

IPTV試験とショウケース

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沖電気工業株式会社

通信システム事業本部 キャリアシステム事業部

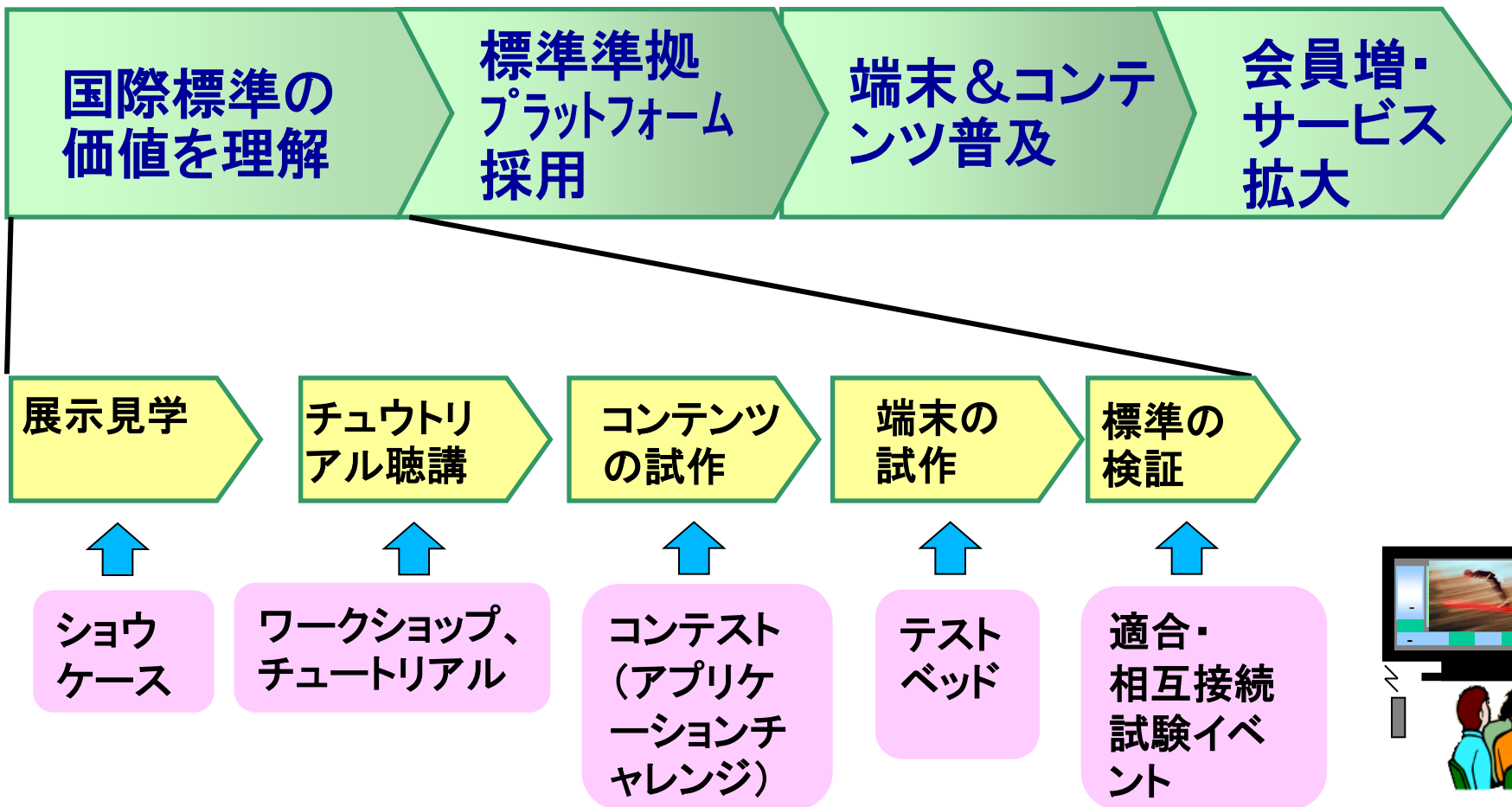
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Agenda

- IPTV普及活動の流れ
- IPTV Testing
- IPTV Showcasing
 - Equipment and contents
- Conclusions

IPTV普及活動の流れ

- 途上国で導入されるまでの第一歩として国際標準の価値を理解してもらうことが必要



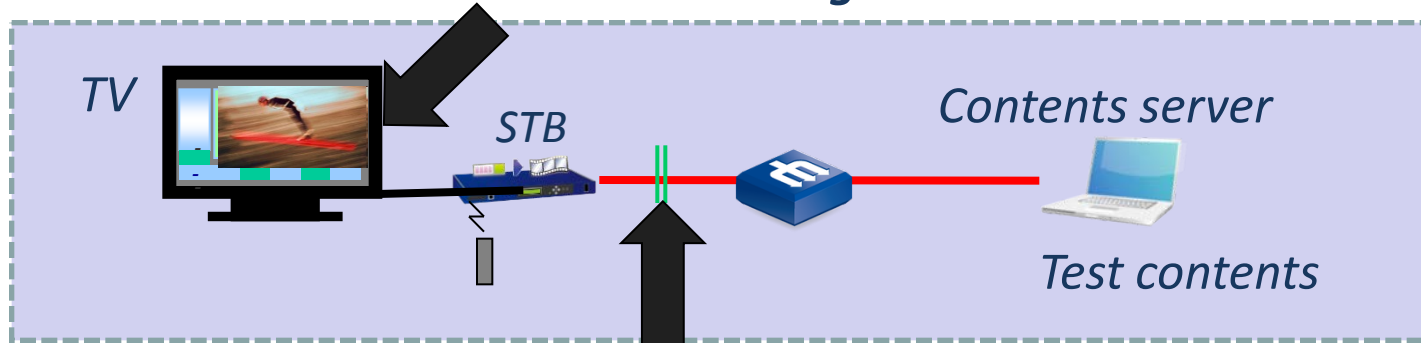
C&I Testing outline(1)

- C&I testing for IPTV are based on ITU-T conformance documents.
 - ITU-T HSTP.IPTV-H721 (Basic Terminal)
 - ITU-T HSTP.IPTV-H762 (LIME)
- Basic IPTV services (VOD and Linear TV) operations are tested based on HSTP.IPTV-H721.
- Display images and remote controller operations over LIME contents are tested based on HSTP.IPTV-H.762



C&I Venue

H.762 LIME Testing



H.721 Basic Terminals testing

C&I Testing outline(2)

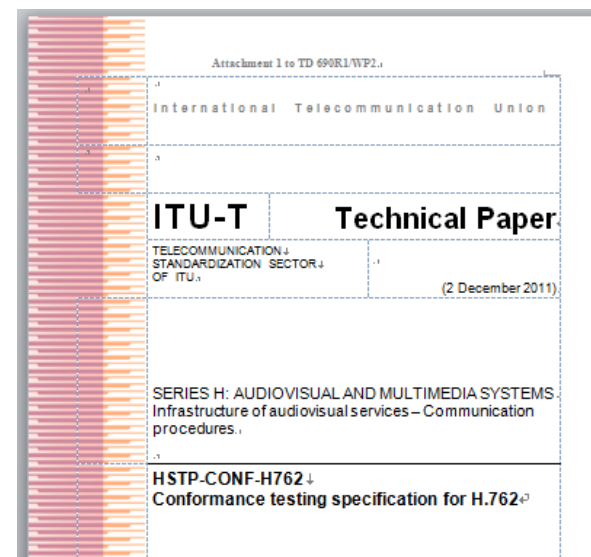
- HSTP.IPTV-H762 (LIME) describes basic element test, object element test items and et.al.
- HSTP.IPTV-H721 (Basic terminal) was used to test interoperability between a server and a terminal.

Basic element test

| No. | File name | Description |
|-----|--------------------------|-------------|
| 1 | docstr0.lime | TBD |
| 2 | body-element-test.lime | TBD |
| 3 | body-element-test0.lime | TBD |
| 4 | body-element-test1.lime | TBD |
| 5 | p-element-test.lime | TBD |
| 6 | p-element-test0.lime | TBD |
| 7 | br-element-test0.lime | TBD |
| 8 | div-element-test.lime | TBD |
| 9 | div-element-test1.lime | TBD |
| 10 | Span-element-test0.lime | TBD |
| 11 | Span-element-test1.lime | TBD |
| 12 | a-element-test0.lime | TBD |
| 13 | a-element-test1.lime | TBD |
| 14 | Input-element-test.lime | TBD |
| 15 | Input-element-test1.lime | TBD |
| 16 | link-css.lime | TBD |

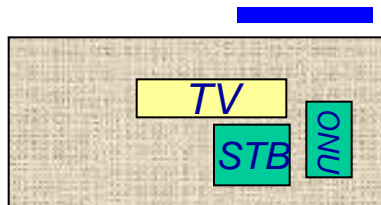
Object element test

| No. | File name | Description |
|-----|---------------------------|-------------|
| 1 | object-element-test.lime | TBD |
| 2 | object-element-test1.lime | TBD |
| 3 | object-element-test2.lime | TBD |



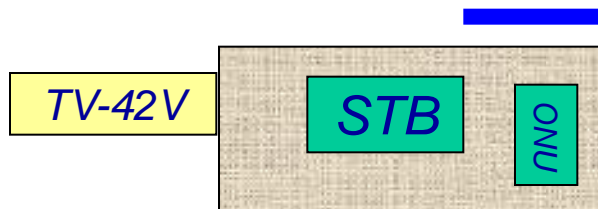
IPTV Showcasing Layout Image

**OKI, Mitsubishi Electric,
NTT, Chulalongkorn Univ.**



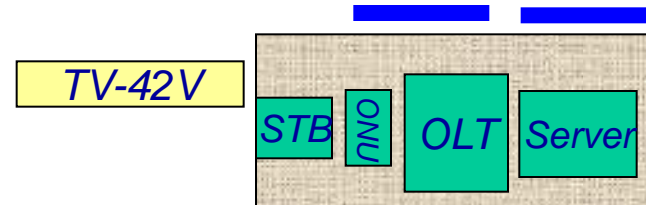
IPTV applications
(ITU IPTV Application challenge)

Mitsubishi Electric



IPTV terminal

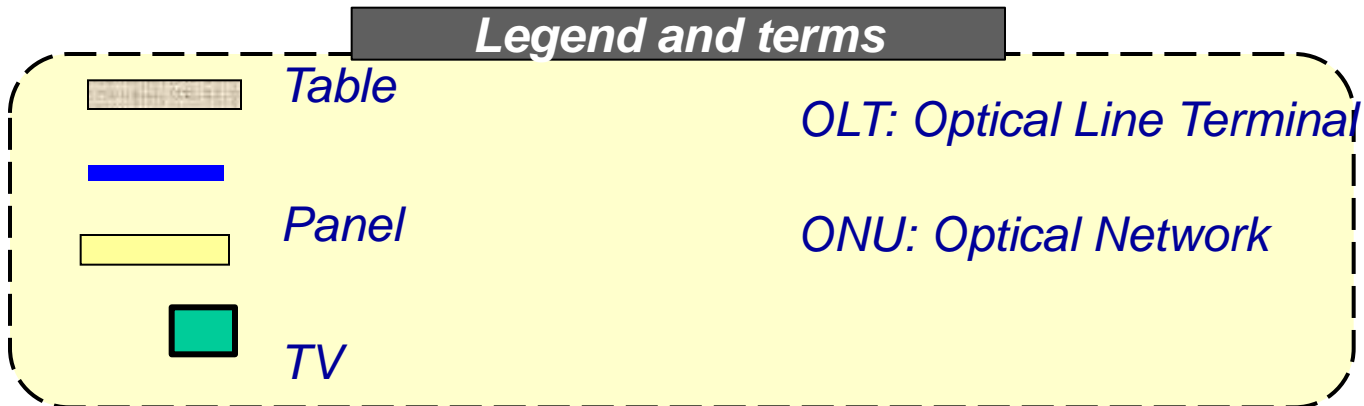
OKI



**IPTV head-end +
Optical Access**



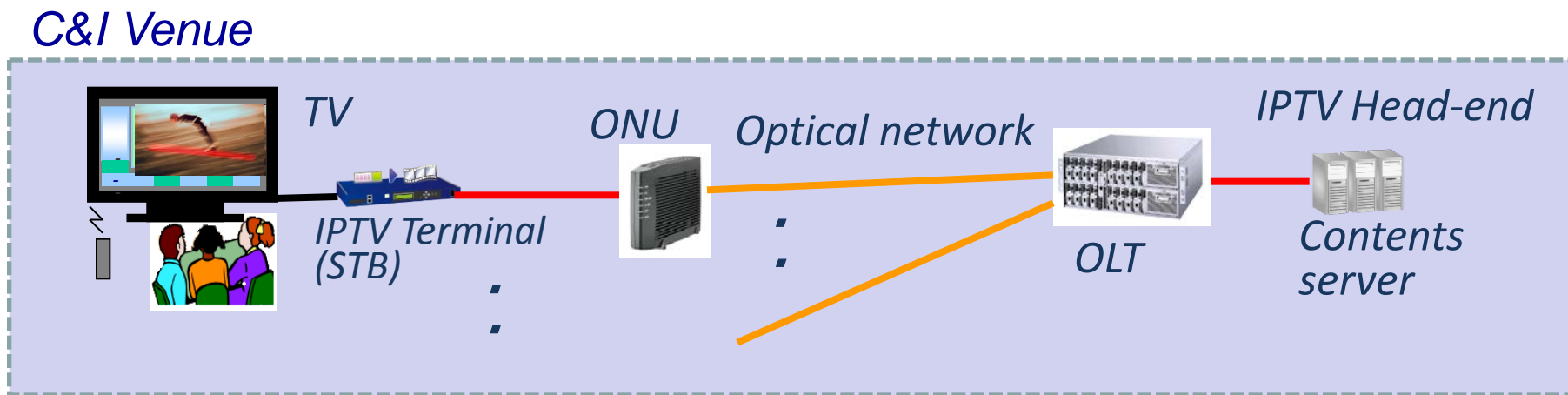
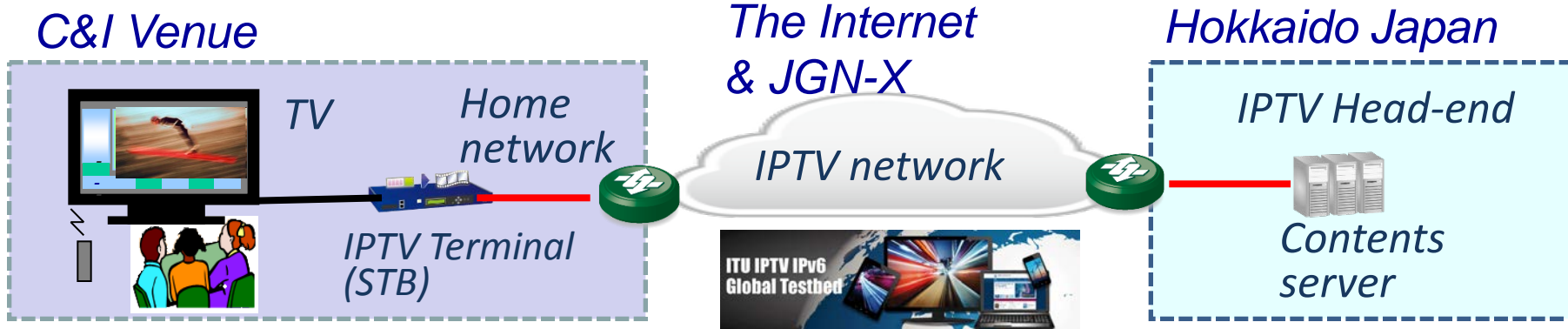
Legend and terms



IPTV Showcasing

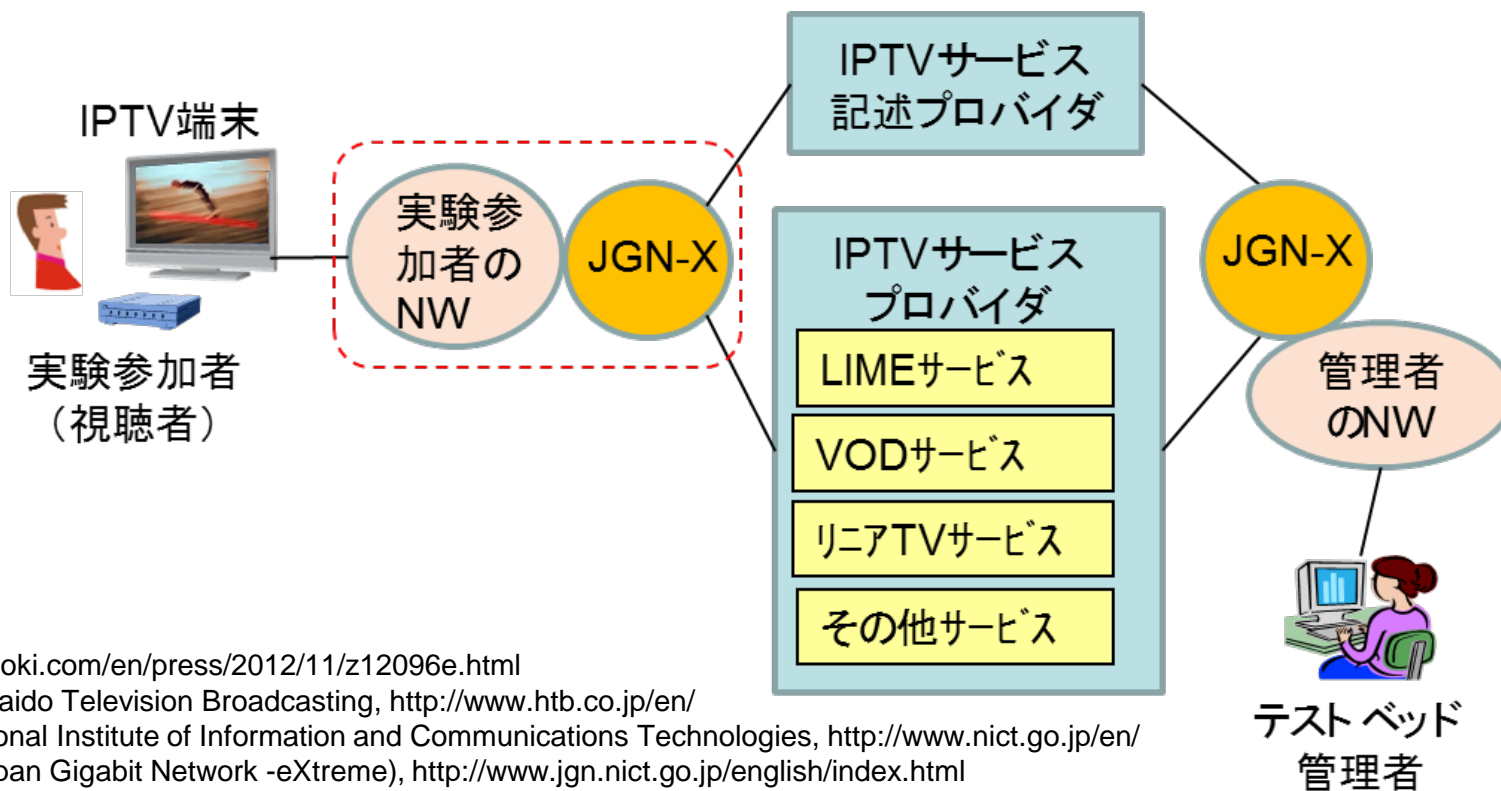
■ Showcasing

ITU IPTV IPv6 global testbed (I3GT) and local servers are used for showcasing



ITU Global IPTV テストベッド (Showcaseで使用)

- ITU, OKI, 北海道テレビ放送(HTB)などが行っているIPTVの実験環境
- 2012年のNICT主催のJGN-X上札幌雪まつり実験をきっかけにジュネーブのITU本部と日本や世界各地にIPTVを使ったコンテンツ交換・配信実験用のプラットフォームを構築
- 現在までに、札幌に設置したサーバと、ジュネーブのほか、シンガポール、マニラ、バンコク、ペナン、ドバイ、ヨハネスブルクが接続実績がある。



(*1) <http://www.oki.com/en/press/2012/11/z12096e.html>

(*2) HTB: Hokkaido Television Broadcasting, <http://www.htb.co.jp/en/>

(*3) NICT: National Institute of Information and Communications Technologies, <http://www.nict.go.jp/en/>

(*4) JGN-X (Japan Gigabit Network -eXtreme), <http://www.jgn.nict.go.jp/english/index.html>

IPTV STB by Mitsubishi Electric

Features

- ◆ Multiple services (currently deployed STB)
 - ◆ Terrestrial and satellite TV broadcast
 - ◆ Premium channel TV broadcast
 - ◆ VoD, Revenue-generating interactive services: Karaoke, portal services
- ◆ Personal video recorder, Remote scheduled recording

ITU-T Recommendations supported

- H.721 IPTV Terminal devices – Basic model
- H.762 Lightweight interactive multimedia environment (LIME) for IPTV services
- H.770 Mechanisms for service discovery and selection

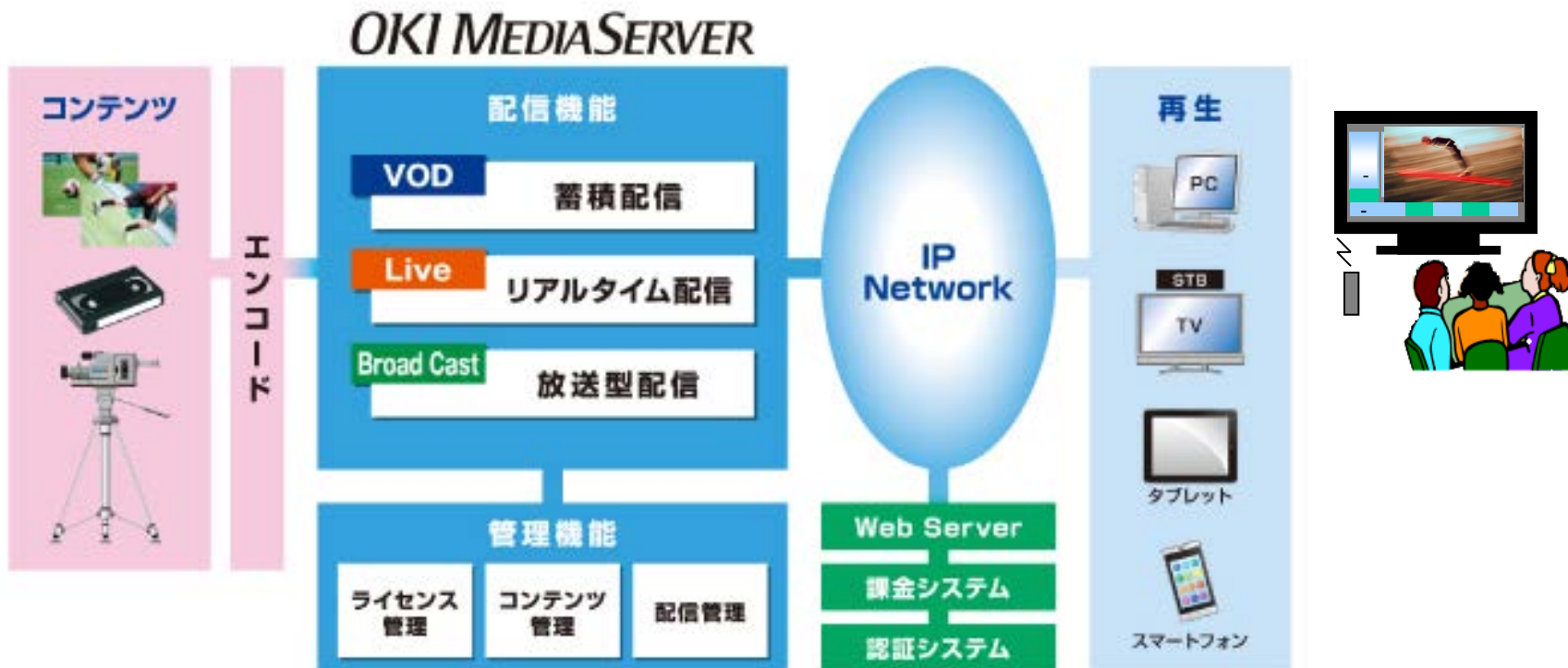
Specifications

- Full-HD H.264, MPEG2
- LAN 10/100 Base-TX x1
- USB 2.0 x2 ports for HDD PVR
- HDMI digital Audio/Video
- Stereo audio
- Composite/Component video
- Digital audio
- IR interface (for remote controller)



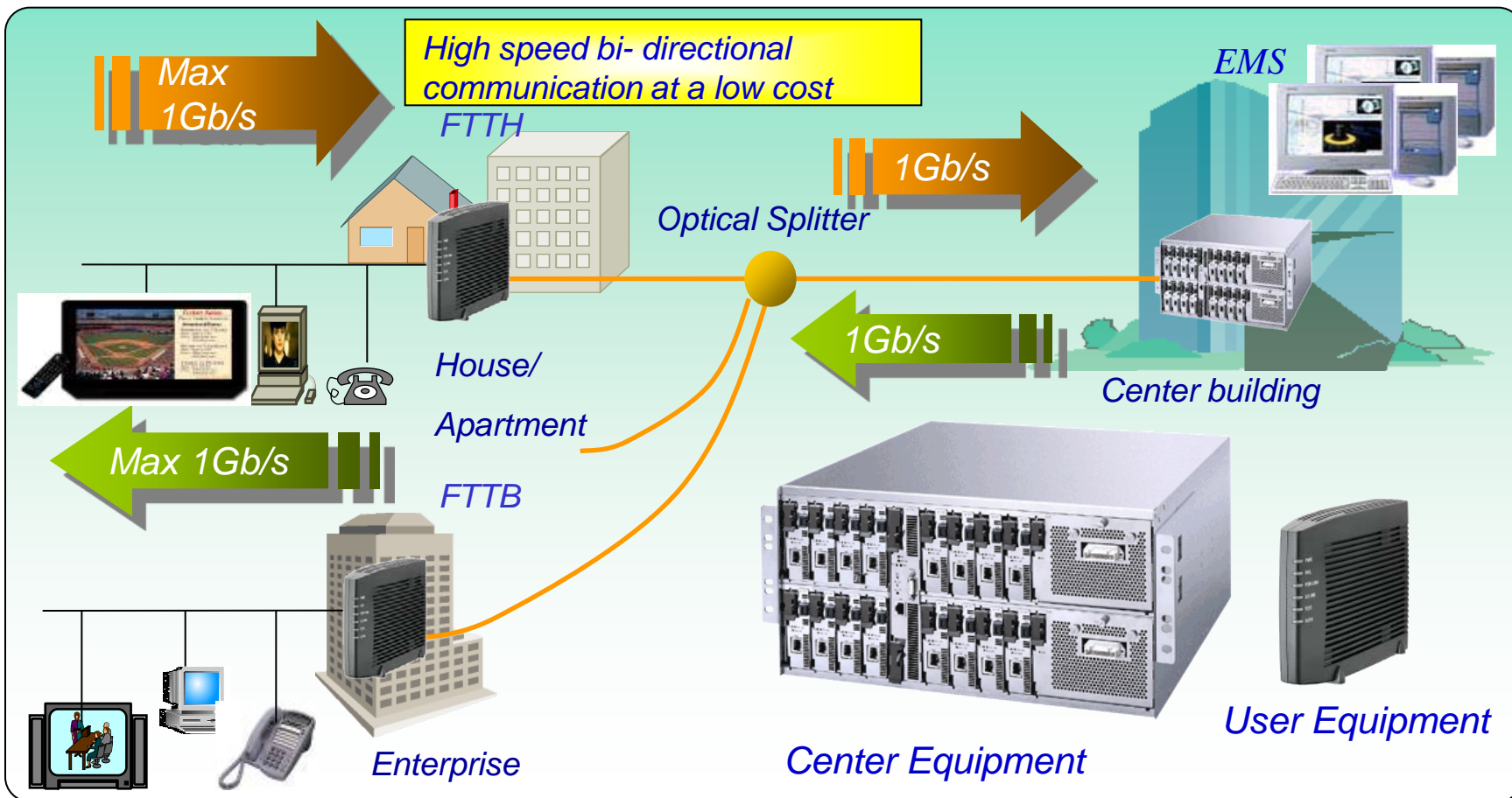
配信プラットフォームの特長

- 統合プラットフォーム
 - VOD、ライブ(リアルタイム配信)、放送型配信(マルチキャスト) 対応
 - マルチデバイス対応(PC, STB, TV, スマホ、タブレット、スマートTV)
- 標準ベースのシステム
 - 国際標準 ITU IPTV標準準拠。デファクトスタンダードにも対応
- 大規模システム対応
 - 一台構成から、分散、並列構成まで対応可能



GE-PON Product by OKI (1)

- Provide products to be installed at homes, in apartment and enterprise buildings. for ultrahigh-speed broadband services such as real-time distribution of high quality contents over single optical fiber.



GE-PON: Gigabit Ethernet Passive Optical Network

FTTH: Fiber to the Home FTTB: Fiber to the Building

HATSにおける第2回NGNインターオペラビリティイベントワークショップ

Contents for Showcasing

1. LOCAL

1. VOD and linear TV

- ◆ Love Hokkaido by HTB
- ◆ Sapporo snow festival 2013 by HTB
- ◆ Greetings from Director of ITU-T by ITU-T

2. LIME application

- ◆ Sign language learning system by Chulalongkorn Univ.
- ◆ Health condition visualization (E-Health) by NTT (poster only)

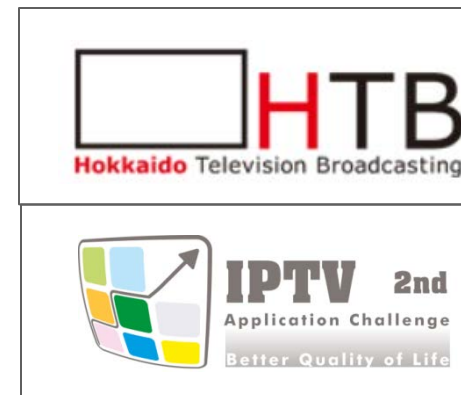
3. Others

- ◆ Device shift (STB and Tablet) and time shift application by OKI

2. ITU IPTV IPv6 Global Testbed (I3GT)

1. VOD

- ◆ The same as the above local “VOD and linear TV” except for Love Hokkaido.



HTB: Hokkaido Television Broadcasting, <http://www.htb.co.jp/en/>



アプリケーションコンテスト 受賞作品(1)

- 2012年のITU IPTV アプリケーションチャレンジ(コンテスト)に、タイのチュロンコーン大学が、「タイ語での手話学習システム」を展示。
- ITU H.762 LIMEを使ってシステムを作成し賞を受賞。

Sign language video

Thai language alphabet selected

Thai language alphabet group

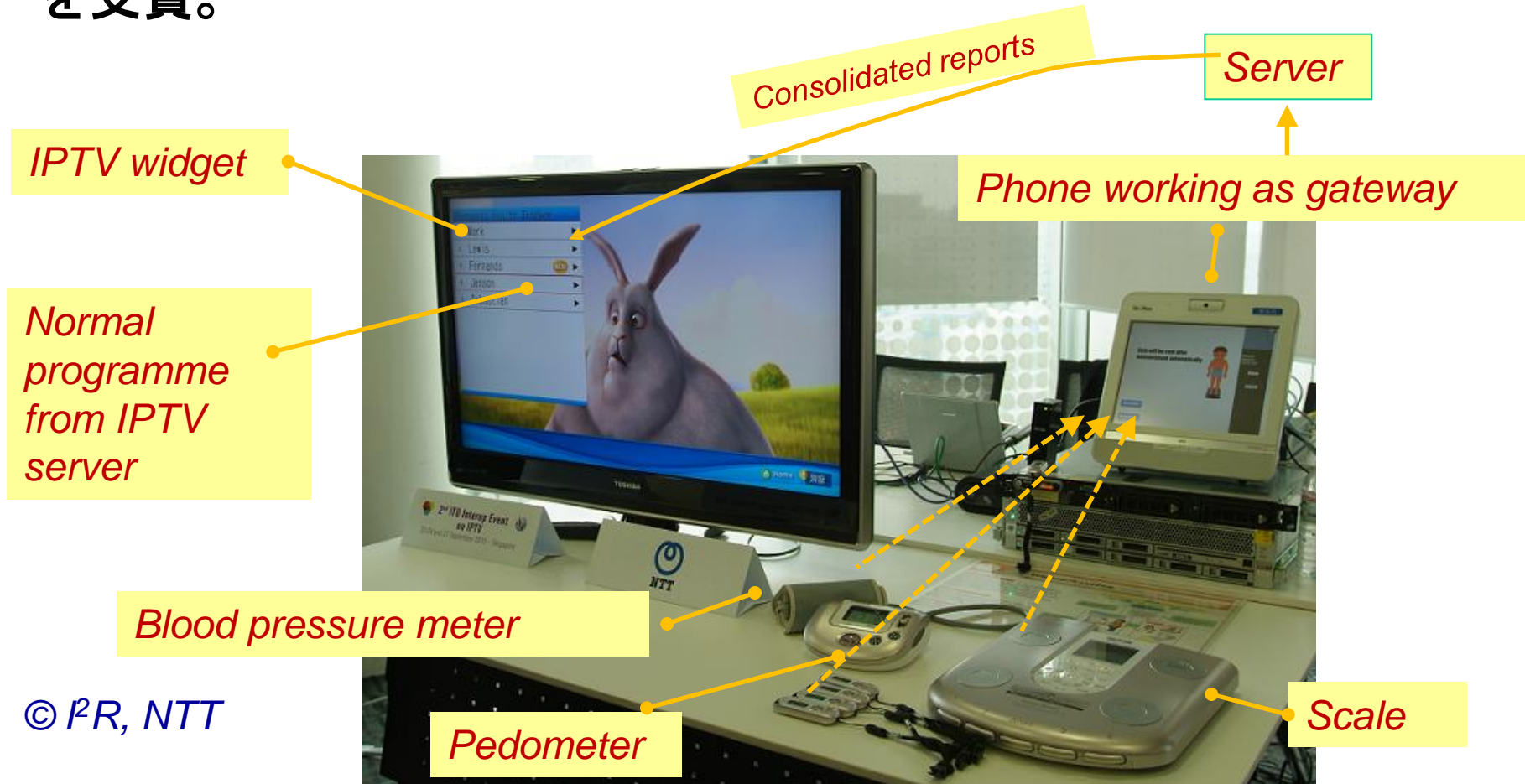
Selected character in the group

Alphabets in selected group

アプリケーションコンテスト 受賞作品(2)



- NTT及びシンガポールI²R が、IPTV視聴中に健康状態の可視化するアプリケーションをLIMEを用いて作成し賞を受賞。



© I²R, NTT

<http://www.itu.int/en/ITU-T/challenges/iptv/Documents/semi.pdf>

アジア太平洋通信機関イベント (2013.9.9-12 @バンコク)



Conclusions

■ In APT/ITU C&I event:

– IPTV Testing

- Confirm interoperability on H.721(IPTV basic terminal), and H.762(LIME) between server (OKI) and STB (Mitsubishi Electric)

– Showcasing

- Demonstrate streaming from ITU IPTV IPv6 Global testbed in Japan to Thailand
- Demonstrate interactive applications between server and STB/tablet.
- Demonstrate IPTV application programs in ITU Application challenge (NTT, Chulalongkorn Univ.)

■ Future directions

- More participants and new testing are expected in future events.

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