New Services in "THE SMART CITY"

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Göteborg Energi

Göteborg Energi 2008

- Owner   Municipality of Göteborg

- Number of customers   Approx. 300,000

- Number of employees   1,097   (1,048)

- Operating revenue   BSEK 4.3   (4.0)

- Profit   MSEK 510   (565)

- Investments   MSEK 1,326   (1,118)

- Total assets   BSEK 11.6   (10.7)

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Our vision

A sustainable Göteborg

Core values

- Foresight

- Stability

- Competence

- Environmental focus

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Our customer offer

- Comfort agreement
- Energy services
- Cooling
- Ready heat
- Data and telecommunications - GothNet

Concept and services
– flexible solutions for differing demands

- District heating
- Gas (natural gas/biogas)
- Electricity retailer - DinEl

Basic offer 2
– various categories based on demand

- Electricity and gas supply networks

Basic offer 1
– a prerequisite for energy

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Göteborg Energi – infrastructure owner

|	
Gas supply network	1846
Electricity supply network	1908
District heating	1954
Optical fibre	1988
District Cooling	2007
ZigBee	2009

Background
Due to the new legislation, manual reading of electricity meters has been replaced with automatic meter reading

- The Swedish Government decided 21 Dec 2006 to introduce new regulations for monthly readings of electricity meters $\leq$ 63A
- The new legislation was enforced 1 Feb 2007, with dispensation until 1 July 2009
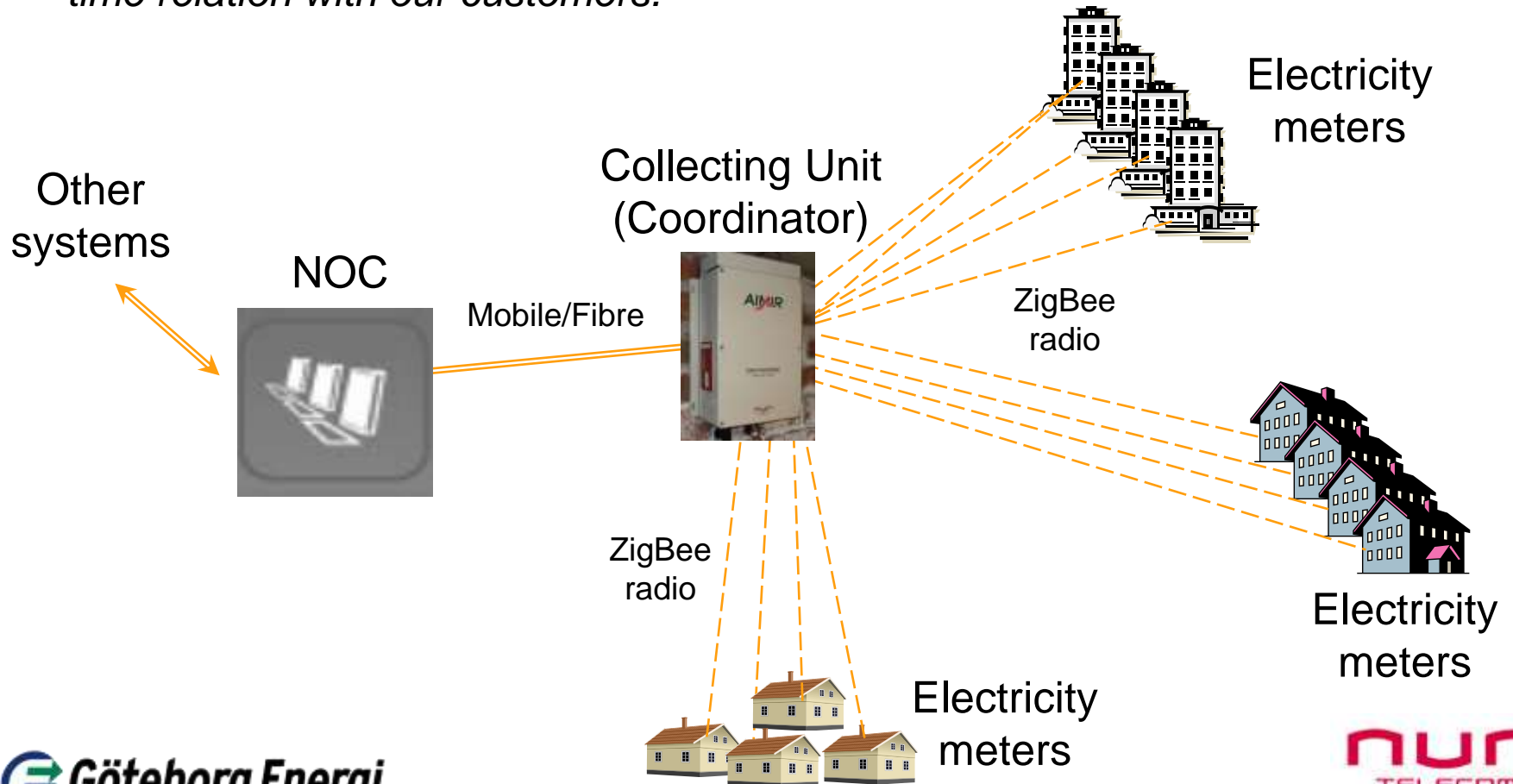
- Manual reading of electricity meters is replaced with Automatic Meter Reading – AMR
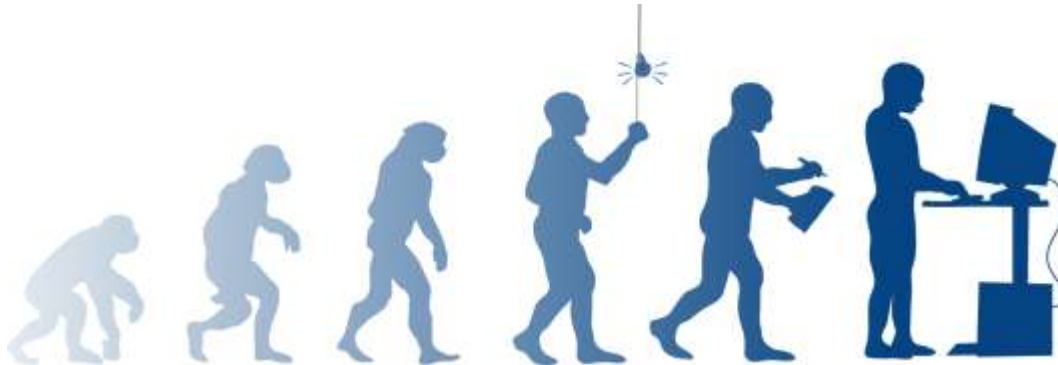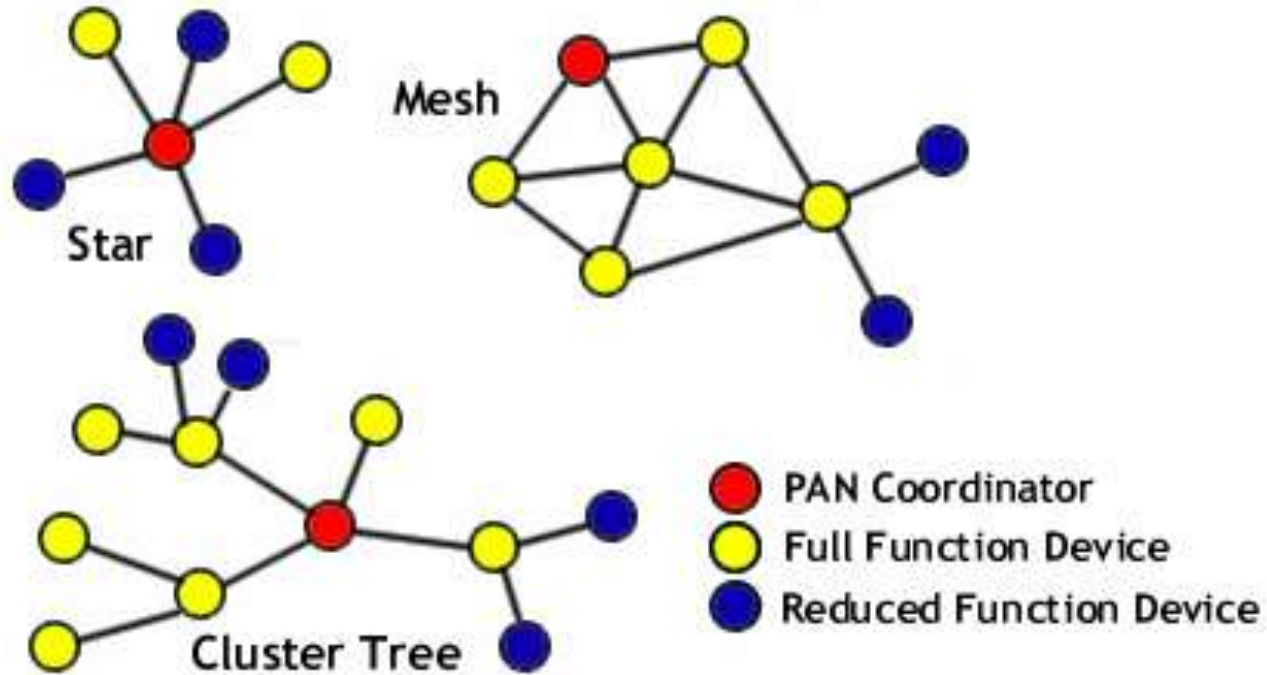
ZigBee City - a new wireless network!

AMR of 270,000 electricity meters is performed with a wireless infrastructure that has two-way communication possibilities which enables a close to real time relation with our customers.
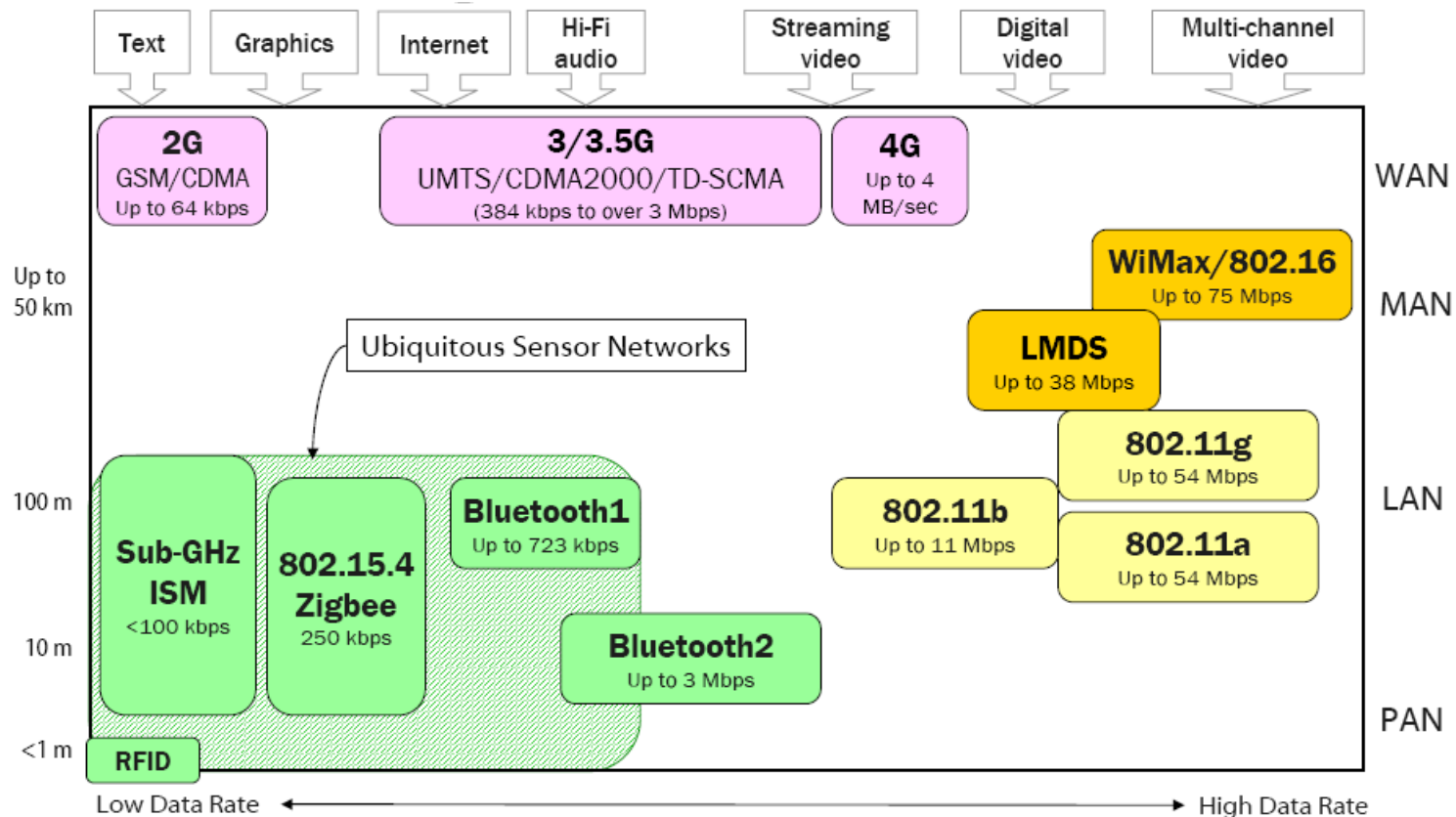

Other systems

NOC

Mobile/Fibre

Collecting Unit (Coordinator)

Electricity meters

ZigBee radio

ZigBee radio

Electricity meters

Electricity meters

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nuri TELECOM

ZigBee

- License free 2.4 GHz ISM band
- Based on IEEE 802.15.4, open standard
- Range <100 m
- Bandwidth <250 kbps

- Low power
- Two-way communication
- Built-in security AES-128
- Scalable and cost efficient
- "Mesh network"

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ZigBee – architecture

Star

Mesh

Cluster Tree

PAN Coordinator
Full Function Device
Reduced Function Device

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ZigBee on the radio map

ZigBee – application profiles

Smart Energy

Home Automation

RF4CE – Radio Frequency for Consumer Electronics

Building Automation

Health Care

Telecom Applications (*not yet ratified*)

A Smart City creates…

Safety & comfort

- Customers do feel safe and secure in their everyday life and experience a greater ease of life.

Climate benefits

- Customers can more easily monitor and control their consumption which saves both money and the environment.

Economical improvements

- Services that simplifies both the actual decision making process and the direct actions to reduce costs.

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A sustainable Göteborg

ZigBee

ELECTRI-
CITY

DISTRICT
HEATING

DISTRICT
COOLING

GAS

BROAD
BAND

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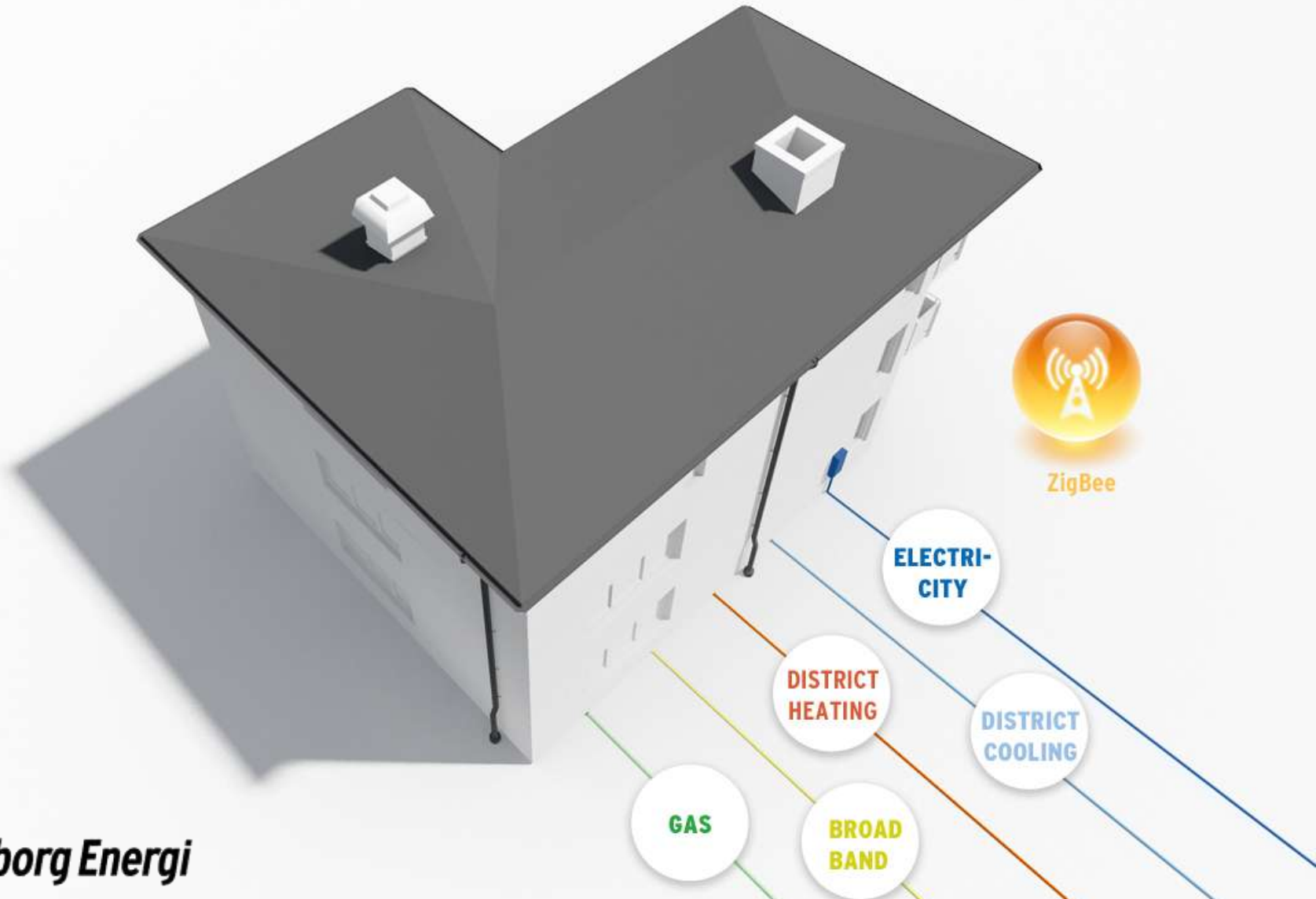
Don´t use more than necessary

Reduced environmental impact and improved net operating costs

21°C and a guaranteed comfort indoors through advanced management

Improved control, follow-up and reporting

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New services in the smart city

Charging electical cars
Smart charging for the electrical cars of the future. Warning in the event of a fault and the cheapest and most efficient charging possible.

Water metering
We create major cost, operating and maintenance benefits by using the same wireless information collection system for water and electricity.

Street lighting
Intelligent control of street lighting saves energy and improves safety in the immediate area.

ZigBee

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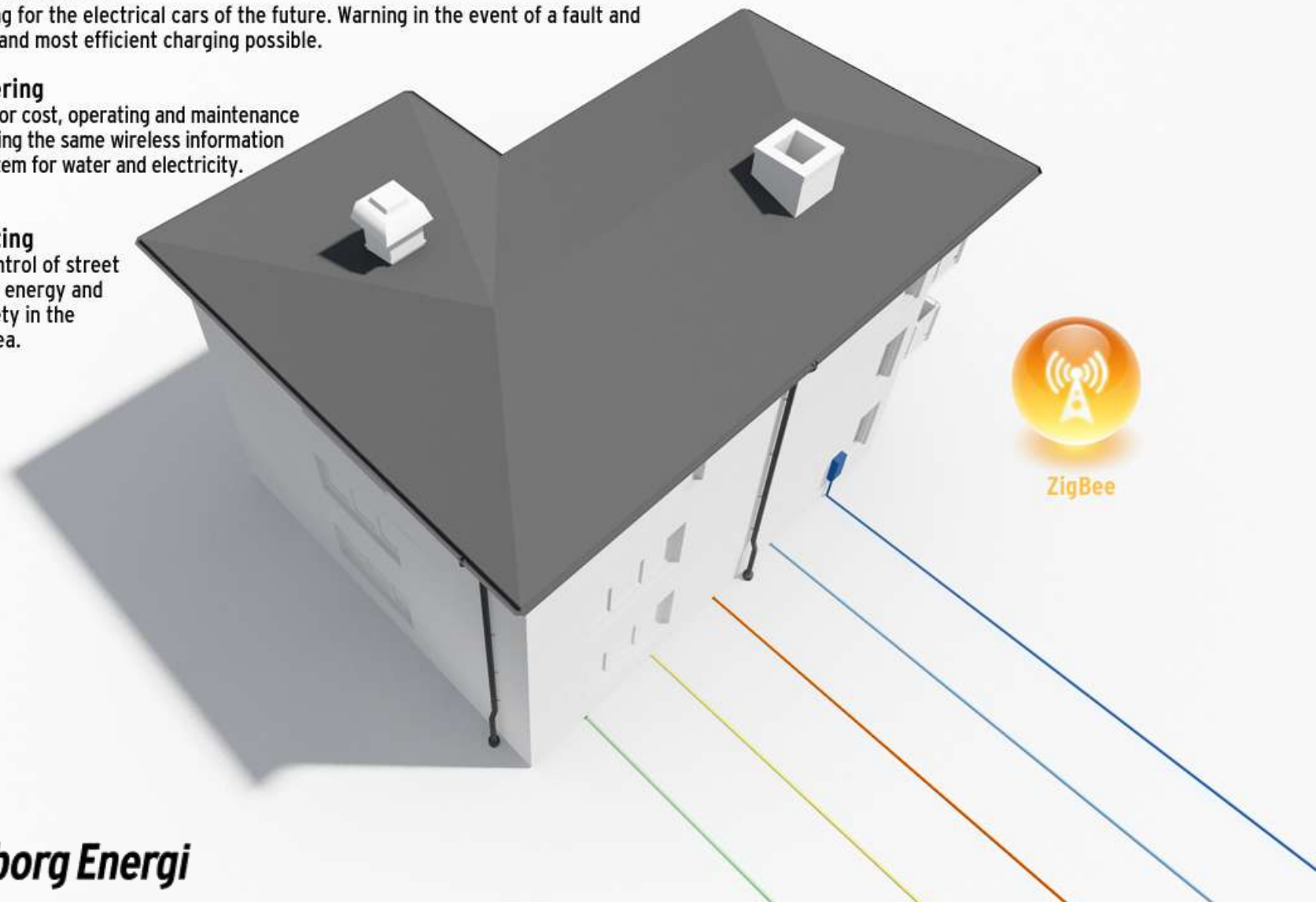
Individual metering

IIndividual metering ensures fair distribution among tenants and is a major environmental benefit. Energy consumption may fall by as much as 20–30 percent. We offer a hassle-free, reliable service where we are responsible for the whole process, from installation to operation, maintenance and replacement of meters.

Temperature monitoring

Heat is measured by discreet temperature sensors with a battery life of more than 10 years. The temperature information can also be used when adjusting radiators.

Electricity consumption

Certified approved meters are used in an extremely reliable system. Uses the same electricity meter and wireless information collection system as for 270 000 electricity subscribers.

Water metering

Small, wireless, robust meters for hot and cold water. It detects water leaks and you avoid unsightly cables in the kitchen and bathroom.

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Safety/security package

Burglar alarm

An affordable, user-friendly and simple burglar alarm. "My home is my castle" – the combination of burglar alarm and fire alarm provides apartment dwellers with improved everyday safety and security.
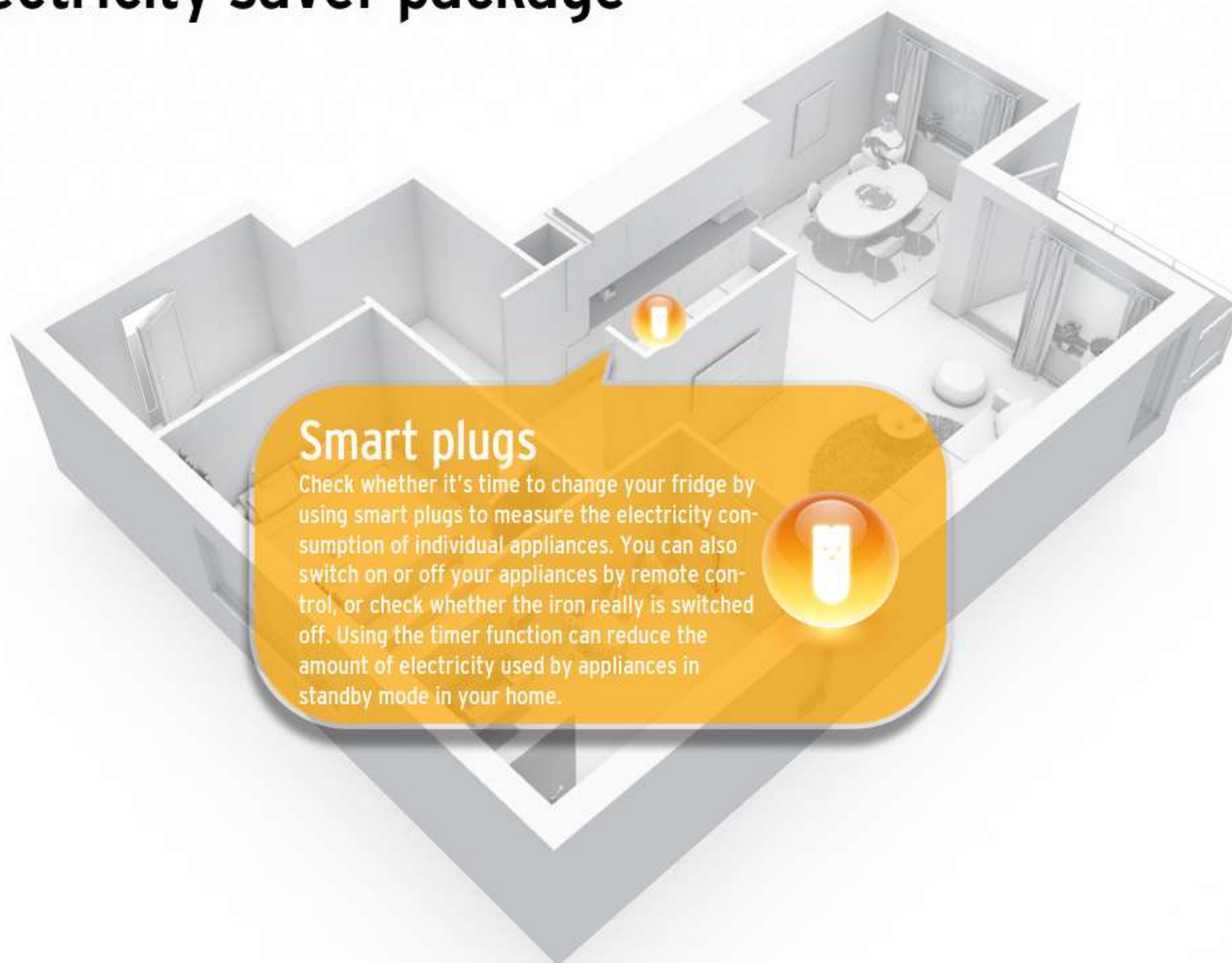
Fire alarm

Wireless fire alarm for apartments and areas without surveillance in residential buildings. In the event of a fire the emergency services can be alerted.

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Safety/security package

Smart Locks

Eliminate keys to reduce costs as well as create higher safety and security for the residents.

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Electricity saver package

Smart plugs

Check whether it's time to change your fridge by using smart plugs to measure the electricity consumption of individual appliances. You can also switch on or off your appliances by remote control, or check whether the iron really is switched off. Using the timer function can reduce the amount of electricity used by appliances in standby mode in your home.

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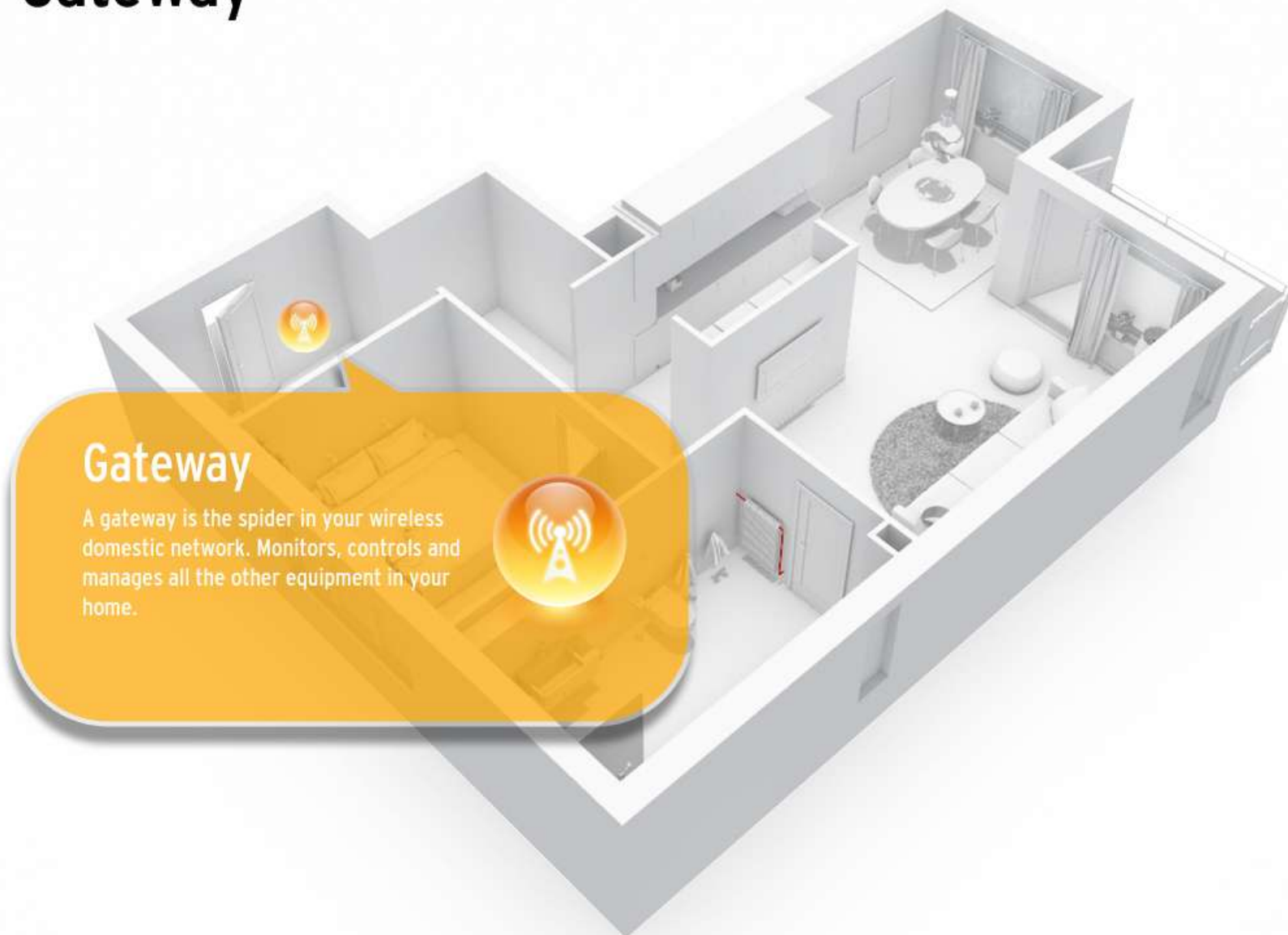
Gateway

Gateway

A gateway is the spider in your wireless domestic network. Monitors, controls and manages all the other equipment in your home.

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Display

Display

The display acts like a gateway, but also provides a visual display of energy consumption, alarm functions and, for example, building information.

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Future possibilities – health care
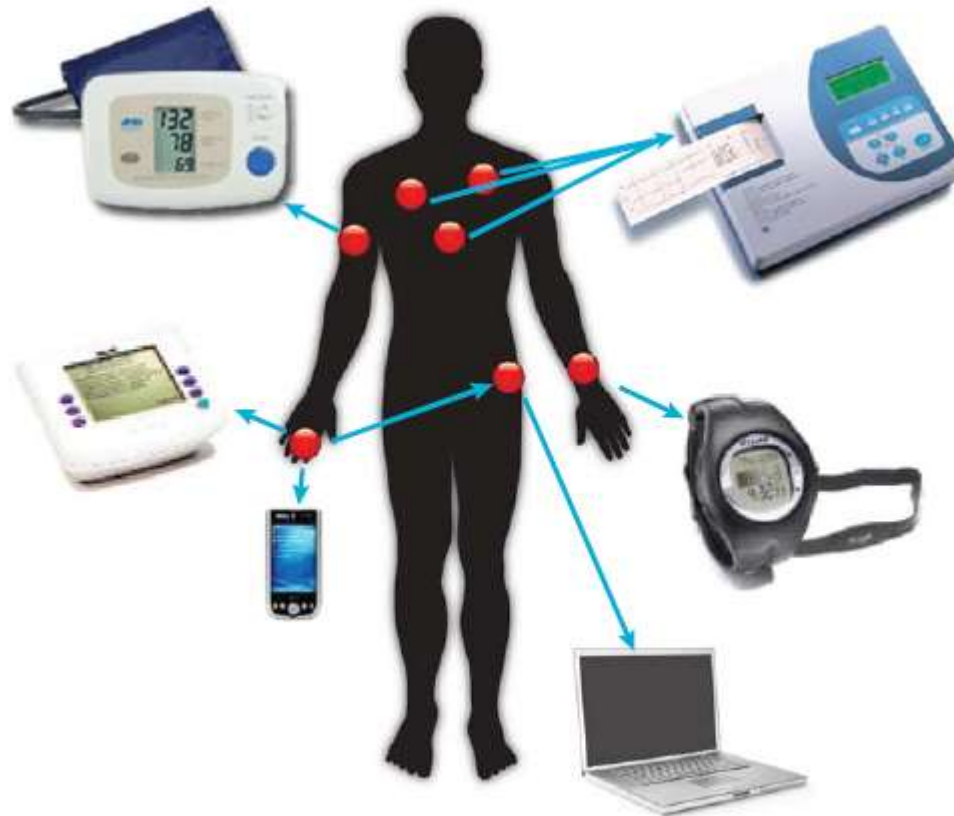
Future possibilities – asset tracking
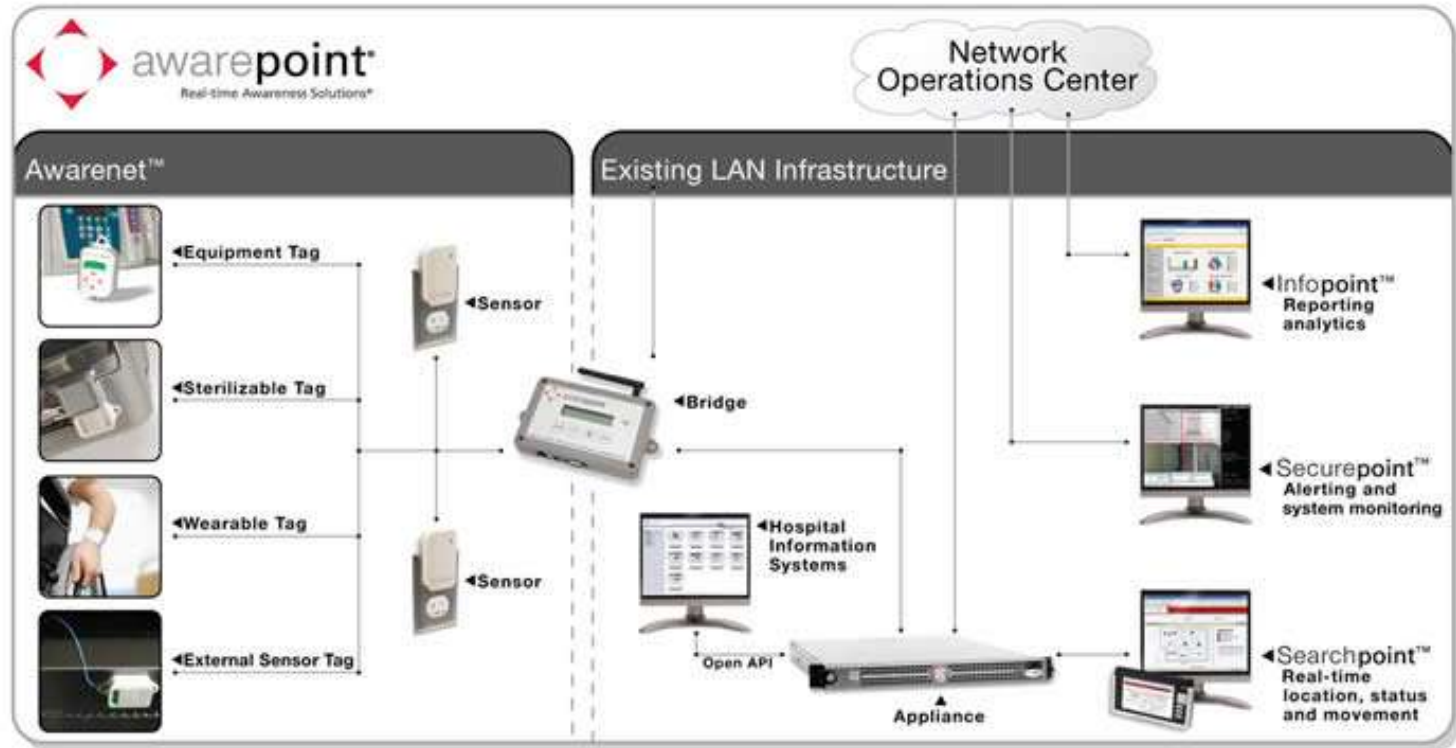
Future possibilities – mobile solutions

Future possibilities – cell positioning
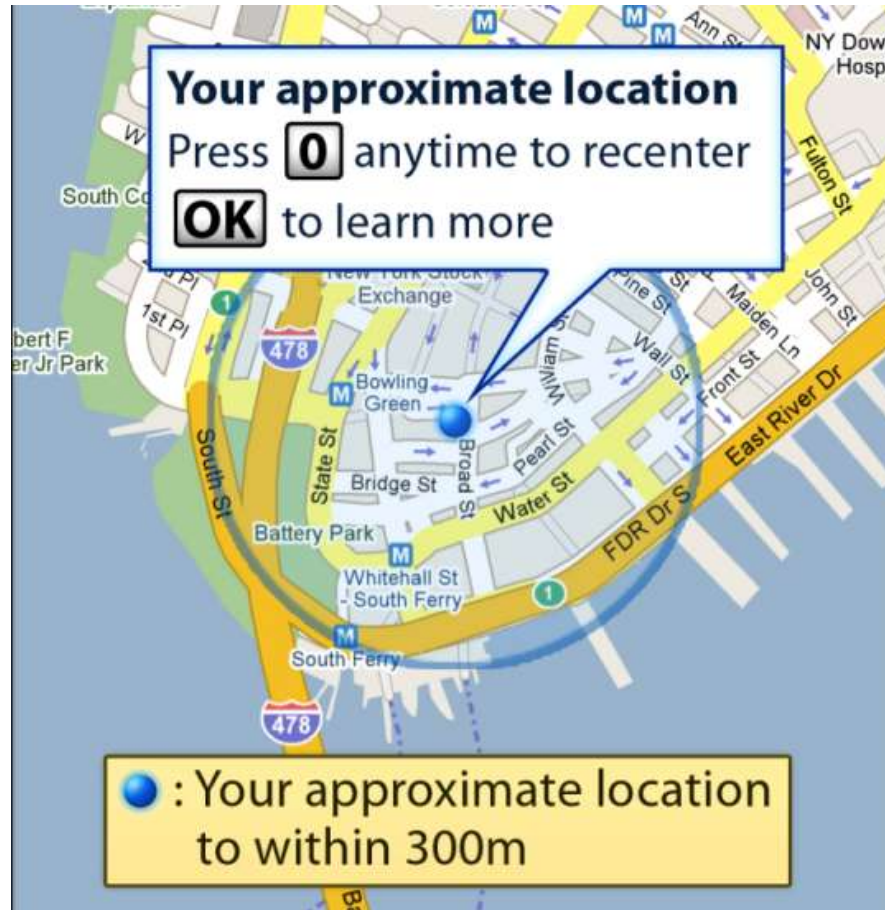
Together we create "The Smart City"

Thank you!

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