

Innovations in Urban Solutions

Overcoming Urban Sustainability Challenges
Through Innovation

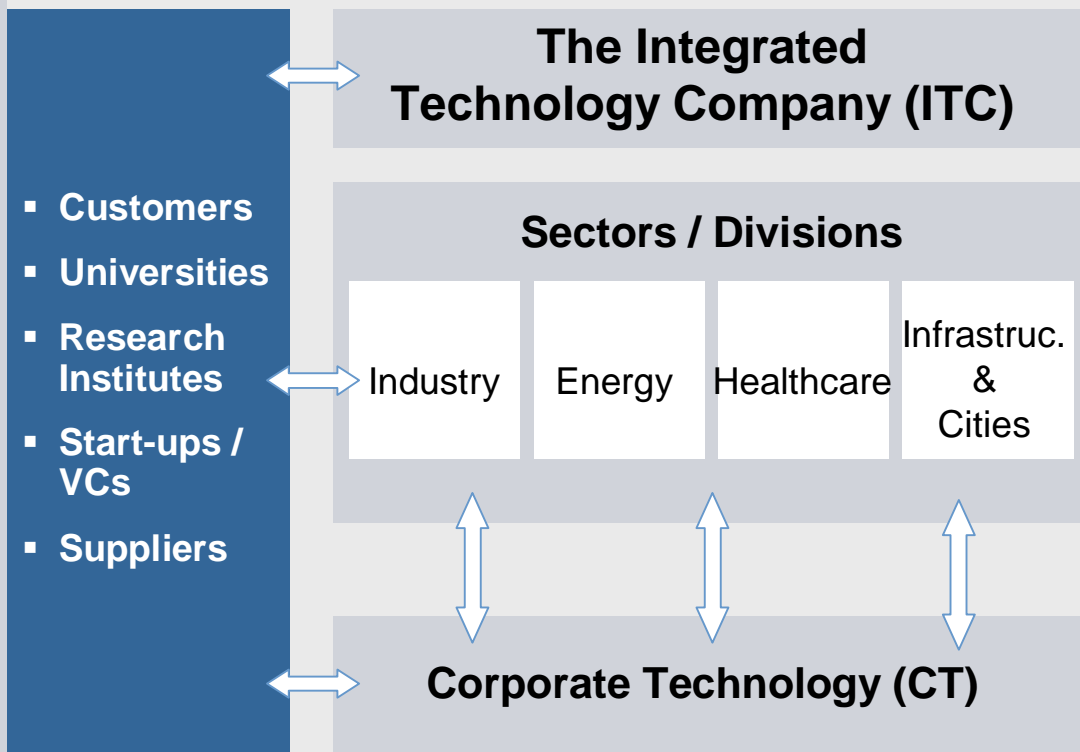
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GEDC Conference

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R&D at Siemens: The Integrated Technology Company



Innovation of Products, Systems and Solutions

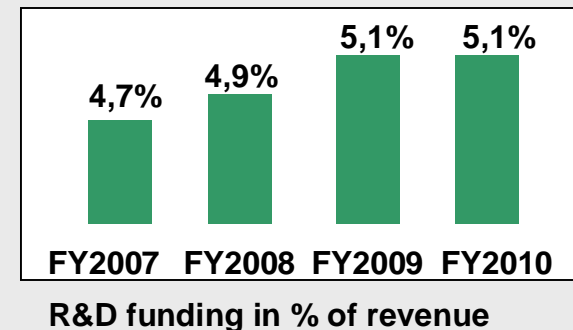


R&D locations & funding

- 30,100 R&D employees worldwide
- 18,000 software engineers
- 8,800 inventions
- 57,900 active patents
- Siemens patent position FY 10
 - ➔ Germany: No. 3
 - ➔ Europe: No. 2
 - ➔ USA: No. 13

R&D employees & patents

- 178 R&D locations in over 30 countries around the world
- €3,8 billion R&D funding in FY 10



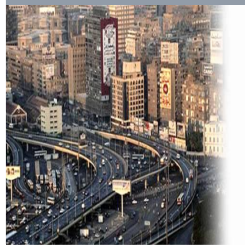
Cities are the growth engines for their national economies

Megatrends

Globalization



Urbanization



Demographic Change



Climate Change



Megatrends imply significant challenges for city decision makers

Sustainable Urban Development

- **Cities are competing globally** to make their urban areas attractive to live and to invest in
- **Challenge to balance** between competitiveness, environment and quality of life, and to **finance** infrastructure solutions
- **Need for**
 - Holistic approaches
 - Sustainability
 - Technological feasible
 - RoI attractiveness

➤ What is feasible in terms of proven technology, and for what cost and RoI?

Sustainable Green Growth – Siemens examples for “sustainability” in cities



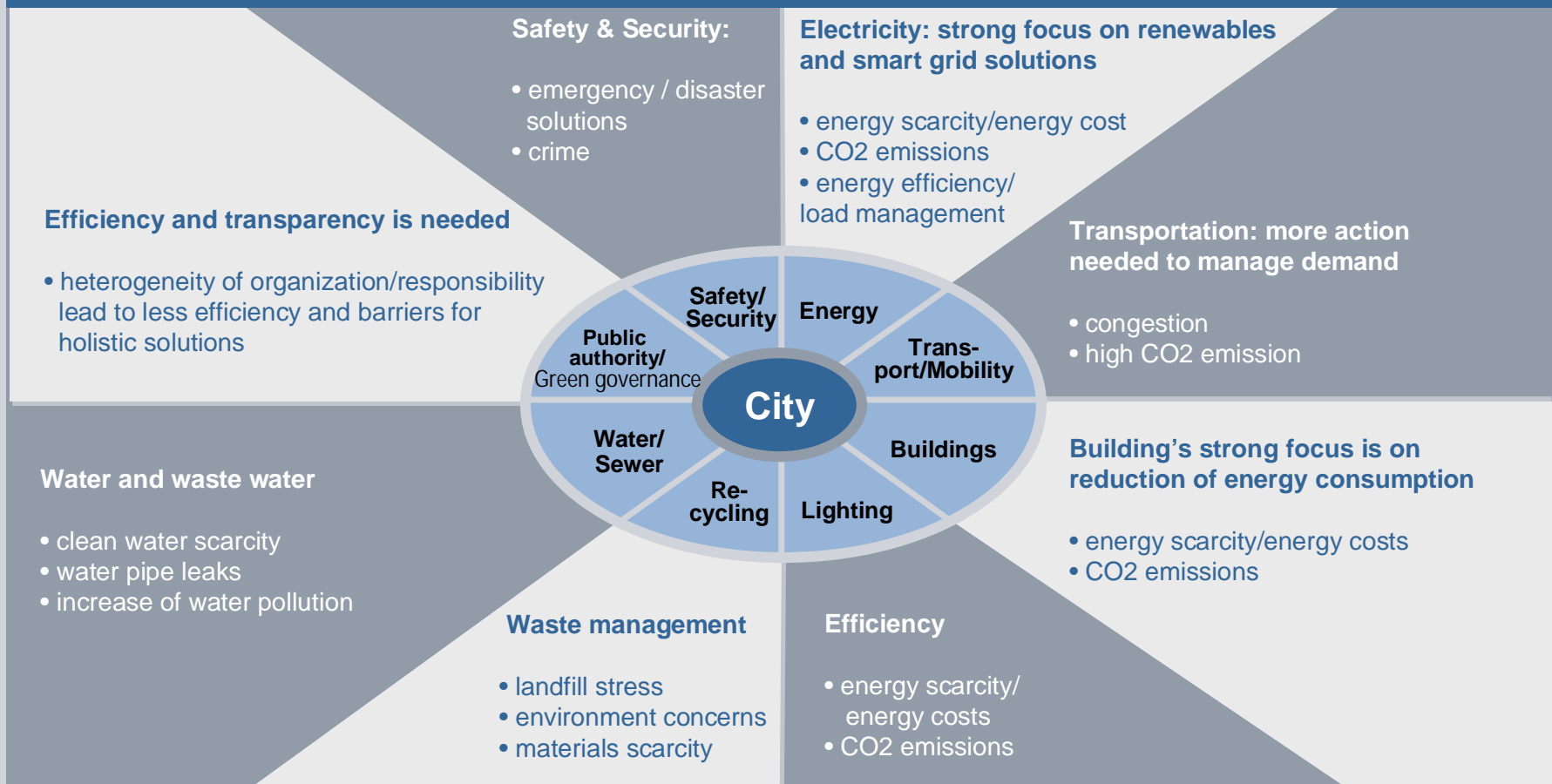
Existing technology achieves high gains in sustainability and CO2 abatement

<p>Renewables</p> <hr/> <p>Wind turbines: Efficiency up from 1 MW to 3.6 MW</p>	<p>Renewables</p> <hr/> <p>Solar thermal and photovoltaic</p>	<p>Building technologies</p> <hr/> <p>30% less energy used through building energy management</p>	<p>Traffic management system</p> <hr/> <ul style="list-style-type: none"> ▪ Traffic speed: +37% ▪ Commuter times cut by 17% 	<p>Smart Grid</p> <hr/> <p>Smart grids are central part energy efficiency increase</p>
<p>Efficient energy production</p> <hr/> <p>Combined Cycle: From 50% to 60% Steam Power Plant: From 40% to 47%</p>	<p>High-voltage urban link</p> <hr/> <p>Efficient energy transport by HV close to the consumer</p>	<p>Water</p> <hr/> <p>Membranes and high energy efficiency solutions for treatment and desalinization</p>	<p>Complete Mobility</p> <hr/> <p>Higher attractiveness of public transport (reduced waiting and up to 20% fuel savings)</p>	<p>Street lighting</p> <hr/> <p>Potential in Europe: 3.5 million tons less CO₂ emissions with LED systems</p>

...but how to address future innovative solutions

Top Down Challenges of Smart Sustainable Cities

Drivers: - Economic competitiveness & employment based on attractive environment
 - CO2 reduction and ROI solutions

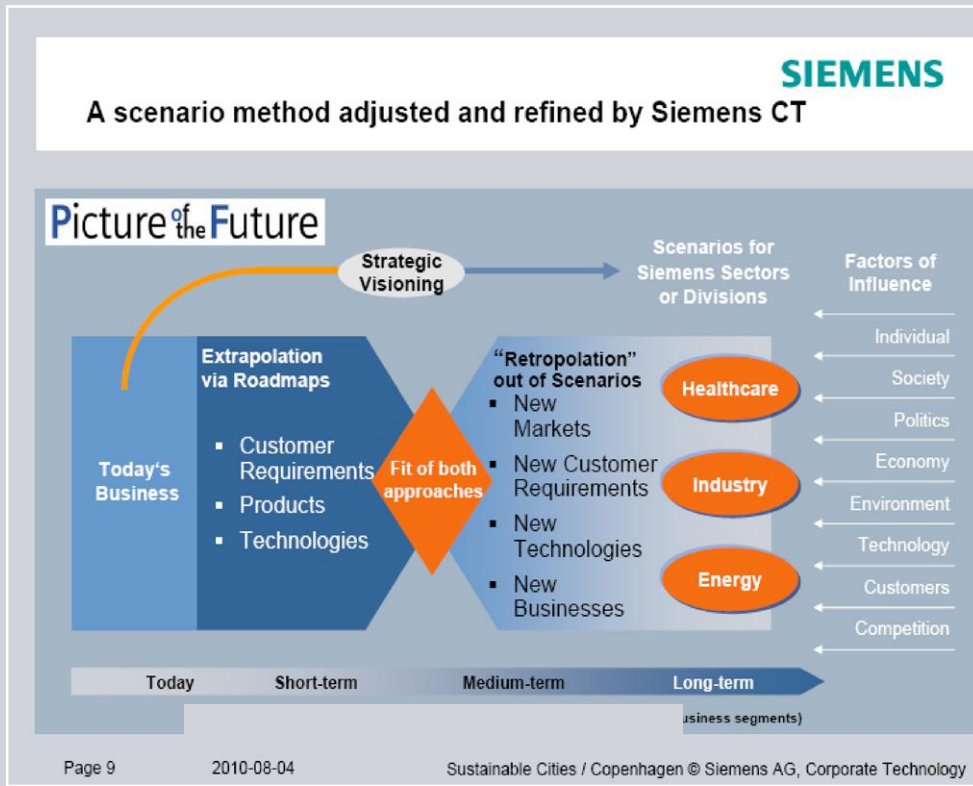


➤ **City challenges require comprehensive innovative technologies/solutions**

Picture of the Future: An Instrument for Technology and Business Management at Siemens



For describing and evaluation of future markets and businesses



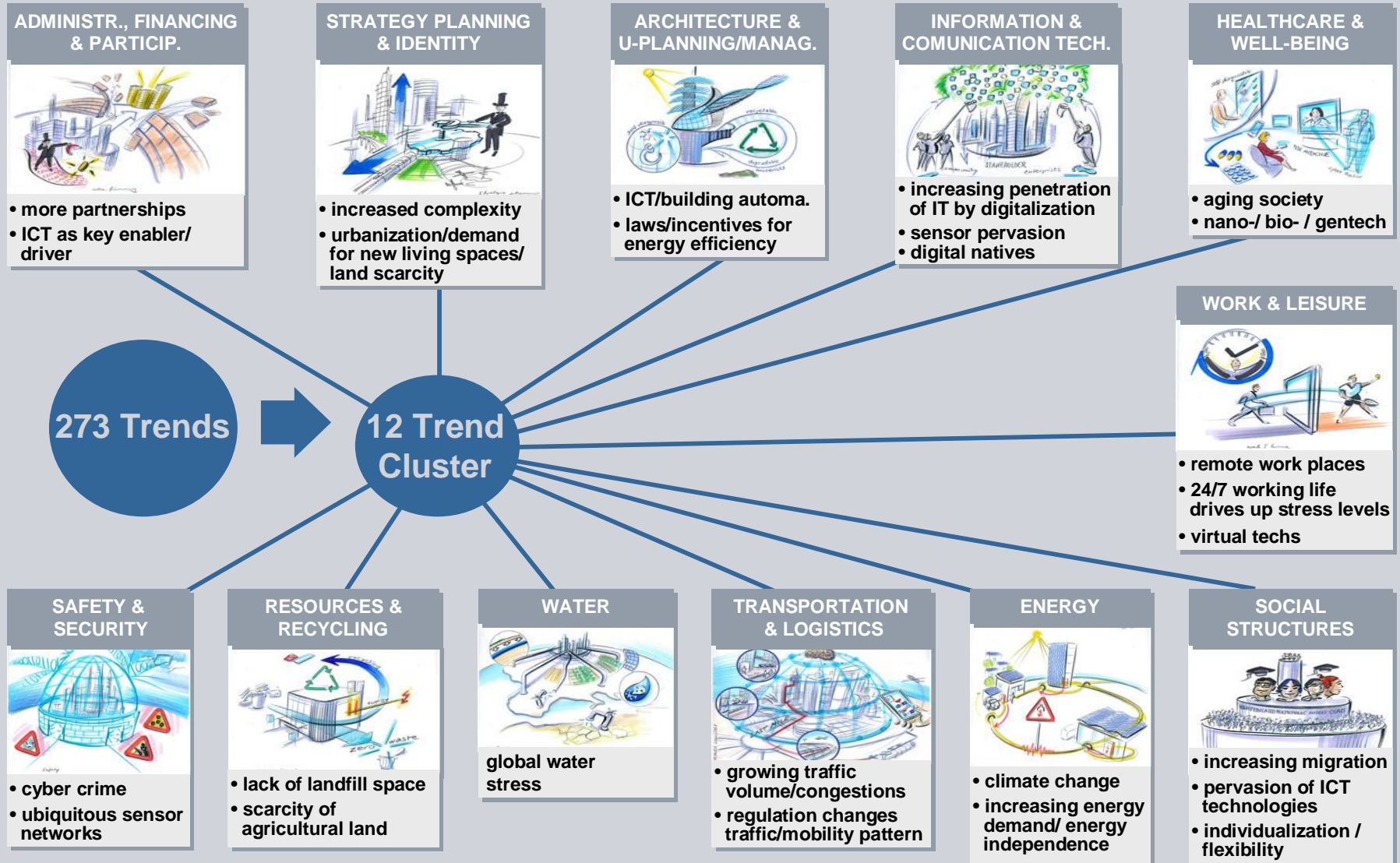
Goal:
Holistic and Siemens independent description of future markets and innovative technologies/solutions

Actual:
Picture of the Future “Smart Sustainable Cities 2050” scenario with sub-scenarios

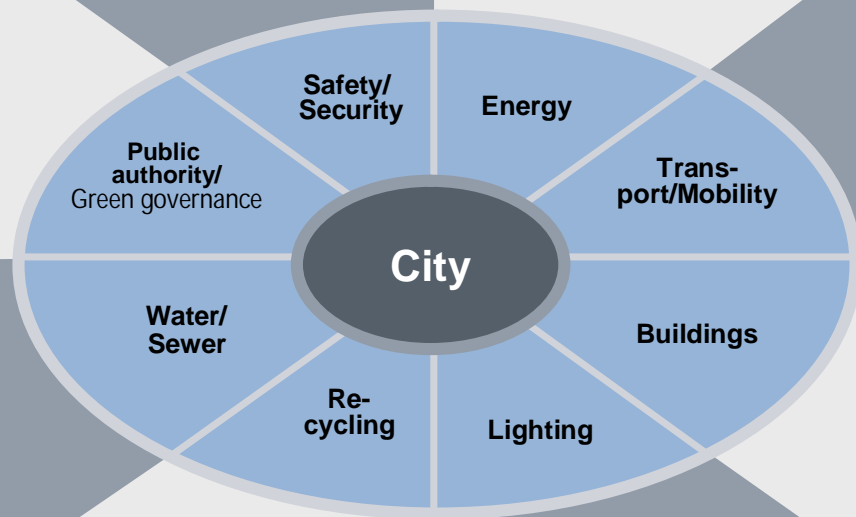


➤ Comprehensive description of a smart sustainable city scenario in 2050 with potential innovative solutions

City trends overview: Framework for scenario(s)



Deep Dive Mobility



**Based upon results of
“Picture of the Future
Project”**

Mobility

Complete People Mobility 2050 - Scenario

Innovative solutions for moving more people more efficiently on a smaller ecological footprint

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Intermodal End-to-End travel

- Intermodal real-time information, decision support and navigation solutions
- Individual services for intermodal door to door travel
- Individual timetable depending on cost, speed and preferred means of travel

Integrated eco-based traffic management

- Virtual megacity by holistic and seamless IT integration for reduced traffic jams
- Traffic management system based on forecasts and real-time infrastructure
- Pay what you use (CO2, time depending ticket pricing)

Integrated intermodal hubs

- Efficient passenger and baggage processing for increased throughput of people and goods
- Automated material handling systems
- Automated change of trains by conveyers

Demand-responsive rail

- Fleet adaptation: Individualized , flexible trains adapted to real-time demand and cabins serving point-to-point connections
- Modular trains

Smart road grid

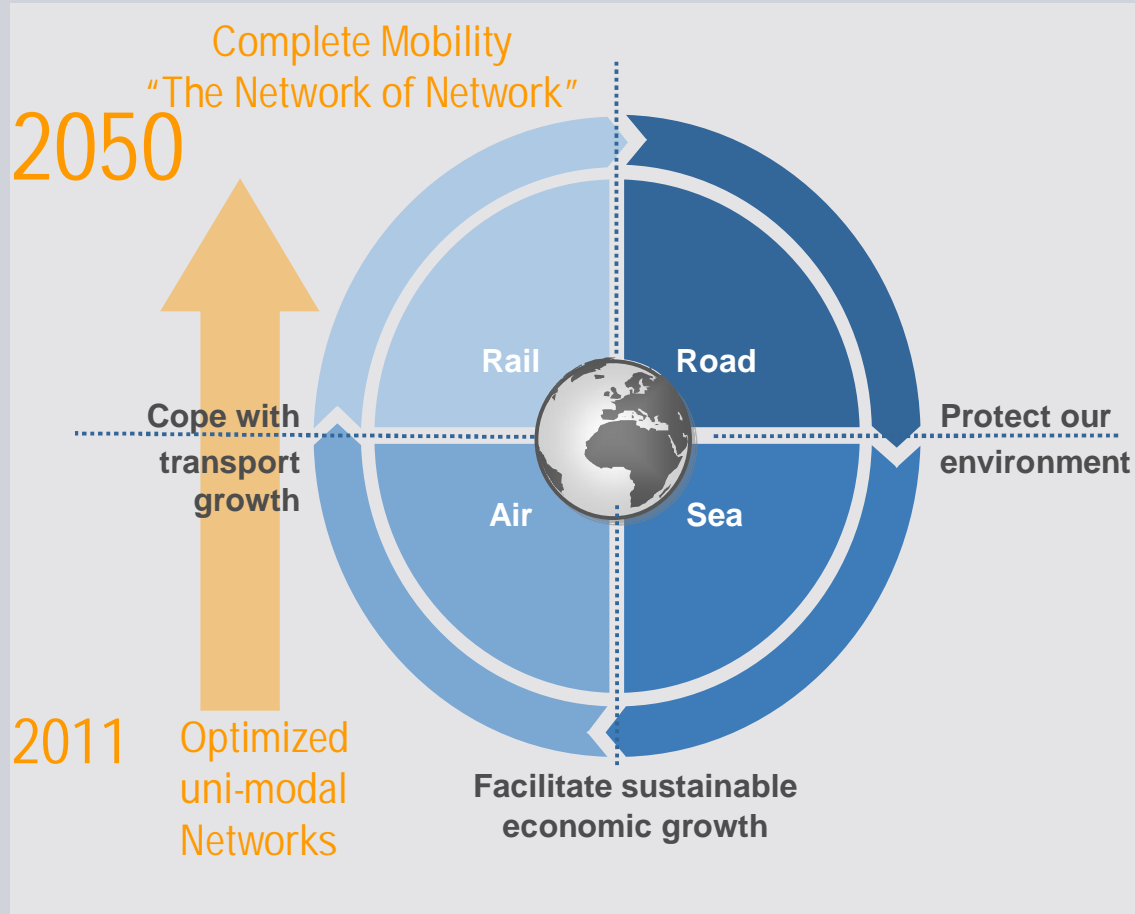
- Real time infrastructure with open communication to avoid traffic accidents and improve traffic flow
- Autonomous e-drive
- Car-to-car and car-to-street communication

Mobility on demand/last mile concepts

- Integration of last mile into public transportation network to reduce private traffic
- New business models e.g. sharing of e-cars

To cope with transport demand and environmental challenges, all transport modes need to operate in concert

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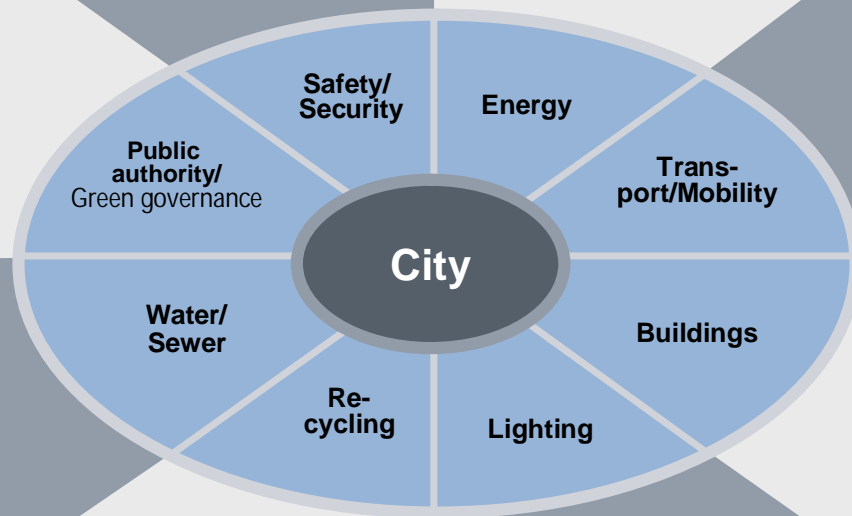


Complete Mobility 2050

Intermodality seamlessly integrates all modes and leverages their individual strengths in order to

- accommodate growing demand
- maximize the effective capacity of the overall transport system for both personal and goods transport
- reduce transport's ecological footprint
- facilitate sustainable economic growth
- reduce time loss, GHG emissions, noise, congestion and accidents

London Center



**Platform for joint
collaborations**

**Urban Sustainability
Centre**

The Urban Sustainability Centre at a glance

- **Vision:** The Urban Sustainability Centre is a global knowledge hub for urban sustainability and environmental technologies.
 - Combined **exhibition** and **conference** facilities with office space
 - Audience includes **key urban decision makers** and the **general public**
 - Dedicated to Siemens hospitality activities during the **2012 Games**
 - Part of 2012 **legacy**, supporting local schools and attracting green investment
 - **Located** between the Olympic Park and Excel Centre, close to City Airport
- **The building itself is a showcase for sustainable technologies and innovative solutions**



Key figures:

- Exhibition: 2000m²
- Auditorium: 300 seats
- Office space: ca. 160 desks
- Expected visitors: 100,000

A nighttime photograph of a city skyline, likely Singapore, featuring numerous illuminated skyscrapers and the Esplanade - Theatres on the Bay in the foreground. The sky is dark blue, and the city lights are reflected in the water.

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Thank you for your attention

21st of October, Beijing
GEDC Conference 2011

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