

POLICY BRIEF

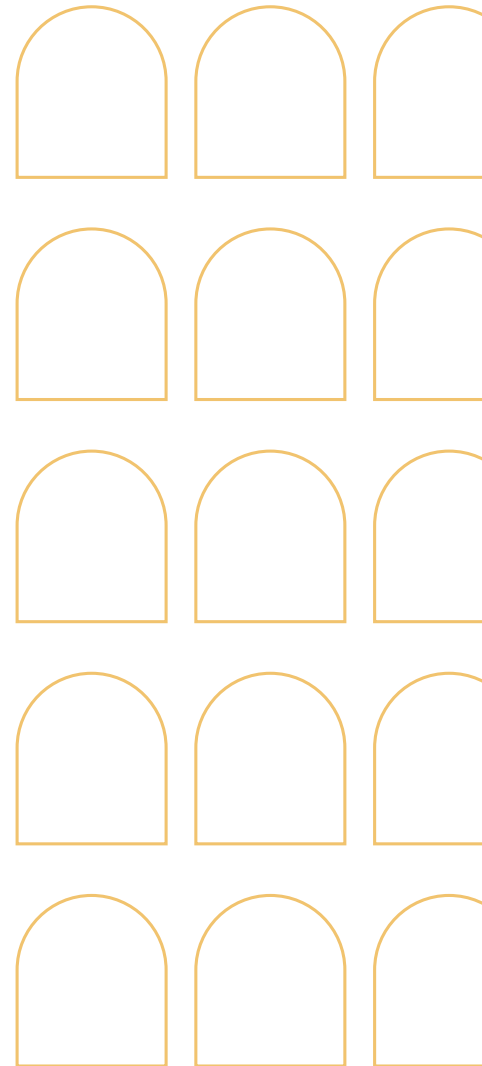
EUROPEAN TRANSPORT REGULATION OBSERVER

Towards EU-wide Intermodal Ticketing

Highlights

Starting from [2018 'Year of Multimodality'](#), the European Commission has put together a number of legislative and policy initiatives relating to better infrastructure, connections, incentives and digital solutions, with a view to promoting the shift towards a fully integrated, multi-modal and sustainable transport sector. At present, however, only the [Delegated Regulation \(EU\) 2017/1926](#) on EU-wide multimodal travel information services establishes the necessary specifications to ensure that multimodal travel information services are accurate and available across borders to users. It supports the development of multimodal travel information services by mandating the accessibility and the possibility to exchange and reuse static travel and traffic information data, where these exist in digital machine-readable format, on National Access Points. Services facilitating payment and booking of mobility products are not part of this regulation. To support both passengers and other intermediaries compare different travel options, choices and prices, and to facilitate the sale and re-sale of mobility products from both public and private operators, within one mode or across modes, the Commission is currently preparing a new initiative on [Multimodal Digital Mobility Services \(MDMS\)](#), to be presented by the end of 2022.

MDMS are currently deployed in a fragmented manner, lacking adequate legal and market frameworks to develop more success-



Issue 2022/44
September 2022

Authors

Juan Montero, Matthias Finger, Teodora Serafimova

fully and to provide a full range of offers across the EU. Many issues remain, such as difficult cooperation between mobility operators and multimodal digital mobility services; complex and lengthy negotiations to obtain licenses and distribution agreements; the lack of common standards and interfaces; and the absence of solutions concerning revenue sharing. In some cases, distribution agreements between operators and digital service providers are unbalanced due to inequalities in bargaining power favouring incumbent operators. The recently introduced obligation for rail carriers to provide ticket vendors with real-time travel information and access to the operation of reservation systems is only a first step in the right direction which needs to be further developed in a multimodal context.

In the rail sector, with its specific network structure, which sometimes makes the use of multiple operators necessary, the limited uptake of fair and transparent underlying private agreements between operators on journey continuation is a barrier to ensuring a smooth passenger experience when combined journeys are sold. Such agreements enable companies to ensure that passengers who miss a connection due to the late arrival of a previous train can be accommodated on a later train, reducing the risk of being stranded and making rail more attractive for a wider range of travellers. On the other hand, through-tickets, which ensure comprehensive passenger protection (including journey continuation), are not often offered on the market. It remains to be seen to which extent the offer of through-tickets would increase based on the new obligation that all international, long-distance domestic and regional services of rail carriers, which qualify as “sole undertakings”, shall be offered as through-tickets.

As a result, the full societal, economic and environmental benefits from enhanced multimodality and the use of the most sustainable transport modes are not achieved today. Some current practices also risk limiting competition among transport service providers by restricting access to customers and the development of a healthy

market for transport services. Drawing on the discussions of the [9th Florence Intermodal Forum](#), this policy brief examines the challenges and enablers to delivering EU-wide multimodal ticketing and MDMS, whereby emphasis is placed on the issues of interoperability, access to data, through-ticketing/journey continuation, and passenger rights.

Multimodal Ticketing: What Kind of Regulation is Necessary?

A comment by Juan Montero and Matthias Finger, Florence School of Regulation – Transport Area

Digital technology enables multimodality at previously not possible levels, notably by identifying and implementing complementarities between transport modes, which in the past were too complex to be coordinated. Different traveling options can be displayed to potential passengers, who can then acquire their tickets for through-journeys in multiple formats, and subsequently be accompanied along the trip in case of disruption.

Corresponding technology is mature and continues to evolve rapidly. Global Distribution Services have been managing aviation reservations for decades. Application Protocol Interfaces (APIs) allow the interaction of the various systems used by different companies. Algorithms are already capable of personalising traveling options.

However, little progress has been made when it comes to implementation. Passengers still have to navigate through the different modes on their own, often with scant information, bearing the risk of missing connections. This gets worse when crossing borders. So what is missing?

Discussions in Florence made it clear, once more, that the necessary governance models, i.e., the incentives for the involved actors as well as the underlying business models supporting multimodal digital mobility services (MDMS) are not yet in place. The fact that something like this is technically feasible, does indeed not mean that it will automatically happen. As a matter of fact, the real difficulty is to align the interests of all the involved actors in the ecosystem, namely the providers of physical transport services, the digital platform services providers and the public authorities. Together, they have to define the governance framework that allows for the best services to customers, while at the same time incentivising all the relevant actors to actively participate.

There is the tendency to simplify the discussion around buzz words such as “data sharing”: if only we were able to standardise data exchange protocols and by doing so to increase data sharing, MDMS would happen almost miraculously.

But the fact of the matter is that not all the participants in the ecosystem are equally interested in coordinating, or rather being coordinated by digital platforms, as there can be winners and losers. Also, data are not just “data”. The digital intermediaries’ and mobility platform providers’ business model precisely is to coordinate transport service providers. So, they are obviously in support of regulation so as to accelerate standardisation, data sharing and new MDMS channels. The higher the quality of “data” to be accessed (e.g., real-time information and ticketing information), the better for them. And small physical transport services providers (e.g., micro-mobility providers) see clear benefits in using such new distribution channels which will bring more passengers to their services.

Other players see “digital coordination” with suspicion. They have heavily invested resources and time to coordinate complex systems (such as hub-and-spoke aviation networks, cadenced rail networks, dense urban networks) themselves, including investments in their own digital distribution systems. They see a limited potential for further growing passengers and revenue and see no gain by losing control over the access to their customers, as others increasingly coordinate their services. They also anticipate threats to their financial stability, as digital intermediaries will extract value from their already strained systems.

Regulatory intervention could certainly accelerate data sharing and even ensure the right to the digital intermediaries to distribute third party services and issue multimodal tickets. However, it is not advisable to build such a complex ecosystem against the will of some of the most relevant players, especially the ones that will ultimately deliver the physical services. Experience in multisided markets, as derived from the traditional network industries, shows that the so extracted value has to be evenly distribut-

ed across the ecosystem so as to keep all the involved players actively engaged in maintaining and even developing the (mobility) system.

The ultimate aim of such regulatory intervention should be to benefit the users. And such regulatory intervention should be proportionate to the market failure that results from the discrepancy between what is technologically possible, yet not happening because of lack of coordination. The challenge is to identify the right and proportionate measures to enable transport to reap the benefits of digitalisation.

We therefore see a clear role for regulation as an enabler to facilitate data sharing. Yet, one has to clarify beforehand what exactly is meant by “data”. Clearly, the “richer”, i.e., the more real-time and the more analysed the data, the more strategic it is for the actors having invested in it, and the less likely these actors are willing to “share”. And this principle is valid for both physical and digital operators, as well as both for incumbents and new entrants, a reality that has to be taken into account when regulating “data sharing”.

The adoption of standards through public intervention is an already well-established practice. There is also a recognised role for public authorities and regulators to guarantee safe environments in terms of infrastructure (generation, transmission, storage), security, privacy, and others more. The creation of mobility data spaces, as foreseen by the EU in its Digital Governance Act is certainly a step in this direction.

Compulsory data sharing requires a solid legal base. Local authorities are building such a legal base around licensing for the provision of services (taxi, micro-mobility, shared vehicles). Regional and national authorities are building it around public service contracts. Competition authorities are becoming more active in the elimination of illegitimate bottlenecks created by dominant firms. The EU, in turn, is developing data sharing obligations across transport modes (maritime single window, ITS Directive, and so on). We think this is the way forward.

Some Member States are currently experimenting with the compulsory sharing of already quite enriched data, such as real-time travel information or ticketing (e.g., Finland, France). However, the legal base for such a strong public policy intervention at the EU level is not obvious. Furthermore, such an obligation would require a coherent and comprehensive framework for effective enforcement. As described along the Forum, detailed rules have been enacted in the past to support similar arrangements (i.e., rules governing liability in the case of through-ticketing in the UK), including rules to determine access conditions to such information. We are afraid that a mere reference to FRAND conditions is too vague to be effective. A significant body of rules as well as case-law have been developed over the past 30 years on access to telecoms, energy and transport infrastructure (i.e., slots regulation and access charges in aviation, track access regulation in rail, etc.). And it became clear that sophisticated institutional arrangements are always necessary to enforce such regulations. We think that this will be no different in the case of access to operational and commercially relevant information.

In short, beyond mere data sharing obligations, a more balanced approach has to be developed in order to evenly distribute the gains derived from digitalisation across the ecosystem of involved actors. Data sharing by transport service providers might be the first step, but it cannot be the last. Rules on the use and compensation of such “data” are necessary. In particular, we think that some kind of reciprocity will be necessary, for example the obligation for digital intermediaries to pay back with their data. Also, obligations will have to be imposed upon digital platforms pertaining to transparency, self-preferencing, non-discrimination and pro-competitive behavior will help ensure a more balanced digitalisation of the transport industry, and in this way, a more active engagement by all actors involved in the ecosystem.

Main Takeaways from the Discussions

By Teodora Serafimova, Florence School of Regulation – Transport Area

In its [Sustainable and Smart Mobility Strategy \(SSMS\)](#), released in December 2020, the European Commission commits itself to “considering options and benefits of going further with a multimodal framework for passenger rights that is simplified, more consistent and harmonised”. The Action Plan, accompanying the Strategy, puts forward a number of concrete action points in this regard. These include action point 63 to “review the passenger rights regulatory framework, including to ensure its resilience to extensive travel disruptions, and including options for multimodal tickets”; as well as action point 64 to “assess the options and propose, if appropriate, an adequate financial protection scheme to protect passengers against the risk of a liquidity crisis or an insolvency regarding the reimbursement of tickets and if needed their repatriation”. Equally relevant here is action point 37 “to assess the need for regulatory action on rights and duties of multimodal digital service providers and issue a recommendation to ensure public service contracts do not hamper data sharing and support the development of multimodal ticketing services, together with an initiative on ticketing, including rail ticketing”.

To this end, the Commission launched a [call for evidence](#) for an impact assessment in back December 2021 and is currently developing the scope of the impact assessment in line with the current EU legislative timeframes. The [9th Florence Intermodal Forum](#), thus, provided a well-timed platform for discussion that will feed into the Commission’s ongoing work.

The Forum took place against the backdrop of the recently revised [Rail Passenger Rights Regulation \(EU\) 2021/782](#). In particular, its Article 12(1) includes provisions for obligatory offers (long-distance or regional rail passenger services operated by a “sole” undertaking) as well as for voluntary offers (all other rail

passenger services) whereby railway operators should make all reasonable efforts to offer them and cooperate to that end amongst themselves. It clarifies the meaning of tickets purchased from a railway undertaking in a single commercial transaction. Moreover, the new Regulation deals with tickets bundled by the ticket vendor or tour operator and purchased in a single commercial transaction. It introduces new business-to-business-to-consumers (B2B2C) rules on real-time traffic data and travel information (i.e., on the access of intermediaries to this data, on the need to ensure fees are proportional, etc.). Not least, the Regulation introduces a new right for self-re-routing, which foresees that if within 100 minutes the carrier does not provide any solution for re-routing, the passengers are entitled to re-routing themselves while guaranteeing their right to reimbursement of the price paid for the alternative ticket (on the condition that a reasonable price range is respected and that no taxes are used). These provisions will become applicable as of June 2023.

Back in 2016, a public stakeholder consultation was conducted by the Commission on multimodal passenger rights, though it did not result in any legislative proposals, given that the end of the legislative period at the time was approaching. Instead, an exploratory [study on passenger rights in a multimodal context](#) was carried out in 2019, whose overarching conclusion was that multimodal transport is a niche market. The study also concluded that regulatory action at the EU level was premature given the still-evolving nature of the market. But the study identified four main gaps when it comes to passenger rights, including the absence of obligations for carriers or terminal managers vis-à-vis persons with reduced mobility (PRM) using multimodal transport; the lack of complaint-handling rules or national enforcement bodies (NEBs) designated for dealing with multimodal transport; the absence of harmonised liability schemes (carrier-carrier and carrier-ticket vendor); and not least, the lack of obligations for ticket vendors, terminal managers and carriers to provide information regarding multimodal aspects of the journey at connecting points.

The International Rail Transport Committee (CIT) [Agreement on Journey Continuation \(AJC\)](#) allows participating railway companies to help each other by enabling passengers on international journeys who miss a connection due to delays to take the next train on the same route operated by the same company. However, the agreement is confidential (meaning that passengers and rail staff are not necessarily informed about it); it is voluntary (i.e., not binding for participating operators, which are mostly incumbents) and does not establish a right for the passenger. While in theory it is open to all operators, newcomers have refrained from participating and its scope has been limited to international journeys only. The so-called ‘hop on the next available train’ (HOTNAT) arrangement, on the other hand, allows travellers to take the next high-speed service leaving from the same station as originally planned when a delay of a preceding Railteam member’s high-speed service prevents them from making their originally-planned connection. However, HOTNAT also faces shortcomings linked to the fact that it is limited to high-speed trains of the Railteam Alliance, and is subject to available capacity on board each train.

The SSMS states that by 2030, seamless multimodal passenger transport will be facilitated by integrated electronic ticketing. To this end, the Commission is working on completing four key pieces of the puzzle. These include the review of existing pieces of legislation, namely the [ITS Directive \(2010/40/EU\)](#), which is the Commission’s framework directive aimed at facilitating access to data (on journeys, traffic) through national access points (NAPs), as well as the review of the [Delegated Regulation 2017/1926 on Multimodal Travel Information Services \(MMTIS\)](#). As part of the revision of the Delegated Regulation on MMTIS the Commission will seek to further enhance the development of information services while focusing on technical aspects, including the accessibility to dynamic data, the incorporation of new data types to the list of data to be made accessible, requiring the use of certain standards for payment and booking interfaces, and not least, ensuring alignment with other data

categories of the [Real-Time Traffic Information Services \(RTTI\) Delegated Regulation’s revision which was adopted in February 2022](#).

These come in addition to new initiatives, namely the [Multimodal Passenger Mobility Forum \(MPMF\)](#), which is a forum gathering stakeholders from the domain to help the Commission in elaborating a new proposal to support the development of [Multimodal Digital Mobility Services \(MDMS\)](#). The latter, which constitutes a core policy priority for the Commission, will focus on ticketing, booking and payment services by addressing a number of market-related problems, namely the unwillingness to cooperate between operators and MDMS; the commercial and technical challenges to establishing viable, scalable and high-quality MDMS; and not least, the lack of commercial incentives to improve the performance of the transport system in terms of efficiency, resilience and sustainability. To this end, an impact assessment is currently ongoing, whereas stakeholder consultations are carried out within the MPMF and other working groups. The targeted timeline for the completion of this work stream is the beginning of 2023.

Interoperability

The first session explored the technical requirements for making multimodal ticketing a reality. Here one phrase, in particular, resonated among participants: “*If there is no pain (i.e., standards), there will be no gain (i.e., interoperability)*”. By definition, standardisation is a painful process given that it ultimately involves competitors working together with a view to agreeing on common technologies, methods and business processes, which are oftentimes of high strategic relevance. In the same spirit, MDMS services will not reach maturity, profitability and deliver massive societal benefits without interoperability. In the absence of a common standard, interoperability can only be achieved partially through aggregation platforms.

Interoperability can be approached from different angles. First, there is post-facto interoperability, which is when a single supplier dominates the market and creates interoperability by imposing

its own rules and standards. By definition, these standards are not democratic and can be subjected to legal challenges (e.g., Apple and Android wallets used to store tickets). Interoperability is complex and involves mutual recognition of accepted identification and security methods; products, reference data and product acceptance rules; payment, apportionment, settlement and liabilities; and change management processes, among others. To this end, the development of standards and norms should ideally gain consensus and recognition among stakeholders active in a given industry. This, in turn, will depend on the standards representing a “state of the art” solution to practical (cooperation) issues in a given context. Conversely, if the standard does not enjoy strong backing from key stakeholders and/or if it does not provide efficient methods and tools to build MDMS ecosystems, it cannot be considered a good standard or norm for MDMS.

The example of payment cards was highlighted as a successful example of interoperability, offering valuable learnings for the development of MDMS. The high degree of interoperability enjoyed by payment card users across the world today can, to a large extent, be attributed to the existence of card governance schemes. These schemes lay down clear definitions and ensure that operations are run according to a set of pre-determined rules. A robust rulebook defines a set of rules for retail transactions, whereas another set of rules governs transit transactions. The schemes define the liabilities of the participants, they are concerned with questions of probity to ensure debts are paid, and lastly, they ensure penalties are applied to those who fail to adhere to the set rules. A legal entity (i.e., scheme manager) oversees the scheme and ensures that standardisation is enforced. Some equivalents exist in the transport sector, with one notable example being the ticketing settlement agreement in the UK, which describes how all train companies’ ticketing systems shall work together.

Though governance plays a critical role, card schemes have also heavily relied upon standards.

In particular, there are two fundamental types of standards for card schemes: the ones created by the global technical body EMVCO and the ones created in the ISO framework, which in turn, are open standards. These standards are used by all players in the industry. Here, participants underlined that it is not merely about technical data exchange standards but also about the standardisation of business processes (e.g., authorisation, clearance, payment, 3D secure), of equipment technologies (e.g., magstripe, Chip&PIN, contactless, mobile wallet, QR barcode), and not least, of message formats.

The existence of an elaborate testing and certification process has been another key pre-condition to ensuring the interoperability of the payment card system. Card schemes are subject to testing and certification on a yearly basis: a lengthy and costly process which safeguards that equipment is interoperable and fit for purpose before connecting to the system. Whereas the UK carries out ticketing equipment certification, there is no analogy in continental Europe when it comes to the testing and certification process in the transport sector.

Stakeholders broadly agreed that technological barriers are no longer the main barrier in the way of interoperability. Notwithstanding, it was also acknowledged that the specificities and variety of the transport sector make it particularly more challenging to implement interoperability, as compared to the banking sector, for instance. Understandably, due to the local nature of public transport, public authorities tend to focus on catering to the needs of local users, whereas the implementation of international standards forms a secondary consideration. This interaction between the European, national and local levels makes it particularly challenging to create the right incentives for interoperability.

The idea of pursuing a super scheme that addresses all the barriers and incentives to enable interoperability is among the main challenges in the MDMS framework. In particular, a major challenge will be to identify the right set of carrots and sticks to nudge operators towards interoperability. A reinforcement of the public

policy aspects was also welcomed by stakeholders. In other words, interoperability is a means to enable the creation of multimodal journeys, increase the efficiency of public transport, and reduce the reliance on private cars, all of which are crucial to advancing the European Green Deal objectives. Public authorities have a central role in using public policy, such as tax incentives for transport users in order to nudge them to use more sustainable forms of transport.

Approaching the topic of interoperability from the perspective of a national regulatory authority, the example of Finland attracted particular attention given the country's adoption of a major reform back in 2018, which saw the imposition of obligations to open API interfaces. In particular, the new law mandates all mobility service providers to open essential data in a digital machine-readable format. Before opening up their ticketing APIs, transport operators have, therefore, had to renew their ticketing system from (physical) card/ticket-based ones to account-based ticketing. In cases where operators have lacked their own computerised systems, the State has provided the necessary tools and financing to digitise information. As low margin profit entities, public transport operators' (PTOs) ability to invest in new payment systems and interoperability is limited and thus needs to be incentivised and subsidised. Drawing on the Finnish experience, it was found that PTOs also need incentives for interoperability beyond their own territory, given that their primary concern is to safeguard the level of service within their own region.

Another provision of the Finnish law requires transport operators to open their ticket and payment system interfaces for third-party service providers. The law does not, however, regulate the third party sale commission or revenue sharing, which in turn, is left to the transport operators and companies involved to negotiate. Another obligation stemming from the Finnish regulation foresees that third-party service providers be allowed to act on behalf of the passengers using the traveller's existing user account (discounts, tier benefits). Where an MDMS provider or MaaS platform intends

to integrate into transport operators' API, these access terms need to be fair, reasonable and non-discriminatory (FRAND). Not least, the regulation promotes ticket and payment system interoperability in the case of public service obligations (PSO).

More generally speaking, the discussions made clear that not all stakeholders are equally satisfied with the current EU standardisation process and governance. Public transport authorities (PTA) and the public transport (PT) ecosystem in general were said to be fairly content with current standards. These stakeholders have been heavily involved and well represented in the CEN standard development process. Whereas larger PTAs can design their own solutions as needed, smaller PTAs have had more difficulties in using new standards. Mobility-as-a-Service (MaaS) services providers and apps (or broadly defined as MDMS service providers), on the other hand, are usually under-represented (outside of PT operators) in current standard development processes. Given that their main function is to connect systems, they are used to dealing with complexity and different standards. Nevertheless, complexity comes with a cost in the form of financial resources, longer projects, and fewer opportunities. Even less satisfied with the current standardisation process were said to be Mobility Services Providers (MSP), given their complete exclusion from the process. In the case of France, for example, MSPs have agreed to work on MDMS standards only on the assumption that these will not be based on current EU standards. This notion that MSPs are unsatisfied with the current process was challenged by some stakeholders, however, who insisted that EU standards are essential given the complexity of operating through numerous MaaS applications. Indeed, reducing complexity would allow the industry to lower operating costs, thereby benefiting customers with lower prices.

In MDMS, we see a convergence between two industries with distinct cultures and technological paradigms, namely transport and digital. These industries are critical for European economic competitiveness as well as for the advancement

of European Green Deal objectives, which in turn, underscores the need to improve interoperability and standard-setting processes for MDMS. As illustrated above, part of the problem pertains to the question of whether and how the entire community of actors is engaged in the process. Some stakeholders underlined that though current processes are receptive towards PTAs, they sideline digital platforms and MSPs. It is precisely because of this failure to involve all stakeholders along the ecosystem that we fail to achieve network effects. Furthermore, it was pointed out that EU standardisation bodies and processes are currently falling short of cooperating and forming partnerships with international standards.

To wrap up this session, stakeholders put forward some concrete proposals for further reflection and debate. One suggestion was to conduct an experimental normative process for EU MDMS standards. Whereas there is a digital standards organisation in North America, no equivalent exists in the EU, and MDMS offers an opportunity to put this concept to the test. A second proposal favoured the idea of granting key stakeholders, namely PTAs, MSPs, and MSDM operators, a veto right on standards for MDMS. Another proposal was to prioritise the standardisation of “fundamental interoperability principles” for MDMS APIs at the EU level. Once these basic semantics (i.e., the fundamental business process in MDMS and their definition) have been laid down, room for manoeuvre could be left for variations. Building upon existing standards, participants supported the need to develop Transmodel standards and extensions that cater to the MDMS API needs.

Another message that emerged from the discussion was to define priority areas when it comes to pursuing interoperability and standardisation. In particular, participants stressed the importance of distinguishing between long-distance ticketing (e.g., making an unfamiliar journey where a passenger needs to book in advance to secure a good price) and regular urban travel. A variety of discounts (e.g., for children, for residents, etc.) are typically applied to urban

ticketing today, which complicates pricing, rendering it dependent on the various criteria of the passenger. The shift away from ticketing for urban travel to simpler pay-as-you-go (PAYG) systems was welcomed as a means to address interoperability issues while also enabling cost savings for PTAs (e.g., since implementing its contactless ticketing system, Transport for London has cut its spending on ticketing from ca. 15% to ca. 6-7% of its total revenues). Addressing interoperability should, therefore, be the priority for long-distance travel where ticketing is unavoidable. Last but not least, some participants cautioned against the enactment of overly strict standards on the type of services that can be provided as this may act to hamper the innovation and development of businesses and services. In view of this, stakeholders favoured the identification of a minimum level of standards.

Access to data in a multimodal context

Once interoperability between systems has been achieved, it is important to dive deeper into the question of data sharing. Indeed, besides ensuring that systems work together, it is crucial to define how the data is being shared as well as to clarify the underlying rationale for it. To this end, amongst other things, the Commission’s proposal for the revision of the ITS Directive includes obligations for the mandatory provision of data. The proposal contains a mandate to create data on access nodes, which in turn, are the places of interchange between different modes (e.g., bus and train stations, park and ride facilities). The framework of the ITS Directive allows for the list of data types to be amended and extended in the coming years. To date, national access points (NAPs) have been created in diverse forms. This was intentionally done by the Commission in order to grant Member States flexibility in developing their NAPs as they saw fit in terms of investment and stakeholder engagement. Some NAPs are data registries, while others actively produce and provide data. It is difficult to harmonise these in the short term, but the intention is to ensure that NAP development happens in a more har-

monised way thanks to the NAPCORE project (National Access Point Coordination Organisation for Europe), in which all Member States participate, leading to better data access and more clarity. The legislative proposal is currently being discussed between the Council of the European Union and the European Parliament, and it remains to be seen whether all the obligations as proposed will remain in the final text.

Once again, this session provided an opportunity to draw lessons from the experiences of other sectors, in particular the air ticket distribution market, which is a few decades ahead when it comes to digital platforms, data sharing and interoperability, as compared to other transport modes. The airline ticket distribution market is regulated by [Regulation 2299/89 on the Code of Conduct for Computerised Reservation Systems](#), dating from 1989. Almost 20 years later, the market has evolved dramatically, whereas new issues are emerging and call for updates to the regulatory framework. First, stakeholders brought attention to the issue of “content fragmentation”, referring to the fact that operators with significant market power may have an incentive to limit access to content, discriminate by favoring their own channels or simply withhold data from intermediaries thus hampering travellers’ comparing transparency. In particular, it was argued that some airline groups have a tendency to withhold content, which is only being made available directly on their own airline webpages (and, as a result, unavailable on online travel agencies or intermediaries, for instance). This issue of “digital visibility” ultimately disadvantages the passengers who will only be able to access certain information by going directly through airline webpages.

Channel discrimination was another issue brought up during the discussion. In a similar fashion, it was pointed out that some big airline groups tend to implement a surcharge on certain channels, namely the global distribution system (GDS) and travel agency channels, which can only be avoided by going directly through the airline websites. Here participants reiterated the need to apply FRAND principles in order to avoid

a situation where these charges are passed on to consumers. Travellers cannot enjoy existing routes if these are not digitally available across all sales channels. To address this, relevant transport data needs to be made available in a transparent and non-discriminatory manner throughout all channels (e.g., operators, intermediaries) so as to enable passengers to identify and opt for what they perceive to be the best travel options according to various criteria, such as price and duration, but increasingly also CO₂ emissions. While it was acknowledged that the principles and obligations stemming from the EU Regulation on the Code of Conduct (CoC) were obsolete today, participants also pointed out that some transport service operators, especially intermediaries, are benefiting from the fact that the regulation’s provisions are not applicable to them, thus opening up questions of level playing field and competition in a multimodal environment. In view of this, participants cautioned against replicating the existing CoC framework into MDMS as this would maintain existing content fragmentation and would not be conducive to sustainable, multimodal travel.

It goes without saying that aviation is an essential component when it comes to fostering a multimodal digital mobility services market. As illustrated by the discussions, however, today, we observe a strong fragmentation in the transport offering, reflecting the silos of different transport modes and limiting consumer choice. Access to content on a fair and non-discriminatory basis is of strategic importance to foster a true multimodal market in Europe. Multimodality, in turn, was welcomed as a unique opportunity to connect relevant transport modes with a view to benefiting travellers and stimulating competition. To fully incorporate air travel into MDMS, participants called on the Commission to take into account the above-mentioned content access restrictions and discriminatory practices of large EU airlines and to define specific obligations to prevent them altogether. Enabling multimodal digital mobility services calls for data which is real-time, accurate and transactable to generate the right incentives for travellers to book and for travel companies to invest in distributing these.

Here, the revised Rail Passenger Rights Regulation was welcomed as a good starting point when it comes to mandating access to information.

Though still a rather young industry, micro-mobility was another industry whose experience discussants sought to draw learnings from in terms of public authority data sharing. The micro-mobility industry shares data with authorities on a voluntary basis or on a tender commitment basis. The type of data typically shared is on fleet and trip monitoring, understanding users and usage, inter-modality, safety, and sustainability. Micro-mobility data is thus primarily used for fleet monitoring and compliance purposes rather than actual data sharing for policymaking. The main challenges the industry has faced through this data sharing exercise have been that data requests and needs vary greatly per city and per market. There is also great uncertainty in the standards framework for city data sharing.

The micro-mobility industry offered a number of interesting lessons regarding MDMS data reporting to authorities. First, participants stressed the need to design a use case-based framework for policy-driven data reporting. In other words, this entails ensuring that every data shared supports the advancement of specific policy objectives so as to guarantee the relevance of the data for the authorities. Moreover, participants cautioned against data sharing for the purpose of monitoring compliance. Instead, they favoured an approach that uses data sharing to support the achievement of common policy goals and helps to inform urban policymaking and planning of a future-proof mobility system.

Another barrier discussed was about enabling data reporting between MDMS partners. What we observe at present is that there is very little data collection and sharing between the various players within a MaaS ecosystem. This poses a major challenge for understanding the impact of MDMS usage on sustainability, modal shift and multimodality. In view of this, as a first step, stakeholders called for efforts to better understand the barriers preventing the collection of data from MDMS. On the basis of this, policymakers should define rules governing data exchanges between MDMS actors.

Another challenge brought to light during the discussions pertained to allowing access to public transport APIs. Pricing bundles and intermodal packages are a prerequisite to making MaaS a viable alternative to private cars while ensuring that public transport remains the backbone of our multimodal transport system. In terms of general trends, we are seeing that more public transport operators are showing interest in piloting packages. A key challenge here is the fragmented regulation governing the sale of public transport tickets in private MaaS apps. Bundle pilots have taken place in Switzerland and Finland, where local legislation has made it possible. In the case of Finland, bundled offers with integrated public transport tickets have proven quite successful, with an over 50% re-purchase rate. Participants argued that current challenges could be transformed into opportunities by allowing private MaaS operators to sell public transport tickets.

Discussions also touched upon local car-sharing tenders, which include mandatory tendering to public MaaS platforms. When it comes to data sharing, public authorities often request both online and offline data to be provided on a regular basis. In order to provide this type of data, car sharing operators need to sign a data-sharing license, which foresees significant processing of personal, raw, and sensitive mobility data. The access and re-use of raw mobility data (via the data sharing license) by mobility agencies or other recipients, typically the public authorities, enable access for third parties, which could include competitors. Here, participants raised concerns about intellectual property rights if raw mobility data is to be accessed by company competitors, thus providing them with potential know-how and presenting them with a competitive advantage.

To avoid the misappropriation of commercially sensitive data, participants urged the need for governance to limit the reuse of data. Some other stakeholders, however, underlined that most cases today concern access to data and information that are publicly available, such as data on fares, schedules, and timing information, among others. Because of this, it was noted that in a majority of cases where public data is

concerned, the risk of infringement of intellectual property (IP) is limited. Instead, infringement of IP is commonly used as an excuse to not share data, stakeholders claimed. Another key question raised during the discussions was about ensuring that data shared with public authorities is in compliance with GDPR. This is to be ensured by design (i.e., by ensuring that the national legal framework is GDPR-compliant) and by enforcement (i.e., by means of audits, whereby all Member States implement it and enforce it through a regulatory authority).

Zooming into the French context, the recently adopted Loi d'Orientation des Mobilités (LOM) and Loi Climat lay down the legal framework for data sharing in transport. The other key piece of legislation is the Loi pour une République Numérique, which complements existing EU legislation in regards to opening access to data and defines the rights and obligations of digital mobility service providers, including sales. It also gives PTAs a role in organising mobility, in addition to the historical role in providing transport in their own environment. The French law mandates the provision of dynamic data when it is available. There is one exception for accessibility data, whose provision is mandatory whether it exists or not. Some concerns were expressed as regards the obligations deriving from EU regulations for the provision of data by PTOs free (or virtually free) of charge when the data exists, on the grounds that these would act to increase the cost of operation without necessarily guaranteeing any compensation.

Three main purposes for data sharing were identified throughout the discussions, namely for monitoring, policy planning, and enabling more customer-oriented and better services. What is more, different models for data sharing were pinpointed, including the introduction of data sharing obligations by local municipalities through tendering procedures, or by means of national obligations, on the other hand, as we have observed in Finland and France. The challenge and responsibility of the EU here would be to bring about a greater degree of harmonisation in the process by introducing some

general rules while bearing in mind local and national dynamics.

Besides harmonising practices, participants underlined the importance of upskilling among public authorities in building capacity surrounding questions of how data can be used, how it can be used to shape policy, and how it can be shared in line with GDPR. For instance, while there appears to be a general reluctance among public authorities to sign data-sharing agreements, Forum stakeholders recalled that the prime purpose of such agreements is to set the right conditions to ensure GDPR compliance. What is more, public authorities can use transport as an instrument to achieve set policy goals (e.g., decreasing emissions, lowering congestion, and improving the wellbeing of their citizens). Here the use of data (from the business-to-government (B2G) perspective) plays an instrumental role in enabling the monitoring and measurement of actual improvement and realisation of set public policy objectives. Under such a “societal business model”, some stakeholders questioned whether data should not necessarily be shared for free if the results would help to improve the wellbeing of citizens.

All in all, discussions pointed to a mentality shift and a growing recognition of the need for data sharing as a means to develop business models and to grow businesses. Whereas data was often referred to as the “*new oil*” in EU policy discussions over the past years, participants agreed that the phrase “*data is the new water*” may be better suited in describing data as a pre-condition to developing services rather than as an accelerator or an asset to be exploited per se. In view of this, just like the water we drink today is subject to various quality and safety regulations, a similar approach would need to be applied to data through the future MDMS framework, whose purpose should be to set rules enabling data sharing from the B2B perspective with respect for the commercially sensitive side, while ensuring that the misappropriation of commercially sensitive data is avoided, among others.

Building further on this, some participants noted that “*data may be water, but not all data is created*

equal – some of it is tap water, while other is bottled”, in reference to the key regulatory issue relating to proportionality. In other words, it is not merely about data sharing but also about defining under “which conditions” data is to be shared. Data sharing obligations need to be proportionate, avoiding unreasonably overburdening companies with multiple data sharing requirements in different formats and standards. Every data sharing obligation should be backed up with clear reasoning and rationale, which is proportionate. This should be the case, in particular, where we move beyond voluntary data sharing to compulsory data sharing. In addition to ensuring its proportionality, participants emphasised the need for data sharing to be “bidirectional”, in terms of companies receiving something in return from the public authorities (e.g., analyses), with a view to improving their services and benefiting the wellbeing of the general public (e.g., reducing congestion, pollution, and other externalities). Of equal importance are the issues of GDPR and cyber security. Here EU regulation has a central role in fostering a secure environment for data sharing to materialise. Last but not least, if the system is to work, there needs to be a balance between the interests of the various players. To this end, some reciprocities and limitations to what can be done with the data will need to be elaborated.

Through-ticketing in railways

While through-ticketing has technical, standardisation as well as economic aspects, participants underlined that political will and setting the right objectives are even more integral when it comes to making progress. To recall, currently, there is a very limited number of through-tickets available for cross-border rail journeys with the cheapest fares or fastest travel times between any two rail stations in Europe. Even if better (i.e., cheaper, faster and/or more frequent) rail options between any two rail stations exist in practice, passengers may only be able to make use of them with separate tickets (and transport contracts) involving a change of trains during the journey. Whereas through-tickets may also imply change of trains, under through-tickets passen-

gers are protected in case of a missed connecting service during the journey. In contrast, under separate tickets passengers may be stranded if they miss a connection and, as the journey continuation is not guaranteed, they may need to buy a last-minute new and expensive ticket.

Where in some cases, a through-ticket between the same two stations might exist – some stakeholders underlined that it tends to be more expensive, slower or less frequent and not attractive enough to induce travellers to opt for rail. While many long journeys in Europe are easily accomplished by a single flight (or a single bus or car road trip), the equivalent rail journey requires several legs and operators – bringing in a missed connection risk that does not apply to the other transport modes. But with separate non-flexible tickets, often tied to a specific train, a missed train connection may necessitate purchasing new onward tickets at high, full-flex prices. As implied, the disadvantages of rail vis-à-vis other modes today pertain not only to the price but equally as importantly, to the level of stress.

Many longer cross-border journeys require over two legs and operators. Combined journeys can enable a myriad of new rail options, especially (but not only) if a new entrant operator is part of the journey. This is because when combining cheaper yield-management non-flex separate tickets tied to specific rail departures, travellers often pay end-to-end prices that are competitive versus less sustainable modes of transport (e.g., flights, cars). However, passengers will be deterred from choosing combined journeys if they face a risk of being unable to complete their trip without additional cost if a train in the travel chain is delayed. This is particularly relevant for price-sensitive budget travellers. While many are willing to pay more to avoid being lost in between journeys and having clear information and assistance during disruptions, stakeholders agreed that the inclusion of “missed connection insurance premiums” is not the answer, as it would constitute an additional cost for passengers and can act to discourage them from choosing rail to start with.

Drawing on this, stakeholders were unequivocally aligned over the common objectives at hand, i.e., to achieve seamless international passenger rail travel, ensuring that rail passengers will have a seamless user experience when searching, selecting, buying, and using rail services, including first- and last-mile transport. This, in turn, is to be enabled by means of access to simple, reliable and comprehensive online information regarding timetables, prices, dependable real-time information and ticket purchasing for (rail) transport services, both domestic (urban, regional, long-distance) and international. There needs to be easy acceptance throughout Europe of tickets issued by different railways and ticket vendors. Moreover, stakeholders asked for guidance to be provided in case of travel disruption on onward journey options and passenger rights. The harmonisation of various terms and conditions (e.g., what is a child, how big is a group, and what is a bicycle) was encouraged for the sake of ensuring the same reference point to facilitate cross-border rail travel.

One of the key barriers hindering through-ticketing is liability. The discussions revealed the need to distinguish between two types of liability, namely the financial liability and the journey continuation liability. Journey continuation is the ultimate priority for passengers who are first and foremost concerned about reaching their final destination within the targeted day, whereas being compensated for the incurred delays only forms a secondary consideration. Stakeholders, therefore, agreed that journey continuation should form the focus of our efforts to improve passengers' travel experience. To this end, passengers will have to be equipped with adequate tools to enable them to access information for alternative routes in order to reach their end destination. Another proposal that enjoyed strong support among participants was the creation of a single point of information for customers to refer to in case of disruptions and delays. As part of the possible solutions, participants also cautioned against placing excessive obligations on the traveller in situations of delay and disruption, in terms of not limiting them to purchasing the same category of tickets or obliging them to

catch the next available train. Not least, stakeholders urged to consider that the additional costs incurred by railway undertakings to host a stranded passenger (from another company or from a missed flight), could be outweighed by the benefits resulting from making the cross-border passenger rail experience smoother and growing the rail market as a whole, with benefits for all players concerned.

The recently revised Rail Passenger Rights Regulation (RPRR) was welcomed as a step in the right direction, despite remaining "weak" on several fronts. To start with, some stakeholders argued that if railways are publicly funded (over 65% of passenger rail services are run under public service obligations), the sector should generate more private opportunities and safeguard greater protection for passengers. According to the new regulation, however, in future through-tickets will only be mandatory when two operators are 100% owned by the same group (e.g., OUIGO and SNCF), which was seen as an overall minor improvement, especially because not all passengers are informed about operators' structures. What is more, criticism was expressed in regards to the vagueness of the formulation of Article 12, which states that "all reasonable efforts" shall be made to achieve through-tickets.

Another worrying aspect of the RPRR highlighted by some participants was the provision requiring ticket vendors to alert passengers if they offer a rail-rail combined journey, which does not have passenger rights coverage, as regards the journey continuation in the event of a missed connection. Whereas a passenger may receive compensation for delays incurred during the first leg of a journey or alternatively, is entitled to accommodation in the case they cannot depart and there are no more rail services on the same day, problems arise when the second leg is missed: under separate tickets, there is no guarantee that an alternative service or journey continuation would be offered.

This, they argued, could act to discourage passengers from opting for rail altogether while also having competition implications if, between the

same two cities, there is a competing incumbent-incumbent through-ticket available with no such warning. Though the new Agreement on Journey Continuation (AJC) was also quoted as a step in the right direction, it remains a patchwork and not mandatory. To avoid uncertainty and confusion for passengers as regards which operators they can opt for, but equally as much for the railway undertakings, participants were in favor of making the AJC mandatory for all operators.

Competition is the best incentive for operators (and intermediaries) to share and facilitate access to data, and thereby constitutes a first pre-condition to achieving through-ticketing in rail. Looking to the airline sector, for instance, when it first embarked on the process of liberalisation, cooperation between airlines gradually started intensifying, allowing airlines to expand (e.g., interlining, code-sharing). Liberalisation in the airline market has allowed for an optimisation of the number of connecting points (airports) to the benefit of consumers. Participants welcomed the pursuit of similar principles on the multimodal level by combining different modes of transport in an optimal way so as to ensure consumer interests are protected while preserving fair competition. Here, the creation of a level playing field for independent distributors was highlighted as key to enabling passengers to find tailor-made solutions.

Italy, for instance, was the first continental country where competition was introduced in the high-speed rail segment. This applied not only to the rail operators but also to the ticket distribution services. Through-ticketing has proven to work successfully on platforms, such as Trainline, where SNCF, Trenitalia and Italo are providing access to data. In France the Loi d'Orientation des Mobilités (LOM) stipulates that the regions need to grant access to the distribution under FRAND principles. This safeguards a level playing field for independent distributors to operate their business. Trainline, for instance, has been able to execute the so-called "Recup-Retard" service in France, whereby push up notifications are provided to passengers travelling by

rail, which inform them when they encounter a disruption or delay, and subsequently offer the possibility to take over in the handling of the administration entailed in obtaining reimbursement for these delays. This would not be possible with an integrated operator, which naturally has an interest to minimise financial losses through the payment of penalties.

Another key pre-condition to facilitating through-ticketing is the full access to content data, including real-time data, prognostic data, and historical data. In this regard, stakeholders broadly welcomed the Commission's MDMS legislative proposal. Here, once again, the application of FRAND was underlined as key to developing through-ticketing for independent distributors. As a legal concept, FRAND can be found in a wide variety of EU sectorial legislation, though not yet in ticketing legislation with the exception of rail. There is thus a need to elaborate in more depth the FRAND requirements for the railway sector and to introduce it also for the other modes at the EU level. Moreover, amendments need to be established so as to incorporate FRAND into the MDMS legislation. Lastly, participants urged the need to find a supervisory procedure that could speed up appeal possibilities in case of a disagreement on the contractual terms because current competition authority procedures last 4-5 years, which is excessively long to ensure the business models of the industry and distributors.

In conclusion, participants observed that the debate had evolved significantly over the past 20 years. When ticketing was first placed on the EU agenda, it was primarily approached in the framework of barriers to entry in liberalised markets. Subsequently, the discussion shifted onto the issue of fragmentation, as countries such as the UK saw 25 different companies operating at the same time, which, in turn, necessitated simplification for passengers to navigate through these. A similar situation is now arriving in France. This fragmentation is now emerging on the EU level, as many of the current issues discussed pertaining to liabilities and timely information are not specific to pure rail-to-rail through-ticketing but are common also for mul-

timodal (air-to-rail) connections. In view of this, participants agreed that sector-specific matters could be tackled by means of sector-specific regulation, though the remainder, which are shared across modes, need to be approached in a more holistic cross-sectoral manner.

Passenger rights in a multimodal context

What passengers want is a public transport system that is affordable, reliable, sustainable and coordinated. To this end, the transport system should have sufficient capacity to transport people comfortably to their targeted destinations at times they wish to travel, using whatever combination of modes is most efficient overall, in social, environmental and economic terms (and this, of course, is subject to the personal views of the passenger). Despite the fact that customers' needs and expectations vary to a great extent, in general, it can be said that they attribute great importance to timetables and connections (door-to-door), services (e.g., luggage transport, bicycle transport, catering, restaurants onboard, PRM support, and Wifi, etc.), as well as transparent information on prices with different tariff specifications (flexibility, comfort, safeguarding the travel chain).

Today, however, the planning, booking and executing of multimodal journeys is risky, difficult and time-consuming. Some advanced multimodal door-to-door journey planning applications exist but are mostly limited in scope (in terms of geographic coverage, modes and operators) and/or do not offer any booking and ticketing facilities. Most passengers tend to take the easiest solution, which is not always the most sustainable one. As underlined in the previous section, in cases of disruption, first and foremost, passengers expect journey continuation (i.e., reaching their travel destination in the best possible way while taking into consideration special needs). To this end, ideally, they also need to be provided with the fastest possible push information and have access to a single point of information (hot-line). If reaching the final destination within the targeted day is not an option, then securing

suitable accommodation and catering are first priorities, whereas compensation concerns only come after.

The combination of different modes of transport comes with a higher cost, which is typically shouldered by the passenger, due to the fact that passenger rights today are tackled through mode-specific regulation. By definition, multiple transport operators are involved in a multimodal journey. Therefore, none of them is in a position to provide comprehensive information on the overall journey, but rather only on the specific leg of the journey they operate. Travel intermediaries could be the single point of contact for passengers throughout multimodal trips, ensuring adequate information to the passenger at all stages of the journey.

Travel intermediaries, such as booking platforms, indeed have a central role to play in facilitating easier access to tickets combining different companies. However, given that such combined journeys still rely on having different contracts with the individual companies, passenger support in the event of travel disruptions remains rather weak. Indeed, as an intermediary, unaffiliated with any transport operator, booking platforms cannot, for instance, guarantee sufficient leg room for passengers, ensure the right kind of services are present onboard, or that compensation will eventually be granted to those affected by delays. Though they evidently fall short of solving all practical problems, booking platforms secure access to information and access to tickets from different operators.

Online travel agencies, for instance, allow passengers to compare and combine offers from different modes of transport and get access to all relevant pre-contractual information, including schedules, connection times, fares but also ancillary services and CO₂ emissions information. Before making a decision about a trip, passengers need to have a lot of information, including the possibility for baby equipment to be transported and for the whole family to be seated together without additional costs, connection times and the existence of a convenient transfer option between the airport and the rail station, for

instance. Such information is crucial to ensure that passengers are confident about their journey but are currently too often missing on travel intermediaries platforms as relevant data is purposefully not shared by the transport operators or not shared under FRAND terms. Building a multimodal journey on this basis can be cumbersome. What is more, before embarking on a trip, passengers attribute great importance to having the certainty that their flight or rail trip will not be cancelled (and even more so in COVID-19 times), as well as about the existence of any delays or changes in their travel information. Such information is not always made available to all travel intermediaries either.

In order to ensure they add value in the context of multimodal journeys and passenger rights, participants stressed the importance of granting travel intermediaries access to relevant data from transport operators. Without access to such data, they are rather limited in what they can do. If enabled to do so, travel intermediaries can thus act as MDMS platforms by helping both passengers and/or other intermediaries compare different travel options, choices and prices, and facilitate the sale and re-sale of mobility products from different operators, whether they are private or public, within one mode or across modes.

Some passengers opt for self-transfer at their own risk, which means there is no connection guarantee, as opposed to through-ticketing in rail or interlining in air. However, it was pointed out that travel intermediaries are developing alternative solutions to allow customers to obtain adequate assistance in case of a missed connection. In aviation, for “virtual interlining” (i.e., an intermediary builds a journey with two different flights in order to offer the best possible fare to its customers), the intermediary can take liability for the connection through a “self-transfer guarantee”. In air-rail journeys, similar products are being made available. To illustrate, travel intermediary DOHOP and rail operator Deutsche Bahn are jointly developing a self-connect initiative with EasyJet, which would allow passengers arriving with an EasyJet flight to Berlin airport to take a Deutsche Bahn train, and in cases

of missed connections, DOHOP provides assistance in the native language of the passengers whilst they get redirected to the next train. With adequate access to relevant multimodal contents, some participants argued that multimodal self-transfer guarantees could be further developed by intermediaries, offering passengers both the best fares and protection in case of missed connections. To this end, however, enabling market conditions would need to be created.

COVID-19 has shown how difficult getting a refund or compensation from a transport service provider could be. This can be further complicated when passengers have to deal with multiple providers in multiple countries, with interfaces not always available in one’s own language. In case of cancellations, passengers need to have a one-stop-shop for all claims related to a given journey. Such a role could also be played by intermediaries.

In sum, with multimodal itineraries involving by definition, multiple operators, operating under different legal, technical and commercial conditions, implementing through-tickets and passenger rights is a challenge. In this context, travel intermediaries were said to have the potential to fill this gap by acting as the one-stop-shop, ensuring a seamless trip for the passengers and providing them with all relevant information regarding their rights before, during and after the trip. However, this is entirely dependent on such travel intermediaries getting access to the relevant data from transport services providers, which needs to also be real-time information in order to fulfill its purpose. That is where the role of the regulator will be key in creating a conducive regulatory framework while ensuring compliance with legal obligations as already set out in the revised RPRR. As part of the possible solutions going forward, participants were favourable to the enactment of compulsory insurance for companies as well as voluntary insurance for passengers at a reasonable cost. If the status quo were to be maintained, however, participants urged the need for the obligatory provision of information to travellers and, ideally,

for the creation of a one-stop-shop access point to assist passengers across all transport modes. To facilitate seamless multimodal travel for passengers, stakeholders were favourable to the proposal for independent monitoring of end-user satisfaction.

Conclusions

Most transport modes have a long history of creating networks from isolated services. Taking a closer look at the rail sector, for instance, what we saw initially were independent railway routes managed by different entities. Today these have evolved to make up what is a single rail network. The same can be said for the history of maritime and urban transport. It is fair to say that the creation of networks is one of the most challenging processes in transport altogether. Over the past century, and in particular, over the past decades, this model was built around monopolies. It was the role of the monopolists to identify and build complementarities by creating hubs and networks.

However, with the introduction of liberalisation in the market, the policy approach has changed, and we no longer rely solely on monopolists to make these complementarities a reality. As a result of liberalisation, the market today is significantly more fragmented, marked by a greater number of players and involving higher transactional costs. This, in turn, makes it more challenging to identify and exploit complementarities. This is where digital technology comes in, with its potential to act as a game-changer in identifying and building these complementarities. In some network industries, intermediaries are not only intermediating but also substituting traditional players precisely in the most delicate moment, i.e., the creation of the network on top of the different pieces.

Regulation and standardisation have a critical role to play in the identification of bottlenecks and facilitating the process. In particular, regulation will have to set clear guidelines on the application of the FRAND principles so as to enable the achievement of fair and non-discriminatory access conditions in practice. Last but not least,

the right balance will have to be struck between obligations, possibilities, liabilities, and the different interests of the various players. While discussions demonstrated that our understanding of the existing bottlenecks is mature, the necessary solutions need further discussion and refinement.

How regulating data sharing practices in the context of Mobility-as-a-Service can help deliver its environmental and social benefits

A comment by Pauline Aymonier, TIER Mobility SE

As cities around the world are looking for ways to make their transport networks more environmentally friendly, resilient and efficient, Mobility-as-a-Service (MaaS) is being deployed as a solution to achieving this by integrating various forms of transport services into a single mobility service accessible on demand.

As Europe's most integrated micromobility operator with 40+ MaaS integrations and 50+ Public Transport partnerships, TIER believes MaaS can create more sustainable urban transport systems. But the full value of MaaS is yet to be unlocked, especially when it comes to data. Not only does MaaS give us an opportunity to rethink urban transport holistically by anchoring the concept of multimodality in our transport governance, but it also gives us a chance to stitch our cities back together, shedding light on the mobility challenges we are up against to tackle them more efficiently. To achieve this though, we need to collect and share data stemming from MaaS and to create harmonised and efficient data sharing processes to benefit the many. This is where policy comes in: it can play an important role in defining how data can accelerate the delivery of MaaS' potential environmental and social benefits, notably by:

- Harmonising MaaS data sharing practices;
- Enabling insight sharing between MaaS partners;
- Generating value from data reporting to authorities;
- Allowing access to public transport APIs and tickets.

Harmonising MaaS data sharing

Despite being at the very root of every MaaS partnership, data sharing for integrations is proving to be a complex exercise: various standards for integration exist, and the level of data requested greatly varies per partnership and market. Different Member States are looking into designing their own national standards for MaaS integrations, creating further fragmentation in the market. The design or support of a single MaaS data standard at European level would address this issue by easing data sharing relationships, creating more market certainty and reducing technical efforts required of all parties. It would make MaaS a simpler task overall and generally more likely to become common-or best-practice across the mobility industry.

Enabling insight sharing between MaaS partners

Beyond data sharing for integration purposes, great value can be generated from the data—or mobility insights—collected by MaaS platforms in order to understand citizens' mobility habits and appetite for sustainable mobility choices. As it stands though, limited data is actually being collected by MaaS aggregators and therefore shared amongst players of the ecosystem, effectively hindering our assessment of the sustainable impact of MaaS. From a micromobility operator's perspective, we are currently not able to know when a user combines the usage of a TIER vehicle with public transport in a single trip performed through MaaS. As the industry evolves alongside platforms' technical capacity to collect data, it will be important to design rules to allow for efficient data exchanges between MaaS players in order to assess the uptake of multimodal transportation and track progress on MaaS' sustainability goals.

Generating value from data reporting to authorities

As an international operator that already shares data with most of the 170 cities it operates in, TIER is convinced of the value that mobility data can bring to public stakeholders to inform their

local policy-making or planning. With that said, the absence of harmonised rules governing data sharing with authorities has resulted in our data not being efficiently read and used by public stakeholders. When regulating mobility data, it is important to grasp the unprecedented opportunity it presents to understand and manage our cities better, i.e., for space management, infrastructure planning, multimodal integration and addressing local mobility needs. In the context of MaaS data reporting, policy-makers should look into use cases of high public value and avoid falling into data-sharing requirements for monitoring and compliance purposes, which have proved to bring limited societal impact in the shared mobility industry.

Allowing access to Public Transport APIs and tickets

We see the development of pricing bundles and intermodal packages as a prerequisite to making MaaS a winning alternative to cars, turning it into an attractive and cost-efficient solution for the end-users. While TIER was able to run successful joint ticketing pilots with Public Transport Operators, notably in Finland (HSL) and Switzerland (SBB), the industry is bound by fragmented regulations across Europe that do not allow for private MaaS actors to access public transport data sources (APIs), and therefore to resell their tickets. Regulation has a key role to play in granting private MaaS operators across the EU a level of access to public transport data in order to build attractive pricing options for users while ensuring that public transport remains the backbone of MaaS.

As rightly pointed out during the discussions of the 9th Florence Intermodal Forum, data should not be considered the new gold but rather the new water when it comes to MaaS. Like water, data must be accessible. It must be collected, treated, analysed and delivered in a way that brings value to citizens. Unlike gold, everyone needs water to survive. And in a MaaS context, each player needs data to thrive and to bring sustainable outcomes. Treating data sharing like water in the context of MaaS policy-making will

be central to delivering people- and planet-centric mobility systems.

What does Article 10 of the revised Rail Passenger Rights Regulation bring to travellers?

A Comment by Guillaume Teissonniere, eDreams

When buying travel tickets, passengers search for complete information on travel time, price and increasingly on CO₂ emissions. They make their decision based on several factors. As an online travel agent, we provide people with clear information about routes, duration and layovers. However, as independent ticket vendors, we frequently struggle with offering rail products as we encounter significant marketing restrictions from dominant and often state-owned railway companies to distribute their offers in a transparent manner. These dominant transport operators have often been using a strong power in their favour and ultimately prevent passengers from having access to the best rail offers on independent platforms. This ultimately harms consumers since passengers are treated differently based on which distribution channel they choose. We strongly believe that passengers have the right to appoint an agent who will act on their behalf, therefore, they should not be treated less favourably when opting for an indirect distribution channel.

We have been advocating for years for a regulatory intervention so all EU consumers have adequate access to travel services and unbiased travel information. If the EU aims to increase the number of passengers travelling by rail, consumers must be “flooded” with more sustainable options that are easily available through one-stop-shops platforms, such as eDreams ODIGEO, without any hassle. We recall that railway undertakings’ current practices (such as withholding contents) are directly hindering the efforts of the European Green Deal, the Sustainable and Smart Mobility Strategy and the European Commission’s Action Plan to boost long distance and cross-border passenger rail. This is also an obstacle for the development of a more sustainable European transport culture.

Therefore, we very much welcome the revised Rail Passenger Rights Regulation. Its provisions, laid down in Article 10, will improve consumers’ choice as railway operators are required to share real-time dynamic traffic data and travel information with independent ticket vendors. The possibility to have access to all available fares, information on delays, reservations and availability will shake up the rail distribution market and will give it a much-needed boost. More importantly, this would also end the current discrimination between passengers based on their choice of distribution channel.

The regulation applies as of 7 June 2023. All stakeholders need to ensure that everyone is ready. Railway companies must have a plan to be able to grant access to all ticket vendors on a fair and non-discriminatory basis. The European Commission needs to hold Article 10 enforcement to very high standards. National Enforcement Bodies designated under this regulation need to be ready to enforce the provisions of Article 10 in a standard and uniform format across the EU. The European Commission must prevent Article 10 from failing consumers through lack of enforcement.

The principles of Article 10 go beyond rail transport. Equal rights for all passengers also means equivalent rights in all modes of transport and through all distribution channels. The problems also exist in other transport modes. For example, dominant large airline groups are increasingly seeking to disintermediate and discriminate against indirect booking channels. This undermines fair competition among carriers and transport modes. There is no reason why the principles of Article 10 of the Rail Passenger Rights regulation regarding access to content should not be applicable in other transport modes. Such an obligation in all transport modes would also helpfully mirror a similar principle articulated by Recital 16 of the Regulation 1008/2008 on the Common Rules for the Operation of Air Services in the EU which states that consumers ‘*should be able to compare effectively the prices for airlines*’. Consumers’ right to compare prices effectively must be acknowledged. For an

effective comparison, transport operators must give intermediaries comprehensive access to the data (including ancillary and other costs) so consumers are able to conduct a thorough comparison of fares.

Benefits of the uniform application of Article 10 provisions in all transport modes

Consumers

Consumers will, no doubt, benefit the most from the uniform application of Article 10 principles in all transport modes. Access to transport operators' content provides consumers with a wider range of choices. Intermediaries can offer 'like for like' comparisons for consumers who will be able to save money and time. They will be able to easily compare different offers, allowing them to choose and pay for the services they really need.

Competition

Access to transport operators' content based on fair, reasonable and non-discriminatory commercial terms will promote fair competition not only between transport operators but also between transport operators and independent distributors. As a direct consequence of Article 10, incumbent, and often state-owned, transport operators will no longer be able to monopolise access to fares, ancillaries, optional price supplements and charges.

Sustainability

Application of Article 10 provisions in all transport modes is also critical to the development of more sustainable and multimodal travel options. Consumers willing to shift to more sustainable transport modes must be provided with the most competitive choices in one place. Access to transport operators' content provides intermodal competition as intermediaries will be able to display rail, air, coach and other transport modes in a one-stop-shop form. If the right offer is available to consumers, they will be able to make a conscious decision based on timetable, travel time, price and CO₂ emissions.

Mapping the MaaS sector: are specific rules for MaaS platforms needed or advisable?

A Comment by Teresa Rodríguez de las Heras Ballell¹*

The rise of platforms has also penetrated and pervaded the transport sector. Platform-based business models maximise a new vision of mobility and create optimal environments to foster a MaaS approach to transportation: an integrated, innovative, technology-intensive, data-driven, user-centric model.

MaaS platforms stack a layer on the transportation infrastructure aimed to fill gaps and add value. Platforms manage to free from certain limitations of transportation service providers and transport infrastructure with data-driven digital solutions and automated systems.

Mobility platforms operating in the market are growing and largely diverse. A legally relevant typology allows to distinguish between those models based on providing (data) information (informational) and those platforms enabling, partly or totally, transactions (transactional).

The first group comprises searchers, aggregators, recommenders or route-planners. These models' vision is to assist users/passengers to take informed decisions providing access to data (timetable, delays, connections, available trains, bus routes) in planning their trips, personalising or recommending routes on the basis of certain criteria (speed, distance, traffic, sustainability) or even providing combined or interlinked solutions in the absence of interoperable offers by transport providers. The reliability of the information and the accuracy of the recommendation produced by the platform depend on permanently updated data collected from or made readily accessible by transport operators. Additionally, platforms can devise models based on peer-based structures. Then, the perception of accuracy, reliability and immediacy of the available data and/or content (opinions, reviews, recommended routes, warning, delay notices) is bolstered by

the reliance on the 'peer-determined truth'. The burgeoning sharing economy is indeed rooted in that community-based approach.

Informational platforms add value with different strategies. Either they help users (passengers) to reduce transaction costs (searching, verifying, updating, comparing) by centralising, aggregating, comparing data through a single point; or they produce new customised data in the form of recommendations, ratings, preferred routes or personalised options. More and more business models lend toward the latter vision, these mobility digital services gain individuality. They become vital for the mobility sector and fundamental for passengers. An additional layer, with infrastructural value, is stacked on the traditional transportation infrastructure.

In the second category, platforms enable directly or indirectly the users to conclude transactions related to mobility services. Therefore, they are transactional platforms. To achieve the transactional purpose, platforms may adopt diverse legal structures. From simple models where platforms redirect users to the different operators, but ensuring that the transaction is completed within the platform; to more sophisticated models where the platforms do fully integrate the multiple ticketing channels acting as a single operator vis-à-vis the user (passenger). Strategic consequences on the user's engagement, the benefits of data aggregation, and the brand position in the market differ across the different models. Besides, technical considerations are also relevant. Higher integration may require higher levels of interoperability of the systems, or access to ticketing systems is based on licenses agreements. But legal implications are crucial and must be carefully considered.

Platform operators may potentially act as mere digital intermediaries redirecting users to each operator – hard to be distinguished from pure informational platforms; or as authorised distributors and resellers; or as genuine (multimodal) mobility service providers. The assessment has to be on a case-by-case basis carefully taking into consideration the functions performed by

¹ * Professor of Commercial Law, Carlos III University of Madrid, Madrid, Spain. Email: teresa.rodruiguezdelasheras@uc3m.es.

the operator (platform design), the contractual structure, and the algorithmic governance.

More advanced transactional platforms integrate into value chains and to a certain extent reshape them. Even more enticing is the possibility that platform operators become multimodal mobility service providers themselves, irrupting as new actors in the mobility sector. Platform users are then passengers and the platform interposes between the passenger (its user), and transport operators. That would have a direct impact on the regulatory perimeter.

MaaS platforms are first governed by the EU rules on platforms (P2B Regulation, DSA, DMA), where applicable. Besides, to the extent that a MaaS platform can be categorised as an actor in the mobility/transport sector, the relevant legal regime will apply.

So, are specific rules for MaaS platforms needed or advisable? In particular, should stricter liability rules, deviating from the general liability exemption, be adopted for MaaS platforms on grounds of the essentiality of the services?

Departing from the general liability exemption on a sectorial basis may fragment the market and misplace incentives. That may be especially inconvenient if services are bundled, comingled and mixed and therefore, lines demarcating traditional sectors blur. What is lacking now is a regulatory approach mindful of the infrastructural power of platforms. Should the platforms' intermediation infrastructure mediate, control, screen, and define how users (passengers) find, select, access, use, and trust (or mistrust) traditional infrastructure for the provisions of mobility services, the intermediation infrastructure becomes as critical and essential as the former. The policy objectives (universality, affordability, security) underpinning the regulation of traditional infrastructures for essential services across sectors should then be mirrored in the regulation of the digital intermediation infrastructure to the same extent. Thus, a regulatory approach that acknowledges the infrastructural power of platforms in certain sectors might effectively replace a sector-specific deviation from the

general rules on platforms solely on grounds of the sector.

FSR Transport

The Florence School of Regulation (FSR) is a project within the European University Institute (EUI) focusing on regulatory topics. It works closely with the European Commission, and is a growing point of reference for regulatory theory and practice. It covers four areas: Communications and Media, Energy (Electricity and Gas), Transport, and Water.

The FSR-Transport Area's main activities are the European Transport Regulation Forums, which address policy and regulatory topics in different transport sectors. They bring relevant stakeholders together to analyse and reflect upon the latest developments and important regulatory issues in the European transport sector. These Forums inspire the comments gathered in this European Transport Regulation Observer. Complete information on our activities can be found online at: fsr.eui.eu

Robert Schuman Centre for Advanced Studies

The Robert Schuman Centre for Advanced Studies (RSCAS), created in 1992 and directed by Professor Erik Jones, aims to develop inter-disciplinary and comparative research on the major issues facing the process of European integration, European societies and Europe's place in 21st century global politics. The Centre is home to a large post-doctoral programme and hosts major research programmes, projects and data sets, in addition to a range of working groups and ad hoc initiatives. The research agenda is organised around a set of core themes and is continuously evolving, reflecting the changing agenda of European integration, the expanding membership of the European Union, developments in Europe's neighbourhood and the wider world.

www.eui/rsc

© European University Institute, 2022

Editorial matter and selection © Juan Montero, Matthias Finger, Teodora Serafimova, 2022

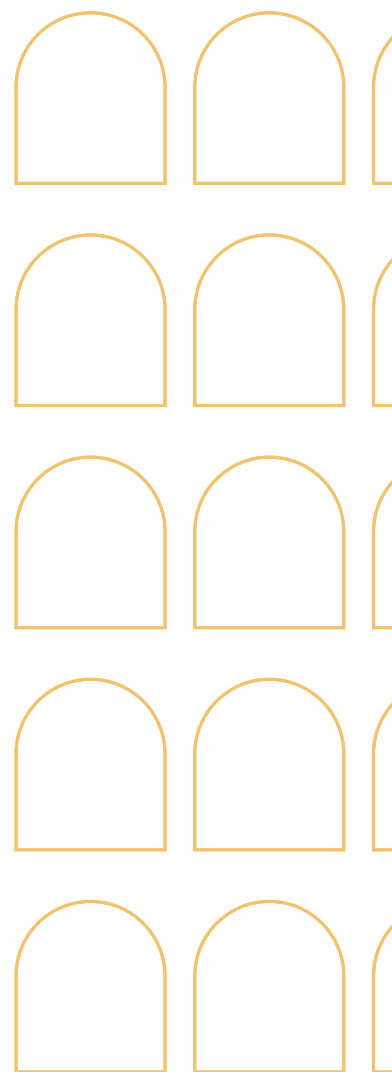
This work is licensed under the [Creative Commons Attribution 4.0 \(CC-BY 4.0\) International license](https://creativecommons.org/licenses/by/4.0/) which governs the terms of access and reuse for this work. If cited or quoted, reference should be made to the full name of the author(s), editor(s), the title, the series and number, the year and the publisher.

Views expressed in this publication reflect the opinion of individual authors and not those of the European University Institute.

Published by
European University Institute (EUI)
Via dei Roccettini 9, I-50014
San Domenico di Fiesole (FI)
Italy



Co-funded by the
Erasmus+ Programme
of the European Union



doi:10.2870/784917
ISBN:978-92-9466-242-2
ISSN:2467-4540
QM-AX-22-044-EN-N