

Making Cities Work – Sustainable Urban Infrastructure

Union of the Baltic Cities, 64th Executive Board Meeting Rakvere

Lars Maura, Business Development, Siemens Finland

We are in the “Urban Millennium”



Population

In 2007 ~50% of the world's population was living in cities, an increase from 3.5 B to 4.7 B until 2030

Powerhouses

50% of world GDP is produced in cities with a population over 750 K

Major energy and climate factor

75% of energy consumed in cities 80% of CO₂ emissions are produced in cities

The basic needs of a city drive the market for intelligent infrastructure solutions



Sustainable



Competitive



Livable

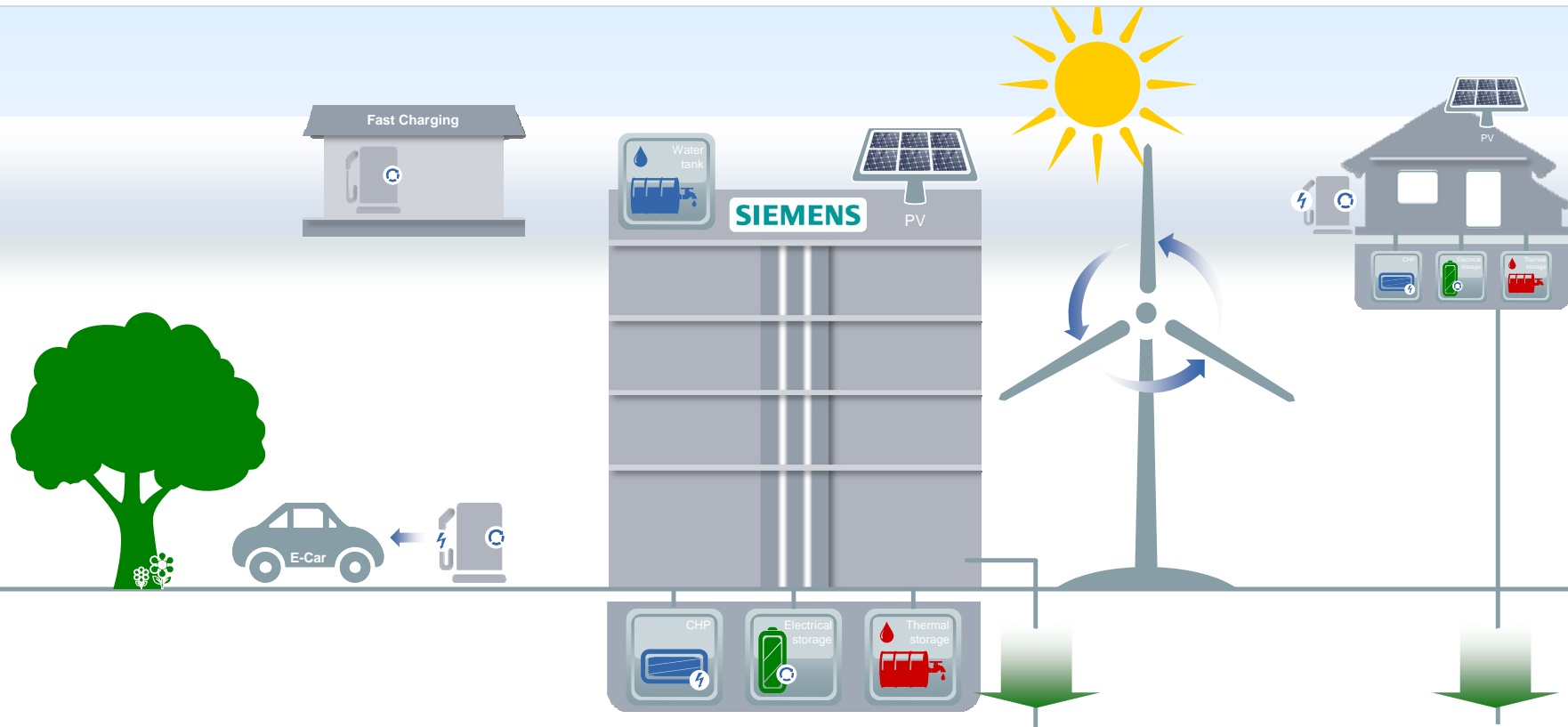
- Intermodal mobility/efficient and effective mobility
- Sustainable and decentralized energy supply
- Efficient water supply and waste management
- Security
- Rigorous reduced carbon footprint of the entire city (e.g., smart buildings, transportation)

Requirements are drastically changing from closed island solutions / single products to interlinked intelligent infrastructure solutions

Example “Smart Building in a Smart Grid”

High energy costs

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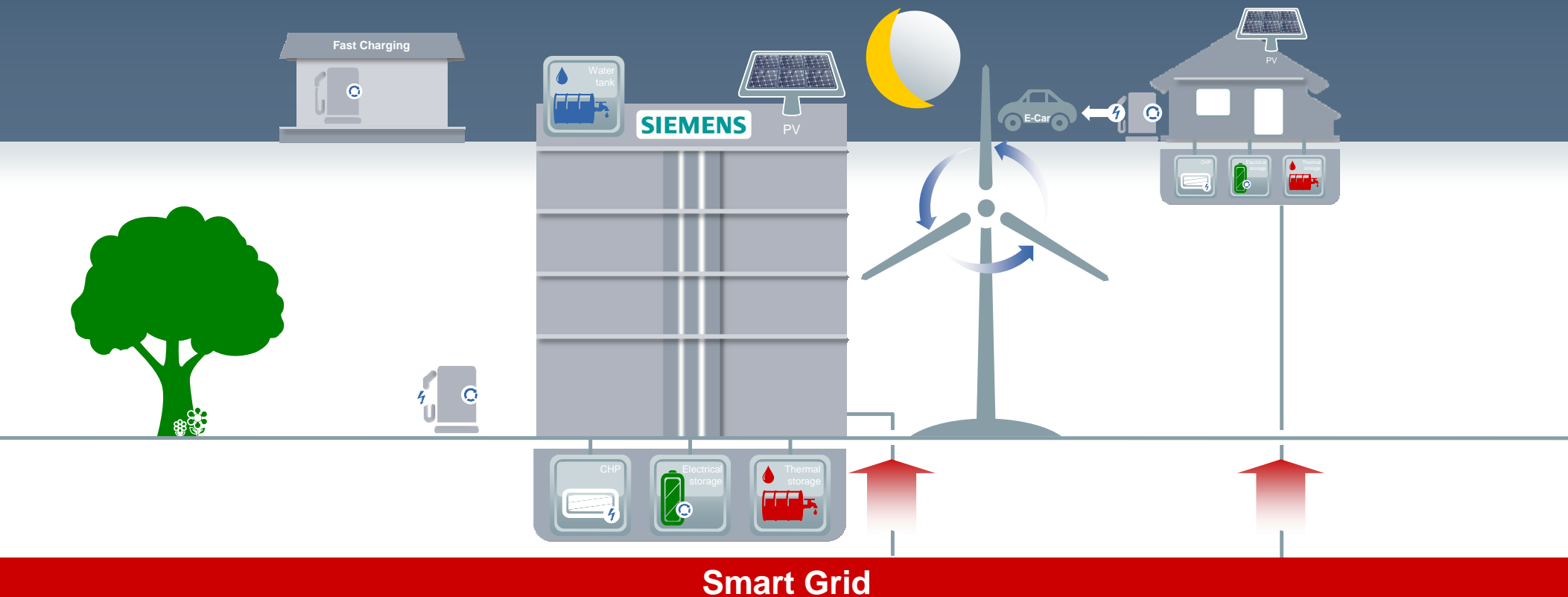


Smart Grid

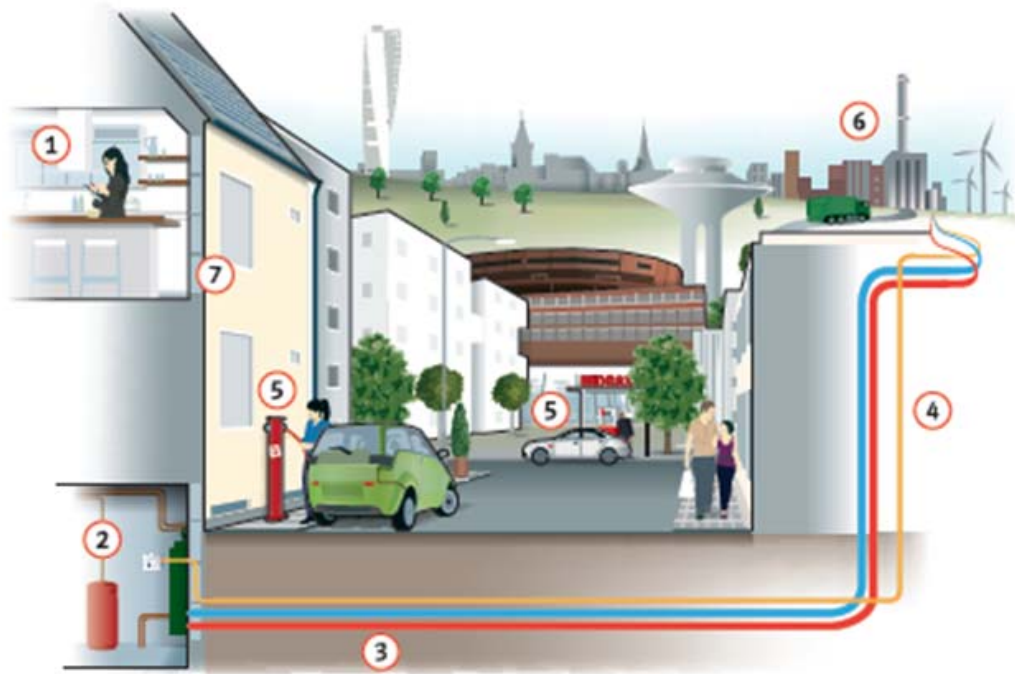
Example “Smart Building in a Smart Grid”

Low energy costs

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Hyllie, Malmö - A test bed for developing solutions for a future transformed energy



- 1 Customer control of heat and electricity consumption
- 2 Smart home and Smart building solutions
- 3 Distributed generation – electricity and heat
- 4 Smart grid solutions – DH and electricity
- 5 Sustainable mobility solutions – gas and e-mobility
- 6 CO₂ and resource efficient energy supply
- 7 Distributed energy storage

E.ON and Siemens are working together to develop technical solutions and systems integration of smart grid for electricity, heating and cooling

Building Automation: Sello Shopping Mall

Energy Performance Contracting
 Designo Building Automation System

Annual
 savings

- 67% Heat
- 48% Electricity
- 1.7 kt CO₂ abatement

Environmental
 value

Customer
 value

- **Gold Level LEED Certification**
- **EU's European Energy Service Project Award**



Sello is one of Scandinavia's largest shopping malls with 18 million visitors per year. To meet the desired energy saving objectives, the Sello Shopping Mall optimized its ventilation and air conditioning system performance in 2010.

London as a transport pioneer: A city can breathe again

The result of the measures: less congestion, improved air quality

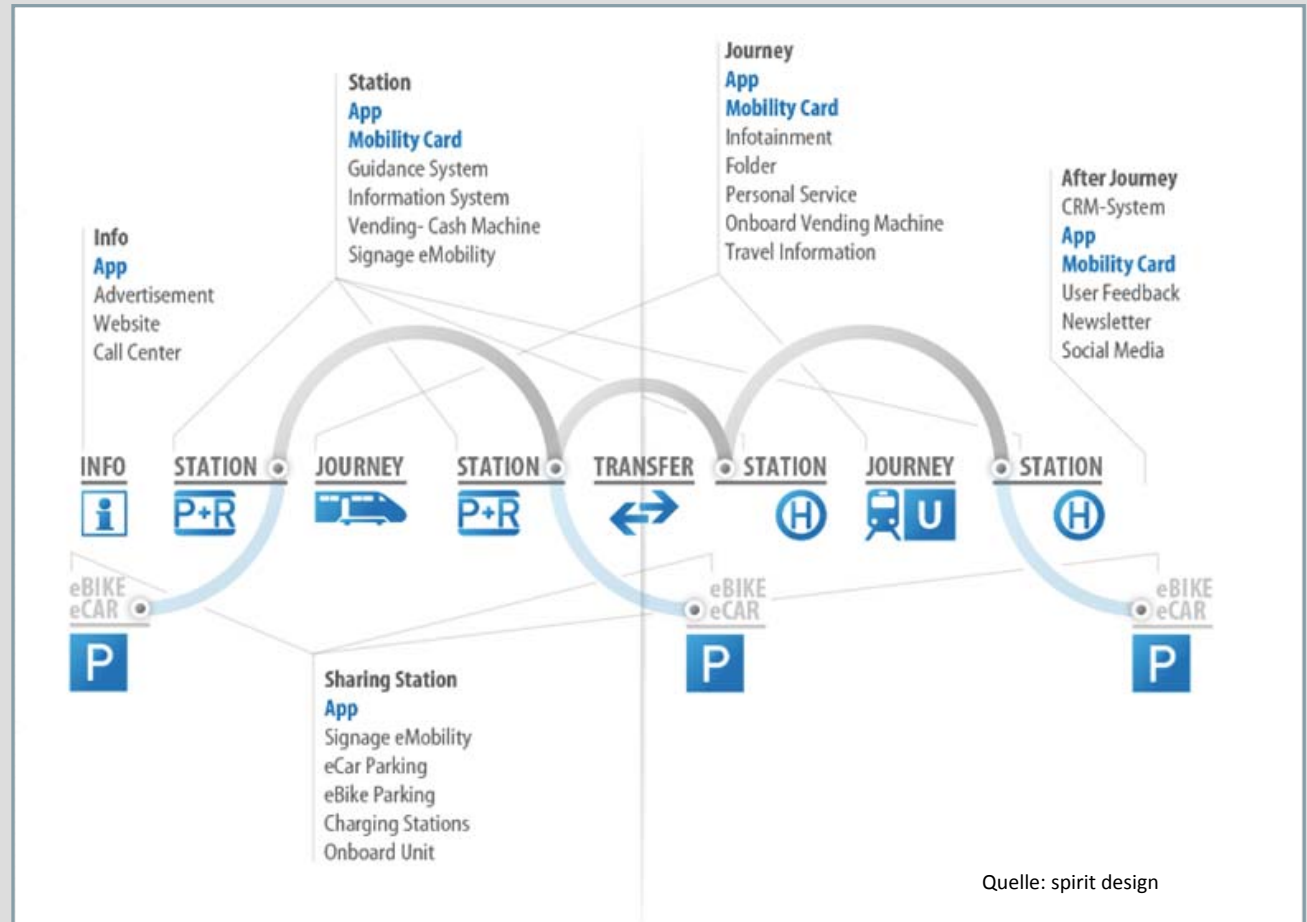
- Street traffic in London's inner city reduced by about 20%
- 150,000 tons of CO₂ emissions saved per year
- Bus patronage increased by 38%
- Commuter times cut by 17%



“Mobility Card“

- The missing link connect public transport and e-mobility

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Quelle: spirit design

The world's first CO₂-neutral city Masdar City, Abu Dhabi



- A futuristic, environmentally-friendly metropolis
- Some 50,000 people are expected to be living in Masdar City by 2016
- Local resources will satisfy requirements no net emissions generated
- Renewable energy sources: solar-thermal plants and photovoltaic facilities
- Minimized energy consumption
- Car-free metropolis: a tightly woven public transport network of electrically operated vehicles
- A long term strategic partnership including an innovative power grid, advanced building technologies and CCS research center.

Cities offer huge growth potential and need pioneering solutions to solve their problems

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How to **bring enough goods** into the city?

How to **get enough electric power**?

How to **manage the ever increasing traffic**?

How to **reduce the energy consumption**
... and emissions?

How to **ensure security and safety** of people?

How to **finance all** this?



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Infrastructure and Cities Sector

Technology partner for cities



Green infrastructure solutions ensure sustainability in cities and metropolitan areas.

Excellent

- Rail Systems
- Mobility and Logistics
- Low and Medium Voltage
- Smart Grid
- Building Technologies

Responsible

Innovative technology solutions ensure cities' competitiveness and improve city dwellers' quality of life.

Innovative

Smart grid increases efficiency and reliability as well as enable sustainable electromobility.

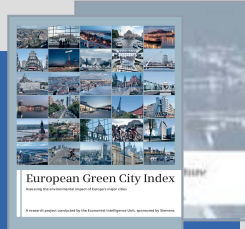
Siemens insights into "how to become sustainable" jointly developed with major world cities

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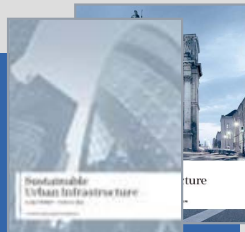
Perception studies



Comparative studies



Implementation studies



<http://www.thecrystal.org/html/sustainable-cities/cities-research.html>





WBCSD workshop in winter 2011 was the initial step towards the strategic partnership

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Starting from City of Turku Climate and Environmental Plan.

Support of Sustainable Action Plan Development:

TOYOTA



United Technologies



acciona

GDF SUEZ

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Thematic Clusters

Energy use

Ideas

Heat machines & chillers,
Heat metering & mgmt,
Building control & mgmt,
Municipal energy management,
Public lighting,
Performance contracting

Energy supply

CHP, geothermal, Biogas,
Heat machines & chillers,
Smart grid, Material and energy flow analysis

Transport and Logistics

Smart parking, Traffic Management,
Green logistics, Light rail, Green procurement,
Public private partnerships



Strategic partnership acts as one cornerstone to develop Turku into a showcase for sustainability

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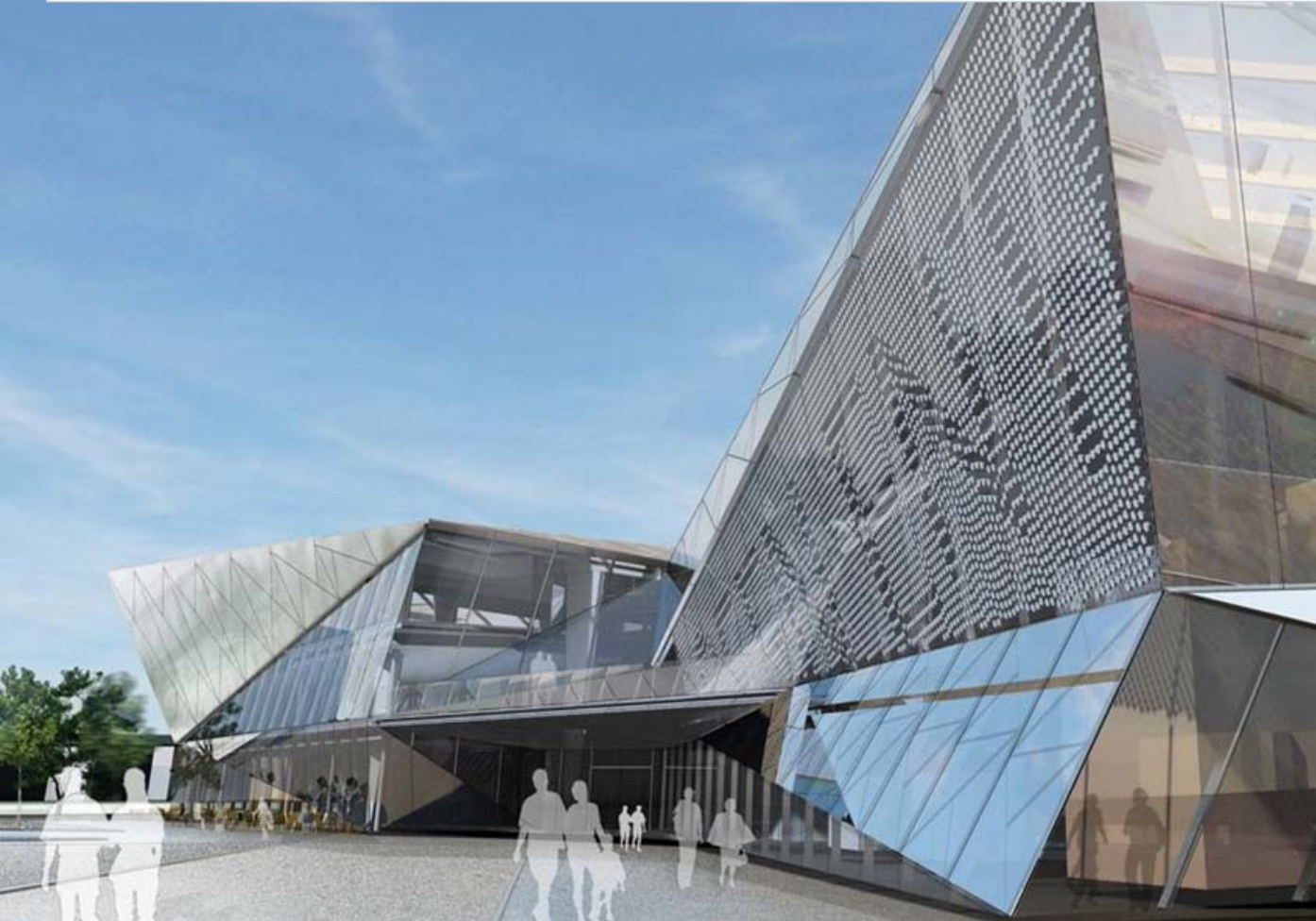
Vision:

To make Turku a best-practice example for sustainable development in mid-sized cities

Photo: The City of Turku

- Long-term partnership
- First in kind for Siemens and a city in Finland
- Collaboration in infrastructure development projects
- Regular discussion and identification of new topics
- Impact study for light rail
- Innovation workshop for planned new district
- Workshop for financing options
 - Results of cooperation are concept papers, studies, reports etc.
- Results will be publicly available.

Center of city competences



Siemens experts will conduct research and tailor special packages of products for urban planners

- First located in London, two others planned in the USA and Asia

Three tasks

- Research
- Technology
- Project work

The Crystal at a glance



Key Figures

- Exhibition: 2000m²
- Auditorium: 270 seats
- Office space: ca. 160 desks
- Expected visitors: 100,000+ per year

- Combined **exhibition** and **conference** facilities with office space
- Audience includes **key decision-makers** and **general public**
- Dedicated Siemens hospitality activities during the **2012 Games**
- Part of 2012 **legacy**, supporting local schools attracting green investment

Thank you.