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# MISTEGRATED MOBILITY

## Potential Acceptance of Mobility as a Service ('MaaS') – Business Models and Consumer Attitudes

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#### What is MaaS?

- Multimodal transport?
- Combined or integrated mobility?
- Servitised transport?
- Smart payments and ticketing?
- Information services?
- Autonomous vehicles?
- Something else?





## INSTEAD OF TRYING TO DEFINE MOBILITY AS A SERVICE, PERHAPS IT IS BETTER TO THINK IN TERMS OF WHAT IT AIMS TO ACHIEVE

## i.e. WHAT CHARACTERISES SUSTAINABLE FORMS OF MAAS?





### Growth in Global Mobility (1950-2005)



#### **Historical Trends in Mode Share in Various Countries**





CHALMERS **IS UCDAVIS** 

### Model Projected Consumer Transport Demand (2030-2050): Passenger Kilometers Traveled (PKT)

Project PKT. Allocate PKT to different modes based on exogenous/endogenous shares





## Model Projected Consumer Transport Demand (2030-2050): Vehicle Ownership and Choices

Project vehicle ownership per capita and vehicle types.



#### Personal passenger light vehicles

Drivers of demand





Sources: elaboration of national and international databases, building on the information referenced in UNECE, 2012



## MaaS Presents a Possibility for a Disruptive Innovation that Offers an Alternative...





## **Different Levels of MaaS**





### What Makes MaaS Possible?

- Urbanisation;
- Digitalisation;
- Sharing economy;
- Servitisation;
- Decarbonization
- Hybridisation of public and private sector organisations;
- Disruptive innovation in the transport space.





### What Can Integrated Mobility Be?

- Integration of different transport modes
- Integration between public and private organisations
- Integration of land-use, urban development and transport planning
- Integration of social inclusion and cohesion (accessibility) into transport planning and policy
- Integration of environmental and economic transport policy objectives
- Integration of personal mobility with the movement of goods









### What Can Integrated Mobility Bring?

Integrated Mobility aims to **generate and disseminate scientific knowledge** on integrated mobility solutions and **assess their potential** to:

- Deliver radical environmental improvements
- Improve accessibility, social inclusion and cohesion
- Provide economic benefits associated with a more resilient and efficient transport system
- Act as a base for new innovations that combine transport services, new vehicle technologies and ICT





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# What Research Do We Need to Realize an Integrated Mobility Economy?

	-	Behaviour and attitudes	Business and organisational models	Urban design	Governance and policy	Sustainability assessment	
	THEME 1		The rise and gro	owth of integrated	mobility services		
	THEME 2	The interaction between personal mobility and the movement of goods					
	THEME 3	The integ	The integration of mobility services into urban planning and development				
		Assessing the sustainability and accessibility of integrated mobility					
			THEME 5 Synthe	esis across persp	ectives and them	es	
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### A New *Robust* and *Scientifically Grounded* Sustainability Evaluation Framework is Paramount

- Traditional tools are inadequate to capture system level interactions of IMS, failing to recognize:
  - Inconsistent system boundary or too narrow scope of analysis,
  - Dynamics of behavioral changes in the short-term vs. long-term
  - Leakage and rebound in modes/behaviors/technologies
  - Changes in the use, operation, construction, and manufacturing of infrastructure, energy supply systems and vehicle and transit technologies.
- Local and national governments require an evaluative framework for the creation and implementation of public policies that seek to support MaaS.
- Tools that help to identify gaps and opportunities in improving overall societal longterm benefits







### Criteria for a *Robust* and *Scientifically Grounded* Sustainability Evaluation Framework

#### Multi-Dimensional:

- Service provided: PKT, quality, efficiency, and costs (\$/PKT)
- Environmental sustainability: GHG emissions, air pollution
- Socioeconomic sustainability
- Business model viability and functionality that support innovation
- Institution and governance
- Life Cycle Sustainability Assessment (LCSA)
  - Robustness across system boundary, scale (trip, individual, company, societal level), time (short- vs. long-term)
  - Capture direct and indirect changes across the entire value chain
  - e.g. rebound effects and the substitution of services/materials/energy/infrastructure
- Practical, transparent, use reliable/reproducible data
- Stakeholder consensus







### ACKNOWLEDGEMENT



