Chapter 9
Governing Mobility-as-a-Service: Insights from Sweden and Finland

Göran Smith, Steven Sarasini, I. C. MariAnne Karlsson, Dalia Mukhtar-Landgren and Jana Sochor

Abstract Based on a review of recent developments in Sweden and Finland, this chapter analyzes the roles of public organizations in the governance of a transition to Mobility-as-a-Service (MaaS). In particular, we draw on insights from transition frameworks to explore what these two pioneering cases can teach us about how the public sector can both enable the development of MaaS and steer the development trajectory toward diffusion of MaaS offerings that contribute to transport policy goals. We propose three main points. Firstly, public sector organizations at national, regional, and local levels have key roles to play in potential transitions to MaaS, regardless of their intended operative roles in the emerging MaaS ecosystem. Secondly, a central task for public sector organizations is to align operational and tactical MaaS governance activities with both an overarching MaaS strategy and with other relevant strategies, such as transport infrastructures investments, programs for economic and industrial growth, city plans, and parking norms. Thirdly, new models and tools for public–private collaboration are needed in order to effectively govern the development and diffusion of sustainable MaaS.

G. Smith (✉) · I. C. M. Karlsson · J. Sochor
Chalmers University of Technology, Gothenburg, Sweden
e-mail: goran.smith@chalmers.se

I. C. M. Karlsson
e-mail: mak@chalmers.se

J. Sochor
e-mail: jana.sochor@ri.se

G. Smith · D. Mukhtar-Landgren
K2—The Swedish Knowledge Centre for Public Transport, Lund, Sweden
e-mail: dalia.mukhtar-landgren@svet.lu.se

G. Smith
Västra Götalandsregionen, Gothenburg, Sweden

S. Sarasini · J. Sochor
RISE Viktoria, Gothenburg, Sweden
e-mail: steven.sarasini@ri.se

D. Mukhtar-Landgren
Lund University, Lund, Sweden

M. Finger and M. Audouin (eds.), *The Governance of Smart Transportation Systems*,
The Urban Book Series, https://doi.org/10.1007/978-3-319-96526-0_9

Keywords Mobility-as-a-Service · Transport policy · Public governance
Sustainable transitions

9.1 Introduction

Mobility-as-a-Service (MaaS) has received a great deal of attention from both researchers and practitioners in recent years. The concept has been proposed, and in limited cases proven, to address impediments to the multimodal use of servitized transport modalities, such as the hassles of planning, booking, and paying, as is the case when transport services are offered by different organizations and through different end user interfaces. It has also been argued that the diffusion of MaaS may completely change both how we travel and how personal transportation is organized and that MaaS could be an emerging trillion-dollar industry at the expense of the incumbent private car sector.

Consequently, a set of underlying objectives for enabling MaaS has been suggested. Firstly, MaaS is proposed to have the potential to address the negative externalities of personal transport by reducing private car use (e.g., Sarasini et al. 2017; Sochor et al. 2015) in order to combat issues such as congestion, parking, noise, transport-related injuries and deaths, local pollution, and carbon gas emissions. This objective is most prevalent in urban and suburban areas (e.g., Aapaoja et al. 2017). Secondly, MaaS is suggested to be able to contribute to increased accessibility to personal transport services by improving and extending the transport service ecosystem (e.g., Melis et al. 2017). For instance, MaaS could complement traditional public transport by offering more agile solutions for rural dwellers. Thirdly, MaaS might increase the efficiency of public spending on transport by facilitating the use of private services that better fit with tasks such as special needs transport (e.g., Heikkilä 2014). Fourthly, MaaS could contribute to the economy by creating space for new innovations and private businesses within the personal transport sector (ibid.).

In coining the term, Heikkilä (2014) described MaaS as "a system, in which a comprehensive range of mobility services are provided to customers by mobility operators" (p. 8). While several definitions of MaaS have been offered since, none has become the de facto standard. For the purposes of this chapter, we understand MaaS as an integrative concept that bundles different transport modalities into joint, seamless service offerings, as a means of providing tailored mobility solutions that cater for end users' travel needs (Mukhtar-Landgren et al. 2016).

Numerous MaaS-related pilot programs have been performed, including Smile in Austria; Qixxit, Moovel, Switchh, and Hannovermobil in Germany; Whim in Finland; and UbiGo in Sweden. While these have often reported promising results in terms of promoting more sustainable transport behaviors (e.g., Sochor et al. 2016), successful transformations from pilots to large-scale implementations are yet to appear. Several innovation barriers have been found to hinder such transformations. While some research has focused on technical impediments—especially

the lack of open, interoperable, and trusted interfaces for data (e.g., Li and Voege 2017)—most attention has, arguably, been on organizational and relational challenges. MaaS builds on the integration of offerings from several transport service providers. Thus, MaaS is an intrinsically collaborative venture that requires new business ecosystems to emerge in order to bring MaaS offerings to end users (Smith et al. 2017a). Business models that are viable for all the organizations in the emerging MaaS ecosystems, and that cater for MaaS offerings that contribute to policy goals, are yet to be proven (Sarasini et al. 2017). Similarly, a lack of suitable processes for, and experience in, managing collaborative innovation has been found to make it difficult for key stakeholders to agree on shared goals for MaaS and to divide responsibilities (Smith et al. 2018).

To date, Sweden and Finland have acted as pioneers in the development of MaaS. For instance, the 2014 pilot of UbiGo in Gothenburg (SE) is often referred to as the first demonstration in real-life conditions (e.g., Sochor et al. 2015), while the 2016 launch of Whim in Helsinki (FI) drew international attention to the concept. In both countries, the public sector has had a hand in MaaS developments. The public transport authority (PTA) in the region of Västra Götaland (SE) attempted to procure MaaS (Smith et al. 2017b), and the Finnish Ministry for Transport and Communication (Liikenne- ja viestintäministeriö, LVM) has been praised for its reform of transport legislation, partly motivated by the desire to enable MaaS (Smith et al. 2017c). Nevertheless, public organizations in both countries are still struggling to identify their roles in enabling and governing the development of MaaS (Mukhtar-Landgren and Smith 2018). On one hand, too much regulation might impede the private sector's ability to participate and innovate, leading to unattractive MaaS. On the other hand, too little regulation might lead to MaaS that does not serve public interest (Smith et al. 2017a). Moreover, governing MaaS developments is a complex challenge given that the concept is proposed to challenge prevalent private car ownership. 'Automobility' is deeply entrenched in terms of institutionalized structures on both individual and societal levels (such as lifestyles, markets, and legislation). Thus, holistic, collaborative approaches to governance are presumably needed for the efficient development and diffusion of sustainable MaaS.

Driven by both empirical relevance and research interest, we utilize Sweden and Finland as empirical cases in order to explore how public organizations can govern MaaS in the early stages of its development, both to enable disruptive innovations and to steer the development trajectory toward the diffusion of MaaS offerings that contribute to the fulfillment of transport policy goals. Inspired by Sarasini and Linder (2017), we probe the governance challenge by drawing insights from the literature on transition management (e.g., Kemp et al. 2007; Loorbach 2010), focusing on the role of the public sector in governance activities. In particular, our study addresses the following research question: *How can public organizations create institutional arrangements that are conducive to the development and diffusion of sustainable MaaS?*

Our analysis synthesizes the findings reported in four previous conference papers (Mukhtar-Landgren and Smith 2018; Smith et al. 2017a, b, c). The primary data

sources are recorded and transcribed semi-structured interviews with 31 representatives of key public and private MaaS stakeholders, extensive participatory observation, and a structured review of related policy documents.

The chapter is divided into six sections, of which this is the first. Next, the second section introduces transition management. The third section describes how MaaS has developed so far in Sweden and Finland. The fourth section outlines what types of governance activities have been undertaken by different types of Swedish and Finnish public organizations in relation to the development of MaaS. The fifth section analyzes the approaches to governance in the two cases and proposes takeaways for public sector organizations. Finally, the sixth section suggests potential topics for future transition-oriented research on MaaS.

9.2 Transition Management

Transition management (TM) is one of several transition frameworks concerned with the governance of systemic transformations of sociotechnical systems, usually with sustainability as the overarching goal (Markard et al. 2012). TM acknowledges the potential roles of multiple stakeholders from different societal sectors (government, industry, research, consultancy, civil society, grassroots movements, etc.) in sustainable transitions (Loorbach 2010). This approach mirrors developments in the wider field of environmental governance, where the term has been broadened to acknowledge the role of non-state organizations in governance activities (Driessen et al. 2012). Traditionally, governance has been seen as synonymous with the conditions upon which public policies are framed and acquire content following interactions between ensembles of organizations in a given institutional context (Kickert et al. 1997). By contrast, the 'government-to-governance shift' (Hysing 2009) has served to redefine governance in terms of multi-stakeholder involvement (Glasbergen 1998), following the empowerment of civil society organizations and the rise of private sector self-governance activities. TM reflects this shift by proposing a prescriptive, collaborative, and multi-stakeholder governance program that relies on co-creation and social learning (Kemp et al. 2007).

While recognizing the importance of multi-stakeholder engagement in the governance of transitions, we delimit our case to an examination of the roles of public sector organizations for two principal reasons. Firstly, our analysis focuses on the role of institutional arrangements in enabling and hindering MaaS developments. Although institutions are a broad concept, we posit that the public sector plays an important part in defining and orchestrating institutional conditions generally, especially in Scandinavian countries, which have been described as 'coordinated' market economies due to tight links between industry and the state (Soskice and Hall 2001). Secondly, MaaS is commonly described in these countries as an innovative concept whereby public transport constitutes the backbone of combined services (e.g., Holmberg et al. 2016). This entails that MaaS developments largely rest on the willingness of public sector organizations to create a set of

conditions that enable new innovations to emerge in the MaaS field. In practice, existing public transport systems are maintained by a set of entrenched institutional arrangements (such as procurement rules, ticketing schemes, buses and trams, routes and timetables, and organizational cultures). Hence, while MaaS developments are contingent upon transforming the structures that maintain systems of 'automobility' (that is, private car ownership and use), they are also influenced by the institutional arrangements associated with the public transport system. Others have noted the complexities of this transition, with MaaS described as being 'caught between two regimes', namely those related to public transport and private car ownership or 'automobility' (cf. Parkhurst et al. 2012). The existence of these two regimes makes the governance of MaaS developments a challenging task.

The concept of a 'regime' is drawn from another transition framework—the multi-level perspective (MLP) (Geels 2002). TM studies often utilize the MLP and particularly the concept of a sociotechnical regime (Rip and Kemp 1998) to identify drivers and barriers of system innovations. By using the MLP in this way, as a heuristic device, TM scholars outline governance implications based on a detailed understanding of dynamics of system innovation. Within the MLP, sociotechnical regimes are viewed as a major source of stability, inertia, and lock-in effects, which makes them, arguably, the source of many of the barriers to sustainable transitions. Regimes are multi-actor networks in which the propensity for regime organizations to utilize existing heuristics results predominantly in incremental rather than radical innovation. The structuring qualities of regimes come from numerous sources. Firstly, organizations are embedded within a system of institutional arrangements that enables and hinders certain activities (Geels 2004). Secondly, the organizations within regimes are bound by interdependencies between organizations and networks (Geels 2002). Thirdly, artifacts and material elements of regimes acquire certain durability over time. The artifactual elements of large technical systems, such as electricity infrastructures, acquire 'a logic of their own' due to complementarities with other system elements and sunk costs (Rycroft and Kash 2002). The regime related to private car ownership is embedded in a multilayered institutional context that contains various regulations, norms, and cultural understandings, and also relies upon different types of physical infrastructure, markets, and the car as an artifact per se (Urry 2004).

To overcome regime inertia, TM acknowledges the importance of cycles of learning and adaptation throughout the innovation process, which is commonly divided into four phases: pre-development, takeoff, acceleration, and stabilization (Nevens et al. 2013). TM also recommends a long-term approach that is intended to overcome the short-termism associated with political cycles and the private sector, consisting of four iterative steps: (i) *strategic* (envisioning) activities, which focus on the creation of adaptable, long-term visions that are created by and embedded among relevant organizations; (ii) *tactical* activities, which link individual organization strategies to shared long-term visions; (iii) *operational* activities, which link everyday activities and innovative experiments to long-term visions and can focus on experiments with new products/services, new policies and legislation, and social innovations; and (iv) *reflexive* activities which focus on iterative monitoring,

assessment, and evaluation of experimental policies and practices as a means of revising overarching visions and plans where necessary (Kemp et al. 2007). Hence, one way to understand why transitions occur in a particular place (and not in others) is to evaluate the manner in which these activities are being practiced.

One critique of transition frameworks such as the MLP is that it obscures the role of spatial scales (that is, geographical conditions) in transitions, focusing instead on temporal and structural variables (Raven et al. 2012). This critique is based on the premise that the MLP is an adaptive framework that allows researchers to willfully delineate system boundaries, with most studies consequently focusing on national settings when applying the regime concept (Coenen et al. 2012). One might be tempted to mirror this approach by treating countries as institutionally homogenous entities whereby MaaS developments unfold. However, the very basis of this critique is that countries are not institutionally homogenous; they are multi-scalar entities within which organizations operate on a local scale, often with supranational influence (Hansen and Coenen 2015). Alternatively, one may suggest that cities are a useful spatial scale, given that MaaS may, initially at least, target urban and suburban citizens. Indeed, some work has been done to apply the tenets of TM to urban settings using terms such as urban transition laboratories (Nevens et al. 2013). Still, while cities may be essential in governing transitions—for instance, by creating niches for experimentation—scholars have also noted that cities do not act alone in seeking to transform regimes, and those that succeed have ties with national governments and other supranational entities (Hodson and Marvin 2010). Such relational ties are key to establishing a set of institutional arrangements that are conducive to the development and diffusion of radical innovations. This distinction is also useful when considering the difference between *absolute* spatial scales (that is, those that are territorial) and *relative* spatial scales (that is, those that are socially constructed), where the latter are seen to be more relevant to sociotechnical transitions (Raven et al. 2012). When attempting to synthesize multi-scalar perspectives into transition frameworks, economic geographers have drawn upon a few useful concepts. Coenen et al. (2012) noted the importance of institutional thickness; that is, "the comparative performance of governance bodies in terms of their ability to work together locally, and persuade or compel sufficient external agents to support their activities" (p. 972). Similarly, Raven et al. (2012) noted that cognitive, organizational, social, and institutional proximity are conducive to innovation. These terms refer to similarities and trust among organizations along different dimensions and can circumvent the need for spatial proximity.

A further critique of TM is that, in addition to targeting sustainable reorientations of sociotechnical systems, it requires major changes in other key areas such as environmental policymaking. In practice, some of the key tenets of TM are 'lost in translation' when transferred from one national context to another, such as between the Netherlands and Finland (Voß et al. 2009). While we acknowledge that these sorts of problems exist, mainly due to prevalent cultures within key sectors and organizations, our aim is not to evaluate the way in which TM, as a *reflexive* policy paradigm, is transferred from one national context to another. Rather, we utilize the TM framework in two ways. Firstly, we evaluate MaaS developments in Sweden

and Finland using TM as an analytical framework that can elucidate the key elements required for the governance of a sociotechnical transition. Secondly, we use this framework to elucidate implications for governance. That is, we contend that the public sector can be imperative in creating a set of institutional arrangements conducive to MaaS developments by, intentionally or otherwise, performing *strategic*, *tactical*, *operational*, and *reflexive* governance activities; and ensuring that relational linkages that connect organizations acting at different spatial scales support these activities (local, regional, national, and supranational).

9.3 Developments in Sweden and Finland

Sweden and Finland have arguably been global pioneers in the early days of MaaS. Sweden witnessed the first comprehensive MaaS pilot program in 2013–2014. Over 70 households in Gothenburg trialed UbiGo, a service that bundled public and private transport services to customized packages of digital clip cards. The UbiGo pilot was deemed successful in terms of user acceptance and favoring sustainable travel (e.g., Sochor et al. 2014), but the contract between the regional PTA and UbiGo was not extended after the pilot period as the PTA had to determine what it was legally able, and strategically willing, to do (Smith et al. 2017b). As part of this work, the PTA decided to initiate a pre-commercial procurement process, looking for a private entrepreneur that could develop, deploy, and operate a comprehensive MaaS solution across the region of Västra Götaland.

Concurrently, the notion of MaaS started growing in Finland. In interviews with central organizations in Finland, the notion is described as having been proposed, and named, by the future founder and CEO of MaaS Global in a government-led think tank, then further developed and detailed in an Aalto University-based master's thesis (Heikkilä 2014), and eventually popularized through the 2014 European Congress on Intelligent Transportation Systems in Helsinki. Two different types of governance processes were initiated in Finland during the years that followed. Firstly, several MaaS projects and pilots were funded and implemented between 2015 and 2016: Sonera Reissu, Ylläs Around, Kätevä, Whim, and Tuup. Secondly, LVM adopted MaaS as a vision for the future organization of the Finnish transport system. The first phase of its ongoing major legislative reform, which will be enacted in 2018, is arguably partly designed to facilitate the development and diffusion of MaaS in Finland as well as the export of MaaS-related innovations (Smith et al. 2017c).

The developments in Finland and the increasing international interest inspired further debates in Sweden. The attention to MaaS spread from having initially been concentrated to the region of Västra Götaland, to ultimately including two other urban regions (the county of Stockholm and the Skåne region), as well as national-level organizations. Currently, several new Maas-related pilots are planned in Sweden, and two national development programs have been initiated to further propel the development.

In order to govern MaaS activities in Sweden and Finland appropriately, both in the short term and long term, it is essential for the public sector to understand how institutional arrangements can either encourage or discourage the development and diffusion of MaaS. Institutional drivers and barriers to sustainable transitions, such as the alleged shift to MaaS, can be both formal and informal (Scott 2014) and can arise on different societal levels. The IRIMS framework (Mukhtar-Landgren et al. 2016) delineates institutional arrangements into three analytical levels. The *macro*-level encompasses societal arrangements, such as continental procurement laws and national identities; the *meso*-level includes institutional arrangements at the regional and local levels, such as regional transport directives and local cultures of collaboration; and the *micro*-level reflects the level of the individual (in this case referring to the proposed users of MaaS) and covers the institutional arrangements that impact their behaviors, such as existent transport infrastructures and current travel habits (Karlsson et al. 2017a).

On the *macro*-level, societal trends such as digitalization, servitization, city densification, more flexible work times, higher expectations of positive use experiences, and the growth of the sharing economy are, despite the lack of empirical evidence, often described as general drivers of MaaS (e.g., Tinnilä 2016). Extant research has found that, notwithstanding geographical proximity and similar institutional arrangements, the public sectors' main objectives for enabling MaaS diverge between Sweden and Finland (Mukhtar-Landgren and Smith 2018). In Sweden, public organizations' funding of and involvement in both the UbiGo pilot and the forthcoming MaaS developments can be understood as a response to the identified need to find new cost-effective measures that can contribute to an increased modal share of public transport, which, in turn, can help reduce the negative externalities of personal transport. Also, the public sector in Finland is hoping that MaaS can contribute positive effects on sustainability. However, their interest in MaaS is rather a derivative of its quest to battle economic downturn (Smith et al. 2017c). In terms of *macro*-level barriers, legislation has been proposed to hinder innovation and renewal in the transport sector in general. Correspondingly, continental and national legislations have been found to limit both the Swedish and Finnish PTAs' understandings of what roles they can take in relation to MaaS (Mukhtar-Landgren and Smith 2018), thus constraining their MaaS-related actions.

On the *meso*-level, all organizations are supposedly motivated by MaaS's potential contribution to their organizational goals, whether these goals are increased profit, reduced car traffic, or something else. In Finland, private investments, prosperous cross-sector collaborations, and strong informal networks have been found to further drive the attentiveness to MaaS (Smith et al. 2017c). In contrast, a lack of a shared vision for MaaS as well as few MaaS champions with the discretion and authority to impact high-level decisions seems to have created further challenges in Sweden, compared to Finland (ibid.). The need to identify business models that are viable for all the organizations in the emerging MaaS ecosystems; the transport service providers' unwillingness to open up their tickets for third-party resale; and the lack of data and standards have been identified as key

meso-level barriers in both countries (ibid.). Further, a case study of a Swedish PTA's MaaS efforts found that its lack of experience of and processes for public–private innovation made it difficult for the PTA to collaborate with private organizations on MaaS developments (Smith et al. 2018). Explicitly, its use of a 'rigid' public procurement processes was pinpointed as hampering experimentation and collaboration, issues that were further augmented by low levels of trust between the PTA and the potential bidders. In similar fashion, the PTA's organizational culture was considered to foster inertia and the PTA struggled with prioritizing MaaS internally (ibid.).

On the *micro*-level, the most prevalent barrier is arguably the limited knowledge about the potential end users. The MaaS development is still in its infancy, and few of the MaaS-related pilots have been systematically evaluated in terms of end users' adoption, use, and the impacts on their travel behaviors (Karlsson et al. 2017b). As a result, both public and private organizations struggle to establish what the potential return of MaaS investments could be. For instance, how many new end users might MaaS attract to public transport within a given geographical area? Further, several institutional arrangements are thought to favor private car use and thus preclude a transition to MaaS. These include existing travel habits, private car lock-in effects, and current taxation rules, such as subsidization of company cars and tax deductions for expenses related to car travel to and from work (Holmberg et al. 2016).

In sum, drivers and barriers on multiple levels affect the development and diffusion of MaaS. The perceptions of these partly differ and partly coincide between Sweden and Finland (Smith et al. 2017c), which implies that the appropriateness of different approaches to governance probably differs somewhat between the countries as well. Distinct differences have also been found in terms of how innovation barriers are perceived among public and private organizations (Smith et al. 2018), suggesting that a shared understanding of what is hindering the development of MaaS is lacking across organizations within the emerging MaaS ecosystems.

9.4 The Roles of the Public Sector

Public organizations in both Sweden and Finland have been actively involved in the developments described above. As the development of MaaS is still in a pre-commercial stage in both countries, the following text focuses on what actions public organizations on national, regional, and local levels have taken in order to (i) ignite the development and (ii) either govern initial MaaS developments or create possibilities to govern the development trajectory for MaaS in the future. Further, drawing on TM, we center the inquiry on *tactical*, *operational*, *strategic*, and *reflexive* governance activities. Our findings are summarized in Table 9.1.

Table 9.1 Summary of identified governance activities

	Sweden	Finland
National authorities	Following regional activities, have stimulated MaaS experimentation and research through *tactical* and *reflexive* activities	Have acted as a spearhead for MaaS developments by promoting a shift to MaaS through *strategic*, *tactical*, and *operational* activities
Regional public transport authorities	Have initiated and assisted MaaS developments through *tactical* and *operational* activities	Following national activities, have pursued *operational* activities that enable MaaS piloting
Local authorities	Have mostly participated in *operational* activities	Have mostly participated in *operational* activities

9.4.1 National Authorities

The national governments in Sweden and Finland have so far taken different roles in the development of MaaS (Mukhtar-Landgren and Smith 2018) and have therefore used dissimilar policy instruments to govern the trajectory of MaaS. While the Swedish government has primarily utilized soft measures, the Finnish government has also used its regulative and legislative powers to initiate change.

In Sweden, MaaS emerged as a regional phenomenon with little involvement from the national government. It was not until late 2016, more than two years after the acclaimed UbiGo pilot, that the Swedish Ministry of Enterprises and Innovation (Näringsdepartementet) took any concrete action in relation to MaaS. Then, the proposed potential of MaaS and the outspoken need for governmental action coincided with Näringsdepartementet's ongoing pursuit to catalyze innovation that might benefit the next generation's travel and transport. An expert group was tasked with drafting a road map for the diffusion of MaaS in Sweden, including how the national government could support the development. This resulted in funding of a development program entitled Combined Mobility-as-a-Service in Sweden (*Kombinerad mobilitet som tjänst i Sverige*, KOMPIS). The program links the plans and actions of several Swedish public organizations. It will run from 2017 to 2020 and distribute approximately two million Euros of public money in order to set the scene for and initiate the diffusion of MaaS in Sweden. The grand vision is that, by 2030, legislation, policies, and transport norms in Sweden should be shifted to favor traveling by 'shared modes'.

In contrast, the development of MaaS in Finland has, from the very start, been tightly coupled to national government activities (Smith et al. 2017c). During the last decade, LVM has been on a quest to transform the Finnish transport sector, aiming to offset the national economic downturn by streamlining public spending on personal transport and by creating space for new digitally driven innovations within the transport sector. Since 2014, LVM has used the enablement of MaaS as both an internal tool for selecting and revising its actions and as a tool for externally communicating its agenda. The ministry's actions have influenced Finnish MaaS

developments in two major ways. Firstly, its frequent use of MaaS as a vision for Finland's future transport sector has drawn attention to MaaS from both entrepreneurs and investors. Secondly, its proposed major reform of Finland's transport legislation, the Transport Code, is meant to pave the way for market-driven MaaS (cf. Smith et al. 2017a). The first phase of the reform, which will be enacted in 2018, is meant to make more room for collaborative innovation within transport by deregulating the public transport and taxi markets, and by regulating transport service providers' use of open interfaces. As of July 2018, all providers of road and rail transport services in Finland, including brokering and dispatch organizations, must provide external parties with access to the sales interface of their ticketing and payment systems and allow them to purchase and resell ticket products at a basic price that, at minimum, entitles the end user to a single trip. As such, LVM is actively forcing transport service providers to collaborate with MaaS operators.

The national innovation funding agencies in the two countries have had comparable roles in that they have mainly funded MaaS-related experimentation and research. The Swedish Innovation Agency (Vinnova) funded the research project that included the UbiGo pilot (Go:Smart). It has since funded several other projects that might benefit the development of MaaS, and is also involved in distributing the funding linked to KOMPIS. Further, Vinnova is setting up a 'policy innovation laboratory'. The laboratory is meant to enable institutional experimentation, for instance, regarding the consequences of altering innovation-related regulation, and one of the proposed applications for this is MaaS. In Finland, the Funding Agency for Innovation (Tekes) has funded numerous MaaS-related pre-studies and pilots as part of a joint development program for MaaS, which it has managed together with LVM since 2014.

A handful of other national authorities are participating in MaaS developments. In Sweden, the Swedish Transport Administration (Trafikverket) has included the KOMPIS road map in its proposed 2018–2029 action plan for the national transport system, and the Swedish Energy Agency (Energimyndigheten) is hosting an innovation contest meant to boost the diffusion of MaaS in Sweden. In Finland, the Finnish Transport Agency (Liikennevirasto) and the Ministry for Agriculture and Forestry (Maa- ja metsätalousministeriö) have both funded MaaS pilots as well, while the Transport Agency is also participating in several MaaS-related initiatives in order to better understand its role in MaaS (e.g., the MaaS Alliance and the research project MAASiFiE). Moreover, Finpro, a publicly owned organization, has initiated a growth program for MaaS aimed at challenging Finnish companies to act upon the global business opportunities of MaaS, and at increasing the awareness of Finland as a great investment target for Maas-related innovation work. These activities show that national agencies beyond the transport policy field are also involved in the development of MaaS, mainly those dealing with innovation policies.

In sum, the clearest similarity between the roles of the Swedish and Finnish national authorities is that both are focusing on enabling private entrepreneurship; that is, both countries seem to envision private organizations as MaaS operators (Smith et al. 2017c). They are attempting to realize this through *tactical* governance

activities including collaborative governance, that is, organization of formal and informal collaborative networks, and funding of research and development. However, the two nations differ in that the national government in Finland, to this day, has been a superior promoter. It has placed greater effort into *strategic* activities, has been more actively involved (*operational*) in the development of MaaS, and has used 'harder' policy instruments to boost its developments, compared to its Swedish counterpart (Mukhtar-Landgren and Smith 2018). In Sweden, the national authorities have been more reactive and seem to put greater emphasis on *reflexive* governance activities, funding more assessment-oriented research, compared to Finnish authorities, which have been more concerned with boosting development.

9.4.2 Regional Public Transport Authorities

Public transport has frequently been described as the backbone (main transport mode) of MaaS in Europe. As a consequence, PTAs seem to be in a key position to enable the development of MaaS. As of now, they can single-handedly either empower or block MaaS developments by deciding what public transport tickets MaaS operators can purchase and resell, what business deal the MaaS operators get (with the PTAs), and what resale rules they need to adhere to. However, the Transport Code will erase some of this power for Finnish PTAs. In preparation for this change, the PTA of Greater Helsinki (Helsingin seudun liikenne, HSL) decided to author a generic MaaS contract, which enabled it to negotiate an operative contract with MaaS Global and thereby support the widely discussed Whim pilot in Helsinki.

In Sweden, the operative company of the PTA in the region of Västra Götaland, Västtrafik, participated in the UbiGo pilot. It since tried to procure MaaS as a means of progressing from pilot to implementation (Smith et al. 2017b), but discovered that its proposed contract terms did not allow potential bidders (MaaS operators) to develop business models that would be both viable and efficient in contributing to public transport growth, which was (and is) Västtrafik's chief aim in relation to MaaS. The PTA in Stockholm County (Stockholms läns landsting, SLL) entered the MaaS scene at a later stage. Drawing on Västtrafik's alleged missteps, it decided on a MaaS strategy in which it will not procure MaaS, but will instead initiate and participate in pilots in preparation for opening up its tickets for third-party resale, a direction in which Västtrafik also seems to be headed. Moreover, Västtrafik, SLL, and several other regional PTAs in Sweden have joined forces in a development program—the Swedish Mobility Program (SMP)—for MaaS hosted by their joint development company, Samtrafiken. Beyond initiating and coordinating Swedish

MaaS pilots (and other MaaS efforts), the major goals of the program, which was initiated in 2016, are to develop a national integration platform for transport-related services and to establish Samtrafiken as a national MaaS integrator.[1]

In sum, PTAs in both Sweden and Finland are rethinking their responsibilities in light of the potential paradigm shift that MaaS entails; that is, what roles should they possess in a future MaaS ecosystem? In doing so, the potential trade-off between the level of openness and perceived control seems to be the hardest nut to crack. Moreover, there appears to exist a potential conflict between public organizations on the national level—who are keen to revolutionize the transport sector and fulfill visionary targets such as replacing the private car as the go-to solution for mobility (e.g., LVM in Finland and Vinnova in Sweden)—and regional PTAs, who are more focused on improving the existent regime and fulfilling incremental growth goals (Mukhtar-Landgren and Smith 2018). The most evident difference between Sweden and Finland is that the PTAs in Sweden have been more outspoken about their desire to enable MaaS. Further, the Swedish PTAs have been highly involved in creating the 'common' road map for MaaS, while their Finnish counterparts have been largely left out of this process (Smith et al. 2017c). Hence, the Swedish PTAs have arguably actively participated in both *tactical* (such as plans for MaaS and PT growth) and *operational* governance activities (e.g., technical developments, procurement attempts, and pilot participation), while the Finnish PTAs primarily have been involved in the latter.

9.4.3 Local Authorities

Not many local authorities have had 'front-seat' roles in the development of MaaS in Sweden and Finland, with a few notable exceptions. Civil servants at the city of Helsinki have been part of the informal inner circle of MaaS since it first came about in Finland. For instance, the city of Helsinki co-sponsored the master's thesis that was eventually used to promote the MaaS concept during the European Congress on Intelligent Transportation Systems in Helsinki, and has contributed to the drafting of the Transport Code. Moreover, the city of Turku has collaborated with the MaaS start-up Kyyti (formerly known as Tuup), and the city of Tampere has recently launched a three-year MaaS pilot in which it will develop a MaaS platform for the city and trial concepts that make use of spare capacity in special transport services, among other things. In Sweden, the city of Gothenburg was a crucial participant in the UbiGo pilot, but has since become silent, awaiting the actions of Västtrafik, while the city of Stockholm and Lund municipality are planning to participate in MaaS pilots. Still, in both the Swedish and Finnish MaaS developments, the city planner perspective has rarely been discussed; that is, how MaaS might interplay with long-term visions for urban, suburban, and rural developments.

[1]However, these plans have been put on hold for the time being, for financial reasons.

In sum, some local authorities in both Sweden and Finland have been active in the development of MaaS. However, few have contributed to or performed any *strategic* or *tactical* governance activities, and those that have participated have not focused on what MaaS might contribute to, or need from, the physical planning of cities and regions. Instead, they have acted as *operational* enablers of experimentation and have not focused on the long-term vision for MaaS.

9.5 Analysis

The two cases described in this chapter generate useful insights regarding the governance of MaaS developments. Our narrative may be recapitulated as follows. In Sweden, the early success of a thoroughly and well-evaluated pilot was followed by a period of indecision and inaction, in which a superficial understanding may allude to the public sector and particularly the PTA of the region of Västra Götaland having halted MaaS developments. By considering the four key elements of TM, a more nuanced understanding of MaaS developments can be gleaned. Despite making initial headway in terms of *operational* and *reflexive* governance activities, Swedish MaaS developments have slowed—until recently, at least, when the development of a national road map and the establishment of an innovation program have sought to rekindle MaaS-related action. The public sector has played a key role in the attempt to rejuvenate MaaS developments, since the Swedish government succeeded in making MaaS a national priority, supported ably by the research sector and by expert practitioners. The result is a renewed focus on *operational* and *reflexive* governance activities via pilots and evaluations/assessments within the four-year KOMPIS program. Further, by engaging with both PTAs and private transport service providers, and by pushing for a national platform, the SMP has conducted valuable *tactical* activities in cooperation with key operative organizations. Although the plan to establish a national integration platform has been put on hold, these activities have succeeded in stimulating debates within several PTAs and putting MaaS higher on their agendas. The outcome of KOMPIS and SMP, among other activities, appears to be a public–private approach to MaaS in Sweden (cf. Smith et al. 2017a).

The Finnish case, by comparison, when seen through the lens of TM, is in many ways opposite to the Swedish case. The need for economic renewal has forged a stronger national consensus on MaaS, resulting in a more coherent vision (Smith et al. 2017c) and the rapid establishment of an ambitious pilot program, such that the *strategic* and *operational* activities missing in Sweden are prevalent in Finland. Public sector efforts are again prominent. LVM and Tekes have each played significant roles in creating a favorable set of institutional arrangements and supporting research and development efforts with state funding, and a few Finnish municipal governments are active with MaaS debates and developments (although primarily through *operational* activities). One area that appears to be lacking in Finland relates to *tactical* activities that involve the incumbent operative organizations.

Although public and private transport service providers in Finland are supposedly rethinking their roles and positions with regard to MaaS developments, the Finnish market-driven approach (cf. Smith et al. 2017a) appears to require the support of public policies that will coerce them to engage in MaaS ecosystems. For example, the Finnish PTAs have so far been reluctant to participate in MaaS pilots despite the pressure from the national authorities, and the taxi sector has been vocal in its criticism of the reorganizations proposed in the Transport Code.

Both cases imply that geographical perspectives are critical to effective TM activities. By adopting a multi-scalar approach, the importance of relational links between different public sector organizations becomes apparent in terms of *strategic*, *tactical*, and *operational* governance activities. The Finnish case demonstrates the importance of a network of MaaS champions, acting within public and private sector organizations at national, regional, and local societal levels, for creating a robust and legitimate vision for MaaS developments. By comparison, the Swedish case demonstrates the lack of such relational ties as one reason for the apparent slowing of MaaS developments. It also demonstrates the importance of relational ties for *tactical* activities vis-à-vis the SMP, which has arguably enabled a more consensus-based approach to engaging the PTAs. This has helped align key public organizations, albeit at a slower pace than the Finnish Transport Code, which aims to force alignment within public transport organizations. It remains to be seen whether Finnish startups will succeed in developing viable MaaS given the possibility of resistance among PTAs and other transport service providers. In other words, a relational approach to *strategic* and *tactical* activities may be important for aligning interests and engaging organizations such that *operational* activities succeed. Our cases show that public sector organizations at different societal levels can play key roles in facilitating collaborative and relational approaches that can underpin effective TM.

Regarding *operational* activities, the Swedish case demonstrates that traditional mechanisms used by the public sector to drive innovation are unsuitable for collaborative ventures. In particular, conventional public procurement procedures seem to hamper experimentation, encumbering transitions from pilots to implementations and obstructing inter-organizational collaboration (Smith et al. 2018). Moreover, collaborative innovation partnerships between public and private organizations require that the public organizations give up or share some of their governance authority (Bommert 2010). Hence, we propose that, regardless of the operative roles adopted by public organizations, MaaS necessities new models and tools that target a collaborative approach to innovation. In other words, a relational approach is also paramount in *operational* activities.

As noted, the roles of public organizations in Sweden and Finland have diverged, both in terms of what types of governance activities they have performed and what operative roles in the emerging MaaS ecosystem they are planning for. The role of the public sector has been contested in both countries, particularly regarding whether the current roles of PTAs should be broadened or reduced as part of the MaaS transition (cf. Smith et al. 2017a). Which model is most appropriate in this regard remains to be seen. However, we hold firm that pertinent national

authorities, regional PTAs, and municipalities should all be involved in drafting and revising an overarching strategy for MaaS, as they, in their capacities as planners of the transportation system, are in key positions to make sure that the potential transition to MaaS is supported by, and in itself supports other public strategies on the national, regional, and local levels. Further, public sector involvement may be a key to the development of a more sustainable transport system.

To conclude, we propose three main points. Firstly, public sector organizations at national, regional, and local levels have key roles to play in potential transitions to MaaS, regardless of their intended operative roles in the emerging MaaS ecosystem. Secondly, a central task for public sector organizations is to align *operational* and *tactical* MaaS governance activities with both an overarching MaaS strategy and with other relevant strategies, such as transport infrastructures investments, programs for economic and industrial growth, city plans, parking norms. Thirdly, new models and tools for public–private collaboration are needed in order to govern the development and diffusion of sustainable MaaS effectively.

Lastly, we revisit our research question: *How can public organizations create institutional arrangements that are conducive to the development and diffusion of sustainable MaaS?* Here, we echo the message from Smith et al. (2017c). Drawing on the analysis presented in this chapter, we argue that the public sector should perform the following, if MaaS is assessed to be an integral part of fulfilling policy goals: (i) engage directive and operative organizations in MaaS networks; (ii) create a strong and shared long-term vision for MaaS that addresses policy goals; (iii) foster an open and collaborative innovation climate around MaaS; (iv) support MaaS pilots and implementations with financial and human capital; (v) experiment with institutional arrangements that could support the development and diffusion of MaaS; and (vi) focus on steering toward societal effects that are positive in the long-term while concentrating on generating and absorbing knowledge in the short-term.

9.6 Concluding Remarks

This chapter is based on two qualitative case studies. This is an appropriate approach for exploring new phenomena in depth and for creating high-quality explanatory theories (Eisenhardt 1989). Still, the generalizability is often questioned (e.g., Miles 1979). Addressing this issue, we side with Donmoyer (1990) on his emphasis on the value of learning from individual cases as well as from reviews of aggregates. In this particular case, we propose a naturalistic approach to the generalizability of our findings; that is, they should be interpreted as transferable to other similar cases rather than to the entire population (Myers 2000). Thus, our proposed insights might be valid for MaaS developments in contexts with similar institutional arrangements as in Sweden and Finland.

Still, as we have traced distinct differences between two neighboring countries, we acknowledge that complementary case studies in dissimilar settings are needed

to better establish generalizability. For this reason, we suggest that fellow scholars should further examine the development and diffusion of MaaS in contexts with disparate institutional arrangements, compared to our cases. For instance, studies in countries or regions with dissimilar socioeconomic circumstances, less developed public transport systems, and more autonomous and/or authoritarian governments would complement our study. Further, although both Sweden and Finland may be regarded as global pioneers of MaaS developments, MaaS is nascent in both countries—very few citizens have participated in or experienced any impact from MaaS. Hence, further studies that comprise later stages of the alleged transition, in both similar and dissimilar settings, are needed. Our study has focused on the roles and activities of a limited set of organizations, primarily on the public perspective of governance. Given that MaaS is a collaborative venture, the private perspective should be highlighted as well. Moreover, a few publicly owned organizations that are vital to MaaS have been left out, particularly the national rail companies and organizations on the supranational level. Their roles should be further investigated. Lastly, we recognize that our governance suggestions, while perhaps theoretically sound, remain unproven. Hence, we hope that future research will advance the understanding of how relational, collaborative, and explorative approaches can be materialized.

Acknowledgements This chapter is a product of a research project entitled Institutional Frameworks for Integrated Mobility Services in Future Cities (IRIMS). The authors would like to express gratitude toward Vinnova, which funded the project, and toward our research colleagues who contributed to the analysis, mainly Till Koglin, Annika Kronsell, Adam Laurell, and Emma Lund. Moreover, we are thankful to all the interviewees who devoted their valuable time.

References

Aapaoja A, Eckhardt J, Nykänen L, Sochor J (2017) MaaS service combinations for different geographical areas. Presented at the 24th world congress on intelligent transportation systems, 29 Oct–2 Nov, Montreal

Bommert B (2010) Collaborative innovation in the public sector. Int Public Manag Rev 11(1): 15–33

Coenen L, Benneworth PS, Truffer B (2012) Toward a spatial perspective on sustainability transitions. Res Policy 41(6):968–979. https://doi.org/10.1016/j.respol.2012.02.014

Donmoyer R (1990) Generalizability and the single-case study. In: Eisner EW, Peshkin A (eds) Qualitative inquiry in education: the continuing debate. Teachers College Press, New York, pp 175–200

Driessen PPJ, Dieperink C, Laerhoven F, Runhaar HAC, Vermeulen WJV (2012) Towards a conceptual framework for the study of shifts in modes of environmental governance—experiences from the Netherlands. Environ Policy Gov 22(3):143–160. https://doi.org/10.1002/eet.1580

Eisenhardt KM (1989) Building theories from case study research. Acad Manag Rev 14(4): 532–550

Geels FW (2002) Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. Res Policy 31(8):1257–1274. https://doi.org/10.1016/s0048-7333(02)00062-8

Geels FW (2004) From sectoral systems of innovation to socio-technical systems: insights about dynamics and change from sociology and institutional theory. Res Policy 33(6–7):897–920. https://doi.org/10.1016/j.respol.2004.01.015

Glasbergen P (1998) Co-operative environmental governance: public-private agreements as a policy strategy, vol 12. Springer Netherlands, Dordrecht. https://doi.org/10.1007/978-94-011-5143-6

Hansen T, Coenen L (2015) The geography of sustainability transitions: review, synthesis and reflections on an emergent research field. Environ Innov Soc Transit 17:92–109. https://doi.org/10.1016/j.eist.2014.11.001

Heikkilä S (2014) Mobility as a Service—A proposal for action for the Public Administration, Case Helsinki (Master's thesis). Aalto University, Aalto

Hodson M, Marvin S (2010) Can cities shape socio-technical transitions and how would we know if they were? Res Policy 39(4):477–485. https://doi.org/10.1016/j.respol.2010.01.020

Holmberg P-E, Collado M, Sarasini S, Williander M (2016) Mobility as a Service (MaaS): describing the framework. RISE Viktoria, Göteborg. https://www.viktoria.se/projects/maas-framework#publications. Accessed 4 Feb 2017

Hysing E (2009) From government to governance? A comparison of environmental governing in Swedish forestry and transport. Governance 22(4):647–672. https://doi.org/10.1111/j.1468-0491.2009.01457.x

Karlsson ICM, Mukhtar-Landgren D, Lund E, Sarasini S, Smith G, Sochor J, Wendle B (2017a) Mobility-as-a-Service: a tentative framework for analysing institutional conditions. Presented at the 45th European transport conference, Barcelona, 4–6 Oct

Karlsson ICM, Sochor J, Aapaoja A, Eckhardt J, König D (2017b) Deliverable Nr 4—impact assessment. https://research.chalmers.se/publication/248829. Accessed 14 June 2017

Kemp R, Loorbach D, Rotmans J (2007) Transition management as a model for managing processes of co-evolution towards sustainable development. Int J Sustain Dev World Ecol 14 (1):78–91. https://doi.org/10.1080/13504500709469709

Kickert WJ, Klijn E-H, Koppenjan JF (1997) Managing complex networks: strategies for the public sector. Sage Publications, London

Li Y, Voege T (2017) Mobility as a Service (MaaS): challenges of implementation and policy required. J Transp Technol 7(2):e95–e95. https://doi.org/10.4236/jtts.2017.72007

Loorbach D (2010) Transition management for sustainable development: a prescriptive, complexity-based governance framework. Governance 23(1):161–183. https://doi.org/10.1111/j.1468-0491.2009.01471.x

Markard J, Raven RR, Truffer B (2012) Sustainability transitions: an emerging field of research and its prospects. Res Policy 41(6):955–967. https://doi.org/10.1016/j.respol.2012.02.013

Melis A, Mirri S, Prandi C, Prandini M, Salomoni P, Callegati F (2017) Integrating personalized and accessible itineraries in MaaS ecosystems through microservices. Mob Netw Appl, 1–10

Miles MB (1979) Qualitative data as an attractive nuisance: the problem of analysis. Adm Sci Q 24 (4):590–601

Mukhtar-Landgren D, Koglin T, Kronsell A, Lund E, Sarasini S, Smith G, Sochor J (2016) Institutional conditions for integrated mobility services (IMS): towards a framework for analysis. http://www.k2centrum.se/fou-områden/integrerade-mobilitetstjänster. Accessed 4 Sept 2017

Mukhtar-Landgren D, Smith G (2018) Perceived action spaces of public actors in the development of Mobility as a Service. Presented at the 7th transport research arena TRA 2018, Vienna, 16–19 Apr 2018

Myers M (2000) Qualitative research and the generalizability question: standing firm with Proteus. Qual Rep 4(3):9

Nevens F, Frantzeskaki N, Gorissen L, Loorbach D (2013) Urban Transition Labs: Co-creating transformative action for sustainable cities. J Clean Product 50:111–122. https://doi.org/10.1016/j.jclepro.2012.12.001

Parkhurst G, Kemp R, Dijk M, Sherwin H (2012) Intermodal personal mobility: a niche caught between two regimes. In: Kemp R, Geels FW, Dudley G (eds) Automobility in transition? A socio-technical analysis of sustainable transport. Routledge, Oxford

Raven RR, Schot JJ, Berkhout F (2012) Space and scale in socio-technical transitions. Environ Innov Soc Transit 4:63–78. https://doi.org/10.1016/j.eist.2012.08.001

Rip A, Kemp R (1998) Technological change. Battelle Press, Columbus. https://doi.org/10.1007/bf02887432

Rycroft R, Kash D (2002) Path dependence in the innovation of complex technologies. Technol Anal Strateg Manag 14(1):21–35. https://doi.org/10.1080/095373202201125865

Sarasini S, Linder M (2017) Integrating a business model perspective into transition theory: the example of new mobility services. Environ Innov Soc Transit. https://doi.org/10.1016/j.eist.2017.09.004

Sarasini S, Sochor J, Arby H (2017) What characterises a sustainable MaaS business model? Presented at the 1st international conference on Mobility as a Service (ICOMaaS), Tampere, 28–29 Nov

Scott WR (2014) Institutions and organizations: ideas, interests, and identities. Sage Publications, Thousand Oaks

Smith G, Sochor J, Karlsson ICM (2017a) Mobility as a Service: implications for future mainstream public transport. Presented at the international conference series on competition and ownership in land passenger transport (Thredbo15), Stockholm, 13–17 Aug

Smith G, Sochor J, Karlsson ICM (2017b) Procuring Mobility as a Service: exploring dialogues with potential bidders in West Sweden. Presented at the 24th world congress on intelligent transportation systems, Montreal, 29 Oct–2 Nov

Smith G, Sochor J, Sarasini S (2017c) Mobility as a Service: comparing developments in Sweden and Finland. Presented at the 1st international conference on Mobility as a Service (ICoMaaS 2017 Proceedings, pp. 223–239), Tampere, 28–29 Nov

Smith G, Sochor J, Karlsson ICM (2018) Public–private innovation: barriers in the case of Mobility as a Service in West Sweden. Public Manag Rev. https://doi.org/10.1080/14719037.2018.1462399

Sochor J, Karlsson ICM, Strömberg H (2016) Trying out Mobility as a Service: experiences from a field trial and implications for understanding demand. Transp Res Rec J Transp Res Board 2542:57–64. https://doi.org/10.3141/2542-07

Sochor J, Strömberg H, Karlsson ICM (2014) The added value of a new, innovative travel service: insights from the UbiGo field operational test in Gothenburg, Sweden. In: Giaffreda R, Cagáňová D, Li Y, Riggio R, Voisard A (ed) International internet of things summit. Springer, New York, pp 169–175. https://doi.org/10.1007/978-3-319-19743-2

Sochor J, Strömberg H, Karlsson ICM (2015) Implementing mobility as a service: challenges in integrating user, commercial, and societal perspectives. Transp Res Rec J Transp Res Board 2536:1–9. https://doi.org/10.3141/2536-01

Soskice DW, Hall PA (2001) Varieties of capitalism: the institutional foundations of comparative advantage. Oxford University Press, Oxford

Tinnilä MT (2016) Towards servitization of mobility—Mobility as a Service. Int J Res Bus Technol 8(2):958–963. https://doi.org/10.17722/ijrbt.v8i2.444

Urry J (2004) The 'System' of automobility. Theory Cult Soc 21(4–5):25–39. https://doi.org/10.1177/0263276404046059

Voß J-P, Smith A, Grin J (2009) Designing long-term policy: rethinking transition management. Policy Sci 42(4):275–302. https://doi.org/10.1007/s11077-009-9103-5

Göran Smith is an industrial doctoral candidate in innovation for sustainable transitions. In his doctoral project, he studies the development and diffusion of Mobility-as-a-Service (MaaS). The goal is to create better understanding of (i) how institutional arrangements affect disruptive innovations during different phases of their lifecycles, and (ii) how the public sector can enable fruitful innovation collaborations with private firms without losing the ability to ensure societal benefits.

Steven Sarasini holds a Ph.D. in Research Policy from Lund University. He is a Senior Researcher at RISE Viktoria whose research utilizes theories and concepts from transition studies and business model innovation to focus on sustainable forms of MaaS. At present, he is active in projects that examine institutional drivers and barriers to innovation within the MaaS field, action research that aims to stimulate the development of sustainable MaaS services in different urban settings, and assessment of MaaS' sustainability impacts.

I. C. MariAnne Karlsson is a Professor (chair) in Human-technology Systems at Chalmers University of Technology. Her overall research aim is to develop knowledge on the multi-dimensional relationship between people and technology. She has more than 20 years experience of investigating prerequisites for sustainable mobility from a traveler perspective. She has explored the impacts of ICT-based services and has studied MaaS since the birth of the concept.

Dalia Mukhtar-Landgren holds a Ph.D. in Political Science from Lund University, where she is employed as senior lecturer and researcher. She is also a research fellow at K2, the Swedish Knowledge Centre for Public Transport. She has published on topics such as urban development planning and experimental governance. Ongoing research projects include the governing of smart mobility and the usage of new forms of temporary organizations such as pilots and projects in local development and planning.

Jana Sochor holds a Ph.D. in Transport Science from KTH—Royal Institute of Technology. She is a Senior Researcher at Chalmers University of Technology and RISE Viktoria. She has served as a Main Member of the Emerging and Innovative Public Transport and Technologies Committee of the Transportation Research Board since 2016. Her research interests include understanding end users' perceptions, motives, and behaviors as related to MaaS so as to improve service/system design and development, adoption, and effect, as well as positively impact users' mobility choices in a more sustainable manner.