

**ITU-D Regional Development Forum for the EUR
and CIS Region: "NGN and Broadband,
Opportunities and Challenges"**

Chişinău, Moldova; 24-26 August 2009

**Voice Evolution and Fixed-
Mobile-Internet Convergence**

John Visser, P.Eng.
Chairman, ITU-T TSAG

+1 613 276 6096

jvisser@rogers.com

Abstract

- The way voice services are provided is changing. The role of mobile services vis-à-vis fixed services is changing. The way Internet access is provided is changing. There has been and there is ongoing tremendous evolution in both access and core infrastructure. The essential common factor is the convergence of all types of traffic, and how this changes the entire game, necessitating a fresh look at the rules applied to the game.

Outline

- We've always been working on NGNs
- What's different this time?
- Hyperconnectivity
- Communication Enabled Applications
- True Broadband and the Evolution of Structures and Services

What's Life Like

- **Today ...**
 - ◆ Most people can't do without their mobile phones
 - ◆ Content is on DVDs or magazines or books or a local hard-disk
 - ◆ Contact Lists are by application, device, and individual situation
- **Tomorrow (already?) ...**
 - ◆ Everyone connected, can't do without being on-line
 - ◆ The first place people go for content is on-line
 - ◆ Informal peer groups and sharing are common
- **Future (soon?) ...**
 - ◆ Everyone, everything always connected everywhere
 - ◆ Only place people go to for content is on-line
 - ◆ Dynamic communities of interest w/o boundaries



Today's technology literate young person is tomorrow's key decision maker at home and at work, and your target customer!

We were always working on the "next generation" ...

- We began with human operators handling switching and services for "hard-wired" subscribers, ...
- ... "progressed" to analog mechanical circuit switching (SxS), ...



... refined it with stored program control (#5 XBar, SP1), ...

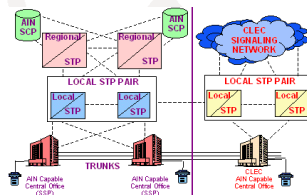


Chişinău, Moldova; 24-26 August 2009

5

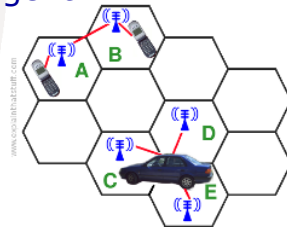
... but we were focused on refinements ...

... converted the analog circuits to digital transmission and switching, with replicated islands of intelligence (exchange based service logic and data), ...



... added message based signalling (SS7) and centralized intelligence (Intelligent Networks), ...

... then went from exclusively hard wired access by adding mobility with cellular telephony, ...



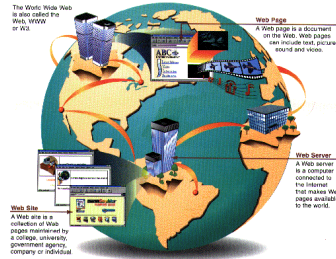
Chişinău, Moldova; 24-26 August 2009

6

... until some key developments came along ...

... the Internet and global connectivity ...

... coupled with almost unimagined computing technology advances in super computing, servers and personal computing ...

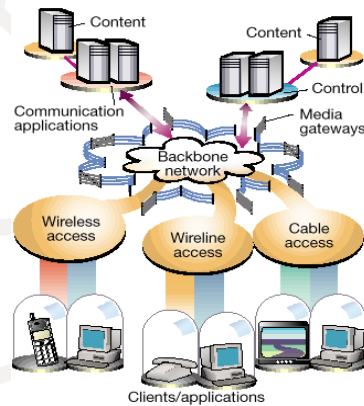
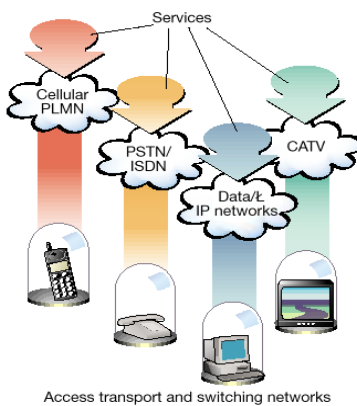


Chişinău, Moldova; 24-26 August 2009

7

... that *require* a paradigm shift ...

... and these technologies now ~~allow~~ ~~enable~~ *require* us to combine what used to be separate ...

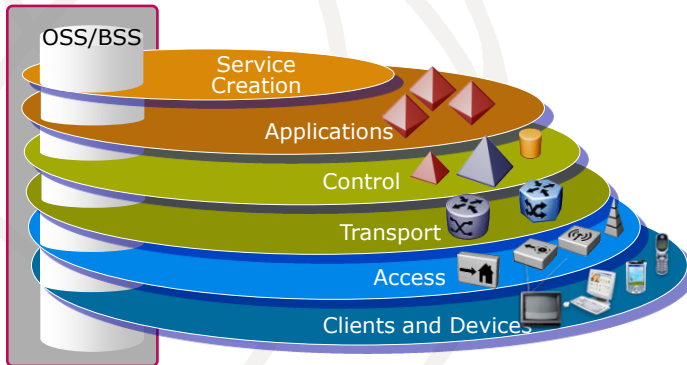


Chişinău, Moldova; 24-26 August 2009

8

... in how we do next generation telecommunications ...

... and we are taking advantage of all of this to change the entire architectural framework and infrastructure for one that is much more flexible, much more capable and much less expensive ...



Chişinău, Moldova; 24-26 August 2009

9

... always keeping our eyes on the goal: meet user needs!



Chişinău, Moldova; 24-26 August 2009

10

Telecommunications Industry: Constant Innovation

VoIP and Converged Communications

Wireless to WiMAX/4G/LTE

Wireline to Wireless

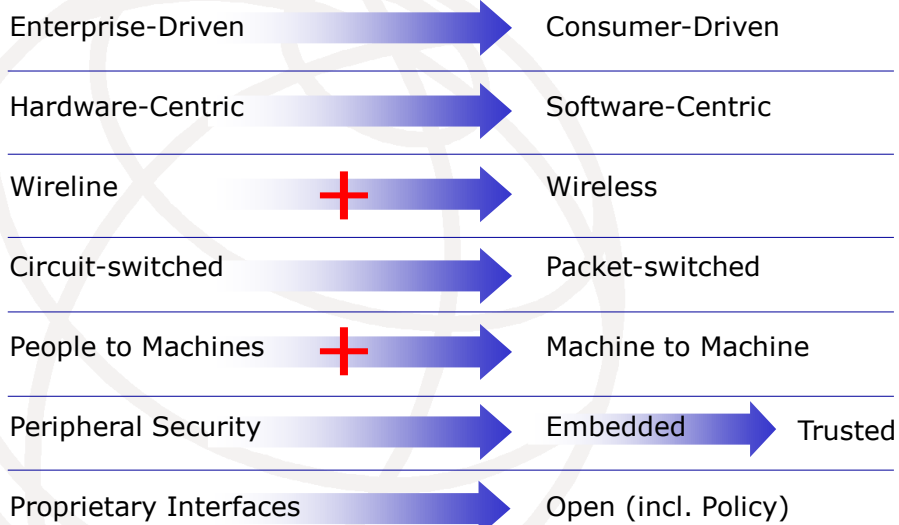
Copper to Fiber

Analog to Digital

Change comes from disruption. And we are going through a highly disruptive period!

Chişinău, Moldova; 24-26 August 2009 11

Landscape is changing



“Next Generation Networks” – a New Era in Telecommunications

- The communications industry is entering a new era of unprecedented capabilities that promises a rate of technology innovation far surpassing any other era in recent history
 - Catalyst is increasing demand for “Personal Broadband” which delivers high-bandwidth, super-fast, low cost access to any application from any device and any location
- Emerging megatrends require us to re-think how communications technology is developed and what technical challenges need to be overcome to deliver personal, pervasive broadband services unlike anything we have experienced.

Hyperconnectivity

- Evolution from being fully connected, (meaning everybody is on the network), to being *hyperconnected*, (meaning the range of devices and entities on the network far outpaces the number of people consuming the services offered by those devices).

Hyperconnectivity



Anything that *can* be connected and would benefit from being connected *will* be connected

Chişinău, Moldova; 24-26 August 2009

15

Hyperconnectivity is Real and Happening Now

Person to Person



- Europe – mobile phones now outnumber people (>100% penetration)
- Global mobile IM continues to grow at double digit rates
 - One Laptop Per Child



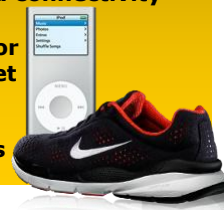
Person to Machine

- By 2010, worldwide:
 - 4-fold growth in Internet Commerce to 100B transactions
 - 1-2 billion GPS-enabled handsets
 - 150 million iPods sold (March 2008)
 - iPhone sales hit 11.4M in 2008, may hit 45M in 2009; hyper-connectivity at applications level

Machine to Machine



- 98% of all CPUs today are embedded (by 2010 – 14 billion connected, embedded devices)
- >>70% of 2009 cars in U.S. had iPod connectivity
- Sensor pocket in Nike shoes



Chişinău, Moldova; 24-26 August 2009

16

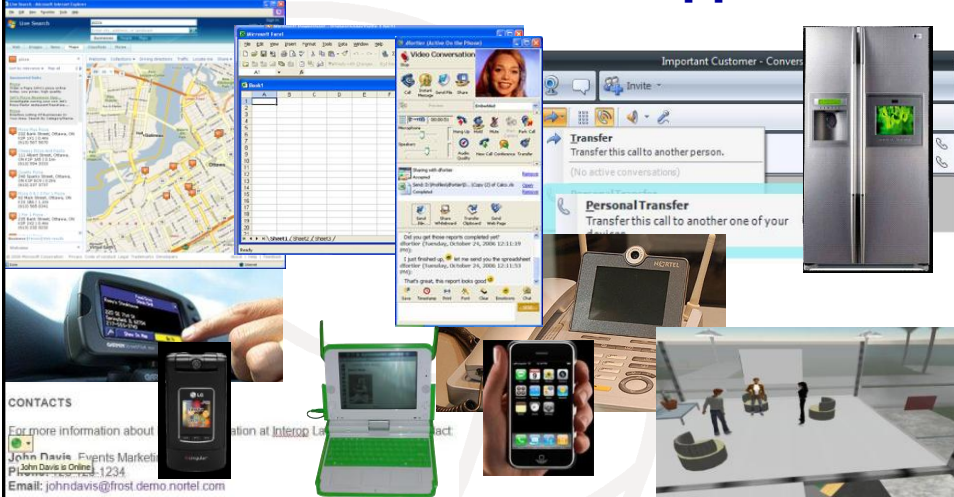
Communications-Enabled Applications

- Reinvention of services and applications to support new levels of network-aware intelligence and an intuitive interaction experience through advanced technology frameworks such as IMS and Services Oriented Architecture (SOA).

Chişinău, Moldova; 24-26 August 2009

17

Communications-Enabled Applications



Every Application will have Built-In Communications Capabilities

Chişinău, Moldova; 24-26 August 2009

18

Converged Communications Vision

All Devices, Applications, Interfaces

Context

Identity

Services

Environment

Chişinău, Moldova; 24-26 August 2009

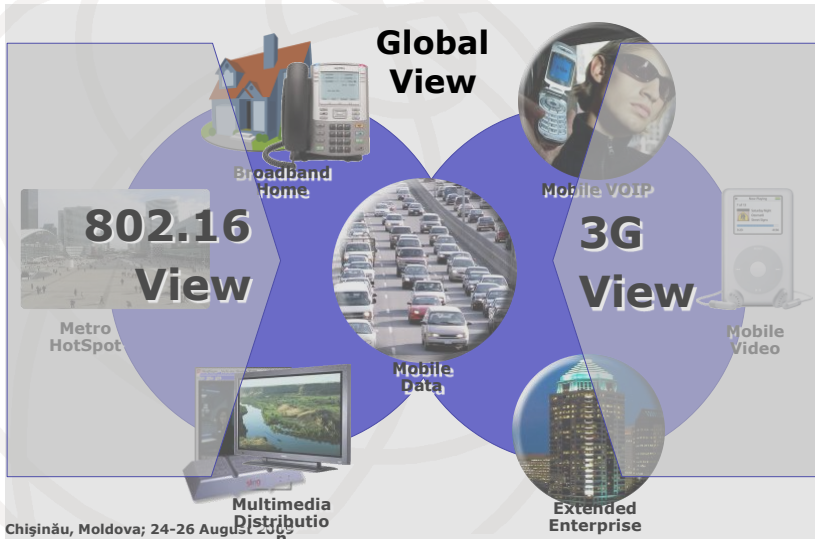
19

True Broadband

- The communications experience is so seamless that users no longer have to consider which technology – wireline or wireless – is being used to make a connection. They simply communicate, anywhere, anytime from whichever device is most convenient. Most importantly, the broadband experience becomes so economical that the range of uses exceeds any experience of the past.

4G World – Broad View

Connecting everything that should be connected!



21

Hyperconnectivity: Opportunity & Challenge

■ Opportunity

- Increased revenue (carriers)
- Increased productivity (enterprises)
- Better communications experience (end users)
- A more connected world (societal good)

■ Challenge

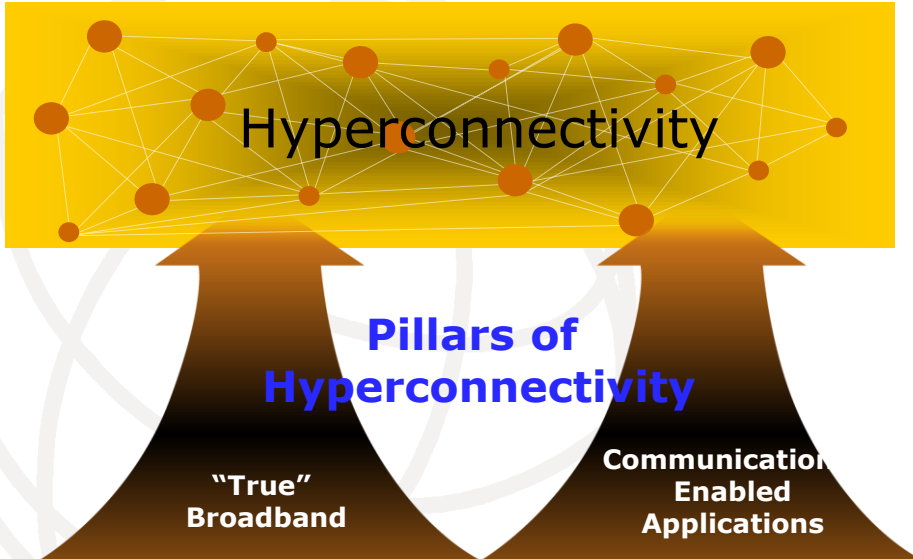
- Scale is unprecedented
- Today's networks are not designed for Hyperconnectivity
- New technology required to transform much of IT and Telecom

**Embracing innovation and scale
will capture the opportunity of Hyperconnectivity**

Chişinău, Moldova; 24-26 August 2009

22

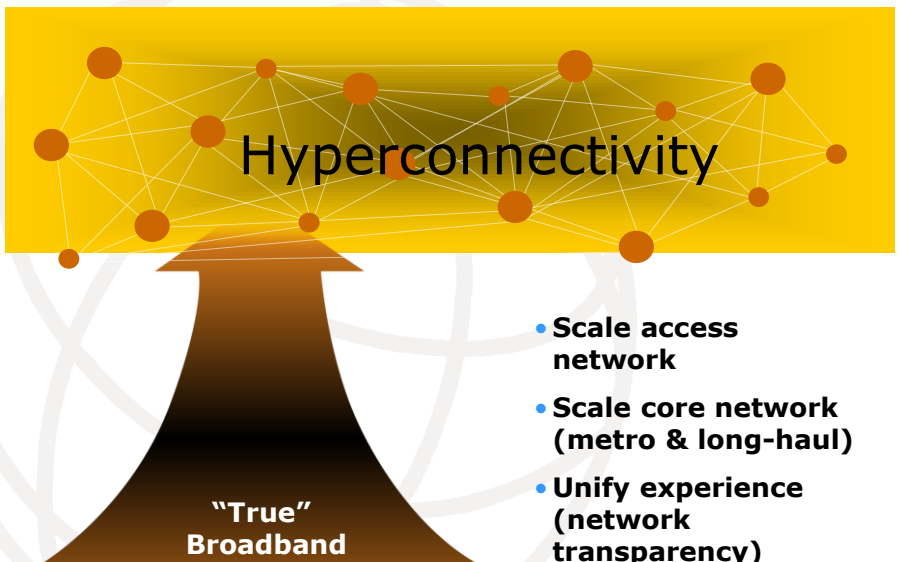
Addressing the Challenge and Opportunity of Hyperconnectivity



Chişinău, Moldova; 24-26 August 2009

23

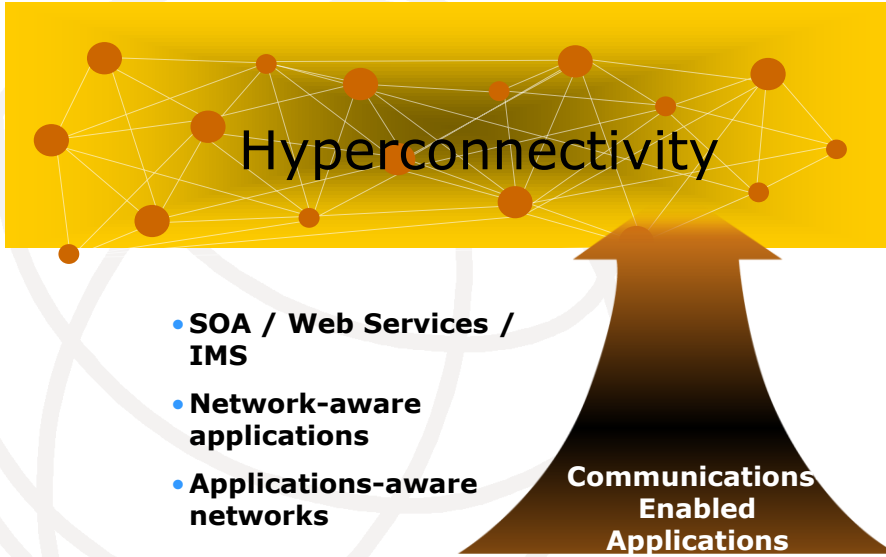
Addressing the Challenge and Opportunity of Hyperconnectivity



Chişinău, Moldova; 24-26 August 2009

24

Addressing the Challenge and Opportunity of Hyperconnectivity



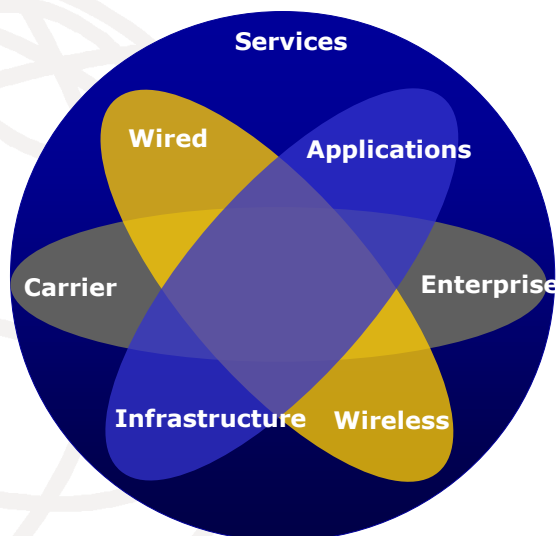
Chişinău, Moldova; 24-26 August 2009

25

Leveraging the Synergy

Synergy matters because today's challenges are multi-dimensional

- Multimodal phones
- Fixed-mobile convergence
- Real-time communications handoff
- True Presence
- Extension of Enterprise application to mobile devices
- Carrier-grade enterprise mobility



Chişinău, Moldova; 24-26 August 2009

26

Summary

- We've always worked toward "Next Generation Networks"
 - ◆ Expectations of next generation users a key driver
 - ◆ Landscape is changing, rate of change is increasing
- What users want:
 - ◆ Always on
 - ◆ Anytime
 - ◆ Anywhere
- Hyperconnectivity is the future
 - ◆ Change comes from disruption
 - ◆ Enormous growth of mobile plus IP-based infrastructure leading rapidly to convergence
- Opportunity abounds!