

# LoL@ - A Prototype of a Network Independent Wireless Internet Service

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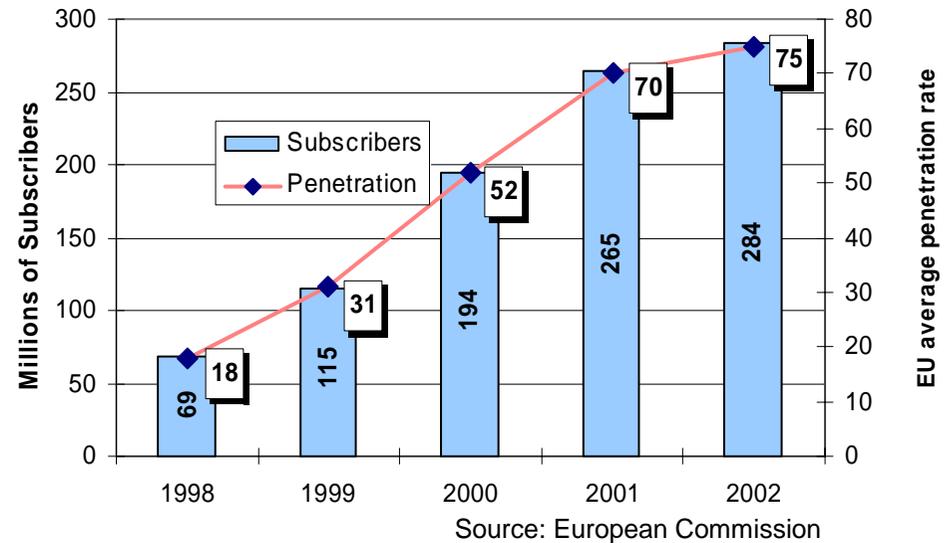
*ISART 2003, Boulder*

## ■ Which?

- ⇒ Mobility of users
- ⇒ M-commerce
- ⇒ M-office
- ⇒ M-entertainment

## ■ But How?

- ⇒ Different devices, displays
- ⇒ Different operating systems
- ⇒ Different underlying networks
- ⇒ Frequent disconnections
- ⇒ Expected reliability
- ⇒ Etc.



Lots of challenges...

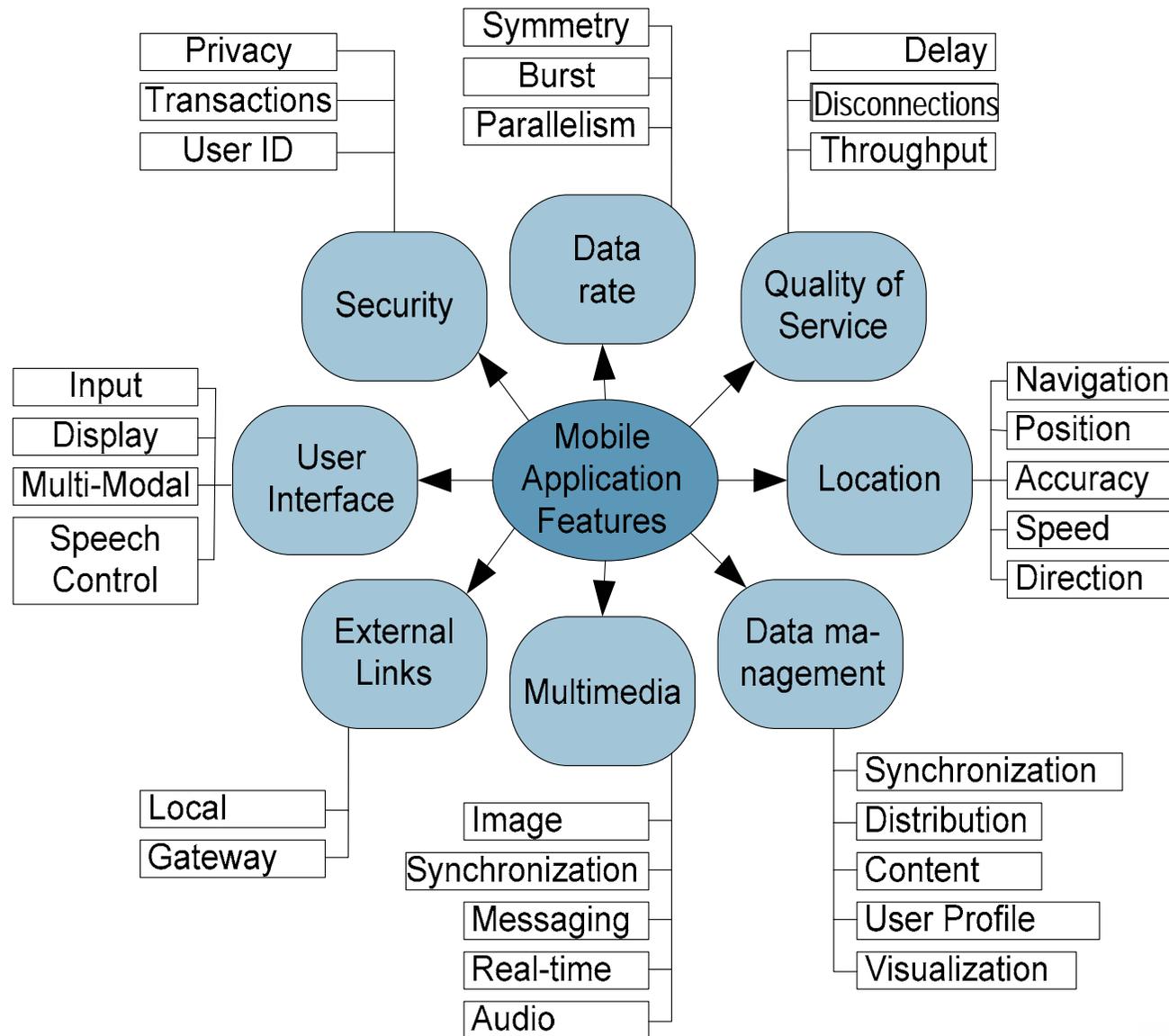
# Outline



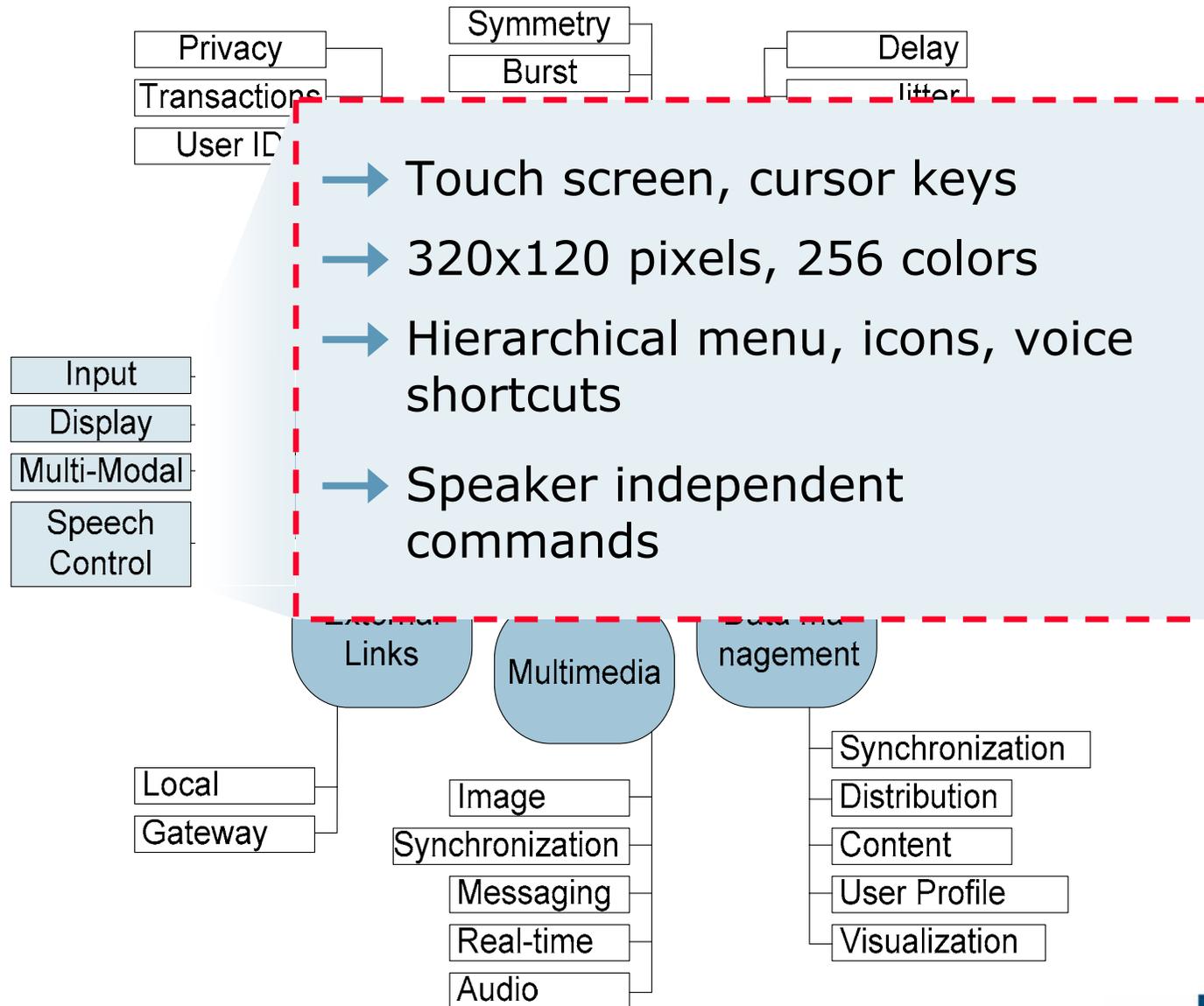
- Introduction to LoL@ (Local Location @ssistant)
- Challenges and some solutions
  - ⇒ Telecommunication and Internet
  - ⇒ Aspects related to location based services
  - ⇒ Mobile devices
- Conclusions



# A Mobile Service



# LoL@ - A Mobile Service



# LoL@ - A Mobile Tourist Guide



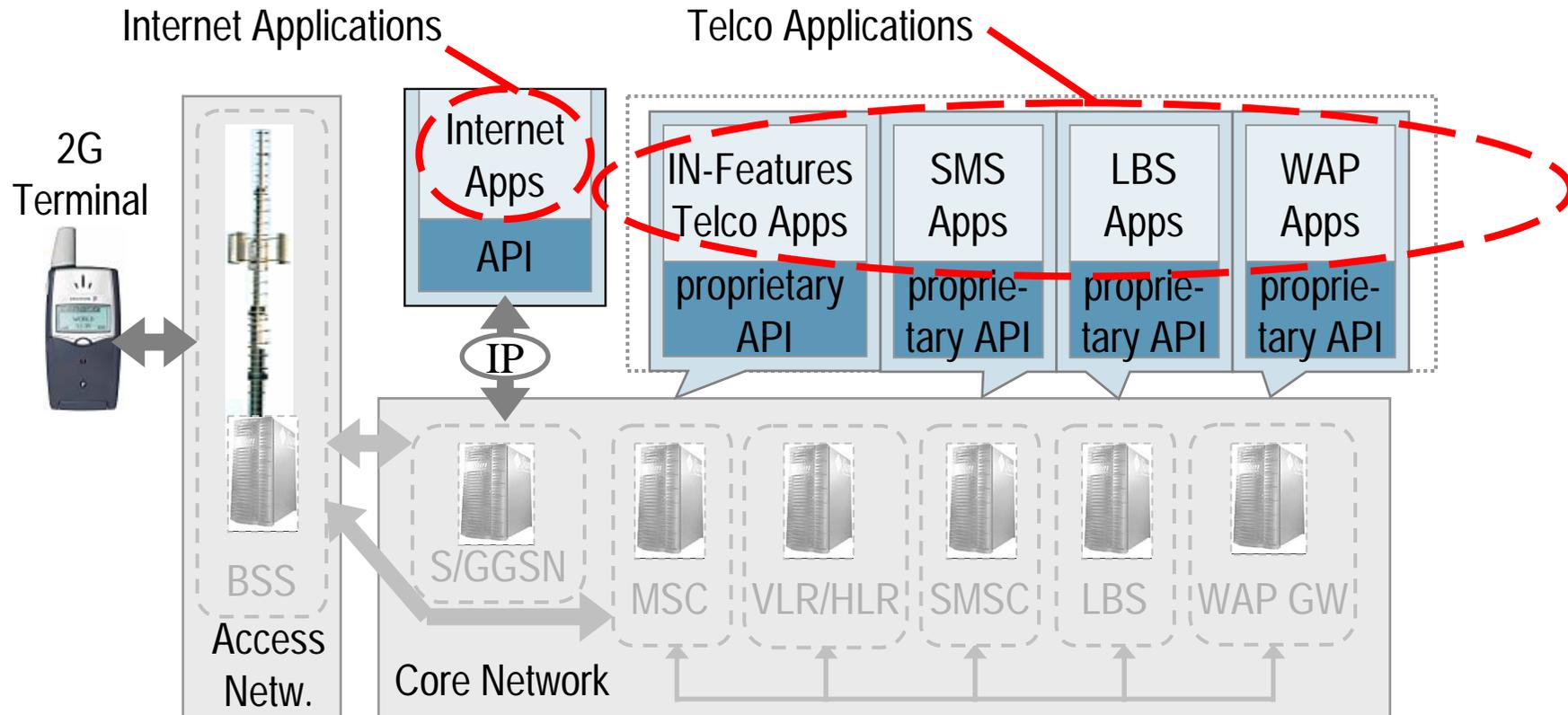
- Assist users during sightseeing:
  - ⇒ Navigate through the city (positioning, routing)
  - ⇒ Online tour diary, including personal entries
- Assist users while preparing the tour:
  - ⇒ Multimedia information for tour planning in the hotel room
- Retrieve tour diary after finishing the tour:
  - ⇒ PC version of diary for download



# 2G Telco Architecture



Vertical application structure, various proprietary APIs



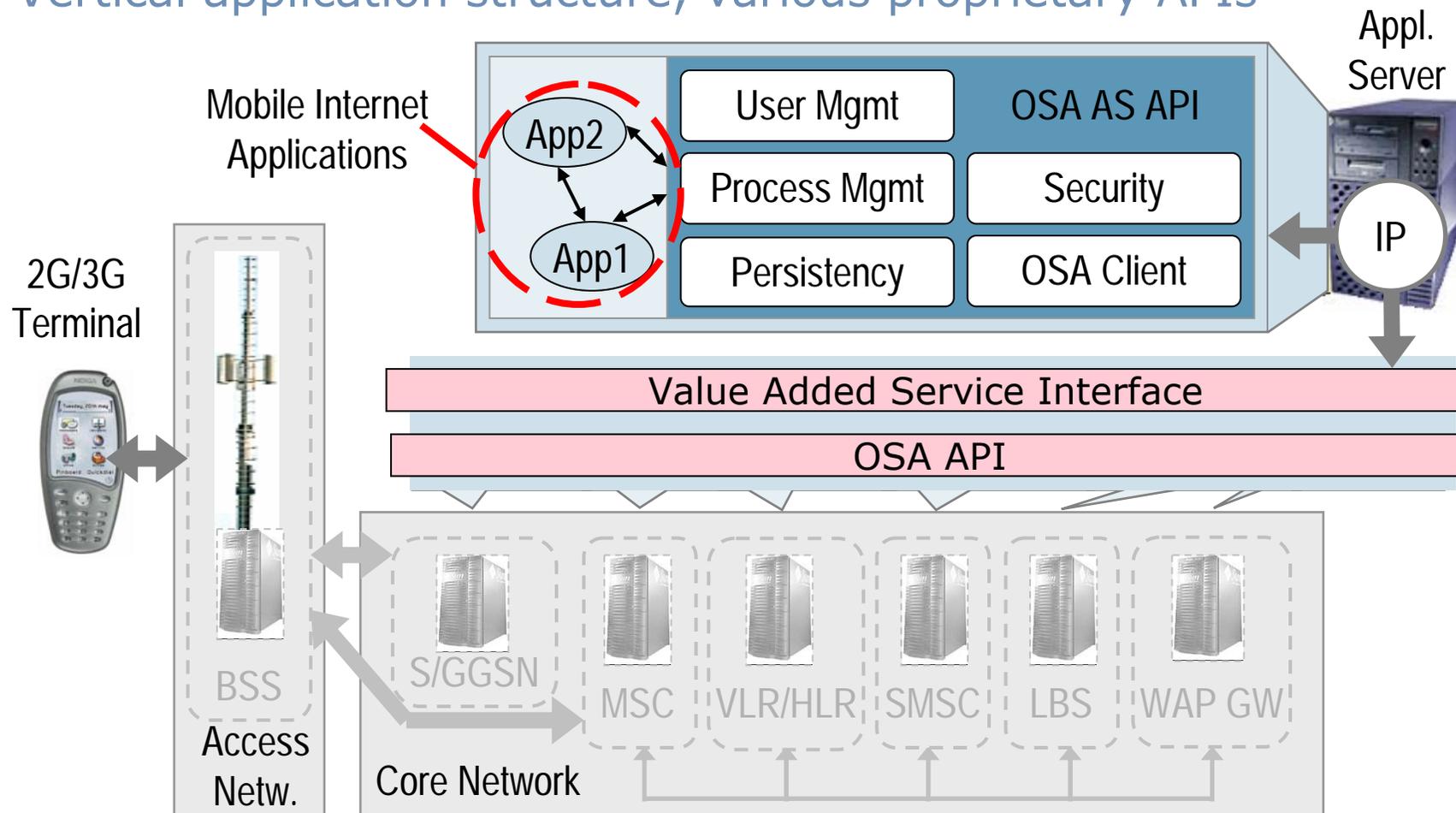
BSS: Base Station Subsystem  
 S/GGSN: Serving/Gateway GPRS Support Node  
 MSC: Mobile Services Switching Center  
 VLR: Visitor Location Register

HLR: Home Location Register  
 SMSC: Short Message Service Center  
 LBS: Location Based Service  
 WAP GW: Wireless Application Protocol Gateway

# LoL@ Architecture

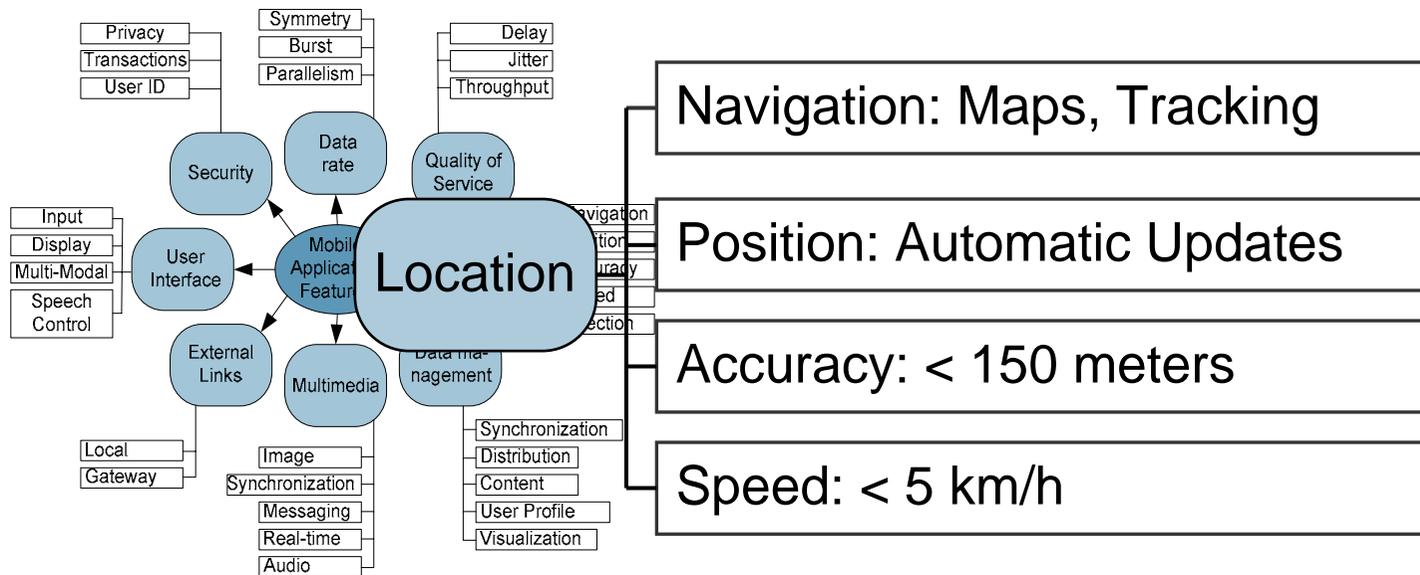


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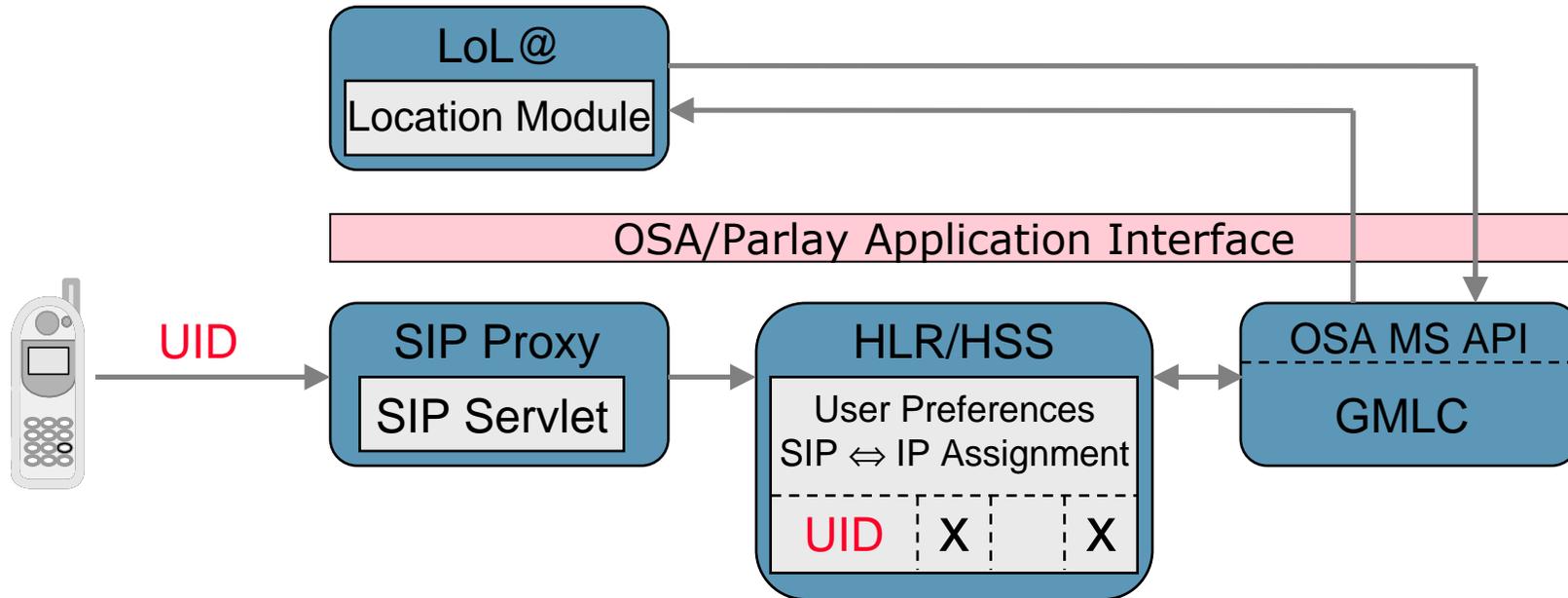
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## Service related Aspects

- Single User Log In
- LoL@ push sub-system

# Single User Log In



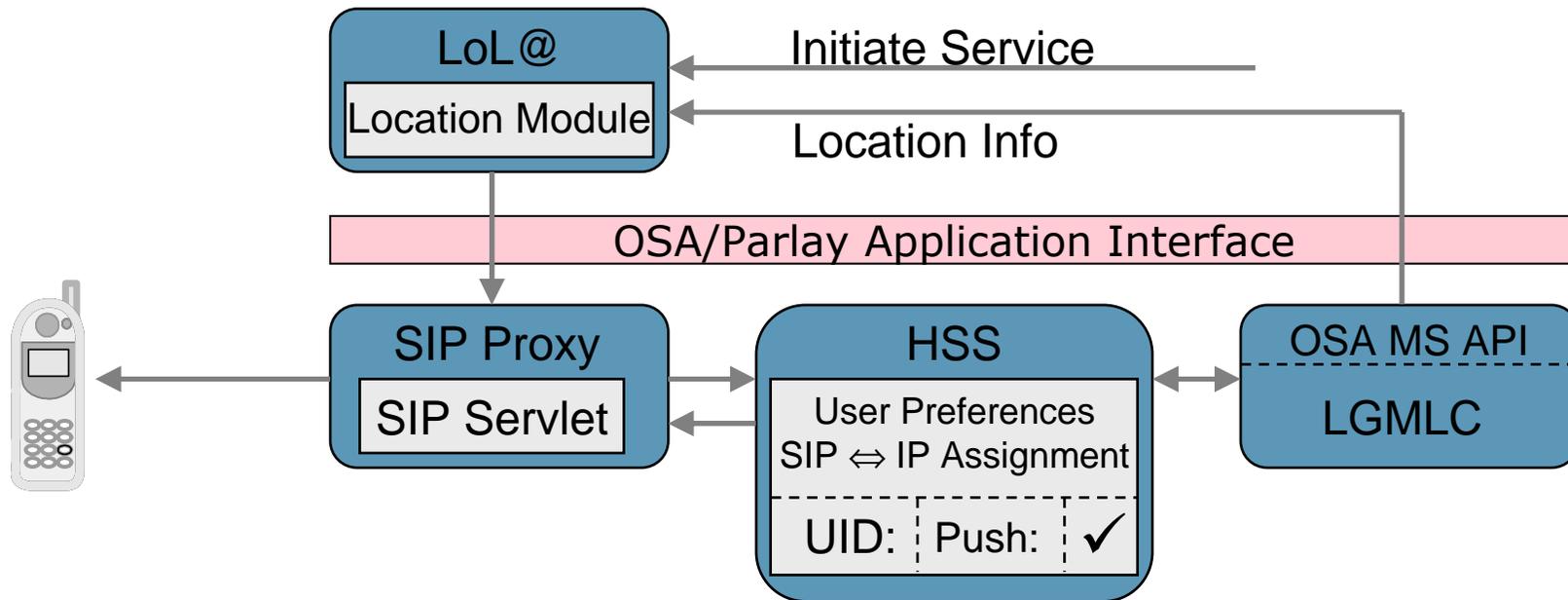
- No repetition of username-password log-ins
- Access to all subscribed services

⇒ LoL@ can access Location Sub-System

HLR: Home Location Register  
OSA MS API: OSA Mobility Service API

SIP: Session Initiation Protocol  
GMLC: Gateway Mobility Location Center

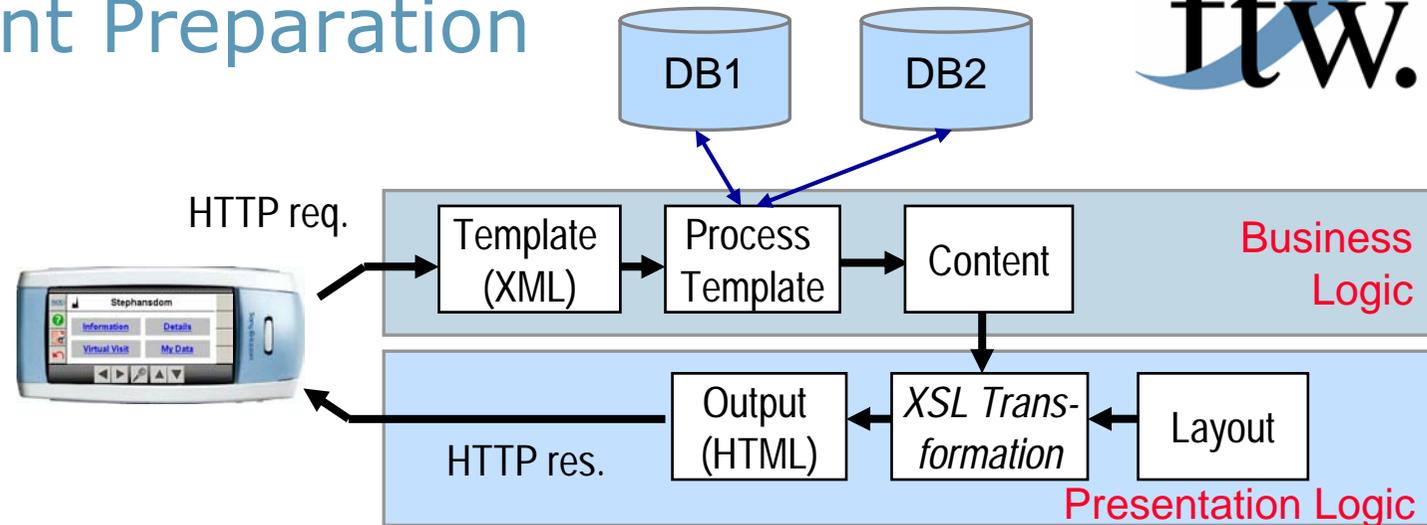
# LoL@ Push Sub-System



- More efficient bandwidth use
- Particularly suitable for asynchronous events

⇒ Location data pushed to the application

# Content Preparation



- Split of Business and Presentation Logic
  - ⇒ Suitable for different devices
  - ⇒ Suitable for different sources
- Business Logic also implemented at the mobile
  - ⇒ Reduces data traffic
  - ⇒ Improves response time
- Suspend/Resume functionality based on SIP

# Results of Usability Study



- Target Area: City of Vienna
- Running prototype system via GPRS

## Good response to the application but

- Response time extremely important: 1sec / 3sec  
Mobile service has to be reliable
- Users don't distinguish between application & content ->  
correct content important.
- LCS Data has to be available everywhere. Uncertainty  
area has not been accepted.

# Conclusions



- It's not only about bandwidth
- Network functionality must be easily accessible for programmers
- Device and connectivity limitations require split of business logic between Client and Server
- Usability extremely important
  - ⇒ Reliable
  - ⇒ Fast
  - ⇒ Individually adapted for all devices

Further information: [www.ftw.at](http://www.ftw.at)

## Thank you!