



Network Composition – a new way of creating a dynamic networks business landscape

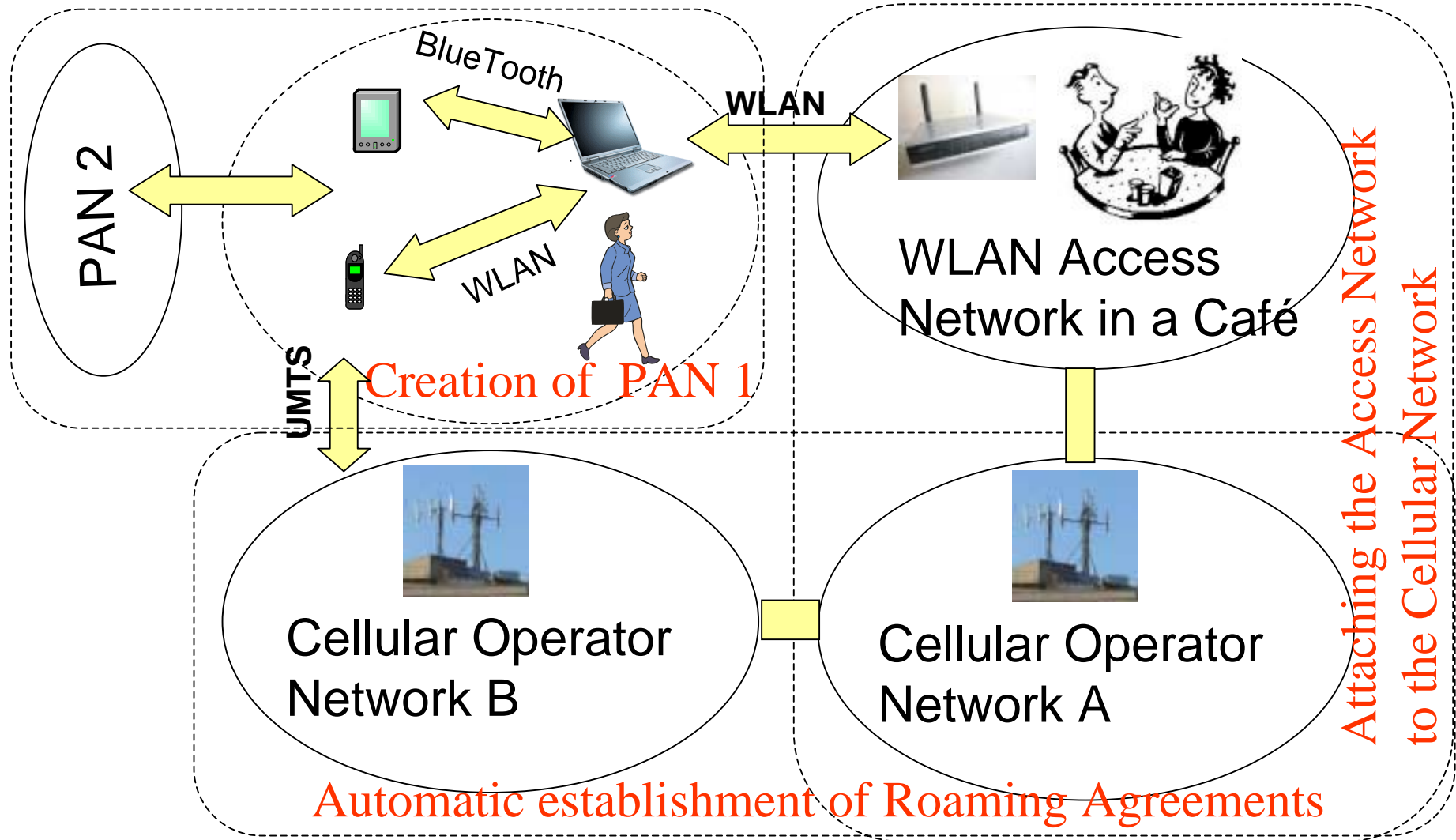
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Why Composition?





Motivation



- Networks become dynamic regarding structure and constituents
 - ⇒ network configuration must become flexible and autonomous
- ⇒ Generic plug&play method for creating, extending and merging networks: **Composition**
 - automatic configuration of joint control plane (ACS)
 - generic method facilitated by modular control plane
- Difference between end-system and network blurs
 - Users own networks that they attach to other networks



Different Types of Composition



❖ Network Integration

- All physical and logical resources belong to the „composed“ network
- Example: creation of a PAN

❖ Control Sharing

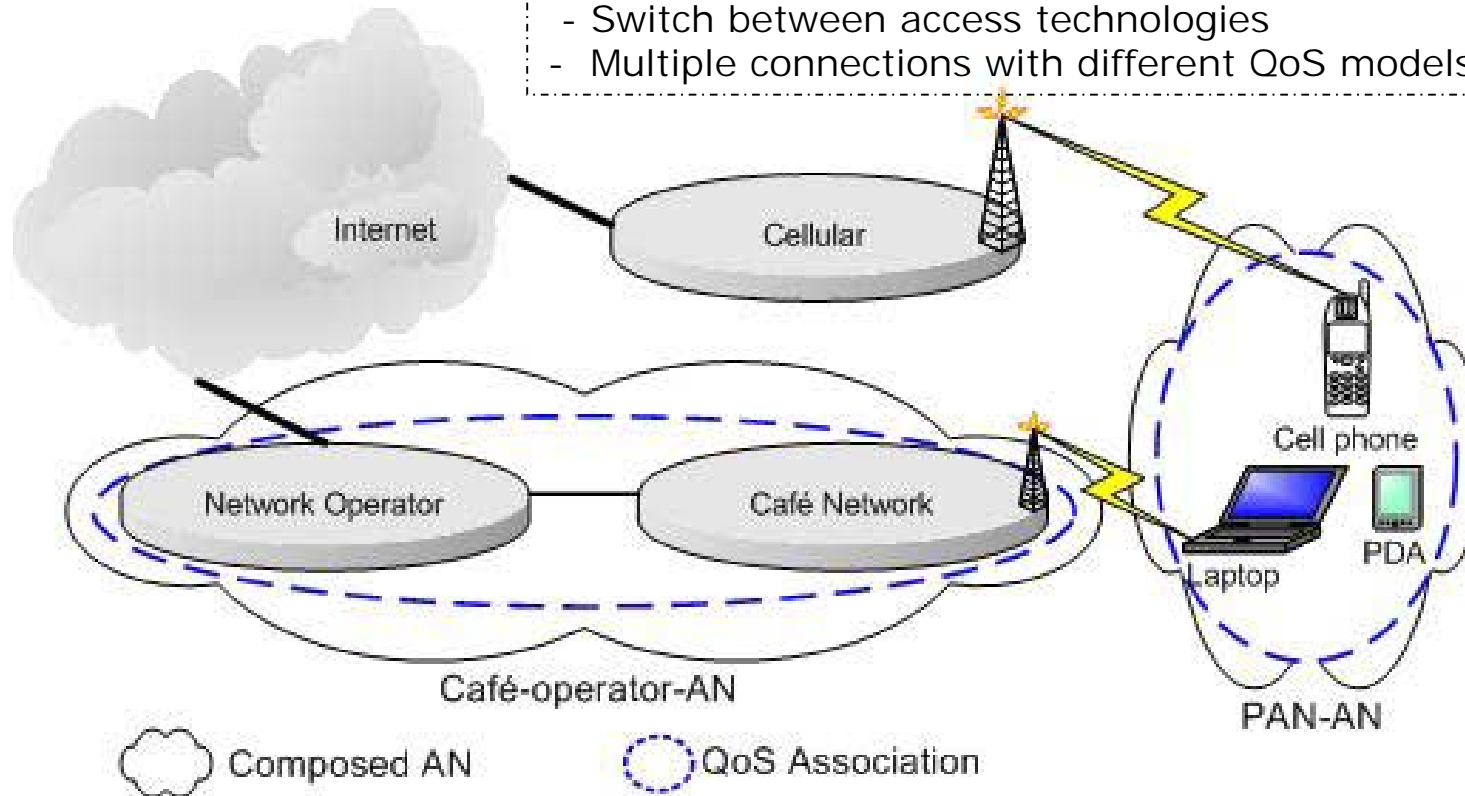
- Part of logical and physical resources of the involved networks belong to the „composed“ network according to the Composition Agreement
- Example: Attaching a WLAN Access Network to a Core Network

❖ Network Interworking

- Cooperation according to the Composition Agreement but no shared control
- Example: Dynamic establishment of Roaming Agreements

PAN chooses suitable operator:

- Switch between access technologies
- Multiple connections with different QoS models



plug-and-play adding of devices into PAN:

- address conflict resolution
- joint management of interfaces (Which interface to use - when?)
- adopt QoS management already existing in PAN
- delegate mobility control

Café - Operator network:

- Authentication and authorization delegated to Network Operator
- Automatic establishment and dynamic adaptation of SLS
- Joint QoS and mobility management



Migration to Composition



- ❖ **Must enable easy migration to composition**
- ❖ **Principles for migration-friendly design**
 - **Integrate existing technology**
 - **Enable step-wise migration**
 - **All parties must see an obvious benefit in each step**
 - **Minimize (control) feature interaction**



Summary of Benefits



Network Composition of Ambient Networks

- ❖ Offers a framework for network cooperation
- ❖ Can be used for many scenarios
- ⇒ **Unified procedure for control-plane interaction of networks**

Network Composition facilitates

- ❖ Plug & play network interaction
- ❖ Dynamic negotiation of network parameters
- ❖ More flexible network scenarios

Users: More flexibility and reachability across network boundaries with minimal human interaction

Providers: Automatic and dynamic integration of heterogeneous technologies