Multimodal transport – an OEM perspective

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Toyota’s Urban Mobility vision – co-modality

- Public transport network: Covering the whole city with multi-modal transports, locating major city functions along the lines.
- Seamless settlement service.
- Shared mobility for the last one mile.
- Safe, comfortable transportation.
- BRT-Subway coordination.
- Convenient, efficient services.
- Easy-transfer station.
- Well-designed stations.
- Smart logistics.
- Flexible supply control reflecting demand.
- Out-of-town depot and cooperative transport & delivery.
- Credit card systems.
- Destination and path guidance.
- BRT, Train, Path indication.
- Dynamic road pricing.
- Transit signal priority (Smart BRT).
- Real-time transport mode select navigation.
- Smooth guidance to public transport.
- Park & Ride service for people from outside.
- Dynamic coordination among multi-modal transport.
Building blocks of a future mobility system

- Vehicle technology & energy
- Management systems
- Information technology/systems
- Behaviour
Towards sustainable mobility & the ultimate Eco car The right car, the right place, the right time

Ultimate Eco car

Energy diversity   CO₂ reduction   Air quality

Hybrid technology

Gasoline, diesel  Gaseous fuels  Biofuels  Synthetic fuels  Electricity  Hydrogen
Full Hybrid: a game changer

Prius yearly global sales volume

Toyota’s Powertrain roadmap

- **Vehicle size**
  - EV
  - HV
  - PHV
  - FCV
  - Personal Mobility
  - Home delivery vehicles
  - Short-distance commuter

- **Travel distance**
  - Electricity
  - Gasoline, diesel, biofuels, CNG, synthetic fuels, etc.
  - Hydrogen

- **Vehicle technology & energy**
- **Behaviour**

- **Types of Vehicles**
  - Home delivery trucks
  - Full-size trucks
  - Shuttle bus
  - Passenger cars
  - FCV (bus)
Easy navigation
Autonomous driving
Easy access to energy through connectivity
Implementation example: Toyota City

Effective use of various transportation systems will contribute to "Green community" in terms of human movement
Example: Grenoble, France

Departure Station

Arrival Station

Final Destination

Vehicle technology & energy
Information technology/systems
Management systems
Behaviour

Departure Station

Arrival Station

Final Destination

Departure Station

Arrival Station

Final Destination
Sustainable Mobility Project 2.0
Participating Companies

Brisa
Ford
TOYOTA

BMW GROUP
bp
Bridgestone
DAIMLER

DB Bahn
Honda
Michelin
NISSAN

Pirelli
Shell
Volkswagen
Sustainable Mobility Project 2.0

...aims to accelerate the implementation of sustainable mobility solutions by

• focusing comprehensively on city & intercity transport of people & freight

• establishing a unique global cross-sectoral platform

• developing sustainable mobility indicators to measure progress

• working on concrete “action plans” for certain cities

• advocating and communicating to create the right “policy accelerators” and framework conditions
STEP I: Establish City Cluster

Source: Jeff Kenworthy
Cluster is based on 51 criteria
### STEP II: Identify and develop methodology to measure indicators

24 draft indicators to be revised and quantified within 2013

| Indicator                                                                 | Action
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<tr>
<td>More flexibility and reliability</td>
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<tr>
<td>More convenience, comfort and accessibility</td>
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<td>More active mobility</td>
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<td>More social and cultural integration</td>
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<tr>
<td>More security</td>
<td></td>
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<tr>
<td>More pleasure</td>
<td>✓</td>
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<tr>
<td>More resilience (disaster and ecological/social disruptions)</td>
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<td>More economic sustainability</td>
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<td>Higher utilisation rate</td>
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<td>Increased opportunity (job creating, economic)</td>
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<tr>
<td>Improve health</td>
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<tr>
<td>More interaction with urban environment (connectivity)</td>
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<tr>
<td>Make mobility affordable</td>
<td>✓</td>
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<tr>
<td>Provide appropriate access to mobility</td>
<td>✓</td>
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<tr>
<td>Reduce noise</td>
<td></td>
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<tr>
<td>Reduce fatalities and injuries</td>
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<tr>
<td>Reduce accidents</td>
<td>✓</td>
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<tr>
<td>Reduce congestion and delays</td>
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<tr>
<td>Reduce need for physical mobility</td>
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<tr>
<td>Reduce air pollution</td>
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<tr>
<td>Reduce GHG emissions across lifecycle</td>
<td>✓</td>
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<tr>
<td>Improve resource efficiency</td>
<td>✓</td>
</tr>
<tr>
<td>Improve energy/resource security</td>
<td></td>
</tr>
<tr>
<td>Improve sustainability in resource supply chain</td>
<td>✓</td>
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</tbody>
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Minimize the negative and Maximize the positive aspects
STEP III: Build a solutions portfolio (examples)
STEP IV: Apply in a city and scale up in similar city types

I. Cluster

II. Set of SMP 2.0 indicators

III. Solution Space & enabler

IV. Scale up

Select a city & apply relevant indicators

Enabler:
- Finance
- Governance
- Customer Demand
Sustainable Mobility Project 2.0 Timeline

Sustainable Mobility Indicators

City cluster

Evolving mobility demand

Compile a solution portfolio

Develop indicators to measure progress

Develop concrete action plan and enabling structure (incl. policy & financial measures that are necessary to implement)

Generate strong stream towards sustainable mobility

2013

2014

2015
Thank you very much!