G. Summary and lessons

GECKO stakeholder focus group series

The rest of the week

|	Monday	Tuesday	Wednesday	Monday
AM	A1. Learning from GECKO	C1. Regulating passenger urban air mobility, drone last-mile delivery, hyperloop C2. Regulating bike sharing, e-scooter sharing, micro-mobility	E1., 2 and 3. business model of new mobility services and technologies, future scenarios and regulatory responses	
PM	B1. Regulating ride-hailing, TNC, MaaS platforms, MaaS, carpooling, on-demand ride sharing B2. Regulating connected and automated vehicles B3. Regulating big data for fleet management and logistics, cooperative traffic management, crowd shipping	D1. Big data and sustainable business model innovation	F1. regulation performance indicator overview	**G1. Summary and lessons**

Presentation Agenda

- **Session D**
  - ☐ Opportunities and challenges for big data applications in the transport industry
  - ☐ Business model for sustainability: the role of big data

- **Session E**
  - ☐ Regulatory changes (support) and challenges in the future scenario
  - ☐ Toward a 'pandemic-proofing' business model

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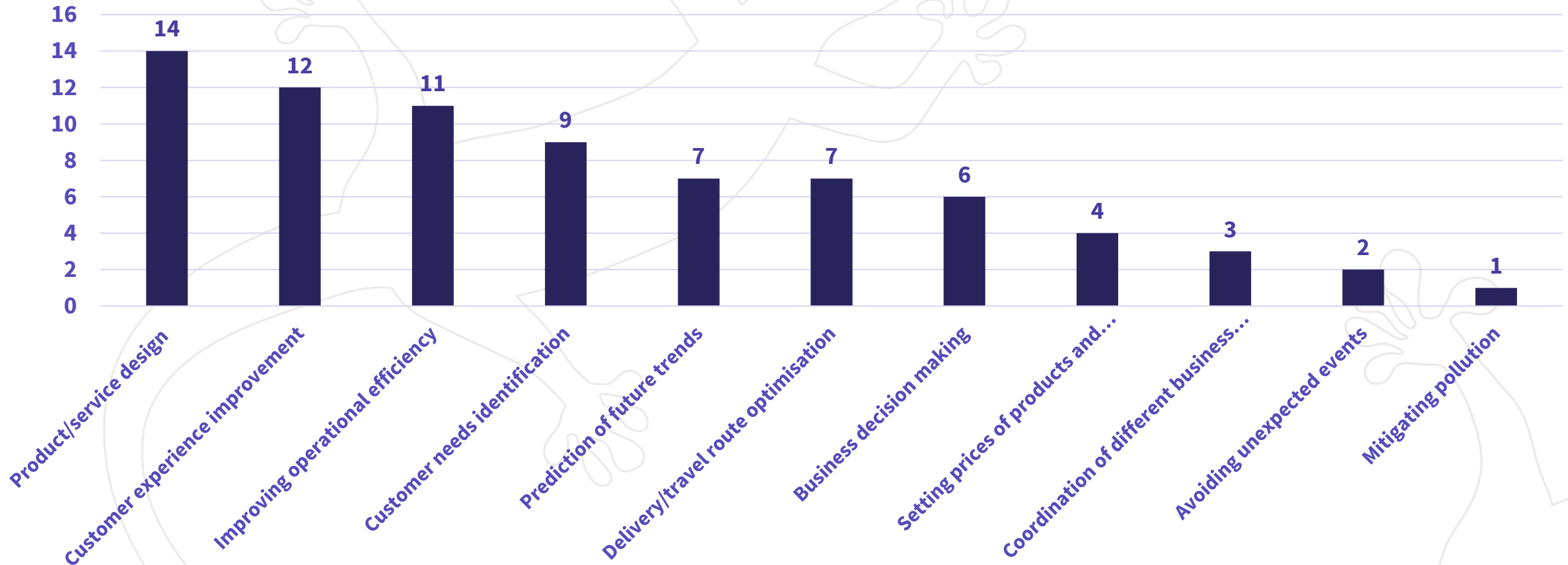
Opportunities of big data applications
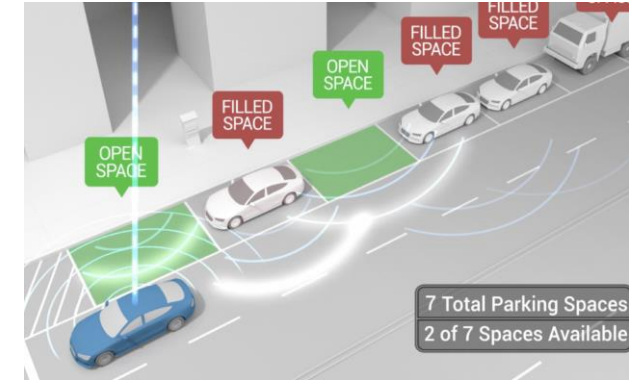
For private sector

Route optimization for delivery bots

Utilization of freight vehicles (land and air)

Tailored B2B or B2C services (e.g., real-time parking)

Comprehensive competitor analysis and business strategy

Data-driven customer experience

Effective communication supports between mobility firms

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Opportunities of big data applications

For public sector
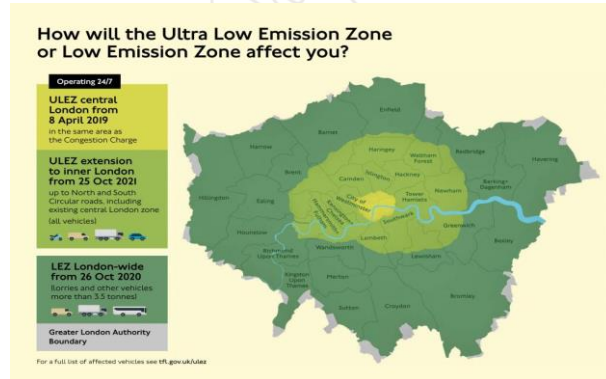
Data-driven policies (e.g., low emission zone)

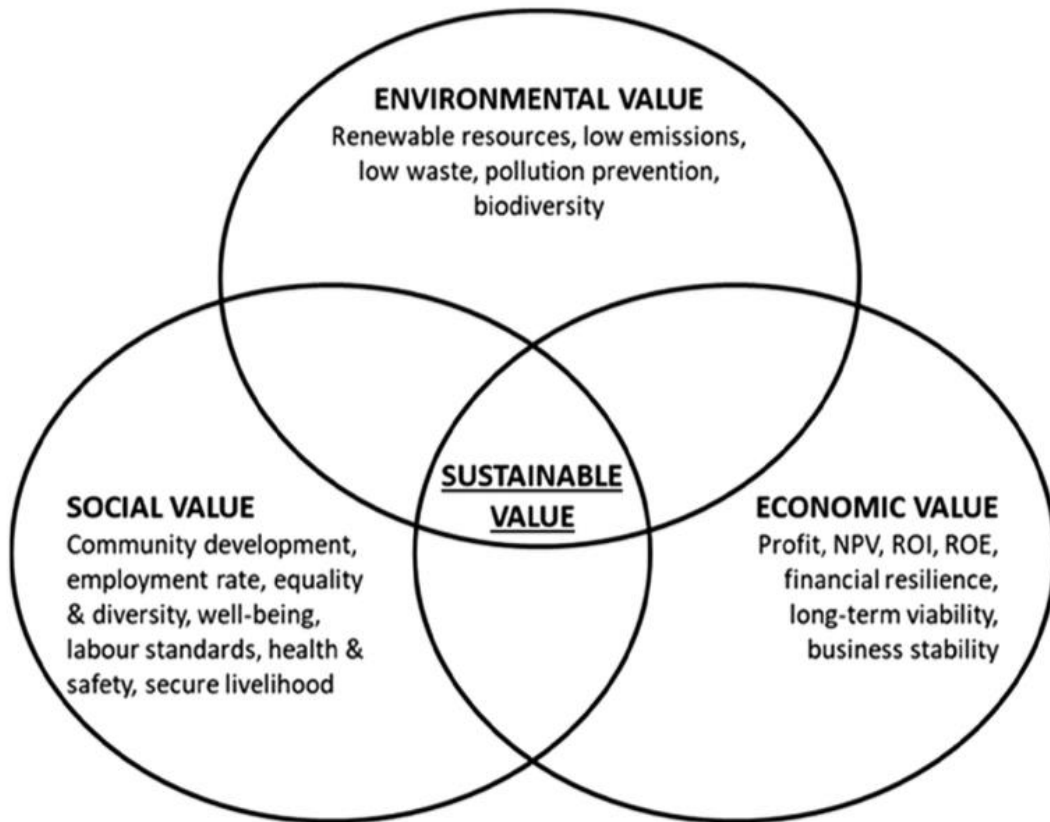**City planning and redesign (e.g., bike lanes and direction of road)**

Mobility dashboards

Challenges of big data applications

1. The costs and benefits for SMEs and small cities

2. Data access, standardization and guidance

3. Lack of capacity

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Business models for sustainability: Sustainable value and challenges

ENVIRONMENTAL VALUE
Renewable resources, low emissions, low waste, pollution prevention, biodiversity

SUSTAINABLE VALUE

SOCIAL VALUE
Community development, employment rate, equality & diversity, well-being, labour standards, health & safety, secure livelihood

ECONOMIC VALUE
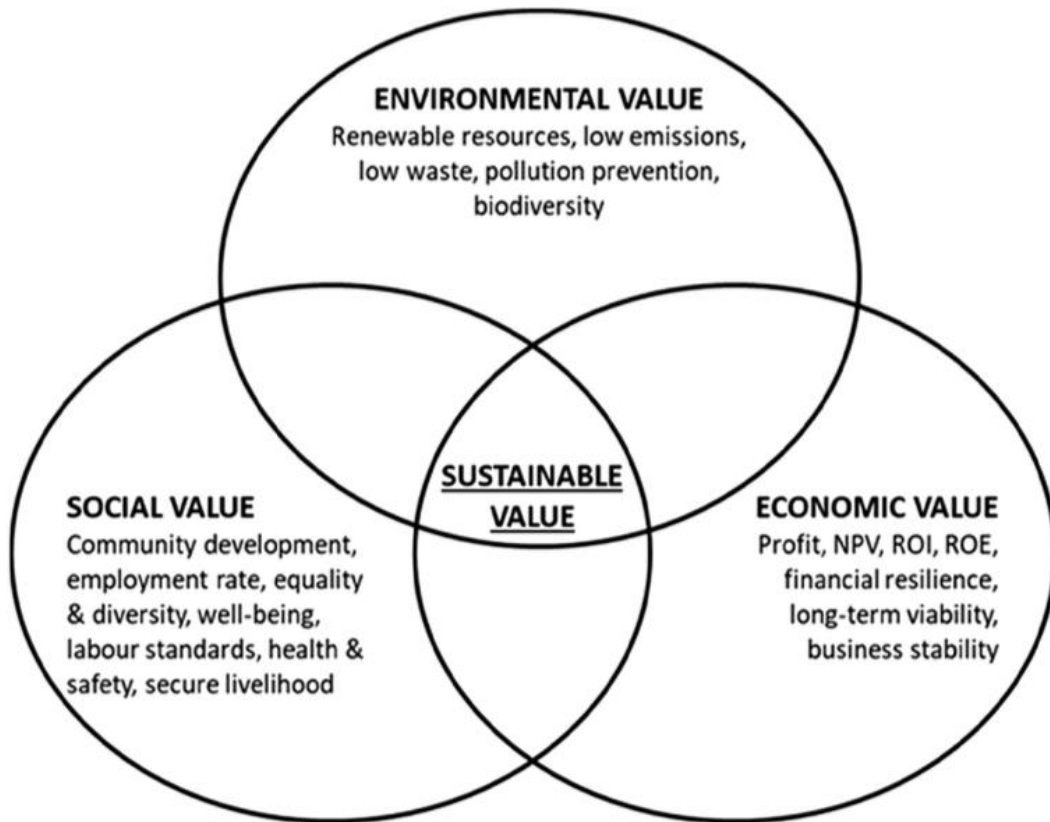Profit, NPV, ROI, ROE, financial resilience, long-term viability, business stability

From Cosenz, Rodrigues and Rosati (2019)

Challenges:

1. The lack of regulatory supports to make business environmentally and socially sustainable.

2. Market competitions

3. The lack of urgency and capacity

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Business models for sustainability: Sustainable value and challenges

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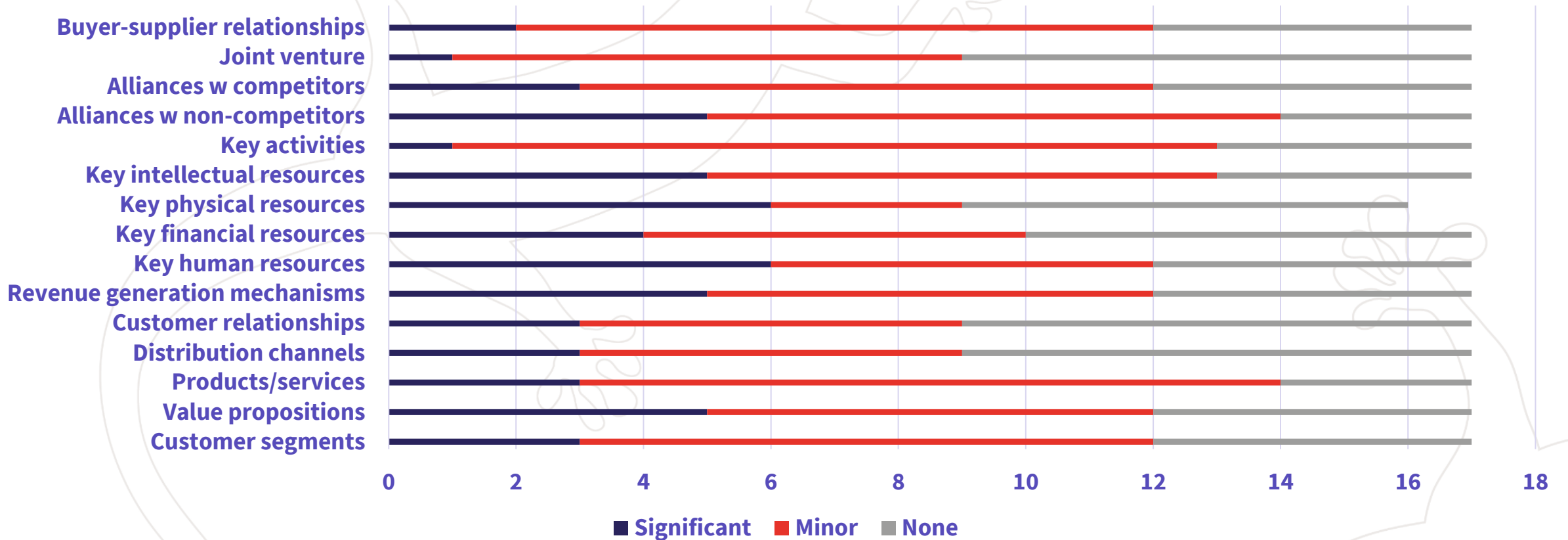Profit, NPV, ROI, ROE, financial resilience, long-term viability, business stability

From Cosenz, Rodrigues and Rosati (2019)

Challenges:

4. Unclear costs and benefits analysis

5. Inconsistent of mobility dashboard across regions/countries

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Future Scenario 2040: Greener Communities

In 2040, society becomes less materialistic and prioritises the social and environmental aspects of mobility over new technology and individual choice. All forms of transport will be faster, more efficient, and seamlessly integrated, both physically and digitally. Below are some key features of the future scenario:

- Mobility-as-a-Service (MaaS) has been successfully rolled out and adopted across demographic groups.

- Active travel has significantly grown, improving air quality and providing health benefits.

- Transport sharing is widespread, as private car ownership falls and use of private AVs only for some groups.

- Road charging has increased transport sharing, leading to reduced congestion on the roads

- Data sharing and new technologies are constrained to uses with clear social and environmental benefit

- Transport largely decarbonised, with electrification of rail and widespread uptake of EVs

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Regulatory changes (support) and challenges in the future scenarios
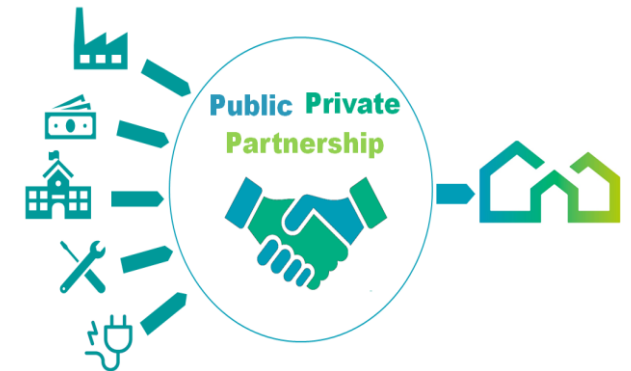
Changes and support

Top down approach

Public education

Stronger public-private partnership (PPP) Model

Challenges

How to deal with top down approach for disruptively innovative mobility firms?

Persuade people to adopt new mobility services and technologies for environmental reasons is not always an effective way. (where is economic benefits).

The city needs to make sure the collaboration is profitable and sustainable.

The public/private dialogue is region-specific, it's a city to city approach. Should there be a standard for this collaboration.

Regulatory changes (support) and challenges in the future scenarios

Changes and support
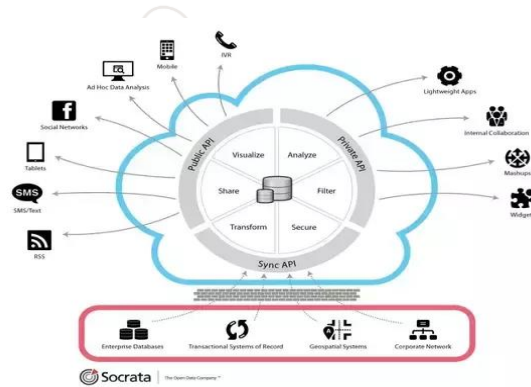
B2G data platform

B2G agreement (contract)
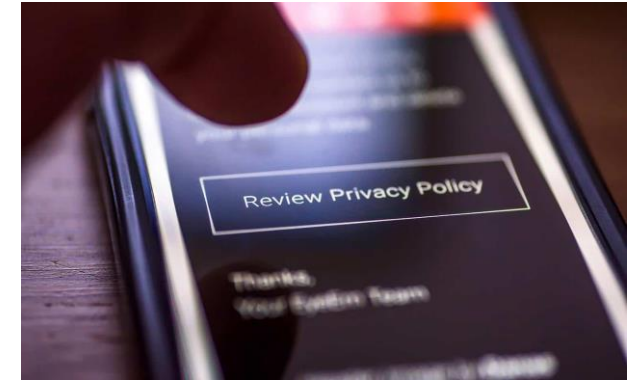
Transparent and well-established data policies

Challenges

The lack of capacity for cities and PTOs to use the data. How to deal with data sharing and APIs issues?

More negotiation is needed if government adopts a top down approach (e.g., service level agreements between private/public - who has the liability to provide the coverage in remote areas).

Data standard, APIs, and other policies are difficult to be consistent especially given the nature of data variety.

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Regulatory changes (support) and challenges in the future scenarios

Changes and support

Urban space

Subsidies for peripheral transportation

Assessment of the environmental footprint

Challenges

Why would municipalities provide spaces for business that make money? The private sector needs to prove the benefit for the municipality.

New players and innovators need to prove the contribution to the city objectives, benefits for the local community in order to receive support, possible subsidies, etc.

Need to "charge" the environmental impact.

What are standards for environmental footprint across cities/regions?

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Toward a 'pandemic-proofing' business model

Enhanced micromobility experience

Incentives for off-peak travel

Diversified services in business portfolio

Creation of 'crisis packages'

Social distancing features in the app

Perceived safety in shared mobility services

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Sessions
B2 and C1

Connected and Automated Vehicles, Urban Air Mobility, Drones, Hyperloop

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CAV, UAM, Drones, Hyperloop

	Current	Challenges	Future Focus
General safety	Test tracks, validation ongoing	Proving that it's safe, perception of safety Predictability from AI Requirements in terms of design	CAV: Limited speed zones Drones and UAM: flying over populated areas Hyperloops: Evacuation procedures
Data security and protection standards		"Adaptive development" over time Investment from the nations or EU to set standards to protect devices from cyberattacks Standars depending on vehicles type (level of automation, private VS public)	
Data Integration and interoperability	Enough standards for public transport are there; Private transport to be defined	Autonomous vehicles should be independent from infrastructure	Provide guidance to cities to make sure they are well integrated with existing PT services
Checks of mobility devices	Checking standards from existing technologies (e.g. for Hyperloop: Infrastructure = railways, Vehicle = aircraft) to identify the gaps and provide guidance	Insuring that the public administration approves the solution whose standards have to be defined at the worldwide level	Regulations need to be defined in parallel with the validation of prototypes.
Insurance and liability	Experimental regulation to define standards for different cases	Definition of liability Flying over populated areas and flying at scale Liability also from infrastructure operator	Level of insurance depending on level of automation Decision Making process CAV and drones: Insurance for people on the ground

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Sessions
B1 and C2

Bike sharing, E-scooter sharing, Micro-mobility, Ride-hailing, TNC, MaaS, Carpooling, On-demand ride sharing

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Bike sharing, E-scooter sharing, Micro-mobility, Ride-hailing, TNC, MaaS, Carpooling, On-demand ride sharing

	Current	Challenges	Future Focus
General safety	Well regulated for vehicles; less so for passengers Accreditation requirements in terms of safety; Service Level Agreements (SLAs) and contracts are used for regulating safety.	To ensure that all drivers who provide relevant services have high quality skills Replacement of vehicles/fleet, it usually depends on the level of risks operators are sharing with the city	A general law using broad rules on speed limits and weights and power, could be helpful Social issues should be included, such as the driver conditions.
Data security and protection standards	Accreditations including clauses on data security Local variation: Some cities want to control the data related to mobility, while others don't Few regulations on data, but generic and not specific to bike sharing, e-scooter and micro mobility sector	Role assigned to operators with respect to data ('data controller', 'data processor'..?) Differences in countries on how different data related aspects are regulated It is not clear if continuous tracking is allowed or not.	Definition of roles and competences regarding data management Definition of a list of data to be collected Definition of a standard at national/supranational level?
Insurance and liability	In some countries, having insurance is mandatory for operators	Liability usually rests with company and sometimes additional insurance is required to cover the customers Liability issues are difficult to regulate in terms of bikes (not only shared). Liability of MaaS: the MaaS provider should not be liable for what happens by the operator	Insurance and liability to be considered in the offer by the operator to the authority. MaaS, end user's perspective: determine who to turn to if the service does not work as it should
Contracts	Bike sharing, e-scooter sharing, micro-mobility: Different approaches and level of authority Ride-hailing, TNC: EU market, not well regulated. Tendency to ban them due to the mistakes that took place in the past. US market, PTA are supporting Ride-hailing TNC companies Carpooling: contracts not seen for the moment. In some cities carpooling services integrated in local platforms MaaS: US market, little contracts as it is a quite new service	Confusion in terms of who can regulate what, and sometimes different approaches are used (e.g.laws, VS contracts/ MoUs); managing or determining jurisdictions of different authorities can be difficult for operators	Unique approach at city level, no differences between zones/areas Mandated contact point with whom operators can deal with The use of public space by bikes/e-scooters needs to be controlled
Equity and accessibility	Accessibility: regulation already taking place for PT for persons with disabilities	Accessibility: Service coverage for rural areas Equity: Clarify the groups of people who need more consideration of "equity" and ensuring different categories	Accessibility: regulate to keep a cap on the service in the city centre and making sure it reaches outside the centre. Public authorities need to question if they subsidies services outside the city centre to reduce the need for private vehicles. Incentives can be used to address this

Regulation categories

- General safety
- Data sharing and ownership
- Data security and protection standards
- Data Integration and interoperability
- Checks of mobility devices
- Insurance and liability
- Contracts
- Impact on vulnerable road users
- Equity and accessibility

	B1: Regulating ride-hailing, TNC, MaaS platforms, MaaS, carpooling, on-demand ride sharing	B2: Regulating connected and automated vehicles	C1: Regulating passenger urban air mobility, drone last-mile delivery, hyperloop	C2: Regulating bike sharing, e-scooter sharing, micro-mobility
General safety	social issues should be included, such as the driver conditions. "to what extent is safety (physical and social) part of the business models of providers of innovative mobility services?" linked to the pressure to drive (or deliver) as much as possible	Demonstrate that an autonomous vehicle is safe – without the driver and the supervisor	Hyperloops: The evacuation procedures, safety case have to be considered. Aviation safety standards are higher than railways. => Objective to have the safest system in the world. Level of failure not accepted	At the city level a single approach should be applied, and different zones/areas should not adopt different approaches. This would also benefit the people using these vehicles. A general law setting the definition of these types of vehicle, by using broad rules on speed limits and weights and power, could be helpful. Then general regulations could be applied to all such vehicles and services that fall in the scope of the definition. Standardisation could also be helpful, where umbrella categories and terms are defined at the national level and do not fluctuate with regions and cities.
Data sharing and ownership			Similar to railways. Ownership depending a lot of the public/private transport operator. To offer a good environment to passengers who travels hundreds of km (500-1500 km inland transportation)	
Data security and protection standards		Liability. Demonstrate that an autonomous vehicle is safe – without the driver and the supervisor. Cyberattacks aspect. How society is/will adapt, difficult to do a forecast for 2040	Major priority in the future due to the major potential impacts.	
Data Integration and interoperability	Making sure the systems that track the data can be built/ executed.	Provide guidance to cities to make sure they are well integrated with existing PT services.		
Checks of mobility devices			Insuring that the public administration approves the solution whose standards have to be defined at the worldwide level. This should not be defined at the country level!	
Insurance and liability	Making sure insurance and liability is considered in the offer by the operator to the authority. Looking at the passenger perspective (how to include the aspect linked to "quality" in contracts?): Whom do they turn to if the service doesn't work as it was supposed to?	Liability. How society is/will adapt, difficult to do a forecast for 2040	Hyperloop: To decide the level of automation for the vehicles. Fully autonomous vehicles, controlled direction, etc. Level of insurance in each case. UAM : Level of automation is also key. Financial aspects that require fully automated vehicles. But higher requirements in terms of liability: e.g. the decision-making process (like for autonomous cars). Airlines have insurance for passengers. => Part of regulatory framework for the operators. Insurance to cover people on the ground?	
Contracts	New forms of contracts can be needed for flexible mobility services such as on-demand ride sharing. The responsibility that operators have and the risks they share, should be factored in for determining subsidies, taxes etc. to level the playing field.			There is usually a lack of clarity on who is responsible for these topics in local authorities and departments. Many times, MoUs and contracts with cities lack a mandated contact point whom operators can deal with.
Impact on vulnerable road users		General low speed limit for everything, which is also a way to reduce the need for segregation (easy to operate also technically).		
Equity and accessibility	Accessibility: regulate to keep a cap on the service in the city centre and making sure it reaches outside the centre. Public authorities need to question if they subsidise services outside the city centre to reduce the need for private vehicle ownership. Incentives can be used to address this. Graz car sharing is an example of expanding their service to outside the city centre. Question of how public mobility is: should cities subsidise privately offered services?			

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Shared issues across modes?

- Safety **regulations adapted from other fields** (e.g. air and rail for hyperloop, bicycles for e-scooters)

- Level at which **vehicle design standards** are set

- Real and **perceived safety** (e.g. automated vehicles)
    - Level of automation determines level of insurance (and level of regulation) needed (e.g. urban air mobility, automated vehicles)

- **Public subsidies** for private service providers to ensure equitable access (e.g. shared bikes)

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What would happen if we regulated by purpose/function rather than by vehicle type? (e.g. e-scooters in Austria)	(How) can we regulate multimodality when transport competencies are spread over different administrations and jurisdictions?

• Ensure that the purpose really is the same for different modes
   • Does an e-scooter really serve the same purpose as a bike?
   • Would this put ride-hailing and taxis in the same category?
• Combine purpose with impacts: A matrix could capture the externalities to avoid getting caught in details
	• Passenger experience of a multi-modal trip varies by mode
	• Integrated approach to evaluate which combination is most sustainable
	• Integrate operators into one platform/ app, while allowing a city to prioritise certain modes.
	• Who would insure this?!?

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Setting priorities
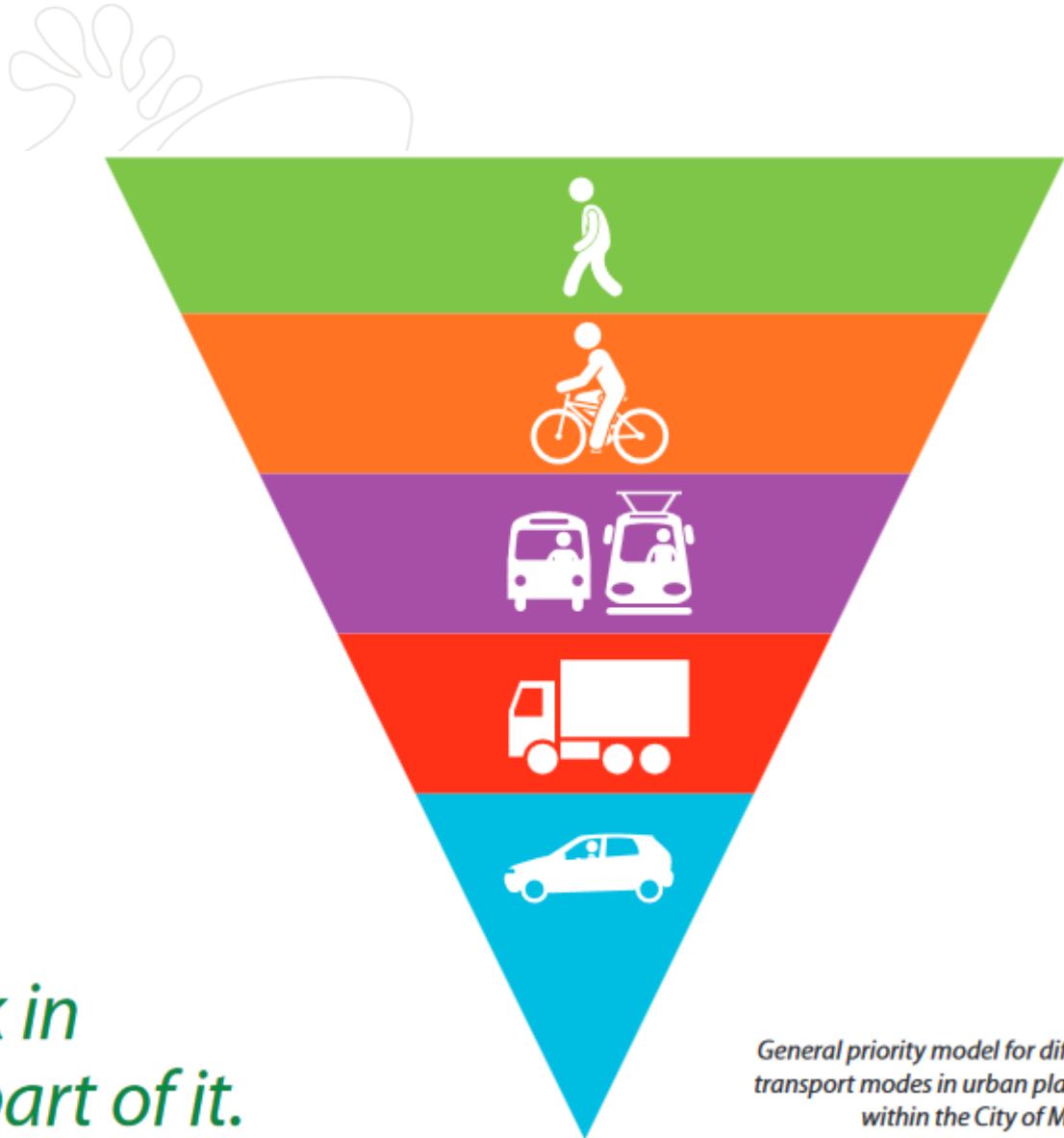
You are not stuck in traffic - you are part of it.

General priority model for different transport modes in urban planning within the City of Malmö.

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Setting priorities

Operationalising your priorities	• Allocating urban space to high priority modes • Subsidising what you want to see happen
What to assess	• What you've prioritised (e.g. social and environmental impacts)
What needs to be developed	• Strong, reliable public-private partnerships • Capacity building for the public sector • Relationship building between the public and private sectors

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What barriers have you faced in cooperation with the "other" sector?

Thank you for your interest and attention

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