Mobility-as-a Service
The Emerging Mega-Market

Susan Zielinski, Managing Director, SMART.
Focus on the Future Automotive Research Conference
Ann Arbor, Michigan. February 15, 2017
SMART’s MaaS STUDY

Accelerating the Demonstration-Learning-Deployment Cycle: Cases, Challenges, Success Factors

SMART Research Group (Meet our Team!)

Supported by Ford Motor Company

Wrapping in April
Mobility-As-A-SERVICE (MaaS)

Pulling it all together: Public Private Innovation advancing sustainable future mobility systems and the industries and enterprises to supply them.

MaaS = Mobility-as-a-Service
(Service & Product BUNDLING for the end user)

Seamless connected multi-mode multi-service IT-enabled...

... car share, bike share, transit, shuttle, taxi, informal, trains, boats, planes, connectivity, automation, parking, wayfinding, apps, traffic management, safety, security, measuring, monitoring, moving goods, tele-work, tele-other, sensing, marketing, tourism, learning, gaming, ...

BUSINESS MODELS
ENABLING INFORMATION TECHNOLOGY
PHYSICAL DESIGN, PLANNING INFRASTRUCTURE
SYSTEMS & PRODUCT OPTIMIZATION, ENGINEERING & DESIGN
MARKETING (DECISION MODELS, ATTITUDES, BEHAVIOR)
POLICY & LEGISLATION
INNOVATION RESEARCH
TECH TRANSFER
CAPACITY BUILDING
SMART Sustainable Mobility & Accessibility Research & Transformation
SMART MaaS CONSORTIUM

National innovation agencies & leading research institutions in concert with industry, enterprise, & urban ecosystems from:

Finland
Sweden
Scotland
UK
Austria
Michigan
And growing
A ROSE BY ANY OTHER NAME

DEFINING & DESCRIBING THE SPACE

“MAAS-LIKE” and “MAAS-ISH”
Mobility-as-a-Service (MaaS), describes a shift away from personally owned modes of transportation and towards mobility solutions that are consumed as a service. This is enabled by combining transportation services from public and private transportation providers through a unified gateway that creates and manages the trip, which users can pay for with a single account. Users can pay per trip or a monthly fee for a limited distance. The key concept behind MaaS is to offer both the travelers and goods mobility solutions based on the travel needs. MaaS is not limited to individual mobility; the approach can be applied to movement of goods, as well – particularly in urban areas....
DEFINING AND DESCRIBING

SEARCH TERMS:

Mobility-as-a-Service * Transportation-as-a-Service * New Mobility-Hub-Networks * Combined-Mobility * Connected-Transport * Egg-Laying-Wool-Milk-Sow* MobiPunkt * EcoMobility * Green-Transport* Integrated-Mobility* Integrated * Urban-Mobility * Mobility-as-a-Service * Mobility-On-Demand * New-Mobility * New-Mobility-Services * On-Demand-Transport * Smart-City * Connected-and-Automated * Smart-Transportation * Smart-Mobility * Sustainable * Transportation * Transportation-as-a-Service * Etc *
DEFINING AND DESCRIBING

✓ Continues to evolve & usually includes similar elements

✓ BUT raises important questions: Does it:

- include all forms of transport: cars? transit? boats?; the WHOLE transportation system or just the service component? moving goods? moving less? (tele-everything (commerce, work, education, medicine etc); accessibility?; land use?; local production & distribution?; urban agriculture?); automation? self driving cars? drones?

- have to be environmentally sustainable? socially equitable? privately led? publicly led? a mix?

- Many other…
PRECEDENTS
THE HUMAN BODY
TECHNOLOGY SYSTEMS
FOOD : THE WHOLE ENCHILADA
Mobility is transforming just about everywhere.
WhereIsMyTransport, South Africa
Avego Ride Sharing Technology, Ireland
Zagster provides bicycle sharing systems for the world’s leading businesses and institutions. We design, build, and operate solutions to fit your organization’s unique needs and provide a great rider experience.
UBER Global

WANT TO DRIVE WITH UBER? BECOME A DRIVER

MENU

UBER

LOG IN SIGN UP

YOUR RIDE, ON DEMAND
TRANSPORTATION IN MINUTES WITH THE UBER APP

SIGN UP
MCITY Connected & Automated Vehicles Ann Arbor USA
Chair Lift in Rio

Dr. AM Speradio, Faculdade Jaguariuna
MellowCabs, South Africa
Priyadarshini Taxi Service, India
Bikes On Buses in Bage
Rio Grande Do Sul

Dr. AM Speradio, Faculdade Jaguariuna
Eco-Cabs Dial-a-Rickshaw, India
Roadify, USA

Roadify Text Service

B67 Bus to Downtown
Stop: 7ave/12st
Scheduled: 7:50, 8:02

Roadify ETA: 7:56

Please give when it arrives and help others.

mobiprize.com
Hangzhou Omnipay, China

mobiprize.com
A transit revolution fighting for a connected Detroit. "Biofuel-powered transit with a healthy shot of uncommonly good customer service."
Caronettas, Brazil

How does it work?

Buy Caronetas from the website and choose the best option that suites its urban trip.

Spend Caronetas to schedule a ride and get the confirmation N#.

In the car, provide to the driver a ticket (or conf N#) to confirm the payment.

Insert the ticket on the smartphone or website.

Redeem Caronetas accumulated by products and services.

The commuters exchanged GHG production by products and services.

mobiprize.com
MISTER Guideways, New Zealand, Poland
Electric Tricycles in Blumenau Shopping Centers

Dr. AM Speradio, Faculdade Jaguariuna
City Ryde Zagster, USA

Bicycles are the newest amenity!

Make your property more attractive.
Provide on-demand bikes.
We do everything. You do nothing.
Our system arrives two weeks from order.

Login
Register

E-mail (we won't spam you)

Trying to login or register for a Zagster bike program that already exists?
- Yes
- No

Next

mobiprize.com
Getaround Car Share, USA

Rent a car from someone nearby.
Convenient hourly rentals. Full insurance included.

yeti
MINI Cooper
San Francisco, CA
$8.50 / hour

ModelS
Tesla Model S
San Francisco, CA
$25.00 / hour

pluto
MINI Cooper
San Francisco, CA
$8.50 / hour

midnightmarina
Porsche Cayenne
San Francisco, CA
$9.50 / hour

mobiprize.com
Federal District 235 more kilometers of bike lanes

Dr. AM Speradio, Faculdade Jaguariuna
Tuk Tuk Factory Electric Shuttlces, Netherlands
GoMetro, South Africa

On your phone. On your way
Jayride Spare Capacity, Australia

Where are you?

mobiprize.com
Provides accessible, high-quality information and analysis to drive informed decision-making in Detroit.
Ford’s definition of Mobility: Accessibility for people, goods and services to go where they need or want safely, efficiently and affordably – providing a simplified and fun customer experience. Our goal is to make mobility affordable in every sense of the word – economically, environmentally and socially.
Zambikes, Zambia

1 Zambulance = $1,000

1 Zambulance = 1 life saved every 2 weeks

$1,000 = 26 lives saved per year

5 Years = 130 Lives Saved

mobi.prize.com
Flocksourcing Buses, Bangladesh
Banking Boat in Manaus

Dr. AM Speradio, Faculdade Jaguariuna
A Way To Be, South Africa

0109
0146

a way to be anywhere using public transport, buses, trains and teksis.
If You Party, Party Right. Get A PHD Tonight!

Our uniformed drivers are reliable, professional, trained and capable of driving all cars. Our services are reasonably priced so you no longer need to worry about how to get home after a couple of drinks.

1. Call 7738087500 to book your driver. (Between 12 p.m. and 12 a.m.)
2. Driver reaches your destination. Hand him your keys.
3. Drink responsibly and party hard.
4. Get driven home safe and problem free!

Drinking and Driving is dangerous for health

License To Party
The Green Cab, South Africa
Buenos Aires Launches Automated Bike Share

March 3, 2015
Tapajos River

Health Care On Boats

(Floating Hospital)

Dr. AM Speradio, Faculdade Jaguariuna
Relay Rides Peer to Peer, USA
Cabcorner Taxi Platform, USA
E & E recognized that its employees needed a more convenient, easy-to-use tool to find carpool matches and report their commute, which led to the design and implementation of the Web- and map-based system called GreenRide.
Detroit Labs is a team of thinkers, doers, and makers. We dream up and ship beautiful, intuitive apps.
A luxury goods maker located in Detroit creating a community that will thrive through excellence of craft and pride of work. Where we will reclaim the making of things that are made well. And define American luxury through American quality.
MindHelix, India
Thula Lula, South Africa
Moovit, Israel
Neosphere Invisible Bus Bay, India

- Cars or other vehicles can use IBB area but can't park in INVISIBLE BUS BAY area.
- DIGITAL SMART POLE (DSP)
- INVISIBLE BUS BAY
- BUSES HAVE TO PARK IN INVISIBLE BUS BAY
- Passengers have to wait outside IBB
- ARTISTS IMPRESSION *EXAGGERATED*

DO NOT CROSS TILL BUS PARKS
E2 Community Taxi, USA

mobiprize.com
Bill Ford:

A future beyond traffic gridlock

TED2011 · 16:48 · Filmed Mar 2011
Subtitles available in 26 languages

View interactive transcript

INDUSTRY LEADERSHIP
City Driving On-Demand; Car Swap; Dynamic Social Shuttle; Share Car; Remote Positioning; Ford Carsharing; Painless Parking; Parking Spotter; Data Driven Insurance; Big Data Drive; Info Cycle; Fleet Insights; Rapid Recharge & Share; Data Driven Health Care; LA Parking Lot 2.0; Traffic Tamer; City Mobility; Future of Mobility; Accessory Challenge; Australia Accessory
Smart City Challenge Finalists

PORTLAND  KANSAS CITY  COLUMBUS
SAN FRANCISCO  DENVER  AUSTIN  PITTSBURGH

Enterprising City & State MobiPrize

The European Mobility as a Service Alliance
Working to create a seamless, demand-based travel experience
Launched at the 2015 ITS World Congress in Bordeaux

Honorary Enterprising City & State MobiPrize

IT'S TIME TO SPARK MEANINGFUL CHANGE
The India Smart Cities Challenge helps cities get smarter, faster.

NATIONAL LEADERSHIP
THE FOUR SOLITUDES

SERVICE
Car Share / Car Pool / Peer to Peer
Lyft / Uber
Home Delivery
Senior Chauffeur
Auto Rickshaw
Taxi / Pedicab
Etc.

PRODUCT / MODE
Car / Bus / Train
Plane / Boat
Bike / Trike
Shoes / Skates / Skateboards
Etc.

TECHNOLOGY
Fare Payment / Parking
Wayfinding
Traffic Management
Congestion Pricing
Mesh Network / Cloud
Border Crossing / Security
Connectivity / Automation
Etc.

DESIGN / INFRASTRUCTURE / REAL ESTATE
Urban Design
Product Design
Real Estate
Roads
Network Design
Etc.

PERSON / USER / CUSTOMER
DRIVERS

WHY IS THIS HAPPENING NOW?
BECAUSE IT NEEDS TO
BECAUSE IT CAN
May Live to See
May Solve Congestion Problems

How You May Live and Travel in the City of 1950

Picture city streets, says Mr. Corbett, will be in low levels. The top level for pedestrians, the next level for slow motor traffic, the next for fast motor traffic, and the lowest for electric trains. These levels of covered walkways will have no high cost houses office.
By Donna St. George
Washington Post Staff Writer
Sunday, January 24, 2010; A01

The quest to get a driver's license at 16 — long an American rite of passage — is on the wane among the digital generation, which no longer sees the family car as the end-all of social life.

The holdouts include Kat Velkoff, who turned 17 in Chantilly without a license. Focused on tough classes, the debate team, dance and color guard, she turned 18 without taking the wheel. Then 19.

"It just wasn't a priority," said Velkoff, who got her license last year at 20. "It was just never the next thing that needed to get done in my life."

Federal data released Friday underscore a striking national shift: 30.7 percent of 16-year-olds got their licenses in 2008, compared with 44.7 percent in 1988. The difference is even sharper in Virginia and Maryland, state figures show. Numbers from the District, which go back to 2003, show a decline in the past two years.
BECAUSE IT’S
AN INVESTMENT (not a cost)

- REGIONAL COMPETITIVENESS / PRODUCTIVITY
- SAVES MONEY (OPTIMIZATION)
- CREATES JOBS

- A WHOLE NEW MOBILITY INDUSTRY
Multi-trillion $ global market / industry cluster

ENTREPRENEURSHIP & ENTERPRISE
Meeting customized local needs. Replicating and scaling globally. Catalyzing investment, building capacity.

SMART MobiPrize

ENTERPRISE & TECH TRANSFER

INDUSTRY MOBILIZATION
- Ford Motor
- Ashok Leyland
- Cisco Systems
- Michelin
- IBM
- Intel
- Infosys
- Mapunity
- Qualcomm
- Siemens
- Velankani
- eolia
- etc

NEW MOBILITY INDUSTRY CLUSTER DEVELOPMENT
- Scotland
- Finland
- Brazil
- Sweden
- Spain
- Austria
- etc

BIG BUSINESS is transforming supply to meet emerging global market needs & opportunities.

MULTI-TRILLION $ INDUSTRY
Industry Cluster:
Automotive; Transit;
Energy; Real Estate; IT;
Logistics; Planning & Architecture;
Telematics; Retail;
Tourism; etc…
CURRENT META DRIVERS

✓ Change is changing faster

✓ Technology is outpacing policy

✓ We don’t know what we don’t know

✓ We are all the deciders (wider field of actors)

✓ It’s an infinite game

✓ It’s an eco-system
STATUS OF THE SPACE

Past 30-40 years: evolution of vision & elements of MaaS

Currently:

- broader understanding of economic / business opportunity
- more talk than action in terms of whole system / platform
- multi-sector, public-private eco-system recently exploded
- attention has followed
- investment has followed
- demonstrations, deployments, data emerging
MaaS business model innovation:

Ubigo (including academic role)
Whim (Finland - private sector)
Samtrafiken (regional - Sweden)
Smile (Austria)
Bremen Germany (MobilPunkt)
Public sector-led MaaS systems

(organic growth
building on existing transportation assets
incorporating private sector)

Seoul
Barcelona
Sao Paulo emerging
US Smart City Projects

Columbus - focus on access/ role of technology
Kansas (Bridj/Ride KC)
LA Mobility hubs
Interesting Enterprise + City Partnerships
(PLUGIN - opportunity to replicate component)

Grenoble
Lyft & SF
Bileto
Veniam in Porto
Kutsuplus & Ajelo Finland & SPLIT
Policy Models to incentivize or support MaaS Development

Hanover - incentivizing multimodal trip travel
Hangzhou - Omnipay
Sao Paulo - Open data + Supporting enterprise development
Scottish Enterprise (Scotland national innovation)
Tekes (Finland national policy & innovation)
Vinnova (Sweden national innovation)
Drive Sweden – industry development very MaaS focused
Big Businesses in MaaS and SMART City players

Ford
Siemens
Ericsson
Daimler
IBM
Google
Consultants
+ many more
MaaS Ecosystem
(Partnerships/funding/alliances - elements moving MaaS discussion forward)

Many EU-supported working groups + programs
MaaS Alliance
Many global efforts (WRI, USDOT, KIC 2018 Shared Use Summit etc)
UM-SMART MaaS Working Group
KEY ELEMENTS / VERTICALS

Business Models / Economics:

Technology

Physical/Spatial:

Environmental:

Policy/Legal:

Culture/End User/Equity

Eco-System
Business Models / Economics:

Analyzes the variety of business models both from the business development & operations end (partnership diversity; service and fee distribution; legal; financing; revenue and funding, etc) to services to be offered to the customer (packages; data access; fee payment; etc)
Technology:

Analyzes the technology elements that influence MaaS evolution including data (collection, standardization, distribution, payment, information), platforms, V2V- V2I connected technologies, automation etc.
Physical/Spatial:

Analyzes the impacts & drivers of MaaS processes and systems on their physical environments (design, planning, infrastructure, local production, economic development) and the influence of physical space on MaaS
Environmental:

Analyzes the environmental drivers and potential environmental benefits that have driven enterprises and public entities toward smart mobility and MaaS. (impacts on physical environment, natural resources, health, safety, ecosystems etc)
Policy/Legal:

Analyzes the policy & legal issues & frameworks related to potential MaaS challenges and successes
Culture/End User/Equity:

Focuses on decision models, customer experience, behavior change, equity, and the digital divide from a customer perspective. Analyzes the role of culture on the uptake of MaaS and the potential impact of MaaS on the end user.
Eco-System

Focuses on Range of Sectors, Players, Alliances.
Public-Private Balance
CHALLENGES
CHALLENGES

Public-private balance (who owns / leads)

(NUMBER ONE CITED SO FAR)
CHALLENGES

Ecosystems:

Much wider set of public, private, NGO players need to be involved and working together

(This also came up a lot)
CHALLENGES

Complexity:

✓ Hard to understand

✓ Lack of common language (both cultural and technical) for discussing and implementing

✓ Harder to adapt & scaling more complex systems
CHALLENGES

Customer:

✓ End user variance

✓ Culture & demographics

✓ Changes by purpose & over time
CHALLENGES

Business models:

✓ (across complex systems)

✓ jury out on winners & losers in terms of whole system business models (blurry line between MaaS & apps)

✓ vary according to existing conditions, legacy business and government

✓ procurement (what and from whom and by whom)

✓ replication and scaling is hard given the range of actors and variance in local conditions
CHALLENGES

Technology:

✓ platform vs. apps vs non-technology components standards / system architectures
  ✓ digital divide
  ✓ cyber security
  ✓ ends vs means
✓ connected & automated infrastructures (V2V, V2I)
CHALLENGES

Data:

✓ ownership (user; business; government, all or none or some of the above)
✓ monetization
✓ availability
✓ accuracy
CHALLENGES

Physical space & DESIGN:

✓ essential but neglected element currently (contrasting from over-attention in earlier planning approaches) i.e. very important yet technology dominates
✓ requires integrative work within existing physical & technical infrastructure (based on needs & legacy)
✓ varying mental maps of physical space leads (from knowing nothing to smart city champions)
✓ environmental & resilience elements overlooked to date
✓ rural vs urban comes up
CHALLENGES

Policy, legislation & insurance

✓ more policy actors need to be involved
  ✓ they need to work together
✓ need to do different things (frameworks not just rules)
✓ need to develop & enforce standards / architectures
CHALLENGES

Evidence Base:

✓ lack of research / evidence base in an increasingly competitive environment, slowing the demonstration-learning-deployment cycle
CHALLENGES

Marketing

✓ complexity
✓ competing with self driving cars and drones and other new innovations (though marketing hasn’t played as highly as technology in the early stages of MaaS development possibly to detriment of MaaS)
CHALLENGES

Confusing means & ends

✓ enablers & goals. i.e. seeing the technology platform, business result, or policy suite or even mobility itself as the goal (as opposed to meeting user / customer needs / accessibility / sustainability being the goal)
SUCCESS FACTORS

Robust end-user analysis (across the whole system)

Enabling open data / API’s / codes to support interoperable

Supportive policy / legislation

Contracts & agreements to support public private innovation

Robust public private eco-system

Smaller countries sometimes have advantage

Culture: non car-dominated cultures

Compelling & Exciting Narratives
SMART ACTIVITIES & RESOURCES

MaaS Consortium leadership & MaaS Alliance representation

SMART’s global Implementation Methodology for leaders

MaaS research (industry, policy, end user)

Mobi Platform

SMART global ecosystem

SMART events

Other…
SAVE THE DATE!

C3 CONNECTED MOBILITY FOCUS SERIES EVENT:
Mobility as a Service

November 3, 2017
Troy, MI

The C3 Group is teaming up with the Mobile Technology Association of Michigan (MTAM) and the University of Michigan’s Smart Mobility & Access Research & Transportation (SMART) division for an intimate and interactive event that explores how diverse stakeholders in the urban space can work together to enable Mobility as a Services (MaaS) solutions that increase transportation efficiency and promote sustainability.

MaaS links multiple transportation modes and services from door-to-door, offering a user-focused bundle of connected options. Enabled by new technologies and business models, this emerging “system of systems” phenomenon is taking off in the mobility world, engaging diverse stakeholders from automotive to tech to public transport to urban planning and real estate (and beyond!).

Contribute to the discussion and learn how these diverse stakeholders can connect to move MaaS and Michigan forward!

Registration Opening Soon!