

DIGITAL - Institute for Information and Communication Technologies



A Novel Metadata Standard for Multimedia Preservation

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Outline

2

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- Motivation
 - Scope
 - Model overview
 - Interoperability with other models, containers
 - Conclusion



Motivation

3

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Recommendations to professional organizations:

d. work with industry for the development of requirements of systems that embed preservation concerns;

Recommendations to industry:

a. ensure long-term accessibility to digital information;

b. adhere to descriptive standards and recognized metadata standards to enable the creation of trusted digital repositories.

from: UNESCO/UBC Vancouver Declaration, Sept. 2012

Motivation

4

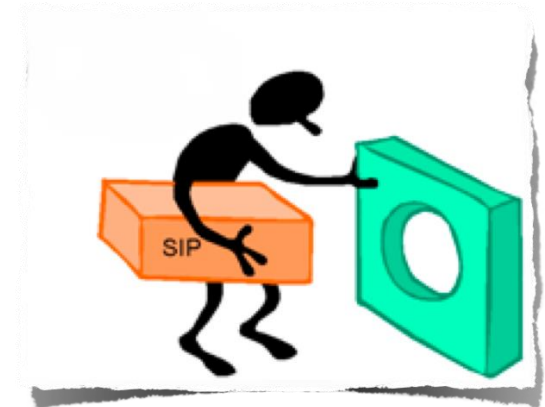
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- Need to exchange multimedia assets together with (preservation) metadata
- Lack of a standard for preservation metadata for multimedia content
 - time-based metadata
 - handling containers with streams using different codecs
 - issues of migration, possibly with lossy codecs



Motivation

5

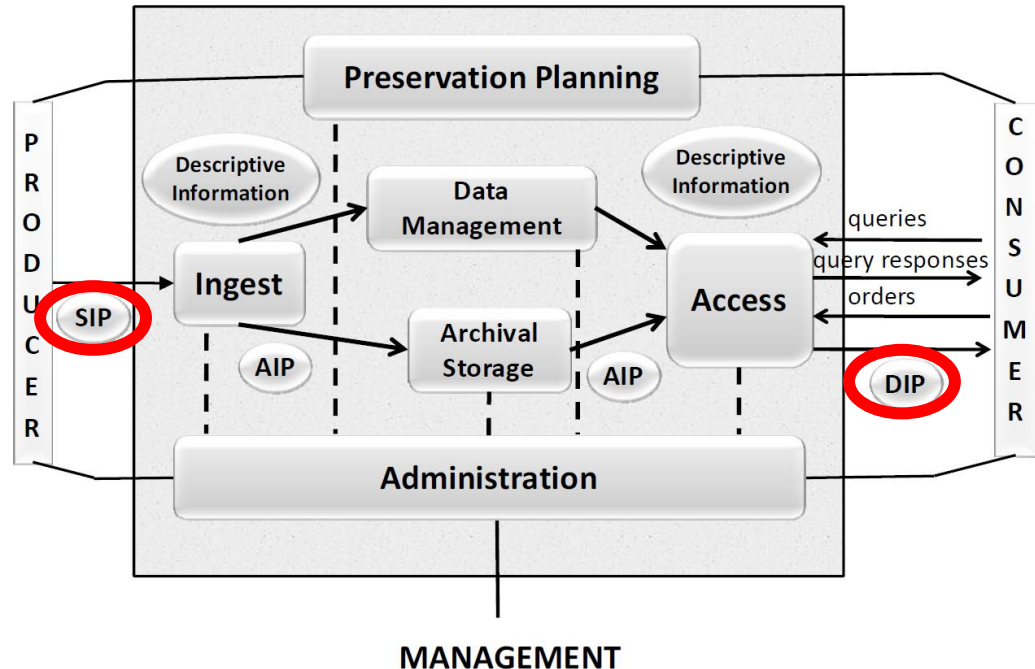
- Interoperable preservation metadata for multimedia
 - exchange between preservation systems/repositories
 - change/upgrade preservation system
 - exchange with service providers
 - preservation services for other organisations



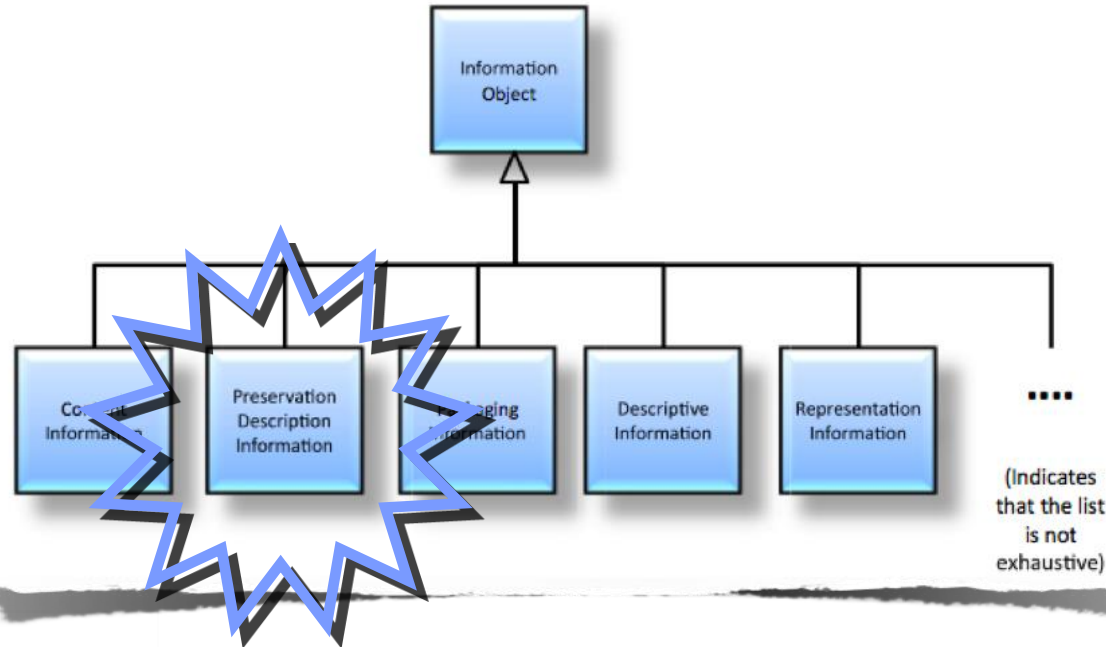
Motivation

6

Context in the OAIS model



Preservation Description Information



Existing preservation metadata work

- Mainly from the digital library domain (e.g. PREMIS)
- Lack of support for specific properties of multimedia
- PREMIS elements in MPEG-21 Digital Item Declaration (DID) containers, early work at LANL in 2006
- MPEG Professional Archive Application Format (PA-AF): focus on packaging rather than metadata

Addressing open issues

- Compatibility with standards in use
 - e.g., MPEG, SMPTE
- Enhanced support for modelling hierarchical, complex structures and descriptions
- Support for time-based metadata
- Defining the metadata container



MPEG Multimedia Preservation

10

- Multimedia Preservation AhG formed in MPEG
(MPDI–Multimedia Preservation Description Information)
- Issued call for proposals in 2012
- Work is performed in the context of MPEG Application
Format (MAF, MPEG-A)
- Multimedia Preservation Application Format
(MP-AF, to become MPEG-A part 15)

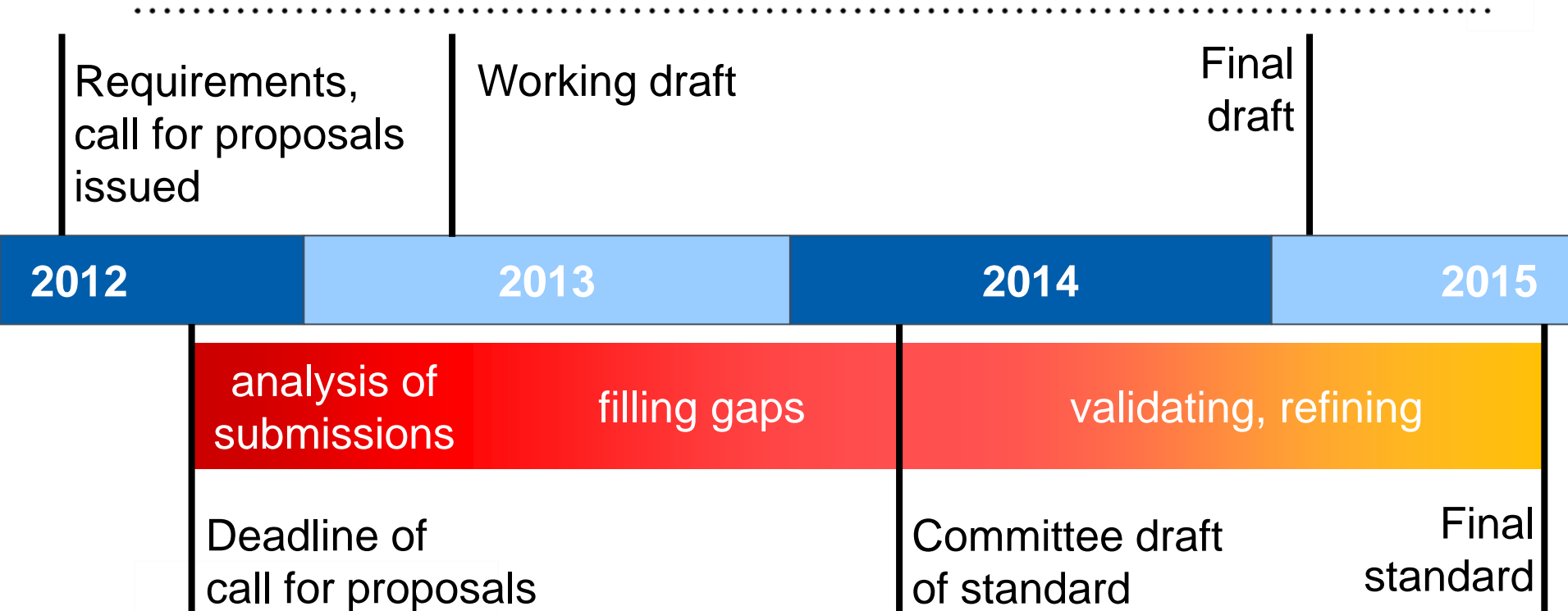
MPEG as framework

11

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 - Expertise on standards dealing with multimedia content, including
 - metadata (e.g., MPEG-7)
 - media lifecycle (e.g., MPEG-21)
- Strong involvement of industry
 - audiovisual archive in the context of a media production workflow

MP-AF Timeline

12



Preservation metadata considered

- **Provenance:** creation of the resources, custody, (processing) history
- **Context:** circumstances of the production of the resource
- **Reference:** identifiers, linking related resources
- **Quality:** assessment of technical quality of resources (content and metadata)

Preservation metadata considered

- **Integrity:** presence, persistence of the resource
- **Authenticity:** metadata to assess authenticity of the resource
- **Fixity:** information ensuring that properties of the resource have not been altered
- **Rights:** legal, regulatory, or contractual provisions that affect ownership, control, or use

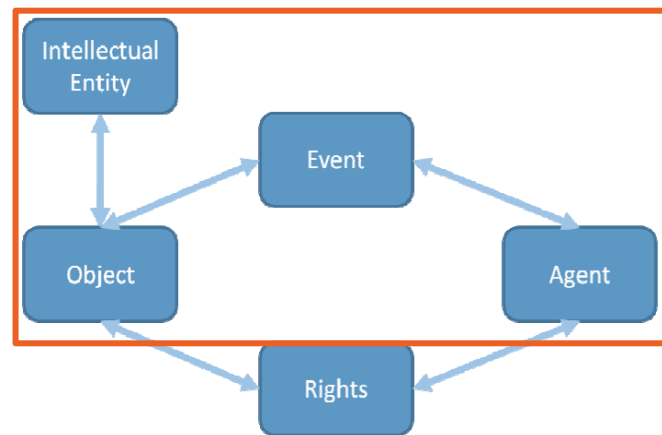
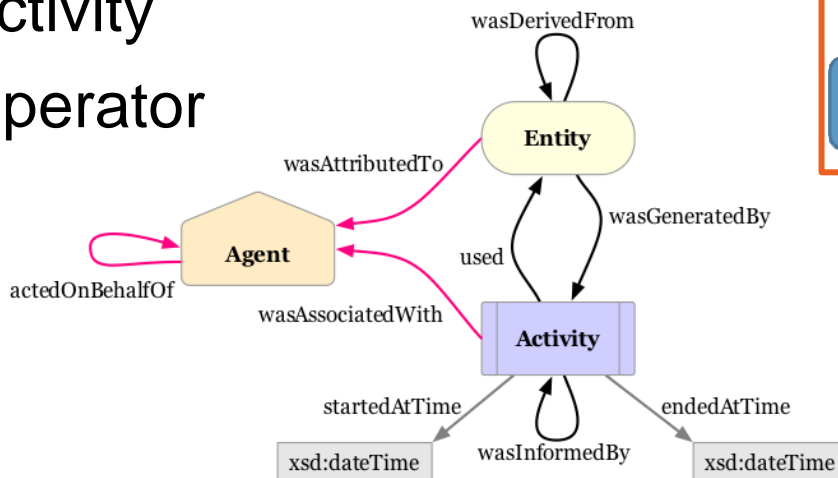
Core of the metadata model

Centred around

Digital Item

Activity

Operator



Metadata on different entities

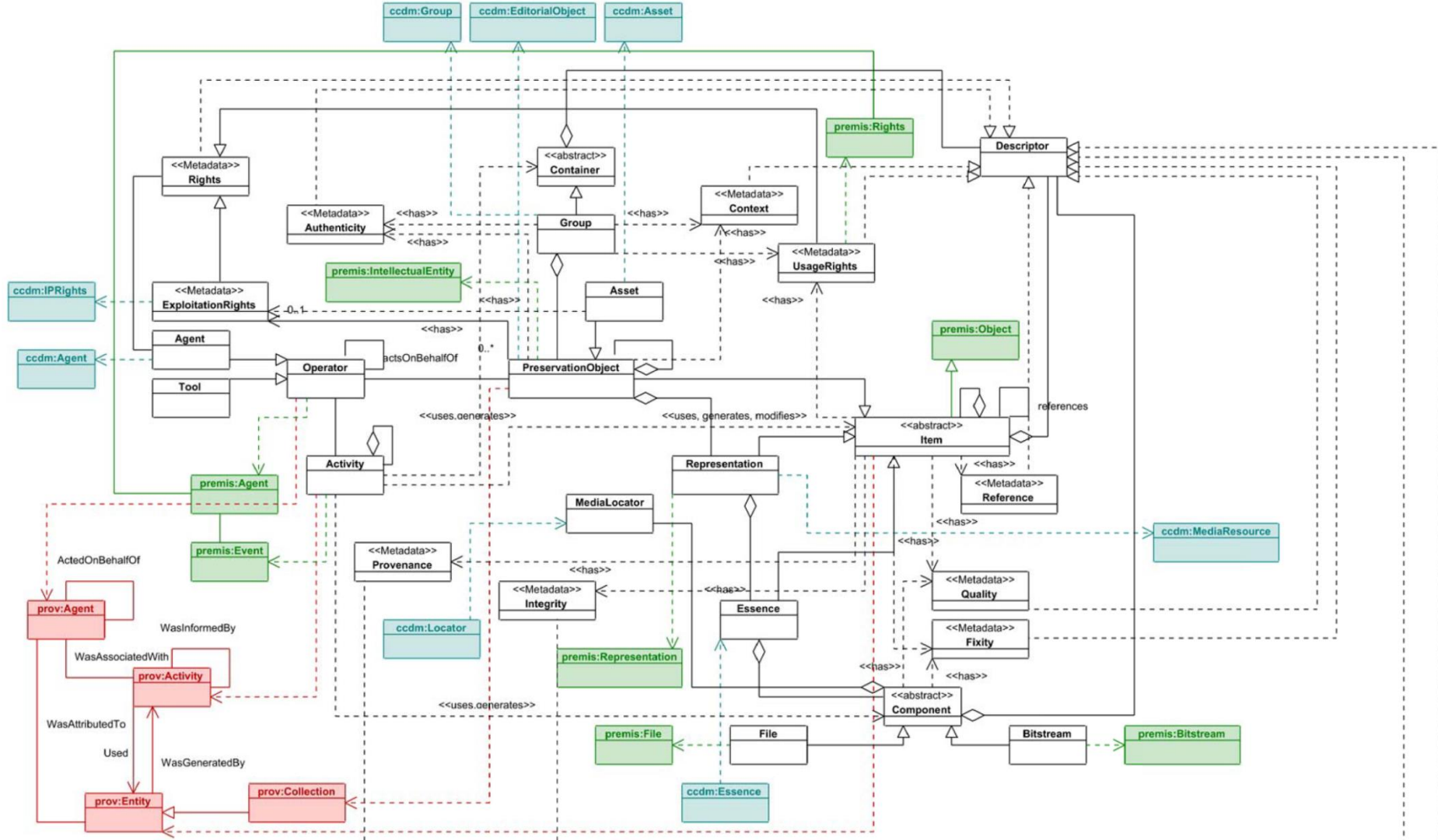
	Preservation Object	Representation	Essence	File/ Bitstream
Provenance	x	x	x	
Context	x			
Reference	x	x	x	
Quality	x	x	x	x
Integrity	x	x	x	
Authenticity	x	x	x	
Fixity	x	x	x	x
Rights	x	x	x	

External metadata specifications used

Provenance	MPEG-21 Digital Item Identification/Description
Descriptive MD	MPEG-7, Dublin Core, EBU Core
Technical MD	MPEG-7, EBU Core
Context, Reference	MPEG-21 Digital Item Semantic Relationships
Quality	MPEG-7 MDS/Amd 5, compatible to EBU QC model
Rights	MPEG-21 Rights Expression Language (REL), MPEG-21 Contract Expression Language (CEL)/Media Contract Ontology (MCO)

Interoperability with other standards

- Core entities (Digital Item, Activity, Operator)
 - PREMIS (3 out of 4 main entities covered)
 - W3C Provenance data model
- Digital Item hierarchy aligned with audiovisual metadata models
 - e.g. EBU Class Conceptual Data Model
- Process model: interoperability with BPMN



Packaging MP-AF

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- MP-AF defines a container for metadata
- Options for packaging content + metadata
 - Embed in SMPTE MXF
 - MPEG PA-AF
 - SMPTE AXF



Use beyond “MPEG world”

- Not restricted to MPEG coded content
- Support for non-MPEG metadata
- Interoperability with other data models
- Packaging in other containers



Conclusion

23

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- Standard for preservation metadata of audiovisual content
 - Closing gaps related to audiovisual media
 - Embedded in ecosystem of existing standards and formats
 - Focus on interoperability with existing standards

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