

Business Considerations for Migration to IMT-2000

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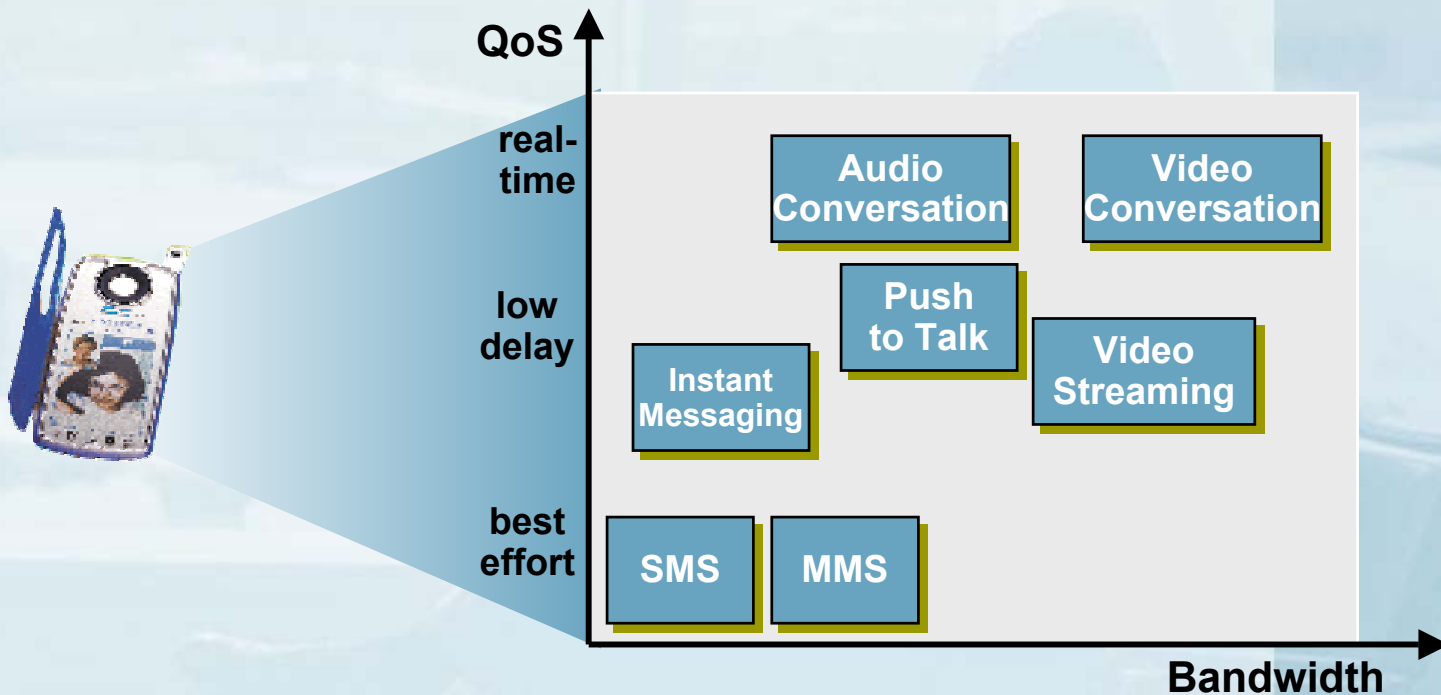
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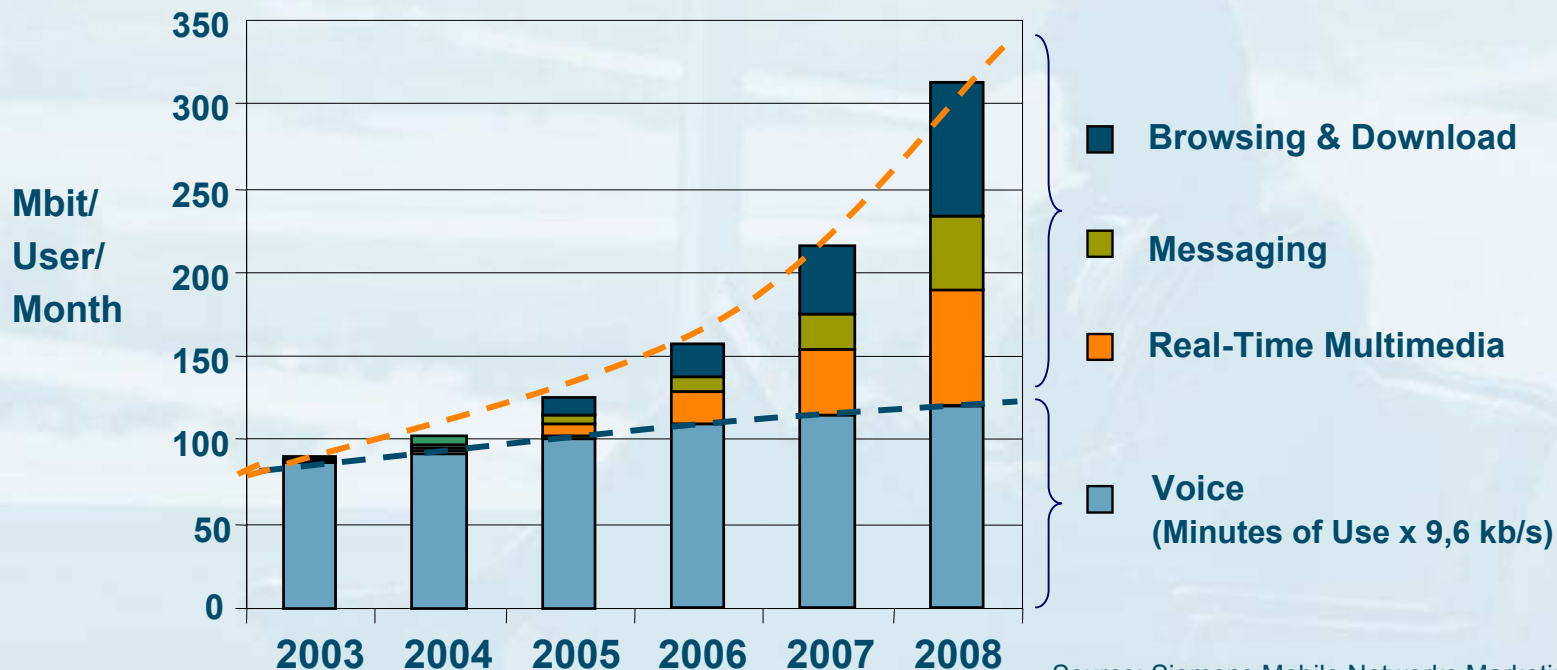
International Affairs

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- **The Services Delivery Challenge**
- **Services Infrastructure**
- **IMS Mechanisms**
- **Operators Choice**
- **Conclusions**

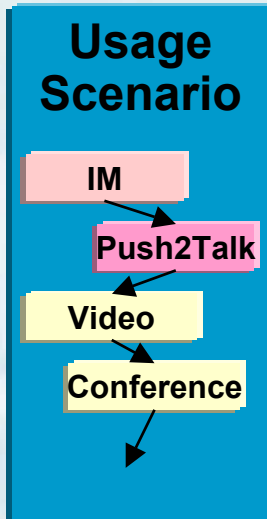


For increased ARPU beyond GSM/GPRS, UMTS (IMT-2000) service scenarios include any combination of applications / services presented seamlessly to the user



Source: Siemens Mobile Networks Marketing, 2003
Note: Figures include consumer and enterprise traffic

- Operators need to get ready for an increasing mixture of services over the PS-Domain
- Real-time and peer-to-peer services are part of the scenarios



UMTS (IMT- 2000) communication scenarios provide **any combination of multimedia services**

Examples are:

- text and picture messaging
- voice and video conversation
- streaming video
- Voice, video and data conferencing

- Services of different categories should be **easy to use** and **presented seamlessly to the user**



To increase (and retain) the subscriber base operators are facing the following challenges:

Enable instant deployment and upgrade of services to stay competitive

Run on a large variety of multi-vendor devices

- Mobile terminals
- PDAs
- PCs, Laptops



Enable seamless service access for the roaming user (VHE)

Allow inter-working of services with other operators

Low per-service CAPEX and OPEX

to earn money on low priced services as well

- Enable **smooth integration of different services** from a user perspective
- **Expand the value chain** including higher value services
- **Build on existing MNO assets** (authentication, charging,...) to create a competitive advantage in service deployments
- Enable access to services from a **large device base**
- **Flexible concept** to include 3rd party services
- Keep **CAPEX and OPEX low** while deploying multiple new services

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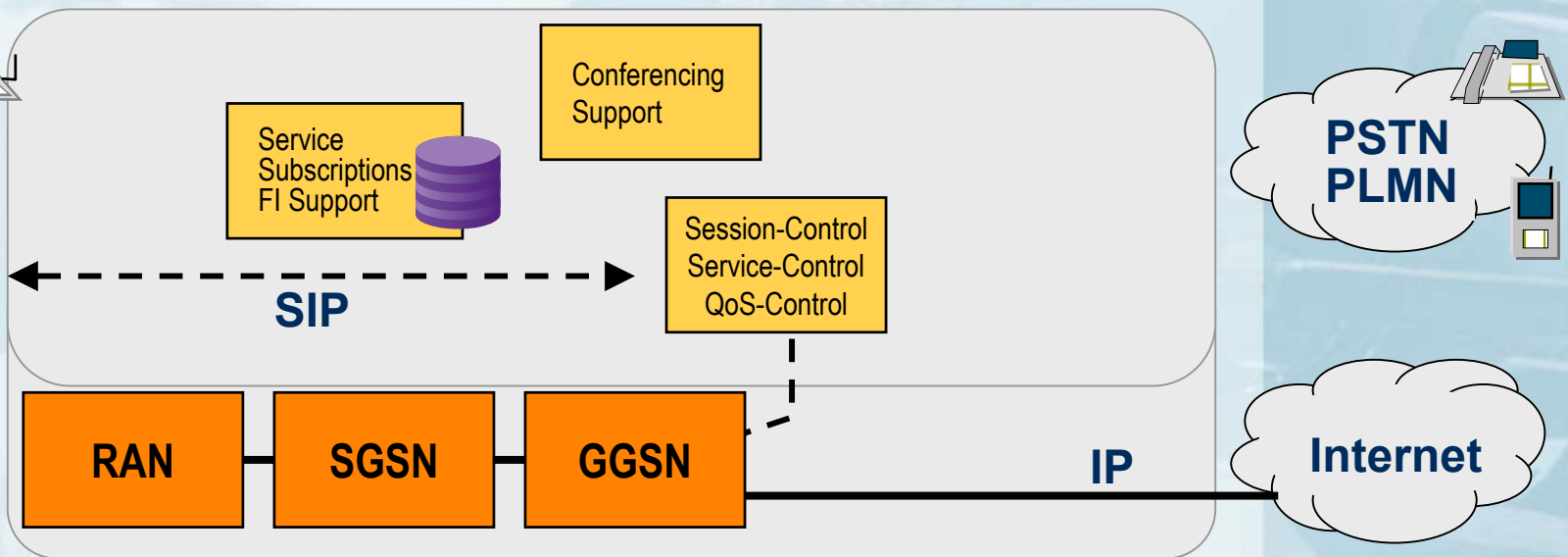
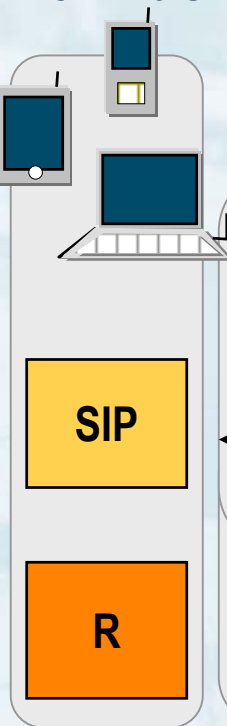
The PS Domain provides connectivity to mobile services based on IP



Introducing multimedia and peer-to-peer services into the mobile PS-domain requires new mechanisms

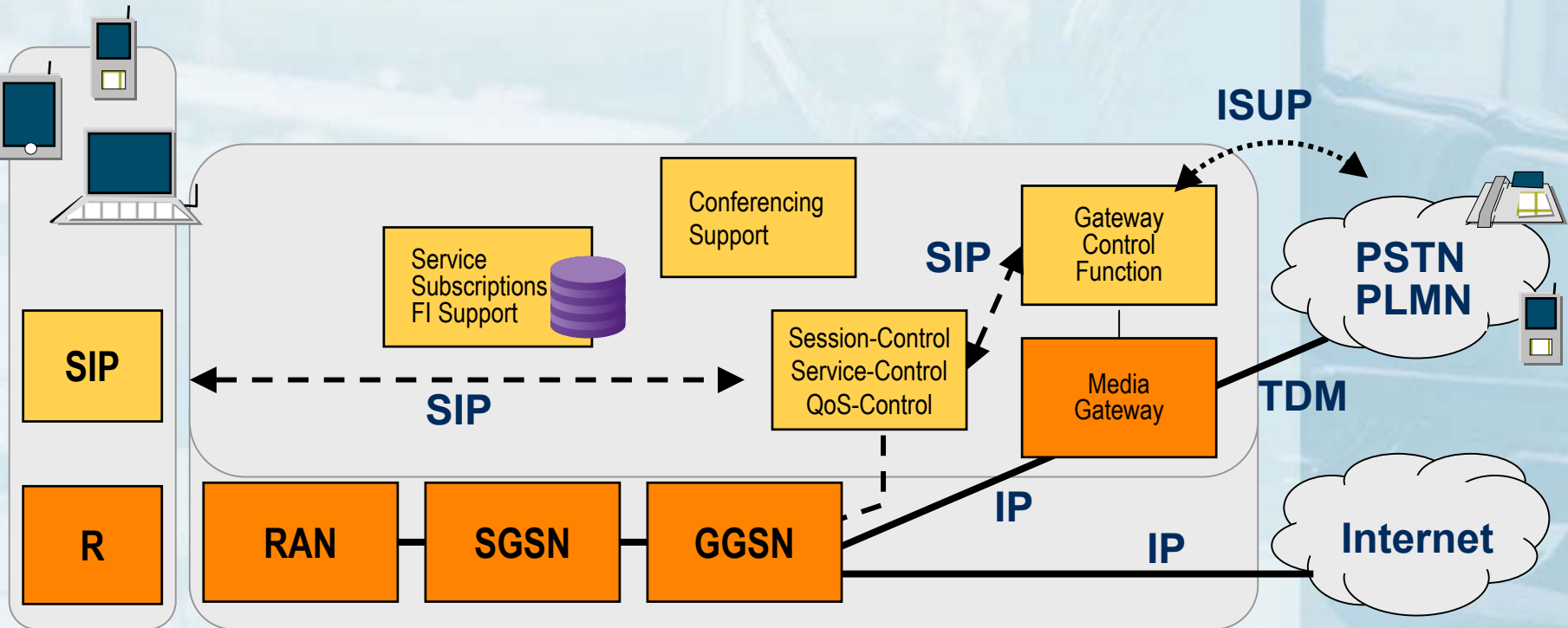
- Using the SIP Session Control is the industry trend
- Basic service-support functions are required (e.g. Session- / Service- / QoS-Control, Authentication, Feature Interaction, Conferencing Support)

SIP-enabled
Terminals



- Inter-working with PSTN / CS-voice services require a media gateway and a corresponding control function

SIP-enabled
Terminals



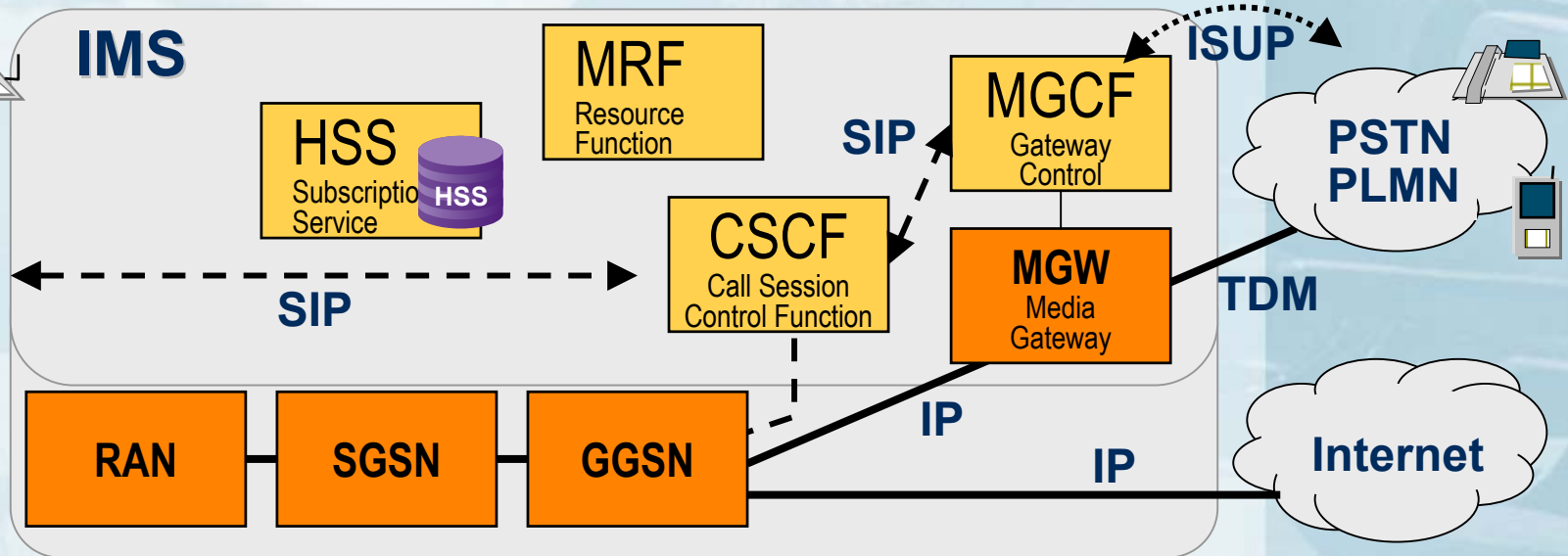
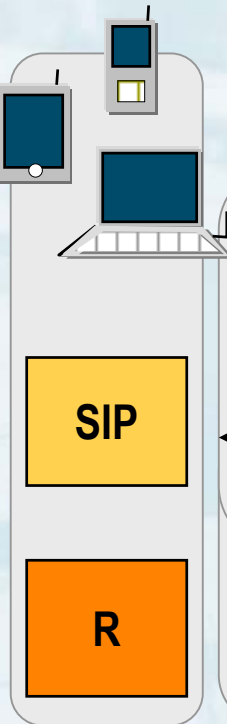
The “IP Multimedia Subsystem” (IMS) standardized by 3GPP provides the required service support functions



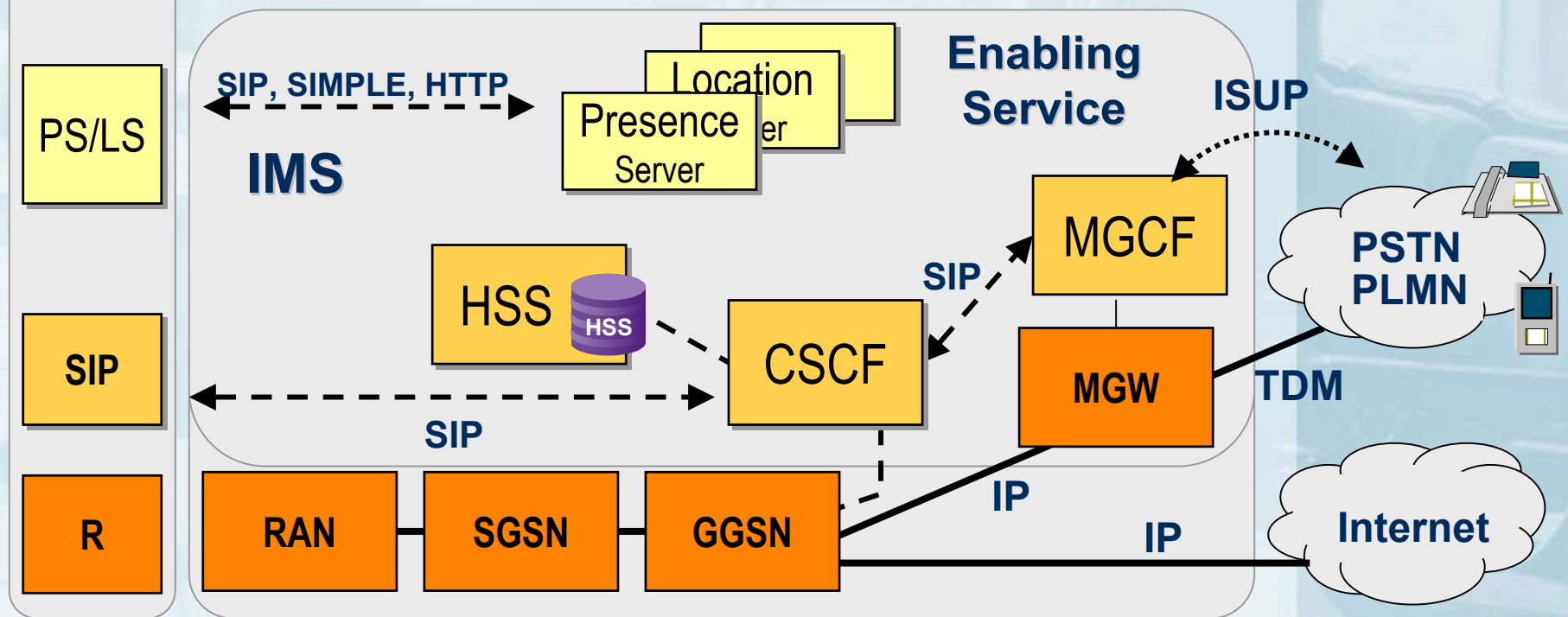
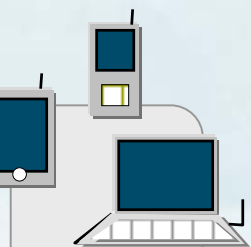
The resulting benefits for the operator are:

- service support functions are implemented once and utilized by many applications, thus
- reducing implementation time and effort for the applications
- the standard enables multi-vendor environment
- standardized future proof architecture

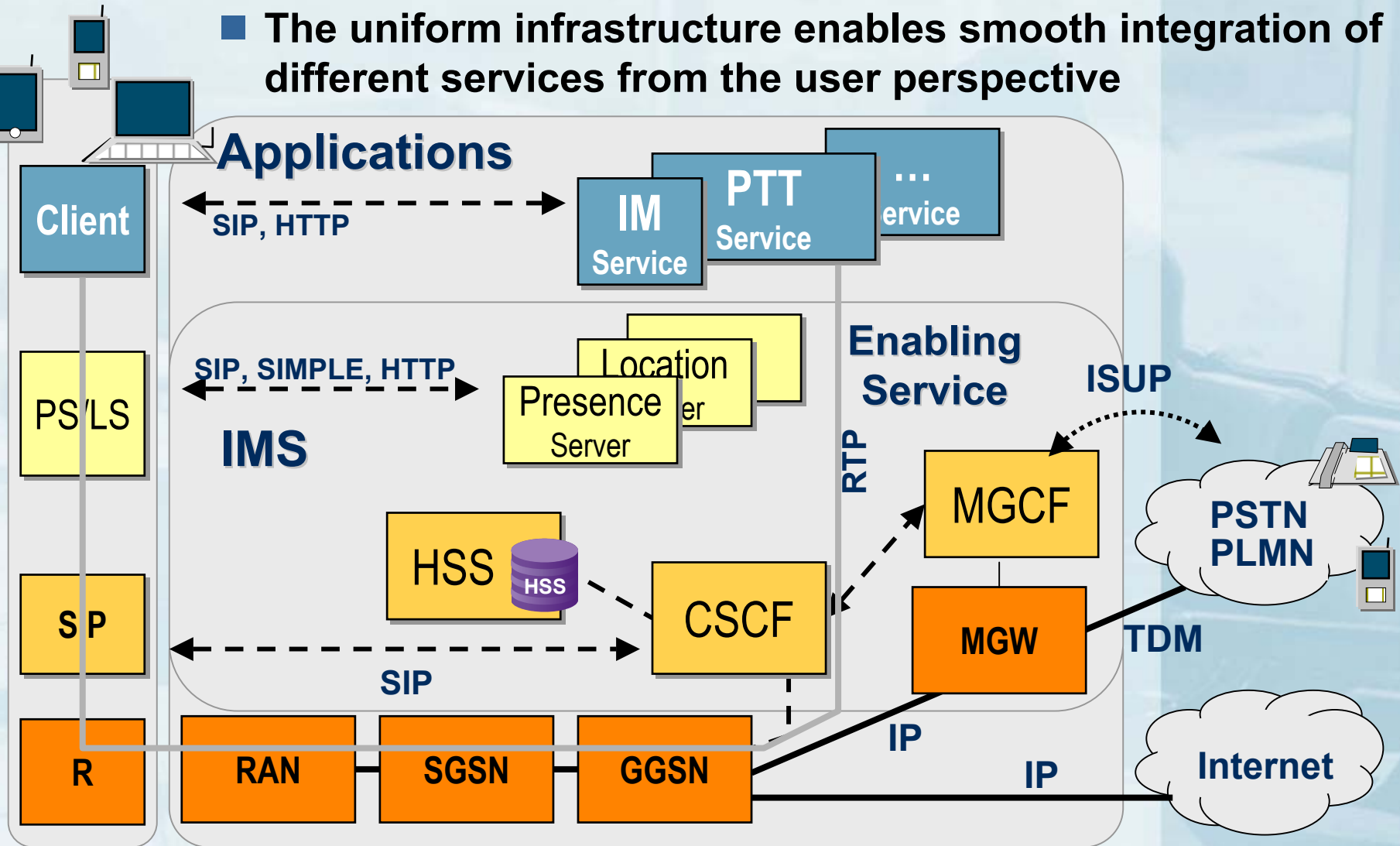
SIP-enabled
Terminals



- Further **Enabling Services** added to the infrastructure serve as advanced building blocks for mobile applications
- Scenarios might include the use of different protocols (SIP, http, ...)



- The uniform infrastructure enables smooth integration of different services from the user perspective



- Enable **smooth evolution** from existing base of **GSM/GPRS to UMTS/IMT-2000** (W-CDMA, TD-SCDMA, EDGE/GERAN)
- **Support multi-vendor environment (open interfaces)**
- **Inter-working with CS fixed and mobile networks**
- **Future proof architecture with SIP protocol**
- **Flexible concept to include 3rd party services**
- **Use proven GSM evolved mobility management**

- **IMS is an essential part of the 3GPP Release 5 mobile network specifications, approved in 2002**
- **3GPP Release 5 is an ITU IMT-2000 family member, described by ITU-T Rec. Q.1741.3 which has been consented for approval by ITU-T SSG in June 2003**
- **Recommendation Q.1741.3 specifies IMS in terms of**
 - **the 3GPP network architecture, Core Network entities and interfaces supporting IMS**
 - **Stage 1, 2, 3 specifications, including protocol elements, charging, security for IMS**
- **Hence IMS is an existing ITU-T standard already**

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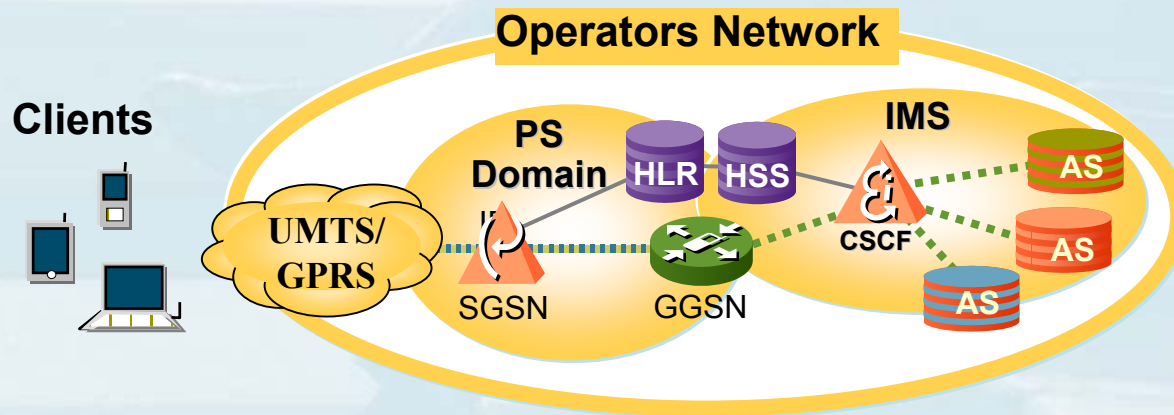
“Single Sign On” or IMS-based Services

IMS subscribers are authenticated only once

The CSCF invokes the Application Server (AS) only after the successful subscriber authentication

Application Servers (AS) do not have to authenticate the subscriber again

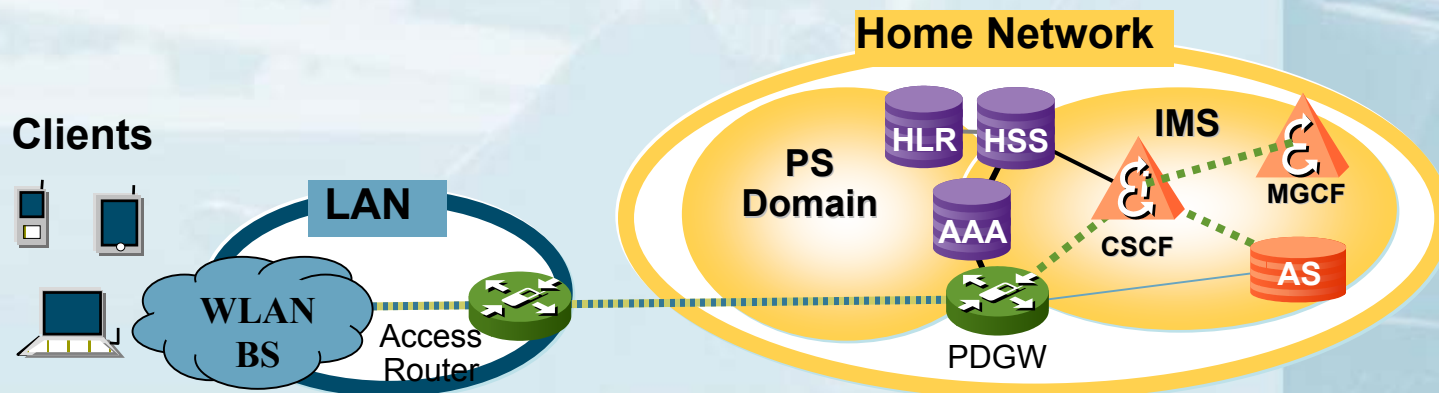
The standardized SIM-based user authentication method ensures a high security level and is independent of the underlying access network



IMS based services can be offered to users through different access networks (e.g. GPRS, UMTS, EDGE, WLAN, Fixed Network)

WLAN is one of the possible mobile access methods to IMS services (e.g. in hotels, airports or from home)

Peer to peer voice and video service control is performed by the IMS based on the same feature set. This is independent of the underlying transport network

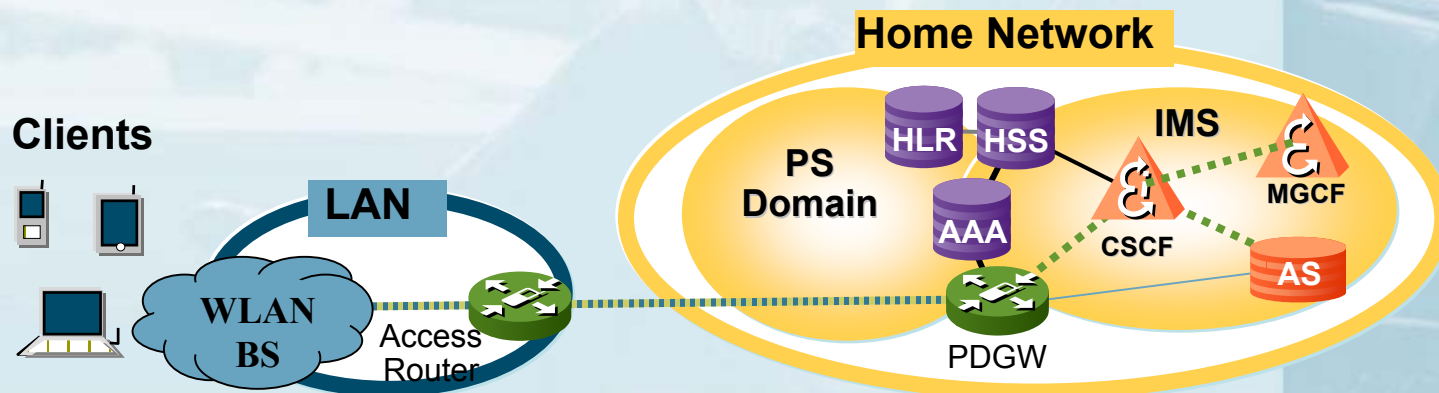


The Packet Data Gateway (PDGW) supports VPN (IPsec) and the authentication via AAA/HSS

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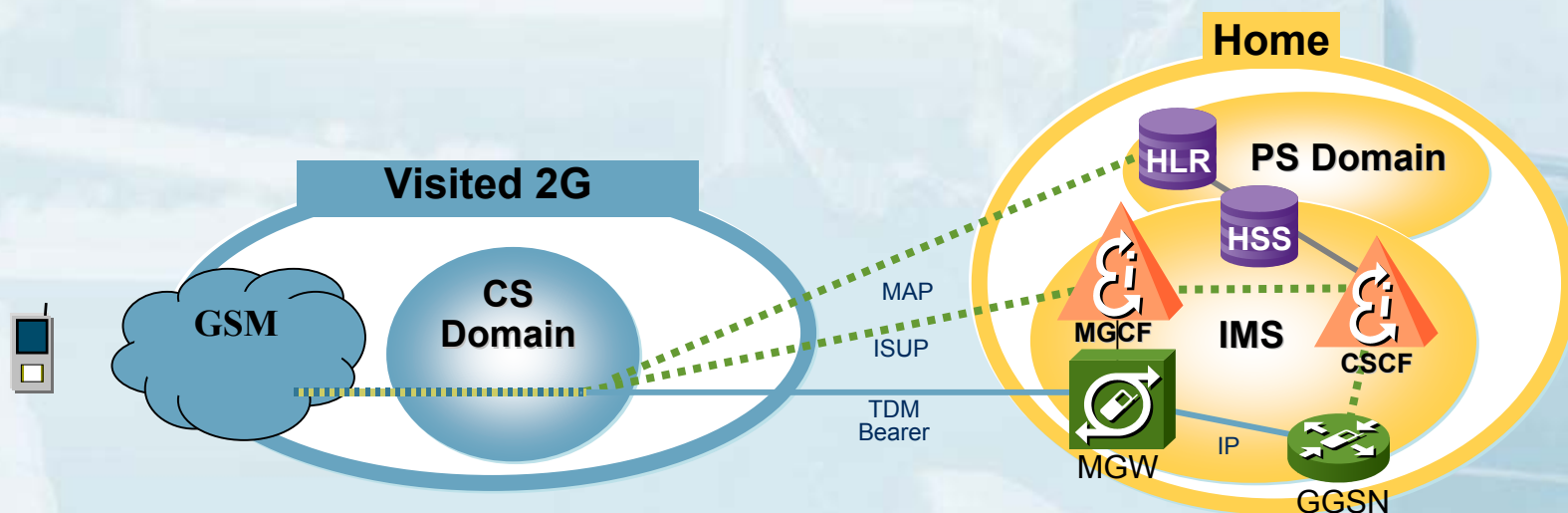
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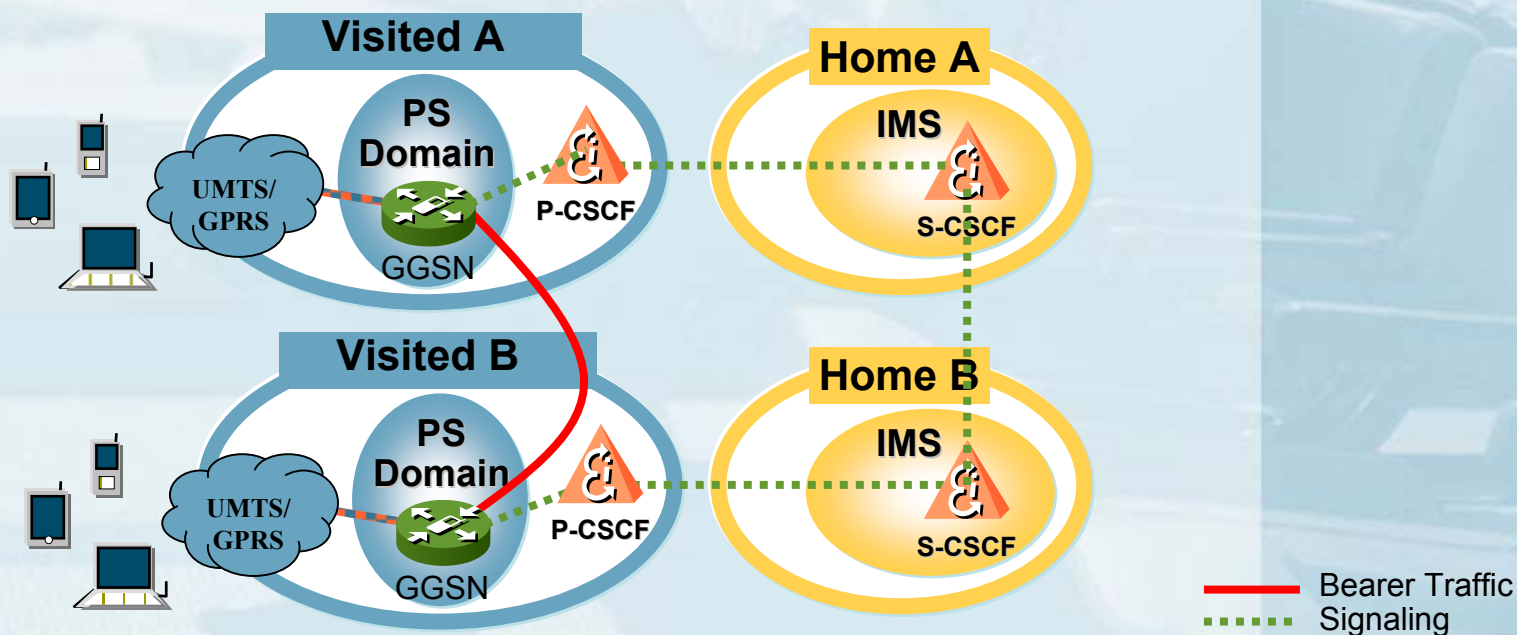
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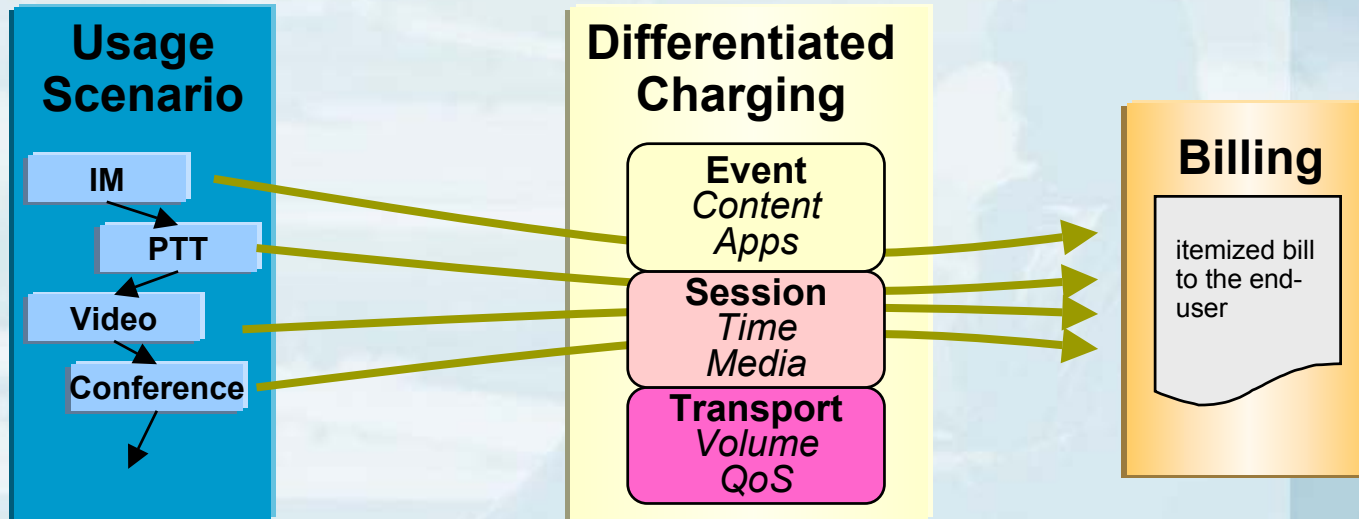
- “CS Domain Roaming” ensures the availability of voice services for IMS subscribers when UTRAN/PS-Domain coverage is not available
- Terminating Services can still be executed in the IMS before the call is forwarded to the IMS subscriber who is roaming in the visited network



- This concept supports the phased introduction of UTRAN/PS-Domain/IMS as a unified network infrastructure for voice and data services since full UTRAN/PS-domain coverage does not have to be available from the beginning

- The 3GPP standard includes IMS roaming
- IMS roaming enables optimised routing of IMS bearer traffic (e.g. peer to peer voice traffic routed directly between the visited networks)
- Optimised Routing leads to OPEX savings
- The visited MNO (hosting the P-CSCF) is able to offer local services to roaming IMS subscribers





MS enables standard charging methods to support differentiated billing (volume, event, session and any combination)

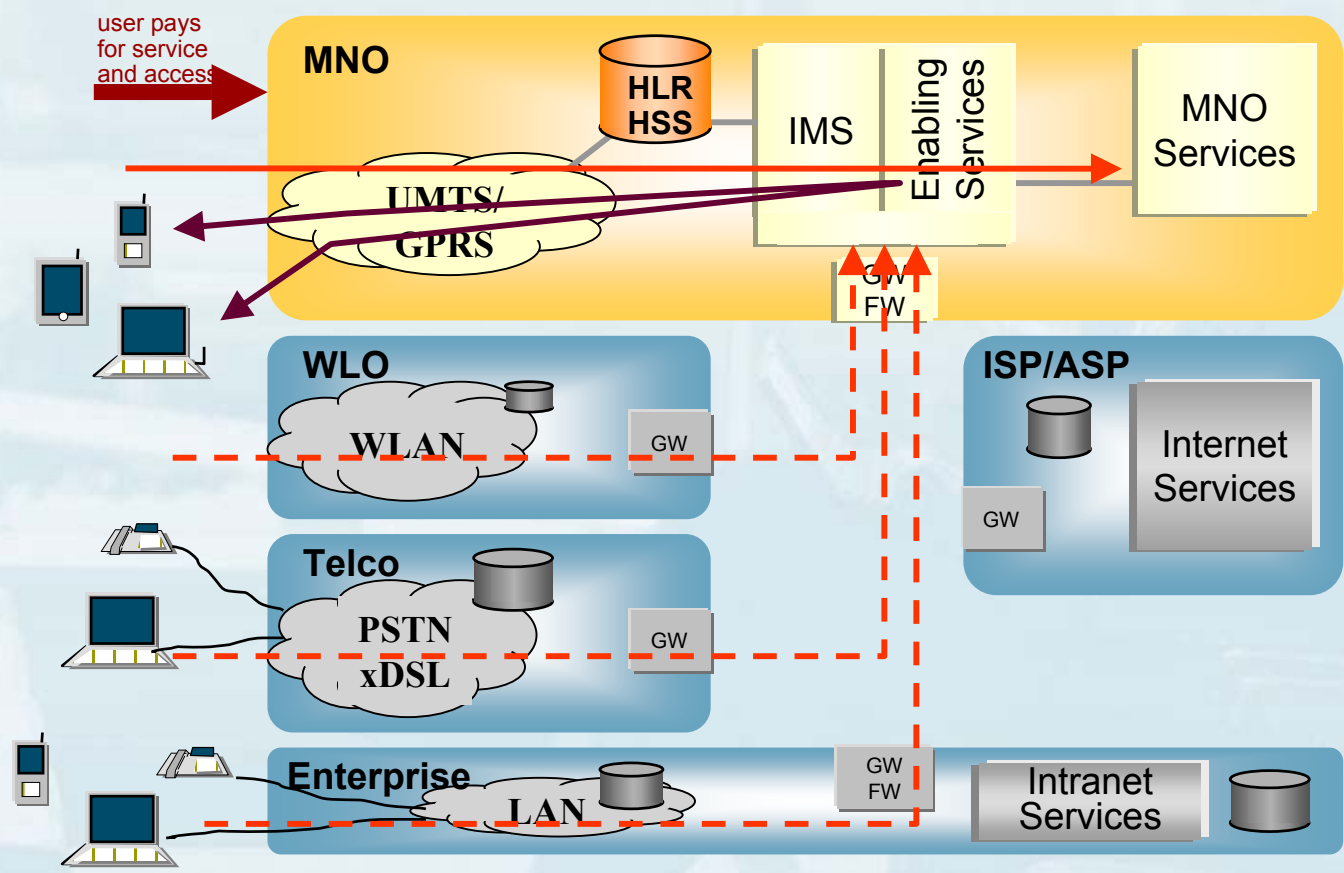
Differentiated billing for different types of services allow competitive billing strategies

- IMS enables the operator to build up new **IP-based mobile services** and applications under his control
- IMS provides the capability to offer **any mixture of peer to peer real-time and non-real-time services** to increase ARPU and reduce churn rate
- The IMS based highly scalable common service control infrastructure helps the operator to keep **OPEX low** while deploying new services rapidly
- Using an IP-transport network supports the **fix/mobile convergence** of those services by enabling access over any network
- Faster implementation of applications by re-using IMS service support functions leads to **CAPEX savings**
- IMS service support functions provide **value-add**

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Choice of Business Model #1

“Service completely hosted by MNO”



End to End service delivery by MNO

Alternative services access possible

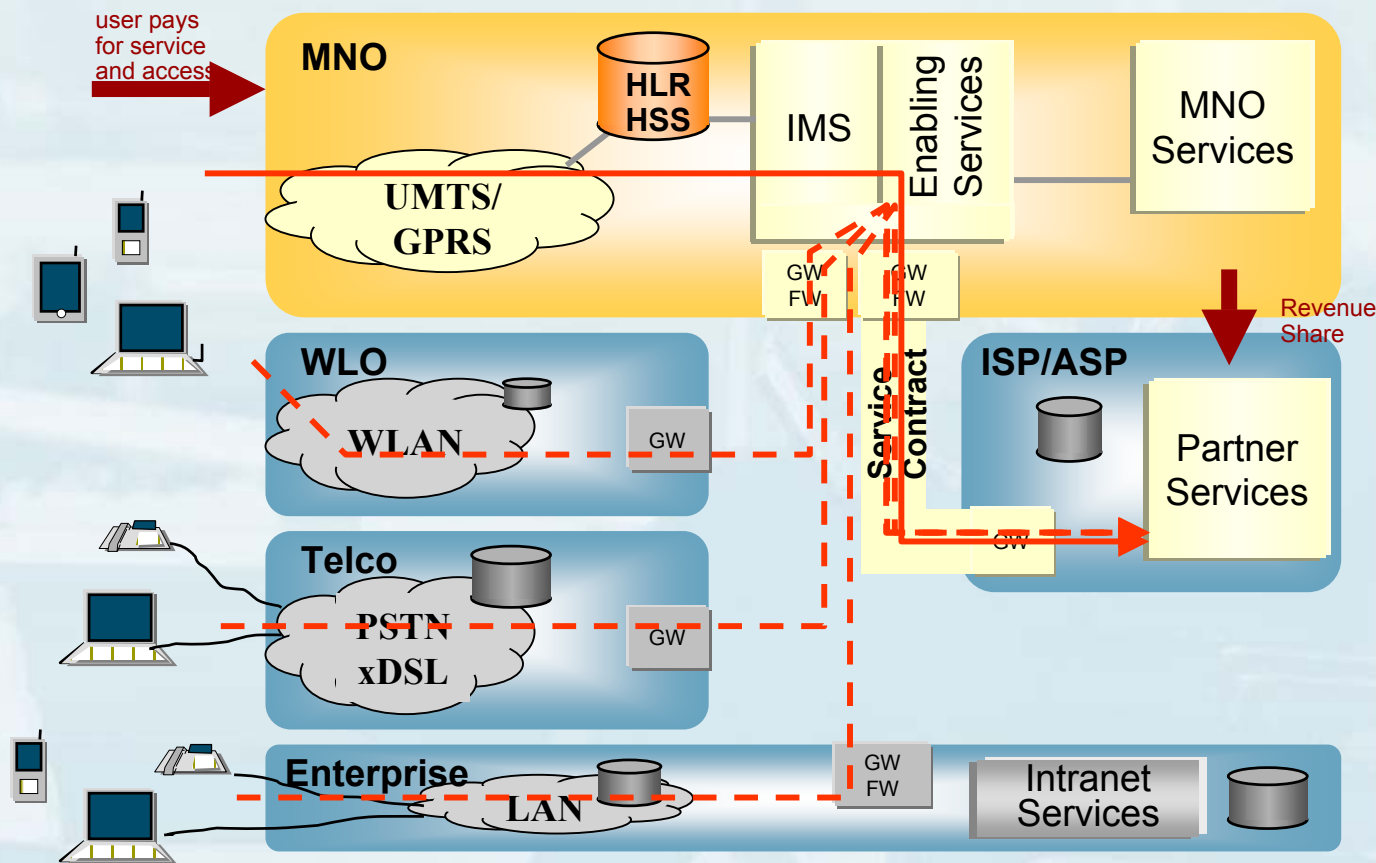
— Peer to Peer
- - - Service access
- - - Alternative Access

GW Gateway
FW Firewall

The MNO is able to expand the value chain including higher value services

Choice of Business Model #2

'MNO provides services with partners'



User authentication and charging by MNO

Alternative services access possible

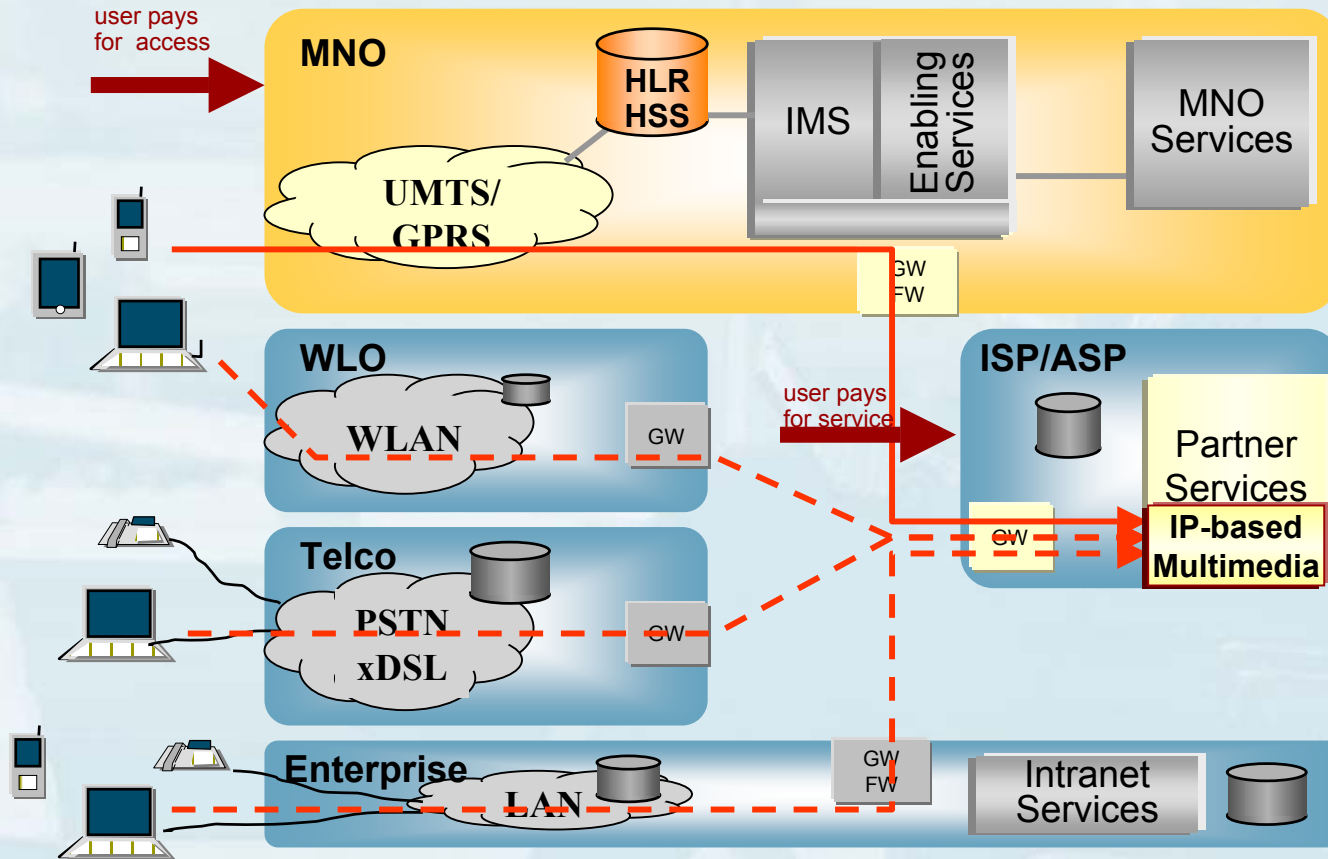
Peer to Peer
Service access
Alternative Access

GW Gateway
FW Firewall

The MNO is able to maintain full business relationship to the user while including 3rd party services in his portfolio

Choice of Business Model #3

'MNO provides access only'



Access business separated from services business

Operator provides access to the Internet allowing mobile customers to choose from an (competing) services in the web

- Peer to Peer
- Service access
- Alternative Access
- Gateway
- Firewall

The MNO provides access only ("Bit Pipe")

IMS

Best practice

Do we want to use **standardized** components?

Do we want to provide these services on a **homogeneous infrastructure**?

Do we want to **control** the new services beyond providing the bit-pipe?

MNO's choice of business model

Do we want to **mix service categories** (conversational, streaming, messaging) for **multi-modal** communication?

New MNO business opportunities

Do we want to deploy IP based **real-time** and **non-real-time** multimedia services?

Single infrastructure reduces OPEX

- Single type of interfaces to Admin and Billing
- Central subscriber data base

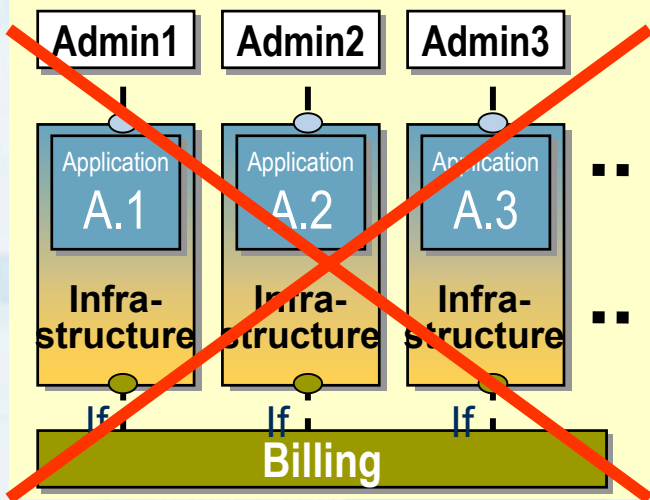
Single infrastructure reduces CAPEX in the long term

- less effort to implement
- less effort to adapt to existing components

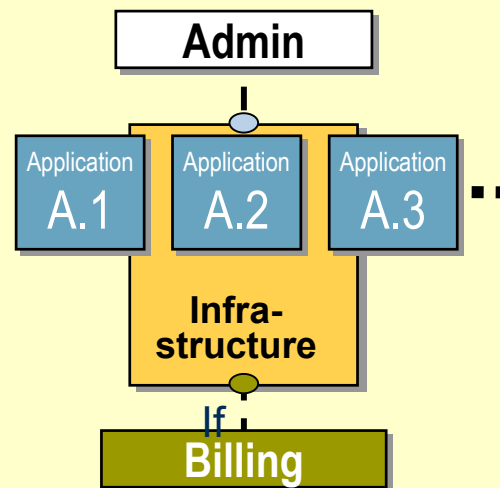
Single infrastructure enables inter-working between applications

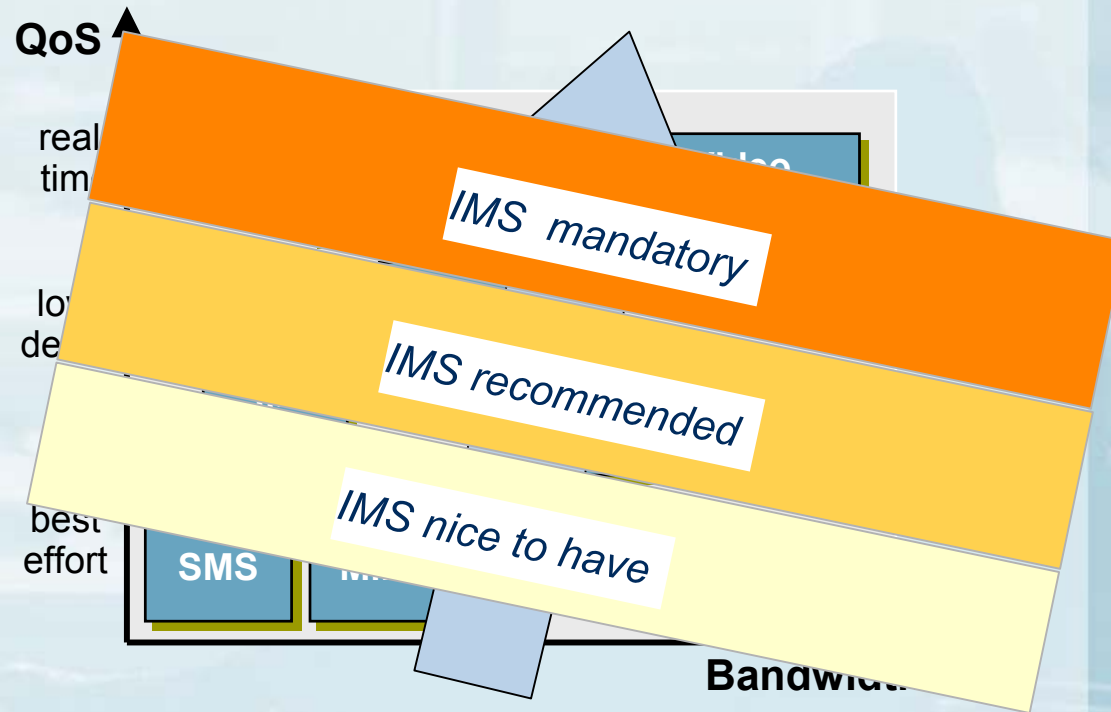
- Common functions (e.g. group management)
- Common status information (e.g. presence, location)

Expensive !!



Lower OPEX and CAPEX





- Stronger demand for an IMS control infrastructure when moving towards real-time services (e.g. Voice, Video, Conferencing)
- Starting early on IMS avoids a change of the entire infrastructure later!

Any operator willing to expand on his PS-Domain business beyond “Bit-Pipe”, must build up a services infrastructure

Real-time and peer to peer services will be part of the operator’s portfolio

MS is designed to allow most efficient deployment of those new services

The early decision for the right infrastructure is crucial to the future deployment of seamless services

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3GPP open multi-vendor standards ensures no “lock-in” to a particular vendor or radio technology

3GPP2 will use IMS as developed and evolved by 3GPP

Open Mobile Alliance (OMA) is using IMS as basis for access independent services

IMS already common platform for mobile networks

IMS concepts can be applied to “Wireline” (fixed) networks for Seamless Service Delivery as well

IMS can become THE common platform (for the migration from legacy “fixed” networks there is still work to be done).

Given that:

ITU has extensive leadership in “fixed” networks

MS leadership is with 3GPP

Open Mobile Alliance is also working on access independent services

The environment for fixed and mobile networks is different (legacy systems, regulation, competitive environment, operators/share-holders, ...)

Rather than trying to create unique “NGN” Recommendations for fixed/mobile... networks, it is more effective to accept ITU/3GPP/OMA “core competencies” and better leverage collaborations!

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*Thank You
for Your Attention!*