

Panel 1 Service Platform and Network Infrastructure for Ubiquitous Services



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WWRF WG2 (Service Architecture)

Vice Chair

Questions introduced by Panel Chair

- (1) What functionalities are required for ubiquitous service platforms?
-  (2) What are the main technical challenges and obstacles of the platform?
-  (3) What are the requirements for underlying network infrastructure?
- (4) Will personalization play a major role for end user acceptance?
-  (5) What is the role of the mobile (=cellular) network operator in ubiquitous services?



- Major objectives
 - develop a consistent vision of the future Wireless World
 - generate, identify, and promote research and trends
 - identify and assess the potential of new technologies and trends
 - contribute to the definition of research programs
 - ease future standardization by harmonizing and disseminating views
- Scope
 - concentrate on the definition of research items
 - open to all actors
- Members
 - More than 160 members from Europe, Asia, America, Australia

WWRF Vision: Key Principles



- Users are **in control through intuitive interactions** with applications, services and devices
- Services and applications are **personalized, ambient-aware, and adaptive (I-centric)**
 - ubiquitous from the point of view of the user
- **Seamless services to users, groups of users, communities and machines** (autonomously communicating devices) irrespective of place and network and with agreed quality of service
- Users, application developers, service and content providers, network operators and manufacturers can **create efficiently and flexibly new services and business models** based on the component-based open architecture of the wireless world
- There is awareness of, and access to, appropriate levels of reliability, **security and trustworthiness**, in the wireless world

Service Platform: WWRF model

WIRELESS WORLD

RESEARCH FORUM



User Model & Appl. Scenarios

Ambient Awareness Personalization Adaptation

Service Bundling Service Control Service Discovery Service Creation Environment Monitoring Service Deployment Conflict Resolution

Application Support Layer
Service Execution Layer

Service Support Layer
Network Control & Management Layer
IP Transport Layer

Networks

Terminals

User centric functionalities and generic platform enablers

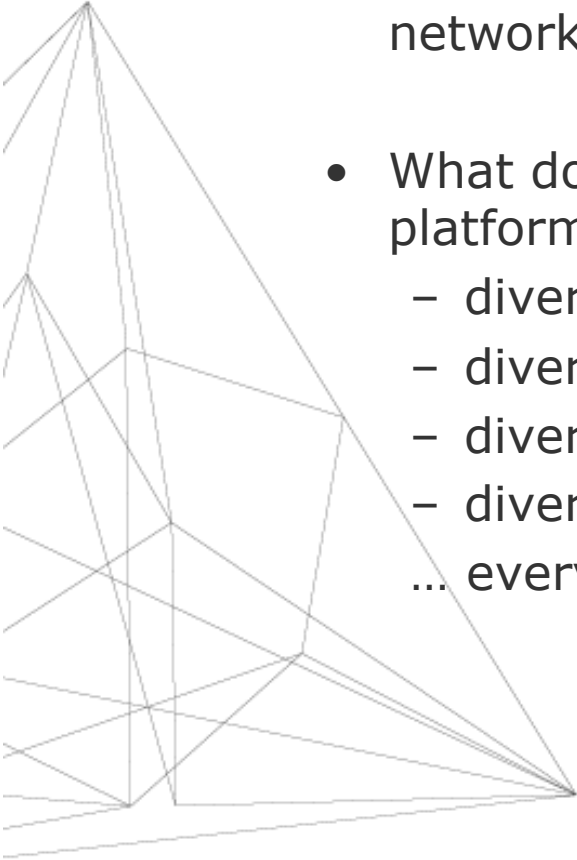
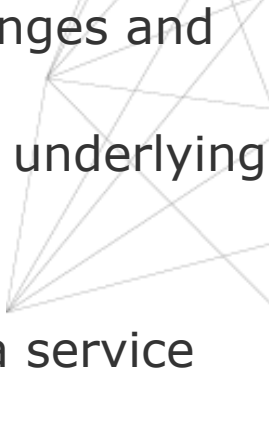
Service Platform

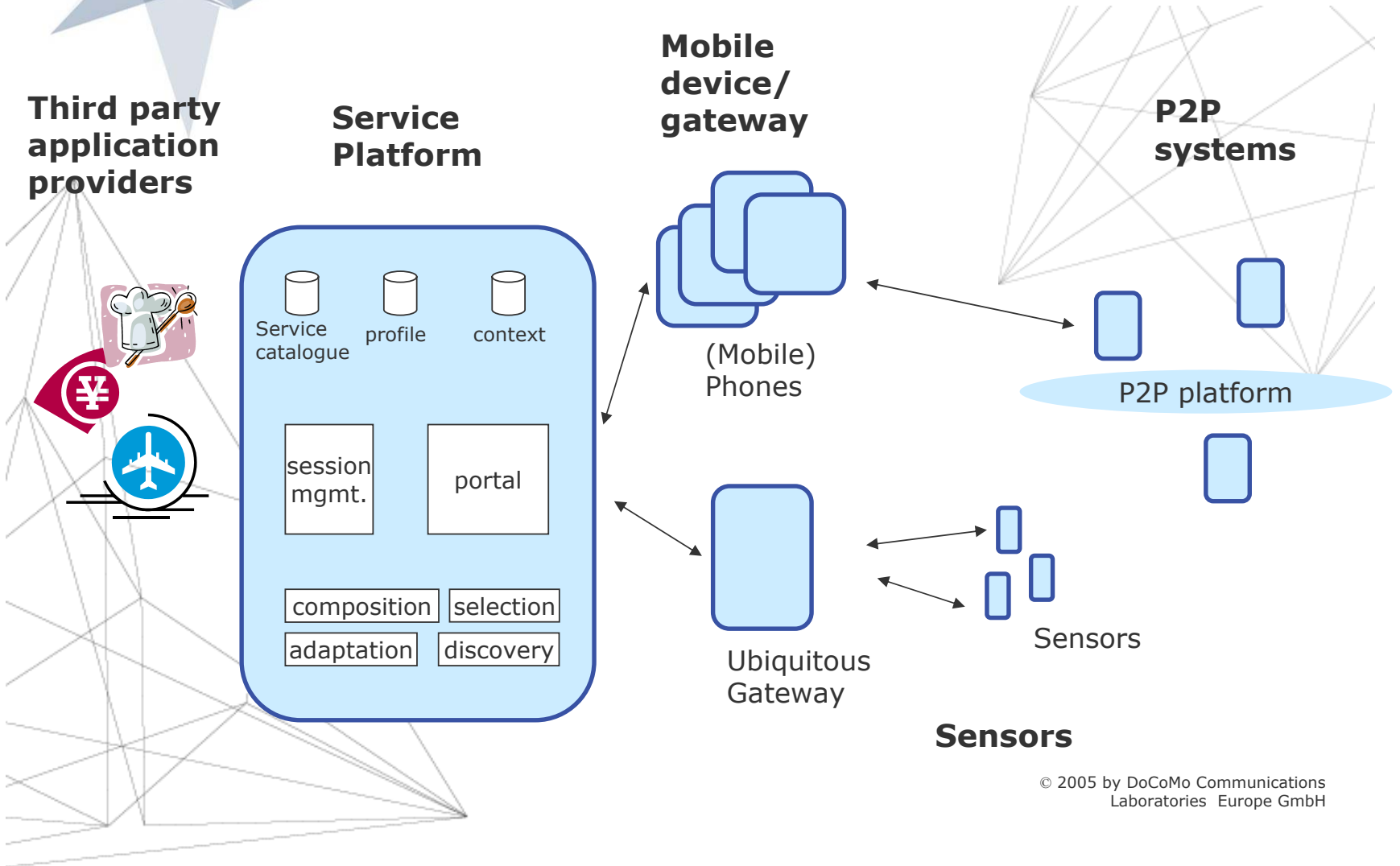
IP based Communication Subsystem

Wired or wireless Networks

Devices and Communication End Systems

Business Model

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- What are the main technical challenges and obstacles of a service platform?
 - And what are the requirements for underlying network infrastructure?
 - What does “Ubiquitous” mean for a service platform?
 - diverse devices
 - diverse services and service components
 - diverse service providers
 - diverse environments (context, situation)
 - ... everywhere a user can be



- **Ubiquitous service mobility**
 - Seamless access and usage across domains and devices -> session mobility
- **Ubiquitous services, i.e., with and without infrastructure**
 - Wireless Peer-to-Peer communication
 - Service composition (Web services?)
- **Ubiquitous gateway**
 - Bridging between ubiquitous environment and cellular

Example 1: Context-aware Session Mobility

- Transfer ongoing services between devices
- Dynamically discover available devices as well as their capabilities
- Supporting splitting session transfer over multiple devices



Called Party



Calling Party

Devices in Conf. Room



3. SIP Phone.....



Conference Room



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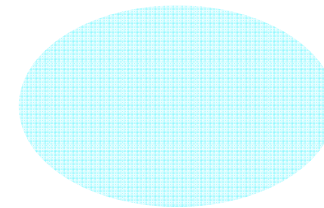
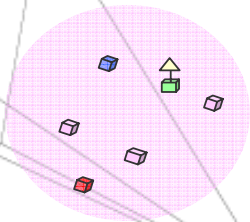
Example 2: Ubiquitous Gateway

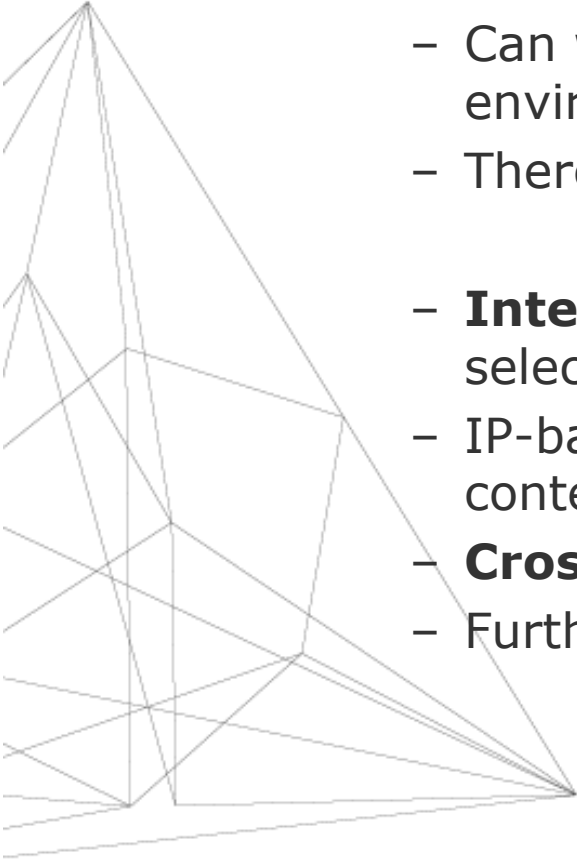
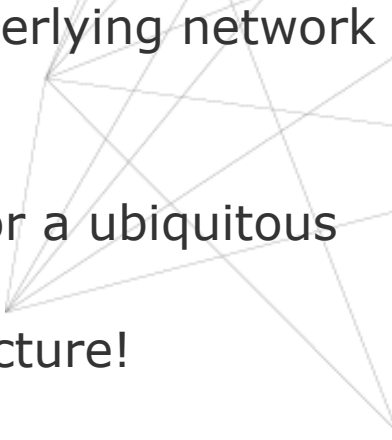
- **Ubiquitous Gateway**
 - Mediator between Cellular Network and Sensor Networks
 - Interoperable with heterogeneous SNs
- **Two service provisioning modes**
 - Access to remote services and information from cellular network services
 - Access to services in the cellular network from sensor networks

Sensor Networks

Gateway

Cellular Network



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- What are the requirements for underlying network infrastructure?
 - Can we set any requirements for a ubiquitous environment?
 - There is no ubiquitous infrastructure!
 - **Interoperability** -> gateways, gateway selection, addressing
 - IP-based -> **routing**: ad hoc, location aware, context aware, QoS aware
 - **Cross-layer** aware
 - Further: security and privacy

- What is the role of the mobile (=cellular) network operator in ubiquitous services?
- Trusted party orchestrator in a multi-stakeholder environment
 - Billing
 - Service aggregation
 - Negotiation and contract enforcement
- I-centric
 - Simplicity
 - Provide context and personal information
 - Adaptation
- Key stakeholder in the service provisioning chain