

Independent Regulators' Group – Rail

IRG – Rail

Task force on multimodality in transport

Mobility as a service (MaaS) – An overview

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Abstract

The paper presents an overview of MaaS services in several countries of IRG-Rail members. It also reports on other forms of transport services integration, namely by means of through ticketing. Upon examining the outcome of a survey used to gather relevant evidence, it is found that a definition of MaaS implying the integration of different mobility and transport services in a single, comprehensive, and on-demand mobility service does not capture the variety of digital mobility services which are already in operation or being tested and of interest for regulators. Some case-studies are highlighted in boxes. The paper highlights opportunities and risks associated with the operation of MaaS and suggests that clear obligations should be in place to ensure, among others, that the gathering and sharing of data for the operation of MaaS services is consistent with the rules governing the operation of relevant markets, including rail. Furthermore, it points towards the need for regulators to be equipped under EU and/or domestic law to address emerging regulatory issues. The following regulatory bodies provided evidence referred to in this paper: ACM (NL), AMT (PT), ART (FR), ART (IT), BNetzA (DE), CNMC (ES), DOPRAVNY URAD (SK), HAKOM (HR), JBN (DK), Communications Regulatory Authority of the Republic of Lithuania (RRT), ILR (LU), Konkurentsamet (EE), ORR (UK), RAS (GR), SIT (NO), SRTF (BE), TIM (HU), Rautatiealan sääntelyelin (FI), Transportstyrelsen (SE).

Table of contents

1	Introduction	3
2	Scope of the paper and definitions	4
3	Methodology and structure of the questionnaire	7
4	Findings of the survey	8
4.1	Institutional profiles	8
4.2	MaaS experiences	9
4.3	Mobility platform other than MaaS	11
4.4	Through-ticketing	15
5	Wrap-up	16

1 Introduction

1. Throughout Europe and beyond, multimodal initiatives and infrastructure projects provide the environment within which mobility services integrating different modes of transport are becoming increasingly diffused¹. They include shared and micro-mobility services, but also traditional means of transport, such as railways. Hence, IRG-Rail interest in exploring how this phenomenon intersects the interests and scope of action of rail regulators.

2. In this context, Mobility as a Service (hereinafter “MaaS”) gains salience both as a concept, as “a new layer of digital integration overlaid on the existing transport systems and potentially introducing new forms of cooperation and integration between mobility providers”, and as a trait that characterises the digital services provided under it². As a concept, MaaS is referred to in policy documents. This paper focusses on current examples of services actually provided or planned under the heading of MaaS.

3. While integrated mobility services mostly serve local or regional areas, they can also operate on a larger scale. Additionally, integration frequently concerns land transport services (for instance, rail and bus services), though land (rail or road) and air or sea transport services too are integrated in some instances; in other cases, integration extends to services other than transport (tourism, culture, entertainment, etc.).

4. By providing an alternative to using private means of transport, i.e., private vehicles, MaaS services can help reduce congestion and carbon emissions overcoming constraints in transport capacity, particularly in urban areas. Integration across a range of different forms of efficiencies, in general time, supported by digital technologies and bundled products is deemed to reduce ownership and use of individual vehicles³. Thereby these services effectively underpin the pursuit of greener transport policies; they entail extensive application of new technologies and, not least, enable the provision of targeted response to emerging and unmet mobility needs and demand.

5. For companies, MaaS can provide new business models and ways to organise and operate transport; as such they are regarded as instrumental to extending the pool of the potential users of the services provided by participating enterprises⁴. For local governments and transport authorities,

¹ For a recent overview of such initiatives, see European Mobility Week, 16-22 September 2022, *Mix and move, Thematic Guidelines 2022. Better connections*, at <https://mobilityweek.eu/home/>. The French project Grand Paris Express is quoted among others for, in addition to the creation of new metro lines, it will promote the offering of new multimodal services including both transport and other services.

² ITF-OECD, *Integrating transport in mobility as a service*, ITF Roundtable n. 184, 2021, p.8.

³ D.A. Hensher, C. Mulley, c. Ho, N. Wong, G. Smith, “Understanding Mobility as a Service (MaaS); past, present and future”, London, Elsevier, 2020, pp. 33 ss.

⁴ Over the past few years, an extensive body of literature, policy documents and other materials, have explored the characteristics and potential of MaaS services. Already in 2016, a research document produced for the European Parliament (The world is changing, transport too, available at <https://op.europa.eu/en/publication-detail/-/publication/4a55a7c8-e10d-11e5-8a50-01aa75ed71a1>), sketched out emerging examples of digital mobility services and begun to discuss the opportunities that could be offered by the integration thereof. A useful literature review up to 2020 is that of D. Arias Molinares and J. Garcia-Palomares, *The Ws of MaaS: Understanding mobility as a service from a literature review*, *IATSS Research*, Vol. 44, Issue 3, October 2020, pp. 253-263 at <https://doi.org/10.16/jatssr.2020.02.001>

MaaS open up valuable information on travel behaviour and on service demand and usage which, in its turn, may be used to better design transport policies. Alongside novelty, however, come regulatory challenges.

6. Within the EU, MaaS provide examples of multimodal digital mobility services (MDMS), which are the object of a legislative initiative of the European Commission that is ongoing within the framework of the *Smart and Sustainable Mobility Strategy*⁵.

7. Against this background, this paper presents an overview of MaaS services planned or in operation in several countries of IRG-Rail members. Although it does not aim at providing a comprehensive illustration of developing mobility solutions, alongside some examples of MaaS, it also reports on other forms of transport service integration, namely by means of through-ticketing services.

2 Scope of the paper and definitions

8. Different definitions of MaaS services are being framed and becoming established, though none is universally adhered to by commentators. In most instances, the degree of integration of the services provided under each MaaS constitutes an essential component thereof and is used to classify them⁶.

9. MaaS services enable a user to plan, book, and pay a complete trip or obtain other transport services involving use of multiple transport means and modes (public transport, bus, tram, metro, railway, taxi, car sharing, bike sharing, moto sharing, e-scooter sharing, on-demand public transport, ride-hailing, ridesharing, long-haul bus, park & ride, car rental, etc.), if possible based on own individual preferences and on real time information (for an example, see Box 1 below).

and, more recently, B. Maas, *Literature review of mobility as a service*, in *Sustainability* 2022 (July), 14, 8962 at <https://doi.org/103390/su14148962> based on a review of 127 scientific publications about MaaS. Arthur D. Little and UITP, *The Future of Mobility 3.0 - Reinventing mobility in the era of disruption and creativity*, March 2018, available at https://www.adlittle.com/sites/default/files/viewpoints/adl_uitp_future_of_mobility_3.0_1.pdf. Also, several think-tanks are being set up to contribute to the framing of policies at the EU and national levels, such as MaaS alliance (<https://maas-alliance.eu/>), Polis (<https://www.polis-mobility.com/>), Cerre (<https://cerre.eu/>), MaaS 4 EU (<https://www.maas4eu.eu/>), to mention only some.

⁵ Communication from the Commission to the European Parliament, the Council, the European economic and social Committee and the Committee of the Regions, *Sustainable and Smart Mobility Strategy – putting European transport on track for the future*, COM (2020) 789 final, 9 December 2020.

⁶ J. Sochor, H. Arby, M. Karlsson, S. Sarasini, *A topological approach to Mobility as a Service: A proposed tool for understanding requirements and effects, and for aiding the integration of societal goals*, ICoMaaS Proceedings, 2017, p. 187-208, at https://www.lesscars.it/wp-content/uploads/2020/06/SOCHOR-ICoMaaS_Proceedings_S6.pdf, for instance, propose a five-level model of integration whereby at level 0 no integration is offered; at level 1 information (including on pricing) is integrated to enable the planning of multimodal travel; at level 2 booking and payment is also integrated, though for a single trip; at level 3, services are actually bundled or travel passes are offered; at level 4, integration extends to public policy objectives and instruments such as incentives, discounts, etc.

Box 1 - A MaaS example: Whim in Helsinki and elsewhere

Whim (<https://whimapp.com/>) combines in a single app different public transport services. It is operated by the Finnish company MaaS Global. First launched in Helsinki in 2015, Whim later started operations in Turku and, later still, in other countries, cities and areas (Belgium, West Midlands in the UK, Austria, Switzerland) where the combination of tickets and services offered may be different. Consultation with public transport authorities in Tokyo is also under way.

In Helsinki, the app enables the user to buy tickets, order taxis and hire a car or bike. Tickets bought through Whim may be single, serial or monthly subscriptions and include discounts for certain categories or groups of users. Notably, public transport subscriptions bought through Whim have the same prices with Whim that they have with the local public transport operator. Whim permits to buy a seasonal city bike or monthly scooter subscription, while paying-as-you-go is also possible. In addition, it offers discounted taxi rides from many companies. Taxi rides have dynamic pricing; however, the user is informed of the price before confirming the order. Users holding a Whim subscription or plan may also hire a car. For heavy users, in Helsinki Whim has a comprehensive unlimited Plan costing 699 Euro per month. Whim Unlimited users can use public transport, city bikes and scooters as much as they wish, or they can hire a car without extra charges or have 80 costless short-distance taxi rides.

10. At the outset of work for this paper, based on publicly available sources, MaaS was meant to imply the integration of different mobility and transport services in a single, comprehensive, and on-demand mobility service (figure 1)⁷. As it will be shown, however, the reality of digital mobility services is far more articulated and requires a broader definition. Consider, for instance, the case of the Kyyti technology that, through a demand responsive transport (DRT) platform, enables planning, design and deployment of customer-branded turnkey solutions for municipalities, public transport authorities, transport operators and corporations.

11. As mentioned above, digitalisation of service management and delivery is another characteristic of MaaS. Indeed, intermediation of services through a digital gateway (platform) constitutes a constant feature of MaaS services. Platforms, in their turn, may be structured to address different mobility needs, provide solutions, and operate a single payment system⁸.

12. Indeed, there are multiple examples of digital intermediation of mobility services through a platform, and digital service intermediation (DSI) in transport constitutes *per se* a business model relevant for regulatory purposes. Given its current scope, this paper focusses on those instances in which DSI services integrate the provision of a MaaS service according to the definition above; however, in the light of the broad ranging scope of MaaS service, it also presents relevant examples of other DSI services.

⁷ Definition provided under MaaS alliance at <https://maas-alliance.eu/homepage/what-is-maas/>

⁸ These include *personalised journey planning*, based on the individual's needs or preferences; *multi-modal travel* that provides access to integrated journeys from A to B, whether that's via a single mode or a combination of modes; *easy wayfinding* that provides real-time and accurate information to navigate between different modes and locations; *real-time information* that keeps the user informed about the service, thus minimising anxiety and providing confidence; *disruption re-routing* which enables to change mode, route or timing of the journey in case of disruption on the network, *integrated ticketing and payment* which enables the one-stop-shop approach for all mobility needs of the user. The platform may also provide the user to book and pay for multiple modes of transport and have access to the tickets.

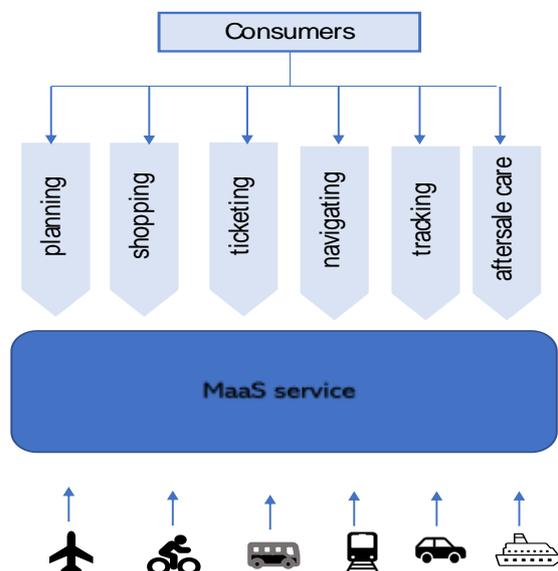
13. Another recurrent component of a MaaS service is the integration of tickets pertaining to the different components of the service. Depending on the model under consideration, underlying tariffs may or may not be integrated, hence the interest in pursuing work on MaaS' pricing models.

14. In this paper, the respective scope of integrated ticketing and MaaS is emphasised to highlight that, although both imply the sale of more than one ticket for different "legs" of the trip or transport services through a single access point, the former may still be offered by traditional non-digital means and does not usually refer to user-tailored services. As regards through-ticketing, while the concept refers to the sale of a single ticket for a combination of multiple legs of transport services, it does not entail multimodality.

15. While the categories of integrated- and through-ticketing cannot be equated to a MaaS service and may instead constitute a component thereof, both recur among ongoing commercial practices of transport companies. This includes railway undertakings and so fall, though in different ways, within the scope of EU rail legislation.

16. IRG-Rail too has devoted some attention to them⁹. As such, though not constituting the focus of the present paper, some relevant experiences are reported below.

Figure 1 – A representation of MaaS



⁹ See, *Overview and challenges — integrated ticketing and through ticketing measures in the EU*, November 2021, <https://irg-rail.eu/download/5/897/IRG-Rail202111-OverviewPaperonTicketing.pdf>.

3 Methodology and structure of the questionnaire

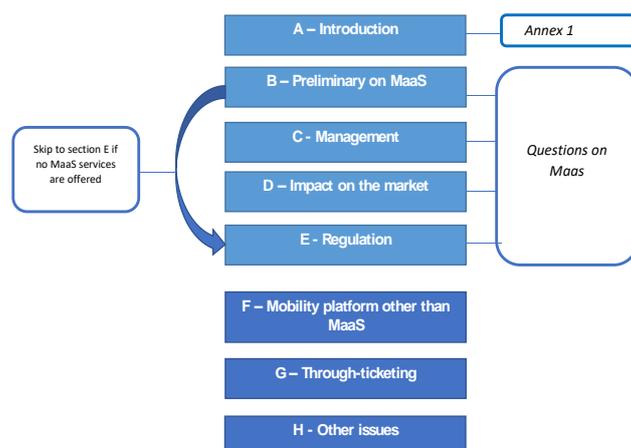
17. To gather evidence on current experiences with MaaS, and identify relevant regulatory issues, a questionnaire was distributed to IRG-Rail members. The questionnaire was structured in eight sections.

18. The introductory section was aimed at mapping out basic information on the areas of competence of member regulatory bodies both *within* and *beyond* rail regulation and covered modes of transport other than rail. Building on earlier work on multimodality, participants were asked to update information provided in schematic form; in particular, this sought to integrate the evolution brought about in transport and mobility by the digital economy (Annex 1).

19. Specific questions on MaaS services in operation were set out in the following sections focussing, respectively, on the type of services concerned (section B), the role of the entity or entities responsible for the development and management of MaaS services (section C), their impact on individual transport and mobility markets (section D) and the regulatory issues that MaaS services may raise (section E). Where no specific experience with MaaS could be reported in section C, respondents were requested to move on to section E.

20. Section F focussed on mobility platforms other than MaaS. It targeted evidence on experiences of service integration provided by different means of transport which do not, however, consist in MaaS services and instances in which digital mobility providers offer, through platforms, transport services other than MaaS. Section G concerned through-ticketing, while a final, open section H aimed at collecting any other views that IRG-Rail members wished to report on the issues dealt with.

Figure 2 - Structure of the questionnaire



21. To date, eighteen of the thirty-one IRG-Rail members have responded to the questionnaire; the information they reported is illustrated below. Significantly, experiences in their respective countries differ widely, with digital mobility service being offered in all of them but with a significant variation in the degree of integration of services.

22. While participation in the exercise indicates the interest of IRG-Rail members in the topic, only few of them are directly involved in the regulation of individual components of MaaS other than in the rail area and regulate mobility services. As a result, some examples are provided based on publicly available sources rather than on direct first-hand accounts. Further, except where expressly indicated, the examples referred to do not reflect an institutional involvement of regulatory bodies.

23. Mindful of the caveats above, several issues of interest remain to be explored in their practical application, some of which already discussed in literature. These include: How similar will MaaS services look across countries? Will a need to regulate them emerge and, with it, a need to harmonise regulation? Which pricing models will apply? This is to mention only some, which are not dealt with in this paper.

4 Findings of the survey

4.1 Institutional profiles

24. The aim of this section of the survey was to sketch out the perimeter of regulatory bodies' activities in individual non-rail components of MaaS services. 11 out of 19 participants confirmed that, in addition to rail, they are entrusted with competencies in other areas of mobility and transport, mostly land modes.

25. Only ART-FR and AMT, however, stated that they have been entrusted with some competences to regulate digital mobility services and systems such as those operating ticketing and mobility support systems and operators of electronic platforms who provide mobility services or intermediate them (further details in Box 2 below). A few RBs indicated that responsibility to regulate the operation of digital markets, including in the transport sector, rests with national competition and antitrust authorities.

26. Another respondent pointed out that, even if a direct competence is not attributed to rail regulators at the domestic level, art. 56.9 of Directive 2012/34/EU of the European Parliament and of the Council, of 21 November 2012, establishing a single European railway area (recast), as later modified, contains provisions which might be sufficient for the regulatory body to intervene on issues related to digital markets on a case-by- case basis.

27. Some respondents indicated that the award of ad hoc competences might be needed, especially as regards the supervision of national data access points provided for under regulation (EU) 2017/1926 of 31 May 2017 supplementing Directive 2010/40/EU of the European Parliament and of the Council regarding the provision of EU-wide multimodal travel information services. In one of the two cases mentioned above (para. 25), the regulator has also been designated as the authority in charge of assessing the compliance of transport authorities, operators, on-demand service providers and travel information services with the requirements set out in the legislation mentioned above. In a different case still, the fact of having been assigned the same tasks has not led to entrusting the relevant regulatory body with competence in the area of digital mobility services.

28. Concerning the rights of users and passengers, nine respondents indicated that they are directly entrusted with this responsibility, two of which are in several transport modes. The nature, mode of exercise and extent of such competencies varies from case to case.

Box 2 - Digital mobility: institutional profiles. The examples of AMT-PT and ART-FR

AMT-PT

AMT regulates and supervises the mobility sector including road, rail, sea and inland waterway transport, infrastructure, and services, it is entrusted with the protection of users and passengers' rights and interests and promotes the pursuit and defence of social goals related to transport and mobility. AMT is the national enforcement body in charge of the enforcement of EU regulation concerning the rights of passengers travelling by rail, bus and sea and inland waterways. Within its scope of action, regulated entities include, among others, those that manage ITS and services, namely, ticketing and mobility support systems, including operators of electronic platforms, which directly provide mobility services or are intermediaries thereof. For instance, AMT has competences concerning digital platforms that intermediate services provided by rent-a-car, sharing, taxis and ride-sharing companies (like UBER, BOLT, Free Now, etc).

ART-FR

As of 2019, domestic legislation (*loi d'orientation des mobilités*) granted the French regulatory body some competences regarding the digital mobility system. In particular, ART-FR has been designated to ascertain compliance of transport authorities, operators, on demand service providers and travel information services with the obligation to provide access and update static and dynamic travel and traffic data through the dedicated National Access Point (<https://transport.data.gouv.fr>) as well as to exchange and reuse these data, possibly by linking travel information services) as per Commission regulation 2017/1926. ART-FR has also been granted specific competences regarding multimodal digital services.

4.2 MaaS experiences

29. In responding to the survey, many examples have been provided of services treated as MaaS. When looking at the details of individual schemes, nonetheless, in some cases, planning of a multimodal trip is provided but without a single payment system for the purchase of the different transport services. In other cases, ticket integration does not result in the provision of a single mobility service. In others still, digital mobility platforms include information, booking, payment and partial or total after-sale care but only for individual modes of transport. A respondent qualified as MaaS services those rendered by digital travel agencies which include transport in their tourism offer. In one instance, the company concerned neglected the MaaS denomination outrightly preferring to be referred to as on-demand digital mobility services.

30. As a result, very few services in operation or being experimented in the respondents' countries would qualify as a MaaS according to the definition above. A preliminary output of the questionnaire rather points to embracing a broader notion encompassing all categories and types of digital service intermediation which have a potential to alter the functioning of the underlying service markets, including transport. Such a broader notion, moreover, does not seem to affect the relevance of the topic for rail regulators.

31. A recurrent feature of the schemes presented in the answers to the questionnaire is that they benefit from public support, particularly in their infancy and experimental stage, insofar as they are explicitly related to the pursuit of public policy objectives, In addition, these schemes enable

integrated ticketing reservation and payment and also provide additional services that characterise individual platforms. The modes of transport included in the integrated service are mainly urban rail, bus, and metro, smart mobility services, such as bike and car sharing, and taxi.

32. From a management point of view, some participants indicated that MaaS services are provided in their countries by both private and public entities. Most integrated ticketing products for public passenger transport services, are managed by public entities, whilst other services based on digital platforms tend to be managed by private entities. The role of the MaaS service manager, be it public or private, is to integrate the transport and ancillary services into one package and set the rule of operation, including pricing.

33. Concerning the impact on the demand side of the market, respondents confirmed that there is an expectation that MaaS services provide easier and better-informed interaction between users and mobility systems and help address low-demand services and associated costs. Also, increasing availability of data through MaaS may improve the monitoring, management, quality, and planning of mobility services (for instance, by reducing congestion, overcrowding and travel time for commuters), thereby also promoting a more interoperable and integrated transport system. As a result, it is expected that MaaS services may bring about improvements for customers, positively contribute to the modal shift by making public transport services more attractive (in particular, by offering door-to-door solutions), and increase demand, service quality and service satisfaction. Though, based on the responses to the survey, there is no clear evidence of the latter effects, views seem to converge on the above.

34. For most regulators it is key that MaaS services include available public service obligation (hereinafter, PSO) services, particularly in large cities. Providers should include these services in their product and non-discriminatory charges and access conditions for interested companies should apply. In one case it was pointed out that, under domestic legislation, transport providers with a PSO contract are already required to offer some of their transport services through MaaS providers for not more than their own retail price, although the obligation has not prevented the occurrence of demands to lower access prices. One regulatory body pointed out that, in its country, while MaaS providers are all private companies, the services they provide typically include those of the incumbent railway undertaking, of the transport companies of the major cities and of regional rail companies. Concerns are also expressed about the fact that, as mentioned above, some operators have access to public subsidies; to address them, the keeping of separate accounts may be required.

35. As regards the regulatory aspects, it is widely felt that the absence of a shared appreciation of the relevant regulatory terms and of jurisprudence on the subject could lead to possible disputes and complaints between users and operators of the different components of the MaaS service with the MaaS manager; the award of specific/dedicated competencies to an independent regulator to resolve them may ease this difficulty.

36. Respondents also indicated their concern that by using AI algorithms that could promote given services or condition the operation of the market, some MaaS players might take advantage of their

position as data collectors. For instance, should a MaaS provider also own large transport providers, it may have no incentive to let competing companies in its scheme. Not least, the MaaS operator might be tempted to promote profitable transport modes rather than sustainable ones. Art. 8.2 of regulation 2017/1926 provides that MaaS managers use travel and traffic data “in a neutral manner”, “without discrimination or bias”, and ensure the application of “transparent” criteria¹⁰.

37. Like in many other areas, in that of digital mobility services too, the treatment of data raises regulatory issues. In this regard, one regulatory body pointed out that, should a role be identified for central or local governments in the development of MaaS services which should stem out of market-base initiatives, this could be that of providing an example of proactive interface-building and data sharing.

38. Respondents who expressed the view that specific European and/or domestic legislation was necessary to implement MaaS services including rail, whether it *ad hoc* or by amending existing legislation, also pointed to the need to develop provisions covering different modes of transport in line with the multimodal nature of such services, apt to cater for cross-border travel and including basic rules enabling the integration of services other than transport or mobility services. Dedicated rules could govern the sale of aggregated services, stipulate requirements and responsibilities for each of the parties and for the product as a whole.

39. Emphasis was also placed on a more general need to develop a common legal framework to guarantee interoperability, data exchange, and consistent protection of users’ rights. A similar reasoning applies to regulating platforms, in which case the existence of discrete legislation for different modes of transport renders supervision more difficult with possible negative consequences for users. Regarding the adequacy of existing EU or national legislation to protect the rights of passengers (in particular, the rights of passengers with disabilities or reduced mobility) using several modes of transport, while some regulators consider that the provisions already in place are adequate, others believe that the current sector-based EU regulations do not ensure effective protection of passengers’ rights where the journey is made by several transport means. For instance, managing the rerouting of travellers in the event of disruptions on one of the travel segments, which is crucial to allow the success of MaaS, appears to be very complex and EU regulation on passengers’ rights (unlike that on travel agencies) does not seem to provide for appropriate tools in this respect.

4.3 Mobility platform other than MaaS

40. As mentioned above, besides actual MaaS services, the survey contained a section on digital mobility platforms providing intermediation between providers and users for other types of services such as, for instance, single-mode ticket-vending or integrated ticketing of services provided by different modes. Platforms do not necessarily integrate mobility modes but only provide for ticket

¹⁰ The example is quoted of the criteria used for ranking travel options of different modes. “Recommended” and “Best choice” criteria could be used without clear-enough and transparent definitions of these criteria.

sales (even though for multiple transport modes) and each service provider remains solely responsible for its own part of the journey.

41. Almost all participants reported that such digital platforms operate in their respective countries regardless of whether MaaS are in operation. Rail transport operators and services extensively recur amongst, respectively, the intermediaries and intermediated services provided by such platforms. A rather unique case displaying specific features is presented below in Box 3.

Box 3 – The case of Luxembourg

In Luxembourg, the multisectoral regulator ILR regulates railways and airport charges; an integration of the two transport modes is not explicitly foreseen, nor is an analysis of MaaS for regulatory purposes, at least in express terms. Nevertheless, Luxembourg presents several peculiarities that influence passenger mobility and potentially empower the use of different transport modes as a (single) service.

First, national passenger mobility in public transport (PSO offer) is free of charge for all passengers and may be used without prior purchase of a ticket nor reservation (<https://mobilitegratuite.lu/en/>). This enables passengers to use trains, tramways, buses and the funicular in a very flexible manner. The use of commercial trains (non PSO), on the other hand, requires possession of a valid fare ticket. 1st class tickets in PSO trains and cross-border transport are also not free of charge.

Secondly, all mobility modes are managed by a dedicated administration of the ministry for mobility and transport and presented as a single service to the public through a unique terminal (<https://www.mobiliteit.lu>) which allows searching an optimal route by different means of transport. The search results present the user with alternatives, combining multiple transport modes and cost, duration, and ecological impact depending on the means of transport used. This tool includes among others, pedestrian routes, bike usage (showing elevation profiles), cars (electric and thermic, honouring time as well time required for access and parking search), buses, funicular, tramways, and trains. Ticket booking and reservation are not integrated; however, insofar as the services is free of charge integration may not be needed.

A centralised mobility planning platform displays data in an user-convenient way; mobility data is also publicly accessible via the state's public open-data platform (<https://data.public.lu/en/topics/transport/>) and public API's (<https://data.public.lu/en/datasets/api-mobiliteit-lu/>) in order to enable use by third parties.

The modes that are not free of charge (e.g., taxi, bike rental, commercial train operation) need to be reserved in a non-integrated manner via the respective applications.

Notably, cross-border traffic is not covered by the gratuity of transportation which may affect and distort the use of transport modes, especially in the context of Luxembourg being a territory highly reliant on foreign daily commuters from Belgium, France, and Germany. Planning for regional cross-border traffic is nevertheless integrated.

Other applications for route planning are being offered by transport providers; however, they mostly focus on the respective transport mode offered.

42. Eight respondents highlighted that intermediation of mobility services may raise regulatory issues and potentially affect the operation of the rail market. These issues mostly relate to the collection and sharing of data through apps, the accountability of platforms in handling the complaints of users and the need to ensure equitable and non-discriminatory access to the platform by interested parties.

43. It was pointed out that, while an incumbent operator with a large consumer base has an advantage in offering tickets through a proprietary digital platform, newly established companies might have incentives in selling their tickets through the incumbents' platform, to reach potential passengers. The incumbent, in its turn, might request a fee for using its digital ticketing platform and even select the railway undertakings to which to grant access. In addition to paying for access,

newcomers will also be forced to share route and other data with their competitors. An interesting example of the avenues that such practices may follow is described below in Box 4.

Box 4 - The central ticketing system and the Entur company in Norway

With effect from 1 January 2018, Norway introduced national regulation on ticketing for railway transport that obliges railway undertakings to utilize a centralized travel information and ticketing system organized under a company owned by the Ministry of transport, Entur AS, and called Entur ("One Trip"). Entur AS tasks are specified by the Railway Directorate, a directorate organized under the Ministry of transport, which is also the competent authority procuring public services on the national railway network in Norway. Railway undertakings must pay a fee for joining and use of an electronic ticketing support system. The regulation facilitates travel information and tickets to be available for consumers through the state-owned Entur-platform.

Entur AS has launched a travel planner and distribution channel for tickets encompassing a web portal and an app (tickets are purchased through the app). The regulation on ticketing establishes obligations for railway undertakings to submit travel data and utilize systems as specified/approved centrally. The Railway Directorate has furthermore included obligations concerning ticketing in their PSO-contracts with railway undertakings.

The Entur-system does not mean that operators that are obliged to send travel information and sell tickets through Entur cannot offer these services through their own platforms. As an illustration, the tickets of Vy (the incumbent), SJ Norge and Go-Ahead are available for purchase through the Entur app but are also sold through the companies' own platforms. Other modes of transportation, for example bus and ferry, can choose to use Entur as a ticket distributor and be included in their travel planner. Only railway undertakings are obliged to use Entur. However, there have been some challenges concerning Entur.

Even though Entur is the centralized travel information and ticketing system in Norway, Vy's route planning and ticketing application is the most used one. Railway undertakings have experienced challenges with Entur's app. One example is that this travel planner has excluded or not prioritized train routes and primarily suggests other modes of transportation, such as, for example, buses. In addition, the incumbent has an advantage in offering tickets through its digital platform since it has a large consumer base and high marked recognition. As a result of Entur's challenges and lower market recognition the newly established companies find it necessary to turn to Vy's platform to sell their tickets. Vy agrees to sell the other companies' tickets for a fee, meaning that the newly established companies pay a fee to both Entur and Vy. In addition, the incumbent can choose which railway undertakings to include in their digital ticketing platform. This leads to a situation where newcomers might experience higher barriers to entry. The railway undertakings that sell their tickets through the incumbent's platform must share route data with their competitors and the incumbent might use the newcomers' route information to its advantage.

The regulatory body in Norway has warned the competent authority about the negative effects this may have on competition in the railway market.

44. A case reported in the press concerns the ongoing complaint lodged before a national competition authority by the operator of an online booking platform; the latter is arguing that the domestic and vertically integrated incumbent rail company has shared delay data exclusively with one internet company. To date the national competition authority has come to the preliminary conclusion that certain practices and contractual clauses used by the rail operator concerned in relation to mobility platforms constitute an abuse of market power. At the time of writing, the case is ongoing (see Box 5 below).

45. Other regulators too stressed that an intermediary with too much market power could discriminate between transport operators based on the expected profitability of their relationship. Others still confirmed that the ability of railway undertakings (in particular, national incumbent companies) to access relevant data, including commercial conditions, is key for the development of

these platforms. On the competition side, exclusivity clauses and sales commissions may be an issue (on the latter issue, among others, see Box 6 below).

Box 5 - The Bundeskartellamt–DE – A preliminary decision on certain practices by Deutsche Bahn

In Germany, the Bundeskartellamt has come to the preliminary conclusion that certain practices and contractual clauses used by Deutsche Bahn (DB) in relation to mobility platforms constitute an abuse of market power (press release at https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2022/20_04_2022_Bahn.html).

Mobility platforms mainly offer online solutions for integrated route planning for which rail transport plays an important role. For example, mobility platforms allow passengers to combine train tickets with flights, carsharing, long-distance coach services or rental bikes. For these kinds of services, DB does not provide forecast data on passenger rail services, such as information on delays, the progress of a journey, cancellations or platform change, which are essential for the development of such services. DB's contractual restrictions addressed in the proceeding cover bans on advertising, price specifications for passenger tickets, far-reaching bans on discounts and possible discrimination against some mobility platforms with regard to the commission rate paid for ticket sales.

Access to forecast data on railway services in Germany, such as information on delays and cancellations, is also important for mobility providers, but DB has so far refused to make such data available. However, this data cannot be obtained in any other way. The investigation results so far have shown that this forecast data on passenger rail services is crucial for organising and booking intermodal mobility chains, that is journeys including different means of transport. At present, DB reserves this data for itself and for a few selected mobility service providers such as Google.

Based on the current results, the restraints of competition also affect the interests of other transport companies which can also be found on the platforms of DB's online partners. Especially for the significantly smaller and lesser-known railway companies in Germany, mobility platforms can be an important channel to increase their reach and win customers for their transport services. If, however, passengers are always directed to DB's channels, either directly or indirectly, alternative transport companies can reach only a few potential customers with their transport offers and DB's market power is further strengthened also in the transport markets.

DB and mobility platforms admitted to the proceeding are now given the possibility to comment on the Bundeskartellamt's preliminary findings.

Box 6 – ACM-NL – Enquiry in a joint venture to create a MaaS

In July 2020 ACM cleared the creation of a digital mobility platform between Dutch Railways NS and the municipal public-transportation companies in the three largest Dutch cities, Amsterdam (GVB), Rotterdam (RET) and The Hague (HTM), providing several strict conditions are adhered to. On their proprietary digital platforms, MaaS-providers combine different transportation services (such as train, bus, subway, car-sharing programs, and bike-sharing programs) as well as related services such as travel information and payment services. The four transit companies in question wanted to create a joint platform that connects transit operators with MaaS-providers in a technical manner. NS, GVB, HTM and RET are active as transit operators (they offer public-transportation services and, for example, bike-sharing programs). In addition, they are also MaaS-providers or wish to become one. To address anticompetitive concerns, NS, GVB, HTM and RET have committed to offering other mobility providers and MaaS-providers access to the platform under equal conditions. In that context, they will not demand exclusivity. In addition, the four companies will make their transit services (bus, tram, subway, and train services) available to MaaS-providers, regardless of whether these MaaS-providers are connected to the platform. They will apply the same conditions to all parties. Also, they will ensure that mobility providers and MaaS-providers (including the four companies themselves) will not have access to commercially sensitive information. These conditions serve to ensure that access to the platform is guaranteed for mobility-service providers, that innovation is stimulated, and that a level playing field will remain in place.

46. In addition, a regulator pointed to the possibility that information regarding compensation for delays or other incidents may be heterogeneous in journeys combining services provided by different companies. Difficulties may also arise from the fact that most travel-planners use

algorithms to suggest routes and it may be difficult to assess whether they affect the operation of the market.

4.4 Through-ticketing

47. An additional form of transport service integration other than MaaS investigated by the survey is that of through-ticketing. Although the latter does not necessarily operate through a platform and does not imply multimodal transport, it was considered relevant for the purpose of the investigation.

48. Recent EU legislation on rail passenger rights and obligations (Regulation (EU) 2021/782- the Regulation) will enter into force on 7 June 2023. Art. 12 of the Regulation provides that *“Where long-distance or regional rail passenger services are operated by a sole railway undertaking, that undertaking shall offer a through-ticket for those services. For other rail passenger services, railway undertakings shall make all reasonable efforts to offer through-tickets and shall cooperate to that end among themselves”*.

49. It could be argued that, since MaaS platforms operate different modes of transport, the above legislation may present regulatory challenges beyond the specific area of rail passengers' rights, hence the formulation of specific questions on this issue.

50. Answers to the questions whether the legal framework in individual countries is ready to apply art. 12 of Regulation (EU) 2021/782 indicate that many countries have already introduced or are preparing the relevant domestic legislation; others report that, in their respective legal system, no further legislation is required.

51. On the issue as to whether the regulatory body foresees difficulties in implementing through-ticketing according to art. 12 of Regulation (EU) 2021/782 in the case of more than one railway company being in operation, several participants, in whose country this situation applies, stated that they do not foresee any such difficulties at present either because the through-ticketing system has already been implemented or because Regulation (EU) 2021/782 is not applicable yet.

52. The regulators who foresee difficulties point to the fact that railway undertakings will be reluctant to cooperate in the offering of through-tickets, because there is no obligation to have agreements. Difficulties may also arise with ensuring appropriate and useful information to the passengers in case of delays and/or cancellations of travel legs included in the through-ticket and with reference to the handling of complaints.

53. This section of the questionnaire concluded by asking whether regulatory bodies have encountered difficulties in the application of Article 12 of regulation (EU) 2021/782. On this point, the few respondents who report having experienced such difficulties indicate a concern regarding the way train companies inform passengers about the terms of through-ticketing, particularly regarding cancellations and delays.

5 Wrap-up

54. An extensive body of work has begun to explore the features of MaaS services comprising rail services. Based on the evidence made available through the survey, in practice, very few examples of digital services which are already in operation or being tested meet the definition of MaaS as providers of comprehensive and on-demand services as presented in this paper.

55. There is a wider set of multimodal digital mobility services (MDMS) provided through platforms: a phenomenon that intersects both the interest of rail regulators, and EU initiatives and priorities in the area. In 2023, the taskforce proposes to turn its attention to MDMS and EU initiatives in this area.

56. Participants share a view that MaaS and other digital mobility services may contribute to improving the match between demand and supply of mobility and other services, with a positive effect for the development of door-to-door and yet more sustainable transport and the pursuit of better use of infrastructure.

57. Figure 3 below summarises the advantages, drawbacks, risks, and opportunities of MaaS and other digital mobility services identified in the responses to the survey.

Figure 3 - MaaS: advantages, drawbacks, opportunities, and risks

a) ADVANTAGES

b) easier planning and paying for travel; better integrated & more convenient way to travel; increase use of public transport promoting decarbonisation

a) OPPORTUNITIES

b) better interconnection of different modes; help reach modal shift; better knowledge of mobility behaviour; leverage on the experience of public authorities in dealing with data

a) DRAWBACKS

b) high costs of digitalisation
d) uneven public/private cooperation, service coverage, shared vision, cybersecurity

a) RISKS

b) uncertain regulation and different legal frameworks affect enforcement of consumers rights; high investment favour large companies; potential disputes between MaaS managers and transport operators; platform may impose own rules; data management may be used to curtail competition

58. Against this background, clear obligations should be in place to complement existing (though still sparse) legislation and ensure that the gathering and sharing of data for the operation of MaaS services is consistent with the rules governing the opening of relevant markets, including rail.

59. Having identified regulatory issues in the operation of digital mobility services, in particular regarding the interconnection between rail and digital services, evidence would appear to point towards the need for regulators to be equipped under EU and/or domestic law to address them; the latter would be alongside the role that antitrust authorities may play on a case-by-case basis.