MPEG-21 – Current Work Plan

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Goal:
Define the technology needed to support Users to exchange, access, consume, trade and otherwise manipulate Digital Items in an efficient, transparent and interoperable way.
The parts of MPEG-21

1. Vision, technologies and strategies
2. Digital Item Declaration
3. Digital Item Identification
5. Rights Expression Language
6. Rights Data Dictionary
7. Digital Item Adaptation
8. Reference Software
9. File Format

MPEG-21 Part 1 — Vision

• Define a multimedia framework to enable transparent and augmented use of multimedia resources across a wide range of networks and devices
  1. Provide a vision
  2. Facilitate integration and harmonization of technologies
  3. Provide a strategy for achieving a framework through collaboration
MPEG-21 Part 2 — Digital Item Declaration

- Index a Digital Item
- Purpose: describe a set of abstract terms and concepts to form a useful model for defining Digital Items
- Three normative sections:
  - Model
  - set of abstract terms and concepts
  - Representation
  - normative description of syntax & semantics of DID elements
  - Schema
  - normative XML schema comprising the entire grammar of DID

Digital Item Declaration in detail
MPEG-21 Part 3 — Digital Item Identification

The scope of the Digital Item Identification (DII) specification includes:
• How to uniquely identify Digital Items and parts thereof (including resources)
• How to uniquely identify IP related to the Digital Items (and parts thereof), for example abstractions
• How to uniquely identify Description Schemes
• How to use identifiers to link Digital Items with related information such as descriptive metadata
• How to identify different types of Digital Items

DII example: MPEG-21 music album

21.04.2004
MPEG-21 Part 4 — IPMP

- Improvements over MPEG-4 IPMP:
  - Internetworking
  - IPMP tool retrieval & authentication
  - Integration of Rights Expressions (RDD & REL)
- Intellectual Property Management and Protection involves the enforcement of REL permissions
  - IPMP shall consult REL before any actions are taken in the User’s system
- REL: What is protected? What right applies?
  - IPMP: How is it protected?

MPEG-21 Part 5 — REL

- The Rights Expression Language consists of licenses and grants that give specific permissions to Users to perform certain actions on certain resources, given that certain conditions are met
  - Grants can also allow Users to delegate authority to others
- User’s system shall parse and validate the RE
- User’s system shall check permissions before any further action is done
- DID parser is responsible for discovering and identifying where to gather licenses
- REL licenses are wrapped in Digital Items
**REL data model**

- REL grant consist of
  - principal to whom grant is issued
  - rights the grant specifies
  - resource to which right in grant applies
  - condition to be met before grant can be exercised

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**MPEG-21 Part 6 — Rights Data Dictionary**

- Set of clear, consistent, structured, integrated and uniquely identified Terms to support REL
- Specification of dictionary structure and methodology to create dictionary
- Dictionary is prescriptive, inclusive, and has audit provisions
- Legal definitions are mapped from other Authorities
- Supports mapping & transformation of metadata from terminology of one namespace (or Authority) into that of another namespace in automated or partially automated way
- Dictionary is based on a logical model, the Context Model, which is the basis of the dictionary ontology
MPEG-21 Part 7 — Digital Item Adaptation

- Goal: achieve transparent interoperable access to distributed multimedia content
- Enable ad hoc formation of User communities in which contents is shared with agreed or contracted
  - Quality
  - Reliability
  - Flexibility
  - Diversity
- Guaranteed user experience
MPEG-21 Part 8 — Reference Software

- Success of a standard depends on the availability of reference software
- Plan to use the software developed in Core Experiments (CE) as a basis
- Platform independence
- Future repository (requires membership)
  - http://mpeg.nist.gov/cvsweb/MPEG-21/
- Temporary repository
  - http://www.titr.uow.edu.au/cgi-bin/mpeg-ref-sw.pl
- Current main issue: parsing DID
Digital Item Processing and Terminology

- Digital Items act as a structure for organizing resources and its descriptions
- Need a mechanism for defining a set of operations by which a terminal can process a DI or DID
- Currently considering to specify a set of operations that can be used to process DIs: Digital Item Method
- A DIM defines an intended method for configuring, manipulating and/or validating a DI

- Interoperability of Digital Items means that terminals must handle the DIs in a consistent manner
- Digital Item Methods provide a way to specify a selection of preferred procedures by which the DI should be handled at the DI level
  - a menu of user interaction possibilities
- Digital Item Processing encompasses all aspects of processing a DI from an application perspective
- Applications build DIP environments around a fundamental DIME

CDI — Content Digital Item
a DID containing the actual content
DiBO — Digital Item Base Operation
DIM — Digital Item Method
method that can be applied to a DID
DIME — DIM Engine
part of the terminal responsible for executing the DIM
DIML — DIM Language
DIP — Digital Item Processing
MI — Method Item
PI — Processing Item
XDI — Context Digital Item

Digital Item Processing
MPEG-21 Part 9 — File Format

- An MPEG-21 file format shall be capable of storing MPEG-21 Digital Items
  - all components of the DI within a single file
- The MPEG-21 file format will inherit several concepts from MP4, in order to make ‘multi-purpose’ files possible

MPEG-21 — Further work

- Persistent association of information with DIs
- Accessibility
- Personal data
- Content representation
- Event reporting
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Why is MPEG-21 relevant to you?

- All rich media commerce on the Internet will be driven by MPEG-21
- Only companies that drive the standard will reap substantial profits
  - First to market
  - Licensing fees