Technology Influencing Active Transport: Mobility as a Service and Equity

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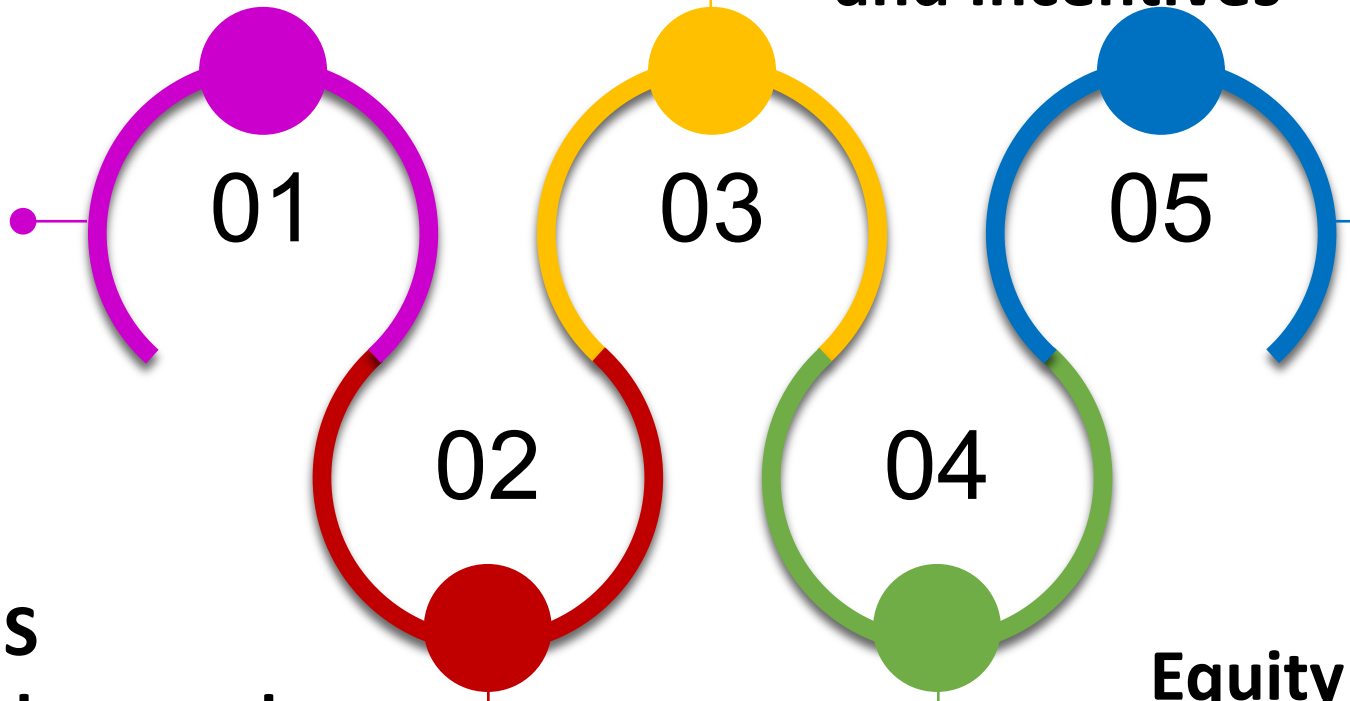
Active Transport Mobility Summit
Thursday, April 28, 2022

Presentation Outline



01 What is Mobility as a Service (MaaS)?

02 MaaS Topology and in Different Geographies

03 Behavioral Science and Incentives

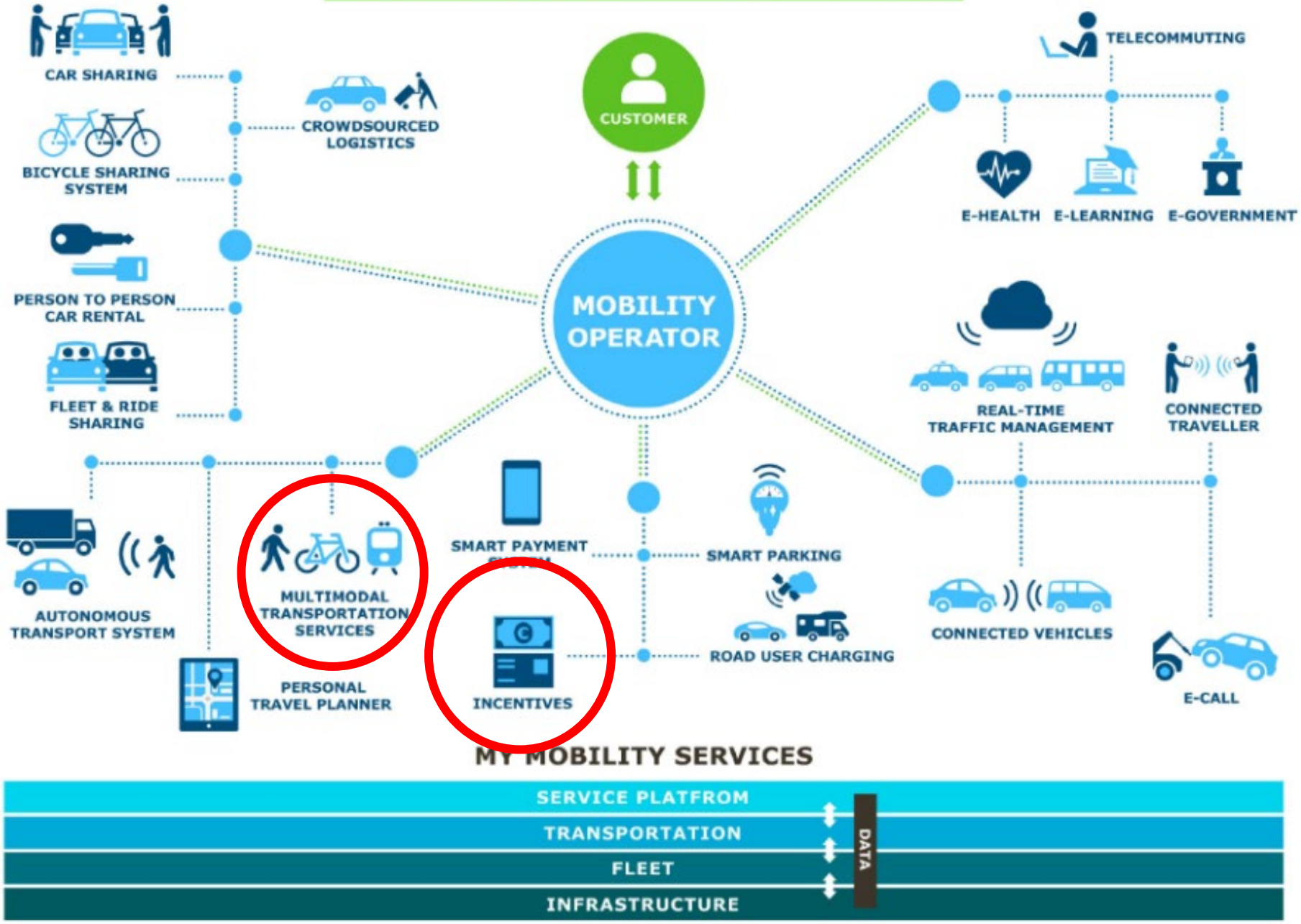
04 Equity of Technology-enabled Mobility

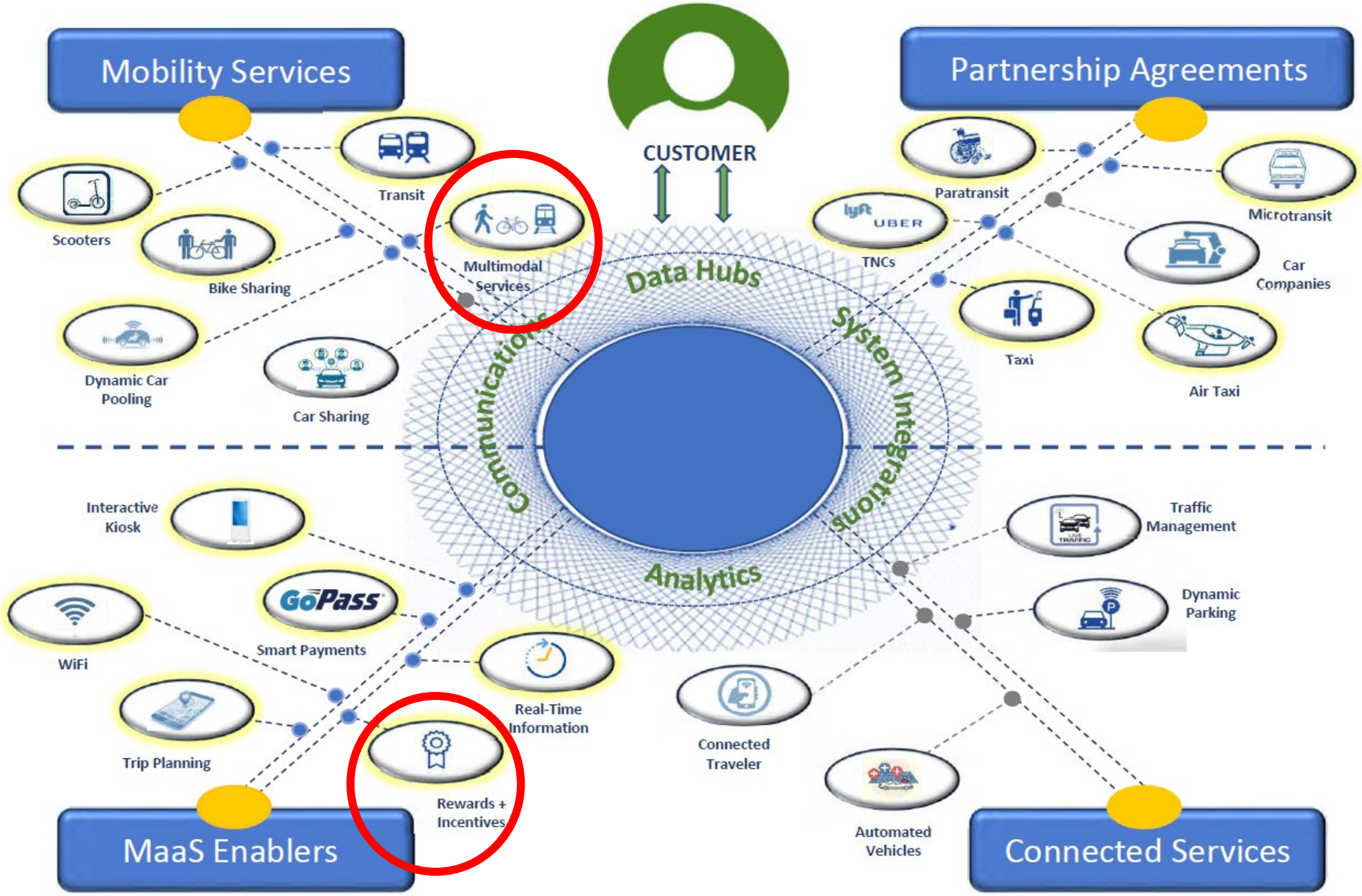
05 Examples

Definitions

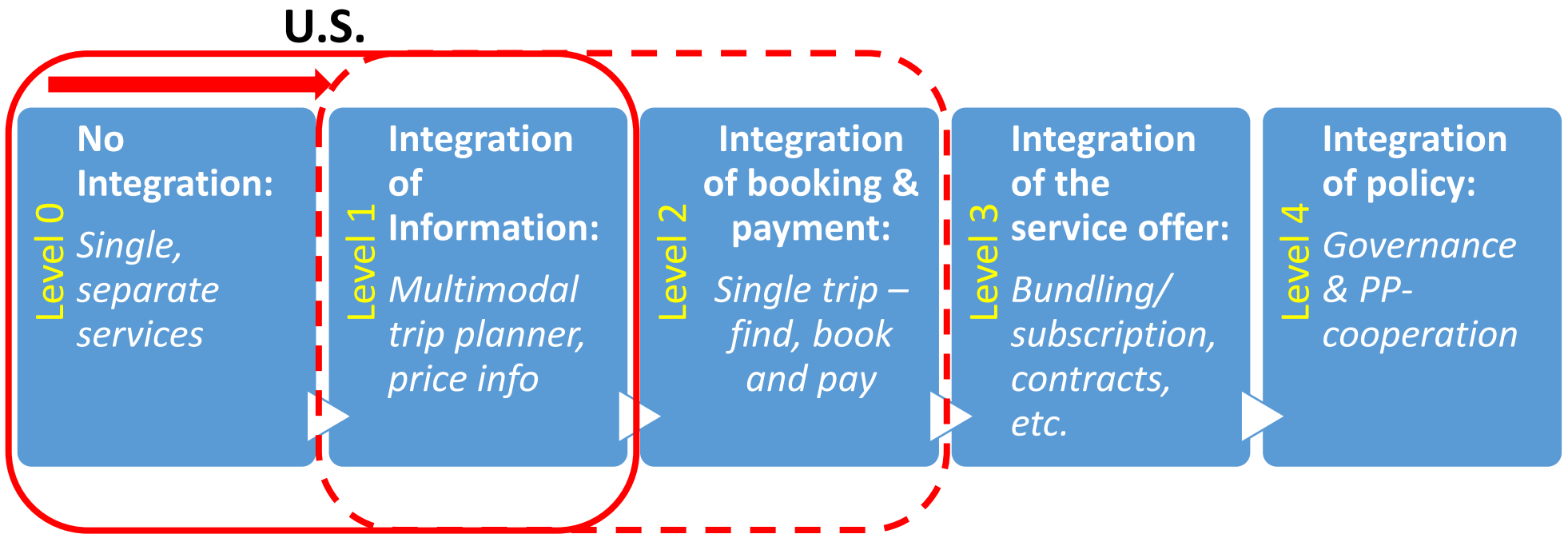
MaaS	Integration of various forms of transport services (and their fares) into a single mobility service accessible on demand
Mobility on Demand	Multimodal, integrated, automated, accessible, and connected transportation system in which personalized mobility is key feature. – **Not MaaS**
New mobility services	Ridesourcing, carsharing, bikesharing, microtransit, etc. See SAE JA3163 – **Not MaaS**
Transportation Demand Management	Service offerings and incentives to get commuters out of single-occupant vehicles. – **Not MaaS**
Mobility Management	Provide viable alternatives for non-drivers. – **Not MaaS**

Source: Jeremy Dalton, “What is “New Mobility” Anyway?” Method City, July 6, 2018, https://method.city/what-is-new-mobility-anyway-581cbabb55a4


MOBILITY AS A SERVICE FRAMEWORK
CAR SHARING
BICYCLE SHARING SYSTEM
PERSON TO PERSON CAR RENTAL
FLEET & RIDE SHARING
CROWDSOURCED LOGISTICS
CUSTOMER
MOBILITY OPERATOR
TELECOMMUTING
E-HEALTH
E-LEARNING
E-GOVERNMENT
REAL-TIME TRAFFIC MANAGEMENT
CONNECTED TRAVELLER
AUTONOMOUS TRANSPORT SYSTEM
MULTIMODAL TRANSPORTATION SERVICES
SMART PAYMENT
SMART PARKING
PERSONAL TRAVEL PLANNER
INCENTIVES
ROAD USER CHARGING
CONNECTED VEHICLES
E-CALL
MY MOBILITY SERVICES
SERVICE PLATFROM
TRANSPORTATION
FLEET
INFRASTRUCTURE
DATA


Mobility Services
Partnership Agreements
CUSTOMER
Transit
Scooters
Bike Sharing
Multimodal Services
Dynamic Car Pooling
Car Sharing
Paratransit
Microtransit
TNCs
Car Companies
Taxi
Air Taxi
Data Hubs
Communications
System Integrations
Analytics
Interactive Kiosk
Traffic Management
Dynamic Parking
WiFi
GoPass
Smart Payments
Real-Time Information
Trip Planning
Rewards + Incentives
Connected Traveler
Automated Vehicles
MaaS Enablers
Connected Services

MaaS Topology: US Market



Source: Jana Sochor, Hans Arby and MariAnne Karlsson, ” The topology of Mobility as a Service: A tool for understanding effects on business and society, user behavior, and technical requirements,” Paper No. EU-SP1013, 2017 ITS World Congress, Montreal

MaaS Service Combinations For Different Geographical Areas

Rural MaaS Objectives

- Increase efficiency and utilization rate
- Maintain sufficient service level

Based on:

- Demand-responsive transport, taxis, buses and connections to long-haul transport, and car pooling
- Additional services: parcel deliveries, library services, and food and medicine distribution…

Suburban MaaS Objectives

- No need for a 2nd car
- First-/last-mile accessibility

Based on: Park & ride -services, on-demand transport and other services connecting suburban to city transport services

MaaS in Different Geographic Areas

Urban MaaS Objectives

- Reduce the use private of cars (congestion, parking)
- Reduce emissions

Based on: (1) Existing public transport; and (2) Extended with rental and shared cars and bikes…

National and International MaaS Objective

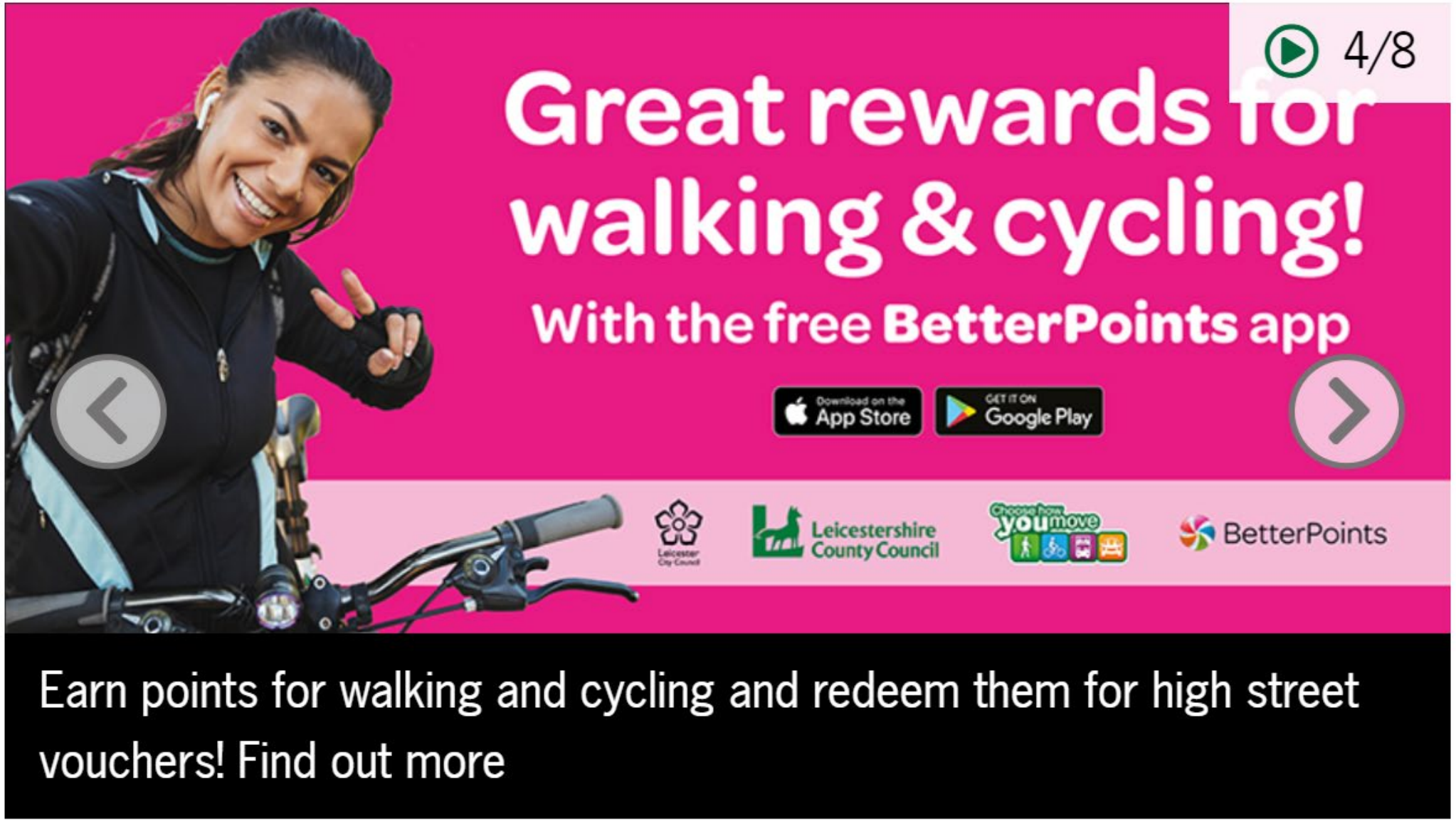
- Offer easy all-in-one packages

Based on: (1) Long-haul transport including air traffic; and (2) Additional services: accommodation, event tickets, activities…

Aki Aapaoja, "MaaS service combinations for different geographical areas," 24th World Congress on Intelligent Transportation Systems, 29 October - 2 November 2017, Montreal, Canada

Application of Behavioral Science in MaaS

- Try to **understand the new service concept**
- Try to **comprehend a particular manifestation of MaaS** with a very specific, detailed service offer, while they also need to:
  - Reflect (probably for the first time) on their transport needs and use
  - Estimate how well [the service] may or may not match their transport needs and use
  - Decide whether or not they are willing to jump in and take the risk of becoming customers at all, let alone how much they would be willing to pay for it
- Actually **undertake behavioural change** (e.g., learning to use a new service as well as potentially reorganising one's daily life and changing one's use of transport)
- Users of transport rarely make unilateral decisions, but rather **coordinate their activities** with other household members, which affects transport needs and behaviours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Great rewards for walking & cycling!
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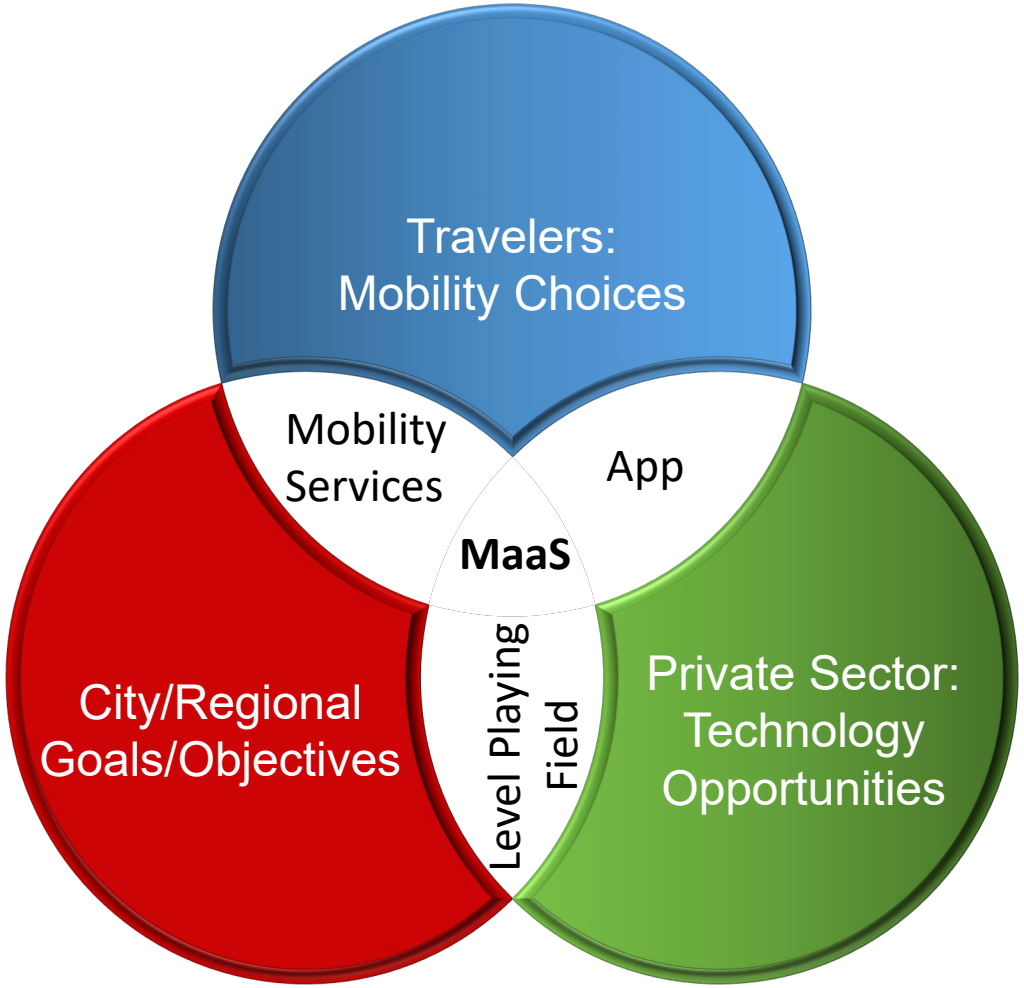
Leicestershire County Council
Choose how you move
BetterPoints
Earn points for walking and cycling and redeem them for high street vouchers! Find out more

Governance and Policies



1. Travelers choose mobility services that **meet individual and city/regional goals**

2. Private Sector provides **mobility services** and **technology platform**

3. The City or Region tries to attain specific goals and objectives that could include **environmental, societal, economic and health.**

3 Perspectives on Equity of Technology-enabled Mobility

Diversity, Accessibility, Equity & Inclusion

Overlooked **culture, gender, physical ability, and ability to access and use** in ITS design and deployment. Leads to wasted time, diminished safety and increased costs.

Equity of New Mobility Technologies

Identifying **equity of technology-enabled mobility services**, defining key **equity dimensions and metrics**, and developing **mobility equity frameworks**.

Bias in ITS Data, Data Analysis and Use

Data generated, analyzed and used by ITS technologies may result in **societal or ethical issues**. Data may not be impartial since the data may be used in a way that can create **biases**.

Barriers to Use of Technology

- Unbanked or underbanked
- Cost of electric vehicles, and connected and automated vehicles
- Lack of access to smartphones
- Seniors and individuals with disabilities unable to use micromobility solutions
- Lack of data to drive decisionmaking - know how people travel, but not how they would like to travel

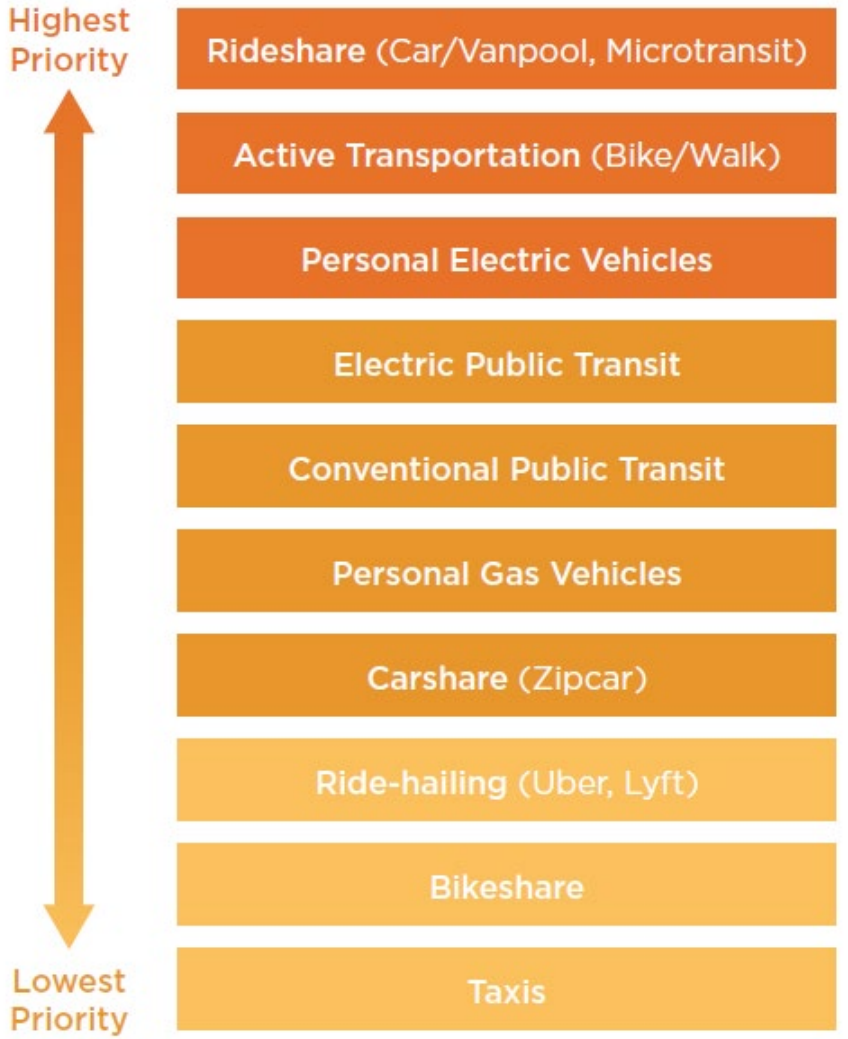
Source: Victoria Sheehan, "Diverse, Equitable and Inclusive Technology-Enabled Mobility," SIS 62, 2021 ITS World Congress, Hamburg, Germany, October 14, 2021.

Incorporate Equity Into Technology-enabled Mobility Services

- 2016: TRB Special Report 319
- 2017: USDOT STEPS to **Transportation Equity**
- 2018: Greenlining Institute's "**Mobility Equity Framework**: How to Make Transportation Work for People"
- 2019: "**Equity and Smart Mobility**" study commissioned by Institute for Sustainable Communities (ISC) and conducted by Center for Neighborhood Technology (CNT)
- 2023: Transit Cooperative Research Project (TCRP) B-47: **Impact of Transformational Technologies on Underserved Populations** - assessment tool for reviewing inclusiveness of transformational technologies for transportation services

Rural Areas Mobility Choices Using Mobility Equity Indicators

- Because flexible, high-occupancy modes best suit the needs of a rural community, rideshare receives high priority
- Where practical, active transportation ranks as high priority due to need for safe biking and walking infrastructure
- Personal electric vehicles receive high priority, due to dispersed housing and destinations
- Both electric and conventional public transit have medium priority, due to efficiency
- Carshare, ride-sourcing, bikeshare and taxis are ranked low, mostly due to lack of accessibility and feasibility

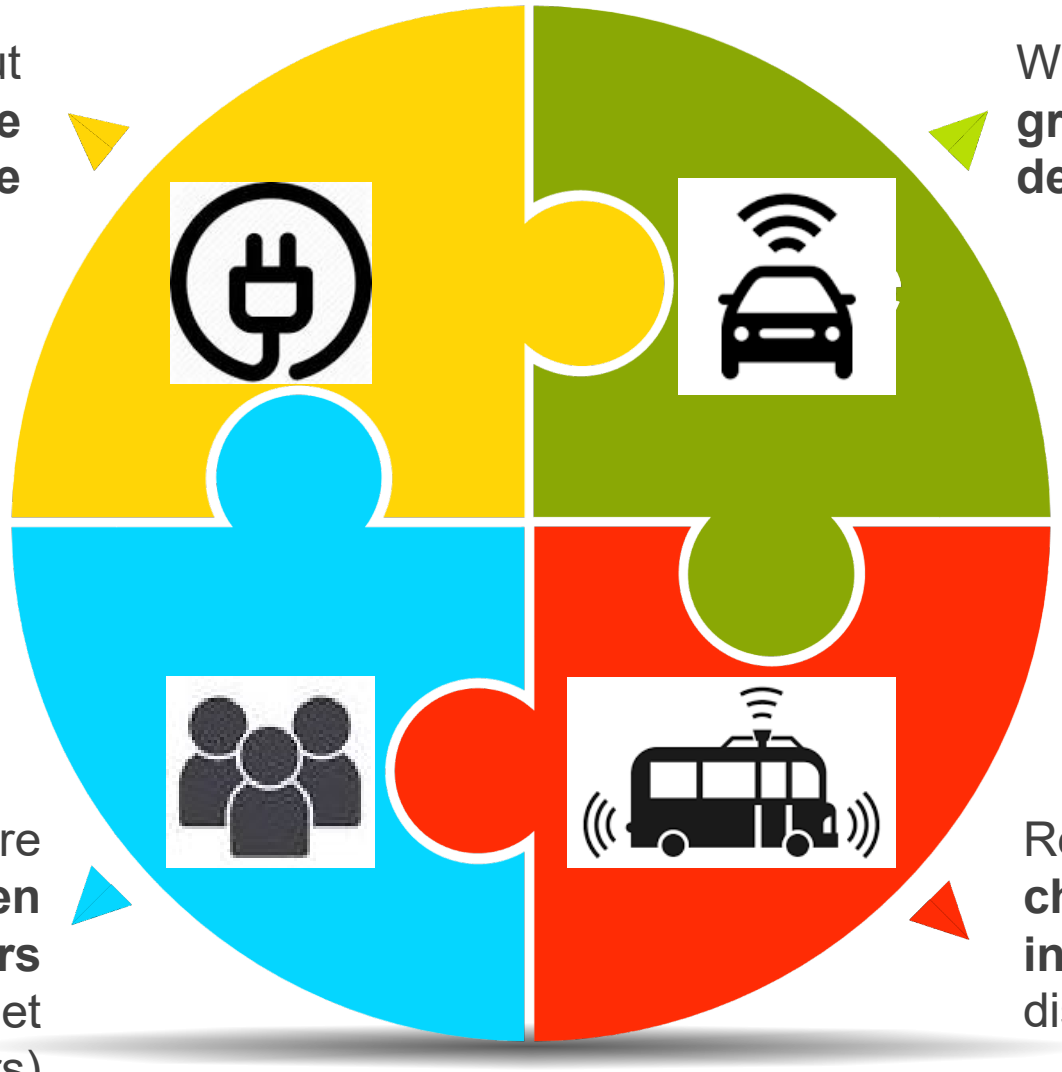


Hana Creger, Joel Espino and Alvaro S. Sanchez, "Mobility Equity Framework: How to Make Transportation Work for People," The Greenlining Institute, http://greenlining.org/wp-content/uploads/2018/03/Mobility-Equity-Framework-Final.pdf

DfT Equality Impact Assessment (EIA)

Embed thinking about EIAs as **early in the process as possible**

Work with **diverse groups to deliver design solutions**



Address areas where there may be a **tension between equalities and other factors** (e.g., e scooters, on street chargers)

Remember the **breadth of characteristics around inclusion** (e.g., geographical distribution of interventions)

Source: Professor Sarah Sharples, Chief Scientific Adviser, DfT (UK), "Equalities, Equality Impact Assessments, and Future of Transport" prepared for 2021 ITS World Congress, Hamburg, Germany. Session SIS 75

ITS Data Considerations – ITS UK

Design: who is designing the systems that are generating, analyzing and reporting the data?

Data equity: how long is the data stored and how is the data being used

Data security: who has access to the data

Data location: where is it stored?

Source: Jennie Martin, ITS UK, "Diverse, Accessible, Equitable, and Inclusive Technology Enabled Mobility," prepared for 2021 ITS World Congress, Hamburg, Germany, Session SIS 75

Thank You!

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