ITU-BDT Workshop on guidelines on the smooth transition of existing mobile networks to IMT-2000 for developing countries - Arab Region

Transition Path to IMT-2000 in Serbia

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AGENDA

- GSM/EDGE/WCDMA Seamless Network
- Serbia&Montenegro Country Information
- Serbia&Montenegro Telecom Market
- Mobile Operators Telekom Srbija
- UMTS/WCDMA Pilot Precommercial Networks for Telekom Srbija Mobile

Mobile Market Segmentation in Europe

- Well Developed GSM operators in Europe going WCDMA
- GSM operators still building out coverage

Well Developed GSM operators going WCDMA

The GSM and WCDMA evolution raises several critical questions for the operator:

- How can operators maximize and reuse current GSM assets?
- How can they deploy WCDMA while maintaining profitability in GSM?
- How do they best allocate investments between GSM and WCDMA infrastructures?
- How will users experience the new combined GSM and WCDMA services?

Well Developed GSM operators going WCDMA

Seamless Network - Ericsson's view on how existing GSM networks will evolve and interwork with WCDMA

- The evolution scenarios, operator needs and suggested solutions
- System evolution for GSM, the introduction of third-generation (3G) services and the integration of GSM and WCDMA to form a seamless network
- Evolution of GSM and WCDMA networks as a single, unified seamless network that shares core, transmission, radio and application resources.
- The seamless network ensures the most efficient use of GSM and WCDMA
- Seamless user experience – transparency of services to users
- Ensures operator's investment protection in GSM/GPRS and re-use of 2G/2.5G equipment for WCDMA networks

Well Developed GSM Operators Going WCDMA

3G Service Continuity

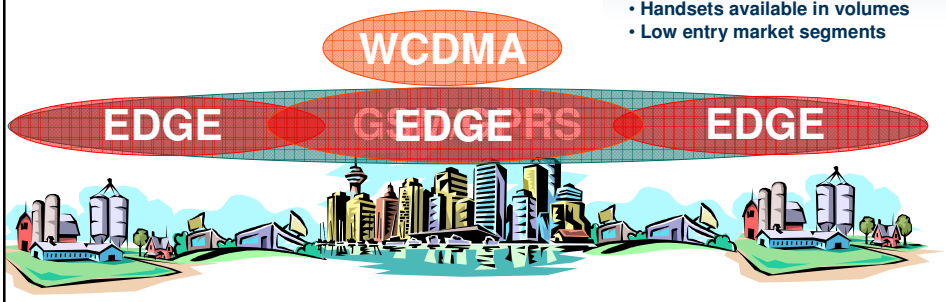
Challenges:

- Make Applications adaptive
- Surviving handover between two Network Technologies

Well Developed GSM Operators Not Going WCDMA in Near Time

Roll-Out Options

- Start Building EDGE coverage in dense areas
- Use GPRS as fallback initially
- Be competetive if WCDMA is available in other networks
- Handsets available in volumes
- Low entry market segments



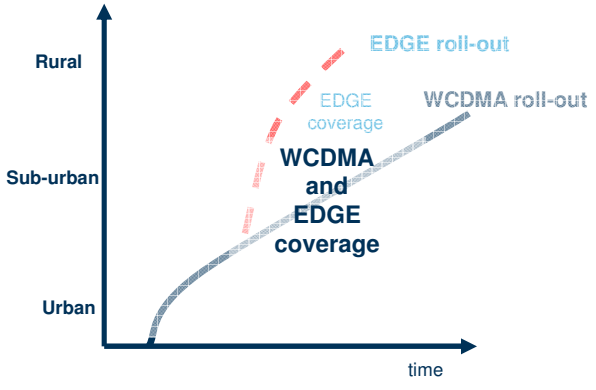
Rural | Sub-urban | Urban | Sub-urban | Rural

Well Developed GSM Operators Going WCDMA

Roll-Out Options – Time-To-Market by Fast Roll Out

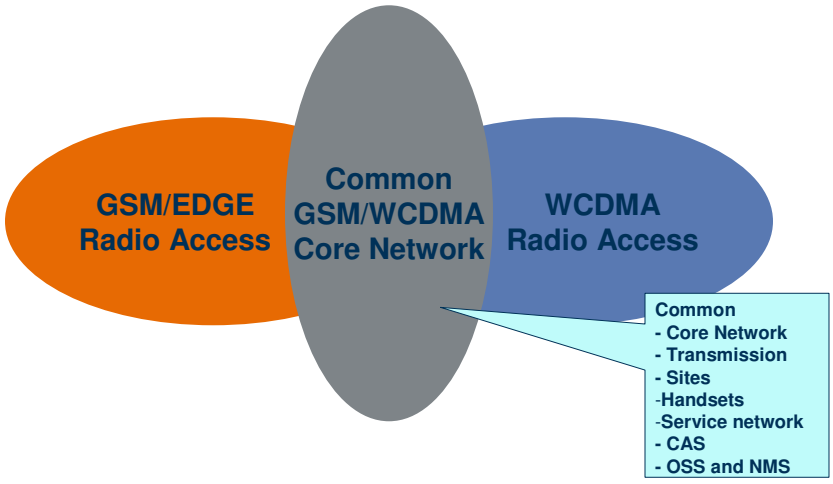
One EDGE TRU per cell for coverage

RBSs EDGE enabled



Well Developed GSM Operators Going WCDMA

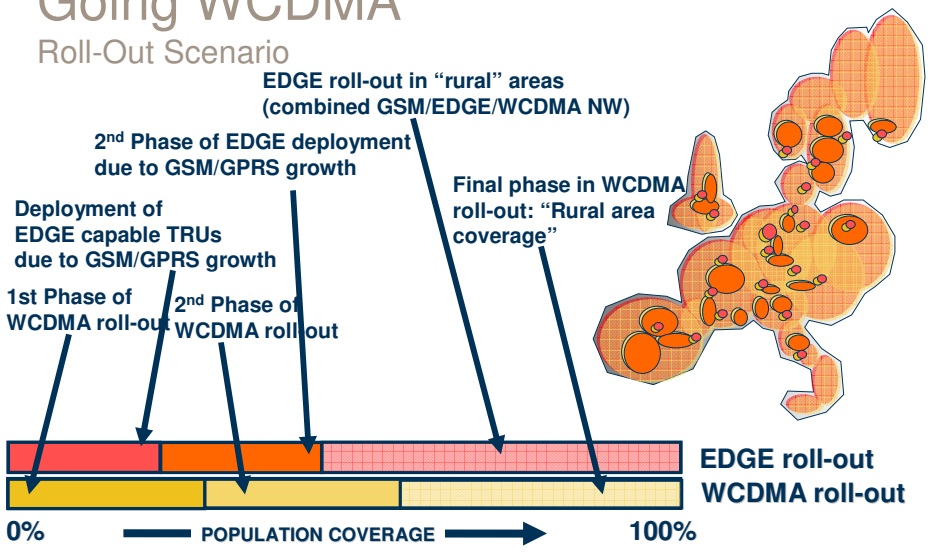
Seamless Network



9 (30) TRANSITION PATH TO IMT-2000 IN SERBIA ERICSSON

Well Developed GSM Operators Going WCDMA

Roll-Out Scenario



10 (30) TRANSITION PATH TO IMT-2000 IN SERBIA ERICSSON

Well Developed GSM Operators Going WCDMA

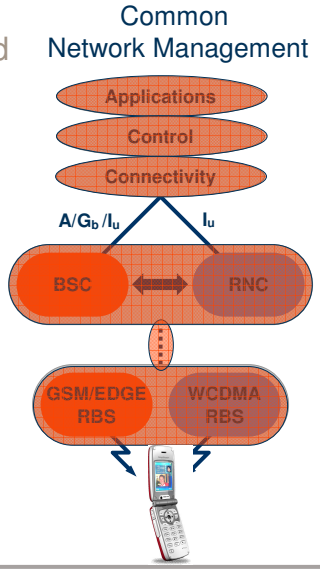
Seamless Network - Benefits Introduced

100% node reuse

50% spectrum gain

50% transmission savings

80% co-siting



Serbia and Montenegro (former Yugoslavia)

The Republic of Serbia :

- Territory: 88.361 sq.km
- Population:
  - 7,5 mil. with 110 inh./sq.km
  - Belgrade with 2 mil.citizens
- GDP per capita 3000$ (2004)
- GDP yearly increase 13%

Mobile operators status in Serbia

- 063 MOBTEL SRBIJA, Mobile Telecommunications "Srbija" BK-PTT, operates as a joint-venture company by :

  1. "BK Trade", Moscow (51% shares – private capital)
  2. PTT "Srbija" (49 % shares – state capital)

- Telekom Srbija, Mobile Telecommunications of Srbija, operates as a joint-venture company by:

  1. PTT "Srbija" (80% shares – state capital)
  2. OTE Greece (20% shares – private capital)

*Cross ownership of the two operators by **PTT !***

13 (30) TRANSITION PATH TO IMT-2000 IN SERBIA ERICSSON

Mobile market in Serbia

GSM 900/1800 operators :

1. 063 MOBTEL (launched in 1996)
2. 064 Telekom Srbija (launched in 1998)

Total mobile subscribers: 4,7 millions (60% penetration)

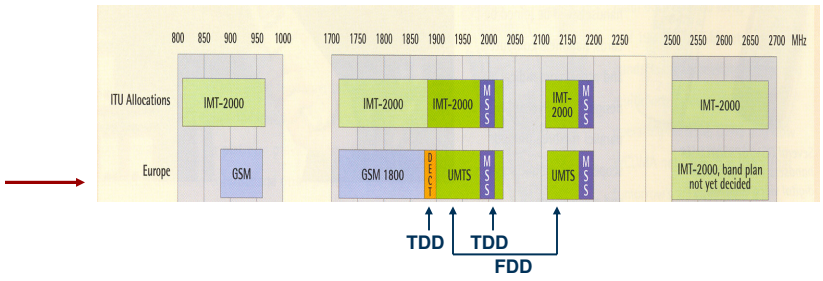
Market share: 46/54 % (Mobtel/Telekom)

14 (30) TRANSITION PATH TO IMT-2000 IN SERBIA ERICSSON

Regulation in Serbia

- *Competion* market, increasing the benefits in terms of price and QoS, is not yet regulated completely.
- New Telecom Act is approved in April, 2003, designed on the basis of EU legislation *(licensing, interconnection, transparent, objective and no-discriminatory basis, open network provision on all hierarchical level, competion for the open market).*
- New Act is not yet put into force, since the management board of NRA is not yet approved by the Parliament.
- Telekom Srbija (incumbent) operates public fixed network and mobile network as well, with monopoly for fixed telephony until June, 2005. → *liberalization allowing new players!*
- No official anouncement has been issued for the *IMT-2000 license*, frequency bands are still *occupied* by other users.

Frequency bands for UTRA *(UMTS Terrestrial Radio Access)*



1. **60 MHz x 2 for FDD = 1920-1980/2110-2170 MHz (up/down link)**
2. **20 + 15 MHz for TDD = 1900-1920 + 2010-2025 MHz (up+down link)**

Frequency bands allocated in Serbia

- Frequency Plan is adopted by the Authority in Serbia, quite fully in accordance with WARC/ITU and CEPT/ECC/ERC decisions and recommendations.
- Bands allocated for the UMTS/IMT-2000 network are:

1.	1900 – 1939 MHz	UMTS TDD/FDD
2.	1930 – 1980 MHz	
3.	1980 – 2010 MHz	(mobile satellite component)
4.	2010 – 2025 MHz	UMTS TDD
5.	2110 – 2120 MHz	UMTS
6.	2120 – 2170 MHz	
7.	2170 – 2200 MHz	(mobile satellite component)
8.	2500 – 2520 MHz	
9.	2520 – 2655 MHz	UMTS
10.	2655 – 2670 MHz	
11.	2670 – 2690 MHz	

- All bands are currently occupied and a negotiations with the User should be finalised before the licensing procedure start.

REGULATORY AGENCY

- Set-up future requirements in the overall telecom sector regulation process
- Analyse the data from mobile market survey and define needs and demands
- Put into force the new Telecom Act → ASAP!
- Main priority is to remove measures that restrict competion
- Free the frequency bands for the IMT-2000 (UMTS) development
- Define the principles and methods for the licensing
- Define the preconditions of the licenses
- Define obligations related to the universal services
- Define the number of licenses, based on market potential
- Proceed with the licensing process!

Some key questions for 3G evolution/migration

- Licensing
- 2GHz frequency band occupied
- Transmission network evolution both for core and access network to meet requirements for increased flexibility, capacity and availability
- Terminals availability covering GSM/GPRS/EDGE/WCDMA (handsets and PCMCI cards)
- Readiness of operator's organizations for 3G (resources, competencies...)
- Evolution vs. migration
- CS & PS handovers
- Role of IMT-2000 in Corporate Social Responsibility:

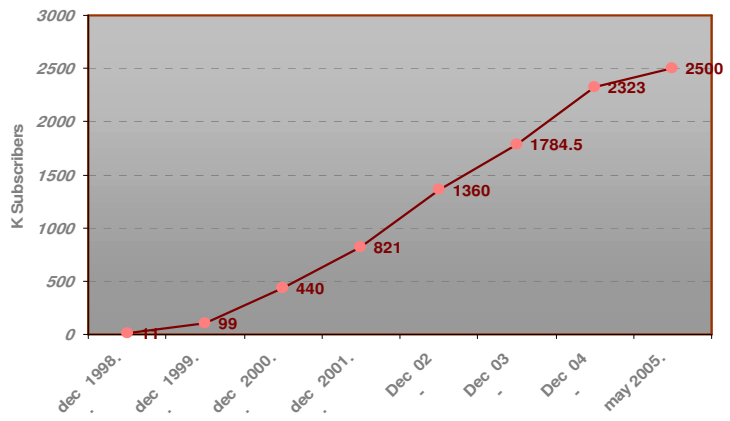
The responsibility of the state/government, vendors, operators and regulators to support new technologies bringing new dimension of communications. Preparing for the Information Society inclusion.

- Pilot 3G Network for Telekom Srbija and Mobtel

Telekom Srbija Mobile

- Established in 1998 as second mobile operator in Serbia
- 2.500.000 users in May 2005
- More than 600 RBSs installed
- 84% teritory coverage and 94% of population

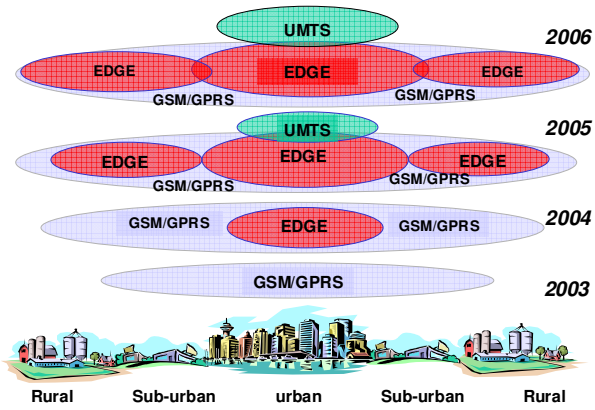
Number of subscribers



Services and Applications

- mid 1998 **- Prepaid**
- end of 1998 **- Postpaid**
- 2001 - **VPN** offered to business users as VPM 50 package
- 2002 - SMS based **VAS** services
- 2002 – new mobile numbering **065** -postpaid service **Friend** 065
- 2003 - **Friends&Family** tariff package for prepaid (3 favorite numbers)
- 2003 - **Prepaid roaming, Call Center**
- 2003 - **GPRS** and **MMS**
- 2003 - **3G trial** with Ericsson and first video call presented during Telfor
- 2003 – **BEL**, **BIZNET** postpaid tariff profiles
- 2004 - **MONDO WAP portal**
- 2004 - **M-Payment** platform for prepaid recharge
- 2004 - **MTS Postpaid Club**, **TOKI**,**TIPI** and **NETI** prepaid tariff profiles
- 2004 - **LBS** (Near me and Buddy locator)
- 2005 – **Special tariff profiles for disabled persons**

Operators' Business Plans with Gradual Introduction of the UMTS Relative to the GSM/EDGE



- EDGE used as a complement to WCDMA
- Service Continuity
- Seamless Network
- Business aspects for rural areas

Telekom Srbija and Ericsson Pre-Commercial WCDMA/UMTS Systems

Purpose of the trial

- Use of WCDMA/UMTS pre-commercial trial for different kinds of load and interoperability testing in order to prepare the operator's network for the fast 3G launch

- To give the opportunity to Telekom Srbija to:
  - Build up competence and get hands on experience of IMT-2000 networks and services
  - Implement and test end-to-end solution for a 3G system
  - Look into integration issues, e.g. billing and customer care
  - Prepare for an early IMT-2000 launch - immediate transition to commercially ready-for-launch network
  - Hold market events

MTS WCDMA/UMTS Trial

Responsibilities:

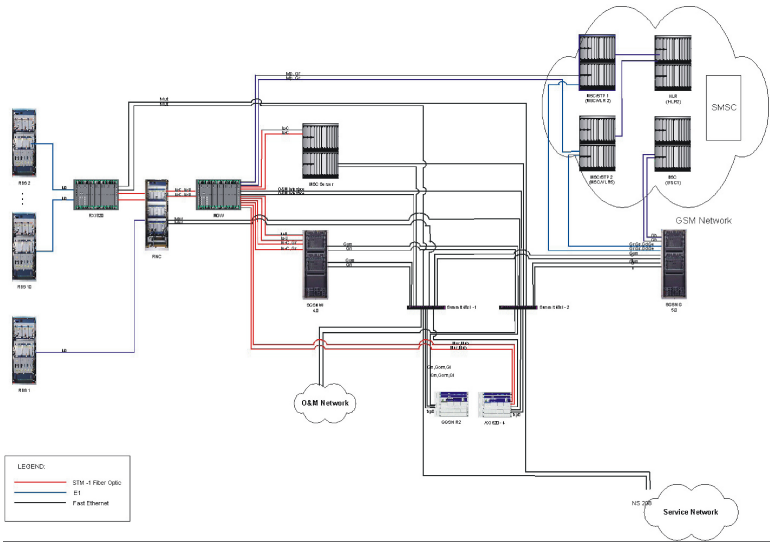
Ericsson:

- 3G System:
  - ❖Hardware
  - ❖ Software
  - ❖ Implementation services
  - ❖ Operation & Maintenance
  - ❖ Support

Telekom Srbija Mobile:

- Licenses
- USIMs
- Terminals
- Transmission
- Floor Space
- Power Supply (except for RBSs)

Telekom Srbija & Ericsson 3G Network Diagram – Trial Configuration



End-user services that could be offered

Basic Services	Voice
	SMS
	MMS
	Browsing
	Gaming
Video Services	Video/Music Streaming
	Mobile TV
	Video Download
Videocall	
"Rich Call" *	

* Possibility to use multimedia services during a voice call

RAN Functionalities

Radio Access Bearers Supported:

Conversational RAB for AMR speech 12.2 kbps

Conversational RAB for 64 kbps multimedia

Interactive RAB, RB 64/64 kbps (UL/DL)

Interactive RAB, RB 64/128 kbps (UL/DL)

Interactive RAB, RB 64/384 kbps (UL/DL)

Streaming RAB for non-transparent Circuit Switched data, 57.6 kbps

Speech and Packet data RAB combination

GSM Handover:

UMTS to GSM Handover (Cell Re-selection, Voice, PS Data, MultiRab)

GSM to UMTS Handover (Cell Re-selection, Voice, PS Data)

mt:s

Thank you for your attention !

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