Seminar Feedback and Conclusions

4.2.2: Conclusions and Closing Remarks

ITU-BDT Regional Seminar on Fixed Mobile Convergence and Guidelines on the smooth transition of existing mobile networks to IMT-2000 for Developing Countries for Africa Region

Nairobi, Kenya 9-12 May 2005

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Some Key Messages and Discussion Points

- **This presentation, prepared, in real time to reflect the key points in the presentations (1535 slides), and the Q&A and discussion, aims to provide a summary of the workshop and to provide an aid to more in depth review of the material contributed.**

- **"The only that isn't changing is the fact that everything keeps changing!" ***

- **"We always over-estimate the change which will occur in the next two years and underestimate the change that will occur in the next ten." ****

> ***   *John Visser, Chairman ITU-T SG 19*
> **** *Bill Gates, Chairman, Microsoft Corporation, courtesy Roland Götz, LS telcom AG*

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Some Key Messages and Discussion Points

- **Don't forget the network!**
  - **Always plenty of interest and attention to access issues, especially radio access and associated spectrum concerns**
  - **But core network infrastructure (incl. "national backbone") is an equally important part of the telecoms world**
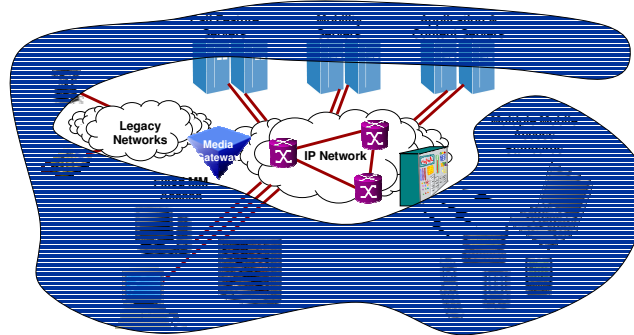
Session 1.1: Opening

1.1.1 Welcome address
- Eng. **James Rege**, Permanent Secretary, Ministry of Information and Communications
- Dr. **James Kulubi**, Director General, CCK

1.1.3 Introductory remarks/Keynote address/ITU Structure
- **John Visser** (ITU): provided overview of ITU structure and described role of each of the three sectors

1.1.2 ITU/BDT projects of interest in Africa
- **Chali Tumelo** (ITU-BDT Field Office): noted projects addressing harmonizing policy and regulation, convergence, network development, frequency management, network management, and feasibility studies

Session 1.2: International Framework

1.2.1 ITU-T: Activities on NGN

- **John Visser** (ITU-T): described Focus Group on NGN topics, structure, deliverables, and evolution going forward

### 1.2.2 ITU-R: Mobile convergence issues (ITU-R)

- **Colin Langtry** (ITU-R; presented by John Visser): highlighted process for identifying and allocating spectrum
  - IMT being implemented, will evolve over next 10-15 years
  - Mobile, Internet and broadband access growing rapidly
  - Convergence is occurring in many spheres
  - New radio interfaces required around 2010-2015
  - Spectrum aspects will be considered at WRC-07
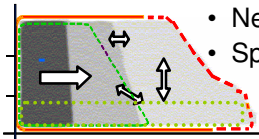
Session 1.2: International Framework (b)

1.2.3 ITU-D: Regulating Convergence
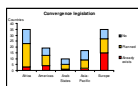
- **Fabrizio Savi** (Rapporteur ITU-D Q.10/1):
  - Converged regulator should cost effectively ensure a level playing field; recommends light and cost effective regulation with limited intervention.

1.2.4 TISPAN: Telecommunications and Internet converged Services and Protocols for Advanced Networking

- **Alain Le Roux** (France Telecom, TISPAN Chairman; presented by John Visser):
  - Strong industry demand for Multimedia services on xDSL
  - First release by 2005: realistic and implementable solutions
  - Architecture based on maximizing fixed/mobile convergence through adoption of 3GPP IMS

Session 1.3: Network Evolution to NGN and Convergence

1.3.1 Shaping the Future: Converged Networks

- **John Visser** (Nortel): network transformation, convergence essential to enhancing user experience, driven by demand
  - Mobility an integral capability of NGN
  - Anytime, anywhere, in any form; secure, trusted, reliable
  - Self service, intuitive/simple for the end user

1.3.2 Mobile Network Evolution: Economic Aspects of Evolution towards IMT-2000
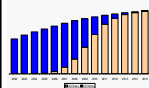
- **Kiritkumar Lathia** (Siemens Mobile Communications SpA):
  - Users will choose mass market technology
  - Develop 2.5G (GSM/GPRS) for transition to 3G
  - New business model of "horizontal" partnerships
  - Remember "back-office" applications

Session 1.3: Network Evolution to NGN and Convergence

1.3.3 Convergence & 2G/3G Evolution from Africa perspective

- **Vitalis Olunga** (Head of Regulatory & Public Policy, Safaricom Limited, Chair GSM AFRICA):
  - Challenges:
    - Human resource capacity building
    - Infrastructure (mobile and fixed); support (roads, power)
    - License policies: international gateways, satellite

High interest topic: many questions!

  - Appropriate ICT policies and regulation essential
  - Convergence should match technology evolution, include other technologies such as Wi-Fi, Wi-MAX, etc.
  - Sustained IMT-2000 growth: need spectrum
  - Effective management of the resources necessary to achieve the MDG goals by all the stakeholders

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Session 1.4: Network Evolution to NGN

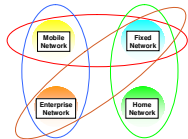- **1.4.1 Network Architecture consolidation in the evolution towards NGN**
  - **Oscar Gonzalez Soto** (Spain): key factors in network architecture evolution to NGN:
    - Plan business and services first, then the technology
    - Implement pilot cases before network migration
    - Competitive differentiation to competitors: services, quality
    - Design financial performance per best business practices
- **1.4.2 Migration from TDM to NGN**
  - **Helmut Schink** (Siemens, presented by <u>Kiritkumar Lathia</u>):
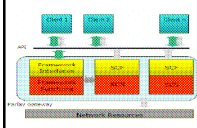   - The market is ready for cost savings, new applications, convergence
    - The technology is mature for successful introduction of IMS to provide real value-add

ITU-BDT Regional Seminar: Fixed/Mobile Convergence & Guidelines for Transition to IMT-2000 - Africa Region - 8

Session 1.4: Network Evolution to NGN

- **1.4.3 Network Evolution to NGN: "Parlay Architecture"**
  - **Albert Kamga** (NICT department, Ministry of Post and Telecommunications, Cameroon):
    - Parlay/OSA provides a framework for clients, service interfaces, capability features and network resources
    - Benefits users, operators, service providers and developers
    - Need to adapt regulation; standards on the way (ITU-T SG 13)
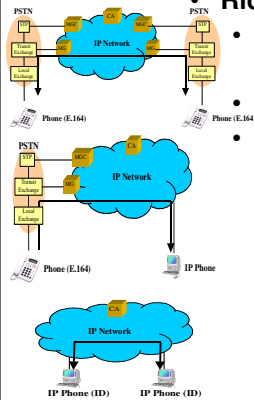   - Important for Africa to participate

ITU-BDT Regional Seminar: Fixed/Mobile Convergence & Guidelines for Transition to IMT-2000 - Africa Region - 9

Session 1.4: Network Evolution to NGN

- **1.4.4 Signalling Protocols and Evolving Architectures for NGN**
  - **Riccardo Passerini** (ITU-BDT):
  - Telecoms is a crucial factor for efficiency in administrations, public utilities and private companies
  - Telecoms plays a key role for increasing competitiveness
  - Evolution principles and approach:
    - separate transport, control, OAM&P, service functions
    - capital and maintenance cost reduction
    - maximum reuse of existing resources
    - comparable QoS to existing network
    - optimum use of the new technologies
    - rapid implementation to enable new applications and mechanisms to enable full utilization
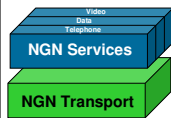
Session 2.1a: Converged Networks

2.1.1 Mobile Network Evolution to NGN
- **John Visser** (Nortel):
  - deployment of fixed-mobile convergence possible now, begin gaining advantages of IMS, packet-based core network
  - security must be built in from the beginning

Standards are not static but undergo evolution and enhancement
Ref.: ITU-T Q.1741.x-series & Q.1742.x-series
Ref.: ITU-R M.1457.x-series

2.1.2 3G/UMTS – An evolutionary path to Next Generation Networks
- **Jean-Pierre Bienaimé** (Chairman, UMTS Forum):
  - IMS provides flexible architecture with access independence
  - IMS "separations" enables cost savings and interoperability
  - tomorrow's entire multimedia mobile world will be IMS-based
  - reasonable licensing costs, availability of terminals essential

Session 2.1a: Converged Networks

2.1.3 Broadcast Mobile Convergence for New Generation Media Networks

LS telcom

- **Roland Götz** (LS telcom AG):
  - Life goes mobile: convergence in content and services
  - Hybrid networks: >1 network per application
  - Cooperation opportunities for broadcast and telecom
  - Synergy for both: fusion creates new business opportunities

2.1.4   Mobile Network Evolution to NGN

SIEMENS

- **Bosco Fernandes** (Siemens):
  - Telecoms transition ahead: prepare for PSTN replacement
  - ETSI TISPAN Rel. 1 architecture includes NASS & RACS
    - Maximizing convergence: adopt 3G/UMTS IMS
  - Global standards collaboration important and essential: ITU-T FG NGN & SGs, other SDOs

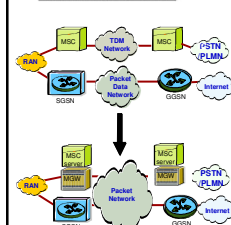## Session 2.1b: Converged Networks

2.1.5 IMT-2000 vs. Fixed Wireless Access (FWA) systems

UMTS Forum

- **Jean-Pierre Bienaimé** (Chairman, UMTS Forum):
  - Wireless access technologies will co-exist, complement
  - Factors to keep in mind: globally harmonized spectrum; economies of scale; roadmap to future
  - Timing is everything

**2.1.6 Mobile Network Evolution to NGN**

ALCATEL

- **Roland Thies** (Alcatel, France):
  - NGN: 3G UMTS R4/R5, CDMA2000 1x EV-DV
    - Strong architecture similarities, especially IMS/MMD
  - Separation of control and transport
  - Why NGN?
    - Transport network simplification: 1 for voice, data, MM
    - Bandwidth saving
    - Unified new services through standardized Interfaces

Session 2.1b: Converged Networks

2.1.7 Mobile Network Evolution to NGN
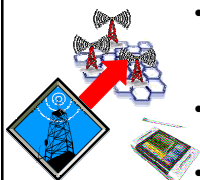
SIEMENS
- **Bosco Fernandes** (Siemens)
  - Convergence of services very important
    - Broadcasters need a return channel
    - Mobile operators want high value services, low investment
  - Convergent services on UMTS/DVB-T brings broadcast and telecom together: add DVB-H to 3G terminal
 - Impacts regulation and traditional service definitions

2.1.8 Application of Wi-Fi in Bridging the Digital Divide in Developing Countries

TelkomKenya
- **Jared Baraza** (Telkom Kenya):
  - Rural, sub-urban connectivity for communities, schools, health care, research and scientific applications
  - Rapidly deployable, cheap, license free:
    - Can bridge missing digital link for user, service provider
  - Regulators should encourage, operators consider for network deployments
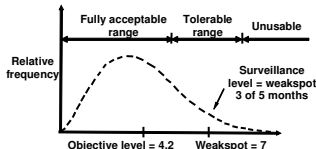

Session 2.2b: Network Evolution to NGN – Services and Traffic Engineering

2.2.3 Case Study: planning of different BB solutions in the last mile for urban and suburban areas
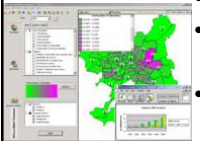
- **Ignat Stanev** (ITC: International Teletraffic Congress)
  - Planning process for evaluation of different BB solutions
  - Careful planning, comparison of alternatives, corresponding economics identify best long-term solution
  - Sample uses real data on professional grade tools provided by ITU partners in network planning programs and activities

2.2.4 Service Level Agreement (SLA) and Global QoS index for 3G networks

Fully acceptable range Tolerable range Unusable

Relative frequency

Surveillance level = weakspot 3 of 5 months

Objective level = 4.2   Weakspot = 7

- **Villy B. Iversen** (Technical University of Denmark, presenter), **Manfred Schneps-Schneppe** (Abavanet, Moscow):
  - What an SLA is; SLA framework & criteria

Session 2.2a: Network Evolution to NGN – Services and Traffic Engineering

- **2.2.1 Network and service development and their demands for traffic engineering**
  - **Villy B. Iversen** (Technical University of Denmark, Vice-Chairman, ITC):
    - Starting with the Erlang B formula, look at considerations in QoS: guaranteed through resource reservation; blocking probability, priority mechanisms, widely varying traffic characteristics
    - Analysis vs. simulation: pros & cons
- **2.2.2 Modeling issues of integrating services in Next Generation Networks**
  - **Villy B. Iversen** (Technical University of Denmark , Vice-Chairman, ITC, presenter) and **Sergey Stepanov** (Sistema Telecom, Moscow, Russia)

Session 3.1a: Operational and Regulatory Aspects of Convergence

3.1.1 Reaching Regulatory Excellence Kenya's Case Study of Hurdles Overcome

- **Stanley Kibe** (Licensing and Compliance, CCK):
  - Liberalization, privatization, level playing field
  - Many regulatory challenges but also successes
  - Future: technology neutral market classification: Network Facilities, Applications Service, & Content Services Providers

Infrastructure sharing being investigated to address public concerns
Several Q&A on tribunals, process, success; interest in self-certification

3.1.2 Convergence Strategy for a Universal Operator and role of Business Planning

- **Oscar Gonzalez-Soto** (Spain):
  - Maintain business indicators within margins in competition
  - Evaluate on technical, economic factors; economies of scale
  - All services, multiple customers approach: maximum returns

Session 3.1a: Operational and Regulatory Aspects of Convergence

3.1.3 Fixed Mobile Convergence: Regulator's Response
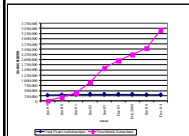
- **Mercy Wanjau** (Principal Legal officer, CCK) and **Mwende Njiraini** (Assistant Engineer, New Technologies and Internet Services, CCK):
  - Rapid growth of mobile makes it hard for regulators to keep pace. Regulators need to both:
    - be proactive and responsive, and
    - do just what is necessary to achieve clear goals
  - Significant, growing unmet demand: mobile poised to meet
  - Convergence is an opportunity: understand it, leverage it
    - Encourage investment, competition
    - CKK initiatives: ENUM: connectivity IP/PSTN; cost studies, local & X-border interconnection

MUSEUM

Session 3.1b:Operational and Regulatory Aspects of Convergence

3.1.4 Licensing in an era of convergence

- **Sofie Maddens Toscano** (Portugal):
  - Dynamic, unpredictable markets: competition & convergence
  - "Technology and service neutral licensing = best way forward to encourage competition and to accommodate convergence"

3.1.5 The new Italian Code for electronic communications: a technologically neutral solution

- **Fabrizio Savi** (Telecom Italia, Rapporteur ITU-D Q.10/1):
  - Key words wrt new Italian Code: objective, transparent, non-discriminatory, proportional, efficient (spectrum usage), timely, simple, interoperable, freedom in use, flexible regulation for interconnection

3.1.6 Case Study: Unified Licensing Regime in India

- **Rajendra Singh** (TRAI, India)
  - Integrated into 3.1.4, presented by <u>Sofie Maddens Toscano</u>

Session 3.2a: Fixed Mobile Convergence

3.2.1 Trend for Fixed and Mobile users growth based on Statistics data for ICT Indicators

- **Ignat Stanev** (ITC: International Teletraffic Congress):
  - Considerable potential, most in developing countries
  - Users in developing countries concentrated in urban areas
  - Traditional voice expected to dominate with low IT density

3.2.2 Mobile 2G/3G networks: a Universal Communication and Service solution

- **Roland Thies** (Alcatel France):
  - After an unsuccessful past (lack of incentives, service value, prohibitions, etc.); a promising future ($\Uparrow$ revenue, $\Downarrow$ churn, $\Downarrow$ OPEX): end of the "unhappy customer"
  - 2.5G in rural WLL can contribute to Universal Access

Session 3.2a: Fixed Mobile Convergence

3.2.3 Convergence: Commercial Deployment of Wireless Systems
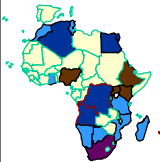
- **Sachin Bhatmuley** (Sr. Manager of Business Development, Qualcomm Incorporated)
  - Evolution of technology and regulation enables FMC
  - CDMA enables increased spectrum efficiency: voice & data
  - lowest voice rate: BSNL ($0.008/min); data: Sprint ($10 flat)
  - higher data rates -> affordable better user experience
  - APEC guidelines reviewed
  - Example of regulatory change success: Telecom Regulatory Authority of India (TRAI)
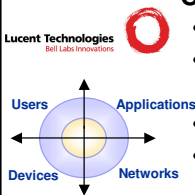
Session 3.2b: Fixed Mobile Convergence

3.2.4 3G C D M A (Creating Digital Multimedia Applications) Around the World

- **Molly Gavin** (Qualcomm Incorporated):
  - 3G CDMA mobility enables new applications: connectivity, education, public safety, health care, conservation, safety, democratic process participation, ...

3.2.5 Creating Value Through True Convergence

- **Colin Horton** (Lucent Technologies)
- User becoming more sophisticated and more demanding
- Convergence enables evolution to blended lifestyle applications: new and compelling end user experience
- Increased revenue for operator and reduced churn
- IMS: the basis of fixed-mobile convergence

Users   Applications

Devices   Networks

Session 3.2b: Fixed Mobile Convergence

3.2.6 Impact of Frequency and Radio Channel Variability on a Converged Wireless Access Network and Telecommunication Service Provision in Sub-Saharan Africa

- Peter J. Chitamu (School of Electrical and Information Engineering at the University of the Witwatersrand, Johannesburg):
  - Access network capabilities (reach, data rate) are key in converged networks and services
  - Most service areas in Africa may be classified as non-urban
  - Sub-Saharan Africa has unique conditions:
    - Large coverage areas with low traffic volume
    - Careful selection of access network technology needed to address propagation issues and meet reach, data rate requirements for converged services

Session 4.1a: 2G to 3G Migration/ Evolution: Guidelines for Dev. Countries

4.1.1 IMT-2000 Services: Special needs of Operators, Regulators and Users in Developing Countries
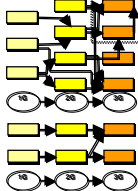
- **Nataša Gospić** (Rapporteur ITU-D Q.18/2):
  - "Mid Term Guidelines" (MTG, Sep 2004) met objectives
  - "Smooth transition of existing networks ..." target: Sep 2005
  - IMT-2000 accommodates special needs for urban, sparsely populated rural, and mixed urban/rural areas

### 4.1.2 ITU-D Guidelines for Transitioning Towards IMT-2000 Systems in Developing countries

- **Davide Grillo** (Alcatel, presented by Nataša Gospić)
  - Social aspects particularly important in developing countries.
  - Transition evolution & migration phases: mix, sequence based on case specific economic and strategic decisions
  - Guidelines (GST) identify issues and options for a smooth and cost-effective transition towards IMT-2000 systems.

Session 4.1a: 2G to 3G Migration/ Evolution: Guidelines for Dev. Countries

4.1.3 Migration to IMT-2000 in Developing countries: The view of Policy Makers and Regulators and market reaction
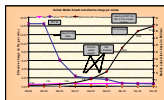
- **Rajendra Singh** (TRAI India, presented by Nataša Gospić):
  - Drivers for IMT-2000 reviewed
  - Spectrum utilization efficiency, licensing process important
  - Spectrum allocations iun India closely match ITU allocations

4.1.4 IMT-2000 Regulatory and Spectrum Issues

- **Samantha Craig** (Qualcomm Incorporated):
  - Spectrum is a scarce and critical resource
  - Considerations in assigning frequencies reviewed
  - Bands under 600MHz of significant interest: very good match to developing country needs
  - WP 8F questionnaire on spectrum
 - IMT-2000 key role in achieving universal access for Africa

Session 4.1b: 2G to 3G Migration/ Evolution: Guidelines for Dev. Countries

### 4.1.5 Licensing Aspects, the case study of Portugal
- **Riccardo Passerini** (ITU-BDT) & **Sofie Toscano** (Portugal):
  - Part 1: statistics, competition stimulates growth; licensing approaches with pros & cons, considerations, etc.
  - Part 2: case study, consideration, results: opportunity to learn from others' experience; focus on long term
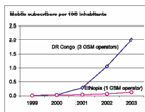
4.1.6 CDMA2000 Transition Path in Africa
- **George Mansho** (Vice President, Int'l Development, CDG):
  - Small % change in telephony, internet usage stimulates substantial increases in GDP
  - Regulator's best situation: everyone is equally unhappy
  - Data is never fast enough nor cheap enough
  - Lower frequencies: more coverage, fewer base stations
  - "When you come to a fork in the road, take it." * I.e., keep going, you'll get there!
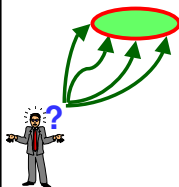
  > * *Yogi Berra*

Session 4.1b: 2G to 3G Migration/ Evolution: Guidelines for Dev. Countries

4.1.7 Besoins Particuliers des Pays en Développement
- **Denis Ngae** (Chief of Service Ministry of Post and Telecommunications, Cameroon):
  - All developing countries experiencing the same realities
  - Mobile is addressing the needs
  - Appropriate analysis of needs will identify the path forward

4.1.8 Achieving Social & Economic Development Goals with 3G Technologies
- **Azfar Aslam** (Lucent Technologies):
  - Barriers: economic, technical, regulatory uncertainty, experience base
  - 3G's higher capacity and data rates yield lower CAPEX, OPEX, translate into lower get-started cost and lower cost of ownership, lower prices to consumers
  - Competition leads to reduced cost per minute

Session 4.1c: 2G to 3G Migration/ Evolution: Guidelines for Dev. Countries

4.1.9 The Regulatory Challenges in Transitioning to IMT-2000

- **Patrick Masambu** (Chief Executive of Uganda Communications Commission):
  - Introduction of 3G is a must
  - Regulatory preparedness is urgent: stimulate growth, access
  - A national backbone is an essential element
  - Take a broad holistic approach – ICT based, cross-sector

4.1.10 Transition Path to IMT-2000 in Serbia

- **Divna Vuckovic** (Director Customer Solutions & Sales Support, Ericsson d.o.o, Serbia & Montenegro)
- Radmila Simić (Project Manager, Strategic Development), **Jakov Stojanovic** (Network Planning Centre, MOBTEL)
  - Information on Serbian market situation: regulation, operators, services, considerations; spectrum incumbents
  - Planning underway: combine wireless, fixed and broadband

Session 4.2:Seminar Feedback and Conclusion

4.2.1 Participants' feedback per country

- **HoD of each participating country**
  - Brief presentation of key points of feedback to assist ITU-BDT in making these regional seminars as useful and effective as possible

4.2.2 Conclusions and closing remarks

- **John Visser** (ITU)
  - This presentation
  - Next page

Closing Remarks

Today's technology savvy young person will soon be a key decision maker at home and at work. This "next generation user" is the target customer who will demand and expect multimedia services, security, personalization and mobility for enhanced productivity and user experience as normal. Next Generation Networks (NGNs) must meet the demands of these next generation users.

There are now more mobile users than fixed users. This increasing "demographic" shift requires an essential re-examination of the relationship between fixed and mobile networks. It also makes it very clear that mobility must be a core capability of the NGN.

The key objectives of this Seminar were to provide an overview of convergence in its widest sense (Telecom/IT/Broadcast), then to focus on near term convergence topics including fixed and mobile, Telecom + IT. The Seminar will include identification of directions and work topics for proceeding forward from near term convergence. Guidelines on the smooth transition of existing mobile networks to IMT-2000 for Developing Countries will be part of the Seminar.

On behalf of all the speakers, I hope that we have met your expectations!

Appendix: Some Additional Resources * (1/2)
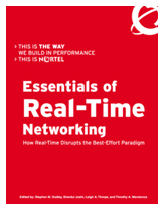
- **"Essentials of Real Time Networking" is available for download at: http://www130.nortelnetworks.com/cgi-bin/eserv/cs/main.jsp?BV_SessionID=@@@@0449629309.1115789159@@@@&BV_EngineID=gadddhfhejghbhkcginchgcgjg.0&cscat=DOCDETAIL&DocumentOID=292677&searched="real%20time%20networking**

- **Definition of "Seamless Mobility" in presentation 2.1.1 is based on §5.3 of Supplement 52 to the ITU-T Q-series Recommendations:**
  - **http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=T-REC-Q.Sup52**

- **Shosteck free white papers: www.shosteck.com**
  - **1 of several: "Lessons From Metricom and MobileStar: Success Factors for the Portable Internet Access Market"**

* N.B.: These are provided for convenience only. For non-ITU references, being listed here does NOT indicate ITU endorsement.

Appendix: Some Additional Resources * (2/2)

N.B.: These are provided for convenience only. For non-ITU references, being listed here does NOT indicate ITU endorsement.

- **Web sites with resource material for Regulators:**
  - **ITU:** www.itu.int
  - **European Commission:** www.europa.eu.int
  - **Australia:** www.aca.gov.au
  - **Bahrain:** www.tra.org.bh
  - **Brazil:** www.anatel.gov.br
  - **Equador:** www.conatel.gov.ec
  - **Guernsey:** www.regutil.gg
  - **Ireland:** www.comreg.ie
  - **Jordan:** www.trc.gov.jo
  - **Lesotho:** www.lta.org.ls
  - **Macau:** www.gdtti.gov.mo
  - **Malaysia:** www.mcmc.gov.my
  - **Mauritius:** www.icta.mu
  - **Nicaragua:** www.telcor.gob.ni
  - **Nigeria:** www.ncc.gov.ng
  - **Panama:** www.enteregulador.gob.pa
  - **Singapore:** www.ida.gov.sg

Thank you!