“Smart city” – the use of technologies to provide intelligent response to the needs of the city. *(Smart City and the Applications, 2011)*
Smart City

What are the needs for developing a smart city in the future?

- **eService** (Government, Education, Healthcare, Tourism)
- **Environment-friendly Design Buildings**
- **Water/Gas Distribution Management & Leak Detection**
- **Metering Management & Demand Response**
- **Smart House**
- **Multimodal Intelligent Transportation Systems**
- **Emergency & Disaster Management**
- **Urban Flooding**
- **Alternative Energy System**
  - Solar Panel
  - Offshore Wind Farm
- **Public Safety**
- **Electric Vehicle Infrastructure**

Source: District of future
http://www.districtoffuture.eu/
Smart Transportation is About ……

**Smart City Planning**
- Integrated development & spatial planning
- Transportation & traffic strategy
- Environment & public safety

**Urban Planning**

**System Design, Management & Operation**

**Outcomes & Impacts**

**Technologies & Urban Infrastructure**
- Automation
- Real-time information
- Advanced control methods

**Urban Multimodal Systems for High-Density Megacities**

**Smart Sensing and Computing**
- Stationary & mobile data
- Urban informatics & data analytics

**Smart Travel Behavior**
- Data driven (Short-term)
- Infrastructure (Medium-term)
- Technology driven (long-term)

**Smart Performance**
- Efficient
- Resilient and reliable
- Safe
- Green and sustainable
Smart City Planning

- Is high-density development a solution to rapid urbanization?
- What are the enabling technologies and urban infrastructure to enhance sustainability, accessibility, mobility, and wellbeing?
Technologies & Urban Infrastructure

- How would autonomous vehicles modify fundamental traffic flow properties, and impact infrastructure design and urban form?
- How would electric vehicles interface with the smart grid in terms of energy distribution and storage?

Autonomous self-driving vehicle

Electric vehicle charging infrastructure

Real-time travel information

Speed Map Panel

Journey Time Indicator
Smart Sensing

What are the sensing strategies for collecting stationary and mobile sources of multi-modal traffic data and how are these data integrated and interpreted?

What are the computing strategies for centralized and distributed data transmission, processing, interfacing, analysis, sharing, dissemination, and storage, in the context of big data arena?

Source: CloundT Project
http://clout-project.eu/
**Smart Travel Behavior**

- **Data driven**
- **Technology driven**
- **Infrastructure driven**

**Short-term**

- How would accurate, reliable and timely multi-modal traffic information affect travelers’ decision making processes?

**Medium-term**

- How would future technologies, such as autonomous self-driving vehicles, electric vehicles, multi-modal traffic information, massive and robust traffic control affect activity and mobility patterns?
Smart Performance

How to develop a cost-effective but highly resilient multi-modal transportation system in response to increasingly frequent and serious natural and manmade disruptions?

How would the above smart developments help to maintain safe, healthy, rapid, reliable, comfortable, convenient, affordable, equitable, and environmentally compatible mobility of mankind?

Uncertainties and disruptive conditions

V2V and V2I technologies

Better mobility and less congestion
Hong Kong’s Role

Excellent Test-bed with Various Multi-modal Transport Modes

Hong Kong Universities’ QS Rankings in Related Disciplines

- Civil and Structural Engineering (9th, 11th, 17th, 35th)
- Computer Science & Information Systems (8th, 12th, 18th)
- Engineering - Electrical & Electronic (19th, 22nd, 25th, 37th)
- Engineering - Chemical (27th)
- Engineering - Mechanical, Aeronautical & Manufacturing (31st, 46th)
- Architecture / Built Environment (12th, 13th, 47th)
- Geography & Area Studies (19th, 46th)
- Economics & Econometrics (30th, 36th, 49th)