



IPTV Interoperability Testing **in** **ITU-T SG16**

HATS Workshop on NGN Interoperability

13 July 2012

ITU-T SG16 Chairman
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ITU-T SG 16 Overview

- ITU-T SG16 is the lead Study Group on;
 - multimedia coding, systems and applications
 - ubiquitous applications ("e-everything", such as e-health)
 - telecommunication/ICT accessibility for persons with disabilities
- ITU-T SG16 consist of 3 WPs (21 Qs) and 2 Questions directly under Plenary
- IPTV standardization is under the responsibility of Q13/16, "Multimedia application platforms and end systems for IPTV "



SG16's approach to CIT

- In general, Conformance and Interoperability Testing on multimedia applications requires special knowledge on applications, such as media coding
- SG16 has been working closely with SG12, responsible for Quality Aspects, on quality requirements
- SG16 also has been successfully developing multimedia coding Recommendations in collaboration with other SDOs, such as ISO
- SG16 has been developing CIT specifications, test-vectors, guidance etc. coordinating with SG11 and JCA-CIT



IPTV InterOp Events/Showcasing

- Q13/16 has been actively working on IPTV InterOp Events and Demonstrations (Showcasing)
- It is important not only to develop CIT specs, but also demonstrate the reliable deployment of state-of-the-art new series of technologies.
- SG16 also encourage users to develop new applications through holding the software application contests called "IPTV application challenge".
- 4 InterOp/Showcasing events, 2 Showcasing/Application Challenges has already been conducted/planned in collaboration with TSB.
- Further requests/invitations for InterOp events/Showcasings has been offered mainly from developing countries.



Work Plan

IPTV FG
Deliverables

Phase 1 Basic Model		Phase 2 Advanced Services		
2008	2009	2010	2011	2012

Standardization of Basic Functions

Standardization of Advanced Services

Jan 2008
1st IPTV-GSI

Completion of
Basic Model Design

- Widgets
- Internet Contents Access
- Multiscreen
- Digital Signage etc.

CIT Standardization

● InterOp Event

● Showcasing (Planned)

● Application Challenge (Planned)

■ Jul 2010 Geneva

■ Sep 2010 Singapore

■ Dec 2010 Pune

■ Jul 2011 Rio

■ Sep 2011 Dubai

■ Oct 2011 Geneva

■ Nov 2012 Dubai
(Planned)



Responsibilities for IPTV-related Recs.

Home networking

H.622.1: Req & Arch for IPTV Home networks

SG16

Applications and end-systems

H.750: Metadata for IPTV Services

H.721: IPTV Terminal (Basic)

H.770 : IPTV Service discovery

H.761: Ginga-NCL

H.740: Application Event Handling

H.762: LIME

H.763.1: Cascading style sheets for IPTV services

H.764: Script for IPTV

Architecture, requirements, network

Y.2007: NGN Capability Set 2

Y.sup5 IPTV Service use cases

Y.sup7 NGN Release 2 Scope

Y.1910 IPTV Functional Arch

Y.1901 IPTV Service Requirements

SG13

Quality of Experience

H.701: Content Error-Recovery

SG12

G.1080: IPTV QoE

G.1081: Performance Monitoring

G.1082: Improving robustness of IPTV performance

Security and Content Protection

X.1911 Req & arch for IPTV security

SG17



IPTV conformance testing specs

Number	Title and contents	Publication
HSTP.CONF-H721	"Conformance testing specification for H.721" IPTV terminal (basic model)	2010-07
HSTP.CONF-H770	"Conformance testing specification for H.770" IPTV service discovery	2010-07
HSTP.CONF-H762	"Conformance testing specification for H.762" LIME interactive applications	2010-07
HSTP.CONF-H701	"Conformance testing specification for H.701" Error recovery	2011-12
HSTP.CONF-H761	"Conformance testing specification for H.761" Ginga-NCL interactive applications	2012-05
HSTP.CONF-H740	"Conformance testing specification for H.740" Application event handling for IPTV	Under study (timing: '13)
HSTP.CONF-H750	"Conformance testing specification for H.750" High-level metadata for IPTV services	Under study (timing: '13)
HSTP.CONF-H764	"Conformance testing specification for H.764" IPTV enhanced script language	Under study (timing: '14)

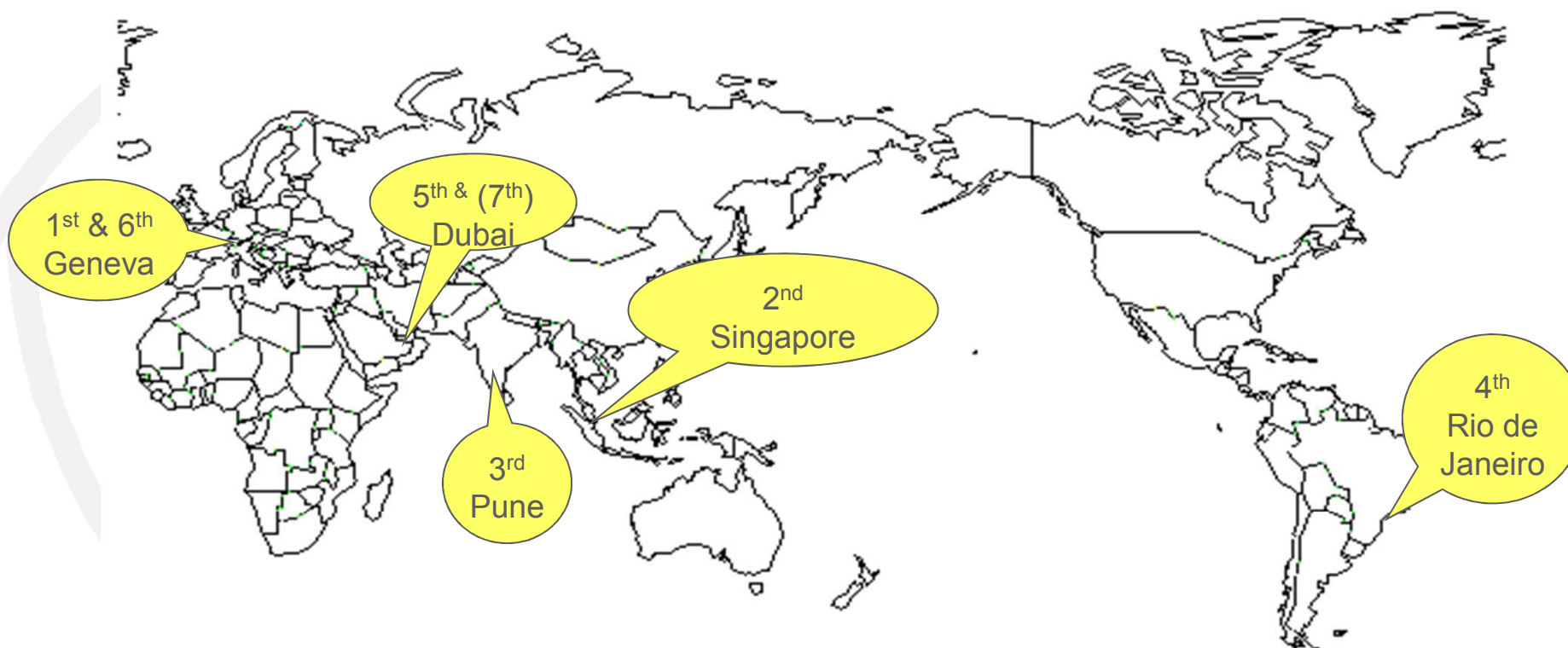


InterOp Events/Showcasing

- Interop Events
- Testing sessions (only participant companies)
 - Conformance and interoperability testing of IPTV devices implemented according to ITU specifications
- Showcasing (public demonstration)
 - Public showcasing of ITU compliant IPTV devices (servers, terminals)

Event	Host	Location	Timing
CIT and Demo	ITU	Geneva, Switzerland	2010 July
CIT and Demo	IDA, I2R	Singapore	2010 Sep
CIT and Demo	Singhad Univ.	Pune, India	2010 Dec
CIT and Demo	Anatel, PUC Rio Univ.	Rio de Janeiro, Brazil	2011 Jul
Demo	du, AICTO	Dubai, UAE	2011 Sep
Demo	ITU (Telecom 2011)	Geneva, Switzerland	2011 Oct
Demo (Planned)	ITU (WTSA-12)	Dubai, UAE	2012 Nov

IPTV InterOp Test Events/Demo





CIT issues in SG16

- SG16 is the pioneer for Interop testing in IPTV
- Speech, video and still picture codecs
 - *use of test vectors and reference software*
 - *chip-level implementations will be the most of the case, and verification of implementations will be done in software debugging mode*
 - *Subjective measures are often used for quality evaluation*
 - *different in nature from typical protocol testing*
- Joint development in collaboration with other SDOs
 - *test specifications can not be drafted only by ITU-T*
- WP1 Questions have decided to include dedicated clause for CIT aspects in newly developed Recs.
 - The contents of the clause are left open for the questions
 - Other WP/Qs are investigating their ways to include ITS issues



Conclusion

- To ensure the Interoperability/Conformance is essential for the success of multimedia applications
- SG16 has been leading CIT practices on multimedia applications for long years in collaboration with SG12, SG11 and JCA-CIT and also with other SDOs
- For IPTV applications, SG16 has developed and conducted many InterOp/Showcasing events
- For multimedia codecs, providing test vectors/reference software has been the major cases, especially for chip-level implementations
- SG16 will continue to develop CIT specifications and guidance for testing on multimedia applications



Background Information

1st IPTV IneterOp Event in ITU-T

ITU-T Interop : Events



Upcoming Events:

Registration to open soon for ...

- Singapore, Sept 2010
- India, December 2010

ITU Interop Event on IPTV, Geneva, 20-23 July 2010



Showcasing/Demonstration



1st Event in Geneva



2nd Event in Singapore

Showcasing/Demonstration



3rd Event in Pune



4th Event in Rio de Janeiro

Workshop/Showcasing



Workshop in Pune



5th Event in Dubai

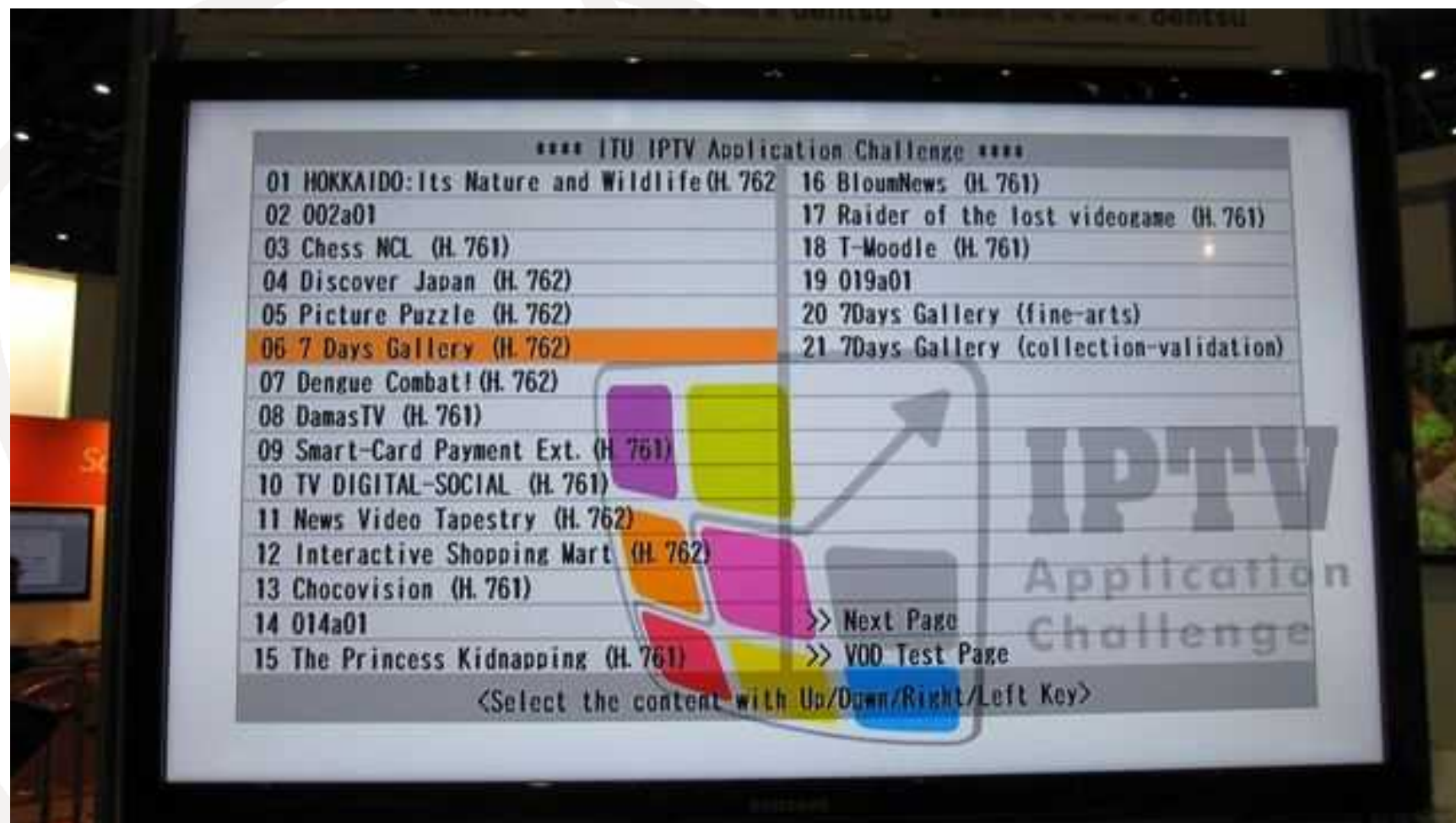
Showcasing at World TELECOM 2011

IPTV joint Pavilion



6th Event in Geneva (TELECOM)

IPTV Application Charange



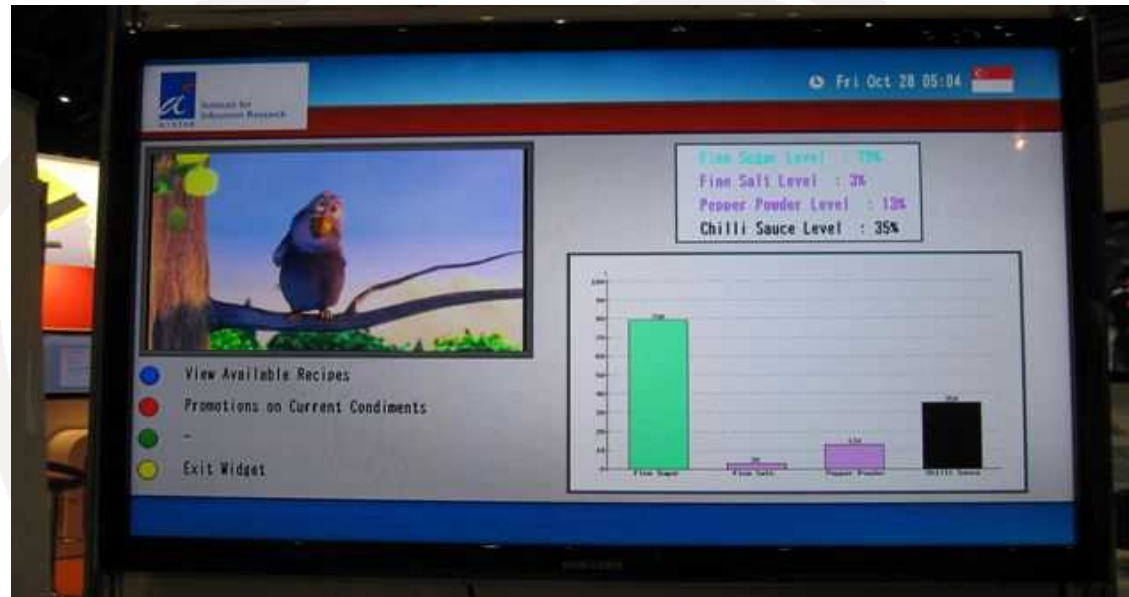
World TELECOM 2011

Application Challenge –Winner-



1st Prize Winner:NHK
Discover Japan

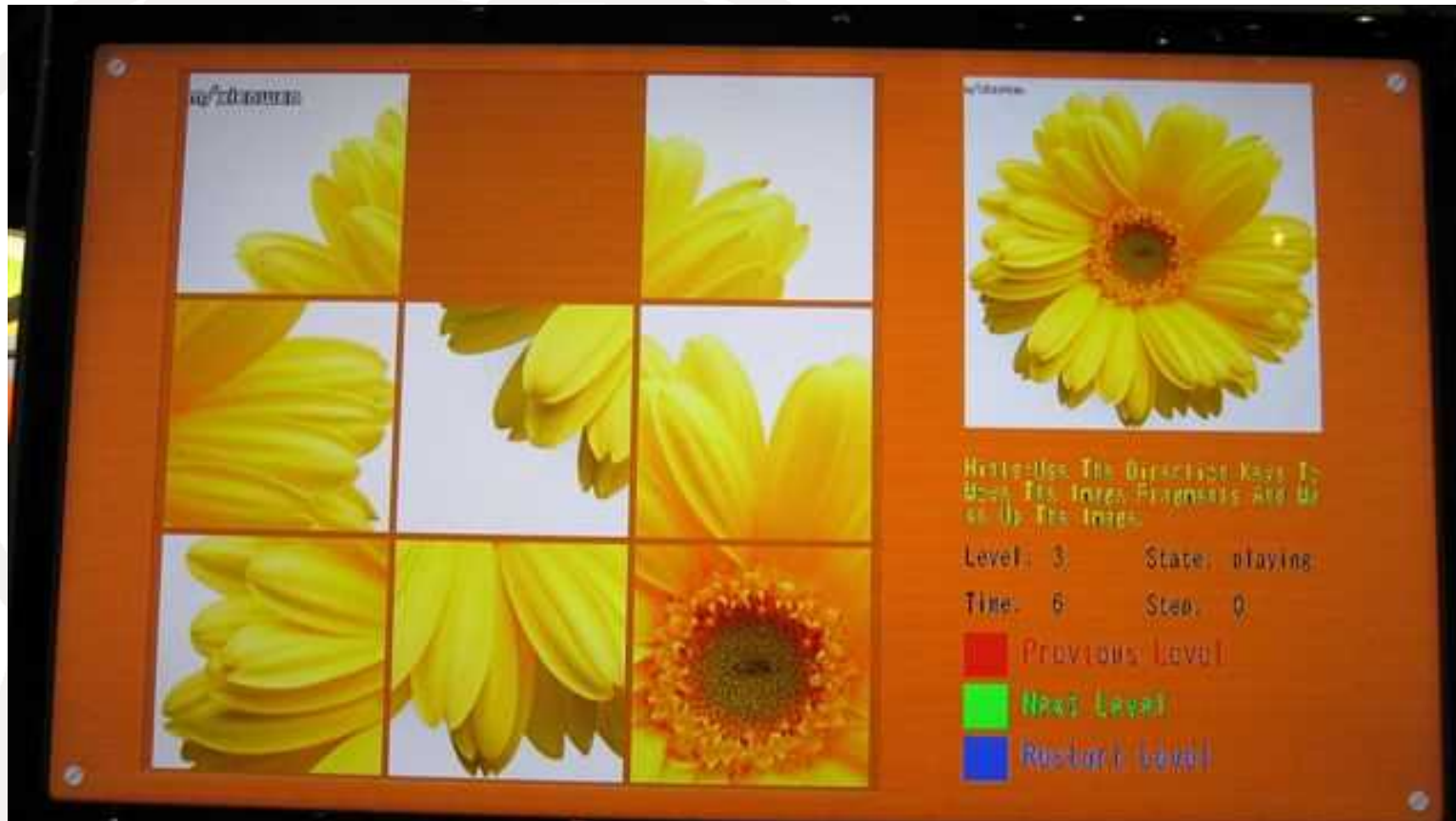
Application Challenge



Hornable Mention
Application from I2R Lab, Singapore



Application Challenge



Application from China



Thank you