



presentation
Philips Research



Delivery Context in MPEG-21

Sylvain Devillers

Philips Research France

Anthony Vetro

Mitsubishi Electric Research Laboratories

Philips Research France

Presentation Plan

- MPEG achievements
- MPEG-21: Multimedia Framework
- Digital Item concept
- Digital Item Adaptation

MPEG Standards

- **MPEG-1:** Video & Audio coding for digital storage
- **MPEG-2:** For digital TV (DVD, Satellite)
- **MPEG-4:** Coding of Audio/Visual Objects
- **MPEG-7:** Multimedia Indexing, standardizes:
 - A set of low-level descriptors for content-based search
 - A set of high-level schemas
 - A language based on XML-Schema
 - System tools (binarization and streaming of XML descriptions)
- **MPEG-21:** Multimedia Framework...

MPEG-21

- **What is MPEG-21**
 - ISO/IEC 21000: MPEG-21 Multimedia Framework
 - MPEG-21 will create an open framework for multimedia delivery and consumption, with both the content creator and content consumer as focal points
- **Why MPEG-21 is needed**
 - Many elements (standards) exist for delivery and consumption of multimedia contents, but there is no 'big picture' to describe how these elements relate to each other
 - MPEG-21 will fill the gaps and allow existing components to be used together, thereby increasing interoperability
- **Why now?**
 - Hardware building blocks and infrastructure in place
 - Multimedia compression, transmission, description standards are ready

MPEG-21

- **Vision**
 - To define a multimedia framework to enable transparent use of multimedia resources across a wide range of networks and devices used by different communities
- **Purpose**
 - Enable electronic creation, delivery, trade of digital multimedia content
- **Goals**
 - Provide access to information and services from almost anywhere at anytime with ubiquitous terminals and networks
 - Identify, describe, manage and protect the content in order to support multimedia delivery chain that contain the content creation, production, delivery and consumption

Digital Item

- **Fundamental Concept: Digital Item**
 - Abstraction for multimedia content + related material
 - A structured digital object with a standard representation, identification and meta-data
 - Fundamental unit of distribution and transaction in the MPEG-21 framework
- **Example: Music Album**
 - Songs (possibly encoded for different bit-rates) (*mp3*)
 - Lyrics, artist biography (*text, html*)
 - CD cover (*Jpeg*)
 - Intellectual Property information
 - Links to web page to purchase the album

MPEG-21 Parts

- Vision, Technologies and Strategy
 - Technical roadmap, identify key steps in value chain
- Digital Item Declaration (DID)
 - Schema defining the *structure* of a Digital Item (resources + descriptors)
- Digital Item Identification & Description (DII&D)
 - Provides tools to *identify* a Digital Item
- Intellectual Property Management & Protection
- Rights Data Dictionary (RDD)
- Rights Expression Language (REL)
- Digital Item Adaptation (DIA)
 - To enable interoperable and transparent access to content across networks and terminals

Deal with digital rights management

Digital Item Adaptation

- **Scenario:**
 - Set-top-box receives a broadcast program, forwards it to:
 - High definition TV
 - Portable, wireless device with small display
- **Broader scope than the Web:**
 - Not bound to a protocol (HTTP...)
 - Not bound to web application (also: TV, mobile phone...)
 - Not only web content (SMIL, HTML...) but also MPEG-2 Video, MP3 audio, JPEG image...
 - But overlaps
- **Adaptation relies on *Descriptions*:**
 - Of the environment (terminal, networks, user...)
 - Of the adaptability of the content

Digital Item Adaptation Descriptions

- **Usage environment** (*about the environment*)
 - Terminal & Networks capabilities
 - Service capabilities
 - User preferences
 - Natural environment (location...)
- **Content Representation Format** (*about the content*)
 - Description of resource complexity required to decode a content
 - *Bitstream Syntax Description Language*:
language based on XML-Schema describing the structure of multimedia bitstream
 - Produces an XML description of the bitstream, may be transformed via XSLT
 - Extension of XML publishing framework
- **System tools**
 - Protocols to exchange descriptions
 - Compact (binary) version of the descriptions

Call for Proposals on MPEG-21 DIA

- Preliminary **Call for Proposals** on MPEG-21 DIA issued in December 2001
 - Requirements document
- CfP will be finalized in March 2002
 - Requirements document finalized
 - Evaluation criteria documents
- **First evaluation** in May 2002
 - Following meetings in July and October 2002
 - Committee Draft (first step of approval) planned for Dec. 2002
- **Contributions welcome !**
 - From individual companies or standardization bodies

Conclusion

- MPEG-21 DIA addresses the issue of multimedia content adaptation
 - Focus on video, audio and image
 - Not restricted to Web content, but overlaps
- Call for Proposals issued, evaluation in May 2002
- Contributions welcome
- See Call for Proposals
 - http://mpeg.telecomitalia.com/hot_news.htm