Rec. ITU-T H.761 (2011) NCL and Ginga-NCL

IPTV Multimedia Application Framework

H.761 (2011) - Introduction

- ✓ **H.761 - Nested Context Language (NCL) and Ginga-NCL**
- ✓ Ginga-NCL is the Presentation Environment of Ginga
  - ➤ Subsystem for running NCL applications
- ✓ NCL is a declarative, XML-based language.
- ✓ Main NCL features:
  - ➤ Glue language (strict separation between the application's content and structure)
  - ➤ Intrinsic ability for easily defining spatiotemporal synchronization among media assets
  - ➤ Multi-device support
  - ➤ Presentation and content adaptability
  - ➤ Language homogeneity and flexibility
  - ➤ Reuse facility
 - ➤ API for building/modifying applications at runtime

Ginga Position

- ✓ Ginga is an ABNT standard for terrestrial DTV since 2007 (ABNT NBR 15606-2)
- ✓ In 2009, Ginga-NCL and NCL became ITU-T Recommendation for IPTV (ITU-T H.761)
- ✓ Ginga-NCL is also part of the ITU-T J.201 and ITU-T BT 1699 Recommendations
- ✓ At least 7 brands of commercial Ginga-NCL implementations embedded in most TV sets of main manufacturers in Latin America
- ✓ 13 countries have adopted Ginga as the middleware of their terrestrial DTV standards
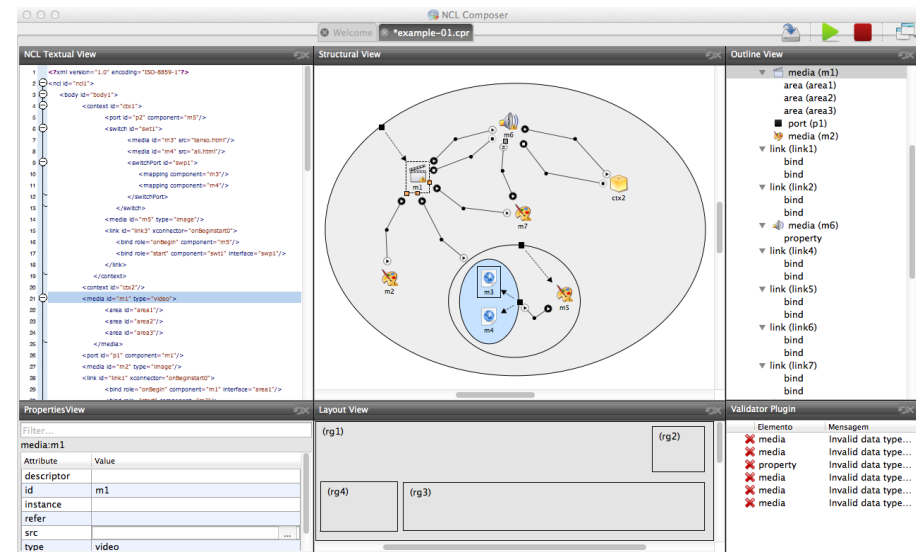
Authoring Tools

✓ Several textual and graphical authoring tools were developed to help application designers to create new NCL applications.
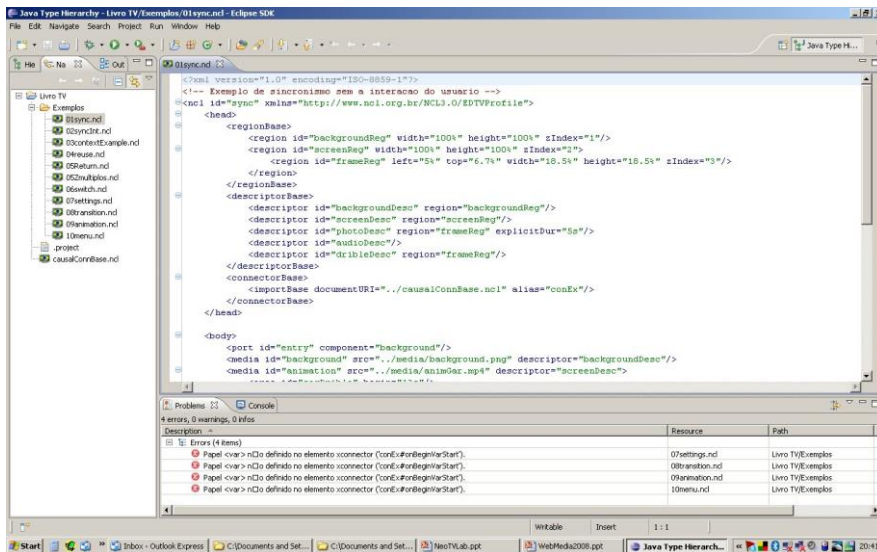
NCL Eclipse

NCL Composer

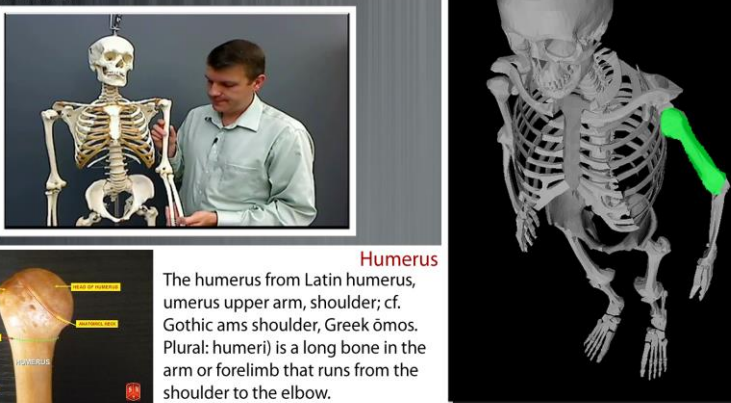http://www.ncl.org.br/en/autoria

H.761 Reference Implementation

✓ Open-source reference implementation

✓ Also available as a tool for:

  ➢ Developers to test their applications
  ➢ End-users to watch interactive content

✓ Ported to main Operating Systems:

  ➢ Linux, Windows, Mac OS X, Android

http://www.ncl.org.br/en/ferramentas

H.761 - Examples

learning

sports

advertisement

soap opera

H.761 - Examples

news

sports (mobile)

talk show

game (multi-device)

Nested Context Language

- ✓ NCL imposes a strict separation between application content and its structure
- ✓ NCL does not define itself any media content
- ✓ Defines the glue that holds media objects together in multimedia presentations
  - ➢ An NCL application just defines how media objects are structured and related, in time and space.
  - ➢ User interactivity is homogeneously handled as a temporal synchronization

Supported Media Types

✓Supported media types just depend on which media players are coupled up to the NCL Presentation Environment

➤Video, Audio, HTML, Image, Text...

➤Lua Scripts (NCLua API)

✓Independently of their types, media objects are homogenously handled by the same group of events and actions: `Presentation, Selection and Attribution`

✓Media objects may be sourced from local file system, carrousels, Internet

H.761 - Example

✓ Code sample: temporal synchronization, including user interactivity

```
<link  id="lBegingShoes" xconnector="conEx#onKeySelectionStopSet_varStart">
    <bind role="onSelection" component="icon">
        <bindParam name="keyCode" value="RED"/>
    </bind>
    <bind role="start" component="shoes"/>
    <bind role="start" component="ptForm"/>
    <bind role="set" component="reusedAnimation" interface="bounds">
        <bindParam name="var" value="5%,6.67%,45%,45%"/>
    </bind>
    <bind role="stop" component="icon"/>
</link>
```

Multi-device Support

✓NCL provides declarative support for presenting distributed DTV applications on multiple devices

➢Presentation of media objects in NCL applications can be associated to devices using an abstraction called *device classes*

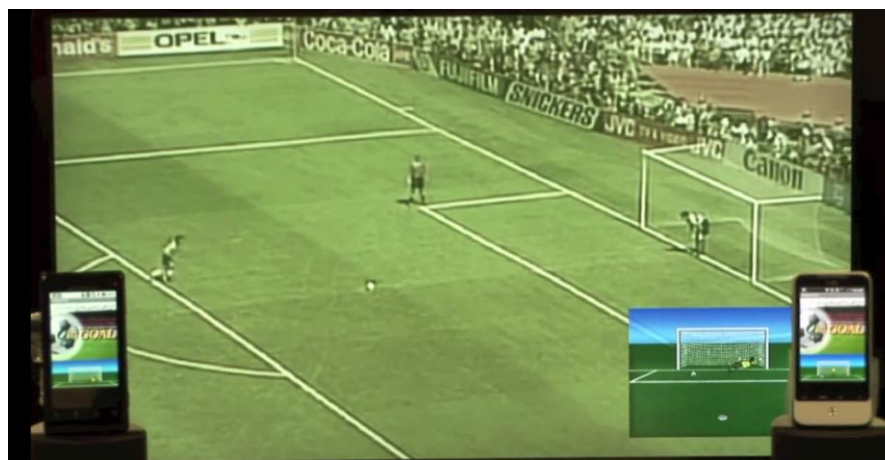➢Secondary devices (child devices) are registered to classes controlled by a parent device

Multi-device Support
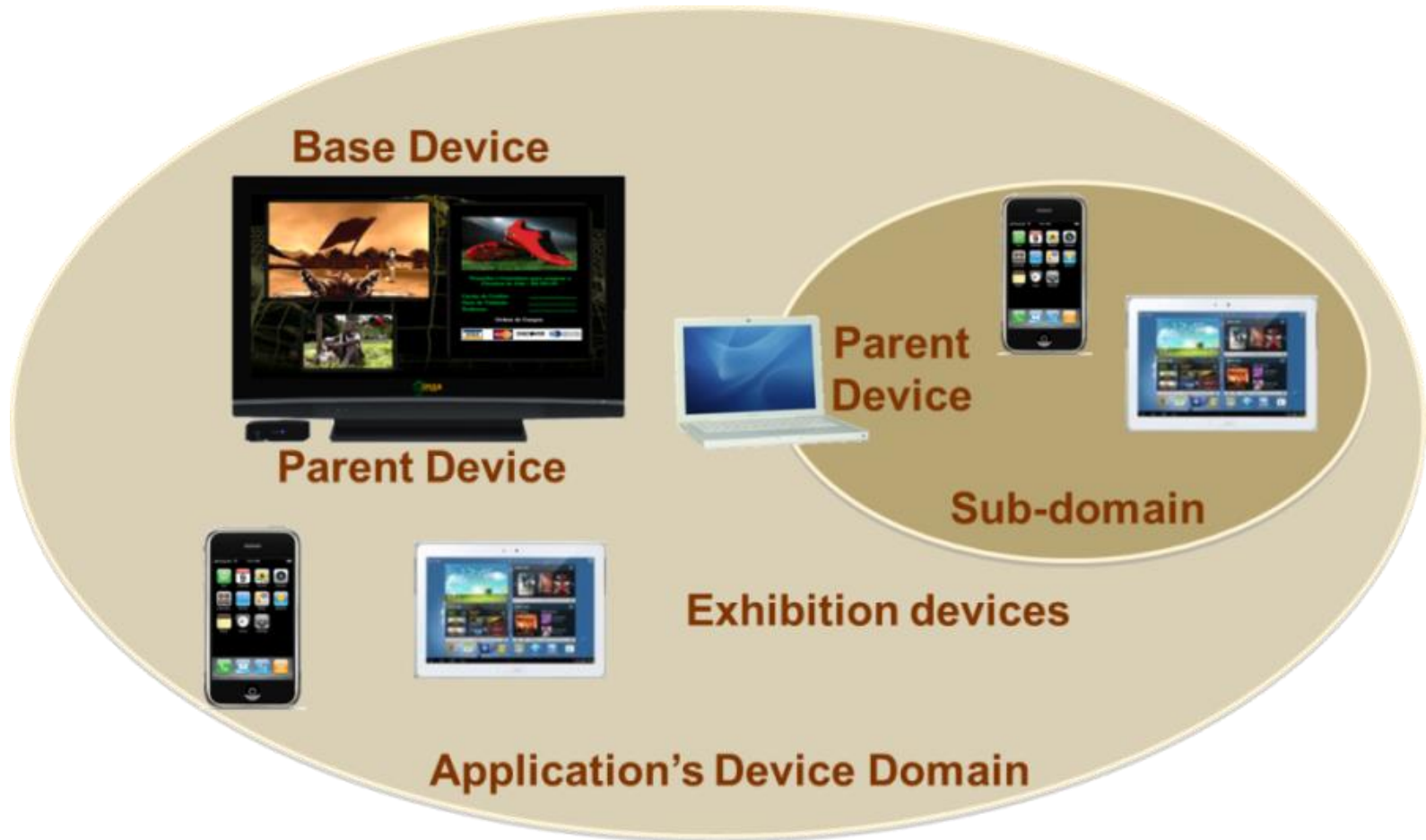
Multiple Device Examples

Multiple Device Examples

Multi-device Support

✓NCL has two main types of device classes:

➢Passive classes: in a passive class, the same content is shown on all paired devices, under the rendering of their parent device

➢Active classes: in an active class, the content is decoded and rendered by each individual child device, thus allowing independent navigation and interaction

H.761 - Example

✓ Code sample: multi-device presentation

```
<regionBase device="systemScreen(0)">
      <region id="screenReg" width="100%" height="100%" zIndex="1">
      <region id="frameReg" left="5%" top="6.7%" width="18.5%"
height="18.5%" zIndex="2"/>
</regionBase>

<regionBase device="systemScreen(2)">
      <region id="NCLAdvertReg" width="100%" height="100%" zIndex="1"/>
</regionBase>
```

Final Remarks

✓NCL is a simple, easy to learn multimedia language

✓Ginga-NCL is a lightweight multimedia presentation environment

✓Official Websites:

➢http://www.gingancl.org.br

➢http://www.ncl.org.br

✓NCL Reference Guide:

➢http://www.ncl.org.br/en/handbooks

✓More application examples:

➢http://clube.ncl.org.br