ITU Forum on Conformance and Interoperability Testing in CIS and Europe Regions
(Moscow, Russia, 9-11 November 2011)

Handbook on NGN testing on Model Network

Janusz Pieczerak,

(Rapporteur of Q.6/11, Orange Labs, Poland)

Moscow, Russia, 9-11 November 2011

Agenda

- Testing in ITU-T
- Handbook on Testing
- Testing challenges
- Model network
- Testing methodology
- Presentation of test results
- Regional testing centers
- Virtual testing laboratory

2

Testing in ITU-T (1)

- Study Group 11
  - Signalling requirements, protocols and test specifications
  - Lead study group on test specifications
  - Activity initiated in 2004
- Study period 2005-2008
  - Q.8 Protocol Test Specifications for NGN
  - Q.6 Assistance in preparation of a handbook on the deployment of packet based networks

3

Testing in ITU-T (2)

- Study period 2009-2012
  - WP4 Test specifications
  - Q.8 Protocol Test Specifications for NGN
  - Q.9 Monitoring parameters for NGN protocols
  - Q.10 Service test specification for NGN
  - Q.11 QoS tests specification for NGN
  - Q.12 NID and USN test specification
- Q.6 Coordination of signalling requirements and protocol development

4

Testing Recommendations (1)

- Q.3900 Methods of testing and model network architecture for NGN technical means testing as applied to public telecommunication networks (2006)
- Q.3901 Testing topology for networks and services based on NGN technical means (2008)
- Q.3902 Operational parameters to be monitored when implementing NGN technical means in public telecommunication networks (2008)
- Q.3903 Formalized presentation of testing results (2008)

5

Testing Recommendations (2)

- Q.3904 Testing principles for IMS model networks, and identification of relevant conformance, interoperability and functionality tests (2010)
- Q.3906.1 Test scenarios and catalogue for testing fixed-broadband access networks using a model network - Part I (2010)
- Q.3910 Parameters for monitoring NGN protocols (2010)
- Q.3911 Parameters for monitoring voice services in NGN (2010)

6

Handbook on testing

- Describes general approach to testing of next generation networks (NGNs). It is developed on the basis of ITU-T Recommendations, but it refers to ETSI and ISO/IEC standards if needed. It fulfills the needs formulated by WTSA-08 Resolution 76 "*Studies related to conformance and interoperability testing, assistance to developing countries, and a possible future ITU mark program*"
- Approved by SG11 in 2011

7

Goals of Handbook on Testing

- To assist Administrations and Operators in implementation of testing as a method to verify network and services development strategies, but can be used by Vendors as well
- Handbook discusses the interoperability problems, that could appear during networks and services implementation. The interoperability is considered as a Global metric, including technical means interoperability, conformance, services interoperability, Quality of Services (QoS) classes and parameters interoperability

8

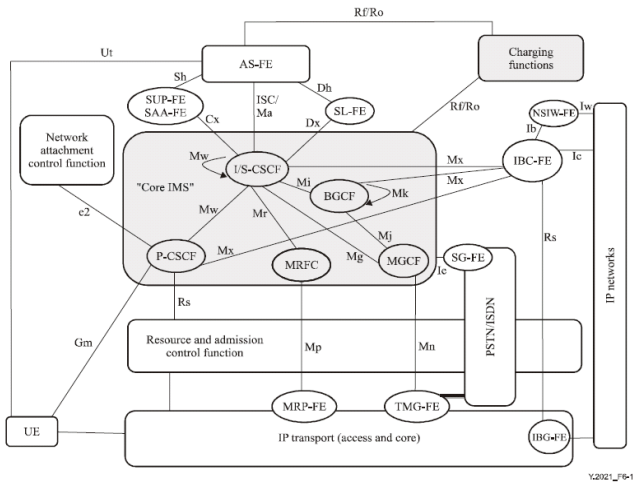
Testing challenges

- Testing problems for the new technologies
  - NGN implementation
  - NGN and IMS functional architectures
  - Existing testing methodologies
  - Conformance and interoperability
- Global interoperability as new approach to testing with a complex metric

9

IMS testing challenges

- IMS functional architecture (Y.2021 (09/2006))



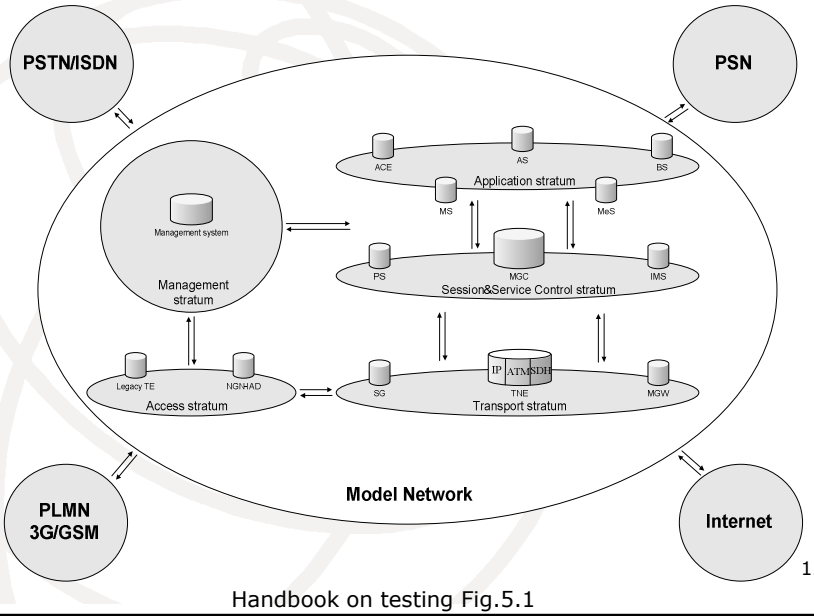
10

Model network concept

- Simulates the capabilities similar to those available in present telecommunication networks, has a similar architecture and functionality and uses the same telecommunication technical means.
- Types of model network
  - Dedicated
  - Distributed
  - Regional
- Model network configurations

11

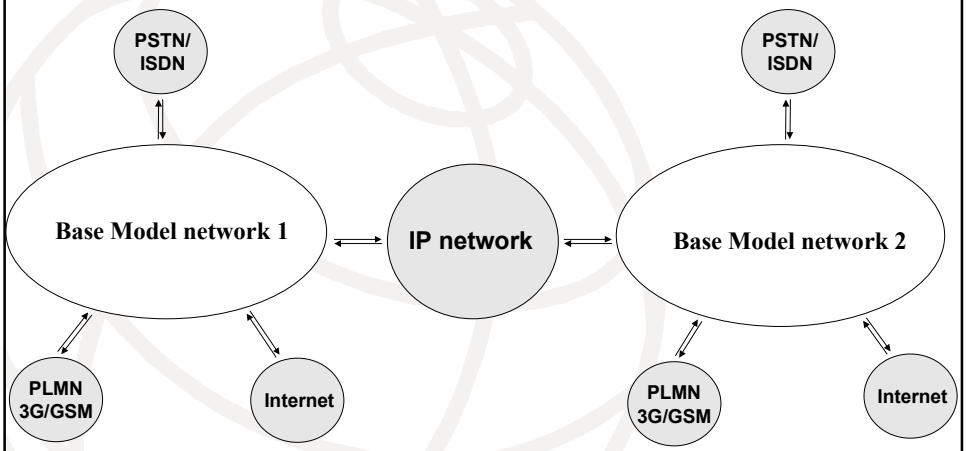
Dedicated model network



12

Handbook on testing Fig.5.1

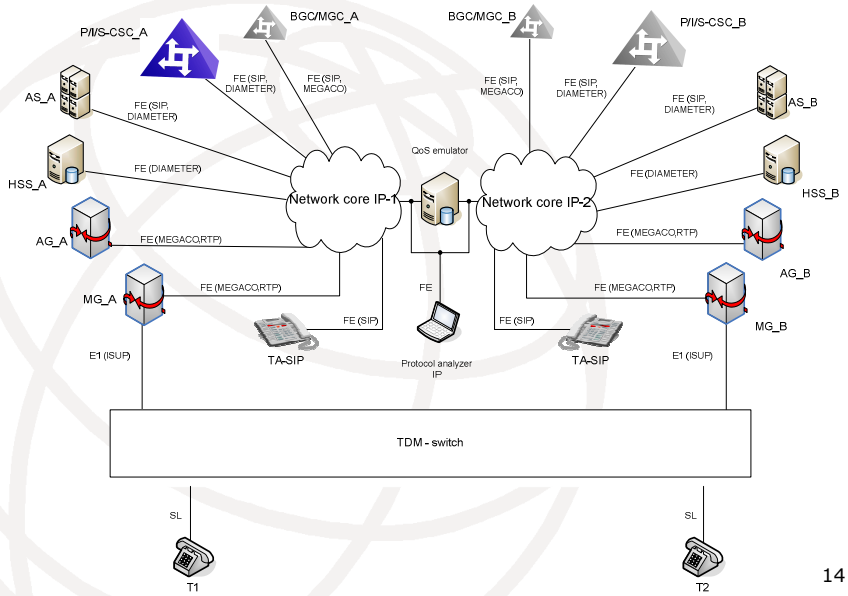
Distributed model network



13

Handbook on testing Fig.5.2

Model network configuration for IMS



14

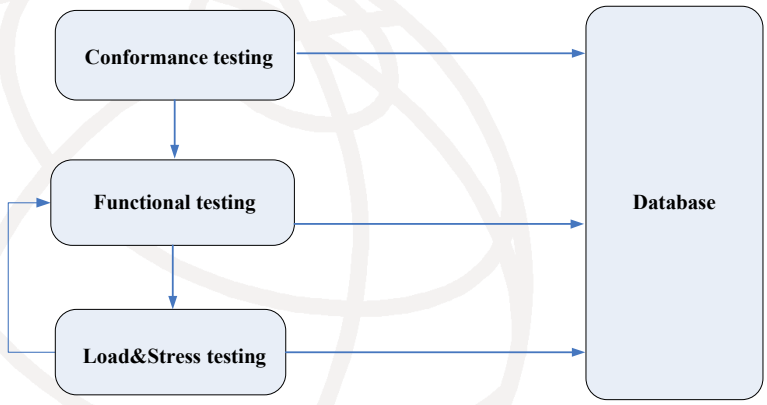
Handbook on testing Fig.5.4

Testing methodology

- Technical means local testing
- Network Under Test
- Services testing
  - Service parameters
  - Testing scenarios
- QoS and QoE testing
  - Network performance
- Benchmarking

15

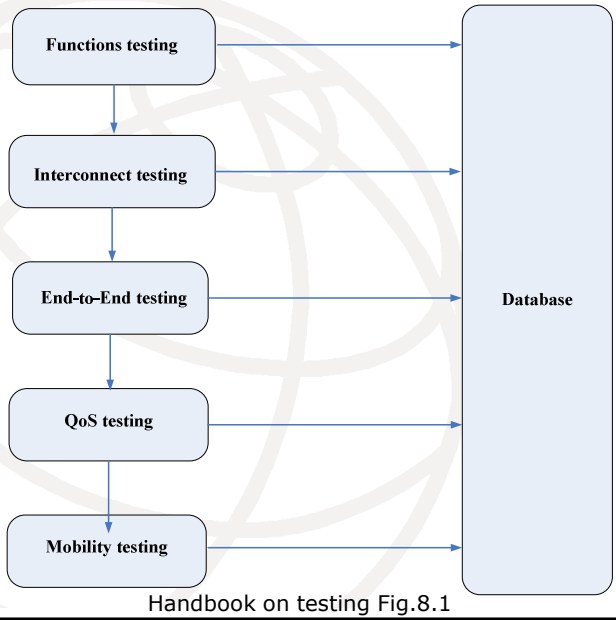
NGN TM local testing methodology



16

Handbook on testing Fig.7.1

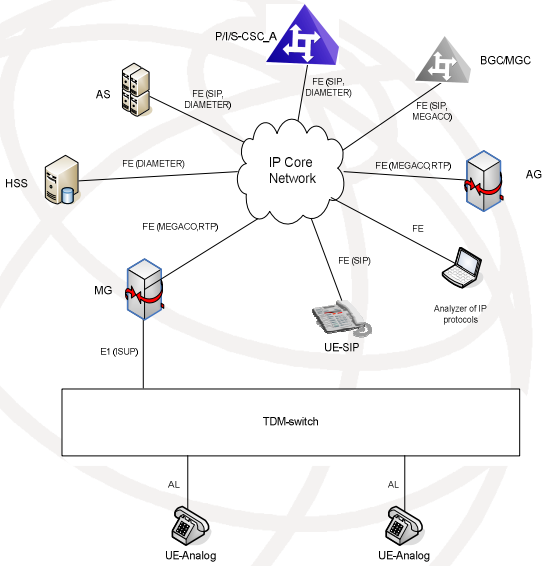
NUT testing methodology



17

Handbook on testing Fig.8.1

Multimedia services testing



18

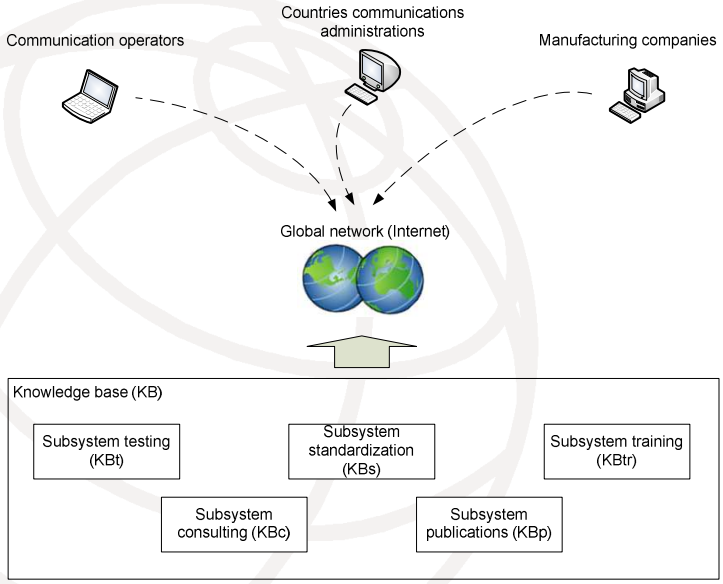
Handbook on testing Fig.9.2

Presentation of test results

- Formalised database (Q.3903)
- Accumulation, storage and presentation
- Subsystems
  - Testing
  - System consulting
  - Standardisation
  - Publication
  - Training

19

Knowledge base structure



20

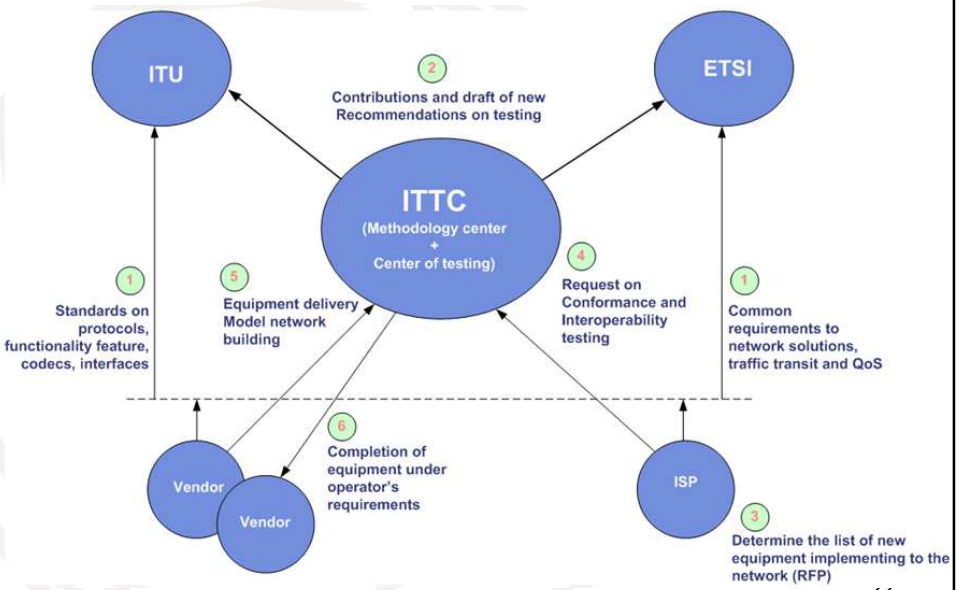
Handbook on testing Fig.12.1

Regional testing centers

- Goals
  - unified testing network solutions for Region
  - equipment cost reduction
  - determine the optimal operation conditions of equipment, network solutions
- Tasks
  - conformance and interoperability testing
  - testing on functionality, special requirements of Region, performance
  - development of testing processes and implementation

21

Regional center operations



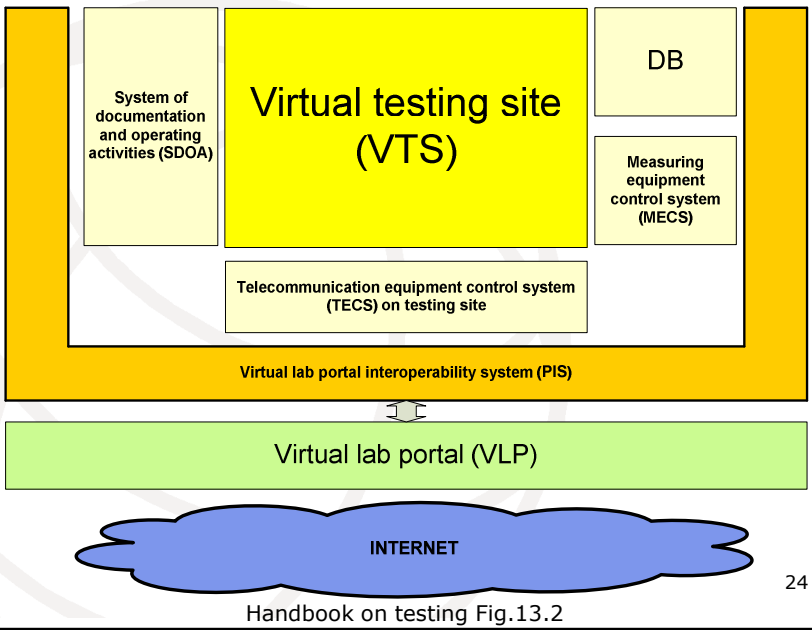
Handbook on testing Fig.13.1

Virtual testing laboratory

- WTDC10 approval
- Capabilities
  - remote control of the model network infrastructure and testing processes
  - remote configuration of telecommunication and measurement equipment
- Benefits
  - shortage of time of testing campaigns
  - cost optimisation by process automation and on-site personel reduction
  - training possibilities by easy access to test environment and database

23

Virtual Lab Block Diagram



24

Handbook on testing Fig.13.2

Thank You ☺

Janusz Pieczerak
Orange Labs, Poland
tel +48 22 699 5267
email: janusz.pieczerak@telekomunikacja.pl

25