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Transport Research Arena (TRA) Conference

Moving beyond MaaS with ecosystemic way of work

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Abstract

This paper introduces a concept aiming at enhancing traveler's mobility by integrating mobility and tourism services together, creating added value for travelers seeking more sustainable ways to reach peripheral destinations. Furthermore, the paper creates ecosystem approach required to implement the concept in practice. Challenges related to the improvement of traveler's mobility are visited to further elaborate the need for the ecosystem approach. The main challenge is that nobody seems to be responsible enough for travelers' mobility and thus advancements are rolling in slowly. The paper assumes a design science approach to create the concept and ecosystem model constructs. The main result of the paper is the ecosystem model, which enables cross-sectoral collaboration and is a solution to tackle the identified main challenge.

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Keywords: Tourism; Ecosystem; Public-Private-People Partnerships; Mobility-as-a-Service and integration of networks/services; Risk sharing and stakeholders' engagement

1. Introduction

Remarkable challenge in tourism is the accessibility of rural areas and nowhere destinations and experiences. To improve the accessibility of these areas, mobility services must be further developed. The problem is also connected to larger systematic challenges such as disruption of transport. Need for efficient, low-carbon and seamlessly interoperable mobility services is well-known issue in today's society that is aiming to be carbon neutral in coming decades while battling growing demands of customers. Mobility-as-a-service (MaaS) is often named as a one solution to the problem. However, it is becoming clear that the current state-of-the-art concept of MaaS is not sufficient to the rural areas, or even in the cities, but multi-sectoral collaboration and integration are needed to achieve more desirable outcomes (Lefler 2021). Thus, we have developed a concept that goes beyond MaaS (Pihlajamaa 2021). In the concept other industries such as tourism are integrated to transport and mobility services, creating added value for travelers who are seeking more sustainable ways to reach peripheral destinations.

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The Travellers' Hospitality and Mobility Services (THMS) concept saw its birth in 2016-2018 in VAMOS! – Value Adding MOBility Services research project that examined and promoted productization, piloting and scaling of innovative customer-oriented ecosystem-based mobility and associated services into international market. VAMOS! project was followed by Open Arctic MaaS project (2018-2019) that went further in developing MaaS solution for rural areas. Further advances towards multi-sectoral collaboration were seen in FIT ME! – Foreign Individual Travelers' hospitality and Mobility Ecosystem project (2019-2020) that evolved to a larger project ensemble (bears the same name) that started in 2021. The FIT ME project aims to establish cross-sectoral collaboration between various stakeholders with innovation ecosystem approach. The THMS concept evolved from the advancements achieved in these projects and the concept is explained further in this paper. The paper creates ecosystem approach that is required to implement the concept in practice.

The paper is structured as follows. Chapter 1 presented introduction to the paper, while Chapter 2 explains used methodology. Descriptive literature review is presented in Chapter 3 and the beyond MaaS approach and concept construct of THMS is described in Chapter 4. The ecosystemic way of work is described in Chapter 5. Chapter 6 discusses the meaning of ecosystems and concludes the paper.

2. Methodology

The aim of this paper is to show how the THMS concept can be implemented in practice with ecosystemic way of work. Methodologically this paper assumes a design science approach and purpose is to develop an emerging ecosystem construct that is not yet existing in empirical sense. Research utilizes past research achievements on above-mentioned projects. Furthermore, research exploits researcher's experiences and research data from building of SmartRail Ecosystem. Research data was gathered through literature review and workshops. The THMS concept and ecosystem model are developed in close collaboration with companies, public sector, research organizations and third sector. Fig. 1. shows the research work, related results and used research data sources that were used in the development of THMS and ecosystem model concepts. Further research includes building of the ecosystem and implementation of the concepts.

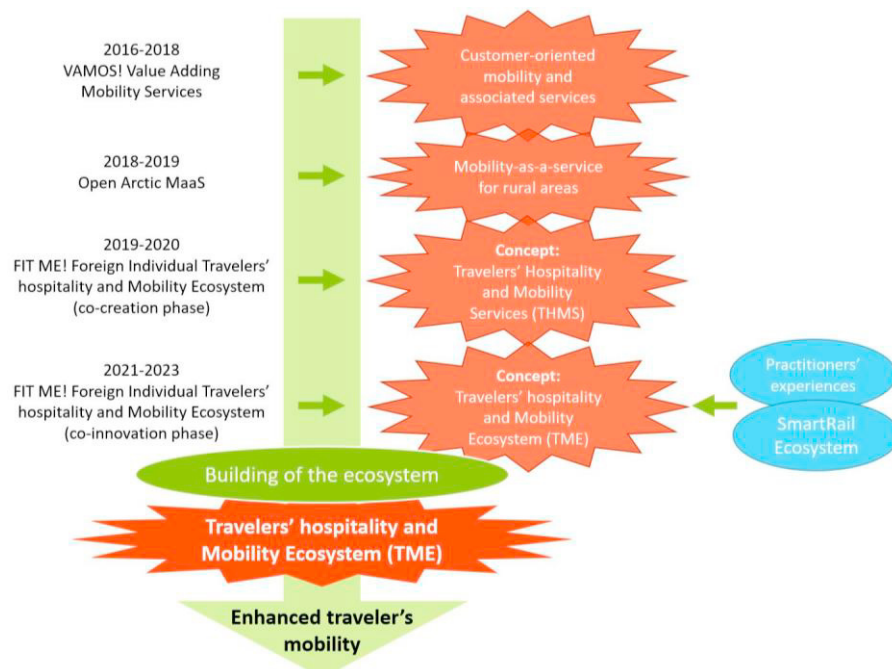


Fig. 1. Framework for construction of the THMS and ecosystem model.

3. Literature review

3.1. Tourism and travelers' mobility

Transportation plays an integral role in the development of tourism (Van Truong and Shimizu 2017). Many rural tourist destinations and resorts have attractions dispersed at remote locations, and the availability of mobility services is frequently poor for exploring the region (Pihlajamaa et al. 2018). Improvement of accessibility of tourist destination can advance the economic success of the destination (Currie and Falconer 2014). However, most studies and research on transportation-tourism relationship fail to incorporate accessibility factors (e.g. travel costs, infrastructure improvements, information provision) at all (Van Truong and Shimizu 2017).

Smart mobility services using digitalization are needed to provide easier discoverability and access to peripheral locations (Pihlajamaa et al. 2018). However, most digital services for mobility tend to focus on the needs of local users and disregard the needs of tourists and other travelers (Mendes et al. 2022). Public transport and other similar modes of mobility are commonly produced or procured (and subsidized) by municipalities, other local authority, or government, and thus the mobility services are mainly designed for local users (i.e. taxpayers).

Some developments towards more traveler-focused services were achieved e.g. in Finnish Lapland, where coalition of local Destination Management Organizations (DMO) and visit organizations (municipal DMOs) joined forces and resources to build digital information services for public transport (Nuottila et al. 2020). Even though the research and development project in question was successful, there were operational challenges (e.g. funding, organizational capabilities) as the transport or related digital services are not DMOs core business and mostly business owner (at least for the physical transport service) is very different organization (e.g. local transport authority or private business) (Nuottila et al. 2020). This results into conclusion that there are currently no organization that is responsible enough for travelers' mobility.

Angel and Benjamin (1976) referred to the 'no organization responsible enough' problem as "the principle of somebody else's problem" meaning that responsibility for complex problems fall across many different organizations (e.g. departments of government) and even those organization who wish to tackle the problem are unable to do so as they cannot overstep their authorities while the responsibilities overlap extremely and no one can act with a singleness of purpose. Considering above-mentioned shortcomings of current system, more robust integration between tourism and mobility sectors must be achieved to tear down the "entrenched structure that militates against accepting responsibility for solving the problem" (Angel and Benjamin 1976).

3.2. Mobility-as-a-service and mobility services

MaaS is a concept of user-oriented and integrated mobility services (Hietanen 2014). Integration in terms of MaaS may refer to customer transport/mobility needs (Hietanen 2014, König et al. 2016), a large variety of mobility services (Kamargianni and Matyas 2017), multimodality (König et al. 2016, Li and Voege 2017), on demand services (Burrows et al. 2015) and door-to-door travel chains (Burrows et al. 2015, Veerapanane et al. 2018). In rural areas, integration may include the integration of different services and user groups, since accessibility is the main concern (Eckhardt et al. 2020).

Integration component of MaaS can be divided e.g. into Ticket & Payment integration, Mobility package and ICT integration (Kamargianni et al. 2016) or Shared mobility, Booking/Ticketing and Multimodal traveller information (König et al. 2016). Levels of MaaS Integration (LMI) taxonomy is based on operational and cognitive user efforts and suggest that operational and informational integration should be principal determinants of scaling up MaaS (Lyons et al. 2019).

MaaS offering is based on existing public transport and expanded with additional services, such as sharing services and taxis (Eckhardt et al. 2017). However, rural areas have limited public transport, which challenges accessibility. Thus, rural mobility solutions could include e.g. on-demand transport/DRT (Wang et al. 2015), sharing services (Parker et al. 2011) and goods deliveries and other additional services connected to MaaS (Eckhardt et al. 2020).

Public-Private Partnerships (PPP) -model is used increasingly in public services (Casady et al. 2020) and it is recommended to be used in MaaS also (Eckhardt et al. 2017). In PPP-model public and private actors together develop services and divide related risks, costs and resources (Van Ham and Koppenjan 2001). Related to MaaS, it has been suggested that public sector should take more major role in service innovation and value creation (Smith et al. 2019). Services can also be developed with Public-Private-People Partnerships (PPPP) -model. In the PPPP-model end-users

participate to service creation through discussions and ideating (Jin and Qiu 2019). Furthermore, end-users can be active actors who produce mobility services within MaaS-ecosystem in accordance with the principles of sharing economy, such as peer-to-peer rental services and carpools (Eckhardt et al. 2017). The collaboration of different stakeholders (i.e. actors of PPPP-model) is key to the success of MaaS in rural areas (Eckhardt et al. 2018).

3.3. Business ecosystems and innovation ecosystems

Knowledge about business ecosystem has been produced since 1990's inspired by Moore's (1993) metaphor and article in Harvard Business Review. However, ecosystem research is mostly focused on existing business ecosystem that are concentrating on one industry and are led by single actor. In business ecosystems actors are simultaneously cooperating and competing, while creating new offerings to respond customers' demands and give birth to new innovations (Moore 1993). Ecosystems enable greater potential for value creation as companies and other actors are working together than actors could create on their own (Adner 2006). According to Moore (1993) ecosystems evolve and have certain life cycle, during which they attract new actors. On the other hand, ecosystem evolves through interactions between participating actors (Peltoniemi and Vuori 2005). Actors can operate in multiple ecosystems simultaneously (Bosch-Sijtsema and Bosch 2015), which can have ripple effects between the ecosystems and actors in question.

Innovation ecosystem is partly overlapping or parallel term with business ecosystem, but value creation and value capture discussions accentuate more in innovation ecosystem research (Apilo et al. 2014). Innovation ecosystem is integrating mechanism between knowledge and business ecosystems (Valkokari 2015). The goal of innovation ecosystem is usually solving systematic challenges, integration of different industries or goal-oriented orientation of collaborative actions (Valkokari et al. 2021).

Ecosystems can consist of public actors and other organizations besides companies (Peltoniemi and Vuori 2005). Ecosystem actors can be said to be stakeholders, which are usually divided to primary and secondary actors (Clarkson 1995, Eesley & Lenox 2006). Primary actors are critical for ecosystem survival, while secondary actors influence the ecosystem but are not necessary to its functioning (Clarkson 1995). It is significant to identify the actors and their role in the ecosystem as exit of primary actor could result in catastrophic collapse of the ecosystem (Iansiti & Levien 2004). Actors can have different roles through the life cycle of the ecosystem and similarly actors can exit and join ecosystems according to their interests (Lusikka et al. 2022).

4. The Travelers' Hospitality and Mobility Services concept

The literature review argues for the validity of the need for integrated concept between transport and tourism sectors. Thus, the THMS concept was formulated as described in introduction and methodology chapters. The THMS comprises hospitality and mobility services together and serves as a basis to the more robust integration of tourism and mobility sectors. Essentially, THMS as a product can be something as simple as digital platform that combines several services related to travelling into one unity. Fig. 2. illustrates initial construct of a such digital platform. Other research (e.g. Mendes et al. 2022) have also proposed digital solutions for traveler's urban mobility that would fit the concept. Aim of the concept is to create fertile soil for close collaboration between the two sectors in order to promote effortless sustainable individual travelling.

As stated in the literature review, currently there are no organization that is responsible enough for travelers’ mobility. Referring to the phenomenon as “somebody else’s problem” the paper argues many organizations are partly responsible, but the responsibility is divided to several organizations that look the traveler’s mobility from different angles (DMOs, individual businesses, third sector etc.) or are related to traveler’s mobility but are only indirectly producing services that traveler’s use (e.g. public transport authorities, private mobility providers). Furthermore, THMS concept co-creation process proved that most of the organizations in question are interested to improve the situation, but they are lacking resources, capabilities, incentive (business case) or grounds for jurisdiction. Continuing research on the topic also indicates that even though these organizations work on the same topic and cooperate to advance the traveler’s mobility, they also tend to concentrate only to their point of view leading to situation where every organization is in sectoral silo. To advance the situation towards more close collaboration and shared responsibility for solving the problem, we argue that the two sectors should change their way of work towards ecosystemic principles.

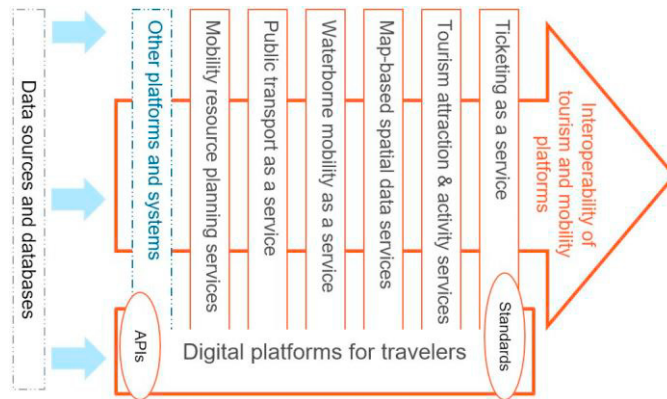


Fig. 2. Digital platforms combining several travelers’ services into one unity.

5. The Travelers’ hospitality and Mobility Ecosystem

This chapter presents the Travelers’ hospitality and Mobility Ecosystem concept construct that has been formulated based on the results so far. The work is continuing, and the concept will evolve as ecosystems usually do. Fig. 3. coins the general idea of what transition from present-day sectoral silos to ecosystemic way of work means. Idea is that the emerging Travelers’ hospitality and Mobility Ecosystem (TME) is an open, co-creative and interactive entity that brings previously separated industries, sectors and actors together to share knowledge and knowhow with shared purpose to develop effortless sustainable travel for individuals. Ecosystemic way of work summarizes terms such as multi-sectoral collaboration, PPP/PPPP-models, co-creation activities and effective use of resources and sharing of costs and risks.

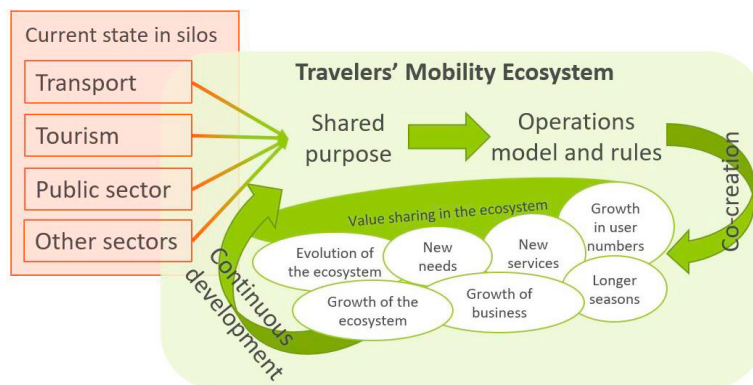


Fig. 3. Traveler’s hospitality and Mobility Ecosystem concept.

To increase stakeholders’ engagement and participation in the TME, it is important that they have true need and willingness to work with other organizations and even with direct competitors. Building sense of community is also necessary, so that all actors find the participation useful. This can be achieved e.g., by open communication, and creating the operations model and rules together with all ecosystem actors (Valkokari et al. 2021). More importantly, the ecosystem actors should share a common purpose and goals (Anggraeni et al. 2007). Thus, it is significant that primary actors and needed capabilities are identified early and those actors engaged to formulate shared purpose and goals together. Shared purpose and goals can be created in the form of vision and roadmap that represent the common ambition. Fig. 4. introduces first version of TME’s vision and initial roadmap that was formulated in early phases of ecosystem development. The initial roadmap is not yet ‘a development roadmap’ but it was created to demonstrate different aspects of mobility and travelling to introduce the operational environment for stakeholders.

Regarding creation of the operations model and rules, it is central to agree on rules and organizational model of the ecosystem. Past achievements in SmartRail Ecosystem showed that co-creation and development activities in the ecosystem should be more systematic and less organic. Actors stated for example that systematic co-creation process supports them in collaborating with other ecosystem actors (Lusikka et al. 2022). Furthermore, co-creation activities utilizing systematic development methods, such as Scrum or Lean, are seen to be more productive. However, often these ready-made methods do not apply directly to all other activities, so it is highly recommended to utilize them where applicable and tailor them to suit the needs of the ecosystem actors.

Self-organizing actors are one key aspect of ecosystems (Valkokari et al. 2021), meaning that ecosystems should not be tightly governed, but participating actors should be able to make their own decisions and act accordingly. Thus, it is recommended to have systematic co-creation process (that has been agreed on together) but leave the more precise methods and tools to be decided by actors participating to the specific co-creation activity. Furthermore, the findings suggest that to achieve meaningful results, co-creation activities cannot be forced on actors but the actors themselves should have the interest to participate. However, it seems that intensive co-creation activities are ignited more frequently if the topic or subject of the activity is well defined before calling the actors to participate. If the topic is too vague, actors are not as engaged as they should be to achieve desired outcome.

Furthermore, actors’ engagement to co-creation activities requires shared purpose (i.e. why we are co-creating instead of doing this by ourselves) and often also facilitation by a third neutral actor. The role of the third actor is highlighted when participating actors see each other as competitors. However, facilitation does not necessarily mean active participation in every discussion, but it is more about bringing different actors together and smoothing the prejudices and other hindering functions (e.g. competition, lack of confidence).

Ecosystemic way of work obviously requires resources allocated to collaboration and co-creation with other organizations, but this research proved that more close integration and collaboration is needed as no organization alone is responsible for traveler’s mobility or capable of making the required advancements to boosting effortless sustainable individual travelling.

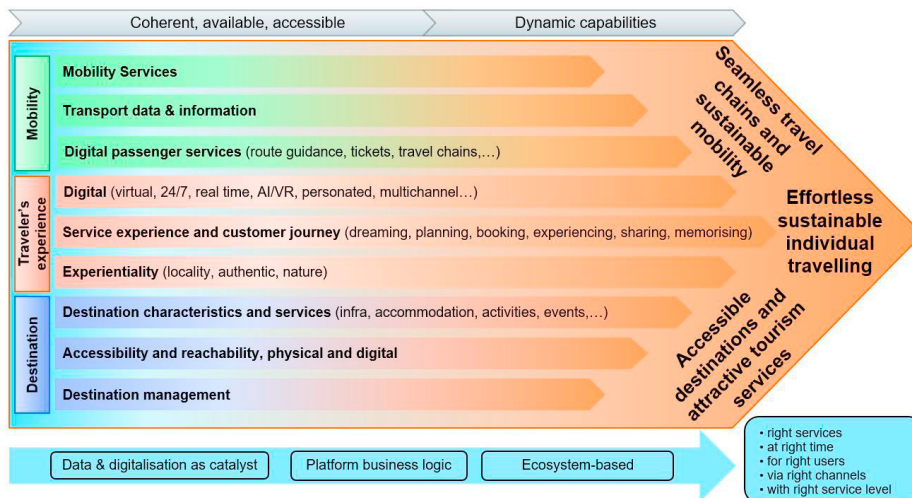


Fig. 4. Initial vision and roadmap of TME.

6. Discussion and conclusion

TME ecosystem concept has been constructed based on literature and past experiences in SmartRail Ecosystem. However, the model is still in development and requires further research. Transport/mobility and tourism industries are quite divergent, and thus experiences from transport industry ecosystems (e.g. SmartRail Ecosystem) are only partly applicable in building the TME. For example, SmartRail Ecosystem is a keystone-led innovation ecosystem while frequently in tourism industry ecosystems are more diffused, regional cluster-like communities led by public organization or association. Thus, challenge is to find right balance in governance and operational model in ecosystem formation.

Changing organizational culture is required for organizations to adapt to ecosystemic way of work. The change might be difficult to achieve if organizations are not fully invested in it. Seeing the full benefits of the TME can be challenging for the actors and without clear advantages, participation in collaboration may remain weak. Nevertheless, it is the primary actors whose participation is necessary for ecosystem's survival (Clarkson 1995), so organizations that see most the highest utility to them should be central actors in building of the ecosystem. The rest of the ecosystem should form naturally around the central actors through business interests and connections, other relationships and ties between organizations.

Further challenges of the ecosystem building relate to the prevailing world situation with pandemic and war that are affecting greatly to both travel and transport industries. Numbers of travelers and passengers have decreased greatly during the pandemic and several businesses are struggling financially. This affects companies' ability to participate to ecosystem activities as well as their whole businesses. However, the crisis is only one more reason to change attitude from lone survivor towards "win-win-win" situation that could be achieved with closer collaboration and looking beyond the barriers of own sectoral silos and breaking down the entrenched structure that hinders the progression of traveler's experience.

This paper formulated the THMS concept that integrates different industries to the production of mobility services. The paper proposed a solution how the concept can be implemented through ecosystemic way of work and illustrated the TME. The main result is the ecosystem model, which enables cross-sectoral collaboration and integration of tourism and mobility services into a holistic service offering. Future research will include implementation and progression of the ecosystem model and THMS concept. Further research is needed on the "somebody else's problem" phenomenon, i.e. how complex, systematic problems can be solved when the problem is nobody's responsibility.

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