ITU Initiatives on NGN
and Way Forward

“Workshop on
“NGN Planning and Migration”

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New Delhi

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ITU Regional Office for Asia and the Pacific
Agenda

- Why Broadband?
- ITU Standardization work on NGN
- Developmental work on NGN
- ITU Asia Pacific Initiatives on NGN
- Conclusions
The ITU Vision on Broadband

Build on broadband and the rest will follow

Broadband needs to be considered as basic national infrastructure, as it will fundamentally reshape the world in the 21st century and change the way services are delivered – from e-health to e-education to e-commerce to e-government.
Broadband: National Perspective

- Promoting economic and social development
- Enhancing productivity and competitiveness
- Helping job creation and opportunities
- Raises rural income in developing countries
- Gender equality and empowerment of women
- Bringing economies out of economic crisis
- Creating knowledge based society
Investment in Broadband

Source: Qiang and Rossotto, 2009;

Stimulates Economic Development
Impact of Broadband on Innovation

Innovation efficiency vs. broadband penetration

Broadband facilitates innovation and entrepreneurship
Countries with a higher penetration see greater innovation
Broadband stokes innovation and it does so exponentially

Source: World Economic Forum
Announced Government Support for ICT Development

<table>
<thead>
<tr>
<th>Country</th>
<th>Vision</th>
<th>Timing and objective</th>
<th>Government support (US$ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>First 100% fibered up country in the world</td>
<td>By 2015: 100% homes and businesses passed</td>
<td>670</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Be one of the most technologically advanced countries in Asia</td>
<td>By 2018: 35% Internet penetration</td>
<td>680</td>
</tr>
<tr>
<td>Korea</td>
<td>Have the highest broadband penetration in the world</td>
<td>Already among the highest broadband (94%) and fiber penetrations (34%)</td>
<td>700</td>
</tr>
<tr>
<td>Australia</td>
<td>Fiber up the entire country, even all remote rural areas</td>
<td>By 2014: 98% of homes and businesses passed</td>
<td>3,300</td>
</tr>
<tr>
<td>Italy</td>
<td>Give all Italian citizens access to 20 megabits per second</td>
<td>By 2013: 100% of homes passed with fiber to the home</td>
<td>1,250</td>
</tr>
<tr>
<td>Stockholm</td>
<td>Be one of the first cities entirely covered by fiber</td>
<td>By 2012: 100% homes and businesses passed</td>
<td>300</td>
</tr>
</tbody>
</table>

Strong Belief that ICT Can Turn Around

Source: World Economic Forum
Broadband and NGN

- Broadband is key driver for social and economic growth
- To establish the knowledge based society requires robust infrastructure and applications
- ITU defined NGN which is a reliable social infrastructure to deliver broadband applications
- Efforts of ITU towards NGN:
  - ITU-D: Regulatory reforms/ institutional capacity building/Best Practice Guidelines/Case Studies
  - ITU ASP RO: County Specific assistances/ regional/national training/Forums
ITU-T Standardization on NGN
Objectives of NGN

- Promote fair competition
- Encourage private investment
- Provide open access to networks
- Single billing contact with the consumer
- Faster roll-out for new services
- Reduces cost of infrastructure: Affordability
- Can enable developing countries to leapfrog and extend broadband connectivity
General Drivers of Migration

**New services and revenue** increase with multimedia services
- Compensate voice revenue reduction and increase BB related business
- Providing Service innovation (e.g. VPN)
- Decreased time to market

**Cost reductions** by sharing network infrastructure and systems
- Savings are a function of network scenario, equipment modernization status and customers grow speed
- Evolving legacy networks to NGN: Reduced OPEX and streamline operations

**Simplification of O&M**
- Integrated operation platforms, maintenance and training
- Centralized Management and Control

*New Services & NGN Applications*

*Source: Nippon Telegraph and Telephone*
Drivers of Migration: Operators Perspective

- **Business continuity** required to maintain ongoing dominant services and customers that require carrier-grade service
- **Flexibility** to incorporate existing new services and react quickly to the ones that appear on real time (main advantage of IP mode)
- **Profitability** to allow feasible return on investments and in the best practices market values
- **Quality of Service** to guarantee the **Service Level Agreements** for different traffic mixes, conditions and overload.
- **Interoperability across networks** to allow to carry end to end services for flows in different network domains

Source: ITU Technology Watch, Cisco
ITU-T NGN Milestones

Past

2003
JRG-NGN
Y.2001
Y. 2011
11 draft Recommendations

~ 2008
NGN-GSI (1st Phase)
NACF
RACF
QoS/Security Mobility

2004-2005
FG-NGN
30 Documents collected in Proceeding Book

~ 2010
NGN-GSI (2nd Phase)
NGN Rev.1
IPv6 NGN
IPTV/CD&F
NGUN, N-ID &IdM

~ 2012
NGN-GSI (2nd Phase ... going)
Future Networks
OSE/SIDE
USN, DSN
Cloud Computing

Future

Present

~ 2008
NGN-GSI (1st Phase)
NACF
RACF
QoS/Security Mobility

JRG: Joint Rapporteur Group  GSI: Global Standards Initiative  FG: Focus Group  SG: Study Group
NGN release 2 to support the following functions:
- All functionalities of NGN release 1;
- Delivery functions for streaming content including multicasting such as IPTV services;
- Mobility support functions, e.g. FMC and seamless handover.

**Newly developed functions in Rel.2**

**ITU NGN Architecture Rel.2**
## Status of ITU-T SG13 NGN Developments

<table>
<thead>
<tr>
<th>Area</th>
<th>Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements</td>
<td>NGN (R1, R2), IPTV, Mobility Management, Id/Log separation, FMC(IMS), Multicast, VPN, N-ID, OSE, MDS, IPv6-NGN, Migration-IPv6 NGN, Flow State aware-NGN, Accounting-Charging, AAA, Security</td>
</tr>
<tr>
<td>Architecture and Functions</td>
<td>NGN (FRA R1), RACF, RACF-MPLS (Central, Distributed), NACF, IPTV, Multicast, IdM, IPv6-NGN, Multi-himing-IPv6, PSTN/ISDN-Emulation/Simulation, Loc-MM, HOC, Converged Services, Ethernet-QoS, Admission Control/Storage Restoration Priority Level</td>
</tr>
<tr>
<td>Service</td>
<td>Customized Multimedia Ring, Converged Web Browsing Service</td>
</tr>
</tbody>
</table>
Strategic Direction for NGN Developments

- Remaining enhanced network related capabilities
  - Transport control capabilities: Mobility, Multicasting and QoS control over interworking
  - Networking capabilities: Ad-Hoc Networks, DSN, Multi-connection and Ubiquitous Networking
  - Security related: Support of IdM and DPI (Deep Packet Inspection)

- Service related capabilities
  - Service support: SIDE (Service Integration and Delivery Environments)
  - Provider support: OSE (Open Service Environment), Mobile IPTV and Web based IPTV

- Continue to develop Testing Specification:
  - From methodology, testing model, architecture to detailed service testing such as VOIP service.
  - Monitoring parameters set becomes the important part for NGN testing and interoperability.
<table>
<thead>
<tr>
<th>Question #</th>
<th>Question title</th>
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<tbody>
<tr>
<td>1/13</td>
<td>Coordination and planning</td>
</tr>
<tr>
<td>2/13</td>
<td>Network terminology</td>
</tr>
<tr>
<td>3/13</td>
<td>Requirements and implementation scenarios for emerging services and capabilities in an evolving NGN</td>
</tr>
<tr>
<td>4/13</td>
<td>Requirements and frameworks for QoS enablement in the NGN</td>
</tr>
<tr>
<td>5/13</td>
<td>Principles and functional architecture for NGN (including ubiquitous networking)</td>
</tr>
<tr>
<td>6/13</td>
<td>Mobile telecom network architecture for NGN</td>
</tr>
<tr>
<td>7/13</td>
<td>Impact of IPv6 to an NGN</td>
</tr>
<tr>
<td>8/13</td>
<td>Mobility management</td>
</tr>
<tr>
<td>9/13</td>
<td>MM mechanisms supporting multi-connections for multiple access technologies</td>
</tr>
<tr>
<td>10/13</td>
<td>Identification of evolving IMT-2000 systems and beyond</td>
</tr>
<tr>
<td>11/13</td>
<td>Convergence of existing and evolving IMT and fixed networks</td>
</tr>
<tr>
<td>12/13</td>
<td>Evolution towards integrated multi-service networks and interworking</td>
</tr>
<tr>
<td>13/13</td>
<td>Step-by-step migration to NGN networks</td>
</tr>
<tr>
<td>14/13</td>
<td>Service scenarios and deployment models of NGN</td>
</tr>
<tr>
<td>15/13</td>
<td>Applying IMS and IMT in Developing Country mobile telecom networks</td>
</tr>
<tr>
<td>16/13</td>
<td>Security and identity management</td>
</tr>
<tr>
<td>17/13</td>
<td>Packet forwarding and deep packet inspection for multiple services in packet-based networks and NGN environment</td>
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<tr>
<td>18/13</td>
<td>Requirements and framework for enabling COTS components in an open environment</td>
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<tr>
<td>19/13</td>
<td>Distributed services networking (DSN)</td>
</tr>
<tr>
<td>20/13</td>
<td>Public data networks</td>
</tr>
<tr>
<td>21/13</td>
<td>Future networks</td>
</tr>
<tr>
<td>Topic</td>
<td>Recommendations</td>
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<tr>
<td>----------------------------------------------------------------------</td>
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<tr>
<td>Next Generation Networks</td>
<td>Y.2000-Y.2999</td>
</tr>
<tr>
<td>Frameworks and functional architecture models</td>
<td>Y.2000-Y.2099</td>
</tr>
<tr>
<td>Quality of Service and performance</td>
<td>Y.2100-Y.2199</td>
</tr>
<tr>
<td>Service aspects: Service capabilities and service architecture</td>
<td>Y.2200-Y.2249</td>
</tr>
<tr>
<td>Service aspects: Interoperability of services &amp; networks in NGN</td>
<td>Y.2250-Y.2299</td>
</tr>
<tr>
<td>Numbering, naming and addressing</td>
<td>Y.2300-Y.2399</td>
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<tr>
<td>Network management</td>
<td>Y.2400-Y.2499</td>
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<tr>
<td>Network control architectures and protocols</td>
<td>Y.2500-Y.2599</td>
</tr>
<tr>
<td>Future networks</td>
<td>Y.2600-Y.2699</td>
</tr>
<tr>
<td>Security</td>
<td>Y.2700-Y.2799</td>
</tr>
<tr>
<td>Generalized mobility</td>
<td>Y.2800-Y.2899</td>
</tr>
<tr>
<td>Carrier grade open environment</td>
<td>Y.2900-Y.2999</td>
</tr>
</tbody>
</table>
Conformity & Interoperability

WTSA-08 Resolution 76 Studies related to conformance and interoperability testing, assistance to developing countries, and a possible future ITU mark program

- **Conformity** ITU is developing a pilot conformity database which lists and gives visibility to products tested for conformity against ITU-T Recommendations. The database available for ITU members;

- **Interoperability** ITU is organizing a series of interop events, some in partnership with relevant standards development organisations, forums and consortia. Future interop events may include: Home Networking; VDSL2; GPON

- **Capacity Building** ITU-T and ITU-D Secretariats preparing a programme of capacity building events on conformity and interoperability testing.

- **Test Centers** ITU is providing assistance in establishment of testing facilities with other international organizations and private entities. A pilot project has been initiated in Tanzania in cooperation with Sintesio

- **Regional ITU Consultation** on Conformance Assessment and Interoperability for the Asia-Pacific Region: Sydney, Australia, 16 - 17 September 2010
Conformity & Interoperability-II

ITU-T Approved Standards on Testing Specifications

- **Q.3900** Methods of testing and model network architecture for NGN technical means testing as applied to public telecommunication networks
- **Q.3901** Distribution of tests and services for NGN technical means testing in the model and operator networks
- **Q.3902** Parameters to be monitored in the process of operation when implementing NGN technical means in public telecommunication networks
- **Q.3903** Formalized presentation of testing results
- **Q.3904** The scenarios, list and types of tests for TM local and NUT testing for IMS on the model networks
- **Q.3910** Monitoring parameters set for NGN protocols
- **Q.3911** Monitoring parameters set for voice services in NGN
ITU-R Initiatives on Broadband
Broadband radiocommunication systems are increasingly being deployed to rapidly bridge the “broadband access gap”.

- Identify and effectively manage the radio frequencies that are vital for the operation of wireless broadband networks.
- Develop globally agreed technical standards for wireless broadband.

A prime example of this activity is coordinating development of the global broadband multimedia international mobile telecommunication system, known as IMT.

- IMT-2000 (commonly referred to as 3G) is now widely deployed.
- Enhancements to these standards can provide transmission rates of the order of 50 Mbit/s — comparable to that provided by cable connections but with the added benefit of mobility.
IMT Advanced

- In 2000, work began on “IMT-Advanced” — the global platform on which to build the next generations of fixed and mobile wireless broadband services
- This process, which is now concluding, involved a detailed assessment of market needs up to 2020, identification of suitable spectrum and the detailed specification of the globally agreed radio interfaces
- Selection of radio interfaces will be decided in October 2010, and the detailed specifications for IMT-Advanced should be finalized in 2011
IMT Advanced-Satellite

- Satellite radiocommunication systems have great potential to accelerate the availability of broadband, particularly in remote and land-locked areas

- Studies into providing global access to the Internet at high data rates via satellite have been carried out and are contained in ITU-R standards

- Work on the satellite component of IMT-Advanced is also underway

- Process for selecting candidate satellite radio interface(s) of IMT-Advanced is being developed, and a report identifying requirements of the interface(s) is being finalized
ITU-R: Promoting Innovation

- FSS: 20/30 GHz bands are believed to be the most suitable for broadband Internet access in the near term. Standards on this topic are expected to be developed in the near future.
- ITU–R is also studying emerging technologies such as cognitive radio systems, to facilitate operation in the congested lower frequency bands, and free-space optical systems, to meet the very high data rate requirements of network backbones.
- With these activities, ITU–R is moving to meet its objective of enabling the delivery of equitable, affordable broadband access.
Radiocommunication Study Groups

Res. ITU-R 4-5 of Radiocommunication Assembly 2007:
- 6 ITU-R Study Groups:

SG 1: Spectrum management
SG 3: Radiowave propagation
SG 4: Satellite services
SG 5: Terrestrial services
SG 6: Broadcasting service
SG 7: Science services

In addition:
CCV: Coordination Committee for Vocabulary
CPM: Conference Preparatory Meeting
SC: Special Committee on regulatory and procedural matters

- >900 Recommendations
- "Standards" in areas of spectrum management and radio technology
- Result of consensus from meetings of world-wide experts
- Some referred to in RR
- Used by spectrum planners and system designers

Supported by Counsellors and Assistants in Study Group Department of BR

See Web page at: http://www.itu.int/ITU-R/go/rsg
Developmental Work on NGN
Changing Institutional Frameworks

Legislations embracing the power of convergence as well as addressing concerns such as Cybersecurity on the rise.

Institutional convergence including Telecom, Broadcasting, IT and in some cases even beyond on ground: e.g., Australia, China, India, Republic of Korea, Malaysia,

Converged policy & regulatory frameworks evolving: e.g., Converged Licensing (Malaysia), Authorization (European Union), Unified Access License (India), Digital Signature, etc.
Regulatory Institutions Playing Key Role

Countries with a separate regulator, 2009

- CIS: 39
- Arab States: 26
- Asia-Pacific: 13
- Europe: 31
- Americas: 38
- Africa: 6

Total: 153

Mandate of the regulator, 2009

Source: ITU World Telecommunication/ICT Regulatory Database.

Regulators having enforcement power, world

- Yes: 77
- No: 51

2005: 114
2009: 140

Source: ITU World Telecommunication/ICT Regulatory Database.

Trends in mechanisms used to solve disputes once negotiations among parties failed, world

2005
2009

Source: ITU World Telecommunication/ICT Regulatory Database.
Impact of Technology on Market and Regulation

Source: ITU
New Regulatory Paradigm

Pre-NGN

Service-based Pol./Reg.

Voice
Internet
Video
MM

Access Network Provider Domain

ANP 1 (DSL)
ANP 2 (DSL)
ANP 3 (Opt)
ANP N (Cable)

Access Agnostic

Transport Agnostic

Resource-based Pol./Reg.

IP (Future Packet ?) Platform
xDSL/Optic based Fixed-Mobile

Pol. X Reg. x

Core Network Provider Domain

User

Service/Application Provider Domain

SP1
SP2
SP3
SP m

CNP 1
CNP 2
CNP 3

ANP 1 (DSL)
ANP 2 (DSL)
ANP 3 (Opt)
ANP N (Cable)
What Could be the Licensing Models?

Simplification of Licenses

Models for Reduction of Administrative Requirements

Source: Report from ITU-D Study Group 1, Question 10-2/1
Regulatory Considerations for NGN Migration

<table>
<thead>
<tr>
<th>Licensing</th>
<th>Consider appropriate regime for classes and types of licences and licensing criteria, where licensing is required. There is a shift away from service and technology specific licensing towards horizontal licensing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbering</td>
<td>To ensure access to numbering resources and ensure that numbering, naming and/or addressing schemes encompass legacy, transitional and NGN services and associated directory services.</td>
</tr>
<tr>
<td>Interconnection</td>
<td>Regulatory considerations include whether new interconnection models may be required; the impact of IP based networks and traffic on current interconnection arrangements; ensuring no discriminatory access behaviour; defining the parameters of interconnection in a multi-service environment and whether there will still be a need for mandated wholesale interconnection regimes, as well as a revision of the charging principles.</td>
</tr>
<tr>
<td>Standards and Interoperability:</td>
<td>Regulatory considerations include mandating standards and interoperability between operators and new entrants to ensure no delays in the introduction of new services and providers in retail markets and to coordinate standardization activity where no specific body has been established.</td>
</tr>
<tr>
<td>Spectrum</td>
<td>The main regulatory consideration is ensuring equitable access to spectrum required by new NGN operators and services and ensuring that competition is not hampered through legacy spectrum assignments to incumbent operators for the provision of fixed, fixed-mobile and mobile services.</td>
</tr>
<tr>
<td>Universal Service</td>
<td>Affordability and accessibility are key policy goals that should not be abandoned or altered in a NGN environment. There is ongoing relevance to the structure of universal service obligations and levies for NGN migration, whilst ensuring that these are not onerous on operators such that they compromise innovation and infrastructure development. Regulatory questions include whether VoIP providers should contribute to a universal service fund; how to structure universal service contributions and to which technology or service these should attach.</td>
</tr>
<tr>
<td>Consumer Protection</td>
<td>Issues that require attention include but are not limited to, quality of service; priority access to emergency services; the provision of location information; rights and presence management, number portability, operators’ liability; privacy and security. Regulators around the world have started industry wide consultations of the consumer aspects of NGN migration to ensure that consumers are in no way adversely affected.</td>
</tr>
<tr>
<td>Spectrum</td>
<td>The main regulatory consideration is ensuring equitable access to spectrum required by new NGN operators and services and ensuring that competition is not hampered through legacy spectrum assignments to incumbent operators for the provision of fixed, fixed-mobile and mobile services.</td>
</tr>
</tbody>
</table>

Source: GSR 2007 Discussion Paper : NGN Overview
An enabling regulatory regime can foster innovation, investment and affordable access to NGNs and facilitate migration to NGNs.

- Establish forward-looking regulatory regimes
- Recognizing the need for regulatory flexibility and technology neutrality
- Removing undue regulatory barriers to competition and innovation
- Establish investment-friendly regulation while maintaining a level playing field and protecting consumer interests

The best practice guidelines cover as well authorization, access, interconnection, numbering and NGN identification systems, universal access, quality of service, consumer awareness, security and protection.

GSR 2007 Best Practice Guidelines for Next-Generation Networks Migration
The purpose of this module is to develop an intellectual framework and innovative content exploring issues related to new technologies and regulation policies. The module is organized in three main parts:

- **Technological trends.** This part examines the main technological trends and their impacts on regulation.

- **Market and regulation.** The analysis of the technology implications on the current regulation and market structure in this part is focusing on traditional regulatory areas, like Interconnection, price regulation, etc. and market structure aspects, like horizontal and vertical integration.

- **New regulatory paradigm.** Based on the technology trends and regulatory implications a new regulatory paradigm and its constituent elements are discussed in this part.

http://www.ictregulationtoolkit.org/en/Section.1318.html
QUESTION 12-2/1: Tariff policies, tariff models and methods of determining the costs of services on national telecommunication networks, including NGN

This report provides a link between economic and tariff policies based on conventional networks, and those set to lead to the effective establishment of next generation networks in different countries.

- Economic aspects of NGN investment projects

**Type of cost model used by administrations for NGN – 2009**

**Cost models used in setting tariffs for new services carried by NGN**
Aspects of migration

- Migration of core network: transformation of transport infrastructure to carry the different services
- Migration of access networks: deployment of multiple play access networks
- Deployment of multiservice platforms: migration of voice services for fixed operator, addition of new services
- Organizational impacts, which also generate costs.

Constraints regarding migration to NGN

- Call routing must be optimized using advanced engineering
- Quality of user services
- Interconnection service level agreements (SLA) with operators
- Adaptation of customer billing model
- Impact on human resources

Dilemma of operators in developing countries

- Pressure from the customer base to offer converging services
- Universal service obligations: extension of geographical coverage of existing telephone and data networks
ITU-D Study Group Questions (2011-2014)

**Study Group-1**

- Question 7-3/1 – Implementation of universal access to broadband services
- Question 12-3/1 – Tariff policies, tariff models and methods of determining the costs of services on national telecommunication networks, including next-generation networks
- Question 18-2/1 – Enforcing national policies and regulations on consumer protection notably in a converging environment
- Question 19-2/1 – Implementation of IP telecommunication services in developing countries

**Study Group 2**

- Question 25-2/1 – Access technology for broadband telecommunications including IMT, for developing countries
- Question 26-2/1 – Migration from existing networks to next-generation networks for developing countries: technical, regulatory and policy aspects

Contributions, participation, response to survey questions from stakeholders are encouraged.
ITU Asia Pacific Initiatives on NGN
Access Evolution TOT, Thailand

- Network assessment and audit for the status of the existing copper access network infrastructure in Bangkok
- Analyze target models & architecture for OSP network systems & services
- Evaluate dynamic migration models over time towards target solution based on technical dimensioning and business evaluations
- Network modernization for triple play services with at least 8 Mbps
- Guidelines on current access network capability toward NGN including economics of access network upgrading, NGN planning and deployment of ICT-based services over the access network
- To extract generic conclusions and experiences with applicability to other countries of the Region

## Radio Network Planning
- Assessment of the existing technologies in access network;
- Developing broadband IP-based-CDMA wireless access data network;
- Designing EVDO REVA with voice and design network connectivity at protocol level;
- Recommend Tools and instruments for optimization, maintenance, monitoring and QOS related issues for all IP Networking

## Core Network Planning
- Assessment of the existing technologies in core network;
- Preparing detailed design of overall network topology based on all IP CDMA, equipments for pool network, network design for disaster management;
- Design Network connectivity at protocol level;
- Recommend Tools and instruments for optimization, maintenance, monitoring and QOS related issues for all IP Networking
- Design one window customer related management system for customer provisioning, maintenance, billing for post paid and prepaid subscribers;
- SIP based point to point and point to multipoint services for post paid/prepaid;
- Suggest on issues related to WAP server, NMS, MMS, Voice over SMS
NGN Case Study: India, Philippines, Sri Lanka

WTDC 2006: A handbook with a number of parts on NGN network planning methodologies: a guideline for selecting NGN network planning software tools; and global network planning initiative.

Terms of Reference

- Compile Best Practices
- Prepare a manual consisting of various implementable action points for licensing, regulation, standardization, and deployment for facilitating smooth transition towards NGN;
- Conduct a two days interactive workshop

Philippines

Project Document Prepared
Coordinated by CICT and Ministry, Philippines
Funds: By DBCDE
Dates: 7-18 June
Expert: Oscar Soto
Working Group: Formed

India

Project Document Prepared
Coordinated by IAFI, TRAI, DOT
Funds: RI Funds
Dates: 11-22 October
Expert: Oscar Soto
Working Group: Formed

Sri Lanka

Project Document Prepared
Coordinated by TRCSL
Funds: RI Funds
Dates: 25 Oct-5 Nov
Expert: Oscar Soto
Working Group: Formed
Collaboration with India on Broadband

- Adopted at WTDC, Hyderabad, 2010, Hyderabad Action Plan include five regional initiatives for Asia-Pacific region
- RI on “Broadband access and uptake in urban and rural areas”
- This RI envisages broadband access and uptake in both urban and rural areas taking into consideration the need for development of
  - National Broadband Policies
  - Broadband infrastructure
  - ICT Applications
- Project Document Developed and discussion with DOT ongoing
- Possible funding for technical assistance on broadband policy and regulatory areas for India as well as ASP countries
Conclusions

- NGN Migration is a complex issue requiring close cooperation amongst regulators, policy makers, industry stakeholders to promote innovation.
- ITU has taken several initiatives to facilitate migration towards NGN:
  - Build on Broadband and Broadband Commission
  - ITU-T and ITU-R Recommendations on NGN
  - Guidelines on Migration Strategies
  - Case Studies, Country Specific Actions
- Publication of the outcome in Q4, 2010.
I THANK U

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