Principle and methodology of NGN technical means testing

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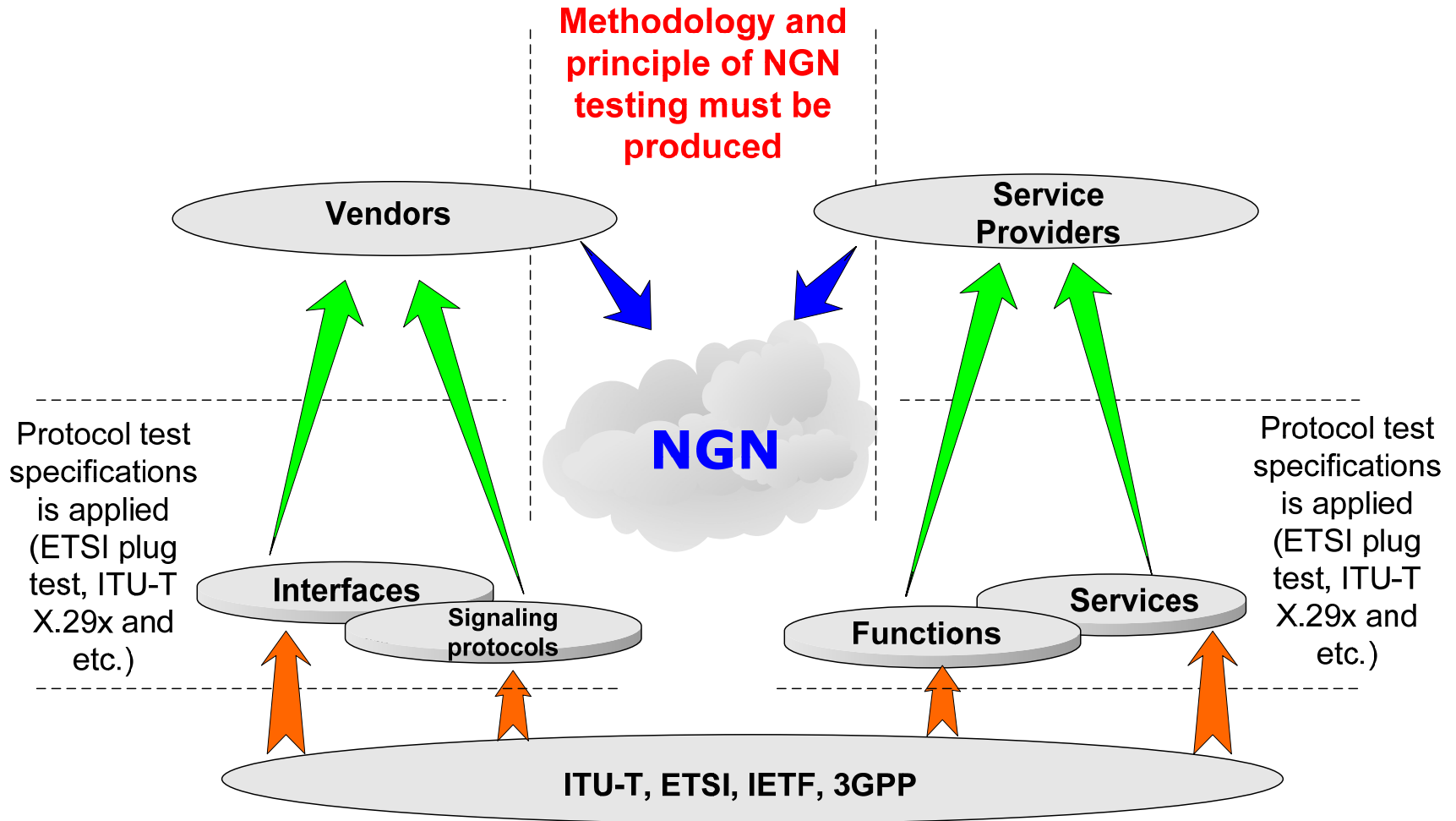Central Science Research Telecommunication Institute (ZNIIS), Moscow

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Importance of NGN testing

Complex of NGN technical means testing methods will be used before realizing the NGN solutions on the real public telecommunication networks

Methodology and principle of NGN testing must be produced

Vendors

Service Providers

NGN

Protocol test specifications is applied (ETSI plug test, ITU-T X.29x and etc.)

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Interfaces

Signaling protocols

Services

Functions

ITU-T, ETSI, IETF, 3GPP

Principle of NGN testing

At present the process of testing may be divided into the following stages

- **testing for conformance**
- **testing for compatibility**
- **testing for interoperability**

Means of NGN testing

Equipment Under Test (EUT)

- Functional testing
- Load&Stress testing
- Conformance testing
- Compatibility testing

Network Under Test (NUT)

- Functional testing
- Interconnect testing
- Services testing
- Ent-to-End testing
- QoS testing
- Mobility&Roaming testing

Model Network for NGN testing

Model network

a network which simulates the capabilities similar to those available in present telecommunication networks, has a similar architecture and functionality and uses the same telecommunication technical means

Dedicated Model Network

is a fragment of the public telecommunication network which is not connected to other model networks and are used to perform testing for conformance, compatibility and etc.

Distributed Model Network

is composed of several model networks, two as a minimum, interconnected via communication channels and are used to perform complex tests for compatibility, interoperability, testing QoS parameters and etc.

Architecture of Model Network
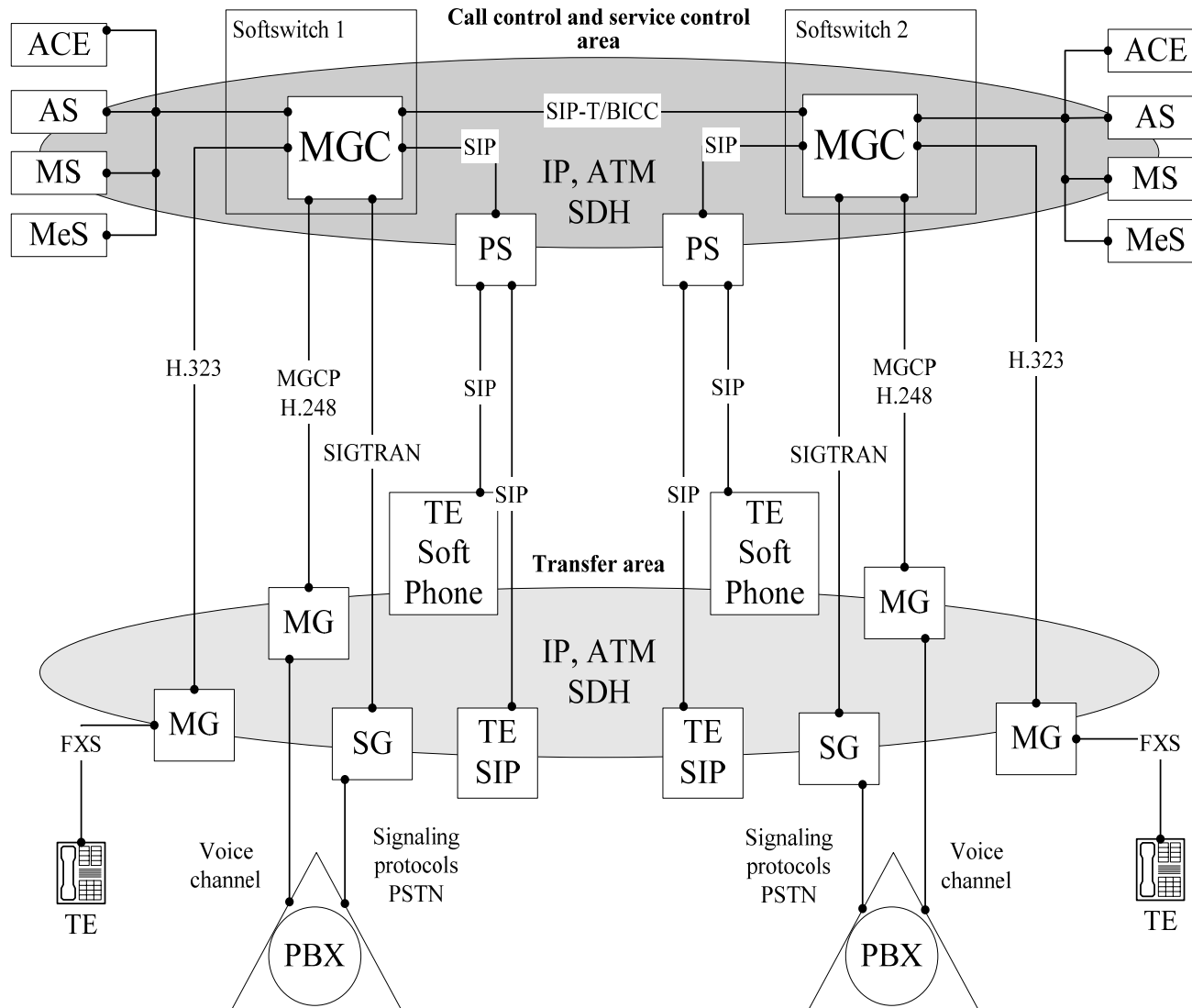
Standardization of NGN testing

Present time

TTCN 1 (X.292-1995), TTCN 2 (X.292-1998), TTCN 3 (Z.140-2003)
TSS&TP, PICS/PIXIT proformas for different protocols testing

Goal

To develop the principle, methodology and set of tests for NGN technical means testing basis on the model network

Set of new NGN technical means testing Recommendations

Q.tt1 Methods of testing and model network architecture for NGN technical means testing as applied to public telecommunication networks

Q.tt3 Integral testing. Tests and services' distribution for NGN technical means testing in the model and operator networks

Q.tt4 Parameters to be monitored in the process of operation when introducing NGN in PSTN

Q.tt5 Formalized presentation of testing results

Q.tt6 Handbook on NGN technical means testing as applied to NGN technologies to be introduced on PSTN networks

Methodology of NGN testing – Q.tt1

Classification of main functions and services to be checked during testing of NGN technical means used in public telecommunication networks

   Classification of NGN Technical Means Used in Public Networks

   Classification of functions to be tested

   Conformance of the Functionality under Test to NGN Technical Means Used in Public Networks

Testing methods

Model Networks

   EUT and NUT Testing Using Model Networks

   Types of model networks and their applicability for testing

      Basic architecture of model network

      Architecture of distributed model network

      Architecture of regional model network

   Requirements for EUT and NUT testing by means of model telecommunication networks

      Model network configuration for the testing of different (basic and additional) service types

      Model network configuration for EUT testing

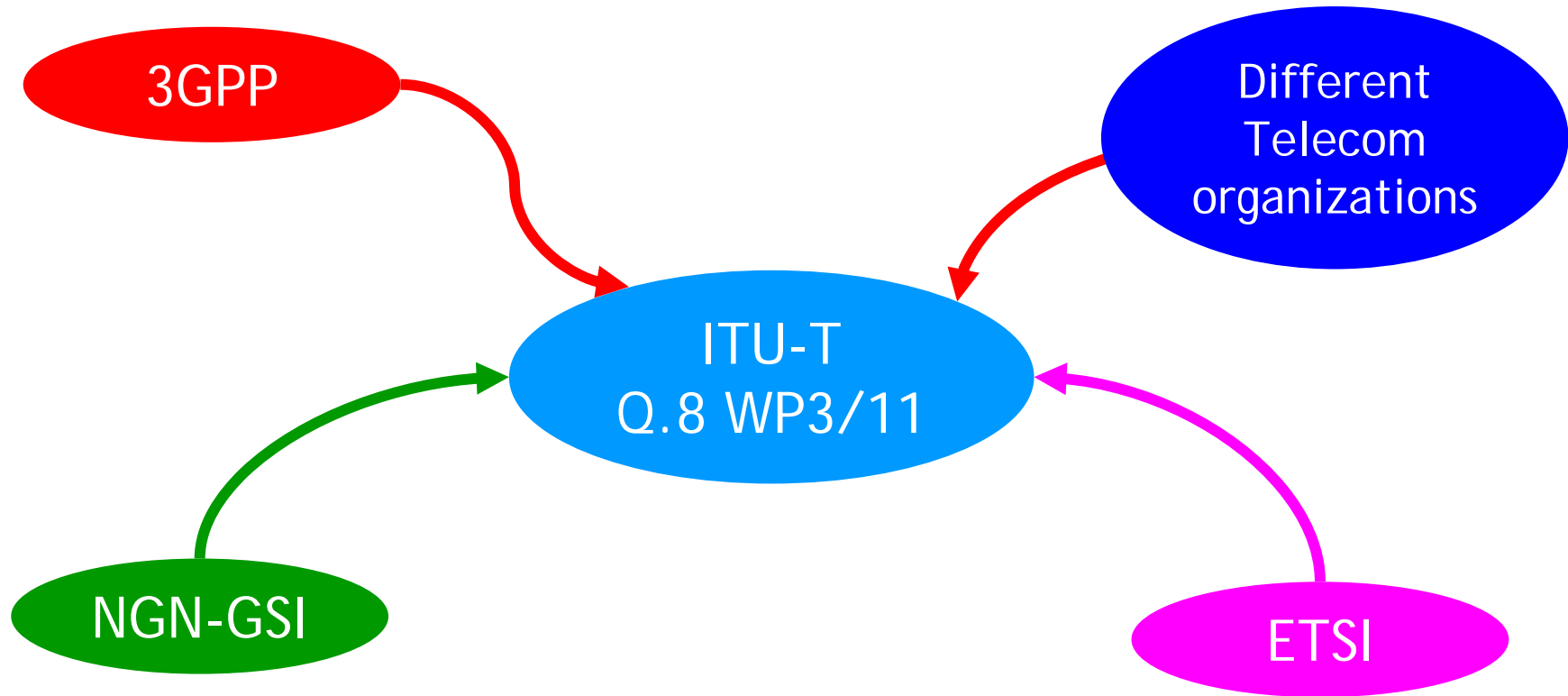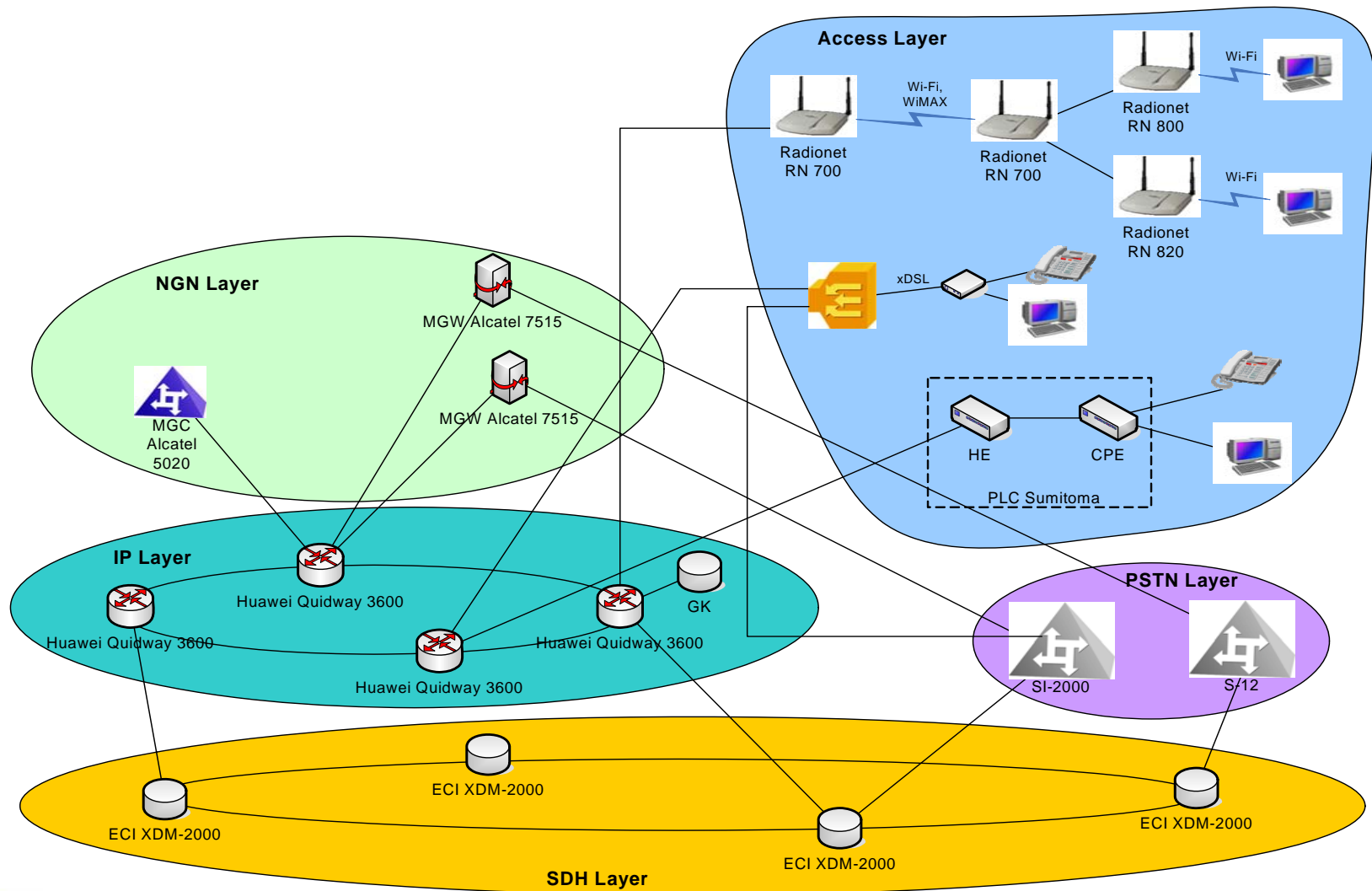   *Model network configuration for NUT testing*

The main aim of ITU-T SG11

Combination and aggregation work of development standards and recommendations devoted to NGN technical means testing

The experience of model network practical realization

Access Layer

Radionet RN 700 — Wi-Fi, WiMAX — Radionet RN 700

Radionet RN 800 — Wi-Fi

Radionet RN 820 — Wi-Fi

xDSL

HE — CPE

PLC Sumitoma

NGN Layer

MGW Alcatel 7515

MGW Alcatel 7515

MGC Alcatel 5020

IP Layer

Huawei Quidway 3600

Huawei Quidway 3600

Huawei Quidway 3600

Huawei Quidway 3600

GK

PSTN Layer

SI-2000

S-12

SDH Layer

ECI XDM-2000

ECI XDM-2000

ECI XDM-2000

ECI XDM-2000

Thank you for your attention

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