Mobility-as-a-Service from cities & PTO perspectives

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Mobility-As-a-Service (MaaS) aims at providing consumers with seamless, flexible, efficient and users-oriented mobility services.

It ultimately folds a shift away from the personal ownership of individual (motorized) transportation modes and non-integrated means of transportation towards the use of multimodal mobility solutions, consumed as a service.

This is enabled by combining transportation services from public and private transportation providers (incl. “new mobility solutions”) through an integrated mobility platform that creates and manages the journey and integrating planning, booking, ticketing and payment on a one-stop-shop principle.
Cities and PTO understand **public benefits** of MaaS

**Consumers**
- **Improvement of** customer experience, providing freedom of movement to all
- **Reduction of households** mobility budget

**Cities/Authorities**
- **Optimization of investment** in infrastructures
- **Productivity and efficiency improvement** of the system (including PT)
- Ability to orient mobility usage towards sustainable mobility, helping to solve congestion and reach sustainable development goals (SDGs)
- Contribution to mobility for all through better integration of PT with first & last miles solutions

**Mobility Solutions Providers** (public/private)
- **Real-time optimization** of the each of the mobility offerings
- **Extended access to customers for “new mobility” MSPs**, reducing customer acquisition costs and improving coverage rate

Source: Arthur D. Little Future of Mobility Lab
… but also have **fears** towards private MaaS players entering “their” mobility systems with commercial-driven approaches

Fears from authorities perspective

- Fear of **encouraging a shift towards cars** and away from sustainable transport modes
- Fear of **higher costs for transport** and **inequality of services and reach** to citizens (focusing on most contributive customers)
- Fear that private MaaS operators would **capture relationship with the customer**, weakening authority’s brand image

Fears from PTO perspective

- **Fear of losing direct contact with the customers** and of **commoditization**
- **Fear that the core PT offering will be undermined** in case private MaaS operators would favor car-based solutions
- **Fear of losing part of the revenue from ticket distribution** (part of the endowment for incumbent PTOs)
- **Risk of not being part of capturing the potential of the MaaS market**

Source: Arthur D. Little Future of Mobility Lab. ¹ In case Mobility-as-a-Service would not be properly regulated. See e.g. Polis position paper.
Most PTA & PTO realize they have a *role to play*... but many are still *struggling* to define their vision and strategy

- **How can PTA contribute to frame a virtuous MaaS for their city?**
- **What is the appropriate MaaS market model?**
- **What is the right governance and industrial model between PTA, PTO and private actors?**
MaaS at system level from city perspective – *It is not just a platform & apps!*

- **Multi-modal transport masterplan**
- **Well-integrated physical mobility infrastructures and solutions**

**MaaS Governance & Regulation (system level)**

**Back-end B2B platform**
- B2B back-end platform optimizing planning, booking, ticketing, and payment
- Accessing data from individual MSPs and connecting to physical solutions and infrastructure

**Front-end B2C application(s)**
- Front-end application (customer interface) with integrated functionalities (plan, book, pay, reporting)
- Providing on-demand additional services

**Multimodal tariffs integration**
- Multimodal tariffs integration (“single tickets”)
- Integrated payment (pay-as-you-go, pre-paid packages, monthly subscription,...)
- Risk governance model (insurance for third-party services)

Source: Arthur D. Little Future of Mobility Lab
Challenges and Imperatives for cities

Cities must play an **active role** in MaaS...

... finding the right balance between **framing** and **enabling**

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**Framing and controlling MaaS in the benefits of the system as a whole**

- MaaS Vision and Market Model (ensuring “system optimum” and “fair distribution of access to mobility”)
- Operating conditions for MaaS & MSP
- “Data sharing” requirements
- Monitoring & Controlling

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**Enabling value maximization for all (incl. private players) by fostering innovation and collaboration**

- Public investments in multi-modal mobility infrastructure
- Level playing field across mobilities
- Open innovation platform & Experimentation
- Standardization & Guidance

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**Source:** Arthur D. Little Future of Mobility Lab
Cities can also play a critical role to enable MaaS through deployment of **mobility data-lakes** (e.g. NAPs)

**European legislation on the re-use of public sector information** (2003/98/EU), December 31st, 2003
- Encourage Member States to make as much public-sector information available for re-use as possible

**Intelligent transport system directive** (2010/40/EU), August 26th, 2010
- Framework in support of the coordinated and coherent deployment and use of ITS within the EU

**“Open Data”** (Revision 2013/37/EU), July 17th, 2013
- Public open data (issued or controlled by the public sector or its entities).
  - Principles put forward:
    - Access and availability;
    - Reuse and distribution;
    - Universal participation

**National Access point** (2010/40/EU), October 21st, 2017
- Member States are required to deploy National access point(s):
  - Compulsory: Historical and static data
  - Optional: Dynamic data
  - Includes a set of guidelines about implementation

In Europe, it is up to each Member State to define its ambition

Cities have a critical role to play!

Source: Arthur D. Little analysis. 1) (i.e. nature of data to include, depth of integration and operating model: one single NAP (Database), several access points with an “orchestrating” layer (DataWarehouse) or a simple register
Evolution of MaaS market models

Three *MaaS market models*

**Aggregated public MaaS platform**

"Public MaaS operator takes it all"

- Front-end
- Back-end

**Aggregated liberal MaaS market**

"Free market – operators driven" (public & private)

- Front-end
- Back-end

**Disaggregated public MaaS platform**

"Regulated free market with public enablement"

- Front-end
- Back-end

Source: Arthur D. Little Future of Mobility Lab; 1) Make or Buy or combined industrial model
The **aggregated public MaaS platform** model implies non-openness of PT data & development of a “closed” public MaaS.

**Aggregated public MaaS platform**

“**Public MaaS operator takes it all**”

- **Front-end**
  - API
- **Back-end**
  - API

**Representative examples**

- **Hannover (Hannovermobil by üstra/GVB)**
  - Pilot in 2014, 2nd phase in 2016 by GVB (PTA) and üstra (PTO)
  - Plan, book, ticket, payment of PT, taxi and car-sharing (PaYG)

- **Dubai (S’Hail by RTA)**
  - Launched in 2017, integrating PT (journey planning) and taxi (plan & book)
  - Operated by RTA

- **Mulhouse (Compte Mobilité)**
  - Hybrid Card & App MaaS with post-PayG, integrating PT, bike & car-sharing, VTC and bicycle parking facilities
  - Developed & operated by Transdev

*Source: Arthur D. Little Future of Mobility Lab; 1) Make or Buy or combined industrial model*
Cities increasingly recognize the limitations of this “transitional model” which is likely to become obsolete.

- This model is based on the public's hold on the MaaS, implying a policy of non-openness to third parties of PT data.

- Public player (PTA or PTO) operates a unique MaaS platform, integrating its own modes and aggregating third party modes.

- It does not allow for free-market dynamics and thereby can severely limit innovation at the detriment of citizens.

- Transition model – In Europe, this model might become obsolete given expected evolution of the ITS Directive (i.e. NAP).

Source: Arthur D. Little Future of Mobility Lab; 1) Make or Buy or combined industrial model.
Evolution of MaaS market models

The “**aggregated liberal MaaS market**” implies openness of PT data/APIs to allow development of (public & private) MaaS

### Aggregated liberal MaaS market

“**Free market – operators driven**” (public & private)

- **Front-end**
- **Back-end**

### Representative examples

- **Helsinki, Birmingham, Antwerp (Whim)**
  - In Helsinki (since late 2016), Birmingham and Antwerp & more to come soon
  - Multiple mobilities, PayG & subscription based

- **Denver/US (Uber)**
  - First app-based integration of PT ticketing by private eHailer
  - Strong ambitions (‘head of cities’ in Europe)

- **London (Citymapper)**
  - Card-based MaaS with PayGo and subscriptions integrating PT, rail, cycles and ride sharing
  - “From J. planner to MaaS”

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Source: Arthur D. Little Future of Mobility Lab; 1) Make or Buy or combined industrial model
If properly framed, the **liberal MaaS model has multiple benefits** and foster innovation at the benefits of the customer.

- **This liberal model** (involving open data and APIs of PT) allows for **strong free market dynamic favoring innovation** to the benefits of the customers.

- **It requires strong framing/regulation by PTAs** to ensure that MaaS operators are striving for the system optimum.

- **From a city perspective, a disadvantage of this model is that** – in case of multiples platforms and data-lakes – it **would not allow optimization of mobility flows in public interest**.

Source: Arthur D. Little Future of Mobility Lab; 1) Make or Buy or combined industrial model
The “Disaggregated public MaaS platform” model implies the development of an “open back end” by public transport operators.

### Disaggregated public MaaS platform

- **“Regulated free market with public enablement”**
- **Front-end**
- **Back-end**

### Representative examples

- **Vienna + planned extension to other Austrian cities (Upstream)**
  - Founded in 2016 by WienerStadtwerkte (PTA) and Wiernerlienen (PTO) after 1st pilot in 2012
  - Several MaaS front-ends in place or in development

- **Hamburg (Switchh)**
  - MaaS back-end developed by Hamburger Hochbahn (PTO), with Upstream
  - Comprehensive MaaS front-end planned by late 2019

- **Other cities in planning (& more to come)**
  - Paris (IDFM): Tender recently launched to find a solution provider for back-end platform
  - Brussels (STIB / BM): Cf. MaaS vision published in April 2019 by Brussels Minister of mobility

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Source: Arthur D. Little Future of Mobility Lab; 1) Make or Buy or combined industrial model
If properly operated (requiring agility of public entities), this model can be virtuous and is increasingly considered by cities.

Disaggregated public MaaS platform

“Regulated free market with public enablement”

- Development by public (authorities and/or PTO1) of a public back-end and data-lake (incl. PT and third party MSPs data).
- … allowing (public or private) MaaS operators to connect and to deploy their front-end MaaS B2C applications
- Provision of PT data through the back-end (under non-discriminatory conditions) to front-end operators
- If properly operated, it combines the advantages of the liberal model while allowing dynamic optimization of traffic flows in the public interest (authority accountability)

Source: Arthur D. Little Future of Mobility Lab; 1) Make or Buy or combined industrial model
### MaaS… Challenges and Opportunities for all players!

#### Cities and Public Transport Operators

- **Cities have a strong role to play:**
  - Framing/Controlling & Enabling
  - Investing in physical integration of mobilities
  - Co-development of MaaS back-end (data-lake & mobility flow optimization)
- **PTO should not consider MaaS as a threat and open their system...**
  - ...while assessing opportunities to **play a role in MaaS back-end platform** development (along with authorities)

#### MaaS operators & technical suppliers

- **Main challenges for MaaS operators are:**
  - **Customer acquisition costs**
  - ** Recruiting MSPs**
  - **Securing a viable business case**
- **MaaS operators and suppliers should get closer & collaborate with cities**
  - ... increasing access to customers (reduced acquisition costs) and to MSPs (easier integration)
  - ... as well as further assess opportunities from MaaS B2B

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Source: Arthur D. Little Future of Mobility Lab
The Future of Mobility Lab is Arthur D. Little’s contribution to tackling the urban mobility challenge. Arthur D. Little aims to use its Future Lab to support cities and nations in shaping the extended mobility ecosystems of tomorrow and as a catalyst to enable and facilitate an open dialogue between mobility stakeholders.

– Ignacio Garcia Alves, Arthur D. Little Global CEO

1. Foresight analysis and mobility scenario development in uncertain environment
2. Definition of national/regional/urban mobility vision, strategies and roadmaps
3. Opportunity assessment & Due Diligence of innovative business model and solutions
4. Go-to-Market Strategies (incl. set up of multi-stakeholders ecosystems)
5. Assessment of mobility performance (Urban Mobility Index)

www.adl.com/futuremobilitylab
“Who says it can’t be done?”

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