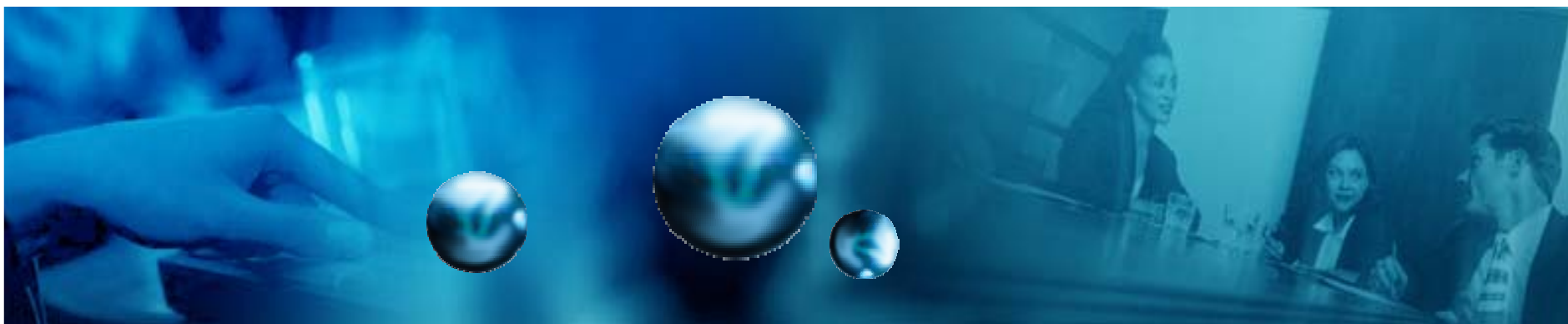
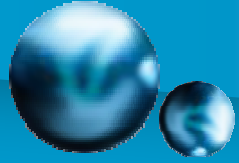


Regulatory framework to foster investment, innovation and affordable access to NGN



Arvind Kumar
Joint Advisor, TRAI, India
Rapporteur for ITU-D Study Group 6-2/1



What is required ?

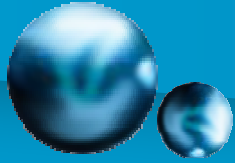
- A proactive regulatory regime
- Innovative polices
- Standardisation
- Access Regulation
- Interconnection Regulation
- Quality of Service



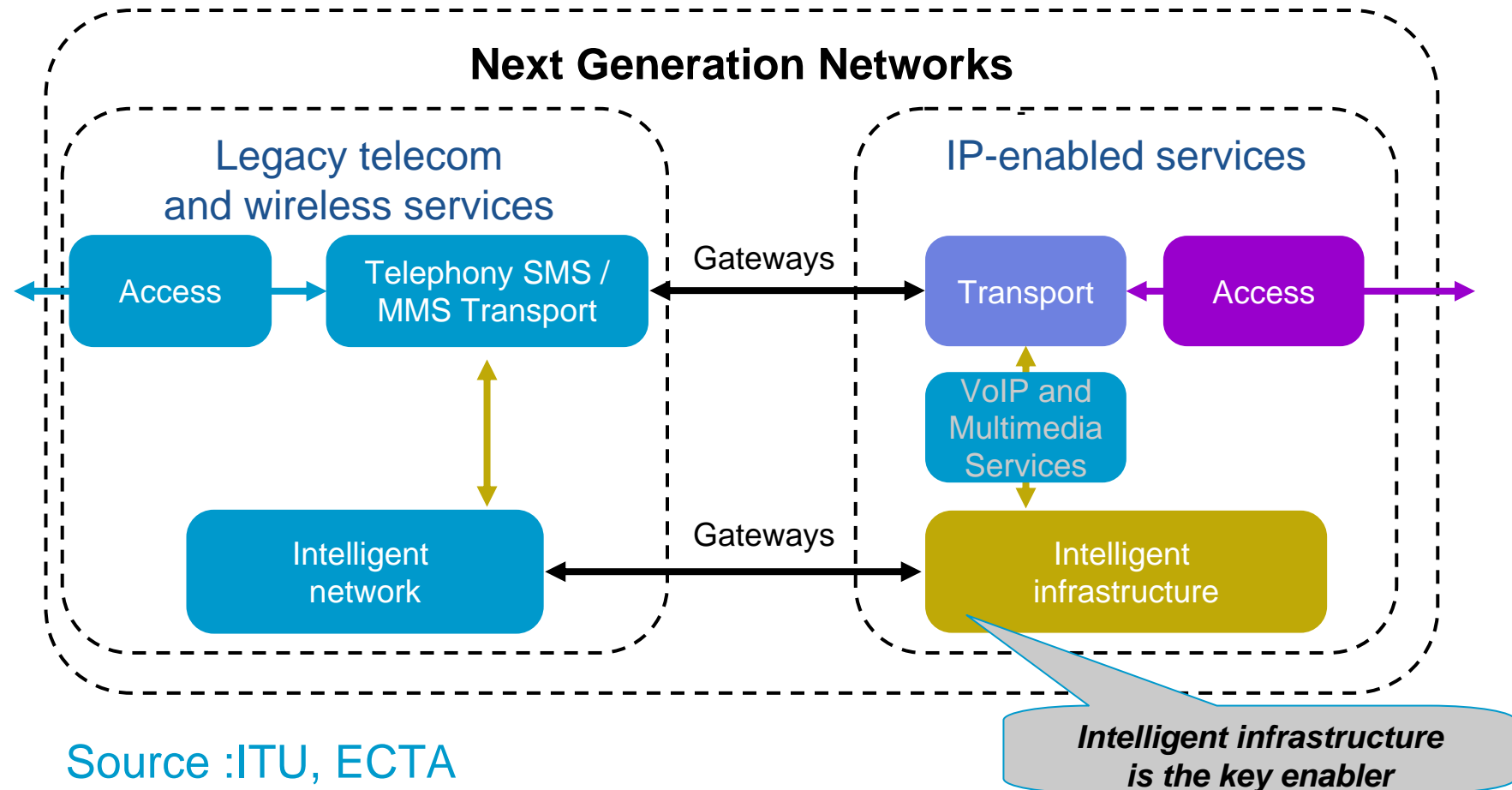
Definitions ...

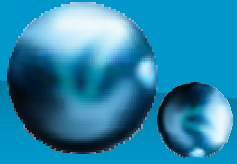
ITU

- A Next Generation Network is a
 - packet-based network able to provide telecommunication services
 - able to make use of multiple broadband access technologies
 - QoS-enabled transport technologies, and
 - in which service-related functions are independent from underlying transport-related technologies



Intelligence: shifts from the network to the service

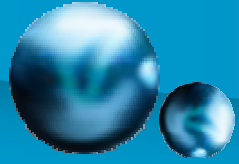




NGN is characterized by ...

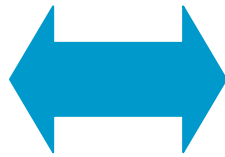
- **Packet-based transfer**
- **Separation of control functions among bearer capabilities, call / session, and application / service**
- **Decoupling of service provision from network, and provision of open interfaces**
- **Support for a wide range of services, applications and mechanisms based on service building blocks (including real time / streaming / non-real time services and multi-media services)**
- **Broadband capabilities with end-to-end QoS**
- **Interworking with legacy networks via open interfaces**
- **Generalised mobility**

Source : ITU, ECTA, ICANN



War of the worlds

Telco world

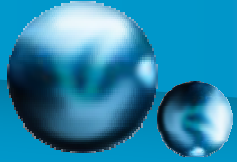


Internet world

- Closed
- Service charges
- Service control
- Intelligent network
- Dumb terminal

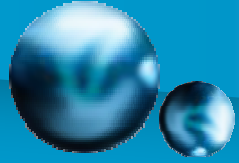
- Open
- Access only
- Self provision
- Dumb network
- Intelligent terminal

Source :ITU, ECTA, ICANN



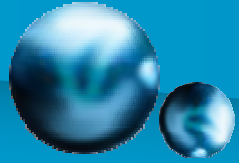
What NGN bring ?

- **Is it any big revolution ?**
 - just about technology and infrastructure?
 - also changing behavior patterns of consumers?
 - changing business models?
 - Changing equation between Incumbent and new telcos
- **Uncertainty?**
 - new architectures, new protocols and new types of access, interconnection
 - operators may face yet unknown challenges - investment highly risky



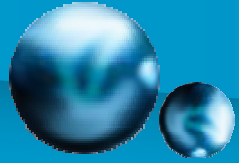
A proactive Regulatory regime

- Enabling environment at all levels
- Transparent regulatory polices
- Enforcement of Rules
- Remove undue regulatory barriers to competition
- Establishing investment friendly regulation
- Regulatory certainty for both incumbent and other service providers
- Seamless transition



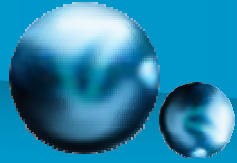
Innovative polices

- Establishment of Converged Regulator
- Parallel existence of PSTN/IP network
- Complete NGN environment-Long term
- Different architecture-network, services and applications
- NGN and Internet
- NGN-engine for convergence



Standardisation and interoperability

- An important element of the policy framework for NGN
 - circuit-switched telco and the Internet packet-switched world come together
 - standards and interoperability of telco and Internet very different!
 - Regulators may think to an arrangement where interoperability standards are determined by the industry through central co-ordination



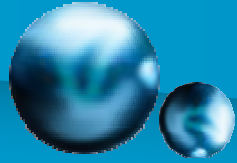
Issues embedded by standardisation ...

Regulatory ...

- **Emergency calls**
- **Legal interception**
- **Numbering**
- **Number portability**
- **Quality of service**
(parameters, grade of service, etc.)
- **Control of expenditure**
- **Caller location**
- **Privacy**
- **Network integrity**

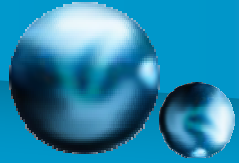
Competition ...

- **Standards to improve competition**
 - **service**
 - **core**
 - **access**



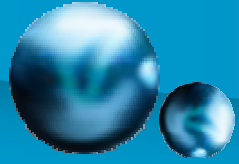
Interconnection and network access

- Interconnection between public telecommunications networks has been regulated in most countries while IP interconnection has not
 - **Internet** : exchange of traffic is organized via peering agreements
 - **telco world**: cost-based Interconnect Usage charges
 - in the transition to an NGN world those two worlds will overlap
- Controlled ways to access or bypass existing and future infrastructure and thereby reduces market entry barriers for all market players



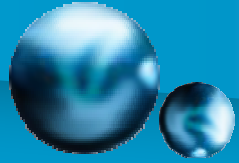
Interconnection: Corner stone of competition

- Interconnection is fundamentally important because the telecom system must function as a single system
- Investment in one part of the network creates potential benefit across the whole network
- Network is as strong as its weakest link
- SMPs try to impose as much of the network cost as possible on new players



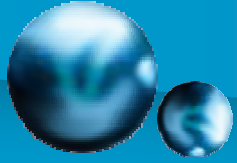
Interconnection: Corner stone of competition

- Interconnection is not one time problem to be solved but on going issue to be monitored and managed
- Interconnection regulations must be modified periodically with changing technologies
- Interconnection Regulation must be changed over time



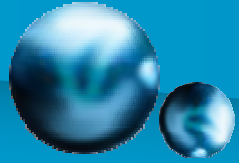
Interconnection: Corner stone of competition

- **Transformation from technical into an economic issue**
- **New technologies and the changing economics of the industry and its markets are major contributing factor to the structural change in telecom**
- **Identify the techno economic factors that are driving the new design of networks and their implications for policy and regulation**
- **Ex-ante access regulation for NGN**
- **Ex-ante Interconnection regulation for NGN**
- **IP interconnection**



Quality of Service

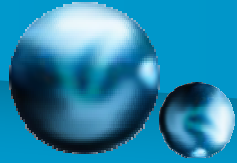
- ***Telco world:*** no difference in quality between players
- ***In an NGN world:*** Quality of Service can be expected to be an important differentiating factor in competition
- View being established is that markets for low quality and for high quality may develop – regulators should not encourage one over the other , awareness among consumers is required so that they can take informed decision
- Market should be left to determine prices and conditions in the context of quality of service
- Market parties should be able to qualify their QoS-needs in the context of interconnection



Introduction to Study Group

Question 6-2/1

- Study group 1-Regulatory issues
- Working Procedure in accordance with Resolution 1 and 2 of WTDC-06
- Question 6-2/1 :Regulatory impact of Next Generation Network on Interconnection
- First meeting Study group :4th Sep - 6th Sep 2006



Introduction to Study Group

Question 6-2/1

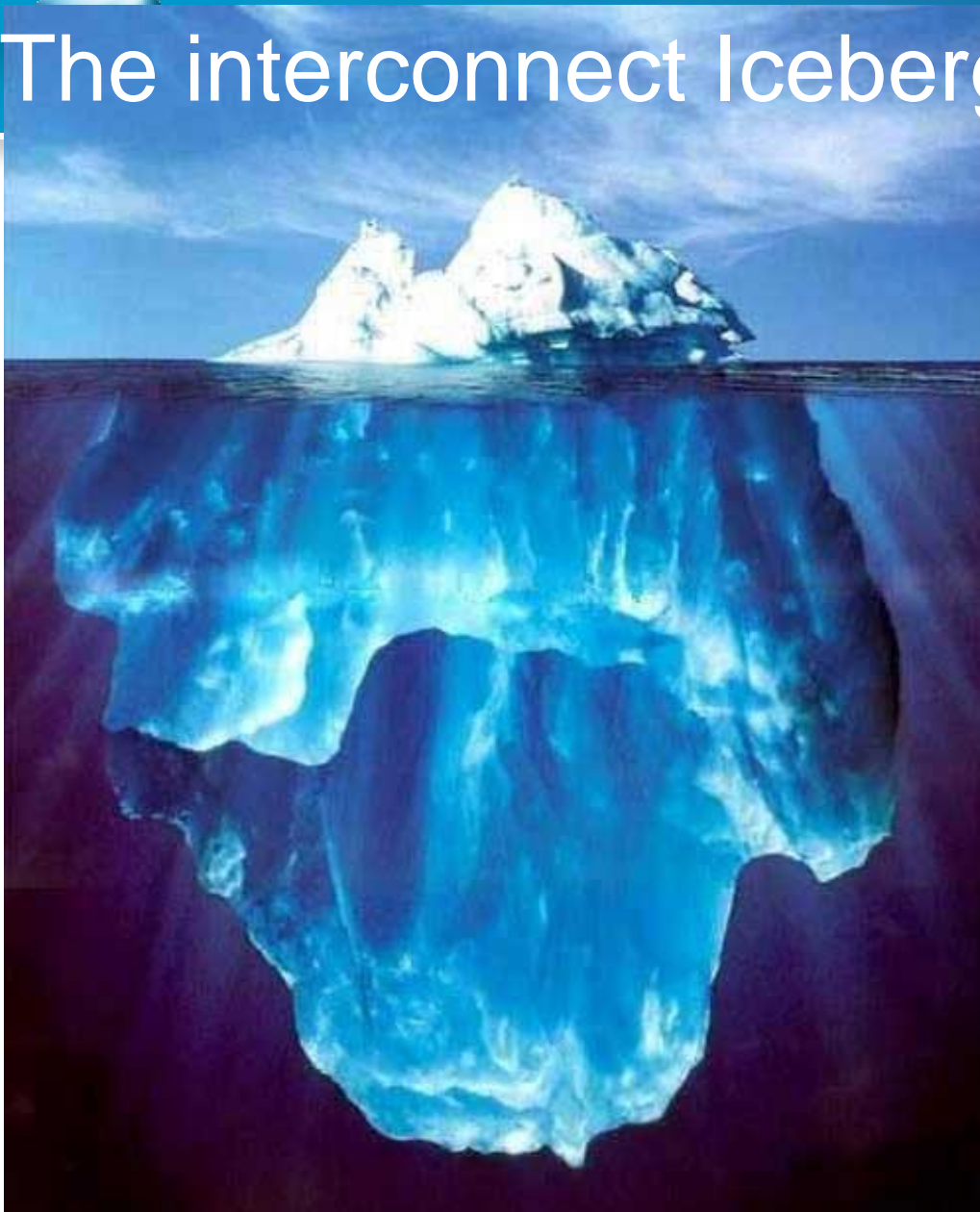
- Regulators today are concerned about bottleneck facilities in incumbent's network
- This question provides an opportunity to the Regulators to discuss issues
- In the service area, If all the service providers migrate simultaneously to NGN then we would have least issues.
- But in reality, This will be continuous process, one operator will migrate to NGN early other will follow...
- Therefore TDM-NGN-TDM have to work for certain period
- Concept of Provider and Seeker has to re-visited.
- Reference Interconnect offer from SMP is to be mandated ?

The interconnect Iceberg



Technical issues
Commercial issues

The interconnect Iceberg



Technical Standards

Commercial issues

What is architecture ?

Physical nodes for interconnection

Interconnect agreement

Limitation in present License

Commercial viability

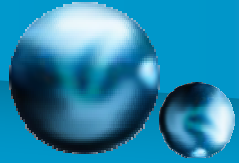
Practical contracts

Transition arrangements

Testing/Trials

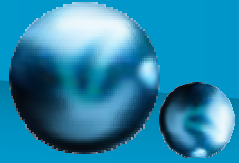
Support of legacy services

Support of new services



All issues are further complicated as

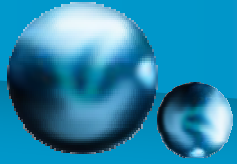
- There would be number of obligatory and non obligatory products
- We need Short term, medium term and long term solution
- May be 4 to 6 operators
- Interconnection agreements, contracts, Interconnection location etc...



Introduction to Study Group

Question 6-2/1

- Relevant input document and Liaison statements:
 - ITU-T SG 3,SG 11,SG 13,SG16
 - ITU-D SG 19-2/1
- Work plan
 - Study Group 1 Meeting 18 – 21 September 2007
 - Your contributions welcome!
 - Interim report by end of 2007
 - This interim report will identify issues and potential challenges to NGN Interconnection



thank you!!!

Contact Information

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+91-9810428700(Mobile)