



UNIVERSIDADE DE
COIMBRA



Mobilidade como um Serviço: passado, presente e futuro

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Outline

- 1. Introduction**
- 2. MaaS Demand**
- 3. MaaS Offer**
- 4. The future of MaaS**
- 5. Conclusion**

1. Introduction

What is MaaS?

“Mobility as a Service (MaaS) integrates various forms of transport and transport-related services into a single, comprehensive, and on-demand mobility service.”



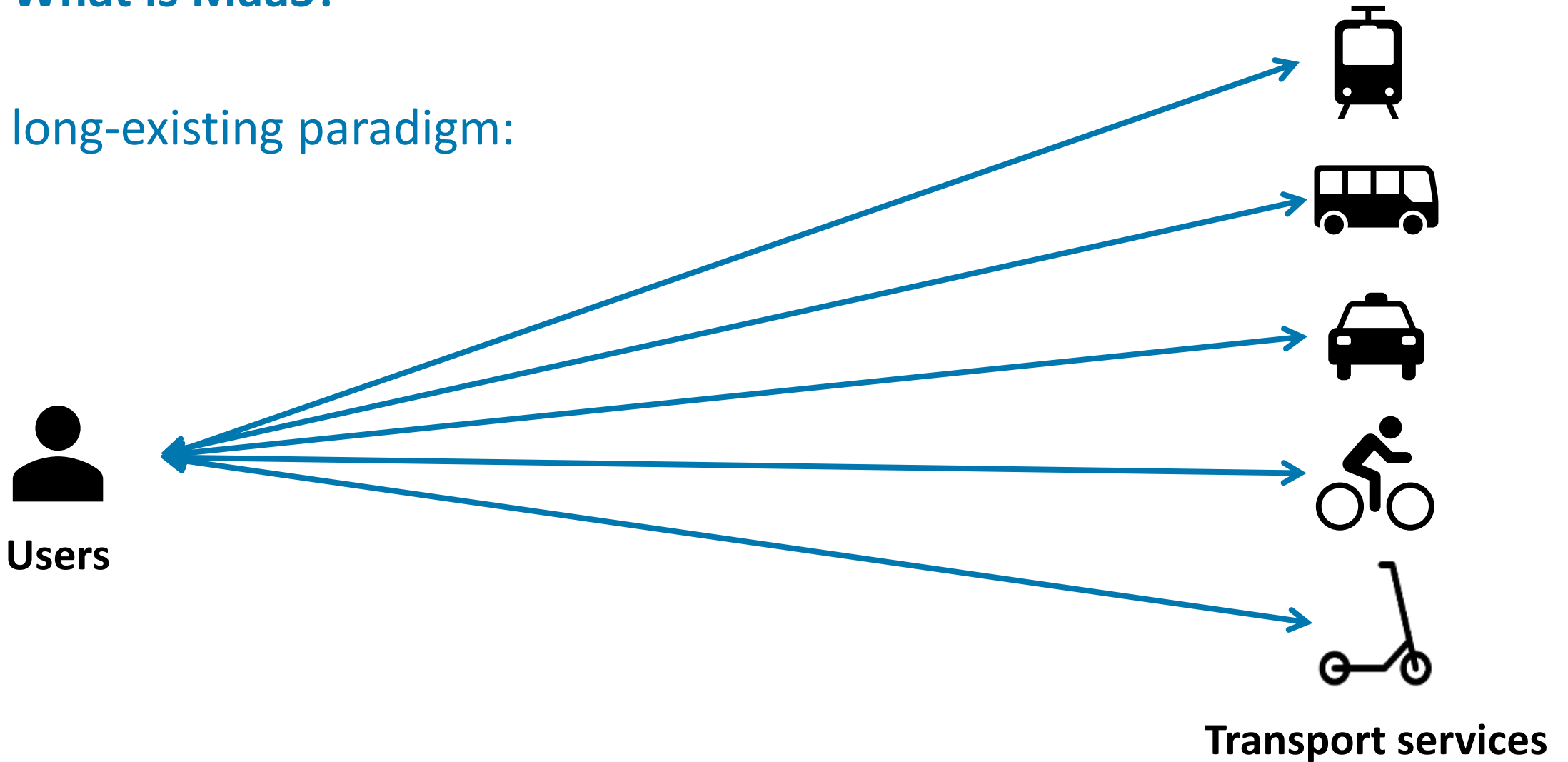
MaaS Alliance

<https://maas-alliance.eu/>

1. Introduction

What is MaaS?

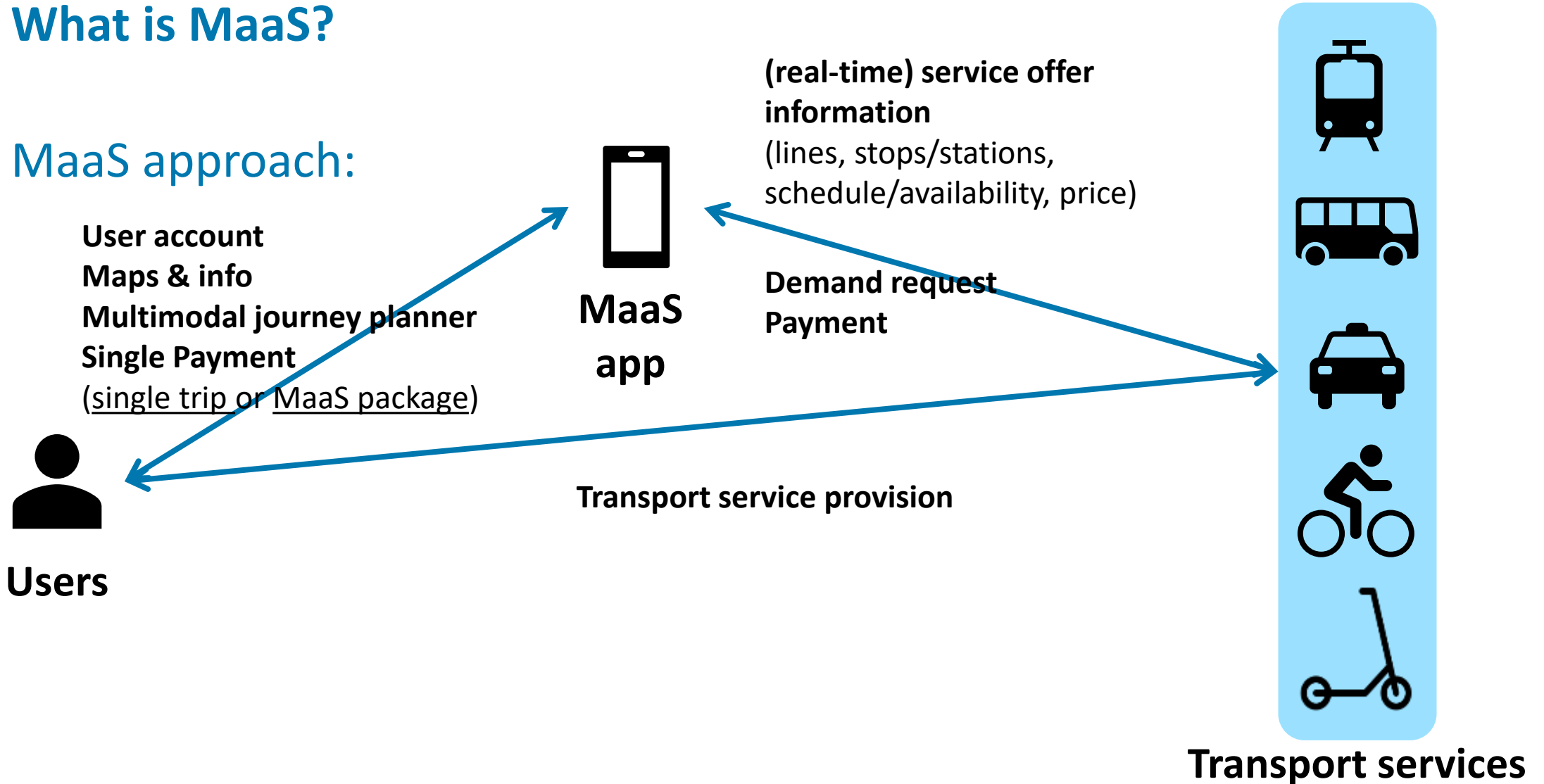
long-existing paradigm:



1. Introduction

What is MaaS?

MaaS approach:



1. Introduction

The main idea



Fulfill mobility needs without requiring to own a private car or various travel cards/apps from different public transport companies or mobility service providers.

1. Introduction

MaaS promises/claims



Users

- Access mobility through a single platform
- Single payment
- Tailor-made, door-to-door, on-demand mobil.
- Seamless experience



Transport operators

- Access to pool of users
- Better demand info
- Opportunity to serve unmet demand



Cities / Transport authorities

- Increase the transport system efficiency
- Promote sustainable transport
- Reduce congestion and transport externalities

1. Introduction

The origin of MaaS

2014 | M.Sc. thesis



Sonja Heikkilä

Mobility as a Service
– A Proposal for Action for the Public Administration

Case Helsinki

Thesis submitted for examination for the degree of Master of Science in Technology.

Espoo 28.04.2014
Supervisor: Professor Eric Bruun
Instructors: Ville Lehmuskoski, Sampo Hietanen

ITS & TRANSPORT MANAGEMENT 2015 | Eurotransport

Sampo Hietanen
CEO, ITS-Finland

'Mobility as a Service' – the new transport model?

What if a service provider took care of your mobility requirements and the only choice you would need to make is how many minutes in advance you would need to order your ride? Your operator would take care of all your transportation needs locally and, if chosen, abroad. What would it take to create a package that offers a better service-promise than a privately owned car? Advances in technology are enabling new ways for service offerings and new players are regularly stepping into the mobility market.

The 'digitalisation-wave' soon to hit transport
Many industries have been dramatically hit by a wave of digitalisation and transformed services. The telecoms sector, media industry and even the banking sector have radically changed over the last couple of decades. And the biggest change in the media sector was not made by the media companies themselves but by Google and Facebook etc.
Transportation has had unchanged structures since owning a private car became dominant. Nowadays, transport systems are a strange combination of separately financed traffic systems, political decisions and local businesses, and the consumer is always left alone to deal with the differences.
For example, if I wanted to compare the cost of using a taxi, bus, train, airplane, rental car (or a private car) to make a 500km-long journey, the calculation would be very difficult.
Bus transportation is subsidised in one way and trains in another, and private cars have high start-up costs but usage is relatively inexpensive. A flight ticket is perhaps the only example where all costs are somewhat included in its total price.

'Mobility as a Service' – the new transport paradigm
Mobility as a Service (MaaS) is a mobility distribution model in which a customer's major transportation needs are met over one interface and are offered by a service provider. Typically,

Eurotransport
Volume 12, Issue 2, 2014

2



Sampo Hietanen ✓ · 1st
Owner Aspectu, Founder MaaS Global (Whim app), Advisor
Helsinki, Uusimaa, Finland · [Contact info](#)
15,071 followers · [500+ connections](#)

At that time (2014-15): CEO of ITS-Finland

1. Introduction

MaaS – Where does it come from?

Antecedents...

- Transport integration
- Multimodality
- ITS

Triggers

- Digitalization
- Sharing economy
- New Mobility Services (NMS)

1. Introduction

MaaS is not all the same → MaaS classification

- Kamargianni et al., 2016: considering the degree of integration, distinguishes between partial/advanced integration.
- Sochor et al., 2018: classifies MaaS schemes based on integration levels (0 to 4).

Table 1

Typology of MaaS schemes according to the level of integration.

Integration Categories (Kamargianni et al., 2016)	Integration Levels (Sochor et al., 2018)	Examples
-	4 - Integration of societal goals	
Advanced Integration with mobility packages	3 - Integration of service offers (bundles)	Whim, UbiGo (pilot)
Advanced Integration	2 - Integration of booking & payment	Free2Move, moovel, Jelbi
Partial Integration	1 - Integration of information	Moovit, Qixxit, Google maps
-	0 - No integration	Lyft, Hertz

Source: Hasselwander, M., Bigotte, J. F., Antunes, A.P. & Sigua, R.G. (2022). Towards sustainable transport in developing countries: Preliminary findings on the demand for mobility-as-a-service (MaaS) in Metro Manila. Transportation Research Part A: Policy and Practice, 155, 501-518. <https://doi.org/10.1016/j.tra.2021.11.024>

1. Introduction

MaaS is not all the same → MaaS classification

- Orozco-Fontalvo et al. (2024). IMPReSS: a comprehensive method to classify MaaS systems, Transport Policy 155, 234-241.

Complexity/Relevance order	Feature	Question
1	Societal goals and values	Are local, regional and/or national policies and goals integrated into the service?
2	Service subscription	Does it offer more than one subscription option?
3	Booking & Reservation	Is it possible to book within the app?
4	Payment (Seamless)	Is it possible to pay within the app?
5	Multimodal options	Does it include public transport and other modes?
6	Information access	Does it include a multimodal trip planner, providing different travel alternatives?



Information access	Multimodal options	Payment (Seamless)	booking or Reservation	Service subscription	Societal goals and values
1 (included)	1 (included)	1 (Included)	0 (absent)	1 (included)	0 (absent)

2. MaaS Demand

MaaS trials

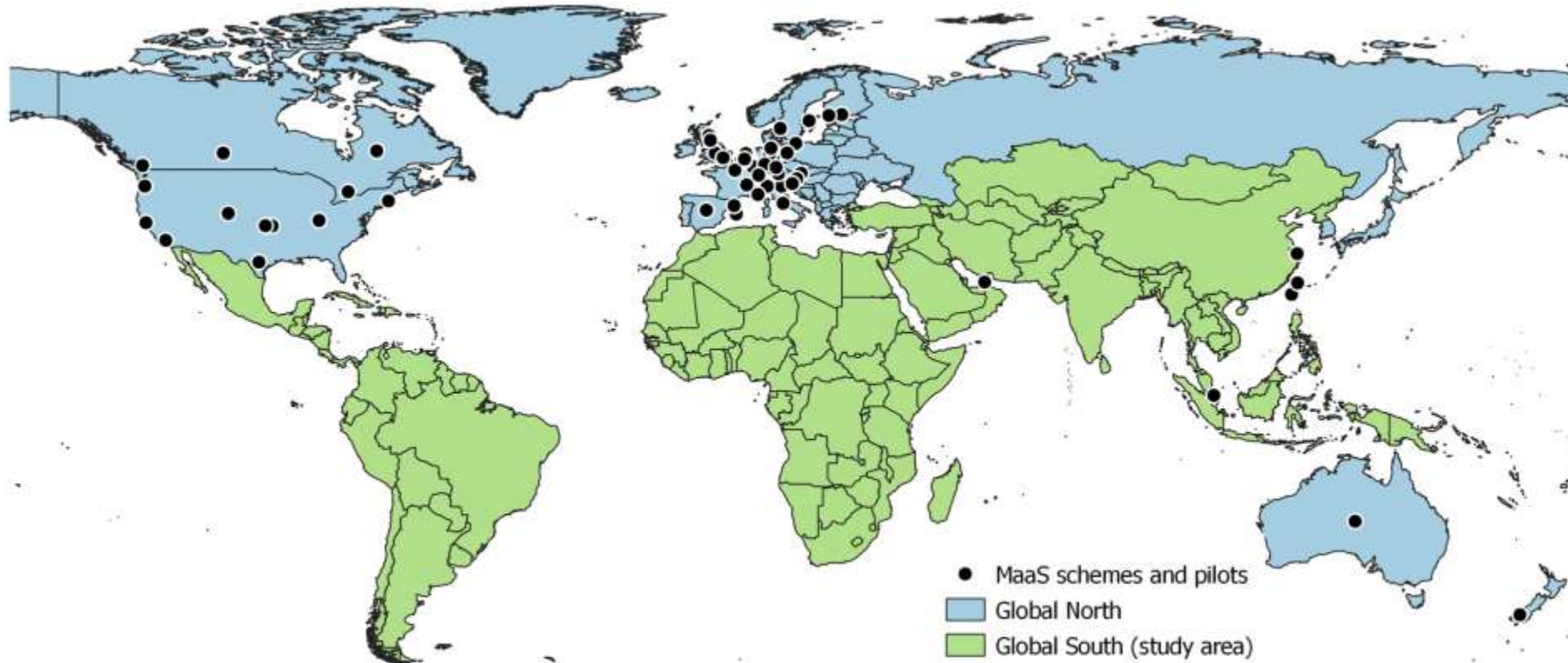


Fig. 1 Worldwide MaaS penetration: Map of existing MaaS schemes and pilots as of 2019. (Data source: MaaS-Alliance)

2. MaaS Demand

MaaS adoption

Recent review (SLR)

Kriswardhana and Esztergar-Kiss (2023):

Total of 29 scientific studies (no grey literature)

- revealed preference: 3
- stated preference: 26

Gothenburg

Author	Country	Number of respondents	Experiment design	Modeling technique
Sochor et al. (2016)	Sweden	195	RP	-
Ho et al. (2018)	Australia	252	SP	MNL
Matyas and Kamargianni (2019b)	UK	1068	SP	MXL
Floreze et al. (2019)	Netherlands	568	SP	LCCA, Regr.
Ho et al. (2020)	Australia, UK	290	SP	MNL
Caiati et al. (2020)	Netherlands	1078	SP	MXL
Feneri et al. (2020)	Netherlands	1010	SP	ECLogit
Vij et al. (2020)	Australia	3985	SP	LCCM
Guidon et al. (2020)	Switzerland	998	SP	MXL
Polydoropoulou et al. (2020b)	UK	N/A	SP	HCM
Ye et al. (2020)	China	600	SP	SEM
Jang et al. (2020)	Netherlands	1078	SP	MXL
Alonso-González et al. (2020)	Netherlands	1006	SP	LCCA
Schikofsky et al. (2020)	Germany	1067	SP	PLS-SEM
Zijlstra et al. (2020)	Netherlands	1547	SP	CFA, Regr.
Hoerler et al. (2020)	Switzerland	995	SP	BLR
Mola et al. (2020)	French, Finland	201	SP	SEM
Tsouros et al. (2021)	UK	574	SP	MNL
Lopez-Carreiro et al. (2021b)	Spain, Netherlands	1418	SP	GOLogit
Lopez-Carreiro et al. (2021a)	Spain	1000	SP	CFA
Ho et al. (2021)	Australia	150	RP	MXL
Sujae Kim et al. (2021b)	South Korea	161	SP	Regr.
Hensher et al. (2021)	Australia	150	RP	BLM
E. J. Kim et al. (2021a)	South Korea	331	SP	MXL
Farahmand et al. (2021)	Netherlands	236	SP	MXL
Ko et al. (2022)	South Korea	781	SP	OPM
Hasselwander et al. (2022)	Philippines	238	SP	BCM
Matowicki et al. (2022)	UK, Poland	6405	SP	MNL
Seheon Kim and Rasouli (2022)	Germany, Netherlands	1299	SP	HCM

Sydney

Sydney

2. MaaS Demand

MaaS adoption factors



Users

Socio-demographic characteristics

- Age ↓, MaaS ↑ (but Manila: across all groups)
- Educational level ↑, MaaS ↑
- Access to car ↑, MaaS ↓ (but NED: no)
- Tech adoption (apps) ↑, MaaS ↑
- Male / Female: no clear effect

Travel habits and attitudes (+)

- Inter/multimodal travellers ↑, MaaS ↑
- Shared mobility ↑, MaaS ↑
- Avg. daily travel distance: no clear effect

2. MaaS Demand

MaaS adoption

Reasons for adoption

- Convenience
- Reliability
- Cost reduction
- Environmental sustainability (but Manila: no effect)
- Information and ticket/payment integration
- Personalization / Tailor-made

3. MaaS Offer

3. MaaS Offer

Diffusion of MaaS (vs ride-hailing)

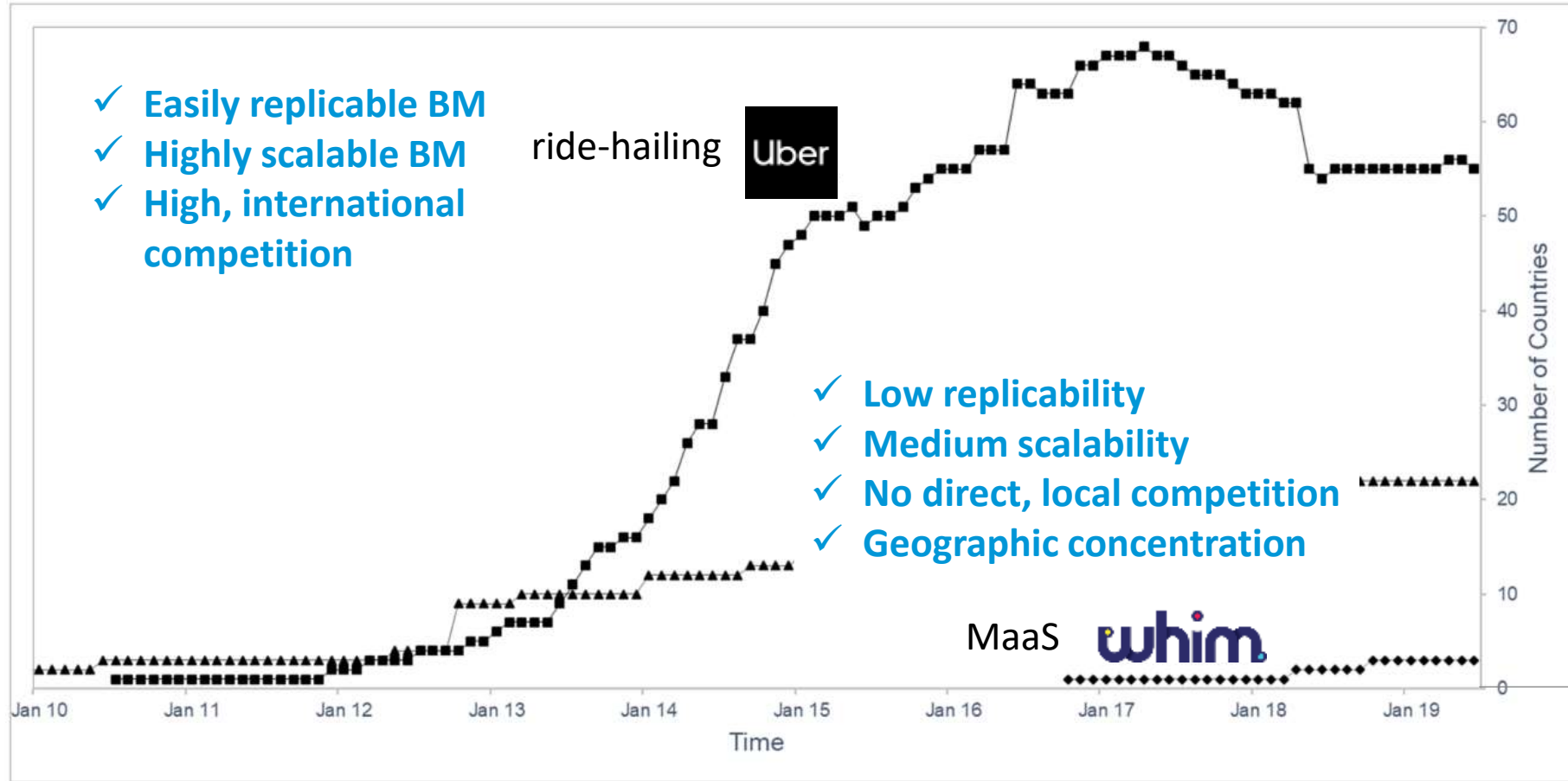


Fig. 6. Expansion of market leaders over time (Jan 2010 – Jun 2019).

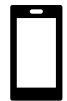
April 2024:
Whim was
acquired by
umob

3. MaaS Offer

MaaS ecosystem / stakeholders

- Transport authorities
- Transport service providers
- Customers / end-users
- Tech solutions and infrastructure (e.g. ticketing and payment, journey planners, ICT infra.)

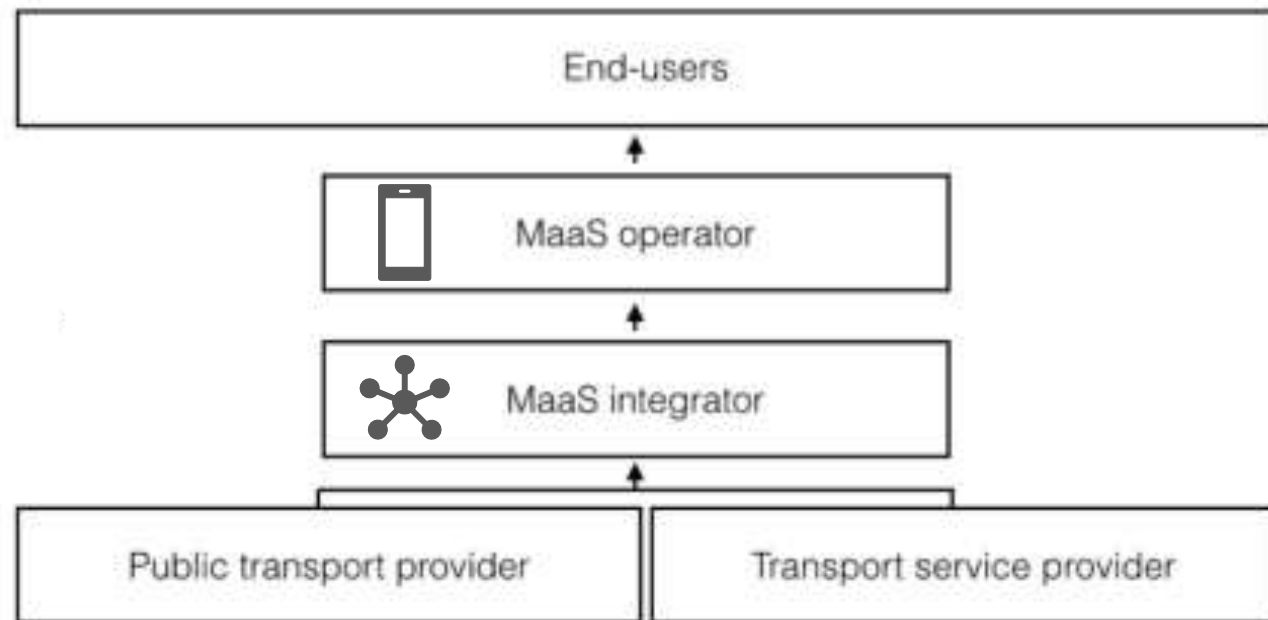
➤ New roles!!



MaaS operator(s)



MaaS integrator

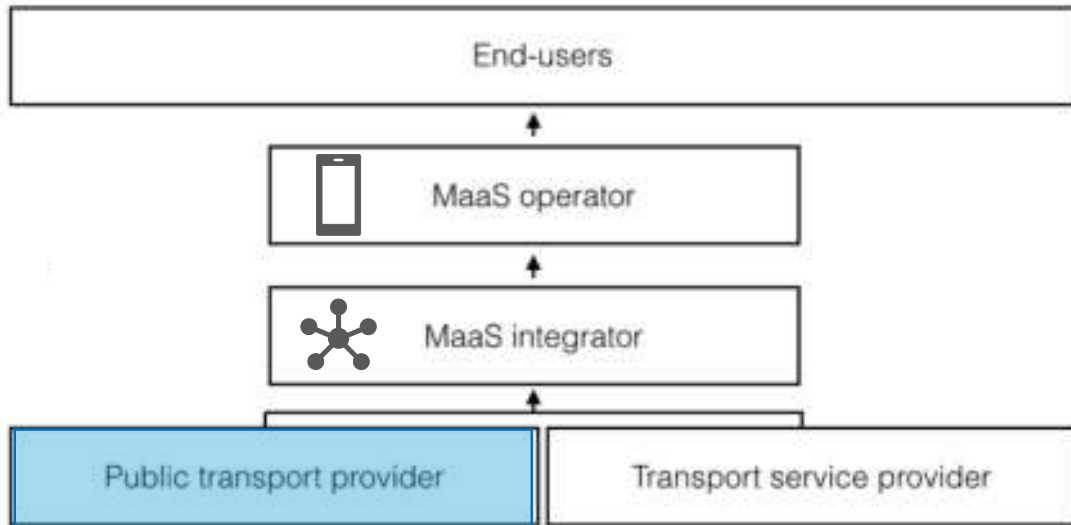


Source: Smith et al. (2018). MaaS: Development scenarios and implications for public transport. Research in Transportation Economics, 69, 592-599.

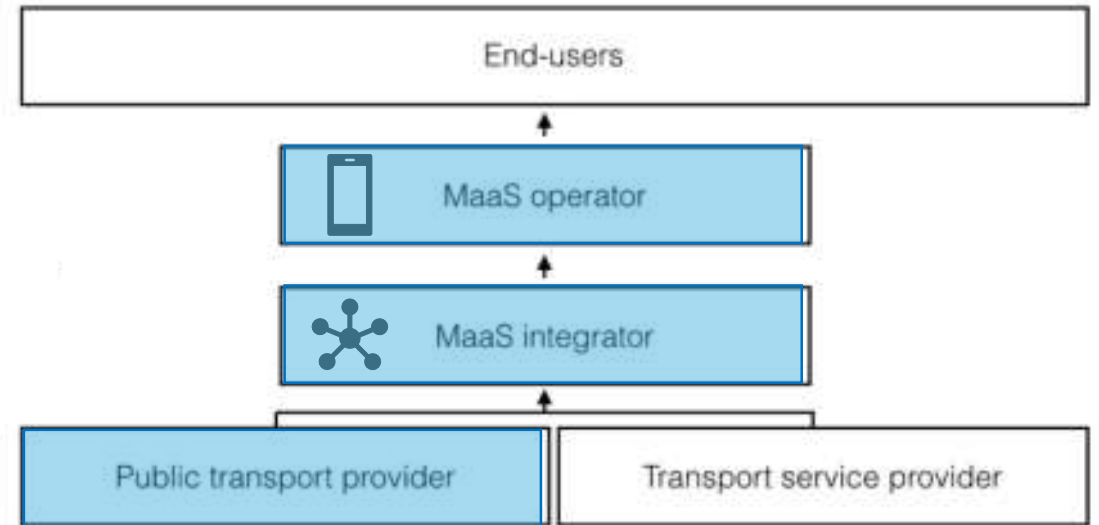
3. MaaS Offer

MaaS governance models / development scenarios

Market-driven



Publicly-controlled



 Public sector role

3. MaaS Offer

MaaS governance models / development scenarios

Market-driven



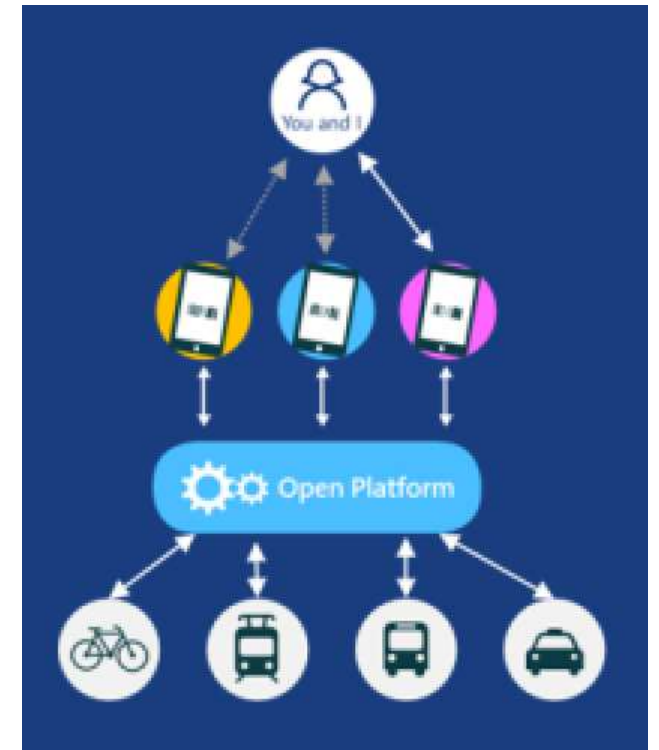
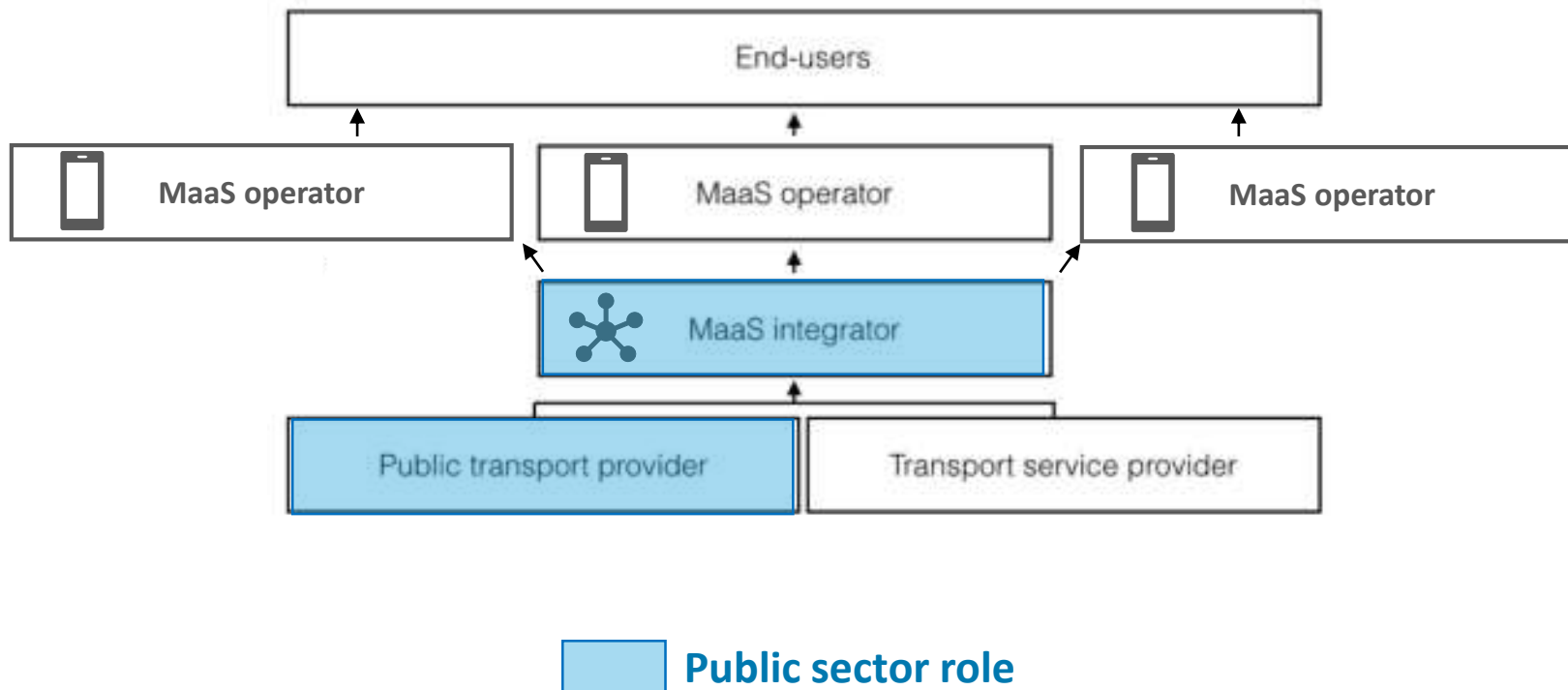
Publicly-controlled



3. MaaS Offer

MaaS governance models / development scenarios

Public-Private Partnership (PPP)



3. MaaS Offer

MaaS business model

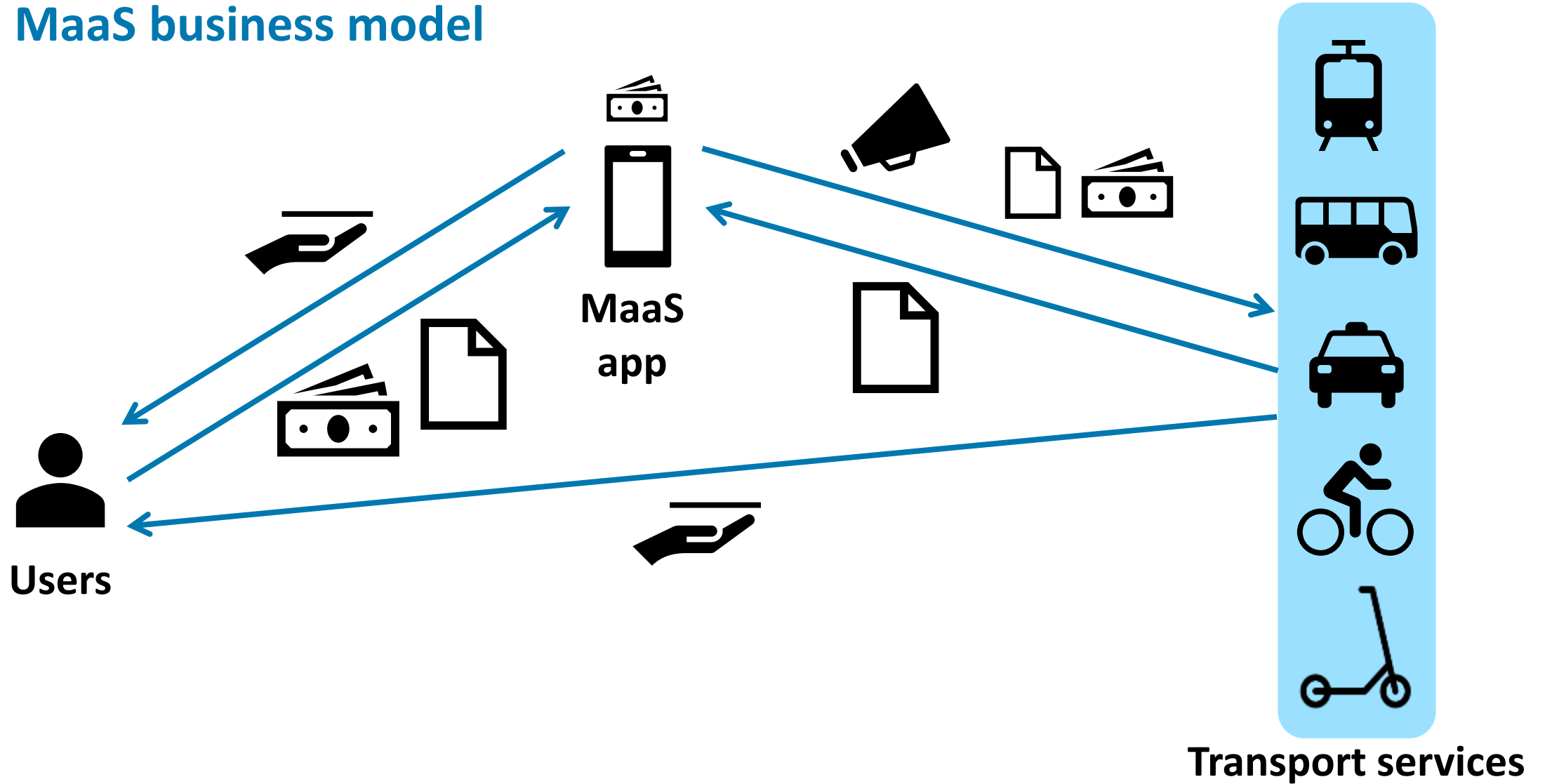
➤ It is a digital platform business model.

Key aspects:

- Bring together 2 or more distinct but interdependent groups of customers.
- Create value by promoting and facilitating interactions between the groups.
- The larger the number of customers of one group the more interesting to the other group.
- At least one group must be willing to pay.

3. MaaS Offer

MaaS business model

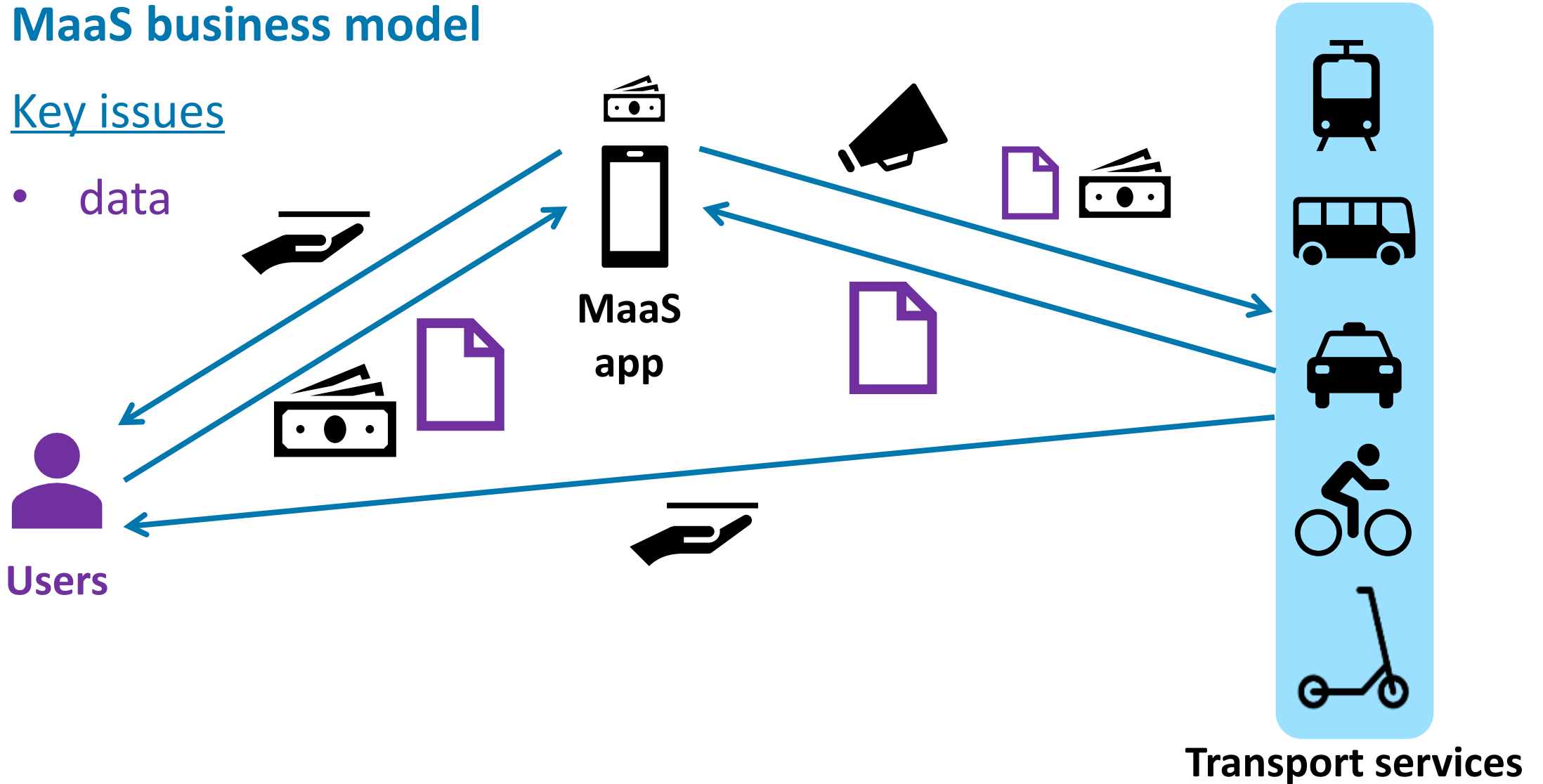


3. MaaS Offer

MaaS business model

Key issues

- data

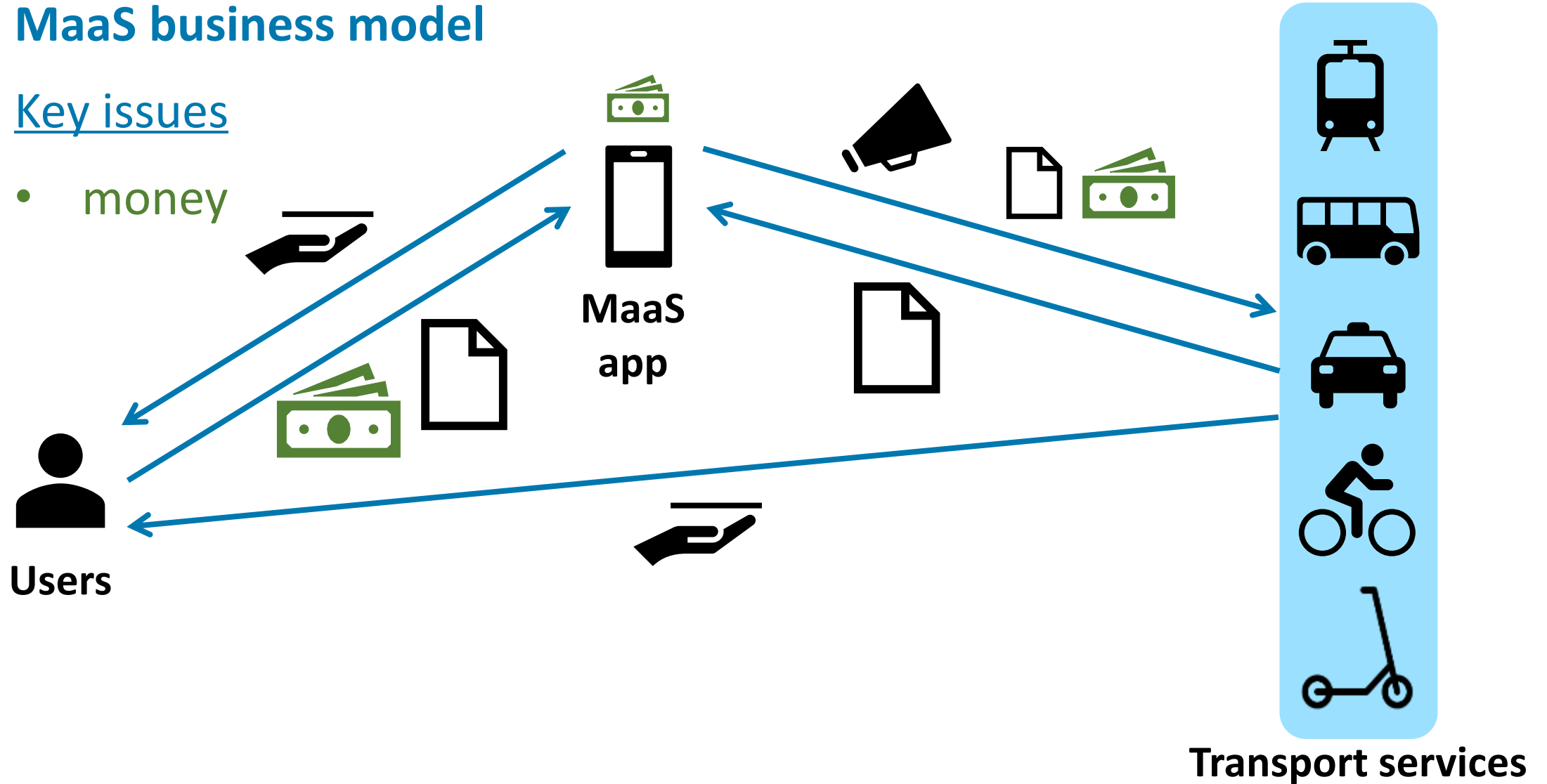


3. MaaS Offer

MaaS business model

Key issues

- money



4. The future of MaaS

4. The future of MaaS

MaaS promises/claims – some are not yet proven and raise serious doubt



Users

- Access mobility through a single platform
- Single payment
- Tailor-made, door-to-door, on-demand mobil.
- Seamless experience



But...

Reasons for adoption

- Convenience
- Reliability
- **Cost reduction**
- Environmental sustainability
- Information and ticket/payment integration
- Personalization / Tailor-made

4. The future of MaaS

MaaS promises/claims – some are not yet proven and raise serious doubt



- Access to pool of users
- Better demand info
- Opportunity to serve unmet demand

- What about my current users?
- OK, but who owns the data?
- OK, but what about unit economics?

4. The future of MaaS

MaaS promises/claims – some are not yet proven and raise serious doubt



Cities / Transport
authorities

- Increase the transport system efficiency
- Promote sustainable transport
- Reduce congestion and transport externalities



- Individual choices + Limited capacity VS system efficiency & societal goals
- reduce cars trips OR increase use of car-based services (in bundles)
- Profit comes from increase in use

4. The future of MaaS

Key questions

- How can MaaS create more value for the user than the sum of the individual offerings?
- How can MaaS add value to transport service providers? How do we fix the MaaS business model?
- What is the most adequate governance model / development scenario?
- Can MaaS truly promote sustainable mobility? What should the role of car-based services be? (What about AVs)?
- Can MaaS contribute to equity? (no promises/claims about equity)

4. The future of MaaS

Emerging trends

- **Superapps**
- **Mobility as a Feature (MaaS)**
Travel is a derived demand.
Shift from multimodal mobility to multi-service perspective.



5. Conclusion

5. Conclusion

Key insights

- ✓ There is still a long way to go until MaaS fulfills its promises.
- ✓ MaaS is evolving to MaaS 2.0
- ✓ It's the right time to work and do research about MaaS!

Get in touch!



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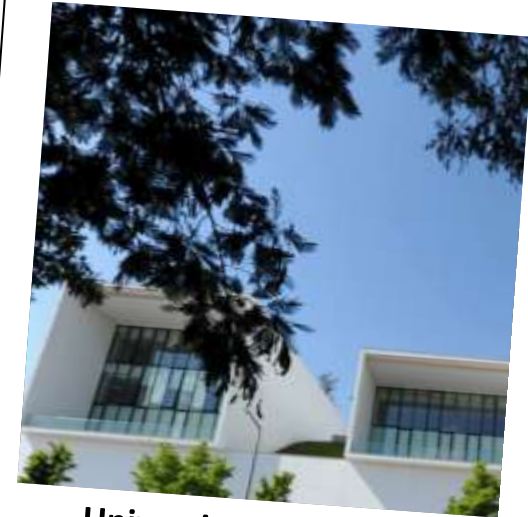
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