Understanding the Development of Digital Governance: A Study of the Relations between Institutions, Organisations, and Actors in the Member States of the OECD and EU

Nele Leosk

Thesis submitted for assessment with a view to
obtaining the degree of Doctor of Political and Social Sciences
of the European University Institute

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Department of Political and Social Sciences

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I Nele Leosk certify that I am the author of the work ´Understanding the Development of Digital Governance: A Study of the Relations between Institutions, Organisations, and Actors in the Member States of the OECD and EU´ I have presented for examination for the Ph.D. at the European University Institute. I also certify that this is solely my own original work, other than where I have clearly indicated, in this declaration and in the thesis, that it is the work of others.

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Thesis Summary

This thesis is concerned with the development of digital governance. The main goal of the thesis is to analyse and explain patterns and levels of digital governance through the lens of actor-centred institutionalism and institutional change. More concretely, the research question of this thesis is: "To what extent do changes in institutional arrangements, organisational processes, and actors' preferences influence changing patterns and levels of digital governance over time and across space?" To answer this question, this study employs a multi-method approach, combining statistical analysis and case study research. The quantitative part of the thesis consists of time-series cross-sectional analysis of forty-one countries over the period of 2003-2016. The qualitative part includes two in-depth case-studies, Estonia and the USA, and traces the development of digital governance from the early 1990s onward.

One of the main findings of this study is that the level of digital governance is largely determined by institutional factors. This finding is supported both by the statistical and the qualitative analyses of the thesis. However, the findings of the in-depth case studies also suggest that the effect of institutional arrangements may vary across countries over time as it has been consistently stronger in the USA than in Estonia, and it has been increasing over time in Estonia. I find modest support to the hypothesis that organisational processes affect the level of digital governance. Regarding the role of actors, the results are not clear-cut, and they are rather surprising. The statistical analysis reveals that digital governance is negatively affected by politicians' preferences but positively influenced by the private sector whereas the public has no effect. The qualitative study partly confirms these findings, indicating that politicians play a minor direct role in the development of digital governance. Instead, progress in this area has been mainly in the hands of government officials, which have been supported both by the IT sector and favourable legislative frameworks. Overall, this study suggests that digital governance has not been, until 2016, a politicised issue, and this has created good conditions for government officials to take the lead in the development of digital governance.

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Abbreviations

ACTA - Anti-Counterfeiting Trade Agreement
AI – Artificial intelligence
ARRA - American Recovery and Reinvestment Act
CDO – Chief digital officer
CIO - Chief information officer
CSO – Civil society organisation
CTO – Chief technology officer
DATA - Digital Accountability and Transparency Act
DESI – The Digital Economy and Society Index
EC – European Commission
EA – Enterprise architecture
eID – Electronic identity i.e., electronic means to identify a person or an organisation
eIDAS - Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC
EENET - Estonian Education and Research Network
EIS – Information System of Draft Acts
EPA – United States Environmental Protection Agency
EU – European Union
FB - Facebook
FE – Fixed effects
FEA – Federal Enterprise Architecture
FFATA - Federal Funding Accountability and Transparency Act
FITARA - Federal Information technology Acquisition Reform Act
FOI – Freedom of information
FOIA – Freedom of Information Act
GAO – United States Government Accoutability Office
GDP – Gross Domestic Product
GDPR - Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC
GIS – Geographic Information System
GPRA - The Government Performance and Results Act
GPRAMA - GPRA Modernisation Act
GSA – General Services Administration
GSII - Government Services Information Infrastructure
HITSA - Information Technology Foundation for Education
ICTs - Information and Communication Technologies
ITMRA - Information Technology Management Reform Act
IRS – Internal Revenue Service
IT – Information technology
ITAO - Department of Information Society Services Development
ITU – International Telecommunication Union
MKM – Estonian Ministry of Economic Affairs and Communications
MoJ – Ministry of Justice
MoU – Memorandum of Understanding
MTA - Estonian Tax and Customs Board

NGO – Non-governmental organisation
NPM – New public management
NPR – National Performance Review
NPRG - National Partnership for Reinventing Government
OECD – Organisation for Economic Co-operation and Development
OGIS – Office of General Information Services
OGP – Open Government Partnership
OIRA - Office of Information and Regulatory Affairs
OLS – Ordinary least square
OMB – Office of Management and Budget
OSTP - Office of Science and Technology Policy
PART – Programme Assessment Rating Tool
PB – Participatory budgeting
PIC – Personal identification code
PIN – Personal identification number
PKI – Public Key Infrastructure
PMA – President Management Agenda
PPA – Police and Boarder Guard Board
PPP – Public private partnership
RE – Random effects
RIA – Information System Authority, Estonia
RIK - Centre of Registers and Information Systems, Ministry of Justice, Estonia
RISO – Department of State Information Systems, Estonia
SMIT – IT and Development Centre, Ministry of Interior, Estonia
TAM – Technology adaptation model
TOM – Direct democracy portal Today I Decide
UN – United Nations
UNDESA – United Nations Department of Economic and Social Affairs
US – United States
USA – United States of America
VAT – Value-added tax
WB – World Bank
WEF – World Economic Forum
X-Road - Data exchange layer, enabling exchange of data between registries and information systems

Chapter 1. Digital Governance. Introduction

Introduction and research question

During the last decade, scholars have focused intensely on explaining digital governance, which in this thesis, stands for the use of the Internet and information and communication technologies (ICTs) by governments i) to organise their administrative procedures (i.e., e-administration), ii) to provide services (i.e., e-services), and iii) to involve the public in the policy-making process (i.e., e-participation) (Dawes 2008). One of the findings of the research on the development of digital governance is that it reveals different development patterns and levels across the World. This divide, often referred to as digital divide seems to persist around the world both between developed and developing countries but, strikingly, also across them (Cilan et al. 2009; Cruz-Jesus et al. 2012; Eynon and Margetts 2007; Ragnetta and Muschert 2013).

There are several theoretical considerations explaining the development patterns of digital governance, and one of the more prevalent ones – "path dependency" and "logical incrementalism" originate from institutionalism that largely understand the development of digital governance as a step by step process. According to this line of thought, once a country has embarked on the journey of digital governance, it does not deviate from the taken course and continues the development along the following three stages: from e-administration to e-services and; lastly, to e-participation (Chadwick 2006; Heeks 2006; Layne and Lee 2001; Janowski 2015). However, there is also empirical work on the development of digital governance finding that the trajectory of digital governance may differ from these predictions, and that the development of digital governance may reveal several patterns not just the still dominant evolutionary one (Ebbers and Van Dijk 2007).

Similarly, myriad of explanations exists to shed light on the potential factors influencing the development of digital governance (Fountain 2001; Gil Garcia and Pardo 2005). Whereas, according to technological determinism, it is evident that it is the technological development itself that triggers digital governance, over time, other explanations have emerged. By now, different schools of institutionalisms have tackled digital governance alongside with innovation diffusion and technology adaptation theory as well as numerous variations of the latter. Over time, however, it has become evident that there seems to be no one requisite to determine the level of digital governance, and it is rather a combination of several factors that matters (Gil Garcia 2012, Bussell 2011, Chadwick 2011, Castells and Himanen 2002).

In my research, I am mainly concerned with changing patterns and levels in the development of digital governance that exist throughout democratic countries, and more specifically, in the member states of the OECD and EU. Broadly, my research attempts to shed light on the following research questions: i) How can we understand the development of digital governance over time and across countries? ii) What accounts for the changing patterns and levels of digital governance over time and across countries? iii) Do the factors that influence the development of digital governance have, at different times and in different countries, different effects? As it will be discussed thoroughly in the following chapter, I attempt at understanding and analysing the development of digital governance through the lens of actor-centred institutionalism and institutional change. The more specific question of my research is:

> **"To what extent can changes in institutional arrangements, organisational processes, and actors' preferences influence changing patterns and levels of digital governance over time and across space?"**

The rest of this chapter is concerned with the discussion on digital governance. I start with the review of how digital governance has been defined and conceptualised, including its main components. In this chapter, I also look at how digital governance has developed over time, including the two main components examined in this study: e-services and e-participation. The chapter summarises the main aims (but also hopes) that have been associated with the use of the Internet and technologies by governments. I then turn to the assessment of digital governance and the prevalent models used.

Chapter 2 is concerned with theoretical considerations. First, I discuss the dominant theories and the factors that have been identified as main determinants in the development of digital governance. Here, I explain in more detail how different institutional factors, driven mainly from actor-centred institutionalism, are expected to influence the development of digital governance, but I also put forward other theoretical accounts. In a second step, I introduce the theoretical framework - technology enactment framework that is applied to explain the development of digital governance. I also explain how this framework, first offered by Jane Fountain in 2001, has been modified for the purposes of this research. I then form hypotheses.

The following Chapter 3 focuses on the research design. Here, I specify the methods by beginning with an overview of a mix-method approach employed in this thesis, moving further to an overview of both the large-N data analysis and case studies. I explain how different

methodological issues are being tackled; I extend on the operationalisation and explain the data used.

In Chapter 4 I discuss the findings of the statistical comparative analysis on the development of digital governance in the member states of the OECD and EU, and how the changes in institutional arrangements, organisational processes and actors' preferences have influenced the development of digital governance in 2003-2016 in these countries. Here, I also introduce the effect of alternative explanatory factors such economic and technological development but also general demographic aspects on the development of digital governance across time and space.

Chapters 5 and 6 are concerned with how digital governance has developed in Estonia and in the USA, from the early 1990s until 2016, and whether and how the factors put forward in previous chapters have influenced this journey. Here, the findings of the comparative statistical analysis are further tested and specified. Both chapters start with an overview of the development patterns and levels of digital governance in Estonia and in the USA and provide a chronological overview of government e-services and e-participation tools in both countries. I then move to explaining institutional arrangements and organisational processes but also to examining how these factors have developed over time. Regarding the role of actors and their preferences on the development of digital governance, it has been specified across the chapters. Both chapters end with a summary of the findings.

Before moving to the conclusions, in Chapter 7, I compare the development of digital governance in Estonia and in the USA, revisiting the main findings of individual country case studies. When applicable, the findings of the comparative statistical analysis have been reflected. After comparing the results, I discuss some general findings and draw conclusions.

Understanding digital governance

Defining digital governance

Over the past 20 years, governments across the world have been using the Internet and the ICTs in their work: in administrative processes, in service provisioning, in communication with their partners and in involving their partners in what they do. This has given rise to the broadly used term "digital governance" but also several other terms that have been used over time such as "Internet government" (Chadwick 2006; Henman 2013), "virtual government" (Fountain 2001),

"digital era governance" (Dunleavy et al. 2006), "wired government" (Homburg 2008), "wiki-government" (Noveck 2009; Nam 2010), "e-government" and "e-governance" (Chadwick and May 2003; Gil-Garcia 2012; Henman 2013), "m-government" (Kushchu and Kuscu 2003), "we-government" (Linders 2012), "open government" and "open governance" (Noveck 2009; Harrison et al. 2012) and "smart government" (Gil-Garcia et al. 2015) being probably the most recent catch-word. Most of the terms are still in use even though we have witnessed a change in their popularity over time. For example, "e-government" and "e-governance" that were one of the most widely used terms in 2000s and 2010s have given away to "digital governance." "Digital governance", again, witnessed a decline in its use in 2000s and 2010s, only to emerge again in more recent years. Some other terms such as "we-government" or "digital-era government" have never gotten into the masses.

In my research, I make use of the following broad conceptualisation of digital governance, proposed by Sharon Dawes (2008)[1]: "*the use of information and communication technologies (ICTs) to support government administration, public services, democratic processes, and relationships among citizens, civil society, the private sector, and the state".* I find this term particularly useful as entails all main government functions that, shortly, are: *1) e-administration*, i.e., the use of ICTs in government for its internal operations and processes, *2) e-services*, i.e., the provision of online information and services, and 3) *e-democracy* that represents the use of ICTs for democratic processes. This wide definition of digital governance is commonly accepted by scholars, practitioners and international organisations alike (see Fang 2002; Janssen and Estevez 2013; Margetts 2008; Pardo 2000; United Nations). This, however, does not mean that this thesis is concerned with all these different aspects of digital governance, and I will introduce the restrictions when explaining what these different terms mean.

As pointed out above, over time, myriad of terms has been used in parallel with digital governance; yet, by and large, their meaning does not have substantial variances. Still, some nuances do exist and for the clarity of this research, it is essential to distinguish between "digital governance" and some of its more prevalent alternatives such as "e-government" but also "open government", "open governance", and "smart government". Additionally, the term "e-democracy" has been subject to several interpretations and, therefore, this section is also concerned with

[1] Sharon Dawes makes use of the term "e-governance" and not "digital governance" but, in the context of this study, these terms are used synonymously.

bringing clarity into what "e-democracy" means, in particular what the differences between the terms "e-democracy" and "e-participation" are.

First, the relation between digital governance and e-government (or digital government) needs attention as, indeed, their function is somewhat distinct. e-Government concerns with the efficiency of administrative transactions within government apparatus but also with the efficiency of service delivery. By and large, the supporters of this conceptualisation recognise e-government as "the use of technology to enhance access to and delivery of government services to benefit citizens, business partners, and employees" (adopted Silcock 2001, p.88). Digital governance seeks to increase effectiveness in administration and service delivery, but it is equally concerned about the relationship between government and its partners: CSOs[2], businesses, and citizens. Thus, digital governance stresses both efficiency and transparency and participation (Dawes and Pardo 2002; Gupta 2010) and, in this sense, we could consider e-government as a sub-section of digital governance. To make this distinction clearer - whereas e-government regards citizens as "clients" and "customers", digital governance regards citizens also as "partners" and "stakeholders". With these differences in mind, it is useful to introduce the concept of the so-called "balanced e-governance" that was coined by Bertelsmann Foundation back in 2002 and quickly gained popularity. The balanced e-governance refers to an equal importance of these three main dimensions: e-administration, e-services, and e-democracy.

Secondly, around 2010 and particularly after the launch of the Open Government Initiative in 2011[3], terms "open government" and "open governance" found their way to practitioners' vocabulary and have also become a constant in an academic literature (Janssen et al. 2012; Lathrop and Ruma 2010; Meijer et al. 2012). Both "open government" and "open governance" refer to the use of the ICTs in and by governments to support democratic processes rather than administrative processes or service delivery. It is precisely because of the emphasis on transparency, collaboration and inclusiveness that the terms open government and open governance are, at times, intertwined with e-democracy and e-participation, or even used synonymously. However, in some contexts, open government and open governance may also stand for digital governance and in these cases,

[2] CSOs are here defined as a set of institutions through which society organises and represents itself autonomously from the state (Gramsci 1971).

[3] Open Government Partnership (OGP) is an international initiative that was launched in 2011 to provide a platform for national stakeholders to commit to transforming their governments more open, accountable, and responsive. See more at: https://www.opengovpartnership.org/.

they do cover other aspects of digital governance like administrative processes and service delivery.

Regarding another recent emergence - "smart government", again, the literature refers to the use of the ICTs in and by governments to transform their inner administrative processes, improve service delivery as well as public participation (Harsh and Ichalkaranje 2015; Gil-Garcia et al. 2014 and 2015). Still, smart government emphasises on a more innovative and sophisticated use of technologies such as artificial intelligence, Internet of things etc that enable for automated service deliver without human intervention. Until now, the focus of smart government has been clearly on service provisioning and not that much on the policy-making processes even though there is discussion on the latter as well (see Mellouli et al. 2014; Nam and Pardo 2011). It should be added here that "smart solutions" have mainly been applied in domains that fall under the jurisdiction of local governments like in transport and mobility, waste management, energy but also buildings. This, in turn, has given rise to another popular term – "smart city" (Anthopoulos 2017; Gil-Garcia et al. 2015) that is more widespread than "smart government". But, again, the variances between all these terms are not that substantial as they all concern the use of technology in public administration, for service provisioning and public participation.

In the following, I discuss in more detail what e-democracy and e-participation stand for. Even though e-democracy is no longer a novel concept, there is a heterogeneity of e-democracy definitions in use and similarly to digital governance, there is no universally agreed-upon concept. Broadly though, it is concerned with how technology can support democratic citizenship, democratic institutions and democratic processes (Coleman and Norris 2005, Coleman and Blumler 2009; Bimber 2003; Fuchs 2007; Trechsel et al. 2003). In this respect, it is useful to look at the following modified definition of e-democracy proposed by Trechsel et. al (2003) and Zittel (2004a and 2004b):

"*e-democracy is a process in which new media based tools enable citizens to access information, as well as to connect with each other and with their representatives, for the purposes of (1) increasing the transparency of the political process; (2) for enhancing the direct involvement and participation of citizens; and, (3) improving the quality of opinion formation by opening new spaces of information and deliberation."*

This broad conceptualisation of e-democracy is stretched to include all sorts of uses of the ICTs from political campaigning to mobilisation, from community building to collaboration, from providing information to consultations and co-decision-making, from

petitions to voting. Here, e-democracy accounts for both: i) voting i.e., participation in elections and ii) participation in between elections. Even though voting via the Internet as one of the many ways to vote has caught quite a bit of academic attention and has been scrutinized by several scholars (see Alvarez et al. 2009; Gibson et al. 2016; Krimmer et al. 2007; Madise and Martens 2006; Vassil et al. 2016), I am mainly concerned with how the ICTs and the Internet have been used in between elections. The main reason for this restriction is that I am interested in how central government agencies utilise the ICTs for public participation. Still, at times, I have accounted for the discussions and developments around the Internet voting, particularly in the case of Estonia where the Internet voting was first made available in 2005 and has, by now, become one of the main ways to cast a vote at local, national and at the European elections. Clearly, the Internet voting is one of the milestones in the development of digital governance, particularly e-democracy, in Estonia and should not be ignored.

Apart from the Internet voting, there are other aspects of e-democracy that are not studied in depth. Namely, this thesis examines how government agencies use the ICTs to engage the public in the policy and decision-making processes, commonly referred to as e-participation (Macintosh 2004; Susha and Grönlund 2012). So, this study follows the understanding according to which e-democracy focuses on the use of the ICTs for the enhancement of broader democratic goals while e-participation emphasises facilitated public engagement in the policy and decision-making process (Susha and Grönlund 2012). In this sense, just as well e-government can be considered a sub-set of digital governance, e-participation is one of the many areas of e-democracy. Now, whereas e-participation has a narrower motivation than e-democracy, it is also evident that these two areas overlap and are interconnected. Therefore, these two terms are often used simultaneously by practitioners, international organisations, and academic alike. Occasionally, it is also the case here, in this thesis, in Chapters 5 and 6 that trace the development of digital governance in the USA and in Estonia. The reason is rather simple – both governments' efforts to enhance e-participation are connected to the broader aim to improve e-democracy and democracy more generally. Hence, institutional and organisational frameworks supporting the development of e-participation also overlap the those supporting the renewal of e-democracy and democracy at large.

Before closing this section on the definition of e-democracy and e-participation, I would like to draw a reader's attention to one other important issue: to who leads participation initiatives. Participation projects can be either top-down, meaning that they are initiated and hosted by state actors; or they can be bottom-up which means that they are initiated by people,

CSOs, or businesses. In the literature, the former is referred to as institutionalised participation and the latter non-institutionalised or unconventional participation (Barnes et al. 1979). Grassroots initiatives can be targeted at the mediation between those in power and those not holding power, i.e. the public (citizens ideas, agenda initiatives, petitions) but there are also initiatives that facilitate communication between people with the overall aim to encourage people to be more active in the political processes (Coleman and Kaposi 2009). Even though these initiatives do not work with governments per ser, they may have a substantial influence on those in power (Coleman and Kaposi 2009).

Over the past decade, scholars have observed a shift towards unconventional participation that is much less elite driven than institutionalised participation and, therefore, more appealing to the public (Inglehart 1999; Hay 2007; Anduiza et al. 2012). Several other reasons have been brought out as the reasons for increasing incentives for unconventional participation such as the decreasing power of vote but also emerging digital tools that provide new opportunities for communication and mobilisation (Kriesi 2008; Anduiza et al. 2012). Indeed, some truly new instruments of civic engagement have been created that, in the absence of the ICTs, would either not have been developed in the first place or they would not have had the success in their diffusion. One can, for example, think of voting advice applications (VAAs) that have become important elements of election campaigns in many countries (Trechsel and Mair 2011; Garzia et al. 2014) as more voters tend to turn to VAAs for consultation and voting recommendations but also to connect with one another (Alvarez et al. 2014). Having acknowledged the potential that bottom-up initiatives may have in the policy and decision-making, I would like to stress here that this thesis is primarily concerned with top-down e-participation. Occasionally though, bottom-up practices have been analysed to better comprehend how e-participation (and democracy) has progressed (or not) in the countries studied in the framework of this thesis, in the USA and in Estonia. It goes without saying that the same applies to online services, i.e., this research counts for public online services.

Development patterns and levels of digital governance

There is a relatively large literature examining the development of digital governance. This process if mainly referred to as evolution (Dawes 2008; Gil Garcia 2012; Janowski 2015; Moon 2002) along the line of the maturity of digital governance (Andersen and Henriksen 2006). In this journey, governments move from one stage to the other, the former phase being more superior in its sophistication to the latter (Kaaya 2007). In short, digital governance stages stem from the three

broad interrelated government activities already introduced in the sections above: internal government operations, provision of public services, and public participation in the policy-making processes (Heeks 1999; Dawes 2008). Earlier scholars particularly have predicted the development of e-governance to follow this three-step model (Chadwick 2006; Heeks and Bailur 2007) by moving from improving internal administrative processes to online service delivery and, finally, to e-participation (Chadwick 2006; Heeks and Bailur 2007).

Apart from staging digital governance more generally, its main components – online services and e-participation have been grouped into levels or stages as well. Again, the first stage of both online services and e-participation tools is generally considered inferior in the maturity, sophistication, usefulness, and user-friendliness to the ones to follow. This stage-based approach is also used to assess the level of digital governance and the progress that governments make in online service provisioning and in e-participation. The remainder of this chapter is divided into two main sections. First, I give an overview of what the stages of online services and e-participation entail, including the observed shortcomings. Second, I provide a summary of how digital governance has been assessed until now, including a snapshot of the internationally recognised digital governance assessment practices. A short summary of the main shortcomings of the assessments and the indices is given.

Levels of e-services

Similarly to the development of digital governance, we can distinguish between different dimensions of e-services. There seems to be no agreed model of the stages of e-services, but most tend to be based on and are closest to the four-level "maturity" model offered by Gartner Group in 2000 (Baum and Di Maio 2000). The levels of e-services that have been subject to some modifications over time, include: 1) information provision, 2) one-way services, 3) two-way services, and 4) personalised services. In recent years, "invisible services", "life-event based services", or "proactive services" have been added to the list of services, that either fall under the fourth category - personalised services or under added fifth category of seamless services. In the following, I will briefly describe the stages of online services relying on the

literature (such as Andersen and Henriksen 2006; Baum and Di Maio 2000; Layne and Lee 2001; Moon 2002 etc), but I have added some examples of online services under each category[4].

The first, initial phase is the most basic phase and has been a starting point for most governments. At this stage, governmental agencies set up websites to provide information about the services they provide but also about the agency itself, its operation, opening hours, policies etc. There are no options for interaction and transactions. By now, all governments included in the study, have bypassed this initial stage and do use their website for more than just providing information. The second stage services are very preliminary, simple e-services like downloadable forms and applications. At this stage, users of online services cannot yet authenticate themselves online nor provide digital signature which means that they need to visit a government institution both for initiating a service and for ending it. There is no vertical nor horizontal integration of information systems which means that even information in the jurisdiction of one government agency does not get shared. Therefore, for example, to apply for a renewal of a driving license, a person must visit a government agency responsible for the renewal of a driving license twice: first when submitting an application and, second time when picking up the licence. As mentioned, due to no integration, a person may need to visit several other offices to receive any other required certificates or documents, such as a medical certificate for example. There is no payment integration at this stage, so a person needs to submit a payment certificate as well.

The third stage services, i.e., the two–way communication services already require some sort of electronic authentication and at this stage, there is already vertical integration between information systems within one agency and its jurisdiction. This means that local or regional service centres' information systems are connected to the central ones and data moves automatically in between them. To illustrate this case, one can think of a registration of a car that can be done at a regional or local service centre even though the data on the vehicles is centrally collected and maintained. At this stage, it is already possible to initiate some services online, either when applying for licences, permits, or when paying bills; and fewer visits to government institutions are required. Still, there is no full integration and no digital signature function yet, which means that fully automated online services are not possible.

[4] An overview of the stage-based models that have been developed by scholars, international and inter-governmental organisations but also governments can be found, for instance, in Nielsen M.M. (2016).

The fourth stage includes fully automated e-services that require electronic authentication to initiate a service and digital signature function to end a service online. Full integration of information systems between different levels of government as well as between their partners is functional. Here, when applying for a parking permit for residents in an otherwise payed parking zone could serve as a good example as a person must only apply online for a parking permit whereas all the other needed data (on the residence, on the vehicle ownership) is being automatically retrieved from relevant registries/information systems, in addition to the integration with an online payment system. Here, one-stop-shop concepts fall as well as recent catch words in online service delivery like proactive services. Pro-active services are services that are initiated by the government instead of an end-user. For instance, instead of an applying for a renewal of a driving license, government notifies citizens of the upcoming expiry date and initiate the renewal. Here, a citizen does not need to take a medical certificate confirming her eligibility, to drive to a respective authority as this information is exchanged between a medical institution and an authority responsible for renewing a driving license.

Since the introduction of the concept of the maturity model of digital governance, several other models have been introduced and the existing ones have been subject to constant modifications and extensions. Many scholars (like Gil-Garcia and Martinez-Moyano 2007; Janowski 2015; Layne and Lee 2001; Moon 2002; West 2004) have suggested improvements but also international organisations like UNDESA, Brown University from academia, and private organisations where consulting firms have taken a lead like Gartner Group, Capgemini etc. All these models follow the same logic, starting from information provision and moving up in the ladder of sophistication of the provided services. As mentioned, some models extend the final stage of e-services adding by either a more sophisticated or trendier stage (i.e., seamless services); but also adding e-participation to the model to serve as the most mature stage of digital governance. This is the case, for instance, with the e-Government Survey that is carried out by United Nations and includes an online service index consisting of an assessment of a level of both online service and e-participation tools.

Levels of e-participation

The most widely used e-participation model is based on the OECD (2001) concept that comprises the following three main stages: (i) *e-Information* – online provision of information, (ii) *e-Consultation* – organizing public consultations online, and (iii) *e-Decision-making* – involving citizens directly in the decision-making processes. In the paragraphs to follow, I

provide the reader with what these three stages concern, basing on what was proposed by OECD already in 2001 but also reflecting academic literature in this domain (such as Fung 2006; Lee et al. 2011; Lee and Kwak 2012; Macintosh 2004; Vedel 2006).

The first stage of e-participation concerns providing information online. At this stage, people are passive observants, but the received information should prepare them for informed choices during the stages to follow. In a sense, this stage is essential as background information about the issues at stake should be given in a comprehensive and targeted manner to allow for the opinions to be formed. Additionally, at this stage, a clear overview of the aims, process and expected outcomes of the engagement initiative should be provided. It is also a stage when information on the upcoming participation events (work plan of an agency, planned future public consultation etc) as well as the past ones (summaries of previous participation events) should be given. When moving further, to the second phase of what is called public consultations, people should already give their opinion and feedback on a given policy issue, for example via gallups, online forums, online consultations etc. These first stages, information and consultation, do not foresee a translation of participants' preferences into a policy decision even though public officials may take them into consideration when formulating one. In any case, feedback on the second phase participation activities is generally required.

The third stage of decision-making includes public involvement in the policy-making processes and it usually requires an active dialogue from both sides. At this stage, people's proposals get incorporated into the decision-making either partly or fully, but they do not get incorporated. Here, different types of participatory budgeting (PB) serve as a good example of this stage practice because some of the PB practices give people the power to decide over the use of a government budget (usually, a portion of an investment budget) whereas some other models merely collect people's ideas on how to use the budget but do not give the decision-making power to them. Participatory budgeting, then, that has become an overly popular practice around the World after it was first experimented with in Porto Alegre in 1987 (Smith 2009). Other examples include online referendums as well as the Internet voting.

This three-stage e-participation model has been widely used with certain variations. For example, the *Inform-Consult-Empower* model that was developed by Layne and Lee (2001) or *Enable-Engage-Empowering* approach proposed by Ann Macintosh (2004). The most significant contribution to the model has been made by Archon Fung (2006) who added a fourth stage – *co-governing* to the model, sometimes also referred to as *co-decision making*. At this stage, citizens' proposals do get translated into policy decision, but the public also gets either

partial or full control over the implementation of the project following the policy decision. This stage that Fung (2006) has also named a *direct authority* phase could be illustrated, again, by a type of participatory budgeting that gives the public an opportunity to decide over the use of the budget but also over the execution of the proposed project itself. The latter has been the case, for instance, in participatory budgeting model used in several towns in Estonia (Krenjova 2017) but also elsewhere in Europe.

Apart from adding the co-governing phase to the policy influence stages of e-participation, Fung (2006) also introduced participation selection mechanism into the model. In Fung's categorisation, the selection of participants falls under five categories: "authorized delegates", "professional stakeholders", "lay stakeholders", "targeted selection", "random selection" and, finally, "self-selection". Regarding "authorized delegates", these would be, for instance, elected representatives whereas "professional stakeholders" are considered either organised or individual paid experts. "Lay stakeholders", again, include unpaid citizens who are willing to contribute substantially to the policy issue at stake because they have strong interests representing a certain group such as school council, for instance, or any policy issue group. The next two participants' selection mechanisms - "random and targeted" are, again, considered more inclusive than the previous two because of the wider range of participants. But, again, their use depends largely on the purpose of the initiative and a specific policy issue. For example, when deciding over issues such as domestic violence or people with special needs, targeted selection method might work better to reach the target group.

Lastly, "self-selection" seems more inclusive than the other ones because it gives everybody an opportunity to participate. However, one of the findings of the empirical work is that "self-selection" attracts people who are higher educated and better skilled but who are also bolder and have more time. So, here there is a risk of counting for the opinion of those privileged and further increasing the existing digital divides (Smith 2009; Trechsel 2007). Regarding examples, online crowdsourcing[5] serves to be brought out as it has been employed for the preparation of policies and regulations (Aitomurto 2012; Aitamurto and Landemore 2015), constitution writing (Landemore 2015) but also for the renewal of democracy. Apart from Fung proposals on how to improve the measurement of the level of e-participation or the success of individual initiatives, additions to the original model have been rather mediocre.

[5] Crowdsourcing as a term is known to be coined by a Wired writer Jeff Howe in 2006. Crowdsourcing is a rather new phenomenon powered by the ICTs and the Internet and stands, in this thesis, for a public participation tool (Brabham 2009) that is based on the notion of „collective intelligence" (Levy and Bononno 1997) or the „collective wisdom" (Landemore and Elster 2012).

The stage-based approach to online service delivery and e-participation, despite being widespread, does pose several challenges and shortcomings, and I will introduce some of them here. One of the observations is that the stages of digital governance, e-services and e-participation often overlap, they are not mutually exclusive and; therefore, they are not easily distinguishable (Gil-Garcia 2012; Lee 2010). For example, when governments involve the public in the development of online services, the line between online services and e-participation is rather thin as the ICTs are being used for two different stages simultaneously. It is also obvious that the level of online services is dependent on the level of digitalisation of public administration's inner processes. Fully automated online services, for instance, require the full integration of government information systems and databases.

This takes me to the second, interconnected drawback of the stage-based models. Namely, one stage may not necessarily be superior to the other. As the example above demonstrates, the level of online services (for example, downloadable pdf-forms) may not be superior in their technological complexity, usefulness or user-friendliness to the one of administrative inner processes. Another example here could be brought from the stages of e-participation. Even though the first stage – providing information - is considered the most basic one, it may not necessarily be inferior to the stages to follow. Providing accurate, easy to understand and easy to find information is one of the most crucial preconditions for any e-participation initiative. The provided information may also influence a person's standpoint or a decision that the following phases (such as consultation) may not.

The third criticism concerning the stage-based assessments is related to its use in digital governance assessments and doubts have been raised over its suitability to measure the level of digital governance at first place. Indeed, the stage-based model focuses mainly on the so-called front-office outcome of the use of the ICTs by governments i.e., an online service or an e-participation tool available for the public via a government website. Some scholars have suggested that the stage-based approach fails to understand the usefulness and user-friendliness of online services and e-participation tools (Heeks 2006; Pihor and Batueva 2012) and others have suggested to evaluate the context in which these tools are being provided instead (Codagnone and Undheim 2008; Mosse and Whitley 2009). I will come back to these in more detail below when discussing digital governance assessment exercises below.

Measuring the development of digital governance

Until now, the maturity of digital governance is largely being measured by checking digital governance outcomes. Thus, it is useful, before discussing digital governance assessments, to look at the outcomes that have been associated with the use of the ICTs in government.

Unmistakably, the ICTs have the potential power to influence the way governments function which, in turn, has the potential to increase the effectiveness of government operations (Schelin 2003; Heeks 1999; Adler and Henman 2005). In this regard, many scholars have stressed that alongside with the application of the ICTs, governments need to re-engineer the existing administrative processes, or otherwise, the desired outcomes of digitalisation would not be reached (OECD 2003; Corradini et al. 2010). Greater effectiveness, in turn, has been related to accompanying efficiency and several scholars have disputed over the cost savings argument. Until now, apart from a few enthusiastic calculations[6], there has not been much progress made in the cost saving estimations and it is worth mentioning that it is not at all clear whether digitalisation has resulted in reducing government apparatus operational costs. There are several reasons for this, and a few of these seem to be repeated in the literature. First, several digitalisation projects to not deliver expected outcomes and, at times, it is not immediately clear whether digital governance projects have failed or not (Heeks 2003). Second, and more importantly, cost-benefit calculations of digital governance projects are rather complex and often not accurate, mainly due to the horizontal nature of most digital governance initiatives and the complexes thereof (OECD 2003). Nevertheless, increasing effectiveness and efficiency of government operations have remained one of the vocal arguments in the support of technology adoption in government until the present day.

In 2000s, the promises around government digitalisation diversified and the focus shifted to faster but also higher-quality service delivery, shortly to the user-friendliness of governments and what they do, including service provisioning. During this period, 24/7 availability of a customer-oriented government became a number one argument (Helbig et al. 2009; Klievink and Janssen 2009). In support of this line of thinking, promises such as higher level of personalisation, customization, and individualisation in service delivery became popular (OECD 2003; Pardo et al. 2010). Later on, in the 2000s and in the 2010s, in parallel with the hopes for more user-centric government and personalised public services, the ICTs were

[6] See, for example, the estimations on the reduction of work hours in Estonia: https://e-estonia.com/how-save-annually-820-years-of-work/.

associated with a more effective and user-friendly service design process as keywords like co-creation, co-design, and collaborative service design emerged. So, for a period, the priority focused from service delivery to the service design and development process itself (Allwinkle and Cruickshank 2011; Kristennson et al. 2008).

Apart from effectiveness, efficiency, and user-friendliness of public administration and provided services, the ICTs have been also associated with its powers to transform democratic processes. Trechsel et al. (2003) have brought out, in the STOA working paper "Evaluation of the use of new technologies in order to facilitate democracy in Europe" three main impacts that technology has on democracy: 1) increasing the transparency of the political processes, 2) enhancing the direct involvement and participation of citizens; and, 3) improving the quality of opinion formation by opening new spaces of information and deliberation." Public participation and the use of technologies in this process, have been associated with several other positives also in later STOA reports. In 2011 (p.56), the authors have highlighted technology's power to increase trust in government, government responsiveness, quality of decisions, social inclusion, and so forth. These desired outcomes have been associated with the use of the ICTs by several scholars (Bertot et al. 2010; Bhatnagar 2003; etc).

Although the discourse on the role that the ICTs could have in a government and in a society at large tends to be optimistic, it is important to stress that digital technologies can also have a negative impact. It is especially common to relate e-participation with positives outcomes on governance and democracy at large as the general expectation is that more e-participation leads to more openness, participation and inclusion and, thus, also to better democracy. However, this is not necessarily the case. Similarly to public participation that can be used to manipulate citizens (Arnstein 1969), e-participation initiatives, too can be used for propagandistic purposes, to legitimise authority, disguise social control, and restrain public opposition (Jiang and Xu 2009; Åström et al. 2012; Medaglia 2012). Scholars have also noted that there are several cases where the positive and negative effects of the use of technologies go hand in hand. For example, during the "Arab Spring", social networking sites and digital media enabled democratization movements to quickly mobilise but, at the same time, authoritarian governments integrated social media into their counter-insurgency strategies (Ritter and Trechsel 2014; Howard and Hussain 2011). Even though it has been widely recognised that e-participation can be and is used for anti-democratic purposes (Ferdinand 2000), it has still not been sufficiently studied and addressed in the literature (Susha and

Grönlund 2012). Apart from challenges on democracy and democratic values, it has been also recognised that inequality in terms of access, skills and education necessary for the use of digital technologies, has prevailed (Trechsel 2007; Norris 2001).

The list of potential outcomes of the use of the ICTs, both positive and negative could continue as several other hopes and fairs have been associated with the emergence of the Internet and technology, but I will not continue listing these here. This thesis analyses the development of digital governance and attempts to identify what constitutes to higher levels of digital governance and is not concerned with the potential impacts of digitalisation on governments and societies at large. Furthermore, it is not concerned with digital developments in non-democratic regimes as I will explain in the Chapter 3 that introduces the research design, including case selection. I will now turn to explaining the main digital governance assessments and respective indices.

Assessing the level of digital governance

In this section, I give a quick overview of how digital governance has been assessed and introduce some of the more prevalent assessment exercises, including the Online Service Index of the e-Government Survey of the UNDESA. To better understand some of the complexities around the statistical analysis of this thesis, I do not only talk about the positives around digital governance assessments but also point to several negatives observed by practitioners and scholars alike.

By and large, digital governance assessments until the present have been benchmarking exercises that review digital government performance of a country in comparison with other countries, using a set of indicators (Heeks 2006). Most of the digital governance assessments check whether a certain online service and e-participation tool exist and attempt to evaluate their maturity and sophistication following the stage-based approach introduced earlier in the thesis. By now though, main digital governance assessments do look beyond the provided online tools (that are still being assessed basing on the stage-based model) and include other aspects that enable to get a more comprehensive overview of the level of digitalisation of a government and a society. These include, for example, regulative and organisational context in which technologies emerge but also the readiness of all potential stakeholders (like civil servants, people, businesses) to use digital technologies.

Digital governance benchmarking studies have been carried out at global, regional, and national level by public, private, and non-profit organisations for decades by now. However, only a few of them have been repeated regularly and cover a wide range of countries, and these are generally conducted by international or inter-governmental organisations. Two have survived the test of time. First, the United Nations Department of Economic and Social Affairs (UNDESA)[7] has been carrying out an e-Government Development Survey since 2001 when the first pilot assessment was carried out. The study has been conducted since 2003 in all UN member states, in 2003-2005 annually and since 2008 every other year. Second digital governance assessment giant is the World Economic Forum (WEF) that annually publishes The World Information Technology Report. The main difference between these two exercises is that the WEF one assesses both the level of the provided online tools and the environment in which these emerge as well.

Apart from the mentioned UNDESA and WEF, other organisations such as the Organisation for Economic Cooperation and Development (OECD) and the European Commission have also been concerned with the progress of digital governance in their member states. OECD has published in depth studies under different pillars, for instance, several OECD Public Governance Reviews have tackled issues related to building digital governance[8]. These reviews, however, are not being repeated regularly. The European Commission, again, does monitor the development of digital governance in its member states regularly and does so through several initiatives and indices. The most recent, the Digital Economy and Society Index, i.e., the so-called DESI Index that was first published in 2016, assesses the level of e-governance via several main dimensions that, in turn, are divided into a set of sub-dimensions[9]. An interesting addition of DESI is that all these five areas are interconnected and the advancement in the development of digital society can be achieved only by improvements in all these areas together. Therefore, in assessing the level of public online services, one should also account for the access to these services, the skills of both the public and enterprises to use

[7] The e-Government Survey conducted by UNDESA is discussed in more detail in Chapter 3 where I give an overview of the methodology used alongside with methods, operationalisation of variables and data used.

[8] Several editions of Public Governance Reviews has also been studied within the framework of this thesis to find information on institutional and organisational aspects as well as on the actors involved in the development of e-governance in the member states of the OECD and the EU. For example, OECD Public Governance Reviews: Estonia and Finland. Fostering Strategic Capacity across Governments and Digital Services across Boarders (2015).

[9] More about DESI Index, including the methodology can be found at: http://ec.europa.eu/information_society/newsroom/image/document/2018-20/desi-2018-methodology_E886EDCA-B32A-AEFB-07F5911DE975477B_52297.pdf.

these services as well as to develop them further and the public's online activity more generally. This is a novel but also ambitious approach to digital governance assessments.

The pool of organisations practicing digital governance benchmarking is wider though and includes also private companies, academic institutions as well as think tanks and public institutions themselves. Prominent technology and consulting firms like Accenture, Capgemini[10], Deloitte, IBM, and a few others have analysed the progress countries have made in digital governance. Occasionally, universities have stepped into the area of digital government evaluations, the most prominent of them used to be the one conducted by Brown University (sometimes referred to as West e-government survey[11]) but also Rutgers University Newark, an "owner" of the survey on Digital Governance in Municipalities Worldwide needs to be brought out. As the title of the report indicates, the latter is concerned with assessing the level of digital governance at local level. And last, there are a myriad of studies that focus on individual countries (Abanumy et al. 2005; Peters et al. 2004 etc) or on just one sub-component. A good example of the latter originates from Netherlands where Dutch local municipalities benchmarked their organisational processes against other organisations' processes with an aim to re-engineer some certain aspects of their operations (Janssen 2010).

A question - why to benchmark and why to benchmark digital governance? – needs an answer, as it has, indeed, been tackled intensively in digital governance literature. Both pros and cons have been brought out. To begin with positives, most importantly, benchmarking as an assessment tool allows to follow the development of digital governance in an individual country over a longer period (Rorissa et al. 2011), and to compare the progress against other countries (Kaylor et al. 2001; Ojo et al. 2005). This is essential for national governments, international organisations or any other actors potentially interested the development of digital governance for several reasons. As emphasised by the UN, benchmarking is a tool to "gain a deeper understanding of the relative position of a country vis-a-vis the rest of the world" (UN 2005) that may lead to the introduction of corrective actions by respective country governments.

[10] Capgemini, in cooperation with other institutions, has been preparing a report on e-Government Benchmarking for the European Commission evaluating the progress of the EU member states in the priority areas of the EU's e-government policies and action plans.

[11] Brown University, under the leadership of Darrell M. West carried out annual assessments of the websites of 50 states of the USA and 198 countries around the World. The analyses included the websites of executive offices (President, Prime Minister but also party leader and even a member of the royal family), legislative offices (Congress, Parliament), judicial offices (courts), Cabinet offices, but also agencies providing services in the areas such as health, taxation, education, economic development, interior, foreign affairs, transportation, business regulation etc.The last Global e-Government Report was published in 2007, and to my best knowledge, the survey has not been repeated since then. All reports are available at: http://www.insidepolitics.org/.

By using the results of digital governance benchmarking, governments but also other actors such politicians, businesses or CSOs, could justify the need for certain policy choices, organisational changes but also budgeting decisions and spending (Jannsen et al. 2004; Heeks 2006; Pardo et al. 2011; Rorissa et al. 2011). Apart from national governments, international organisations, too, monitor the adoption of the ICTs in governments across regions and the globe to detect hurdles as well as encouraging factors in the implementation of digital governance or to identify trends (such as United Nations, for instance). To sum it up, benchmarks can be significant political and policy impact tools (Bannister 2007; Kunstelj and Vintar 2004).

Despite widespread use of benchmarks and their increasing popularity, several drawbacks have been discussed in the literature. Generally, benchmarks are not considered a reliable way of measuring the level of digital governance (Bannister 2007; Janssen 2010; Pardo et al. 2011). The afore-mentioned scholars have referred to three serious limitations: i) benchmarking exercises fail to evaluate what they should be evaluating, ii) the collected data is of low quality or inaccurate, and iii) data collection process has weaknesses.

Firstly, digital governance assessments, as already mentioned, focus largely on the front-office which means that they mainly check whether a certain online service or an online participation tool exists and, by following the stage-based approach described earlier in this section, their maturity is being assessed. At the same time, they fail to fully grasp the user-friendliness of these online tools or whether these tools help users at the first place (Heeks 2006; Pihor and Batueva 2012). It has also been agreed by now that the mere provisioning of online services and e-participation tools may not fully reflect the maturity of digitalisation of a government or a society. Therefore, in order to improve the existing digital governance assessments, some suggestions have been made to enrich the set of used indicators. For instance, to assess the administrative processes and their re-design behind online services (Peters et al. 2004; CapGemini 2004) so that the results could be interesting also to those concerned with improving provided services like public officials (Jannsen 2010). Mosse and Whitley (2009) further suggest that service design and development process and their inclusiveness should be considered as well. Another concern relates to the uptake of online services and e-participation tools and the readiness to use the ICTs (Codagnone and Undheim 2008), etc. It should me added though that, by now, most indices do accommodate these suggestions.

Secondly, the quality of the collected data seems to worry academics and practitioners alike, particularly because there is an immediate assumption that the quality of benchmarking data is high. This, however, has not proven to be always the case (Heeks 2006; Pardo et al. 2011). One of the two main reasons for this assumption is that countries are not consistent across different digital governance benchmarking studies. The second one concerns the secrecy around methodologies and the collected data that are not made fully public and have remained behind the closed doors. Some (such as Bannister 2007) speculate that limited resources constrain the possibilities of benchmarking and influence the validity of the results as „a benchmark is a trade-off between cost, scale and the quality of information."

There have been also other problems raised, but I believe that these are not that detrimental. One of them relates to the fast-moving developments of technology and several trends that do not get reflected in digital government benchmarking measurements (Curtin 2006). This, in turn, is considered to do an injustice to these countries whose new and innovative developments do not get assessed and not reflected in the final results of these assessments. The other raised issue, and contrary to what was discussed in the sections above, concerns too wide scope of digital governance assessments that also has a risk in producing inadequate results (Heeks 2006; Pihor and Batueva 2012). Despite the addressed limitations, until the present day, digital governance benchmarking remains the most comprehensive effort to evaluate the development of digital governance across countries and through time. The results, even if not to be taken at face value, are still believed to mirror the development of digital governance in different countries. This enables to trace a development pattern, identify sudden advances or disruptions, but also to drive conclusions from these observations (Curtin 2006).

Chapter 2. Theoretical considerations

Theories and factors explaining the development of digital governance

In this chapter, I discuss the main theories that have attempted to explain the development of digital governance over time and bring out the main factors. I also attempt at establishing relationships between these factors and how these may have changed over time across countries. In doing so, I first look at how the scholars of technodeterminism, technology adaption and innovation diffusion have understood the development of digital governance, moving then to institutionalism that complements the earlier dominant works. Here, I first conceptualise the development of digital governance through the lens of different schools of institutionalists, including historical institutionalism, rational choice and actor-centred institutionalism. I then put forward the theoretical framework of my research.

Technodeterminism and the development of digital governance

Early works on the development of digital governance largely follow a technodeterminist (also known as technological determinism) perspective which, by and large, means that technology drives people and our societies (Adler and Henman 2005). In technological determinism terms, technologies are understood as "self-governing forces that affect individuals, social arrangements, and institutions and are beyond human agency" (Danziger 2004). Technodeterminism contains two streams of thought: first, technology develops itself, independently from external influences and; second, technology influences people, institutions, and societies at large. Thus, technodeterminist scholars look at how technology and the Internet affects institutions without considering how institutions adopt technologies and use them in different contexts. Following this theory, the level of technological development in a society is considered the main factor influencing the development of digital governance. The more technologically advanced a country is, the more advanced it is also in the development of digital governance.

Technological determinism peaked in the 1980s, when Toffler's and Alvin's famous The Third Wave (1980) was published, predicting the emergence of an Information Age, enabled by technologies such as mobile and the Internet. The main argument of this seminal work is that technology changes the way institutions operate. It is believed that this book also triggered technodeterminitsic claims on the development of digital governance, particularly in the 1990s. Technological determinism did not live long though and, at the present, very few scholars argue

that technology itself can explain the differences in the levels of digital governance, and a consensus has grown around the understanding of digital governance as a socio-technological (Gil Garcia 2012) or; furthermore, as a socio-political phenomenon. It is also recognised that technological determinism loses its importance in time (Åström et al. 2012; Dunleavy and Margetts 2010) whereas the context in which digital governance emerges gains its importance over time (Rose 2005).

However, there is a stream of thought connected to technological determinism that has stood up the time. Namely, overall economic situation of a country is considered crucial in building digital governance as this, is turn, is thought to be a precondition for technological development, particularly infrastructure that naturally requires financial resources. In these perspectives, digital governance is seen primarily as an arena for rich countries, where success is determined by economic development enabling technological development that, in turn, is influencing digital governance positively. Country's wealth is stressed to be a leading contributor to digital governance sophistication by several theorists, technodeterminists or not (for instance, look at Norris 2001; Åström et al. 2012; West 2005). Still, one of the main findings of the work on the development of digital governance is that whereas it is evident that certain level of economic development is necessary for the development of digital governance, it does not determine *per se* the level of digital governance (Gil Garcia and Pardo 2005; Bussell 2011; Chadwick 2011). This argument is supported by the digital divide that exists also between highly developed countries (Eynon and Margetts 2007; Ebbers and Van Dijk 2007). From this discussion, it could be concluded that even though technological determinism has lost its appeal and has been subject to criticism, some aspects of the latter have remained acute until the present. This said, I now address other main theories used to explain the development of digital governance.

Technology adaptation and diffusion and the development of digital governance

The other, inter-connected grand theories that have stood over time to explain a wide variety of phenomenon, including digital governance are the technology adoption and innovation diffusion theory. Here, the technology acceptance model (TAM) introduced by Davis in 1989 and the diffusion of innovations theory (DOI) proposed by Rogers already in 1962[12] need to be brought out. According to both theories, the main factor explaining the differences in the level of digital governance lies in the adoption rate of the introduced technological solutions. Some

[12] In this thesis, the 2003 version of the Diffusion of Innovations has been studied and referred to.

differences between these schools of thought exist, and I draw attention to those in the following paragraphs.

The Technology Acceptance Model, deriving its arguments mainly from sociology and behavioural insights, stresses on the importance of usefulness of technology and its ease of use (Davis 1989). Davis (1989) believes that people are rational in their behaviour, so the more useful and easy technology is, in the context of this thesis this means online services and online participation tools, the higher the uptake of these tools. In this sense, Davis connects the development of digital governance to the actual use of online services and e-participation tools, i.e., to the demand side of digital governance, and not to the supply side.

Unlike TAM that tackles technology adoption specifically, the diffusion of innovation theory that was suggested by Rogers (2003) is a more generic theory, and it does not engage only with the use of technology. For Rogers, innovation can also be a new concept, therefore, he explains diffusion as the dissemination and adoption of either concepts or technologies into a society. Rogers (2003) builds on some aspects of TAM as he, too, brings our attention to several essential constructs that can either hinder or enhance the adoption of innovation. Two of these: complexity and relative advantage correspond to what Davis' calls "ease of use" and "usefulness". Rogers adds factors like compatibility, trialability and observability to the list of important factors influencing the level of innovation diffusion. In terms of compatibility, Rogers refers to values, views, beliefs, and customs that either favour or not one's likelihood to adopt an innovation. Trialability, in turn, refers to the opportunity to test a system before starting to use it, and observability suggests that one is more likely to adopt an innovation when its benefits are visible, concrete or touchable. In a way, these constructs correspond to the so-called "usefulness" factor of TAM, but it adds details to what the added value could be.

From the point of view of digital governance, there seems to be two sides to explaining the existing differences in the level of digital governance development. The first is connected to the adopters of digital governance, i.e., the users of online services and e-participation tools: businesses, CSOs, the public, and, as importantly, to their characteristics. The second side concerns the characteristics of online services and e-participation tools, i.e., how easy to use they are and what their added value to an end-user is. In terms of users, Rogers (2003) has divided them into several categories ranging from "risk-takers" to "laggards", depending on their readiness to adopt innovation (Rogers 2003, p. 263). The so-called risk-takers group consist of two types of users: a very small number of well-informed and well-educated citizens

of “innovators” and a slightly larger group of “first adopters” following them. The characteristics of the “first adopters” is less prominent than the one of the “innovators”. Then, groups of adopters called “early majority” and “late majority follow” and, at final order, “laggards” adopt technology. Laggards adopt to innovations only when visible and tangible gains outweigh the cost of adoption (Rogers 2003, p. 263-265).

Both models have been widely used to explain variances in the development of digital governance or in some of its components, and they continue to live to date (Carter and Belanger 2005; Colesca and Dobrica 2003). Both theories have been widely applied in explaining the adoption of information systems, online services, but also e-participation. Recently, Vassil et al. (2014) analysed the usage patterns of Internet voting in Estonia in 2005-2013, examining how the profile of the Internet voters has changed over time, by contrasting them to conventional voters, and found that, at the individual level, Internet voters are increasingly less distinguishable from regular paper ballot voters. Their findings suggest, in line with innovation diffusion theory, that Internet voting started off as a voting method of the socio-economically privileged and technologically advanced but has, over time, reached wide usage among all voters.

Both TAM and DOI have numerous modifications and continue to be subjects to adaptations. Perhaps one of the most widely tested models originates from Venkatesh et al., who in 2003, after having reviewed user acceptance literature, proposed the Unified Theory of Acceptance and Use of Technology (UTAUT). In order to come up with UTAUT, they reviewed eight prominent theories: the theory of reasoned action, the technology acceptance model, the motivational model, the theory of planned behaviour, a model combining the technology acceptance model and the theory of planned behaviour, the model of PC utilization, the innovation diffusion theory, and the social cognitive theory. As a result, UTAUT includes four main determinants for technology adoption and diffusion, largely related to the Theory of Reasoned Action and Theory of Planned Behaviour (Venkatesh 1999; Venkatesh and Davis 2000). There are also many other disciplines that attempt to explain differences in the level of digital governance: social informatics, the structurational model of technology (Orlikowski 1992; Devadoss et al. 2003) to name the few. Rather than dwell on these theories, I devote the remainder of this chapter to exploring institutional theories and how these studies have been tackling the development of digital governance.

Institutions, institutional change and the development of digital governance

In this section, I review the lines of institutionalism and institutional change, summarising the standpoints of the main schools of institutionalism: historical institutionalism, sociological institutionalism, rational choice and actor-centred institutionalism. I identify how the works of institutionalists and institutional factors have been identified to influence the development of digital governance or some other complex phenomena. I also attempt complimenting the earlier works by further establishing the role of institutional factors but also actors, embedded in the institutional setting and organisational environment, in the development of digital governance. It should be added here that not all these schools of institutionalism that I have included in this chapter have touched upon digital governance. Still, I have opted to add these theoretical considerations because they could be used to explain the differences in the development levels and patterns of digital governance.

Institutionalism has been conceptualized in many ways and various schools of institutionalism exist, each of them representing so much diversity that institutionalists have claimed that it is sometimes difficult to draw a strict line between them (Thelen 1999; Hall and Taylor 1996; Steinmo 2001). Generally, institutionalists agree that institutions form the foundation of political and social life (Campbell 2004; Steinmo et al. 1992). The other aspect that institutionalists seem to have found a consensus concerns the subject of their research. Namely, institutionalists seek to explain the role that institutions play in shaping political and social life, but they also look at how institutions and institutional arrangements themselves change and develop over time (Hall and Taylor 1996; Scharpf 2000). Whereas the first perspective is connected with the impacts that institutional factors have on a process or a phenomenon (March and Olsen 2006), the second perspective is concerned, as already mentioned, with how institutions develop. Here, the notion of time is essential to mention because several institutionalists stress on the influence that the past has on the present (Evans et al. 1984). Pierson (2000) particularly highlights the importance of sequence. In this thesis, I am mainly interested in the first side of the theory i.e., how institutional factors affect the development of digital governance. Still, as I attempt to identify how digital governance has developed over time and what the role of institutions has been in this process over time, I have also counted for the second side of institutionalism, i.e., how the institutional factors have developed over time. In longitudinal studies, it is also essential to count for the time i.e., how the past has influenced the present.

Naturally, historical institutionalists (such as Pierson 2000, 2004; Thelen 1999; Steinmo et al. 1992) have emphasised on the importance of a long view in explaining a phenomenon or a process as timing and sequence have been identified of main determinants explaining social and political developments. From the point of view of historical institutionalists, it is not possible to explain nor compare cases without knowledge of the past as, otherwise, important aspects that relate causes and consequences might be ignored (North 1990; Pierson 2004). Some (e.g., Thelen 1999) go even further by arguing that to understand a process, it is essential to know how it all began i.e., the starting point. It should be clarified here that, obviously, not all political scientists or sociologists, who carry out long term analyses, are institutionalists but only those who are interested in the influence of institutions. In the following, I discuss how institutionalists have tackled institutional development and institutional change, and what causes the latter to happen.

How do institutions develop and change over time? One of the more widespread approaches sees the development of institutions through what is called path dependency. Shortly, bath dependency means that early events set the path to be taken later on. Institutionalists (like Pierson 1998, 2000) believe that once a certain process is laid, it gets more attractive while it proceeds and, therefore, it gets increasingly more difficult to break that path, and choose an alternative way (Pierson 1998, 2000). This process has been explained by the so-called "positive feedback loops" (Krasner 1988; North 1990) that reinforce the earlier made choices and make the taken path attractive to the extent that it is hard to change it, even if other, better choices merge on the way. Thus, these "positive feedback loops", sometimes referred to as "increasing returns" (Pierson 1998) reinforce a process to the extent that it gets „locked in" as, again, illustrated by Pierson (2000).

Institutional developments basing on "positive feedback loops" and "increasing returns" view institutions as something stable. From that point of view, institutions either do not change at all or when they do, these developments are slow and could easily be predicted. Still, scholars have found that institutions do change, and that they may reveal different development patterns (Orren and Skowronek 1994; Thelen 1999; Steinmo 2001; Pierson 1996); unfolding what Pierson (1996) calls „collisions," „lags," and „gaps". These changes that institutions face, have mainly been connected to external factors that force them to change, to the so-called "shocks". These shocks happen rarely though but when they happen, they take place rapidly but only to be followed, once again, by a long period of stabilisation. The afore-mentioned authors have

also pointed to some of the pre-conditions for these changes to happen that largely relate to the readiness for these changes to happen.

There are several explanations on how institutions reach these moments when change is possible. Bell (1976) has observed that a change, or a "punctuation" as he has named it, is rather a result of small changes that have accumulated over time and simply explode at certain point, causing what he calls a "revolutionary change". Pierson (2004) has referred to similar process of the accumulation of small changes until the breaking point as "incremental cumulation", "threshold effects", and "slow-moving outcomes." Apart from some small nuances, it refers to a process in which small changes cumulate and culminate in a big bang. Pierson (2004) has further noted that small changes may not be noticeable as well as big changes because their effect could not be immediate and could be realised only after they happened. The other aspect of institutional change concerns "layering" (Pierson 2004; Thelen 2004) which means that changes are made on top of the existing institutions, i.e., they are being layered on top of each other. These kinds of institutional developments and changes, again, may not be noticeable. In order to unfold the changes, a process needs to be traced through time.

Even though the majority of institutionalists see institutional change as something slow, unnoticeable, or something that hardly happens; or when it happens, as something disruptive, there are also scholars who do not support that argument. Thelen (2003; 2004) herself, for example, after analysing German vocational training system, found that institutions change continuously, not only as a result of accumulation of small changes. She understands institutional change "as a process of mobilizing support among social and political actors to construct, revise, or sustain specific institutional arrangements." She stresses that as a result of a constant political and social contestation, actors introduce changes to the existing institutional arrangements continuously.

This brings us to the question - "What makes institutions change?" One thing that institutionalists seem to have reached an agreement about is that institutions do not develop independently and that a change in their development is a result of a change in the environment in which they appear (Orren and Skowronek 1994; Scharpf 1997; 2000; Hall and Taylor 1996). This contextual environment, in turn, is made up of different factors that either influence institutions individually or in a combination. Indeed, institutionalists suggest that even though it is essential to understand the different factors influencing a process or phenomena, it is equally important to understand what the interaction effects of the individual factors are (Thelen

1999; Scharpf 1997 and 2000). I will devote the next few paragraphs, basing on the prominent schools of institutionalism, to discussing what an institution is, what the factors influencing institutions are, and what the mechanisms causing institutional stability and/or change are. I also show how these identified factors, or the interaction of these factors are known to influence the development of digital governance.

Institutions as rules and norms

By and large, institutions are considered formal and informal rules and procedures (Steinmo 2001; Thelen 1999; North 2000). Rules, again, do not exist in isolation but they are usually accompanied with some sort of an enforcement mechanisms so that different actors would follow the established rules (North 2000; Campbell 2004). Although institutionalists have defined institutions differently, there is a general agreement that rules serve the foundation of social and political life, for five interconnected reasons listed below.

First, rules are known to shape actors' behaviour (Weber 1978; Peters 2005) because they define what is allowed and what is not, and actors, by following these rules, act in a certain expected way. Second, rules influence actors' preferences and, in this way also what actors think is desirable or not (Steinmo 2001). This, again, relates to the adoption and spread of certain ideas, policies, etc (Skocpol and Rueschmeyer 1996). Third, rules not only shape policies but they also support or enable the implementation of them (Scharpf 2000; Peters and Pierre 2000). Fourth, rules identify "the rules of the game" which means that rules can define which actors and how can participate in the policy-making processes or in any other activity of a government (Scharpf 2000; Stienmo 2001; Hall and Taylor 1996). Fifth, rules shape organisational processes. What is meant here is that apart from determining how different actors can participate in the policy-making processes, rules also define how government agencies communicate and interact with each other as well as with other actor groups like businesses, CSOs, individuals etc. Rules may additionally define interaction between any other group, for instance, between businesses (Moravcsik 1998; Hall and Taylor 1996).

Formal rules are also recognised to influence the development of digital governance (Bellamy and Taylor 2006; Fountain 2008; Heeks and Bailur 2007; Luna Reyes and Gil-Garcia 2011) that, largely, can be divided into three main categories. The first group comprises of policies that guide the development of digital governance. These function as an essential foundation for digital governance as these policies set goals, actions and expected outcomes of the development. The second category includes legislative acts related to the development of

digital governance or essential aspects of the latter. Several of the areas of regulation have been identified to impact the development of digital governance by several scholars (see Dawes 1996, 2008; Gil-Garcia 2012; Margetts 1999; Dunleavy et al. 2006) and these include: access to information, open data, electronic communication, privacy and data protection, security, identity, authentication etc. The third group of rules is not related to the development of digital governance per se but rather to how different actor groups can pursue their interests in the development of digital governance, i.e., the regulation of the policy and decision-making process. Despite acknowledging the role that official rules have in motivating the involvement of different actors in the development of digital governance which, in turn, could affect the development of digital governance positively (see again Dawes 1996; Gil-Garcia 2006; Margetts 1999; Dunleavy et al. 2006), there is not much empirical work on the effect of these rules on the level of digital governance. There is, however, as it will be discussed in the sections to follow, a general agreement that a variety of actors with their different ideas, skills, and knowledge lead to better results.

Some theorists, after analysing peoples' behaviour, have concluded that not all people follow the established rules and regulations and, therefore, official rules do not fully determine people's behaviour (Cyert and March in 1956; March and Olsen 1989). Instead, people may have their own believes and norms and these, informal rules, may also have a considerable impact on how people act (March and Olsen 1989). How do these beliefs and personal norms form? One of the explanations that has been suggested by political and social scientists and that has stood over time, is connected to culture. Culture, and the role of culture in examining different phenomena has both supporters and opponents, and it has lived through both periods of popularity and disapproval. After a period of "silence" in the literature around culture, there was a rediscovery since late 1980s and early 1990s, particularly among institutionalists and institutional sociologists (Elster 1989a and 1989b; North 1990; Katzenstein 1987; Hofstede et al. 1990). Rational choice scholars, again, keep to their criticism of culture as they believe that actors are rational and are driven by self-interest. It could be argued here though that people's interests are shaped by the surrounding culture that shapes people's values, norms, and behaviour, as suggested by Keating (2008).

Furthermore, it has been noted that there is a relationship between institutions and the role that these institutions associate themselves with (see e.g., Hall and Taylor 1996). This means that institutions create certain "norms" of behaviour, for example, either being modern or innovative, and over time start believing that these norms characterise them. Actors, again,

start adapting to these norms associated with the institutions they represent and start following these roles, in accordance with the created imagine (Hall and Taylor 1996). In a way, they form an identity that spread from few first followers to the rest (Hattam 1993).

It is recognised that informal norms and actors' behaviour influence the development of digital governance. Individual behaviour, shaped by actors' beliefs and norms, is seen either to lead to resisting digital governance development (Eynon and Margetts 2007, Ebbers and van Dijik 2007, Bellamy 2000; Fountain 1998) or being positively correlated with the development of digital governance (Smith 2009; Alvarez 2004). Here, cultural factors such as risk avoidance, power distance, openness, etc have been identified as important contributors (Dawes and Eglene 2004; Fountain 2008; Ozkan and Kanat 2011; Carter and Weerakkody 2008). Trust, particularly, has been brought out as a significant factor determining the level of digital governance. For example, Carter and Weerakkody (2008) undertook a study comparing e-services development and use in the United Kingdom and in the United States. Their findings showed that trust had a significant impact on the uptake of e-services whereas people who lacked trust towards their government, used e-services less.

Last, it has been brought out by some scholars (e.g., Hall and Taylor 1996) that instituI would like to draw a reader's attention to the relationship between institutions and the role that institutions associate themselves with, that has been discussed in the literature on institutionalism (Hall and Taylor 1996). This means that institutions can create certain "norms" of behaviour, for example, being modern, innovative, or tech savvy, that they believe characterises them. Actors, again, start adapting to these norms associated with the institutions they represent and start following these roles, in accordance with the created imagine (Hall and Taylor 1996). In a way, they form an identity that spread from few first followers to the rest (Hattam 1993).

Actor-centered institutionalism and the development of digital governance

By now, few institutionalists believe that rules are the only or the main driving force for change. In recent years, there seems to be a strong support for the actor-centred approach that explains change as a result of actors' preferences, choices, and subsequent actions (North 1990; Shepsle 1989; Pierson 2004). In the dominant literature, actor-centred institutionalists agree that change is primarily determined by actors, but rules and norms provide the framework in which actors can act and pursue their preferences alongside with a few other conditional factors. Here, I want to discuss the work of two prominent scholars, Fritz W Scharpf and Philippe C. Schmitter, who

have tackled institutional developments and policy-making in different context and whose work is applicable to the research of this thesis.

Fritz W. Scharpf in his "*Games Real Actors Play. Actor-Centered Institutionalism in Policy Research"* (1997) largely differentiates between "problem-oriented perspectives" and "interaction-oriented perspectives" in institutional and policy development. In the first perspective, focus is on the policy itself which means that a policy with its defined aims and outcomes is expected to resolve identified problems and issues, and there is much less attention to its implementation. Contrarily to this understanding, in the second standpoint, focus has moved from a policy to the implementation of a policy, predominantly to the context in which the implementation of a policy is taking place. Here, Scharpf (1997) puts an emphasis on the interaction between actors (Scharpf accounts for the actors holding power though, i.e., the "elite" decision-makers) and the way different actors communicate with each other. The nature of interaction between actors, that can be either collaborative or confronting, influences the relationships between actors and their cooperation that, in turn, influences the implementation of policies. In Scharpf's view, institutions (i.e., rules and norms) do provide a framework for actors' involvement in the policy-making process, but it is not the main factor influencing actors' actions when implementing policies. Instead, as already brought out, „actors and their interacting choices, rather than institutions, are assumed to be the proximate causes of policy responses, whereas institutional conditions, to the extent that they are able to influence actor choices, are conceptualized as remote causes" (Scharpf 1997, p. 10-12). So, actors whose power is to decide over the realisation of policies are influenced both by the official rules and regulations setting the opportunities and borders for their actions, but also the extent of cooperation between actors, even when they represent different viewpoints in a given policy issue. Collaboration, too, then, can be shaped by official rules i.e., existing institutions.

Karl and Schmitter (1991) make another important contribution to our understanding on the role of actors in institutional developments and how the context in which actors operate influences actors' preferences and their decisions. The two scholars have carried out their empirical work on institutional and policy developments at a time when Latin-American countries were in transition, during the period when countries suffered from a high level of uncertainty and ambiguity. In these volatile periods when institutions have not yet been settled, as suggested by Karl and Schmitter, actors make their decisions in a hurry, not necessarily knowing whether these decisions are the right ones or what the expected outcomes of these decisions could be. This is particularly so in the case of longer term outcomes. This means that

the effect of the decisions cannot be predicted, and the decisions can even reveal unexpected results. The role of uncertainty in institutional and policy developments has been analysed also by other scholars.

In these volatile situations particularly, according to Karl and Schmitter, it is the actors and the combination of their preferences that define the area and scope for potential changes, distinguishing between two dynamics. The dynamics in their work is related to who initiates the change, whether those in power or those not in power, and by the nature of the interaction between these two groups. The interaction between these two groups, referred to as "intermediate", can be of a collaborative nature or not, collaboration leading to higher quality decisions and better results. A further differentiation has been made between the type of a process of the decision-making process. Karl and Schmitter (1991) have identified two types: a "single-actor design" versus "conflict design". Regarding the first, an individual person determines decisions whereas in the second case, actors together come to a decision and determine action, whether after cooperation or conflict in between their interests. The "conflict design" refers to the inclusiveness of the decision-making process that, contrary to what the name suggests, can be also be a friendly debate or a discussion over the possible policy options and the implementation of the taken decisions.

Karl and Schmitter (1991) but also other scholars (e.g., March and Olsen 2006; Campbell 2004) have further found that the quality of the policy-making and its results are determined by the quality and quantity of the involved actors. This means that actor's skills, knowledge, experience, but also the variety in between them determines the quality of a policy, its implementation and results (Hall 1989 and 1993; Goldstein and Keohane 1993; Scharpf 2000; Landemore 2013). In this sense, it is essential to include other groups of actors in the policy-making, and not only those in power, to be able to use of a variety of social knowledge. This can be done by pooling knowledge and expertise from actor groups like universities, think tanks, professional groups, experts, CSOs but also the general public (Rueschemeyer and Skocpol 1995).

Above, I discussed that rules and norms provide a framework in which actors can pursue their interests but also cooperate with each other. From this perspective, to influence policy-making and the implementation of policies, policy-making process and actors' participation in the latter should be regulated, i.e., institutionalised. The institutionalisation of policy-making is considered essential because, naturally, government agencies do not give equal access to all

potential interested groups and as an outcome, some groups will be better off than the others (Hall and Taylor 1996). In worse cases, those in power may not give external actors an opportunity to be involved in the policy-making process to begin with. In this way, multiple stakeholders with different goals and with different relations with those in power, may have access to the policy-making process. Naturally, actors may, in addition to the established mechanisms, like consultations, petitions, citizens' initiatives but also voting etc, influence policy-making via what can be called non-institutionalised participation, such as protests, demonstrations, non-regulated lobbying, etc. A good example here serves the protests that were held against Anti-Counterfeiting Trade Agreement known as ACTA in February 2012 that resulted in nonratification of the document in several EU member states that had signed the document before the public outcry. Not to confuse a reader, I would like to remind that there has been another differentiation between institutionalised and non-institutionalised participation made, and that was discussed in the sections on e-democracy and e-participation. In this case, institutionalised participation refers to voting, and the non-institutionalised one to public participation between elections.

I now look at the variety of actors identified to influence the development of digital governance. Regarding the mechanisms allowing for their involvement in the development of digital governance, I expect these not to differ from the policy-making in any other area, and therefore, I will not look at these existing mechanisms again. Under the organisational processes though, I will review some aspects of collaboration; yet, focusing mainly on the relationship in and between government organisations and not that much on how different actor groups like businesses or people cooperate in between themselves.

Actors and the development of digital governance

Scholars who have examined the development of digital governance have come to an agreement that, increasingly, different stakeholders play an essential role in this process (Fountain 2001; Gil Garcia and Pardo 2005; Heeks 2006; Norris and Curtice 2004). For example, Trechsel et al. (2003), looking at the level of development of parliamentary websites across 26 European polities, and also considering the level of socioeconomic and technological development, further explored the link between variables such as institutional and ideological factors. In this case, the authors did not find any conclusive results concerning the factors that might predict the variance in the level of development of parliamentary websites, suggesting that it is political actors' strategies rather

than ICT development or other institutional variables that are driving parliaments‘ and parties‘ website development (Trechsel et al. 2003). Other findings discussed in the previous sections have also been confirmed by digital governance scholars such as the essence of brining the multiplicity of stakeholders with their various interests[13], ideas, knowledge and experience into shaping the process of digitalisation (Bellamy 2000; Dawes 1996; Eynon and Margetts 2007).

The actors playing a role in the development of digital governance can largely be divided into two groups: elite actors (i.e., the persons and organisations in power to make decisions) and non-elite actors (i.e., the ones not having power to decide but still having a possibility to influence those in power). Other distinctions exist, too, like the one suggested by Dawes (1996) that makes a difference between external and internal actors. The first refers to all actor groups outside government and the second includes all actors holding positions in government. This means that the range of actors potentially influencing the development of digital governance is wide as it includes all social and political actor groups from politicians, public officials, businesses, civil society organisations, to citizens (Dawes and Pardo 2002; Fountain 2001; Rose 2005; Dunleavy et al. 2006). This differentiation between external and internal actors influencing the development of digital governance has also been theorized in a market model, being determined by the “supply” and “demand” side (Rose 2005). In Rose’s conceptualisation, government can create a demand for online services and e-participation tools by providing them, but it can also work recursively when users demand more e-services and e-participation tools (Rose 2005).

Even though a general consensus has developed around a finding that a high number of actors and the variety in between them leads to higher likelihoods in succeeding in the implementation of digital governance projects and higher digitalisation levels, not all share this optimism. Gil-Garcia (2012) has pointed to the contrary and alludes that involving all potential stakeholders in the development of digital governance may be problematic and a great challenge (Gil-Garcia 2012). From this perspective, it is precisely the variety in people’s behaviour, believes, norms, but also education that is bound to create misunderstanding and conflicts, specially, as one may think that not all actors support digitalisation (Ebbers and van Dijk 2007; Eynon and Margetts 2007; Helbig et al. 2009). Again, one may argue here that involvement and

[13] Most organisations have different stakeholders having different goals who compete for their power and interests (Hall 1997; Pfeffer 1982) which may, in turn, influence the policy-making process and implementation but the analysis of this aspect goes beyond the scope of this thesis.

accompanying increasing awareness of technological particularities may help to smoothen resistance and conflicts.

Organisational processes

Organisational processes, in this thesis, refer to processes, relationships, and structures within and between government agencies (Dawes 1996). Differently from policy-making process, organisational processes concern mainly internal actors and how they, pubic officials at various positions with different degrees of power, influence policies and programs both in and across government agencies. Here, also relationships that exist between government agencies and other actor groups are being scrutinised. Dawes and Eglene (2004), after studying twelve collaborations in the area of digital governance that involved public, private, and non-profit actors in Canada, USA, and Europe concluded that there are three main types of collaborations: government to government collaborations, government-business collaborations, and government-non-profit collaborations. This corresponds to what was discussed above, i.e., who the actors in the development of digital governance are.

The first connection that one makes, when talking about organisational processes, is naturally the distribution of power – i.e., hierarchy. Generally, digital governance literature alludes that as the development of digital governance is dependent on networks, and whereas lower levels of hierarchy are known to leave more room for networks, the lower the level of hierarchy in an organisation, the higher the development of digital governance. This finding is supported by other scholars who tend to agree that traditional vertical flow of information and decision-making is not suitable for the development of digital governance, but horizontal collaboration matters instead (Fountain 2001; Pardo et al. 2010; Helbig et al. 2009). Collaboration may reduce several bottlenecks, identified as: i) lack of consensus among different actor groups regarding the aims, actions, and outcomes of digital governance; ii) incompatible data and databases; iii) different levels of information, data, online services and e-participation tools across the government; iv) ambiguity and misunderstandings in terminology as even "online service" may mean different things in different entities (Dawes and Pardo 2002; Luna-Reyes and Gil-Garcia 2011; Fountain 2001). Even though one may conquer that collaboration is an essential component in the development of digital governance, it has been found to lead to several problems, too, at legal, political or organisational level. In these cases, collaboration may postpone or hinder the development of digital governance, largely because of the potential conflicts and disagreements between these actor groups (Dawes 1996; Gil-Garcia and Helbig 2006). Additionally, different

viewpoints may also occur within a given actor group and that, too, may prolong the decision-making process or the implementation of digital governance.

Moving on to the collaboration between government organisations and other actor groups, collaboration between government and private sector is demonstrated essential for the development of digital governance (Dunleavy et al. 2006; Gil-Garcia and Pardo 2005). IT industry, in particular, is positively correlated with the development of digital governance and, here, various public-private partnerships (PPPs) have been identified as main cooperation instruments. PPPs, naturally, may involve also other actor groups and not just businesses as PPS are generally defined as combinations of government resources with those of other actors to achieve the set goals (Skelcher 2005; Peters and Pierre 2000). PPPs may take several forms; yet the prevailing one until the present day seems to be outsourcing which means that governments contract their IT developments, mainly but not limited, to private sector (Currie 1996; Dunleavy et al. 2006; Fountain 2001; Margetts 1999). Research shows that that there is an increasing tendency to turn to private sector but also CSOs to advise governments on how to better provide online services to the public whereas other aspects like how to improve online participation tools have been secondary in PPPs (Lyytinen 2001).

Before moving to the last essential aspect- budgeting, we also need to establish a link between actors and collaboration in the development of digital governance. In a conventional meaning, collaboration refers to different actors or a network of actors who work together, having different roles. One of the most important roles can be seen in creating a network of actors who should collaborate but also keeping that network of actors together (Huggins 2001; Cohen and Mankin 2002; Fountain 2001). When we talk about digital governance, this role can be fulfilled at different levels: at governmental, organisational, departmental, programme or even at a project level. When we talk about government, this role is usually given to a government agency; at an organisational level, it is given to a senior public official, often referred to as chief information officer (CIO); at an initiative level, it is a project manager.

The last important aspect to raise here concerns budgeting. Public institutions' plans and actions often depend on the available resources, and this is also the case in the development of digital governance. In addition to the amount of available financial resources, budgeting process itself needs to be looked at as it may pose some restrictions. It can be overly complex and long, and it may become an obstacle for government institutions to plan and proceed with digital governance initiatives. Also a too short planning phase has been brought out as a negative factor

(Fountain 2001; Eynon and Margetts 2007; Dawes and Pardo 2002) The complexity of budgeting process is known to hinder progress particularly in multi-level governments such as countries with federal systems (Bellamy 2000; Ubaldi and Roy 2011).

Contextual and environmental factors and the development of digital governance

Some institutionalist scholars argue that, at times, regulations and procedures are not adopted and followed because they are not suitable for the context in which they emerge (Powell 1991). This is why some institutionalists stress the importance of geographical, demographic, political, and ecological factors (Clegg and Dunkerley 2013; Hatch and Schultz 1997). Digital governance scholars tend to conquer as there are myriad of examples of how these factors have determined the differences in the development level of digital governance (see Gil-Garcia 2012; Margetts and Dunleavy 2002; West 2005; Norris 2001).

One of the contextual factors often debated is a political context such as the level of democracy and ideology that have been associated with the development of digital governance, higher levels of democracy and more liberal values seem more likely to host digital governance than authoritarian regimes and conservative viewpoints (Gil-Garcia 2012; Norris 2001; Katchanovski and La Porte 2005). Norris (2001) found, after looking at 178 national parliaments around the world, that even when controlling for technological and socioeconomic development, the level of democratization of countries was the strongest and the most significant predictor of the maturity of parliamentary websites that was measured by the provision of information and communication functions. In these days, the impact of democracy on the development of digital governance seems to be controversial as according to some, the influence is not significant (for example, Le Porte et al. 2002; West 2005) and some others (see Åström et al. 2012) reveal a trend that points to a stronger growth of digital governance among non-democratic countries. In the same realm, political actors presenting liberal democratic values are generally seen to affect the development of digital governance more positively (Gil-Garcia 2012).

Another aspect that the literature deals with is an international environment that impacts the development of digital governance, and here two perspectives need our attention. Firstly, globalisation has been argued to influence the developments of digital governance because it is thought to smoothen the differences between countries and support the adoption of emerging global trends (Kettl 1997; Dunleavy et al. 2006). But, secondly, globalisation has also been

associated with openness and readiness to adopt to trends and practices originating from other countries (Dunleavy et al. 2006; Welch and Wong 2001), actors in urban environments considered to be more open and risk-taking than those living in rural areas. Indeed, it has been confirmed by several studies that there is a wide digital divide between cities and rural areas as urbanisation leads to higher use and demand for technological developments.

Whereas the theories on technological determinism, technology adoption and innovation diffusion theories have had a relatively long history; the way existing institutions, organisational processes, and social arrangements interact with technology, remained isolated from the mainstream digital governance research until the 2000s. The breakthrough came when Jane Fountain published her book "Building the Virtual State. Information Technology and Institutional Change" that examines the use of the Internet and the ICTs within federal government institutions in the USA. Many of the works to follow have looked at more complex relationships between technology and the context in which they appear, and some adaptations of Fountain's work have been successfully adopted. For example, Gil Garcia (2012), for his analyses on the success of state government websites in the USA, employed an analytical model basing on the technology enactment framework offered by Fountain (2001) as well as the structuration theory.

This takes me to introducing Fountain's valuable contribution to digital governance research. Thus, in the next section, I discuss the technology enactment framework offered by Jane Fountain. I look at how Fountain conceptualised actors and their interaction with institutions and organisations and I attempt at contributing to the framework by further ascertaining the types of actors potentially influencing the development of e-governance. I also propose the analytical model for my research and develop the hypotheses basing on what I have discussed in this chapter.

Analytical model and hypotheses

My research is based on the argument that the success of digital governance does not depend on "objective technology" i.e., IT hardware, software, and the Internet, but on how they are being perceived, designed, and used in a particular context, i.e., on "enacted technology" (Fountain 2001). Basing on what was discussed in previous sections, I find Fountain's theoretical lens to the development of digital governance most relevant, and I derive my theoretical arguments and hypotheses from the technology enactment framework proposed by

Jane Fountain in "Building the Virtual State. Information Technology and Institutional Change" (2001). I now briefly discuss her work and how this translates into the analytical model of the thesis.

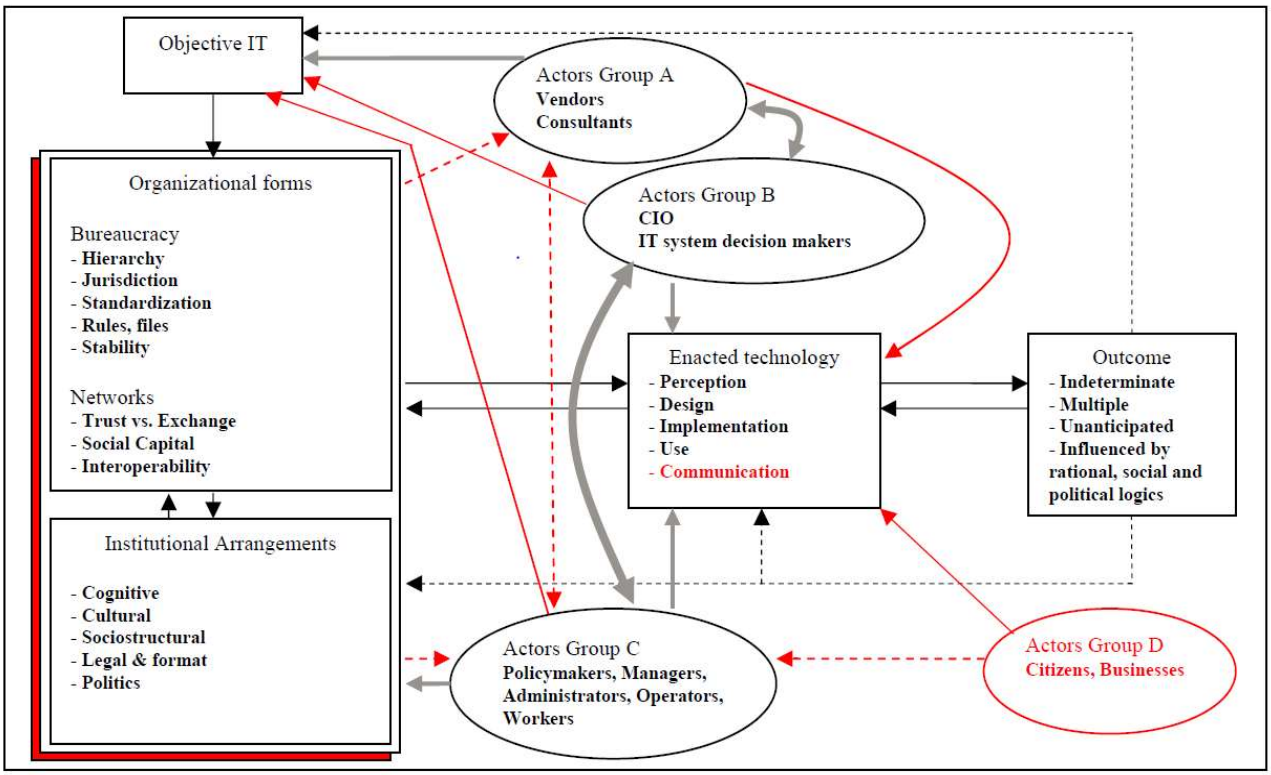
Fountain (2001) built the proposed framework on mainly institutional theorists in political science, sociology, economics or but also the related fields within public policy and organisational behaviour (Fountain 2001). She suggests that technologies get always modified by organisational and institutional factors and she refers to this process, as already mention, being "enacted". As Fountain explains, each initiative is embedded in its own organisational environment and is subject to its institutional constraints, and as a result, each initiative is used differently and has different outcomes. This may explain why countries sharing similar socio-economic context may reveal different patterns and levels of digital governance.

If, as underlined by Fountain (2001), technology is influenced by the environment in which it emerges, we cannot ignore the role that actors play in the enactment of technology and Fountain has also accounted for that. In her framework, Fountain distinguishes between three main groups of actors as follows: i) "external" actors that she singles out as vendors and consultants, ii) civil servants who have to make decisions about technology's use and, lastly, iii) civil servants who are not part of the decision-making or design process but are users of these technologies instead.

The first group of "external" actors, vendors and consultants are the ones responsible for the provision of objective technology and are, usually, hired by government to advise them on the decisions concerning the development of digital governance. The second group includes higher level public officials and their vital contribution. As Fountain (2001) argues, public managers are particularly essential to understand how the ICTs are used in the development of digital governance. It is public managers who must find and introduce the most appropriate structural and process arrangements but also technologies to implement policies. The third group i.e., civil servants are not directly linked to the decision-making, but they play a role in the use of technology, adoption and digital transformation more generally. These are the government people who also communicate with both other governmental actors and external actors like business and the public. Even though the original framework proposed by Fountain does not include actor groups, these have been added into later versions and their role has been specified both by Fountain and other scholars. Two revisions to the framework need our attention here.

In 2004, a Japanese professor, Hirokazu Okumura, when translating Fountain's work into Japanese, added the following three groups of actors into the TEF, in line with Fountain's earlier suggestions: group A consisting of external vendors and experts; group B consisting of higher government officials; and group C consisting of other government officials (from Fountain 2004). Okumura also discussed the difference in the level of influence that these three groups have on the development of digital governance, group B consisting of CIOs and other IT decision makers having the highest level of influence, followed by group A of vendors and consultants, and group C having the least influence. Okumura also suggests that whereas the influence of Group B is direct, the influence of group A, and particularly of group C is indirect. The other amendments have been suggested by Schellong Alexander (2007), and these have been summarised in the figure below.

Figure 1. Technology enactment framework offered by Jane Fountain in 2001, and its main amendments



Source: Schellong, A. (2007). Extending the technology enactment framework. John F. Kennedy School

Shortly, the main contribution of Schellong is that he adds the fourth group of people and businesses into the list of actors influencing the development of digital governance, making a distinction between this group and those who get paid for their involvement i.e., consultants.

Schellong also has a slightly different understanding about the influence that these groups have on the development of digital governance. According to Schellong, the group A (i.e., consultants) have a direct influence because group B (i.e., the decision-makers) make decisions basing on their recommendations. Citizens and businesses, in his view, can influence both vendors and consultants (i.e., group A and group B) either by either lobbying or by the adoption of digital solutions. Schellong does not explore the options for citizens and businesses to participate in the development of digital governance.

The enactment framework and its revisions has received both praise and criticism. One of the main strengths of the framework is that looks beyond government as merely regulators but considers them also users of technology (Dawes 2008). She also finds, and his is an important argument from the point of view of this thesis, that the framework helps to explain why digital governance initiatives can have different outcomes or why the grand benefits of the ICTs, promised by so many advocates, seldom materialize. Apart from theoretical contribution, it is also appraised to add a practical value by assisting actors to plan, design, and implement digital governance initiatives in public sector (Danziger 2004). This comprehensive framework allows to tackle as complex phenomena as digital governance as it includes various aspects connected to the latter, allowing to depict the so-called "full picture." But it is precisely because of this latter reason that the framework poses some challenges. As it includes a variety of factors originating from different lines of thought, it is too general and may not explain much. This might be, indeed, a risk as Moon et al. (2005)[14], for example, when testing the role of different institutional variables on the development of digital governance, found very little support for their claims.

Apart from being considered too wide in its scope, Fountain's framework has been normally used for qualitative analyses and until now, there is very little experience on how to serve the framework for a quantitative study (Gil-Garcia 2012). That said, Gil-Garcia (2012) himself, in "Enacting electronic government success: An integrative study of government-wide websites, organisational capabilities, and institutions", utilised the framework to identify the reasons for the development of the state websites in the USA. To my best knowledge, there have been no further attempts of the kind. The third reason for the criticism has been the context in which the framework has been adopted as, until now, it has been very limited (Bretschneider 2003) to government contexts. I do not find this an issue for my work though. I now turn to

[14] Moon et al. (2005), however, did not test Fountain's framework even though they included a variety of independent variables, originating mainly from various institutionalisms.

summarising the main points taken from the long discussion on the theories explaining digital governance and how these have further assisted me in adopting the technology enactment framework suggested by Fountain in 2001 to explain the changes in levels and patterns of digital governance. I will then present the hypothesis.

Overall, digital governance scholars have agreed that digital governance cannot be explained by one theory only but by the combination of them. From the above-discussed it can be concluded that various institutional theories that focus on both organisations and individuals seem the most appropriate to explain digital governance. Insights from historical institutionalism, for instance, could be used to illustrate the different patterns of digital governance. The first school of thought understands digitalisation as something very slow, hardly noticeable, or with no progress. The second and the most widespread school understands the development of digital governance as a step-by-step process where governments move from stage of digital governance to the other and more mature one. This path dependent development is also described as evolution and here, big changes do not occur. Governments, once they have started digitalisation, just continue in this journey. The third approach does not understand the development of digital governance as slow or steady progress as changes, both small and revolutionary can happen. These institutional lenses shed light on how digital governance develops; however, they do not explain the reasons for these developments. In order to understand the factors contributing to the development of digital governance, a theoretical framework has been elaborated, largely basing on the previous work by Fountain (2001). I now explain the main differences between the previous amendments introduced to the technology enactment framework and the one used in this thesis.

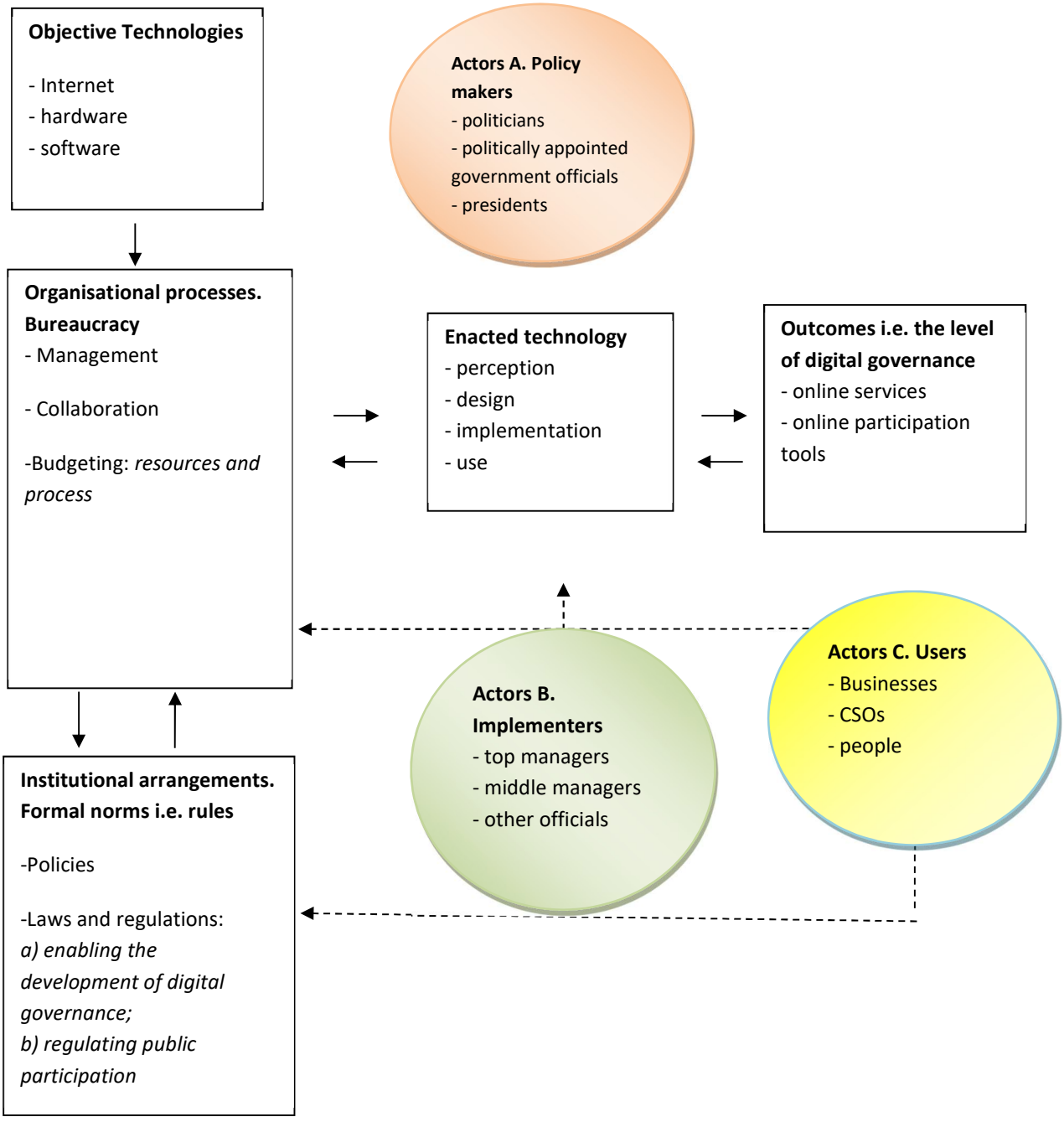
The theoretical framework in Figure 2, similarly to the technology enactment framework of Jane Fountain, is largely based organisational studies and institutionalist theories, particularly actor-centred institutionalism. Actors have been considered increasingly essential in the development of digital governance, and the pool of the actors potentially influencing this process has been further elaborated in the theoretical framework. It has been slightly extended to account for political actors and for the CSOs and there have been also some changes in their so-called grouping. Additionally, the framework counts for different types of relationships between the actor groups, especially between those with decision-making power and those not, going beyond outsourcing or consultancy. One of the reasons for the increase in the role of actors in the development of digital governance is an enormous amount of uncertainty that accompanies the use of the ICTs. Technological developments are fast, and they are often

unpredictable. In these periods of uncertainty, actors and their decisions might overweigh the role of the established institutional arrangements or organisational processes. Institutionalist and digital governance researcher have both concurred that the higher quality and quantity of actors does lead to better decisions.

At the same time, it has been noted that actors are not free in their decisions and actions, and there is every reason to believe that the already set institutional arrangements and organisational processes in the member states of the OECD and EU do pose limitations in their actions or, to the contrary, encourage them. Thus, the theoretical framework does account for institutional and organisational factors and these have been further extended as well. Institutional arrangements that have been established to enable the participation of non-governmental actors in the development of digital governance have been added to the framework alongside with the set mechanisms on the cooperation and collaboration between different actor groups. Considering the posited essential role of different actors on the development of digital governance, these changes help better understand how the established institutions and organisational processes influence the interaction between actors and whether this, in turn, influences the development of digital governance. Following mainly sociological institutionalists, some of the contextual factors are also included in the analytical model such as economic and demographic factors.

Last, an essential difference lies in the outcomes of the use of the ICTs in government. Previous works using the framework have counted for the development of digital governance that encompasses e-administration and e-services, but e-participation has been excluded from this framework. In line with what was discussed in Chapter 1, in this thesis, digital governance stands for the use of the ICTs for administration inner processes, service provisioning and public participation. An overview of the theoretical framework is given in Figure 2.

Figure 2. Technology enactment framework used to test the role of institutional arrangements, organisational processes and actors' preferences on the development of digital governance



Amended. Source: J.E. Fountain, Building the Virtual State: Information, Technology, and Institutional Change. Washington, DC: Brookings Institution Press, 2001.

Following an overview of the technology enactment framework suggested by Fountain (2001) and the main differences between the latter and the theoretical framework used in this thesis, I provide further details on the factors influencing the development of digital governance. I begin with actors and follow describing institutional arrangements and organisational processes. I then form hypotheses.

In this thesis, I test the potential role of the following actors in the development of digital governance that centre around three categories: 1) policy makers; 2) implementers; and 3) users. The three groups of actors, in turn, are distinguished as follows. The group of policy makers consists of the so-called "elite" actors and despite some cross-country variation in who these actors are, I have included: i) political parties; ii) politicians such as the Members of the Parliament and iii) politically appointed government officials (e.g., ministers and their advisors). The second group of actors includes implementers and here I refer to public officials who either: i) make decisions concerning the course of digital governance in their institution, for example chief information officers (CIOs) but also ii) project managers of digital governance initiatives; iii) other public officials who also use the ICTs in their work. The third group i.e., the users of digital governance have been divided into: i) businesses (e.g., IT and telecommunication companies, banks); ii) CSOs (e.g. policy think tanks), and iii) people i.e., all potential users of online services and participation tools.

Regarding institutional arrangements, in this research I refer to formal norms i.e., rules that are divided into three categories as follows: i) foundational policies that guide the overall development of digital governance; ii) legislative acts (e.g., laws, regulations, decrees etc) enabling the development of digital governance (i.e., enabling legal framework); and iii) legislative acts regulating the policy-making processes (i.e., legal framework enabling non-governmental actors' involvement in the policy-making process and the development of digital governance).

Organisational setting is divided into four categories: i) digital governance management model; ii) collaboration in and between government institution, both the established mechanisms to further the cooperation and collaboration in and between governmental institutions and the openness to collaborate; iii) collaboration between government institutions and other stakeholders such as businesses, associations and CSOs, and the public people in the planning, implementation, monitoring, and assessment of digital governance; and iv) budgeting: resources and the process.

Hypotheses

Hypothesis 1 (leading hypothesis) – actors: It is the actors: policy makers, implementers and users, mediated by institutional arrangements, that affect the development of digital governance. In this regard, the higher the level of their interest, education, and trust, the higher the level of digital governance;

Hypothesis 2 – organisational processes: The higher the level of collaboration in and between the three actor groups, the higher the development of digital governance. In this respect, the higher the power diffusion and the level of openness, the greater the collaboration; and thus, the higher the level of digital governance;

Hypothesis 3 – institutional arrangements: The more institutionalised digital governance is, the higher the level of digital governance. In this sense, the higher the level of regulation of digital governance, the higher the level of digital governance. In support of the leading hypothesis, the higher the regulation of the policy-making process, the higher the level of digital governance.

Chapter 3. Research design

Following the previous theoretical chapter where I specified the general analytical framework for my research, this chapter concerns with more practical issues of how I am going to answer the general research question and to test the hypothesis formulated before. In this chapter, I set up the general methodology where I specify the type of analysis that is undertaken, the main reasons for it, and the cases that are selected for the analysis. I then specify the statistical method used for conducting a large-N statistical analysis and the qualitative methods used for a comparative case study to follow. I also address some practical issues and problems of the methods used, both in a statistical analysis and in a case study research; and I address the ways I have dealt with these problems. I also provide an overview of operationalisation and data that I use for my analyses.

In order to find out whether the changes in institutional arrangements, actors' preferences and organisational processes have an effect on the changing levels of digital governance, this study employs a multi-method approach, also referred to as "mixed method" or "nested analyses" (Lieberman 2005). It includes statistical analyses and case study research, and it follows "model-testing small-N analysis" approach (Lieberman 2005) which means that the findings of the statistical analyses are further studied in a country case study. Multi-method approach has been gaining popularity, and Lieberman as one of the main advocates for mixed methods research has pointed to several reasons for the latter. The main and the most important one is that it allows to ask broad questions and explore general relationships, at the same time, allowing to go deeper and study very specific explanations (Lieberman 2005), precisely because it combines both quantitative and qualitative data analysis. Lieberman (2005) has also found that the kind of mixed method study where large-N statistical analysis is followed by small-N comparative analysis of cases, allows for more conclusive explanations than just either one of them.

Even though the research on digital governance tends to privilege one method over the other, qualitative methods still being used more often, multi-method approaches have also been suggested to be efficient in studying complex social phenomena like digital governance (Heeks and Bailur 2007; Gil-Garcia and Pardo 2006). The reasons for the latter are rather obvious- the two analyses, quantitative and qualitative complement each other and compensate for the limitations that using either one or the other analyses poses. Regarding statistical analysis, it helps to identify causality between the dependent and independent variables and is particularly

useful in case of multifactor explanation. This is so because it allows to test for independent variables' effect while holding all the others constant. Apart from these central reasons, comparative statistical data analysis is useful as it allows to test different competing explanations, and to identify the main factors having an impact on digital governance development. Time-series cross-sectional data analysis, that is employed in this thesis, has an additional strength as it permits to identify the factors that hold across a number of countries through many years.

Apart from several positives, comparative statistical data analysis does pose some limitations and one of them is that it is not considered suitable for explaining complex phenomena (Scharpf 1997) that digital governance unarguably is. Also, statistical analysis has not been considered particularly useful in understanding the processes that link the dependent variable with independent ones, i.e., in identifying underlying causal mechanisms (Elster 1989a and 1989b; Little 1991), in other words "why we observe what we observe" (Hedström and Swedberg 1998:8-9). It has also been observed that due to data limitations such as lack of data or its inaccuracy, the statistical comparative data analyses may not give sufficient evidence or could be, in worse cases, misleading (Lieberman 2005). In my research, lack of comparable data over time has caused a few issues as not all factors potentially influencing digital governance are included in the statistical part of the thesis. Namely, the potential role of implementers i.e., public officials is not tested in the statistical analysis precisely because of the unavailability of data that could be used to measure the differences that exist across countries and over time in public officials' preferences or in their capacity to plan and implement digitalisation initiatives. In similar realm, the proxies used are not ideal in a few cases, such as measuring policy makers preferences only by their electoral promises. I will discuss these issues in more detail under the "data and operationalisation" section. In order to compensate for these gaps, scholars have suggested to compliment statistical data analyse with case study research.

In terms of a qualitative data analysis, as already mentioned, it poses several strengths and complements the quantitative part of this thesis in several ways. First, it allows to further specify the relationships between the dependent and independent variables included in the quantitative part of the thesis, confirming their potential influence or not, and adding to the detail in their relationship. This is particularly beneficial when studying complex issues as digital governance. Second, qualitative analysis allows to identify and study the causal mechanisms that connect the dependent and independent variables, i.e., the so-called underlying processes. Third, qualitative case study research allows to bring in the role of time in the

development digital governance in terms of identifying whether and how the past events and arrangements have influenced the ones to follow, i.e., the sequence. Quantitative analysis has this ability too, of course, but it is limited to identifying whether a certain factor holds in the included countries and years, or not.

For these reasons mainly, I find the combination of quantitative and qualitative methods particularly useful for my research. I specify the methods below, but I also address some challenges that both of these methods pose for this thesis.

Specification of methods

Quantitative analysis. Time-Series Cross-Sectional Data Analysis

In order to find whether the changes in institutional arrangements, organisational processes, and actors have an effect on the level of digital governance, in comparative statistical method I am utilising time-series cross-sectional (TSCS) data analysis. I find TSCS data analysis appropriate because I am interested in finding out the relation between independent variables and the dependent variable but also whether it holds through space and time. This, in turn, lets me understand how digital governance i.e., the dependent variable has developed over time and what has led to either lower or higher development levels of digital governance. I this section, I shortly give an overview of TSCS data analysis and discuss the advantages and disadvantages of the latter, or rather the complexities it poses.

The main idea of the TSCS is that data is collected over time and across sections i.e., across several spatial units. This type of data is often referred to as "pooled" because it unites spatial units (like countries, regions, organisations, etc) and time units (usually years, but it can also be collected quarterly, monthly etc) (Beck 2001; Beck and Katz 1995). Often, TSCS data is referred to as panel data, but there are some differences that should be kept in mind. One of the differences is that in case of panel data, spatial units are random and not fixed as they are in the case of TSCS data (Fortin-Rittberger 2015). For example, the countries included in this study are limited to the member states of the EU and the OECD as opposed to a random sample of countries. A good example of random spatial units is, for example, survey respondents. The second difference is that in case of panel data, the interest is not in the included units, for example in survey respondents, but the underlying population instead (Fortin-Rittberger 2015). Regarding the TSCS data, it is rather the other way around as one cannot make assumptions about any other units than those included in the study. There are also some further differences

regarding the number of time and spatial units in panel data and in the TSCS[15] but these are not so relevant for this study.

TSCS is known to have many advantages, and I briefly touch upon the more relevant ones. One of the biggest advantages is that the TSCS data increases the number of observations and this, in turn, increases opportunities for research as well as its validity. The second advantage is that it allows to test theories over time and space. Third, it also allows to understand dynamics i.e., the development patterns of digital governance in this case. This also explains why the TSCS has been increasingly popular among social and political scientists, particularly from the 1990s onwards. It, indeed, has been used to explain a variety of phenomena, such as the emergence of political parties in new democracies (see Tavits 2008), party system changes (see Tavits 2005), voting patterns (like Franklin and Hobolt 2011), the effect of economic growth on the level of democracy (as Gerring et al. 2005), etc. Despite all the above-mentioned positives, TSCS also poses several problems, mostly because the basis of the TSCS models is the ordinary least square (OLS) model[16]. So, for the TSCS to perform well, Gauss-Markov assumptions should be met[17], but a number of these requirements are not met in TSCS data. I now discuss some of the main issues that have been raised by data scientists, summarising these in the following paragraph.[18]

One of the main assumptions of the OLS is linearity, i.e., the dependent variable is a linear function of the independent variable and when it is not the case, estimates can be wrong. For example, this might be a problem for this study because of the theoretical range of the development of digital governance that is measured by an index that has a value ranging from 0 to 1. Thus, if a country has a very high score, or the maximum of 1, this score cannot be increased even though it is supposed to increase after a certain change is introduced, for example, in the legislation or organisational setup in a given country. One way of dealing with that issue is to use a log-

[15] There are two types of TSCS data: i) „cross sectional dominant" (Stimson 1985) which means that there are more spatial units (e.g. countries) than time units (e.g. years) and ii) „temporally dominant" in which case there are more time units than spatial units. There are various opinions on the minimum number of spatial and time units that need to be included in the TSCS data analysis. However, generally, political scientists tend to follow the minimum number of 10 time units and around 14 spatial units as most commonly included number (Beck 2001). There seems to be no upper limit as more observations improve the performance of TSCS.

[16] The OLS model has been used in TSCS data analysis from 1990s onwards, particularly after Beck and Katz (1995) suggested this simpler model over the previously prevalent Parks-Kmenta model that used GLS instead of OLS regression.

[17] An overview is in Treiman (2014); Baltagi (2008).

[18] There is an extensive discussion on the advantages and disadvantages of time-series cross-sectional and panel data analysis, for example, Beck (2001); Beck and Katz (1995); Fortin-Rittberger (2015); Plümper et.al. (2005); Stimpson (1985); Wooldridge (2002).

transformation of the dependent variable, but I have not chosen this option for two reasons. First, because it is a rather minor issue as, in practice, few countries in few years reach this maximum. Second, because it would complicate the interpretation of the results, particularly in the cases I have log-transformed independent variables which would mean that some of the models should then be read as log-log models. Instead, I added two additional methods that have been considered suitable for modelling rates and proportions, the fractional probit and the beta regression, as suggested by Papke and Wooldridge (2008) and Ferrari and Cribari-Neto (2004), respectively.

As just mentioned, I have used log-transformation in some cases. Namely, ideally, in case of linear regression, the distribution of the data on variables should be normal and not skewed toward one or the other end. To meet this assumption, I have transformed some of the independent variables such as a control variable *GDP,* standing as a proxy for an economic indicator and another control variable *Internet penetration* as a technological indicator. While transforming the skewed data, I have used a natural logarithm with a log base ten; and in order not to lose observations with "0" values, I have added a constant one (to all values), as is widely used by data scientists.

The second and the major issue with TSCS data when using OLS regression is the supposition that all units of the analysis, i.e., each country included in this study in any given year, should be independent and identically distributed. This, however, is hardly the case in cross-sectional time series data, and there are several types of correlations. Shortly, the first one is related to serial autocorrelation i.e., temporal dependence which basically means that the past influences what follows. The second violates the assumption of unit homogeneity which means that the units included in the study should be random and there should not be spatial or temporal heterogeneity between units or certain groups. The third problem is related to panel heteroskedasticity, i.e., there are unit specific factors influencing the relationship between the dependent and independent variables. In this case, it can be both cross-sectional and across time. To sum it up, in order to use TSCS, we should presume, for example, that there is no connection between digital governance development in Estonia in 2003 and in Estonia in 2004; Unites States in 2003 and Estonia in 2003; and Estonia in 2004 and United States in 2003. As it hardly happens though, data scientists have come up with several ways to fix these issues. The way I have dealt with these issues, I am turning to now.

The most common and the major violation of the OLS assumption in TSCS data is related to time, i.e., serial correlation. The reason is that, in case of TSCS, data observations are

hardly independent across time; thus, we can almost always expect some dependence within units. For example, we can always expect certain degree of dependence on the level of digital governance in Estonia in 2003 and 2004; or the value of GDP per capita in Germany in 2003, 2004, 2005, etc. In pooled time-series cross-sectional analysis, however, serial correlation is not considered a big of an issue if there is a small amount of serial correlation (as there is always a little serial correlation). This particularly holds for cross-sectionally dominant data, i.e., when there are more panels than time points as serial correlation increases in line with an increase in time units (Beck and Katz 1995). A leading scholar in the field - Wooldridge has even suggested not to test for serial correlation in case of panel dominant data. Still, as some serial correlation is expected in the data used in this thesis (e.g., GDP) etc, I have decided to test for the latter. As the most popular and most widely used test - Lagrange multiplier test has proven to perform well with time dominant rather than panel dominant data (Wooldridge 2002; Drukker 2003), I have used pooled Durbin-Watson test, the one modified by Bhargava et al. (1982) to detect the first order autocorrelation. The results of the Durbin-Watson test do prove serial correlation (value is less than two in the case of all the tested models; yet, only in few cases it less than one i.e., the "limit" that is known to results in issues in the analysis).

What to do in case of serial correlation? Shortly, in case of OLS regression, there are two main options. One of them is to add a lagged dependent variable (LDV) to the right-hand side variables as suggested by major contributors in the field - Beck and Katz (1996; 2001). Still, some scholars have warned that the LDV approach may reduce the explanatory power of other independent variables included in the analysis (Achen 2000), and it is also known to work better when the number of time units is high (more than 15). The second widely used option is to use, instead of standard errors, panel corrected standard errors, also suggested by Beck and Katz (1996). As I am using a fixed effects (fe) model, partly, serial correlation is dealt with. Additionally, I have used robust standard errors instead of panel corrected standard errors but as I have used a *xtreg* command, the latter functions as panel corrected standard errors when used in fe model. The fe model is also considered appropriate over the random effects (re) one because of the set-up of the data, but it is also seen suggested after running the Hausman test[19].

Regarding panel heteroskedasticity, I am using a fixed- effects model to solve for this. Additionally, I am using robust standard errors, also known as Hubert/White robust standard errors. Regarding unit heterogeneity i.e. the assumption that there might be some unit-specific

[19] Even though the fe model is the preferred one, there is a discussion in the literature over the pros and cons of both models, see Bell and Jones (2015), Bell.et.al (2016), Clark and Linzer (2015).

characteristics influencing the relationship between the variables. For example, the Freedom of Information Act (FOIA) has a positive effect on the development of digital governance in all the countries, but the effect is different across countries, potentially due to the variation in the FOIA itself. Using fixed-effects models is one way for dealing with it as the fe controls out between effects by including dummy variables in the model. There might also be the problem of parameter heterogeneity, i.e., the investigated relations might be different due to the differences in countries, but I do not assume that to be the case. First, I would expect the relationships hold through time and across countries and; secondly, while selecting countries (OECD and EU member states) to be included in the comparative statistical analysis, I have eliminated a high variance between them.

The other issue one needs to address in TSCS data analysis is that the causal relationship between independent and dependent variable can be long, i.e., the effect may not be immediate (Weaver and Rockman 1993; Lake and Baum 2001) For example, changes in the institutional arrangements may not influence the changes in the development level of digital governance instantly. To illustrate the case, let us consider a law on the right to submit a legislative initiative to the government i.e., petitions. First, after the adoption of the law, it will take some time to decide upon the most appropriate tools to facilitate people's submission of ideas for legislative changes and, second, it will take some more time to develop these tools, including a website.

Even though it is clear that it takes time for the changes in the institutional arrangements to influence the development level of digital governance, it is not at all clear how much time this takes. As I am not aware of any research concerning the potential effects of institutional arrangements, organisational processes or actors' preferences on the development of digital governance, I do not have a theoretical reference for the choice of lag length, and I have therefore determined the length of lags inductively as suggested by Lake and Baum (2001). This means that it is done by running different models and by including different lags per independent variables. By running different models with different lags for an independent variable, the model that performs best is considered the most suitable. One has to look at the root mean square error that must be the lowest and the R-square that has to be the highest. I have run models with maximum of four-year lags, and I have also used the gained knowledge on institutions, organisations, actors and the development of digital governance to support the choice of the lag-years.

As a result, I have chosen a lag of two years for institutional arrangements, a lag of one year for decision-makers preferences i.e., politicians' positions on government efficiency and technological development and for parties' position in the left-right scale. I have also opted for one-year lag in case of organisational processes. The reason for having a two-year lag in case of institutional arrangements is that, in these cases, I have checked the adoption year of any given institutional arrangement and not the enactment one for mainly accuracy purposes because a legislative arrangement different sections may have different enactment times. Regarding other actors such as people and private sector, I have not used a lag because these data are not subject to big changes. I have also used a one-year lag for organisational processes i.e., e-governance management and coordination. I have chosen not to use lags for other variables like any of the control variables because, again, these data are not subject to as big changes over time.

What also has to be addressed is the potential issue of multicollinearity as one might expect, basing on the literature, a correlation between economic development (i.e., GDP) and technological development (Internet penetration), both used as control variables in all models. However, the Pearson correlation tests do not confirm this.

There is also an issue with missing data that is considered problematic in TSCS data by many leading specialists in the field (Allison 2010; Beck et al. 1998; Honaker and King 2010). The most common solution to the problem of missing data is a simple listwise deletion which basically means that all the observations that miss data, even if just for one variable, are dropped from the analysis. However, missing cases and data deletion are not considered suitable for TSCS as the latter requires balanced and continuous panels to generate reliable estimates, leading experts in the field recommend data imputation over deletion. As missing data is referred to as being even dangerous in case of TSCS data (Fortin-Rittberger 2015), I have imputed missing data, using multiple imputation, for some of the variables for some years and countries.

What needs our special attention here is that the data on the dependent variable is available for years 2003, 2004, 2005, 2008, 2010, 2012, 2014, and 2016, corresponding to the UN e-Government Survey years[20]. For missing values of my dependent variable, I have used

[20] The UN e-Government Survey was first carried out in 2001 but it was a pilot that included only a limited number of countries and used a different methodology from the survey years to follow, thus, I have decided to leave 2001 results out of the analysis.

mean imputation, i.e., the mean of previous and following value of the Online Service Index of the e-Government Survey. Thus, if the index value in 2008 is 0.86 and in 2010 it is 0.92, then the value in 2009 is 0.89. Even though there are scholars who warn against imputing data for a dependent variable, there are many prominent academics that have opted for this option to increase sample size (Gerring et al. 2012). The reason I have chosen to impute missing data is not only to increase the number of time points in my dataset but also because I do not assume the inserted missing values to be misleading. I strongly believe that they correspond to the expected trajectory of the development of digital governance in these years and countries. As digital governance is a very complex phenomenon, changes in the level of digital governance take time, and it is highly unlikely, if not impossible, for a country to undergo big fluctuations in the development level of digital governance within a mere year. So, if a country A had a lower index value in 2010 than in 2008, it would not have had a higher value in 2009 than in 2010 (or the same value) but, rather, would already be moving towards the lower value. Little variation in the development of digital governance in a country within a year was also one of the reasons UNDESA dropped the initial plan to carry out the e-Government Survey annually and has, since 2008, conducted the survey every other year instead[21].

And last, an important issue to be mentioned is related to potential endogeneity which means the institutional arrangements, organisational set-up and actors may influence the development of digital governance but, it can also be that the relationship is recursive, and it is actually the technological development that causes changes in organisational processes, institutional arrangements and actors' preferences. Even though it is likely that in line with technological advancements, new issues raise in our societies that need to be addressed in respective institutional arrangements, for example, I do not believe nor expect technology itself to explain these differences that we encounter in digital governance development levels and patterns across countries. Still, I have included technological development as a control variable in all the models.

Qualitative comparative analysis

In the qualitative comparative analysis, I attempt at finding out the development process of digital governance, by further analysing the relationships between the variables included in the quantitative part. I also aim to identify the causal mechanisms that connect the dependent and

[21] From and interview with the UNDESA personnel responsible for the UN e-Government Survey.

independent variables. As I am interested how these relationships and underlying processes have changed over time and whether they hold through time and space, I am carrying out a historical analysis on the development of digital governance. Here, process tracing has been considered particularly useful, and I will apply it to both case studies (Vennesson 2008; Mahoney and Rueschemeyer 2003; George and Bennett 2005).

Process tracing is appropriate for a number of reasons, and I summarise those most relevant for this thesis. Process tracing allows me to check additional or more detailed indicators for the variables used in this thesis because the proxies used for the variables in the quantitative analysis may not resonate best with what is measured. This is essential to critically examine the development level of digital governance in the countries included in the research but, as importantly, identify more detailed role of the independent variables in this process. Here, I can study the developments of independent variable in more detail and it is an essential argument because, clearly, the mere existence of a certain institutional arrangement, for example Freedom of Information Act, does not reflect the full picture of how it may impact digital governance. To add to the list of positives, I can study the development of digital governance over longer period, since the early 1990s when the first browser was invented and opened the wide wild web world of the Internet to the masses. In principle, this marks the beginning of the time governments started to develop and offer online services and e-participation tools to their stakeholders. For all the reasons stated above, I follow both *process* and *structural* perspective (Heritier 2007). To summarize, it allows me to investigate the development sequence of digital governance and the factors triggering the change in this process over time (*ie process*) and take into account different levels, arenas, and distinguish different types of actors (*structure*).

Regarding data collection, a combination of semi-structured interviews with all actor groups and document analysis is employed. As to interviews, two minor issues should be addressed. First, as the information that different addressees of interviews can provide, and the extent of information needed from each interview varies, the questions have been slightly modified for each interviewed person. For example, they may investigate only dependent variable, or both, or just one of the independent variables. Second, as my knowledge increased after each interview, particularly in the case of the development of digital governance in the United States, the questions asked at the beginning were broader than the proceeding ones that were already more focused and detailed. As the interviews are semi-structured, the focus is on the content rather than on the theme (Morse 2012), and the questions asked are open x-questions

rather than closed nexus questions required in case of standardised interviews (Wang and Ying 2012).

Another matter that I would like to address concerns the existing differences in the depth and detail of the analysis of the dependent variable and some of the independent variables potentially impacting the development of digital governance, in the USA and in Estonia. Regarding institutional arrangements, for instance, the number of analysed legislative acts is higher in Estonia than in the USA and, occasionally, they have been analysed in more detail. In the case of institutional arrangements in Estonia, I have recorded most if not all amendments introduced to the analysed legislative acts and, furthermore, I have analysed in detail the preparation process of these legislative acts. The latter has enabled me to better understand the standpoints and preferences of different actors in a given issue. Additionally, I have digged deeper along the power level of legislative acts and have studied several ministerial decrees or ordinances in Estonia whereas in the case of the USA, only a major and presumably more impactful ones have been identified and analysed. The same applies to organisational processes. In terms of cross-governmental cooperation, for instance, in Estonia, I have acquainted myself with all meeting memos of different committees, councils, task forces etc which is not the case regarding the memos of the government of the USA.

There are several reasons for these differences. The first one concerns volume as the government of the USA is much bigger than the government in Estonia, and it is big by any other measure. The government of the USA has a considerably longer history. This has affected both institutional arrangements and organisational processes. Institutional arrangements in the USA have been settled, in some cases, a century ago and as a result, these documents are long, reaching hundreds of pages. These arrangements have been subject to several amendments that have accumulated over time, building on top of each other. In Estonia, legislative acts but also other documents tend to be short, and due to the lack on layering, but they are also clearer and, therefore, easier to interpret.

The second reason entails the availability of information and access to information. Despite an increasing trend towards information disclosure in the USA, it is still difficult to reach documents and access information. Even though laws and regulations are available to the public, this is not necessarily the case with lower level legislative acts nor with working documents such as agendas and minutes of the meetings, preparatory and accompanying documents etc. These documents can be disclosed by default but not necessarily so.

Additionally, in the USA, it is not possible to follow the policy-making process in the same open way than in Estonia where the preparation of any document is made public from the idea formation in the government until the adoption of a document at the Parliament. In the USA, the drafting process of any document largely remained behind closed doors and is limited, at best, to the availability of one or two drafts (as said, once adopted, legislative acts get disclosed). This means that, in the case of the USA, the information not available to the public has been received through alternative resources, either from interviews with different actor groups or from the third sources like academic literature. Estonian experience again, has not been subject to academic research at the level it has been in the USA. All in all, despite the variances in the depth of the conducted analysis, the received information has enabled me to trace the development of both the dependent and independent variables in both countries to ascertain their potential relationships but also to compare the experiences of these two, different countries.

The variance in the sources of information and in the detail of analyses but also because of the differences in the existing institutions and organisations, the two case studies follow a slightly different structure and depth. The case study on the development of digital governance in the USA follows Presidential periods and, as said, draws largely from academic literature, interviews with different actor groups and higher-level legislative acts. In the case of the USA, the development of e-participation has been recorded alongside with the development of online services and digitalisation more generally, largely because there have been no separate institutional arrangements and organisational processes assigned for e-participation (or e-democracy) for the most period included in the study. The case study on the development of digital governance in Estonia does follow chronological order, but it is not divided into governmental periods. Occasionally, this case study reveals more detail, both on the development of digital governance in Estonia and on the factors potentially influencing this development. Here, due to the availability of information and because e-participation (and e-democracy) has been subject to its own institutional arrangements and organisational processes for a longer period than in the USA, I have traced the development of e-participation and the factors affecting the latter in a separate thread. This means that there is a separate section devoted to the development of e-participation.

I believe though that these variances do not affect one's understanding on how digital governance has developed over time in the USA and in Estonia, and what has constituted to the patterns and levels of digital governance in these countries. The differences that exist in the

USA and in Estonia have, as said, influenced the way I have gathered the information but also the depth of it, but it has not affected the main aim of this research – to understand and analyse how institutional arrangements, organisational processes, actors preferences but also some of the contextual factors have developed over time and how these, in turn, have affected the development of digital governance.

Case selection

Comparative quantitative analysis

The comparative statistical analysis encompasses the development of digital governance in 41 countries, restricted to democratic countries only. This restriction is introduced because I do not find it useful to investigate how the governments of non-democratic regimes make use of online tools to involve the public in the policy-making process, i.e., e-participation, as I do not expect the online (nor offline) participatory processes to have the intended influence on the policy-making and its outcomes in non-democratic countries.[22] This, however, does not mean that non-democratic countries do not use the ICTs to communicate with the public or involve them in the policy-making process. UN e-Government Surveys (see for instance 2008; 2010; 2012) provide clear evidence that also non-democratic countries have stepped in the development of e-participation and have made progress in more recent years. Still, as said, my focus lies on democratic regimes only.

Some other questions may raise about the case selection. On the one hand, not all democratic countries are included in this analysis, but only the member states of the OECD and the EU. This means that there are less cases in the quantitative analysis than there potentially could be (for example, countries in South-America are left out from the study). This poses some limitations as we cannot make assumptions about any other democratic country than those

[22] There are several classifications and models of democracy. By and large, democratic regimes fall into two categories, depending on the attributes assigned to them: a minimal democracy and a maximal democracy, also known as liberal democracy. A country can be considered a minimal democracy when a political system meets the requirements of competition and inclusion (Dahl 1971: 4-6), and it can be considered a maximal or liberal when it fulfils the previous requirements of competition and inclusion, and civil and political liberties. Liberal democracy has been considered an equivalent of what Dahl (1971) considered a polyarchy. Huntington (1991), when analysing country regimes in 1990, grouped countries into three categories according to their waves, i.e., the time they emerged or went through a transition from autocracy to democracy: the first wave from 1826 to 1926, the second wave following the WWII, and the third wave of democratisation from the 1990s onwards. This classification is often used to define the level of an establishment of a democracy. There are several attempts to measure the level of democracy in countries, for example, Freedom House, Polity etc. A good overview of the main existing concepts and measurements of democracy can be found in Munck and Verkuilen (2002).

included in the study. Also, due to a lower number of cases, the validity of the results may be decreased. This restriction is influenced primarily by the lack of data for countries outside the OECD and the EU for the studied period i.e., 2003-2016. Then again, the limitation does decrease the variety that exists between the included countries, and it is an essential factor considering that I attempt at explaining the changing levels of digital governance among countries that share (relatively) similar technological and socio-economic development. From this point of view, this limitation does not seem problematic. On the other hand, there are both the member states of the OECD and the EU, and not only one or the other. The main reason for this is to increase the number of case studies in the quantitative analysis to increase the validity of the results. In this way, we also know about the development of digital governance and the factors influencing the latter in more countries.

In sum, there are 41 country-cases (the member states of the OECD and the EU) and 14 time-points (years 2003-2016) included in the dataset. This means that there are, theoretically, 574 cases in the data set. However, this is not the actual number of cases included in this analysis because the data is not available for all the years and, in some cases, not for all the countries included in the analysis.

Comparative qualitative analysis

The second sample is a small-N sample of two countries: Estonia and the United States of America (USA). This sample was chosen for a number of reasons. First, this sample is a sub-set of the large-N sample, allowing me to go deeper in finding out the reasons for the development of digital governance in these two countries. As the results of the statistical comparative analysis did reveal some interesting but also surprising results, case studies allow me to analyse the causal paths in more detail, adding data to the analysis.

Second, it is rather clear that these countries differ from each other. They have remarkable differences in size and in history, but they have also different political and institutional set-up. It goes without saying that the level of economic development in Estonia and in the USA varies, too. Estonia is a democratic country re-established in 1991 after the collapse of Soviet Union. It has a population of 1.3 million people and the GDP per capita is 26,355.4 USD (as of 2014) which makes it lower than the average of the EU and the OECD. It is a parliamentary republic. The USA, on the other hand, is one of the oldest established

democracies in the World, with a population of 321,556,407 and a GDP per capita being one of the highest in the World (54,629.5 USD as of 2014). It is presidential federal republic.

These differences also count for differences in the factors that potentially influence the development of digital governance such as institutional arrangements, organisational processes and actors also differ in Estonia from those in the USA. Due to its re-establishment in just 1991, very differently from the USA, Estonia had to start from the beginning to build new institutions and organisations, to settle regulations and the ways to work. The roles of actor groups were new and not yet settled. The USA has not been subject to such disruptions which also means that the government has established its rules and processes gradually and slowly, building on past administrative practices and institutions which may have resulted in thicker bureaucracy. The government of the USA has not faced a need to abruptly change the way it has functioned.

Despite their differences, both countries have reached a high level of digital governance.[23] The development patterns do reveal some minor differences as the USA has hold the top position in the UN Online Service Index throughout the studies period whereas Estonia seems to have a bit more variation. Still, Estonia has outperformed most other countries and has been considered one of the most advanced digital nations (see for instance the World Bank 2016). Even though Estonia's efforts in modernised its government with the help of the ICTs have caught quite a bit of international interest, apart from the Internet voting and a few other cases, the development of digital governance in Estonia has not been subject to scholarly scrutiny. One of the reasons for this lack might be that the international academic community is unfamiliar with Estonian language which poses serious challenges for a qualitative research. My Estonian background and understanding of its society and government have played a role in the selection of Estonian case on the development of digital governance as well.

In sum, in this thesis, the small-N analysis follows the large-N analysis and differently from the quantitative analysis that uses the most-similar system design, it employs the most-different one. The most-different research design has both its advantages and disadvantages. To start with positives, it allows me to test whether the relationships between variables hold despite the context in which they emerge and despite the variances in between them (McAdam et al. 2001). It has been considered particularly appropriate to study exceptional or deviant cases

[23] A thorough overview of Estonia's and the USA's position in digital governance assessments and indices is given later in this thesis, in Chapters 5 and 6 that scrutinise the development of digital governance in Estonia and in the USA respectively.

(Mahoney and Goertz 2006) that Estonia's digitalisation journey clearly is. But, the most-different case has been heavily criticised. Przeworski and Teune (1970) have noted that the most-different system design is more suitable for analysing individuals than countries or governments to identify, for example, whether different factors have the same or different effect on similar and different voters. The strongest argument against the most-different research design, however, is that it may simply not explain much.

As mentioned in the paragraph above, despite their differences in the independent variable, both countries have reached a similar outcome in the dependent variable - a high level of digital governance. The development patterns though, do reveal minor differences as the USA has hold the top position in the UN Online Service Index throughout the studied period whereas Estonia seems to have a bit more variation. Still, Estonia has been outperforming most other countries throughout the period in question. The choice of selecting Estonia as a case study that is partly based on its puzzling advancements in the development of digital governance may cause some criticism. Renowned methodologists King, Kohane, and Verba (1994) have insisted that a sample should never be chosen basing on the dependent variable. More recently, scholars seem to have a different opinion, too. A prominent duo Mahoeny and Goertz (2006), for instance, have given their strong support to choosing a case basing on the dependent variable.

Data and operationalisation

In this section, I discuss the operationalisation of the variables in three groups: the dependent variable i.e., the development level of digital governance and the independent variables such as institutional arrangements, organisational processes, and actors' preferences, and the alternative explanation variables.

Operationalisation of the dependent variable

The dependent variable *the level of digital governance* is a country's score in the online service index of the e-government development index (EDGI) that, in turn, is part of the United Nations e-Government Survey. The survey is carried out by the Department of Economic and Social Affairs (UNDESA) through its Division for Public Administration and Development Management (DPADM) and it provides an overview of e-government development in all the member states of the United Nations. EDGI ranks countries on a relative scale which means

that the e-governance performance of countries is not an absolute measurement but, rather, a position relative to one another. The survey was first piloted in 2001, and it has been regularly carried out since 2003 and semi-annually since 2008.

EGDI itself is a weighted average of: i) scope and quality of online services, ii) telecommunication infrastructure, and iii) human capital. Each of these dimensions, in turn, is a composite measure that can be extracted and analysed independently; and I am using the first dimension - online service index - as the proxy of my dependent variable. The online service index includes also an e-participation index that, is also published separately and can be analysed independently. Yet, what has to be kept in mind is that online service index includes e-participation index and cannot be looked at separately, i.e., without e-participation index. The online service index is based on an expert assessment of national websites: government and six ministries.

It should be noted here that even though the online service survey methodology has not changed over time, the content of the survey has been modified each survey year to adjust it to the technological changes. In practice, it means that the questions included in the survey have not remained constant over the period of 2003-2016 as some questions have been added and some others have been removed. These refinements, though, are inevitable as, for example, governments' use of Facebook and other social network sites for information provision that was rare in 2008 or, furthermore, impossible in 2003, has turned into an everyday commodity by 2016. Still, these modifications have been few and as the index reflects a country's position relative to one another and is not an absolute measure to begin with, it does not pose a big problem. The composite value of the online service index is normalized to fall between the range of 0 to 1, higher values indicating higher levels of digital governance.

Operationalisation of the independent variables

Institutional arrangements

Institutional arrangements are divided into two categories of official norms i.e., rules as follows: i) foundational policies and legislative acts (laws, regulations, decrees, ordinances) that guide and support the development of digital governance i.e., the enabling legal framework and ii) laws and regulations supporting public participation in the policy-making process.

Foundational policies guiding the development of digital governance are singled out as digital governance strategies. Due to a variety in terminology used over time and across countries, I have identified whether and when a digital governance strategy or an equivalent other digital governance policy document was adopted. So, I have identified the existence of: digital government/information society/e-government/open government/government modernisation policy/strategy. Here, I have relied on three sources mainly: 1) The National eGovernment Factsheet of the European Commission[24], 2) The Global Information Technology Report of the World Economic Forum (WEF) that has been published since 2002[25], and 3) the OECD Digital Government Studies[26]. Occasionally, I have cross checked the adoption year relying on a country government website and a database of legislative acts such as the State Gazette. I have also relied on the opinion of country experts. Coding is simple as 0=no strategy/policy, 1=strategy/policy exists. I have used a sum-up of the existing policies and legislative acts as a proxy for the institutional arrangements supporting the development of digital governance. I now describe the legislative acts supporting the development of digital governance.

Legal framework enabling the development of digital governance. Here, legislative acts such as laws and regulations, and in a few cases, ministerial decrees are used as indicators. Again, due to the differences in terminology and in a regulatory environment across the OECD and the EU countries, I have identified the adoption[27] year of the following legislative acts (or an equivalent other): i) access to public information/freedom of information; ii) re-use of public information/open data; iii) personal data protection; iv) public registries/databases; online services and communication (in and between government institutions); vi) digital signature; vii) electronic identity; viii) cyber security; ix) electronic commerce; x) online procurement; xi) all-governmental interoperability.

The coding used here is obvious 0=no legislative institution; 1=the legislative institution exists. Here, again, I have relied on three sources mainly: 1) The National eGovernment

[24] The National eGovernment Factsheets of the European Commission are available at: http://ec.europa.eu/digital-agenda/en/news/national-egovernment-factsheets-34-countries.

[25] The Global Information Technology Report of the World Economic Forum are available at: http://reports.weforum.org/global-information-technology-report-2015/.

[26] The OECD Digital Government Studies are available at: http://www.oecd-ilibrary.org/governance/oecd-digital-government-studies_24131962;jsessionid=ng89ks8tt8ay.x-oecd-live-03.

[27] I have opted to include an adoption year of a legislative act and not the year it was enacted due to the complexities in identifying the enactment year. In several cases, for instance, a legislative act can be enacted in different phases or by different sections, each with different enactment time.

Factsheet of the European Commission; 2) The Global Information Technology Report of the World Economic Forum (WEF), and 3) the OECD Digital Government Studies. Occasionally, I have cross checked the adoption year in a country government website and the relevant database if available, for example, State Gazette. In several cases, I have relied on country experts.

In the comparative quantitative analysis, I have only identified the existence (or not) of the above-mentioned legislative institutions for each unit of analyses (i.e., country year). The information that a mere existence (or not) of these laws reveals is, naturally, limited. For example, Freedom of Information Act may not touch upon the online information provision (i.e., disclosure of online information) whereas it may include a very detailed description of what kind of an information must be disclosed to the public by default and what kind of online tools must exist to allow for the request of information. Therefore, in the qualitative part of my research, I have carried out a detailed analysis of these laws as well as other relevant legislative acts to identify the relation between institutional arrangements and the development level of digital governance. As mentioned above, I have used the sum-up of all the above-mentioned legislative acts and digital governance policy/strategy as a proxy for institutional arrangements.

Legal framework for public participation in the policy-making process. There are a number of legislative acts that concern the public participation in the policy-making process, or the development of direct democracy[28]. In the quantitative analyses, I have singled out the existence of legal provisions for i) a mandatory referendum (the cases when a referendum is mandatory are defined by law); ii) an optional referendum (a possibility to have a national referendum in the cases other than prescribed by law); iii) a citizen initiative (a possibility for the public to initiate a referendum), iv) an agenda initiative (petition). The data is taken from the Institute for Democracy and Electoral Assistance (IDEA) handbook and has, occasionally, been cross-checked with a relevant country database and/or expert. Some corrections have been introduced as a result of the cross-checking of the data.

Policy-making process, of course, is a lot more nuanced and subject to many other laws and regulations that, due to the limited data availability are not included in the comparative quantitative analysis. I have, however, identified all major legislative acts relevant to the central

[28] Generally, there are no separate legislative acts regulating the development of e-participation but, instead, they serve as legislative acts regulating public participation as such. In some cases, references to online tools are being made, and I have identified this in case studies but not in a statistical analysis.

government policy-making processes (and beyond), and I have analysed them in country case studies: Estonia and the United States. These legislative acts that shape the policy-making process and how the public can participate in the latter, in case studies, has also been connected to the development of e-participation and e-democracy. One may presume that these legislative acts may also regulate whether and how to use the ICTs in the policy-making process or even of this reference is missing, one may still presume that the higher institutionalisation of public participation in the policy-making may contribute to the advancement of the use of the ICTs in this process as well.

Organisational processes

Openness is measured by globalisation, and the source is the KOF Globalization Index that includes annual data for 207 countries over the period of 1970-2012. It ranges between 0 and 100, higher values indicating higher degree of globalization. The KOF Globalisation Index measures: i) political globalisation, ii) economic globalisation and iii) social globalisation.

For *digital governance management and coordination,* I have identified whether the development of digital governance it is the responsibility of a Prime Minister's/President Office's or a Ministry's and/or Agency's. Here, again, coding is simple as 0=Prime Minister's/President's Office and 1=Ministry/Agency. Here, I acknowledge the limitations of the data as the proxy used for openness to reform is a rather broad one and, furthermore, the level of hierarchy is not included in the comparative statistical analysis. This is purely because of the lack of data. In social and political sciences, the level of hierarchy is often measured by decentralisation and Regional Authority Index (RAI) score is most commonly used as an indicator (Hooghe et al. 2016) and could be considered here. As it includes data only until 2010 (inclusive) and not for all countries included in the analysis, I have decided not to use this otherwise valuable index. Similarly, I have not included interagency collaboration but also cooperation between government institutions and the partners in a quantitative part of the thesis, again, due to limited data. However, in case study research, I have identified existing collaboration mechanisms as well as technical, semantic, and organisational cooperation in and between government institutions.

Actors and their preferences

Politicians

The *preferences of politicians* are singled out as the positions of the Cabinet parties on two issues related to supporting digital governance: i) governmental and administrative efficiency and ii) technology and infrastructure. In order to find out Cabinet party positions on the afore-mentioned issues for each country and year, I have relied on the data originating from two projects: i) The Manifesto Project (Volkens et al. 2016) and 2) ParlGov Project (Döring and Manow 2016). The Manifesto Project provides with parties' positions (salience) in several issues, including in the issues in percentages in the scale from 0 to 100, higher values indicating higher salience. The positions derive from a content analysis of parties' electoral manifestos of each election that a party has been participating. In case parties have run in coalitions with a joint programme, the latter has been assigned to all the parties in that coalition. If parties in a coalition have had separate programmes, they have all been analysed unless there has been a clear leading party. As the unit of analysis in my research is a country year, I have assigned a party's position of one electoral manifesto to all the years in between elections, i.e., until the next elections' manifesto. In case of Cabinet change in between the elections, I have also kept parties' positions of the previous electoral manifesto, unless there were changes in the parties themselves, e.g., split-ups that may have influenced parties' positions in these issues.

For cabinet membership, I have used the data from ParlGov Project that has recorded data on all cabinet memberships. In case of several cabinets in a year (in most cases, because of the elections but also early elections and Cabinet changes in between), I have kept the positions of the parties that were the members of the Cabinet that served the longest. In order to get Cabinet parties' positions for all years and countries included in this study, I have merged the two datasets and cross-checked them manually. As a result, I introduced several changes that have been recorded. Additionally, I have checked for the Cabinet parties' orientation in right-left scale utilising the data, again, from the ParlGov Project.

Implementers

Due to unavailability of comparable data over time on public officials, their skills and capacities, implementers as an important group of actors have been excluded from the comparative statistical analyses. There exists a possibility to check whether a country has assigned a responsible person in public administration to lead the development of digital governance, a position often called as chief information officer (CIO) using the following sources: i) The National eGovernment Factsheet of the European Commission and 2) The Global Information Technology Report of the World Economic Forum (WEF) that has been

published since 2002. Still, these sources proved unreliable as only in few cases they have recorded a year when such a position was established. I have accounted for the role of implementers, at all levels, in a qualitative part of the thesis.

Users: businesses and people

In order to roughly indicate the *preferences of businesses* and their skills, I use ICT goods' export (% of total goods export) as an indicator, originating from the United Nations Conference on Trade and development (UNCTD). Even though ICT services' export may serve as a better proxy, the data unfortunately, even though deriving from the same source, is scarce.

Regarding the *preferences of people,* two indicators are used: i) trust and ii) education. Trust is measured by corruption perception[29], and the data originates from the Corruption Perception Index (CPI) by Transparency International. The CPI focuses on the corruption in the public sector and the abuse of public for private gain, for example, bribe-taking by public officials in public procurement. The CPI score reflects the degree of perception of corruption, and it ranges between 10 (highly clean) and 0 (highly corrupt). In 2012, the scale was changed to ranging from 0-100, therefore, I have adjusted the values dividing them by 10 since 2012. Knowledge and skills are measured by the percentage of labour force with tertiary education. Tertiary education refers to all post-secondary education, including but not limited to universities; and the data originates from the World Bank.

Alternative explanations. Environmental/Contextual factors

In this research, contextual factors are singled out as economic development, technological development, and urbanisation. Technological development is measured by the number of broadband subscriptions per 100 inhabitants and the data originates from the International Telecommunication Union (ITU). For economic development, I use an indicator such as GDP per capita (current, USD), originating from the World Bank. Regarding urbanisation, I am using, once again, the World Bank Data on the percentage of urban population.

[29] People's trust and confidence in their government has also been measured by both World Values Survey (WVS) and European Values Survey (EVS). However, these surveys are not annual and, furthermore, respective questions have not been included in all waves. Therefore, these otherwise more relevant data could not be utilised in this study.

Chapter 4. Comparative statistical analysis on the relations between the development of digital governance, institutions, organisations, and actors in the member states of the OECD and EU

In the previous chapters, I presented and discussed some of the main research questions of this thesis, its main research hypotheses and the methods and data used to explore and test those hypotheses. In this chapter, I present the results of a comparative statistical analysis that was conducted, using panel data of 41 countries (OECD and EU members) in 14 years (from 2003 until 2016) in order to test the research hypotheses. As it was discussed in Chapter 2 where some theoretical considerations were given, some of the puzzling differences in the development levels but also patterns of digital governance have persisted, both among developing and developed countries but also among countries that share rather similar socio-demographic and economic characteristics. Therefore, the primary goal of this comparative statistical analysis is to investigate the importance of some variables in explaining the differences that countries face in the development of digital governance. This is the first main goal of this dissertation – to offer a novel and solid empirical contribution to better understand the determinants of the development of digital governance at a country level. However, as discussed in Chapter 3, the comparative statistical analysis poses several challenges. One of the main difficulties in this task concerns the availability of good, comparable and, in a way, usable time-series/cross-sectional data. For this reason, this chapter has a secondary goal. Since this thesis relies on a multi-method approach to investigate its main research question, the comparative statistical analysis offers input but also guidance for the two in-depth case studies conducted in this study that will follow the statistical analysis.

Regarding its structure, this chapter is divided into two interrelated parts. The first part, or section, consists of a thorough descriptive analysis of the data used in the statistical analysis. It offers an overview, with descriptive statistics, of all the variables included in the analysis. Both the dependent variable and the independent ones are examined to explore and better understand both between and within country variation over time. Additionally, this section also identifies and discusses development changes and patterns of change. The objective is mapping the development of digital governance in the 41 one countries analysed in this chapter, over a time period of 13 years. The second part of the chapter consists of an explanatory analysis of the determinants of digital governance development. The objective of this section is to test the different research hypotheses developed and discussed in the previous chapters. In order to do

that, I have conducted a time-series cross sectional analyses with country fixed effects. The explanatory variables are grouped into three categories (i.e. institutional arrangements, actors and organisational processes) and tested in different models with different estimation methods. The results about the factors that are more likely, in a broader sense, to improve or hinder the development of digital governance in democratic countries are then discussed.

Overview of the variables used for the statistical comparative analysis

The dependent variable of the analysis, i.e., the development level of digital governance is, as already discussed, the online service index of the e-Government Survey of the United Nations. The explanatory variables of this study, the operationalization of which was also given in more detail in the previous chapter, have been grouped into three categories. The first concerns institutional arrangements that are singled out as the enabling legal framework and includes the number of policies and legislative acts (laws, regulations) enabling both the development of digital governance and the related areas, such as access to public information or cyber security for instance. This group also includes the existing legislative framework for enabling public participation in the policy-making processes. The second group of factors concerns organisational processes such as the management of digital governance and collaboration between government entities and other stakeholders. Here, openness and the digital governance management model, either centralised or not, have been tested.

Finally, the last category is the role of different key actors and measures the effect of political actors, businesses, and the public in the development of digital governance. As also mentioned in the previous chapter, the role of implementers i.e., public officials is not tested here due to the unavailability of suitable data to carry out a cross-sectional time-series analysis. Additionally, there are three control variables, GDP per capita, Internet connection singled out as broadband connection per 100 habitants, but also urban population, included in the models presented and discussed in this chapter. All three control variables are in natural log format to uphold the normality assumption. As mentioned above, some variables are lagged, and it is indicated in the parenthesis, either (L1) or (L2).

The table below summarizes the descriptive statistics of the variables included in the analysis of the level of digital governance in the 41 OECD and EU member countries analysed in this chapter. It includes the mean, the standard deviation and the minimum and maximum

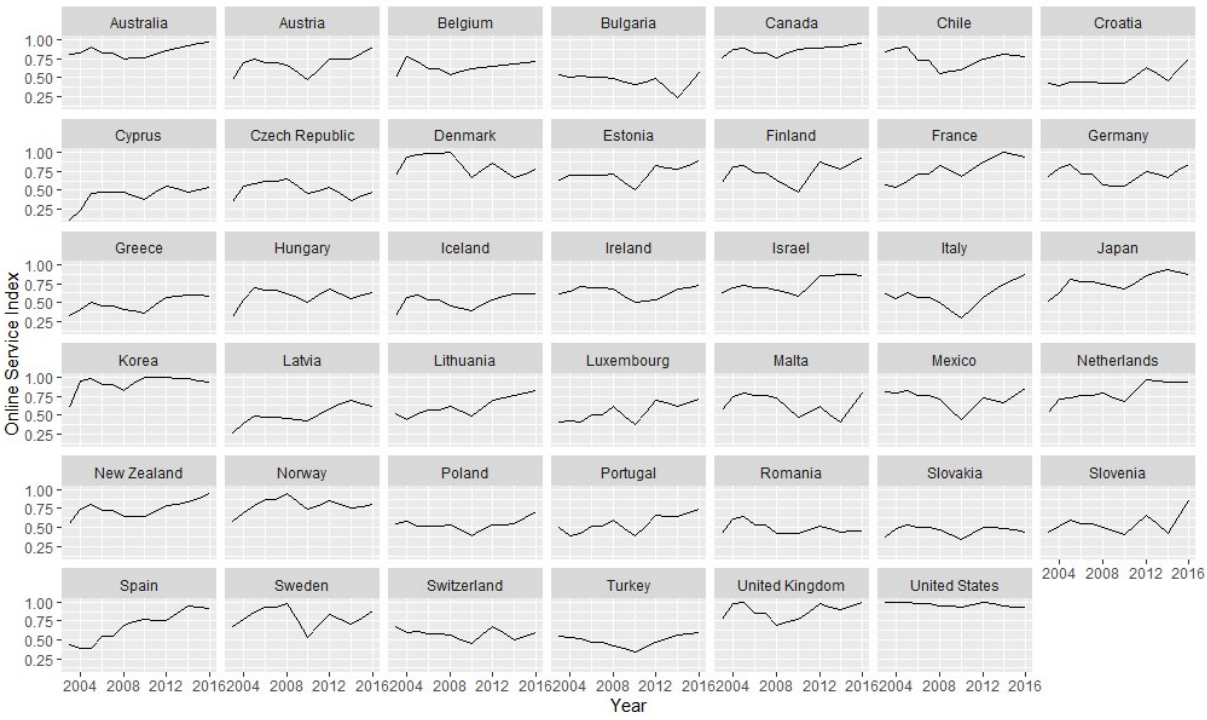
value for each variable. The L1 and L2 identify the variables with one- and two-year lags, respectively.

Table 1. Summary statistics of the main variables analysed

	mean	sd	min	max
Online service index (DV)	0.659552	0.175963	0.11353	1
Institutions. Participation legislation (L2)	1.632404	1.237459	0	4
Institutions. Digital governance legislation (L2)	7.541812	2.510883	0	12
Policy-makers. Preferences (L1)	11.5865	5.566169	0	32.04509
Policy-makers. Ideology (L1)	5.843821	1.754903	1.0526	8.894633
Public. Trust	6.603734	1.848797	2.8	9.7
Public. Education	28.73742	8.760834	10	51.5
Businesses. ICT goods' export	7.453536	7.869051	0.06773	51.46412
Org. processes. Openness	80.06722	8.041108	57.54211	92.83772
Org. processes. Dig. Gov. Management (L1)	0.62892	0.483515	0	1
GDP (log)	10.23773	0.683004	8.495925	11.62597
Internet penetration (log)	2.927226	0.764604	0.058269	3.855876
Urban population (log)	75.83711	11.97057	49.627	97.897
N	574			

Regarding the dependent variable - online service index of the e-Government Survey, its average value and standard deviation are, respectively 0.66 and 0.18, its minimum score is 0.11 and its maximum value is 1. While the lowest value of online service index belonged to Cyprus in 2003, there were a few countries that, in some years, achieved the score of 1 (i.e. United Kingdom, United States, Denmark, Korea and France). Figure 3 shows the development of digital governance for each country in 2003-2016. This figure shows that differences exist in the development level of digital governance across the countries but also in the trend over time. There are countries with constant high development level of digital governance such as Australia, the United Kingdom, the USA, or Estonia; but there are also countries that have not performed well in digital governance throughout the studied period. In this group, we can find Greece, for instance, but also countries like Switzerland.

Figure 3. The level of digital governance (online service index) over time (2003-2016) per country



Source: UN e-Government Survey 2003, 2004, 2005, 2008, 2010, 2012, 2014, 2016

From the figure, it also becomes evident that even though there is a general steady incline in the development level of digital governance in the OECD and EU countries, several variations exist. Largely, we can make a distinction between three patterns of the development of digital governance over time in the OECD and EU countries. The first one includes countries such as Lithuania, New Zealand, and Spain where, indeed, the level of digital governance has been constantly increasing. The second group belongs to countries like Bulgaria, Check Republic, and Malta that, over time, face a moderate decline in the development of digital governance. In the third group of countries of Slovenia, Sweden, or Italy, for instance, we can witness several fluctuations in the development of digital governance, revealing both increases and decreases. Sweden, for example, shows an increase in the development level of digital governance in 2008 that is followed by a sharp decline in 2010 and is then followed by a steady increase until 2016. Slovenia, again, shows a decline both in 2008 and in 2012 but increases in between.

The remaining variables were used to test the role of institutional arrangements, organisational processes and different types of actors in the development of digital governance. With respect to institutional arrangements, policies and legislative acts enabling the

development of digital governance and legislative acts enabling public participation in the policy-making processes were tested. The values of the legislative acts enabling participation in the policy-making process and legislative acts enabling digital governance range respectively from 0 to 4 and 0 to 12. The mean value of the first one is 1.6 and the average value of the second variable is 7.5. These results suggest that, in comparative terms, digital governance seems to be more regulated than public participation in the policy-making processes as there are more countries with higher number of legislative acts enabling the development of digital governance than the ones dealing with public participation.

Figures 4, 5, and 6 show that differences exist in the institutional arrangements enabling digital governance in the OECD and the EU member countries over time. Overall, there is a clear increasing trend in the number of policies and legislative acts over time. In 2003, the mean of digital governance policies and legislative acts was 5.3 whereas it had increased to 8.1 in 2008 and 10.5 in 2016. In addition to the variance in the number of policies and legislative acts enabling digital governance over time, differences between countries exist as well. Out of all countries in all years, the countries with the lowest number of policies and legislative acts over time are Turkey, Italy, Mexico and the countries with the highest number of policies and legislative acts supporting the development of digital governance are Estonia, Finland, and Netherlands. Additionally, the Figures 4, 5, and 6 show that there are differences in between the types of policies and legislative acts that exist over time. In 2003, for example, most countries had adopted a digital governance policy and some of the legislative acts such as the one on digital signature or freedom of information. At the same time, only a few countries had adopted a policy/legislative act on cyber security, electronic procurement, or had introduced an all-governmental interoperability framework. By 2016, most countries had adopted these legislative acts. The patterns of change in the institutional arrangements does not seem to diverge as there is, as mentioned above, an increasing trend over time. In practice, this means that once an institutional arrangement gets adopted, it is not abolished. This, however, does not mean that changes to the existing legislative acts do not occur but, as pointed out in Chapter 3, the quantitative part of this thesis is not concerned with the amendments introduced to the existing legislative acts.

Figure 4. Institutional arrangements (policies and legislative acts) enabling the development of digital governance in the OECD and EU countries in 2003

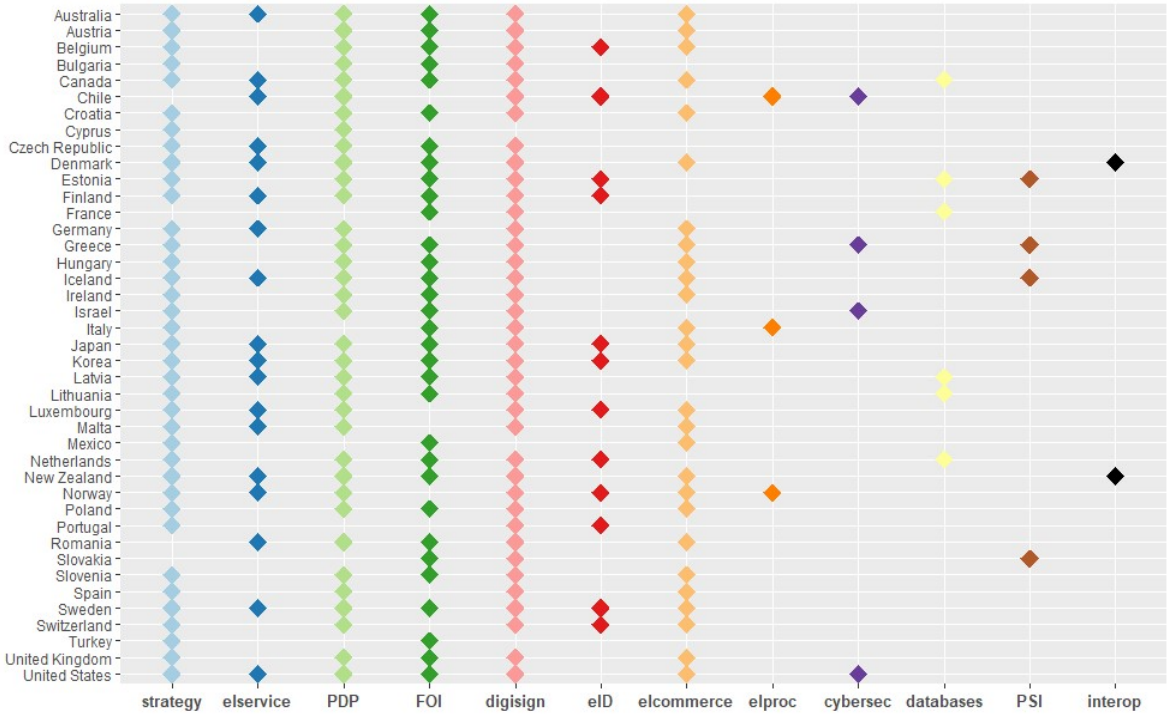


Figure 5. Institutional arrangements (policies and legislative acts) enabling the development of digital governance in the OECD and EU countries in 2008

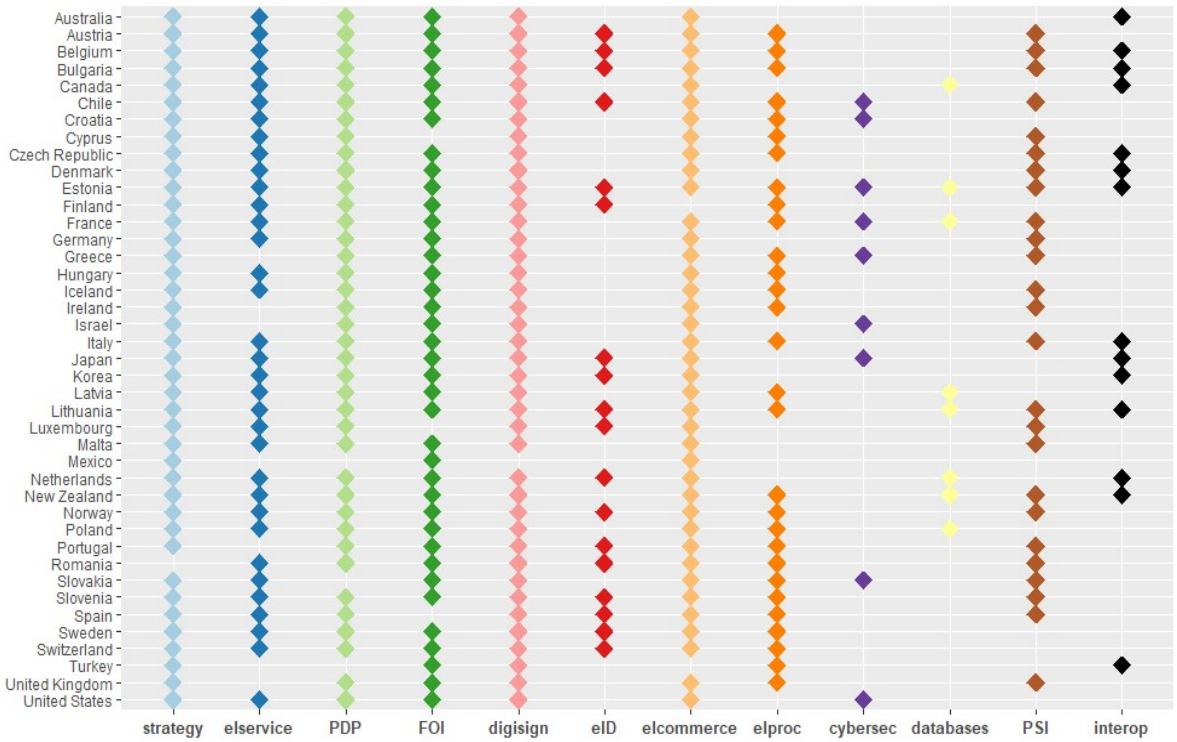
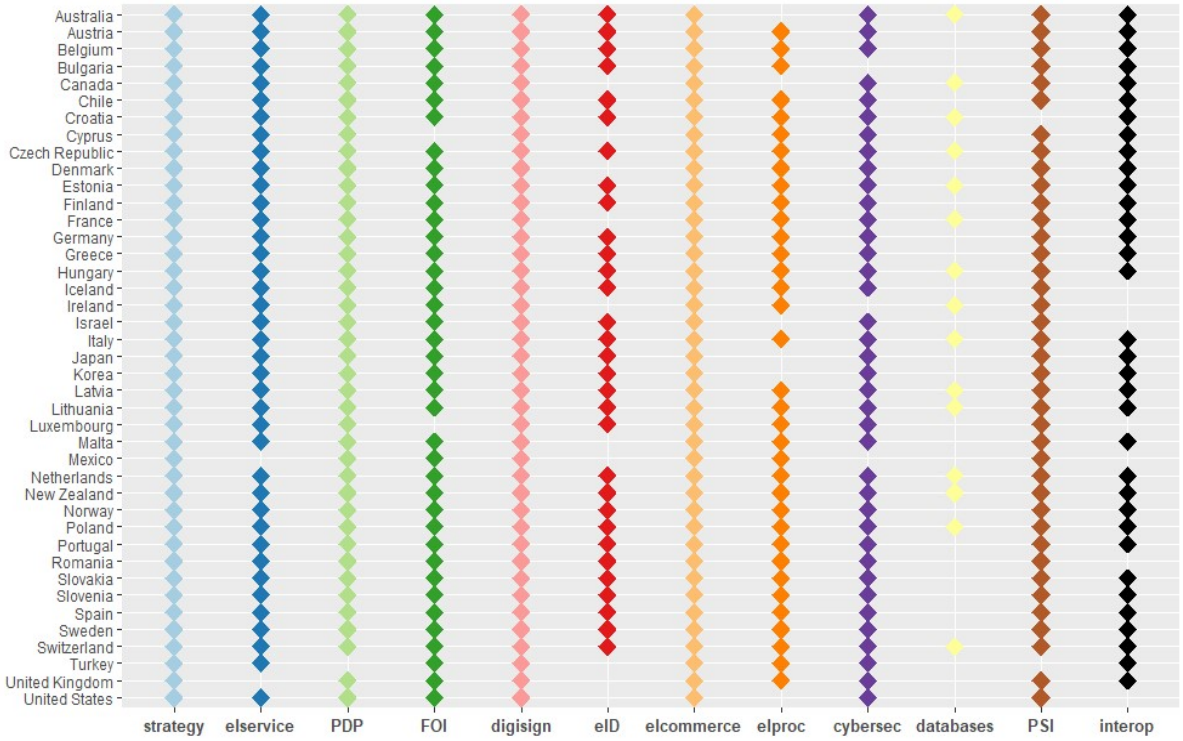


Figure 6. Institutional arrangements (policies and legislative acts) enabling the development of digital governance in the OECD and EU countries in 2016



The second measure for institutional arrangements is the legislation enabling public participation in the policy-making process. Figures 7, 8, and 9 show that differences exist between countries as there are a number of countries with no legislative acts supporting public participation in any of the years like Israel or Mexico whereas several of the countries such as Latvia, Lithuania, Slovakia etc have adopted several of the institutional arrangements supporting public participation. However, what is evident from these figures is the variance over time seems not to be substantial as it was the case with the institutional arrangements supporting the development of digital governance. This means that, over time, the number of legislative acts regulating public participation in the policy-making process has not increased substantially over time. There is a very slight increase in the number of institutional arrangements supporting public participation though. Similarly to the institutional arrangements enabling digital governance, the patterns of change in the institutional arrangements supporting public participation for the OECD and EU countries does not diverge. As already mentioned, when comparing these two measures of institutional arrangements, we can notice differences in the number of adopted policies and legislative acts, the number of institutional arrangements enabling the development of digital governance being considerably higher than the one enabling public participation. Again, as noted in Chapter 3, two-year lags

are used for these two measures of institutional arrangements. The reasons are twofold. First, I do not expect the effect of institutional arrangements on the development of digital governance be immediate and; second, this minimizes the risks of reverse causality in the models.

Figure 7. Institutional arrangements (legislative acts) enabling public participation in the policy-making process in the OECD and EU countries in 2003

Source: Institute for Democracy and Electoral Assistance (IDEA), cross-checked by the author

Figure 8. Institutional arrangements (legislative acts) enabling public participation in the policy-making process in the OECD and EU countries in 2008

Source: Institute for Democracy and Electoral Assistance (IDEA), cross-checked by the author

Figure 9. Institutional arrangements (legislative acts) enabling public participation in the policy-making process in the OECD and EU countries in 2016

Source: Institute for Democracy and Electoral Assistance (IDEA), cross-checked by the author

There are two variables related to organisational processes. The first one is the countries' openness to reform, measured by its globalization level (KOF), an index that ranges from 0 to 100. As Table 2 shows, its average is 80.1, with a standard deviation of 8. The minimum and maximum values of this variable are, respectively, 57.5 and 92.8. The country that has the lowest value in the KOF Globalization Index is Mexico in 2014. The Netherlands in 2014, contrarily, is the country with the highest KOF value.

Table 2. Organisational processes (openness to reform) in the OECD and EU countries over time (2003-2016)

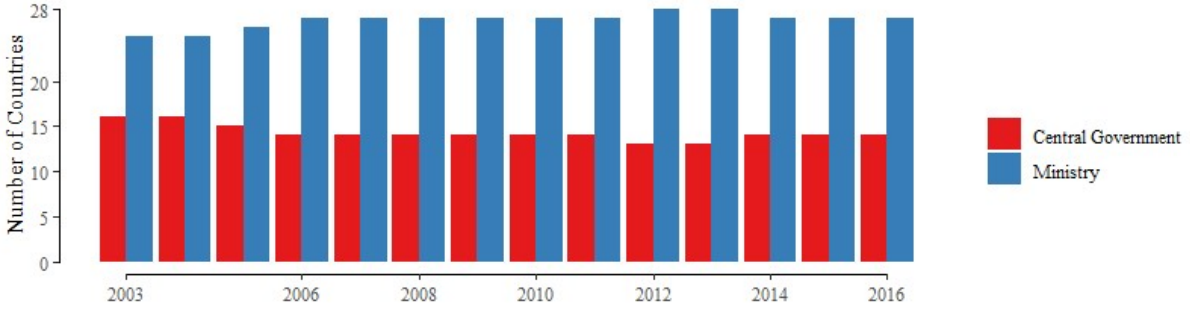
		Mean	Standard deviation	Minimum	Maximum	Number of Cases
Org. processes Openness	Overall	80.01	8.04	57.54	92.84	574
	Between		7.84	60.36	91.74	41
	Within		2.14	65.88	86.90	14

Source: The KOF Globalisation Index

The second variable is the management/coordination model of digital governance. As it was previously explained, it is measured with a dummy variable coded 0 when the office of a prime minister or a president is responsible for digital governance management and

coordination or coded 1 when there is a ministry or an agency responsible for it. Figure 10 shows that differences between countries and over time exist even though the majority of countries have a ministry/an agency responsible for the development of digital governance. Regarding the patterns of change in the management model, there is not much variation. However, changes do occur when countries have moved the responsibility over the development of digital governance from a prime minister's/president's office to a ministry/agency, or vice versa. This variable has one-year lag.

Figure 10. Organisational processes (digital governance management) in the OECD and EU countries over time (2003-2016)



Finally, this study includes a total of five variables that aim at examining the impact of different types of actors (i.e. politicians, businesses, and the public) on the development of digital governance. The role of politicians' preferences is analysed with two different variables, politicians' preferences and ideology, both of them one year lagged. The first one varies from 0 to 100 and refers to the salience that two digital governance related issues, i) administrative efficiency and ii) technology and infrastructure, had in the electoral manifestos of the government parties. Table 3 indicates substantial variation in the salience of these issues as both between and within country differences over time are high. The mean value is 11.6 and its minimum and maximum values are, respectively, 0 and 32. The highest value belongs to Italy in the period of 2002-2006, while the lowest value is observed for Greece and Hungary. Regardless of the observed high within and between country variation, there are no clear patterns in the changes of salience of administrative efficiency and technology and infrastructure among political parties in the OECD and EU countries in 2003-2016, neither clearly trending increases nor declines.

Table 3. Salience of administrative efficiency and technology and infrastructure in political parties' electoral manifestos in the OECD and EU countries in 2003-2016

		Mean	Standard deviation	Minimum	Maximum	Number of Cases
Politicians' Preferences (L1)	Overall	11.6	5.6	0	32.0	574
	Between		4.4	4.1	22.4	41
	Within		3.5	-3.3	25.5	14

Source: The Manifesto Project Dataset and ParlGov database

Regarding political parties' ideology, a simple zero to ten left-right ideological scale is used, which has a mean value of 5.8. The extent to which there is between and within country variation, is illustrated in Table 4. Regarding the patterns of change in political parties' ideology over time, again, there are no clear-cut trends.

Table 4. Political parties' ideology in left-right scale in the OECD and EU countries over time (2003-2016)

		Mean	Standard deviation	Minimum	Maximum	Number of Cases
Politicians' Ideology (L1)	Overall	5.8	1.8	1.1	8.9	574
	Between		0.9	4.4	8.1	41
	Within		1.5	1.1	9.8	14

Source: ParlGov database

The ICT goods exports variable is used to examine the role and impact of businesses on the development of digital governance. The average of this variable is 7.5 and its minimum and maximum are, respectively, 0.07 and 51.5, demonstrating high variation both between and within countries over time. The country with the lowest value is Iceland, while Malta shows the highest values concerning ICT goods exports. The variances are shown in the following Table 5. Regarding trends in the changes over time, these are not clear.

Table 5. ICT goods' export (% of total goods' exports) in the OECD and EU countries over time (2003-2016)

		Mean	Standard deviation	Minimum	Maximum	Number of Cases
ICT goods' export	Overall	7.5	7.9	0.1	51.5	574
	Between		7.1	0.1	33.7	41
	Within		3.6	-13.0	25.2	14

Source: United Nations Conference on Trade and Development

To analyse people's preferences, this study uses both trust and education indicators. Citizens' trust is measured using the corruption perception index (CPI). The mean of this variable is 6.6 and it ranges from a minimum of 2.8 in Romania to a maximum of 9.7 in Finland. In the case of this variable, a higher value means that citizens' perception of the level of corruption in the country is smaller. The existing variation is shown in Table 6.

Table 6. Trust (Corruption Perception Index) in the OECD and EU countries over time (2003-2016)

		Mean	Standard deviation	Minimum	Maximum	Number of Cases
People. Trust	Overall	6.6	1.8	2.8	9.7	574
	Between		1.8	3.4	9.3	41
	Within		0.4	5.1	7.9	14

Source: Transparency International

Finally, the education variable, used as an indicator of the citizens' knowledge and skills, refers to the percentage of labour force with tertiary education, including all different types of post-secondary education. Table 7 shows that the mean of the education variable is 28.7 and the values range from the lowest 10, in Romania, to a maximum of 51.5 in Canada, revealing higher between country variation than within country variation. The data reveals linear increase in the level of education, albeit moderate, in most countries.

Table 7. The level of education (% of labour force with tertiary education) in the OECD and EU countries in 2003-2016

	Mean	Standard deviation	Minimum	Maximum	Number of Cases
Overall	28.7	8.8	10	51.5	574
Between		8.2	14.9	47.2	41
Within		3.2	11.1	42.6	14

Source: The Word Bank

Regarding data on the variable- economic development measured by GDP per capita, Table 8 reveals high between and within variation and a linear increase over time. In Table 9, there is data on technological development, measured by the number of broadband subscriptions per 100 inhabitants that, again, demonstrates a clear increasing trend across countries over time but also a high between and within variation. Regarding data on urban population, shown in Table 10, between variation seems to be higher than within and this, too, reveals a clear increasing trend. There are no differences in the patterns of change in urban population even though differences do exist between countries in terms of the level of increase in urban population in a country.

Table 8. Economic development (GDP per capita) in the OECD and EU countries over time (2003-2016)

		Mean	Standard deviation	Minimum	Maximum	Number of Cases
GDP (log)	Overall	10.2	0.7	8.5	11.6	574
	Between		0.7	8.8	11.6	41
	Within		0.1	9.9	10.5	14

Source: The Word Bank

Table 9. Technological development (number of broadband subscriptions per 100 inhabitants) in the OECD and EU countries over time (2003-2016)

		Mean	Standard deviation	Minimum	Maximum	Number of Cases
Internet (log)	Overall	2.9	0.8	0.1	3.9	574
	Between		0.4	1.9	3.5	41
	Within		0.6	0.5	4.0	14

Source: International Telecommunication Union

Table 10. Urbanisation (% of urban population) in the OECD and EU countries over time (2003-2016)

		Mean	Standard deviation	Minimum	Maximum	Number of Cases
Urbanization	Overall	75.8	12.0	49.6	97.9	574
	Between		12.0	50.1	97.6	41
	Within		1.2	69.5	80.5	14

Source: The World Bank

Results of the statistical analysis on the role of institutions, organisations, and actors in the development of digital governance

This second part of this chapter is devoted to introducing and discussing the results of the statistical comparative analysis. As mentioned in Chapter 3 and earlier in this chapter too, I have conducted a time-series cross sectional analyses with country fixed effects. The explanatory variables are grouped in three main categories: institutional arrangements, actors and organisational processes, and tested in different models with different estimation methods.

Table 11 shows the results of the statistical analysis of the effects of the main independent variables on digital governance level. The six models included in this table estimate country fixed effects with robust standard errors. This method has the advantage of controlling for all immutable variables within a country. In this sense, the models allow to tell us more about the reasons for the changes in the levels of digital governance within a country rather than explaining the digital governance level of a particular country. All models include the same set of control variables.

The first model (Institutional arrangements) investigates the effect of policies and legislative acts in the countries' level of digital governance. It concerns the research Hypothesis 3 that expects that the more institutionalized digital governance becomes, the higher the level of digital governance will be. In this sense, it is expected that the increase in the regulation of digital governance will results in the increase in the development level of digital governance. Also, the higher the level of regulation of the policy-making process becomes, the higher the level of digital governance. Indeed, the analysis seems to confirm this hypothesis. As it is seen in the first model, there is a positive and statistically significant effect of the legislation enabling the development of digital governance on the level of digital governance. This effect can also be considered substantial. The results suggest that the difference between having none or all of the considered policies and legislative acts can contribute to a difference of 0.23 points in the level of digital governance level. The level of the regulation of the policy-making process, however, does not seem to influence the development of digital governance. These results demonstrate that the extent to which the public can participate in the policy-making process, including in the development of digital governance, does not affect the development level of digital governance. I will turn back to this finding when discussing the role that different actors have on the development of digital governance. Regarding the three control variables, only the percentage of urban population of the country seems to have a statistically significant effect, its coefficient being positive. This suggests that an increase of urban population is associated with an increase in the level of digital governance.

The second model focuses on the role of political actors. It is part of Hypothesis 1 that expects that the preferences of key actors, namely policy-makers, businesses and the public, are the main determinants of a country's digital governance level. The results suggest that the ideology (i.e. position on the left-right scale) of the governing parties is not relevant in the development of digital governance. This means that an ideological shift of political parties that make up a government doesn't seem to have an impact on that country's digital governance level. This is not particularly surprising since digital governance appears to be an aspect that transcends and cross-cuts traditional political cleavages. When it comes to the effect of political parties' preferences, it is statistically significant. However, unexpectedly and surprisingly, this variable's coefficient has a negative sign. This suggests that the more government parties talk about issues related to digital governance in their electoral manifestos (here, measured by administrative efficiency and technology and infrastructure), the lower the level of a country's digital governance.

Table 11. Results of the comparative statistical analysis on the role of institutions, organisations, and actors on the level of digital governance in the member states of the OECD and EU

	(1) Legislation	(2) Actors group 1	(3) Actors group 2	(4) Org. Processes	(5) Simplified Model	(6) Full Model
Institutions. Participation legislation (L2)	0.00303					0.00232
	(0.0229)					(0.0203)
Institutions. Digital governance legislation (L2)	0.0193***				0.0193***	0.0183**
	(0.00681)				(0.00699)	(0.00734)
Policy-makers. Preferences (L1)		-0.00522***	-0.00529***		-0.00456***	-0.00401***
		(0.00143)	(0.00134)		(0.00126)	(0.00138)
Policy-makers. Ideology (L1)		-0.00181				-0.00276
		(0.00401)				(0.00385)
People. Trust			8.50e-05			0.0151
			(0.0191)			(0.0182)
People. Education			0.00147		-0.000538	-0.000227
			(0.00208)		(0.00220)	(0.00220)
Businesses. ICT goods' export			0.00348*		0.00389**	0.00348*
			(0.00202)		(0.00178)	(0.00175)
Org. processes. Openness				-0.00347		-0.00169
				(0.00433)		(0.00411)
Org. processes. Dig. gov. management (L1)				-0.0401		-0.0248
				(0.0285)		(0.0264)
GDP (log)	0.0159	0.140	0.138	0.115	0.0467	0.0293
	(0.125)	(0.113)	(0.111)	(0.128)	(0.117)	(0.119)
Internet penetration (log)	-0.0295	0.0111	0.00690	0.0206	-0.0282	-0.0231
	(0.0191)	(0.0168)	(0.0192)	(0.0167)	(0.0203)	(0.0182)
Urban population	0.0126**	0.0184***	0.0222***	0.0188***	0.0161**	0.0163**
	(0.00580)	(0.00605)	(0.00655)	(0.00566)	(0.00645)	(0.00605)
Constant	-0.522	-2.130*	-2.462*	-1.704	-1.061	-0.856
	(1.333)	(1.166)	(1.239)	(1.289)	(1.327)	(1.301)
Observations	574	574	574	574	574	574
R2 within	0.151	0.134	0.144	0.119	0.189	0.196
R2 overall	0.236	0.256	0.264	0.261	0.258	0.279
R2 between	0.299	0.355	0.368	0.364	0.330	0.360
F-stat	5.511	8.504	6.443	4.282	8.800	6.593
rho	0.669	0.847	0.887	0.828	0.768	0.776

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

This finding is rather shocking to me but there might be some important points that we could take from this unforeseen result. On the one hand, it may suggest that the successful digital governance reforms or initiatives may not be related to political parties' preferences, program priorities or campaign promises. It may suggest that digital governance development has been more a technical concern rather than a political one. However, the effect is negative and not insignificant. So, on the other hand, it may suggest that the more parties deal with digital governance related issues, it impacts negatively digital governance development. It is indeed puzzling that the higher salience of digital governance related issues in electoral campaigning leads to poorer levels of digital governance. Since the difference is statistically significant, it is not merely a case where the actions (of a party) do not end up meeting the plans and preferences. One possible explanation might be that once digital governance becomes salient for a political party, it sort of leaves the technical realm to enter a political one and that has a negative consequence in the development of digital governance. In other words, the higher the level of politicization of digital governance, the lower the level because of the negative effect of polarization on digital governance. Politization might lead to the polarization of digital governance in legislative bodies and forces that do not favour digitization, may start opposing some of the developments.

The third model explores, together with politicians' preferences, the preferences and characteristics of two other actor groups, namely citizens and businesses in the development of digital governance. Here, too, the politicians remain the most statistically significant variable in the model. None of the two variables related to people's characteristics and preferences, the education and perception of corruption, have a statistically significant effect on digital governance level, even though their coefficients are positive as predicted in Hypothesis 1. These results also suggest that countries' digital governance situation can improve and develop regardless of the level of people's education or their perception of corruption levels in a country. But, it can also suggest that digital governance development has not been driven by the public but by other actors instead. Partly, this finding is also confirmed by the results of the first model where I tested the effect of institutional arrangements on the development of digital governance. Indeed, the results also showed that the increase in the regulation of the public participation in the policy-making process, does not result in an increase in the development level of digital governance. Finally, ICT goods exports' standing for the preferences of businesses has both a positive and statistically significant effect on digital governance level. This is the only aspect of the Hypothesis 1 that is confirmed in the statistical analysis. In sum, the result suggests that

the development of the ICTs related businesses in a country can contribute, either due to lobbying or to the growth of technical solutions and knowledge, to the development of digital governance.

Overall, the results did not really confirm Hypothesis 1. In a sense, the results of the analysis suggest that, in general, the development of digital governance is, to some extent, driven by economic interests of some companies, rather than citizens' pressure or politicians' preferences and interest. Of course, this type of interpretation or conclusion is weakened by the fact that it is difficult to measure citizens' and politicians' attitudes towards digital governance. The operationalisation of these factors has been further challenged by the limited available data as pointed out in Chapter 3. Additionally, the role of public officials (at any decision-making level) has not been included in the quantitative analysis because of the lack of data. Analysing the role of different type of actors in the development of digital governance can thoroughly only be done in in-depth case studies that follow this comparative statistical analysis. Therefore, it wouldn't be surprising is the subsequent case study research would depict somewhat different results and conclusions.

Finally, the third model tests the Hypothesis 2 and the role of organisational processes in the level of digital governance. The two main dependent variables in this model are the countries' level of openness and the type of digital governance management model (whether it is done by a dedicated ministry or an agency or if it is a responsibility of the prime-minister/president office). The results show that none of the two variables is statistically significant. Overall, I did not find any evidence that organisational processes have an effect on the level of digital governance, thus, the hypothesis is not supported.

The last two models in the table, the simplified model with the main dependent variables and the full model, simply confirm the results that were found in the previous models. Shortly, the statistical analysis confirmed Hypothesis 1. More precisely, the higher the level of regulation of digital governance the higher the level of digital governance. Apart from this, both businesses and the level of urbanization have a positive and statistically significant effect on e-governance development. Contrarily, the salience of digital governance related issues in the governing parties' election manifestos seems to have a negative and statistically significant effect on digital governance level.

Since the dependent variable in this study is bounded between zero and one, two additional methods that have been considered more suitable for modelling rates and proportions

by some of the leading scholars in the filed - the fractional probit and the beta regression, were used to estimate the effect of all independent variables on the level of digital governance. In the table below, three different estimation methods are used for each model (1 - Fixed Effects; 2 - Fractional Regression; 3 - Beta Regression). The three specifications have the same set of independent variables with country fixed effects.

Table 12. Results of the comparative statistical analysis on the role of institutions, organisations, and actors on the level of digital governance in the member states of the OECD and EU using three different estimation models

VARIABLES	(1) Fixed effects	(2) Frac Probit	(3) Beta Regression
Institutions. Participation legislation (L2)	0.00232	0.000116	-0.00266
	(0.114)	(0.0129)	(-0.298)
Institutions. Dig. gov. legislation (L2)	0.0183**	0.0174***	0.0187***
	(2.490)	(4.374)	(4.940)
Policy-makers. Preferences (L1)	-0.00401***	-0.00379***	-0.00361***
	(-2.902)	(-3.252)	(-2.907)
Policy-makers. Ideology (L1)	-0.00276	-0.00279	-0.00304
	(-0.717)	(-0.990)	(-1.096)
People. Trust	0.0151	0.0138	0.00943
	(0.827)	(1.248)	(0.819)
People. Education	-0.000227	-0.000300	-0.000943
	(-0.103)	(-0.182)	(-0.525)
Businesses. ICT goods' export	0.00348*	0.00300**	0.00340***
	(1.987)	(2.083)	(2.614)
Org. processes. Openness	-0.00169	-0.00208	-0.000855
	(-0.410)	(-0.735)	(-0.363)
Org. processes. Dig.gov. management (L1)	-0.0248	-0.0307**	-0.0270*
	(-0.942)	(-2.058)	(-1.707)
GDP (log)	0.0293	0.0576	0.0200
	(0.246)	(0.849)	(0.291)
Internet penetration (log)	-0.0231	-0.0253**	-0.0241*
	(-1.266)	(-2.147)	(-1.787)
Urban population	0.0163**	0.0179***	0.0172***
	(2.695)	(4.241)	(3.879)
Constant	-0.856		
	(-0.659)		
Observations	574	574	564
Number of country	41		
R2	0.196		
Log-likelihood	551.8	-337.1	540.1
pseudo r		0.0842	

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Overall, the results are very similar and consistent across the different models. All variables that were statistically significant in the previous full model, the model 1 of table 12, remain essentially the same regardless of the estimation method used. Additionally, the differences for all those variables, with the exception of politicians' preferences become even more statistically significant. There are, however, two differences. The first one is related to the technological factor, namely Internet connection that becomes statistically significant in the second and third model. The effect of Internet connection on the level of digital governance, however, is negative and that is, again, a bit surprising. This result suggests that the increase in connectivity has a negative effect on the level of digital governance. However, it may not be the case because by now, people use alternative ways for accessing Internet such as wireless mobile subscriptions, but these are not included in this study due to limited data over time. Since this variable measures the proportion of the population with broadband subscriptions, it might be that these proportions do not mirror the connectivity situation in the included countries adequately as people may have started to use alternatives such as mobile Internet and public WIFI more frequently. Therefore, this result might simply reflect the fact that alternatives to broadband subscriptions are becoming more common and popular nowadays.

One other important difference that needs attention here is the fact that the variable "digital governance management" becomes statistically significant in the second and third models. Since the coefficient of this variable is negative, the results in models 2 and 3 imply that the level of digital governance is increasing when its management but also coordination is conducted within the president's or prime-minister's office. This is an important finding since it gives some empirical evidence that the settings behind digital governance management and coordination can have an impact on the level of digital governance. Indeed, the prime minister's/president's office may be more efficient in introducing all-governmental initiatives or digitalisation projects that require cross-governmental cooperation than an individual ministry or agency.

To conclude, the comparative statistical analysis done in this chapter shows some interesting results even though only a few hypotheses formulated in Chapter 2 were supported by the results. The most important seems to the finding that institutional arrangements can be important for the development of digital governance, giving strong support to Hypothesis 3. Indeed, the more institutionalised the digital governance becomes, the higher the level of digital governance. However, the level of institutionalization of the policy-making process does not seem to affect the development level of digital governance. The most surprising finding on the

analysis, by far, is the one that concerns the role of politicians in the development of digital governance that contrary to what was expected, affects the development of digital governance negatively. As to the other types of actors, the public does not yet drive the development as, again, results are not significant. However, the higher the preference and skills of an IT sector, the higher the level of digital governance. In terms of Hypothesis 2, again, the results do not seem to support it even though the digital governance management model seems to be modestly significant.

The analysis poses several challenges and limitations, mainly due to limited availability and measurement problems of some important variables. For this reason, this analysis will be complemented with two in-depth case studies of two countries, Estonia and USA, both with high levels of digital governance development but, at the same time, with different institutional, socio-demographic and political arrangements. These two case-studies will allow me to further investigate the research question and give a better understanding of the most important aspects behind the development of digital governance.

Chapter 5. The development of digital governance in Estonia in 1991-2016

This chapter traces the development of digital governance[30] in Estonia in 1991-2016 i.e., since Estonia regained independence from the Soviet Union. It begins with a short overview of Estonia's digital governance level and its development patterns relative to other OECD and EU countries. In this, I mainly rely on the Online Service Index of the e-Government Survey of the UN, using also as a proxy for the development of digital governance in the quantitative analysis. Occasionally, I do make a reference to other relevant indices, mainly to the EU e-Government Benchmarking Reports[31] and The Digital Economy and Society Index (DESI)[32] that is a relatively recent undertaking attempting at grasping the potential and impact of the ICTs on EU member states' governments and societies at large. This provides a reader an overall picture of how Estonia has been performing in digital governance in comparison with other EU but also OECD countries, and what the main development patterns have been. After this brief snapshot, I trace how the Internet and the ICTs have been used by central government in Estonia. Here, I have divided the development of digital governance into two sections. The first section focuses on the provisioning of e-services as well as on some critical components of digital governance in Estonia, the so-called building blocks: electronic identity and the data exchange layer X-Road. I then describe the development of e-participation in Estonia.

Following the technology enactment framework described earlier in this thesis, I then proceed with providing an overview of how the relevant institutional arrangements (policies, legislative acts) have developed, what the organisational processes (management, coordination and collaboration) have been and how these have developed over time, and which actors (politicians, public officials, and users) have been involved in the development of e-services and e-participation in Estonia. Here, I would also like to note that there is no separate section

[30] There have been several terms used in Estonia to refer to the use of the Internet and the ICTs for reorganising public administration, for providing public services and for involving the public in the decision-making processes, and the one used in this thesis, i.e., digital governance is only one of them. During the 1990s, the term „information society" was the prevalent one which gave way to „digital society" and „e-government", or even „e-Estonia". Most recently, „open government" and „smart government" have also been mentioned. In this thesis, as also explained earlier, I am mainly referring to the term „digital governance" but, occassionally, I too have mentioned „information society" or „e-governance" instead. By and large, there is no big difference in what these terms entail.

[31] The EU eGovernment Benchmark Reports and other studies can be found at the European Commission Digital Single Market website, accessible at: https://ec.europa.eu/digital-single-market/en/digital-public-services-scoreboard.

[32] The Digital Economy and Society Index (DESI): https://ec.europa.eu/digital-single-market/en/desi.

discussing the role of actors, but their involvement has been brought out in all other sections of the chapter, i.e., under the sections on institutional arrangements, organisational processes, and the development of e-services and e-participation. Only then, in the summary, I establish a relation between the level of digital governance and institutions, organisations, and actors; or the relation of any combination of these factors on digital governance in Estonia. Before moving to describing the progress in digital governance in Estonia, I specify the methods and data used. This adds to the general methodology described in Chapter 3.

Specification of methods and data

In this section, I provide overview of the methods and data used, including the sources of information that I have used to track the development of digital governance in Estonia and to establish the already mentioned relationships.

Institutional arrangements

Regarding institutional arrangements, I have identified and studied the following documents:

i) Policy documents including: digital governance strategies and accompanying action plans[33], Government action plans and reform programmes[34], research and development and innovation strategies, Open Government Partnership action plans[35], civil society development concept and action plans[36].

ii) Implementation reports of all the above-mentioned documents, for instance, the implementation reports of information society principles and action plans.[37]

iii) Legislative acts, main amendments introduced to them and, occasionally, their implementing acts.[38] Additionally, government and ministerial regulations, ministerial decrees and ordinances.

[33] Main documents related to the development of digital governance in Estonia can be found at the website of the Ministry of Economic Affaits and Communications, under Information Society: https://www.mkm.ee/en/objectives-activities/information-society. Note that previous strategies, action plans, guidelines etc may not be available.

[34] Government programmes and action plans and other documents can be found at the website of Estonian Government: https://www.valitsus.ee/en and at the website of the Government Office: https://www.riigikantselei.ee/en.

[35] About Estonia's involvement in the Open Government Partnership Initiative: https://www.riigikantselei.ee/en/supporting-government/open-government-partnership.

[36] About civil society development and related documents: https://www.siseministeerium.ee/en/regional-affairs/civil-society.

[37] An overview of the progress that the Government has made on any of its strategies and action plans can be found via the information system for legislative acts (EIS), as of August 2019 accessible only to the authenticated users, using either an Estonian eID or mID. EIS: http://eelnoud.valitsus.ee/main#zQbKcCMw.

[38] Legislative acts can be found at Riigi Teataja i.e., State Gazette: https://www.riigiteataja.ee/en/.

iv) Other documents of an advisory nature supporting the implementation of digital governance, for example the interoperability framework and its numerous versions.[39]

v) Annual books providing an overview of main digital governance developments[40] prepared in 1994-2012.

vi) Reports prepared by the National Audit Office of Estonia[41], for example, on the efficiency of using structural assistance in developing information society.

An overview of the main documents that have been studied to understand the development of digital governance in Estonia and the potential role of the identified factors on the latter, can be found in Annex 1.

Organisational processes

Under organisational processes, I have established the management and cooperation structure of digital governance but also in and between agency collaboration and between stakeholders. Here, I base my findings both on the analysis of the relevant legislative framework and policy documents (described above) but also on the agendas and summaries of the meetings of main working groups, task forces[42], councils and committees. Work of the following councils, committees, working groups and task forces has been studied: e-Estonia Council[43], Council of CIOs, Committee on Public Services committee[44], OGP Coordination Board[45], Network of

[39] Documents supporting the implementation of digital governance can be found at the webiste of Information System Authority (RIA): https://www.ria.ee/en.html or the Department of Public Services, MKM: https://www.mkm.ee/en/objectives-activities/information-society/information-society-services.

[40] These annual overviews have carried different names over time such as „Information Technology in Administration Management" in 1994-2000, „Information Technology in Public Administration" in 2000-2009 and „Information Society Annual Book" in 2010-2012. Since 2012, these books have not been prepared. Similarly, these books have been prepared by different organisations over time, depending on the organisation responsible for the development of digital governance in Estonia.

[41] All reports are available at: https://www.riigikontroll.ee/Riigikontrollipublikatsioonid/Auditiaruanded/tabid/206/language/en-US/Default.aspx.

[42] The establishment of task forces is a relatively recent trend in Estonian government as the first ones were formed only in 2011. Their number has increased considerably since then, yet, in the area of digital governance, there has been just one task force established. Additionally, there have been issue-based task forces such as on e-health and education that might be relevant for this study; yet, activity of these has not been followed as thoroughly.

[43] e-Estonia Council was formed in 2014 to replace the previous Information Society Council that was established in 2012 that, in turn, replaced the Informatics Council founded in 1996.

[44] Committe on Public Services, the members, agendas, and minutes can be found at: https://www.mkm.ee/et/avalike-teenuste-noukogu-koosolekud.

[45] The members and the overview of the meetings of the OGP Coordinating Board can be found at: https://www.riigikantselei.ee/en/supporting-government/open-government-partnership.

Participation (including e-participation) Coordinators, X-Road community[46], etc. I have also relied on the conducted interviews.

Actors

In determining the potential role of various actors in the development of digital governance in Estonia, I have relied on the analysis of the above-mentioned documents as well as on the study of the activity of the coordination and cooperation councils, working groups etc listed above. Additionally, I have studied the preparation process of these documents and, here, I have largely relied on the information system for legislative acts (EIS) - a government information system designed for the preparation and approval of government documents. The actors include:

i) high level political figures such as the Prime Minister of Estonia but also the President of Estonia. I have (randomly) examined their speeches and other public statements, using keywords such as: technology, innovation, digitalisation, digital government, e-governance, e-government, online services, online participation, e-participation, open government.

ii) politically appointed staff of the Minister of Economic Affairs and Communications i.e., the institution responsible for the development of digital governance in Estonia but also some other ministers such as the ones of the Ministry of Interior or Ministry of Finance. Here, I have not carried out a systematic study of their statements. Additionally, I have relied on the conducted interviews.

iii) Political parties. I have studied the election programmes of Parliamentary elections of the following main parties since 1992 until 2015[47]: Estonian Reform Party, Estonian Centre Party[48], Social Democratic Party[49], and Pro Patria and Res Publica Union[50]. Even though the election programmes for the Parliamentary elections have been analysed in the framework of the Manifesto Project[51], findings of which have been used as a proxy for the preferences of

[46] X-Road Community (but also cyber security core group) functions under the Information System Authority (RIA) and an overview of its activity can be found at: https://www.ria.ee/et/riigi-infosusteem/x-tee/kogukond.html.

[47] The election programmes are not available for all Parliament election years and not for all parties.

[48] In 1991, basing on the movement Popular Front of Estonia (Rahvarinne), Estonian People's Centre Party was established that in 1993 was re-named Estonian Centre Party.

[49] In 1992 and 1995 elections, the Estonian Social Democratic Party run in a coalition with the Estonian Rural Centre Party. In 1996, these two parties merged and named themselves Moderates. In 2004, Moderates renamed themselves Social Democratic Party.

[50] The party was formed in 2006 as a result of the merger of two parties: Pro Patria Union and Res Publica Party. In 2018, the Pro Patria and res Public Union changed its name to Pro Patria.

[51] As a reminder, Manifesto Project identifies parties' positions in the following issues used in the statistical analysis of this thesis as a proxy for the preferences of political actors: i) Technology and Infrastructure: Positive

political actors in the statistical analysis part of the thesis, I have carried out a more detailed analysis of the parties' position in issues related to digital governance at large as well as in some of its components. I have added key words such as: e-services, online services, digital services, Internet voting, information society, and e-participation and e-democracy. The list of the studied election manifestos can be found in Annex 1.

I acknowledge some shortcomings in detecting the potential role of politicians in shaping digital governance in Estonia as I have not studied the activity of the Members of the Parliament. This exercise would exceed the time I and effort I dedicate to this thesis, but it is also a cumbersome process as all documents (transcripts of the sittings of the Parliament or the recordings of public sittings of the committees[52], for instance) are still in a non-searchable pdf format and would require going through all of them. Additionally, it is not yet possible to order notices on the proceeding of legislative acts once they have been submitted to the legislature by the government.

iv) The role of public officials has been identified mainly during the course of the conducted interviews as well as the earlier works on this topic (published articles, reports). Also, I have used documents listed under institutional arrangements but also their preparation process that, as already mentioned, is also made open in Estonia via an information system EIS. Public officials have seen singled out as: i) the heads of the directorates/departments; ii) project managers of digital governance initiatives and projects; iii) the staff more actively involved in the implementation of essential digital governance projects in Estonia.

Users represent in this thesis: i) private sector like IT companies (Nortal AS, Helmes AS, Reaalsüsteemid AS, Tieto Estonia AS, Cybernetica etc); Telecommunication companies (Elisa, Telia, EMT[53]); and banks (Swedbank and SEB Pank), ii) CSOs (Network of Estonian

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and ii) Governmental and Administrative Efficiency (that is often related to the use of the ICTs that enable to cut down costs but also improve bureaucratic procedures).

[52] Parliament committee sittings are closed in Estonia, however, they can be declared open if more than one half of the members of the committee vote in favour of it. The recordings of the committee sittings are rare and only open committee sittings are recorded and made available to the public, usually of the sittings during which matters of wide public interest or topic are being discussed. The reason for this is that in 2016, Riigikogu Rules of Procedure and Internal Rules Act was amended to abolish the previous requirement to record all Parliament committee sittings and archive these recordings. Currently, there are only minutes of committe sittings prepared and even though there was another amendment introduced later in 2016, requiring more detailed minutes of the committe sittings, the practice of this is subject to scrutiny. This amendment has been heavily criticised as undermining democracy in Estonia; yet, until the present, no action to re-establish the requirement to record and archive committe sittings has been made.

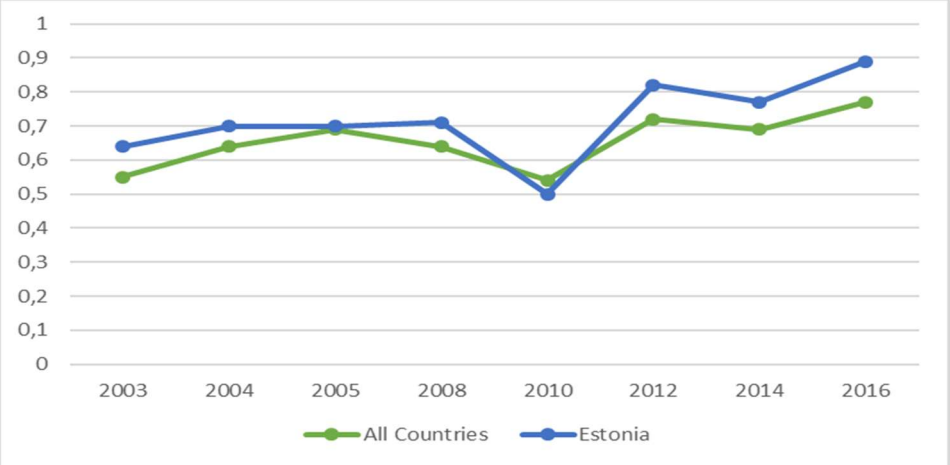
[53] EMT was the biggest telecommunication company in Estonia in 1991-1914. It then joined with Elion and carrries a new name of Telia since then.

Non-Profit Organisations, Estonian Association of Information Technology and Telecommunications, e-Governance Academy Foundation, Praxis think tank, Cooperation Assembly), and the iii) the public that has been limited to active citizens in the field.

Introduction

Throughout the studied period, Estonia has demonstrated a very high level of digital governance, and the efforts of this small former Soviet republic in modernising its government and society with the help of the ICTs have also caught wide international recognition. Estonia's success in building digital governance was first noticed when the UN piloted its e-Government Survey in 2001, and Estonia shared similar web presence with countries like Denmark and Sweden, preceding countries such as Austria, Belgium, Netherlands but also several other, economically better to do and traditionally technologically more advanced states. The e-Government Survey conducted by UNDESA in 2003 situated Estonia in the 5th position in the e-participation index and in the 13th position in the web measure index (later renamed online service index) of the e-Government Survey. Since then, Estonia has hold similar or higher positions both in online service index and in e-participation index[54]. As the Figure 11 shows, Estonia's online service index has had a higher value than the EU and OECD average throughout 2003-2016 with an exception of 2010 when its position has slightly fallen.

Figure 11. Online service index 2003-2016 (mean) of Estonia and the OECD and EU countries' average



[54] The comparison on the level and patterns of online services and e-participation needs to be attended to with caution. Namely, e-participation index is also incorporated into the online service index which, naturally, influences also online service index. This means that there is a certain amount of correlation between these indices. E-participation index can be extracted from the online service index though and it also makes as a stand-alone index of the e-Government Survey.

Similar results have been revealed by other international studies that measure and compare the provisioning of online services and online participation. In the DESI index in 2016, for instance, Estonia is part of the group of countries referred to as "running ahead", holding the 7th position. It is a leading country in the public online services sub-component of the same index. Additionally, Estonia' s efforts in building digital governance have been brought out by several international and intergovernmental organisations such as the WB, OECD, etc. In 2016, in "The World Development Report: Digital Dividends", praises Estonia as "a global leader in e-services and e-voting" (p.194). The report further claims Estonia to be "one of a handful of countries closest to becoming a digital society" (p. 274) demonstrating that "even small and developing or transitioning countries can seize the opportunities the Internet offers by implementing a smart and comprehensive digital development strategy." (p.274). The list could continue.

Estonia's much-vaunted experience in building digital governance has puzzled several other observers, among governments, policy think tanks, media as well as academia. Indeed, some of initiatives have been studied in depth by a number of scholars such as the Internet voting, for example (see Alvarez et al. 2009; Krimmer et al. 2007; Maaten and Hall 2008; Madise and Martens 2006; Vassil et al. 2016), or the direct democracy portal Today I Decide (Ernsdorff and Berbec 2007; Glencross 2009; Pruulmann-Vengerfeldt 2007). Recently, a few other initiatives have caught academic interest such as the e-residency project (see Kotka et al. 2015; Prause 2016; Särav and Kerikmäe 2016) that was launched in 2014 to provide Estonian virtual residency to foreigners not living in Estonia i.e., for those who are not eligible for Estonian ID. Apart from these stand-alone initiatives, very few studies have been conducted on the development of digital governance (see, for instance, Kalvet 2012; Kitsing 2011; Runnel et al. 2009) or e-participation (see, for instance Aström et al. 2013; Toots et al. 2016) and none (to my best knowledge) have tackled Estonia's journey in building digital society throughout the period studied in my research. This is precisely what I attempt to do in this thesis, to start filling in the gap in understanding how digital governance has developed in Estonia, what the development patterns have been and how different factors have shaped this process since Estonia regained its independence in 1991.

The development of e-services and digital governance building blocks

The very first step towards digitalisation in Estonia was taken in 1991 when the first dial-up connection was established between the Estonian Government and the State Chancellery

(Vallner and Tammet 1999). Soon after, in 1994, the Estonian government opened its first ever website and, at about the same time, plans to modernise Estonian society through the introduction of the ICTs were discussed among several politicians and government leaders. As a result of these debates over the future of Estonian state and society, in 1996, the "Tiger Leap" programme[55] was launched and an independent Tiger Leap Foundation[56] was created to manage and coordinate this initiative that later has become the symbol of Estonia's e-governance success. Tiger Leap Programme, proposed by then Estonian Ambassador to the United States and later President of Estonia Toomas Hendrik Ilves[57], together with the Minister of Education Jaak Aaviksoo that connected all schools into the Internet, and took ICTs to the teaching and learning process, was the first fully government funded digitalisation initiative. At the time, the cooperation between Estonian government and the IT sector had not yet been established.

This, however, does not mean that there were no IT developments in the private sector taking place. On the contrary, in parallel, banks and telecommunication companies made considerable investments in modernising their sectors in Estonia, particularly in adapting to technological developments. By 1996, all three main banks in Estonia: Ühispank[58], Forekspank[59] and Hansapank[60] had introduced Internet banking to their clients, leapfrogging banking sector in most other countries. At the same time, invaluable foreign investments were made in the telecommunication sector that, in turn, were accompanied with liberating

[55] The project was announced by Lennart Meri, the President of Estonia, on 21 February 1996. Funds for the Tiger Leap Foundation were first allocated in national budget of 1997. The proposed idea to take computers and the Internet into schools, however, was modified by the Tiger Leap working group and several experts (Mart Laanpere) suggested adding teacher training to the original plan. In later years, it has been recognized that the success of the "Tiger Leap" programme lied largely on training teachers on how to use technologies in the teaching and learning process.

[56] On May 1, 2013, The Tiger Leap Foundation merged with the Estonian Information Technology Foundation and The Estonian Education and Research Network EENet. Since then, it is under The Information Technology Foundation for Education (HITSA), see: http://www.hitsa.ee/en.

[57] In 2011, in his keynote speech at the Conference on Theory and Practice of Electronic Governance (ICEGOV 2011) in Tallinn, then President of Estonia Toomas Hendrik Ilves referred to the book by Jeremy Rifkin called „The End of Work" as a source of motivation for digitalisation in Estonia. This book predicts that automation and computerisation will take work away from people as Rifkin wrote that, in Kentucky, 12 000 steel workers had lost their jobs due to the automation of the steel mill. „But from the Estonian perspective, it was intriguing, because our fundamental existential angst is tied to our smallness. So, I reversed the logic and said that was how we could increase our functional size by many orders of magnitude...From there I figured, we ought to computerise as much as possible". The speech given in ICEGOV 2011 is available at: https://www.youtube.com/watch?v=7QrM6hvgdi8. The President has made a reference to the book in several occasions when introducing e-Estonia to the world.

[58] Now SEB Pank.

[59] Forekspank was founded in 1991 and was renamed Optiva Pank in 1999. In 2007, it became Sampo Pank and since 2012, it has been Danske Pank.

[60] Now Swedbank.

telecommunication market in Estonia[61]. Högselius (2005), in his book "The Dynamics of Innovation in Eastern Europe. Lessons from Estonia" is particularly vocal about the essence of telecommunication sector in digitally enabled innovation and e-governance in Estonia.

At about the same time, several large-scale government infrastructure developments began to connect all public institutions into the Internet as well as to guarantee equal public access to the Internet. The government-wide backbone network EEBone (Peatee in Estonian) was launched in 1998 to connect all central and local government institutions in Estonia to provide network inter-connectivity of all central and local government institutions in Estonia. It also provided access to the Internet and government intranet, any by 2000 this centrally financed network, although optional, had more than 1300 central and local government institutions connected to it. Another centrally supported infrastructure project that needs to be noted concerns Village Road (Küla tee in Estonian) that was initiated to guarantee that all local governments in Estonia have access to the Internet by 2000. Indeed, by 2001, when the second phase of the Village Road project was initiated, the number of local municipalities had permanent Internet connection compared to 24 in 1999.

Generally, the end of the 1990s and the very first years of the 2000s mark an essential period on the development of digital governance in Estonia as it was then that the preparations for several of the innovative e-solutions began. These initially modest plans have, by now, turned into the main cornerstones of Estonia's digitalisation and two particularly need to me brought out. The first pillar – the data exchange layer X-Road[62] forms the backbone of Estonia's digital governance as it enables data exchange between registries and information systems of government entities (but not limited to). The X-Road project idea was born at the Department of State Information Systems (RISO)[63], or rather, at one of the annual brainstorming sessions of RISO that brought together higher government officials but also representatives of several IT companies. There was an urgent need to standardise the use of national databases as the development of e-services required the cross-use of data. A proposal for a central "tool kit" that all government institutions[64] could use was made, primarily because of lack of resources. As the long-time X-Road project manager, Mr Ahto Kalja has memorised: "it was clear that we

[61] More on the developments in the telecommunication sector in Estonia in the 1990s and in the early 2000s can be read in Högselius (2005).
[62] About X-Road: https://www.ria.ee/en/state-information-system/x-tee.html.
[63] The department no longer has its website, but some of its activities can be found at: https://www.mkm.ee/en/objectives-activities/information-society/state-information-system.
[64] Later, when the X-Road concept was specified, it was decided not to limit it to governmental institutions only but open it to everybody, including companies and even physical persons.

did not have money to accommodate all these similar requests coming from different government institutions. We had to find a solution and quick."

The X-Road was developed within one year[65] under the leadership of RISO together with experts from academia, from the formulation of technical and functional specifications to organising a tender and choosing the developer.[66] X-Road was opened in December 2001 and the first database connected to the X-Road was the Population Registry[67]. Even though it took some years until government institutions started to connect their information systems and registries into the X-Road (that served as an obligatory environment), it now connects more than 900 organisations, 200 public databases and registers; it provides 1'700 services with almost 600 million inquiries in a year. Several interviewed experts and officials have referred to the role of a young and energetic X-Road project manager Riho Oks in getting the X-Road going as enthusiastically promoted the X-Road across the government.

The second building block of digital governance in Estonia is the comprehensive system for electronic identification[68], authentication and digital signature that includes the ID card[69], the eID (or Digi ID, Digital ID), the Mobile ID, the digital stamp, the residence permit card, and as of 2014 also the e-residency card. Contrary to the X-Road project, the preparations for

[65] The X-Road project was initiated by the Department of State Information Systems (RISO); yet, the concept was prepared by six professors of Tallinn Technical University, led by Ahto Kalja who later became the project manager of the X-Road and served in that position until 2014. At the time, the RISO subcontracted an external project manager.

[66] The public tender for the development works of the X-Road was won by Assert AS that was later sold to a Swedish company after which the name was changed to Cell Networks. The best formulated proposal, however, was the one of IBM, a company that flew two proposal writers to Estonia from its head-office in New York. At the time, IBM lost the tender because of an unreasonably high budget – the price exceeded the one of all the other offers together.

[67] Population register is needed in the case of all services and by being connected to the X-Road, it allows for the exchange of up-to-date data between all insitutions connecetd to the X-Road (and are authorised for the latter, of course). Thus, when a person applies for a study allowance, or a social benefit, or files taxes, all the relevant data is retrieved from the Population Register automatically. This means that there is no need to submit any documents or fill in forms etc. Each person can receive a service and access registries via the national portal www.eesti.ee with their eID or Mobile ID; citizens can also review and correct their data in the Population Register.

[68] The identity of a person in Estonia is based on a personal identification number i.e., PIC that is the very core element of the identity system in Estonia. The PIC is printed on an ID card and it also included in the data file i.e., in the chip that is on the ID card. Thus, the ID card serves as a proof of one's ID in an electronic environment. The PIC is also contained in the two certificates that are saved on the ID card: one is used for authentication and the other for the digital signature. The PIC is used as the primary key in both public and private databases.

[69] The ID card is based on the so-called public key infrastructure - or PKI-technology. In principle, the PKI uses an encrypting key pair: a public encryption key and a private decryption key. In Estonia, this technology is used in relation with the electronic identity (ID card, mobile ID, digital ID), and it includes two private keys (each key has a separate PIN): one for authentication and the other for the digital signature. About ID and eID: https://www.id.ee/?lang=en&id=30470.

a new identity document took long, in total five years from the establishment of the first working group by the Citizenship and Migration Bureau[70] in 1997 until the launch in January 2002[71]. During this process, the Digital Signature Act was drafted, the Identity Documents Act was amended, and two companies were established: AS Sertifitseerimiskeskus (Certification Centre) for providing certification services and TRÜB AG for delivering ID cards. The decision to give everybody in Estonia a chip and certificate equipped ID card, however, was made at the very late stage by then Prime Minister Mart Laar in October 2001. Shortly after, the government led by Mart Laar fell; yet, the change in the government did not hinder the further introduction of the national ID card (and eID) and was continued as first planned (Martens 2010). Since the first ID card was issued on January 28, 2002 to then President of Estonia, 1.27 million ID cards have been issued.

Despite the present active use of the eID, the uptake of the electronic use of the ID cards has been slow, particularly in 2002-2006 when very few citizens seemed to care about it. First, people had no real incentive to use the eID as there were very few public e-services offered and consequently, the awareness of the eID was low. Second, until the issuance of the eID, in 1996-2002 the only online authentication modes were the ones issued by banks to facilitate Internet banking such as PIN calculators and password cards, and people kept using them also after the introduction of the eID. The first breakthrough came only in 2009 when the programme Computer Security 2009 was initiated in cooperation with banks, telecom companies, and the Estonian government to increase the use of eIDs and mIDs as more secure online authentication modes. Indeed, only after the banks decided to reduce the share of the password cards and PIN calculators as modes of authentication in 2009 and abolished their use in case of transactions equal to or over 200 EUR from January 1, 2011 onwards, ID cards started to be increasingly used, from 25'000 in 2006 to 400'000 times in 2010 when this initial project was achieved. One of the reasons of the popularity of the authentication modes offered by banks in Estonia, is that the Internet banking system is not exclusively used for traditional online banking purposes. In addition to the latter, Estonian banks offer third party services that can be accessed via the Internet banking such as energy, water, gas, tax, etc. services. On the one hand, this has been

[70] Citizenship and Migration Bureau is under the jurisdiction of the Ministry of Interior and since 01.01.2010, it is part of the Police and Boarder Guard Board (PPA): https://www.politsei.ee/en.

[71] As the first round of passports that had been issued in 1992 had to be renewed in 2002, it was decided to issue ID cards simultaneously with passports to reach a wide audience.

one of the main facilitators of using online services, including online authentication; yet, on the other hand, it may have impacted the slow initial adoption of the eID.

Even though Estonia has established a well-functioning scheme for identity management and for electronic identity that is based on the public key infrastructure (PKI), discussions about the future of the eID in Estonia have been recently triggered due to the growing popularity of biometric and biographical data-based personal identification and identity verification. In 2006, the Ministry of Interior ordered a study on the biometric identification to analyse the existing practices and its applicability in Estonia. The study analysis several limitations in its application in the EU, including those driving from the existing legal framework[72]. The authors of the study together with the involved experts recommend continuing with the existing model i.e., to keep the central identity management performed by the state, to keep personal code-based identity but also keep an identity card that is a compulsory identity document with electronic functionality and keep population registry responsible for the management of personal data (Siseministeerium 2016). In addition to some discussions over the suitability of biometric-based identity verification in Estonia and in the EU, further questioned have been asked about the alternative carrier of the electronic identity. Until the present, the supporters of an identity card have been clearly more vocal and changes in this matter are not foreseen soon.

After the establishment of the two main pillars of digital governance Estonia – the X-Road and the eID and the introduction of the state financed education modernisation initiative "Tiger Leap", several public-private partnership initiatives were launched too, including the largest digital awareness project to date - "Look@World". Within three years, in 2002-2004, 10% of the Estonian population passed free courses to learn how to use the Internet and computers and more than 700 free Internet access points were opened all over Estonia. After this successful endeavour, similar cooperation projects have continued until 2012/2013 such as Computer Security programme supported by the "big four" i.e., two banks and two telecommunication or its follow-up project "Come Along" to assist Estonian people in using e-services in the specially opened computer labs in more than 300 different locations in Estonia. There have been no private-public partnerships in educating Estonian public since then, but this

[72] The EU has regulated electronic identity field, e.g., the EU regulation No. 910/2014 on electronic identification and trust services for electronic transactions in the internal market (eIDAS) includes a number of rules on electronic identity and digital signature. Additionally, in 2018, a new General Data Protection Regulation (GDPR) No. 2016/679 enters into force that introduces several rules on the collection, maintenance and processing of personal data.

does not mean that the cooperation between these two partners has weakened. To the contrary, since 2012/2013, Estonian government has strengthened the cooperation with the IT sector but for a different reason and aim– to help IT sector grow, to attract foreign investments in IT sector and to contribute to general economic growth. Here, international market serves to be mentioned as it is seen as one way to strengthen Estonia's image as technologically savvy nation with a strong IT sector.

The establishment of the X-Road and the eID, accompanied with vast public awareness campaigns, provided a fertile ground for the development and use of online services in Estonia and as we can see below, the number of online services has been steadily increasing until 2012 when it has slightly slowed down. I will now briefly describe the main developments in the provision of e-services to both the public and businesses in chronological order[73].

First breakthrough in online service provisioning came in 2000 when the Estonian Tax and Customs Board (MTA)[74] launched its e-Tax Board[75] application - an electronic tax filing system on October 18. Inspired by the success of Internet banking, the first concept of the e-Tax Board was developed by a small group of mainly government and taxation experts in 1999 and in 2000, natural persons were given the possibility to file their income tax returns electronically via the Internet banking system of two major banks: Ühispank and Hansapank. As a second step, in 2000, several other services were added such as the possibility for legal persons to file, view, and correct their value-added tax returns (VAT), income and social tax returns, submit VAT refund applications, etc (Lindroos 2010). As of February 2002, taxpayers could log into the e-Tax Board both via the Internet banking and the MTA's website, using a national eID in parallel with the banks' authentication modes such as PIN calculators and code cards. The latter decision of the MTA was a deliberate one to draw on the public trust in online banking to build one in the e-Tax-Board.

The e-Tax Board was then expanded and supplemented by extra information to tax payers, but it reached its major developmental milestone in 2003 when the automated pre-filled tax declaration forms were introduced. The main principles and functionalities of the e-Tax

[73] A good overview of the e-services provided in Estonia can be found in the report by the e-Governance Academy (2016) "e-Estonia: e-Governance in Practice", available at: http://www.ega.ee/publication/e-estonia-e-governance-in-practice/. Additionally, the ICEGOV conference in 2011 included a three-day track on e-Estonia development, materials of which can be partly found at: https://www.ria.ee/en/publications.html. Also, there is a website on e-Estonia main components: https://e-estonia.com/components/.

[74] Estonian Tax and Customs Board: https://www.emta.ee/eng.

[75] E-Tax Board, accessible only to those who can authenticate themselves using Estonian eID, mID or smart ID: https://maasikas.emta.ee/v1/login?authst=MCLMbOH197#.

Board have remained unchanged since 2003, yet recently, in 2014, the MTA initiated the refurbishment of the e-Tax Board, building on the principles of real-time economy enabling a fully automated data exchange between the MTA and a place where the data on a tax object is being generated.[76] The first e-Tax Board was used by 11'760 persons, a figure that exceeded the expected numbers (Tiirik 2002). Regarding the use of online tax filing, the numbers remained low until in 2003, it was decided to return the overpaid income tax to those persons submitting their tax declarations via e-Tax Board quicker than to those doing it in paper - in five days instead of a month. Additionally, in 2004, a help desk was established, and the e-Tax Board was made available also in Russian language. Since then, the number of the e-Tax Board users has been increasing, amounting to 59% of Estonian tax payers in 2004, 92,4% in 2010, and 95% in 2015.

The second biggest step was made by the Government Office and concerns the organisation of its work when in 2000, e-Cabinet was launched on August 8, 2000 with the support of then Prime Minister Mart Laar and his then forward-looking IT advisor Linnar Viik. E-Cabinet is an information system of government sessions, enabling ministers to prepare and conduct cabinet meetings, review minutes, and perform other tasks without paper, and at the time, the Estonian government was the first in the World to prepare and conduct government meetings without paper. e-Cabinet, without doubt, contributed to higher visibility of government's modernisation efforts but, additionally, as pointed out by the long-time project manager of e-Cabinet, Mr Aivar Rahno, e-Cabinet was designed to build trust among the public. The aim that Mr Rahno believes was successfully fulfilled.

In 2000, several innovative e-solutions popped up also at local level and even though this thesis is concerned with central government advancements, m-parking as one of the first progressive m-solutions in Estonia, does serve to be brought out. It goes without saying that m-parking enables car drivers to pay for their city parking via their mobile phone provider. Since then, several online services and solutions were developed targeting both the general public and businesses. In 2003, e-Geoportal was opened, offering information on maps, spatial databases, and providing location-based services due to being linked to the e-Land Register and the geographical information system (GIS) via X-Road. In 2005, the e-Police system was updated to comprise two main tools: a mobile workstation installed in each petrol car, and a positioning system used in the headquarters. As a result, officers can have instantaneous access to

[76] From an interview with Marek Helm, Director of the MTA in 2011-2017.

information from the database of the police but also the Motor Vehicle Registration Center, the Traffic Insurance Fund, the Population Register, the Weapons Register etc. Additionally, the operations centre knows the exact location and status of petrol vehicles. In 2008, the Company Register Portal was opened allowing to establish a company within 18 minutes.

In 2008, The Estonian National Health Information System was launched, better known as e-Health, including components such as Electronic Health Record**,** Digital Prescription, Digital Registration, Digital Image, Digital Emergency etc. Over time, some of these components have been accompanied with success, most notably the Digital Prescription (e-Prescription is also used) whereas others not, for example Digital Registration or Digital Emergency. The Digital Prescription, developed and managed by the Estonian Health Insurance Fund was launched in 2010 for issuing and handling medical prescriptions and by 2015, 95% of the prescriptions were issued electronically. Yet, this service was not an immediate success but reached higher use in 2011, when it became mandatory to issue prescriptions electronically[77]. Digital Registration has not yet kicked off as bigger health care service providers like hospitals have already developed their own systems and it is not in their interest to begin with, but the project has also suffered from poor project management and ambiguity over exact roles and obligations of several of the involved partners. For similar reasons, the Electronic Health Record, integrating data from Estonia's different healthcare providers to create a common record for each patient, has at times demonstrated slower progress than anticipated.

Since 2010/2011, the development of internal e-services has somewhat slowed down as the priority has shifted, as mentioned, to the marketing of Estonian digital governance experience both through the strengthening of Estonian IT sector and their ICT export capacity but also thorough specially designed state programmes. Here, two initiatives deserve attention, the e-Residency Programme and cross-border services, and I will turn to these in more detail below in respective order.

By launching e-Residency[78], Estonia became the first country to open its e-services to non-nationals by issuing a transnational digital identity, i.e., the e-residency card that enables

[77] The obligation for doctors and other authorised persons to issue prescriptions electronically was implemented in two phases. In 2011, only those prescriptions had to be issued electronically that were to be compensated by the Estonian Health Insurance Fund. Since 2012, all prescriptions have to be issued electronically.

[78] Issuing digital identities to non-residents: creating e-residency. Concept. Appendix to the explanatory memorandum to draft legislation of Estonian Identity Documents Act and State Fees Act. Appendix 1. The amendment was initiated by the Ministry of Interior in May 5, 2014, and the subsequent proceedings can be

access to Estonian online services to anyone in the world. It should be noted here that the Estonian Information Society Strategy 2007-2013[79] adopted in 2006 already foresees the provisioning of Estonian public e-services to the citizens of other countries. Consequently, the Estonian Identity Documents Act was amended in 2009 accordingly to enable the issuance of eIDs to foreigners. Still, it never took off until, in 2014, the idea "10 million e-Estonians by 2025" was presented to the Estonian Development Fund idea competition by Siim Sikkut, then ICT advisor at the Government Office, Taavi Kotka, freshly nominated Government CIO and Ruth Annus, Head of Citizenship and Migration Policy Department at Ministry of the Interior. The first e-residency card was given soon after, on December 1, 2014 by the Estonian President Toomas Henrik Ilves to the British journalist, Senior Editor to the Economist Magazine Edward Lucas. Within one month, 391 applications were submitted and by the end of 2016, it had reached 15'662 out of which 14'604 were granted e-Residency, in total from 136 countries.

Until now, e-residents are not offered any e-services except for the registration of a company. Despite national prioritization and the availability of generous funds, government institutions have been cold greeting the e-residency programme. The call "Online Services for e-Residents" that was opened by RIA at the beginning of 2015 with the aim to develop e-services for e-residents has not been popular, and only two projects with a total budget of 400 000 EUR have been carried out, from a budget that totals to 4 mln euros. As a result, e-residents cannot enjoy any benefits of being a virtual resident of Estonia other than registering a company, a largely Estonian language-based process. Still, without any doubts, e-Residency brought e-Estonia into the international market better than any other programme before or after.

As a second major attempt to take expand Estonia's digital governance experience outside concerns the development of cross-border services, especially those between Estonia and Finland. In 2013, the Prime Ministers of the two countries signed the Memorandum of Understanding (MoU) in the area of the ICTs, serving as the first digitally signed document between any governments. The two countries agreed to use X-Road in their mutual digitalisation efforts which took almost three years to materialise as Estonia opened the X-Road source code to Finland only in October 2016. Shortly before, in May 2016, the two countries

found at (in Estonian): https://eelnoud.valitsus.ee/main/mount/docList/b54cb986-5df6-481a-ad9bc95b938e8611.

[79] Under priority area "The Development of Citizen Centred, Transparent, and Effective Public Sector" (p. 4.3.2. The Estonian Information Society Strategy 2007-2013 (in Estonian though, the English version is not available since the refurbishment of the website of the Ministry of Economic Affairs and Communications in 2014): https://www.mkm.ee/sites/default/files/eesti_infouhiskonna_arengukava_2006.pdf.

signed another MoU – a „*Joint Declaration on an Initial Roadmap for Cross-border Data Exchange and Digital Services Between the Republic of Estonia and the Republic of Finland,*" foreseeing the development of cross-border access to digital prescriptions by 2017-2018 and full patient medical history by 2018-2019.

Despite the political will and both governments' commitments, the implementation of the plans has been slow. Different levels of devotion may hinder the progress as Estonia might see more utility in developing common services. First, more Estonians live in Finland and, second, the planned cross-border services would rather serve the Estonian government ambition to be the World pioneer in digital innovation. The project manager of the cross-border digital prescription project (the first cross-border e-service project to be launched between Estonia and Finland), however, believes that both the organisational and technical readiness for introducing such e-solutions varies and may further postpone the launch of the planned e-services. Finally, the officials of the MKM has stressed the role that the financing of the EU Structural and Investment Funds' plays on these plans as, for instance, several planned developments were on hold when the EU financing cycle was to come to an end in 2013. There was simply no money for these ideas to materialise.

Apart from e-Residency, several of other projects planned for the period from 2013 onwards have not been initiated and there are no signs of their start either, such as the further development of life-event based services (postponed), the establishment of a global information society think tank, or the awareness raising activities targeted at the youth. Several other initiatives, again, suffer from slow progress like the establishment of the "Public Cloud" project or the development of social benefits information system that has been relaunched several times after a number of failures to develop a comprehensive information system for social benefits. Lastly, despite the grand promises in open data, big data, and artificial intelligence, evidence on the progress is scarce.

Regarding online service delivery more generally, there has not been considerable progress during the past years as the timeline of e-Estonia developments clearly shows - the latest online services were introduced or reengineered in 2009/2010 when a digital health record and a digital prescription were introduced[80]. Until the present, the main success cases have

[80] A good overview of the online services provided to citizens and businesses can be found at e-Estonia website: www.e-estonia.com, from a publication by e-Governance Academy "e-Estonia: e-Governance in Practice": http://www.ega.ee/publication/e-estonia-e-governance-in-practice/ , and a report by Ströbele, Leosk, and Trechsel: "Two Countries- Two Decades- Two Results: A brief comparison of e-government solutions in Estonia

remained declaring and paying personal income taxes, registering a company, and a parental benefit claim whereas all of the above-mentioned e-services have not undergone considerable improvements since their launch. Where Estonia has considerably improved though, is marketing its successful digital governance experience by better international visibility but also by introducing attractive and innovative solutions that extend the borders of Estonia. An overview of the main online services is included in Annex 2 that provides an overview of the main milestones in the development of digital governance in Estonia.

Institutional arrangements supporting the development of e-services

While the previous section functioned as an introduction to what the online services in Estonia are and how they have developed over time but also the main components of Estonia's digital governance, this and the following sections will be devoted to describing and analysing the development of the factors potentially influencing this process. In line with what was set up in the theoretical part and in the section on research design, the remainder of this chapter follows two main groups: institutional arrangements and organisational processes. Regarding institutional arrangements, I have followed the developments of legislative acts and policies separately and, therefore, they are also discussed in separate paragraphs, starting with policies, moving to legislative acts. As already noted, the role of actors has been identified across all other sections. Only after having analysed the development of various factors, I will analyse, in summary section, the influence of these factors in the development of digital governance in Estonia.

Policies

Over time, digital governance development has been guided by strategic documents and their action plans and despite a moderate start, these have been growing fast both in number and length over time. In 1994, a small community – a loose network of government officials, IT specialists, and academics put down the main principles for the functioning of state information systems (Ott and Siil 2003) that were further developed and finally approved by the Parliament in 1998 as "The Principles of the Estonian Information Policy" for the years 1998-2003[81]. This first strategic document is a three-pager, laying down very general concepts and principles, and it serves to guide digital transformation of the Estonian Government to reach its four objectives:

and Switzerland": https://procivis.ch/2017/01/24/report-summary-egovernment-two-countries-two-decades-two-results/.

[81] The Principles of Estonian Information Policy (in Estonian): https://www.riigiteataja.ee/akt/75308.

improve democracy, advance information infrastructure, support economic development, maintain Estonian language and culture, and modernise government apparatus. It does not entail any specific programmes or projects that could take Estonia to the desired outcomes. The strength of this short document, however, lies in its scope as technology is seen an integral part of a society, not in the limits of government information systems or service provision. Essentially, it is seen as an enabler for a societal change.

The following strategy for 2004-2006[82] continues the approach, functioning as an all-governmental strategy with the following main aims: i) introducing e-services to all state agencies together with respective training and awareness-raising activities for the whole society; ii) keep the level of ICT use in Estonia at no less than the average level of the EU, iii) ensuring the efficiency of the Estonian economy and society in general; iv) increase the export capacity of the IT sector. However, the document adds to the laconic nature of the previous document, listing some sectoral priorities and programmes such as e-Health or ICT in education but also all-governmental efforts such as the further adoption of eID and X-Road, improving the user-friendliness of state portal www.eesti.ee, or setting a framework for ICT export.

Since 2007, the strategies have gained in length and have increasingly prioritised the development of online services rather than the use of the ICTs for improving democracy. Another observation that one can make is that, generally, economic aspects seems to have a much stronger presence, leaving the aims and actions around better governance behind the growth of a private sector. The Estonian Information Society Development Plan 2013[83], for instance, has a strongly presented economic pillar, aiming to contribute to the growth of the Estonian economy both as a result of a widespread use of the ICTs by Estonian public and private sector and by an increase in ICT export. The trend to focus less on government and more on private sector developments that, broadly speaking, should contribute to economic development, is also noticeable in the current information society strategy – Digital Agenda 2020. Additionally, it seems to be driven by a desire to be better off in an international market than at home, as it clearly stands: „The aspiration for Estonia is to become as re-known for its e-services as Switzerland is in the field of banking." This aspiration is supported by numerous projects such as the introduction of e-residency (issuing eID to foreigners), the establishment

[82] The Principles of Estonian Information Policy 2004-2006: https://www.mkm.ee/sites/default/files/infopoliitika_pohialused_2004-2006.pdf.
[83] Estonian Information Society Development Agenda 2007-2013: https://www.mkm.ee/sites/default/files/eesti_infouhiskonna_arengukava_2006.pdf.

of a Nordic Digital Infrastructure Institute, or the development of cross-border services with several European countries basing on X-Road.

The Digital Agenda 2020 for Estonia[84] is worth discussing for several reasons. First, there seems to be no clear vision nor a coherent plan for the development digital society in Estonia. True, all recent catch-words: big data, artificial intelligence, Internet of Things etc have found their way into this document but these are not connected to broader objectives nor are they supported by concrete actions, outcomes and budget. In some cases, the commitments seem either overly ambitious or rather naïve, but either or, very unlikely to be fulfilled. For instance, the plan to connect all Estonian information systems to pan-European service infrastructure platforms, using the possibilities of X-Road for the latter; or the idea to promote the use of digital signatures in other European countries with an expected increase of 20% by 2020. Second, Digital Agenda 2020 seems to have lost its cross-governmental nature, catering largely to the aims and actions of the Ministry of Economic Affairs and Communications and the agencies in its jurisdiction. Several areas that do not fall under the jurisdiction of the MKM such as e-democracy, ICT in education, or raising public awareness and skills are not present or underrepresented. This, however, does not mean that government institutions do not have any plans to further online services they provide. Rather, the plans of individual ministries and agencies are not reflected in information society strategic documents (e.g., e-Tax and Customs Board 2020 or information system of Social Insurance Board).

On a positive note, the Digital Agenda 2020 for Estonia does include some ambitious and highly relevant initiatives such as the "Public Cloud" and the establishment of "Virtual Data Embassy" as part of the Public Cloud project. The former aims, by incorporating Estonia's IT developments and solutions under one umbrella, to increase effectiveness, cost efficiency, security and continuity of online solutions and services in Estonia's public institutions. The latter project aims to ensure the continuity of Estonia and of the state information system by storing digital copies of all data and information systems in the so-called virtual embassies located in other countries. These two projects have the potential to adhere IT developments and online service provision in Estonia but also increase Estonia's visibility in an international arena as a forward-looking e-state.

[84] Digital Agenda 2020 for Estonia: https://www.mkm.ee/sites/default/files/digital_agenda_2020_web_eng_04.06.19.pdf.

In addition to policies guiding the development of digital governance, there has been an increase in the production of concept papers, green books, guidelines and other documents of advisory nature, mainly prepared by the MKM to support government institutions in their digitalisation efforts. There are several materials on how to design and develop public e-services: Public Services Green Paper (2013)[85], e-Services Design Handbook (2013)[86], E-Services Design Process. An Example of Road Administration (2013)[87], Management of Public Service Portfolio (2014)[88], Management Model of Public Service Portfolio (2014), Process Analysis Handbook (2014), Public Service Prototype (2014) could serve as some of the examples. Also, Open Data Green Paper[89] was developed in 2014 and several concepts such as the one attempting to improve the image of e-Estonia i.e., e-Estonia Image Concept[90].

The impact that these documents have had on the development of online services, but also digital governance more generally is rather questionable, and it might be too early to identify their influence as the development of e-services may take some time. Still, there seems to be no link between general digital governance strategies and action plans and these more practical guiding documents. Whereas it is evident that these documents are meant to guide public officials to reach strategic aims and implement the set actions, none of the services that have been chosen as an example in these documents or, furthermore, have been listed as priority services within the project "20 e-Services Project" (in the framework of which the above-listed documents were prepared)[91] are included in the current action plan of the MKM for re-engineering and developing public e-services. The current action plan of the MKM includes twenty life-event based services such as birth, death, registering a company requiring collaboration between different government institutions; yet, none of these is listed in the "20 e-Services Project".

[85] Public Services Green Paper (2013): https://www.mkm.ee/sites/default/files/avalike_teenuste_korraldamise_roheline_raamat.pdf.
[86] E-Services Design Handbook (2013): https://www.mkm.ee/sites/default/files/content-editors/lisa_5.1._kasutajasobralike_e-teenuste_disainimine_maanteeameti_naitel._.pdf.
[87] E-Services Design Process. An Example of Road Administration (2013): https://www.mkm.ee/sites/default/files/content-editors/lisa_5.1._kasutajasobralike_e-teenuste_disainimine_maanteeameti_naitel._.pdf.
[88] The following documents: Management of Public Service Portfolio (2014)[88], Management Model of Public Service Portfolio (2014), Process Analysis Handbook (2014), Public Service Prototype are available (in Estonian) at: https://www.mkm.ee/et/tegevused-eesmargid/infouhiskond/infouhiskonna-teenused.
[89] Open Data Green Book (2014): https://opendata.riik.ee/en/green-paper/.
[90] E-Estonia Image Concept (2014): https://www.mkm.ee/sites/default/files/e-maine_presentatsioon_loplik.pdf.
[91] The "20 e-Services Project": https://www.mkm.ee/et/uudised-pressiinfo/analuusid-ja-uuringud#20eteenust.

Legislative acts: laws and regulations

The development of legislative acts connected to digital governance could be divided into three periods. The first one concerns 1990s and it is a time when the first, usually very short, legislative acts regulating some essential aspects of digital governance emerged. This period could be named a "self-regulation" period as, indeed, legislative acts on digital governance were scarce. The second period includes the 2000s, and this is the time when Estonia adopted several essential legislative acts, again, in order to give "green light" to some of the digital innovations of the time but also to settle some crucial principles to enable and guarantee the well-functioning of digital governance in Estonia. The third period, the years from 2010s onwards marks a time when legislative amendments have been galore; yet, these have been minor amendments to the existing legislative acts and have been more of a cosmetic nature rather than establishing new principles or allowing for new developments to take place. Here, one may also notice an increasing need for more detailed legislative changes to push the administration towards digitalisation or to enable the implementation of new or even amended information systems or online solutions.

Legislative acts in the 1990s

The 1990s could be generally characterised as a period of "self-regulation" as, at the time, there were no major legislative acts adopted that would concern digital governance per se, or some of its essential components. Still, during that time, some of the main principles that have clearly influenced the development of digital governance in Estonia were settled, and four of them need attention here. First – "once only" principle was introduced when Databases Act[92] was adopted in 1997. In practice, this means that once a public institution has asked for data either from people or businesses, these data cannot be asked again but have to be re-used if needed. The Databases Act laid down the second essential principle accounting for the development of digital governance in Estonia - the principle according to which a person must know the data that the government possesses about him or her. By implementing this principle, the government made a considerable step in building public trust towards technological developments as well as the public sector. Third, Archives Act[93] entered into force to establish main principles for collecting, archiving, preserving, and accessing archival documents, applying also for digital archiving. And fourth, central identity management was established

[92] Databases Act (1997), since 2008 incorporated into Public Information Act: https://www.riigiteataja.ee/akt/32230.

[93] Archives Act (1998): https://www.riigiteataja.ee/en/eli/504032016002/consolide.

alongside with digital identification (or eID) and digital signature. As digital identity forms one of the cornerstones of digital governance in Estonia, it serves more scrutiny.

There are three main legislative acts regulating inter-connected components of Estonian ID and eID. First, The Population Register Act[94] regulates a Personal Identification Code i.e., PIC[95] that serves as a base for a person's identity in Estonia and is also printed on an ID card. PIC is also included in the chip or, more concretely, it is contained in the two certificates that are saved in the chip of the ID card. The Population Register Act regulates the registration of Estonian population and the maintenance of the records in the Population Registry that is also established as the registry for verifying a person. Second, the Identity Documents Act[96] were introduced in 1999 only to allow for the introduction of an electronic identity. Third, Digital Signatures Act[97] that took two years to prepare, was adopted in 2000 to give equal value to digital and handwritten signatures and to introduce an obligation for public institutions to accept digitally signed documents. The Act also regulates supervision over certification service providers as well as time-stamping service providers. And fourth, Personal Data Protection Act[98] that was adopted already in 1996 must be mentioned as it stipulates the conditions and procedure for processing personal data, including the PIC used also for eID. With this system, Estonia established a centralised identity management system and has been following it since then.

Legislative acts in the 2000s

In 2000s, we can witness an increase in the number of legislative acts introduced in Estonia and several essential legislative acts were adopted then. One of them is Public Information Act (PIA)[99] that was adopted in 2000, entering into force on January 1, 2001. PIA obliged all public institutions i.e., state and local agencies, legal entities in public law but also private entities that are conducting some public duties such as educational, health care, social or some other public services, holding public information, to open and maintain websites and post public information

[94] Population Register Act (1999): https://www.riigiteataja.ee/en/eli/516012014003/consolide.
[95] PIC is given in accordance with a regulation on the generalisation of PICs (can be found in Estonian at: https://www.riigiteataja.ee/akt_rakendusaktid.html?id=130122017012&kuvarakendus=1) and the Estonian Standard EVS 585:2007. It is a 11-digit PIN made of: gender/century of birth (one for both), date of birth, three random digits and an additional checksum digit. PICs have been issued in Estonia since 1992.
[96] Identity Documents Act (1999): https://www.riigiteataja.ee/en/eli/521062017003/consolide. The identity documents were, in 1993-1999 regulated by the Estonian Citizens and Citizenship Identity Documents Act.
[97] Digital Signatures Act (2000): https://www.riigiteataja.ee/en/eli/530102013080/consolide.
[98] Personal Data Protection Act (1996): https://www.riigiteataja.ee/en/eli/523012019001/consolide.
[99] Public Information Act (2000): https://www.riigiteataja.ee/en/eli/514112013001/consolide. As of January 2008, PIA also regulates Databases Act that was then incorporated into the PIA.

that they hold on their websites. PIA's contribution has been highlighted by several interviewed people, both by the CSO representatives and government officials but also by the co-authors of this Act: Mr Ivar Tallo[100] and Mr Rein Lang[101]. Namely, the PIA lists concrete information that must be disclosed at public websites and clearly states that this information should not be outdated, inaccurate, or misleading. It also sets a clear procedure for making a request for information (in case not automatically disclosed) as well as for responding to these requests. Consequently, any e-mail sent to a public institution and/or a public official asking for information must be considered a request for information, and, to further facilitate this practice, there was a requirement introduced to open a special "request-for-information" box at public websites that needs to be responded to within 5 working days.

The other essential legislative acts that needs attention is the co-called X-Road Regulation[102] that regulates data exchange between registries and information systems and the technological platform X-Road enabling the latter. X-Road Regulation is a short and very laconic document, yet, it lists the main requirements and principles for connecting information systems of both public institutions and private enterprises with X-Road and for the data exchange between the members of X-Road. The X-Road has been amended only twice since its adoption: in 2008 to implement the amendments introduced to the Public Information Act and in 2016 to harmonise the new EU Regulation on Trust Services and eID, known as eIDAS[103]. Due to the amendments that were introduced into the PIA in 2008, the latter regulates the management of national information systems, including the X-Road. However, the main principles, as mentioned, were settled in 2003 with the regulation that have been, over time, complemented only with documents of an advisory nature such as the Interoperability Framework[104]. These documents mainly serve as support to the work of Chief Information

[100] Ivar Tallo is a co-founder and long-time Director of e-Governance Academy, a think tank founded by the Government of Estonia, Open Society Foundation and UNDP in 2002 to create and transfer knowledge and expertise on digital governance. He has served as an advisor to the Public Administration Reform Committe in 1997-1998 and has been the Member of the Parliament. He is one of the main authors of the Public Information Act as well as the Code of Ethics of Public Service.

[101] Rein Lang is a politician, member of the Reform Party, and has since 2003 been a Member of the Parliament except for the years he has been a member of the Government, serving as the Minister of Justice, Minister of Culture and Minister of Foreign Affairs.

[102] X-Road Regulation (2003): https://www.riigiteataja.ee/akt/688079.

[103] Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.257.01.0073.01.ENG.

[104] Interoperability Framework of the State Information System: https://www.mkm.ee/sites/default/files/riigi_it_koosvoime_raamistik.pdf.

Officers (CIOs) of government institutions, but also other officials and partners involved in a secure functioning of the X-Road.

There have been other legislative acts adopted in this period that have had their share in the development of digital governance in Estonia like the Information Society Services Act[105] of 2004 that draws on legal aspects related to electronic commerce and, basically, implements the EU Directive 2000/31/EC[106]. The other example concerns Public Procurement Act[107] adopted in 2007, again, to harmonise relevant EU legislation, the EU Directives 2004/17/EC and 2004/18/EC[108] that include legal provisions on e-procurement. The Act has been subject to several amendments, due to the changes in respective EU directives. Last, Electronic Communications Act[109] adopted in 2004, despite not having a direct influence on the development of digital governance, created conditions for the development of electronic communications networks and communications services. The role has not been as substantial.

Legislative acts in the 2010s

Since 2010, there have been several amendments introduced to the existing legislative acts, either to be compliant with relevant EU legislation or equally frequently, due to an increasing trend to prepare too technical legislative acts. The Ministry of Justice[110] (MoJ) has repeatedly warned against the practice of preparing too lengthy, detailed, overly technical but also too complex legislative acts difficult to understand. Legal scholars have joined the MoJ in this critique and described the recent legislative nature as "autoschediastic", often taken out of a bigger picture (Särav and Kerikmäe 2016).

From the point of view of digital governance, the amendments of Identity Documents Act in 2014 driven by e-Residency team serve as an example of unnecessary legislative changes. Namely, at the time of the launch of e-Residency, Identity Documents Act (due to 2009 amendments) allowed for the issuance of eIDs to foreigners; yet the initiators of e-

[105] Information Society Services Act (2004): https://www.riigiteataja.ee/en/eli/ee/504112013008/consolide.
[106] Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market ('Directive on electronic commerce'): https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32000L0031.
[107] Public Procurement Act (2007): https://www.riigiteataja.ee/en/eli/505092017003/consolide.
[108] Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contract: https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32004L0018.
[109] Electronic Communications Act (2004): https://www.riigiteataja.ee/en/eli/501042015003/consolide
[110] Ministry of Justice as a responsible institution for legislation drafting and law quality, prepares annual assessments of the situation.

Residency programme stressed on the importance of changing the Identity Documents Act to serve their idea of e-Residency[111]. As a result, on December 1, 2014, the amendments to the Identity Documents Act and State Fees Act[112] entered into force, implementing the concept of e-Residency, introducing the term "e-Resident" instead of the previous clause "issuing eID to foreigners", and establishing the Estonian e-Resident digital ID as the identity document.

Thus, in the 2010s a myriad of small changes has been introduced to the already existing legislative acts; yet, these have been minor and have not resulted in the introduction of new principles, initiatives or in the changes into the already established principles or developments. An overview of the main legislative acts but also policies is given in Annex 2 alongside with other the main milestones.

Organisational processes supporting the development of e-services and digital governance

Management, coordination, and collaboration

In this section, I look at how digital governance has been managed and led in Estonia and which organisations have played a potential role in the course Estonia's digitalisation has taken. I also identify the part that individual ministries have had in this process and what the main changes have been. I then identify main cooperation and collaboration mechanisms between government institutions in both policy-making and implementation.

Digital governance in Estonia has been subject to central management and coordination since December 1993 when the Department of State Information Systems (RISO)[113] was established at the Government Office. RISO has played a major role in the elaboration of the Estonian digital governance policy and action plans as well as in the preparation of legislative acts supporting the development of digital governance. Equally essential tasks of RISO have been the coordination of the preparation and implementation of digital governance action plans and, in 1994-2003, the central coordination of Estonian IT budget. Since 2003, RISO's role in coordinating government IT budget has decreased considerably and has been limited to the

[111] Issuing digital identities to non-residents: creating e-residency. Concept. Appendix to the explanatory memorandum to draft legislation of Estonian Identity Documents Act and State Fees Act. Appendix 1. The amendment was initiated by the Ministry of Interior in May 5, 2014, and subsequent proceedings can be found at (in Estonian): https://eelnoud.valitsus.ee/main/mount/docList/b54cb986-5df6-481a-ad9b-c95b938e8611.
[112] State Fees Act: https://www.riigiteataja.ee/en/eli/511022015002/consolide.
[113] There is no separate webiste for RISO but its activities are reflected at the website of the MKM: https://www.mkm.ee/en/objectives-activities/information-society.

coordination of the EU Structural funds only, whereas the budgets of individual government institutions have been overseen by the Ministry of Finance instead. This has resulted in a considerable gap in the overview of how much and for which developments government institutions spend their IT budget.

In 2000, RISO was moved from the Government Office to the Ministry of Transport and Communications and in 2002, due to the merger of the Ministry of Transport and Communications and the Ministry of Economic Affairs into then established Ministry of Economic Affairs and Communications (MKM)[114]. There have been, occasionally, suggestions to move RISO back to the Government Office to allow for more efficient all-governmental coordination and management of digital governance, however, until the present, this plan has not been executed. Still, in 2012, there was a position of an ICT policy advisor established at the Government Office with the main task to better align government digital governance strategy across government institutions but also assist the Ministry of Economic Affairs and Communications in the implementation of digital governance action plans. The position that is currently held by Mr Siim Sikkkut has proven to be effective in leveraging much needed horizontal backing for the digital governance agenda of the Ministry of Economic Affairs and Communications.

Over time, the role and the capacity of RISO in managing and coordinating digital governance development seems to have slightly changed. First, as already mentioned, in 2003 RISO lost its position in coordinating the Estonian digital governance budget which affected RISOs position to influence digital governance development in Estonia. Equally, RISO then lost a clear overview of how and on what exactly government institutions spend their IT budget on. Secondly, at times, RISO has lacked human capacity and skills in a few areas, for instance, in cyber security, open and big data but also interoperability. These positions have heavily suffered from high turnover or, furthermore, these positions have not been fulfilled to begin with. To illustrate the case here, in 2014, one of the authors of Estonian interoperability concept and frameworks but also the avid devotee of open and big data - Mr Uuno Vallner left the Ministry of Economic Affairs and Communications. Currently, two years later, his position has not yet been replaced. Apart from the lack of expertise in some crucial areas, the RISO has also been short of higher-level support in its digitalisation efforts as the position of deputy secretary

[114] Ministry of Economic Affairs and Communications (MKM): https://www.mkm.ee/en.

for digital governance remained empty until 2012 when Taavi Kotka, a former IT business man, accepted the position.

Notwithstanding the moderate political support and the lack of capacity in some areas, generally, MKM has guaranteed the leadership and management necessary for the development of digital governance in Estonia. In 2013, for instance, the position of the Government Chief Information Officer (CIO) was established, functioning also as a Deputy Secretary General for IT in the Ministry. Some years before, on November 1, 2011, Department of Information Society Services Development (ITAO)[115] established to coordinate the development of public sector services, a process that had no responsible institution in Estonian government prior to the establishment of ITAO. Additionally, there was a position of the Government Chief Digital Officer (CDO) established to act as the head of the afore-mentioned department. The position has been fulfilled by Janek Rozov, formerly responsible for the development of information systems and online services at Estonian Tax and Customs Board. These steps have turned successful in strengthening central management and coordination of digitalisation and these have somewhat attempted to compensate for the weaker central policy-making. As a reader may recall, with Digital Agenda 2020, the MKM narrowed the scope of digital society policy in Estonia.

Apart from the MKM and its two main departments, the agency founded for the implementation of digital governance strategies and action plans – Estonian Information System Authority (RIA)[116] has gained importance since its establishment in 2011. RIA has a long history as it was established already in 1990 at the Government Office as an Estonian Informatics Fund that in 1996 was renamed Estonian Informatic Centre to be again renamed in 2003 when it merged with the Estonian Procurement Centre and carried a new name - Estonian Information Systems Development Centre. Since 2011, it has functioned under the name of Estonian Information System Authority (RIA) with a main mission to coordinate the development and management of state information systems. Among others, it coordinates all Public Key Infrastructures related operations like the State portal www.eesti.ee, the interoperability system X-Road, the administration system of the State information system (RIHA) and the electronic document exchange centre (DVK). It is also liable to monitoring the legislative processes concerning the management of information systems. Over time, RIA has

[115] Overview of ITAO activities can be found at the website of MKM: https://www.mkm.ee/en/objectives-activities/information-society/information-society-services.
[116] Estonian Information System Authority: https://www.ria.ee/en.html.

grown in its size, mandate capacity and, ultimately, in its importance in managing some of the essential central digital governance components and systems in Estonia.

Regarding the implementation of digital governance, i.e., the development of information systems, online services and e-participation tools, these have remained a responsibility of individual government departments. This means that even though RISO and RIA direct and manage digitalisation centrally, individual ministries and agencies still play a very important role in the development of digital governance in Estonia. The Ministry of the Interior and the Ministry of Justice have been particularly vocal as they are responsible for the introduction, adoption, and well-functioning of the eID and for several essential registries and information systems in Estonia like the business register, land register, but also all the registries related to the justice system. From this study it has also become evident that over time, some of the individual government agencies' digital governance teams have increased in their size but also in their mandate. This has happened because of the consolidation and provision of in-house IT services and IT developments in individual ministries.

Whereas in the 1990s and 2000s, both IT services and IT developments were almost exclusively outsourced to private sector and various public private partnerships lead to a successful implementation of several innovative e-solutions, this practice has been replaced by in-house developments. In house developments are provided by the so-called IT Houses that have been established in most bigger ministries by now. The first IT and Development Centre (SMIT)[117] was established in 2008 under the Ministry of the Interior to provide IT services to the agencies under the Ministry of the Interior's jurisdiction[118]. Step by step, SMIT has grown to a considerable IT company itself as they also develop information systems and main IT solutions. There have been several other IT houses created such as the Centre of Registers and Information Systems (RIK)[119] in the jurisdiction of the Ministry of Justice that has grown from an agency missioned to develop and administer registries (business, land, criminal records, electronic State Gazette etc) into a large state IT "company" managing large-scale digital projects in various fields in Estonia and beyond. The establishment of these IT houses, however, has not been subject to any such policy decision and, consequently, their activity has not been guided by any certain principles. This has resulted in quite a rivalry between these IT houses.

[117] IT and Development Centre, Ministry of Interior: https://www.smit.ee/et.
[118] These include: Police and Border Guard Board, Rescue Service, the Estonian Academy of Security Sciences.
[119] Centre of Registers and Information Systems, Ministry of Justice: https://www.rik.ee/en.

The need for the IT houses has been questioned and the level of the provided services criticised. At the same time, the IT houses have also their supporters.

Cooperation between individual ministries in Estonia has taken the form of various councils, committees, working groups and task forces, either institutionalised or not. In the former case, these groups or networks have been established by a decree of some ministry or agency, mainly by the MKM and these usually function at the policy-making level. In the latter case, small, friendly but relatively closed networks of specialists gather to discuss some issues related to the implementation of digital governance. Regarding the institutionalised groups, these have been few and rather unsuccessful as they tend to be active only for a short period following their immediate establishment and, additionally, they seem to fail in their mission in advising the Government or taking relevant policy decisions because the latter simply follows a different mechanism. Here, one could consider the e-Estonia Council[120] as an example, that after several reinvigoration attempts since its establishment in 1996 has met three times since 2014 i.e., when it was moved from the MKM to the Government Office, accompanied with a name change and, has also not taken any stance in essential policy issues concerning the development of e-governance in Estonia. The e-Health Task Force[121] that was set up by the Government Office has ceased to exist altogether.

Compared to institutionalised working groups and councils, unofficial networks of mainly specialists and communities have proven to serve well in solving everyday practical issues and they have been equally effective is several crises situations, in areas such as eID, cyber security, or interoperability. Still, these networks usually perform as closed circles and as they are not institutionalized, they often lack power to influence decision-making processes. Being overly person-dependent, they do not carry institutional memory. In some cases, these networks also suffer from the same malaise as the institutionalised ones in terms of low activity and inability to discuss important policy issues like the network of agencies' CIOs, for example, that meets occasionally only to get an overview of the next financing cycle and the EU Structural Funds.

[120] e-Estonia Council replaced the previous Information Society Council that functioned under the Ministry of Economic Affairs and Communications that, in turn, replaced the Informatics Council that was established in 1996 at the Government Office.

[121] More on the e-Health Task Force (in Estonian): https://riigikantselei.ee/et/uudised/loodav-rakkeruhm-hakkab-lahendama-e-tervise-probleeme.

Budgeting and financing

In this section, I give an overview of the budgeting and financing of information society in Estonia including the procedure for applying for the funding of IT projects[122] but also the sums spent over the past twenty years. The government of Estonia has facilitated central planning and coordination of information society financing since the 1993 when the first principles of IT development but also financing were established, and the Estonian Informatics Fund was established to coordinate the financing of some IT developments such as the base registers, main infrastructure projects, and information systems of critical importance. In March 1993, the Department of State Information Systems was established at the State Chancellery that, among others, took the lead in mapping the IT needs and making decisions regarding the financing of the IT projects in central and regional government. Additionally, the Bureau of Administrative Reform that was established at the State Chancellery, in 1999, had a say in financing IT projects as part of a government modernisation process.

In order to guarantee a systemic and balanced development of information society in Estonia, on May 3, 1993 the Government of Estonia adopted a regulation on the establishment of a coordinated IT budgeting. Accordingly, all ministries, agencies, inspectorates as well as regional and local governments were to inform RISO about their IT projects and, consequently, a separate budget line for IT costs, Article 37, was added to the state budget. The Article 37, in turn, recognised IT costs in three main groups: i) internal IT costs of ministries and the agencies under their jurisdiction, ii) interagency IT costs, and iii) central IT costs of information systems and state registers. It should be noted that the Article 37 did not include personnel nor maintenance costs but only the costs related to purchasing of hardware, purchasing of software products and their developed and amended versions as well as ordering or developing of IT projects. Thus, not all digital governance expenditures have been subject to central coordination in Estonia since 1990 but only a share of them.

Over time, central coordination of IT budget and financing of government institutions in Estonia has decreased considerably. As the first step in this direction, in 2000, "interagency IT costs" were added to entities' general budget. As a result, interagency projects were no longer centrally approved and financed. This change had an unanticipated impact as in line with the decrease in the coordination of interagency projects, the costs of cross-governmental project

[122] Here, I have used the term „IT projects" or „IT developments" referring to both the development and maintenance of public registries, information systems but also online services and other solutions.

declined. This decrease can be seen in sharply reduced budget as both interagency and central IT costs dropped from EEK 85.79 mln (EUR 5.50 mln) in 1999 to EEK 30.21 mln (EUR 2.1 mln) in 2000. Another move, that weakened central coordination was made in 2003 when due to the State Budget Act amendment, Article 37 was abolished and, consequently, all IT costs were merged with government entities' administration costs, approved by the Ministry of Finance.

The situation somewhat improved in 2004 when the EU Structural Funds became available to Estonia and when pursuant to the Government Regulation of 2004[123], the intermediate body for the development of information society became the MKM and when the tasks of final beneficiary were assigned to RIA (then Estonian Informatics Centre). There have not been any changes in the management of IT funds since then. While MKM and RIA have remained responsible for the coordination of the EU structural funds to support information society development in Estonia, the coordinating authority of the IT developments financed from the state budget has remained the Ministry of Finance. This means that while there is a clear overview of how much money has been spent on IT developments from the EU structural funds, there is no information on IT costs of individual ministries who, in addition to the national state budget, are also eligible to apply for any other funding, for instance, from various EU calls.

Regarding IT costs in 1999-2003, due to the unavailability of the EU funds, these were rather modest, totalling to EEK 22.27 (mln) in 1993, EEK 119.97 (mln) in 1996 and EEK 213.24 (mln) in 1999. Regardless of the sum spent, the expenditures have constituted to roughly 1% of the state budget throughout these years with some minor fluctuations[124]. As mentioned, there is no overview of the IT costs since 2003 due to complexities around the IT budgets of individual agencies that are scattered across different budget lines. However, IT expenditures have increased considerably due to the availability of the EU Structural Funds since 2004,

[123] Government Regulation no 81 or 2004 "Designating the Intermediate Bodies and Beneficiaries of the Structural Funds and Listing the Investment Measures of State and Local Government Institutions (unofficial translation). Available at (in Estonian): https://www.riigiteataja.ee/akt/723670?leiaKehtiv. Last accessed December 29, 2016. The regulation implements the Structural Fund's Act 2004-2006: https://www.riigiteataja.ee/akt/12793955.

[124] The costs on digital governance have been around 1% of the state budget in 1991-2002 as follows: 1.06% in 1995, 0.92% in 1992, 1.12% in 1997, 1.00% in 1998, 1.28% in 1999, 0.79% in 2000, 0.89% in 2001, and 1.06% in 2002 (from information society annual books prepared by RISO in 1991-2012).

totalling to 63.8 million euros in 2007-2013 and 192 million euros for the period of 2007-2020[125] for instance.

No doubt, the availability of the EU funding has positively affected the advancement of information society in Estonia. The steady and generous funds have guaranteed the well-functioning of its main building blocks such as the interoperability layer X-Road and eID and the maintenance of its base registers like the Population Register but has also enabled the development of several information systems (their maintenance remains one of the biggest challenges though). The extended use of the EU funds has come with a cost as, in line with the increase in the EU funding, the financing of IT developments from the Estonian state budget has been decreasing down to 0.2% in 2015, by some estimations. Additionally, the recent study of the MKM[126] reveals that several government agencies are almost entirely dependent on foreign funds, including the agencies that are responsible for some of the critical components of digital governance in Estonia like RIA, for instance, or SMIT, that expect to decrease the dependence on EU funds by 55% by 2016. According to the prediction of the Ministry of Finance, the funds available for Estonia will decrease 40% since 2021 which will heavily affect also the availability of the funds allocated for the development of information society.

Having discussed the development of digital governance cornerstones and the main online services but also the connected institutions and organisational processes, I turn to describing the so-called other side of digital governance – e-participation.

The development of e-participation

In this section, I give an overview of the main all-governmental online participation tools and initiatives in Estonia. Clearly, there are other online tools used by government institutions to provide information, build a dialogue or actively engage with citizens like the websites of the ministries and agencies or social networking cites (FB, Twitter, YouTube etc), however, the analysis of the latter goes beyond the scope of this study. As already mentioned, the study is mainly concerned with e-participation developments at the central government; yet,

[125] Out of the 192 million euros, 163 million euros comes from the EU and 29 million from the beneficiaries.
[126] The study includes nine government entities: four agencies that function as consolidated IT management and service centres, i.e., their operation is entirely related to IT: SMIT, RIK, RMIT, and KEMIT. Additionally, RIA, MKM (and the agencies), PRIA (Estonian Agricultural Registers and Information Board), Estonian Public Broadcasting and National Library, both under the jurisdiction of the Ministry of Culture. Costs were divided into three categories: administrative, personnel and investment i.e., development. The study is not yet finalised (as of December 2016).

occasionally I have referred to innovative practices deriving from civil society organisations. I have done so only in the cases I find these practices meaningful from the perspective of the overall development of e-participation and e-democracy in Estonia. The Internet voting has also been included, mainly because it is one of the very few, if not the only, politicised e-solution in Estonia.

The first all-governmental participation portal Today I Decide (TOM) was opened in June 2001 by the Government Office to allow people to propose government new legislation or to suggest amendments to the existing laws to which the government had 30 days to answer. Despite immediate success, this innovative tool that was proposed to then Prime Minister Mart Laar by his young information society advisor, was soon accompanied by heavy criticism as, indeed, the portal suffer from low number of users and a lack of constructive dialogue. From the analysis of the tool that was conducted in 2006[127] (Glencross et.al 2006), it also appears that TOM did not have sufficient publicity and only a handful of the presented ideas got a positive response from the government. Still, the launch of this portal marks the beginning of e-participation in Estonia and it introduced the ICTs and inclusive policy-making into government organisations and civil society alike. It also improved Estonia's image in an international arena as a modern and open society with progressive government[128].

Some months before though, in March 2001, there was another portal called THEMIS opened by an NGO Estonian Law Centre[129], providing an environment for more inclusive law making and for a dialogue between the public, government and the parliament. Generally, THEMIS was a more popular environment among the public than TOM as within two years, it attracted 3800 users who had commented on more than 35 legislative acts, whereas 10% of the submitted ideas had been accepted and implemented by the government and/or the Parliament (Siivelt 2005[130]). One of the reasons for the success, according to the project managers of both THEMIS and TOM, is seen in the active role of THEMIS administrators who not only

[127] The Project TID+ was lead by e-Governance Academy together with the Government Office and the European Union Democracy Observatory, European University Institute. Project materials can be found at TID+ wiki: http://tidplus.net/project/analysis-of-the-tom-tool/tom-analysis-conclusions/.

[128]TOM is considered a reason for Estonia's initial high position in UN e-Government Survey e-Participation Index described earlier in this study. TOM has also been replicated in other countries, such as in Slovenia for example and has been used as a prototype for e-participation portal in Moldova and in Kosovo.

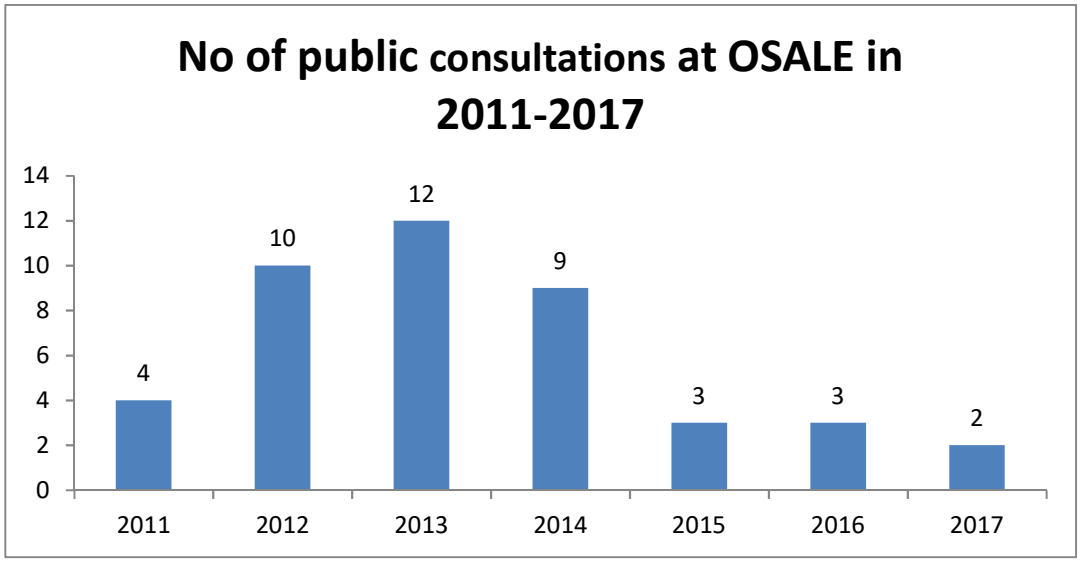
[129] Estonian Law Centre was an NGO founded in 1995 in order to contribute to the formation of Estonian legislative system and good law-making. It ceased to exist in 2009.

[130] From a presentation made by Ülo Siivelt, Head of Information Department at Estonian Law Centre, THEMIS project manager, during a seminar „TOM is Dying. Overview of e-Participation in Estonia" organised by e-Governance Academy Foundation in 2005.

facilitated the discussion at the portal but also kept track of the legislative proceedings. Despite several suggestions to unite TOM and THEMIS to guarantee their further well-functioning (Lepa et al. 2004), this never happened, and both portals ceased to exist, TOM in 2008 and THEMIS in 2009.

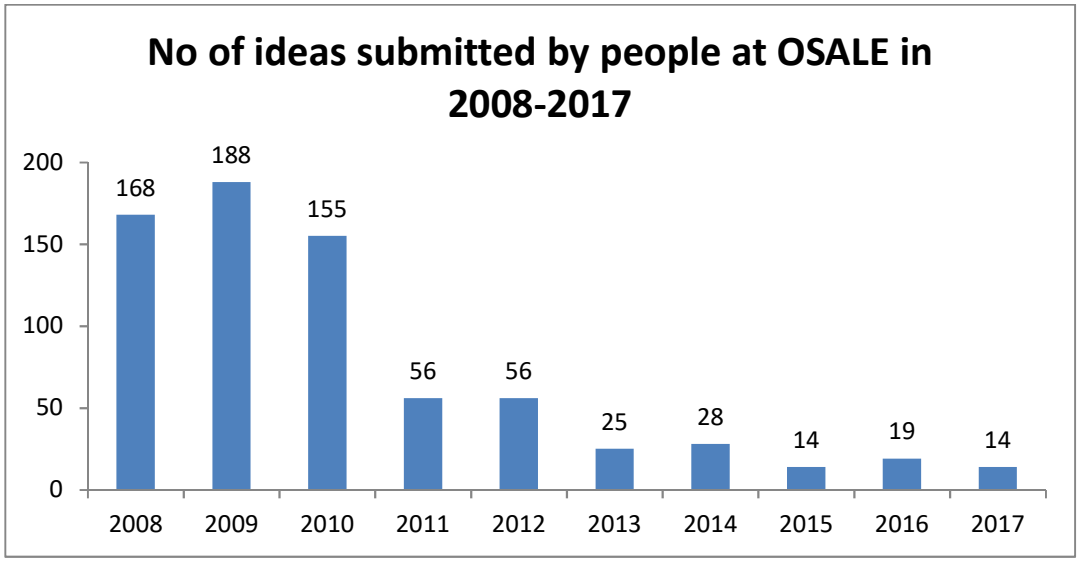
TOM did not disappear though as it got incorporated into the all-governmental participation portal OSALE[131] that was opened by the Government Office in 2008 to include three functions: document search possibilities across government, presenting bottom-up legislative proposals to the government, and organising public consultations on draft acts. OSALE suffers from the same malaise as, until the present, it has not been accepted by the government nor the public as a platform to discuss essential policy issues. The following Figure 12 shows that the no of public consultations has dropped to three in both 2015 and 2016 and the Figure 12 refers to the number of ideas presented in 2008-2017. Another serious issue concerns the technological platform itself which, by now, is technologically outdates and lack any appeal and user-friendliness.

Figure 12. The number of public consultations organised at the national e-participation portal www.osale.ee in 2011-2017



[131] National participation portal OSALE: www.osale.ee includes, amongst others, document search possibilities across government, presenting bottom-up legislative proposals to the government, as well as public consultations on draft acts.

Figure 13. The number of ideas presented by people for government consideration at the national e-participation portal www.osale.ee in 2008-2017



Indisputably, Internet voting[132], i.e., casting one's vote via the Internet that has been possible in Estonia at local, national, and European elections since 2005, has brought Estonia more fame than any other online participation initiative. The remote voting has become increasingly popular among the public. Whereas in 2005, only 1.9% of the votes were casted via the Internet, this percentage has increased to slightly over 30% in 2014 and in 2015. As mentioned, this thesis is concerned with e-participation at central government level and is analysing how the public can participate in the policy-making process in between elections. Still, the Internet voting needs to be brought out for another reason, apart from its gaining popularity and innovativeness. Namely, since its launch (or rather, since its planning), Internet voting has been subject to political contestation as one of the main political parties in Estonia - The Centre Party- has been vocally against this practice. The Centre Party has not joined nor followed the "Good Practice of Internet Voting", it has demanded the abolition of the Internet voting in numerous occasions and has constantly referred to its insecurity and consequent unreliability. In 2014, The Centre Party ordered a study from the University of Michigan,[133] to analyse the aspects of security of the Internet voting and to provide evidence to the raised concerns. Even though the results of this study did reveal several issues around the Internet voting that were discussed widely in the media, these findings do not seem to have impacted the public's voting behaviour as the number of the Internet voters has been increasing in the

[132] About Internet voting at the website of National Electoral Committee: https://www.valimised.ee/en/Internet-voting/Internet-voting-estonia.

[133] The study on the security of the Internet conducted by the team of academics from the University of Michigan, USA can be found at: https://estoniaevoting.org/ (last accessed 24, May, 2017).

same pace. The Centre Party's positions in this matter have not changed either and the Internet voting remains the only digital practice that the party is against. From my detailed analysis of the election manifestos of Estonian political parties since the 1990s, it is evident that the Party support digital governance and several of its programmes do campaign promises on e-services and e-solutions.

Apart from the opening of the information system for legislative proceedings (EIS) in 2011, there have been no major developments since then. In principle, EIS was built on the former government information system for legislative acts e-Justice but it was then united with document management system as well as the State Gazette[134]. Another addition includes the possibility for the public to participate in legislative proceedings equally to government institutions, i.e., since 2011 the public has also the right to comment on legislative once sent to government institutions for approval. According to the study conducted by Praxis and Pulse in 2015, EIS is the preferred participation method among Estonian public. Yet, it lacks public appeal and is technologically outdated. There have been some attempts to improve the user-friendliness of EIS[135], such as better presenting and grouping data at EIS or revamping the help section for users; yet, they have not resulted in apparent visual advances nor in more open and inclusive policy-making throughout its stages. Despite the pressure from NGOs such as e-Governance Academy and Praxis, EIS has not yet been connected to the public consultations (one of the OSALE functions) nor to the information system of the Parliament.

Even though the government has been modest in engaging with the public, particularly in more recent years, there have been several positive developments deriving from the public and civil society organisations, and I would like to bring out two of them. In 2012, following a political turmoil, The People's Assembly process was suggested by active NGOs with an overall aim to improve democracy in Estonia. The opened portal www.rahvakogu.ee[136] that allowed citizens and organisations to crowd-source ideas obtained in a little time over 2000 proposals, out of which 18 were selected and presented to the People's Assembly which

[134] The State Gazette, i.e., Riigi Teataja has, since it was united with EIS, a function that allows to track the processing of all legislative acts since the very beginning until the publishing in the State Gazette. It should be noted though that it currently includes the processing in the Government only as the Parliament's information system for legislative proceedings has not yet been united eith EIS not with State Gazette.

[135] In 2015, the Government ordered a study from Praxis and Pulse with an overall aim to improve the usability of online participation tools OSALE and EIS. Praxis Center for Policy Studies and Pulse, *Osalusveebi Ja Valitsuse Eelnõude Infosüsteemi Kasutatavuse Analüüs* (2015). Available at: https://riigikantselei.ee/sites/default/files/content-editors/Failid/AVP/Osalusveeb,%20EIS%20lopparuanne_8-05-15.pdf.

[136] About People's Assembly (in Estonian): https://rahvakogu.ee/2013-rahvakogu/.

physically met. On the so-called Deliberation Day in April 2013, two ideas were dismissed, and the remaining sixteen ones handed over to the Parliament by the President. This initiative served as a mechanism for handling political contestation during an important democratic crisis and led to concrete policy changes - out of the 16 ideas, three have been fully implemented and four partly implemented. As a result of this process, The Citizen Initiative Portal[137] i.e., online petitions' portal was opened in March 2016. The platform enables to compile and send collective addresses - with at least 1000 digital signatures - to the Parliament of Estonia and follow the further processing of these proposals. These recent developments prove that even though the central participation portals offered by the government have not found active use, the Estonian public has shown interest and initiative in using the ICTs for addressing important policy issues. It has also mobilised itself in seeking answers to as complex issues as the renewal of democracy.

Institutional arrangements supporting the development of e-participation

Policies

Largely, there are three groups of policy documents related to the advancement of public participation in the policy-making process but also the development of e-participation and these are: i) policies on the development of civil society, ii) policies guiding the development of information society, and iii) documents related to the Open Government Partnership (OGP). A brief introduction to these documents follows.

The first strategic document touching upon the collaboration between the public administration and civil society - Estonian Civil Society Development Concept[138] was adopted by the Parliament (and not passed by the Government) in 2002. This essential strategic document defines priorities, roles, and mechanisms for the cooperation between public administration and civil initiatives. The document, however, does not specify how the ICTs could assist in reaching the set aims and principles and, to my best knowledge, this has not been subject to scrutiny at the Parliament also during the years to follow[139]. It took several years

[137] Citizen Initiatives' Portal: www.rahvaalgatus.ee

[138] The Estonian Civil Society Development Concept (2002): https://www.siseministeerium.ee/sites/default/files/dokumendid/Kodanikuyhiskond/estonian_civil_society_development_concept.pdf.

[139] As mentioned earlier in this chapter, in ascertaining the role of politicians in the development of e-governance as well as e-democracy in Estonia, I have not analysed the activity, statements etc of the Members of the Parliament. Still, I have done it occasionally over time, while following the everyday developments of the area in Estonia, and therefore I have occasionally also followed the sittings of the Parliament and its committees. The

before the Civil Society Development Plan for 2011–2014[140] was prepared, setting objectives for the development of civil society and for creating conditions for citizens' initiatives. This Plan is one the first strategies to address specific issues around e-participation in Estonia, including the complexity of the existing online channels for monitoring the process of policy and decision making, in particular the all-governmental participation portal OSALE and the information system for preparing legislation e-Justice (*e-Õigus*). The following Civil Society Development Plan, for years 2015-2020[141] does not carry the same motion.

Meanwhile, in 2007, after The State Chancellery hired an active project manager to advance open and inclusive policy-making, Good Practice of Engagement[142] was prepared and promoted across government. This guiding document outlines key principles in engaging civil society organisations, interest groups and the wider public in the policy-making and gives some recommendations on how to use different methods and channels, including online, for providing citizens information and inviting them to take part in e-consultations. The Good Practice of Engagement was finally adopted by the Government in 2011.

In parallel with the civil society development plans, Estonian information society strategies and development plans have included commitments related to the public participation in the policy-making process, including via digital means. The fundamentals of the information society, adopted in 1998 by the Parliament, consider openness and inclusiveness as an integral part of information society and building a dialogue between the public and the public sector one of its main aims. By adopting these fundamental principles, Estonia set a clear course towards building a democratic information society and towards the development of democratic governance. Despite the early recognition of the ICTs being part of a democratic society and governance, the following documents have lost this initial ambition and the relevant sections have either focused on a securing the Internet voting or have been mainly concerned with the development of online channels to improve communication between government officials or, furthermore, with online service delivery. The information society development plan for the

discussions about civil society development and the cooperation between the public and public sector have not been concerned with the use of the ICTs.

[140] Estonian Civil Society Development plan 2011-2014: https://www.siseministeerium.ee/sites/default/files/elfinder/article_files/kodar_2011-2014_eng_0.pdf.

[141] Estonian Civil Society Development plan 2015-2020: https://www.siseministeerium.ee/sites/default/files/elfinder/article_files/estonian_cs_dev_plan_2015-2020_extract.pdf.

[142] Good Practice of Engagement: https://www.riigikantselei.ee/en/good-practice-engagement.

years 2004-2006 is limited to the development of an information system to allow for the Internet voting in 2005 local election. Regarding the most recent Digital Agenda 2020 for Estonia, its aims and planned actions, regarding e-participation are not ambitious and they are few to begin with.

From 2012 onwards, the main government strategic documents addressing public participation in the policy-making process and e-participation are the Estonia's OGP action plans: first action plan for years 2012-2013[143], the second covering the period of 2014-2016[144] and the very recent for years 2016-2018[145]. The initial hopes that the OGP would bring e-participation higher to the government agenda, however, have not materialised. First, Estonian OGP action plans have clearly focused on online service delivery and much less on the actions that could qualitatively change governance and improve democracy. Second, the action plans tend to accommodate already existing government initiatives that have been slightly modified or fine-tuned for the OGP action plans, such as the e-Tax and Customs Board 2020 for instance[146]. Third, the aims and actions have not been ambitious, expecting to increase the openness and inclusiveness of the policy-making by organising a few trainings for public officials or by preparing various handbooks, guidelines, and green papers, from open data to the description of best e-participation cases. Forth, at times, the action plans have been vague and not specifying the expected final outcomes and, thus, its connection with the OGP remains unclear. Another critique that seems to apply to all OGP action plans, is their preparation process has been open only for bigger civil society organisations, and no efforts have been made to raise public awareness.

[143] Documents concerning the first Estonia's OGP action plan (for years 2012-2014) can be found at: https://www.riigikantselei.ee/et/valitsuse-toetamine/avatud-valitsemise-partnerlus/tegevuskava-2012-2014.

[144] Estonia's action plan for the OGP 2014-2016: https://www.riigikantselei.ee/sites/default/files/content-editors/organisatsioon/failid/AVP/ogp_action_plan_2014-2016.pdf.

[145] Estonia's action plan for the OGP 2016-2018: https://www.riigikantselei.ee/sites/default/files/content-editors/Failid/AVP/avp_2016-2018_tegevuskava.pdf. Additionally, the OGP IRM assessment reports (in addition to Estonian government ones) can be found at the website of the Open Government Partnership Initiative: https://www.opengovpartnership.org/countries/estonia.

[146] The e-Tax and Customs Board 2020 is one of the main priorities for the Estonian Tax and Customs Board's Strategic Development Plan, available at: https://www.emta.ee/sites/default/files/contacts-about-ETCB/structure-tasks-strategy/20170608_mta_strateegiadokument_2017-2020_eng.pdf. e-Tax and Customs Board 2020 is also included in the Estonia's OGP Action Plan 2016-2018; yet, with an emphasis on the engagement of users in its design and development process. Available at: https://www.opengovpartnership.org/sites/default/files/Estonia_NAP3_2016.pdf.

Legislative acts: laws and regulations

In the following, an overview of the main strategic documents and legislative acts (laws, regulations, decrees) supporting public participation in the policy-making process in Estonia in 1991-2016 is given. As in the previous chapters where I laid the theoretical ground for the empirical work but also in the Chapter 4 where the results of the comparative statistical analysis are introduced, in this Chapter too I presume that legislative acts shaping the policy-making process more generally may also affect the development of e-participation. I start with an overview of the relevant legislative acts and move then further to softer institutional measures.

The legislative acts regulating public participation in the policy-making process were not yet adopted in the 1990s and were also scarce at the beginning of the 2000s[147]. At the time, all-governmental legislative acts regulating public participation in the policy-making process did not exist even though some ministerial decrees about collaboration between government institutions and their partners, limited to the jurisdiction of individual ministries that were responsible for the preparation of certain strategies and policy documents, did start to emerge. One of the first legislative acts that drew government and the public attention to more open and inclusive policy-making, can be considered The Environmental Impact Assessment and Environmental Auditing Act[148], adopted in 2000 and that sets rules on who and how needs to be involved in the process of environmental impact assessment. The Act also foresees the organisation of a public consultation in the case of environmental policies. This act, however, did not specifically address the use of the ICTs in the proceedings of important policy documents as it was only in 2015 that a relevant clause was added to the Act.

The law that that did advance e-participation in Estonian public institutions is the Public Information Act (PIA) that has been mentioned in numerous occasions in this thesis. PIA obliges all public institutions to open and keep websites and provide online content of public interest, and it contains a long list of information and documents that must be disclosed to the public, including drafts of policies and legislative acts but also salaries of public officials or

[147] The Constitution of the Republic of Estonia (Paragraph 56) states that people can exercise their political power by voting in elections and in referendums. The organisation of the latter is to be decided by the Parliament and until the present, this opportunity has been given to Estonians only once, when deciding upon the joining of the European Union. The Paragraph 103 touches upon the right to initiate bills which is restricted to the Government but also the members, political bodies, and committees of the Parliament, and the President in constitutional matters. The Constitution of the Republic of Estonia: https://www.riigiteataja.ee/en/eli/530102013003/consolide.

[148] The Environmental Impact Assessment and Environmental Auditing Act: https://www.riigiteataja.ee/en/eli/520012015014/consolide.

vacancies. Additionally, the PIA gives the right to re-use public information, i.e., it also functions as an open data law in Estonia. There are several other strengths of the PIA, in addition to the already mentioned ones, such as the nomination of a responsible institution – Data Protection Inspectorate – to carry oversight over the implementation of the PIA. The current version of PIA also regulates the collection, maintenance and sharing of data and, therefore, also public registries. After a rather long silence, in 2011, Government Regulation on Rules for Good Legislative Practice and Legislative Drafting[149] was adopted. This law required, for the first time, to publicise the results of stakeholder engagement and public consultation.

Until the present, the PIA and Rules for Good Legislative Practice and Legislative Drafting have remained the two major legislative acts shaping the development of e-participation in Estonia. In 2014, however, two legislative amendments were introduced and even though they do not concern central government, they are worth bringing out. Both amendments, the one introduced to Riigikogu Rules of Procedure and Internal Rules Act[150] and the other to Response to Memoranda and Requests for Explanations Act[151], regulate petitions, including online petitions. Pursuant to these changes, any idea with 1000 or more supporting signatures, that can be given in paper or digitally, are subject to the processing of the Parliament. What needs to be added here is that the latter also provides a procedure for responding to requests sent to public institutions and/or officials, to which there is an obligation to answer within 30 days, unless the response requires research, in which case the period is two months. This requirement found way to the Act already in 2004 when the act was first adopted.

It can be concluded that public participation in the policy-making process and, thus, also e-participation has not been subject to regulation in Estonia. Apart from the very few legislative acts, government institutions have had rather open hands in deciding how to prepare policies and legislative acts, or whether and how to involve the public and other stakeholders in this process. Over time, though, the process of the preparation of public policies and legislative acts, especially those of potential wide public interest has been to more scrutiny and a few regulations, as discussed, have been established.

[149] Government Regulation on Rules for Good Legislative Practice and Legislative Drafting (2011): https://www.riigiteataja.ee/en/eli/508012015003/consolide.
[150] Riigikogu Rules of Procedure and Internal Rules Act: https://www.riigiteataja.ee/en/eli/518112014003/consolide.
[151] Response to Memoranda and Requests for Explanations and Submission of Collective Addresses Act: https://www.riigiteataja.ee/en/eli/507042014003/consolide.

To sum it up, institutional arrangements supporting the public participation in the policy-making process but also the development of e-participation have been hollow, particularly in the 1990s and the beginning of the 2000s where it was limited to very general cooperation agreements between government institutions and its partners. Since the 2000s, a few steps have been taken. First, in 2000, the Public Information Act was adopted that that clearly set a goal for Estonia to foster democracy and democratic information society. Also, the number of policy documents concerning public participation and e-participation have increased considerably and, occasionally, ambitious plans have presented such as the idea to introduce the one-stop-shop approach to the policy-making. Mostly though, the set objectives and planned actions have remained mediocre. This is particularly the case with the very recent policy documents like the Digital Agenda 2020 for Estonia but also some of the OGP action plans that centre around effective service delivery instead of inclusive policy-making.

Despite the increase in the number of strategies dealing with public participation and e-participation, until the present day, Estonia does not have a unified policy for e-participation and the relevant commitments are scattered across different policy documents, included in the strategies of individual government institutions. Even though the OGP process provides a platform for an all-governmental effort to enhance e-participation and they could serve as an all-governmental e-participation strategy, in reality, the OGP action plans have remained the collection of un-coordinated initiatives of individual agencies. The Digital Agenda 2020 for Estonia, curated by the MKM, has clearly lost in its ambition to advance e-participation and has moved to a clear prioritisation of online services.

Organisational processes supporting the development of e-participation

Management, coordination and collaboration

Since 1991, the responsibility over the advancement of inclusive policy-making, good practice of law- making and e-participation has been divided between different institutions along their main functions. Here, three ministries have played a main role: Ministry of Justice, Ministry of Economic Affairs and Communications, and Ministry of Interior. Ministry of Justice regulates legislative procedures and looks after the overall quality of legislation and is also responsible for carrying out an oversight over legislative procedures in Estonia. Additionally, Ministry of Justice was, until 2011 in charge of the information system e-Justice that was used as a government working environment for legislative proceedings before it was incorporated into

the current version of the latter, i.e., EIS. Ministry of Economic Affairs and Communications is responsible for the development of information society in Estonia and according to the Fundamentals for Information Society Policy, this also entails electronic democracy and participation. Regarding Ministry of Interior, the latter has to guarantee good conditions for a dialogue between the government and civil society but also opportunities for civil society to be part of the decision-making processes.

In addition to these three ministries, also the Government Office has a role in the development of e-participation, overseeing public participation and consultation practices as well as online participation portals: Today I Decide (TOM) in 2001-2008 and OSALE since 2008. Over time, the Government Office's responsibilities have somewhat increased as since 2011, the Government Office is also responsible for the well-functioning of the information system for legislative proceedings EIS that is a follow-up to the e-Justice system that was managed by the Ministry of Justice until then. The other important task was added when Estonia joined the OGP Initiative and the Government Office became responsible for the preparation and implementation of the OGP action plans. During the first action plan, however, Estonia had not yet nominated the accountable institution and this role was officially carried out by the Ministry of Foreign Affairs who had been the very first contact point for the OGP Initiative and continued the communication between Estonia and the OGP in 2012 and 2013. Despite the increasing duties, the Government Office does not yet have dedicated personnel on e-participation. Instead, the related tasks are simply divided between different positions and have been mainly in the hands of Tex Vertmann, Eleka Rugam-Rebanne, Hille Hinsberg, Juhani Lemmik, Liis Kasemets, Marten Taevats, Merilin Truuväärt, but also others.

The first attempt to raise awareness on e-participation in government institutions through a closer collaboration dates back to 2007 when, under the leadership of the Government Office, an all-governmental network of the so-called participation coordinators was established. This loose network of participation coordinators from different government agencies was active during the first years after its establishment, especially so during the time it was led by Ms Hille Hinsberg, a person responsible for public participation at the Government Office in 2007-2010. By now, most likely as an aftermath of a personnel change at the Government Office and subsequent lack in the central coordination of e-participation, the network has ceased to exist or, at least, the network has not come together once during the past year or two. Regarding the activity of the coordinators in the individual ministries, it again varies from ministry to ministry,

usually depending on a participation coordinator of the ministry, in case the latter has been nominated of course.

Since 2014, the implementation of the OGP's action plan is coordinated by the Coordination Council that was formed in 2014 at the Government Office. The Council that consists of an equal number of government and civil society representatives also evaluates the implementation of the action plan and contributes to the awareness of the OGP in Estonia. At the same time, the Coordination Council lacks the power to compel other government institutions into implementing the commitments and, consequently, there is no real monitoring over the implementation of the commitments. Although the Council has met regularly after it was established, the meetings have been rare in the years to follow. Apart from these two groups, there have been no other efforts by the Government Office to foster cooperation between government institutions in the planning, implementation, and assessment of e-participation in Estonia.

In addition to the Government Office, however, some initiative to collaboration in the area of e-participation in Estonia has been shown by the Ministry of Interior that established a working group to support the implementation of civil society development plan in 2003. The current working group consists in total of twenty-two members from government and civil society has been rather active since then.[152] At times, this group had also discussed the advancements of e-participation, such uniting different information systems to increase the openness and inclusion throughout the policy-making cycles.

From the discussion above, it is clear that the cooperation between government institutions and between government and its partners has been limited to some not active institutional working groups and coordination councils, and their activity has not followed up with the same tempo. There has been no central body to push for the cooperation as central management is weak and the area lacks clear ownership. This leads me to conclude that, overall, the development of e-participation has been in the hands of individual government institutions and has been only moderately centrally supported.

[152] Government order on the establishment of a working group to implement and assess the implementation of civil society development plans and for the advancement of cooperation between the government and civil society (in Estonian): https://www.riigiteataja.ee/akt/311072017006. The list of current members and the minutes of the meetings of the working group can be found at the website of the Ministry of Interior (in Estonian): https://www.siseministeerium.ee/et/eesmark-tegevused/kodanikuuhiskond/eesti-kodanikuuhiskonna-arengu-kontseptsioon.

Budgeting and financing

Since 1991 until the present, e-participation in Estonia does not have a separate budget for e-participation. In line with the functions of individual ministries and sectoral strategies and action plans, e-participation projects have been subject to the financing from the budgets of individual ministries. Currently, there is no budget allocated for the implementation of the main e-participation action plan - the OGP action plan either. Furthermore, there is no separate budget for the coordination of the OGP activities at the Government Office.

Even though e-participation has no budget nor has the OGP action plan, e-participation projects do get funded, as mentioned above, either from individual government agencies' budgets or from alternative sources. One of the main measures to support e-participation initiatives has been the Administrative Capacity measure of the EU Structural Funds with a total budget of 440 000 EUR for the years 2015-2020. Under this measure, three main activities are supported: i) developing government participation solutions, ii) testing these solutions, and iii) building the capacity of non-governmental partners in the policy-making process. Out of this budget, 120 000 EUR is being allocated to the Government Office itself and not solely for supporting participation related projects but also other administrative capacity building efforts. The rest of the budget, approximately 53 000 EUR per year is meant to cover the costs of participation projects of both government and civil society organisations, in total of 7 projects. Apart from some general requirements for the eligibility of projects, there is no clarity over the use of these funds. In order to get a vague understanding on the aims, principles, criteria for selection and funds' allocation, one has to go through the minutes of the established committee that advises on participation related projects.[153]

Hypothetically, there could be also other sources used to fund e-participation initiatives, especially those EU Structural Funds that are coordinated by The Ministry of Economic Affairs and Communications to develop digital governance in Estonia that does include e-participation, even though underrepresented in respective policies. From the allocated funds, it is evident that these funds are spent to support the well-functioning of digital governance more generally, its

[153] The principles for the financing of projects on participation through the EU Structural Funds (2.12 „Administrative capacity,"2.12.2.2 specific objective „ Improve policy development process...") during 2014-2020 have been established by the State Secretary on 19.12.2014: https://dhs.riigikantselei.ee/avalikteave.nsf/documents/NT00219516?open. There is a committee established to advise State Chancellery on the financing of participation projects. From the minutes of the committee one can get an overview of some projects discussed. https://riigikantselei.ee/et/kaasamisprojektid-2015-2020.

main components eID and X-Road. Since 2003, e-participation related actions have been supported just once, in the framework of the programme „Raising Public Awareness about the Information Society" in total of 122 566 EUR in 2010-2012.

Over time, e-participation has lacked a central budget, and the financing generally has been scarce, including the period of the availability of the EU Structural Funds. The allocated funds have been insufficient to support the development of e-participation in Estonia, and it has affected several developments as the progress has been slow, and some of the planned actions have not been executed altogether. This applies to the refresh of the technologically outdates all-governmental participation portals but also further steps in improving the information system for legislative proceedings EIS. Whereas the development of digital governance, its main pillars and e-services has been generally positively influenced by the available financial resources and the budgeting process, e-participation has suffered from underfinancing and it has left a mark in the progress that has slowed down in recent years.

Summary on the development of digital governance in Estonia and the role of institutional arrangements, organisational processes and actors in this process

The development of digital governance: online services and e-participation. The development levels and patterns

Throughout the studied period, Estonia has demonstrated a high level of digital governance that seems largely to be based on the early development and adoption of two of its main central pillars: eID and X-Road. Electronic identity, allowing for both electronic authentication and for giving electronic signatures and X-Road, enabling automated data exchange between public but also private institutions has allowed for the development of secure, easy to use and effective online services in government institutions. From my analyses of chronological developments in online service provisioning, it can be concluded that Estonia witnessed a peak in the development of online services in the 2000s when several innovative and essential online service were introduced. It is the period that followed the quick and radical reforms introduced during the 1999s and early 2000s, including the introduction of these two pillars: eID and the X-Road. Examples of the online services launched then include e-Tax Board, e-Cabinet, m-Parking, e-Police, and e-Business that enables the registration of a company within 18 minutes.

After the introduction of the e-Health programme in 2008 and e-Prescription in 2010, there have not been noticeable national developments as the life-event based approach to online service delivery is yet to materialise and some of the promising initiatives like Government Cloud, for example, behind the schedule. However, some innovative solutions have been launched like the e-Residency, issuing Estonian eID to foreigners not having Estonian citizenship nor Estonian residence; or the initial steps in the introduction of cross-border e-services. The main target group of these developments goes beyond Estonia to advertise but also sell Estonian digital governance experience in an international arena.

The level of e-participation has not been constantly high throughout the studied period as the initial developments have been followed by stagnation and, since the 2010s by a rather sharp decline. This is also reflected in respective international indices as Estonia's position has fallen considerably. In the UN e-Participation Index, Estonia has dropped from the 5th position in 2003 to the 22nd position in 2016. In the early 2000s, Estonia got to the World map of democracy innovators as the TOM portal that allowed for the submission of proposals for the government and required their response was, indeed, innovative are rare at the time. Yet, after the opening of the national participation OSALE in 2008 and the information system of legislative acts EIS in 2011, the government has not shown any interest in putting these tools into active use. Additionally, some of the planned refurbishments of these technologically outdates portals have been postponed and new projects have not started. Nevertheless, some developments have taken place; yet, these innovations like the democracy crowdsourcing initiative People's Assembly that did prove to be an effective means to smoothen political conflict, have originated from the civil society instead.

Thus, even though the level of digitalisation in Estonia has been constantly high, there are some differences in the levels and patterns of e-services and e-participation. Both e-services and e-participation were at their prime in the 2000s, but whereas the progress in e-services has continued and has been steady ever since, there has not been evident progress in e-participation. Overall, the findings support that apart from the quick and novel developments that followed the restoration of Estonia's independence, the development of digital governance and particularly the development of e-services has been largely path dependent. Since Estonia rapidly and successfully stepped in digitalisation, it has continued to develop information systems and provide online services. Estonia did have a quick-start in the digitalisation in the 1990 and particularly in the 2000s, leapfrogging most countries in automated service provisioning, but the progress has been rather steady since then. The development of digital

governance has not witnessed severe ups and downs even when subject to some shocks. Here, for example, the 2007 cyberattacks that did take down some private and public sector websites and limited the availability of some services, did not raise questions whether to continue with digitalisation or not. Generally, the progress in digital governance has not been affected by incidents or scandals related to information society, and these could also not explain the recent slow national developments.

The analysis on the development of digital governance also finds that, over time, doing things digitally has become a new norm for Estonia and for the different actor groups. Estonian government particularly identifies itself with digitalisation and what has been called "e-Estonia." It is perhaps more evident in international arena, but this study also finds that despite somewhat slow recent progress, other ways of doing business than digitally are not in anybody's agenda. It seems that some of the more recent developments may have been triggered by the new image of e-Estonia. The e-Residency project that is targeted at the international arena, does reinforce Estonia's image as modern and technologically savvy.

There are two other aspects related to the development of digital governance that I would like to raise here: timing and sequence. Timing has proven to be essential in the development of digital governance in Estonia as the digitalisation coincided with the re-establishment of Estonian independence that was followed by a period of state-building, providing a favourable context for the digitalisation and government modernisation. During this transformation period, institutional and organisational arrangements were few and these did not pose barriers to the introduction and realisation of, at times, risky and bold ideas. I will elaborate more on this in the following section on the role of institutional arrangements on the development of digital governance in Estonia. Timing has also favoured the development of e-participation as transparency and inclusiveness were central key-words of the public sector reforms introduced in the 1990s and in the 2000s. Indeed, public websites were opened to allow for easy access to information, government sessions were made public together with the accompanied documents and the public was given a novel opportunity to communicate with the government and influence their work through the direct democracy portal TOM. Despite the impetus that the Estonian re-independence gave to the digitalisation, over time, in line with the growing age of Estonian state, this initial enthusiasm and boldness has shaded.

Similarly, sequence has positively influenced the development of digital governance and here, the introduction of the eID and the data exchange layer X-Road provide support. The

early successful introduction of these crucial pillars, one allowing for online authentication and digital signature and the other for the exchange of data between registries and information systems of both private and public sector, has enabled the development of highly innovative, fully automated and user-friendly information systems and online services already in the 2000s. This has also influenced Estonian digital governance development along the so-called maturity phases. Due to the early introduction of fully-automated online services, Estonia skipped the second phase in which forms and applications, available on the websites, need to be downloaded and filled in and taken to the service centre, or sent via e-mail to a public officer. Sequence and its influence is not less evident in the case of e-participation though.

Following this summary on the development levels and patterns of digital governance in Estonia and its main milestone, I turn to an overview of what has influenced these identified levels and patters of digital governance.

The development of institutional arrangements, and their role in the development of digital governance

In this section, I summarise the development of institutional arrangements that have affected the development of digital governance in Estonia. I begin with the ones that have influenced the provisioning of online services and digitalisation more generally that is followed by the summary of the institutional arrangements affecting the development of e-participation. I provide a brief comparison at the end.

Estonia does not have a single digital governance legislation nor a comprehensive system of digital -governance legislation. The findings of this thesis support that digital governance in Estonia has not been very strongly regulated and that Estonia has tried to avoid overregulation of digital governance and technology more generally.[154] This, however, does not mean that Estonia has not established a regulatory framework needed for the development of digital governance or that it has not influenced the course of digital governance in Estonia. On the one hand, Estonia has guaranteed a regulatory flexibility that has allowed for innovative digital developments to take place. First, because unnecessary legal obstacles that could hinder digitalisation have simply not existed and; second, several digital developments have taken place without having to wait for (often late) adoption of legislative acts enabling these developments. This has been particularly so during the years following Estonian re-

[154] It applies mainly to laws and regulations as ministerial decrees often address technological issues, for instance, standards to be followed when guaranteeing the accessibility of websites or online services or their security.

independence, at the beginning of the journey of digitalisation, in the 1990s but also at the first half of the 2000s.

On the other hand, Estonia has regulated several essential aspects of digital governance such as electronic identification, digital signature, access to information, exchange of data between state and private information systems. In this sense, laws adopted in the1990s and in the 2000s such as Public Information Act, Digital Signature Act, Data Protection Act but also X-Road Regulation have been absolutely necessary for the digitalisation in Estonia. Additionally, Estonia has also established fundamental principles in building digital governance like "once only" or "digital by default" that have clearly contributed to the effectiveness of public administration and the user-friendliness of the offered e-services. The findings of the study suggest that the balance between over and under regulation has been important in supporting digital governance in Estonia.

Over time though, legislative changes have increased considerably as legislative acts have been subject to very detailed and technical amendments, at times considered unnecessary and burdening public administration. This might have happened because of the increase in the public administration dependence on institutional arrangements and the increase in the bureaucracy more generally. Clearly, the legislative baggage of Estonian government has been growing over the years and has, by now, left an institutional legacy i.e., public administration is guided by a higher number and more established rules in their work. In parallel with the increase in the number of institutional arrangements, public officials too have become more dependent on the legislative acts in their work. It has been noted that the boldness of the government officials of the 1990s and the 2000s has been replaced by cautiousness and security guaranteed by the established rules.

In terms of strategic vision, digital governance development in Estonia does not seem to be guided by a comprehensive strategic plan that is accompanied with a detailed action plan and a budget. Rather, I find that the strategic documents that have been short, abstaining from going into details, but these documents have guided general modernisation efforts of Estonian government by determining main concepts and fixing general principles. The strength of these short documents has lied in how the role of technology has been conceptualised – as an integral part of all aspects of Estonian society, triggering economic growth, developing democracy, increasing government efficiency, and modernising Estonian society.

In recent years though, digital governance strategies have gained in length and in detail but, at the same time, they seem to be losing their all-governmental nature. The Digital Agenda 2020 for Estonia clearly serves as a digital governance strategy of the Ministry of Economic Affairs and Communications and not as a document guiding digitalisation of Estonian government and society. This trend has, in turn, left a somewhat negative mark in the progress of digital governance in Estonia, particularly in the areas that do not strictly fall under the jurisdiction of the Ministry of Economic Affairs and Communications or require an all-governmental effort. Also, the Digital Agenda 2020 is much less concerned with national government digitalisation efforts than building a stronger IT sector and selling Estonian digitalisation experience in an international arena. Again, there seems to be a correlation between these strategic aims and the progress in implementation as, indeed, projects targeted at PR like the e-residency have been launched and implemented, overshadowing several national projects like the development of life-event services.

Regarding the role these institutional arrangements have played in Estonia, I find that these have positively impacted the development of digital governance in Estonia, however, the effect has not been consistent through time. It seems that the essence of both policies and legislative acts in guaranteeing the progress in digital governance has been increasing. There were several innovative tools introduced during the 1990s and 2000s that were not guided by a policy nor supported by respective legislative acts. The data exchange layer X-Road, for instance, went live before the relevant legislative acts were adopted. But again, in line with the recent policy shift towards international marketing activities, national developments have slowed down.

Similarly, e-participation has not been guided by a clear vision nor a comprehensive development plan and, moreover, the related objectives and actions are scattered across different policy documents of individual governmental institutions as well as all-governmental strategies. Since 2011 i.e., since Estonia joined the OGP Initiative, the OGP national action plan for Estonia could serves as such an all-governmental policy but, in practice, it has remained a collection of uncoordinated plans of individual agencies. Differently from the development of online services and digital governance where, over time, the number of institutional arrangements has been constantly growing, e-participation nor public participation generally has never been subject to much regulation. Only a few legislative acts have been adopted throughout the studied period like the Public Information Act in 2000 or The Good Practice of Engagement in 2011.

Whereas it is rather clear that Estonia lacks an ambitious and comprehensive policy and an extensive regulative framework for public participation and e-participation, the impact of the lack of institutional arrangements supporting e-participation is not that clear-cut. On the one hand, we have witnessed the introduction of innovative online tools such as TOM in 2001 or the information system for legislative acts EIS in 2011. On the other hand, not much has happened since then and the progress on e-participation has stagnated. It seems that the lack of a comprehensive e-participation policy and a regulative environment did not impact the development of e-participation negatively in the 1990s nor in the 2000s; yet, over time, alongside with the increase of the Estonian government dependence on institutional arrangements, the lack of such institutional arrangements may have negatively impacted the development of e-participation. My findings, thus, support that institutional arrangements have impacted the development of e-participation in Estonia; however, not consistently through time. Furthermore, it seems that the role of institutional arrangements in the development of e-participation is weaker than in the case of the development of online services and digital governance more generally.

Summary on the development of organisational processes and their role in the development of digital governance

Estonia has guaranteed central planning and management of digital governance through the policy-making body RISO and a strong digitalisation agency RIA throughout the studied period. RISO has maintained its central position in the policy-making, management and coordination of digital governance regardless of whether being situated in the Government Office or in the MKM. Its position and its ability to support government agencies in their digitalisation efforts has, at times, been weaker which seems to have influenced the advancements in some areas, but it has not negatively affected the general progress in digital governance in Estonia. RIA, an agency responsible for the management and implementation of some of the critical elements of Estonian digital governance: X-Road, the state portal, the database of databases but also cyber security has been another essential central body supporting the implementation of digital governance in Estonia.

Despite the central planning and management, individual agencies have played an essential role in the development of digital governance in Estonia, too as they are responsible for digital developments in their jurisdiction. The findings suggest that the role of particularly some individual ministries has increased over time. Strong and influential state IT houses have

been created such as SMIT under Ministry of the Interior and RIK under the Ministry of Justice. The opinions around the creation, expansion and need for such IT houses are polarised but there seems to be no empirical evidence to support one or the other side. In order to detect the potential influence of the state IT houses on the development of digital governance, further work is required but it seems, at this point, that these have not been essential in the case of Estonia.

Somewhat surprisingly, the collaboration between government institutions, particularly the institutionalised collaboration through the established councils, working groups, and committees has been scarce in Estonia. Moreover, these have turned to be ineffective as the current e-Estonia Council has hardly met and even if it has, it has failed to make decisions on several essential issues. The network of the CIOs, again, has failed to further develop life-event-based services that do require closer collaboration between government agencies. Therefore, this study suggests that the strength in the development of digital governance lies in a good cooperation between a loose network of specialists composed mainly of public officials. Even though the informal cooperation has been efficient in Estonia, it poses some risks as these tend to be overly persona-dependent and do not carry institutional memory. Regarding the involvement of other actors in the development of digital governance, the circle has been rather small composing of, as said, mainly government officials and IT companies and, over time, this circle seems to have narrowed down. OECD (2015) has come to a similar finding after studying the development of digital governance in Estonia, claiming that government institutions have less frequently been part of formal digital government processes. The lack of institutional collaboration between government agencies, however, has been compensated by the well-functioning of an interoperability framework and the enabling technological solution – X-Road. RIA as a central body coordinating data collection, management and sharing has guaranteed that the data, once collected by a given government institution, does get shared and re-used.

In terms of finances, Estonian government has guaranteed a sustainable funding of digital governance development throughout the studied period even though the allocated sums but also the budgeting process has varied substantially over time. In 1991-2003, the financing of digital governance was modest despite constituting 1% of the state budget in all these years. Since 2004 i.e., since the availability of the EU structural funds, the financing of digital governance has increased considerably which has favoured the development of information systems and has guaranteed the secure functioning of central components like eID and X-Road. The EU funding has its downsides, too, as information systems have grown into overly complex

gigantic developments that often progress slowly or fail. Additionally, government institutions seem to struggle maintaining their functioning after the completion of their development.

Regardless of the availability of financial resources, Estonian government has followed a centrally coordinated planning and financing of digital governance, and has aimed to avoid costly duplicative developments, though the central budgeting process or using central digital governance components eID and the data exchange layer. At periods, the central budgeting has been weaker which has impacted the development of cross-agency initiatives (for example, life-event based services) and may have increased the development costs but has not had a noticeable impact on the general progress of digital governance in Estonia. The findings suggest that guaranteeing constant financing has positively influenced the development of digital governance in Estonia alongside with central budgeting and financing; yet, the amount of available resources has not been as essential.

The development of e-participation has suffered from the lack of clear ownership and different institutions have played a role in its progress throughout the period. Additionally, their role has also changed over the years, divided mainly by with the MKM, Ministry of Justice, and the Government Office. Similarly, e-participation has not been centrally funded and has mainly been financed form the budgets of individual government agencies.

In terms of the role organisational processes on the development of e-participation, there is some support to the hypothesis that organisational processes have affected the development of e-participation in Estonia. Still, it seems that it is the lack of a clear central management and the so-called "ownership" that has had a more negative impact on the development of e-participation than a lack of good collaboration between government institutions. The collaboration has indeed, at times, impacted e-participation positively in Estonia but these closer relationships between government institutions and officials have always been triggered by the central management and coordination body. Here is an obvious link between the very concrete persons holding the position of an e-participation coordinator at the Government Office and the level of collaboration between individual government agencies. Apart from the weak central management, the findings also suggest that the lack of central budgeting and scarce resources have had a negative impact on e-participation. In sum, e-participation has been somewhat affected by organisational factors; however, it seems that it is dependent on clear central management, financing and an allocated budget more than other organisational processes.

Summary on the role of actors in the development of digital governance

The development of digital governance in Estonia has clearly been in the hands of government officials, particularly the governments officials with decision-making power but, equally importantly, the managers of digital governance initiatives and programmes. Somewhat surprisingly, I find that the role of politicians, although needed, has been marginal in the development of digital governance in Estonia. Rather I find that Estonia's digital governance has been supported by a political consensus around digitalisation; whereas it has not become a political issue per se and has therefore also not been subject to political contestation. Furthermore, the study of the party election manifestos clearly shows that digitalisation has gotten to the political parties' agenda only in the very recent years, all supporting the use of the ICTs for more effective public administration and for public service delivery. Only in very few cases, has digitalisation been connected to the renewal of democracy.

Even though, generally, digital governance has not been a political issue, one exception exists and needs attention here. Namely, the Internet voting that was introduced in Estonia in 2005, has been subject to political contestation since its launch as the Centre Party has been publicly against the practice. One of the main reasons for the Centre Party's negative attitude towards the Internet voting is that fact that the party has not been receiving as much votes via the Internet than some of its political rivals such as the Reform Party that has been the "favourite" party among the Internet voters. Still, it is worth pointing out that the Centre Party election manifestos have not foreseen the abolishment of the Internet voting and it has rather attacked the practice during the campaigning. The lack of politization and contestation, in turn, has allowed government officials to take necessary steps in the development of digital governance and also guarantee their continuity.

Another surprising finding concerns the almost invisible presence of the CSOs in the development of digital governance as it has been mainly limited to occasional memberships in some of its coordination councils and working groups. Still, their voice has been weak, and this study did not find evidence of their essential role in the progress of digital governance in Estonia. The IT sector, on the other hand, has always played a role in the development of digital governance in Estonia and there is a strong relationship between the government and the private sector. The nature of the cooperation has changed over time though. Whereas in the 1990s and in the 2000s the main means of collaboration were outsourcing or common national initiatives

such as the Look@World, in later years, the IT sector has more heavily influenced the policy-making process.

In the development of e-participation in Estonia, however, the role of the actors has been slightly different as alongside with government officials, politicians and the CSOs has shaped the process as well. The influence of these actor groups has not been constant over time. The initial impetus for the development of e-participation in Estonia was given by politicians; first, when the Parliament discussed and adopted principles for the development of civil society, and; second, when the Prime Minister Mart Laar supported the opening of an online system TOM. In later years, the developments have been driven by government officials either at the Government Office or in individual ministries. In more recent years, the of civil society has taken over. Very differently from the development of digital governance and online services, private sector has not been involved in the development of e-participation. It seems that the development of e-participation, in more recent years, has been pushed by the actors not holding power whereas I did not find this to be the case in the development of e-services that has been mainly driven by public officials, particularly higher officials with decision-making power.

Overall, the development of digital governance in Estonia has been influenced by actors who have been supported by institutional arrangements and, to a lesser extent, by organisational processes. However, their role has not been constant over time and it has also been different in the development of online services and e-participation. Differently from what was expected, digitalisation has not been in the hands of the public nor politicians but by government officials instead who have cooperated with the private sector in the development of information systems and online services but not in the development of e-participation. These findings will be discussed in Chapter 7 that compares the development of digital governance in Estonia and in the USA but also in the Conclusions.

Chapter 6. The development of digital governance in the USA

This chapter traces the development of digital governance[155] in the USA from the early 1990s onwards, when the World Wide Web (later www) became available to the wider public due to the invention of the web browser in 1990, making the www reachable to the masses. Naturally, technologies were exploited by the federal government of the USA prior the 1990s but as my interest lies in the online service provision and online participation available to the public, I am mainly concerned with the developments since then. Still, in the cases it has appeared that the decisions, actions etc made prior the 1990s might have influenced the development course of digital governance in the USA during the period I am concerned with, I have gone further back in time.

The following gives an overview of how the Internet and the ICTs have been used in the federal government of the United States, what the main objectives and functions of these technologies in the federal government have been and what the main factors shaping the development of digital governance have been, either supporting or hindering this process. Following the technology enactment framework, I will focus mainly on establishing the relationships between institutional arrangements, organisational processes, actors' and the level of digital governance development in the USA. I am particularly interested in the processes that have led to these established relationships, attempting to identify how the interactions between different independent variables (for example, actors and the organisational processes) might have affected the development of digital governance. As digital governance is a complex phenomenon, additional understanding of the role of time and the context in which these technological developments have appeared, assists me in this research.

This chapter is divided into the three presidency periods and I have followed and analysed the development of digital governance along these three main periods: the Clinton administration of 1993-2001, the Bush administration of 2001-2009; and lastly, the Obama administration from 2009 onwards. I begin with a very brief snapshot on the development level of digital governance in the USA, relying mainly on the UN e-Government Survey Online Service Index. I then provide an overview of i) the development of digital governance: e-

[T] The terms e-government but also e-governance are not widely used by the federal government officials of the USA nor is it known to the wider public. Despite the occurance of these terms in several public policies (for example, The e-Government Act of 2002) and government structures (for example, The Office of e-Government and Information Technology), the use of the Internet and the ICTs is rather referred to as digital governance/government, government digitalisation, online government, and recently open government.

services and e-participation ii) institutional arrangements, and iii) organisational processes along the three Presidency periods. I have identified the role of different actors in establishing the institutional arrangements and organisational processes as well as in the planning, implementation, and assessment of online services and online participation tools and, thus, there is no separate section on the role of actors in the development of digital governance.

I would like to remind the reader, once again, that I have not tracked the development of e-services and e-participation and the factors potentially influencing these developments in separate threads. This is different from the case study on the development of digital governance in Estonia where, indeed, I have divided the case study into two main sections: one focusing on the development of e-services and the other on the development of e-participation. As discussed in Chapter 3, I have done so because of these two countries are of very different size, Estonia considerably smaller and that has allowed to go deeper in my analysis than in the case of the USA. Additionally, Estonian government discloses more detailed information on its work. In the concluding part, I compare the development of digital governance along the same chronological line, from the Clinton administration to the Obama administration, from institutional arrangements to the actual outcomes i.e., the online services and e-participation tools offered to the public and private sector of the USA. I will draw conclusions from the experiences of the three administrations, determine the main paths of the development of digital governance, the changes in its main focus and concrete goals as well successes and failures; and determine the potential reasons for these outcomes.

Specification of methods and data

I will now add to the general methodology discussed in the previous chapter and will give a more detailed overview of the methods and the data used to establish the hypothesised relationships between the variables, following the order established earlier in this study. I have identified the following institutional arrangements (policies, laws, regulations) that potentially influence the development of digital governance in the USA:

i) Government reinvention/modernisation programmes of each presidency and the accompanying reports and/or programmes.

ii) digital governance/e-government/open government action plans.

iii) implementing reports of the above-mentioned documents[156]. I have mainly studied the reports published by the U.S. Government Accountability Office (GAO)[157] as these are the reports that the Congress requests the federal government to prepare. I have focused on the reports submitted by the Office of Management and Budget (OMB),[158] General Services Administration (GSA)[159], and the main agencies involved in the digitalisation such as the Environmental Protection Agency (EPA)[160], the Department of Treasury[161], etc. I have examined the agency reports using a random sample.

iv) executive orders of the President of the USA published by the Executive Office of the President[162] on the implementation of the above-mentioned policies.

v) main laws and regulations, but also amendments introduced to these laws and regulations[163].

In addition to these laws, I have randomly examined other relevant documents related to the planning, implementation, and assessment of the above-listed laws and regulations such as guidance, performance plans, operational and evaluation reports. What needs to be mentioned here is the significant role of a judiciary in the executive branch of the federal government of the United States. Judicial opinions often dictate the course of the implementation of legislative acts and, subsequently, may influence the development of the areas that these acts regulate. For example, the United States Department of Justice publishes a Guide to the Freedom of Information Act[164] that is comprehensive treatise of the FOIA requirements, exemptions, and other considerations. There is a difference in the thoroughness that these documents have been studied. The main documents studied (legislative acts, policies, executive orders etc) are included in Annex 3.

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[156] Reporting requirements in the government of the USA have been high and increased considerably after the inactment of the Government Performance and Results Act (GPRA) Modernisation Act of 2010 (GPRAMA) that increased the previous annual reporting obligation. Government agencies are now required to publish their strategic and performance plans and reports in machine-readable formats four times a year, i.e., quarterly.

[157] U.S. Government Accountability Office: https://www.gao.gov/about/.

[158] The Office of the Management and Budget, The Executive Office of the President: https://www.whitehouse.gov/omb/.

[159] General Services Administration: https://www.gsa.gov/.

[160] United States Environmental Protection Agency: https://www.epa.gov/.

[161] U.S. Department of the Treasury: https://home.treasury.gov/.

[162] The Executive Office of the President: https://www.whitehouse.gov/.

[163] Public and private laws from 1994 onwards can be found at GPO Info at: https://www.govinfo.gov/app/collection/PLAW and congress.gov ; congress.gov provides laws from 1993 onwards at: https://www.congress.gov/. At times, in this thesis, other sources are referred to as well.

[164] Guide to the Freedom of Information Act, Department of Justice: https://www.justice.gov/oip/doj-guide-freedom-information-act-0.

Under organisational processes, I have established the management and in and between agency coordination and the collaboration, but also collaboration between the government agencies and other stakeholders in the planning, implementation, and assessment of digital governance initiatives. Here, I base my findings both on the analysis of the relevant legislative framework (described earlier in this chapter) but also the conducted interviews.

Determining the potential reasons for a higher/or lower level of digital governance development, I have specifically established the potential role of various actors in this process by establishing the people and organisations that have participated either in the preparation, management, monitoring and/or assessment of e-governance initiatives as well as the mechanisms to allow for their involvement in the development of this area. In this undertaking, I focus on the preferences and the influence of high political figures, public officials, and users as follows:

i) high level political figures such as the President of the United States. To identify the role of the Presidents, I have examined the executive orders, speeches, and other public statements available on the website of the Executive Office of the President, largely on the website of the OMB. In my search, I have used several keywords such as: technology, innovation, digitalisation, digital government, e-governance, e-government, online services, online participation, e-participation, open government. I have also searched for announcements on some of the more essentials laws such as FOIA. I have then randomly chosen the executive orders, speeches, and announcements for further investigation. As the current website of the OMB includes the information on the current presidency only, additionally, I have also utilised the texts in the traditional media for identifying the speeches and statements of the Presidents of the USA, particularly those of Clinton and Bush, mainly The Washington Post. I have used the same key words for searching relevant statements that have been for a further random study.

ii) the politically appointed staff of digital governance central management and coordination bodies as the OMB and the GSA, and other federal agencies and departments. As there are hundreds of federal agencies, departments, and offices in the federal government of the United States, I look at the those more essential in the development of digital governance like The Department of Treasury, The Department of Education, EPA, the Department of Justice. I have relied here on two sources: 1) the conducted interviews and the references made during these interviews; 2) already published academic articles on the same subject.

iii) Members of the United States Congress (both senators and the representatives) in the digital governance development. This has turned out to be a very challenging undertaking. The main reasons for this are the nature of communication between the legislature and the executive, lobbying and the general policy-making process that tends to be closed to the public until the announcement/publication of the draft document. This means that the preparation process called a "pre-decisional deliberative" phase is essentially a closed phase and is accessible only to those stakeholders that have been invited to be involved. Administrative procedures, pursuant to the Administrative Procedures Act, go through a different policy-making process.

One way of identifying the role of the Congress members on the development of digital governance is to examine the letters that the Members of the Congress have sent to the executive branch. Here, I have used the database of the project undertaken by the Governance Lab at the New York University, called "Legisletters"[165] that includes letters sent from the Congress to the federal agencies. It should be added here, though, that the database does not include all the letters but only those that have been made public either by the Congress or the federal agencies. Again, I have used the key words for the search. Additionally, I have used the conducted interviews as a source of information.

The role of public officials and the users have been identified mainly during the course of the conducted interviews as well as earlier works on this topic (published articles, reports). The public officials have seen singled out as: i) the heads of the directorates/departments that are responsible for a certain online service provisioning and the implementation of the laws either enabling the development of digital governance or regulating the policy-making process; ii) project managers of digital governance initiatives and projects; and iii) the staff actively involved in these undertakings in the federal agencies and departments listed above.

The users represent: private companies (IT companies), associations (to a large extent, government watchdog associations and think tanks such as the Project on Government Oversight (POGO), Sunlight Foundation, Government Accountability Project, OpenThe Government.org), and private persons (including experts in any given area). Again, I rely on the sources such as interviews, earlier works on the topic and the legislative arrangements and organisational processes.

[165] The Legisletters Project, The Governance Lab: https://www.thegovlab.org/project-legisletters.html.

Last, I would like to draw attention to one essential difference between Estonia and the USA that I came across when carrying out this study. Namely, the experience of the USA in building digital governance have been studied intensely by academics, think tanks and private companies alike. This is not the case in Estonia where it is very difficult to find third party studies and reports. In the light of this difference, the case study on the development of digital governance in the USA draws information on both the dependent and independent variables from these third party resources, and I would like to point to the works of some academic in the field such as Jane Fountain, Theresa Pardo, Sharon Dawes but also the reports written by previous career civil servants like John M. Kamensky and many others who have been involved in the preparation of studies composed by the IBM Center for the Business of Government[166]. The latter studies have been of an invaluable source of information for the case study on the development of digital governance in the USA alongside their broadcasts of the interviews with civil servants of the federal government.

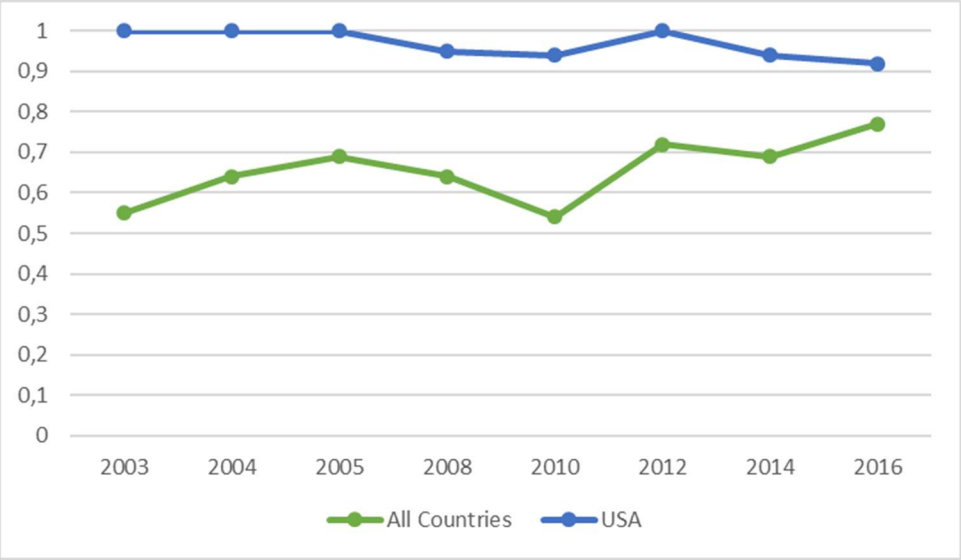
The development of online services and online participation

Introduction

Throughout the studied period, the USA has demonstrated a very high level of digital governance, and the country has hold leading positions in the UN e-Government Survey and its subcomponents since 2001 when the assessment was first piloted. In 2003- 2016, the USA has been among the top performers in the Online Service Index and only recently, since 2014 the country has started to lose its world leader position. As the Figure 14 demonstrates, the USA's online service index has had a higher value than the EU and OECD average throughout 2003-2016.

[166] IBM Center for the Business of Government: http://www.businessofgovernment.org/.

Figure 14. Online service index 2003-2016 (mean) of the USA and the OECD and EU countries' average



Similar results have been revealed by some other international studies that measure and compare the provisioning of online services and online participation, alongside with their impact. One of these includes the Global Information Technology Report prepared by the WEF. In the Networked Readiness Index of the latter report, the USA has hold high positions throughout the time, ranking 7 in the latest report in 2016. These studies reveal that the development of digital governance in the USA has revealed a rather constant high level and has not been subject to severe fluctuations. Still, as noted, in the very past years, there has been a slight, yet constant decline which may indicate some issues in this progress. I will now turn to giving an overview of how e-services and e-participation tools have developed in the USA and what the institutional, and organisational factors have been alongside with the actors' involvement.

The Clinton Administration (1993-2001)

The first websites of the government agencies in the federal government of the United States appeared in the early 1990s, offering citizens some very basic online services that were categorised according to the group they belong to in the eyes of the government: seniors, students, and businesses. The first online tools offered to the public were solely online services and there were no online solutions yet for the involvement of the public in the decision-making processes. Soon after, the federal government started to provide e-services following a certain topic line. Here, one of the first online services that received a lot of notice in the US government and gained usage is the electronic tax file submission system introduced by the

Internal Revenue Service (IRS)[167] in 1990 (Holden and Fletcher 2005; Schaupp and Carter 2010; Schaupp et al. 2010). The year 1990 marks the beginning of nationwide e-filing even though the first initiatives were launched already in 1986 when it was piloted by the IRS in three cities: Cincinnati, Phoenix, and Raleigh-Durham. It then expanded to more cities, regions, states, and; finally, reached the federal government in 1990.

The e-file service intended to ease the burden of citizens in filing taxes and increase customer service satisfaction (IRS 2000). The e-filing system had quite an aggressive launch, aiming to reach 80% of the taxes to be filed electronically by 2009 (IRS 2004) but it also offered some attractive incentives to the users by promising them earlier refunds if the taxes were filed electronically. The IRS made it clear: "if you file a paper return, your refund due will be mailed within 40 days" but „if you file an electronic return, your refund due will be sent within 14 days when you specify direct deposit, within 21 days when you request a check" (IRS 2004).

The US e-filing system very quickly gained ground. In the year of its launch, 4,2 million returns were submitted electronically; by 2005 the number of online tax filers had increased to 68, 4 million and by 2009, 90 million Americans were filing taxes electronically (IRS 2009). In 2015, IRS received more than 90% of the tax returns electronically, 2.4% more than in the year 2014, making it the most widely used e-service in the federal government of the United States[168]. According to the interviewed civil servants, the e-filing system but also other e-government projects planned at the time, followed the examples deriving from private sector. The National Performance Review (1993)[169], the Clinton's administration reform programme makes a very straightforward comparison with an "on-line electronic marketplace" of the banking sector where ATMs, plastic access cards, and nationwide networks were making banking more convenient and faster (NPR 1993).

Regarding other online services of the time, these too followed the business sector similar developments, particularly e-commerce as one of the main functions that got incorporated into the public online services concerned the payment -citizens could use their credit cards to pay for government services (Fountain 2008). In the NPR achievements report, the use of credit cards by the federal government of the USA in online service provision is

[167] Internal Revenue Service: https://www.irs.gov/.
[168] Own calculations, from: http://www.irs.gov/uac/Newsroom/Filing-Season-Statistics-for-Week-Ending-May-15-2015 (accessed May 23, 2015).
[169] The National Performance Review. "From Red Tape to Results: Creating a Government that Works Better and Costs Less: Report of the National Performance Review": http://www.nsf.gov/pubs/stis1993/npr93a/npr93a.txt.

particularly emphasised, reducing processing costs by $250 million a year. Several other policy areas started to move into a virtual sphere and several online services were launched: applying for an unemployment benefit, child support, social security benefits etc. It also allowed for applying student loans electronically[170] and for changing a residential address online[171]. In addition, the government of the USA started to move towards the one-stop shop approach and by late 1990s, the government offered a wide array of services through several one-stop-shop portals like: www.recreation.gov, www.consumer.gov, www.business.gov.

One of the first major milestones here can be considered the creation of FirstGov – a one-stop-shop website www.firstgov.gov for accessing government information, transactions, and offering a possibility to send e-mail to public officials. It has been considered one of the flagships of the US Government (Schaupp et al. 2010), it got the Hammer Award[172] back in 2001, and it has been referenced by several international benchmarking exercises. Principally, this one-stop-shop portal is a collection of other government agencies' websites links, either to online services (like renewing a passport, download forms) or information, and there have been no developments in its sophistication ever since its launch. Within two years, the portal provided about 1,000 forms and services from different agencies of the federal government of the United States.

The Bush administration (2001-2009)

During the Bush area, the focus shifted from individual agency based online services to joint services that would require cooperation between various government agencies. Bush administration focused on 25 initiatives were grouped into four categories: government to business, government to government, government to citizen, and the initiatives targeted at internal efficiency and effectiveness. All these 25 projects had a common feature – they were all cross-agency initiatives, requiring cooperation that would go beyond the borders of one agency, with an overall aim to increase government efficiency but also user-friendliness. The idea was that services would have to be designed from a citizen perspective and not following government inner processes. This, again, would mean that the offered online services would exceed the borders of just one agency.

[170] Federal Student Aid: https://studentloans.gov/myDirectLoan/index.action.
[171] Changing address at: www.usps.gov has been changed to https://moversguide.usps.com/mgo/disclaimer.
[172] About Hammer Awards: https://govinfo.library.unt.edu/npr/library/awards/hammer/index.htm.

In this light, the one-stop-shop portal *www.FirstGov.gov* was greatly improved but also renamed www.usa.gov, and several other all-governmental portals were opened. One of the more successful ones concerns the e-procurement portal www.FedBizOpps.gov. Yet, not all of these 25 initiatives were accompanied by success and some were even abolished on the way, like the one on building Federal Public Key Infrastructure (PKI), including a digital signature function that would allow for governmental inner functions but would also ease the government to business and government to citizens transactions. The resistance from individual agencies but also the massive scope of this initiative and its complexity did not allow for the project to materialise.

During Bush administration, essential steps were taken towards the introduction of online initiatives targeted at more open and inclusive decision-making process, providing more information on the government and its performance and spending but also on the more inclusive decision-making. Here, it is a must to introduce a portal called www.results.gov, opened in 2002, serving as the homepage for the President's Management Agenda. It published the aims, planned actions etc of the agenda, but it also posted standards and the results, either successes or failures, using the traffic light scorecard that had been introduced earlier to assess the performance. Results.gov also allowed for citizen feedback (Johnson 2007). A parallel website – www.ExpectMore.gov was also created, functioning until 2008, where the government posted mainly the so-called PART information, standing for the Program Assessment Rating Tool basing on the PART tool – one of the Bush administration ways to measure the effectiveness of government agencies' plans as well as the management mechanisms. PART also compared the planned and actual results and attempted to measure the effectiveness of the outcomes. The third portal targeted at the increase in government transparency concerns the portal www.usaspending.gov that was opened in 2007 pursuant to the Federal Funding Accountability and Transparency Act (FFATA)[173] adopted earlier in 2006. This website provided public access to information about the federal loans, grants, awards, including the name and the location of the grant recipient, the amount of the award and its purpose.

Apart from increasing transparency, following the e-Government Act of 2002[174], an online rulemaking environment- www.regulations.gov was opened to enable online citizen participation in the preparation process of regulations. Prior this portal, there were different

[173] Federal Funding Accountability and Transparency Act (FFATA): https://www.congress.gov/bill/109th-congress/senate-bill/2590/text.
[174] e-Government Act of 2002: https://www.govinfo.gov/app/details/PLAW-107publ347.

electronic regulatory systems in use in individual agencies but, largely, the regulation preparation had been done in paper, in rather closed circles. The transparency of federal spending was put on the agenda of the Bush administration and remained one of the priorities. Thus, it can be concluded here that even though the Bush has not been remembered as a transparency president, largely to the post 9/11 security concerns that have overshadowed every other development of his time, his administrative did give impetus for the development of e-participation and e-rulemaking in the federal government of the USA. Many of the portals opened during his administration continue to live and serve as major channels for citizen participation even at the present day, like the www.regulations.gov.

The Obama administration (2009-2016)

In line with President Obama's commitment to create an open, transparent, participatory, and collaborative government, particularly his first term administration focused on the development of websites and other online tools that largely fall into two categories aiming either at i) providing the public information about government (including open data and machine-readable raw data); or ii) providing possibilities for a dialogue and collaboration, including co-creation. The discourse around open data involved more than just information provisioning though as the expected outcomes were equally related to economic growth, through the re-use of the data, and the improvement of decision-making, its inclusiveness and quality. In parallel with cross-agency collaboration and the development of government-wide online initiatives, websites and tools of federal agencies were developed. Obama administration has also stood out for making use of the already developed tools and initiatives instead of investing heavily into new online tools and portals. In this, already available commercial tools for communication have been used such as Facebook, Twitter, YouTube. Still, these tools have been effective in providing information than in co-creation or public participation (Mergel 2012a; Mergel 2012b). As importantly, several of the previously launched initiatives and portals were further developed during Obama administration. In the following, a more detailed overview of these developments is given.

As mentioned, more than ever, Obama administration stressed on openness and collaboration and, therefore, online tools (essentially websites) to provide government information, including open data were developed. Here, one needs to bring out the advancements in federal spending, one of the main priorities for open government as, indeed, the public had expressed a considerable worry over the lack of transparency in the federal

spending (Freeman and Minow 2009). Here, the online portal www.usaspending.gov that was opened in 2007 during the preceding Bush administration, has remined the major commitment of the Obama administration. The portal has been expanded, more data has been made available and, more importantly, different organisational processes to further data releases and guarantee that the data available on the www.usaspending.gov corresponds to the actual spending of government agencies have been introduced.

The data quality of the usaspending.gov has been a setback since its launch and been criticised heavily throughout Bush and Obama administrations. For example, the Government Transparency and Accountability Board (2011) report on government spending transparency finds that the www.usaspending.gov fails to help people to know about the amounts that the government spends for certain purposes, and how government agencies actually spend the money allocated for them. Following the criticism, several measures have been taken to improve the data quality of www.usaspending. To name a few, following the signing of the Digital Accountability and Transparency Act of 2014 (DATA)[175] common data standards across the federal government as well as the data exchange standards were introduced, to be completed by 2017. It also obligated each agency to present their spending data within 30 days after the transaction and update the usaspending.gov but also to add more data on the portal. Currently, the website does not include data on appropriations, federal salaries and compensations, or grants (as there is a separate website www.grants.gov) and it does not yet allow to search for data by policy, the search engine not striking as a user-friendly feature.

There are other websites that have been opened during the Obama administration and aim at providing the public with the information about government spending. Whereas on usaspending.gov, data on federal procurement and financial assistance is released, the www.recovery.gov that was launched in September 2009 includes information on stimulus spending. The website was launched after the enactment of the bill named the American Recovery and Reinvestment Act (ARRA)[176] that is known as a stimulus package in response to the economic regression that peaked in 2008. The main aim of the ARRA that was signed into law in 2009, was to save jobs and create new ones but, equally importantly, to invest in the

[175] Digital Accountability and Transparency Act of 2014: https://www.congress.gov/113/plaws/publ101/PLAW-113publ101.pdf.

[176] American Recovery and Reinvestment Act of 2009: https://www.congress.gov/bill/111th-congress/house-bill/1/text.

areas that were hit hard by the recession. Consequently, funding was directed to areas such as education, infrastructure, health, energy, and so on. In order to guarantee the transparency of the fund's allocation and use, the recovery.org website was opened so that every citizen of the US could follow how the allocated funds were spent (ARRA 2009). The website included information on the spending records, planned work, schedules, reports, recommendations, and so on, and has been amended several times through the years. The latest version (as of June 2015) allows to track the spending of various assistance funds. Apart from the recovery.gov website, another one was opened, the federalreporting.gov. The most recent development on government spending transparency concerns the opening of yet another portal – www.paymentaccuracy.gov that also includes updates on government spending and should be more accurate than the other ones.

The landmark of the Obama administration, however, has been considered the portal on open data - www.data.gov inaugurated in May 2009. The portal was launched with wider aims to improve access to government information, foster innovation, enhance transparency of government functions, but also improve government by the involvement of the public. The concrete aim of the portal was seen in providing the public with free and easy to access data that is of high value, relevant and informative data. Among other formats, the portal is meant to share machine readable data sets. Within three months after the launch of the data.gov, the released datasets increased three times, and in line with the increasing data, the number of the visitors of the data.gov has increased accordingly.

The use and impact of the open portal as one the main means to improve transparency and inclusiveness of Obama administration has naturally been scrutinised, and it has received some criticism. Firstly, the usefulness of the released data has been questioned by many. Government watchdog organisations have pointed to the insignificance of the data and its little relevance. Helen Miller, the Executive Director of the Sunlight Foundation has been very vocal in her dissatisfaction, claiming that useful data such audit reports on government agencies' activities have never been disclosed alongside with several other data that would allow to evaluate the work of the government. Here, the data about occupational fatalities in the possession of the Occupational Safety and Health Administration has been brought out as an example of the data that could assist in lowering the number of occupational fatalities. Secondly, the quality of the released data has been questions as it has been inaccurate in numerous cases. Thirdly, the portal lacks user-friendliness as, indeed, it is hard to navigate and finding information is overly complex. When looking for "The Office of Management and

Budget information technology expenditure", the search engine finds 369 datasets, displaying The U.S Custom's and Boarder Protection, Department of Homeland Security, Office of Information and Technology's Financial Management System; ii) Department of Commerce's Economic Census data; iii) Networking and Information Technology Research and Development, Executive Office of the President Fiscal Year 2014 Supplement to the President's Budget. The same search in Google, for example, directs to the IT Dashboard of the Federal Government of the United States that includes the federal IT expenditures.

Fourth, it has been observed that the open data portal and the included data has not been targeted at increasing transparency, accountability and collaboration but, instead, it has been largely directed at the private sector to increase economic activity and profits through the re-use of these data. Joel Gurin (2014), for example, in his book "Open Data Now" has noted that the releasing of the government collected data has increasingly been targeted at fuelling private sector innovation and not at improving governance. Furthermore, in 2011, an interagency task force on information disclosure was formed at the Executive Office of the President and tasked to prepare a report on the federal government information disclosure, particularly on the benefits of open data. The report „Smart Disclosure and Consumer Decision Making: Report of the Task Force on Smart Disclosure"[177] gives a detailed overview of the use cases of open data and how these have improved services provided by either government or businesses. For example, Healthcare.gov and Medicare.gov help consumers compare their insurance plans and the quality of health care providers. What can be observed though is that this report does not include a single use case of open data aiming at increasing government transparency or involving citizens in the policy-making processes. From the analysis of the portals targeted at transparency and information disclosure, it can be therefore concluded that the hopes around open data to improve governance and policy-making have yet to materialise.

Following the open data portal, another all-governmental portal was opened in 2012 to ease the public access to the government information - foiaonline.regulations.gov. This portal was a remedy to the previously overly complex process of submit FOIA submissions i.e., Freedom of Information Act requests to several agencies as it allows to submit a request for information to government agencies via one window. Still, some complexities around the

[177] Executive Office of the President, National Science and Technology Council (2013). Smart Disclosure and Consumer Decision Making: Report of the Task Force on Smart Disclosure: https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/report_of_the_task_force_on_smart_disclosure.pdf.

submission of the FOIA request have remained and currently there is no reason to believe that this newly opened portal will solve them. First, a person must know in detail whom to address the information request (i.e., the information owner in the federal government) and in case of a failure to address it to the correct department, an answer is not required. Second, despite the one unified portal for making an information request, each agency still has its own procedures for processing FOIA requests, and these still differ considerably. As of 2016, FOIA websites of individual agencies exist in parallel to the all-governmental one, hence, it might be confusing for people to choose or differentiate between these options. Still, the agencies have been active in joining the portal and by June 2015, 10 agencies had done so.

Apart from opening websites aimed at increasing openness and transparency, several others have been opened to allow discussion and co-creation, following the President Obama's declaration to make government more collaborative and participatory. First, the official transition website www.change.gov was opened to asked people to share their views on various topics like economy, health, community service etc.[178] This was further supported by the "Open for Discussion" forum where people could ask questions from the government and vote on the questions. The government would then attend to the most popular questions (Sifry 2010).

The second participation initiative that caught a lot of attention is the online petitions website of the White House, called "We the People"[179] that was launched in 2011 and gave Americans a voice in what the administration does. We the People enables the public to create and sign petitions that in the case of passing a set threshold, are being reviewed by the White House. The White House, while processing the petition, consult with other public officials and must formulate a public response[180]. Ever since the petitions' portal was opened, it has been overly popular among the public with more than 18 million users who have signed nearly 400,000 petitions.[181] The experts and public officials alike believe that the portal has increased communication between the public and the US government. At this point, it is difficult to detect the impact of the portal in the decision-making as the website does not refer to any concrete outcomes nor has it been addressed in the relevant documents (for example, OGP progress

[178] As the www.change.gov was a transition period website, it no longer exists.
[179] "We the People" i.e., the petitions' website: https://petitions.whitehouse.gov/.
[180] As the petition gets to be submitted to and reviewed by the executive government, the term "petition" differs from its traditional meaning, according to which a signed petition gets forwarded to a Parliament i.e., to a legislature.
[181] As the We the People platform does not offer statistics, the data is taken from an overview of "We the People" given during the Obama Open Government Initiative's sixth annual celebration called Sunshine Week: https://www.whitehouse.gov/blog/2015/03/20/celebrating-sunshine-week-2015 (last accessed July 28, 2015).

reports nor the independent assessment reports reflect the matter). Some CSOs has risen concerns over the set threshold for receiving an official response, especially after it was increased from the original 5000 signatures (in 2011) to as high as 100 000 in 2013. Apart from the high number of signatures, also the short collection period- 30 days- has been raised as a potential issue by more active CSOs.

In addition to the two main groups of websites, the one concerning information provision and the other online participation in the policy-making process, the Obama administration has also continued to work on online services and as mentioned at the beginning of this section, it has also attempted to strengthen the one-stop-shop approach. Still, these efforts have not been as successful. The www.usa.gov lost the attention at the beginning of the Obama administration and some of the potential developments were hindered because of the lack of higher-level support in the Administration[182]. Most prominently example, by far, is the collapse of the Affordable Care Act's online enrolment platform healthcare.gov following its launch. Still, it has been also noted that the severe criticism has not been entirely justified, considering that the scale and complexity of the system (Fountain 2014).

Generally, it can be concluded that the digital governance developments of the Obama administration have focused on information disclosure and transparency, around openness, whereas the development of online services has been overshadowed by these initiatives around openness. Still, some advancements in online service provisioning are going on at this very moment (2015), partly an aftermath of the complexities around the development of the healthcare.gov portal that resulted in hiring private sector experts and enthusiast to work with government agencies (I will turn back to this in the following sections). As to the fulfilment of the three priority areas of the Obama Open Government Directive[183] - transparency, participation, and collaboration- the findings suggest that information and data provisioning has increased considerably but much less progress have been made in putting these tools to serve co-creation, collaboration and inclusive policy-making.

Having provided this short overview of the development of digital governance in the USA, both e-services and e-participation, the following section examines institutional arrangements, their development.

[182] From the interview with Martha Dorris, General Services Administration.
[183] Open Government Directive: https://obamawhitehouse.archives.gov/open/documents/open-government-directive.

Institutional arrangements supporting the development of e-services and e-participation: policies and legislative acts

The Clinton Administration (1993-2001)

There are various opinions on the role that the ICTs and the Internet played in the government of the USA during the Clinton administration, from being at the very centre of it to having been only very moderately discussed (Chadwick and May 2003; Fountain 2004). Still, it is evident that the Internet and the ICTs do have a presence in the main strategic documents guiding the development of digital governance during Clinton administration: National Performance Review (NPR)[184] that the President Clinton launched on March 3, 1993 but also its descendants: the National Partnership for Reinventing Government's (NPRG)[185] and the accompanying IT programme the AccessAmerica[186], both launched in 1997. I will first describe the NPR and will then turn to providing some more information on the NPRG and the accompanying IT programme. Only then I will return to legislative acts that supported the progress in government digitalisation or aimed at doing it. Here, we can distinguish between those dealing with internal administrative processes and service provisioning, and those concerning with performance management but also those establishing organisational processes to implement policy documents and legislative acts on digital governance.

All Clinton era strategic documents consider the ICTs as a part of a larger government modernisation initiative and not a separate, stand-alone area to be fostered (Fountain 2004; Chadwick and May 2003; Margetts 1999). It may seem rather obvious because these documents guide the modernisation of the government and American society and do not serve as digital governance strategies per se. But it is also about how the essence of the ICTs and the Internet is seen in both of these documents. The NPR and NPRG associate the application of the ICTs with an overall change that the American government needs to undertake, to build a government that "works better and costs less" (NPR 1993). The main aim of the Clinton administration was to make government modern, and as stated by Vice President Al Gore at the launch of the first

[184] The National Performance Review (1993a). "From Red Tape to Results: Creating a Government that Works Better and Costs Less: Report of the National Performance Review": http://www.nsf.gov/pubs/stis1993/npr93a/npr93a.txt.
[185] The National Partnership for Reinventing Government: https://govinfo.library.unt.edu/npr/whoweare/historypart4.html.
[186] National Partnership for Reinventing Government. Access America: Reengineering Through Information Technology: https://govinfo.library.unt.edu/npr/library/announc/access/acessrpt.html.

report of the NPR programme on September 7, 1993: “This report represents the beginning of what must be, and -- with your leadership -- will be, a long-term commitment to change.” (NPR 1993, p.1).

The NPR is very explicit it addressing Clinton’s preceding campaign promise to “fix” the government, to make it more effective and efficient and less costly, and similarly to the Texas Performance Review that serves as a role model for the NPR (Salkin 1994), it aims at: i) increasing the productivity of public administration, at the same time, ii) reducing the costs of government apparatus, iii) changing organisational culture and iv) increasing customer focus of government activities (NPR 1993). Still, according to some of the designers of the NPR, the latter paid more attention to the end-user and did not focus merely on how to improve administrative procedures but also how the people of the USA were served (Kamarck 2013). It is precisely the obligation to cut government apparatus costs that brought the ICTs into the play. The NPR does introduce several measures expected to make the government less costly, but most of them are related to the introduction of the ICTs into the government processes. The NPR (1993) makes it very clear: „everyone knows, computer revolution allows us to do things faster and more cheaply than we ever have before“ (NPR 1993), excepting to save $5.4 billion over 5 years (NPR 1993). It also foresaw, because of technology-supported automation of work, huge cuts in federal workforce, aiming at reducing the number of public officials by 252 000. This, again, would save $108 billion over 5 years (NPR 1993).

Performance, at the time, was mainly measured by results, either by the improvement and reduction of internal administrative procedures or, equally importantly, by the quantity and quality of services provided to different stakeholders. As the NPR (1993, p. 67) introduces: "People must be accountable for the results they achieve when they exercise authority. Of course, we can only hold people accountable if they know what is expected of them.... But with many rules swept away, what is expected from the empowered? The answer is results. Results measured as the customer would-by better and more efficiently delivered services.“ Here, again, the ICTs were brought in as one way to provide easy-to-use services to customers was to do it online, following the earlier set example of businesses, in particular the banking sector. Apart from these general role models that the NPR urged to follow, it also set some concrete actions such as the integrated electronic access to government information and services, national law enforcement/public safety network, intergovernmental tax filing, reporting, and payments processing, international trade data system, environmental data index, and government-wide electronic mail, i.e. the intranet (NPR 1993). Not all these initiatives were new at the time as

the federal government of the USA had already started implementing some of these before, but there was an additional visibility and support given during the Clinton administration (Fountain 2004).

The NPR was renamed at the beginning of Clinton's second term, true, to a rather similar one - National Partnership to Reinventing Government (NPRG). Apart from a similar name, it followed the aims and purposes set in the NPR, keeping the focus on reforming the US government by increasing government efficiency through an extended exploitation of the ICTs either in administration internal procedures or in customer service delivery. In service delivery, again, similarly to the 1993 version, the main moto was to follow the private sector, either banking or e-commerce (NPRG 1997). The accompanying report of the NPRG, "Access America. Reengineering through Information Technology" published on September 13, 1996 served as the main document guiding federal agencies in leveraging new technologies in their work during Clinton administration. The report set general directions for the development of digital governance, in line with the aims of the NPRG but it suggested very concrete digital governance projects alongside with digital governance leadership and supporting frameworks. Some of the planned initiatives such as implementing nationwide integrated electronic benefits transfer, providing simplified employer tax filing and reporting, the introduction of a seamless payment for Medicare, introducing biometrics data search to criminal records to reduce the time needed for checks, or, online system for students' loans, the introduction of a one-stop shop idea for government services, and many other were included (NPRG 1997). It needs to be brought out that the AccessAmerica programme stressed the need for across agency collaboration and planned for a Government Services Information Infrastructure (GSII) to be developed by the Government Information Technology Services board (NPRG 1997). The GSII was designed as all governmental intranet that would allow collaboration between government employees from different agencies. It was one of the first commitments of the Government of the USA to strengthen cross governmental cooperation in the development of digital governance in the USA.

It is quite clear that Clinton administration digitalisation efforts were mainly targeted at changing government, transforming its internal processes as well as services, treating stakeholders as clients and customers as businesses do. There was very little room left for the application of the ICTs for more open and participatory policy-making process. The reason is rather straightforward- the government of the time did not see the lack of public engagement to be a problem or to be a remedy to the problem – the lack of trust in government. The Clinton

administration, as many others, needed to address low trust in the government that, at the time, was related mainly to government spending and incompetence (NPR 1993). At the beginning of the Clinton administration, the average American believed that the government wastes 48 cents of every tax dollar and only 20 percent of Americans trusted the federal government to do the right thing (NPR 1993). One way of restoring the public trust, as already discussed in sections above, was seen in improving government efficiency and reducing costs. Still, John Kamensky (1996) who served as a deputy director of the NPR and the NPRG has observed that the US government followed a trend of the time as several governments were looking for solutions to the same issues, turning to different disciplines, particularly businesses. The public administration reforms of the time were influenced by business models all over the world, where key words as "business process reinventing" and "quality management" ruled (Kamensky 1996, p. 249). Indeed, it was a period of NPM and governments were increasingly turning to market-based systems to increase efficiency (Dunvleavy et al. 2006), including the federal government of the USA (Margetts 1999; Fountain 2004; Kamensky 1996).

To make sure that government agencies do follow the set targets and actions, a number of legislative acts was adopted or amended to eliminate still overwhelming paperwork and reduce the number of administrative procedures. Also, cross-agency collaboration has been addressed in the legislative acts introduced. To increase efficiency, the Government Performance and Results Act (GPRA)[187] was passed in 1993 and amended in 2000. The main legislative act targeted at increasing cross-agency collaboration is the Information Technology Management Reform Act (ITMRA)[188] that was passed in 1996 and was later renamed and better known as Clinger-Cohen Act. The main objective of this act is to establish federal enterprise architecture defined as "an integrated framework for evolving or maintaining the existing information technology and acquiring new information technology to achieve agency's strategic goals and information resources management goals." It has become evident that the Act did not manage to root the establishment of the EA but it did successfully establish the position of agency CIO. The third act, aiming to reduce paperwork and streamline internal

[187] The Government Performance and Results Act of 1993 (GPRA): https://www.congress.gov/bill/103rd-congress/senate-bill/20/text.
[188] Information Technology Management Reform Act of 1995 (IMTRA): https://www.congress.gov/bill/104th-congress/senate-bill/946/text.

administrative processes concerns the Paperwork Reduction Act of 1980[189] that was considerably amended in 1995 in light with the government modernisation efforts of that time.

The Bush administration (2001-2009)

The main document fostering the development of digital governance in the Bush administration is "The President's Management Agenda" (OMB 2001a)[190]. As Clinton administration main strategic documents, the PMA is not a digital governance strategy per se, but it aims at reforming the government of the USA. Still, one of the five main programmes of the PMA - "Expanding Electronic Government" does focus solely on how to use the ICTs for more efficient and user-friendly governance. The PMA, inspired by Bush' s reform plan "A Blueprint for New Beginnings" (OMB 2001b)[191] calling for an "active, but limited government," is concerned with how to adapt to the fast-changing world by changing administrative processes and service provisioning accordingly. As the predecessor, Bush administration too turned for private sector and followed its competition-based business model where citizens are treated as customers and where results matter above all. Here, the PMA (OMB 2001a, p.1) is straightforward: „Government likes to begin things—to declare grand new programs and causes. But good beginnings are not the measure of success. What matters in the end is completion. Performance. Results. Not just making promises, but making good on promises…". Still, there are a few differences compared to Clinton's government modernisation programmes.

The PMA, despite business driven and results' oriented, does bring in processes and the role that citizens play in these administrative processes. As Clinton, Bush too entered the office at the time of low trust in government and took some further steps to eliminate the existing obstacles between the government and its people (OMB 2001a). In the view of PMA, one of the reasons for failures in digital governance initiatives is that they are not being designed and developed from the point of view end-users but government officials instead (OMB 2001a, p. 23). In order to close that gap, PMA and some of the legislative acts to follow paved way for public participation in the USA federal government. In 2002, The e-Government Act[192] was

[189] The Paperwork Reduction Act of 1980: https://www.govinfo.gov/content/pkg/STATUTE-94/pdf/STATUTE-94-Pg2812.pdf.
[190] The President's Management Agenda: https://georgewbush-whitehouse.archives.gov/omb/budintegration/pma_index.html.
[191] „A Blueprint for New Beginnings. A responsible Budget for New Americans": https://www.govinfo.gov/content/pkg/BUDGET-2002-BLUEPRINT/pdf/BUDGET-2002-BLUEPRINT.pdf.
[192] e-Government Act of 2002: https://www.govinfo.gov/app/details/PLAW-107publ347.

adopted to serves the main document guiding the digitalisation of the federal government in the USA, among others, promotes the Internet and the ICTs for a more inclusive government. Still, despite bringing e-participation into the government agenda and introducing relevant legislative acts and changes (that I will turn to in later sections of this Chapter), service orientation, effectiveness, efficiency and cost-saving and later, secrecy and security- an aftermath of 9/11, prevailed throughout Bush administration.

One way to increase government effectiveness was seen in cross-agency collaboration. The lack of interoperability, standing for "the ability of different operating and software systems, applications, and services to communicate and exchange data in an accurate, effective, and consistent manner" (OMB 2001b) was considered of the main obstacles for further progress in the development of digital governance in the USA, and Bush administration, more than any before or after, stressed on furthering cross agency digital government projects. All priority initiatives listed in the PMA (OMB 2001a, p. 24) were across agency ones, such as i) creating an online portal for finding all student loans or opening a portal including information on all state parks, under government to citizens category; ii) portal for government property sales, centralised database for medical information, or streamlining international trade process by joining twenty systems on export/import, under government to businesses category; iii) one-stop shop for geospatial information, opening of e-grants portal under government to government category; and iv) centralised website for government training, e-records management or centralising human resources management under internal effectiveness and efficiency; and finally v) online authentication to allow for the identification of website and services users as a cross-cutting project. As mentioned, all these projects were specifically sought to eliminate duplicative functions and processes both inside an agency and across them with the aim to increase the efficiency of public administration, perform better and cost less.

Much less noted than the attempt to further cross-agency digital initiatives and services, as pointed out in the sections above, is the Bush administration move towards open government to foster transparency, accountability, participation, and collaboration. In fairness, despite being overshadowed by post 9/11 cyber security and several moves towards closing the government, the Bush administration did take strides toward transparency and inclusiveness and more than any of the previous administrations. Here, the E-government Act of 2002 and the FOIA amendments need to be acknowledged. Bush e-Government Act of 2002 is very clear in its purposes: "to promote use of the Internet and other information technologies to provide

increased opportunities for citizen participation in Government," ii) to promote better informed decision making by policy makers; and iii) to make the Federal Government more transparent and accountable. It established concrete actions like the ones around on online public information, including the establishment of standards or creating clearer guidelines for how to process requests for information. In this regard, government agencies had to make more information available on the Internet, determine priorities and develop schedules for making information available but also make these schedules available for the public and, ultimately, make these records available. Additionally, the Act introduced some organisational processes to further openness, and foresaw the establishment of a coordination body - the Interagency Committee on Government Information.

Compared to the ambition of the EGA, the amendments introduced into the existing Freedom of Information Act (FOIA) might seem modest, but they did attempt to increase access to public information, including online. These adjustments introduced to FOIA (section 552 of title 5 of the United States Code), also cited as the Electronic Freedom of Information Act Amendments or e-FOIA[193] required government agencies to publish the information they hold also electronically. At the same time, regardless of all efforts, ambiguity over what information needs to be made public remained as well as over the process for both requesting and obtaining information. In this sense, these FOIA amendments failed to bring clarity to what needs to be published by default (except some information such as the mandates of government agencies etc) and what classifies as a request for information. A deeper problem may lie in the variances that remined to exist across government agencies as individual agencies were the ones to decide which information is important to publish and which not. Furthermore, the request for information and the processing of the latter remained fragmented as well, being depended on individual agencies.

The third act aiming to increase transparency concerned the "Federal Funding Accountability and Transparency Act of 2006'' (FFATA)[194] that aimed at bringing openness to government finances was enacted that required the Office of Management and Budget[195] to develop and manage a website to access federal contracts, grants, loans, and other financial

[193] Electronic Freedom of Information Act Amendments of 1996: https://www.congress.gov/104/plaws/publ231/PLAW-104publ231.pdf

[194] The Federal Funding Accountability and Transparency Act of 2006 (FFATA): https://www.congress.gov/bill/109th-congress/senate-bill/2590/text.

[195] In February 2014, the Office of Management and Budget designated the Department of Treasury responsible for operating and supporting USAspending.gov.

assistance. The website was commissioned to be opened by 2008. In 2008, FFATA was amended by the Government Funding Transparency Act[196] that, in turn, required prime recipients of grants, contracts etc to publish details on their sub-recipients.

Despite these institutional arrangements that were established to further e-participation, the administration kept the focus on the development of e-services, particularly on the ones requiring cross agency collaboration. On top, the 9/11 events had a considerable effect on the Bush administration policies that lost any traits of the openness and inclusiveness that had found their way to Bush administration's agenda in the earlier years. Indeed, post 9/11 policies were prepared in the light of a need for increased security and, consequently, relevant policies and plans shifted to security and surveillance and have overrun the Bush administration efforts towards the establishment of a more transparent and open government. Consequently, until the present, Bush's administration is rather known for creating a closed dark era and the president himself referred to as "Secrecy President."

The Obama administration (2009-2016[197])

Perhaps more than any other President of the United States, Obama has prioritised government openness, participation, and collaboration, and has urged to use new technologies in this process and several institutional arrangements were established to promote openness and participation, to take concrete measures to reach these set aims but also monitor the performance. A few legislative acts were amended and introduced that established some essential organisational processes to further management and cross-agency collaboration around building openness and inclusiveness in the federal government of the USA. I will introduce some of these acts in this section on institutional arrangements even though some of these are tackled also under the section on organisational processes.

The President Obama entered his presidency with a clear ambition to make the government more open and participatory and similarly to previous Presidents, this had also been one of his main campaign promises. Obama had been clear that "opening up the closed practices of governance to greater citizen engagement and participation and re-connecting

[196] Government Funding Transparency Act of 2008: https://www.congress.gov/bill/110th-congress/house-bill/3928.

[197] Barack Obama served as the President of the USA on January 20, 2009 – January 20, 2017, however, this thesis is concerned with the development of digital governance only until 2016, inclusive.

Americans with their democracy in new ways" would be his main priority as the President (Obama 2007). On his first day in Office, President Obama signed the Memorandum on Transparency and Open Government[198] - a considerable step towards transparent, participatory, and collaborative governance in the federal government of the USA. President Obama, again, similarly to previous presidents, entered the office at the time of very low trust in government and as his predecessors, he too promised to radically change the way the government works. But unlike Clinton and Bush, he did not emphasise on effectiveness, efficiency and cutting costs but stood for openness, participation, and collaboration that have become the catchwords of the institutional arrangements of his era. Immediately after, another memorandum - the Memorandum on the Freedom of Information Act[199] was assigned by Obama, requesting government agencies to take a direction towards information disclosure. With this memorandum, again, the openness of public information was addresses and encouraged.

As one of the first acts, Open Government Directive[200] was prepared by the Chief Technology Officer within 120 days in coordination with the Director of the OMB and the Administrator of General Services. This Directive included three aims of the Obama reform plan: transparency, participation and collaboration. Under transparency clause, government agencies were required to disclose information such as information about their operations but also decisions made. Government agencies were also commissioned to ask for public feedback in identifying the data most valuable for the public. As to participation, government agencies were requested to improve the effectiveness and the quality of decisions and government operations and offer more opportunities to engage with the government, including collective action. The third objective collaboration encouraged governments to cooperate across all levels of government as well as increase cooperation with businesses, non-profit organisations and people, using online tools for the latte.

The Open Government Directive also included some concrete measures that federal executive departments and agencies had to undertake. First, government agencies had to publish government information online within 45 days, had to publish online in an open format at least

[198] Memorandum on Transparency and Open Government (2009): https://obamawhitehouse.archives.gov/the-press-office/transparency-and-open-government.
[199] Memorandum on Freedom of Information (2009): https://obamawhitehouse.archives.gov/the-press-office/freedom-information-act.
[200] The Open Government Directive: https://obamawhitehouse.archives.gov/open/documents/open-government-directive.

three high-value data sets and make them available also via the launched open data portal www.data.gov. Even though the agencies were to identify high-value datasets, in practice, this was never evaluated and the main was to get agencies to start publishing data, any data to break the barrier of doing it. Additionally, in 60 days, each agency had to create an Open Government webpage to enable the public to provide feedback on published information, ask the public to assist in prioritising information but also for providing input for the preparation of the agency's open government plan. Second, agencies had to start disseminating information about their spending via www.USAspending.gov or other websites. Third, in 120 days, government agencies had to develop and publish their open government plan on the website bit also develop an enabling policy framework for furthering open government**.** The Directive included concrete guidance on how to prepare agency open government action plan, and the components it should include.

In 2011, Open Government Partnership Initiative (OGP) was launched during the General Assembly of the United Nations to provide an international platform for national stakeholders to make governments more open, accountable, and responsive to citizens. The USA, being the co-initiator of the initiative together with seven other founding members (Brazil, Indonesia, Mexico, Norway, the Philippines, South Africa, the United Kingdom) endorsed the Open Government Declaration and, thus, made also a commitment to adhere to the principles of open governance and to deliver a National Action Plan. For this reason, the OGP action plans[201] serve as main policy documents guiding the development of digital governance and e-participation since: the first action plan endorsed in 2011, the second one in 2013 and the third and current one in 2015. I will briefly provide an overview of what these three action plans have prioritised but also how their implementation has been perceived (apart from the opening of online tools for service provisioning and public participation that was discussed at the beginning of this Chapter).

The first OGP action plan builds on the Obama Open Government Directive and shortly, does not add much to the already existing government strategies to further openness and collaboration as it repeats the already planned commitments. Here, again, the improvement of the implementation of the Freedom of Information Act (FOIA) could be brought out or the further work with some of the existing public participation platforms such as regulations.gov that allows the public to take part in the federal rulemaking. The action plan, similarly to the

[201] U.S. Open Government Action plans can be found at: https://open.usa.gov/.

Open Government Directive, foresees the launch of open data portal data.gov portal but also the "We the People" platform allowing people to create and sign petitions that. Apart from the progress in e-participation, the OGP action plan does include a section on online service delivery - *Open Government to Improve Online Service Delivery,* yet out of the six commitments, five are concerned with open data or improving the websites of public institutions. In a closer look, the action plan reveals some surprises too, like the commitment *Modernize Management of Government Records* that intends to transform the prevalent paper-based records management into an electronic one. This commitment hints that some of the data was still collected, maintained and shared in paper in the federal government of the USA in 2011 and suggests that the previous efforts in this regard had not been fully reached.

The second OGP action plan for the USA mainly builds on the first OGP action plan as it, once again, includes commitments that either expand the already launched initiatives or repeats the commitments that were included in the first OGP action plan but were either not fulfilled. Regarding the former, the improvement and simplification of the We the People petitions platform or the modernisation of the Freedom of Information Act (FOIA) process could serve as examples. Compared to the first action plan, the second action plan is narrower is scope and several previously vague commitments are more concrete in the 2nd one. Here, the government records' management modernisation effort serves as a good example as the 1st OGP plan only referred to the intent of the modernisation of records but did not specify any concrete actions nor a focus area yet, while in the 2nd action plan this commitment refers to a more concrete plan to guide government institutions in electronic management of e-mail records to make these accessible in an electronic format by the end of 2016.

The 2nd OGP action plan has a clearly stronger online service focus than the 1st OGP action plan and similarly, it includes a few commitments that have little relevance for the OGP. Generally, it seems that the earlier priorities of the Obama reform strategies do not have the same voice in the policy documents of his second term. The earlier keywords such as transparency, participation and collaboration seem to be replaced by those characterising better service provision or those targeting business sector with an overall aim to strive towards better economy than better governance. President Obama's emphasis on the essence of open government data changed too during his presidency and moved from improving governance into fostering economy and private sector innovation. As Obama noted in his speech in Austin

on May 9, 2013[202]: "*And today I'm announcing that we're making even more government data available, and we're making it easier for people to find and to use. And that's going to help launch more start-ups. It's going to help launch more businesses…It's going to help more entrepreneurs come up with products and services that we haven't even imagined yet. This kind of innovation and ingenuity has the potential to transform the way we do almost everything*." This statement illustrates well how open data policy of Obama era has changed over time, but it may also hint that the initial enthusiasm around government transparency and participation has begun to vanish.

In the following, I will examine the organisational processes that have been established to plan and implement digital governance in the USA, focusing on the management model and the mechanisms that have been established for governmental cooperation and for the partnerships with non-governmental institutions.

Organisational processes

Management, coordination and collaboration

American government is big and comprises of a variety of actors from federal, state, and local governments but also from private sector, non-profit organisations, and the public, i.e., citizens. Naturally, the development of digital governance requires the involvement of all these actor groups. Due to the federalist system in the USA, and differently from the case of Estonia that was introduced in the previous chapter, there are three levels of levels of government that shape the digitalisation process of the federal government: federal, state, and local (Dawes 1999). Acknowledging that the three levels of government are, to some extent, intertwined and influence each other's digital developments, in this thesis, I have limited the scope to focus only on the management model and collaboration mechanisms that have been established at the federal government level. As this thesis is not concerned with how local and state level digital development affect central government ones, correspondingly, the set collaboration mechanisms between the three levels of government have not been included in this study.

The Clinton administration (1993-2001)

Digital governance management

[202] President Obama remarks on May 9, 2013 in Austin, Texas: https://obamawhitehouse.archives.gov/the-press-office/2013/05/09/remarks-president-applied-materials-inc-austin-tx.

The Clinton administration's digital governance development was heavily dependent on individual agencies and the civil servants working in these agencies, particularly career civil servants, and this started already with the preparation of the National Performance Review (NPR) programme. The preparation process was assigned to the Vice President Al Gore who then formed the initial task force of more than 250 career civil servants, most of whom were sub-contracted from individual agencies for that task. The NPR preparation process was managed by Elaine Kamarck who hired a group of federal employees who, in turn, were led by a small team of high-positioned government officials but also some well-regarded government reformers such as an advisor to the Vice president, Bob Stone (Breul and Kamensky 2008; Stone 2004).

The preparation process is best characterised by its main guiding principles: "empower employees" and "back to the basics." This meant that the leaders of the NPR preparation process had to try to reach out to all federal officials to ask them how to best reinvent their everyday work. Al Gore personally engaged, during the so-called "tollgate meetings," with public officials and the public (Breul and Kamensky 2008). As result, more than 50 000 people sent their recommendations to the NPR, originating mainly from the officials working in individual agencies. Even though the role of the public in the preparation of the NPR remained marginal, the process of preparing such a high-level policy document differed from the previous similar exercises that had been largely subcontracted to the private sector and private consultants (Breul and Kamensky 2008; Kamensky 1999). In this light, the preparation process of the NPR was more participatory than it had been before.

During the preparation process of the NPR, as noted, there was a network of government employees formed who mainly worked basing on short-terms contracts (Breul and Kamesky 2008). This task force continued to contribute to the implementation of the NPR. At the beginning, it was not planned that the "involve-employees-strategy" of the NPR preparation process would also become an NPR implementation strategy; but as it became clear that these officials who were involved in the preparation could continue during the implementation phase, it was considered appropriate (Stone 2004). This, again, produced some unexpected effects.

On the one hand, the people of the task force returned to their individual agencies and continued their mission there. These people also served as representatives of individual agencies in the inter-agency task force that was established at the OMB to guide the development of digital governance centrally. These people continued as strong advocates of the NPR (Breul and Kamensky 2008). On the other hand, as these people continued to work on

short-term bases, the NPR implementation inter-agency taskforce resulted in a very high rotation. More importantly, the task force turned out to be one of the obstacles for the formation of a more permanent management body on digital governance at the OMB. The task-force did include very professional and motivated people and they did encourage employees in their agencies to use technologies in their work. Consequently, individual agencies had their digitalisation paths that they oversaw, while the OMB started to lose control over what was happening in these agencies. Still, cross-agency innovation labs were introduced.

The implementation of the NPR and other documents guiding the development of digital governance, thus, remained largely in the hands of individual agencies, and there were no major changes introduced to the digital governance management model that had been established prior Clinton era. The Paperwork Reduction Act of 1980 had assigned the Office of Information and Regulatory Affairs (OIRA)[203] under the OMB a government-wide responsibility for the leadership in information management. The OMB remained the main institution responsible for the development of digital governance during Clinton administration and there were some attempts to strengthen its position. In 1996, for instance, the Information Technology Management Reform Act of 1996 (later renamed The Clinger-Cohen Act) required the Director of the OMB to: "exercise capital planning control" and "develop a process for analysing, tracking, and evaluating the risks and results of all major capital investments in information systems by executive agencies", "compare, and disseminate results of various agencies' use of information technology" but also "inform the Congress with respect to such technology in the Federal Government". Apart from OIRA, some other agencies performed central roles as well, like the General Services Administration (GSA) responsible, together with OIRA, for the preparation of information resources management competencies for federal employees.

The efforts to increase the role of the OMB in the planning and oversight of digital governance development at the federal government of the USA were taken seriously by the OIRA, and its long-term head Sally Katzen has expressed OIRA's commitment to improving its performance in building digital governances across the federal government (NPR 1993). Still, the OMB did not manage to establish its role of a central digital governance management body, and it did not manage to find sufficient oversight, assessment or supporting mechanisms either. There was an interagency task force established that included government officials from

[203] Office of Information and Regulatory Affairs, OMB: https://www.whitehouse.gov/omb/information-regulatory-affairs/.

different federal agencies; yet they were hired from individual agencies to work for a short time at the OMB and served the interests of the agencies they originated from. A few other measures were also introduced, my keeping an eye over the progress made through softer instruments like Hammer Awards (Ingraham et al. 1998).

Digital governance cooperation and collaboration

The first structures for digital governance management and coordination were introduced in the IT report of the NPR and these measures were largely soft efforts to coordinate the development of digital governance at the federal government of the United States. As mentioned, the implementation of the NPR remined largely a responsibility of individual agencies. To guarantee that each agency has a high-level official dedicated to digital issues, the Information Technology Management Reform Act of 1996, required agencies to establish the position of a CIO. This Act also requested the OMB to form an CIO Council and assign the OMB deputy director to chair the Council work. The Council was established; yet, it was institutionalised only in 2002 when the e-Government Act was passed.

Apart from the CIO Council, a few other collaboration mechanisms were settled. First, the President's Management Council (PMC) was created to guide agencies in the implementation of the recommendations of the NPR. The PMC composed of the chief operating officers of the departments of the major agencies that consisted chiefly of the persons who had been involved in the preparation of the NPR, i.e., the task force (NPR 1993). Second, in 1993, an Information Infrastructure Task Force was formed by the National Economic Council and the Office of Science and Technology Policy, consisting of representatives from federal agencies involved in telecommunications and information policy (NPR 1993). The aim of this task force was rather technical as it supported government agencies in the development of the information systems but also in telecommunications and other infrastructure. The third working group - Information Technology Services Working Group included representatives from the OMB and federal agencies such as the Departments of the Treasury, Justice, Defence, Energy, Agriculture, Commerce, Health and Human Services, Housing and Urban Development, and the GSA. This group was tasked to collaborate with state and local governments but also with private sector. Apart from other tasks, it was also assigned an overly ambitious obligation to develop a strategic vision for using government information resources across agencies. Also, the group was to develop a plan to improve the provision of online services.

As mentioned in the section on institutional arrangements, several legislative acts were adopted to increase cooperation between federal government agencies. One of these is the Government Performance and Results Act (GPRA) enacted in 1993 that mandated government agencies to prepare annual performance plans and reports as part of their strategic plans and submit these to the Congress. The implementation of the GPRA, however did not proceed as planned and was particularly slow in the development of online services requiring cooperation between different agencies (Fountain 2004; Kamarck 2013). Secondly, the Information Technology Management Reform Act (ITMRA) of 1996 objected at establishing the federal enterprise architecture and a position of an agency CIO whose obligation was the development, maintenance, and implementation of this to-be-established federal enterprise architecture in her/his agency. The establishment of a federal enterprise architecture was doomed to failure but, as mentioned above, the position of a CIO was stablished in individual agencies.

The Bush administration (2001-2009)

Digital governance management

The development of Bush reform agenda relied on the permanent staff of the OMB since its kick-off when then time OMB Director Mitch Daniels was given the responsibility to lead the task. He formed a group of mainly OMB' senior personnel and asked them to suggest recommendations for the Bush's government modernisation programme (Breul 2007). As in case with the NPR, advice was sought from other government officials, mainly from those holding higher management positions, whereas the public was not given an opportunity to shape the government reform plan as much.

The OMB remained the main institution to provide guidance to the executive departments and agencies in the development of digital governance as well as carrying out oversight on the performance. During the Bush administration, the role of the OMB in directing the development of digital governance increased. To begin with, highly motivated and competent people were hired to lead the implementation of the President management Agenda and its' digital components. In June 2001, the President Bush hired Mark Forman to push digital governance agenda as an Associate Director for IT and Digital Governance until, in 2003, he was appointed to act as the Administrator for the Office of e-Government and IT. He later became the first Federal CIO of the USA. His role in progressing in digital governance has been widely recognised, including the Congress. Two legislators, Tom Davis (Republican) and Adam Putnam (Republican), in their letter to the OMB have been very generous in their

judgement over Forman's work: "has been an important motivating factor in the progress that has been achieved in fulfilling the goals and objectives of the President's Management Reform Agenda, while being an agent of change in the technological transformation of the way the federal government conducts its business, both internally and externally". After Forman's leave on August 15, 2003, the position was taken over by Karen Evans who served at the OMB as the next digital governance star, equally well-praised.

As a next step, several measures were adopted to strengthen the link between the central management i.e., the OMB and the agencies, but also in between them. Most importantly, the position of the Federal CIO was established by the e-Government Act of 2002. In 2007, the Office of General Information Services (OGIS)[204] was created within the National Archives and Records Administration by the Congress, often referred to as "the Federal FOIA ombudsman." In short, OGIS serves as a FOIA implementation oversight body (a task that until the establishment of the OGIS was carried out by the Department of Justice). OGIS was tasked to encourage communication between government agencies and those requesting information but also resolve disputes and carry oversight over the implementation of FOIA itself.

Some additional softer measures were introduced as well such as the so-called "traffic light" scorecard. This grading system of green, yellow, and red was used to assess whether and how much progress agencies had made in implementing their activities, basing on the performance standards that was developed by the OMB itself. This grading system was used intensely, also because the President Bush himself supported it. As one of the interviewed persons has observed: "Sometimes, he would rearrange the expected meeting seating of the agency heads according to the results of the traffic light grading, the ones having the most greens seating in the more important positions closer to the President, and the ones of yellows and reds further away." The other softer measure to carry oversight over agencies' performance was PART, i.e., Programme Assessment Rating Tool that, basing on a questionnaire, measured agencies' progress on digital governance and the PMA more generally. Bush direct involvement has been brought out as essential in furthering the e-governance agenda in the USA (Kamensky 1999).

Digital governance cooperation and collaboration

[204] The Office of Government Information Services, National Archives and Records Administration: https://www.archives.gov/ogis.

Bush administration stressed the importance of cross-agency collaboration in building digital governance, and it took some measures to advance it. Here, the e-Government Act of 2002 needs to be brought out again as it included twenty-five initiatives and all these so-called "quicksilver" projects were cross-agency initiatives by their nature. This means that to implement these projects, government agencies needed to collaborate in their design, development, and provisioning and share information and data between registries and information systems of different agencies. At the same time, the e-Government Act 2002 also acknowledged the existing challenges to implement these kind of projects: "the Internet-based Government services involving interagency cooperation are especially difficult to develop and promote, in part because of a lack of sufficient funding mechanisms to support such interagency cooperation." The lack of interagency collaboration and interoperability has been considered one of the main drawbacks of digital governance in the USA (OMB 2002, p. 24).

To assist government agencies in this endeavour, Bush administration made attempts to further the establishment of the Federal Enterprise Architecture (FEA) to foster interoperability and information sharing cross federal agencies. The FEA, introduced already during the Clinton administration, however, never fully materialised. One of its main components, all-governmental digital authentication and digital signature[205] has not been introduced and neither has the all-governmental interoperability framework and standards for the latter been adopted. Still, sharing data between government agencies has improved and some sectoral interoperability frameworks have been adopted, such as the Standards and Interoperability Framework for the exchange of health data as part of the Federal Health Architecture. These developments, however, have been sectoral. In the following, I introduce some of the centrally established and institutionalised cross-agency collaboration mechanisms.

One of the essential moves is considered the creation of the position of the Federal CIO, acting as the administrator of the Office of Electronic Government. The Federal CIO's work was vital not only in directing the work of the CIOs of individual federal agencies in the development of digital governance but also in increasing cooperation in between the agencies. Karen Evans, the federal CIO has seen her work in orchestrating the use of the information resources and technology across federal agency of the USA, in overseeing and coordinating

[205] Originally, e-Government Act introduced twenty-five, so-called „quicksilver" projects but as one of them; namely the cross-governmental digital signature project was never launched, these have also been referred to as twenty-four „quicksilver" projects.

digitalisation within these agencies but also in between them. [206] Additionally, the CIO Council was established, and the Federal CIO led its work. These institutional arrangements were planned to be backed up with some finances - the budget of the United States government of 2002 proposed 20 million USD for the establishment of the e-Government Fund for its initial year of 2002 that would grow to 100 million USD. The OMB was assigned the control over the allocation of these resources to support digital governance projects. However, the actual allocation never reached the requested amount which illustrates some complications around the financing of digital governance initiatives in the federal government of the USA, particularly those that involve different agencies.

The OMB introduced some measures to manage and oversee the progress of IT projects of the federal agencies. Here, a quarterly list – Management Watch List serves as a good example the projects included there needed extra management attention. In most cases, cross-agency projects would be found in these lists because of their complex nature that posed a risk for timely and successful completion of these projects. The Management Watch List also informed both GAO and the Agencies' Inspectors General of what projects they should pay attention to. Generally, the interviewed experts agreed that the oversight measures did prove to produce better results and increase also cooperation if required; yet, these are known to have downsides as well. Again, Karen Evans, the CIO has brought out negatives such as restricting the enthusiasm and willingness of active and capable people working in public administration.

In the same hearing in front of the Committee on Homeland Security and Government Affairs in 2014, Karen Evans was asked to bring out the main reasons for either success or failure of digital governance initiatives. Neither of the established performance management or cooperation measures found their way to her list. She was straightforward: „the project failure could be traced to someone not doing what they were supposed to do…The technology did not play a trick on them. There was not an unforeseen outside force dooming the project. No, in every case, someone missed their block and let a defender sack the quarterback." [207] In this statement, she also expressed her concern over the lack of good project managers. The lack of

[206] From Karen Evan's testimony before the committee on government reform subcommittee on technology, information policy, intergovernmental relations, and the census at the U.S House of Representatives on July 24, 2004. See: https://www.whitehouse.gov/omb/legislative_testimony_evans_040721_evans/.

[207] From the statement of Karen Evans on May 8, 2014 before the Committe on Homeland Security and Government Affairs, see: http://www.hsgac.senate.gov/download/?id=c2753209-c5e1-4f78-9830-b134d1a79a0e.

qualified project managers has turned out to be one of the main factors by several federal agencies, as also the results of the Annual IT Workforce Assessments[208] indicate.

The Obama administration (2009-2016)

Digital governance management

During the Obama administration, the strengthening of the OMB position in the federal government digitalisation continued. By and large, the attempts to institutionalise the management and collaboration in the development of digital governance followed the course that was already established by the previous administrations; yet, there were some significant changes. First, the position of a Chief Technology Officer (CTO) was created within the Office of Science and Technology Policy under the OMB. On April 18, 2009, President Obama appointed Aneesh P. Chopra, previously Virginia Secretary of Technology, to serve as an assistant to the President as the first CTO of America.

The CTO tasks include the promotion of innovation within the federal government of the USA and one of the four main priority areas includes furthering technological interoperability across government agencies but also the spreading of best practices. Until now, the CTOs have had very different professional backgrounds but also interests and capabilities. The first federal CTO Aneesh Chopra entered the office at the beginning of the Obama era and vast prior experience in modernising government through the use of technologies. As the State of Virginia had undergone significant transformation under his management and was ranked number one in technology management by the National Association of State CIOs, he was considered appropriate to advise the President in his Open Government reform. The following CTO Todd Parker, again, comes from a private sector and has brought business-based practices back to the government.

Establishing a position of the CTO shows American government commitment to further digital governance and raise the visibility of the related issues. It also demonstrated yet another push towards stronger central management of digital governance development. At the same time, doubts have been raised over the actual power of the federal CTO to influence the development of digital governance. Some of the existing institutional arrangements surely pose

[208] Since 2003, the CIO Council in partnership with the U.S. Office of Personnel Management (OPM) has developed and deployed a competency assessment survey of the Federal Civilian Information Technology (IT) workforce. Available at https://www.cio.gov/.

limits to what a CTO can do, but it also seems that the exact role and responsibilities of the CTO are not clear, these have been guessed through media, interviews, and press releases (Sargent and Shea 2012). More importantly, the position of the CTO is dependent on the mandate of the President as the position has not been established by the Congress which means that it does not have authority over the allocated budget and that might make it difficult to influence individual agency actions or government-wide initiatives.

In parallel, more power has also been given to the individual agency CIOs and to the CIO Council to plan and execute digital governance plans. The Federal Information Technology Acquisition Reform Act (FITARA)[209] enacted on December 19, 2014 requested to reduce the number of agency CIOs to one only so that there would be clarity over who is responsible for IT projects, their failures but also successes in each agency. Just as a side note, the act requires the federal government to make use of private sector best practices which brings in, again, business-based approach to digitalisation in the federal government of the USA. The third position to strengthen central management was established by the Open Government Directive (2009) which asked for the assignment of a high-level senior official in each agency. That person was to be accountable for internal controls over the federal spending information to guarantee that the publicly disseminated information at USAspending.gov or some other website would be accurate. This person got extra powers to fulfil the newly assigned tasks like the access to Senior Management Council or similar higher decision-making body.

In 2011, the USA co-initiated the Open Government Partnership (OGP) Initiative and the OGP action plan has served as one of the main documents guiding the development of digital governance, particularly e-participation, in the federal government of the USA. Since 2011, the OGP process has been led centrally by the Executive Office of the President, coordinating all national efforts but has also implementing commitments itself. During the implementation of the 1st action plan, however, the obligation shifted from the OMB to the Office of Science and Technology Policy (OSTP)[210]. Despite the effort to centrally guide the development of open government, it has been noted that, in practice, the main responsibility for open government lies in individual government agencies. The Executive Office of the President does coordinate the preparation process, it monitors the implementation of the OGP action plans, but is not directly involved. Furthermore, the Executive Office of the President cannot

[209] Federal Information technology Acquisition Reform Act (FITARA): https://www.congress.gov/bill/113th-congress/house-bill/1232/text.
[210] Office of Science and Technology Policy: https://www.whitehouse.gov/ostp/.

intervene in individual agencies' commitments as the agencies are not obliged to be part of the OGP Initiative at first place nor do they have to follow the commitments they have made. Currently, there is only a memorandum that states that individual agencies should prepare their own open government action plans, but these are not subject to the Executive Office of the President scrutiny. In practice, thus, there is no centrally orchestrated development of open government in the USA.

Cross-agency collaboration

Obama administration too made efforts to increase imperatives for cross-agency collaboration. Yet, the Obama administration took a slightly different approach than the two previous ones, combining the establishment of legislative acts requiring collaboration with several softer measures that were intended to be motivational and encouraging and not guardian-like. In terms of collaboration with partners outside government, there are some noticeable differences between the first and second term engagement practices. Whereas the first term prioritised participation, collaboration and co-creation and several practices could serve here as path-paving examples, during his second term, the administration has turned towards private sector, bringing in knowledge and skills from businesses, from big tech industry in particular.

Regarding legislative acts, three specifically need our attention here. The first one is the Government Performance and Results Act Modernisation Act of 2010 (GPRAMA)[211] that was enacted in 2011 and that introduced several new requirements to advance government-wide collaboration. Compared to the previous GPRA that was passed in 1993, not many changes were introduced to its main aims that remained increasing effectiveness, efficiency, accountability and transparency but GPRAMA. Still, GPRAMA did specify the need for cross-border initiatives and it institutionalised some of the central management frameworks. It formed the government-wide performance improvement Council. The second legislative acts that was introduced during Obama administration is FITARA that introduced oversight provisions on the implementation of IT projects in the federal government.

Both GPRAMA and FITARA and their impact on cross-border government cooperation have been studied by a few scholars and practitioners who conquer that the acts have not yet had the intended outcomes (see Fountain 2013; Kamensky 2012; Verkuil and Fountain 2014).

[211] GPRA Modernisation Act of 2010 (GPRAMA): https://www.govinfo.gov/content/pkg/PLAW-111publ352/pdf/PLAW-111publ352.pdf.

Fountain (2013), for instance, has found that GPRAMA remains at too abstract level to add value to federal agencies in establishing cooperation and that the existing organisational and institutional arrangements may pose an additional challenge for cross-agency initiatives. Kamensky (2012) conquers with her and points to how the decision-making process of the Congress is yet another hindrance for cross-agency projects initiatives. Namely, cross-agency projects need approval of several committees, of all the involved agencies' appropriation committees but these committees may have different priorities and financing plan. In his view, the decision-making process of the Congress severely limits cross-agency projects that, again, are vital for the provisioning of user-friendly online tools. FITARA, again, is considered to have introduced too severe oversight provisions on the implementation of IT projects, burdening federal agencies instead of furthering the development of cross-agency online portals like the one on funding.[212]

The third legislative change concerns the FOIA Improvement Act of 2016[213] that requested the establishment of a Chief FOIA Officers Council, chaired by the Director of the Office of Information Policy at the Department of Justice[214] and the Director of the OGIS. It goes without saying that the aim of this amendment was to increase public access to information, and equally across federal government.

Other than the above-introduced legislative acts, as noted, Obama administration relied on softer management and cooperation measures: ad hoc task forces, project teams, meeting, hackathons etc. The OMB saw its role as a motivator and functioned as an intermediary in sharing best practices deriving from both either the White House or the federal agencies. Here, several steps were taken. The Open Government Dashboard was opened where the agencies had to make public their Open Government Plans together with an assessment of the progress. An additional working group established by the Deputy Director for Management at OMB, the Federal CIO, and the Federal CTO on transparency, participation, and collaboration. This group, too, served as a platform for sharing best practices on innovative projects promoting openness. In 2014, the OMB convened another interagency group to develop an "open innovation toolkit" for federal agencies that includes best practices, policies, and guidance on how innovate, including concrete tools such as crowdsourcing and citizen science, for instance. Several handbooks, guidelines etc were composed and made public like the Digital Service

[212] From the statement of Karen Evans in 2014.
[213] FOIA Improvement Act of 2016: https://www.congress.gov/bill/114th-congress/senate-bill/337/text.
[214] Office of Information Policy, The Department of Justice: https://www.justice.gov/oip.

Playbook[215], a collection of best practices form both public and private sector, that was released in 2015, and the TechFAR Handbook[216].

Obama administration practice in collaborating with its partners has changed over the course of time. The preparation process of some of the earlier documents such as the Open Government Directive is well known for its inclusiveness, and it did draw from expertise across a wide range of stakeholders. There were several mechanisms introduced, both offline and online, that provided an opportunity for everybody who wished to contribute to the preparation of the Directive. The popularity of the online a crowdsourcing portal "We the People" serves as good example here that remained to be used also after the completion of the Open Government Directive. Over time though, this initial enthusiasm over government-public collaboration seems to have vanished, and the Obama administration has been criticised for turning into a closed administration, heavily dependent on public officials and private sector, whereas the public has been left behind.

The assessment the OGP National Action Plans for the USA carried out by the Independent Reporting Mechanism of the OGP has found that the development process of these main documents guiding the development of digital governance in the USA has been closed. Only a few stakeholders have had access to this process and neither the preparation of the 1st action plan nor the 2nd went through a public consultation process. The IRM report reveals that these consultations that were carried out, were conducted in individual agencies, and that these individual agencies, if at all, involved only big and influential CSOs, i.e., the "usual suspects" in the preparation of the OGP action plans. The IRM assessment results are harsh, claiming that the federal government of the USA, serving as one of the initiators of the OGP Initiative has not met the main principles guiding open government and has not progressed in participation and collaboration.

The cooperation between the government agencies and private sector, again, has intensified. Since 2014, "new techies" from private sector, mostly people who reside in Silicon Valley have been recruited to be part of President Obama team to reform the federal government. The team, currently consisting of 140 people who have worked in big technology companies such as Google, LinkedIn, Twitter, Microsoft, Skype, PayPal, have been asked to

[215] Digital Services Playbook: https://playbook.cio.gov/.
[216] The TechFAR Handbook: https://playbook.cio.gov/techfar/.

redesign US government information systems but also the online services it provides. The team, characterised as the "three-layered cake" by the CTO Todd Park, is made up of three different teams. The first one consists of strategists and is part of the U.S. Digital Service (USDS) team in the White House that was formed in 2014 (after the crisis of the healthcare.gov portal). The second team and perhaps the best known is the one called 18F[217], consisting of both strategists and designers and is in the General Services Administration. Their services could be used by agencies to plan digital projects. This team is consisting of developers mostly and assist government agencies in the implementation of their digitalisation initiatives. It's too early to tell the longer-term impact of the activity of F18 on technological developments in the federal government of the USA, but it has proven to be effective in bringing in technical capacity and talent that the federal government has been lacking not only during the Obama administration but throughout the studied period.

I will now turn to providing an overview of the development of digital governance in the USA, starting with the main development levels and patterns, moving then to the main milestones in e-service delivery and e-participation, and finally to discussing the role of institutions, organisations, and actors in this process.

Summary on the development of digital governance in the USA and the role of institutional arrangements, organisational processes and actors in this process

Summary on the development of digital governance: e-services and e-participation. The development levels and patterns

The development level of digital governance in the USA has been high throughout the studied period; yet, in more recent years, the development has stagnated which is also reflected in the respective indices. Generally, the digitalisation has followed the maturity stages of digital governance moving from administration digitalisation to online service provisioning and, finally to e-participation. Yet again, in the past years the optimism around openness and inclusiveness has somewhat given way to online service provisioning but also for driving business innovation and digital economy.

The Clinton Administration digital governance developments were heavily influenced by the business sector, focusing on administrative efficiency but also on the provision of user-

[217] See more on 18F: https://18f.gsa.gov/dashboard/. The name 18F derives from the address of the U.S. General Services Adminsitration where the team is being placed (F street in Washington DC).

friendly and effective service delivery. Technology was a cross-cutting tool to enable governments to perform better, to work differently and with less costs, but it also allowed to provide services online, simpler and faster. As a result, Clinton administration treated its partners as clients and customers and progressed in online service delivery whereas e-participation tools were not developed yet.

Several online services were introduced in federal agencies, but these online services were mainly one institution-based online services with the integrated payment system as the main innovative element. Here, as well, the government was following the private sector as a role model for service provisioning, particularly online commerce and banking sector. Apart from the fact that online business was starting to boom at about the same time, the development of online services during Clinton administration also coincided with the peak of New Public Management (NPM) that also supported bringing business-like practices to the public sector. Clinton administration's major achievement is the launch of the one-stop-shop government portal firstgov.gov but also other attempts to unify online information and service provisioning in different sectors via websites like consumer.gov or business.gov.

The trend to develop easy to use and effective online services continued during the Bush administration as, his administration too admired the achievements of private sector compared to the still old-fashioned and resource-wasteful work of the government. Saving costs became of the main arguments for digitalisation and one was of cutting government expenditures was seen in cross-agency collaboration. Bush attempted to establish some of the central components of digital governance emerged like building the Federal Government IT Architecture, including digital authentication and signature that, despite the efforts, never materialised. The firstgov.gov was renamed www.usa.gov and further developed; yet, the portal remained a collection of links to other agency websites and online services. Much less known is the Bush administration's effort to use technologies for more open and participatory government. One of the better-known online participation portals, www.regulations.gov for the preparation of regulations was opened during the Bush administration and is functional and actively used until the present day. Additionally, the portals for increasing budget and spending transparency were developed and used.

More than any administrations, the one of Obama stressed his commitment to transparency, participation, and collaboration, and the prevalent customer-centric approach was replaced with the one of partnership. Portal such as the one on open data, for budgeting and

spending information and for presenting ideas to the government were opened. Still, this initial enthusiasm around openness collaboration has begun to fade during his second term. In terms of service provisioning, further attempts to integrate different information systems and registries to start providing more user-friendly and automated have been made; yet not all of these efforts have materialised.

It is rather evident, as noted also in the introduction of the summary on the development of digital governance in the USA that the development of digital governance has moved from administration digitalisation to online service provisioning and, finally to e-participation; yet has started to move back to emphasising online service development in recent years. Similar evolutionary patterns can also be found in the development of e-services as, indeed, the federal government has clearly moved from information provisioning to the second phase of providing downloadable form and application, and then to the third stage by offering a few automated services. Here, however, the progress seems to have stopped as the federal government of the USA has not succeeded to introduce fully transactional, the so-called seamless services starting to trend now in several other digitally more advanced countries. At the present, there seems to be no evidence that the federal government would progress faster in the integration of different information systems and in the automated exchange of data between government agencies that is required to move further in online service provisioning.

Generally, the development has been rather stable and could be described as path dependent as, indeed, big fluctuations have not occurred. Still, it seems that this progress has been, to some degree, disposed to the so-called "shocks" that have influenced the development of digital governance in the USA. As discussed in the sections above, the collapse of the healthcare.gov portal that followed launch caused so much criticism that forced the government to take action and some effective measures to improve ongoing developments were introduced. One of these includes the formation of the 18F team that brought the private sector talent to the federal government. Also, some of the scandals seem to have influenced the federal government efforts in the adoption of the ICTs as well as the support for the digitalisation among other actors. For example, controversy over Hillary Clintons e-mail leaks forced the government to introduce stronger security measures and brought federal online identification issues back to the table, but it may have negatively impacted the public perception and acceptance of digitalisation.

Summary on the development of institutional arrangements, and their role in the development of digital governance

Regarding digital governance policies, the priorities and commitments of the federal government of the USA have been gradually moving from prioritising administrative efficiency to online service delivery and, lastly, to openness and participation. What has been common for all the administrations in this journey though, is the desire to modernise government, to leave behind its archaic ways of functioning, to cut its size and cost. In this sense, the federal government of the USA has always been portrayed as a laggard behind as progress and innovation happens in the private sector – a constant role model for the federal government of the USA.

The USA government does not entail a single digital governance legislation nor a comprehensive framework of digital governance legislation. In the USA, digital governance is subject to several legislative acts, and numerous amendments to these acts and this has hold for all years included in this thesis. Every single online development is prior planned, and it is reflected in a respective institutional arrangement. However, not all legislative acts have materialised. Here, FOIA, The Government Performance and Results Act Modernisation Act (GPRAMA) but also its predecessor Government Performance and Results Act (GPRA), and a Paperwork Reduction Act (1980) and its amendments have not led to expected outcomes. Experts have criticised these acts for being too vague which leaves room for a variety of interpretations and subsequent implementation by federal agencies.

The findings of the study of the institutional arrangements in the USA support the hypothesis that higher levels of institutionalisation lead to higher development levels of digital governance in the federal government. This seems to apply to both online service and e-participation development even though differences in the effect of different institutional arrangements do exist. Some institutional arrangements have led to expected outcomes but in some cases the development has been slow and problematic like the implementation of FOIA or the introduction of central all-governmental digital governance components. One of the reasons for these hurdles in the implementation, however, is the long previous history of institutional arrangements and subsequent organisational processes of the US government that has avoided centralisation. Overall, the results suggest that the affect of the institutional arrangements on the development of digital governance has hold through time in the USA.

Summary on the development of organisational processes, and their role in the development of digital governance

Throughout the studied period, the lack of strong central management alongside with a limited interoperability and cross-agency collaboration have been considered the two main challenges in furthering the progress in the development of a user-friendly and efficient digital governance in the federal government of the USA. Since 1993, the government has acknowledged these weaknesses and has continuously taken steps to push for a stronger role of the OMB in managing federal government digitalisation, as it has also introduced several measures to further government-wide digital governance initiatives. Despite these efforts, some essential all-governmental components of the digital governance are missing in the USA until the present day. First, government-wide electronic identity that would allow for online authentication and for giving digital signature has never been introduced which means that individual agencies still use their own online authentication mechanisms for both their workers i.e., public officials and the public. Second, the all-governmental interoperability framework has not yet been adopted which seriously undermines the opportunities for secure automated data sharing between registries and information systems, particularly in between different agency ones. There are several reasons for why it has not been possible to establish these central components, and several of these go back in time.

American government is very fragmented, and the centralisation of decision-making and power has been avoided over time. Individual agencies make their development plans, execute them and report on the progress; and the Congress then decides over financing. In this way, the Congress has an opportunity to influence the development of the areas that are in the interests of the Members of the Congress, but it can also make sure that the executive branch does what it is supposed to do. This single-authority based approach to the decision-making is reinforced through several processes, including the budgeting and oversight processes. The Congress appropriation committees[218] follow the structure of single agencies and they process budgets accordingly. Until now, neither the Senate nor the House of Representatives has an appropriation committee for cross-agency initiatives (these are usually processed by the

[218] Congress appropriation committees receive the federal government budget from the OMB i.e., the President Executive Office. Agencies present their budgets to the OMB that has the right to accept it as is or not, or ask for amendments. Once the OMB has submitted the government budget to the Congress, the Congress proceeds the budget in two committees: approval and appropriation committees. It is in these committees that it is decided whether and how much money to actually allocate.

subcommittee on Financial Services and General Government). Secondly, agencies are mandated to function within their jurisdiction which poses a challenge for cross-agency projects that require shared obligation. Thus, it can be concluded that the current set-up of the federal government of the USA, including budgeting and financing, favours single-agency based digital developments.

Despite these obvious hindrances, the OMB has been pushing for cross-agency collaboration in the federal government and several forms of cooperation have been formed. The most common mechanisms remain different institutionalised inter-agency working groups or task forces, either under the management of the OMB or some other agency responsible for certain area connected to the development of digital governance. One of these include The GSA, for instance, in charge of the provision of shared services to the federal government agencies. Memorandum of Understandings, other agreements for cooperation, common financing (i.e., "pass-the hat"), communities of practice, all serve as examples of softer cooperation measures between government agencies. Over time, the number of these interagency cooperation bodies has increased.

Similarly, as mentioned, there have been continuous attempts to strengthen the role of central planning, implementation but also oversight over the development of digital governance. Both the OMB and GSA have increased their power over the development of digital governance, largely through the establishment of various positions supporting individual agencies' digitalisation processes or by increasing their visibility in these issues. Here, the positions of the CIO and CTO serve as good examples but, equally, a mandate for a stronger oversight that has been assigned to the OMB and GSA. Until now though, individual agencies remain the strongest and most influential players in the digitalisation, as mentioned, also because of the budgeting and financing process that is supporting a single-agency approach over the multi-agency one.

The findings of this case study support the organisational processes have played a role in the development of digital governance; yet, it seems to be marginal. Even though the lack of interoperability and the weak central management have been barriers to the development of digital governance in the USA, progress has been made and online services and online participation tools have been offered to the partners. These e-solutions have been developed and provided by individual federal government agencies, who have had the needed human and financial resources but also higher-level government commitment to plan and execute these

digital governance initiatives. Most likely, this arrangement has been duplicative and more costly, and some developments have taken more time, but it has been possible. In the past years, the development has slowed down, partly due to these reasons and these may have also longer-terms effects on the development of digital governance.

Summary of the role of actors in the development of digital governance in the USA

Throughout the studied period, the development of digital governance in the USA has been largely in the hands of the government, particularly on the career civil servants but equally by project managers and higher-level decision-makers. It is also is evident that the development has been supported by all three presidents: Clinton, Bush, and Obama who have guaranteed high-level backing and public visibility to digitalisation. Moreover, to some extent, they have all been involved in the planning, implementation, and assessment of digital governance. The President Bush actively participated in the establishment of oversight mechanisms and the follower of the "traffic light" assessment system of green, yellow, and red that was introduced during his administration. Obama, again, has very masterfully used new technologies in his electoral campaign and has continued to visibly support the use of modern technologies, also personally throughout his term. Still, somewhat surprisingly, apart from the high-level support received from all three presidents, digital governance has not been supported from the Members of the Congress, with a very few exceptions. Until the present, digitalisation has not become a political issue in the USA so, therefore, it does not have avid supporters nor politicians strongly against the latter. On the one hand, this has created favourable conditions to the government to plan and implement digital governance initiatives. On the other hand, digital governance does not have strong lobbying at the Congress and, therefore, the funding of particularly cross-agency initiatives has suffered. There is little interest and low awareness on digitalisation among the MCs.

From the user group, the role if the private sector has been the strongest throughout the studied and the relationship goes beyond outsourced technological developments. Private sector has served as role model for the government in online service modernisation for all the administrations and they have been actively included in e-governance policy-making. In the past years, private sector has also enthusiastically assisted the federal government agencies in their digitalisation efforts. Despite private sector's interest in technological developments and service modernisation, their role in e-participation has not been substantial. Private sector has

been one of the target groups and users of the government open data, but these practices have served better service-provisioning in private sector and economic growth. Somewhat surprisingly, the public's role in the development of digital governance has been minimal. The public trust towards government and digitalisation generally has been rather low and the scandals around security issues or Hillary Clinton's e-mail controversy may have further increased public's scepticism towards digitalisation. This may have decreased their motivation to contribute to the process and, furthermore, may have been the cause for why some initiatives, e.g., eID, never took off. The CSOs have been rather vocal and somewhat influential in the USA but their contribution is evident in the development of e-participation rather than digitalisation more generally.

Overall, the findings suggest that the development of digital governance in the USA has been in the hands of the government; yet, their activity is heavily influenced by the institutional arrangements whereas the organisational processes do not seem to matter much. Still, the organisational processes have had a slight negative impact on the development in more recent years and this may continue in the future. Apart from the government officials, business sector seems to have positively influenced the development of digital governance; yet, the politicians other than the presidents and related political positions have not had a role in the digitalisation yet. Similarly, the public role, if any, has been indirect and the CSOs have been influencing the progress of e-participation; yet it seems that they have not impacted the progress in online service provisioning.

Chapter 7. Comparison of the development of digital governance in Estonia and in the USA

Introduction and context

In this chapter, I compare the development of digital governance in Estonia and in the USA and examine the role that institutional arrangements, organisational processes and actors have played in this development from the 1990s onwards. As in the previous chapters, I summarise the development of digitalisation at central government in these countries, following the progress of both online service delivery and e-participation. I also look at how the factors potentially influencing this development have evolved over time, and I attempt at identifying how these changes, in turn, have influenced the development of digital governance. Comparing the two cases, I find whether the observed relationships of separate country cases hold through time and space and whether these results resonate with the findings of the quantitative analysis discussed in Chapter 4. I begin this Chapter by comparing socio-economic situation of both countries, but I also account for their historic differences. This will remind the reader of the context in which the development of digital governance has taken place in Estonia and in the USA.

Estonia and the USA are two very different countries with different political and institutional set-up, but also with very different histories. These different historic paths have also set a different starting point for the adoption of technologies in the government of Estonia and the USA and have shaped the development of digital governance in both countries. In the USA, digitalisation started well before 1990s and by the time Estonia regained its independence from the Soviet Union in 1991 to start building its country, the USA had already developed several big information systems. These information systems continued to be used also after the 1990s and many of them serve the government even at the present. Throughout the years, instead of building new information systems, the existing ones have been regularly updated, and as these amendments have been introduced on top of the old, previous systems, the changes have been slow and often rather limited.

This applies also to the administrative processes and government mechanisms at large as these too have had a long history. The way government works in the USA has not been subject to immediate and radical reforms but, instead, has been modified gradually and slowly, building on past administrative practices and institutions. The government of the USA has not

experienced the same disruption as Estonia did in 1991 and, therefore, it has not faced a burning need to change the way it functions. Even though the American government has acknowledged the downsides of the federal government of the USA, and it has been committed to modernising its government throughout the studied period, it has been stuck amidst its legacy system prevented fast reforms.

In Estonia, digitalisation coincided with regaining independence from Soviet Union in 1991, and the use of technologies was accompanied with the re-building of Estonian state. Very differently from the USA, Estonia had to radically reform its government, build new institutions and organisations. During the 1990s and 2000s, several administrative reforms were introduced that completely changed the way government used to operate, the way it provided services and communicated with its partners. The introduced reforms were abrupt and radical and took advantage of the new technological developments of the time. It should be noted here that some information systems that existed before 1990s continued to live also in Estonia and some past institutional and organisational arrangements also influenced the development of digital governance, but these examples serve as exceptions.

Regarding technological development, both Estonia and the USA have reached a high level and have also shown a positive growing trend in both access to the Internet and the number of mobile subscriptions. While the broadband subscription has been slightly higher throughout the studied years in the USA, the gap has somewhat closed between the two countries. In 2003, the broadband subscription rate in Estonia was 6.74% and 9.47% in the USA and by 2016, Estonia had reached 31.07 % compared to 32.37% in the USA. In terms on mobile subscriptions, the number has been higher in Estonia throughout the studies years. In 2003, around 78 persons from 100 had a mobile subscription which is much higher than in the USA where 54 people had one. By 2016, in Estonia, it has reached 88.68 and, in the USA, it has gotten as high as 74.75%.

Internet penetration i.e., the number of the Internet users has been high in both countries as well and has been rising over time, however, there is an interesting difference in the trend between Estonia and the USA. Whereas in 2003, only 45.32% of Estonians were Internet users, 61.70% of Americans were using the Internet. By 2010, the gap between Estonia and the USA had closed considerably as 74.10% of Estonians were Internet users compared to 71.69% of Americans. By 2016, however, the development trend had reversed and Estonians bypassed Americans as there were already 13% more Internet users in Estonia than in the USA.

When we look at the economic development, however, we witness greater differences between the two countries, Estonia being considerably poorer than the USA. Even though the gap is not as wide any longer, it is still considerable as Estonia's GDP per capita in 2016 was 17853 USD compared to 52 194 USD in the USA. I will turn to the role that the technological development and financial resources have played in the development of digital governance in the sections to follow, after having summarised how digital governance has developed in both countries alongside with institutions, organisational processes and how the actors have been involved in this process.

The development of digital governance: e- services and e-participation

Digital governance development levels and patterns

Both Estonia and the USA have boasted high levels of digital governance throughout the studied period and this has also been reflected in respective international assessments. The development has been more constant in the USA over time and across e-services and e-participation as the USA has hold top positions in the UN e-Government Survey Online Survey Index as well as in e-Participation Index. Only recently, we can witness a slight decline in the USA's position in both indices and as of 2016, the USA ranks no 12 in the e-Participation Index and even lower in the Online Service Index. In terms of the development digital governance in Estonia, the level has been high throughout the years but not as constant and not as high as in the case of the USA. Estonia has not hold top three positions in these indices like the USA has, and more noticeable differences exist in the development patterns of online services and e-participation. Whereas Estonia's position in the Online Service Index has been increasing, its e-Participation rank has been decreasing. For instance, in 2003, Estonia ranked no 5 in e-Participation Index and has lost 22 positions by 2016. The trend in online services is reverse, as noted before.

Obviously, the indices reflect overall development, and some inaccuracies may appear due to several limitations that digital governance assessment exercises possess, including the Online Service Index of the UNDESA. Still, overall the indices do reflect the development levels and patterns and the findings of the case studies also verify that both countries have had a high level of digital governance throughout the studied period. Still, the findings suggest some differences between the development levels and patterns of digital governance. In Estonia's development of digital governance does not seem to have evolved along the maturity levels as online service provisioning has been constantly progressing whereas the development of e-

participation has considerably suffered since the 2010s. In the USA, again, the development of digital governance has clearly followed the stage-based maturity model as the digitalisation of the administration was followed by the development of online services and only then by e-participation. When we look at the very recent developments in both countries, the progress in digitalisation has slowed down a little; yet, it is more evident in the case of the USA. The findings also suggest that the lack of some central components of digital governance but also the complexity of the federal government in the USA may continue to negatively impact further development. Estonia's development of digital governance, again, has not been following the evolutionary approach as administration digitalisation, the development of online services and e-participation started in parallel. After the introduction of successful digitalisation initiatives that did originate from all these three main governance areas, the progress has been evident in administration modernisation and online service delivery; yet not in e-participation.

The results of this study suggest that, overall, the development of digital governance in both countries has been rather path dependent. Yet, it has not been consistent throughout the studied period and some essential differences between these two countries exist as well. Most importantly, as mentioned, Estonia's digitalisation coincided with building its state and this gave an impetus for very rapid and bold first developments in the 1990s and in the early 2000s. The re-independence disrupted Estonia's government's ways of working and gave a head start in employing the ICTs for modernising its public administration, for service provisioning and public participation. Hence, timing has played a vital role in the development of digital governance in Estonia. However, after these initial quick developments, the further progress has not been subject to shocks and has been rather steady. Again, it applies to the development of online services and digitalisation more generally but not to e-participation. What is also interesting is that a norm - being digital – has evolved along the way and it has reinforced itself over time. By now, Estonian government considers itself tech-savvy and modern and does strive toward the strengthening of the image of e-Estonia also at an international arena.

The development pattern of digital governance in the USA has been more evidently path dependent as it has hold through time and applied to both online services and e-participation. Also, the development has been somewhat slower than in Estonia. There are several reasons for why digital governance initiatives take time in the federal government in the USA, long history and size already mentioned in this section but also subsequent institutional arrangements and organisational processes that I will turn to in the flowing sections. It seems, however, that the development of digital governance in the USA has been somewhat influenced by scandals but

also other events that have happened along the way. These scandals like the Hillary Clinton e-mail controversy or Snowden leaks may have shaped both the public perception towards digitalisation and the government's subsequent steps in the use of the ICTs. More evidently, the post 9/11 priorities and subsequent activities of the USA federal government focused on cyber security and impacted negatively the use of the ICTs for openness and public participation.

The development of online services and digital governance main building blocks

In both countries, the first online services were introduced already in the 1990s in finance sector, when tax declarations went online. Serving as the first fully automated online service, in 2000, Estonian Tax and Customs Board (MTA) launched its e-Tax Board application - an electronic tax filing system that built on the earlier centralised information system from 1998. Inspired by the success of the Internet banking, taxpayers could log into the e-Tax Board, using a national eID in parallel with the banks' authentication modes such as PIN calculators and code cards. In the USA, too, the first nationwide e-service was an e-filing system that was followed by a success as by 2009, 90 million Americans had filed taxes electronically. As of 2015, electronic tax return is still the most widely used e-service in the federal government of the United States. The federal government of the USA copied practices originating from online banking and electronic commerce. At the time, online services were largely single-agency based services even though Estonia started to take steps towards cross-governmental service provisioning.

In 2000s, both countries open state portals. In Estonia, www.eesti.ee was opened in 2003 and in the USA, www.FirtsGov.gov was opened already in 2000 that in 2007 changed its name to www.USA.gov. Both portals share the same core aim - to function as a government gateway, i.e., the first and main government contact point for both people and businesses to provide information about what government does but also an access to public services. Still, there are some differences in what these two portals offer. In the USA, the portal does function as an introduction to the government of the USA, helping people to find information from different government agencies (also at state level), or finding out which agency is responsible for a given area. Additionally, it collects links to other government agencies, including to the online services provided by these agencies. The portal, however, does not offer any personalised information nor services to people nor businesses, and there is no opportunity to get online services form this portal either. Basically, the portal functions as a collection of links to other

agencies and their services. In addition to the state portal, there are several other issue-based one-stop-shop portal in the USA that were developed at the time such as www.medicare.gov for information on available health insurances, www.vaccines.gov for information on vaccinations, etc.

The Estonian one-stop-shop portal www.eesti.ee serves as a single window to government as well, providing information about the government and different government agencies as well as an access to online services of these different agencies. This means that similarly to the USA state portal, the Estonian one redirects to the online services of individual agencies. Yet, what is different is that the portal does offer personalised services and information. After logging in with a national eID, mID, bank link, but also with some other EU eID, a person can see all the data that the government possesses about her and, in some cases, it is also possible to change that data might, in case of inaccuracies or updates. To illustrate this, a person can change her residence online, for instance. The portal can also be used as a communication tool between a person and the government, it gathers all public notices (such as the ones about fines, extreme weather alerts, reminders about expiring documents, etc). As every Estonian citizen has a state e-mail that can be used to communicate with the government, the latter can be accessed via the state portal.[219] Apart from www.eesti.ee, myriad of innovative and user-friendly online services were launched in the 2000s: e-Cabinet, m-parking, e-school, e- geoportal, e-business, parental benefit claim etc.

Differently from the USA, Estonia has avoided the development of several portals that gather information and services on one concrete topic, however, exceptions do exist. One of these is the patient portal, for instance, that gathers all information and online services around healthcare. Again, after logging in with an eID or mID, a person can retrieve all information that exists about him/herself from all hospitals, clinics, or any other medical establishment. This includes, for instance, information on vaccines, allergies, insurance, family doctor, prescriptions and the time when the prescribed medicine was bought from a pharmacy, x-rays, results of any medical tests, data on dental care, etc. A person can access only her personal data and she can also decide whether she allows that data to be accessed.

[219] Each person residing in Estonia has an official state e-mail address assigned to him/her (for instance, nele.leosk@eesti.ee) so that the state could communicate with the people: send notices and alerts (on snow storms, upcoming elections, or trainings organised by the government), send fines, etc.

These differences that exist in online service provisioning, Estonia offering more personalised online services that go beyond the borders of one government entity, and the USA providing online services largely falling under the jurisdiction of one agency, have several reasons. Apart from historical, institutional and organisational reasons, there are also technological barriers. Namely, the federal government of the USA has not introduced, despite some attempts, a federal electronic identity. Also, the data sharing between registries and information systems of different government entities, but also private sector is not centrally supported. Estonia owns its success in the development of digital governance explicitly to these two central components, the so-called building blocks: i) national electronic identity (eID) and ii) interoperability layer X-Road allowing for automated data exchange between registries and information systems both in private and public sector. The following paragraphs summarise the development but also role of these central pillars in Estonian digital governance.

The first building block of digital governance in Estonia is the comprehensive system for electronic identification, authentication and digital signature that includes the ID card (as the carrier of the eID), the eID, the Mobile ID, the digital stamp, and as of 2014 also the e-residency card. The eID project that started already in the second half of the 1990s, was finalised in January 2002 when the first ID card was issued to the President of Estonia. The ID card has a chip in it that carries embedded files and by using a public key encryption, can be used as an identity in a virtual environment, both for authentication and for giving a digital signature. Since 2002, 1.27 million ID cards have been issued, and the use of an eID have been steadily increasing. The wide use of the eID have been guaranteed by close cooperation between the public and private sector as the eID can be used for both public and private sector services, for instance, as an online authentication mode to access Internet banking.

The second backbone of e-Estonia: X-Road is an interoperability layer that allows for real-time data exchange between registries and information systems between all organisations, public or private, connected to the X-Road. X-Road supports the implementation of the “once only” principle which means that once government has asked a data from a citizen, it cannot ask it again but must re-use the already collected data. To illustrate the implementation of this principle, whenever a person’s marital status needs to be identified, relevant data is retrieved from the Population Registry that stores and updates that information, instead of asking a person to bring proof on her marital status. X-Road was opened in December 2001 and it now connects more than 900 organisations, 200 public databases and registers; it provides 1’700 services with almost 600 million inquiries in a year.

Regardless of some efforts, the government of the USA has not been successful in the establishment of these central components. Until now, inter-agency collaboration in the USA is largely based on bilateral agreements, including data exchange between government entities that is, in most cases, still not automated. Regarding digital authentication, these are subject to practices of individual agencies and may vary considerably. As to digital signature, until the present, legally, it does not have a similar value to a handwritten one despite being used in some individual government agencies. These are some of the main reasons for a slower progress in online service provisioning in the USA and in Estonia. The findings suggest that the near future developments may also suffer and place the government of the USA in a worse position compared to other digitally advanced countries that are clearly moving towards life-event based service provisioning that exceed the borders of one agency. Instead, the USA has, in more recent years, progressed in using the ICTs for transparency and openness but I will summarise these efforts under the e-participation section to follow.

In Estonia, too, the development of national online services has somewhat slowed down and since the launch of the patient portal and e-prescription in 2010, there have not been noticeable advances since then. Since 2012, e-solutions targeted at the national public have been moving slow such as life-event based services (e.g., re-engineering and integrating all death related services to provide these via one window) but also some of the bigger information systems like the one on social benefits. Still, compared to the USA, the stagnation is less substantial, and the findings suggest that this may not necessarily affect the future progress. One of the reasons for the stand-by mode might be the shift from national developments to those targeted at the international arena such as the e-Residency project - a virtual identity of Estonia issued to foreigners, or the launch of cross-border services, particularly between Estonia and Finland. In the USA, again, apart from the complexities around cross-agency collaboration and initiatives that were already pointed out, the priority shifted to transparency, openness and collaboration and related online solutions which may have contributed to a slower progress in online services.

The development of e-participation

The development of e-participation reveals some differences between Estonia and the USA. Estonia got a quick start in the development of e-participation and most of the online participation tools, some forward-looking were launched in the 2000s. There have been no major e-participation projects nor tools initiated by the central government since 2011 when the

information system of legislative acts was launched. In the USA, again, the order seems to be reverse. Until the Obama era, the portal for the preparation of federal regulations remained one of the very few government-provided online tools seeking the public opinion. Since 2010, however, several online collaboration tools and open data portals particularly have been opened, and despite some criticism, these have provided the public more opportunities to know what the government is doing than any before.

Largely, e-participation portals have had the same functions across the two countries: they provide information, seek public feedback and opinion, or they are used to more actively collaborate with the citizens. The last category is by far the least represented in both USA and in Estonia whereas the number of transparency-oriented portals is higher in the USA than in Estonia. The opportunities for the public participation in the policy-making process, even though not actively used, seem to be higher in Estonia than in the USA where it is limited to public consultations on the already prepared draft acts. The following provides a brief snapshot of the main e-participation tools in Estonia and in the USA, how these practices have progressed, and what the main issues around their use have been.

The development of e-participation in Estonia was marked with an opening of an e-participation tool called Today I Decide (TOM) in 2001 that allowed people to present ideas to the government, to discuss them and vote either against or in favour of a presented idea. Despite immediate success, this innovative tool was soon accompanied by heavy criticism as, indeed, the portal suffered from low number of users, lack of constructive dialogue and low publicity. TOM was also unsuccessful in a sense that there were very few positive responses from the government, mostly because these ideas were not congruent with the priorities and work of the government. Still, it can be concluded that TOM gave impetus for the development of e-participation in Estonia, and it did demonstrate the ambitiousness of the government but also some of the political leaders of the time to foster democracy in Estonia. Similar platform in the USA was opened only in 2011 when "We the People" website was launched to enable the public to create a petition and sign it and get response from the government.

In Estonia, TOM got incorporated into the all-governmental participation portal www.osale.ee that was opened by the Government Office in 2008 to offer three functions: document search across government, presenting bottom-up legislative proposals to the government, and organising public consultations on draft acts. Regarding the use of the portal, it has been declining both among the public and public officials. With the exception of the

opening of the information system of legislative acts EIS in 2011, there has been no major push for online participation from the government side. EIS, itself, is a revolutionary in a sense that it opened the policy-making process to everybody interested from the problem formation until the passage of the legislative act to the Parliament; it connects all preparation phases and allows for the participation in the latter.

At the same time, an online rule making environment www.regulations.gov was opened in the USA in 2002, allowing for the public to comment on government regulations. This platform functions as a public consultation portal which means that only draft acts are being posted at the portal, and it has been widely used both by government officials and the public since its launch. The next all-governmental tool to facilitate public participation in the policy-making process was opened in 2011 when online petitions platform We the People was launched during the Obama administration. The initiatives that were many in the years between aimed at increasing government transparency and not that much inclusiveness. During the Bush administration, in 2007, a website www.usaspending.gov was launched to provide public access to the information about the federal loans, grants, awards etc alongside with several others.

During the Obama administration, opening government information became one of the main priorities and the trend to open websites for information provisioning continued. The main milestone of the Obama administration, in this line, is the open data portal www.opendata.gov launched in 2009 where the federal agencies were requested to publish datasets in an open format for their potential reuse. Still, as noted before, the findings here suggest that the main data has been targeted at the private sector that has improved its service provisioning by the re-use of government data whereas the data that could hold government accountable has been largely missing. More recently, another big step was taken when in 2012, the USA government opened an all-governmental platform foiaonline.regulations.gov to enable to send FOIA requests to several agencies via the all-governmental portal. In comparison, in Estonia websites to solely provide information about some specific issue (e.g., on vaccines or loans) have not been opened. As to the open data, the portal https://opendata.riik.ee/ has been just opened; yet it lacks clear ownership, the available data is limited and hardly used.

Throughout the studied period, there have been a difference between Estonia and the USA in the ease in accessing online public information but also the extent of available information. In the USA, it has not been clear what kind of information needs to be made public by default and the practice varies substantially between agencies. Furthermore, sending a

request to receive government information has been a cumbersome process that, too can vary across government agencies. Either or, in order to be eligible for an answer from the government and receive the data, request for information has to be sent to its specific owner. This has received a considerable amount of critique among the CSOs and the public, and the USA government has taken steps to make it easier for people to access public information by opening special websites both and, later, also by unifying FOIA requests. In Estonia, the information that must be made available by default has been clear since 2001 dur to the PIA that lists information that needs to be disclosed via websites. Equally, the process for submitting requests for information has been unified together with its processing rules. The gap between Estonia and in the USA in accessing public information has been closing though because of the USA government continuous effort in this front.

Institutional arrangements: policies and legislative acts

There is a noticeable difference in digital governance institutional arrangements in Estonia and in the USA, but these two countries do share some similarities. In both countries, throughout the studied period, the main aim of the digitalisation has been the modernisation of government and changing the way it works. Some nuances between the two countries, however, do exist. In Estonia, the role of the ICTs has been put into an even larger context of an overall development and modernisation of the Estonian society and not just the government. In the USA, the government has been represented as an old-fashioned and monstrous apparatus lagging in technological developments that needs to be fixed.

In both countries, the priority has mainly lied in the efficiency and user-friendliness of the administration and online services delivery and much less on the role that the ICTs could have for improving democracy and for increasing public participation. Furthermore, the findings of this study suggest that the weight of e-participation related claims in policy documents has not been consistent during the studied period. In Estonia, the democratic aspect of digital governance has been more prevalent in the earlier policy documents that followed the restoration of Estonia's independence. One may presume that during these initial years of Estonian state it was critical for the government to prove the public that it differs from the previous regime, that it is not only modern, but it is transparent, inclusive, collaborated, and that the government can be trusted. In more recent years, the role of the ICTs in innovating democracy has been moderate and secondary. Contrarily, in the USA, e-participation has been a policy priority during the more recent administrations as, indeed, the claims around building

more open and collaborative state have been increasing with time. The current Obama administration promises in this respect are bold and ambitious whereas the earlier documents of particularly Clinton administration stressed on efficiency and cutting costs.

In terms of the nature of the policy documents, these have been more coherent but also considerably shorter in Estonia than in the USA where the digital governance policy priorities have been scattered across different, much longer documents. Over time, policy documents in Estonia have grown in length and depth as well, along with the Estonian government dependence on institutional arrangements and its growing bureaucracy. Last, it seems that the strategic priorities of digitalisation of the government of the USA have been influenced by scandals and events whereas in Estonia it has not been apparent (apart from the restoration of its independence, of course). For instance, the post 9/11 policies witness a sharp increase in the commitments on cyber security and the lack of transparency and openness related claims that were present in the earlier Bush administration documents.

In terms of the legislative acts, both countries do not possess one single digital governance legislation as several have been essential in the development of digital governance. The number of legislative arrangements has been considerably higher in the USA during all the studied years whereas in Estonia the number has been increasing over years. The layering, typical to the legislative acts in the USA, has at times, resulted in complexities but also differences in their interpretation and consequent implementation. The number of legislative acts on e-participation has been much lower in both countries and, similarly to online services, the area has been more regulated in the USA than in Estonia. The following summarises the main policies and legislative acts guiding and supporting the development of digital governance in Estonia and the in the USA. I end this section with the analysis on how these institutional arrangements: policies and legislative acts have impacted the development of digital governance in Estonia and in the USA. Here, I return to the findings of the quantitative analysis as well.

Digital governance policies: online services and e-participation

In Estonia, the first strategic document on digital governance was adopted only in 1998 when the Parliament adopted the "First Principles of Information Society", building on the principles that had been put down by the RISO department a few years earlier. This first policy document is a three-pager, laying down very general concepts and principles to guide government institutions in reaching the four set overall objectives. The following strategy serving until

2006, largely follows this approach; yet, it goes deeper and includes some of the priority projects like X-Road, Tiger Leap Programme, and Look@World. Only in more recent years, these policy documents have gained in length, and the Digital Agenda 2020 for Estonia does contain a long list of concrete initiatives and projects to be implemented. Generally, the number of policy documents and guiding materials has rocketed since the establishment of the Department of Information Society Services Development in 2011 at the MKM.

The objectives that these documents set for the use of technologies by the government have changed over time in Estonia but as summarised in the sections above, orientation towards online services prevails. The first Principles of Information Society from 1998 is a three-page manifest of an intention to modernise Estonian society though technologies, triggering economic growth, developing democracy, and increasing government efficiency. The following digital governance policy has a clear focus in the adoption of the two central digital governance components: eID and the X-Road. During this period, the objectives around stronger democracy and e-participation started to give way to online service provisioning. The current Digital Agenda 2020 for Estonia seems to lack all-governmental vision and ambition and it is much less concerned with national developments than those exceeding the borders of Estonia. The included activities largely fall under the MKM, leaving several essential policy areas underrepresented, or entirely missing. The number of sectoral digitalisation strategies, again, has grown and it seems that these policy documents of individual agencies play a bigger role in the development of digital governance than in the earlier years. The misalignment of priorities between these strategies may have impacted the progress of some initiatives, for example e-Residency.

Regarding e-participation policies, these have largely overlapped with general digital governance policies and throughout the years, Estonia has not had one unified all-governmental e-participation or e-democracy policy. In 1998-2011, information society policies served as the main document touching upon the use of the ICTs for democratic renewal in Estonia. Since 2011, the OGP action plans have been guiding the development of e-participation in Estonia. Throughout the years, promises on e-participation and e-democracy have been mediocre, yet occasionally, the Civil Society Development Strategy has included some bold and innovative commitments. Furthermore, the role of the ICTs for democracy renewal has been diminishing and the OGP action plans of Estonia largely cater to the commitments around online service delivery and these few planned actions on e-participation lack ambition.

In Estonia, as we saw, the development of digital governance has been mainly guided by one central policy, even though it has been losing its grasp. In the USA, again, digital governance policy is made up of a list of different documents, reports and legislative acts that specify the very general aims of policy documents and list concrete projects and initiatives. In this sense, digital governance policy in the USA is scattered across different documents and, therefore, it seems to lack a coherent vision and comprehensiveness. Obama open government policy, for example, is made up of several President's executive orders, memorandums, directives, reports and alike. One must also account for the fact that the political set-up does not favour strategic continuity either as the administration led by a President from the Democratic Party does not want to continue with the priorities deriving from the administration led by the President from the Republican Party, and vice versa.

Still, President Management Agendas do play essential role in the development of digital governance in the federal government of the USA, and I have considered these as the main guiding policy documents. Even though the PMAs are not digital government policies per se but serve as government reform strategies instead, they do contain passages on digitalisation. President Management Agendas such as Clinton's National Performance Review, its descendant National Partnership to Reinventing Government, Bush's President Management Agenda and Obama's President Management Agenda all consider the ICTs as means to reach the objectives of an overall government reform. Due to the nature of the PMAs, questions like "how to digitalise?" or "what the concrete aims are?" do not get answered, but they do depict areas where technologies could be of assistance, and what the main endeavours should be. Over time, digitalisation has gained space in these documents. While the Clinton's National Performance Review is rather moderate in terms of digital governance, the following policies, from Bush and Obama administration have situated technologies at the very core of government modernisation. At times, the presence of technologies has been particularly strong. This is the case with the Bush's President Management Agenda, for instance that includes a comprehensive section on e-governance. Regardless of the President, these documents have all been lengthy and boasting a long list of aims and outcomes.

The expected outcomes of the use of the ICTs have generally been associated with transforming the government, but the emphasis and more concrete aims have somewhat changed over time. Clinton had a strong believe in increasing government efficiency, increasing productivity and cutting costs. Clinton's administration was ambitious and, perhaps idealist in a sense that it believed that computerisation alone would bring an end to the old-fashioned ways

of working, that it would end paper-based administrative processes and improve service delivery etc. It is noteworthy that the NPR, despite listing all these bold aims and outcomes, does not foresee any costs for digitalisation. The NPR is clearly driven by market-based ideas, leaving no room for partnerships between the government and its partners who are depicted as clients in a need for fast and easy to use services.

This customer driven approach and strong focus on online service was taken over by the Bush administration. In the PMA, again, government efficiency and reducing costs are on top of the agenda; yet, one can notice a few differences. Firstly, cross-governmental cooperation found its way to government agenda by introducing ambitious interagency digital governance projects, called "quicksilver". Bush's agenda is highly ambitious in a sense that it picks up priorities of individual agencies and combines them with the all-governmental ones, supported by central components like digital authentication. As we know, digital signature project was doomed to failure already in its idea phase. Secondly, and much less known, Bush brought openness and participation into the government agenda, and his administration policies did pave way to better access to public information but also to more transparent and inclusive policy-making. Still, post 9/11 policies that are concerned with security and secrecy, have overshadowed Bush's efforts to improve partnerships between the government and its partners.

Giving credit to Bush, it is evident that the following Obama administration prioritised openness more than any other administration before. His election campaign promise of opening up the closed practices of governance did find their way to relevant policies. Already in his first day in the Office, President Obama signed the Memorandum on Transparency and Open Government, giving impetus for open data movement within federal government but also for innovative collaboration mechanisms such as crowdsourcing. In later years, his administration's policy documents have focused much less on openness and the 2nd OGP action plan for the USA, for instance, is centre around online services but also idealised by private sector practices. In similar vein, open data policy has shifted from serving government transparency to business interests.

Comparing the development of digital governance policies, thus, we can conclude that whereas e-participation related priorities and commitments have been raising over time in the USA, these have been losing their importance in respective policies in Estonia. In this sense, the USA has followed the predicted patterns of the development of digital governance in its policy documents, starting with administrative efficiency, moving to online service delivery

and, lastly, to openness and participation. In Estonia, this pattern has not been observed. On the contrary, e-participation has been losing in its visibility in policy documents over time. In a way, we can notice a slight shift back to online services prioritisation in the USA, too.

Both governments' digitalisation efforts have been guided by the desire to modernise government, to leave behind its archaic ways of functioning, and cut its size and cost. There are different shades of modernisation efforts in Estonia and in the USA. The latter has been guided by private sector practices as the federal government of the USA has always been portrayed as a loser in innovation and in the application of technology. In Estonia, it seems that the government has taken the lead in setting a technological trend and market-based incentives have not been prevalent. This does not mean that role of the ICTs for economic growth has not been considered as the Digital Agenda 2020 clearly focuses on economic growth and IT export.

Legislative acts: laws and regulations

When it comes to digital governance legislation, Estonia does not have one single act regulating digital governance nor has it a comprehensive system of digital governance legislation. Generally, Estonia has tried to avoid overregulation of technology to guarantee the needed flexibility for digital innovations to emerge. Still, Estonia has well-regulated several essential components of digital governance and it has set principles critical in the development of digital governance. Similarly, the USA government does not entail a single digital governance legislation nor a comprehensive framework for the latter and has, instead, regulated different aspects of digital governance. In the USA, central digital governance components have not been regulated and all-governmental principles have generally not been. In this sense, the countries do share some similarities in regulating digital governance even though there are also a few differences.

There are number of principles that have guided and supported the development of digital governance in Estonia, and these have been set in respective legislative acts. First, a centralised identity management has been established though the adoption of or amendments to Identity Documents Act (1999), Population Registry Act (2000), and Digital Signature Act (2000). Second, the "once only" was established when the Databases Act was adopted in 1997 (incorporated in the Public Information Act in 2008). This means that if data has already been asked and stored in any one database of the government, these cannot be asked again but must be reused instead. Third, the Databases Act (1997) laid down the principle according to which a person must know the data that the government possesses about him or her. And fourth, since

2000, digital signature has been recognized as being fully equivalent to hand-written signature as stipulated in Digital Signature Act (2000). These principles that have been established have led to high level of interoperability between government databases and information systems but also between government and private sector databases which, in turn, has allowed for the emergence of user-friendly online services. The use of these central components has also led to government efficiency and cost saving.

Apart from the afore-mentioned laws setting the fundamental principles of digital governance, there are a few other legislative acts that have influenced the development of digital governance in Estonia. Here, cannot bypass the role of Public Information Act (2000) in opening public websites and increasing easy access to public information. The PIA also nominated Estonian Data Protection Inspectorate, established in 1999, a responsible body for carrying oversight over the implementation of the PIA. Other laws like the Personal Data Protection Act (2003), Information Society Services Act (2004), or Electronic Communications Act (2004) have been essential in guaranteeing the well-functioning of some components of digital governance.

The USA government does not entail a single digital governance legislation nor a comprehensive framework of digital governance legislation either. In the USA, digital governance is subject to several legislative acts, and numerous amendments to these acts. However, the government of the USA has not established clear cross-governmental principles guiding the government digitalisation process and, generally, legislative acts in the USA tend to be extensive and complex. As mentioned earlier in this chapter, the federal government of the USA has a long history in adopting the ICTs in government institutions which, in turn, is closely linked to how the government agencies have operated during all these years, strictly within their jurisdiction, following carefully their mandate and related regulations. This historic development has complicated the introduction of new principles but also new regulations with clear function and language. Additionally, very differently from Estonia, judiciary plays an important role in the executive branch of the federal government of the United States and, therefore, judicial opinions too influence the course of the implementation of legislative acts. For example, the United States Department of Justice publishes a Guide to the Freedom of Information Act that is comprehensive treatise of the FOIA requirements, exemptions, and other considerations. This annually updated guide includes a detailed analysis of the judicial opinions issued on the FOIA and is aimed at guiding the federal agencies in the implementation of the Act.

In the USA, legislative acts related to the development of digital governance have, largely, four main functions but, of course, it is not limited to these. The first group comprises of the legislative acts requiring agencies to undertake certain digital governance initiatives, such as open a website, offer certain online service etc. In Estonia, these are usually included in policy documents and accompanying action plans. Here, the e-Government Act from 2002 required the modernisation of the already existing state portal www.usa.gov and the opening of a website for processing regulations www.regulations.gov. In 2009, The Open Government Directive requested the creation of an Open Government Dashboard on www.whitehouse.gov/open and obligated federal agencies to publish their Open Government Plans at that website. Generally, it seems that most digital governance projects have been preceded by a respective legislative clause.

The second group of legislative acts introduces oversight measures to monitor the implementation of different digital governance initiatives, largely related to reporting requirements. Here, the Government Performance and Results Act Modernisation Act (GPRAMA) enacted on January 2011, building on its earlier version GPRA, needs to be brought out as it creates several oversight mechanisms by institutionalizing a government-wide performance improvement council, for instance. The third group of legislative acts is concerned with cross-agency collaboration and one of the aims of these acts is to further the development of initiatives that go beyond the borders of one government agency. Again, e-Government Act, introducing 25 cross-agency initiatives serves as an example here, but also GPRA and its descendant GPRAMA that request federal agencies to prepare action plans that go beyond the borders of one agency. The fourth set of legislative acts sets some organisational arrangements for the management and coordination of digital governance development. The Information Technology Management Reform Act of 1996 required agencies to establish the position of a chief information officer (CIO), for instance.

In line with the growth of strategic priorities on transparency, participation, and collaboration, the number of legislative acts serving e-participation have increased in the USA as well. In 2007, National Government Act, better known as Open Government Act was adopted that also amended FOIA. The Obama Open Government Directive has been by far the most ambitious national effort to move toward openness and it has also served as a base for the following OGP action plans. Despite the increase in the commitments related to the access to information, public participation, accountability, and transparency that is evident in the first

OGP action plans, the latest one has slighty moved back to prioritising government effectiveness and online service delivery.

The role of institutional arrangements on the development of digital governance in Estonia and in the USA

This study finds that the development of digital governance has been influenced by institutional arrangements both in Estonia and in the USA. This finding is also supported by the results of the quantitative study. Still, the finding of the case study research point to some differences in the effect of the institutional arrangements on the development of digital governance in Estonia and in the USA through time. Furthermore, there seem to be some differences between the impact that these arrangements have had in the development of online services and e-participation. I elaborate on these findings in the following paragraphs.

The results of this study suggest that legislative arrangements have positively influenced the development of digital governance in Estonia and in the USA, yet the effect has not been equally strong in these two countries. It is evident that the role of institutional arrangements has been higher in the USA than in it has been in Estonia, and it has also hold through time. In the USA, all online services, e-participation tools, or the development of any e-solution has been preceded by the passage of a relevant legislative act or an amendment. Each technological development in the USA federal government has been following an institutional mandate. It also appears that institutional arrangements have been equally essential in the development of online services and e-participation. In line with the growth of policy commitments on openness and participation and legislative acts requiring government agencies to open websites for public participation, the number of these tools has also been increasing.

However, not all legislative acts introduced in the USA have produced the expected results. There are several examples illustrating that not everything required by legislative acts gets executed. Here, we can again think again of the failed attempt to introduce an all-governmental digital signature, or the hurdles around the implementation of FOIA. This provides some evidence that, in addition to institutional arrangements, other factors have influenced the development of digital governance in the USA as well such as the role of actors or organisational processes.

In Estonia, the development of digital governance has been influenced by the existing institutional arrangements, but the impact seems to differ across sectors and over time. In the

1990s, when the preparations of the two most essential components of Estonia's digital governance: eID and X-Road were in full swing, the institutional arrangements supporting or enabling their development were not yet adopted. In 2001, X-Road went alive without any supporting policy documents or an enabling legislative act. The first policy document guiding the development of digital governance was prepared only in 1998 and the three-pages directed Estonian government until the mid2000s when digital governance policies started to gain in length. During the 2000s, several legislative acts that have clearly impacted the development of digital governance were adopted. The Public Information Act, for instance, that gave impetus for the development of public websites and for easy access to public information or the Digital Signature Act that equalled digital signature to the one written by hand. Some of the fundamental principles that have guided Estonia in the digitalisation process such as "once only" or "digital by default" have clearly contributed to the effectiveness of public administration and the user-friendliness of the offered e-services.

Over time, in line with the government dependence on institutional arrangements, the number of policies and legislative acts in Estonia has been increasing and so has their role in the development of digital governance. This has had both negative and positive effects. Better functioning of one of the central components - X-Road, for example, has been guaranteed through the introduced regulations over time. Some other new initiatives have kicked off such as the digital prescription and digital health or the recent cross-border services. Then again, some of the areas has suffered considerably due low policy prioritisation and hypothetically, also little regulation that may give actor freedom not to undertake certain developments.

Generally, legislative arrangements have played more prevalent role in the development of e-services than in e-participation. Throughout the studies period, e-participation has been less supported by legislative arrangements than e-services, but several innovative solutions have been introduced nevertheless, TOM in 2001 or EIS in 2011. Still, progress cannot be detected from 2011 onwards which, again, may direct to the finding that institutional arrangements play a higher role on the development of digital governance, including e-participation in recent years now than before. The results of the quantitative study partly confirm this finding of the case studies research, too as the effect of the legislative arrangements enabling public participation is insignificant. One of the reasons for this could be that fact that e-participation has generally not been much regulated and the institutional arrangements around e-participation have not been noticeably increasing either. The other reason, however, could be that compared to the role of government actors in the development of digital governance, other

actors' role has been considerably more moderate. I will turn to the role of the public and businesses in the development of digital governance in the final sections of this chapter.

Organisational processes

Management, coordination and collaboration. Budgeting and financing

Estonia and USA differ in how the digital governance has been managed and coordinated; yet, some similarities do exit. In the USA, the digitalisation is centrally coordinated by the Executive Office of the President and in Estonia, the responsibility lies in the Ministry of Economic Affairs and Communications. The latter has proved to be more effective and stronger both in setting policies and respective actions and in the implementation of these decisions. Here, Estonian government provides central pillars: the eID and data exchange layer X-Road that is used by public and private organisations alike. In the USA, again, individual agencies have been stronger than the centrally established units despite their increasing role over the course of years.

Apart from the automated data exchange between government institutions in Estonia, other means of cross-agency collaboration have been more common in the USA than in Estonia, and these have also been more institutionalised. The numerous task forces, committees, working groups, expert groups that have been established in the USA have been more active, and they do play a role in the digitalisation of the federal government. In Estonia, networks are mainly based on personal relations and those few institutionalised ones do not seem to have interest or power to influence the course of digital governance in Estonia.

In terms of cooperation between the government agencies and its partners, generally, the IT sector has been more involved than the CSOs or the public in both countries. Still, some differences exist. In Estonia, several forms of the PPPs have been established in parallel with outsourcing, and some impactful nation-wide public awareness campaigns have been co-organised and co-financed during the first half of the studied period. During the second half, IT sector has been more active in the policy-making process; yet, outsourcing has been decreasing in some areas due to the establishment of powerful state IT houses. In e-participation, government-wide collaboration has been rather dire and private sector's interest in the area modest. Here, the CSOs seem to have been more actively involved. In the USA, the private sector has serves as a role model for the digitalisation of the federal government throughout the years. Still, the relationship has been mainly limited to outsourcing private sector services and

only in the very recent years, other forms of partnerships have emerged. After this snapshot on the organisational arrangements in Estonia and in the USA, a more detailed overview of how these have developed and impacted the development of digital governance follows.

Management and cooperation in the development of online services and digital governance

Digital governance has been centrally managed in Estonia since 1993 when RISO was created at the Government Office to lead the preparation and implementation of Estonian information society policies and action plans but also to coordinate the budgeting and financing of IT developments. Since 2000, RISO has been part of Ministry of Transport and Communications, later Ministry of Economic Affairs and Communications and it has kept its rather strong position in digital governance management since then. Regarding the implementation of digital governance in Estonia, it has been mainly in the hands of individual ministries, but several essential components of digital governance have been developed and provided centrally through a strong implementation agency RIA. Here, the data exchange layer X-Road, state information systems and their register RIHA, state portal www.eesti.ee, three-level IT baseline security system ISKE serve as some examples.

At times, RISO's role but also the capacity to lead the development of information society in Estonia has weakened. In 2003, due to a respective change in State Budget Act, RISO lost its central position in coordinating and approving individual agencies' IT budgets to the Ministry of Finance and has been coordinating the allocation of the EU Structural funds only. This has resulted in a considerable gap in an overview of IT expenditures but also means to influence digitalisation in individual agencies. Recently, MKM has taken several steps to re-establish its central lead by establishing several positions, e.g., the government CIO, the government CTO, but also by creating an additional department - the Department of Information Society Services Development (ITAO) to coordinate the development of public sector services, that has been active in producing all sorts of documents to guide and support government institutions in the development of online services across central government. Regardless of the instabilities of MKM, generally, it can be concluded that the MKM and its implementing agency RIA have guaranteed the central management and coordination of digital governance in Estonia and its decentralized implementation by individual agencies.

In the USA, the lead has been within the Executive Office of the President, at the Office of Management and Budget but also at the General Services Administration. Over time, the responsibilities and tasks of the OMB in digital governance management and coordination have

grown, most notably in 1996 when, following the passage of Clinger-Cohen Act, the OMB was tasked to exercise control over the implementation of digital governance policies and legislative acts within federal government but also take a lead in digital governance budgeting. Continuous attempts have been made to increase the capacity and mandate of the OMB to lead the development of digital governance in the USA via several measures, through the establishment of high-level positions within the OMB such as the one of the CIO and CTO. The creation of higher-level digital governance positions in individual agencies has been triggered by the White House too, to serve as the "agents" of all-governmental digital agenda. Additionally, myriad of control and oversight measures to assess the progress of government entities have been introduced like the "traffic light" during the Bush administration or by strengthening reporting requirements.

Regardless of the White House efforts to increase central planning and implementation of digital governance in the federal government of the USA, the main drivers have remained federal agencies that are in charge of their digital governance development. Indeed, the influence of the OMB on the development of digital governance has been increasing over time but its power is still limited. One of the many reasons for this is the budgeting and financing. Even though the OMB receives and approves agencies development plans and funding requests, the allocation of funds lies in the hands of the Congress and its different appropriation committees. These committees, again, tend to be issue- and institution-based, and the financing of cross-cutting projects of digital governance has not been the priority until the present. Secondly, the vertical set-up of the federal government has avoided the centralisation of power historically and at the present. The combination of these and some other factors (like the lack of trust in government) have prevented the government of the USA from introducing central components like eID and interoperability despite several efforts in this domain.

The lack of central digital governance components in the federal government (such as the X-Road in Estonia) has been compensated by other measures to increase cross-agency collaboration. Several interagency taskforces, working groups and councils have been established to facilitate cooperation and cross-government digitalisation initiatives like: The President's Management Council (PMC) of chief operating officers, the Information Infrastructure Task Force consisting of representatives from federal agencies involved in information policy but also telecommunication, the CIO Council, etc. Apart from these institutionalised networks, a few ad hoc working groups on various topics have been established by all administrations. In Estonia, again, institutional inter-agency committees like the e-

Estonia Council or the Open Government Coordination Board have largely failed either because of the low interest and activity of its members or because of the lack of decision-making power. Still, the non-institutionalised friendly networks of specialist that have formed around certain topics in Estonia like the X-Road community, or the cybersecurity network do function well. These groups, again, tend to be closed circles of public officials and some experts that have proven efficient in solving everyday problems or some crisis situations, but they do not have the power to influence the decision-making process of digital governance.

In terms of the cooperation between the government and its partners like the private sector, it has been rather limited in both countries, but some differences do exist in the forms of the established partnerships but also across the development of online services and e-participation. Generally, the relationship with private sector has been contractual which simply means that the government has ordered services from the IT sector mainly, either to develop e-solutions or to provide consultancy. Paid consulting, been somewhat more common in the USA where experts have also advised on the development of strategies, action plans etc. Due to the establishment of the so-called state IT houses within some ministries to provide IT services and develop information systems, in some areas, the number of outsourced technological developments has decreased in Estonia over time.

Apart from outsourcing that is still the prevailing form of PPPs in both countries, other partnerships have been established, particularly in Estonia. Some of the essential and highly impactful public awareness campaigns were co-organised and co-financed together with the private sector in the 2000s. In the later years, alongside with Estonia's efforts to strengthen its image as the most digital country in the World, Estonian government and the IT sector have cooperated in this endeavour to re-enforce this message. It is also the period that the government has involved the IT sector in the policy-making process; yet their involvement has largely taken place behind the closed doors and it has not been open to the general public to. In the USA, contractual relationships out rule the other forms of cooperation even though some changes have taken place during the Obama administration.

In e-participation, government-wide collaboration has been rather dire and the forms of collaboration between the partners limited to a few institutionalised councils or bodies where the CSOs have their representatives. Here, public consultations have been organised by the government, for instance on open government action plans and they seem to have been more meaningful than those on e-services, if any. Even though the established collaboration measures

have been rather limited, the CSOs and the public have influenced the development of e-services more than digital governance more generally, but this will be discussed in the section to follow that tackles the role of actors in the development of digital governance in the USA and in Estonia.

Management and coordination of e-participation

Both countries have failed to establish a well-functioning central management for furthering e-participation (or open governance, as used in more recent years). In the USA, the responsibility has largely been in the hands of those individual agencies that have demonstrated more interest and will to invest in e-participation. Here, the management of the all-governmental portal regulsations.gov serves as a great example as it has been under the Environmental Protection Agency throughout the studied period. Later, the OGP process was assigned to the OMB that got later shifted to the Office of Science and Policy, but the latter has little control over the preparation and implementation of the OGP action plans that remain the collection of initiatives suggested by federal government agencies. Additionally, the budget and financing are decided by the Congress. The situation is no different in Estonia where the responsibilities over e-participation are scattered across different ministries and the Government Office. Even though the OGP has been assigned to the Government Office, it lacks any personnel dedicated to the OGP matters. Over time, there has been some confusion over the exact roles of the Government Office, the Ministry of Justice but particularly the Ministry of Economic Affairs and Communications in the development of e-participation in Estonia.

Equally, both countries have established a cross-governmental body to coordinate the development of e-participation, and the OGP. The Government Office in Estonia has established an OGP Coordination Council and the White House formed the Open Government Working Group in 2010. Both interagency groups include higher level representatives from government agencies but also from prominent policy CSOs. These coordination councils, despite their mandate, have no power over the implementation of the OGP action plans, nor the choice of the commitments to be included in the OGP action plans. Another observation that one can make is that public consultations have serves as means for seeking partnerships and even though their impact and usefulness has been questioned, most e-participation policies have gone through a public process. What is very different from the development of online services is the lack of partnership with business sector in the advancement of e-participation in both countries.

Regarding financing, throughout the years, e-participation has not had a separate budget neither in the USA nor in Estonia, including the current OGP action plans. Even though there are some resources allocated to centrally support the development of e-participation in both countries, this has had severe limitations, particularly in Estonia where e-participation has been supported through alternative measures only and has not had a separate line in the budget of the Government Office. In the USA, the actions included in the OGP action plan that are a direct responsibility of the OMG at the White House, are financed from the White House Budget such as the platform We the People, for instance, yet, similarly to Estonia, other activities included in the OGP action plan are covered by respective ministries.

The role of organisational processes in the development of digital governance in Estonia and in the USA

From this study, I find that organisational processes have influenced the development of digital governance in both countries, but the effect that these processes have had on the level of digital governance has not been substantial, and it is not clear-cut either. Generally, the findings suggest that budgeting and financing have affected the development of digital governance more than other organisational processes like management and coordination. Surprisingly, the cooperation between government and its partners, particularly between the government and the public and the CSOs, does not seem to have impacted the development level of digital governance.

This finding is moderately supported by the results of the quantitative analysis as only in few models, the management structure proved to be significant, suggesting that the digital governance unit, when situated under the PM or the President's unit leads to better results in the development of digital governance. Yet again, the case study research does not fully support this finding because the digital governance management unit that is situated in the Executive Office of the President of the USA, has not influenced the development of digital governance more positively than the similar unit in Estonia that is in the Ministry of Economic Affairs and Communications. This difference, however, could be explained by the peculiarities of the federal government of the USA that has historically avoided the centralisation of power. Regarding budgeting and financing, due to the lack of data, this variable was not included in the quantitative analysis. Still, as the economic development proved to be insignificant, it seems that the wealth of a country does not determine the level of digital governance. One may further presume that the amount of funding, therefore, does not affect digitalisation either, but this

presumption might be heavily misleading as higher state budget does not necessarily lead to higher budget of digital governance. In the following, I elaborate on the findings of the role that organisational processes have played in the development of digital governance in Estonia and in the USA.

In the USA, the government is very fragmented, and the concentration of power has been historically avoided. Despite continuous efforts to strengthen the role of the White House, central management and direction has been weak, and consequently, the planning and implementation of digital governance lies largely in the hands of individual agencies. In Estonia, too, individual agencies play a role in the progress within their jurisdiction but, at the same time, digital governance has been centrally managed and coordinated by both MKM and its implementation agency RIA. Furthermore, Estonia seems to own its success in the development of digital to centrally provided components such as the eID and X-Road, but not limited to. From this, it seems that the progress on digital governance is possible both under weak and strong central management, even though there seems to be a strive towards central management in both countries.

What complicates the drawing of final conclusions over the role of the management model on digital governance is the very different political and institutional set-up of these two countries. In the USA, individual agencies are big and strong, and they possess the needed human and financial capacity to plan and execute their digital governance plans. Furthermore, as noted in few occasions already, the centralisation of power has been, and still is, avoided in the federal government of the USA. It seems that these independent agencies with the needed resources have substituted for the lack of central management and support in the development of digital governance. In Estonia, again, it has been clear that due to the lack of capacity and financial resources in ministries, especially in the 1990s and at the beginning of the 2000s, the single-agency based development path would not have led to the desired results. In line with the increase in financial resources, however, individual agencies have gained power in Estonia too, and some duplicative parallel developments do exist by now. It appears that both countries have followed a digital governance management and coordination model applicable to their socio-economic and political context, and the combination of these factors has led to high levels of digital governance.

Generally, it can be concluded that the availability of financial resources and budgeting has influenced the development of digital governance in both countries. Yet, whereas the

availability of financial resources is obviously necessary for the development of digital governance, higher amounts do not necessarily lead to higher levels of digital governance, nor vice versa. There is support to the finding that the decision-making process over the budgeting and funding allocation plays a role in the development of digital governance alongside the amount of available resources. Central approval and allocation of funds that enables to avoid duplicative developments in individual agencies and save resources, seems to compensate for the potentially limited financial resources. In Estonia, for example, the eID, the X-Road and some other central elements were introduced at the time of scarce financial resources. Duplications were not possible to fund and had the government then decided to continue financing individual agency developments in data exchange and online identification, hypothetically, Estonia would not have reached as high level in its digital governance. In the USA, duplicative developments have been funded throughout the studied period and even though it has caused delays and has limited the development of cross-agency initiatives, high level on digital governance has been reached due to the availability of necessary resources.

Finally, the results are somewhat surprising when it comes to how the cross-agency collaboration and the cooperation between the government and its partners have influenced the development of digital governance. Generally, the study reveals that cross-agency collaboration has had a moderate effect on the development on digital governance. Differences in the established cooperation mechanisms between the two countries exist. The main means for collaboration between different agencies is interoperability layer X-Road, enabling the exchange of data between government organisations, and it has positively affected the development of digital governance in Estonia. The other means of partnerships, again, have not had a significant role in the digitalisation. In the USA, cooperation has been mainly limited to institutionalised cross-agency working groups that have been active and have, indeed, tackled several essential cross-cutting issues in the federal government. Yet, again, it seems that the course of digitalisation in the USA and its level has not been affected much by the existence or activity of all these groups.

The influence of the government cooperation with its partners on the development of digital governance has varied across the actor groups in both countries. Generally, the public has not been involved in building digital governance, except for the organised public consultations. Regarding the cooperation between the private sector and the government, both countries have cooperated with the private sector throughout the studied period, and they have

also affected the development of digital governance over time. In Estonia, various forms of partnership between the private sector and the government have been established whereas in the USA, the relationship has been largely contractual and despite a positive correlation between private sector online developments and the government one, the affect does not seem as strong.

Actors' role in the development of digital governance

Largely, I find that the development of digital governance in both countries has been in the hands of government officials, particularly the governments officials with decision-making power, career civil servants in the USA and, equally importantly, the managers of digital governance initiatives, programmes, and projects. They have established priorities for the development of digital governance, they have led the preparation and the implementation of digital governance, and they have guaranteed continuity and sustainability in this progress.

The results on the role of other actors in the development of digital governance does reveal surprises. I find that the role of politicians has been marginal in the development of digital governance both in the USA and in Estonia. In both countries, digital governance has not been a political issue which means that there have been no avid supporters of digital governance but there have also been no opponents. This has, in a way, created favourable conditions for the public officials to take the lead in the development of digital governance, both in Estonia and in the USA. The study of the party election manifestos of both countries supports this finding as, clearly, digitalisation has not been situating at the core of any political party in either country. Furthermore, there seem to be no vital differences in political parties' promises on digitalisation as, generally, these are related to the potential positive outcomes like cost-saving, efficiency but also better governance. In the USA though, post 9/11 election manifestos have witnessed an increase in commitments around cyber security. Generally, over time digitalisation has been receiving more visibility, equally across political parties.

Some minor differences between the role of political actors on the development of digital governance in the USA and in Estonia exist though. In Estonia, there has been a modest political consensus around digitalisation, a sort of quiet approval to let the government use the ICTs for reforming the state and a society. But, as said, digitalisation has not become a political issue and has not been subject to political contestation. One exception exists here though as the Internet voting that was introduced in Estonia in 2005, has been opposed by the Centre Party

since its launch. In the USA, all Presidents throughout the studied period have been avid supporters of technological innovation and have been active in the development of digital governance. Yet, the role of the members of the Congress has been marginal and until the present, digital governance has remained one of the silent issues without supporters but also without opponents. Generally, it seems that the awareness and interest of the members of the Congress on digitalisation has been lower in the USA than in Estonia.

Another surprising finding concerns the role of the CSOs and the public in digitalisation that, too, has been marginal both in Estonia and in the USA. In both countries, it has been mainly limited to occasional memberships in some of its coordination councils and working groups and, in a fewer cases, in the participation of the development of online services or when testing the pilot versions of these services. Still, their voice has been weak, and this study did not find evidence of their essential role in the progress of digital governance in Estonia nor in the USA.

The private sector, on the other hand, has played a significant role in the development of digital governance in both countries even though the impact seems to be somewhat stronger in Estonia than in the USA. There are some differences in the types of relationships that have been established between the government and the private sector in Estonia and in the USA, some of which were discussed under organisational processes, and these have had different influence on the development of digital governance. In the USA, the private sector has impacted the development of digital governance by serving as a role model for the federal government and by advising the government in how to makes use of these business examples in public sector. This relationship has been largely contractual, but it has also influenced the policy-making and government priorities in digitalisation. The impact of the private sector has hold through time in the USA and it has been rather constant.

In Estonia, too, the private sector and particularly the IT companies have impacted the development of digital governance but their role seems to go beyond government, particularly in the 1990s and during the 2000s. Banks, by offering convenient Internet banking, grew a habit among Estonians to use technologies and these positive first experiences made Estonians believe that technology is easy to use and, more importantly, that it is safe. The widespread public awareness campaigns that the banks and telecommunication companies organised in the 2000s together with the government, increased adoption rates in Estonia and as pointed out before, the banks have a role in the increase of the use of a national eID and mID among the

public. In later years, the IT sector has been more actively involved in the policy-making process and in setting priorities for the Estonian government digital agenda. The impact that the IT companies have had on the development of digital governance through the outsourced technical works, has been secondary in Estonia.

In the development of e-participation, however, the role of the actors has been slightly different and both the CSOs and the public have had a more substantial role, alongside with the government officials. In Estonia, a moderate role of politicians has been detected as well. Whereas in the USA, the role of different actor groups has been rather constant over time, in Estonia, differences occur. The initial push for the development of e-participation in Estonia was given by politicians and it then moved to the hands of the government officials and only in the third order it reached the CSOs. In the USA, with the presence of very strong and influential CSOs, their influence has been evident throughout the studied period. Very differently from the development of digital governance and online services, private sector has not been involved in the development of e-participation.

Overall, it can be concluded that the development of digital governance has been driven by government officials in both Estonia and the USA, and their role has been essential in this process throughout the studied period. Equally, the private sector interests have shaped the digitalisation of both governments whereas the public and the CSOs role has been largely limited to influencing the use of technologies for public participation. Politicians have had a more modest influence on the development of digital governance than hypothesised and until very recent years, digitalisation was not a political topic subject to political contestation. Government officials have been, in their efforts, influenced by the existing institutional arrangements either be enabling or pushing for certain developments; yet how the implementation has bene organised does not seem to have an essential role on the development of digital governance.

Conclusion. Discussion on the development of digital governance

In this final chapter I attempt at bringing together the whole technology enactment framework to see whether, how, and to what extent the three main factor groups: institutional arrangements, organisational processes, and actors' preferences affect the development of digital governance and whether and how this has changed over time. I try to summarise but also compare the findings that have been presented above in three different chapters, relying largely on the results of the two country cases studies, the one on the development of digital governance in the USA and the other on the development of digital governance in Estonia. I also account for the findings of the statistical comparative analysis on the development of digital governance in the member states of the EU and the OECD. I reflect on their potential interrelationships and the context in which the development of digital governance has taken place.

Apart from the hypothesis tested in this thesis, the development patterns of digital governance across countries over time have been studied to find out whether they, indeed, have followed the development path as identified in the theoretical chapter of the thesis, and whether it has hold through time. I proceed as follows: I first remind the theoretical explanations that were introduced in Chapter 1 and Chapter 2 that, in turn, led to the expectations that are also included in Chapter 2. I then explain whether and to what extent these expectations were supported by the findings that have already been discussed in Chapters 5, 6 and 7. I will end with discussion.

Development patterns of digital governance

The findings of my research somewhat support the predictions according to which digital governance is a step-by-step process that moves from e-administration to e-services and only then, at the last order, to e-participation. Both in Estonia and in the USA, the first steps were taken in digitalising government apparatus and only in a second step, government started to provide services to their stakeholders. However, this development pattern is not clear-cut and the development pattern of digital governance in Estonia does not fully support the prevalent evolutionary approach. One of the findings of this study is that that Estonia developed e-participation tools in parallel with some of its pioneering information systems that gave impetus for the development of online services but also digital governance at large. Indeed, online tool TOM for submitting ideas to the government was opened in 2001, the year when two of the main building blocks of Estonia's digital governance: X-Road and eID were launched. In the

USA, however, the development pattern of digital governance has been of an evolutionary nature as the development of e-participation got impetus only when the Open Government Directive was introduced in 2009.

Additionally, the findings suggest that after reaching the third stage of digital governance, i.e., once governments start to provide e-participation tools, they neglect the area and return to the second stage of digital governance, i.e., to online service provisioning. It seems that e-participation only makes a short entrance to governments' agenda as the progress has not been constant in either of the cases. Thus, digital governance development pattern seems to be recursive as once governments touch the ground of democracy and establish a dialogue with their partners, they make their way back to effective, efficient, and user-friendly service provisioning to their clients and neglect the third, supposedly most advanced stage of digital governance.

Furthermore, the results of this study suggest that the sophistication and user-friendliness of online services and e-participation tools is dependent on the level of digitalisation of public administration inner processes. Thus, outdated information systems and government processes may hinder the further progress in digital governance overall development. In this sense, it seems reasonable to develop these three inter-connected stages of digital governance in parallel as they are not mutually exclusive and depend on each other. My findings, therefore, suggest that there is no stage in the development of digital governance that is superior to the other and, from that point of view, the stage-based digital governance development model is not useful in describing digital governance level or the progress made. Still, the stages might be adequate to understand and assess the progress made within all these three areas; yet again, they too may not necessarily be superior to one another or mutually exclusive.

Overall, the development of digital governance in both Estonia and the USA has been rather path dependent and this supports the institutionalists claims presented in Chapter 2. Yet, some differences seem to exist. The invention of the World Wide Web and fast technological developments of the 1990s coincided with Estonia's re-independence, giving the country a unique opportunity to leave behind all previous arrangements and combine digital tools with fast radical reforms the country had to undertake. The timing gave Estonia an advantage for rapid digitalisation and as the progress of the late 1990s and the 2000s proves, these opportunities were fully materialised. After the initial quick developments though, the progress

has been steady and considerably slower. The development pattern of digital governance in the USA has been more evidently path dependent, and it has also been somewhat slower than in Estonia. Still, the digitalisation of the federal government of the USA has been more prone to the so-called "shocks" and some events like 9/11 but also scandals such as the Hillary Clinton e-mail controversy have impacted the development of digital governance in the USA more than they have in Estonia.

Institutional arrangements and the development of digital governance

One of the main assumptions of this thesis is that the development of digital governance is not determined by technology but by institutional arrangements, organisational processes and actors, or by any combination of these three main factors. One of the three main hypothesis of the thesis that were presented in Chapter 2 posit that institutional arrangements such as policies and legislative acts, singled out as laws, regulations, decrees, etc have a positive impact of the development of digital governance. In this sense, the higher the level of institutionalisation of digital governance, the higher the level of the latter.

The findings largely support this hypothesis. Regarding the role that institutional arrangements play in the development of digital governance; indeed, higher level of digital governance institutionalisation leads to higher level digital governance, a finding that is strongly supported by the results of the comparative statistical analysis and the case study research. However, there seems to be no positive relation between the level of institutionalisation of the policy-making process and the development of digital governance. This finding is fully supported by the comparative statistical analysis but only somewhat by the case study research. The results of the qualitative analysis reveal that, indeed, higher levels of regulation of the policy-making do not lead to higher levels of digital governance or online services; yet, there seems to be a moderate correlation between more institutionalisation of the policy-making and higher levels of e-participation. This effect, again, is clearer in the case of the USA.

However, as mentioned, the statistical analysis does not support the latter finding, and there could be some explanations for why more policy-making regulation does not lead to increase in digital governance. First, the policy-making process in most countries has not been highly regulated and the number of institutional arrangements has not been increasing in the same space than the institutional arrangements enabling the development of online services and digital governance. Hence, the effect of the increase in the institutional arrangements enabling

participation is more difficult to detect. Second, as I will discuss in the following sections, the non-governmental actors' role, apart from the private sector, has been moderate which may suggest that there has been no interest to influence the development of digital governance, even if the possibilities do exist. And third, the results of a qualitative analysis propose that the private sector has used other means to influence the development of digital governance. Again, one should not mix here the effect that legislative arrangements have on the development of e-participation as, here, the case study research reveals some support to the hypothesis that e-participation is more positively influenced by higher levels of institutional arrangements.

The effect that institutional arrangements have on the development of digital governance does not seem to be consistent across time and space. My findings suggest that the role that the institutional arrangements have played in the USA has been consistently higher than in Estonia. Whereas in Estonia, particularly in the 1990s and the 2000s, several e-solutions were developed and launched without supporting policies or legislative acts, in the USA, all online services, information systems or other digital governance developments have been mandated by a respective institutional arrangement, mainly by legislative acts. In Estonia, since the 2000s, the role of institutional arrangements in the development of digital governance has been constantly increasing alongside with increasing bureaucracy.

Organisational processes and the development of digital governance

Regarding organisational processes, it is posited that higher levels of intergovernmental collaboration and cooperation between different groups of actors (governments, businesses, civil society organisations and the public) lead to higher level of digital governance. In this sense, more open and less hierarchical organisations lead to higher levels of collaboration which, in turn, has a positive effect on the development of digital governance.

The findings provide moderate support to this hypothesis. The results of the comparative statistical analyses do not support this hypothesis as the relation between openness and the level of digital governance is insignificant. However, regarding the managerial model of digital governance, little evidence was found in favour of the central management of digital governance, indicating that the level of digital governance is higher if it is managed from either the Prime Minister's or the President's Office. This may indicate that digital governance introduces cross-cutting issues that require all-governmental attention and, therefore, requires stronger central management. Both Prime Minister and the President are generally better

positioned than any individual agency to support other individual agencies in their digitalisation efforts but also to foster cooperation between government entities.

The case study research only partly supports these findings. There is some evidence that higher levels of cross-agency collaboration lead to higher levels of digital governance, but this does not hold through space nor across different collaboration mechanisms. In Estonia, technical, organisational, and semantic interoperability, executed through a middleware X-Road has given impetus to numerous online services and solutions across government. Despite the lack of automated data exchange between agencies in the USA, the government has reached a high level of digital governance. The lack of cross-governmental collaboration in the USA may have slowed down some developments and the digitalisation may have therefore turned more expensive, but it has not had a significant negative effect on the development of digital governance. It seems that individual agencies have possessed the required resources for the development of digital governance in the USA whereas in Estonia, these have not been available and have been compensated by the introduction and use of central digital governance components. Thus, the findings are only somewhat in line with the hypothesis.

The findings of the case study also confirm the modest finding of the statistical analysis that the management model impacts the level of digital governance. In this sense, the more centralised and stronger the planning and management of digital governance, the higher the levels of digital governance. Again, I would like to stress that this finding is moderate and does not necessarily hold through space. This effect is not contrary to the expected results per se as high level of interagency collaboration and strong central management are not mutually exclusive, but this result was not articulated in the formed hypothesis nor expected. Indeed, in Estonia, the Ministry of Economic Affairs and Communications and Agency for State Information System have guaranteed the central management and coordination of digital governance throughout the years. Additionally, decentralized implementation by individual agencies is centrally supported through central components such as X-Road and eID. In USA, again, the lack of central management and weak position of the Office of the Management and Budget at the White House has been brought out as a weakness; yet, the results illustrate that high levels of digital governance can be reached also under weaker management. As in Estonia, also in the USA, e-participation has suffered due to the lack of clear ownership and management along with underfinancing.

The lack of central management and central components but also limited cross-agency collaboration, as seen from the case of the USA, may not necessarily have a negative impact on the development of digital governance. Yet, the findings of the case study research do reveal that weak central management and limited cooperation result in somewhat slower development of digitalisation initiatives. Furthermore, they seem to require more financial and human. In this sense, high levels of digital governance can also be reached by limited finances if accompanied with more central management and coordination. It goes without saying that all digital developments do require finances and the progress can be guaranteed only by their systematic allocation. In sum, only moderate support has been found to the hypothesis that organisational processes such as cross-agency collaboration and cooperation between the government and its partners lead to higher levels of digital governance.

Actors and the development of digital governance

The findings of this study do not fully support the leading hypothesis according to which it is the actors: policymakers, implementers i.e., government officials, and users: businesses and the public that have a positive effect on the development of digital governance. In this sense, the higher the level of education, trust, and skills of public officials and the public and the higher the preferences of the policymakers but also other actors, the higher the level of digital governance development.

Regarding the findings of the comparative statistical analyses, first, the role of the public and their level of education and trust is not significant in the development of digital governance which may indicate that digital governance development has not been in the hands of the public but other actors instead. Somewhat, this assumption is confirmed by the results of the comparative statistical analysis as, indeed, private sector and particularly IT companies have had a positive effect on the development of digital governance in both countries. Although this finding is in line with the formulated hypothesis, the effect of the IT companies is not consistent across all models and loses its significance in the final full model.

The results of the case study research support the hypothesis according to which the private sector has positively impacted the development of digital governance. Both in Estonia and in the USA, private sector has played a rather essential despite the finding that the relationships between the government and the private sector have been different in Estonia and in the USA. In Estonia, the government established itself as a reliable partner for the private sector to

cooperate with whereas the relationship between the private sector and in the USA has been of a contractual nature. Indeed, in Estonia, the development of digital governance has been a multi-stakeholder effort in which private sector actors have been actively participating by raising public awareness, increasing adoption rates but also by creating trust in the virtual world. This is not to say that private sector in Estonia has not been profit-driven as IT companies have heavily benefitted from government generous IT orders. In the USA, as mentioned, private sector role has been fixing the government and bringing their experience by doing business with the government. It should also be added here that the private sector role, if any, in the development of e-participation in both countries has been minimal.

In terms of the role that the public has played in the development of digital governance, the findings of the qualitative study suggest that this has been marginal until now and the results of the comparative statistical analysis provide the same proof. The development of the digital governance has not been driven from demand, neither in Estonia, nor in the USA. Here, again, the results do not support the leading hypothesis. The public and the CSO's have had a stronger say and have influenced the development of e-participation in Estonia and in the USA.

The most unexpected finding of the statistical analysis, however, concerns the role of politicians that, contrary to what was expected, have a negative effect on the development of digital governance. In this regard, the higher the salience of technology, infrastructure and administrative effectiveness in election manifestos of political parties, the lower the development of digital governance, and this is not at all in accordance with what was excepted. One possible explanation for this might be that politicians include all sorts of promises in their election programmes but do not follow up once in power. In a way, it is business as usual – politicians talk and do not deliver their promises and the more they talk, the less they do. This, however, does not seem entirely feasible. The other reason might be that digital governance has not been a political issue and political parties do not actually play a role in digital governance development as it might be depending on other actors. This, however, could serve as a valid explanation if the role of politicians were insignificant and not having a negative effect as is the current case. Thus, the hypothesis No 1 i.e., the leading hypothesis of the thesis is not fully supported by the findings of the statistical analyses. To better understand these results, it is important to take a more detailed look at the role of actors including politicians, in country case studies. In the following, I shortly reflect on these findings.

The analysis of the role of politicians in the development of digital governance in Estonia and in the USA reveal that their direct impact has been modest but, again, the findings are not clear-cut. Both governments seem to own part of the digital governance success to political leaders who have not been avid supporters of digital governance, but they have not opposed these developments either. Politicians in both countries seem to have simply accepted digitalisation. This holds more in the case of Estonia where a political consensus has developed around the development of digital governance. Except for the Internet voting, technological developments have not been contested by any political forces. In the USA, the strong backing of the President has been evident throughout all three studied administrations and their much-needed backing has been guaranteed. The "acceptance" of digital governance among the Congress members is much less evident though. It seems that the awareness but also interest in digital governance has been lower but, similarly, the Congress has not opposed digital governance either. The findings of the detailed analysis of political parties' manifestos in Estonia and in the USA confirm that digital governance has been in political parties' agendas; yet not continuously across time. Furthermore, there seems to be no differences on the commitments associated with the use of the ICTs as these generally support more effective and better government, regardless of a political party.

Thus, the development of digital governance in both Estonia and in the USA seems to have been in the hands of government. In Estonia, the government took a strong leadership in the development of digital governance by putting the ICTs high in the Estonian transformation agenda and initiated some of the most critical components such as the X-Road and the eID. In the USA, similarly, government officials at the White House as well as in individual agencies have been leading the introduction of digital governance initiatives throughout the studied period. Here, my findings support the hypothesis. Just to remind a reader, due to the lack of comparable data over time, the role of public officials could not be detected in the statistical analysis.

Overall, the findings of this thesis suggest that the development of digital governance has been driven by government officials who have been created a favourable environment to plan and implement digital governance. Here, the political situation has been supportive mainly because digital governance has not yet been politicised which means that it has not been contested. Government officials have been rather free in their digitalisation efforts and the political realm has not yet entered the technical one. Institutional arrangements have provided government officials much needed support to execute digital governance initiatives. As the

findings of the case study on the development of digital governance suggest, the role of institutional arrangements has been increasing over time in Estonia in line with the growing bureaucracy. Financing has played a role in the development of digital governance in both countries, but this study confirms that lower budget may not necessarily have a negative impact on the development of digital governance. It may, in turn, lead to wiser decisions on how to plan and execute the development of digital governance, compensating for the lack of financial but also human resources.

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Annexes

Annex 1. List of main documents studied to understand the development of digital governance in Estonia in 1991-2016

Legislative acts[220]

The Constitution of the Republic of Estonia (1992): https://www.riigiteataja.ee/en/eli/530102013003/consolide

Population Register Act (1995): https://www.riigiteataja.ee/en/eli/516012014003/consolide

Personal Data Protection Act (1996): https://www.riigiteataja.ee/en/eli/523012019001/consolide

Databases Act (1997), since 2008 incorporated into Public Information Act: https://www.riigiteataja.ee/akt/32230

Archives Act (1998): https://www.riigiteataja.ee/en/eli/504032016002/consolide

Identity Documents Act (1999): https://www.riigiteataja.ee/en/eli/521062017003/consolide

Public Information Act (2000): https://www.riigiteataja.ee/en/eli/514112013001/consolide

Digital Signatures Act (2000): https://www.riigiteataja.ee/en/eli/530102013080/consolide

The Environmental Impact Assessment and Environmental Auditing Act (2000): https://www.riigiteataja.ee/en/eli/520012015014/consolide

Administrative Procedure Act (2001): https://www.riigiteataja.ee/en/compare_original/530102013037

Electronic Communications Act (2004): https://www.riigiteataja.ee/en/eli/501042015003/consolide

Information Society Services Act (2004): https://www.riigiteataja.ee/en/eli/ee/504112013008/consolide

Public Procurement Act (2007): https://www.riigiteataja.ee/en/eli/505092017003/consolide

Estonian Public Broadcasting Act (2007): https://www.riigiteataja.ee/en/eli/509012014002/consolide

[220] All documents have a link to the official English translation. If not available, an authentic text in Estonian is provided. The year of the first adoption is in paranthesis; yet, the latest version is added. As of August 2019, the Information System of Legislative Acts is available only to the users who can authenticate themselves with Estonian eID or mID. This means that those not holding Estonian eID or mID do not have an access to some of the listed documents.

State Budget Act: https://www.riigiteataja.ee/en/compare_original?id=504072014004

State Fees Act: https://www.riigiteataja.ee/en/eli/511022015002/consolide

Structural Assistance Act for years 2004-2006: https://www.riigiteataja.ee/akt/12793955

Structural Assistance Act for years 2007-2013: https://www.riigiteataja.ee/akt/12765629

Structural Assistance Act for years 2014-2020: https://www.riigiteataja.ee/en/eli/531102014003/consolide

Response to Memoranda and Requests for Explanations and Submission of Collective Addresses Act (2004), since 2014 Response to Memoranda and Requests for Explanations and Submission of Collective Addresses Act: https://www.riigiteataja.ee/en/eli/507042014003/consolide

Riigikogu Rules of Procedure and Internal Rules Act: https://www.riigiteataja.ee/en/eli/518112014003/consolide

Government Regulation on Rules for Good Legislative Practice and Legislative Drafting (2011): https://www.riigiteataja.ee/en/eli/508012015003/consolide

X-Road Regulation (2003): https://www.riigiteataja.ee/akt/688079

Policy documents

The Principles of Estonian Information Policy 1998: https://www.riigiteataja.ee/akt/75308

The Principles of Estonian Information Policy 2004-2006: https://www.mkm.ee/sites/default/files/infopoliitika_pohialused_2004-2006.pdf

Estonian Information Society Development Agenda 2007-2013: https://www.mkm.ee/sites/default/files/eesti_infouhiskonna_arengukava_2006.pdf

Digital Agenda 2020 for Estonia: https://www.mkm.ee/sites/default/files/digital_agenda_2020_web_eng_04.06.19.pdf

National Reform Programme Estonia 2020 (approved 2011): https://www.riigikantselei.ee/sites/default/files/content-editors/Failid/nrp_estonia2020.pdf

National Reform Programme Estonia 2020, action plan 2011-2015: https://www.riigikantselei.ee/sites/default/files/content-editors/Failid/eng_estonia_2020_action_plan_2011-2015_2011.pdf

National Reform Programme Estonia 2020, action plan 2015-2020: https://www.riigikantselei.ee/sites/default/files/content-editors/Failid/eesti2020/eesti_2020_en_05.05.16_0.pdf

Cyber Security Strategy for 2008-2013: https://www.valitsus.ee/sites/default/files/content-editors/arengukavad/kuberjulgeoleku_strateegia_2008-2013.pdf. English version available at:

Cyber Security Strategy for 2014-2017:
https://www.mkm.ee/sites/default/files/cyber_security_strategy_2014-2017_public_version.pdf

Research and Development and Innovation Strategy 2002-2006 “Knowledge-based Estonia”:
http://www.akadeemia.ee/_repository/File/ALUSDOKUD/Knowledge-basedEstonia.pdf

Research and Development and Innovation Strategy 2007-2013 Knowledge-based Estonia”:
http://www.akadeemia.ee/_repository/File/ALUSDOKUD/Knowledge-based%20Estonia%20II.pdf

Research and Development and Innovation Strategy 2014-2020 “Knowledge-based Estonia”:
https://www.hm.ee/sites/default/files/estonian_rdi_strategy_2014-2020.pdf

Estonia’s action plan for the Open Government Partnership (OGP) 2011-2012

Estonia’s action plan for the OGP 2014-2016:
https://www.riigikantselei.ee/sites/default/files/content-editors/organisatsioon/failid/AVP/ogp_action_plan_2014-2016.pdf

Estonia’s action plan for the OGP 2016-2018:
https://www.riigikantselei.ee/sites/default/files/content-editors/Failid/AVP/avp_2016-2018_tegevuskava.pdf

Estonian Civil Society Development Concept (2002):
https://www.siseministeerium.ee/sites/default/files/dokumendid/Kodanikuyhiskond/estonian_civil_society_development_concept.pdf

Estonian Civil Society Development plan 2011-2014:
https://www.siseministeerium.ee/sites/default/files/elfinder/article_files/kodar_2011-2014_eng_0.pdf

Estonian Civil Society Development plan 2015-2020:
https://www.siseministeerium.ee/sites/default/files/elfinder/article_files/estonian_cs_dev_plan_2015-2020_extract.pdf

Guidelines, frameworks and green books

Interoperability Framework of the State Information System (2011):
https://www.mkm.ee/sites/default/files/riigi_it_koosvoime_raamistik.pdf

Public Services Green Paper (2013):
https://www.mkm.ee/sites/default/files/avalike_teenuste_korraldamise_roheline_raamat.pdf

E-Services Design Handbook (2013): https://www.mkm.ee/sites/default/files/content-editors/lisa_5.1._kasutajasobralike_e-teenuste_disainimine_maanteeameti_naitel._.pdf

E-Services Design Process. An Example of Road Administration (2013): https://www.mkm.ee/sites/default/files/content-editors/lisa_5.1._kasutajasobralike_e-teenuste_disainimine_maanteeameti_naitel._.pdf

Open Data Green Book (2014): https://opendata.riik.ee/en/green-paper/

E-Estonia Image Concept (2014): https://www.mkm.ee/sites/default/files/e-maine_presentatsioon_loplik.pdf

Good Practice of Engagement: https://www.riigikantselei.ee/en/good-practice-engagement

Reports of the National Audit Office of Estonia

State support to local governments for developing the information society (2006): https://www.riigikontroll.ee/tabid/206/Audit/1955/language/en-US/Default.aspx

Quality of public services in the information society (2007): https://www.riigikontroll.ee/tabid/206/Audit/2010/language/en-US/Default.aspx

Efficiency of using structural assistance in developing information society (2012): https://www.riigikontroll.ee/Auditeeritavaile/Audititeplaan/Lõppenudauditid/tabid/284/AuditId/163/language/en-US/Default.aspx

Usability of public e-services (2016): https://www.riigikontroll.ee/tabid/206/Audit/2411/Area/4/language/et-EE/Default.aspx

Other documents concerning the development of digital governance

e-State Charter, or Everyone's Rights in e-State (2008; amended in 2018): https://www.riigikontroll.ee/Riigikontrollipublikatsioonid/Muudpublikatsioonid/Eharta/tabid/305/language/en-US/Default.aspx

Information Technology in Administration Management, annually in 1994-2000

Information Technology in Public Administration, annually in 2000-2009

Information Society Annual Book, annually in 2010-2012. Partly available at: https://www.digar.ee/arhiiv/et/raamatud?id=5312

Election manifestos of political parties at national elections[221]

Reform Party (RE) election manifestos 1995, 1999, 2003, 2007, 2011, 2015

National Coalition Pro Patria election manifesto 1992

Pro Patria Union election manifesto 1999

[221] Election manifestos are available at the website of The Manifesto Project: https://manifesto-project.wzb.eu/.

Res Publica election manifesto 2003

Pro Patria and Res Publica Union election manifestos 2007, 2011, 2015

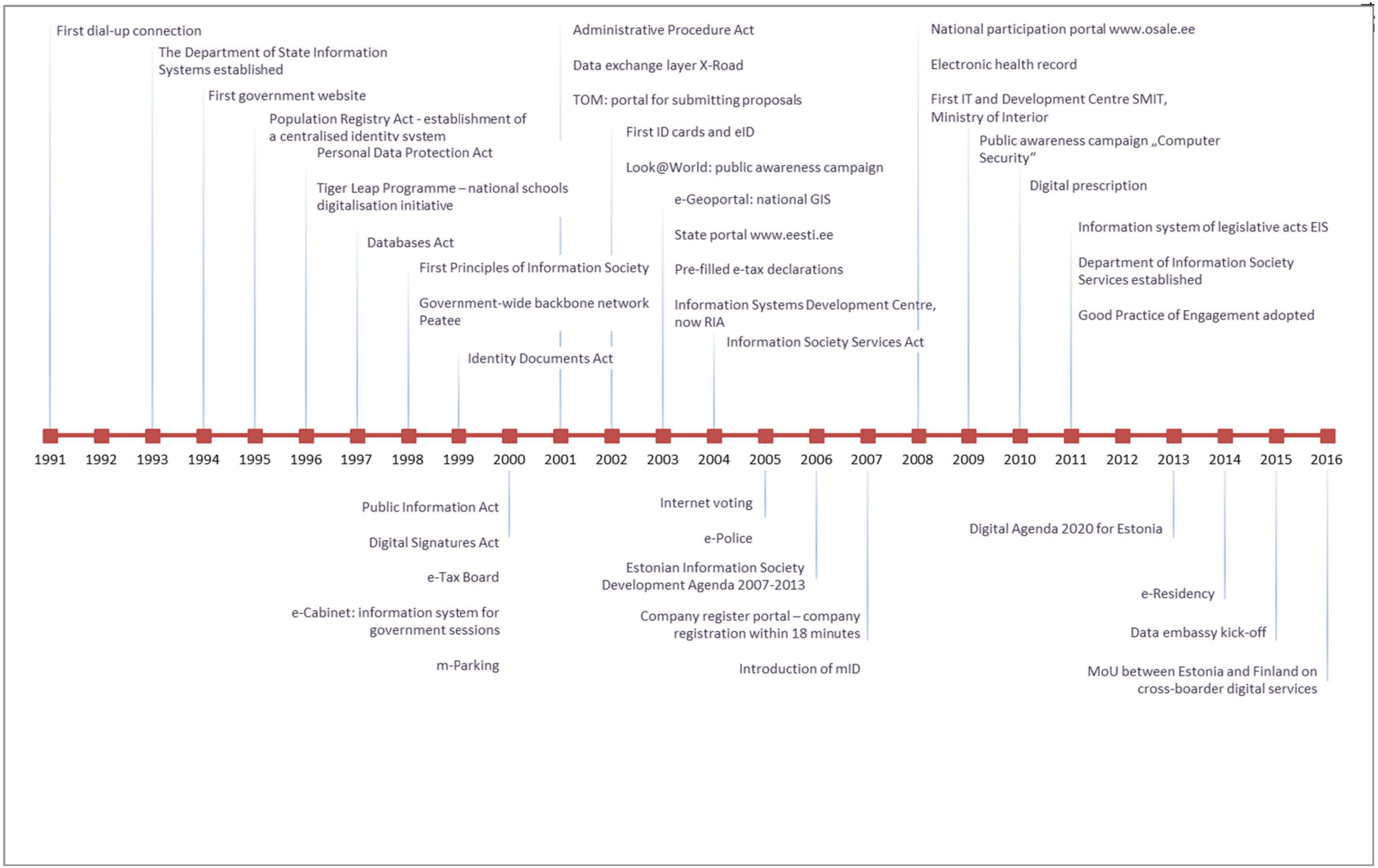
Center Party election manifestos 1995, 1999, 2003, 2007, 2011, 2015

The Coalition Party election manifestos 1995 and 1999

Election Coalition Moderates election manifestos 1992, 1995, 1999, 2003

Social Democratic Party election manifestos 2007, 2011, 2015

Annex 2. Timeline of digital governance development in Estonia


First dial-up connection
The Department of State Information Systems established
First government website
Population Registry Act - establishment of a centralised identity system
Personal Data Protection Act
Tiger Leap Programme – national schools digitalisation initiative
Databases Act
First Principles of Information Society
Government-wide backbone network Peatee
Identity Documents Act
Administrative Procedure Act
Data exchange layer X-Road
TOM: portal for submitting proposals
First ID cards and eID
Look@World: public awareness campaign
e-Geoportal: national GIS
State portal www.eesti.ee
Pre-filled e-tax declarations
Information Systems Development Centre, now RIA
Information Society Services Act
National participation portal www.osale.ee
Electronic health record
First IT and Development Centre SMIT, Ministry of Interior
Public awareness campaign „Computer Security“
Digital prescription
Information system of legislative acts EIS
Department of Information Society Services established
Good Practice of Engagement adopted
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2015
2016
Public Information Act
Digital Signatures Act
e-Tax Board
e-Cabinet: information system for government sessions
m-Parking
Internet voting
e-Police
Estonian Information Society Development Agenda 2007-2013
Company register portal – company registration within 18 minutes
Introduction of mID
Digital Agenda 2020 for Estonia
e-Residency
Data embassy kick-off
MoU between Estonia and Finland on cross-boarder digital services

Annex 3. List of main documents studied to understand the development of digital governance in the USA in 1993-2016

Legislative Acts

Freedom of Information Act (FOIA): https://www.congress.gov/114/bills/s337/BILLS-114s337enr.xml

Federal Acquisition Reform Act of 1995[222]: https://www.congress.gov/bill/104th-congress/house-bill/1670/text

Information Technology Management Reform Act of 1995 (IMTRA): https://www.congress.gov/bill/104th-congress/senate-bill/946/text

The Paperwork Reduction Act of 1980: https://www.govinfo.gov/content/pkg/STATUTE-94/pdf/STATUTE-94-Pg2812.pdf

The Federal Funding Accountability and Transparency Act of 2006 (FFATA): https://www.congress.gov/bill/109th-congress/senate-bill/2590/text

Administrative Procedure Act of 1946: https://www.justice.gov/sites/default/files/jmd/legacy/2014/05/01/act-pl79-404.pdf

Paperwork Reduction Act of 1980: https://www.govinfo.gov/content/pkg/STATUTE-94/pdf/STATUTE-94-Pg2812.pdf

Paperwork Reduction Act of 1995: https://www.congress.gov/bill/104th-congress/senate-bill/244/text

The Government Performance and Results Act (GPRA) of 1993: https://www.congress.gov/bill/103rd-congress/senate-bill/20/text

Telecommunications Acts of 1996: https://www.govinfo.gov/content/pkg/STATUTE-110/pdf/STATUTE-110-Pg56.pdf

Electronic Freedom of Information Act Amendments of 1996: https://www.congress.gov/104/plaws/publ231/PLAW-104publ231.pdf

Internal Revenue Service Restructuring and Reform Act of 1998: https://www.govinfo.gov/content/pkg/PLAW-105publ206/html/PLAW-105publ206.htm

Government Funding Transparency Act of 2008: https://www.congress.gov/bill/110th-congress/house-bill/3928

[222] Federal Acquisition Reform Act of 1995 together with Information Technology Management Reform Act of 1995 are better known as Clinger-Cohen Act.

GPRA Modernisation Act of 2010 (GPRAMA): https://www.govinfo.gov/content/pkg/PLAW-111publ352/pdf/PLAW-111publ352.pdf

Federal Information technology Acquisition Reform Act of 2014: https://www.congress.gov/bill/113th-congress/house-bill/1232/text

Digital Accountability and Transparency Act of 2014: https://www.congress.gov/113/plaws/publ101/PLAW-113publ101.pdf

American Recovery and Reinvestment Act of 2009: https://www.congress.gov/bill/111th-congress/house-bill/1/text

e-Government Act of 2002: https://www.govinfo.gov/app/details/PLAW-107publ347

Open Government Act of 2007: https://www.congress.gov/bill/110th-congress/senate-bill/2488

The Open Government Directive: https://obamawhitehouse.archives.gov/open/documents/open-government-directive

FOIA Improvement Act of 2016: https://www.congress.gov/bill/114th-congress/senate-bill/337/text

Government modernization programmes and policies

The National Performance Review (1993). "From Red Tape to Results: Creating a Government that Works Better and Costs Less: Report of the National Performance Review": http://www.nsf.gov/pubs/stis1993/npr93a/npr93a.txt.

The National Partnership for Reinventing Government: https://govinfo.library.unt.edu/npr/whoweare/historypart4.html

National Partnership for Reinventing Government. Access America: Reengineering Through Information Technology: https://govinfo.library.unt.edu/npr/library/announc/access/acessrpt.html

The President's Management Agenda: https://georgewbush-whitehouse.archives.gov/omb/budintegration/pma_index.html

A Blueprint for New Beginnings. A responsible Budget for New Americans": https://www.govinfo.gov/content/pkg/BUDGET-2002-BLUEPRINT/pdf/BUDGET-2002-BLUEPRINT.pdf

Open Government Partnership (OGP) National Action Plan for the United States of America (2011-2013): https://open.usa.gov/assets/files/NAP1.pdf

Open Government Partnership (OGP). Second Open Government National Action Plan for the United States of America (2013-2015): https://open.usa.gov/assets/files/NAP2.pdf

Open Government Partnership (OGP). Third Open Government National Action Plan for the United States of America (2015-2017): https://open.usa.gov/assets/files/final_us_open_government_national_action_plan_3_0.pdf

IRS Strategic Plan 2005-2009: https://www.irs.gov/pub/irs-utl/strategic_plan_05-09.pdf

Presidential actions: executive orders, presidental memoranda, letters

Executive Order 13450 - Improving Government Program Performance (Bush, 2007): https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/performance_pdfs/eo13450.pdf

Memorandum on Transparency and Open Government (Obama, 2009): https://obamawhitehouse.archives.gov/the-press-office/transparency-and-open-government

Memorandum on Freedom of Information (Obama, 2009): https://obamawhitehouse.archives.gov/the-press-office/freedom-information-act

Office of Management and Budget (OMB), United States Government Accountability Office (GAO), General Accounting Office (GAO) reports

OMB FY 2015 annual report to Congress. E-Government Act implementation (2016): https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/assets/egov_docs/egov_implementation_report_6_17_16.pdf

Government Accountability Office Report to the Committee on Homeland Security and Governmental Affairs, U.S. Senate On Electronic Government Act (2012): https://www.gao.gov/assets/650/648180.pdf

General Accounting Office Report "Electronic Government: Initiatives Sponsored by the Office of Management and Budget Have Made Mixed Progress" (2004): http://www.gao.gov/new.items/d04561t.pdf

Other documents

The United States Department of Justice Guide to the Freedom of Information Act: https://www.justice.gov/oip/doj-guide-freedom-information-act-0

OGP. Government Self-Assessment Report for the United States of America (2013): https://open.usa.gov/assets/files/NAP1SA.pdf

United States of America Final Self-Assessment Report for the OGP. Second Open Government Action Plan 2013-2015 (2016): https://open.usa.gov/assets/files/NAP2SA.pdf

United States of America Midterm Self-Assessment Report for the OGP. Third Open Government Action Plan 2015-2017 (2016): https://open.usa.gov/assets/files/nap_3_self_assessment_final.pdf

Executive Office of the President, Office of Management and Budget (2001). Budget of the United States Government. Fiscal Year 2002: http://www.gpo.gov/fdsys/pkg/BUDGET-2002-BUD/pdf/BUDGET-2002-BUD.pdf

Executive Office of the President, National Science and Technology Council (2013). Smart Disclosure and Consumer Decision Making: Report of the Task Force on Smart Disclosure: https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/report_of_the_task_force_on_smart_disclosure.pdf

Digital Services Playbook: https://playbook.cio.gov/

The TechFAR Handbook: https://playbook.cio.gov/techfar/

Election manifestos of political parties[223]

Democratic Party election manifestos in years 1992, 1996, 2000, 2004, 2008, 2012, 2016

Republican Party election manifestos in years 1992, 1996, 2000, 2004, 2008, 2012, 2016

[223] Available at The Manifesto Project website: https://manifesto-project.wzb.eu/.