

**Regional Development Forum - Africa:  
"NGN and Broadband, Opportunities and  
Challenges"**

**Lusaka, Zambia; 18-19 May 2009**

**NGN migration strategies,  
scenarios and challenges**

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**Abstract**

- NGNs will become reality only if we address how to move from the current infrastructure to the new. Some key elements of achieving NGN while retaining the value of existing investment will be addressed. Another perspective on this is the "green field" environment that exists for new features and services and how NGN overlays can be used to provide these capabilities.

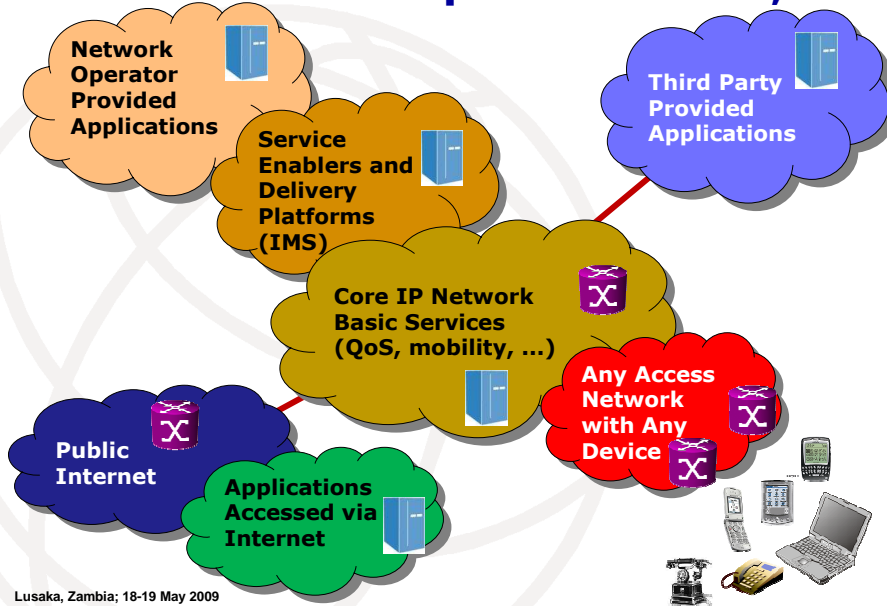
## Outline

- Introduction
- ITU-T SG 13 Structure
- Selected Work Items
- Extracts of Draft Recommendations
  - ▣ Multimedia, VPN, USN, IP Networks, Risk Analysis
- Summary

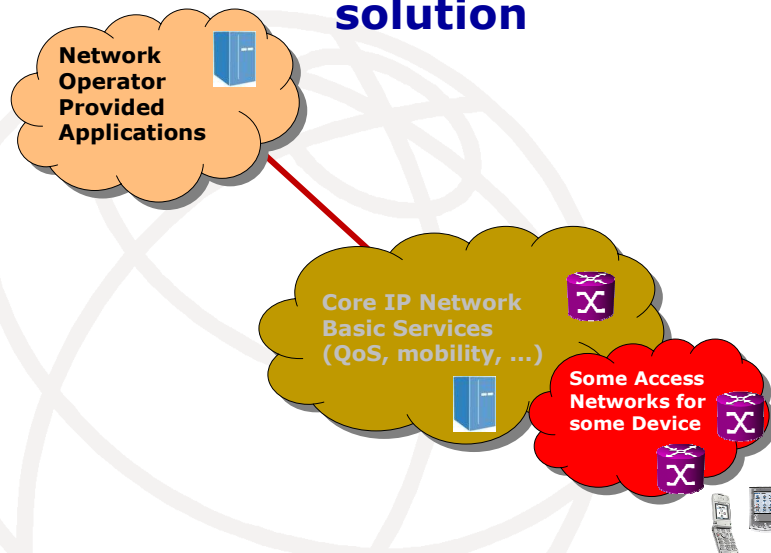
## Introduction

- Challenge: business case
  - ▣ It is nearly always less costly to deploy a service-specific solution when introducing a new service than to deploy a general purpose solution
  - ▣ In the mid-1980s, operators were often reluctant to deploy SS7 because a business case based solely on replacing existing signalling systems wasn't attractive

## Instead of a complete solution, ...



## ... it is tempting to provide a partial solution



## Need to look forward!

- 20/20 Hindsight
  - ◆ Today, it is widely recognized that SS7 was a transforming technology that enables many high revenue network wide services, plus it is the nervous system on which mobile systems depend
  - ◆ "Prediction is very difficult, especially about the future."
    - Niels Bohr, Danish physicist, won the Nobel Prize in Physics in 1922\*

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\* Aage Niels Bohr, son of Niels Bohr, also won a Nobel Prize in Physics in 1975

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## ITU-T SG 13 Structure

- WP 1/13 Coordination, Planning and Global Outreach of NGN including Mobile
- **WP 2/13 Service requirements, scenarios and evolution aspects**
- WP 3/13 Frameworks and Functional Architectures
- WP 4/13 QoS and Security
- WP 5/13 Future Networks

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## **WP 2/13 Service requirements, scenarios and evolution aspects**

- **Q.3/13 Requirements and implementation scenarios for emerging services and capabilities in an evolving NGN**
- **Q.12/13 Evolution towards integrated multi-service networks and interworking**
- **Q.13/13 Step-by-step migration to NGN networks**
- **Q.14/13 Service scenarios and deployment models of NGN**
- **Q.18/13 Requirements and framework for enabling COTS components in an open environment**

## **Status of Material in Following Slides**

- **SG 13 is aggressively working a range of topics**
  - **Work Plan and deliverables: use tool at [www.itu.int/ITU-T/workprog/wp\\_search.aspx?isn\\_sp=545&isn\\_sg=552](http://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=545&isn_sg=552)**
- **Following slides represent work in progress, parts just getting underway, some more mature, but none complete**
- **OPPORTUNITY:**
  - **Get involved, participate and drive the work with your requirements, service scenarios, and use cases**

## Selected Work Items I

- Q.3/12
  - ◆ Y.ngn-mcc: NGN service requirements to support MCC<sup>1</sup> services
  - ◆ Y.ngn-vpn: VPN<sup>2</sup> service capabilities in NGN mobile environment
  - ◆ Y.USN-reqts: Requirements for support of USN<sup>3</sup> applications and services in NGN environment
- Q.12/13
  - ◆ Y.ipev: Best effort IP network evolution to NGN

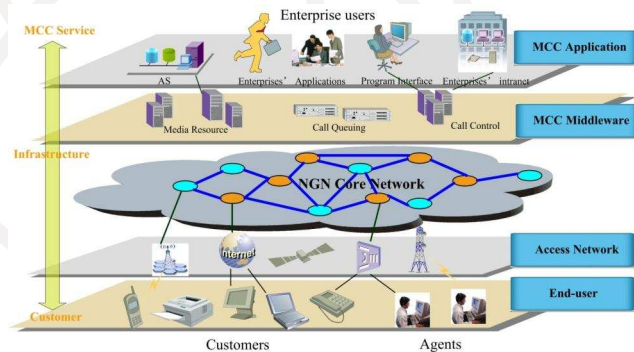
- 1 MCC = Multimedia Communication Services
- 2 VPN = Virtual Private Network
- 3 USN = Ubiquitous Sensor Network

## Selected Work Items II

- Q.13/13
  - ◆ The Handbook of evolving IMT-2000 Systems
- Q.14/13
  - ◆ Y.2214: Service requirements and functional models for Customized Multimedia Ring services
  - ◆ Y.cmoip: Service scenario and use case for high quality mobile VoIP service
  - ◆ Y.hapas: Heterogeneous application profiles adaptation service scenario over NGN
  - ◆ Y.iptvbs: Web-based IPTV service brokering scenarios and use cases
  - ◆ Y.iras: IT Service Risk analysis service scenario over NGN

## Y.ngn-mcc: MCC domains for development and standardization

- Users can access an enterprise's centralized information or customer service using multiple media. Allows efficient management using automated response or agents.
- Calls are distributed in queues to agent groups. Supervisor agent can monitor and manage other agents.



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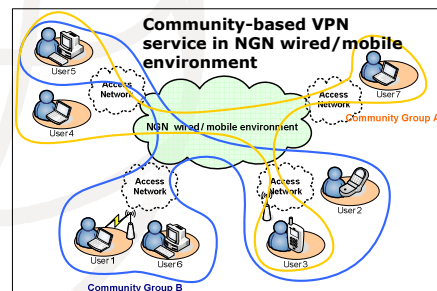
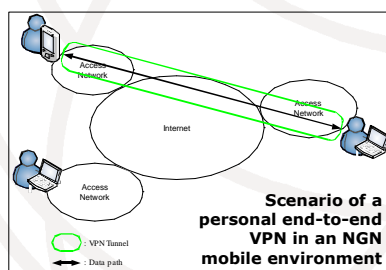
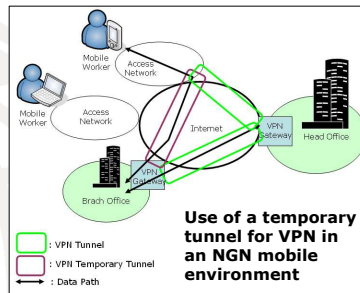
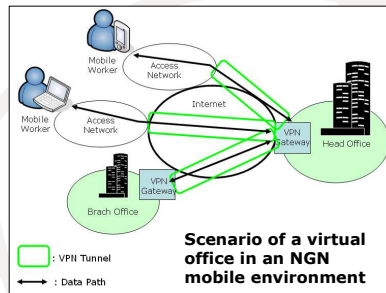
## Y.ngn-vpn: VPN service capabilities in NGN mobile environment

- Identifies NGN capabilities to support VPN applications in NGN mobile environment
- NGN to support:
  - Service configuration for VPN members
  - Wired/wireless tunnel coordination for peer-to-peer compatibility among VPN members
  - QoS/SLA (re-)negotiation for service mobility or upgrades, to ensure seamless VPN service
  - Provision of multiple security levels, as appropriate in response to VPN users' demands

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## Y.ngn-vpn Appendix: Scenarios for VPN services in NGN mobile environment



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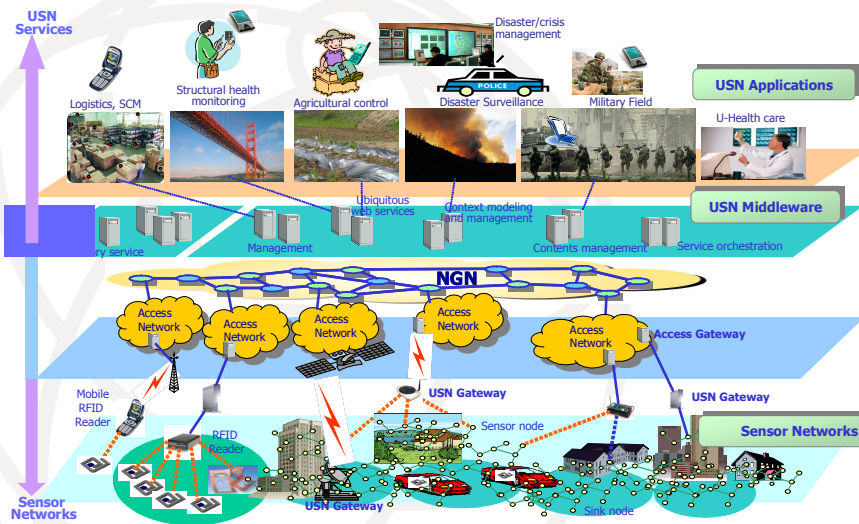
## Y.USN-reqts: Requirements for support of USN applications and services in NGN environment

- USN is a concept and infrastructure which delivers sensed information and context to enable knowledge development
- Sensor networks to date monitor physical or environmental conditions, (e.g., temperature, sound, vibration, pressure, motion or pollutants) at various locations but as isolated networks. Networked sensor applications allow the development of intelligent information infrastructures enabling new possibilities for consumers, public organizations, enterprises, government, etc.
- USN applications and services integrate sensor networks into a network infrastructure with applications such as industrial or home automation, agricultural monitoring, healthcare, environment, pollution and disaster surveillance, homeland security, etc.

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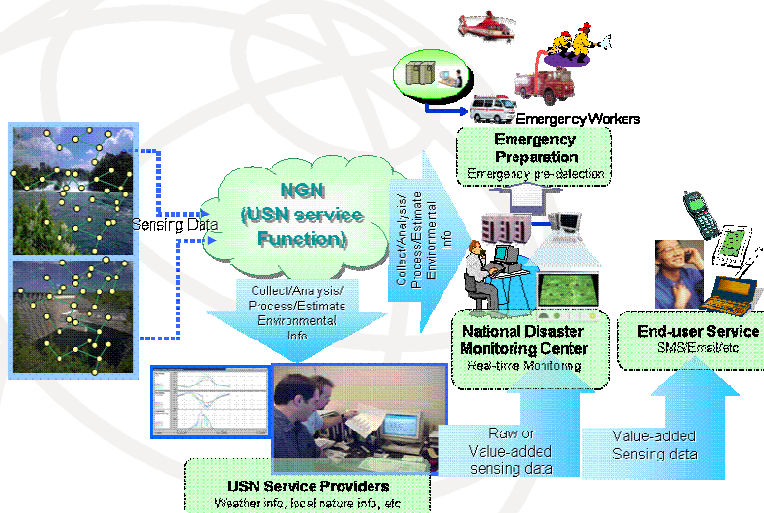


# USN Overview



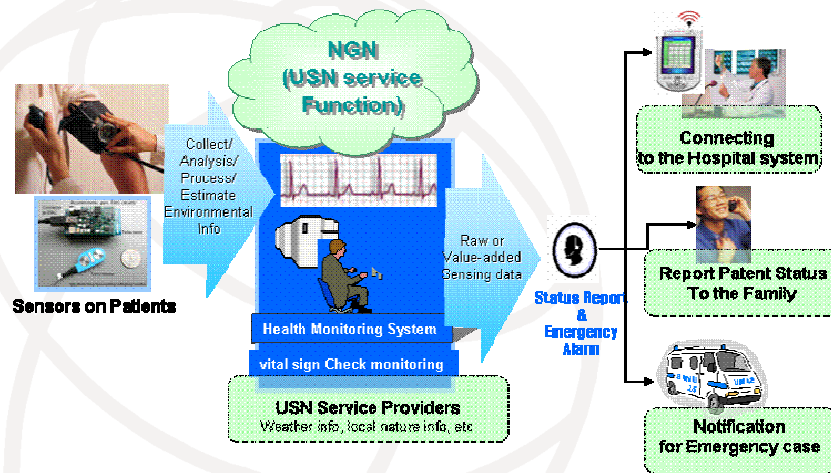
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# Use Case: USN Weather Information Service



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## Use Case: USN Healthcare Service



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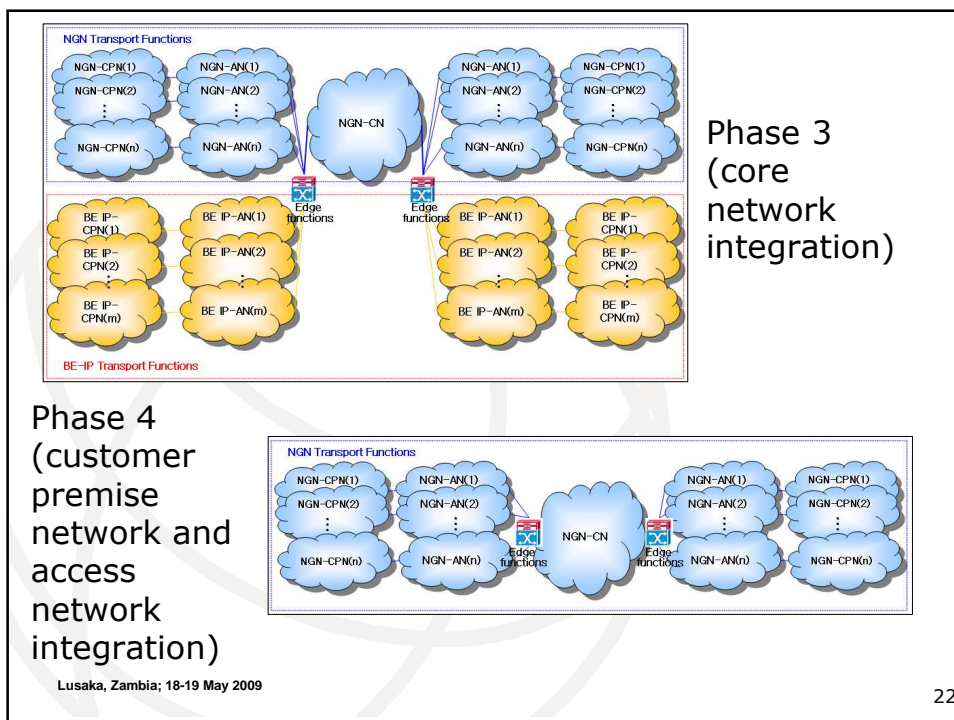
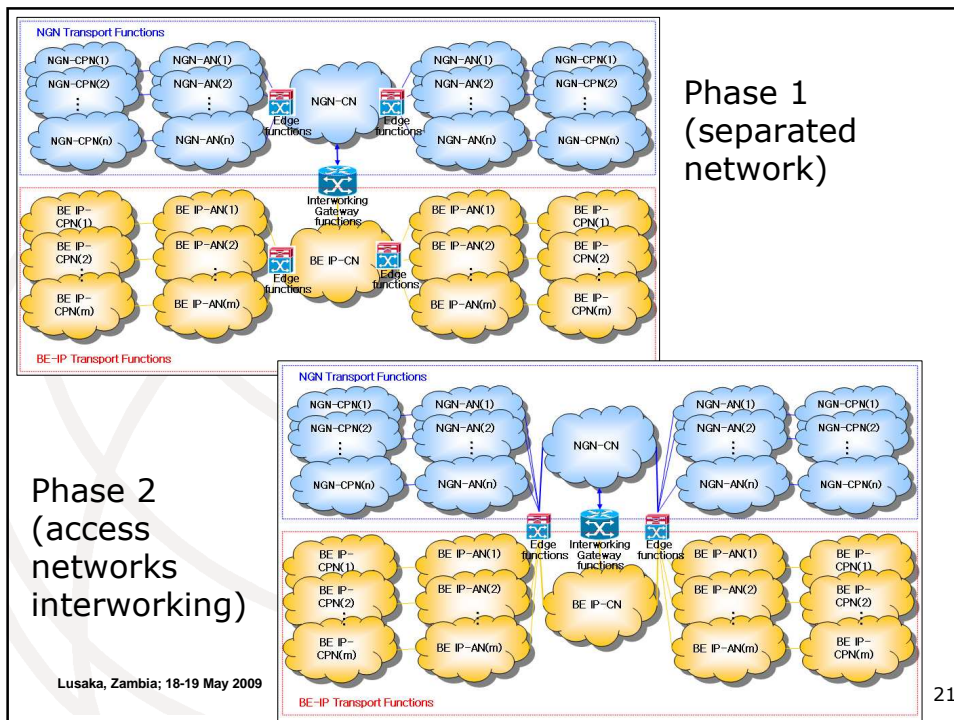
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## Y.ipev: Best Effort IP Network Evolution to NGN

- Widely deployed Best Effort IP (BE IP) networks provide generally low-bandwidth legacy transport technologies and high access network aggregation ratios to provide internet connectivity to as many customers as possible
- High demand for new multimedia services (IP broadcasting, VoD, multimedia communication, etc.) means more capable networks are required
- Changeover ("flash cut") of BE IP networks to NGN is impossible, so need:
  - ◆ Ways to evolve a BE IP network to NGN
  - ◆ General BE IP network evolution architecture
  - ◆ Interworking functions and interfaces between a BE IP network and an NGN
  - ◆ Security considerations

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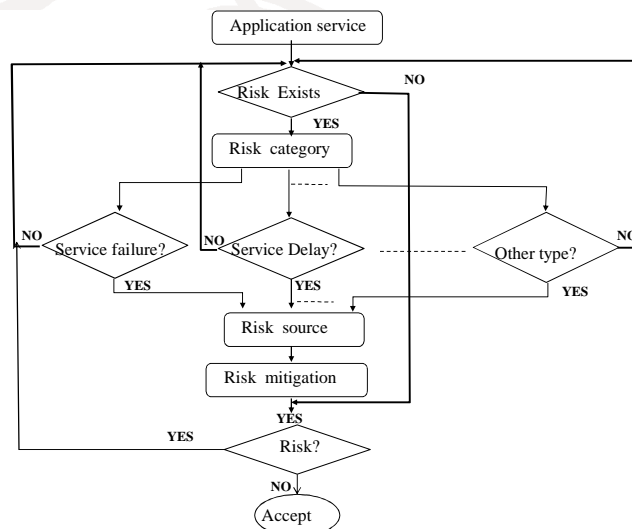
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## Y.iras: IT Service Risk Analysis Service Scenario over NGN

- Looks at availability, compliance, security, and application performance.
- Service failure risk: hardware failure, software errors, network outages, data centre failure, poor change management, network outages, network congestion, inadequate capacity, etc.
- Result: failure to deliver service transactions and operations, or slow or inefficient operation leading to abandoned transactions, lost sales, reduced customer, partner, and user confidence
- Need a systematic service scenario and assessment analysis to mitigate risks

## Service Risk Analysis Scenario Flow



## Summary

- Migration of services and networks to NGN presents challenges
  - Need to develop scenarios and strategies to move forward
- SG 13, the lead SG on NGN, has a WP addressing these areas
- Have highlighted current work
  - Opportunity - get involved: participate and drive the work with your requirements, service scenarios, and use cases