



SMART CITIES – A MATTER OF COMMUNICATION

From T-City to the Smart City Vision

Jörg Heuer, Research & Innovation Director

Joachim Schonowski, T-Labs topic responsible

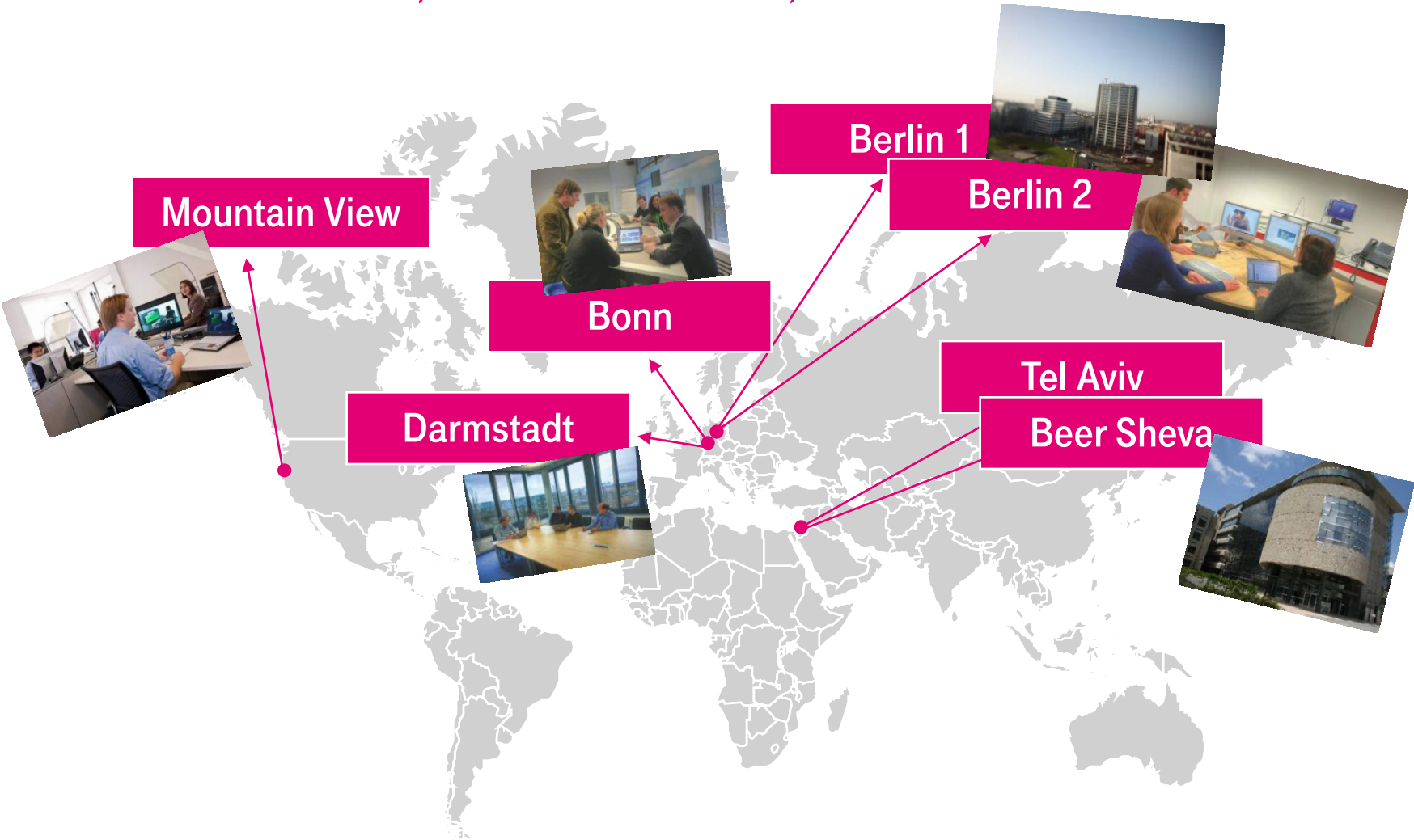


LIFE IS FOR SHARING.

TELEKOM INNOVATION LABORATORIES

LOCATE T-LABS

SILICON ALLEE, SILICON WADI, SILICON VALLEY



T-LABS – OPEN INNOVATION

A LONG-TERM SUCCESS FOR DEUTSCHE TELEKOM

Strategic Research

- Focus on scientific research
 - Six professorships in universities in Berlin
 - More than 150 high-potentials from around the globe
- Leading edge competence:
 - 250 publications per year, 1 patent per week
 - One award per month, e.g. Scientific Leibnitz Award in 2011

Innovation Development

- Focus on 7 key topics
 - 180 Telekom experts
 - Competences all across the Telco value chain
 - Impact orientation:
 - Gravity core for Telekom innovations in the double digit billions
 - Close cooperation with all business units of Deutsche Telekom

- Push results of the Open Innovation ideas
 - Worldwide joint innovation with SAP, Bell Labs, Ericsson, BMW, etc.
 - Start-up network (Berlin, Silicon Valley, Israel)
- Track record of new ventures – Trust2Core, SureNow QiSec, Zimory, Youchoose, Spotlight , etc.

Start-ups & Industry partners

Network of international partnerships with top research institutes, universities, industrial partners and start-ups.

THE EU NOTION
AND
AN ICT VIEW

PERSPECTIVES ON A SMART SUSTAINABLE CITY

HOLISTIC MOTIVATION

Operator excellence

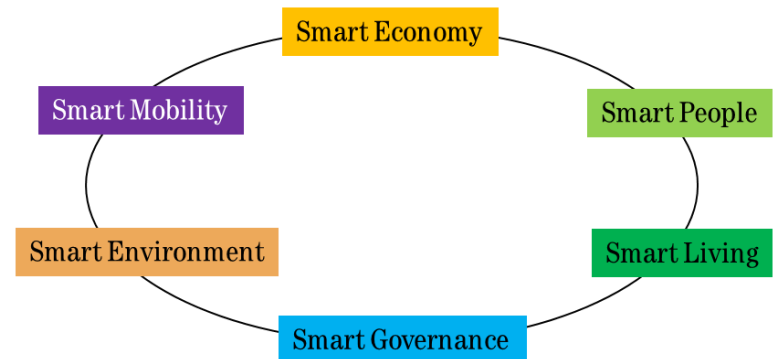
Cities require a high degree of Information and communication technology to run their infrastructures – in a sustainable way. Cities are full of people and businesses with a need for modern ICT provided by operators:

- Connectivity
- Cloud IT and services
- Trustworthy business processes

The German IT Summit has created an extended notion of **Intelligent Networks** which conveys the necessary means also towards Smart Cities.

European smart cities model

A Smart City is a city well performing in six characteristics, built on the 'smart' combination of endowments and activities of self-decisive, independent and aware citizens.



* <http://smart-cities.eu/model.html>

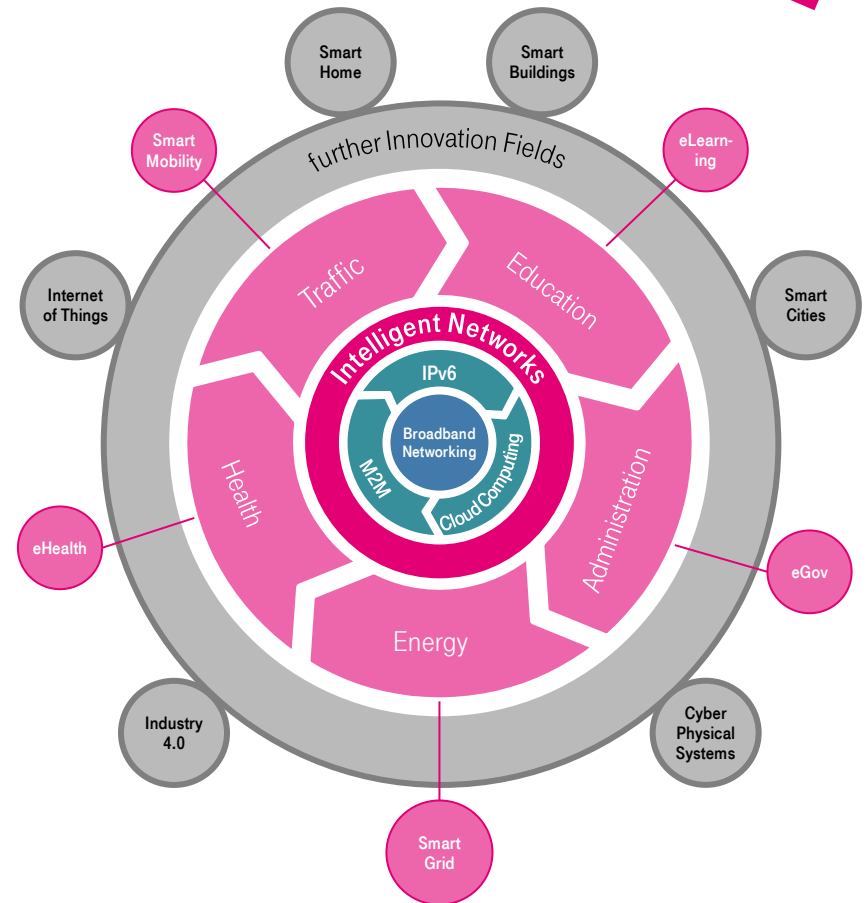
ICT PROVIDES THE INTELLIGENT NETWORK

CLASSIFICATION AND OVERVIEW

Illustration as discussed in 2012

Parallel developments in the context of intelligent networks

- Intelligent networks are technically and in their application related to further current innovation fields.
- The concept of intelligent networks must be considered in the context of manifold dynamic developments and various actors.
- In this sense, the theoretical and scientific basis needs to be fostered and coordinated to improve the technology-neutral build-up of intelligent networks across the industries.



T-LABS' RESEARCH AND TELEKOM INNOVATION TOWARDS SMART CITIES

T-LABS PROJECTS MAPPED TO SIX EU TOPICS

	Smart Economy	Smart People	Smart Governance	Smart Mobility	Smart Environment	Smart Living
Internet & Services + Interactive Media	Indoor analytics & aviation, Customer analytics Ubi Markets	Geo marketing & profiling, Location & augmented reality based ad-hoc social networks	Ad-hoc collaboration & E-Polling for urban planning*	<i>Soundtrack</i>		High quality video communication & conferencing 3D communication
Cross Domain Middleware	Smart microgrid, Smart Security - Cybersecurity	Wearables - urban navigation, Wearables & augmented reality		Business Web: Smart Port Logistics at Hamburger Hafen	Smart microgrid, Earthquake warning „Droidshake“	Smart senior & Ambient Assisted Living, Connected Living - Connected Home, Trust 2 core integration in smart metering und home gateway (Quivicon)
IT & Cloud	Data science support: Hadoop as infrastructure	Mobile wallet, Personal identity	Trust provider, Cyber security		Smart object identity	
Connected Networks & Infrastructure	M2M standardization, Smart devices & sensors, Intelligent IP traffic mgmt	Home network profiling (Lola)			Communicate green + Green DSL + Smart Office- efficient networks as reference for smart grids, Desi, Green IT@T-Labs	Universal broadband access

SELECTED RUNNING ACTIVITIES IN MORE DETAIL

ORGANIZATIONS, PRODUCTS AND INITIATIVES

Smart Living /Home



Provisioning of a certified connected device steering platform + SDK for 3rd parties for a smart home.

Smart Government

Creating Citizen Centric Cities (CCC) to enhance the participation of the citizens



Smart Living / Senior



Modular service offerings enabling the elderly to continue living in their own homes, based on Home Gateway for Ambient Assisted Living (AAL) -

Smart Economy



Smart port logistics – port Hamburg
M2M market places for enhanced logistics

Smart Energy - DESI

Aligning and adapting energy provisioning with real traffic loads opens up a huge carbon decrease potential.

4th Industrial Revolution



Project support of Industry 4.0 projects with industry partners.

EU - Future Internet



Development of a pan-European common Internet platform providing a generic infrastructure to foster open innovation.
Develop future sustainable services towards Horizon 2020.

QIVICON FOR SMART LIVING

FROM THE LABS TO THE PRODUCT

QIVICON Start Was ist QIVICON? Jetzt Partner werden

QIVICON Prinzip QIVICON Partner Aktuelles Häufige Fragen

VERNETZEN, STEUERN, KONTROLLIEREN, GENIESSEN.

QIVICON Home Base + Geräte + Viele Apps

DIE QIVICON PARTNER: UNSERE VIELFALT MACHT DEN UNTERSCHIED.

Profittieren Sie von den vielfältigen Möglichkeiten und Angeboten der starken QIVICON Partner.

> Mehr über die QIVICON Partner

Übrigens: es werden ständig mehr!

> Einfach genial – so funktioniert das QIVICON Prinzip.

10.07.2012 | Medieninformation, Bonn/Berlin
SmartHome Deutschland Award für bestes Start-Up geht an tado.
> Alle Meldungen anzeigen

Sie haben Fragen?
Wir helfen Ihnen gerne weiter.
> Fragen und Antworten rund um QIVICON

st-qivicon/aktuelles/article/detail/News/smarthome-deutschland-award-fuer-bestes-start-up-geht-an-tado/

Service overview

- Energy and Living
QIVICON is an Internet based home-automation platform for future home, supporting multiple scenarios to connect and safe energy and life and provide technically enhanced convenience for their inhabitants, especially supporting the silver generation at home. Partners, e.g.: EON, EnBW, Miele, Samsung, WinkelSolar eQ-3.
- The small box „QIVICON Home-Base“ provides an Internet-platform using powerline and an appstore. The system can communicate over the air with all Qivicon certified electronic devices at home and is steered by any Internet connected device.
- Examples: Developed by partners, Apps provide tasks like: activate a washing machine, once enough solar power is available or power tariffs are cheap. .

SMART PORT LOGISTICS

COOPERATION BETWEEN



Expedition

Truck & trailer status information




Logistics Infrastructure Service

Traffic/ infrastructure status information



Parking Space Rental

Service/ status information



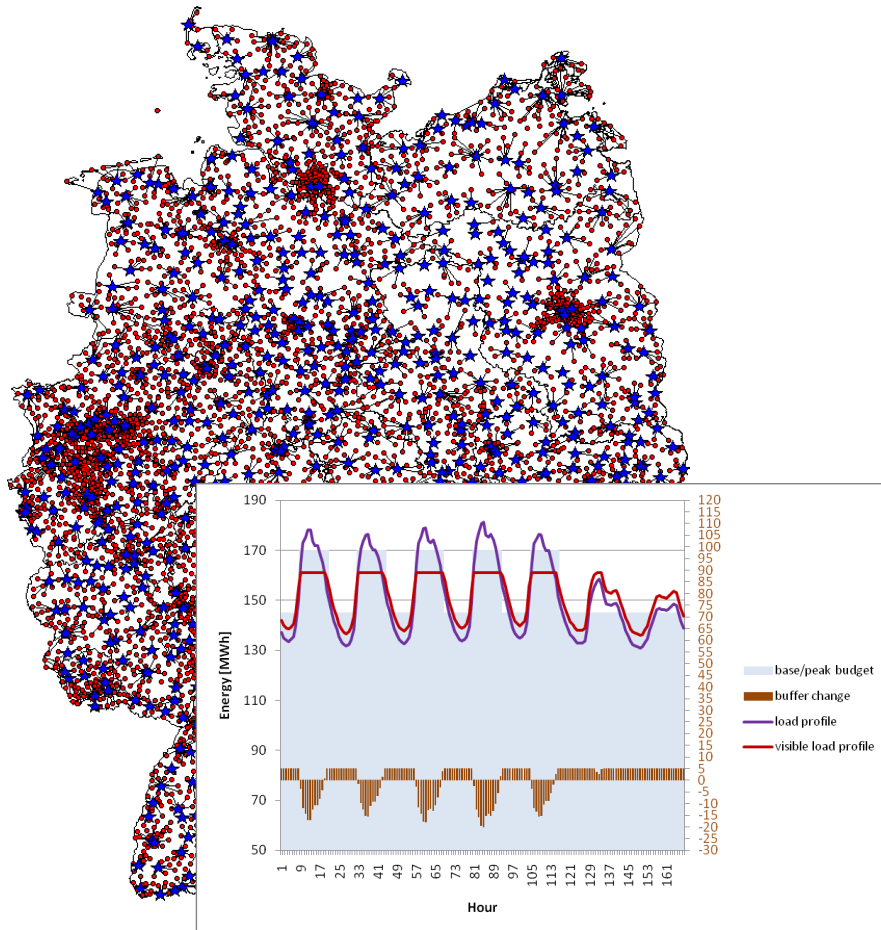
Mobile Business Cloud

Cloud services for Hamburg port logistics ecosystem



SMART ENERGY

DEGREES OF FREEDOM IN THE TELCO NETWORK



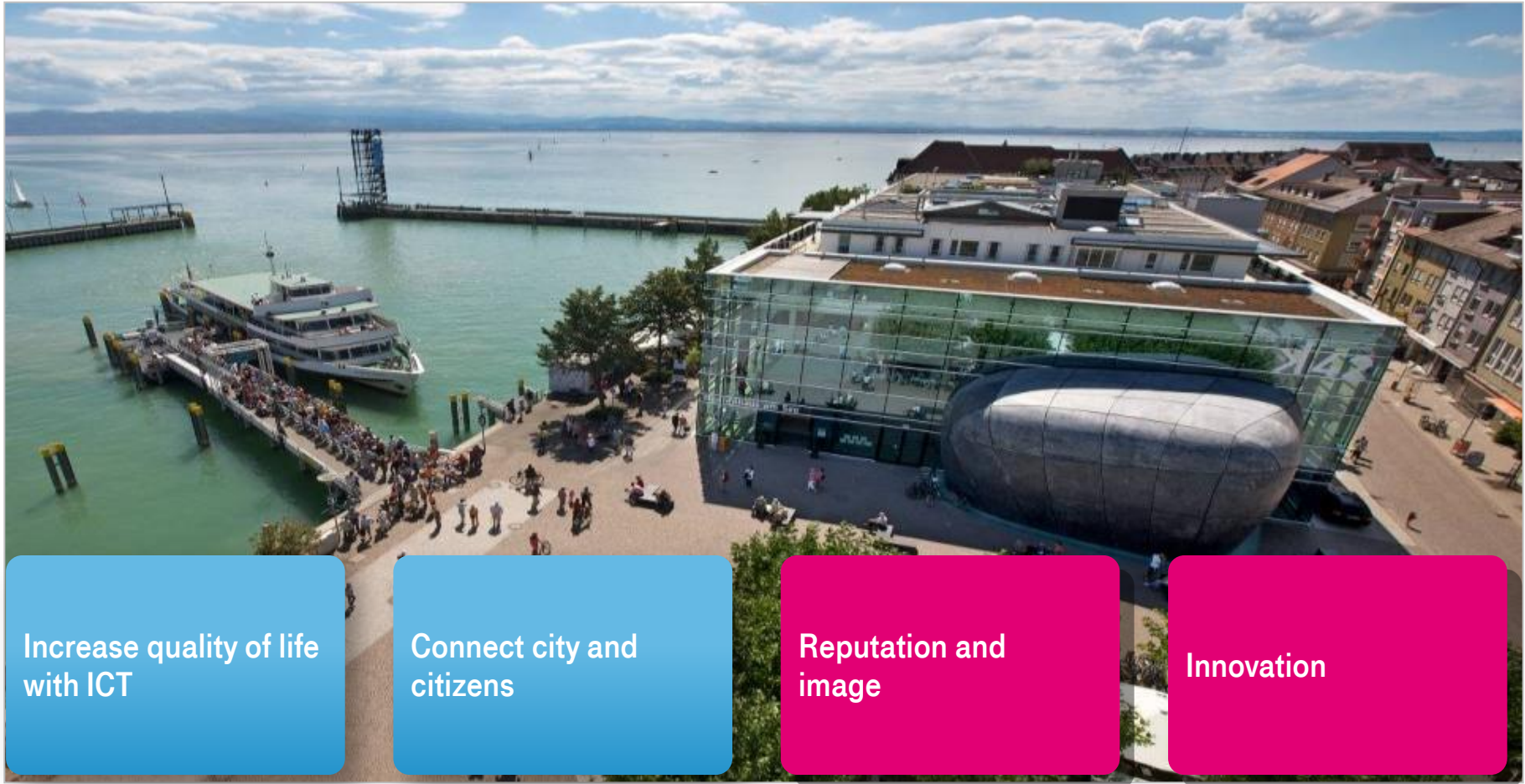
Two system-wide network structures

- Telco and power are parallel network-based maintenance structures with system-wide presence.
- Energy elements of the Telco network may, thus, be sensibly integrated into the future 'Smart Grid':
 - ca. 65,000 power consumer sites
 - ca. 18,500 battery parks with ca. 22 MAh capacity and ca. 2,700 emergency generators.
- The energy provisioning of a system-wide load-adaptive Telco network is ideally positioned to mediate between the challenges of variable load and Smart Grid operation (e.g. volatility).

THE T-CITY EXPERIENCE

T-CITY OBJECTIVES

EXPERIENCE SINCE 2007



Increase quality of life
with ICT

Connect city and
citizens

Reputation and
image

Innovation

FIRST PHASE OF T-CITY 2007 – 2012

MORE THAN 40 PROJECTS WERE COMPLETED

Education



- Edunex
- EduKey

Health



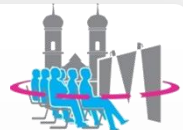
- Self-determined living
- BIGKidsCoach
- derBUTLER
- BodyTel
- Remote patient care
- T-Mobile emergency number
- Tumor conference
- Diagnosis portal

Citizens & Government



- Request management
- Authorities' number 115
- De-Mail
- Online kindergarten
- EU Service Directive

Tourism & Culture



- Interactive hiking
- Suche.mobi (Search.mobi)
- Multimedia terminals for the deaf
- Tourism portal
- Multimedia terminals
- Media hotel
- Schwäbische.de @ Entertain
- Digital picture frame
- CityInfo

Mobility



- flinc
- KatCard
- GPS emergency call

Business & Energy



- Smart metering
- Home Network 2.0
- Smart grid
- Ddesk
- G/On
- Mobile Worker Bundle

T-CITY TURNED INTO TELEKOM-CITY

A SUCCESSFUL EXPERIENCE CONTINUED

T-City...

- attracted a lot of attention: (just a few of the visitor groups)
- Feedback has been great
- Experience collected went into products and fuels the Smart City work at DT



Telekom-City

- The experiment has been turned into 'normal' operation through T-Systems
- Collaboration with local authorities is continuing
- Three model ,futurists' households are kept up
- ,Futurist' companies are in focus now

CONCLUSION

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SMART CITIES AND TELECOMMUNICATIONS PROVIDERS

- **High-performance access and transport networks are a prerequisite for Smart Cities**
- **The network layer alone might not be enough:** the 'Intelligent Network' approach matches many requirements of Smart Cities
- **Industry verticals need specific support:** health, traffic, energy, administration, education, entertainment, production
- User's need to be provided with communications means, and the power to control their communication and data flow: **mobility, security, identity**

THANK YOU!



LIFE IS FOR SHARING.

BACKUP

T-CITY PROJECT EXAMPLES

PROJECT EXAMPLES

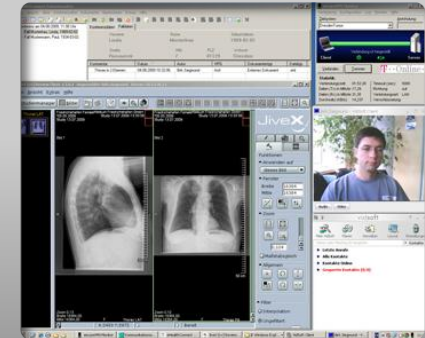


Self-determined Living



- Support for elderly for long-term living in their own home
- Housekeeper services, food or medicine delivery services, food on wheels, public transport information
- Video telephony for social contacts
- Overview of electricity, water and gas consumption
- Telemedicine (diabetes, high blood pressure, etc.)

Tumor Conference



- Cancer physicians from Konstanz and Friedrichshafen consult with each other online
- Software simulates procedures of weekly on-site tumor conferences
- Video conference with integrated electronic patient files including BSI-certified data security
- Authentication through certificates and digital signature
- High resolution presentation of x-ray images
- Treatment plan is created simultaneously
- Better treatment through working together more effectively

PROJECT EXAMPLES.



Online Kindergarten



- Makes searching easier for parents and saves time
- View all kindergartens in the Internet
- Specify desired kindergarten at a mouse click
- Administration obtains transparency on actual place requirements
- Simplifies the administration organization
- www.kindergarten.friedrichshafen.de

DeMail



- Saves postage, printing & paper
- As easy as e-mail
- Encryption protects against access
- Prevents spam
- Can be used 24/7 all over the world
- Telekom certified by BSI as a secure De-Mail provider
- T-City as first pilot location
- Product launched in 2012

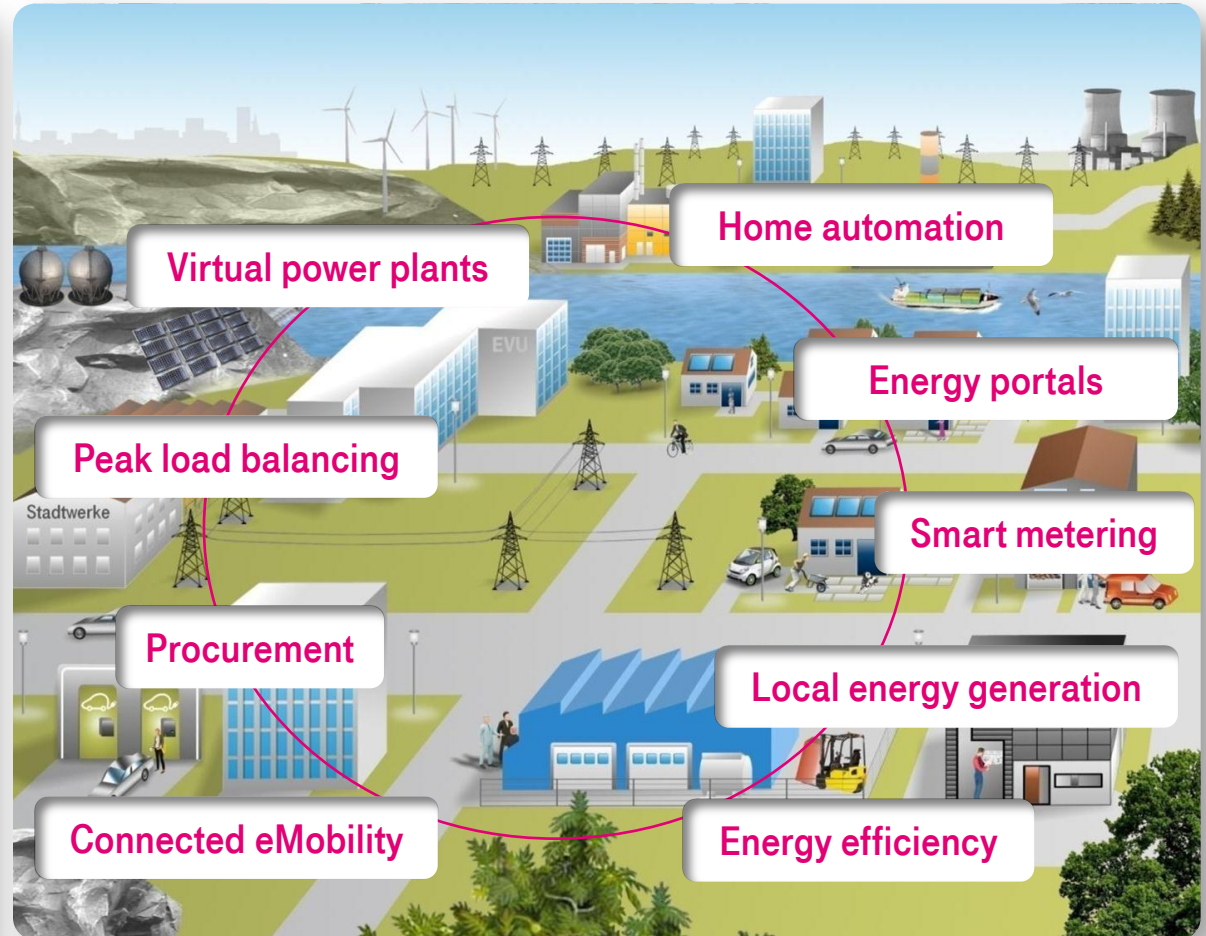
SPOTLIGHT ON ENERGY PROJECTS

TRANSITION TO SMART GRIDS IN PRACTICE

Energy @ T-City

Objectives

- Test secure ICT infrastructure for new energy world
- Generate benefits for utility and end-users
- Enable energy efficiency: transparency and control
- Integrate prosumers to manage loads and optimize procurement
- Project examples:
 - Smart metering as base
 - Home networking
 - Smart grid to the home (PV, mCHP, heat pumps)
 - Virtual power plants
 - Energy efficiency for SME and MNC
 - Portals for different stakeholders
 - Connected eMobility

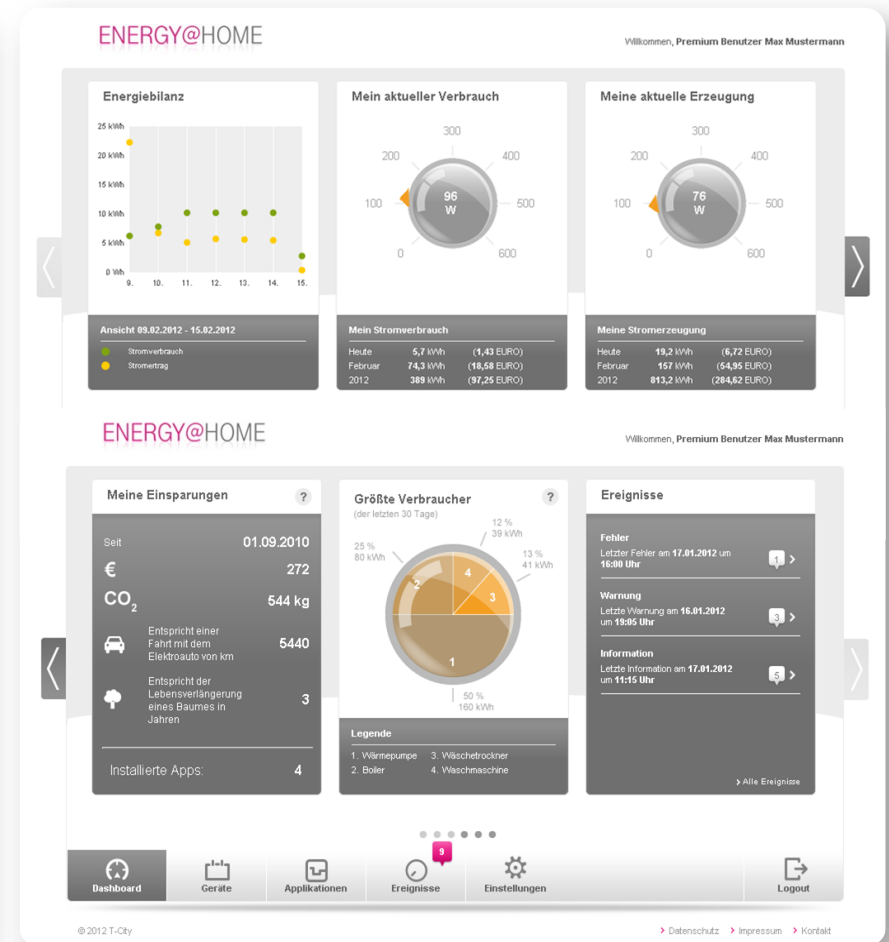


PROJECT EXAMPLE – SMART GRID TO THE HOME

INTEGRATING RENEWABLES INTO HOME AND GRID

Summary.

- Connection of photovoltaic systems, combined heat & power plants and heat pumps in buildings as local producers and consumers
- Visualization of own energy generation and consumption
- Optimization of energy consumption
- Automated energy saving tips
- Identification of largest consumers in the household
- Cost control, alerts and warnings
- Access for end-users, installers, utilities and system operators on the relevant data
- Integration into back-end systems via Virtual Power Plant & Load Management System



CONNECTED MOBILITY

A SHOWCASE FOR „TRIPLE PLAY“ – THE FUTURE OF MOBILITY



Communications

Real-time data exchange (e.g. to / from car) and smooth change of transportation modes



Connected Mobility



Transportation

Network public and private transportation – one tariff & one booking process



Energy

Smart Grid for efficient charging, V2G, metering & payment