Greetings to the participants of the ITU/BDT Regional Seminar on Broadband Wireless Access for CIS, CEE and Baltic Countries

28 November 2007, Moscow

Infocommunication Union

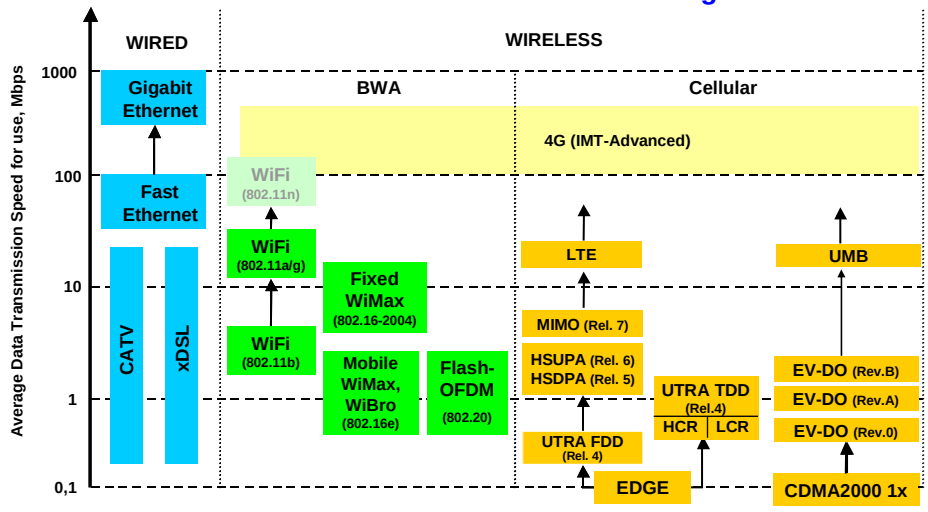
Convergent Development of Cellular & BWA Networks

Andrey Skorodumov
CEO, Infocommunication Union

CONTENTS

- ✓ Evolution of Cellular & BWA networks technologies: current status and perspectives of development
- ✓ R&D results: problems & the ways of their solving
- ✓ First steps to create convergent networks

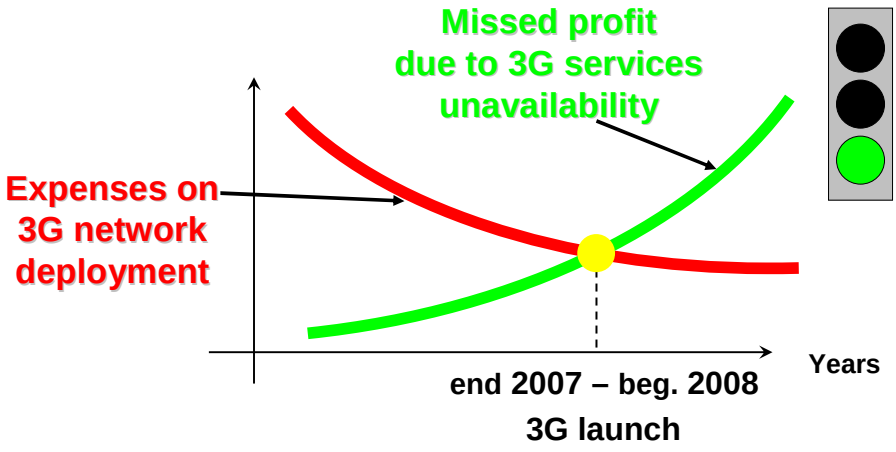
Evolution of Cellular and BWA Technologies



Infocommunication Union (former 3G Association) activities results

- Principles and procedure of the UMTS licensing
- Analysis of 2Ghz band occupation, recommendations for its release
- UMTS networks architecture, principles of their construction and internetworking with the existing telecommunication networks
- Assessing of the licensing procedure impact to the 3G services market development
- Ways of the UMTS networks electromagnetic compatibility (EMC), requirements for frequency and distance separation
- Testing of the trial UMTS network fragments
- Concept of 3G services market formation in Russia
- Principles of the UMTS networks cooperative deployment and using
- Frequencies for UMTS trial network, proposals for frequency bands allocation between the UMTS networks of the deferent operators
- Concept of 3G networks information security

3G's got green light in Russia !!!



3G Licensing Crucial Dates in Russia

- 23 October 2006 - the State Committee on Radiofrequencies made a decision to allocate frequency bands of 1935-1980 MHz, 2010-2025 MHz and 2125-2170 MHz for IMT-2000/UMTS mobile networks deployment on the Russian Federation territory.
- 26 December 2006 - the Federal Communications Agency announced tender rules for getting licenses to provide 3G services in Russia.
- 20 April 2007 – ICU President A.E.Krupnov announced the winners on 3G tender on operators activity licensing in IMT-2000/UMTS standard networks :

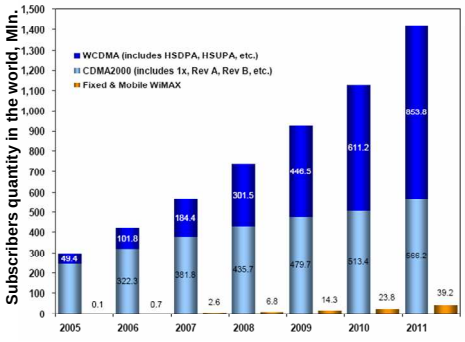
  MegaFon, **Mobile TeleSystems** and **VimpelCom**.
- 24 May 2007 – 3G licenses issuing to winners by the RF Minister L.D.Reiman

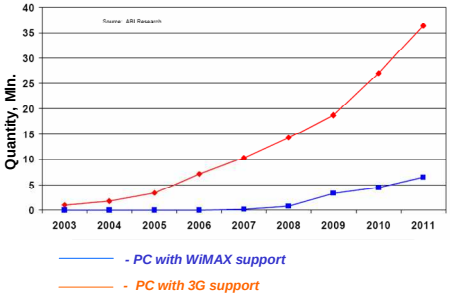
Infocommunication Union

OPERATOR'S PLANS

- **Mobile TeleSystems** plans to launch HSDPA 3G services in the largest cities of Russia in the beginning of 2008. It's going to build 3000 base stations. MTS plans to invest $1bn over 3 years: till 2009 - in 45 cities and till 2011 – 11 mln. 3G subscribers
- **VimpelCom** plans to launch 3G services in Moscow in 2008. It's going to build 6000 base stations over 5 years. VimpelCom plans to invest $300-350 mln. in 2007-2008 in 39 constituent territories of the Russian Federation.
- **MegaFon** is expected to start construction of its new network since the end of 2007. It plans to invest $1bn over 3 years.

3G & WiMAX Market





glspec:

Infocommunication Union

MIMO Technology Usage

Without MIMO

Technology		Maximum Data Transmission Speed (Mbps)	
		DL	UL
3G	DOrA	3.1	1.8
	DOrB	14.7	5.4
	HSPA+	21	11
	UMB	24	9.3
Mobile WiMax		17.6	5.04

MIMO

With MIMO

Technology		Maximum Data Transmission Speed (Mbps)	
		DL	UL
3G	HSPA+ 2x2 MIMO	42	11
	UMB 2x2 MIMO	48	9.3
Mobile WiMax		35.2	5.04

ITU/BDT Regional Seminar on Broadband Wireless Access
28 November 2007, Moscow
10

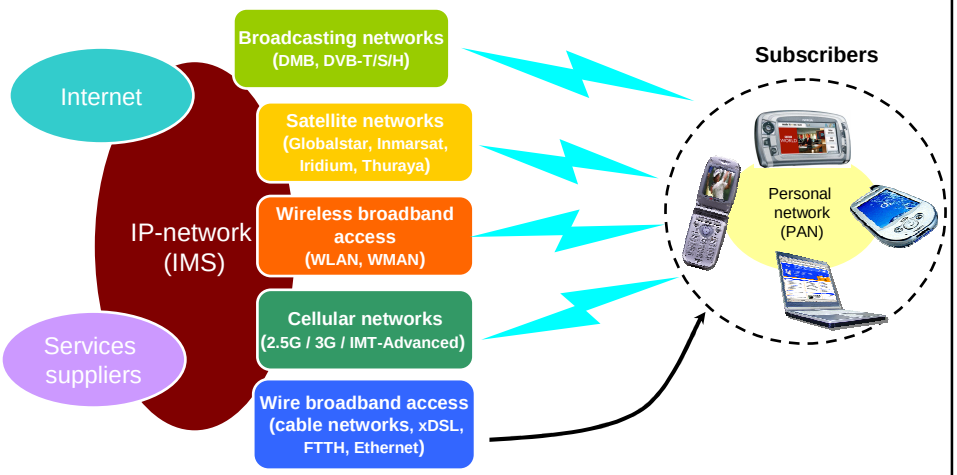
Operators Risks while Networks Deployment

Number of 3G subscribers significantly exceeds WiMAX subscribers → Big international experience in problems solving

Big variety of 3G terminals → No need for a subscriber to choose from «Empty List»

→ Operators risks for 3G networks deployment are significantly lower then for WiMAX

Networks convergence



- Combination of abilities of different technologies
- Ability to choose way of access

Advantages of cellular and BWA networks convergence

Cellular

- Mobility
- Access & core networks
- Large subscriber base
- High-level information security, authentication
- Network interaction, roaming
- Billing

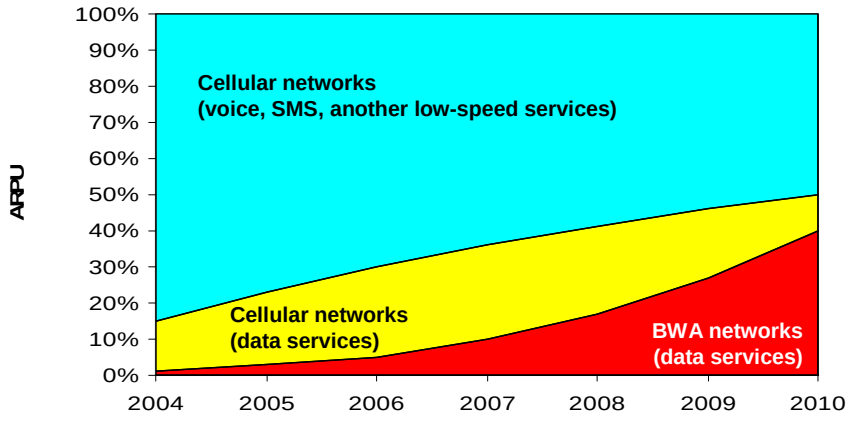
BWA

- Low cost of equipment
- Low self-cost of data transfer
- High-speed data rates
- Possibility of using the unlicensed frequency bands

Improving income for the operators and QOS for users

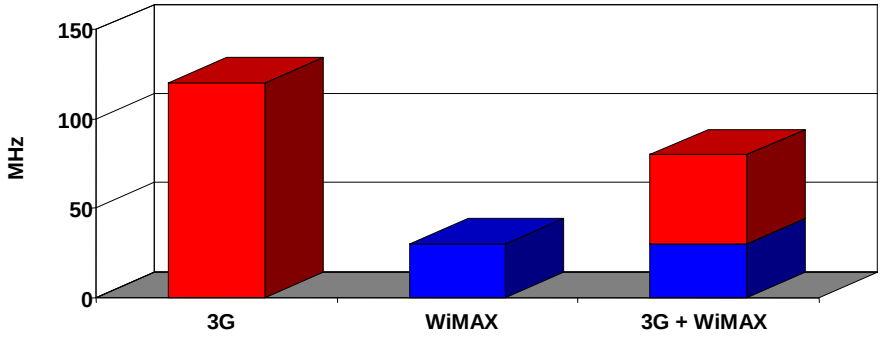
Infocommunication Union

Global forecast of the ARPU distribution in converged cellular and BWA networks



Required spectrum resource for 3G and BWA convergent network

3G (120 MHz) + WiMAX(30 MHz) = 3G/WiMAX (80 MHz)



Infocommunication Union's proposals on BWA networks government regulation

- Licensing for providing services & spectrum identification
- Spectrum distribution & allocation
- Government supervision
- Network interaction
- Information security
- QOS

"Conceptual statements on convergent development of cellular and BWA networks in Russia"

Infocommunication Union

Scientific & Technical Council Meeting of
Ministry of Information Technologies and Communications
of the Russian Federation
on the issue
«Development of BWA and Mobile Networks»

16 January 2007

Participants noted:

- Actuality of conditions creation for convergence of different BWA technologies
- Novelty of the results and thoroughness of approaches study to problem issues solving
- Advisability of additional researches in the sphere convergent BWA networks

Infocommunication Union

DECISION:

- Take into consideration the basic issues of the Analytical Note developed by the ICU
- Consider this direction as the perspective one in the course of technologies and services convergence
- Recommend to operators companies to take part in Trial zone's fragments deployment
- Recommend to ICU to coordinate researches conducting in Trial Zone
- Recommend to work out a Concept of BWA development in Russia with consideration for networks convergence

R & D «Cell-Access»

Aims: Proposals Development on improvement of the normative-technical and legal regulation in the following spheres:

- Frequency regulation
- Licensing provision
- Technologies & services convergence

on the basis of Trial zone construction of convergent BWA, cellular and fixed networks

Ordering Customer: Infocommunication Union

Technical Assignment is agreed by
Infocommunication Union Board
5 April 2007

Infocommunication Union

R&D Main Directions (Part I)

⊕ **BWA Services**
- International experience
- Subscribers traffic estimation
- Development perspectives

⊕ **Radio-frequency Spectrum**
- RF bands usage
- RF Bands of BWA systems (standards 802.11 and 802.16)
- Estimation of technologies spectral efficiency
- Provision of intersystem EMC
- Estimation of the necessary RF resource for convergent networks

⊕ **Networks Interaction**
- Variants and ways of interaction
- Services provision procedures
- Roaming
- Numbering plans
- Signaling channels

R&D Main Directions (Part II)

- **Organization of the trial zone's fragments**
  - determination of the required RF bands
  - list of testing services
  - Interacting fragments architecture
  - roaming between fragments
- **Trial zone examination**
  - testing of roaming between fragments
  - testing of networks interaction
  - estimation of spectral efficiency
  - testing of data transmission quality
- **Proposals on regulatory documents**
  - activity's licensing
  - provision of necessary RF resource
  - commercial operation

Mobile BWA introduction in Russia!!!

R&D «Cell - Access»

New opportunities and risks for operators of:
- **Cellular networks**
- **Fixed networks**
- **BWA networks**

?

Consumer demand and market scope are unknown beforehand

ICU trial area

- **Foreign experience analysis**
- **Accounting Russian situation**
- **R&D**
- **Drafting proposals**

State Regulator

Principles of licensing for operators' activities in Mobile BWA networks

Mobile BWA deployment in Russia

Resume

- The most perspective way of wireless access networks development is the convergence with the cellular and fixed networks
- Convergent development of wireless access, cellular and fixed networks promote the efficiency increase of networks resources usage and radio-frequency spectrum, facilitate the development of new infocommunication services market and make them more available
- ICU's proposals approved by the Scientific & Technical Council of the RF Telecom Ministry are the basis for the further development of state regulation in the communication sphere
- R&D "Cell-Access": first but significant steps to implementation of the convergent networks in Russia
- Researches results realization will contribute to innovation development of telecommunication sphere, population involvement into the world information community

Infocommunication Union

Thank you!

Andrey Skorodumov, CEO

Contacts:

www.icu.org.ru **Moscow, Russia** **E-mail: a3g@a3g.ru**