



SMART TRANSPORTATION

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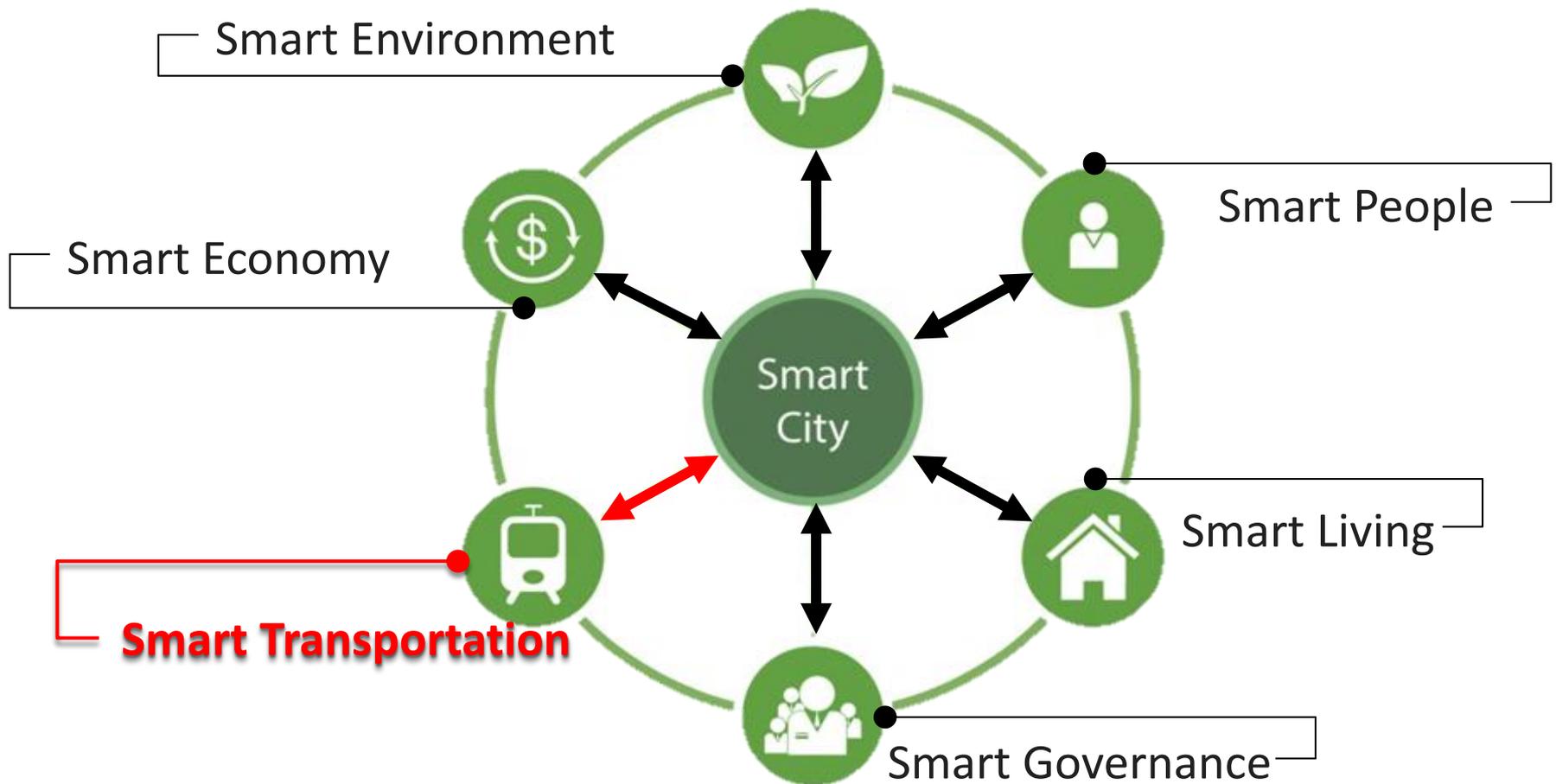
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Smart City

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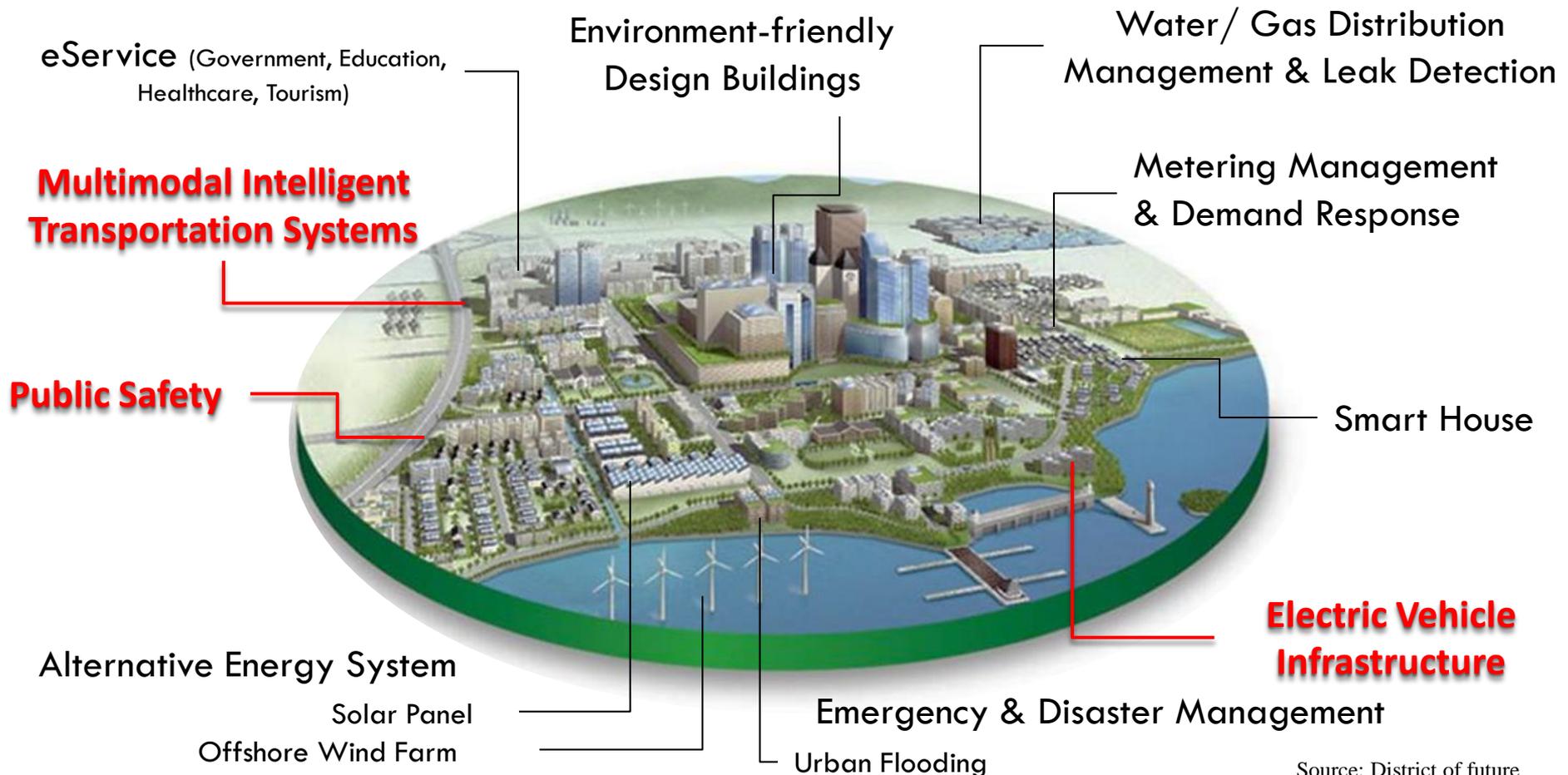
“Smart city” – the use of technologies to provide intelligent response to the needs of the city. (*Smart City and the Applications, 2011*)



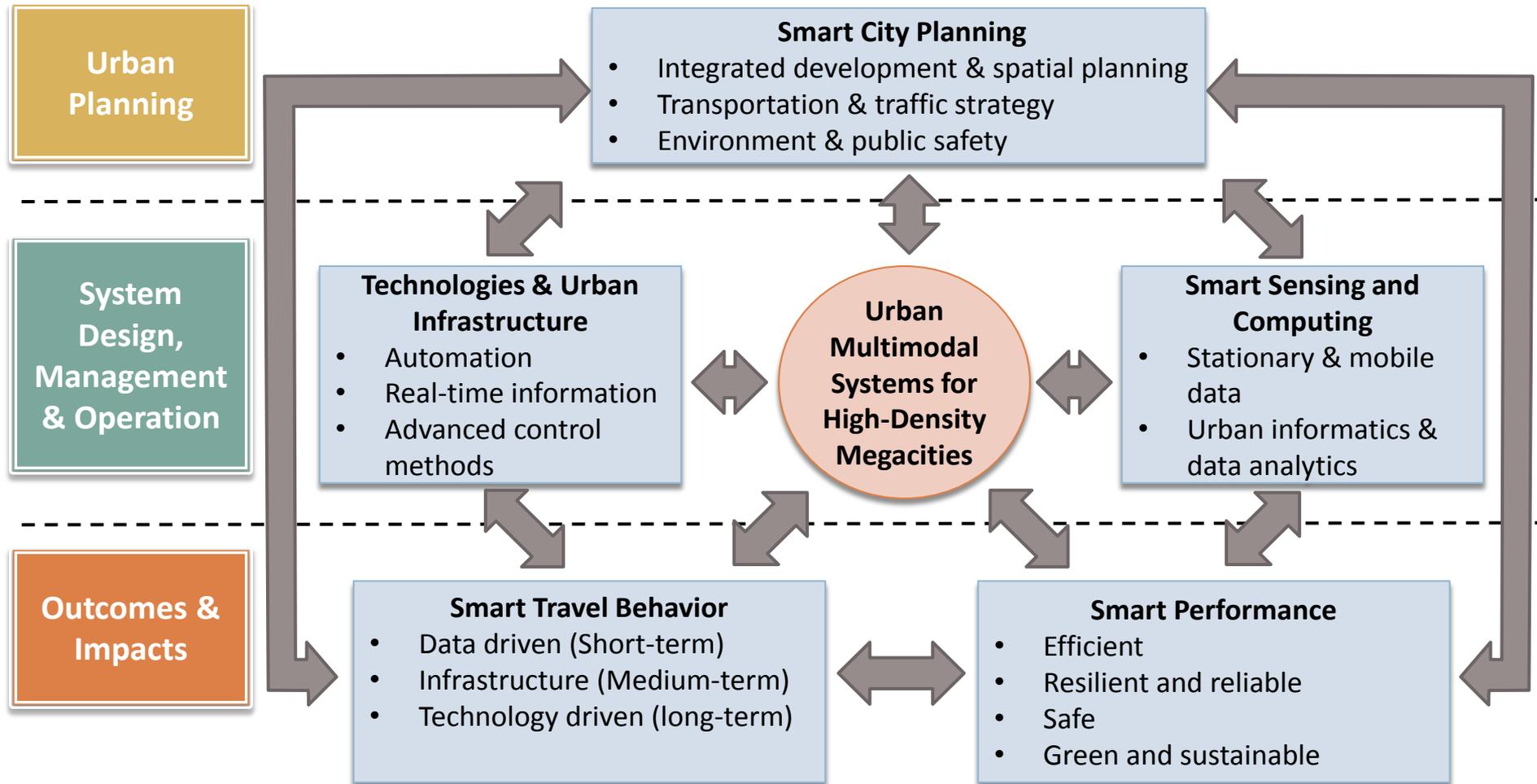
Smart City

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



Smart Transportation is About



Smart City Planning

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Adaptive signal control



Bicycle sharing system

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



Automobile sharing



Walking/Cycling facilities

Technologies & Urban Infrastructure

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- 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



Speed Map Panel



Electric vehicle charging infrastructure



Route	Platform	Time
Lo Wu	Platform 4	14:53
E.TST to Tuen Mun	Platform 3	14:54
Lo Wu	Platform 1	14:59
E.TST to Tuen Mun	Platform 2	15:01
Lok Ma Chau	Platform 4	15:03
Lo Wu	Platform 1	15:06

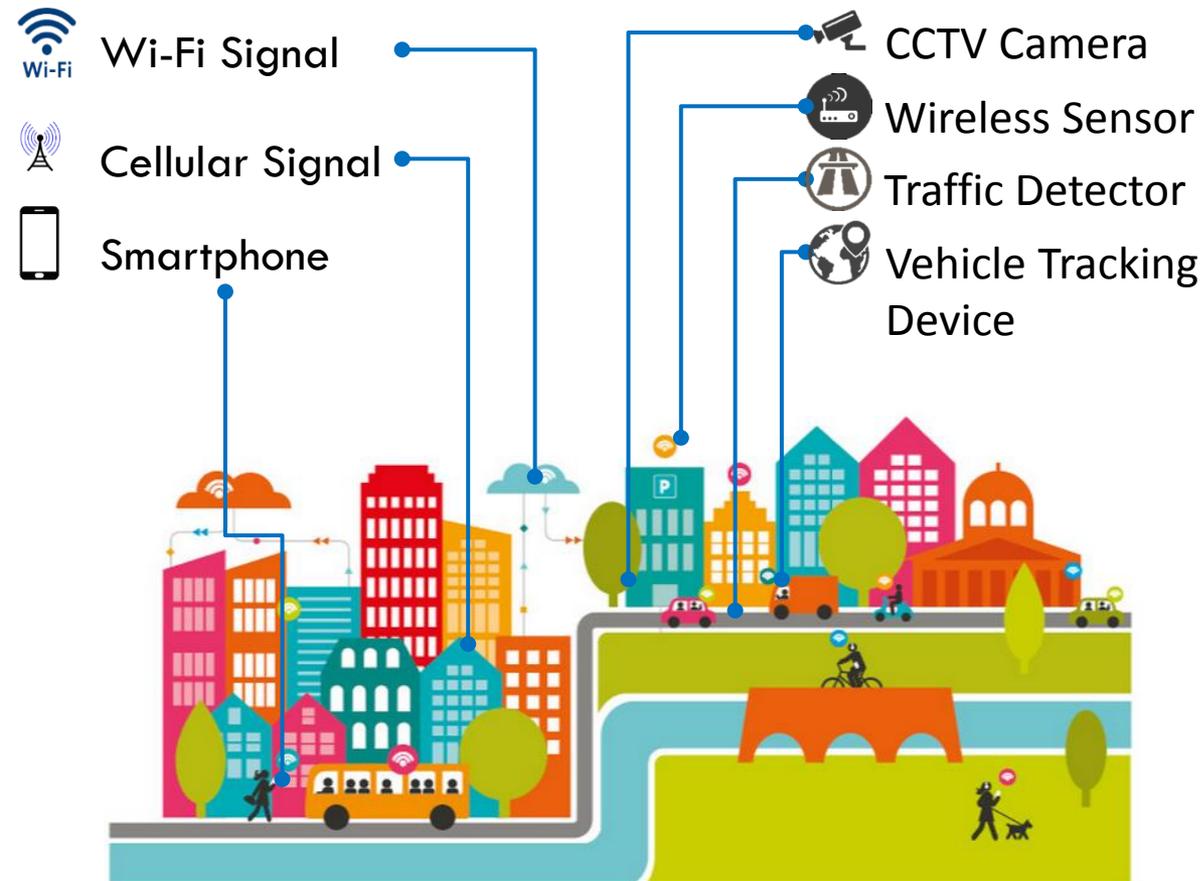
Real-time travel information



Journey Time Indicator

Smart Sensing

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Source: CloundT Project
<http://clout-project.eu/>

- 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?

Smart Travel Behavior

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Data driven



Short-term

Medium-term

Long-term

Technology driven



Infrastructure driven



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

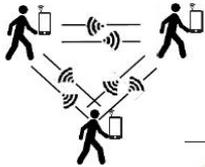
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Web services
and
Apps



crowd-sourcing
information



personal
real-time
information



Better mobility
and less congestion



V2V and V2I technologies

- 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



Smart vehicles

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)**