ASIA-PACIFIC TELECOMMUNITY

2nd APT/ITU Conformance and Interoperability Workshop (C&I-2)

26 August 2014, Bangkok, Thailand

Document: C&I-2/ INP-01

26 August 2014

ITU-T SG11 / WP4

Area of Responsibility and Interconnection requirements

Contact : Martin Brand
Service Network Planning
Optimisation
A1 Telekom Austria AG

Email: martin.brand@A1telekom.at

ASIA-PACIFIC TELECOMMUNITY
2nd APT/ITU Conformance and Interoperability Workshop (C&I-2)
26 August 2014, Bangkok, Thailand

Document:
C&I-2/ INP-01
26 August 2014

ITU-T SG11 / WP4 Area of Responsibility and Interconnection requirements

Martin Brand
(Vice Chairman of SG11,
Chairman of WP 4/11)

International Telecommunication Union

Presentation Outline

- ITU-T SG11 - Area of Responsibility
- SG11/WP4 - Conformance and interoperability testing
  - Focuses of WP4
  - Conformance and Interoperability Testing Joint Coordination Activity (JCA-CIT)
  - Interoperability
- Interconnection requirements of ITU-T and 3GPP networks

ITU-T SG11 - Area of Responsibility

- Responsible for studies relating to signalling requirements and protocols, including those for IP-based network technologies
  - NGN, M2M, IoT, FNs, Cloud Computing, mobility,
  - multimedia related signalling aspects, ad hoc networks (sensor networks, RFID, etc.), QoS,
  - internetwork signalling for legacy networks ATM, N- ISDN and PSTN networks,
  - studies relating to reference signalling architectures and test specifications for NGN and emerging network technologies (e.g., IoT etc.).

ITU-T SG11
lead study group roles

- signalling and protocols
- machine-to-machine (M2M) signalling and protocol
- test specifications, conformance and interoperability testing

SG11/ WP4
Conformance and interoperability testing

Study Group Structure - Study Period (2013-2016)

	TITLE
WP1/11	**Signalling requirements and protocol for emerging networks**
Q1/11	Signalling and protocol architectures in emerging telecommunication environments
Q2/11	Signalling requirements and protocols for service and application in emerging telecommunication environments
Q3/11	Signalling Requirements and Protocol for Emergency Telecommunications
WP2/11	**Software-Defined Networking (SDN) and resource control**
Q4/11	Signalling requirements and protocols for Bearer and Resource control in emerging telecommunication environments
Q5/11	Protocol procedures relating to services provided by Broadband Network Gateways
Q6/11	Protocol procedures relating to specific services over IPv6
WP3/11	**Attachment and service networking, including IoT and M2M**
Q7/11	Signalling and control requirements and protocols for network attachment supporting multi-screen service, future networks, and M2M
Q8/11	Guidelines for implementations of signalling requirements and protocols
Q9/11	Protocols supporting distributed, smart service networking and end-to-end multicast
WP4/11	**Conformance and Interoperability (C&I) testing**
Q10/11	Service and networks benchmarking measurements
Q11/11	Protocols and networks test specifications; frameworks and methodologies
Q12/11	Internet of things test specifications
Q13/11	Monitoring parameters for protocols and emerging networks
Q14/11	Cloud interoperability testing
Q15/11	Testing as a service (TAAS)

Lead in ITU-T's test specifications, conformance and interoperability testing

- SG11/WP4 leads ITU's work on conformance and interoperability (C&I) testing and is responsible for coordinating ITU's C&I programme. Conformance with international standards is one of the core principles underlying the global interoperability of ICT networks and devices. The C&I programme was initiated at the request of ITU's membership in light of the challenges faced by developing countries in improving interoperability. The programme rests on four central pillars:
  - conformance assessment;
  - interoperability events;
  - human resource and capacity building;
  - and assistance in the establishment of test facilities in developing countries.
- SG11 is also investigating whether the ITU C&I programme could play a role in battling counterfeit goods.

Focuses of WP4

The work of SG11/ WP4 - Conformance and interoperability testing focuses on global interoperability testing and covers

- technical means,
- services,
- quality of service (QoS) and
- testing parameters.

Activities encompass establishing benchmark testing procedures and investigating the testing of next-generation networks (NGN), ubiquitous sensor networks (USN) and emerging technologies such as the internet of things (IoT), distributed service network (DSN), home networking (HN), etc. #

- SG11 leads ITU's work on conformance and interoperability (C&I) testing and is responsible for coordinating ITU's C&I programme.

Joint Coordination Activity on Conformance and Interoperability Testing (JCA-CIT)

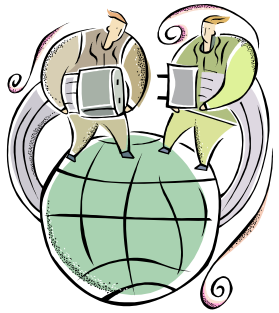
- JCA-CIT coordinates work undertaken by ITU-T Study Groups in driving ITU's Conformance and Interoperability (C&I) Programme, ensuring that these expert groups collaborate efficiently within ITU and with other standards development organizations (SDOs). JCA-CIT also supports ITU-T Study Groups' identification of technologies suited to C&I testing, and acts as the first point of contact for organizations interested in contributing to ITU's C&I Programme.

  The parent group of JCA-CIT was changed from ITU-T Study Group 17 (Security) to ITU-T Study Group 11 (Protocols and test specifications) by agreement of the World Telecommunication Standardization Assembly (WTSA-12), Dubai, UAE, 20-29 November 2012.

Interoperability

Interoperability (IOP)

- Standardisation enables interoperability
  - One main aim of standardisation is to enable interoperability in a multi-vendor, multi-network, multi-service environment
  - IOP is the red thread running through the entire standards development process
  - Interoperability is specified from the beginning
  - Not something 'bolted on' at the end
  - Interoperability should be built-in!



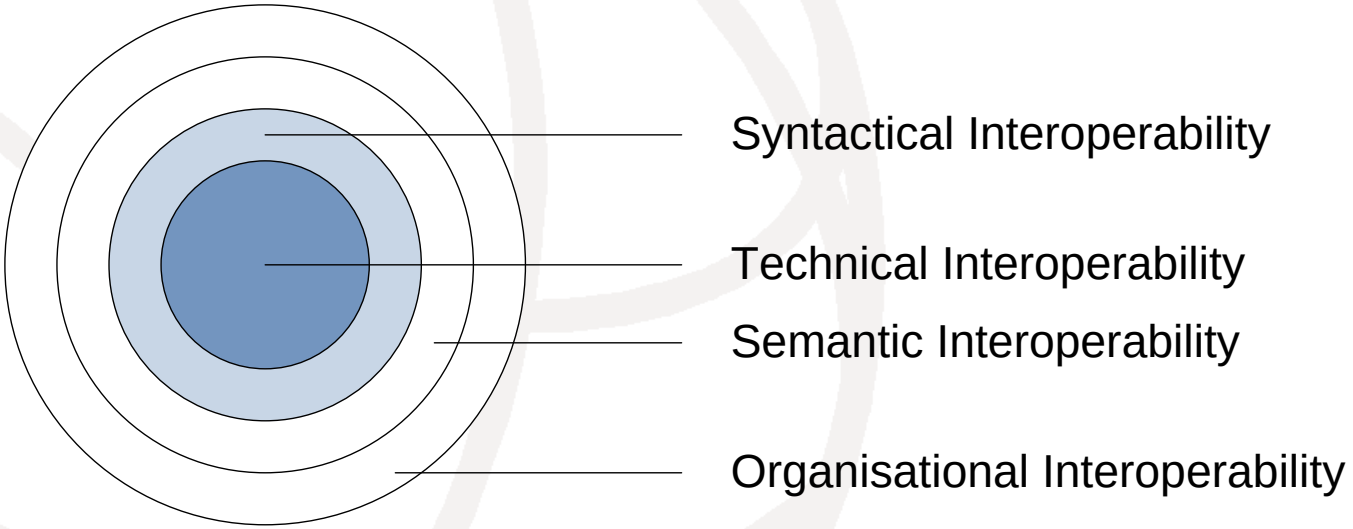
Is Interoperability Important?

- We live in an interconnected world and interoperability is key to drive it forward
  - Digital Home, Smart House
  - M2M (embedded communication)
  - Internet of Things, Intelligent Transport Systems etc.
- Users benefit from increased choice from multiple manufacturers
  - Business, Governmental, Private Consumer
  - And they expect 'stuff to work' (Plug&Play)
- Manufacturers benefit from an increased market
  - Economies of scale

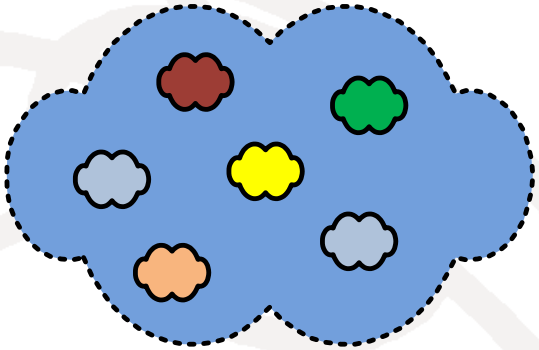
Different 'Levels' of Interoperability

No single definition of Interoperability

- The ability of two or more systems or components to exchange and use information
- …



IOP and Complex Standards



- Complex ICT standards are increasingly specified by 'islands of standards'
  - From different standardisation bodies
  - Or developed for a different (original) use
  - Complete system not specified in detail
- Results in potentially non-interoperable standards and/or products

Typical Causes of Non-interoperable Standards

- Requirements not well identified or missing
- Ambiguous requirements
- Varying technical quality and use of language
- Inadequate handling of options
- Lack of clear system overview
- Loose definition of interfaces (reference points)
- Poor maintenance
- Using standards beyond their original purpose
- …

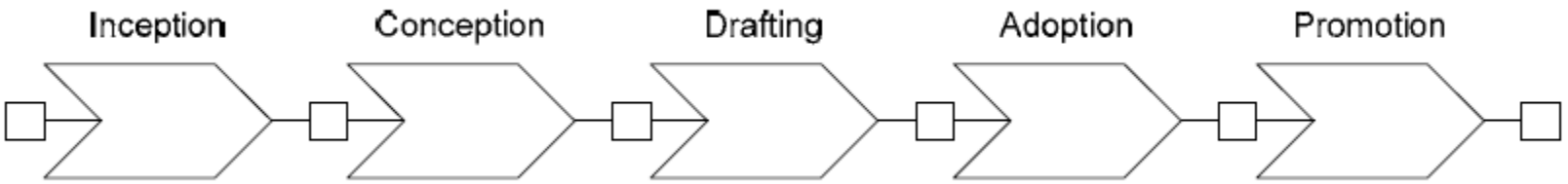
Poor Interoperability Can be Expensive

- Bad publicity
  - For the technology
  - For the manufacturer
- Annoyance to the end customer
  - Damage to brand name
- Loss of customer base
  - Allegiances change rapidly
- May affect uptake of new technology
- Loss of investor confidence

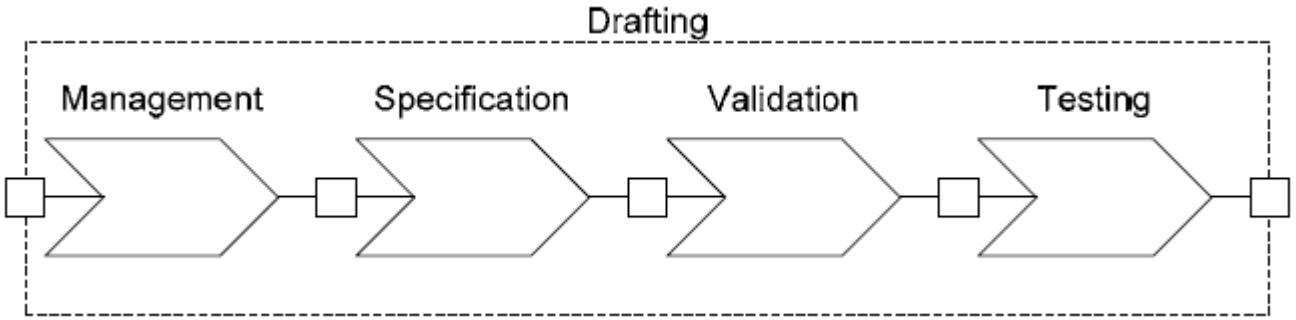
Building interoperability into standards (1)

- The goal is to ensure that instances of non-interoperability are not caused by poor or insufficient standardization.
- It is the drafting phase which is of immediate interest to us. Standards need to be designed for interoperability from the very beginning of this phase.

Building interoperability into standards (2)

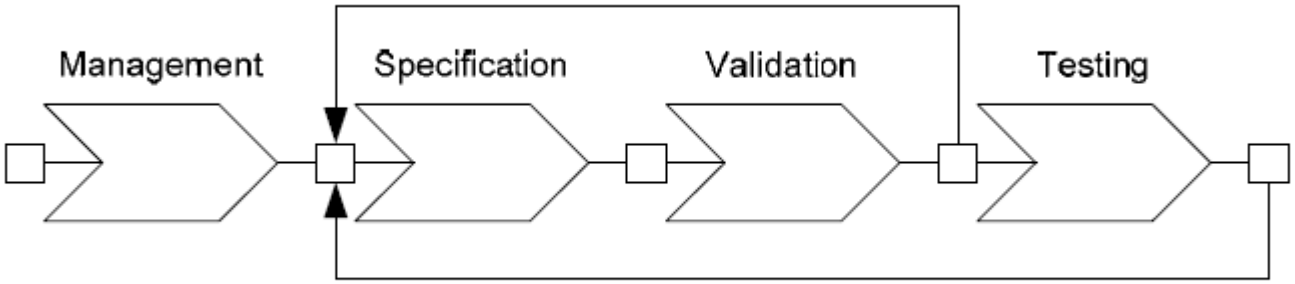


The Standards Making Process



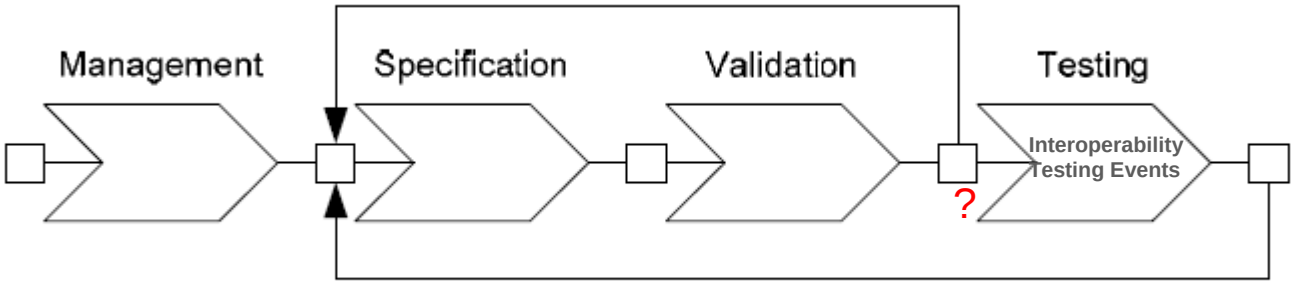
The drafting phase

Building interoperability into standards (3)



Feedback from validation and testing to base standards

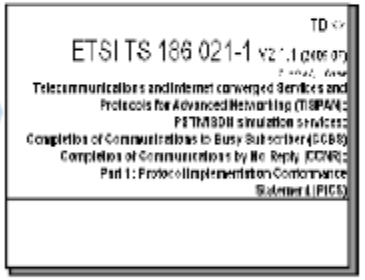
Building interoperability into ITU-T recommendations – current situation



Specification process IETF/3GPP/ETSI

Specification process
Basis for the testing

The process of service interoperability assurance starts with the specification work and ends with the implementation testing.

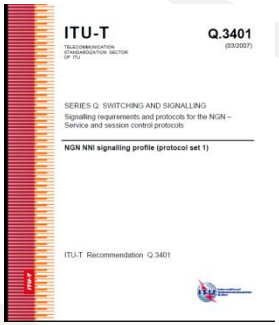
IETF protocol specification	3GPP service specification	ETSI test specification	Test Script
			
1-3 years	**1-3 years**	**1-2 years**	**~1 month**

Even with the parallelisation of the standardisation efforts, the whole process may take up to 4 years to complete.

ITU SG11 Specification process for UNI and NNI

IETF Protocol Specification

NGN NNI / UNI signaling profile



ITU-T Service Specification

ITU-T Service Specification

?

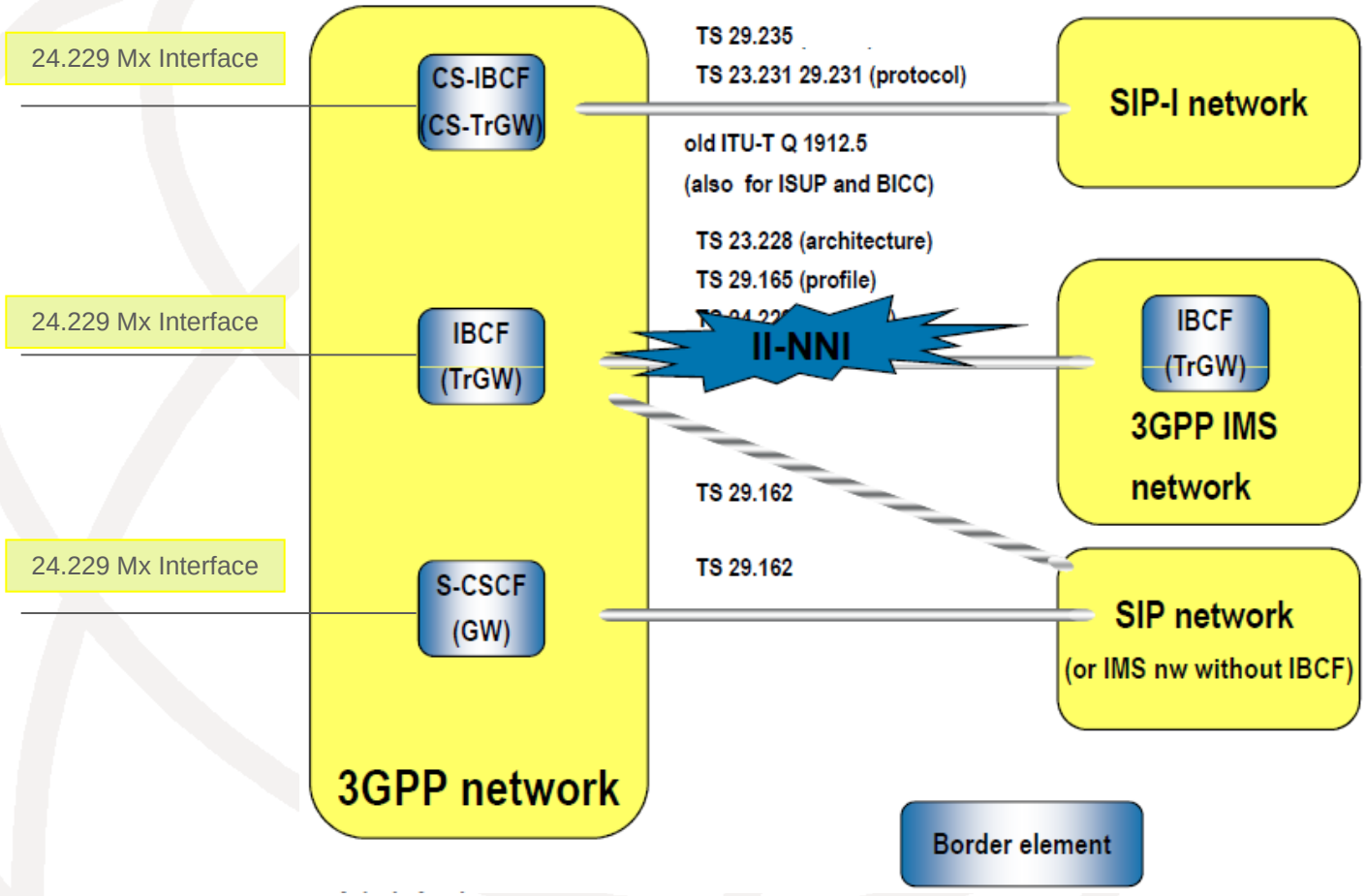
ITU-T Tests Specification

ITU-T Test Specification

?

Interconnection requirements of ITU-T and 3GPP networks

3GPP Interconnection Interfaces



Interconnection restrictions

- The ITU-T NGN can be interconnected with IMS networks only with SIP-I and with SIGTRAN due to profile mismatches
- The SIP UNI and SIP NNI Profiles and resource management are not compatible
- ITU-T has no defined services and the end-to-end functionality is not ensured.
- The end user is buying services not protocols – quality of experience
- As no ITU-T services are defined no interconnection tests can by standardized

Interconnection requirements

To ensure the interoperability with 3GPP implementations SG11 must define:

- The extension / adaptation of the Q.1912.5 interworking and the applicability of SIP header fields
- Internet Protocol (IP) multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP) the services needed for interconnection
- Service requirements for the IP multimedia core network subsystem
- Telecommunication management and charging management
- SBC functionalities and Security requirements
- ENUM procedures and functionalities in the NGN

THANK YOU!

Martin Brand
martin.brand@A1telekom.at