

IPres2013 - Lisbon 5th Sep PREMIS Implementation Fair 2013



Preservation of audiovisual digital contents: multimedia metadata

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Background: the Presto* experience on AV

- Overview of PrestoSpace
- AV Preservation within PrestoPRIME

Current metadata for AV contents

- EBU, MPEG, W3C, ...

MPEG Multimedia Preservation Ad hoc Group

- MPEG-A MP-AF DataModel and current Working Draft
- Ongoing work: PrestoCentre and Presto4U

Presto* experience in AV



PrestoSpace

FP6-IST IST-2002 – no 507336

Years: 2004-2008

<http://www.prestospace.eu>

PrestoSpace
An integrated solution for Audio-visual preservation and access

Today 10:2009-02-13 16:12:00

Info | Transcription | Semantic Analysis | Content Analysis | Related Sources

00:27:22 terrible problem in that their leaders are really squaring with the voters about what's motivating these people we continue to say they want to destroy our freedoms and liberties in other democracies in gender equality in believe that has almost nothing to do with what this war is about what is this far about a dozen

00:27:40 or is about is that religion is the bible in the broadest sense and the belief among many muslims both those who support and latin involved and those who voted in line that at least u. s. foreign policy in some areas is what amounts to an attack on islam

00:27:58 mean when you see those pictures from guantanamo bay when you see the pictures are so great that is obviously this is the guy was suggesting he would continue teaching for precisely the people who do this

00:28:00 continent better produce is a sad fact that some of things we've done on all sides have encouraged terrorism i'm sure there'll be more terrorist government as a result of the war here doesn't mean that the war in iraq was wrong because the tax code book called the revenge and that is going to galleries with he had paid the price london this have any idea what side they

00:28:29 justin listening to mr. livingston earlier today just spoken to the president of the war as mr. galloway saying he believes that yesterday's events had nothing whatsoever to do with the raw will be doing that i think he's told the right fact we have felt like the terrorists and long before the americans the british went into a well known before witnesses what if we're not doing the right thing the western powers involved in the right thing what is the right thing to do

TIME 00:27:28:92

TIMELINE

00:27:22:16

00:27:34:10

00:27:54:06

00:28:21:46

00:28:34:11

00:28:44:11

00:28:56:11

PrestoSpace
An integrated solution for Audio-visual preservation and access

Today: 2009-02-13 18:13:28

Info | Transcription | **Semantic Analysis** | Content Analysis | Related Sources

Persons
STEPHANE ZIMBARDI

Organizations
AFRICAN COUNTRIES
African Union
East African Federation

Locations

27 - Programmes
38 - South Asia

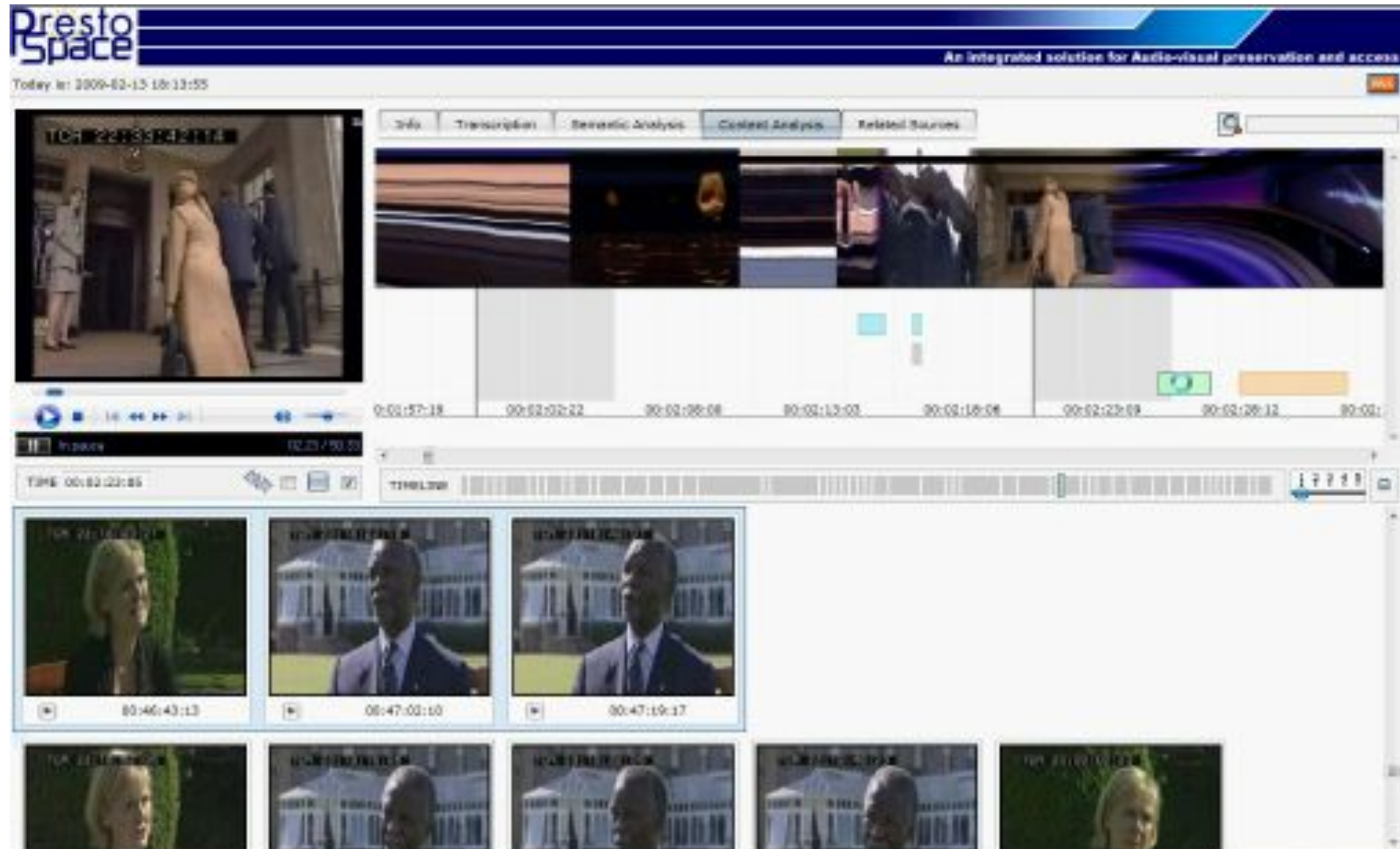
TIME: 00:27:45:40

00:46:43:13
00:47:02:15
00:47:18:17

00:48:00:00
00:48:15:00
00:48:30:00
00:48:45:00
00:49:00:00

File | Internet | Modalità protetta: attivata | 100%

Timed metadata: zoom, pan, tilt, ...





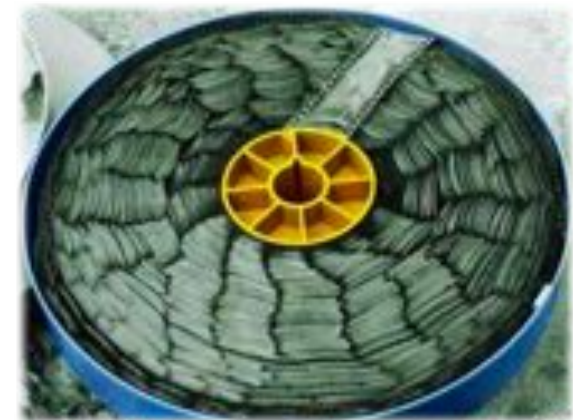
PrestoPRIME

FP7-ICT-2007-3 GA – no 231161

Years: 2008-2012

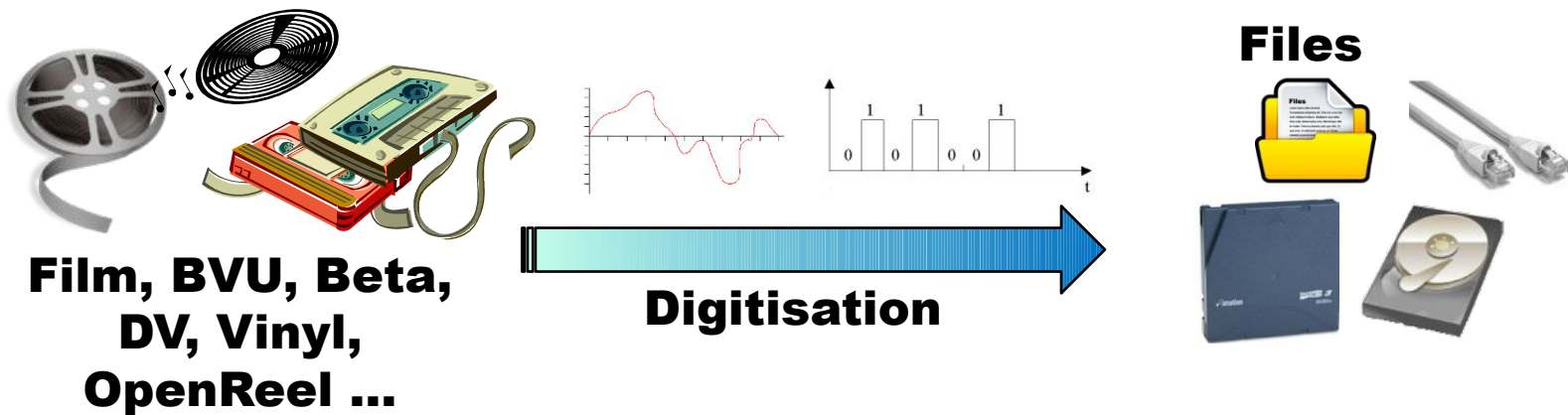
<http://www.prestoprime.eu>

Urgent needs: analog tapes and films



The last 100 years of AV archiving





**Digitisation means
generation of files**

Digitization: What digital format?



0% Packet Loss

0.5% Packet Loss

5% Packet Loss

Every format has RISKS!!



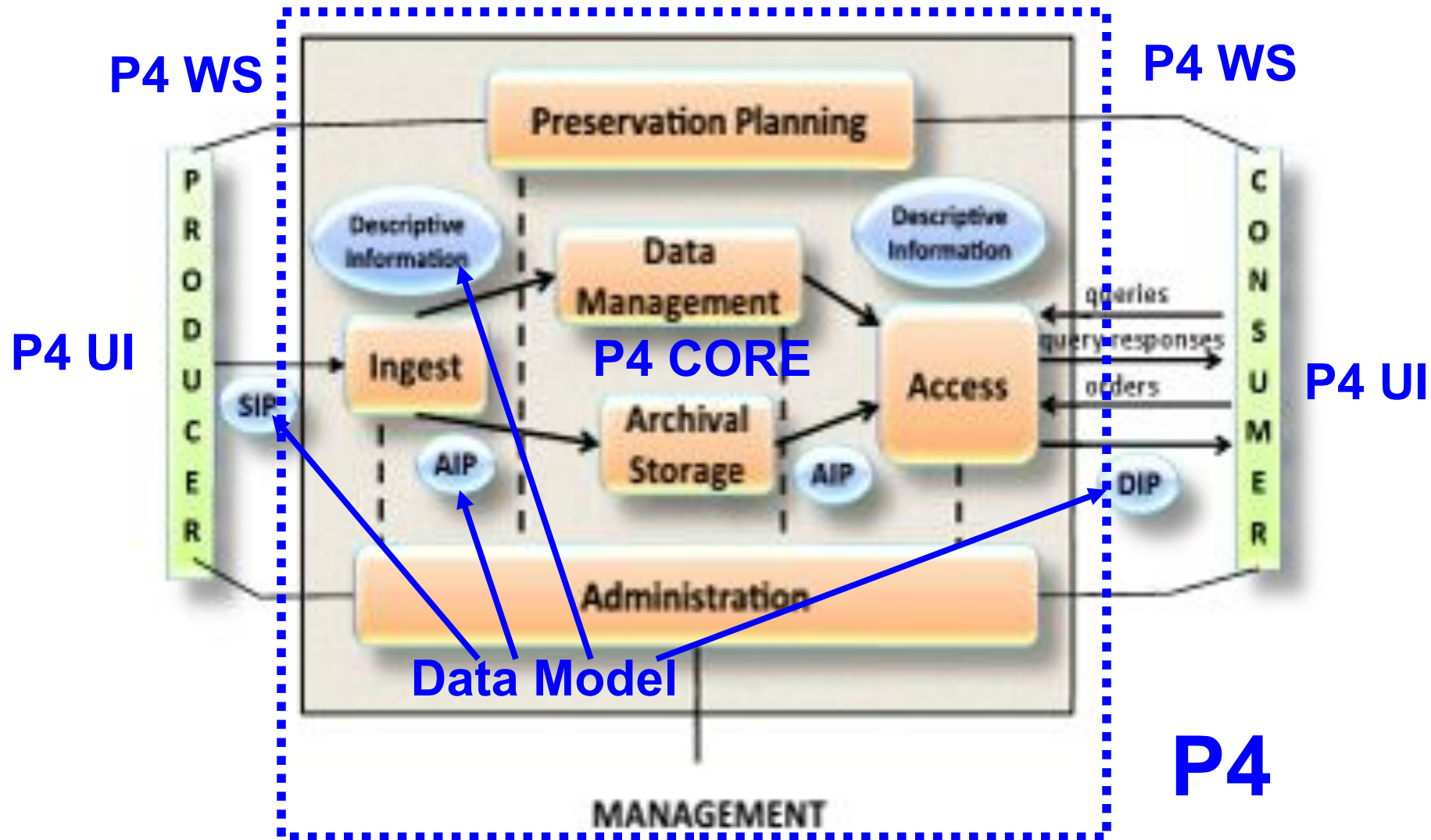
one byte of corruption to a **JPEG2000** image
But other formats are no better!

- Focus on preservation of AV content in broadcast Environment
- OAIS compliant, based on PrestoPRIME data model (METS and PREMIS, DC, MPEG-7 AVDP, MPEG-21 MCO)
- Open: core components released as open source (GPLv3)

Publicly available at:

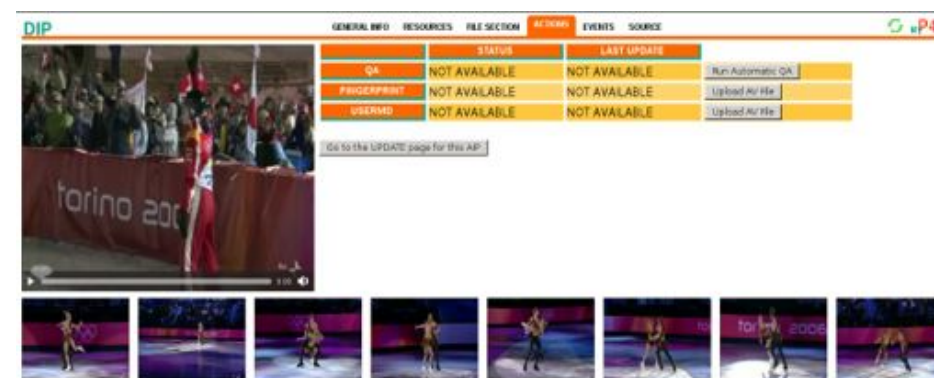
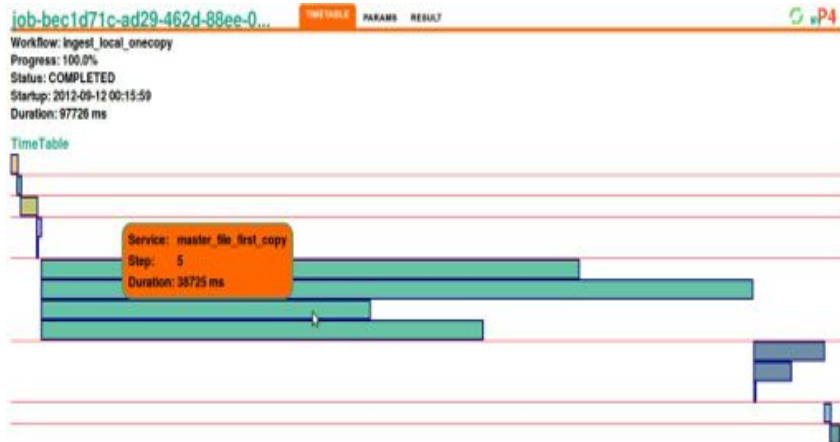
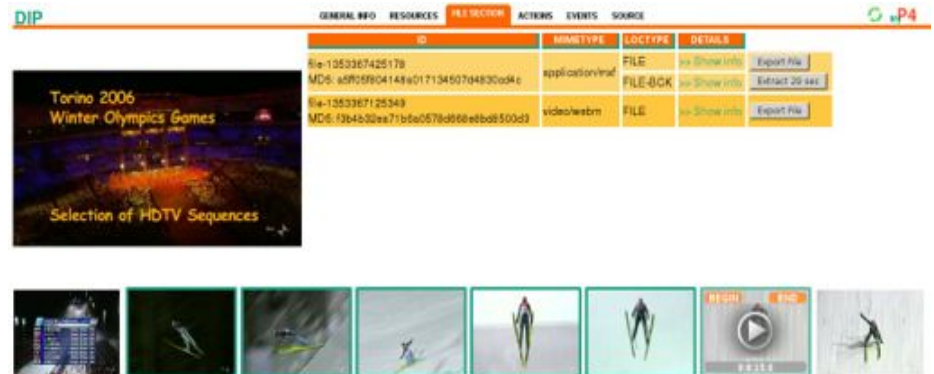
- **<https://github.com/prestoprime/p4>**

P4 mapped onto OAIS



P4 - PrestoPRIME Preservation Platform

<https://github.com/prestoprime/p4>



Metadata for multimedia

AV Descriptive and Technical Metadata

AV Contents have complex timebased metadata

PrestoSpace model (P_Meta and MPEG-7 within a wrapper)

MPEG-7 part 9 **AVDP** (AudioVisual Description Profile)

EBU Core and **P_Meta**

W3C Media Annotations (OWL representation)

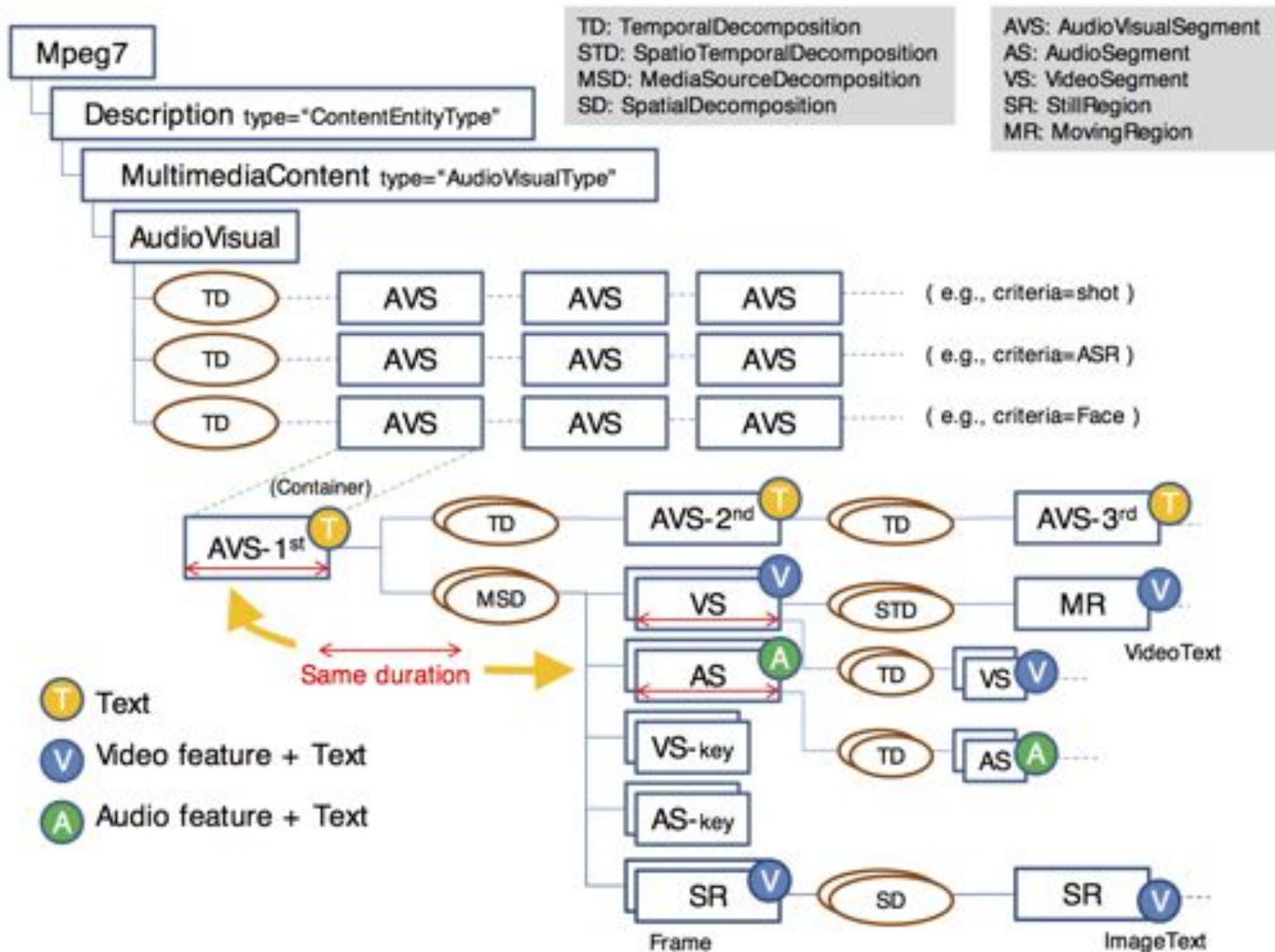
Broadcasting Rights (**contracts**)

MPEG-21 Contract Expression Language (XML representation, part 20)

MPEG-21 Media Contract Ontology (OWL representation, part 21)

MPEG-7 part 9 – AVDP

<http://mpeg.chiariglione.org/standards/mpeg-7/profiles>



Content-based video QA metadata

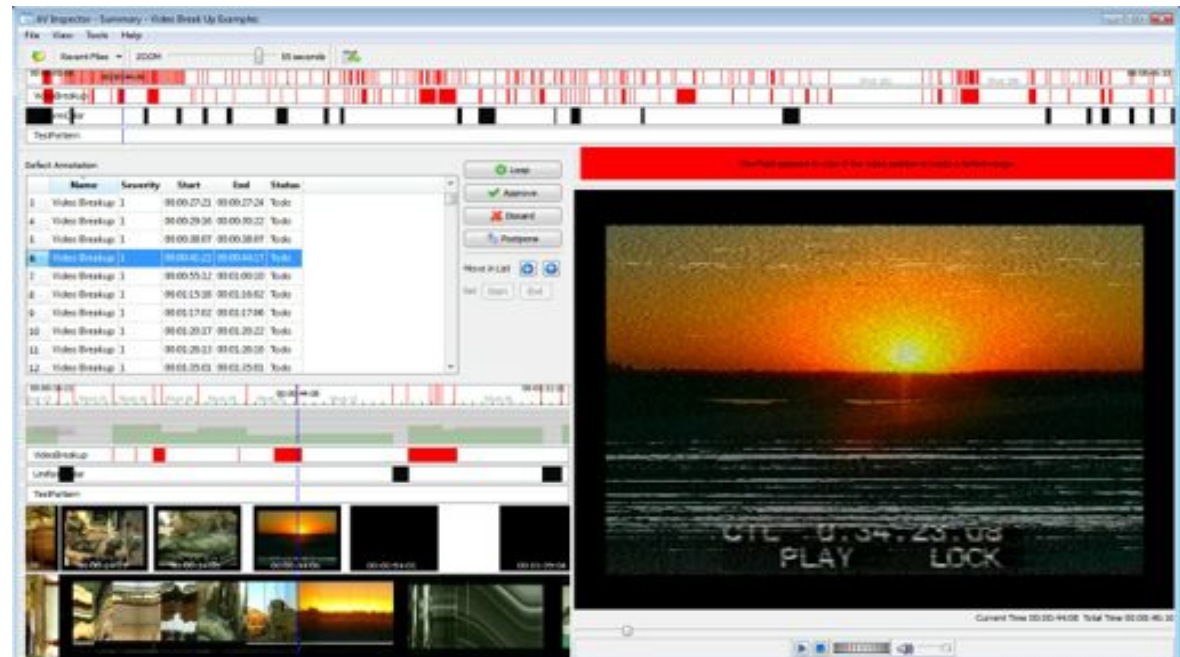
Purely technical checks can detect:
stream/format compliance, storage errors, transfer errors
But these do not “see” errors in the video.



Content-based Video Quality Analysis

Detection of severe visual defects

Joanneum
AV Inspector Tool



Metadata extractor: ffmabc

\$ ffmabc -i "1 Introduction to Matrices.mov"

FFmabc version 0.7-rc8 - Copyright (c) 2008-2013 Baptiste Coudurier and the FFmpeg developers

Metadata:

major_brand: qt
 minor_version: 537199360
 compatible_brands: qt
 com.apple.quicktime.displayname: 1 Introduction to Matrices
 com.apple.quicktime.album: Matrices
 com.apple.quicktime.artist: SIGMA Maths Support Centre
 com.apple.quicktime.comment: Introduction to Matrices
 reel_name(eng): 1 Introduction to Matrices
 title: 1 Introduction to Matrices
 album: Matrices
 artist: SIGMA Maths Support Centre
 comment: Introduction to Matrices
 genre: Coventry University
 composer: Coventry University
 date: 2018-06-24T00:00:00Z
 category: Mathematics
 description: A video introducing matrices
 cover:JFIF.....d.d.....Ducky.....d.....Adobe.d.....
 mime: image/jpeg

Duration: 00:09:43.82, bitrate: 1118 kb/s

Stream #0.0(eng): Audio: aac, 48000 Hz, stereo, s16, 126 kb/s

Stream #0.1(eng): Video: svq3, yuvj420p, 480x270p, 921 kb/s, 25.00 fps

Metadata:

codec_name: Sorenson Video 3

gamma: 2.500000

Stream #0.2(eng): Data: unknown (rtp), 34 kb/s

Metadata:

reel_name: Hinted Video Track

Stream #0.3(eng): Data: unknown (rtp), 9 kb/s

Metadata:

reel_name: Hinted Sound Track

Metadata extractor: MXFDump

\$ mxfdump -i small_wav.mxf

Dump an MXF file using MXFLib

Partition at 0x00000000 is for BodySID 0x0001

ClosedCompleteHeader

MajorVersion = 1

MinorVersion = 2

KAGSize = 1

ThisPartition = 0

PreviousPartition = 0

FooterPartition = 20031

HeaderByteCount = 19855

IndexByteCount = 0

IndexSID = 0

BodyOffset = 0

BodySID = 1

OperationalPattern = MXF Specialized OP

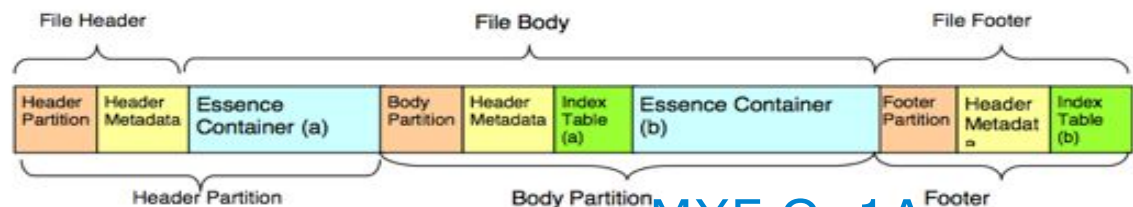
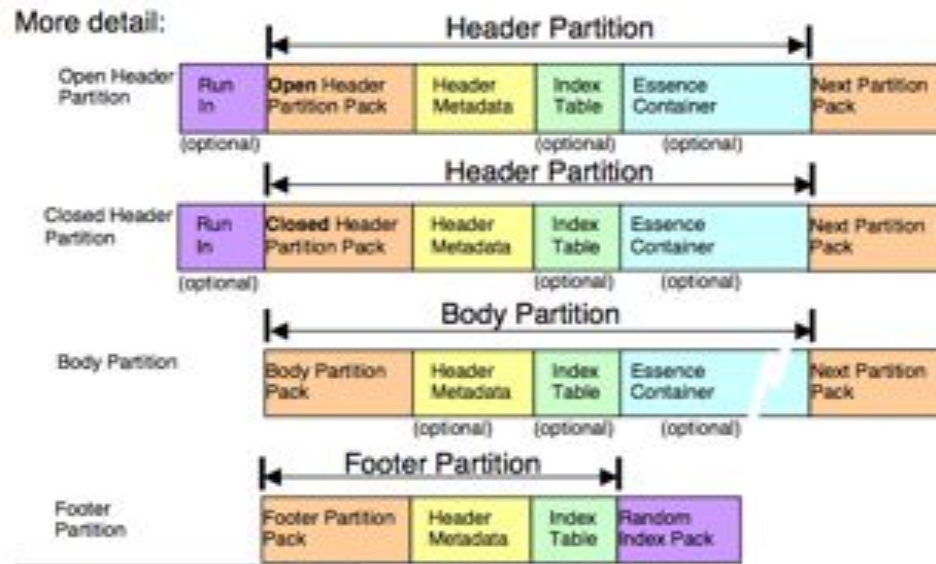
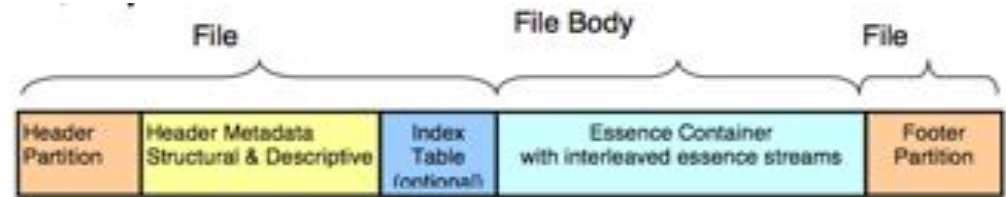
EssenceContainers

EssenceContainer = MXF-GC Generic Essence Multiple Mappings

EssenceContainer = MXF-GC AES-BWF Audio

.....

.....



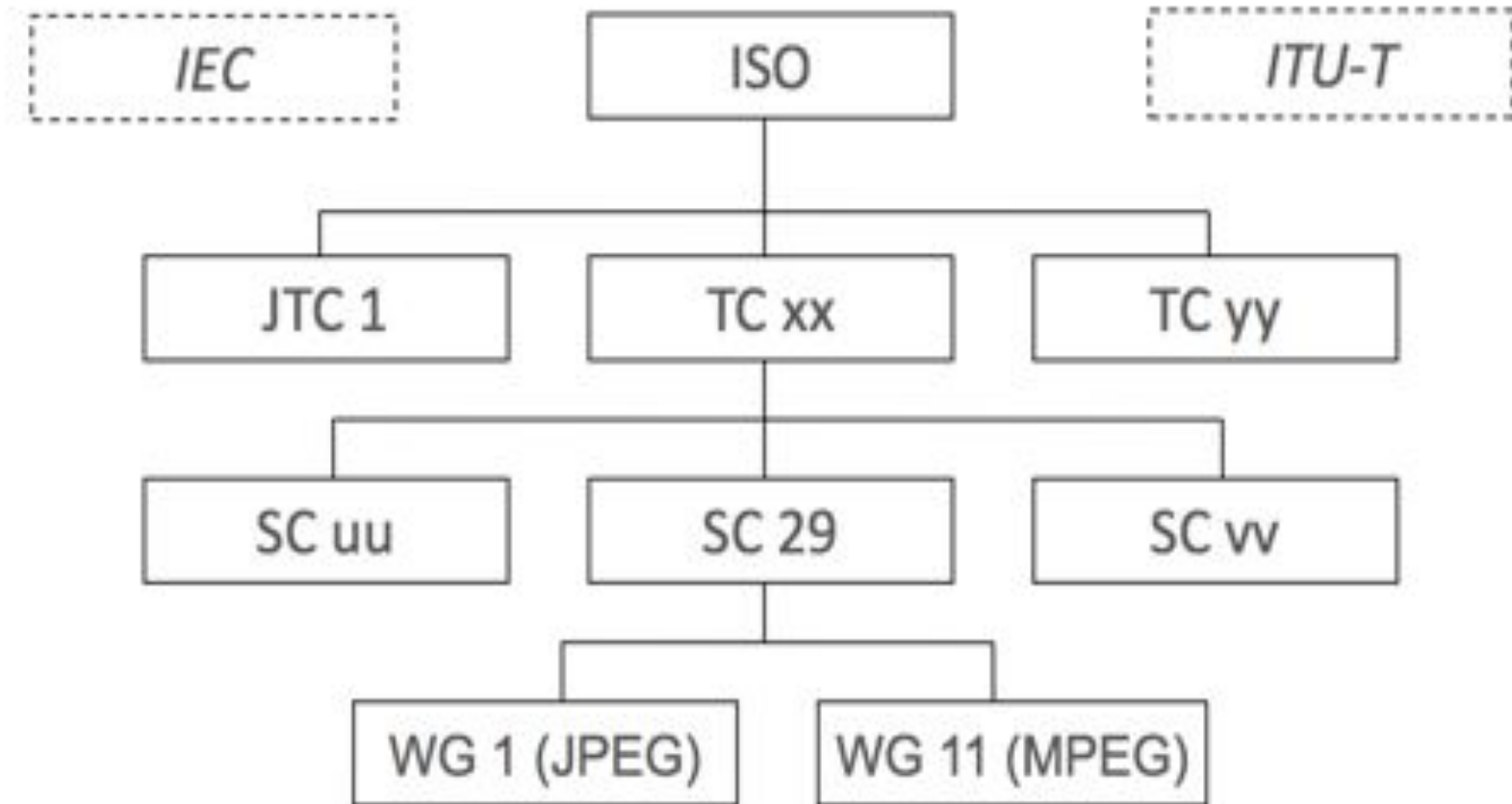
MXF Op1A



MPEG

mpeg.chiariglione.org/

Where is located MPEG



mpeg.chiariglione.org/

Current MPEG Standards

No	Nick-name	Title
11172	MPEG-1	Coding of moving pictures and associated audio at up to about 1.5 Mbit/s
13818	MPEG-2	Generic coding of moving pictures and associated audio
14496	MPEG-4	Coding of audio-visual objects
15938	MPEG-7	Multimedia Content Description Interface
21000	MPEG-21	Multimedia Framework
23000	MPEG-A	Multimedia Application Formats
23001	MPEG-B	MPEG Systems Technologies
23002	MPEG-C	MPEG Video Technologies
23003	MPEG-D	MPEG Audio Technologies
23004	MPEG-E	MPEG Multimedia Middleware
23005	MPEG-V	Media Context and Control
23006	MPEG-M	Multimedia Service Platform Technologies
23007	MPEG-U	MPEG Rich Media User Interface
23008	MPEG-H	High Efficiency Coding and Media Delivery in Heterogeneous Environments
23009	MPEG-DASH	Dynamic Adaptive Streaming over HTTP

mpeg.chiariglione.org/

MPEG

Multimedia Preservation AhG

Metadata challenge for **audiovisual** contents

How to document in an *interoperable* way AV contents?

- Metadata models, mapping and vocabularies

How to *enrich metadata*?

- External sources, user annotations, integrating with in-house documentation

How to handle complex *rights* information (B2C, B2B,...)?

- Rights modelling

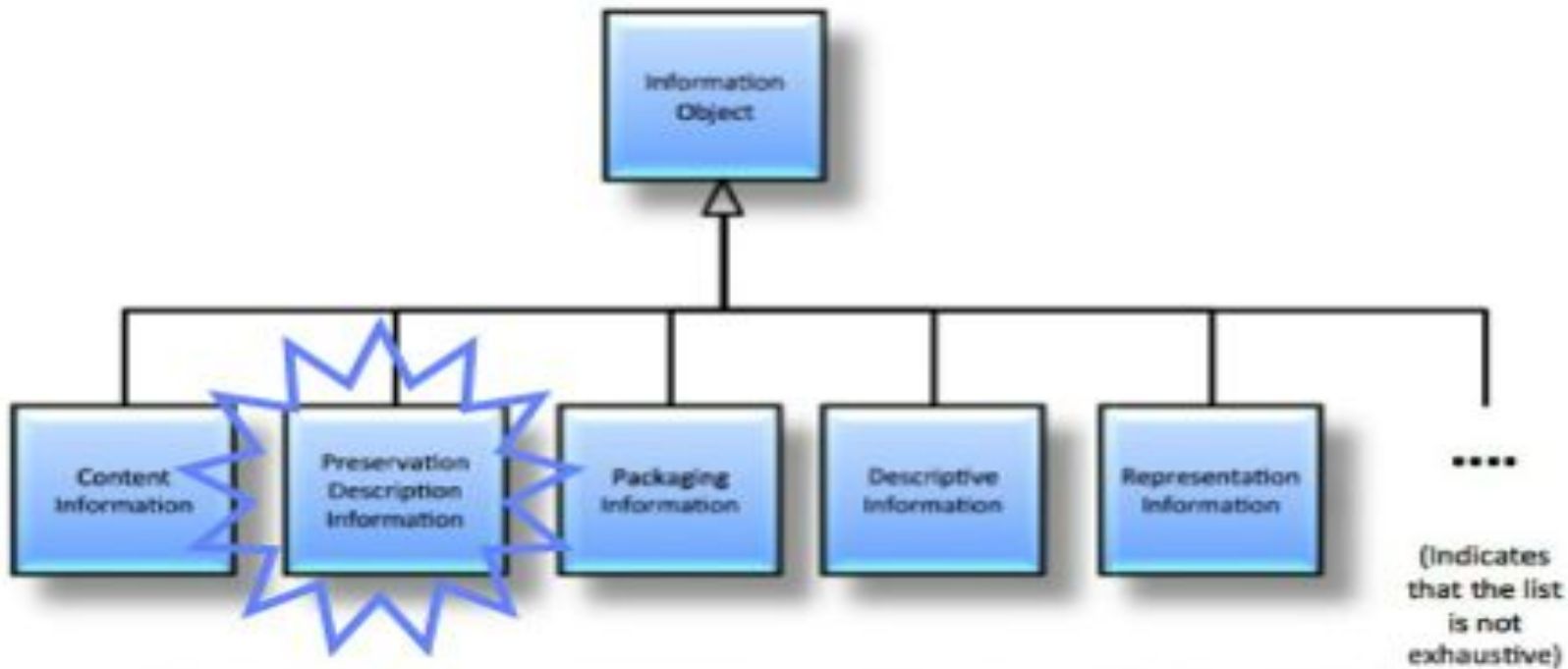
How to determine describe the use of AV contents?

- Content tracking, registries

In 2011 NIST (US) and EURIX, in collaboration with the PrestoPRIME project (EU), have set up the MPEG Multimedia Preservation Ad hoc Group and a datamodel has been identified: the MP-AF

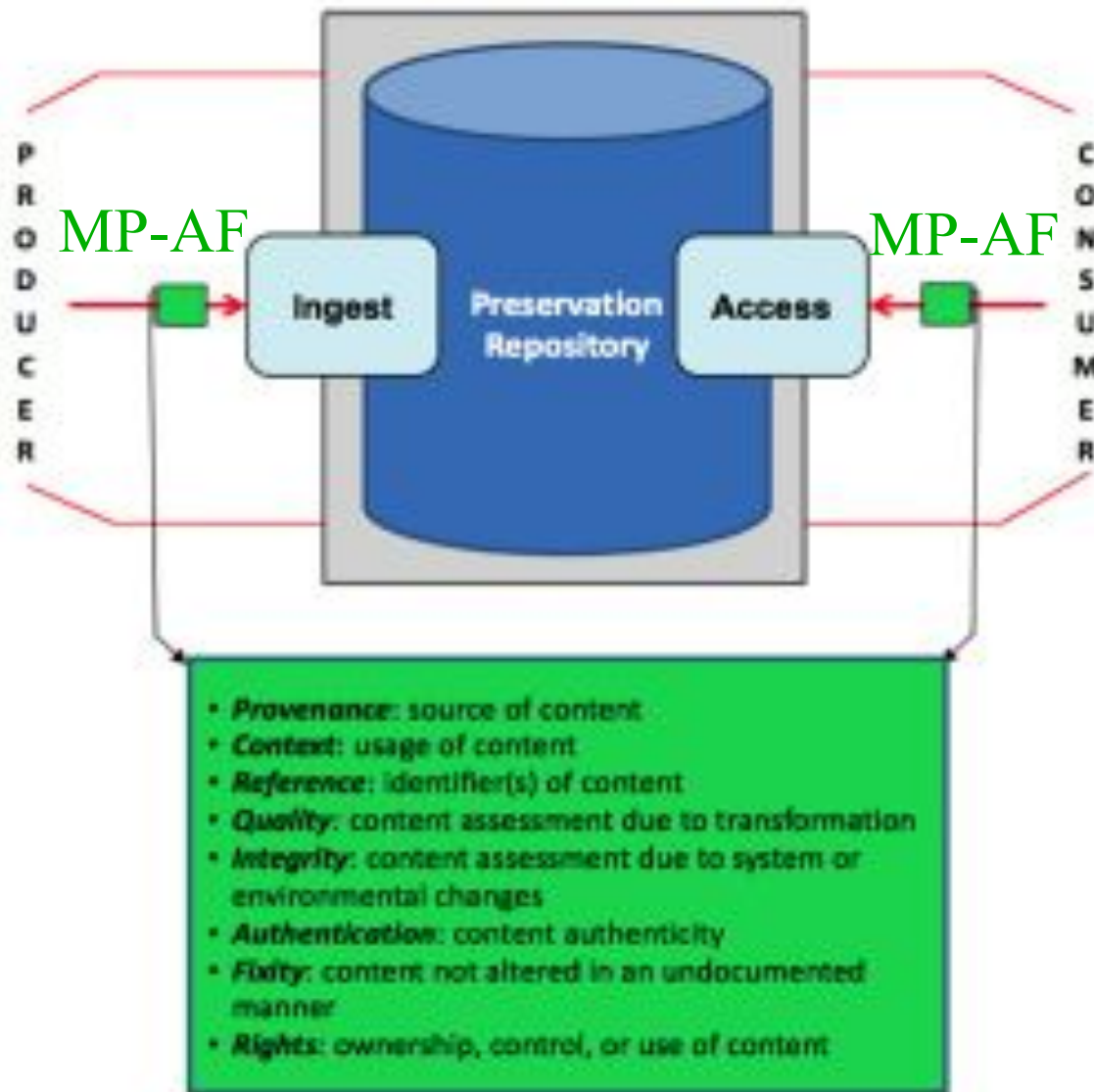


<https://mailhost.tnt.uni-hannover.de/mailman/listinfo/preservation>



MP-AF Multimedia Preservation Application Format

Provisional assignment: ISO/IEC 23000-15



Aims of MP-AF

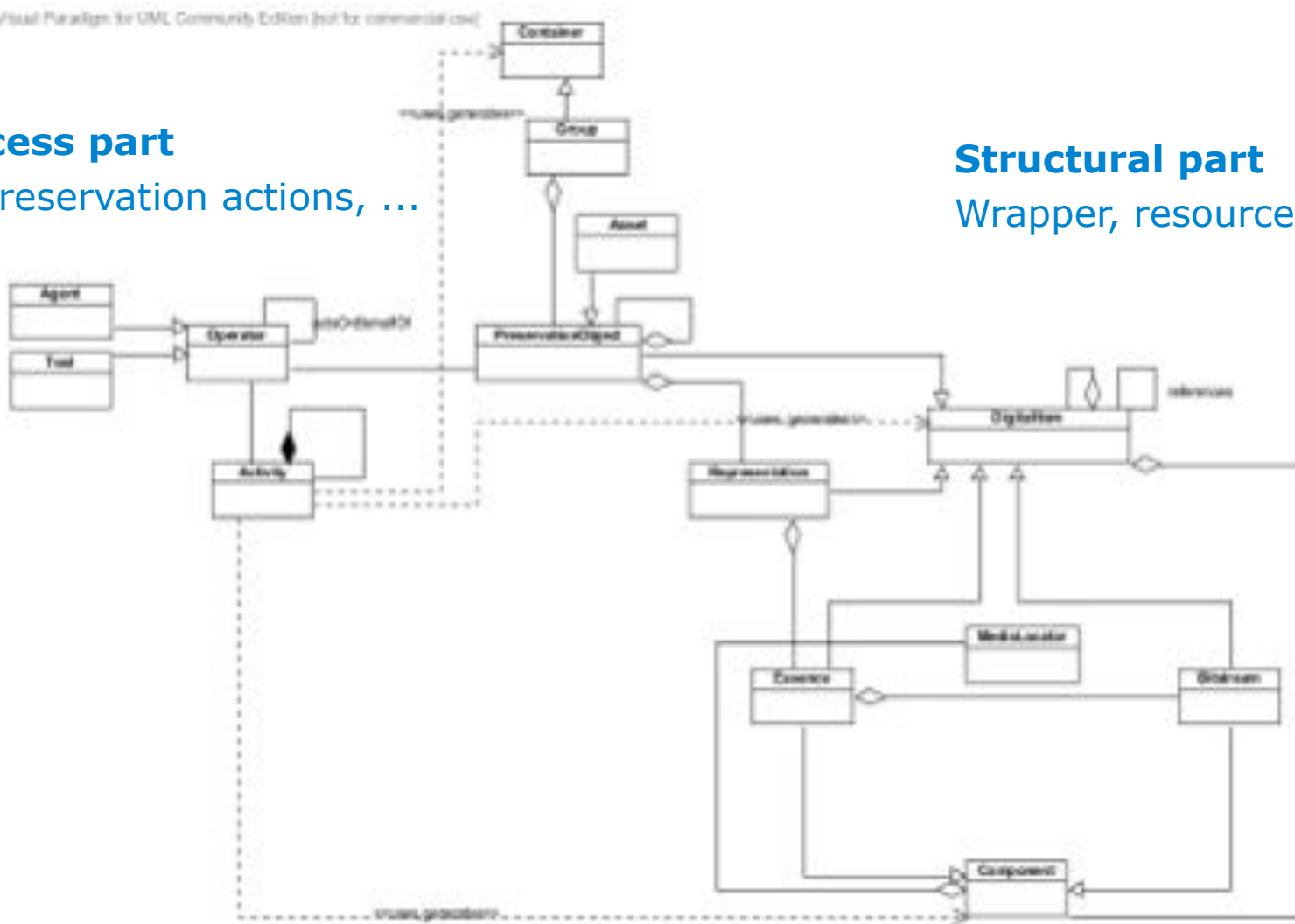
- Standard representation for **AV content** preservation information such as fixity checks, format migrations, preservation events, ...
- Suitable standard for representing SIP and DIP (ingest/access), enabling exchange between archives with minimal metadata loss (concept of **transferable AIP** [DPC])
- Easier integration between *AV Archive* and *AV Production contexts*
- Different possible containers: for example MXF, AXF, PA-AF (currently adopted by NTT within the NDL)

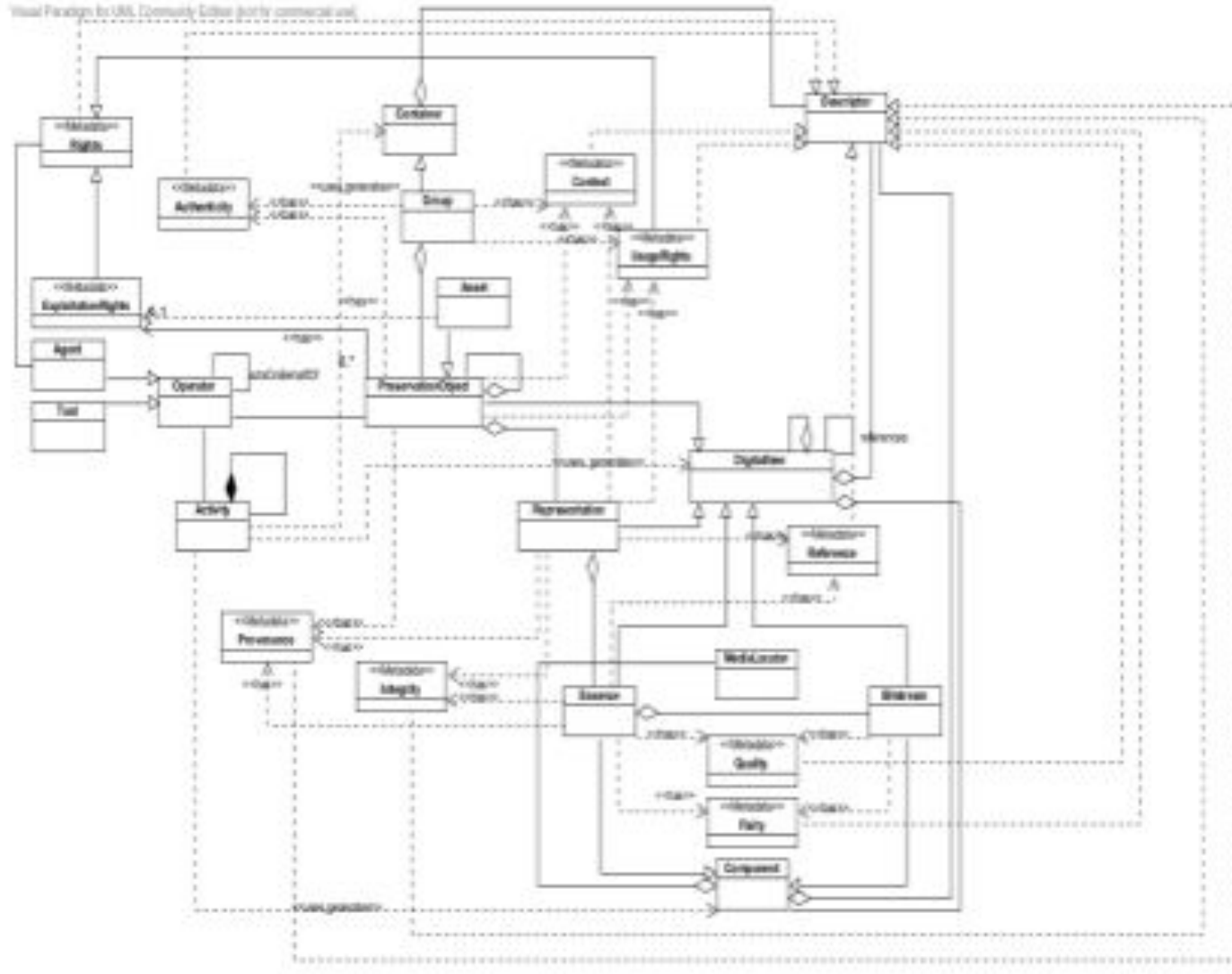
Process part

AV Preservation actions, ...

Structural part

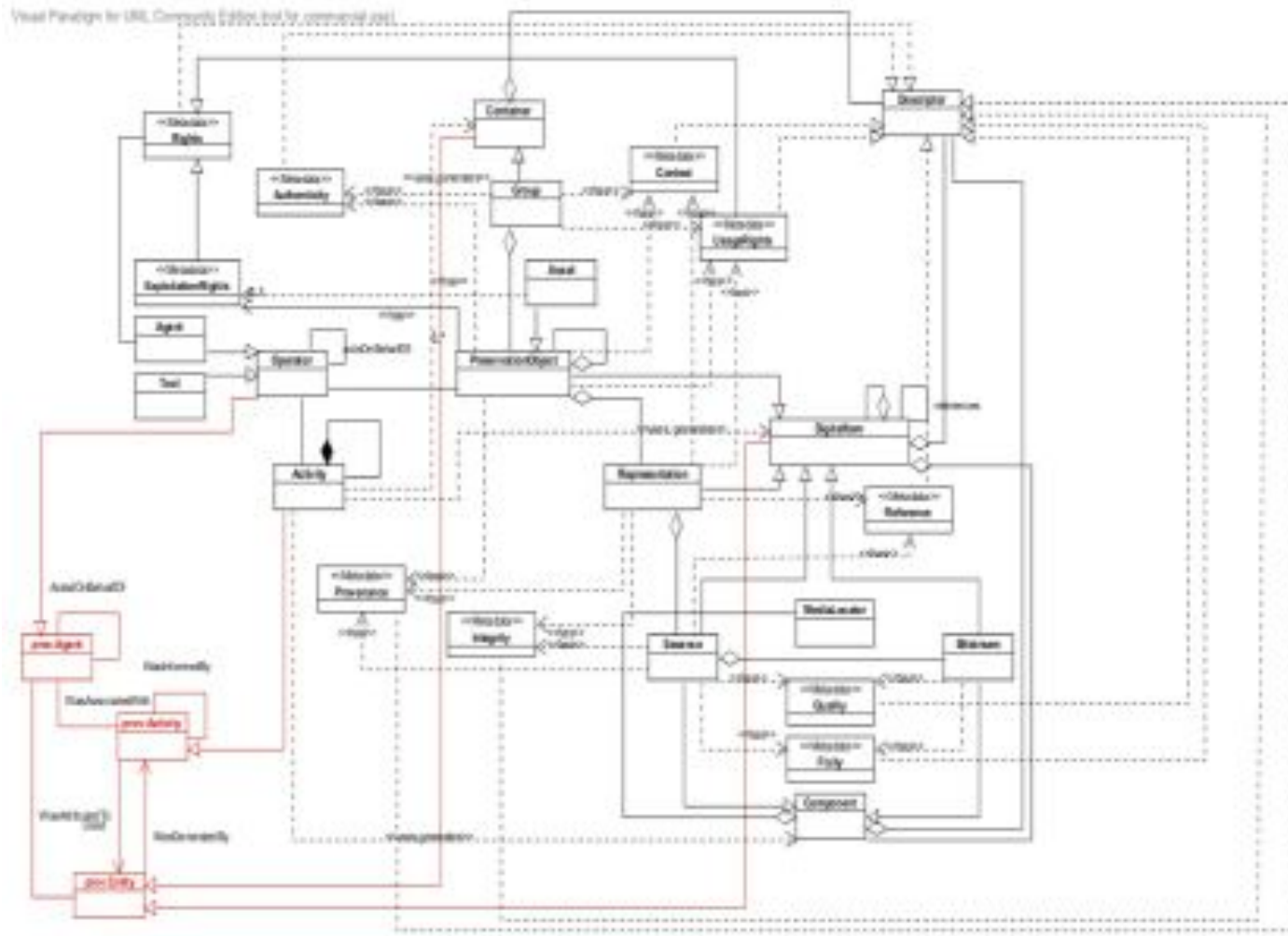
Wrapper, resources,...





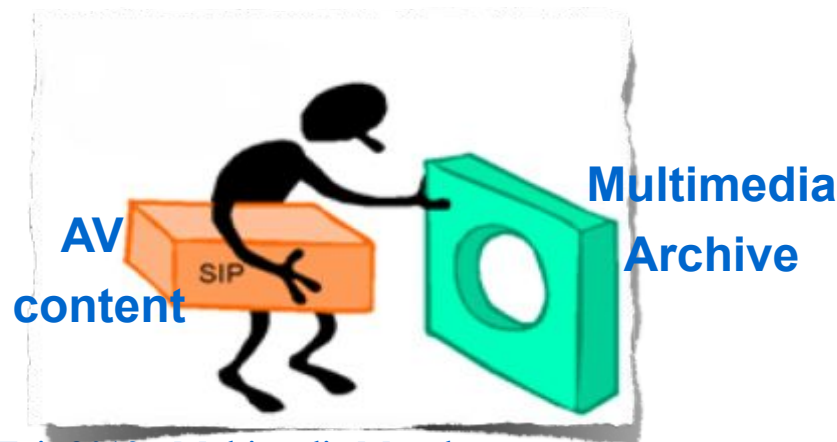






MP-AF represents an interoperable set of preservation metadata for AV contents

- **exchange** between preservation systems/repositories
- **change/upgrade** preservation system
- exchange with **service providers**
- **transferable** metadata format: mapping for other standards
- technologies for MP-AF implementation are widely available



Ongoing work

Projects currently contributing to the MP-AF



<https://www.prestocentre.org>

<https://www.prestocentre.org/4u>



Presto4U
FP7-ICT-2011.4.3
no 600845
Years: 2013-2015

Tools, blogs and CoPs discussions



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P4



P4

TOOL • TOOLKIT

EUROPE C200.06

Average rating: ☆☆☆☆ Please log in to see ratings.

P4 is the open [Distributed Preservation Platform](#), integrating tools and services developed by all partners in the project. P4 is compliant to OAI and is made up of three main components:

- core libraries implementing OAI components for storage, metadata management, ingest, access, administration and preservation actions
- web server providing REST interfaces for interacting with the archive
- user interface providing ingest, access and administrative functionalities according to the user profile

P4 implements a workflow engine to configure custom tasks based on external tools and services. The integration of the external tools is provided by the plug-in framework, enabling the creation of specific plugins to fulfil different requirements related e.g. to AI material processing, metadata extraction or management of storage solutions.

The data model makes use of METS as the main wrapper format for descriptive and technical metadata, as well as AI resources. Other standards are supported, such as MPEG-7 for technical metadata, PREMIS for preservation events, MPEG-21

SEARCH OUR SITE

Featured Resources



Access Archives Audio Digital Digitisation File formats Metadata Preservation

Preservation Plans Standards Storage Video



Presto4U is a two-year project supported by a core network of 14 PrestoCentre members. The project aims to identify useful results of research into digital audiovisual preservation and to raise awareness and improve the adoption of these both by technology and service providers as well as media owners. [Read more](#)



The Presto4U project receives funding from the European Commission's Seventh Framework Programme (FP7). The project will run from 1 January 2013 to 31 December 2014.

Project Partners



Stay in touch

Subscribe to MP-AF reflector and contribute

<https://mailhost.tnt.uni-hannover.de/mailman/listinfo/preservation>

MP-AF technical questions to:

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