

# **ITU-T IPTV Standard Multimedia Application Framework and Web On TV**

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TSR Coordinator

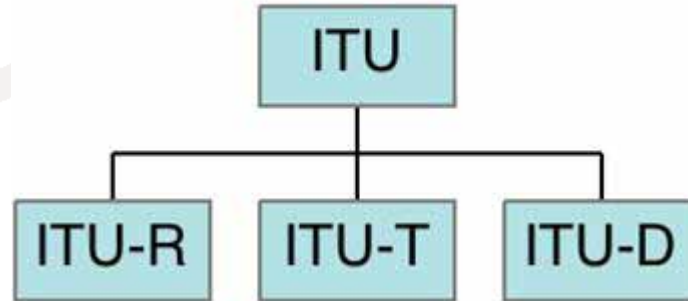
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ITU-T Study Group 16, Question 13  
Associate Rapporteur



# ITU Organization

- **ITU (International Telecommunication Union) is a UN agency with the following structure**



ITU	International Telecommunication Union
ITU-R	Radiocommunication Sector
ITU-T	Telecommunication Standardization Sector
ITU-D	Telecommunication Development Sector

- **Note well!!**

**Standardization work: driven by the private sector**

- \* **All major ICT companies are members of ITU**

- **ITU is uniquely different from other UN organizations in that the private sector has rights to participate on equal footing with governments, and actually are responsible for all technical standards developed by ITU, which are called "*Recommendations*"**

*<http://www.itu.int/aboutitu/structure/index.html>*



# ITU-T's Work on IPTV

- ITU-T has been spearheading the standardization in IPTV
- Focus Group on IPTV (2006-2007)
  - Responding to market demands for standard
- IPTV Global Standardization Initiative (GSI) (2008-)
  - Building on the work of Focus Group, Coordinating all ITU-T's IPTV related activities
  - Many Recommendations\* on Multimedia, QoE, Security, Architecture and Protocols approved by 6 Study Groups, (SGs 9,11, 12,13,16,17)
  - Every two to three months
  - Interop becoming an important aspect

\* ITU-produced technical standards are called "**Recommendations**"



# ITU Definition of IPTV

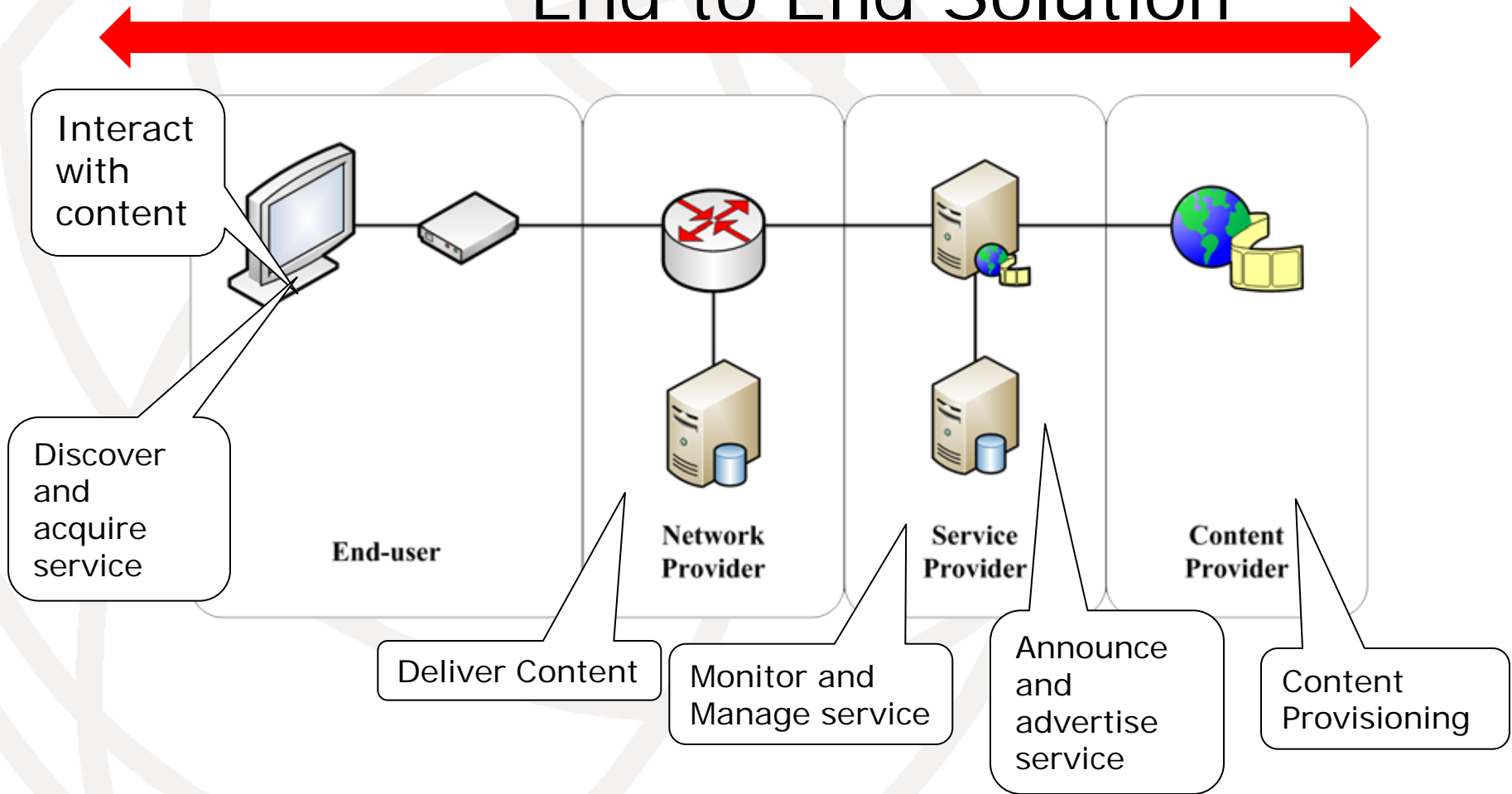
- **Multimedia services**, such as  
Television; Video; Audio; Text; Graphics;  
Data,  
delivered over IP based networks  
**managed to** provide the required level  
of **QoS/QoE, security, interactivity**  
and **reliability**.
  - IPTV is **NOT** EXCLUSIVELY
    - Video streaming
    - Over the Internet
    - For PC



# IPTV Value Chain

- ITU-T IPTV Standards cover all IPTV Value Chain

## End to End Solution





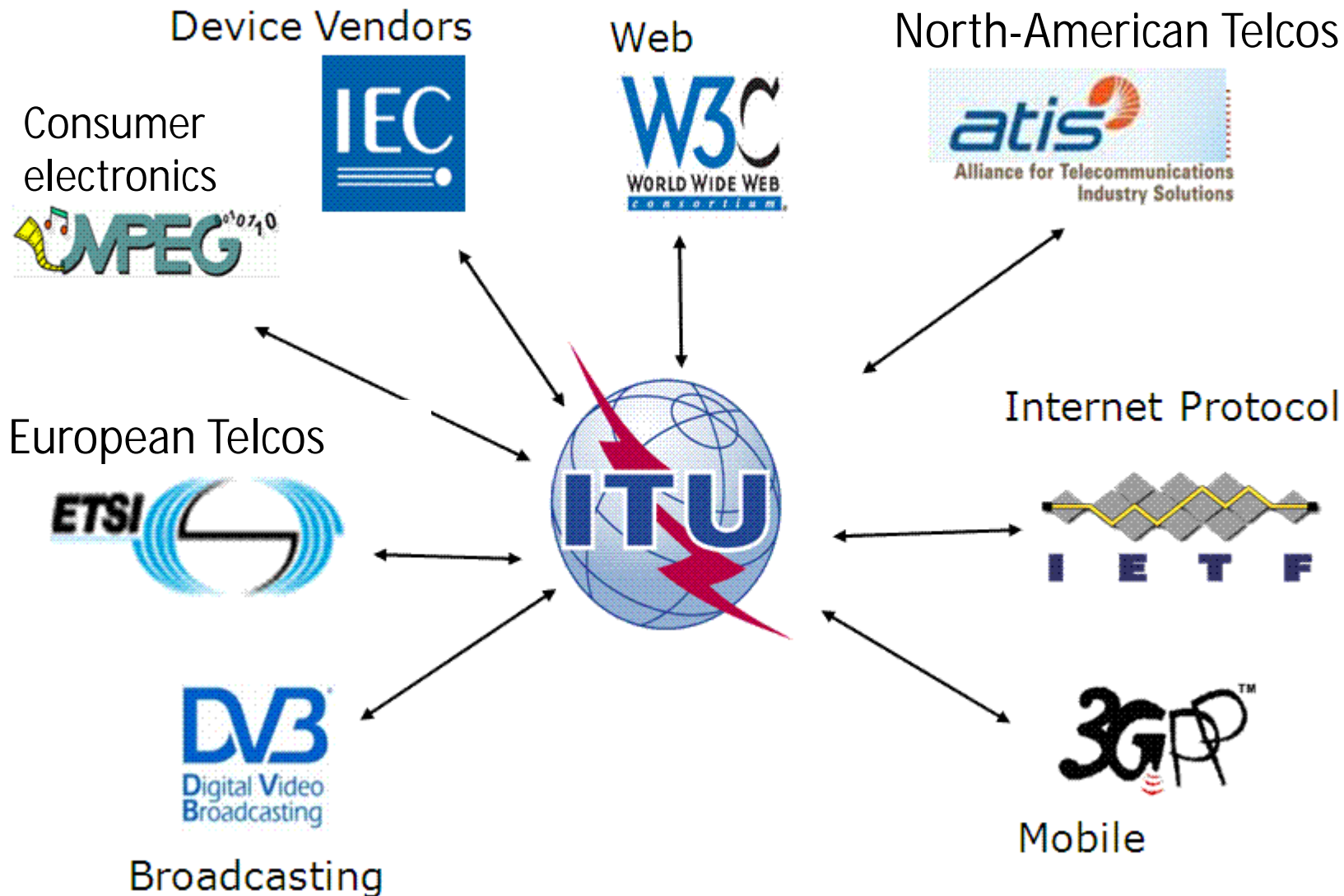
# Characteristics of ITU-T IPTV

- Not to “reinvent the wheel”
- Use existing standards as much as possible
- Practical approach for faster deployment and for meeting industry demands
- Close collaboration with other SDOs (requirements/architecture aligned with ATIS, ATIS documents are included in ITU IPTV-Handbook)
- For a truly interoperable global standard



# ITU-T Liaisons on IPTV

- To ensure interoperability and quality of standards, ITU-T IPTV is working with many SDOs





# Liaison with W3C



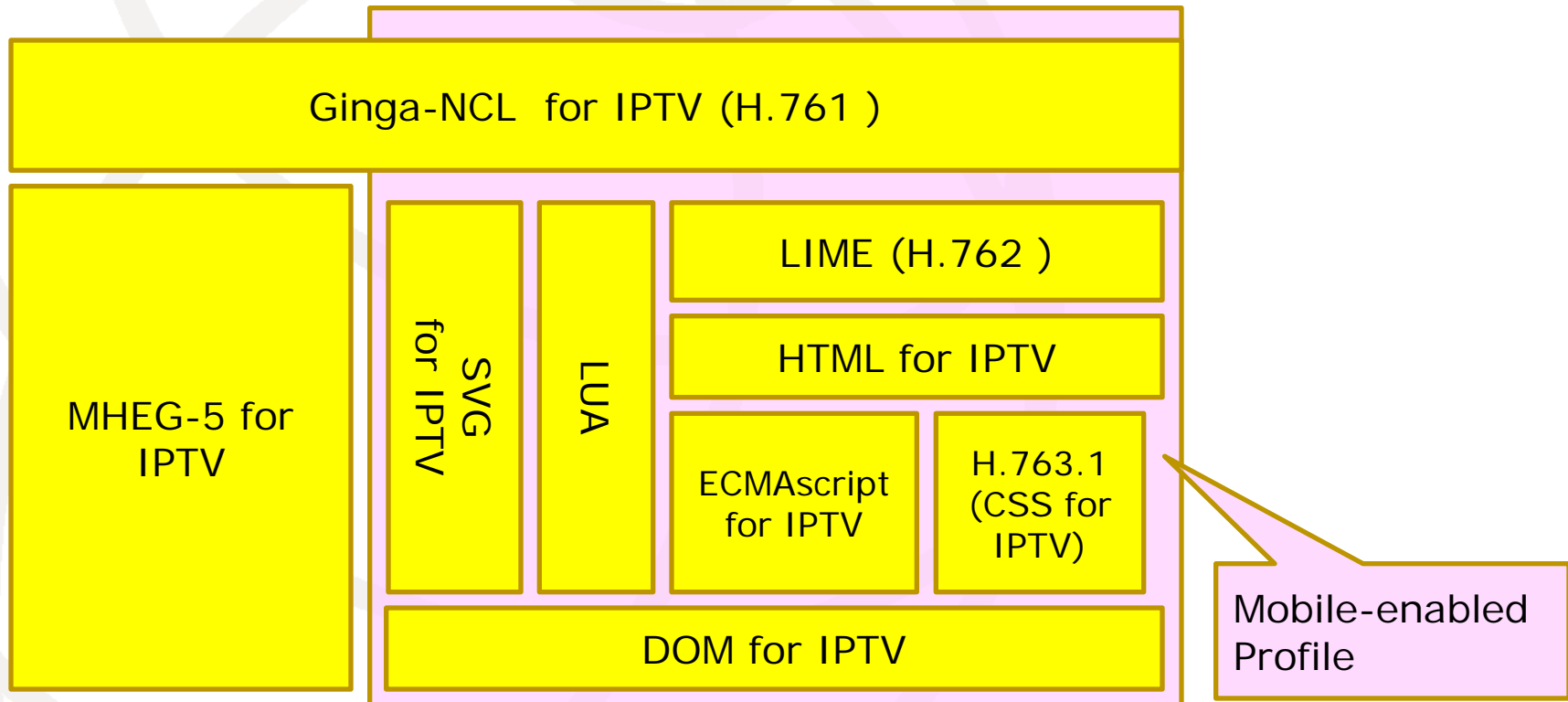
- High-level cooperation in many areas
- On IPTV, especially the Interactive Frameworks
- Profiles of HTML, CSS, DOM, and SVG for IPTV are discussed with W3C Working Groups
  - Reflected in H.762 (LIME)





# ITU-T H.760 series: Standard Common Suite for Interactivity

- ITU-T H.760 (Multimedia Application Framework) Series defines Standard Common Suite of Multimedia Application Platform that gives multimedia interactivity to IPTV content.
- With this Common Suite, IPTV Terminals can support interactivity anywhere in the world





# H.761



- ITU-T H.761 (Ginga-NCL for IPTV) is an adaptation of Ginga-NCL,
  - the middleware standard for Brazilian digital TV broadcasting
  - ISDB - adopted in most of Latin America - Argentina, Peru, Chile, Venezuela, etc. )
- Based on XML
- Scripting by Lua (script language)
- Harmonized with W3C SMIL
- Often used as a glue language for other multimedia frameworks, such as HTML, LIME, SVG.
  - Good integration with Video streaming
  - Can be used for mobile as well as fixed
  - Strong Community support in Latin America

# head

1

```
<head>
```

```
<regionBase>
```

```
...
```

```
</regionBase>
```

regions - *where*



```
<descriptorBase>
```

```
...
```

```
</descriptorBase>
```

descriptors - *how*

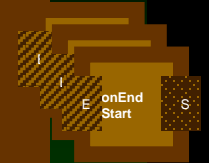


```
<connectorBase>
```

```
...
```

```
</connectorBase>
```

connectors - *when*



```
</head>
```

# body

2

```
<body>
```

```
<port id="pMain" component="video1" />
```

```
<!-- nodes -->
```

Contexts & media – *what*



```
<!-- links -->
```

Links - *when*

```
</body>
```

# Ginga-NCL for Mobile





# LIME (H.762)

- ITU-T H.762 – LIME (Lightweight Interactive Multimedia Environment)
  - Evolved from BML, the interactive application platform for Digital TV (ISDB)
  - Not a new “language” but a simple profile of HTML and Javascript for creating Interactive content
- Some specific features for IPTV – APIs for VOD, Remote control, color buttons, focus control, etc.
- Based on simple HTML and JavaScript
  - Just like very Simple Web designing
- Suitable for any type of terminals, esp. poor ones like TV sets
- Mobile as well as Fixed
- Integration of Web technologies and Multimedia
  - Asynchronous (AJAX-like) Applications
  - Java Server Page (JSP)
  - CGI,



# LIME Testbed in Singapore



- Singapore's Institute for Infocom Research (I<sup>2</sup>R) of Agency of Science, Technology and Research (A\*STAR) is running a test service using LIME (H.762)



- DVB-T content is packetized into IP and consumed on an H.721 terminal with LIME (H.762) browser, showing LIME can easily interoperate with different DTV standards

DVB-T Audio  
Video content:

ITU-T H.721 terminal with LIME browser. (bought from the market). Interactivity is provided by LIME.

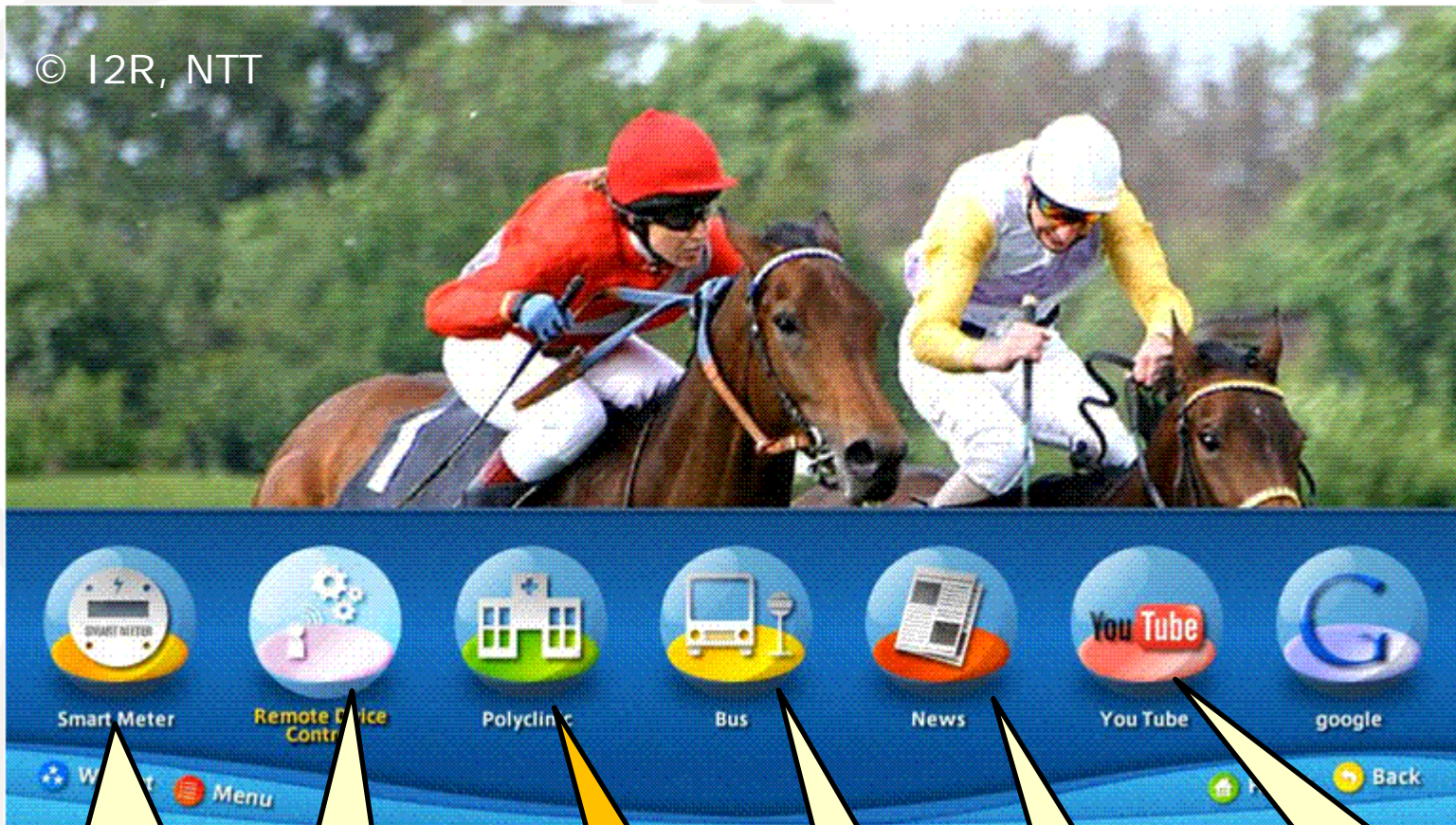


# Widget Apps on LIME



LIME

- LIME-Widget Apps for various services



Smart Meter  
App. that  
monitors energy  
consumption

Remote  
Device  
Control

**Clinic  
Watch**

Bus  
traffic  
Info

News  
Update  
Clips

Links to 3<sup>rd</sup>  
Party Content



# Interop Event



- Successful Interop event held in Geneva, July 2010.
- Attracting many participants from many countries from Africa, Asia, Europe, and Americas
- Many international organizations – e.g. EBU, WHO, WIPO – supported the event
- First good showcasing of Ginga-NCL and LIME in Europe
- Much interest in Europe expected through ITU's collaboration with EBU, WHO, WIPO
- More Interop events
  - Singapore: September 2010
  - India (Pune, near Bombay): December 2010





# Ginga-NCL and LIME at Interop



LIME





# Ginga-NCL Deployments



- ISDB Service already started in Brazil
- Peru, Chile, Argentina, Venezuela, Bolivia, Ecuador, Philippines, etc. are expecting to start soon
- Hybrid receivers (Terrestrial/IPTV) in Brazilian market with Ginga-NCL
- Many Ginga vendors in Brazil. At least 4 non-Brazilian companies are developing their Ginga products
  - Many more expected: Argentina, Chile, China, Japan, Peru ...



# LIME Deployments



- IPTV Forum Japan's "BML for IPTV"
- ARIB-STD-B24 (ISDB) –
  - MHEG-5 (UK, Hong Kong, Australia, Newzealand) based on the same terminal architecture
  - Ginga-NCL (ISDB) based on similar implementation
- Terminals (TV sets for IPTV) deployed and sold in retail market
- Many vendors in Canada, China, Japan, Korea make (and sell) LIME compliant browsers
- High-quality content creation tools in the market
  - Combination with Broadcasting, E-publishing, Digital Signage
- Professional (broadcast-level) high-quality content creators already doing business



# Resources for NCL and LIME

## ■ Ginga Community

(<http://softwarepublico.gov.br>)

➔ NCL Club (<http://club.ncl.org.br>)

➔ Ginga-NCL Virtual STB freely available



■ "Programming in LUA (2006, Lua.Org)

■ "Introducing Lua" (2006, O'reilley)

■ "Beginning Lua with World of Warcraft Addons" (2009, Apress)

■ "LIME Technical Handbook 2010" (to be published, Impress)





# Some Questions on WebOnTV

- “Web on TV” or “TV on Web”?
- Which part of “Web” on TV? Everything? some part?
- Managed WebTV vs Unmanage WebTV -> is Web to be “Managed”?
- What is TV?
  - PC with display?
  - Remote controller?
  - Lean forward vs Lean back
- Multimedia Language vs Text Markup Language
  - Does TV need Text Markup?
- Hybrid: Digital TV and WebOnTV
  - How and why



# Conclusion

- ITU standards encourage innovation, ensure interoperability and ultimately help players remain competitive.
- Various ITU standards for IPTV (Ginga-NCL and LIME) are already implemented and deployed
- Various IPTV interoperability events in 2010
- ITU standards are truly global, open standards deployed for horizontal market
- Collaboration with SDOs is essential



■ Thank you!

■ For more information

➔ <http://itu.int/ITU-T/gsi/iptv>

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