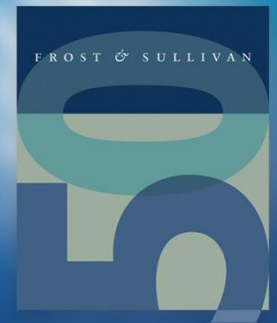


Mega Trends Impacting the Automotive Industry and the Future of Mobility

Shwetha Surender, Frost & Sullivan



Connectivity & Convergence



80 Billion Connected Devices By 2025

10 Connected Devices for Every Household by 2020

5 connected devices for every user by 2020

5 billion internet users by 2020

500 devices with unique digital IDs (Internet of things) per square kilometre by 2020



Cognitive Era



What is Artificial Intelligence?

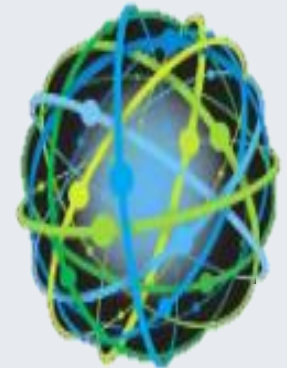
Three Types of Artificial Intelligence Systems



**Artificial
Narrow
Intelligence**



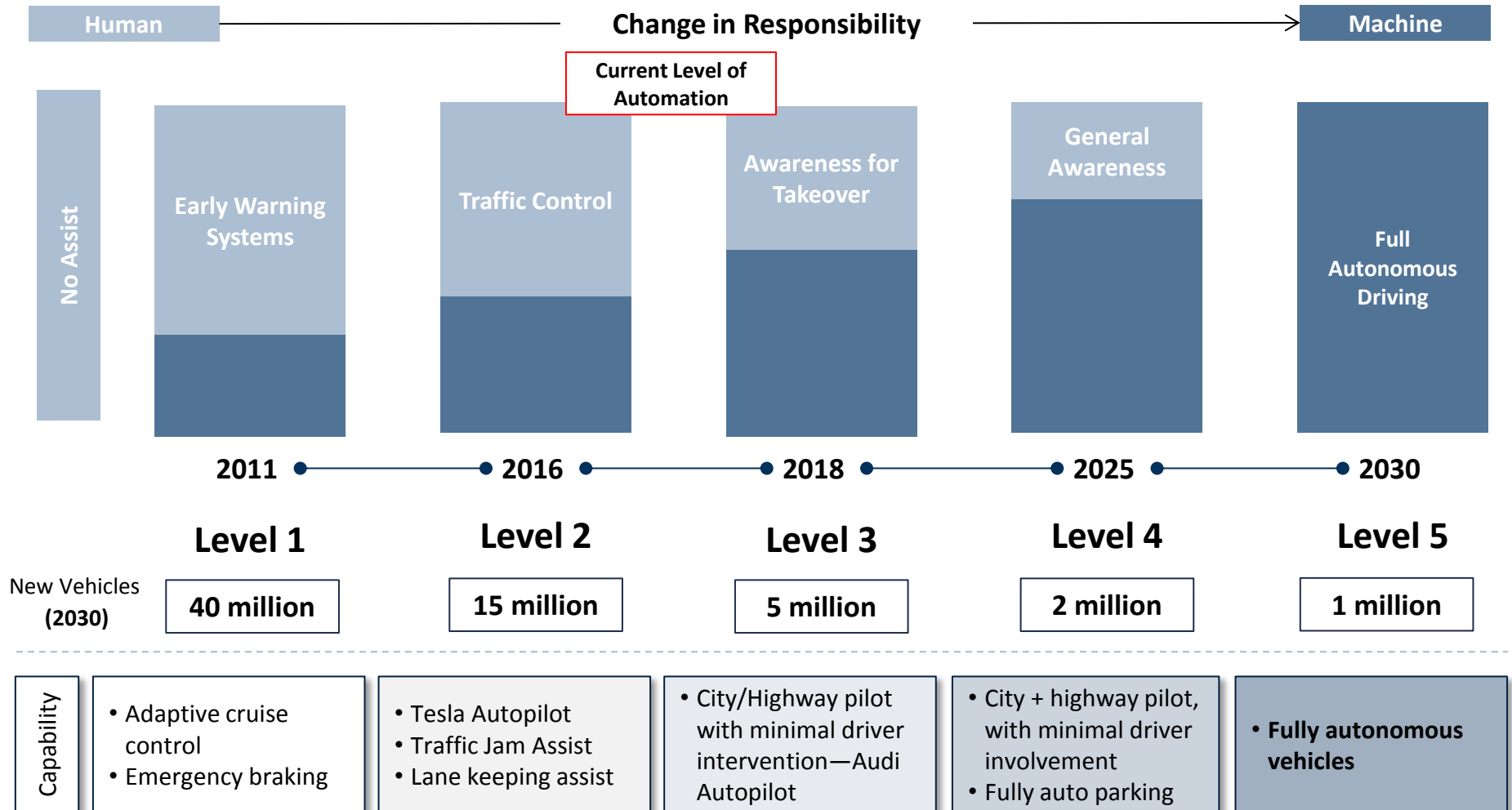
**Artificial
General
Intelligence**



**Artificial
Super
Intelligence**

Autonomous Cars - 8 million semi and highly automated vehicles in the next 10 years.

Autonomous Driving Market: Definitions for Levels of Automation, Global, 2016–2030



Social Trends



Social Trends



Smart is the New
Green





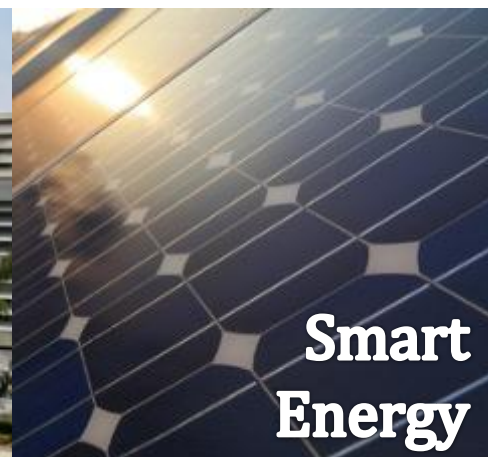
Smart Cities



Smart Technology



Smart Infrastructure



Smart Energy



Smart Mobility



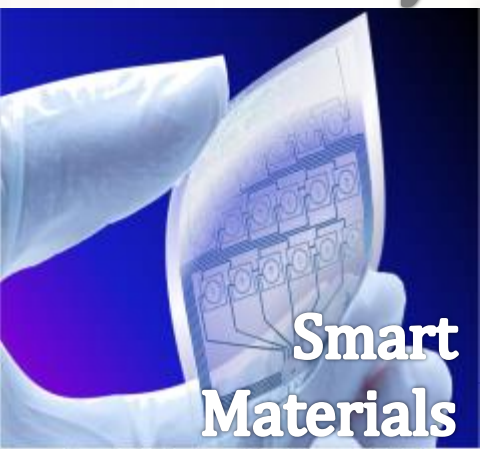
Smart Buildings



Smart Windows



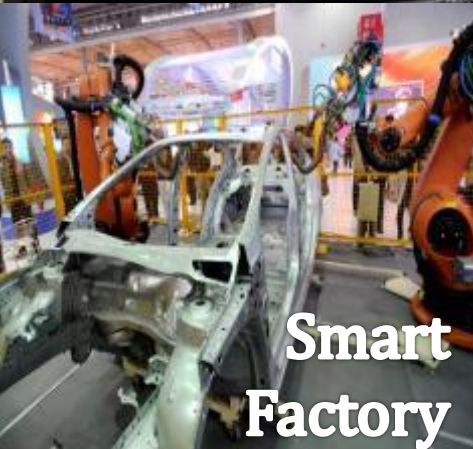
Smart Clouds



Smart Materials



Smart Bandages



Smart Factory

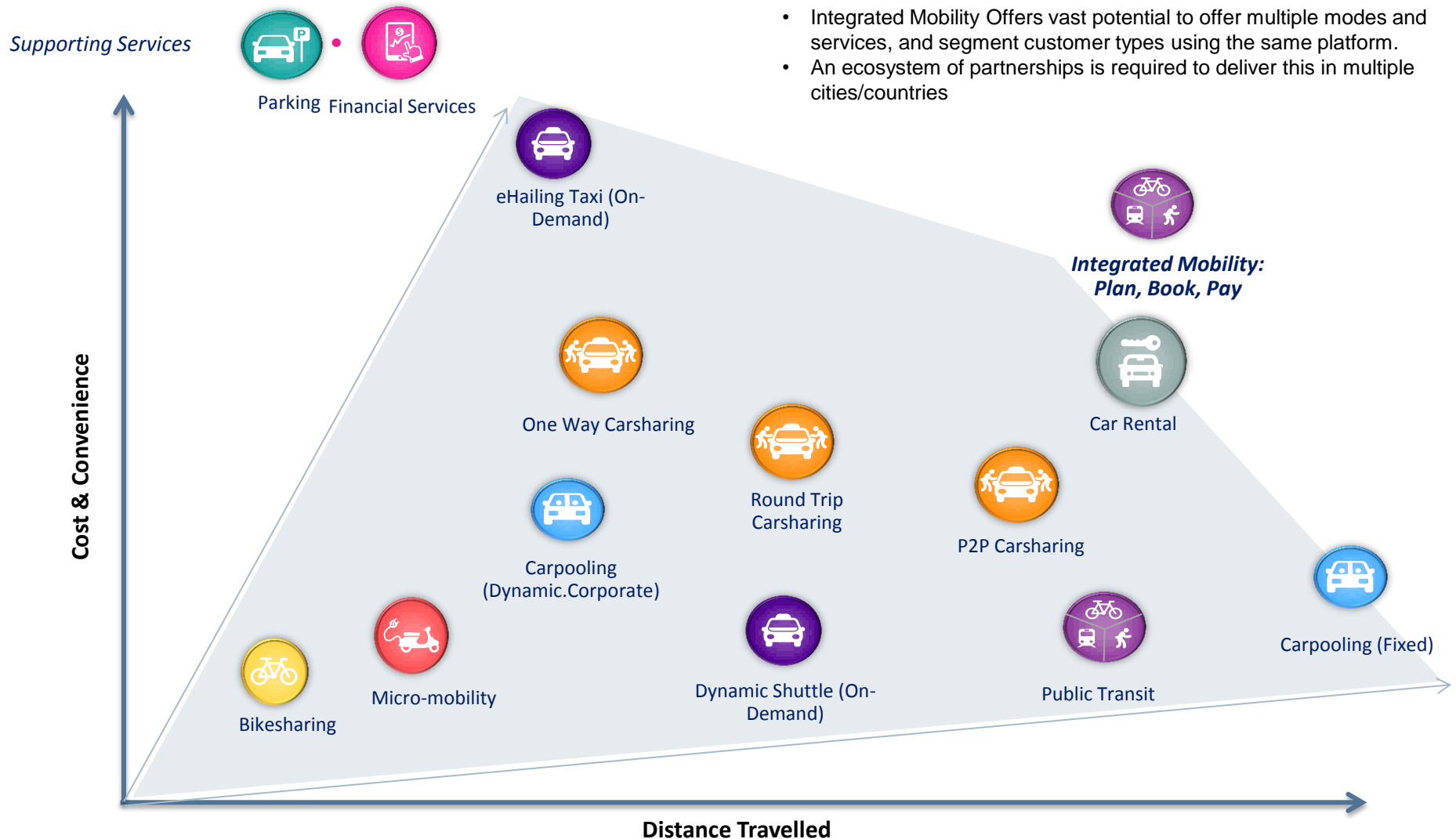


Smart Meters

Mega Trend : Future Of Mobility

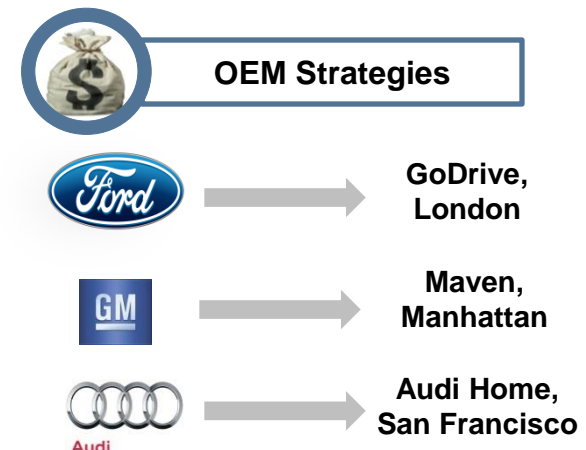
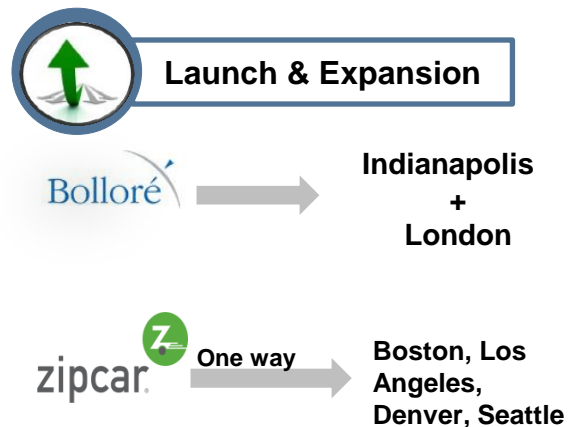
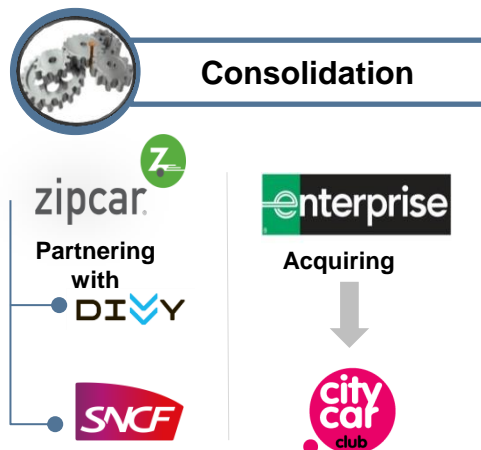
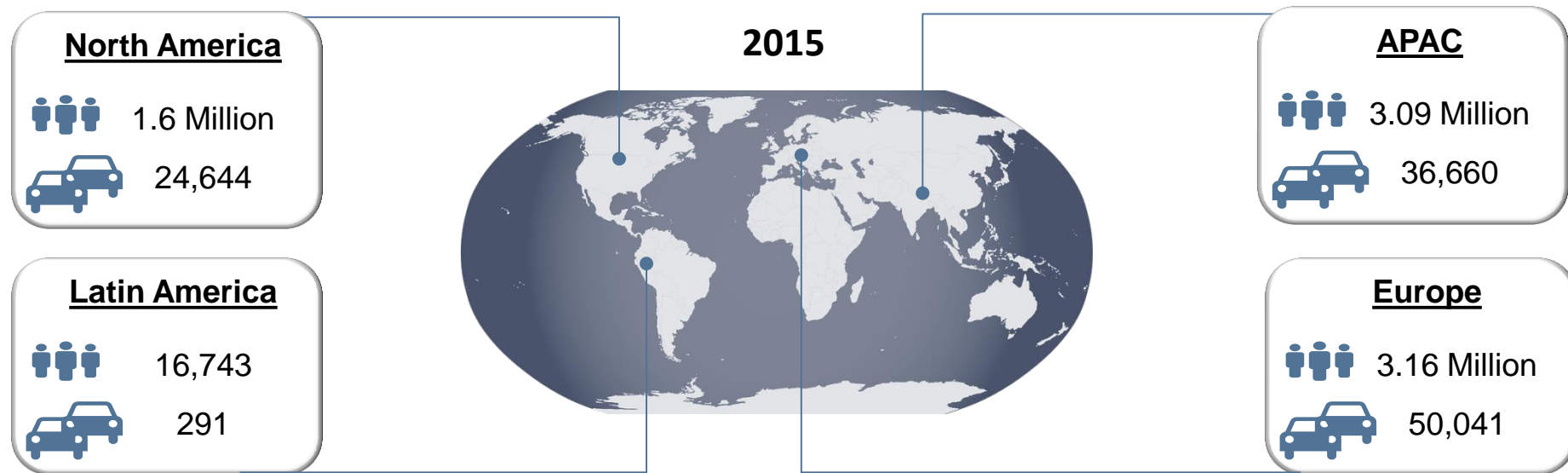


The Emerging Urban Mobility Landscape



Source: Frost & Sullivan

Carsharing to form an integral part of Integrated mobility



Ridesharing– The Next Hot Social Transportation Trend

2015

North America (Big Players)



Kangaride – 350.000
Zimride – 350,000, 130 organization

Europe (Big Players)



BlaBlaCar – 25 million ,
22 countries(Global)
Liftshare – 700,000,
700 Corporates

Asia (Big Players)



Ryde – 30,000



Acquisitions



carpooling.com



OEM Ridesharing Strategies



summon



FCA

FIAT CHRYSLER AUTOMOBILES



MUOVERSI CON INTELLIGENZA



Future Technology Trends

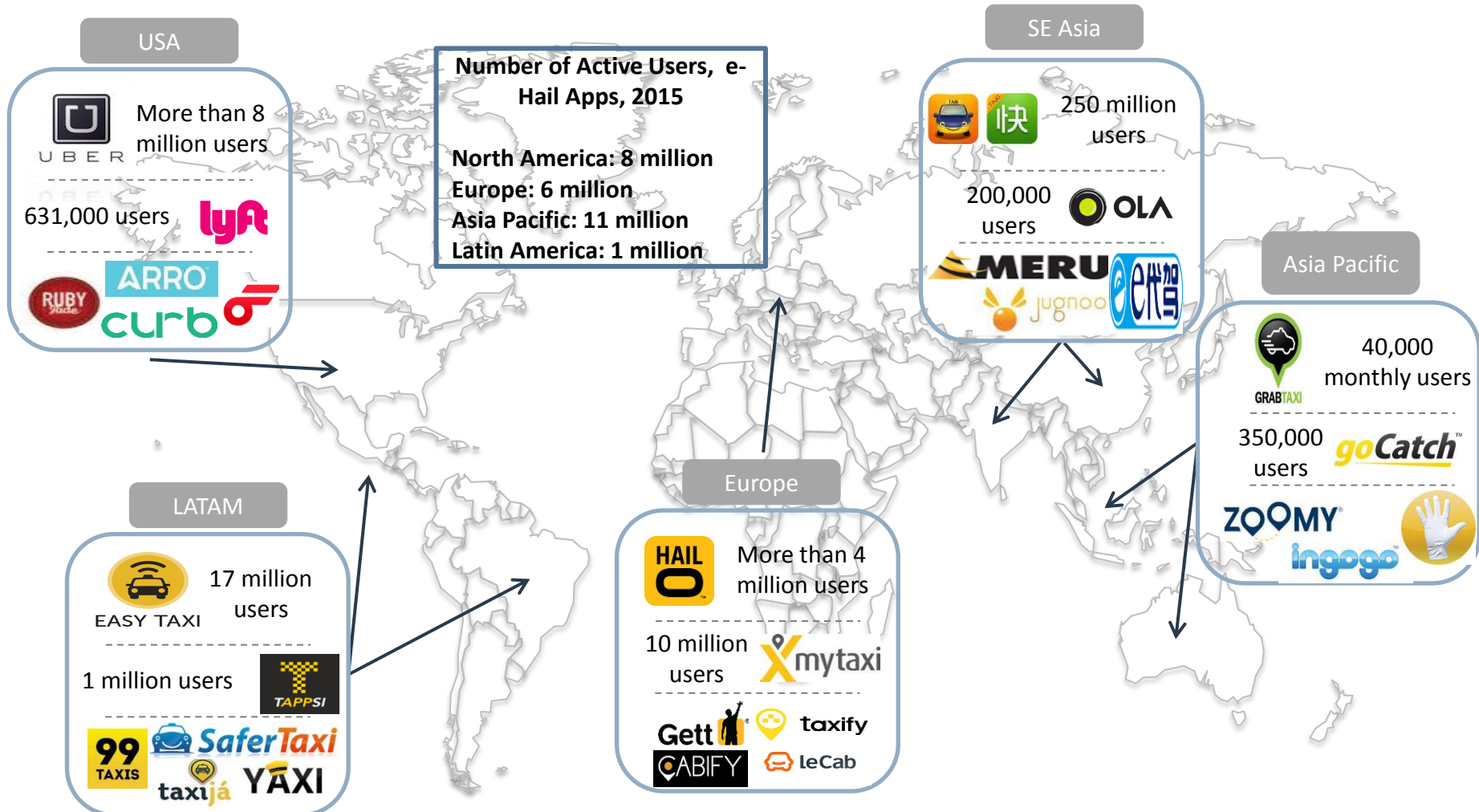
Cloud-based systems

Data-driven ridesharing

Calendar syncing of rides

Proliferation of the Ride hailing Concept

Taxi Industry: Snapshot of Key Taxi Apps, Global, 2015











Source: Frost & Sullivan

Case Study—New York Yellow Taxi

As the vehicle-on-demand model more readily caters to people's commuting needs, a migration from personally owned vehicles to mobility-as-a-service shall largely benefit the taxi market.

Mobility Solution Business Models: Case Study—New York Yellow Taxi, NA, 2015

2015	Parameter	2050	
36	Average number of daily trips per taxi	~50	
200	Average daily miles covered by a taxi	~350	
7.1%	Taxi user base (% of population)	15–20%	
22.39	Number of taxis per 1,000 daily commuters	~18	
\$552 (2015)	Driver cost per day	\$0	
50,000	Number of drivers	0	
\$6.44 (2015)	Average fare per mile	~\$4	
\$29,900 (2015 Nissan NV200)	Taxi price	\$40,000	

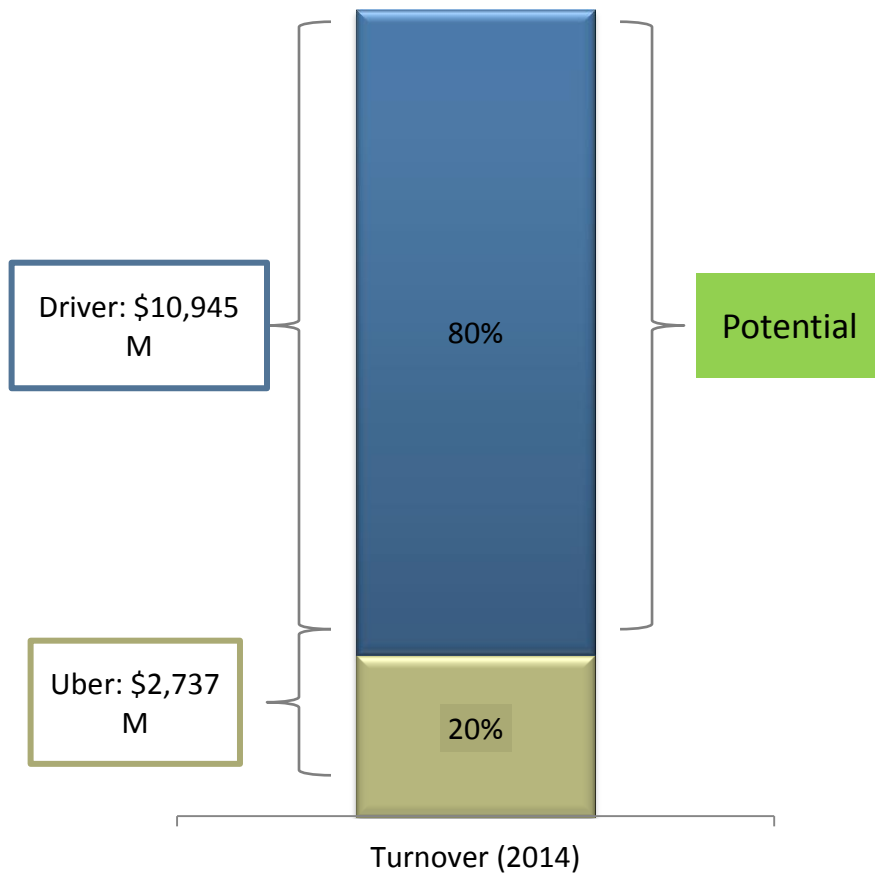
Note: Taxi user base in New York City was 600,000 passengers per day in 2014.

Source: NYC Taxi And Limousine Commission; Frost & Sullivan

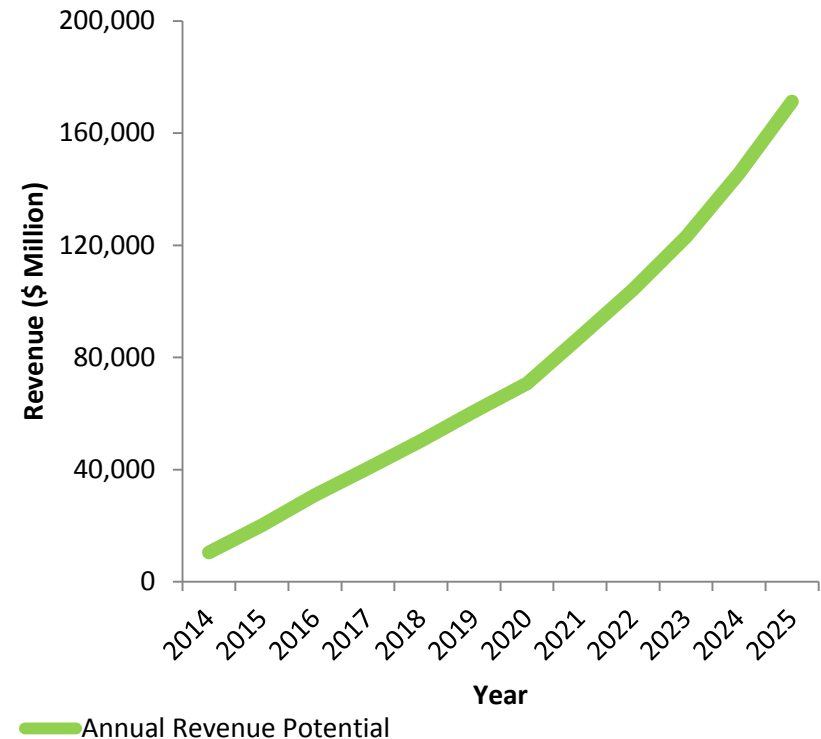
Autonomous Driving—Potential for Uber

The potential to tap into 80% the driver revenue provides incentives for aggressive investments in autonomous technology R&D for Uber.

Uber Revenue Split, Global, 2014

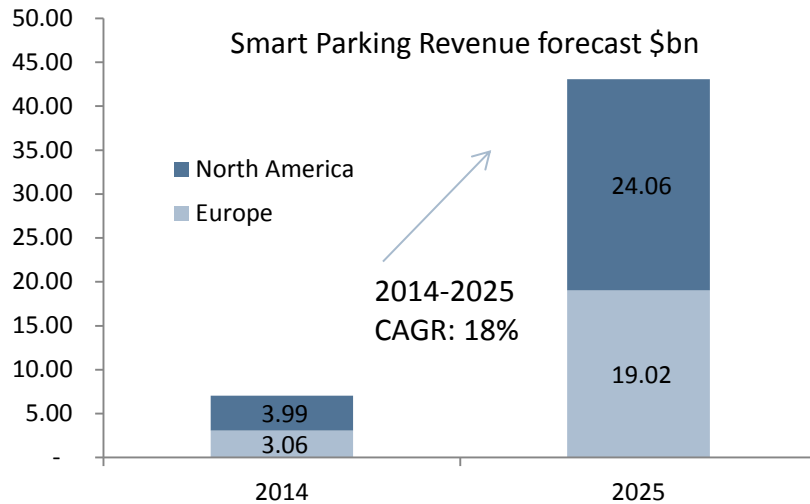


Uber Annual Revenue Forecast, Global, 2014–2025



Source: Princeton Study; Frost & Sullivan

Smart Parking



Parking Analytics and Big Data



Parking Sensor Integration



Payment

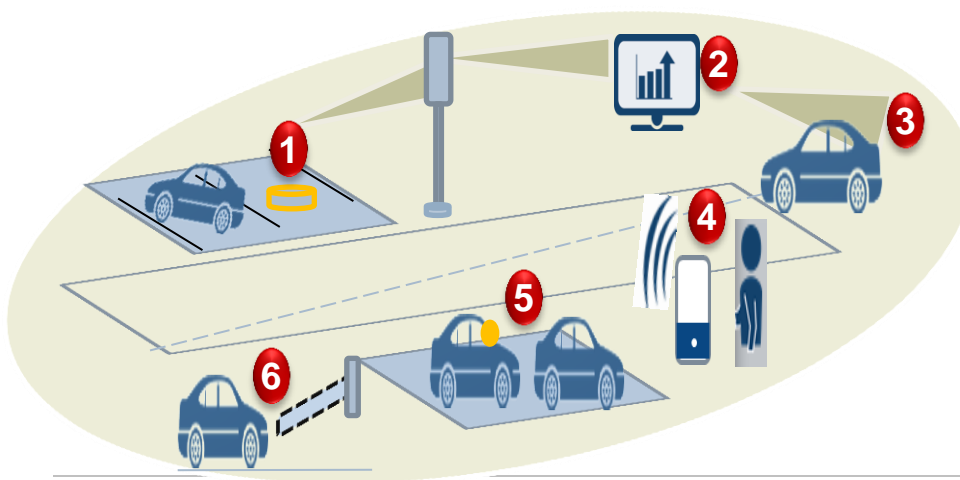


Apps & In Car Reservation



P2P Parking

Smart Parking in Pisa, Italy



Connected Parking

- 1 Sensors detect parking space occupancy
- 2 Transmit data to central server about the status
- 3 Users on smartphone app search for free space and guides
- 4 Parking payment through the app
- 5 Inclusion of special permit – taxi, residents, etc.
- 6 Legitimation—Access control system assistance

Roadmap towards Integrated Mobility



Integrated Mobility

Source: Frost & Sullivan

Journey Planning



Multi Modal Planning of journeys via smartphone or web platforms (business model: usually advertising or commissions)

Booking



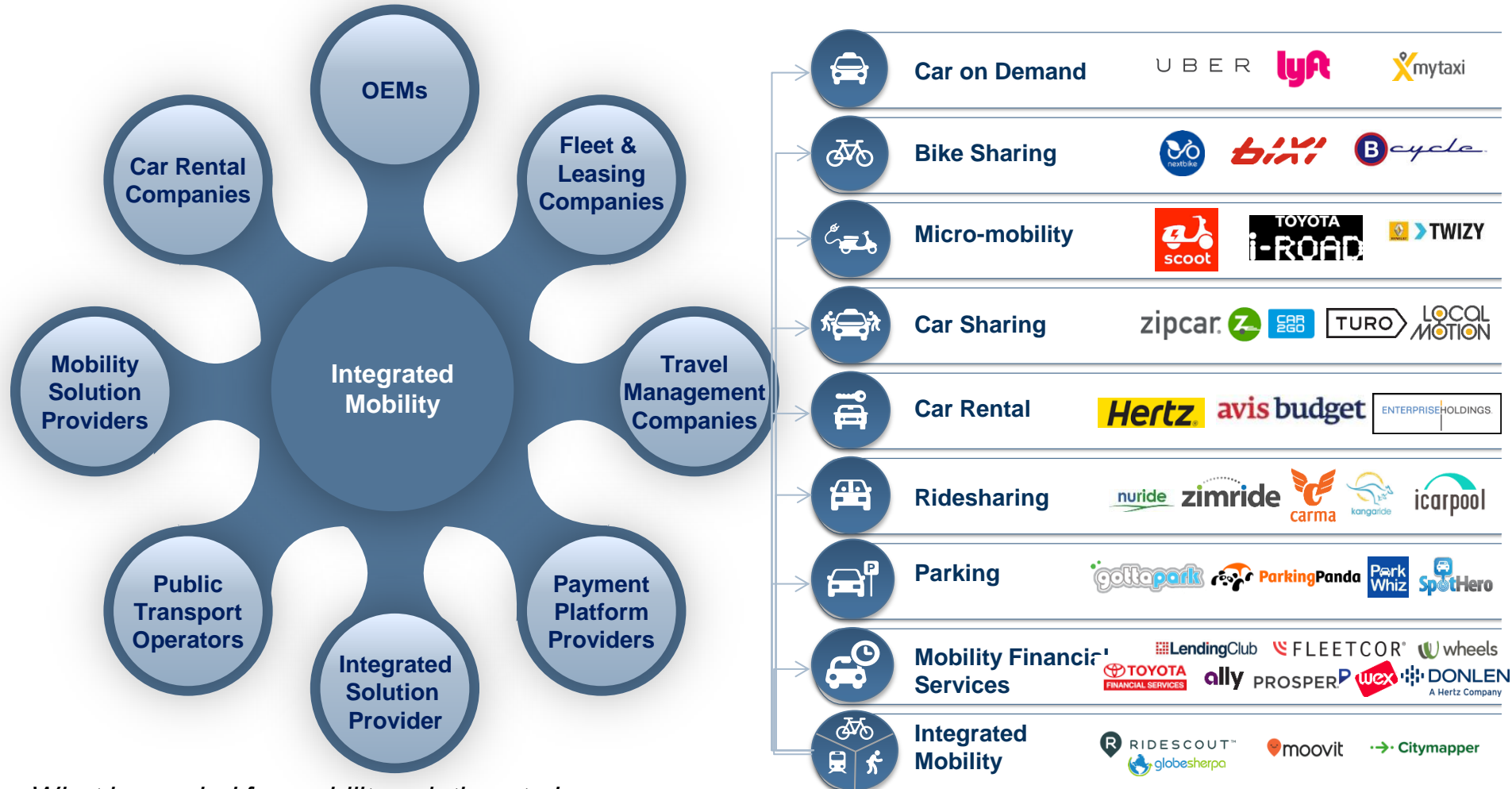
Booking of transportation modes via technology platforms, including referrals from third parties (business model: direct revenue or commission)

Payment & Reconciliation



Facilitating payment for transportation services and clearing / expense management (business model either commission or service fees)

New Mobility Business Models & Partnerships



What is needed for mobility solutions to become "mainstream"? **Policy, Investment & Behaviour Change**

Changing Role of Public Sector in Mobility



Flexible scheduling & on-demand transit



Parking Supply & Monetisation



Automated Driving



Open Data



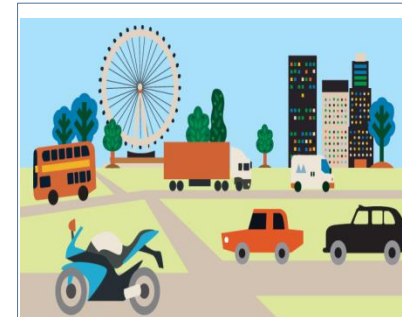
Carsharing Tenders, Operations, SLA's



Bikesharing Tenders



New Regulations for eHailing services



Integrated Mobility-As-A-Service

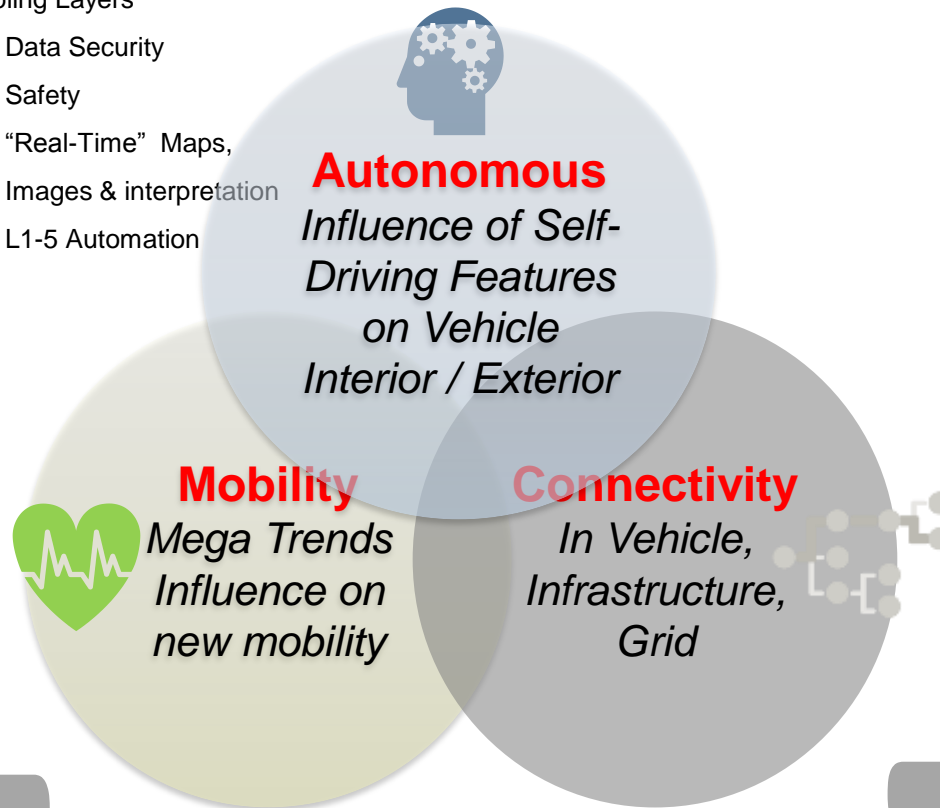
Source: Frost & Sullivan

Mega Trends Leading to a Convergence in Mobility

Mobility Convergence

Enabling Layers

- Data Security
- Safety
- “Real-Time” Maps, Images & interpretation
- L1-5 Automation



Exciting New Business Models

- Shared Mobility
 - Carsharing
 - Ridesharing
 - Ride hailing / taxis
 - Parking
 - Bikesharing
 - Dynamic minibuses

Contact Us

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