How to maintain an urban Mobility Lab in the long term?

The role of the organisational structure in the Labs' Business Model

Gert Breitfuss

The development of sustainable urban mobility systems requires collaboration across various stakeholders, including transport and spatial planning, public administration, companies, and research institutions. Open Innovation (OI) environments, such as Urban Mobility Labs (UML), have emerged as platforms for fostering these collaborations and facilitating innovation in mobility. In Austria, the government has funded UML initiatives since 2015, with six labs currently in operation. This paper analyses the organizational structures of these UMLs, using empirical data from a qualitative study conducted during the second phase of the initiative (2017-2021). Key findings indicate that the size and composition of the UML consortia significantly influence the formalization and operational efficiency of these labs. Smaller consortia are more agile but face resource constraints, while larger consortia benefit from greater expertise but are burdened by higher coordination costs. Successful UMLs balance these dynamics through lean organisational structures, clear role distribution, and efficient processes. The analysis also explores the legal frameworks for UMLs, recommending hybrid models that integrate the strengths of both independent entities and existing institutions. These insights contribute to the long-term sustainability of UMLs by proposing organisational models that support efficient governance and business model development.

1 Introduction

In order to manage the transformation process towards a sustainable transport system and to develop and implement the necessary innovations in the field of urban mobility, cooperation between different stakeholders is required. The solutions and measures for sustainable urban mobility are not only achieved through sophisticated transport planning but also require the involvement of spatial planning and other stakeholders in the urban environment. This means that transport and urban planning must be harmonised (Beckmann, 2001; Holz-Rau, 2018; Schwedes and Rammert, 2020). Depending on the type and complexity of the solutions or measures developed (especially during implementation), it, therefore, requires the involvement of residents, of the urban (public) administrative organisations involved, companies (service providers, infrastructure suppliers) and research institutions (expert knowledge and methods)

This tailor-made combination and integration of the relevant stakeholders in these innovation processes, including the provision of the necessary infrastructure, methods and tools, can be achieved by open innovation (OI) environments such as living labs or Urban Mobility Labs (UML). In Austria, a government-funded programme initiative (FFG, 2014, 2016a) was launched to finance the establishment of real-life development environments and innovation ecosystems for mobility and transport. An exploratory phase (Phase 1) laid the foundation in 2015/16 (Berger et al., 2016; Breitfuss et al., 2018). In a second phase from 2017 to 2021, the establishment and

operation of six UMLs were funded. Five of these were in four urban areas (Vienna, central Upper Austria, the greater Graz area and the city of Salzburg) and the sixth lab (Centre for Mobility Change) had no geographical focus. The third phase was launched in 2022 with six mobility labs currently running.

As the development and establishment of these organisations, as well as the transformation processes of urban mobility, are time-consuming, it is necessary for these OI facilities to exist in the long term. The development of an economically sustainable business model (BM) for these organisations is therefore essential. A viable business model requires all the necessary components as described in established BM concepts (Osterwalder and Pigneur, 2010; Gassmann et al., 2013). These include, for example, the value proposition, the processes and needed resources for delivering the developed services, the addressed customer segments and the different revenue streams to secure the financing.

The organisational structure plays a central role in the UML-BM. The organisation of a UML is a value-creation network that is required for the implementation of the services developed. A value network consists of actors, stakeholders or partners with specific resources and skills who interact and carry out activities together to create value for customers and at the same time realise their strategies and goals (Bouwman et al., 2008). UMLs are also confronted with these organisational challenges. An effective and efficient organisation is therefore the basis for a successful UML business model.

This article is based on empirical data from a dissertation (Breitfuss, 2024) carried out at the Transport System Planning research unit at TU Wien and summarises the results and findings associated with the development of a UML organisation in a compact form. Finally, recommendations for the most efficient and effective organisational structure for UML are provided.

2 Background

The underlying data basis for the findings regarding the organisational structure of the Austrian UML initiative (FFG, 2016b) was provided by an interview study (Breitfuss, 2024) at three survey time points during the UML set-up phase (Phase 2) from 2017 to 2021. The analysis of the collected data was carried out in the form of a qualitative content analysis according to Glaeser and Laudel (2009) and Mayring (2015).

As defined in the Innovation Laboratories funding instrument (FFG, 2016a), the application for funding to set up a UML is submitted by an operating organisation and funded subject to a positive evaluation. This means that, in principle, no consortium was necessary, and the operating organisation could be an existing organisation or one that was founded specifically for the UML. Although the establishment of a separate legal entity for the UMLs was discussed during the application phase, all applicants in phase 2 decided to integrate the UML into existing organisations. Three of the five labs were operated by universities or universities of applied sciences, and two labs by public or administration-related institutions.

The size of the consortia and the number of partners varied greatly and ranged from one operator/partner (MobiLab OÖ) to the 8-partner consortium of Mobility Lab Graz (see Table 1).

UML-Name	Operating Organisation	No of Cons Partners (excl. operator)
aspern.mobil LAB	TU Wien (Research Unit Transportation System Planning)	4
MobiLab OÖ	University of Applied Sciences Upper Austria (Research & Development GmbH)	0
Mobility Lab Graz	Holding Graz (owned by the city of Graz)	7
UML Salzburg	SIR- Salzburg Institute for Spatial Planning and Housing (owned by the province of Salzburg)	5
thinkport VIENNA	BOKU- University of Natural Resources and Life Sciences	1

Table 1: UML operator and partner structure

This means that people from different institutions work in each UML for different amounts of time and in different roles. Most of the operational activities were carried out by the operating organisations. This included, for example, project management, coordination and other administrative activities.

3 Analysis Results

The set-up phase as a whole and the establishment of the organisation including structures and processes (administrative clarifications, cooperation agreements, approvals, decision-making processes, etc.) took longer than planned. For some labs, the organisational set-up took more than 2 years (50% of the funding period). In principle, it can be stated that the organisational set-up effort and the degree of formalisation of the organisation are proportional to the size of the consortium. In two UMLs, the high level of effort was also linked to the connection/integration into existing organisations, which in turn triggered discussions about an independent legal form for the UML.

The organisational structure concerning the distribution of activities of the five UMLs was very different: at MobiLab OÖ and aspern.mobil LAB, the majority of activities (administrative and operational) were carried out by the operators TU Wien and FH Upper Austria respectively. At thinkport VIENNA, the split between the operator BOKU and the Port of Vienna was 50:50.

At UML Salzburg, the operator SIR took on the administrative activities, while most of the operational services were provided by the research partners. The Mobility Lab Graz was similar, with the difference that the project management (except for finances) was not handled by the operator, Holding Graz, but by the partner Graz Energy Agency.

Each of the organisational structures chosen or developed by the five UMLs has both advantages and disadvantages. These depended on the type and integration into the operating organisation (research institution or administration) and the size of the lab or consortium. The labs run by research institutions saw advantages in their function as a central knowledge hub and in their independence. The labs run by administrative units cited the direct connection to the administration and political players as an advantage in terms of faster project implementation.

Table 2 outlines the advantages and disadvantages of the different UML organisational structures.

UML	Organisational Advantages	Organisational Disadvantages
aspern.mobil LAB	Central knowledge hub at TU Wien through technical and operational management, clear distribution of roles and tasks to partners	High coordination and networking effort for operator TU Wien team (25 people)
MobiLab OÖ	Very lean structure (no consortium), small team and therefore responsive and flexible, independence	Small team-> few resources for required activities (acquisition, service development, project implementation, administrative activities)
Mobility Lab Graz	Great diversity and expertise in the consortium, good connection to public administration	Large consortium, resulting in high communication and coordination costs, low operator resources, high degree of formalisation, hierarchical structures
UML Salzburg	Clear division of roles and tasks, direct link to city/country.	High degree of formalisation, rigid structures, slow processes
thinkport VIENNA	Lean structure, short decision-making processes, very agile	No direct connection to the administration

Table 2: Comparison of organisational advantages and disadvantages

The following general organisational structure has become established or proven itself in almost all UMLs during the project.

Operational team: People who primarily or exclusively do UML work, who run the day-to-day operations, who take part in the networking meetings; approx. 3-5 people, depending on the UML, usually employed by the operating institution (in some cases also by co-financing partners), as the UML was not a separate legal entity. The operational core team (2-3 people) usually meets weekly for coordination meetings.

Steering group: This is the group of people who make key decisions. It generally comprises representatives of the operating organisation, the co-financing partners, and optionally people from the operational team and/or people from other partner institutions. Meetings or coordination meetings usually once a quarter or less.

Advisory board (board of experts): This committee does not make any decisions and is usually made up of people (e.g. experts, professors) from project partners or LOI partners of the lab. The participants contribute their expertise and networks, advise the UML, serve as multipliers and 'door openers' and provide support in dissemination. Advisory board meetings usually take place 1-2 times a year.

4 Findings & Recommendations

As explained in Chapter 3, the organisational structure and degree of formalisation is proportional to the size of the consortium. A small consortium has advantages in terms of agility, fast decision-making and lean administration. However, this is also associated with a disadvantage due to - possibly - low or missing personnel resources and competencies for the extensive setup and operational activities of the UML. The aim here should be to combine the advantages of a small organisation (agility and lean structure) with the advantages of a large organisation (more resources and expertise) in the best possible way. An organisational structure in the form of an operational (core) team that is responsible for day-to-day operations, a steering group that makes the key decisions and an (expert) advisory board made up of experts who contribute their expertise and networks has proven successful for all UMLs.

The following recommendations emerged from the analysis results concerning the UML organisation:

- Keep the structure and processes as lean as possible (flat hierarchy)
- Ensure a clear distribution of roles, responsibilities and tasks

- » Break down UML goals (measurable if possible) into roles and responsibilities for each partner and area
- » Increased involvement of the advisory board and experts, especially in the initial phase
- » A relatively high level of autonomy should be aimed for
- » The involvement of public administration as a partner in the UML should be sought or a commitment from public administration institutions should be in place.

Regarding the long-term development of a UML organisation, the lean organisational structure of thinkport VIENNA with the relatively balanced partnership of the university operator (BOKU) and the partner Port of Vienna as an independent company of Holding Wien (indirect connection to the administration) was a good choice.

The considerations as to which legal form (integration into existing institutions or as a separate legal entity) is optimal for a UML were already discussed in the exploratory phase (2015/16) and intensively throughout the entire duration of the UML in phase 2. The fact is that in phase 2, all UMLs decided in favour of integration into existing institutions or chose universities/universities of applied sciences and administrative institutions as operators. Despite the intensive discussions and considerations regarding a possible change of legal form towards a separate UML legal entity, all UMLs in phase 3 again decided in favour of integration into existing institutions.

In addition to these two variants 'integration into existing institutions' and 'separate legal entity', hybrid forms are also possible. This would allow the advantages of both variants to be utilised. The UML partners could be involved in the UML as owners of an independent organisation or in the form of an affiliated company (e.g. a subsidiary organisation of the operator). One example of this is the Green Energy Lab. This innovation lab in the field of sustainable energy solutions was founded as an association with the four regional energy suppliers (Wien

Energy, EVN, Burgenland Energy and Energy Steiermark) as founders. The funding organisation here is the Climate and Energy Fund of the Federal Ministry of Climate Action, Environment, Energy, Mobility, Innovation and Technology.

5 Conclusion and Outlook

As the development and establishment of a UML organisation, as well as the transformation processes in the transport and mobility sector, are time-consuming, these institutions must be set up or exist for the long term. An important prerequisite for this is an economically sustainable UML business model in combination with an effective and efficient organisational structure. A recommendation for a specific legal or organisational form that is per se superior to other forms cannot be derived from the empirical data or the literature. More important than the legal form, however, is the governance, i.e. the design of the organisation regarding the distribution of roles and tasks and the creation of efficient processes.

It is important to emphasise here that the development of an organisation or the development of an economically sustainable UML business model, in general, is not a one-time activity but an iterative process in which the organisational considerations and assumptions made must be tested and revised or adapted if necessary.

References

Beckmann, K.J. (2001), "Integrierte Verkehrskonzepte", in Köhler, U. (Ed.), Verkehr: Strasse, Schiene, Luft, Ingenieurbau, Ernst & Sohn, Berlin, pp. 269–288.

Berger, M., Doerrzapf, L., Breitfuss, G., Poglitsch, M., Stickler, A., Sodl, V. and Remele, E. (2016), Begleitstudie Urbane Mobilitätslabore: Lernprozesse aus den UML Sondierungsprojekten, Graz/Wien.

Bouwman, H., Faber, E., Haaker, T., Kijl, B. and Reuver, M. de (2008), "Conceptualizing the STOF Model", in Mobile Service Innovation and Business Models, Springer, Berlin, Heidelberg, pp. 31–70.

Breitfuss, G. (2024), "Open Innovation Milieus für Mobilität, Wirtschaftlich nachhaltige Geschäftsmodelle zur Etablierung von urbanen Mobilitätslaboren in Österreich", Dissertation, Transport System Planning (MOVE), TU Wien, Vienna, 2024.

Breitfuss, G., Berger, M. and Doerrzapf, L. (2018), "Innovation Milieus for Mobility – Analysis of Innovation Lab Approaches for the Establishment of Urban Mobility Labs in Austria", Proceedings of 7th Transport Research Arena, Vienna, Austria.

FFG (2014), Ausschreibungsleitfaden MdZ Sondierung zu Urbanen Mobilitätslaboren, Wien. FFG (2016a), Leitfaden zur Förderung von Innovationslaboren, Wien.

FFG (2016b), Mobilität der Zukunft UML Ausschreibungleitfaden Phase 2: Implementierung und Betrieb experimenteller Umgebungen für die urbane Mobilität der Zukunft (Umsetzungsphase), 7. Ausschreibung, Wien.

Gassmann, O., Frankenberger, K. and Csik, M. (2013), Geschäftsmodelle entwickeln: 55 innovative Konzepte mit dem St. Galler Business Model Navigator, 1. Aufl., Carl Hanser Fachbuchverlag, s.l.

Gläser, J. and Laudel, G. (2009), Experteninterviews und qualitative Inhaltsanalyse als Instrumente rekonstruierender Untersuchungen, Lehrbuch, 3., überarb. Aufl., VS Verlag für Sozialwissenschaften, Wiesbaden.

Holz-Rau, C. (2018), "Verkehr und Verkehrswissenschaft", in Schwedes, O. (Ed.), Verkehrspolitik: Eine interdisziplinäre Einführung, SpringerLink Bücher, 2. Aufl. 2018, VS Verlag FUR SOZIALWISSE, [Place of publication not identified].

Mayring, P. (2015), Qualitative Inhaltsanalyse: Grundlagen und Techniken, 12th ed., Beltz Pädagogik, Weinheim.

Osterwalder, A. and Pigneur, Y. (2010), Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers, John, Wiley & Sons, New Jersey.

Schwedes, O. and Rammert, A. (2020), "Was ist integrierte Verkehrsplanung? Hintergründe und Perspektiven einer am Menschen orien