

Une introduction à AXIS

An introduction to AXIS

Une conférence organisée par l'ASBL



dans le cadre de l'



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Forum



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Actualités



Photothèques



Glossaires



Contacts



**Présentation générale de
l'architecture d'AXIS**

**General presentation of the
AXIS architecture**

Acquisition, eXchange, Indexing, Structuration

Structure of the presentation

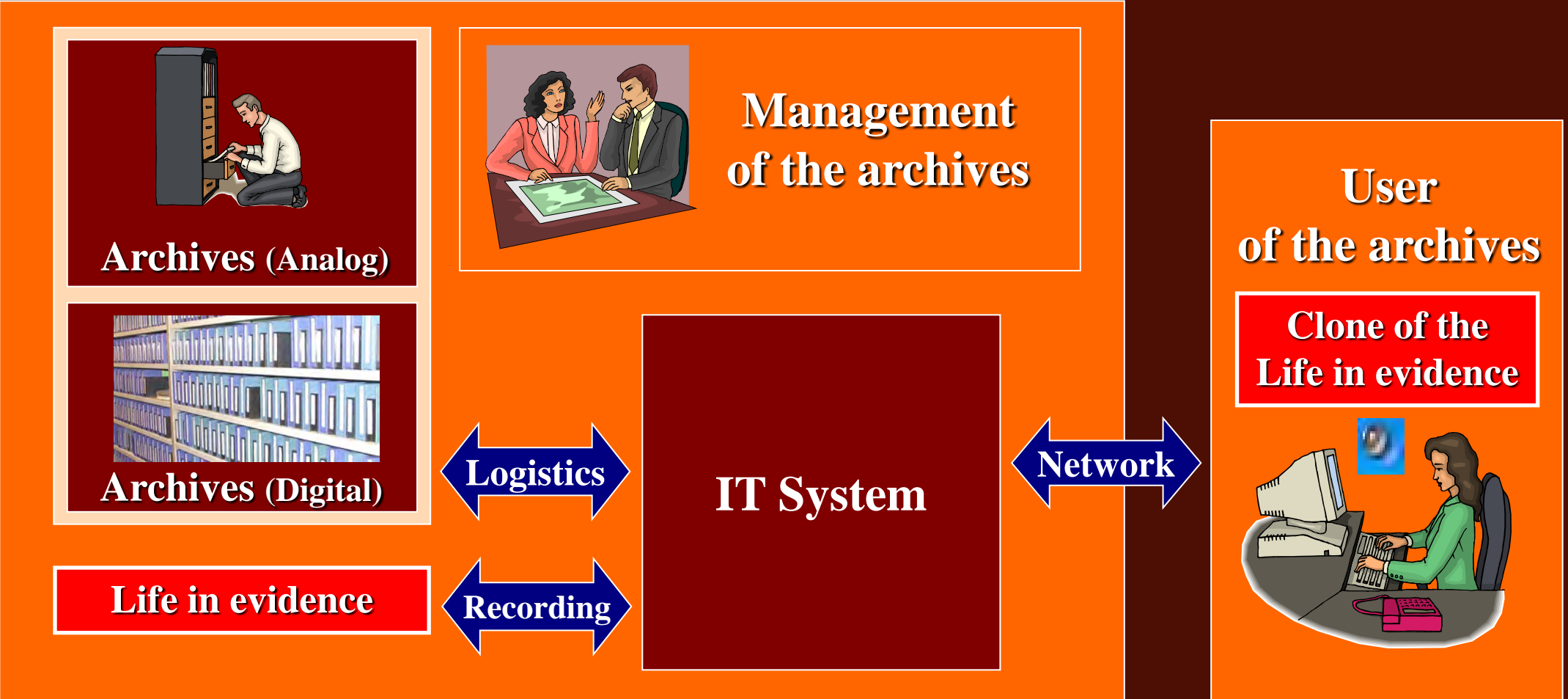
- 1. Missions & Requirements**
- 2. An architectural approach**
- 3. The AXIS key features**
- 4. The “Open Licensing of AXIS” by TITAN**
- 5. Conclusions & Acknowledgements**

Structure of the presentation

1. Missions & Requirements
2. An architectural approach
3. The AXIS key features
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5. Conclusions & Acknowledgements

1. Missions & Requirements

How should the 'Management of the Archives' organize the IT System to valorize the archives and to meet the requirements of the users ?



1. Missions & Requirements (Users)

The users want to find interesting media material

- That they can listen to
- With good quality of audio, video, image, text, ...
- Easy & cheap to access
- They can acquire rights to exploit, to enrich, to improve, ...
- Through a large variety of network channels
- With large semantic annotations
- With association and synchronization of other content
- ...

User
of the archives

Clone of the
Life in evidence



1. Missions & Requirements (**Contents**)

The ‘Contents’ are those excerpts of the social live which have been selected for recording.

They are the ‘Original Information Packages’

They require

- That they should be captured with the expected quality
- That they should be recorded with preservation of their existence, of their identity, of their authenticity, of their integrity, of their accessibility, of their availability...
- That they should be documented, indexed, ... in a fair, competent and ethic way

1. Missions & Requirements (Archives)

The Archives, as custodians of the social memory, require

- That they could easily be accessed and exploited
- That they will survive to the progressive physical degradation of their support
- That they will survive to the progressive evolution of the formats of representation
- That they will survive to the changes of the industrial policies
- That they will be semantically understood
- That the enrichments will be kept for further exploitations
- ...



Archives (Analog)



Archives (Digital)

1. Missions & Requirements (Management)

The management team should

- Meet the expectations of the User's and the various User's communities
- Meet the expectations of the Social communities as custodians of the archives

By ensuring

- The IT system for managing and exploiting the archives
- The persistence of the archives at a reasonable cost
- A technology watch
- ...



Management
of the archives

1. Missions & Requirements (Management)

The management team should not any longer accept to

- To become captive of “Proprietary Systems”
- To pay the price of “Exclusive” suppliers
- To suffer the “barriers” and “obstacles” in the flows of their processes
- ...



Management
of the archives

Structure of the presentation

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The conference is based on my involvement in many architectural works:

- The frame project **ARCADE** sponsored by **PHILIPS**, a contribution to **ISO TC-184**
- The frame project **CIMOSA** (**C**omputer **I**ntegrated **M**anufacturing based on an **O**pen **S**ystem **A**rchitecture)
A consortium project sponsored by the Commission of the European Union having led to 'SAP'
- The frame project **AXIS** (**A**cquisition, **eX**change, **I**ndexing & **S**tructuration) of the 'Non Profit Association' **TITAN**
- The **PAXOS** project and the derived services "Video & Audio Libraries"
A collaboration of Belgavox, INNA, MEMNON, Lsi-e and Logon-SI
- The **AIME** project
« Archivage Intelligent des Multimédia de manière Économique »
A collaboration of TITAN with the CIRTEF, Belgavox, inOvo and Minotaur
- The **RIMES** project
« Rushes Indexing Multimedia Exchange System »
A collaboration of TITAN with Skema, Panasonic, RTBF, the University of Compiègne, ...
- The **AIDAR** project
« Adressage & Indexation de Documents multimédia Assistés par des techniques de Reconnaissance vocale »
A collaboration of TITAN with Voice-Insight, the Brussels University, ...
- The **ADABLE** project
The Memnon project (en collaboration avec LSI-e) for the ASR project of the « *British Library* »
- The **ACE-Media** project (**A**utonomous **C**ontent **E**ntities- **M**edia)
A consortium project sponsored by the Commission of the European Union, under the leading of Motorola

2. An architectural approach (The need of a ‘red line’)

The current Information Technologies become mature!

The definition of ‘architectural directives’ becomes realistic!

Each large organization should define its own ‘strict guidelines’ and plan its concrete project having in sight:

- **The identification of the parts of the guide lines pertinent that specific concrete project**
- **The current situation and scenarios for a progressive convergence**
- **Several scenarios of evolution depending on constrains and plans**

2. An architectural approach (The need of a 'red line')

Many large public and private organizations have defined their own 'strict guidelines' and derived explicit requirements for their suppliers and own personal.

The 'Library of Congress' of the USA

The adoption of the METS, XML, ... as technical standards

The adoption of OAIS as reference model with as key entities the "SIP, DIP, AIP"

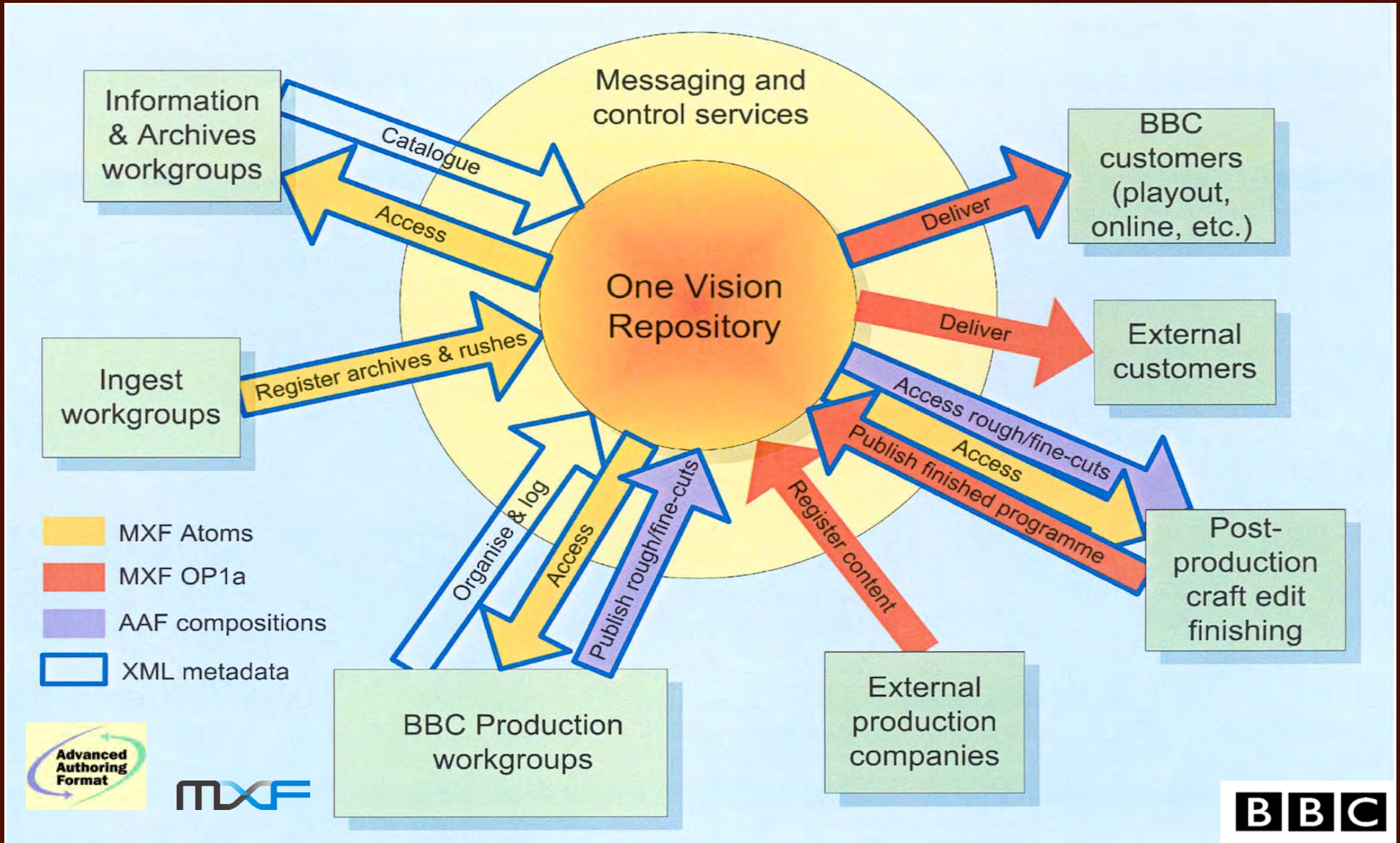
The BBC

The adoption of the MXF, AAF, XML, ... as technical and architectural standards

The CTO of the **BBC** M. John Varney:

"We will not use you as suppliers if you don't embrace the standards, if you don't embrace MXF,"

Key part of the 'strict guidelines' of the BBC: The implementation schema



2. An architectural approach (**Ten recommendations**)

The ‘strict guidelines’ have to be expressed by:

“POLICIES”

“TECHNOLOGICAL SPECIFICATIONS”

“STRUCTURAL & MANAGERIAL FACILITIES”

2. An architectural approach (Ten recommendations)

The ‘strict guidelines’ have to be expressed by:

“POLICIES”

The **POLICIES** are strategic directives and requirements framing and guiding the projects within the organization. It is more than a **MODEL** like the **OAIS**.

“TECHNOLOGICAL SPECIFICATIONS”

It is not enough to decide the adoption of policies. It is required to specify how to use **METS, XML, SIP, DIP, AIP, OAIS, ...** together to obtain consistent results.

For examples: **METS** or **MXF** could be used in a ‘**CLOSED**’ mode! It is also not obvious to combine **DCMI** with **RDF** to obtain the expected results! The definition of the rules for the identification of the assets is a complex problem!

“STRUCTURAL & MANAGERIAL FACILITIES”

It is not enough to decide the adoption of policies and technological specifications. It is required to set facilities to empower the realizations and to ensure the implementation of those policies and facilities.

2. An architectural approach (Ten recommendations)

I do suggest that you check your current **‘strict guidelines’** or construct / define them considering the following ten recommendations:

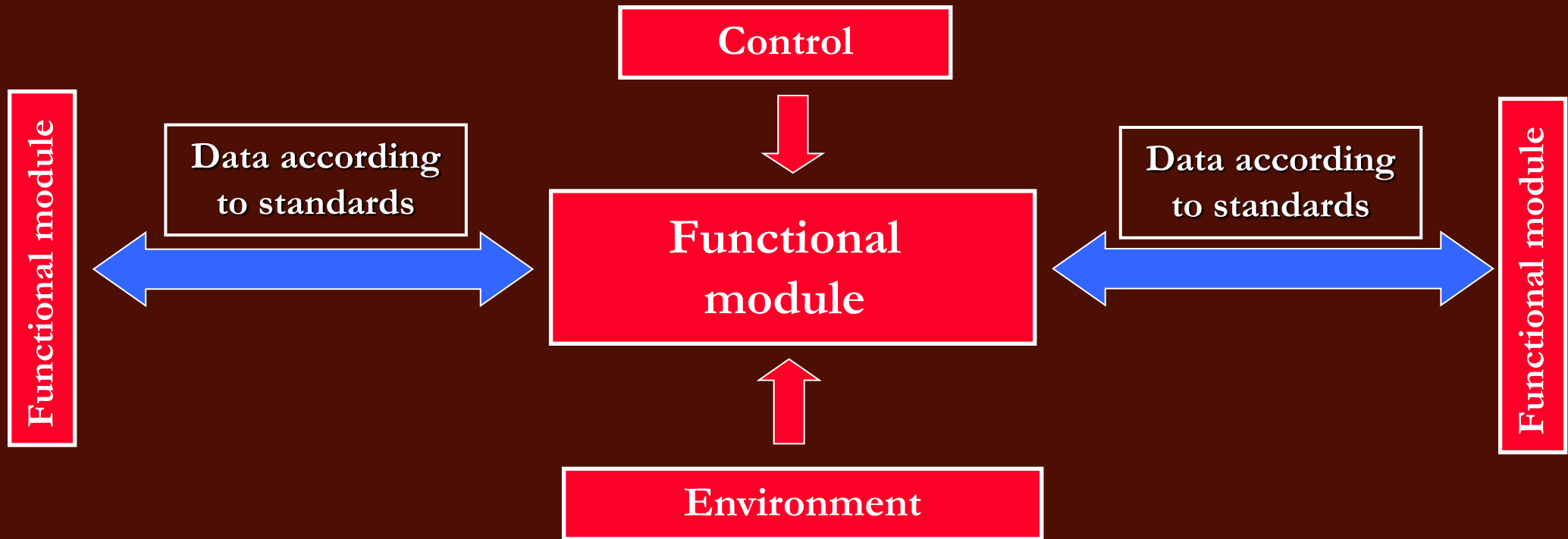
1. Use standards to have full control on the exchanges between functional modules
2. Adopt the SIP, DIP, AIP architecture of the OAIS model
3. Construct **‘Logical Entities’** from **‘Physical Entities’** using **‘Proxies’** & vice-versa
4. Plan the capacity to deliver the **DIP** through various channels
5. Trace always the **“Packages”**
6. Create **“Collection profiles”** to enable **“Autonomous Assets Entities”**
7. Create the **AIP’s** as sets of **“Autonomous Assets Entities”**
8. Manage the persistence of the **AIP’s**
9. Manage the off-line conservation of the **AIP’s**
10. Adopt the previous recommendations for your **“Functional modules”** and **“AIP’s”**

2. An architectural approach: Recommendation # 1 :

Use standards to have full control on the exchanges between functional modules

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Use standards to have full control on the exchanges between functional modules



- Domain of the industrial proprietary technologies
- Domain under control of the local organization

2. An architectural approach Recommendation # 1 :

Use standards to have full control on the exchanges between functional modules

By standards it is meant:

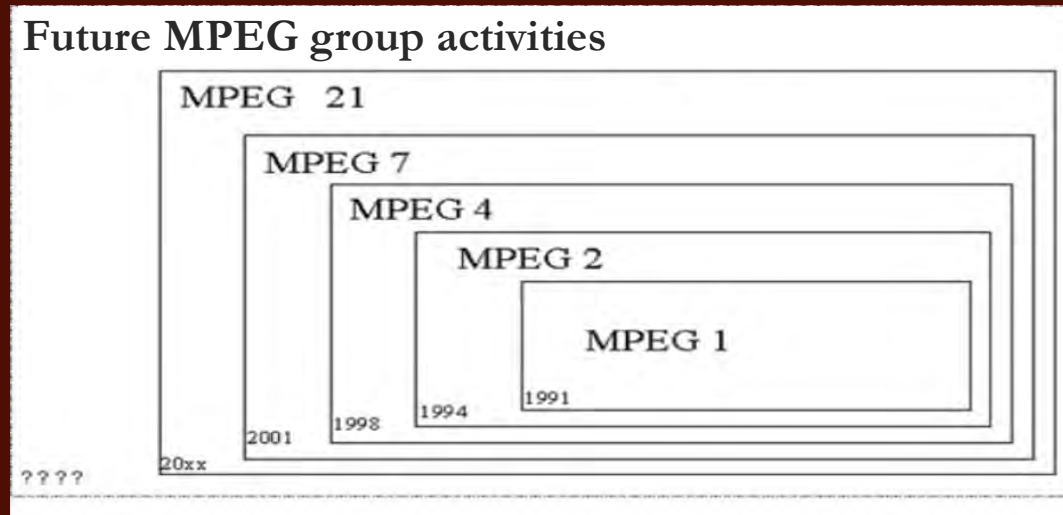
1. International standards (**ISO, ETSI, ...**)
2. National standards (**DIN, AFNOR, ANSI, ...**)
3. Industrial & Community standards
(DVD-R, CD-R, RDF, Dublin Core, OAIS, METS, MXF, AAF, ...):
They are standards backed by a large number of major actors of the domain
4. Industrial standards backed by 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.

The ISO MPEG group cares that each new MPEG standard is upward compatible and/or consistent with all previous MPEG standards:

MPEG 4 “understand” MPEG2 and MPEG1

MPEG 21 “manage” contents coded according to MPEG1, MPEG2 and MPEG4



The ISO MPEG group cares that each new MPEG standard is backed by the main actors of the IT industry through the



Pro-MPEG Forum



2. An architectural approach Recommendation # 2 :

**Adopt the SIP, DIP, AIP architecture
of the OAIS model**

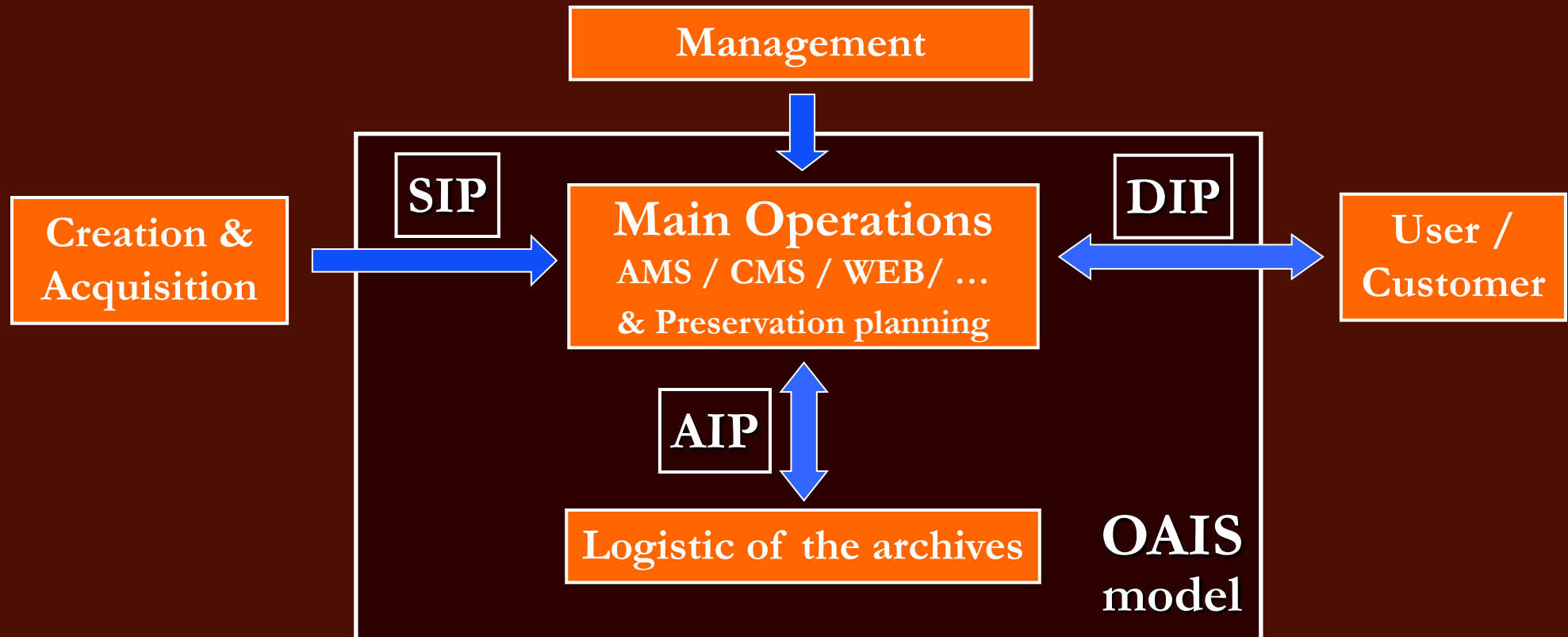
OAIS: Open Archival Information System

SIP: Submission Information Package

DIP: Dissemination Information Package

AIP: Archival Information Package

2. An architectural approach Recommendation # 2 : Adopt the SIP, DIP, AIP architecture of the OAIS model



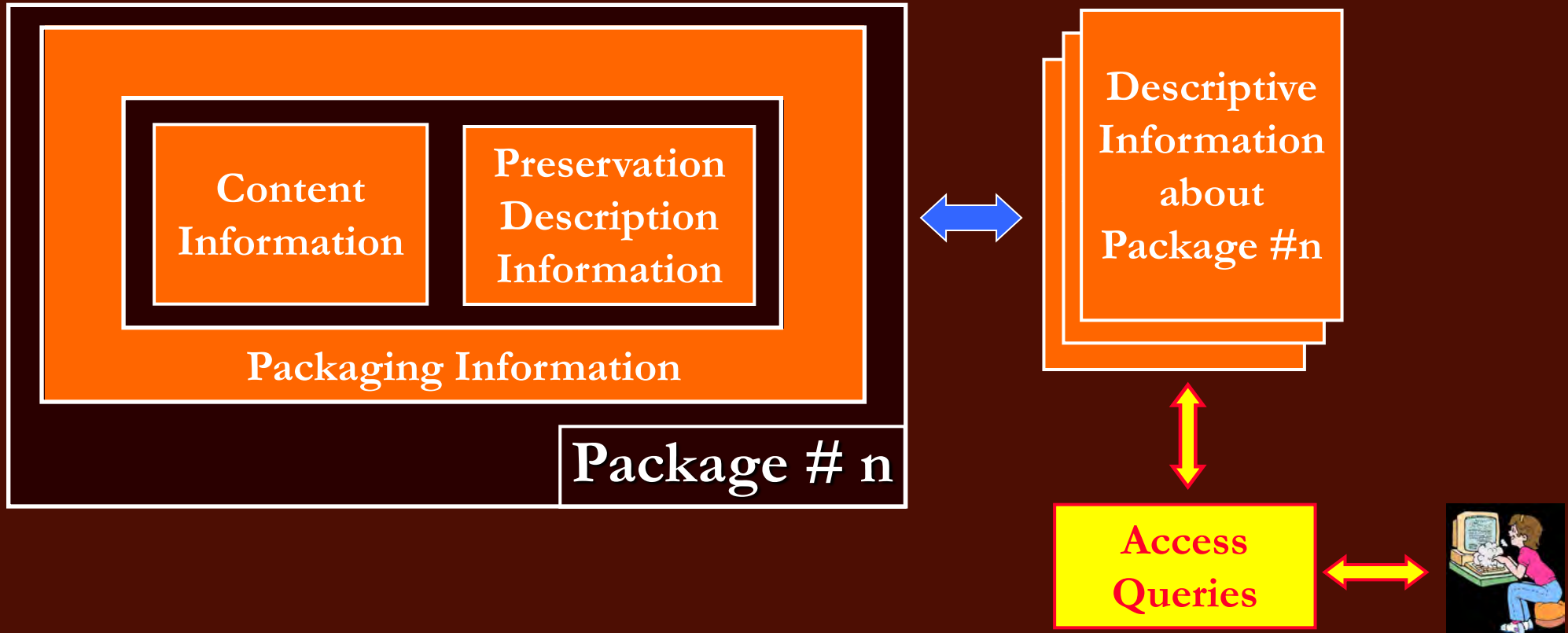
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**Information Package
 Concepts & Relationships**

2. An architectural approach Recommendation # 2 : Adopt the SIP, DIP, AIP architecture of the OAIS model

The detailed OAIS functional model

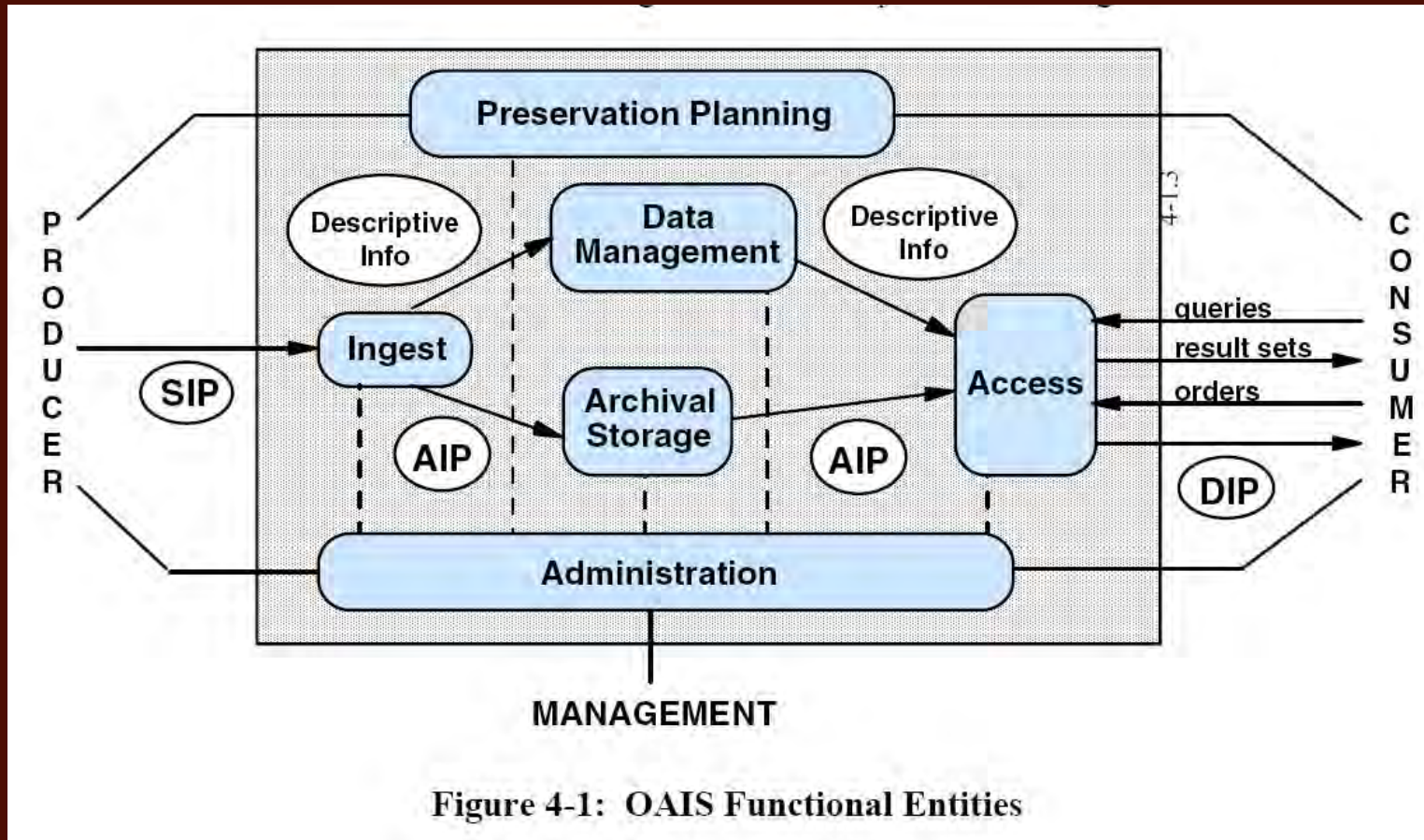


Figure 4-1: OAIS Functional Entities

2. An architectural approach Recommendation # 2 : Adopt the SIP, DIP, AIP architecture of the OAIS model

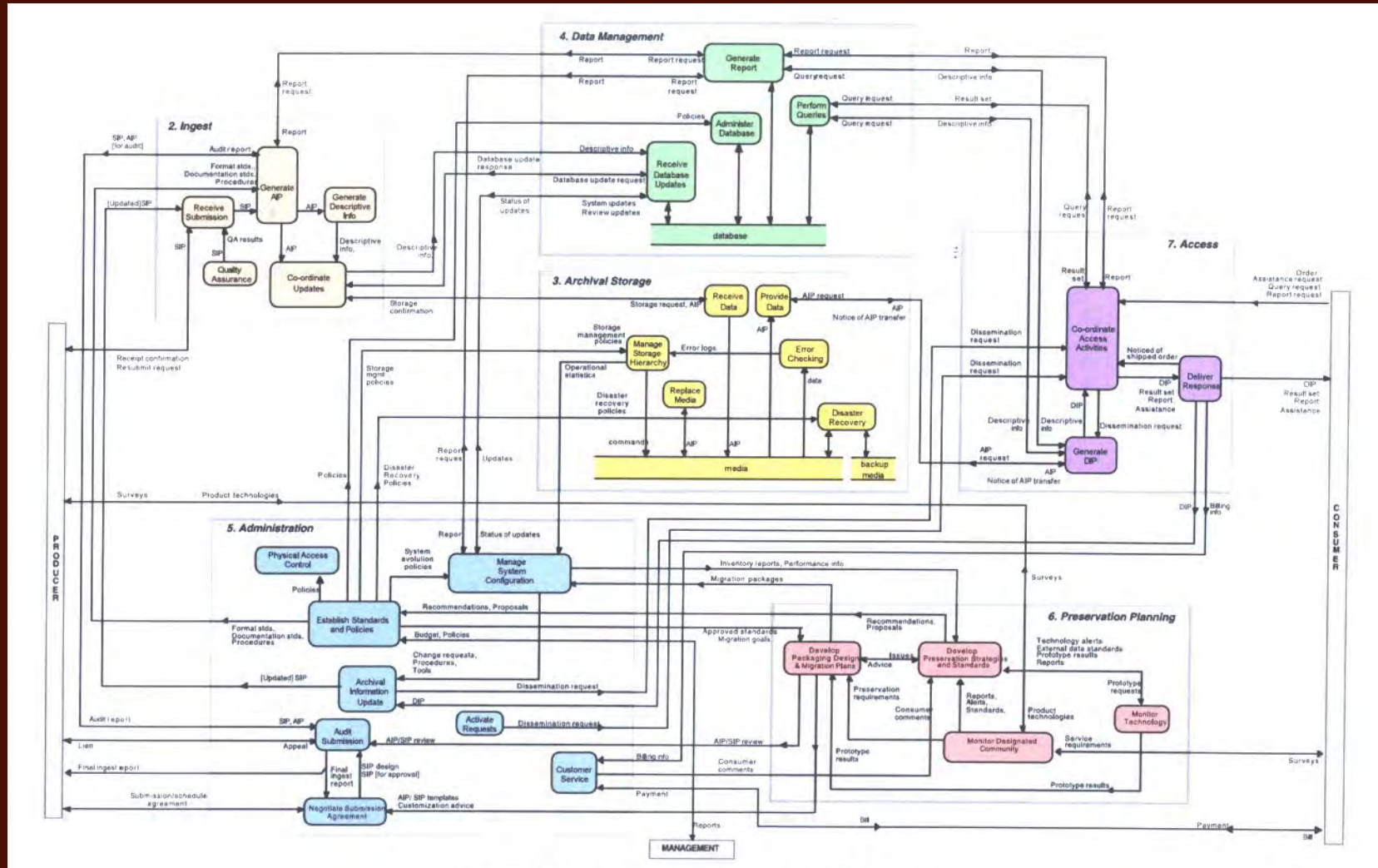


Figure F-1: Composite of Functional Entities

2.An architectural approach Recommendation # 3 :

**Construct ‘Logical Entities’ from
‘Physical Entities’ using ‘Proxies’
& vice-versa**

2. An architectural approach Recommendation # 3 :

Construct 'Logical Entities' from 'Physical Entities' using 'Proxies' & vice-versa

'Physical Entities'

are physical objects carrying 'Logical Entities' or part of them

'Logical Entities'

are semantic objects (*usually called 'OPUS' or 'Works'*) modeled and represented independently of any "data carrier"

2. An architectural approach Recommendation # 3 :

Construct 'Logical Entities' from 'Physical Entities' using 'Proxies' & vice-versa

For example:

- **On a Microgroove disk (Physical object) could be recorded pieces of music composed by W. A. Mozart and by J.S. Bach.**
Themselves, they could have two movements on face and the last one on the other face
The Microgroove disk have its metadata printed on its container
- **The “Toccata & fugue in d-moll of J.S. Bach is an ‘OPUS’ (Logical object) with three movements.**

2. An architectural approach Recommendation # 3 :

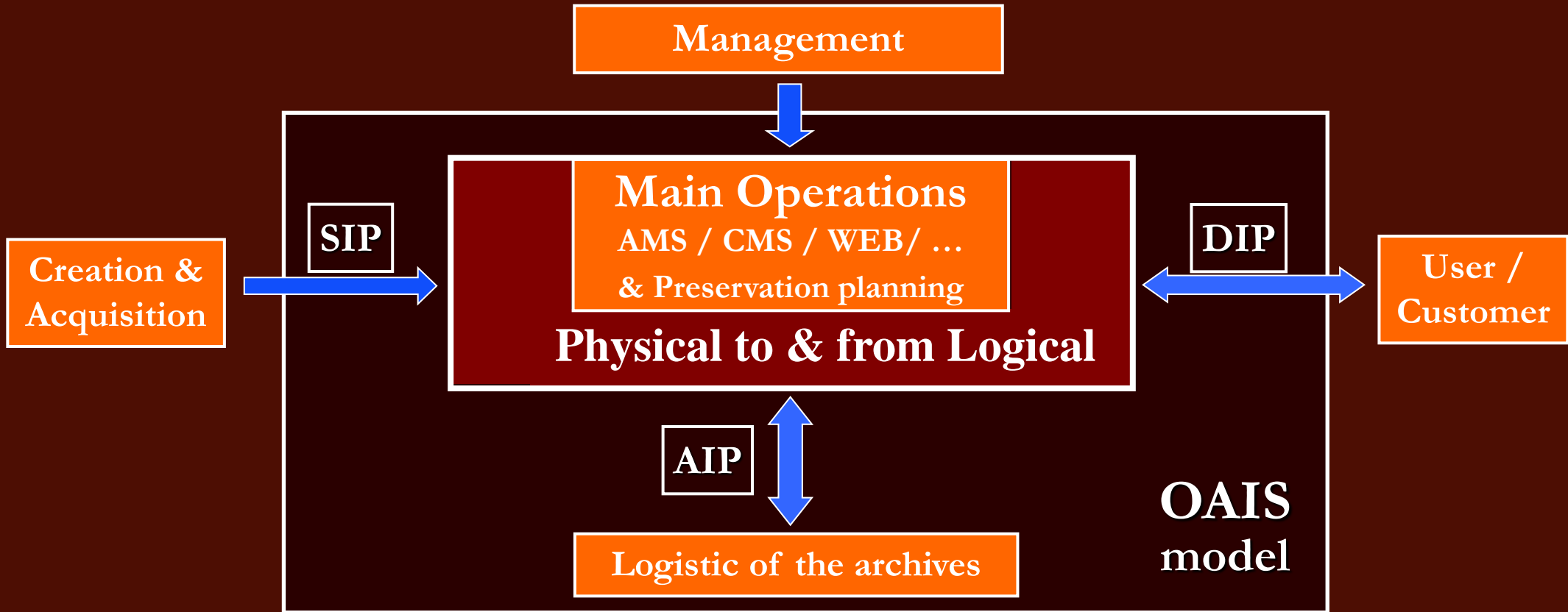
Construct 'Logical Entities' from 'Physical Entities' using 'Proxies' & vice-versa

- The most easy and general way to isolate, annotate and structure the Logical Entities is to use 'Proxies'.
- The Proxy represents the Physical Masters "one-to-one".
- A 'Clip Manager' generate a file expressing the fusions, prunings, segmentations, punctuations, structuring, annotations, ...
- The AIP's are structured according to the LOGICAL structure, i.e. each Package contains an integer number of Logical entities

Note: In the AIDAR project, a two pass process assists the Clip Manager for restructuring by
'Computer Aided Sound and Voice recognition'

2. An architectural approach Recommendation # 3 :

Construct 'Logical Entities' from 'Physical Entities' using 'Proxies' & vice-versa



OAIS: Open Archival Information System

SIP: Submission Information Package

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AIP: Archival Information Package

2. An architectural approach Recommendation # 4 :

**Plan the capacity to deliver the DIP
through various channels**

2. An architectural approach Recommendation # 4 : **Plan the capacity to deliver the DIP through various channels**

The core of the IT system should allow that the DIP could be delivered in many different channels or carriers.

This means ‘open-ended-ness’

For example:

By Internet through WEB sites

By Internet through FTP

By Broadcast

On nomadic carriers (DVD's, CD-Audio, ...)

**If the AIP's are structured according to the
‘Logical Entities’, that flexibility is a ‘build-in’ !**

2. An architectural approach Recommendation # 5 :

Trace always the “Packages”

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All ‘Packages’ imported or exported in or from the operational units should be traced for existence, channels, carriers, property rights, usage rights, occurrences of use, ... :

Examples of concrete approaches:

The MPEG-21 standard

The Certificates of Traceability

The steganographic Water Marking

2. An architectural approach Recommendation # 6 :

**Create “Collection profiles” to enable
“Autonomous Assets Entities”**

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Create “Collection profiles” to enable “Autonomous Assets Entities”

A ‘Collection Profile’ defines how to bundle several standards to construct representations of the information having specific properties in mind.

The ‘**Autonomous Assets Entities**’ are instances of ‘Collection Profiles’ defined by standards

Example of a concrete ‘Collection Profile’:

The combination of the use of

MPEG-4, RDF, Dublin Core, SMIL, ID3, XML, MPEG21, UDF, PDF ...

The concept of AAE is the essential component of the management of the persistence and of the flexibility in exploitation.

2. An architectural approach Recommendation # 7 :

Create the AIP's as sets of
“Autonomous Assets Entities”

2. An architectural approach Recommendation # 7 : Create the AIP's as sets of "Autonomous Assets Entities"

The 'ARCHIVES' are usually organized per type of files or per proprietary 'Back-up' format and the preservation plan is simply the conversion of formats per type of file.

The Assets Management System should organize or construct the 'Archival Information Packages' as structured sets of 'Autonomous Assets Entities'.

The advantage is that the PERSISTENCE construction can be enabled, immediately or later! This will be developed by the recommendation # 8.

2. An architectural approach Recommendation # 7 : Create the AIP's as sets of "Autonomous Assets Entities"

The 'AIP' is organized as a mini-module including all information pertinent for one or more OPUS's:

- **OPUS**
 - Clip
 - Package
 - Project
 - Resources
- **MEDIA**
- **REPOSITORY**
 - Profiles
 - Thesaurus
 - Identification

2. *An architectural approach Recommendation # 8 :*

**Manage the persistence of the AIP's
through the AAE's**

2. An architectural approach Recommendation # 8 : Manage the persistence of the AIP's through the AAE's

The elaboration of the “Preservation planning” is not obvious!

The ‘**Archival Information Packages**’ are usually spread on a large variety of carriers. The persistence requires re-bundling tools, to be used when a need to access is expressed!

An active technology watch based on “Collection Profiles” is far better! It prevents

- The obsolescence of the carriers
- The obsolescence of the formats
- The consequences of the changes of policies of the suppliers

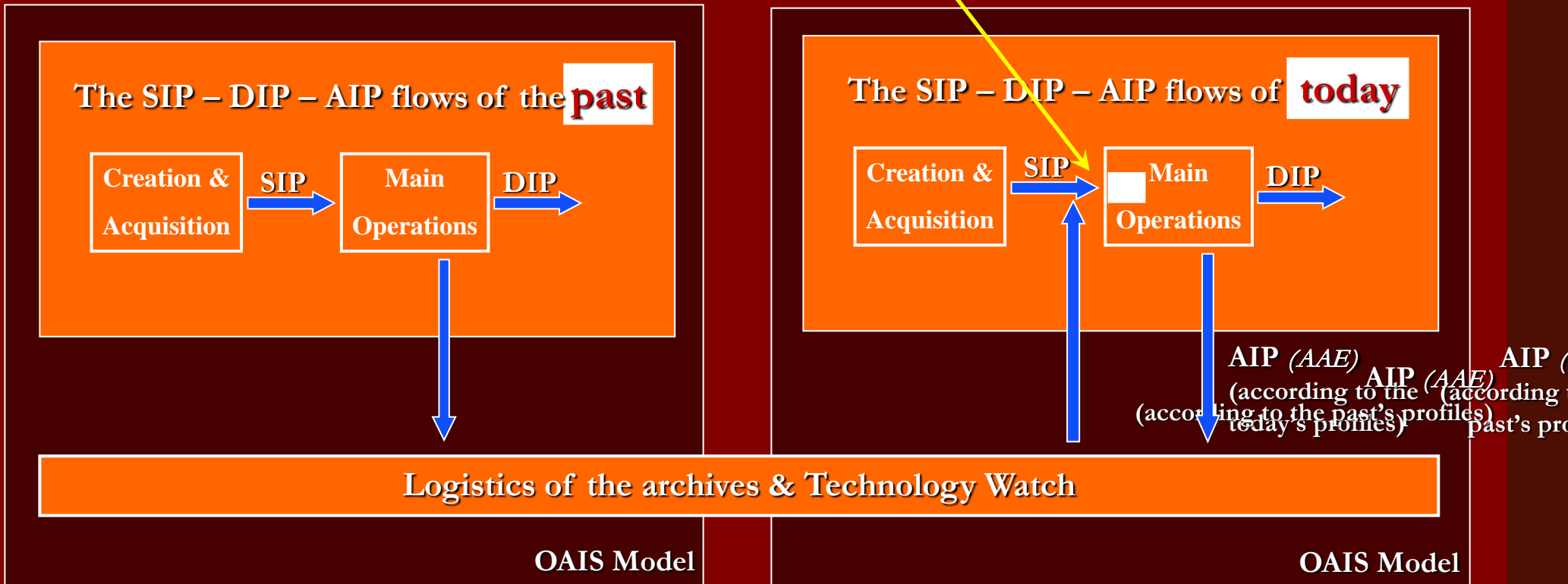
The active technology watch based on such an approach simplifies and automates the construction of the persistence!

The theoretical grounds of that assurance are now well known: see references at the end (**ISO/IEC ISP 35100 & ULB paper on layering**).

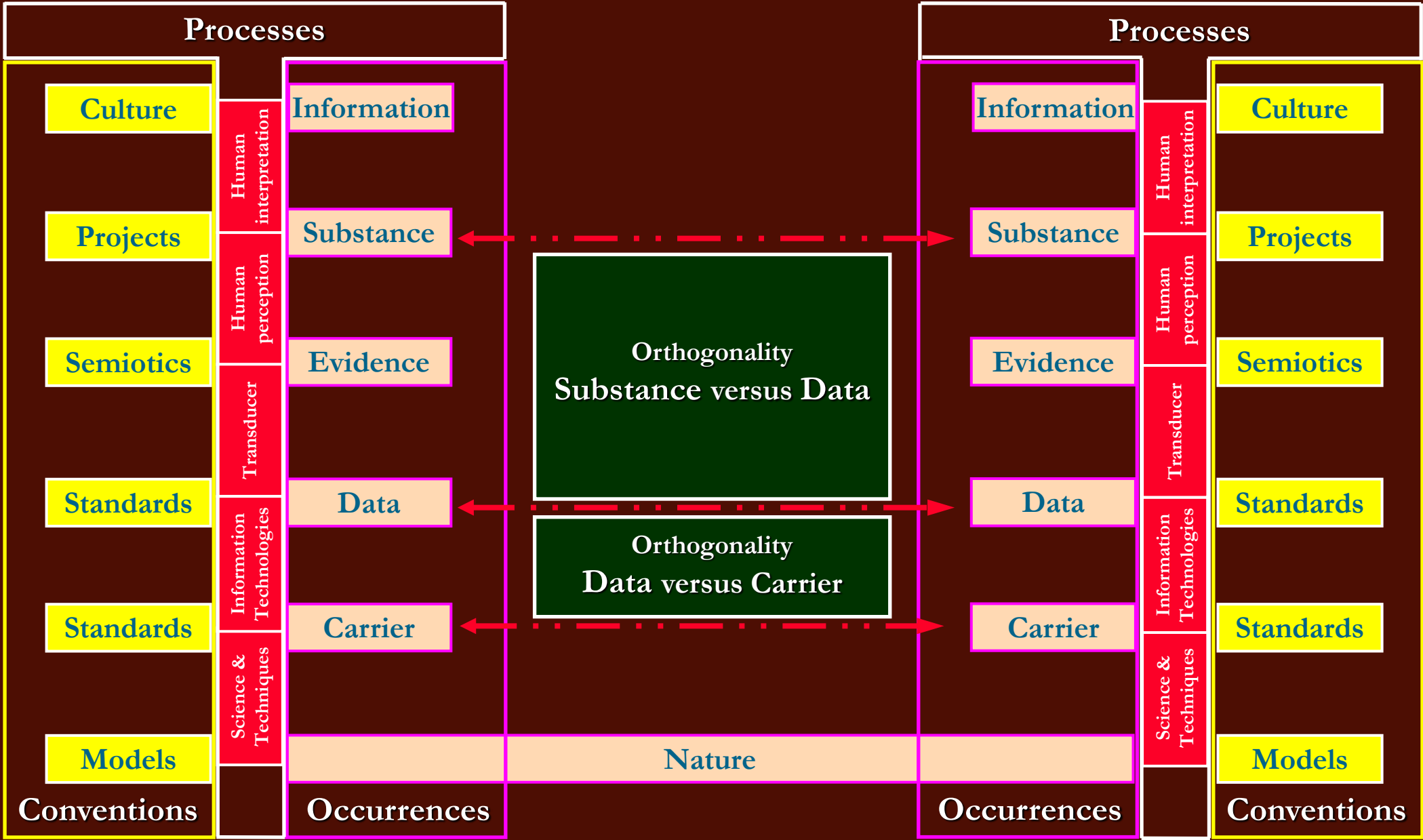
2. An architectural approach Recommendation # 8 : Manage the persistence of the AIP's through the AAE's

Check of the AIP (AAE) against past profiles

Transcoding to the new profiles with zero, or better negative, entropy loss



OSI approach (ISO/IEC ISP 35100) adapted to the AIP being AAE's



2.An architectural approach Recommendation # 9 :

Manage the off-line conservation of the AIP's

2. An architectural approach Recommendation # 9 : Manage the off-line conservation of the AIP's

The 'Archival Information Packages' should be generated in several nomadic copies (DVD's, Tapes, ...) for redundancy

An Active Remote Center should manage 'near-on-line' archive service in area adapted for the correct conservation of the carriers.

The identification system of the AIP's should be based on three independent identifiers:

- Carrier identifier
- Contents identifier
- Location identifier

2. An architectural approach Recommendation # 10 :

**Adopt the previous recommendations for your
“Functional modules” and “AIP’s”**

2. An architectural approach Recommendation # 10 :

Adopt the previous recommendations for your “Functional modules” and “AIP’s”

The key concept is to construct all the ‘Functional Modules’ as Autonomous Entities which manage as well the

- The ‘Autonomous Assets Entities’
- The ‘Packages’ and
- The local Repository of the used standards (including the profiles)

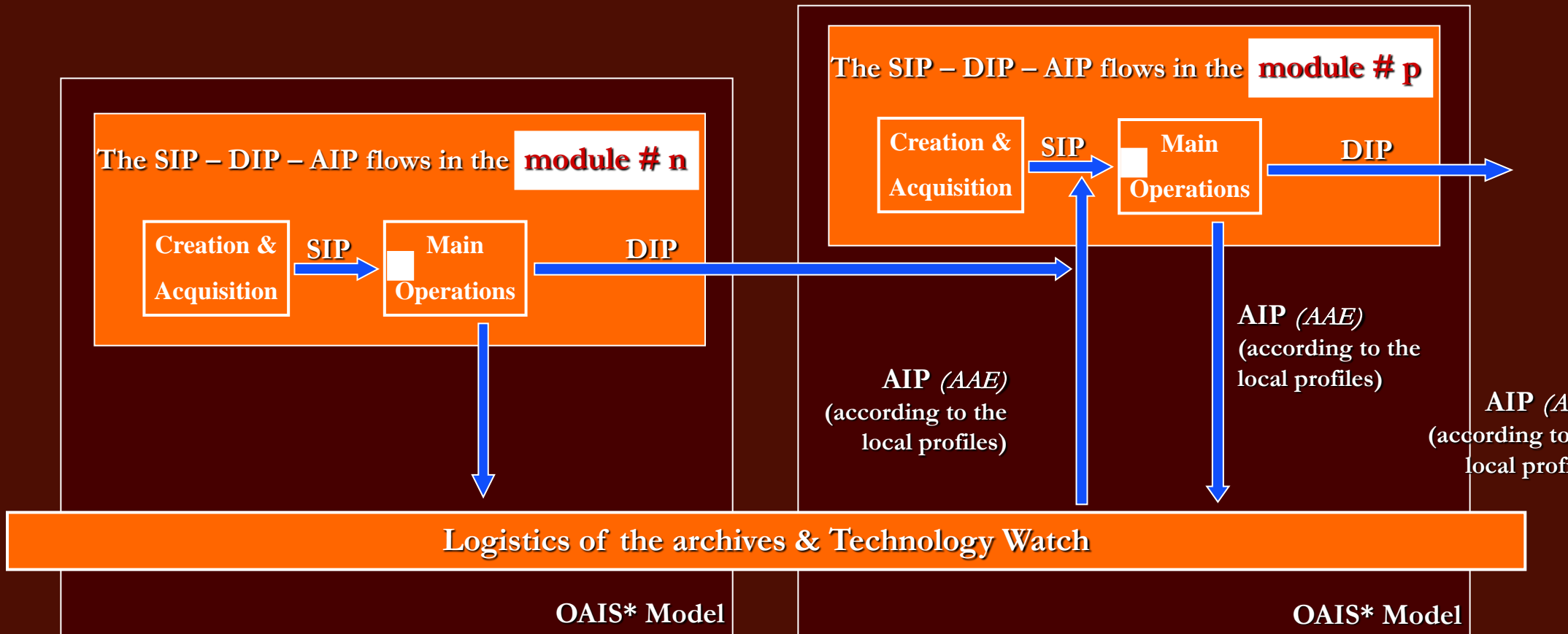
The ‘Functional Modules’ are ‘Active Functional Modules’, including the ‘Acquisition’.

The ‘Archival Information Packages’ are ‘Passive Functional Modules’

2. An architectural approach Recommendation # 10 :

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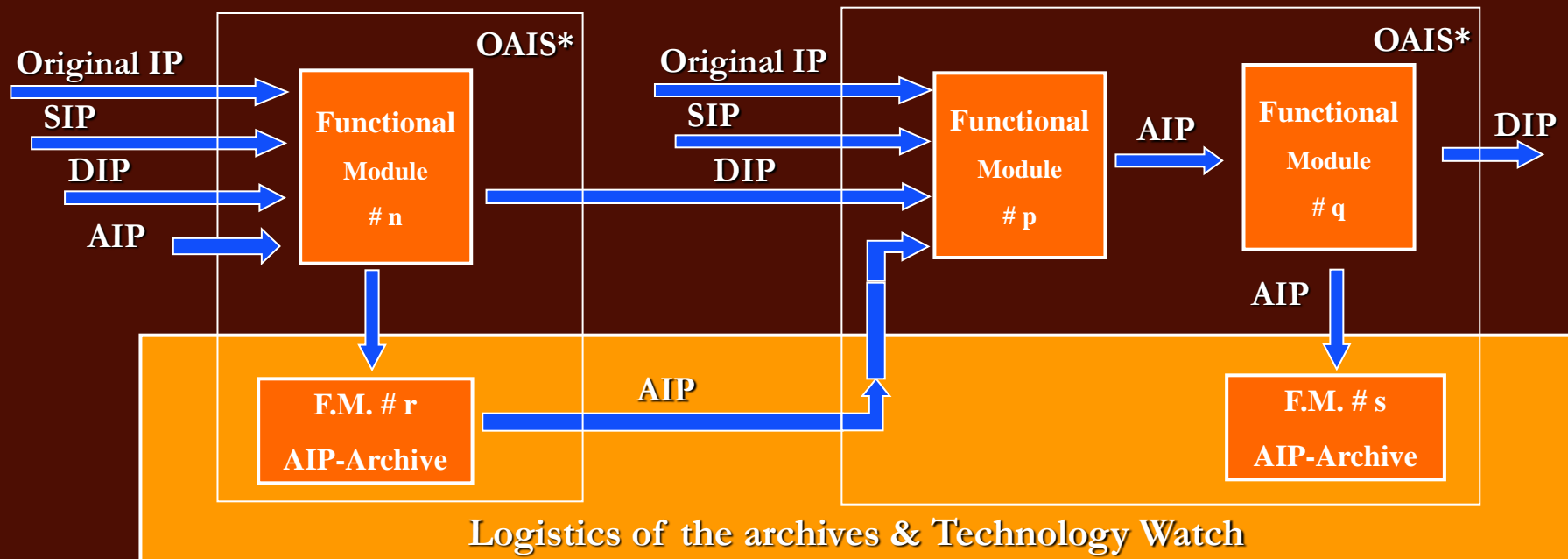
What is applied for transfer from the “PAST” to “TODAY” in the recommendation 8, can be applied to the transfer between “MODULES”



2. An architectural approach Recommendation # 10 :

Adopt the previous recommendations for your “Functional modules” and “AIP’s”

Generalization : Handling of the Original IP’s



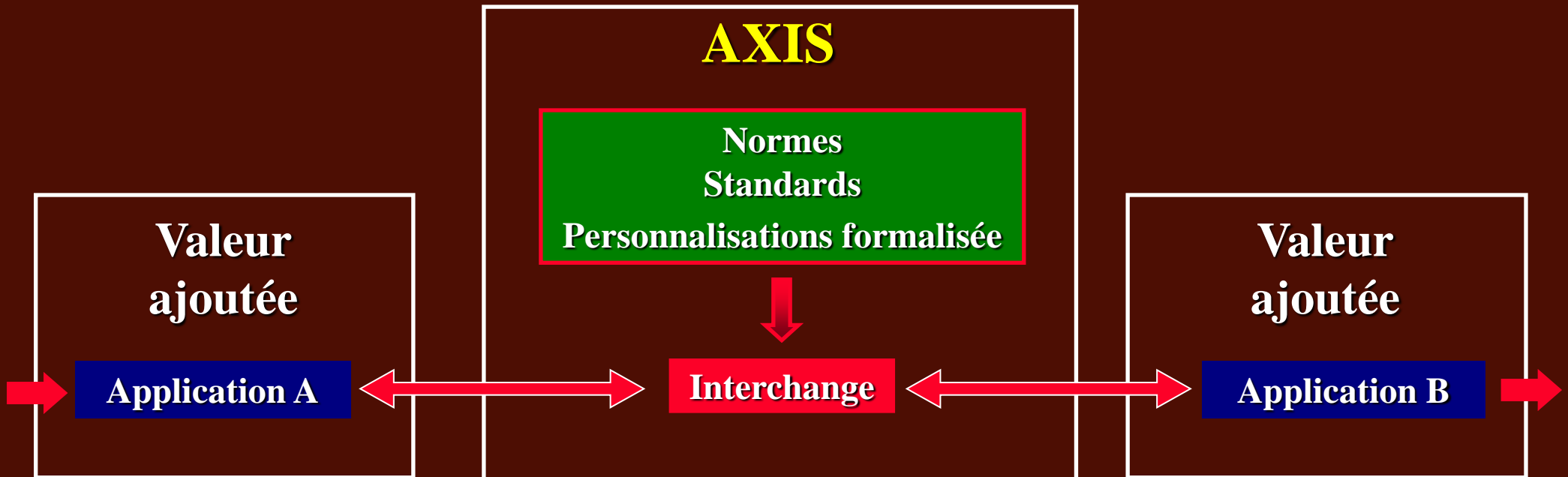
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Acquisition, eXchange, Indexing, Structuration

AXIS : Une 'interaction' basée sur des définitions formelles



AXIS Platform

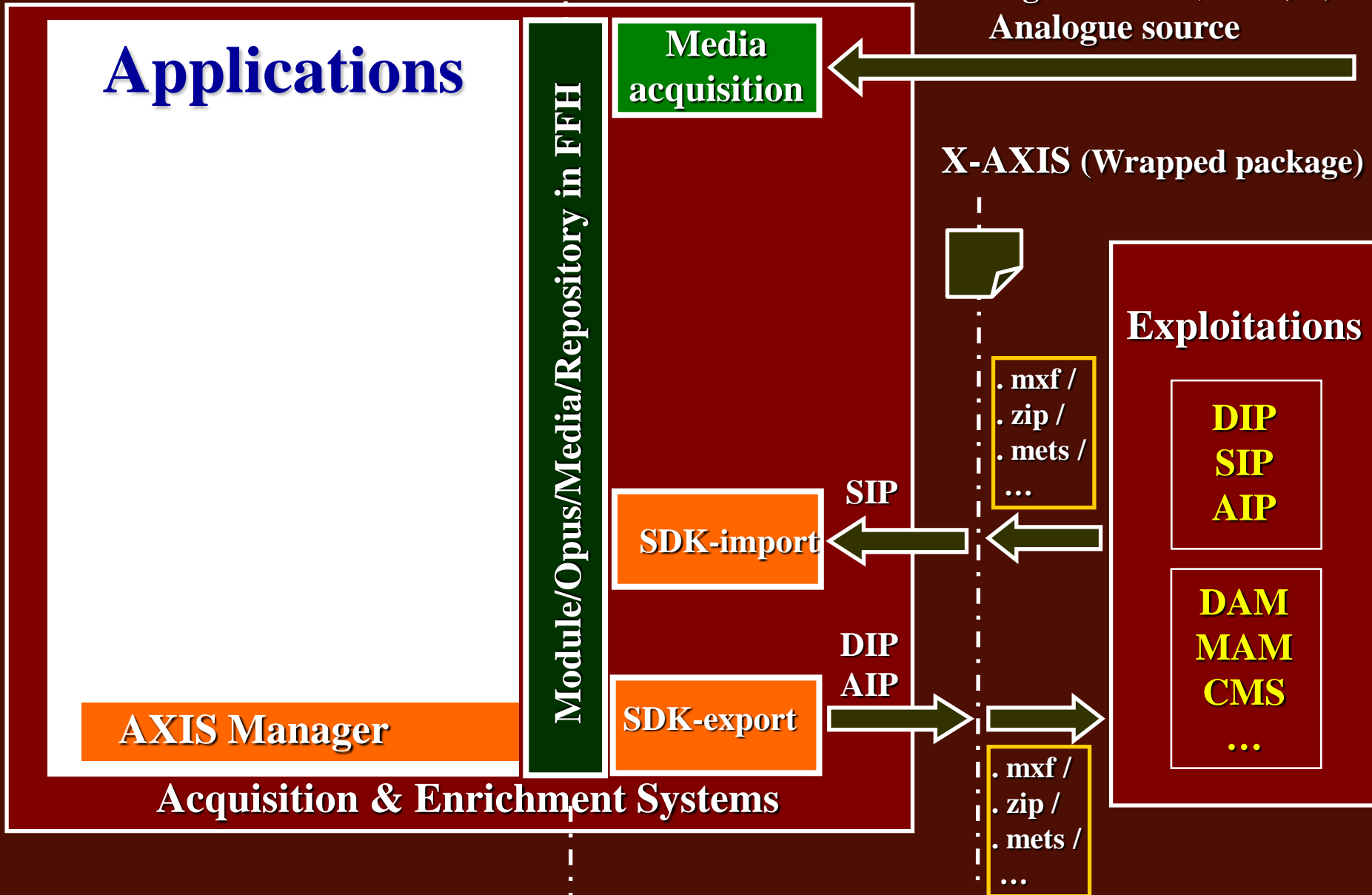
X-AXIS (FFH)

OIP

Original Information Package

Digital source (Camera, ...)

Analogue source



Les « Entités » d'AXIS

Dans AXIS tout ce qui peut être considéré comme une ressource (*au sens du RDF*) est représenté sous forme d'une 'ENTITE' :

- Chaque 'unité' de *travail* ou d'*interchange* est une entité du type : **MODULE**
- Chaque MODULE est accompagné des information de compréhension, de persistance, des méta-méta définitions, ... pertinents pour ce MODULE dans une entité du type : **REPOSITORY**
- Les '*représentation audio, vidéo, image, texte, modèle 3D, ...*' est une entité du type :
MEDIA
- Chaque '*représentation d'une intention*' est une entité du type : **OPUS**

Les « Entités » d'AXIS

Chaque '*représentation d'une intention*' est une entité du type : **OPUS**

Les OPUS peuvent être représentés par cinq aspects orthogonaux :

- Une entité permettant d'identifier, définir, structurer, indexer, synchroniser, ... les processus prévus pour réaliser l'OPUS : Cette entité est du type : **PROJECT**
- Une (ou plusieurs) entité(s) permettant d'identifier, définir, structurer, indexer, synchroniser, ... un ou plusieurs MEDIA : Cette entité est du type: **CLIP**
- Une (ou plusieurs) entité(s) permettant d'identifier, définir, structurer, indexer, synchroniser, ... les moyens nécessaires à la réalisation de l'OPUS : **RESOURCE**
- Une (ou plusieurs) entité(s) permettant de définir, protéger, tracer,... les exports et imports du MODULE, exprimés comme des projets en soi (la définition d'un AIP, d'un SIP ou d'un SIP, ...) d'un OPUS (dans le cas des AEE, c'est l'OPUS cible) : **PACKAGE**
- Une (ou plusieurs) entité(s) du type : **OPUS**

Les « NORMES ARCHITECTURALES » d'AXIS

Les normes de l'**ossature** d'AXIS sont les suivantes:

1. OAIS (ISO, CCSDS)
2. Dossiers, Fichiers, Hyperliens (Normes ISO)
3. XML / XSD (ISO, W3C)
4. Dublin Core Metadata Initiative (DCMI, W3C, JISC, ...)
5. RDF (W3C)
6. SMIL (W3C)
7. MXF (SMPTE, ANSI, ISO)
8. METS (MARC Standards Office, W3C)
9. ZIP (ADOBE / ANSI Standards)

Le concept de “ **PLANE** ” dans AXIS

Dans une ‘ENTITE’, des data sets peuvent être instanciés :

- En plusieurs langues (L)
- En plusieurs qualités de représentation (Q)
- En plusieurs formats (normes/standards) (F)

Chaque instance fait partie d’un ‘plane’ qui reçoit un attribut LQF.

Exemples : La même information pourrait être disponible en français et en anglais ;
Le même son pourrait être disponible à divers niveaux de qualité dans le même format ;

Le même son pourrait être représenté dans divers formats.

Le concept de ‘plane’ permet d’activer des ensembles cohérents de données dans contexte des spécificités de mise en œuvre de chaque projet.

Le concept de “ **PROFIL** ” dans AXIS

En choisissant un ensemble de formats de représentation, avec un choix de paramètres, l'on obtient la capacité de représenter l'information pour une classe d'applications; de nombreux usages sont possibles. Ce choix s'appelle un 'profil'.

Exemple du profil noyau d'AXIS :

<http://www.titan/axis/documents/axis-cap-fre-v00/>

Qui définit comment organiser d'assembler des contenus d'*Opus*, des *Packages* et de *Repository* dans un Module ainsi que les relations entre les entités (aci) qui définit comment organiser de mettre ensemble dans un seul clip des fichiers et les indexer :

[.xml + .xsd + .wav (+ *chunk parameters*) .mp4 + .jpg + .smil + .pdf] + [rules & semantics]

Le concept de “**PROFIL**” dans AXIS

The 15 ‘elements’ of the Dublin Core

1. Title
2. Creator (or Author)
3. Subject (and Keywords)
4. Description
5. Publisher
6. Contributors (other)
7. Date
8. Type (The category of the resource, such as homepage, novel, poem,...)
9. Format (The data representation of the resource)
10. Identifier
11. Source
12. Language
13. Relation
14. Coverage
15. Rights

The 'qualified elements' of the Dublin-Core for the Axis-Core

Dublin Core Element-name	AXIS Core Application Profile Element-name	Comments / property / ...
Title	title	Max 255 characters
	titleShort	Max 30 characters
Creator	author	
Subject	subject	List of the applicable Textual & Sound Thesauri
Description	description	
Publisher	publisher	
Contributors	<see appending list>	
Date	creationDate	
Type	entityClass	Module, Repository, Opus, Package, Opus-Stream, Opus-Source Audio-Clip, Audio-Clip-Component, Audio-Clip-Stream, ...
	entityStatus	Preliminary, Temporary, ... , validated, ... Released
Format	format	
	suffix	
	quality	
Identifier	moduleId	URI (W3C)
	creationModule	
	rootId	
	tagId	W3C-SMIL
	domainId	
Source	version	
Language	source	
Relation	language	ISO639-3AC
	isPartOf	
Coverage	hasPart	
	<all RDF relations>	W3C ...
	country, place, location	ISO3166
	timeCode, periodCode	W3CDTF
	rootIndex, componentId	
	<chaining-code>	W3C-SMIL
Rights	duplicationIndex	
	naturalLanguage	
	originalRightsOwner	
	currentRightsOwner	

Définition formalisée ISO d'un 'qualified term' *AXIS-CAP (Core Application Profile)*

Term Name: identifier

Dublin Core entry

Term URI:	http://purl.org/dc/elements/1.1/identifier
Label:	Resource Identifier
Defined by:	http://purl.org/dc/documents/dcmi-terms/
Source Definition:	An unambiguous reference to the resource within a given context.
Source Comment:	Recommended best practice is to identify the resource by means of a string or number conforming to a formal identification system. Example formal identification systems include the Uniform Resource Identifier (URI) (including the Uniform Resource Locator (URL)), the Digital Object Identifier (DOI) and the International Standard Book Number (ISBN).

Qualification in the 'Namespace' of the 'Core Axis Profile' [xmlns:axis-cap]

AXIS-CAP definition:	The resource identified according to the rules of AXIS-CIF
AXIS-CAP comment:	The identification of the resources is structured according to the "Collection Based" approach. The context is given by the value of [axis-cap:module]. Each "entity-class" has its own encoding scheme.
Type of Term:	element
Refines:	identifier
Refined by:	
Has encoding scheme	http://www.titan.org/axis/documents/axis-cif/...
Status:	Mandatory for the each instance of a "entity-class". Recommended in the other cases.
Date Issued:	2005-0427

Définition formalisée ISO d'un '*Encoding Scheme*' dans un '*qualified term*' de *AXIS-CAP* (*Core Application Profile*)

Encoding Schemes

They are defined by reference to a 'standard', local definition or to a 'thesaurus' (list of possible/suggested values or rule)

Standards:

DCMI-Type:	DC list of types used to characterize the nature or genre of the content of the resource http://purl.org/dc/dcmitype/URI
Open-URL:	NISO...
URI	W3C ...
ISO3166	Code for the representation of the names of the countries
ISO639-3AC	Code for the representation of the names of the languages
W3CDTF	Code for the representation of the dates, times and periods
ISSN	International Standard Serial Numbers
XML	ISO 8859-1 (<i>à vérifier</i>)
...	<International Thesaurus>

AXIS-Core

AXIS-Type:	AXIS list of type codes used to characterize the nature, roles or genre of the content of the resource http://www.titan/axis/axistype/URI
AXIS-Thesaurus	AXIS list of key-entries and values http://www.titan/axis/axisthesaurus/URI

Concepts fondamentaux des **documents**

Un document couvre ce qui se rapporte à une réalité
« **spatiale, temporelle et sémantique** » **UNIQUE**

Les documents sont représentés par des ensembles structurés de dossiers, fichiers et hyperliens.

Plusieurs représentations de la même 'chose' peuvent exister simultanément dans une instance d'un document :
par exemple, une représentation d'un clip audio peut être disponible en .bwf, .wav, .wma, .mp3, ... et, chacune, à divers débits binaires

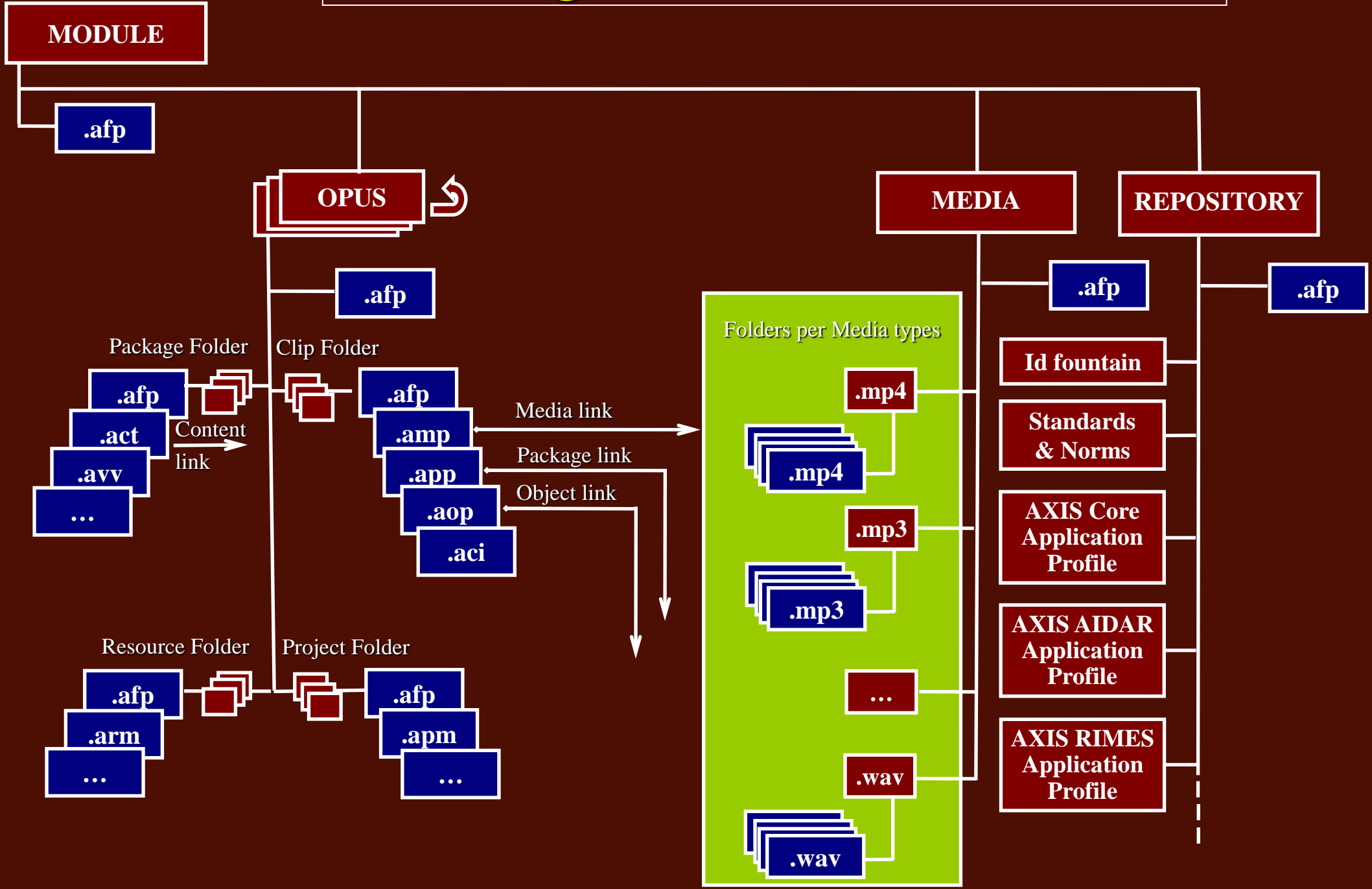
Formats fondamentaux de représentation des Documents

Format source (normalisé, standardisé ou non)

Formats normalisés ou standardisés utilisés dans les profils

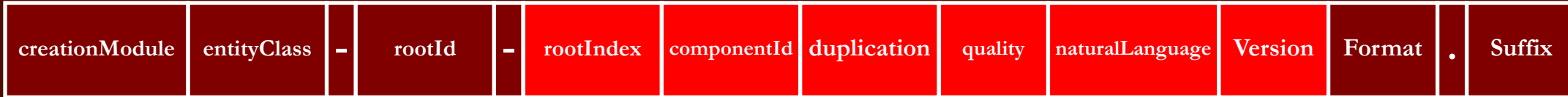
- .xml / .xsd / .xslt / ...
- .mpg4
- .jpg
- .pdf
- .wav .bwf
- .mp3
- .mp4
- ...
- Dossiers
- Fichiers
- Hyperliens
- Synchronisations via SMIL-2
- *Configuration, Play lists & Edit lists* via SMIL-2 ou implicite via les 'index'

Schéma général des data sets en FFH



Naming / Identifying Rules

Naming of Files



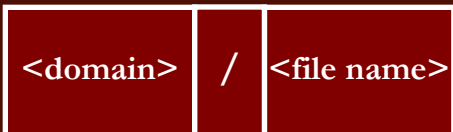
Naming of Folders



Depends on the Class of the entity

Basic part for the ID fountain

URI of Files



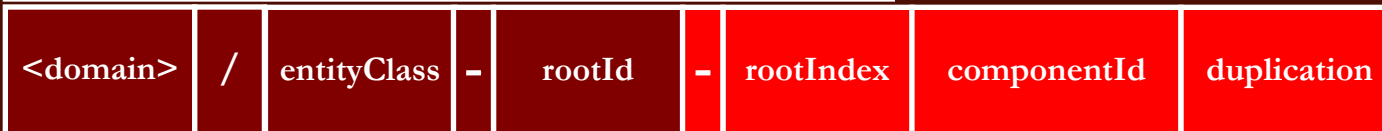
URI of Folder



URI of Package



URI of Package-Component within a Package-Stream
 URI of Opus-Component within an Opus-Stream



Codage :

- La longueur totale de l'identifieur / nom d'un fichier ou d'un dossier serait fixée à 128 caractères (séparateurs compris)
- Chaque champ est nommé dans xmlns:axisCap
- Le séparateur d'isolement du 'root-id' est le tiret « - »
- Le séparateur d'isolement des autres champs est le 'underscore' « _ » ; il est mis pour tous les champs prévus pour la « entity-class », même s'ils sont vides.

Concepts fondamentaux de segmentation des flux dans les documents du type **Clip** :

Les Clips :

Un **Clip** est un ensemble statique de données représentant un flux d'essences (*Audio, Vidéo*) sur une durée de temps. Dans *AXIS*, ils sont représentés soit comme des 'fichiers', soit comme des 'flux'. Par ces dispositions, le 'clip' peut représenter des 'albums' (de photos, par exemple).

Les Points :

A n'importe quel moment du flux, il y a possibilité de placer une balise de **Point**.

Les Segments :

A n'importe quels moments (*non confondus*) du flux, il y a possibilité de placer un couple de balises, une de début et une de fin ; ce couple de balises définit un **Segment**.

L' 'Axis Configuration & Indexing'

- Sélection de clip(s)
- Séquençage
- Offset d'Opus
- Fusion de clip

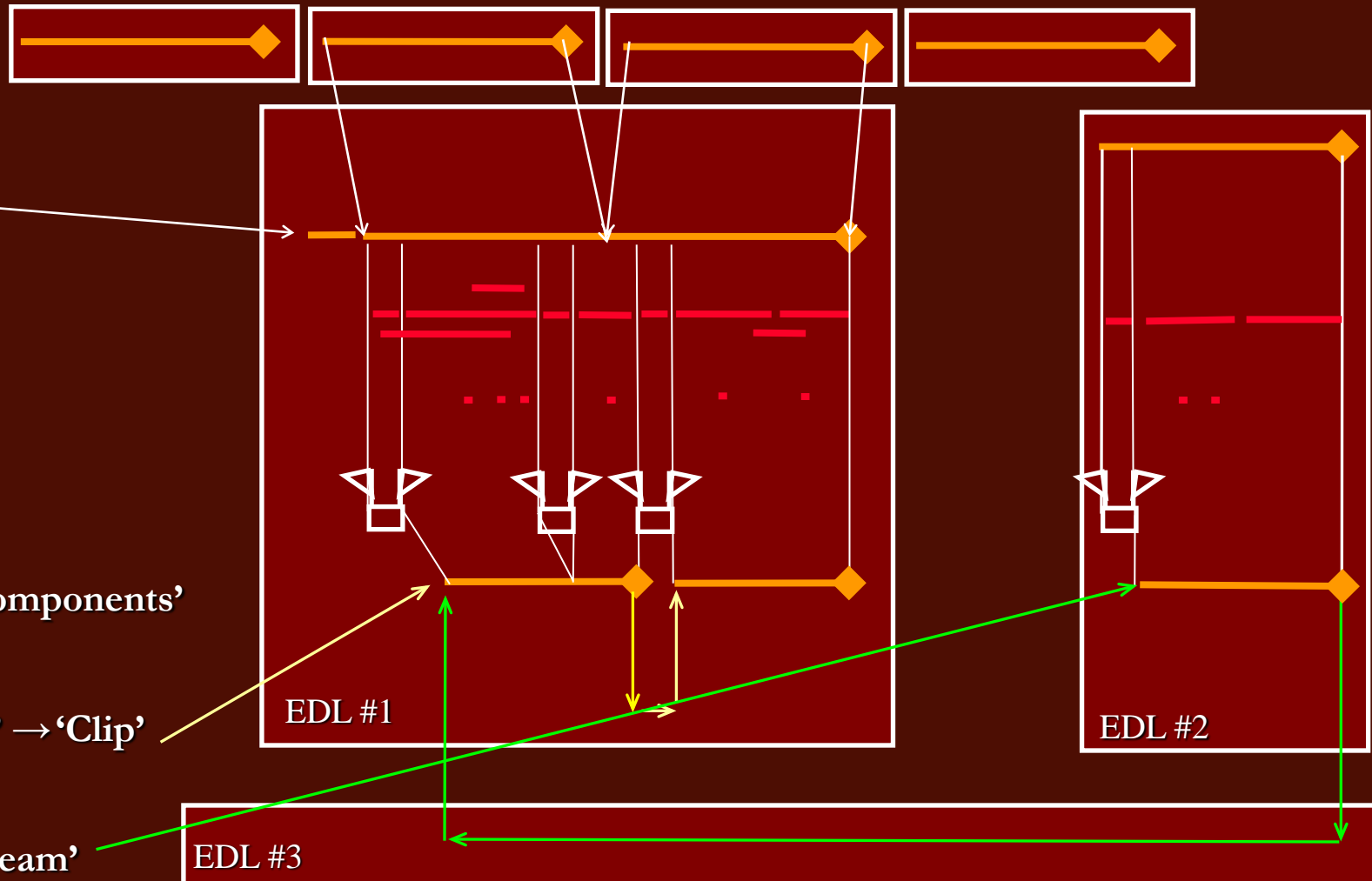
- Segmentation
- Synchronisation
- Ponctuation

- Élagage

- Partition en 'Clip-Components'

- Chaînage de 'Clip-components' → 'Clip'

'Clips' → 'Clip-Stream'



- Annotation de 'Segment', de 'Point', de 'Clip-Stream', de 'Clip', de 'Clip-Component'

AXIS Platform

X-AXIS (FFH)



Digital source (Camera, ...)
Analogue source

Applications

Media acquisition

Module/Opus/Media/Repository in FFH

X-AXIS (Wrapped Package)



Exploitations

DIP
SIP
AIP

DAM
MAM
CMS
...



AXIS Manager

SDK-import

SIP

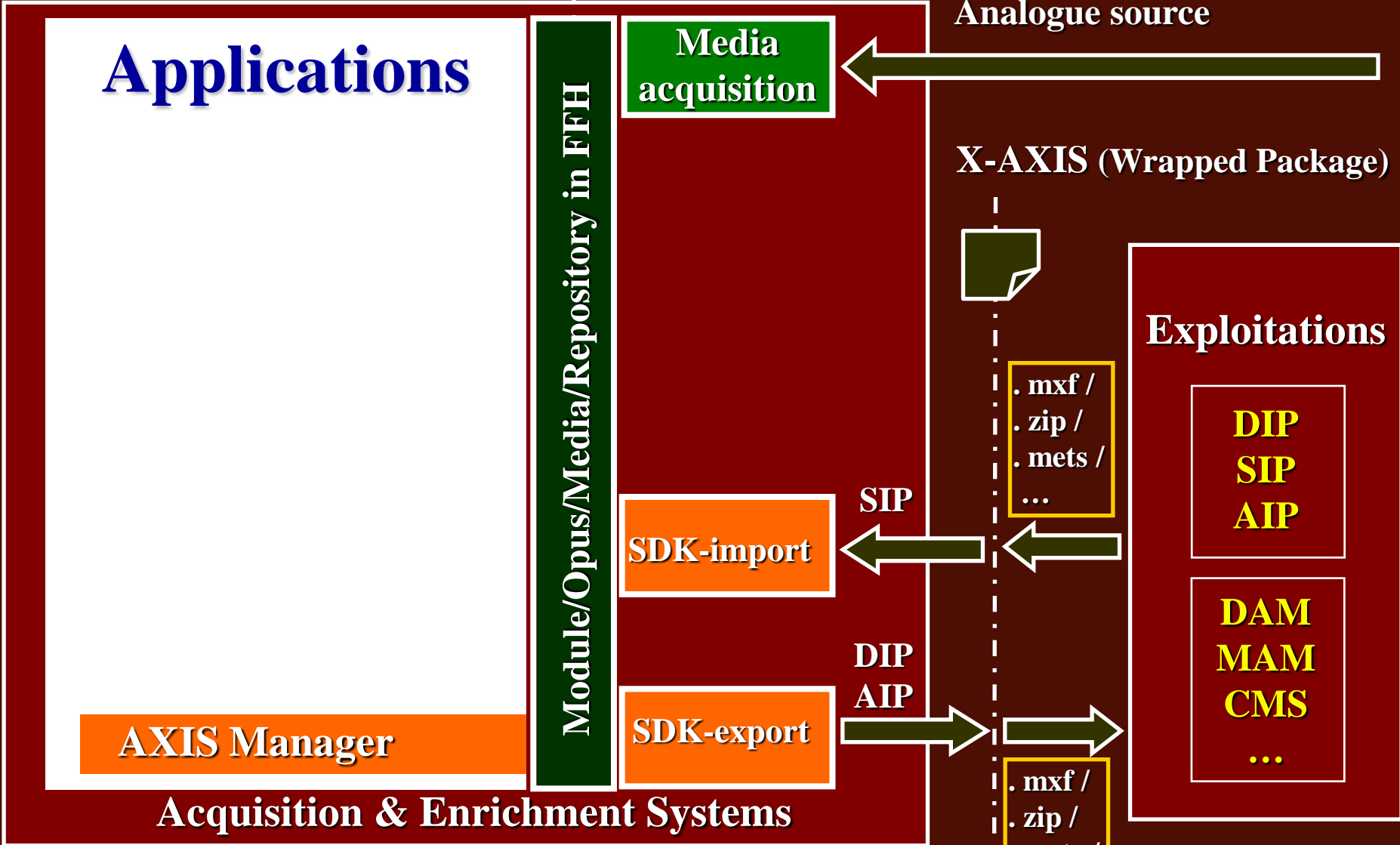
SDK-export

DIP
AIP

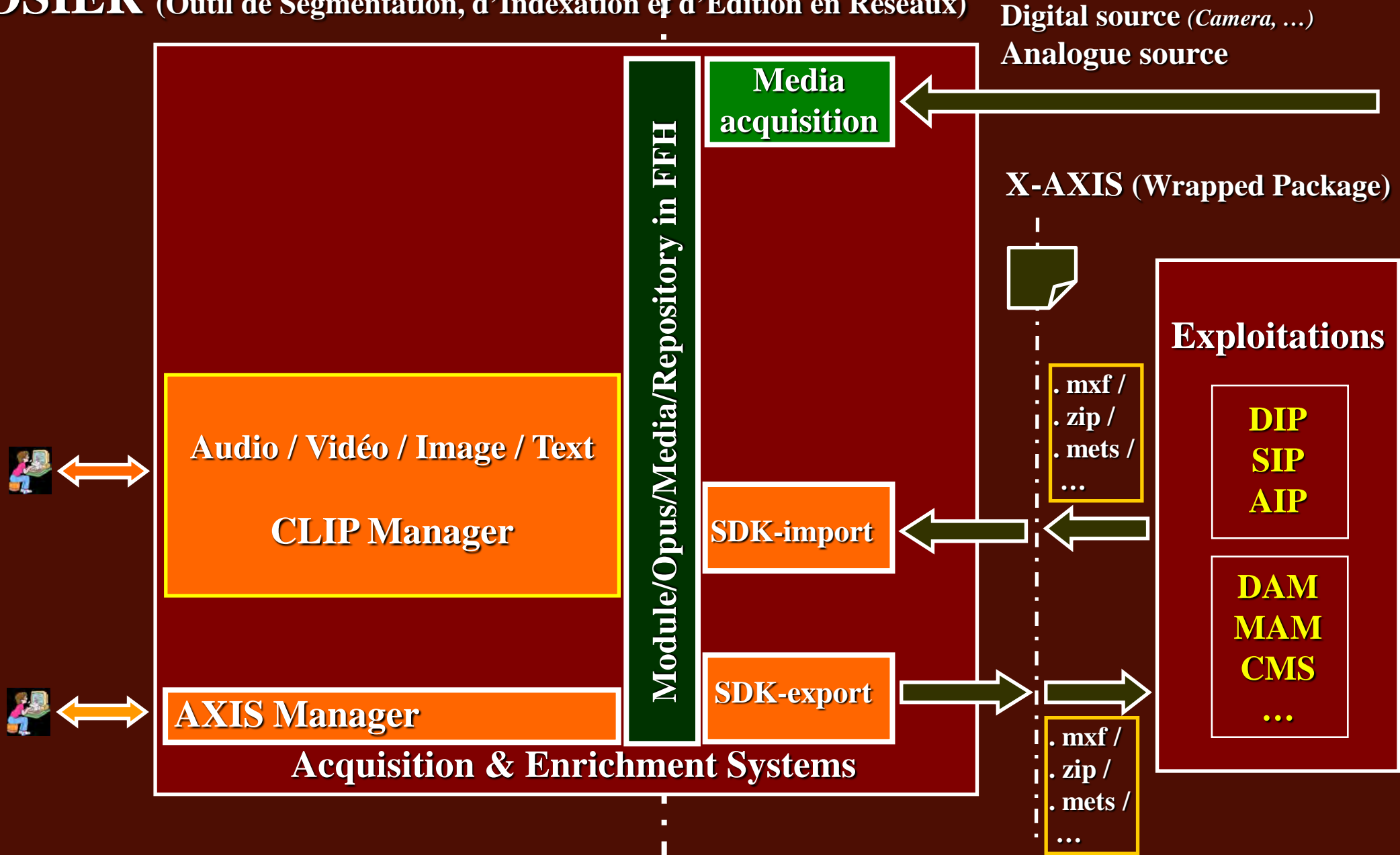
Acquisition & Enrichment Systems

. mxf /
. zip /
. mets /
...

. mxf /
. zip /
. mets /
...

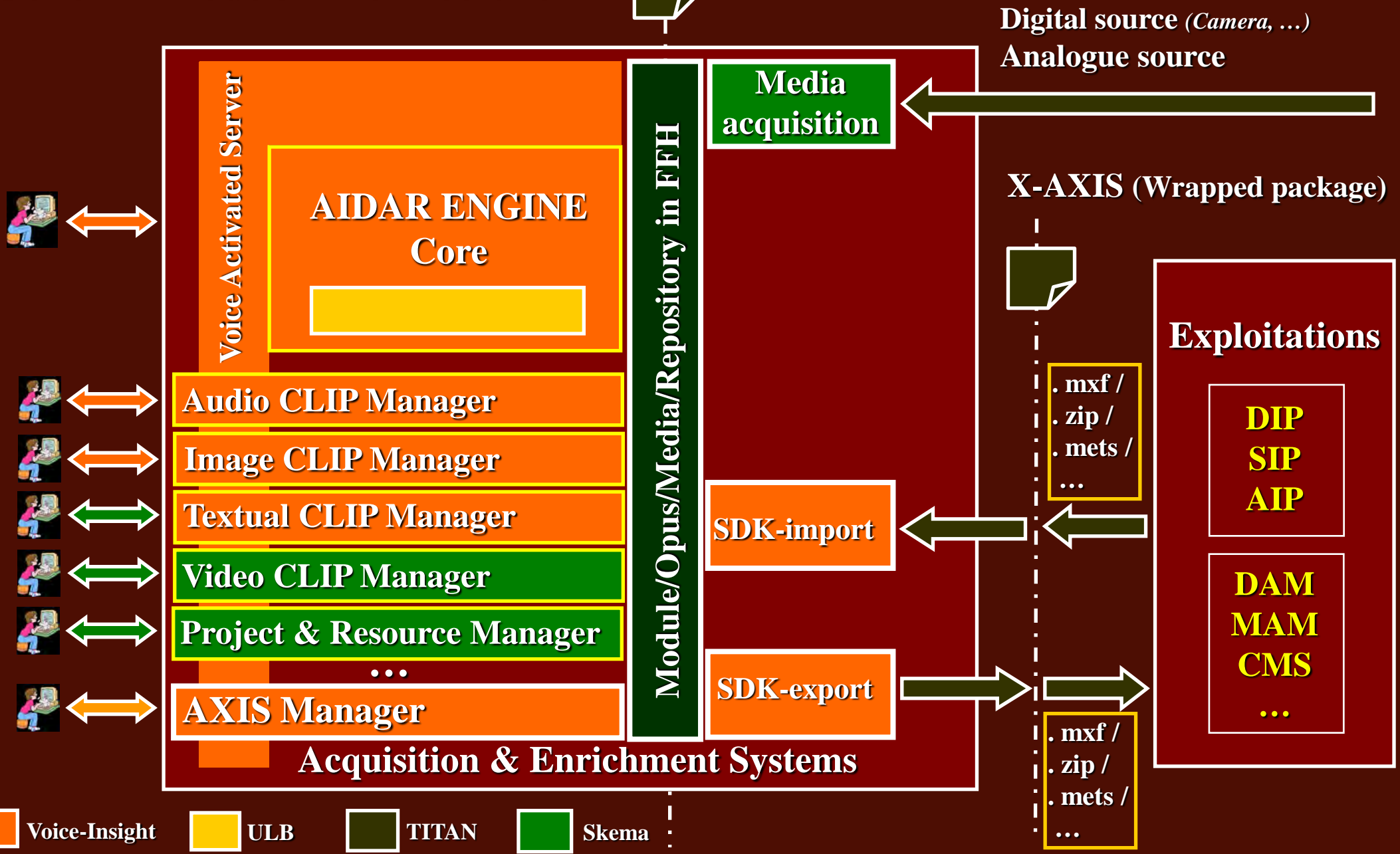


OSIER (Outil de Segmentation, d'Indexation et d'Édition en Réseaux)



General Product Architecture

X-AXIS (FFH)



Structure of the presentation

1. Missions & Requirements
2. An architectural approach
3. The *AXIS* key features
4. The “Open Licensing of *AXIS*” by TITAN
5. Conclusions & Acknowledgements

L'intention de TITAN est de mettre à disposition, sous licence ouverte, de :

- La spécification de l'architecture AXIS
- La définition technique d'AXIS (statique et dynamique)
- Le code source des SDK de *parsing* et assemblage.

Cette licence sera définie sur base de la licence générique rédigée par le Centre de Recherches en Informatique et Droit (CRID) des Facultés Universitaires Notre-Dame de la Paix (FUND) à Namur.

Cette licence implique un droit d'usage gratuit si certaines conditions de modes d'exploitations sont remplies. Toutes applications (industrielles ou autres) sont couvertes.

Structure of the presentation

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MEMNON, *in particular to M. Michel Merten*

The BRITISH LIBRARY, *in particular to MM. Peter Findlay, Chris Clark and Crispin Jewitt*

The BBC, *in particular to Mrs. Sue Malden (past manager of the BBC archiving services)*

CONCLUSIONS

“Good solutions are affordable”

Realistic approaches can be found to meet the evolving requirements of the **USERS** and/or **CUSTOMERS** of the archives; of the **ARCHIVES**, as custodian of the Social and Cultural heritages

Each large organization should construct its own
‘strict guidelines’

- Fitting with its Missions & Constrains and
- Having the OAI model in sight.

CONCLUSIONS

“Good solutions are effective”

Your ‘Architectural guidelines’ can ensure that

“Your ‘media assets’ will be listened or seen for centuries”

Conclusions :*“The OAIS model should be extended and improved”*

The list below is a first contribution to the elaboration of a proposal for enhancing and extending the OAIS model (V2 to be planned in 2006)

1. Adaptations to adhere to the ISO terminology and OSI extensions for persistence
2. Coverage of the ‘Metadata’ for ‘Ontology and ‘Semantic’ (*Standards & personalized*)
3. Identification & Labeling (*ID fountain, ID schemes, ...*)
4. Inclusion of the ‘acquisition’ functions: OIP (*Original Information Package*)
5. Information security (*Identity, Integrity, Authenticity, Confidentiality, ...*)
6. Object and Data Structures ready for the construction of the automatic persistence
7. Separation of the physical IT objects, the logical IT objects and the external objects
8. Management of the “Profiles” for the “Autonomous Assets Entities”
9. Management of the “Profiles” for the encapsulation of the ‘proprietary’ formats with their associated ‘proxies’ (*standard compliant*)
10. Management of the “profiles” for ‘DIPs’ not targeted to a specific community
11. Chaining of OAIS (*Modules {Opus [Clip, Project, Resource, Package], Media, Repository}*)
12. Unstructured searches
13. Certificates of traceability
14. Management of the ‘multilingual’

References and theoretical foundations for the persistence

‘Content critical’ by *Gerry McGovern*

[Prentice Hall ISBN 0-273-65604]

Target : Humanity lifetime !

‘The Open Archival Information System’ (OAIS *Blue book*)

<http://www.ccsds.org/documents/650x0b1.pdf>

‘The Open System Interconnection’ of ISO and its profiles

ISO/IEC standard ISP 35100

‘The OSI model applied to the Archives’ by *Guy Maréchal*

To be published in 2006 (Brussels’s University [ULB])

‘Persistence by combining OAIS and METS’ by *Catherine Lupovici*

<http://ww.adbs.fr/uploads/journees/lupovici200503.html>

‘Collection-Based Persistent Archives’ by *Rajasekar, A., Marciano, R., Moore, R.,*

[*Proceedings of the 16th IEEE Symposium on Mass Storage Systems, March 1999*]

Target : 300 years !

- Collection based persistent data archives (part 1) in

ISSN 1082-9873

D-Lib Magazine April 2000 Volume 6 Number 3

<http://www.dlib.org/dlib/march00/moore/03moore-pt1.html>

- Collection based persistent data archives (part 2) in

ISSN 1082-9873

D-Lib Magazine April 2000 Volume 6 Number 4

<http://www.dlib.org/dlib/april00/moore/04moore-pt2.html>

- Metadata Principles and Practicalities

ISSN 1082-9873

The D-Lib Magazine April 2002 Volume 8 Number 4

<http://www.dlib.org/dlib/april02/weibel/04weibel.html>

‘The KEO satellite project’

Target : 50 000 years !

References and theoretical foundations for the ‘metadata’

‘RDF’ by W3C

<http://www.w3.org/TR/rdf-primer/>

‘Dublin Core’

<http://dublincore.org/documents/>

‘The Metadata Encoding and Transmission Standard’ (METS)

<http://www.loc.gov/standards/mets/>

‘MPEG-7’

<http://mpeg.tilab.comcselt.it>

‘Cover Pages ‘METS’

<http://xml.coverpages.org/mets.html>

KEO

Les lointains enfants ... des enfants... de vos petits-enfants...
que vous ne connaîtrez jamais ..
auraient tant aimé vous connaître.
Qu'aimeriez-vous leur dire de vous-même?



Fin 2006, le satellite KEO s'élancera dans l'espace.
Il reviendra intact sur Terre dans quelque 50 000 ans
pour offrir à nos très très très lointains petits-enfants
l'ensemble de TOUS les messages que nous leur destinons.

Une introduction à AXIS

An introduction to AXIS

Une conférence organisée par l'ASBL



dans le cadre de l'



Bruxelles les 17 et 18 novembre 2005

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