



presentation  
**Philips Research**



## **Delivery Context in MPEG-21**

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# 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](http://mpeg.telecomitalia.com/hot_news.htm)