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

28 November 2007, Moscow

Convergent Development of Cellular & BWA Networks

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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
Infocommunication Union

Infocommunication Union (former 3G Association) activities results

- Principles and procedure of the UMTS licensing
- Analysis of 2Ghz band occupation, recommendations for its release
- 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
- 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
- UMTS networks architecture, principles of their construction and internetworking with the existing telecommunication networks
- Testing of the trial UMTS network fragments
- Concept of 3G services market formation in Russia
- Concept of 3G networks information security
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3G’s got green light in Russia !!!

Missed profit due to 3G services unavailability

Expenses on 3G network deployment

end 2007 – beg. 2008
3G launch

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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

 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

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MIMO Technology Usage

<table>
<thead>
<tr>
<th>Technology</th>
<th>Maximum Data Transmission Speed (Mbps)</th>
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<tr>
<td>DL</td>
<td>UL</td>
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<tr>
<td>3G</td>
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<tr>
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<td>3.1 1.8</td>
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<td>14.7 5.4</td>
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<tr>
<td>HSPA+</td>
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<tr>
<td>UMB</td>
<td>24 9.3</td>
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<td>Mobile WiMax</td>
<td>17.6 5.04</td>
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**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

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**Networks convergence**

- Internet
- IP-network (IMS)
- Broadcast networks (DMB, DVB-T/S/H)
- Satellite networks (Globalstar, Inmarsat, Iridium, Thuraya)
- Wireless broadband access (WLAN, WMAN)
- Cellular networks (2.5G / 3G / IMT-Advanced)
- Wire broadband access (cable networks, xDSL, FTTH, Ethernet)

- Subscribers
- Personal network (PAN)

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

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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

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

- Cellular networks (voice, SMS, another low-speed services)
- Cellular networks (data services)
- BWA networks (data services)
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**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”
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

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
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**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

Principles of licensing for operators’ activities in Mobile BWA networks

State Regulator

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.

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**Thank you!**

Andrey Skorodumov, CEO

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