ITU Regional Development Forum 2008:
Bridging the standardization Gap in Developing Countries
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ITU-D Study Group 2,
Question 19-1/2:
"Strategies for Migration from existing networks to NGN for developing countries"

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Question 19: History

- First established during study period 2002-2006 and re-conducted for the 2006-2010 period

- Renewed interest from ITU member countries:
  - Cross-cutting theme in most of BDT programs (WTDC-06, Doha)
  - Resolutions 101 and GT-PLEN/3 at PP-06 in Antalya

- But… dramatic lack of contributions and participation of developing countries delegates to the Question's meetings !
  - Lack of expertise ?!
  - Lack of awareness of the question's urgency ?!
  - Lack of resources allocated to NGN issues ?!
  - Probably a mixture of all of the above !

Question 19: Agenda and Expected Outcomes

- Agenda
  - Trends of Telecommunication networks
  - Examination of NGN technologies
  - Methodologies and Planning
  - Migration solutions to NGN
- Outcomes
  - Yearly progress report
  - Report on methodologies and planning
  - Set of guidelines for migration from existing networks to NGN

Achievements to Date

- **An analysis of NGN technology and migration**
  - ➢ **Chapter 3 « NGN technologies » of ITU « Trends in Telecom Reform: The road to Next Generation Networks »**

- **A Questionnaire sent to administrations and sector members**
  - ➢ **See http://www.itu.int/ITU-D/CDS/gq/sgq19-1-2.html**

Why NGN… After All ?

- **NGN *will not* come as a sudden thunder in a blue sky !**
- **Essential "building blocks":**
  - ➢ **Broadband access**
  - ➢ **Voice over IP**
  - ➢ **Multiple Services with Broadband access (triple play,…)**
  - ➢ **And…in many developing countries the necessity to have a *national* backbone with enough capability**
- **NGN architecture is a « natural consequence » of the above building blocks:**
  - ➢ **It systemizes and generalizes the offer of *any service* from a *single* network over *any kind of access* and,..**
  - ➢ **It dramatically improves overall *network efficiency* and reduces OPEX costs**

Building Blocks (1): Broadband Access

- **Universal broadband access is now available in *many* technological flavors:**
  - ➢ **Wireline: DSL, Fiber, Cable**
  - ➢ **Wireless: 2G+, 3G and WiMAX with ultimately LTE 4G**
- **Do not discard *any* technology !**
  - ➢ **Pragmatic approach adapted to *local needs and context***
  - ➢ **Wireless for rural/suburban areas but also urban areas for mobile broadband (high-end users)**
  - ➢ **Wireline when copper is available (DSL) but also for new buildings and neighborhoods (Fiber)**
- **Rule of thumb: at any given time the best wireline access provides 10x bandwidth of the best wireless access**
  - ➢ **Radio is wonderful but it is a limited and scarce resource!**

Building Blocks (2): Voice over IP

- **Voice over IP is no more a « hacker's gadget » to circumvent « regular » voice service at a cheaper price!**
    - ➢ **Offered with broadband access with the same quality of service and using a legacy numbering plan (E.164)**
    - ➢ **Offered by newcomers as well as incumbents**
   - ➢ **Largely used for long distance traffic**
    - ➢ **Robust SoftSwitch technology**
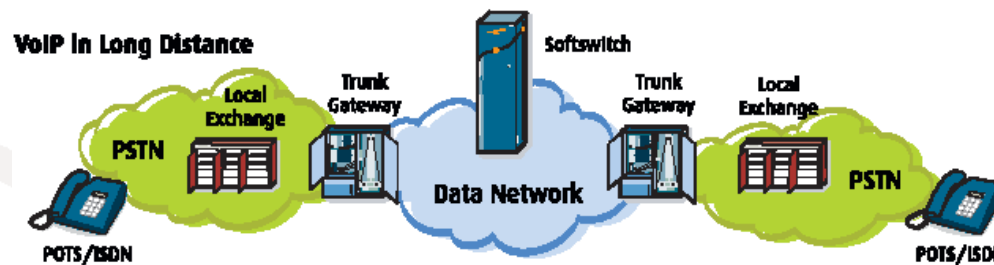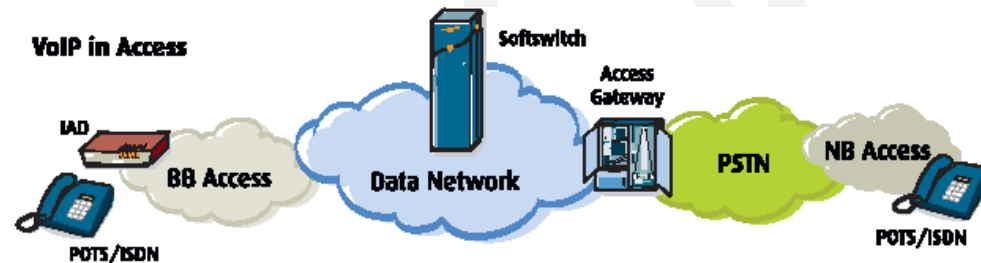
Building Blocks (3.1): Triple play and…more

- **Broadband "access pipe" leveraged to provide TV and Voice in addition to Internet access**
  - ➢ **Recent development of Quad-play involving mobile access when subscribers leaves his home network**
  - ➢ **And…likely more to come**
- **Triple-play is above all an *innovative marketing* to develop broadband take-up among « non-techie » customers seeking a good bargain for their "global telecom bill":**
  - ➢ **Example: figure of 29.99€/month all inclusive in France!**
- **High Definition TV seen as the lever for FTTH/x**
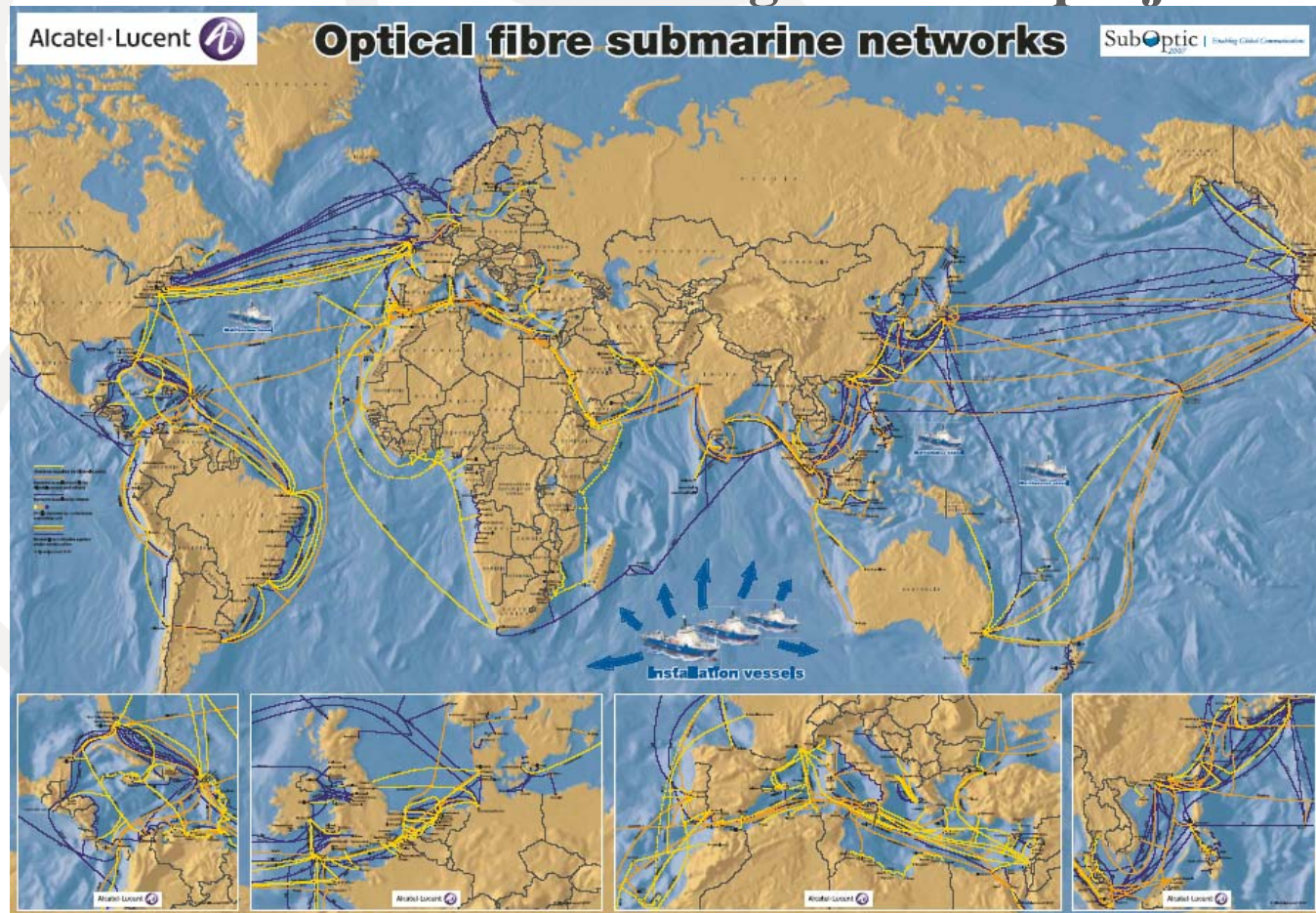- **Triple-play is the *first step* towards a multi-service NGN-like architecture**

Building Blocks (3.2): Triple play and…more

- **Sample technical architecture**
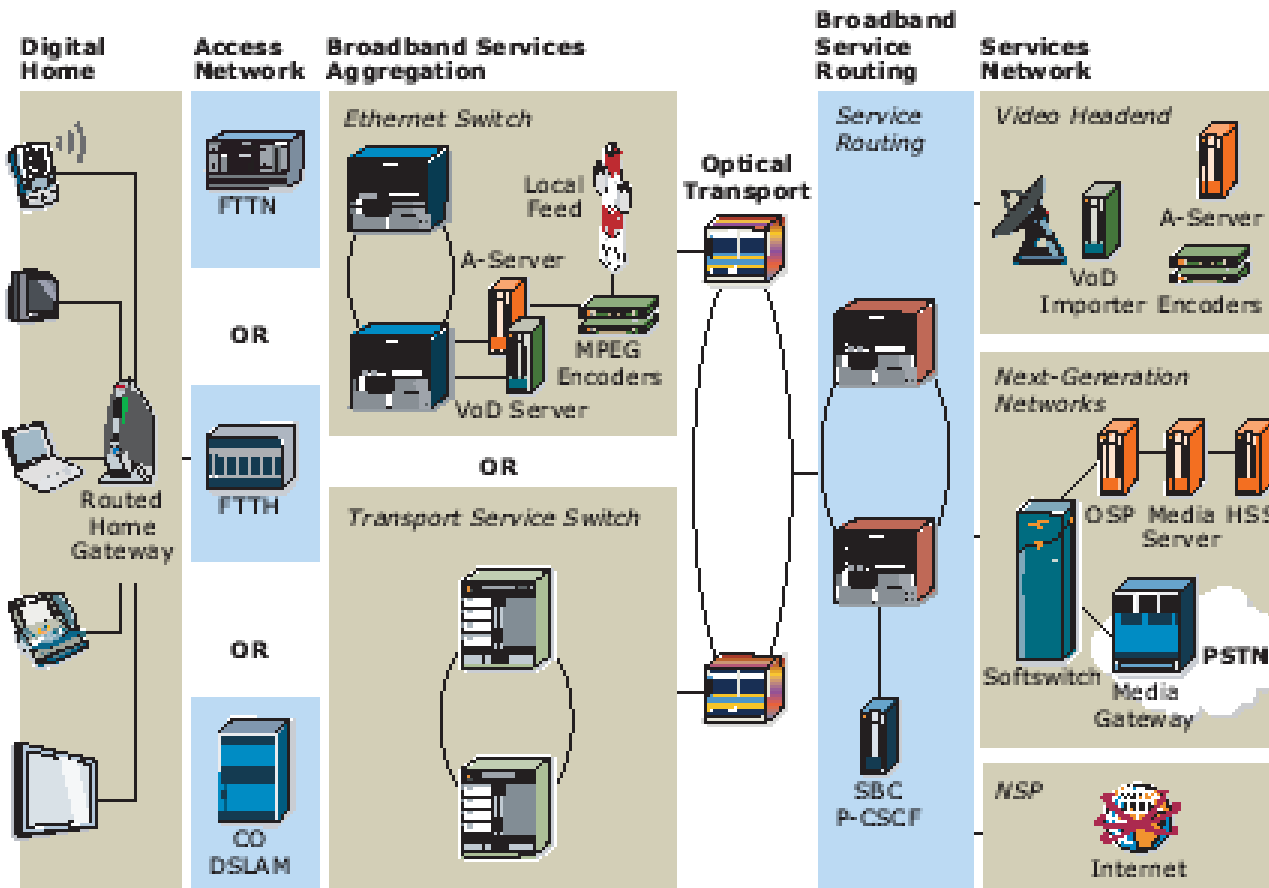
Building Blocks (4.1): Backbones

- **The planet is full of International Fiber Submarine cables and the sector is booming with new projects!**


Optical fibre submarine networks

Building Blocks (4.2): Backbones

- **But the « devil hides in the details » and the crux is the lack of a** *national* **(Fiber) Backbone in many developing countries!**
- **Possible solution:**
  - ➤ *Infrastructure sharing* **on the basis of an "***open access model***" to develop national Fiber Backbone in developing countries**
  - ➤ **Open access means that the** *owner* **of the "bottleneck facility"** *does not* **compete in the downstream market**
- **Sharing could take place at any level of the Fiber:**
  - ➤ **Physical: Ducts, Poles, Dark Fiber, RF Channels**
  - ➤ **Transport: ATM PVC, Ethernet VLANs**
  - ➤ **Services: VPNs**
- **For more details see discussion paper at ITU's 8th GSR**
  - ➤ **http://www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR08/papers.html (paper N° 2).**

NGN Architecture: A bit of History

- **Introduced first by 3GPP for 3G mobile (UMTS) networks: IP Multimedia Subsystem (IMS).**
  - ➤ **Release 5 of UMTS specifications**
- **Extended to xDSL fixed access by ETSI TISPAN architecture**
  - ➤ **Release 1 of TISPAN architecture**
- **Work on ITU-T that leverage and generalizes the above efforts with a more ambitious and telecom-minded perspective**
  - ➤ **Release 1 of ITU-T NGN architecture**
- **All architectures share the same principles of layered separation between transport and control.**

NGN Architecture: Functional view of ITU-T Release 1
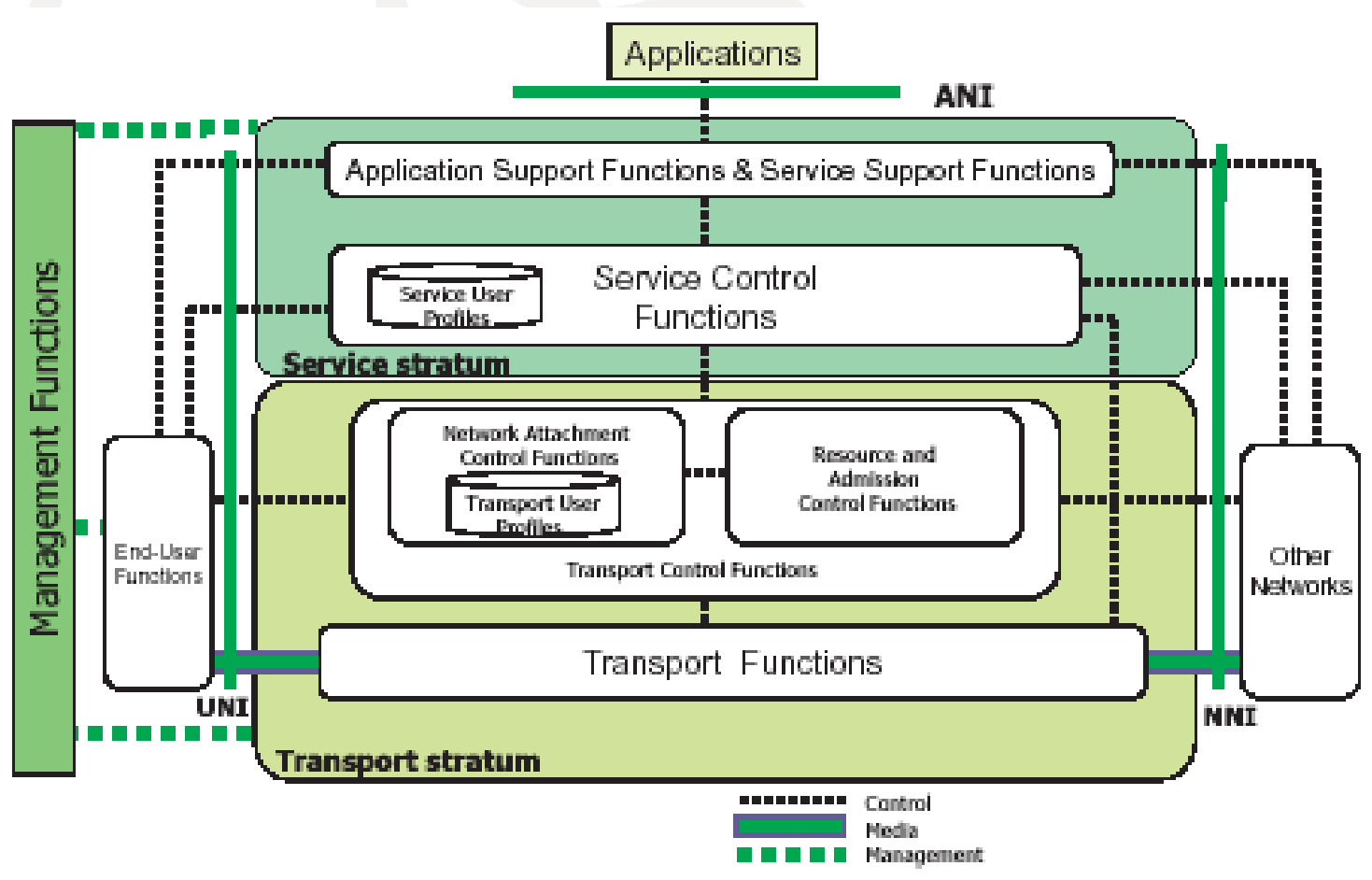
NGN Migration Taxonomy

	Legacy voice telephony service continuity	New end-user VoIP -enabled voice telephony services	New multimedia communication services
Class 4 Soft Switch introduction at national or international long distance	Yes	No	No
Use of PSTN/ISDN Loop Emulation Service over a broadband access	Yes	Yes	No
Class 5 Soft Switch introduction at subscriber access level	Yes, only if Class 5 Soft Switch based on a legacy switch call control engine that is compatible with existing IN platforms is used	Yes	No
IMS in Overlay	Yes, with existing PSTN infrastructure	Yes	Yes
IMS in full replacement	Yes, if PSTN/ISDN emulation subsystem is added	Yes	Yes

Q19 Questionnaire (Posted April 2008): Broadband Access

- **Broadband DSL:**
  - **What is the status of DSL deployment in your country/network (number and geographical distribution) ?**
  - **Are there any unbundling obligations for the last mile copper access ?**
    - Specify type of unbundling: full, line sharing, bit stream
- **Broadband Wireless Access (BWA) and Fiber:**
  - **Have you deployed or is there any plan to deploy BWA or Fiber ?**
  - **If yes, what are the targeted areas for each and nature of end-user services ?**

Q19 Questionnaire: VoIP & Triple-Play

- **Is VoIP service legal ?**
  - ➤ **If No, are you planning to eventually legalize ?**
- **Are you planning to introduce any sort of explicitely branded VoIP services**
- **What services did you provide through broadand access ?**
  - ➤ **Are you providing triple (or more) play services over Broadband access ?**

Q19 Questionnaire: NGN Migration (voice) at Transit (Int'l and National)

- **Are you using or planning to use VoIP for Int'l calls?**
  - ➤ If yes, what percentage of incoming/outgoing Int'l traffic is impacted ?
- **Are you deploying your own SoftSwitches/media gateways or using those of an international VoIP provider?**
- **Do you have a national IP backbone ?**
- **Are you using or planning to use VoIP for national calls (transit level)? What are the reasons of your choice?**
  - ➤ Availability/Unavailability of an IP backbone?
  - ➤ Irrelevant/lower prices for national calls?
  - ➤ New/Obsolete legacy PSTN/ISDN equipment?
  - ➤ Other?

Q19 Questionnaire: NGN Migration (voice) at Access and IMS evolution

- **Are you using Loop Emulation Service over a DSL access?**
- **Did you migrate to next generation Multi-Service Access concentration equipment (MSAN) associated with a Class 5 SoftSwitch ?**
  - ➢ **If yes, is this because of the obsolescence of your legacy equipment?**
  - ➢ **What kind of last mile access (FTTH, FTTx, or copper) are you using with your MSAN**
- **What are your views on the maturity of IMS-like architectures and your willingness to move to them?**
  - ➢ **If yes, what drivers: new revenues, migration of new customers, other?**

Concluding Remarks

- **The work of this question is well advanced in the first two terms of its agenda**
  - Trends of Telecommunication networks
  - Examination of NGN technologies
- **We have a lack of contributions for the third**
  - Methodologies and Planning
- **And in order to properly finalize the fourth (migration solutions) and establish the main outcome (guidelines for migration) we need developing countries contributions at least through answers to the questionnaire**
- **This question illustrates the fact that developing countries participation not only needed to bridge the standardization gap but also to contribute to pertinent standardization adopted to their needs**
  - **The best experts of developed countries cannot help you if you do not contribute to questions that primarily concerns you!**

Thank you for your attention!

Questions ?

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