

Wireless City Berlin – Solutions for a Smarter City

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Das Projekt **Wireless City Berlin**
wird von der Europäischen Union
kofinanziert (Europäischer Fonds
für regionale Entwicklung)

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The Notion of Smart Cities

Wireless City Initiatives in Europe

The Wireless City Berlin Project

Project Goals and Setup

City Marketing and City Trade

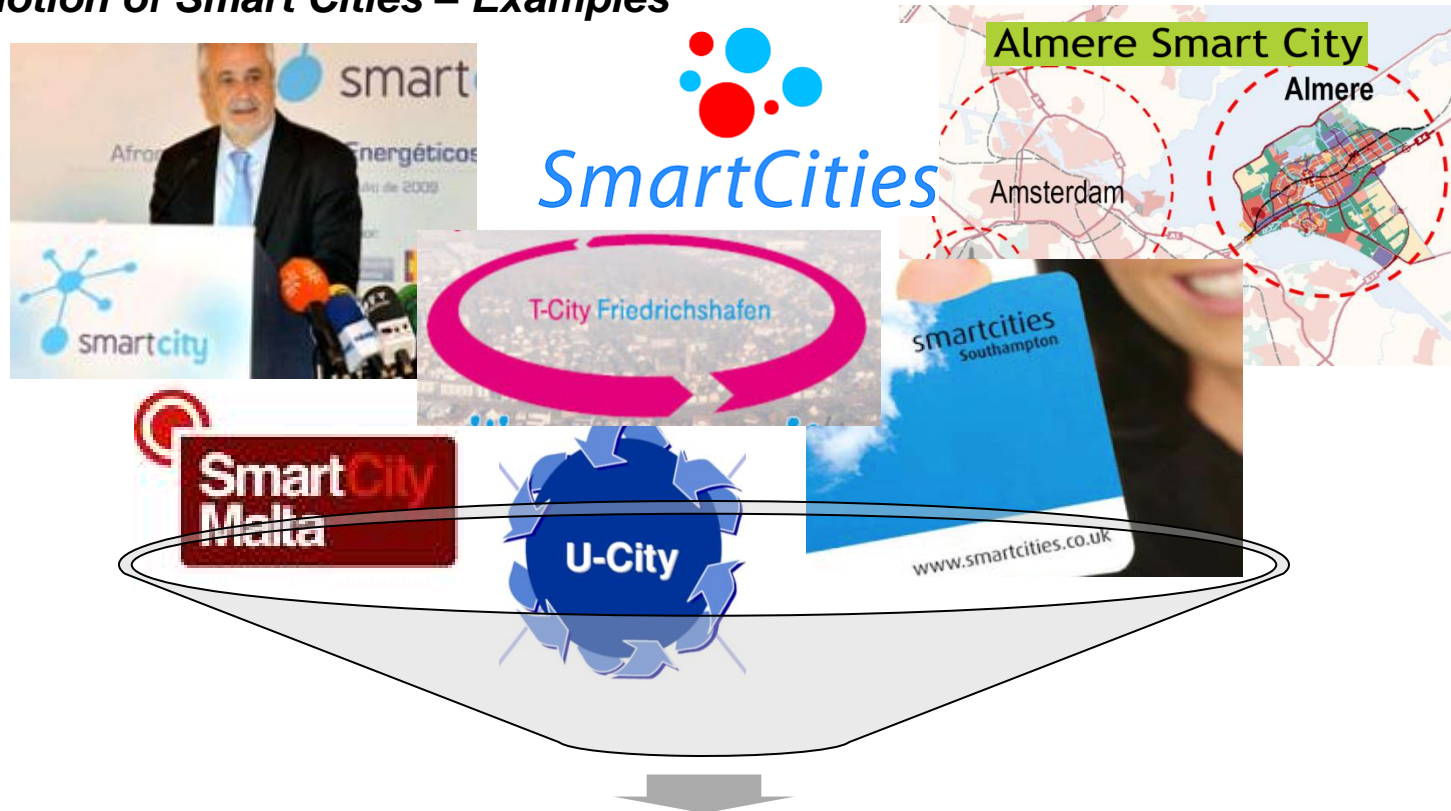
Mobile Services for Companies

SAAS Business Collaboration Infrastructure

Conclusions

In many western countries, the discussion about the future of urban development has been influenced by the concept of „smart cities“

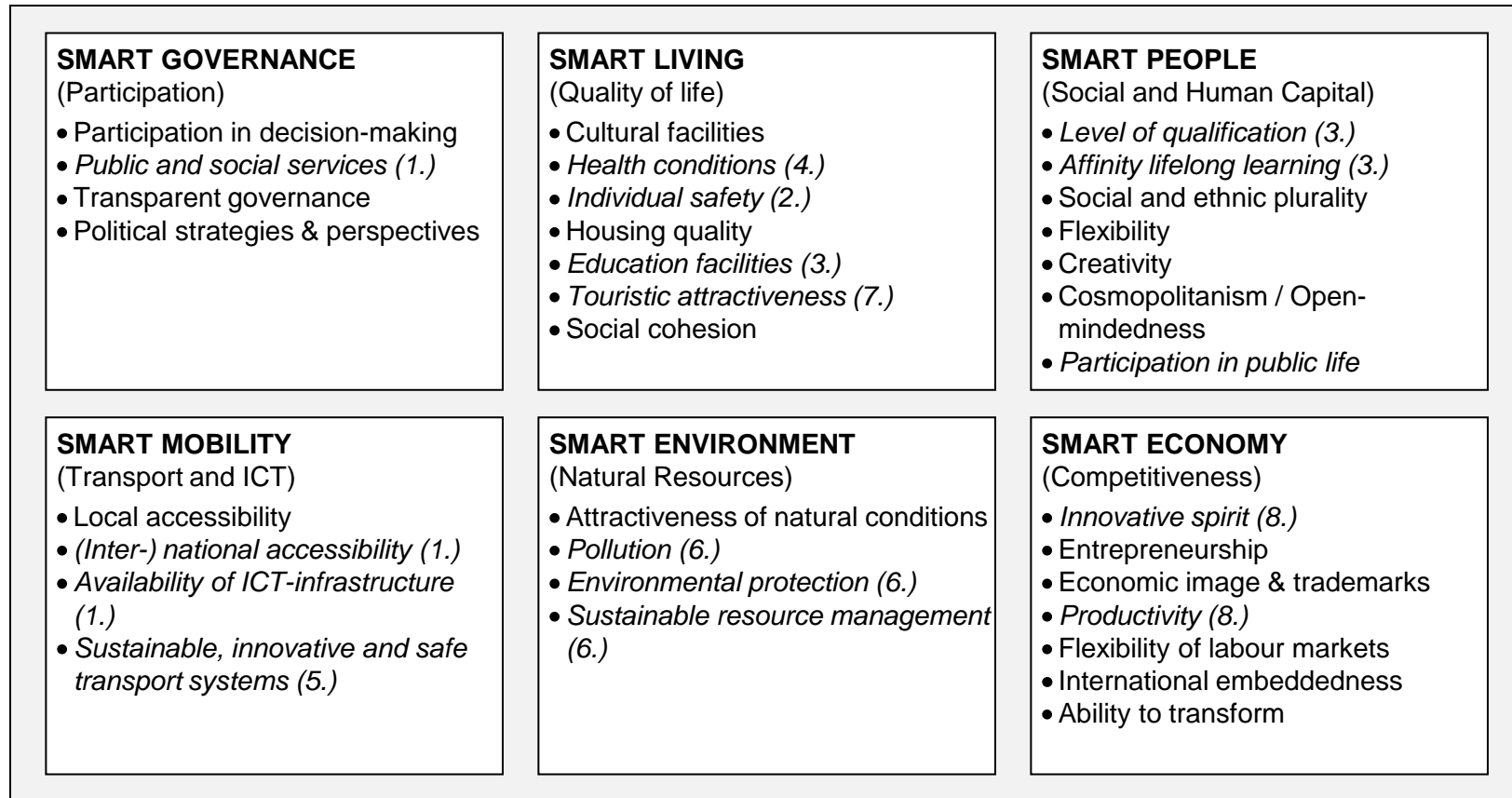
The notion of Smart Cities – Examples



- Term ‘smart city’ not widely used in urban planning literature
- Self-labeling process by some designated cities and regions
 - Marketing of certain aspects of their urban development

The Centre of Regional Science (Vienna) proposes an operationalization of the 'smart city' concept into six categories

The notion of Smart Cities – Framework



Wireless technology can be seen as a means to fulfill the objectives for becoming a smart city.

Source: Giffinger, 2007

A 'Wireless City Initiative' can be defined as a public-private coalition aiming to promote mobile and pervasive technology in the urban area

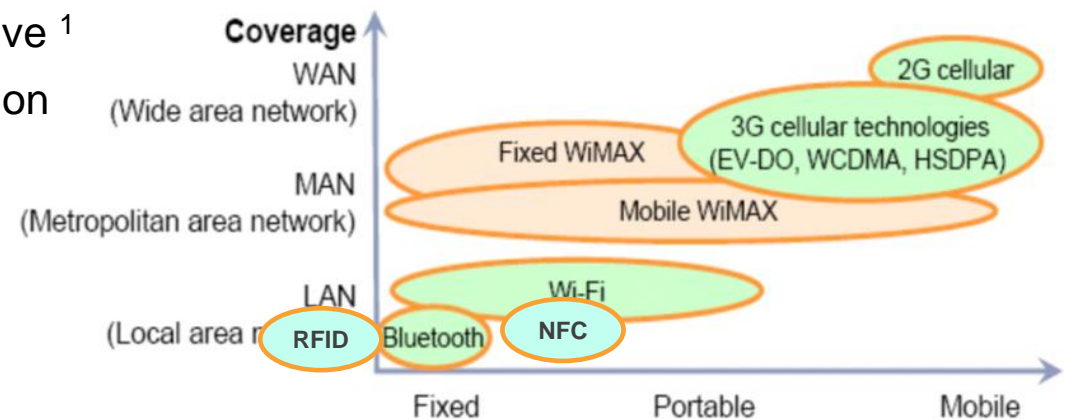
Definitions and Scope

- **Wireless City Initiative**

- “Temporary or long lasting coalition of public and private partners
- ...with the goal of driving the development, deployment, and operation
- ...of wireless services, applications and corresponding networks
- ...in an urban area, in order to fulfill the strategic goals of the municipality.”

- **Wireless Technology**

- Ubiquitous = mobile + pervasive ¹
- Mobile and fixed communication
- Long range and short range



¹ Lyytinen / Yoo, 2002

Source: Bai 2007



Potential wireless services can be divided into eight groups of applications for public and private use

Application clusters

Public utility							Private utility
1. Access to public services	2. Public safety	3. Education	4. Health care	5. Transportation and traffic	6. Infrastructure and utilities	7. Tourism and entertainment	8. Mobile commerce
<ul style="list-style-type: none"> • E-government • City information • Public webcams • Public surveys • Community building • Mobile work (for public staff and for citizens) 	<ul style="list-style-type: none"> • Disaster messaging • Surveillance (CCTV) • Emergency command and control systems • Smoke detection • Noise monitoring • Complaint Issuing 	<ul style="list-style-type: none"> • Education networks • Library systems • Life-long learning platforms • Cultural information • Collaborative content creation 	<ul style="list-style-type: none"> • Clinical data mgmt • Remote medical treatment • Emergency alarm • Home care • Food service • Blood donation 	<ul style="list-style-type: none"> • Traffic information and alerts • Route planning • Traffic control • Intelligent transportation systems • Park space indication • Mobile ticketing 	<ul style="list-style-type: none"> • Breakdown reporting • Asset maintenance • Water quality monitoring • Process control • Automated metering • Smart grid • Intelligent waste management 	<ul style="list-style-type: none"> • Information kiosks • Tourist guides • Mobile / television • Site recommender systems • Person finder • Mobile social networks 	<ul style="list-style-type: none"> • Shop finder • Local interactions • Pervasive marketing • Mobile couponing • Location-based advertisement • Mobile payment

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Based on a first exploratory study, we found that there are three main strategies how cities approach the use of urban wireless services

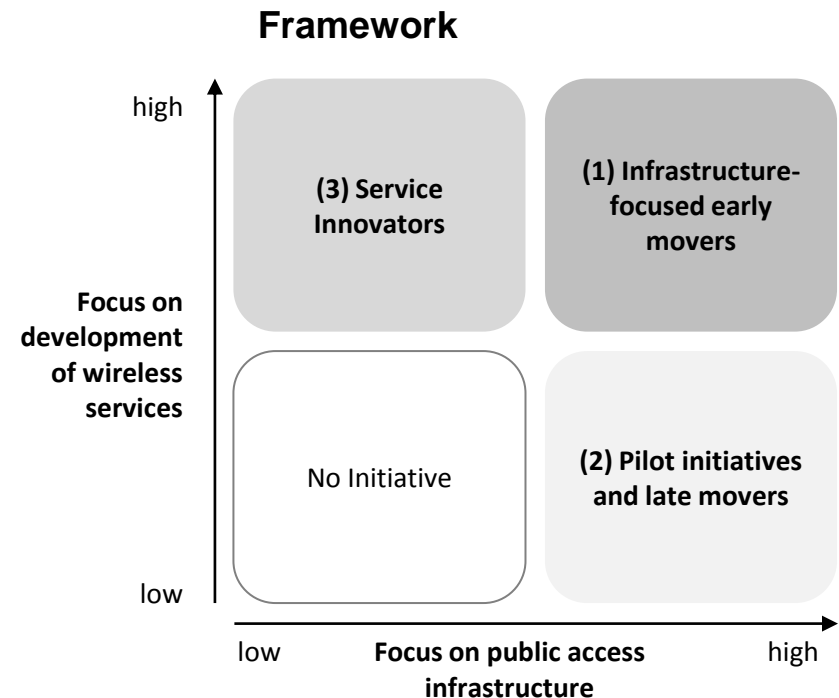
Strategies for Wireless City Initiatives: Service- vs. Infrastructure-focused

Method

- Comparative analysis of 25 wireless city cases in Europe
- Sources: project documentation, evaluation reports, etc. + interviews

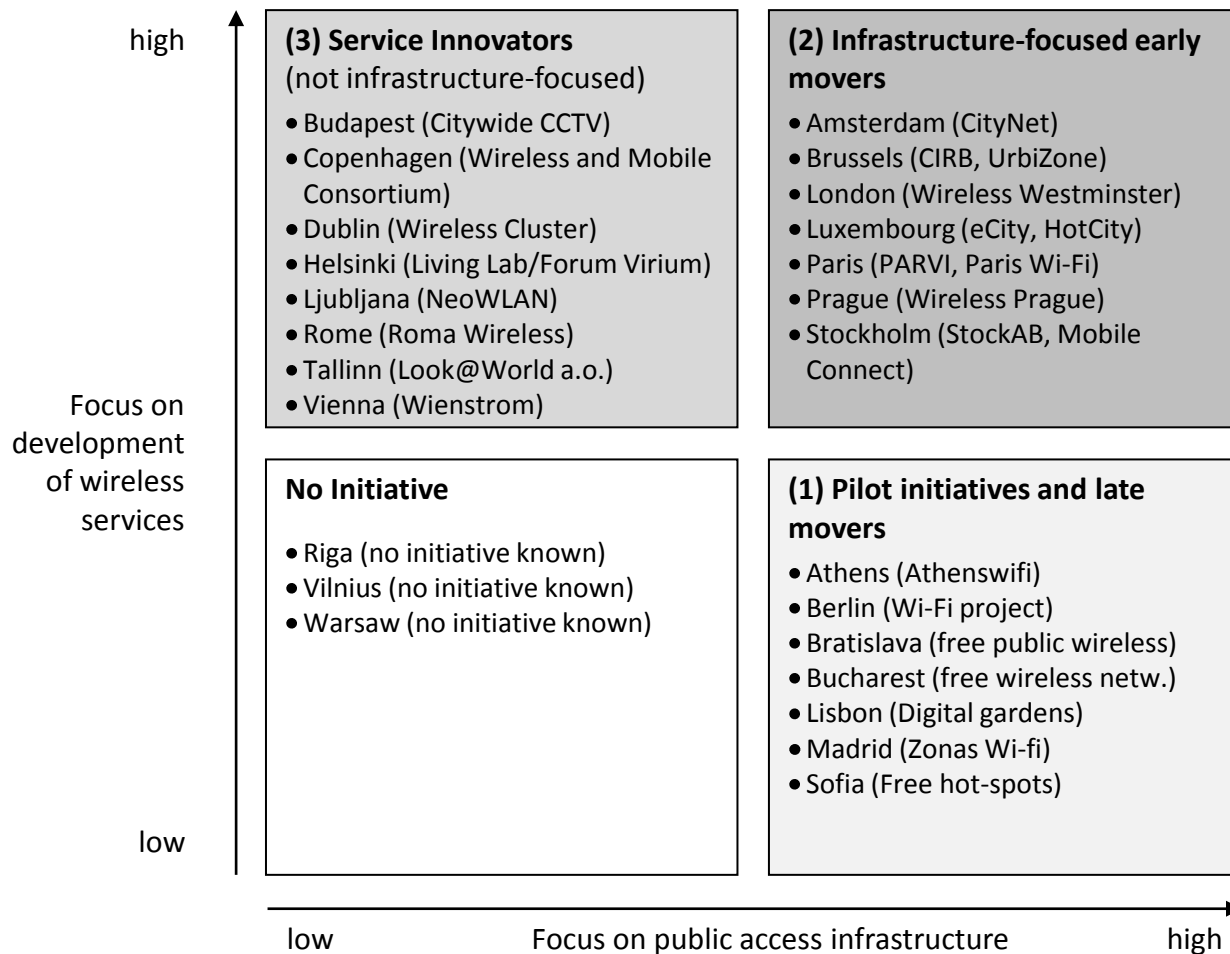
Identification of three clusters

- (1) Infrastructure-focused early movers
 - Significant infrastructure investments
 - Goals: Improvement of public service offering
 - Integrated into broader policies
- (2) Pilot initiatives and late movers
 - Smaller WiFi projects in selected areas
 - Goals: limited to attractiveness in that area and of the city in general
- (3) Service innovators
 - Less focus on public infrastructure investments
 - Building on private investment and competition
 - Goals: focused on stimulating economy and innovation



The analysis indicates that many European cities opt for a 'service innovator' strategy, however, hybrid approaches are also possible

Results: Wireless City Initiatives in Europe



Conclusions

- Some kind of initiative present or planned in most of Europe's capitals
- Early movers focusing increasingly on service innovation
- More recent initiatives opt for 'service innovator' strategies



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The city of Berlin has set up a joint project to demonstrate the potential of wireless services in multiple service scenarios

Wireless City Berlin Project – Goals and Setup

- **Project setting**

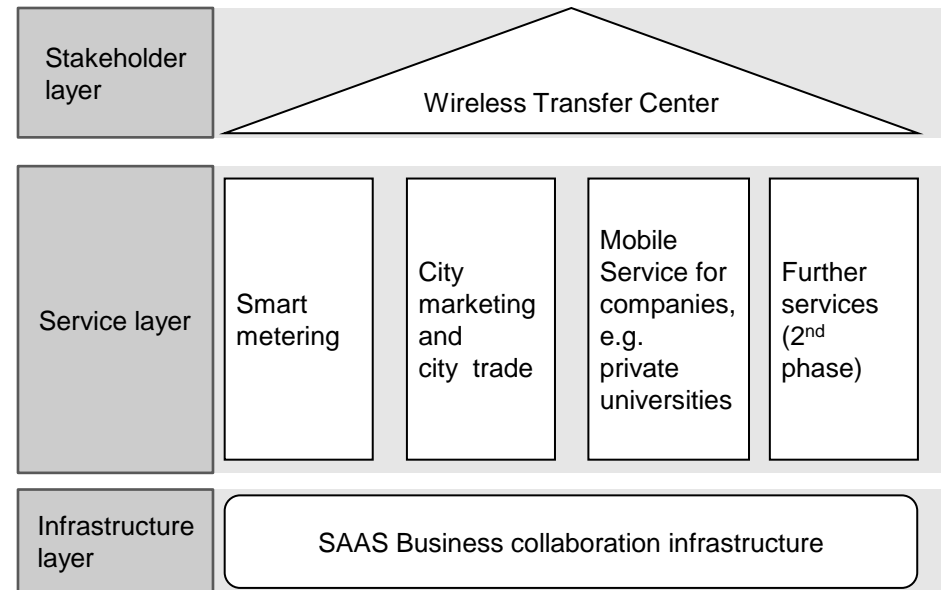
- Supported by European Regional Development Fund (ERDF)
- Multiple industrial partners and research groups in Berlin
- 3 years project timeline, two phases

- **Expected outcomes**

- Wireless Transfer Center Berlin
- Action and communication program
- Identification and evaluation of mobile Services
- User acceptance studies and prototypes for multiple application scenarios
- Model approach for future developments

- **Goals**

- Positioning Berlin as leading site
- Fostering innovation
- Collaboration with “Smarter Cities”
- Improve efficiency and effectiveness in each of the solution scenarios



Source: Winkler et al. “Wireless City Initiatives in Europe – Towards a Service-Oriented Approach”, 2009

A broad alliance of educational institutions and industrial partners

Wireless City Berlin Project – Project Partners

- Humboldt-Universität zu Berlin
- SRH Hochschule Berlin
- Beuth Hochschule für Technik Berlin
- Universität der Künste Berlin (UdK)
- Aucoteam GmbH
- Composed Services GmbH
- Digiate GmbH
- Electronic Business Forum
- Fraunhofer Institut für Zuverlässigkeit und Mikrointegration
- Institute of Electronic Business e.V.
- servtag GmbH
- Spree Hybrid & Kommunikationstechnik GmbH
- TelematicsPRO e.V.
- UMC Berlin – University of Management and Communication

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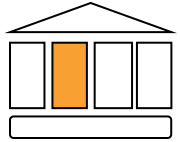
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Using wireless solutions to boost Berlin's strategic growth areas



City Marketing and City Trade

- **Tourism:** Deploying "Interaction Points" and mobile applications to provide recommendations and coupons for nearby shops, restaurants, museums, sights
- Interaction with urban screens and services
- Analysis which services are particularly demanded and which access technologies are mostly accepted

- **Creative Industries:** Designing an architecture for a city-wide advertising space that senses nearby activities and interacts with pedestrians using Wi-Fi, RFID or mobile phones
- Interaction with urban screens and services

- **Retail and Trade:** Deriving novel concepts of marketing and distribution
- Evaluating concepts with respect to end-user acceptance, economic viability, and practical feasibility, implementing selected scenarios as prototypes, re-evaluation under real conditions

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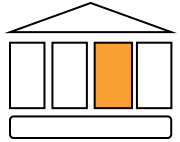
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Using wireless solutions to support universities' internal processes



Mobile Service for Companies e.g. private universities

- **Concept and requirements analysis:** usage of mobile services and web-based services for private universities
- **Definition and description of roles, functions and processes**
- **Identification and evaluation of suppliers for mobile Services** (Market analyses)
- **Technical integration and Usage phase**
- **Economical evaluation and user acceptance study** on the basis of tests, experiments as well as surveys in order to determine end-user acceptance, economic viability, and practical feasibility

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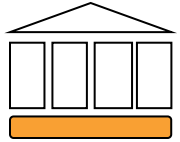
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Applying a service-oriented architecture to build a collaboration infrastructure for the Wireless Transfer Center Berlin (WTCB)



SAAS Business Collaboration Infrastructure

- **Development of Service-Oriented-Architectures with Software-as-a-Service solutions** for aggregated mobile services
- **Evaluation of flexible integration in given IT-landscapes**
- **Cost-benefit analysis**
- **Participation and acceptance model**
- **Identification and evaluation of high-level mobile services**
- **Evaluation** which services can be utilized in across multiple scenarios (e.g. billing and payment, user identification)

- **The results may assure long-term sustainability of the WTCB collaboration infrastructure by providing the future model for ongoing operations**



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- Future of mobile services in urban environment:
 - Transparency, Acceptance and Trust
- Wireless city initiatives in Europe
 - Co-Evolution and Collaboration
- Wireless City Berlin Project as a cluster of ‘service innovator’ initiatives
 - Transfer of best practices



Thank you for your attention!

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