European Media Wrapper Round Table II
PARIS, October 25th 2007 (at TV5)

Goals and first results of the **memories** *project*

An open , tailorable and persistent system for Audio acquisition, exploitation and archiving

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TITAN

memnon

Structure of the presentation

1. The Objectives of the project
2. The Media Chain
3. The Consortium
4. The intended Dissemination

Structure of the presentation

1. **The Objectives of the project**
2. The Media Chain
3. The Consortium
4. The intended Dissemination

Objectives of the project

The **MEMORIES** project focuses on the **SOUND media chain** with as main goals the evaluation &/or validation, through a demonstrator, of:

1. A *PROFILE* acquisition system

2. A "*Content Acquisition System*" generating *Autonomous Assets Entities*

   - Clip manager & indexer
   - Single Sensor Source Separation
   - Speech to text
   - Wave to Midi
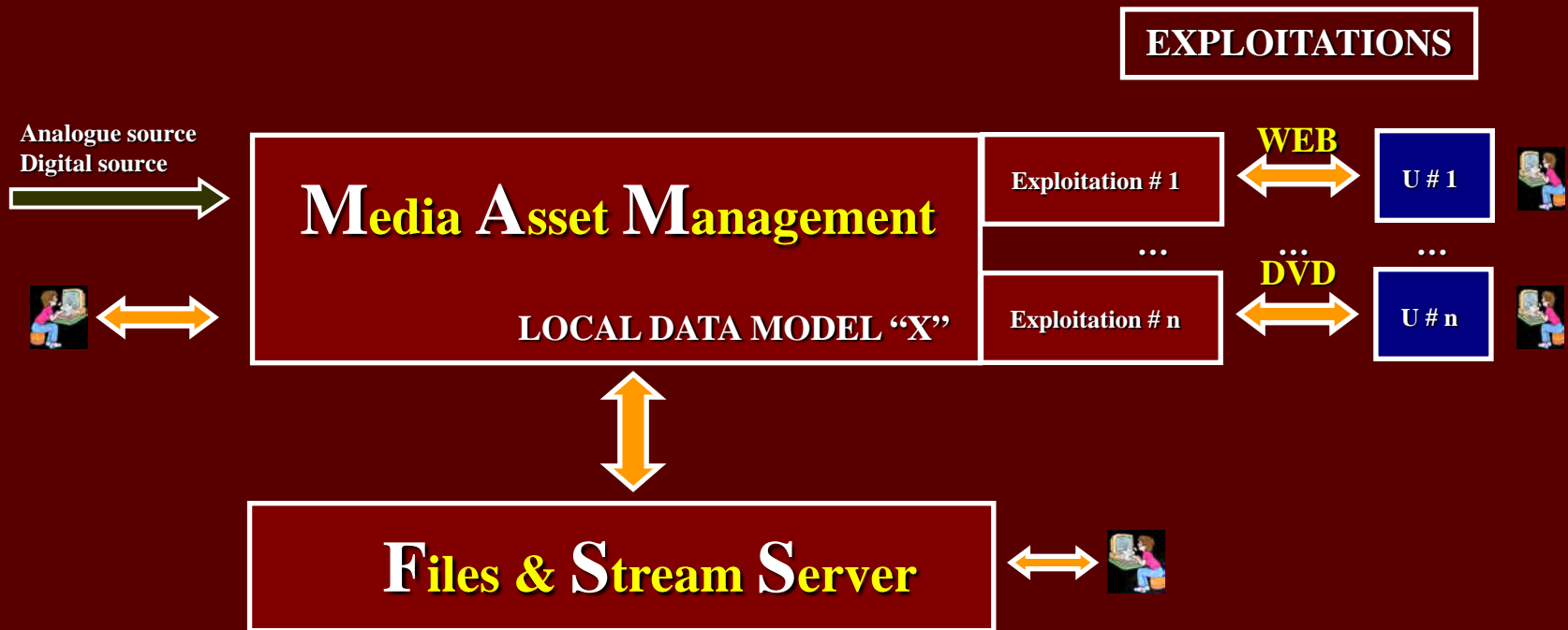   - …

3. The definition of an "*Open eXchange Format*" based on standards:

   - Mainly XML/XSD, RDF, OWL, DCMI, SMIL, X-LINK, for the definition of the "*PROFILES*" and of their "*OCCURENCES*",

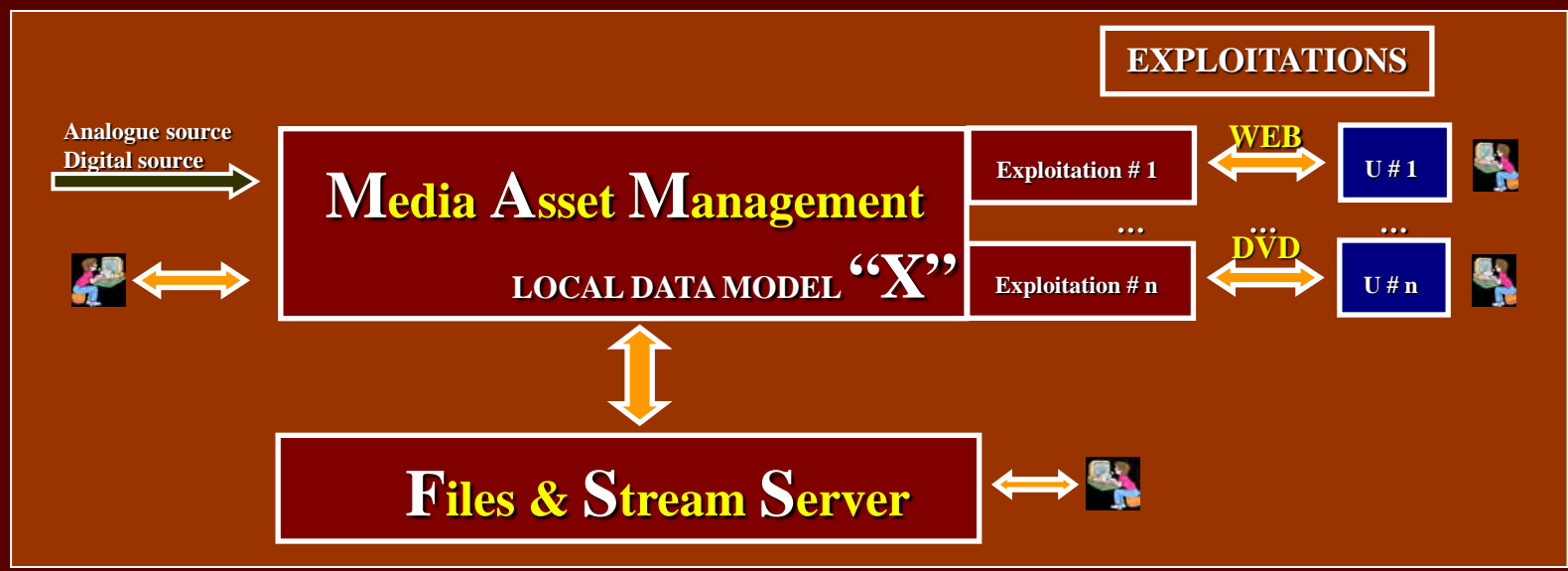   - Mainly the OAIS reference model (ISO 14 721) for the "*INTERCHANGES*" and the "*PERSISTENCE*",

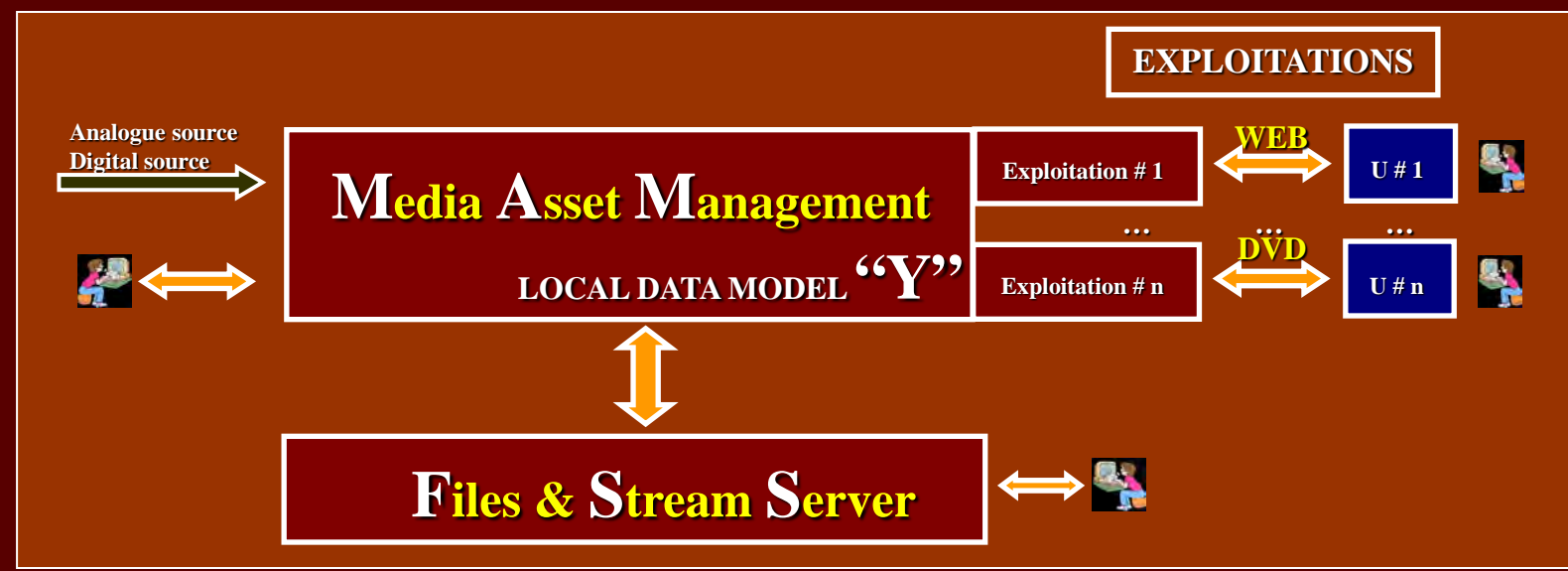4. The improvement of the **retrieval** processes, accepting the tailorization
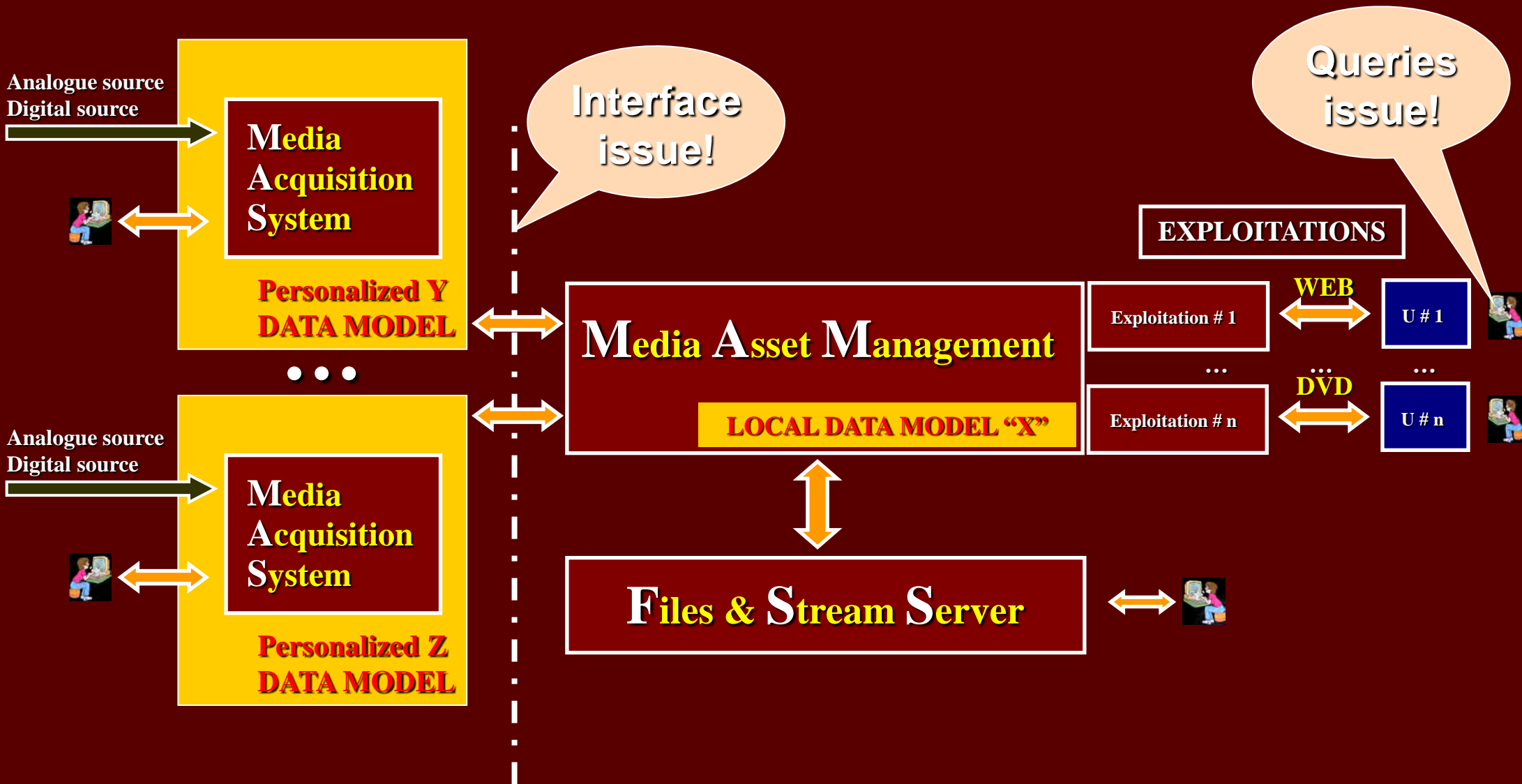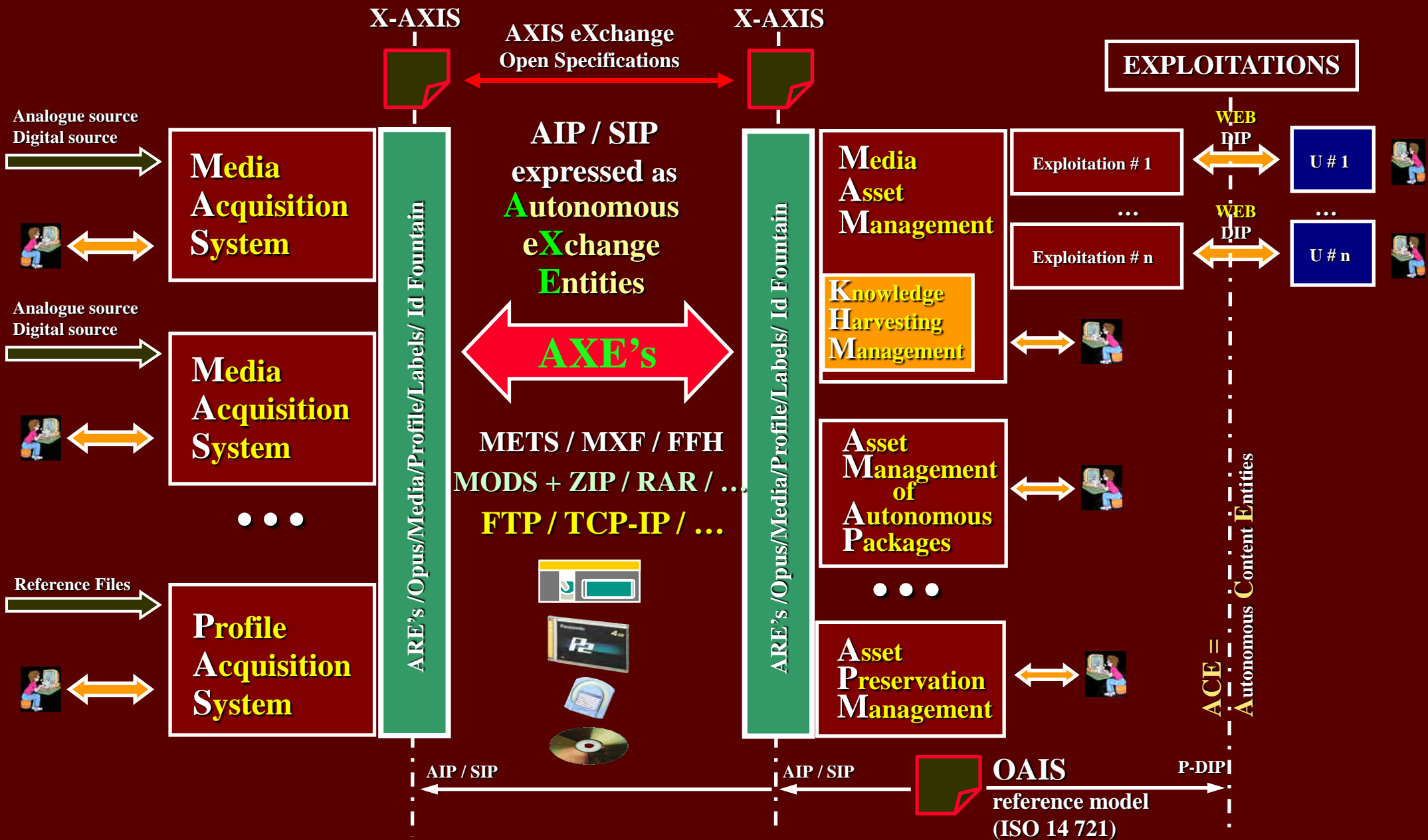
ARCHITECTURE

The usual architecture

EXPLOITATIONS

Analogue source
Digital source

Media Asset Management

LOCAL DATA MODEL "X"

Exploitation # 1

WEB

U # 1

…   …

DVD

Exploitation # n

U # n

Files & Stream Server

The interoperability challenge

EXPLOITATIONS

Analogue source
Digital source

Media Asset Management

LOCAL DATA MODEL **"X"**

Exploitation # 1

...

Exploitation # n

WEB

...

DVD

U # 1

...

U # n

Files & Stream Server

Time & Space InterOperability

EXPLOITATIONS

Analogue source
Digital source

Media Asset Management

LOCAL DATA MODEL **"Y"**

Exploitation # 1

...

Exploitation # n

WEB

...

DVD

U # 1

...

U # n

Files & Stream Server

The target general architecture

The AXIS General Architecture

The AXIS General Architecture

TITAN · memnon · memories · EU

X-AXIS **X-AXIS**

AXIS eXchange Open Specifications

EXPLOITATIONS

Analogue source / Digital source

Media Acquisition System

AIP / SIP expressed as Autonomous eXchange Entities

AXE's

Wrappers

METS / MXF / FFH
MODS + ZIP / RAR / …
FTP / TCP-IP / …

Analogue source / Digital source

Media Acquisition System

Reference Files

Profile Acquisition System

ARE's /Opus/Media/Profile/Labels/ Id Fountain

Media Asset Management

Exploitation # 1

Exploitation # n

Asset Management of Autonomous Packages

Asset Preservation Management

WEB / DIP

WEB / DIP

U # 1

…

U # n

ACE = Autonomous Content Entities

AIP / SIP   AIP / SIP   **OAIS** reference model (ISO 14 721)   P-DIP
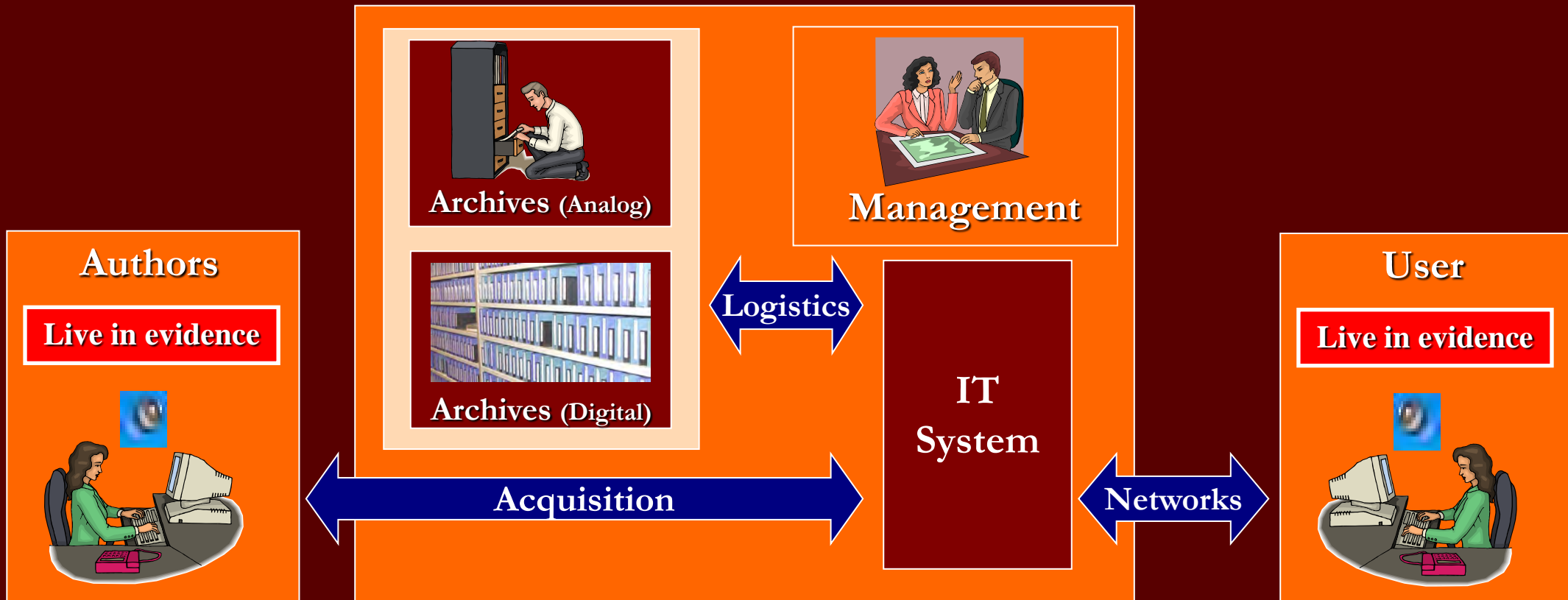
CONTEXT

PERSISTENCE: the ability of a technology & organizational system to ensure to the *citizen of today* that the *citizen of tomorrow* will be capable of *enjoying* the current cultural, sociological, economic, … *assets.*

Abdelazis Habid (*Memory of the World*) UNESCO

ASSETS

Declaration of the **existence** of an "ASSET"   *ONTOLOGY*

Modeling of the "Assets" and of their **presentation** such as to obtain

- Their powerful representation   *SEMANTIC*

- Their independence of the moments   *PERSISTENCE*

- Their independence of the places   *NOMADISM*

- Their independence of the formats   *EVOLUTION*
                                          ENRICHMENT
                                          MIGRATION
                                          …

The DATA MODEL

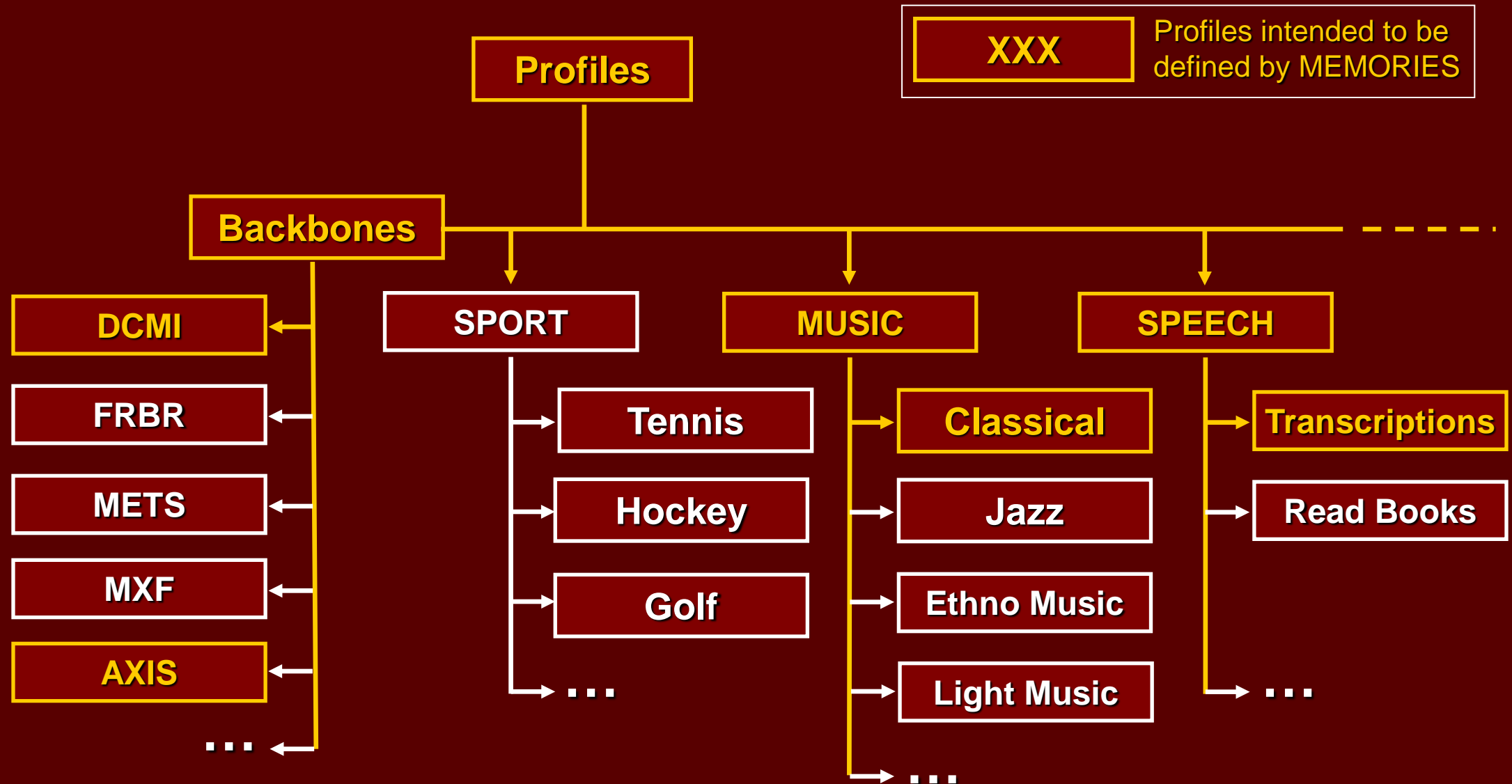Main elements of the « AXIS Framework »

PROFILES

The definition of the PROFILES

The definition of PROFILES is made through the definition of constructs allowing to model, in a specific domain, "audio-visual contents and events" including :

- The **'essences'** *(audio, video, images, texts, models, …)*
- The associated **'metadata'** *(administrative, …)*
- The **'structures'**
- The **'controls'**

Typical PROFILES

Profiles

XXX Profiles intended to be defined by MEMORIES

Backbones

DCMI

FRBR

METS

MXF

AXIS

...

SPORT
- Tennis
- Hockey
- Golf
- ...

MUSIC
- Classical
- Jazz
- Ethno Music
- Light Music
- ...

SPEECH
- Transcriptions
- Read Books
- ...

The definition of the PROFILES

The key principles applied in the definition of PROFILES are:

- The definition of the profiles are themselves **'Preservation Objects'**

  (DIP, AIP, P-DIP, …)

- The definition uses and refers to standards whenever they exist

- The definition implies, whenever required, a local copy *(made according to the local syntax)* of the existing standards

- The definitions are multilingual (*Entries, Definitions, Occurrences &IT*)

- Allow the incorporation of constructs (*T, I, D, H, E, C, R, E*) defined in other PROFILES of the current context

- The definitions are expressed using standards using the XML/XSD language (RDF, OWL, DCMI, SMIL, …)
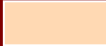
The definition of the PROFILES

The methodology applied in the definition of PROFILES is:

T   The definition of the **'Terms'** according to the RDF in DCMI

I   The definition of the **'Persistent Identifier'** system (or systems) using Terms occurring according to rules expressed in RDF / OWL

H   The definition of **'Relation types'** using Terms occurring according to rules expressed in RDF / OWL

D   The definition of locally defined **'Documents types '** using Terms occurring according to rules expressed in RDF / OWL

The definition of externally defined **'Documents types'** by reference to their external definition using occurrences of Relation types

C   The definition of **'Controlled lists'** by reference to their external definition using occurrences of Relation types or by local definition using Terms

R   The definition of **'References'** by inclusion of data sets *(files, arrays, …)* and using Terms

E   The definition of **'Entity types'** as abstract wrapper of coherent set of any of the constructs previously introduced (T, I, H, D, C, R, E).

The definition of the PROFILES

The multi-lingual properties could be illustrated by:

	IT	Natural languages
Terms entries	**XML/XSD**	...
Definition	**RDF/OWL**	...
Occurrences	**XML**	...

French	
English	
Norwegian	
...	...

The definition of « TERMS »

Name of the TERM

	Technical	XML / XSD
T1	Name Space	dc
T2	Property (name of term)	date
T3	URI	http://purl.org/dc/elements/1.1/date
T4	Defined by	http://www.w3.org/TR/NOTE-datetime
T5	Type of term	Element
T6	Refines	-
T7	Is refined by	Created, Valid, Available, Issued, Modified, …
T12	Encoding type	External Standard
T13	Encoding scheme	http://purl.org/dc/terms/W3CDTF
T14	Example of contents	2006-08-06
T15	Obligation	OPT
T16	Occurrence	NR
T17	Date of definition	1999-07-02
T18	Status of the definition	R (V7.9)

For each entry in natural languages, the source original is also mentioned

		English	Français	العربية
N1	Natural language			التاريخ
N2	Label	Date	Date	-
N3	Original language of definition	English	-	
N4	Definition in natural language	A date associated with an event in the life cycle of the resource …	Une date associée à un évènement du cycle de vie de la ressource	… ...
N5	Source comment	…	…	…
N8	Profile definition	…	…	…
N9	Profile comment	…	…	…
N10	Encoding scheme	YYYY-MM-DD where YYYY represents the ISO Year; MM, the …	AAAA-MM-JJ où AAAA représente l'année ISO ; MM, le …	السنى ⇐ AAAA
N11	Contents H	< Mapping >	< Mapping >	< Mapping >
N12	Occurrence H	Not repeatable unless in refinements	Non répétable si ce n'est en affinage	…
N13	Obligation H	Optional	Optionnel	

Open eXchange format
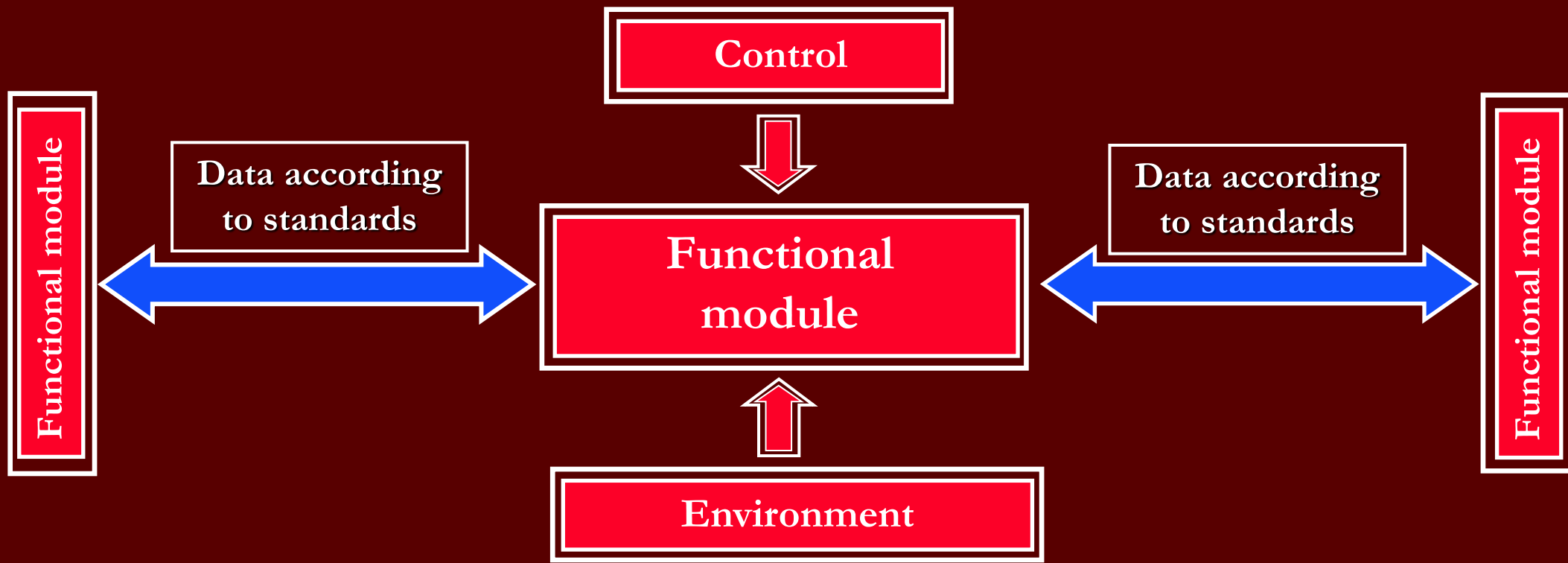
Adopt for the "Open Interface"
the SIP, AIP, P-DIP architecture
of the OAIS model *(ISO 14721)*

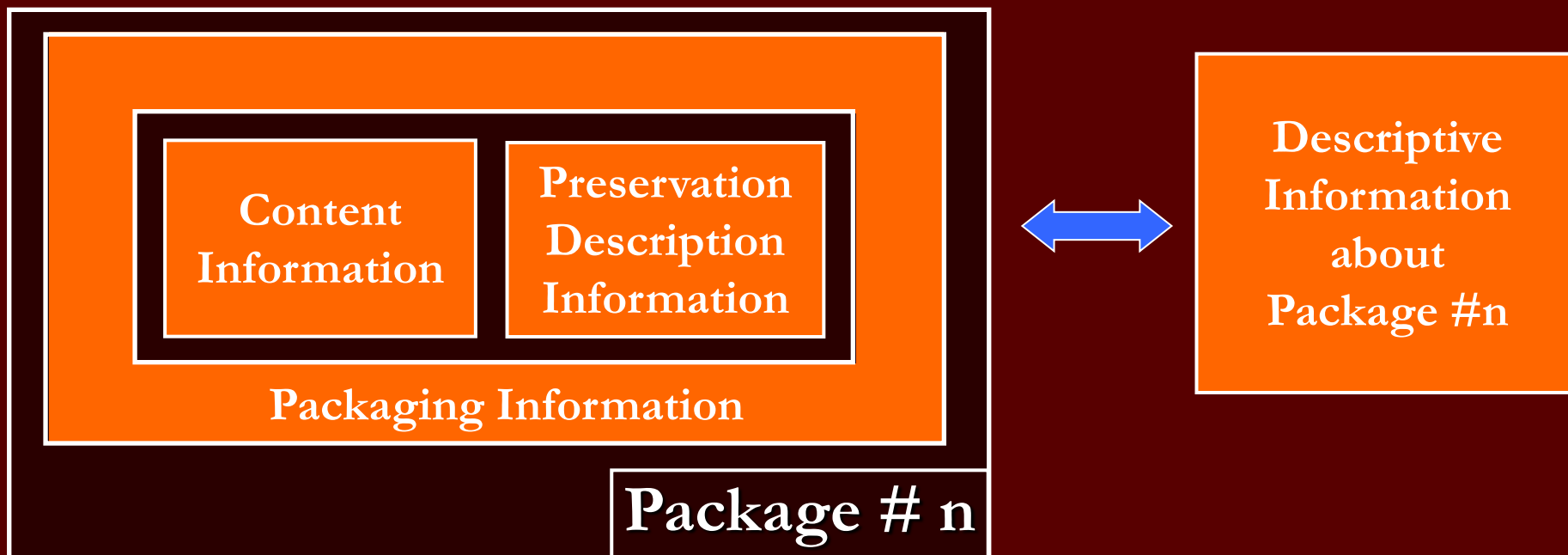OAIS: Open Archival Information System
SIP: Submission Information Package
AIP: Archival Information Package
P-DIP: Persistent Dissemination Information Package

Open eXchange format

The project does not intend to develop an Open Archival Information System but to

Define how to construct SIP's which have the properties of AIP's and being "Autonomous eXchange Entities" (OAIS – X-AXIS)
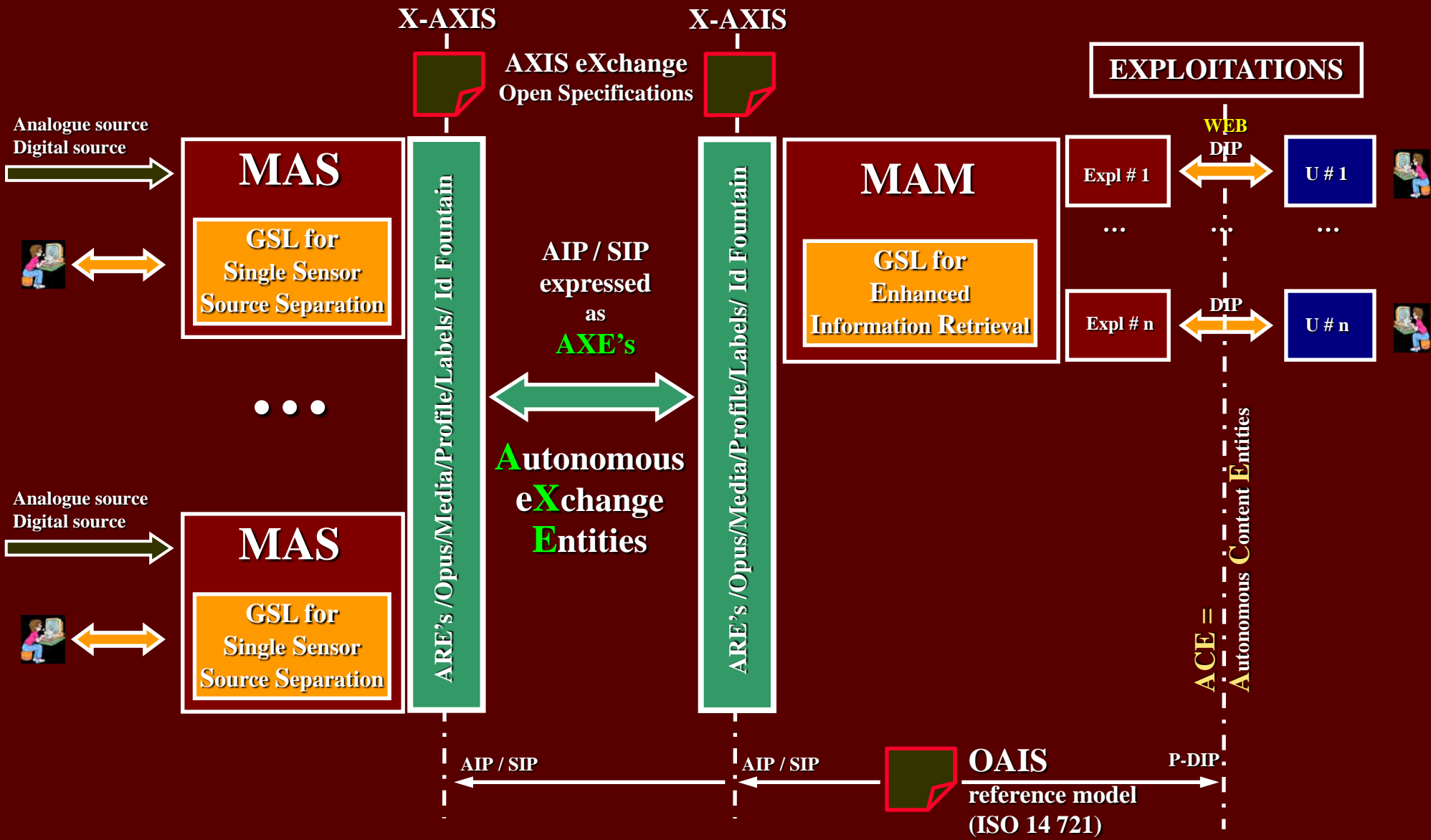
By standards it is meant:

1. International standards **(ISO, ETSI, …)**

2. National standards **(DIN, AFNOR, ANSI, …)**

3. Industrial & Community standards
    (DVD-R, CD-R, RDF, Dublin Core, OAIS, METS, MXF, AAF, …):
    They are standards backed by a large number of major actors of the domain

4. Industrial standards backed by International or National Standards **(DVB → ETSI)**

5. Local standards**: *They are standards valid in a specific environment* (BLAP-S is a local standard of the British Library for the creation of metadata in the Audio sector; it is the definition of a Dublin Core Profile with possible MARC relators)**

Remark: If 'proprietary formats' have to be included in the exchanges between modules, they will be encapsulated and cloned by a proxy.

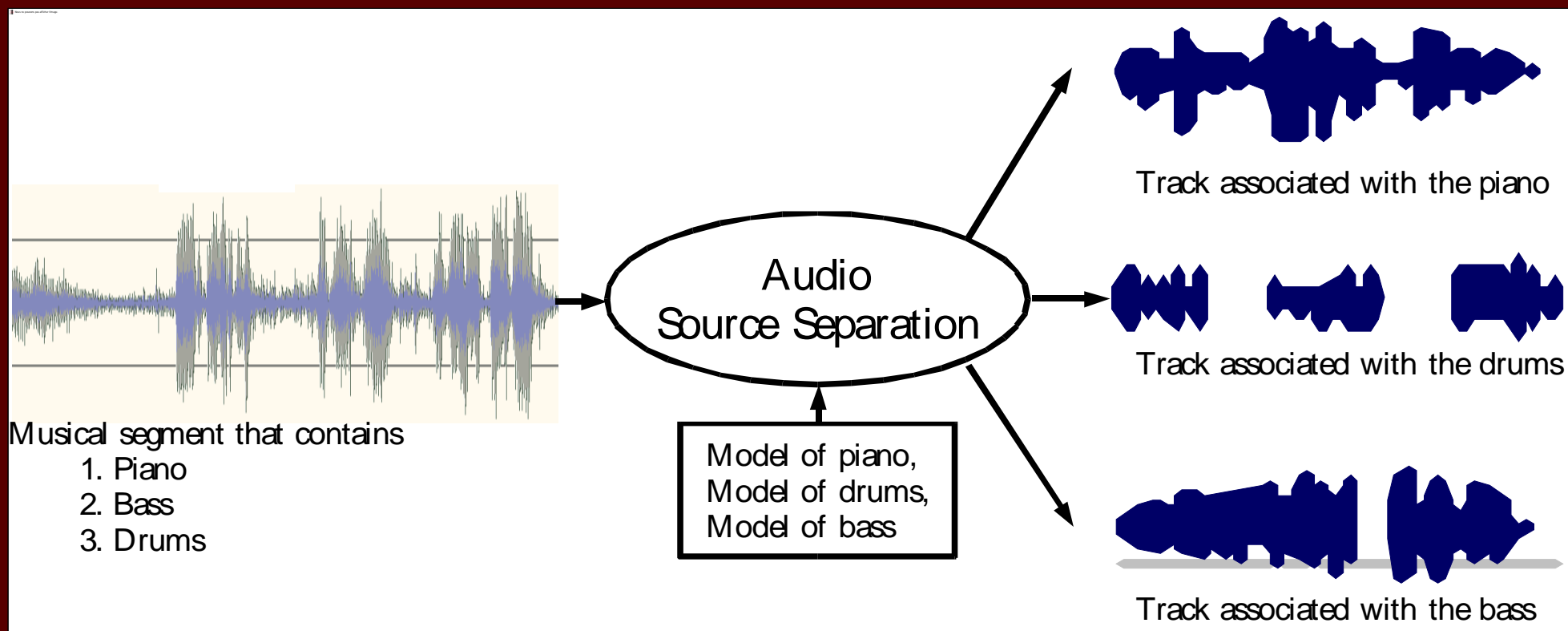# Architecture
The two General Software Libraries

TITAN memnon memories

X-AXIS **X-AXIS**

AXIS eXchange
Open Specifications

EXPLOITATIONS

Analogue source
Digital source

MAS

GSL for
Single Sensor
Source Separation

• • •

Analogue source
Digital source

MAS

GSL for
Single Sensor
Source Separation

ARE's /Opus/Media/Profile/Labels/ Id Fountain

AIP / SIP
expressed
as
AXE's

Autonomous
e**X**change
Entities

ARE's /Opus/Media/Profile/Labels/ Id Fountain

MAM

GSL for
Enhanced
Information Retrieval

Expl # 1

. . .

Expl # n

WEB
DIP

U # 1

. . .

DIP

U # n

ACE =
Autonomous **C**ontent **E**ntities

AIP / SIP AIP / SIP **OAIS**
reference model
(ISO 14 721)

P-DIP

Single Sensor Source Separation

"SSSS"

Single Sensor Source Separation

The improvement of the acquisition processes
### namely by using a "Single Sensor Source Separation" approach

Musical segment that contains
1. Piano
2. Bass
3. Drums

Audio Source Separation

Model of piano,
Model of drums,
Model of bass

Track associated with the piano

Track associated with the drums

Track associated with the bass

Advanced Retrieval

The improvement of the retrieval processes namely by using a "Advance search base on semantic annotations" developed for the biology
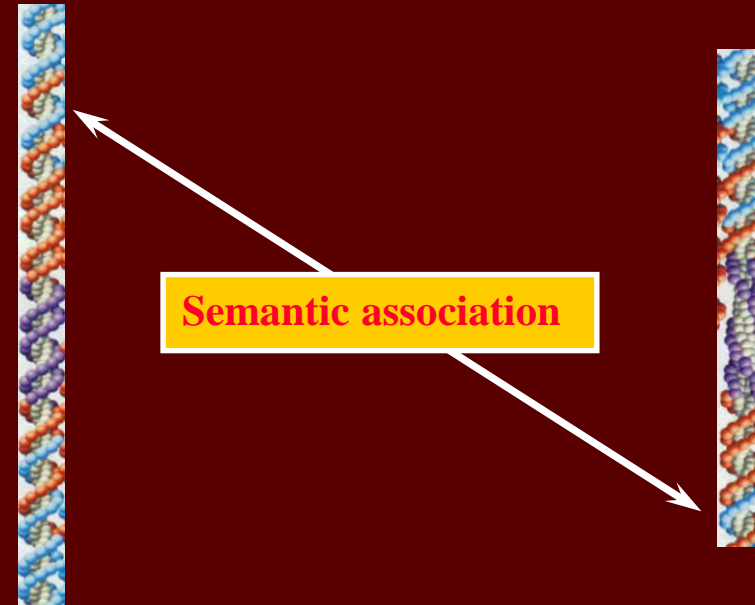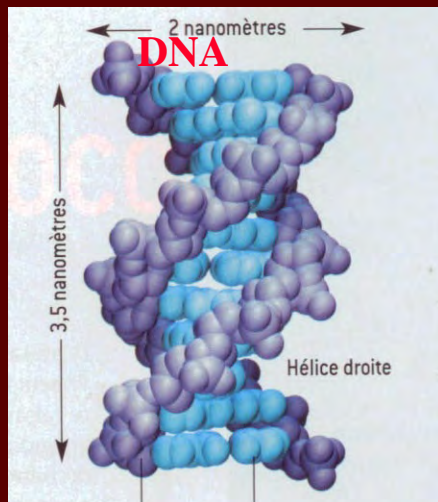
DNA

Semantic association

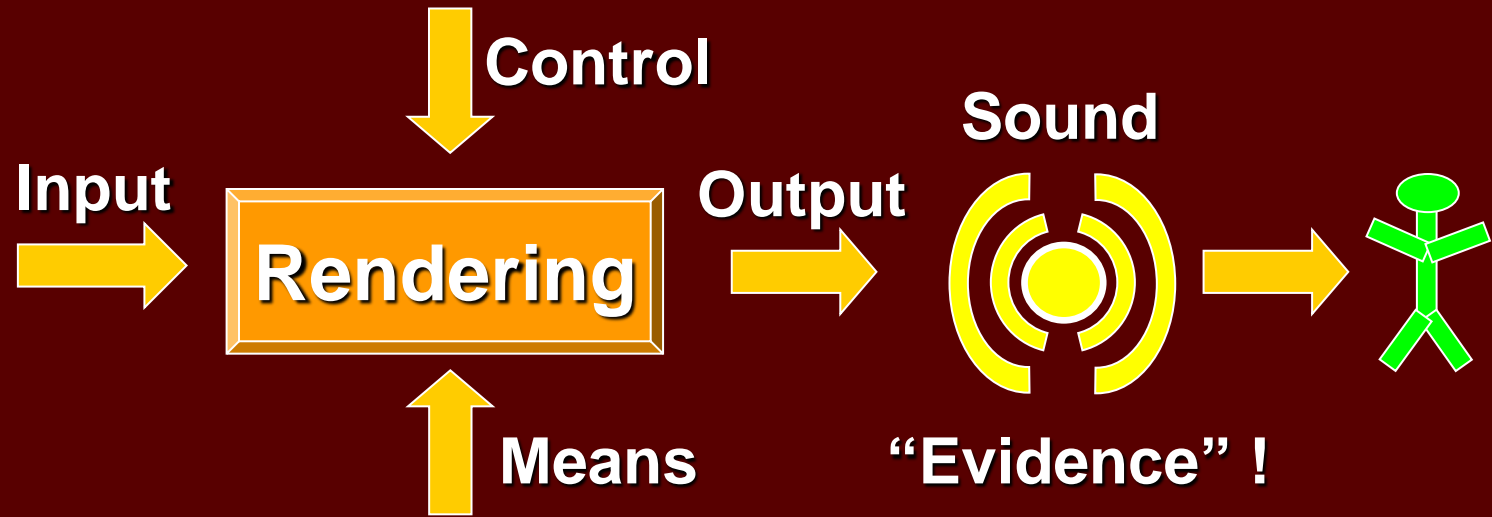# Generalisation

Structure of the presentation

1. The Objectives of the project
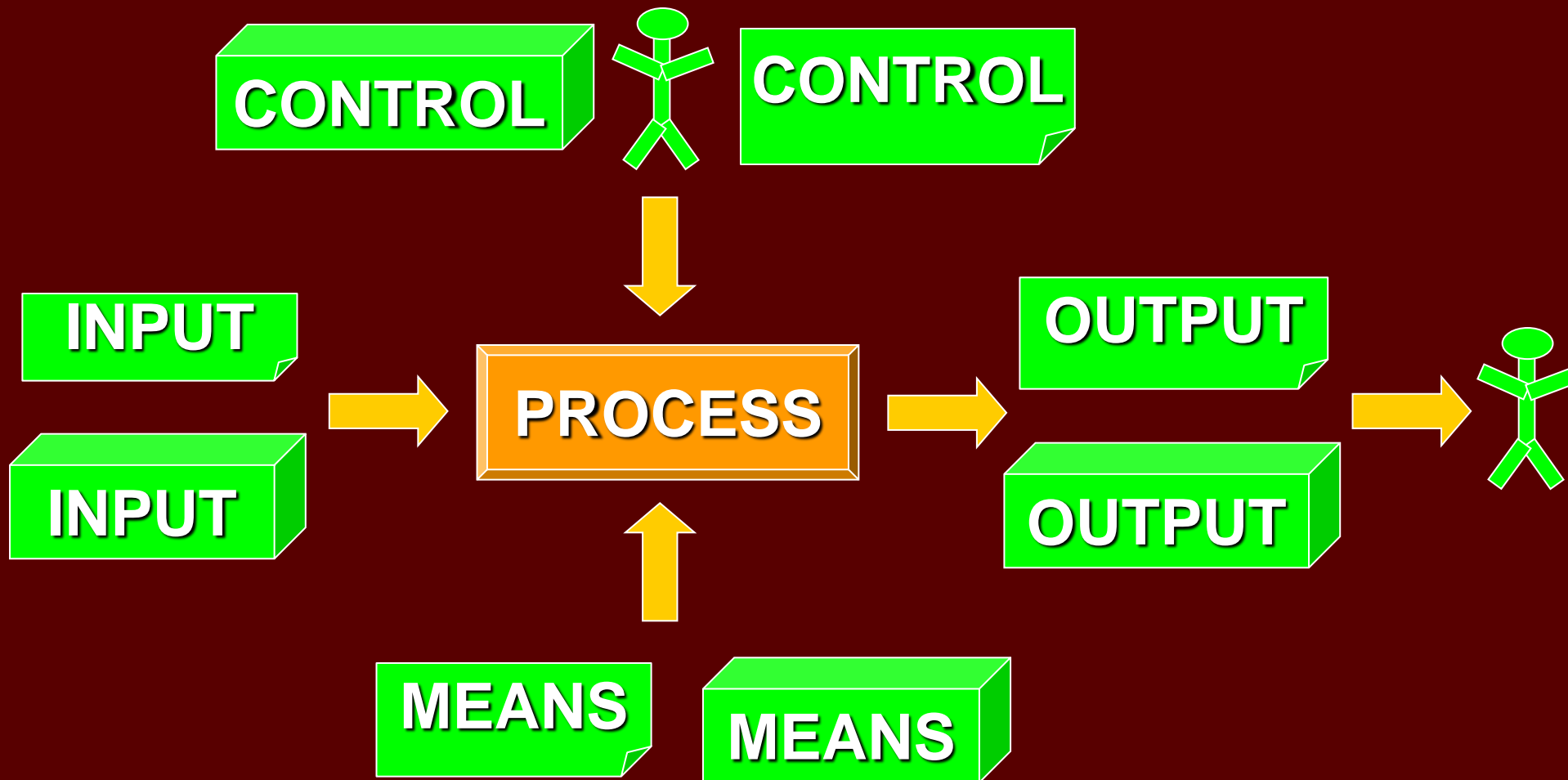2. The Media Chain
3. The Consortium
4. The intended Dissemination

3.   Consortium
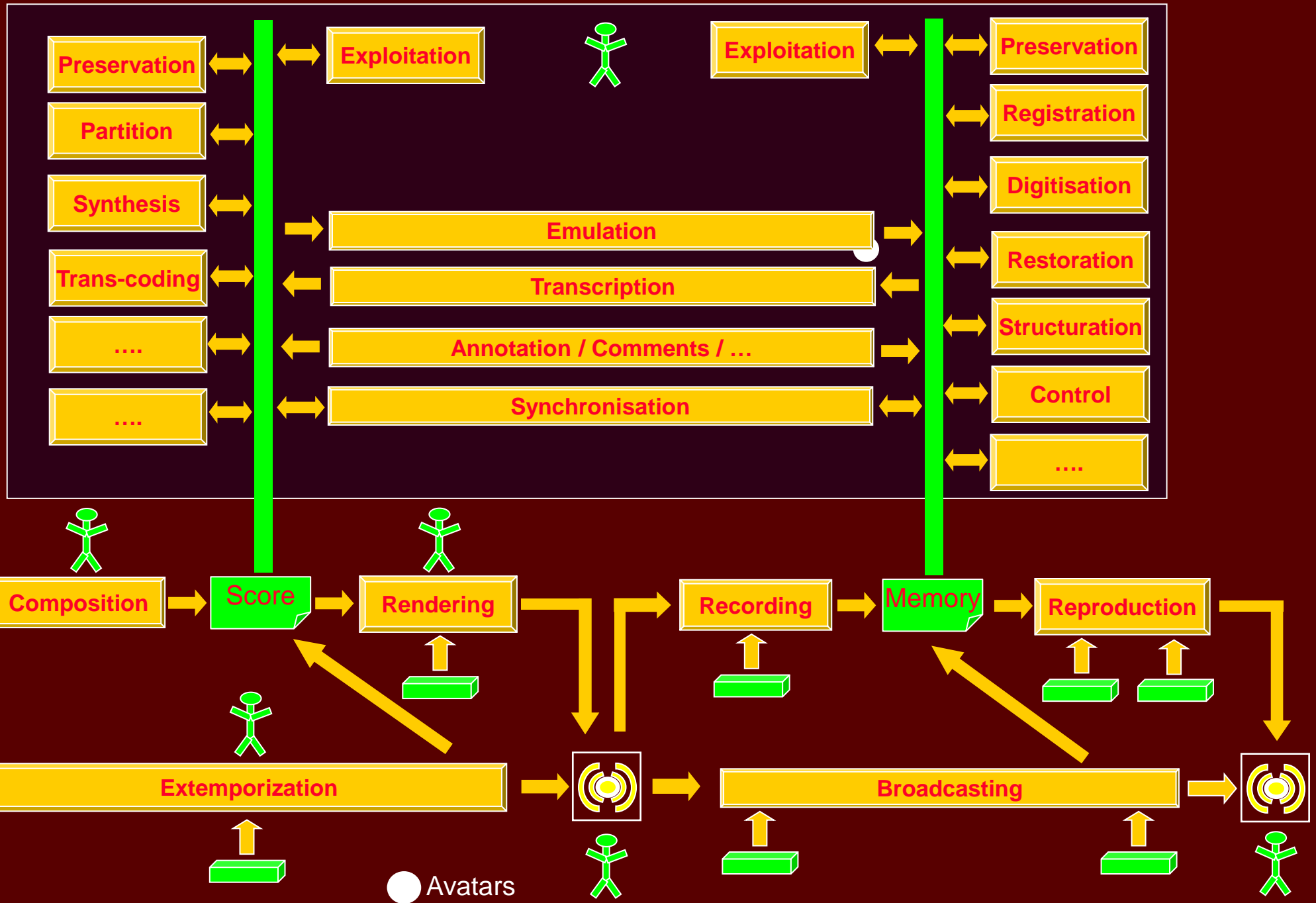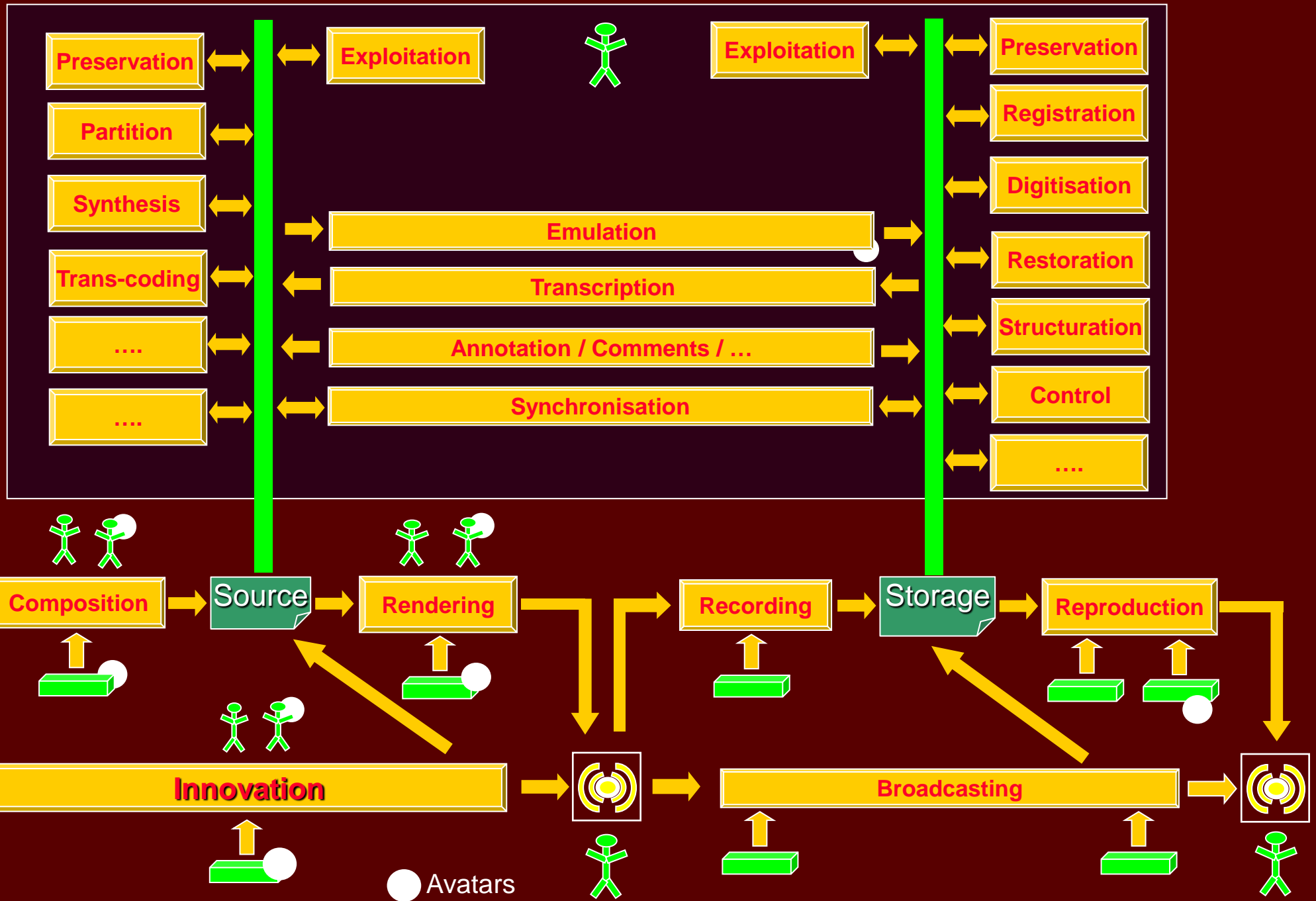
1. **Sound Services:**   **MEMNON (*Project coordinator*)**

2. **Users:**   **Radio Suisse Romande (RSR)**

    Norwegian Institute of Recorded Sound (NIRS)

    UNESCO

3. **IT suppliers**   **MIST**

    Israel Institute of Technology (Technion)

    PubGene

3. Consortium *(Main target results)*

1. **"Single Sensor Source Separation"** General Software Library   **MIST**
   Technion

2. **"Advanced Information Searches"** General Software Library   **PubGene**

3. Open licensing of the exchange format **"AXIS"**   **MEMNON**
   UNESCO

4. Ontological and Semantic Profiles   **RSR**
   NIRS
   UNESCO
   MEMNON

5. Services for Sound acquisition, valorization and exploitation   **MEMNON**

6. Autonomous Asset Entities (~ 3 000 hours of sound archives)   **RSR**
   NIRS
   UNESCO

3. Consortium *(Collaborations)*

memories intends to initiate contacts with the EU projects having the OAIS reference model in sight, in particular:

- Digital Preservation Europe (DPE)
- PLANETS
- CASPAR
- MultiMatch
- Delos
- PrestoSpace

In the domain of sound, contacts will be made with the **EASAIER** project for investigating the possibilities of precompetive collaboration.

The possibility of collaboration with **BRICKS** will be analyzed.

memories has strong contacts with the **IASA**

(The International Association of Sound & Audio-Visual Archives)

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1. The Objectives of the project
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4. The intended Dissemination

The intended dissemination policy is based on:

- **Open licensing, via the UNESCO, of the definition of**
  - The **PROFILES**
  - **AXIS**
  - A Tool kit

- **The commercial exploitation of**
  - The **GSL** for **SSSS**
  - The **GSL** for **AIR** and associated "*Knowledge harvesting System*"
  - The Media acquisition system (*generator of AAE*)
  - The Profile Editor
  - …

Thank you!   Questions?

Goals and first results of the **memories** *project*

***An open , tailorable and persistent system for
Audio acquisition, exploitation and archiving***

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