



Media Delivery in Future Wireless Systems

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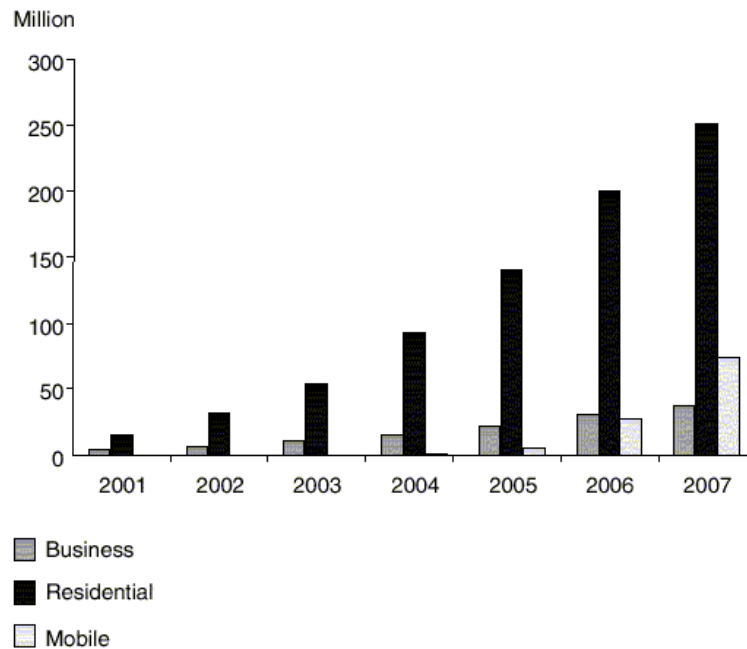
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Motivation

Future networks will be *multimedia*

Multimedia Delivery

Will be a leading service in the future mobile Internet



Number of Multimedia Streaming End-points World-Wide

Source: Ovum, Streaming Media: Commercial Opportunities, Forecast, 2002

Motivation

Future networks will be *heterogeneous*

Network Access Technologies

Modem, ISDN, xDSL, Ethernet, ATM, GSM/GPRS, UMTS, WLAN, etc.
Different characteristics for loss rate, bandwidth, etc.



Devices

Varying Screen Sizes, Processors, Memory, Power Supplies, Interfaces, etc.



Applications

Interactive/non-interactive, realtime/non-realtime, unicast/multicast, adaptive/non-adaptive
E.g. IP Telephony needs low delay, Video-on-Demand needs bandwidth

Users

Different technology background and QoS requirements



‘Normal User’

**likes to have an
‘on/off’ button**



‘Cyborg’

**wants to specify
the importance of
certain parameters**

Motivation

Future networks will be *Mobile*



☐ Terminal Mobility

support physically moving the device and eventually connecting to a foreign network

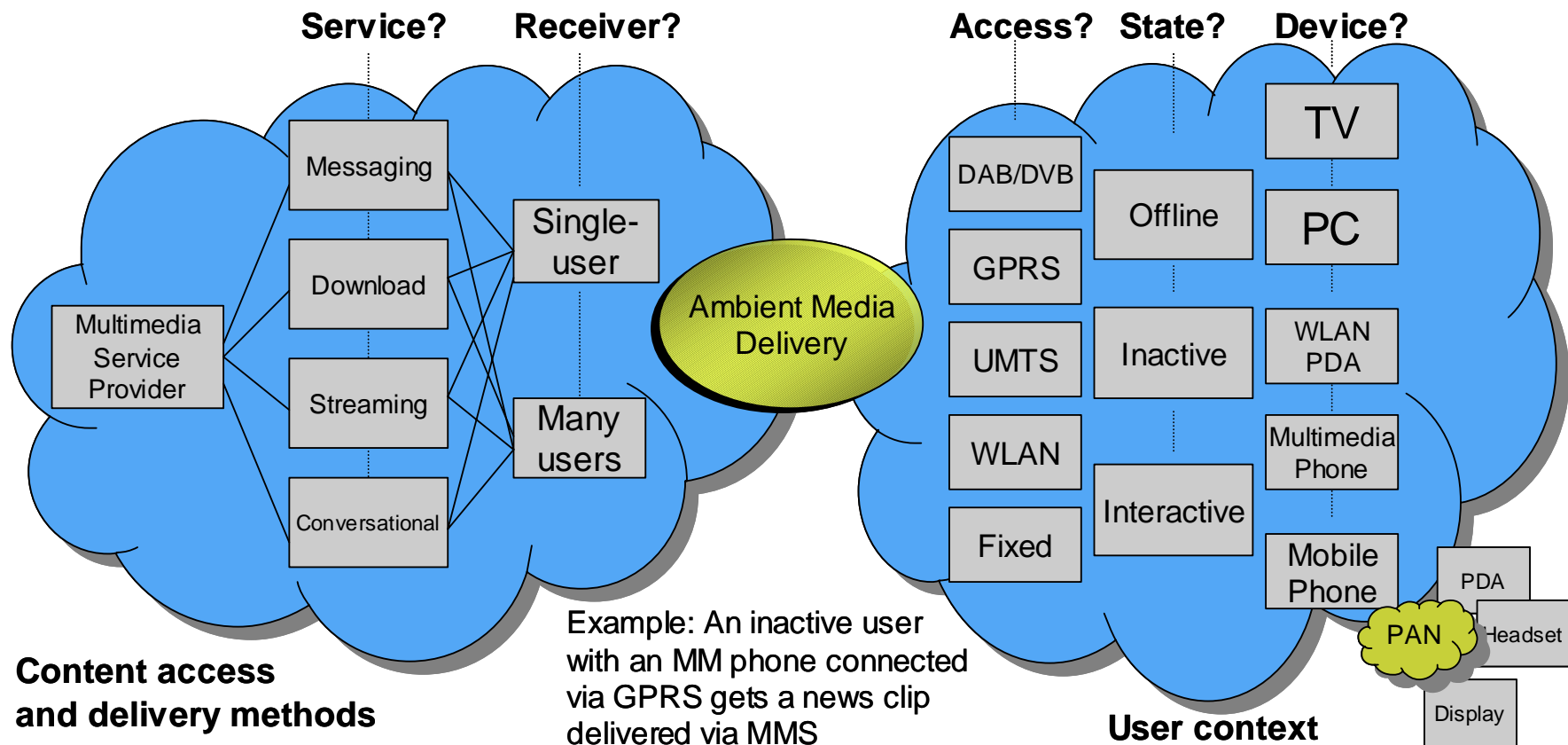
☐ User Mobility

supports to change the device and to have access on personal set of services in foreign networks

☐ Session Mobility

supports to maintain ongoing multimedia sessions during user and terminal movements

The Challenge



The Challenge

Ambient Multimedia Delivery Network

- Hiding the complexity of the underlying heterogeneous transport networks and end-device environments to multimedia service providers and operators.
- Enabling efficient and high-quality multimedia delivery to large heterogeneous user groups.
- Providing common architectural support of communication- as well as consumption-oriented services.
- Access and terminal transparency for providers of services and content
- Support of multi-provider, multi-domain scenarios using different business models
- Control of media delivery needs to be possible not only for the recipients but also for the content providers

The Challenge

Ambient Multimedia Routing Strategies

- Selecting optimal path(s) through the 'wireless world' regarding resources and preferences from users and operators.
- Disjoint path delivery for individual media streams
- Optimal selection of delivery means (broadcast, multicast, unicast, anycast)

Ambient Multimedia Adaptation Strategies

- Optimizing the transmission parameters during a running session regarding resources and preferences of content providers and recipients.
- Optimization of the mix of available adaptation means
 - Codec/Content related
 - Protocol related
- Support of adaptive network nodes and adaptive end-systems

Expected Results

Designing an Ambient Media Delivery Network supporting

- ❑ a concept for abstracting network and content characteristics
- ❑ the provision of ‚perfect‘ mix of media adaptation means considering the imposed quality impacts with objective and subjective criteria
- ❑ specifications of protocols and APIs for
 - internal communication purpose
 - information exchange with the network and application/service layer
- ❑ the description and evaluation of routing strategies as well as adaptation strategies within the media delivery system
- ❑ communication- as well as consumption-oriented services in a common manner
- ❑ efficient use of resources independent of concentration of users both in time and space
- ❑ multi-provider, multi-domain scenarios using different business models
- ❑ configuration of media delivery by providers and recipients of content