Ericsson Seamless Network

Concept and Strategy

Alireza Heidarian
Senior Technical Manager
GSM/ EDGE/ WCDMA
Agenda

- Operators we´ve met and questions they´ve asked
- The seamless network concept
- Operator situation
- Operators seamless strategy & decisions to make
- Summary
Operator questions

What will work between the GSM and the WCDMA network?

What is service based H-O (hand-over)?

New MNC (Mobile Network Code) or not?
GSM/EDGE & WCDMA
Complementary Technologies

Same applications and devices. Seamless towards the end user.
Complementary coverage of WCDMA and GSM

Initial Deployment

First Expansion

WCDMA

GSM/GPRS
User situations and stages

Idle mode  Call set-up  Active mode
Camping

Camping is where the terminal is in **idle mode**, i.e. when the user is not attached to any service.

WCDMA camping means that the terminal selects a WCDMA cell as soon as coverage is available.
Roaming

Services can be set up in both GSM/GPRS/EDGE and WCDMA
Service continuity
hand-over (CS) and cell reselection (PS)

The user can move between access technologies and have a session ongoing
Assumption about operator situation

- Existing installed GSM/GPRS network with national coverage
- Existing GSM/GPRS subscriber base
- Existing roaming agreements
  
  and

- Building/intention to build own initial partial WCDMA coverage
The operators would like to have:

- Service continuity - A seamless user experience
- Efficient use of both the GSM and the WCDMA network
- Flexibility in 3G deployment
- Investment protection and re-use
- Possibilities to restrict/allow roamers
Which applications will work in both GSM and WCDMA?

End user experience should be as transparent as possible

- **Speech**: Same
- **Web browsing**: Higher speeds
- **Streaming**: Higher quality
- **Video telephony**: Only supported in WCDMA
Transfer mechanisms in 2003

- Voice H-O at congestion
- Voice H-O at lack of coverage
- Packet services cell reselection

GSM

WCDMA

Ericsson
Strategy for seamless WCDMA-GSM consists of 2 parts

• Traffic Steering:
  – camping strategy
  – traffic steering mechanisms

• Service continuity:
  – mechanisms for service continuity at RAT change (GSM ↔ WCDMA)

Other decisions to make
• new MNC or not?
Strategic drivers

- service enhancements for better user experience
- resource optimizations for operators
Principles (traffic steering)
Load balancing for dominant traffic group

- **Total traffic (for dual mode users)**
  - **Data**
  - **Voice**

- **GSM**
  - **Voice**

- **WCDMA**
  - **Data**
  - **Voice**
Principles (traffic steering)
Place the mobile where subscribed services are most efficiently provided

- High end user
- Low end user

GSM
WCDMA
WCDMA
Strategy for traffic steering

- **Camping on WCDMA** strategy as a short term strategy (2003-2004)
  - 3G services directly reachable for dual-mode mobiles

- **Subscription based** camping strategy as a medium term strategy (2005-2006)
  - Enabler for subscription control and resource utilization optimization

- **Limited support for Camping on GSM strategy**
  - Too complex / costly to include all needed traffic steering mechanisms
    - GSM -> WCDMA for 3G services
      - possibly Directed Retry for UDI64 GSM->WCDMA
Short and medium term seamless strategy

Short term:
Camping & service on WCDMA
• all Dual Mode terminals will camp and be served in WCDMA

Medium-Long term:
Subscription based camping & service
• High-end subs in WCDMA
• Low-end subs possible to distribute to GSM
• Special transfer possibilities e.g. Video call GSM-->WCDMA
The road towards seamless services GSM&WCDMA

Traffic control

WCDMA
- PS and CS voice to GSM based on coverage
- CS voice to WCDMA based on load & all PS to WCDMA
- CS voice to GSM based on voice load
- Possibilities for subscription based camping
- Video telephony to WCDMA

GSM
- GSM-WCDMA Interoperability
- GSM-WCDMA Convergence
- GSM-WCDMA Full Integration

Short term → Medium term → Long term
Strategy for Service continuity

• Mapping of similar bearer capabilities in both RAT (Radio Access Technologies)
  – e.g. QoS PS streaming, DTM

• Enhance service characteristics for PS services at RAT change
  – E.g. shorten interrupt times
The road towards seamless services GSM&WCDMA

Bearer alignment

**WCDMA**
- Interactive QoS, CS + PS bearer combination
- Streaming QoS, Multiple PS bearer combination
- Traffic handling priority for Interactive QoS
- Conversational QoS
- Network controlled CRS e.g. NC2, Multiple TBF

**GSM**
- Interactive QoS, Streaming QoS
- DTM

**GSM-WCDMA**
- Interoperability
- Convergence
- Full Integration

**Roadmap**
- Short term
- Medium term
- Long term
If regulations allow.....new MNC or not?

What is MNC/PLMN?

Definition:
PLMN = MCC + MNC
- MCC = Mobile Country Code
- MNC = Mobile Network Code

How is it used?

Example 1:
MSISDN = PLMN + value from operator
The number someone dials to reach a certain mobile user.
Comparing solutions

<table>
<thead>
<tr>
<th>Pros</th>
<th>Reuse of GSM MNC</th>
<th>Different MNC for GSM &amp; WCDMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pros</td>
<td>Impression of “one” network</td>
<td>Early support of steering sub.</td>
</tr>
<tr>
<td></td>
<td>Less functions needed</td>
<td>Higher flexibility to steer sub.</td>
</tr>
<tr>
<td>Cons</td>
<td>Later support of steering sub.</td>
<td>Complementary functions needed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Impression of two networks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Summary

- Seamless services as much as possible
- Service based/Load based traffic steering for voice
- Camping on WCDMA is preferred
- MNC - both common & separate are OK!
Terminal Availability

- Terminals will support the following features:
  - Dual mode (2G/ 3G)
  - SMS
  - WAP
  - MMS

- Five biggest terminal providers:
  - Nokia 6650
  - Motorola A835
  - Samsung Z100
  - Siemens U10
  - Sony-Ericsson Z10Z10
  - NEC e808
  - NEC e606 (available now)
Thank You!