Die Stadt von Morgen – ein Web der Dinge und der aktiven Menschen

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The Siemens Infrastructure & Cities Mission
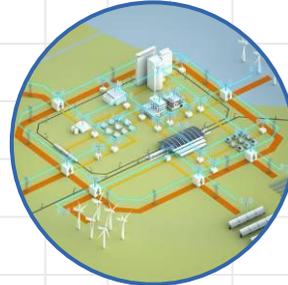## Transform cities for the better through sustainable technology

Intelligent traffic management
- Tolling systems
- Traffic flow management
- Adaptive traffic control

Smart grid solutions
- Grid automation
- Decentral energy management
- Demand response systems

Energy efficient buildings
- Integrated climate, light, and blind control
- Energy performance contracting
- Efficiency monitoring

The **pioneering partner** for **infrastructure & cities**

Clean technology
Efficient use of resources
Connected information
Automation of infrastructure

Rail-bound transit solutions
- High-speed and metro rail
- Train control systems
- Traction power supply

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The Infrastructure & Cities Sector has an increased focus on city needs

City needs

Efficient transportation of people and goods

Reliable and efficient supply of energy

Comfort and security

Low emissions

Infrastructure & Cities Sector

Solutions Systems Products Services

Rail Systems

Mobility and Logistics

Low and Medium Voltage

Smart Grid

Building Technologies

City Account Manage-ment & Cities Center of Competence

Key facts [1]

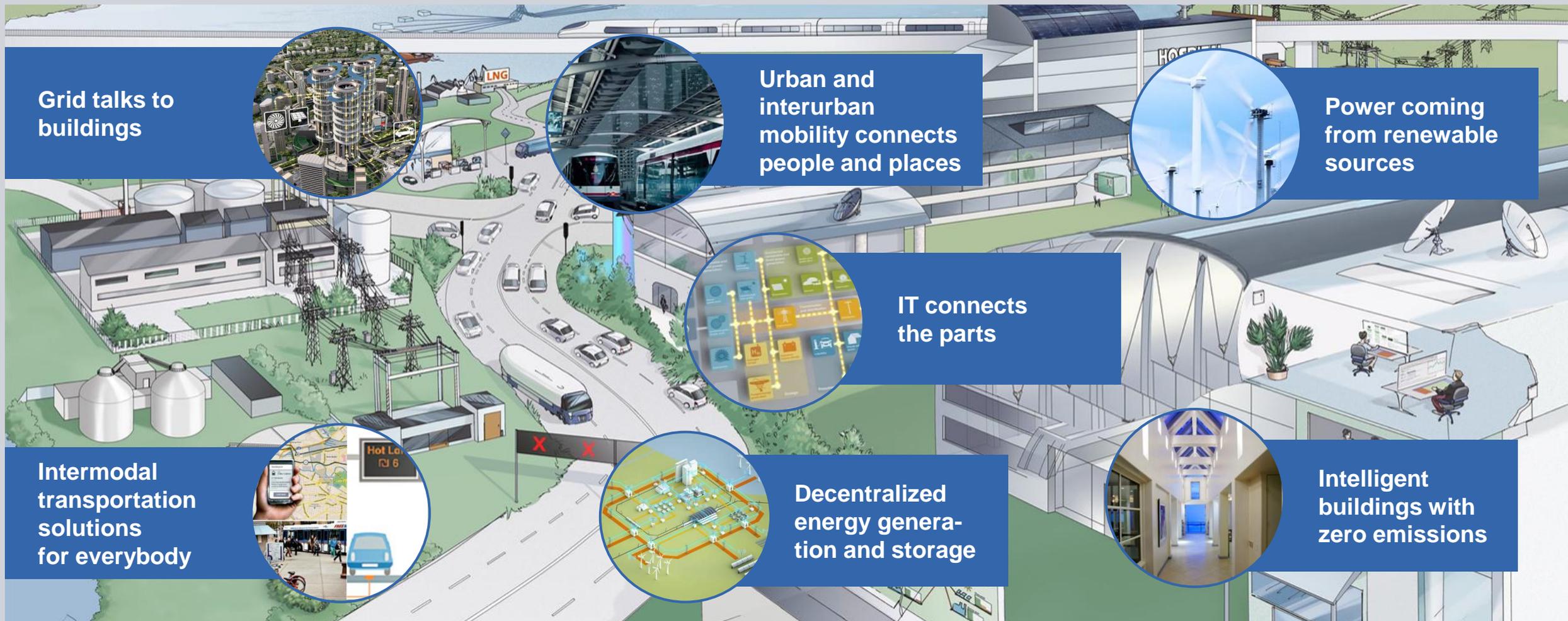**Revenue** 17.6 mil

Profit 1.1 mil

Employees 89,000

~60 City **Account Managers** all over the world

3 **City Centers of Competence** on three continents

5 Cities in the **top 20** of our customers

Overarching function   1) In € / FY12

The city of tomorrow – a picture of the future

Grid talks to buildings

Urban and interurban mobility connects people and places
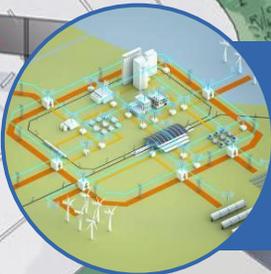
Power coming from renewable sources

IT connects the parts

Intermodal transportation solutions for everybody

Decentralized energy genera-tion and storage

Intelligent buildings with zero emissions

Two basic rules of automation systems
The automation way of the Internet of Things

The optimal structure of an automation
system is achieved,
when the structure of the monitored
process is fully replicated.

Any information should be processed
in the automation layer,
in which it is possible for the first time.

Source: thebureauinvestigates.com

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A basic thought about the new energy system

Everybody agrees on a more **decentralized structure** of the new Energy System in terms of building blocks like generation resources, storage facilities and smart meter.

But if operating principles are discussed, many people still think **more centralized** like huge numbers of loads being influenced by demand-side-management systems.

To operate the new energy system in a centralized manner might be wrong

**Balance
Power Generation
and Consumption
on the possible lowest voltage
level**

Thus, fulfilling the requirements of the second rule of automation systems

The basic design principle
A cellular structure on all levels according to the first rule of automation systems

- ❑ The shown cellular concepts is used on all levels

- ❑ Each cell can comprise generation resources, storage capabilities and loads

- ❑ But also cells comprising a single component like generation or storage are possible

- ❑ From outside, the whole cell is handled like a single entity

- ❑ For dispatching purposes only one figure will be provided to the dispatcher, i.e. the residual power in the next dispatching period

- ❑ As this figure comes with a sign, a generation as well as a load behavior is possible

Storage

Generation

Load

Controls

$$P = f(t_{n+1})$$

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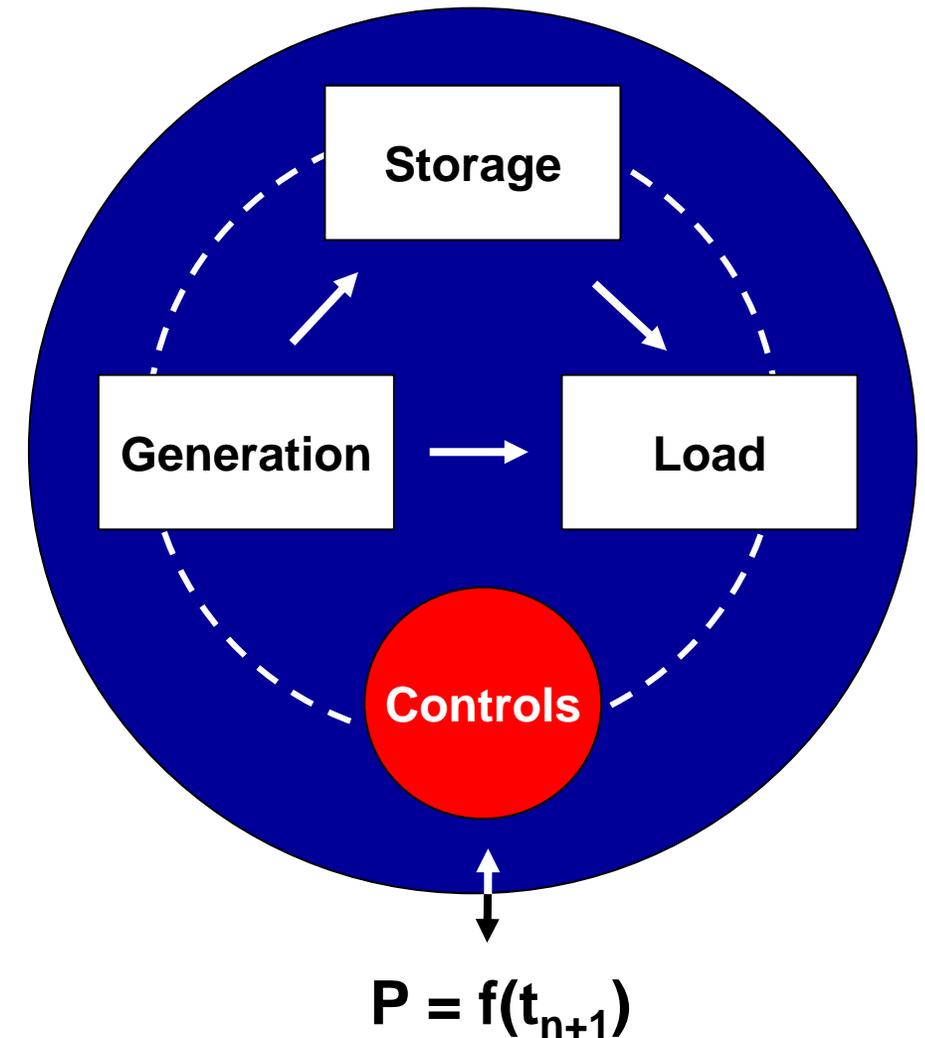
The city of tomorrow
Still dealing with the old known problems?

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❑ The improvement of urban infrastructures does not keep pace with the increasing demands

❑ … but there is not an unlimited budget to solve the problems

❑ Smart solutions like flexible working hours were introduced years ago to avoid traffic jams

❑ … but with the principle lack in capacity they could not solve the problems any longer

Source: youngmanblog.com

The citizen of the city of tomorrow

An active member of a vital community organized by trusted social networks
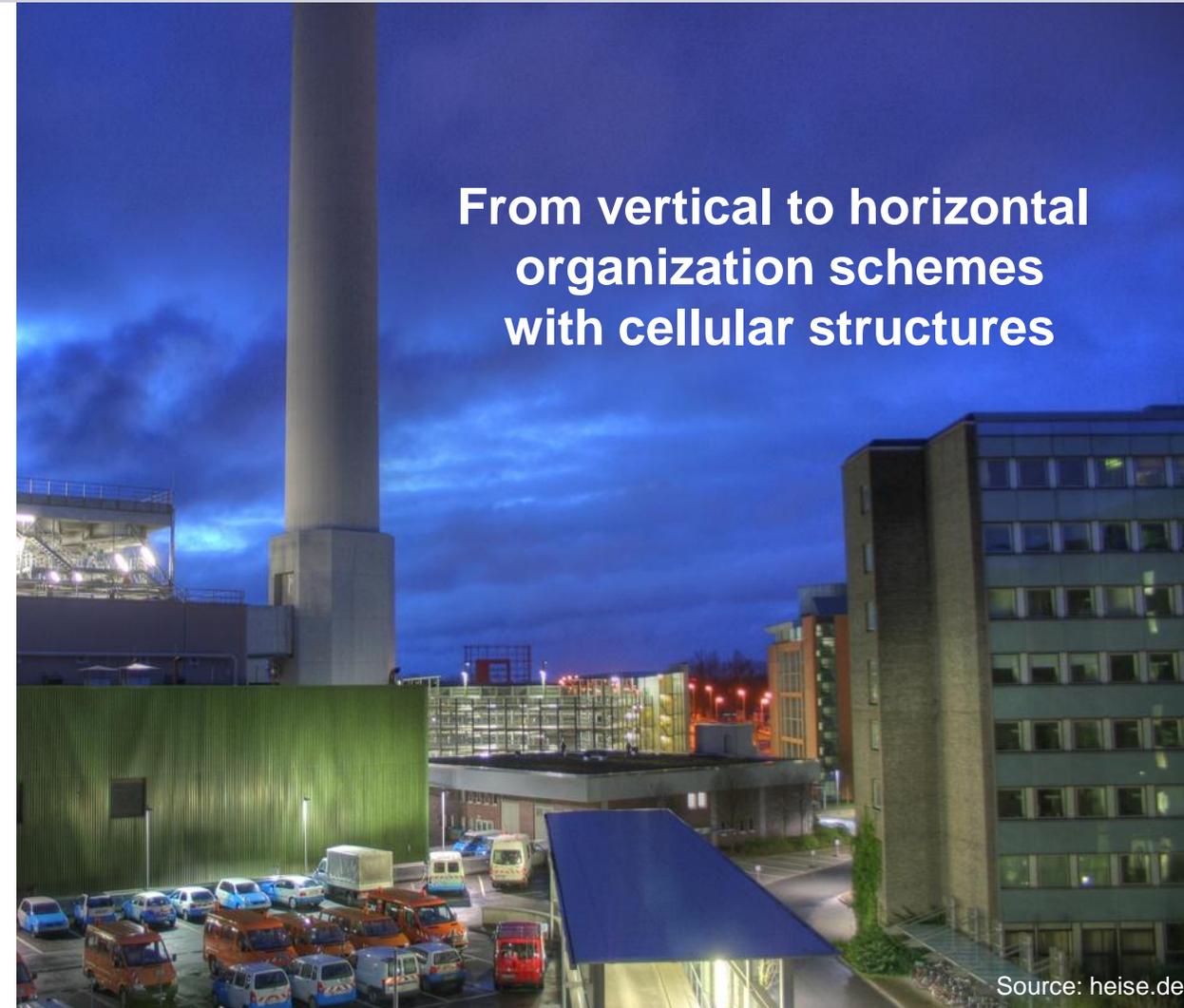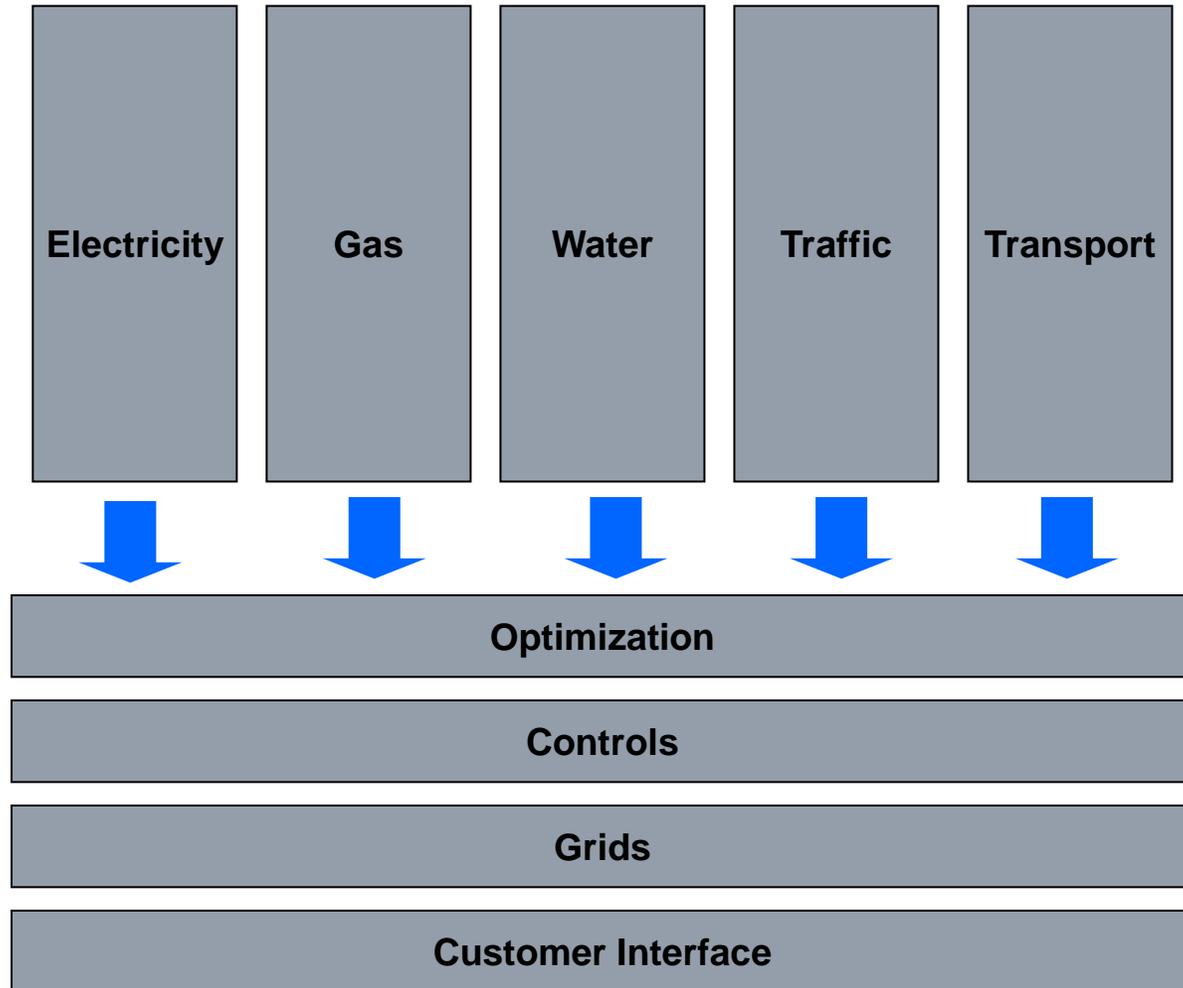
Source: marketing-mitarbeiter.com

- ❑ Trusted social networks could be used, to utilize urban infrastructures in a more homogeneous way

- ❑ Trusted in this context means, that all information in a big data base is trustworthy

- ❑ Prerequisite would be, that all citizen are participating actively in the program

- ❑ Close cooperation between the city authorities and the citizen as well as quick wins to solve problems are key for success

The City of tomorrow
A different organization of public services could change the game

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Electricity	Gas	Water	Traffic	Transport

Optimization

Controls

Grids

Customer Interface

From vertical to horizontal organization schemes with cellular structures

Source: heise.de

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