The New Mobility Revolution, Smart Cities and Global Perspectives

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Mobility in the 1990s

https://youtu.be/-t547eSOam0
U.S. Smart Cities

- In 2016, the U.S. Department of Transportation (U.S. DOT) has leveraged nearly $350 million in public and private funds for smart city and advanced transportation technologies.

- Building on Beyond Traffic 2045, the Smart City Challenge provided a spark for cities looking to revolutionize their transportation systems to help improve people’s lives.

- Through the Smart City Challenge, the Department committed up to $40 million to one winning city. In response, cities leveraged an additional $500 million in private and public funding to help make their Smart City visions real.

- In October 2016, the Department announced an additional $65 million in grants to support community-driven advanced technology transportation projects in cities across America, including 4 of the finalists in the Smart City Challenge.
What is a Smart City?
Smart Mobility Society is expanded with connected services.

Toyota aims to create an exciting and secure society by connecting vehicle, people and community, so as to improve the convenience of daily lives.

Connected with vehicles and roads
Toward the realization of Toyota’s ultimate goal: Zero traffic casualties.
- The vehicles constantly exchange their location and speed information with each other so as to avoid collisions.
- The vehicles receive useful information from the road infrastructure so as to prevent accidents.

Connected with people
The vehicle will become a trusted partner for the driver by having the “Agent” providing guidance.
- The vehicle is able to communicate with the driver verbally.
- The vehicle will provide services by predicting the driver’s actions.
China Smart Cities

- China intends to move over 350M people from the rural communities to urban cities for its long term economic strategy.

- In 2008 - 2015 China had constructed 207 airports and by 2025 their goal is to have a total of 260 new airports in China.

- China already has the largest high speed rail system in the world.

- China is using AI-directed traffic, smart parking and cashless systems for citizen services
New Beijing Nanyuan International Airport
• Will have (7) new runways
• 100 Million Annual Passengers
• 2 Million tons of cargo and mail
成 都
国际化大都市
Singapore/China Smart City

https://youtu.be/iP11XeIV1ZA
Mobility Landscape – Many Players, New Partnerships, New Models
In both B2C and B2B environments customers are demanding intuitive services; many actors investing significantly in order to deliver the ‘killer’ seamless proposition & user experience.
HOW OUR INDUSTRY IS CHANGING

The key trends in the automotive world at a glance

**Future vehicle concepts**
- Autonomous
- Electrified
- Connected

**Advanced mobility solutions**
- Robotaxi
- PRT, GRT, FRT*

**Today’s vehicle concepts**
- SUV/CUV trends
- Budget cars

**Sharing & Mobility On Demand**
- Shared
- Conventional drive system

*PRT = Personal Rapid Transit; GRT = Group Rapid Transit; FRT = Freight Rapid Transit
Fuel diversity and uses

EV: Short-distance, HV & PHV: Wide-use, FCV: Medium-to-long distance
Generating electricity with hydrogen and oxygen

**Step 1**: Air and Oxygen enter the FC Stack.

**Step 2**: Hydrogen is supplied from the Hydrogen tank.

**Step 3**: Electricity is generated in the FC Stack, and Water is discharged.

Motor

Drive battery

FC Stack

Hydrogen tank
H2 Fuel Cells
H2 Fuel Cell Buses
New Mobility Innovations
Connected Homes & Cars

- Lights & Curtain
- Smart Appliances
- Smart Media
- Air Control
- Video Intercom
- Background Music
- Safeguard
- Central Heating

THE CONNECTED CAR

- On-Board Diagnostics
- Safety Sensors

100% Of cars will be connected by 2025
75% Of cars on the road will be autonomous by 2035
Smart City Organizations

- Smart Cities Council: https://smartcitiescouncil.com
- Meeting of the Minds: https://meetingoftheminds.org
- Venture Smarter: https://www.venturesmarter.com
- National League of Cities: https://www.nlc.org/topics/technology/smart-cities
Global Mobility Trends & Opportunities

- Autonomous Cars are 20 - 30 years away from full deployment (Federal & State Legislation)
- EV’s & H2 Fuel Cell Infrastructure Opportunities - Geographic and Climate Limitations
- Artificial Intelligence & Traffic Management
- Smart Homes Connectivity
- Local City & Open Data Initiatives
- Sharing Economy (Ride Share, Delivery of Services)
- First Mile/Last Mile Opportunities (Connecting underserved communities)
- Workforce and 3rd Shift Mobility
- Senior, Accessibility & Health Care Mobility - Medical Districts
- Smart Parking Mobility
- Agricultural and Rural Mobility
- Water Mobility
- New alignments in government and corporations: Chief Mobility Officers, Chief Accessibility Officers
Auto Mobility Trends & Opportunities

- Automotive Industry is facing stiff competition from tech companies and disruptive mobility technology.

- Toyota and others are developing Mobility as a Service Lines of Businesses (MaaS)

- Automobile manufacturers could be like the aviation industry. Supplier of cars for various services (airlines).

- Cars are not a right of passage anymore for the young. The mobile device is!

- Automakers have manufacturing assets that can be used for other mobility technologies.

- Future of Mobility: Toyota Mobility Foundation: https://youtu.be/2Dhl7D5s5U
The New Mobility

https://youtu.be/2DhI7D5sS5U
Thank you!

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