



EPOCH

WP3

# *A Common Infrastructure for Cultural Heritage Applications*

L. Van Eycken, B. DeKnuydt, L. Van Gool

K.U.Leuven

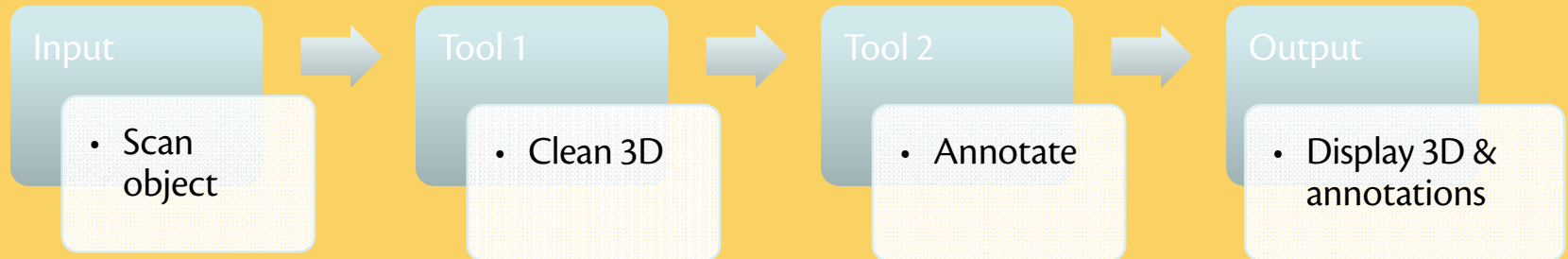
- Requirements for a Cultural Heritage infrastructure
- The concepts behind a common infrastructure
- Cultural heritage data
- Cultural heritage information management
- Suggested standards and formats
- Implementation examples

- Fit small as well as large applications
- Fit a diversity of applications
  - Show/navigate the data
  - Present the data in an exhibition
  - Preserve the data (need for sustainability)
- Fit a wide range of sources (CH = multidisciplinary)  
⇒ not tailored to one discipline
- Data is dynamic (created, augmented & modified)
- As technology independent as possible

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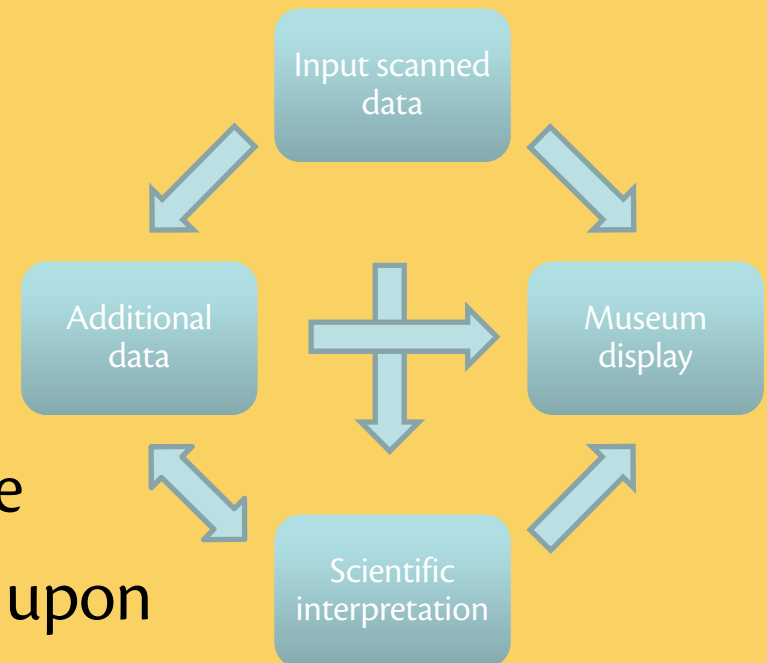
## Cultural Heritage applications

### ➤ Simple applications : a pipeline



### ➤ More complex applications

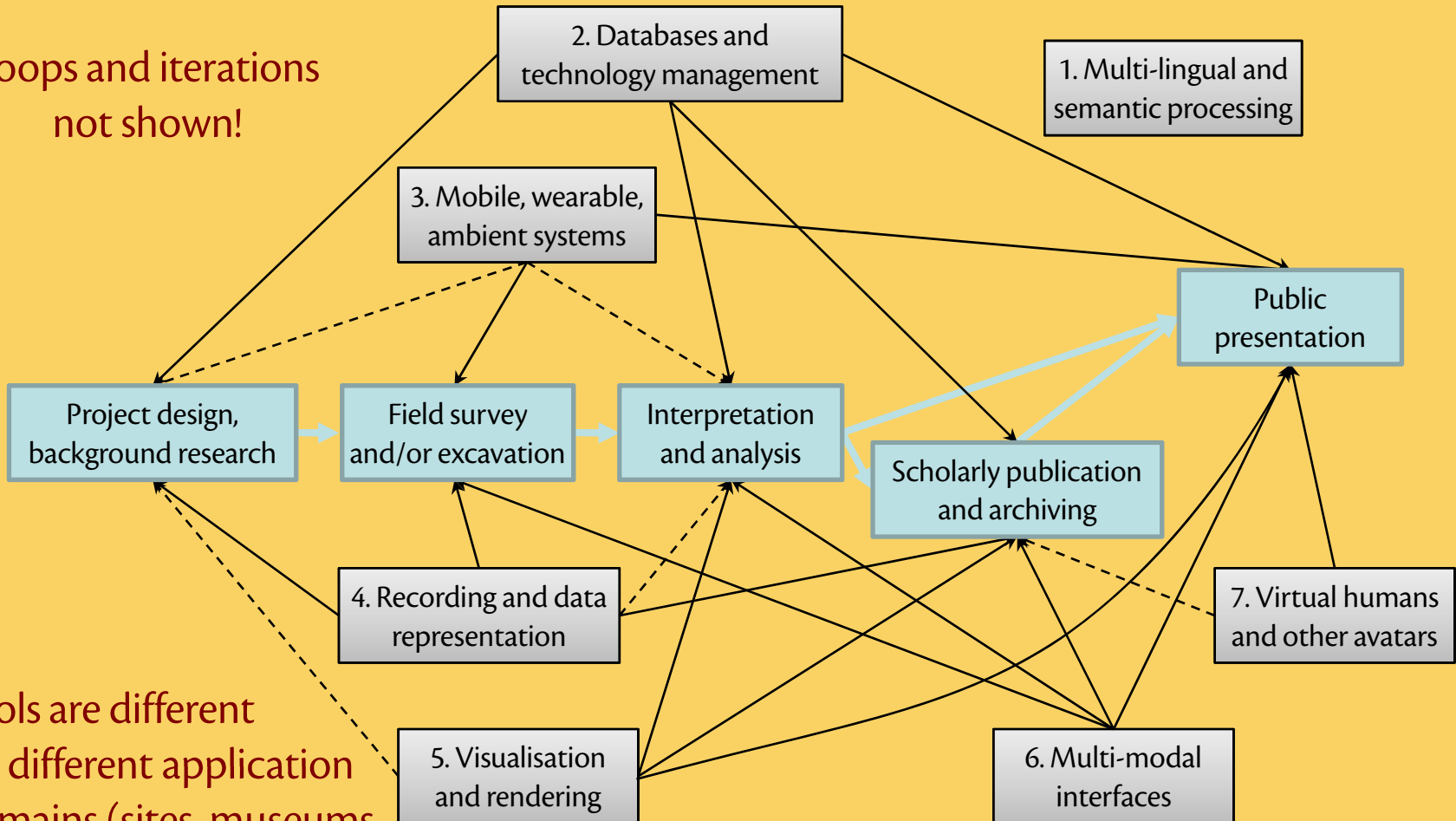
- Different sub-applications
  - generated/used at different times and places
  - exchange CH data
- Each sub-application = pipeline
- Data is combined and iterated upon



# Concepts behind a common infrastructure

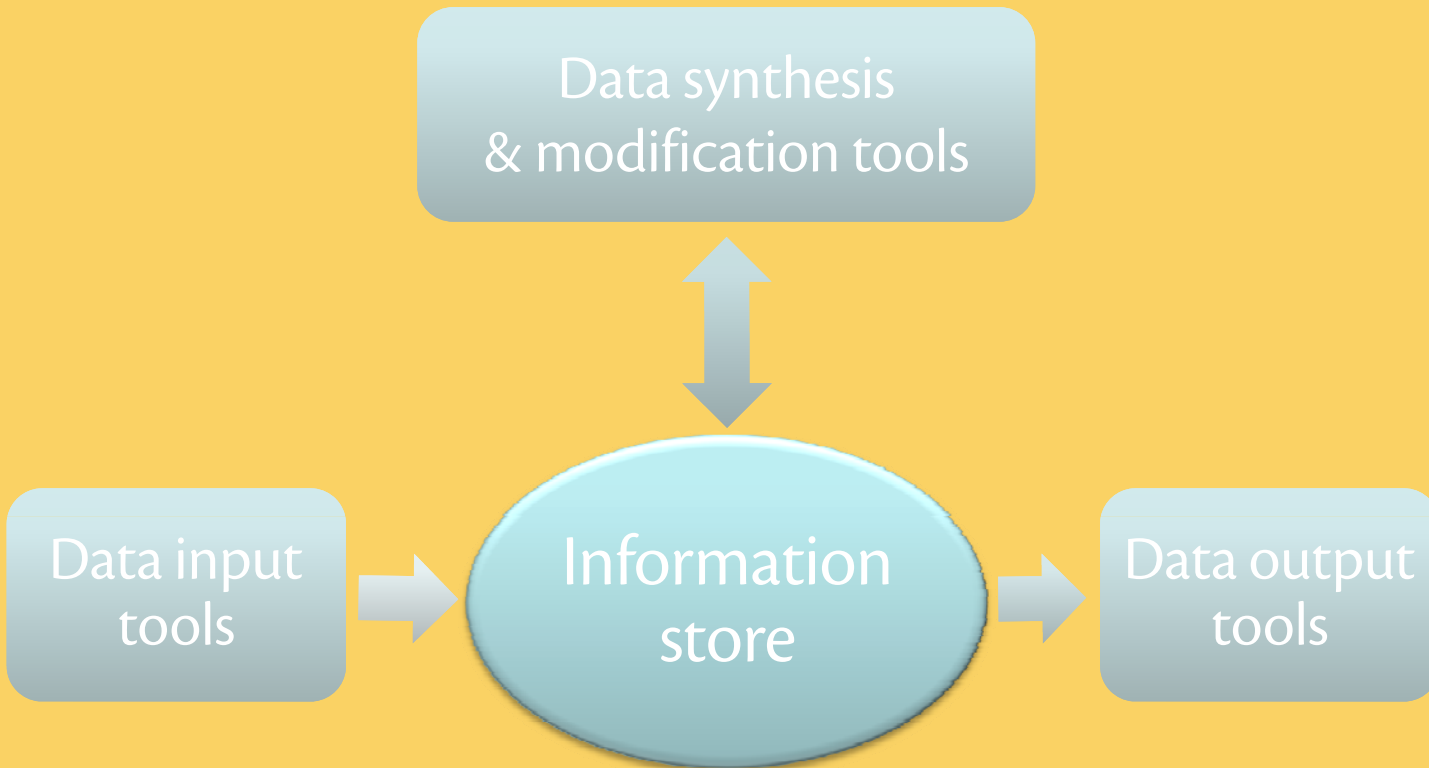
## A typical cultural heritage pipeline (by Nick Ryan)

Loops and iterations  
not shown!



Tools are different  
for different application  
domains (sites, museums,  
tourism, education, ...)!

## The information processing view



- Real applications: only a subset of tools & stored data, but all stores should be based on the same foundations
- Store does not necessarily correspond to physical storage

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## The diversity of cultural heritage data

### ➤ Typical usage

	Preservation	Exchange	Presentation
Sustainability	important	less relevant	less relevant
Standards used	few non-proprietary	few	application driven
Compactness	desirable	desirable	irrelevant
Fast running	irrelevant	less relevant	important

- avoid format conversions if possible
- Type of data
  - usually heterogeneous
  - relations important ⇒ rich linking facilities needed
- Accuracy
  - recorded : keep at maximum accuracy; lossless compression
  - illustrations : look/feel/sound good; lossy compression

## The Cultural Heritage Data Object (CHDO)

CHDO = basic unit for storing CH data and its relations

### ➤ Container format

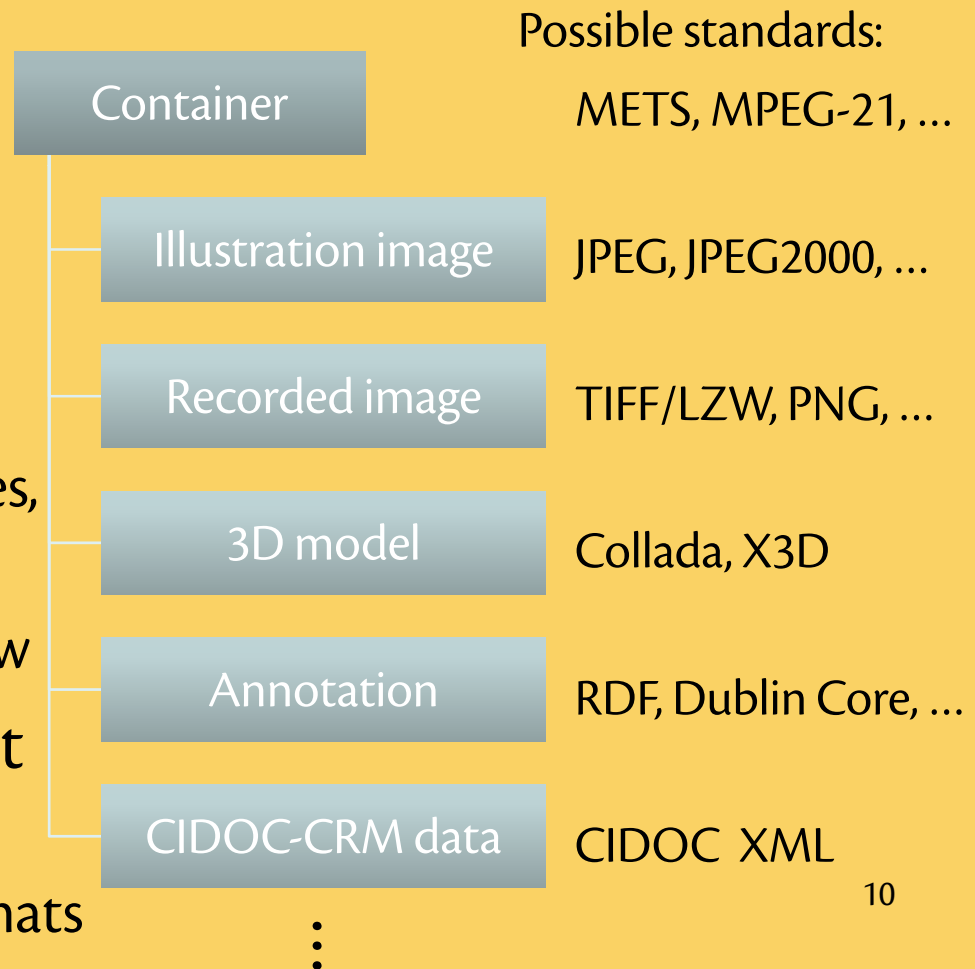
- keep all relevant CH data linked together
- store global info (e.g., IPR)

### ➤ Basic preservation unit

- contains multiple data types, incl. semantic info
- neutral, non-3D centric view

### ➤ Useful as CH exchange unit

- usable with multiple standards or exchange formats



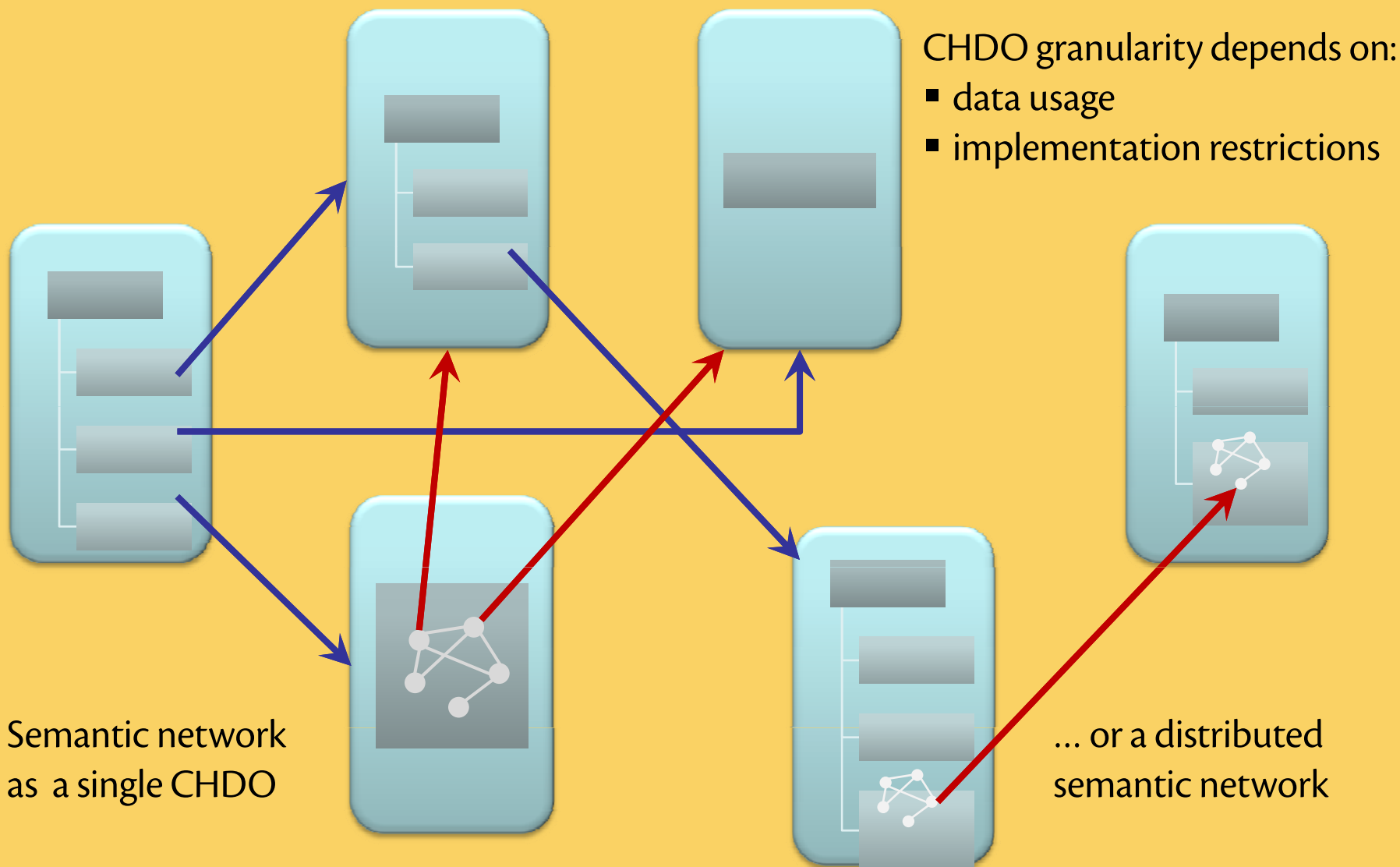
## Standards for container classes

- Existing non-specific container standards
  - DIDL from MPEG-21 (multimedia framework)
  - XPackage & RDF (W3C standards)
  - METS (used in digital libraries)
- Current Epoch's choice: METS
  - active development
  - more interaction with other standards

Note: Concept more important than standard

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## Collection of CHDO



## Implementation of the information store

= any **digital library** but ...

with a flexible digital library format which is easy to extend and adapt to specific Epoch needs

➤ Any implementation can be used

- Simple one: e.g., set of files in agreed upon format
- Application specific one: e.g., MAD semantic database
- More general one: e.g. **Fedora**
  - ⇒ data manipulation tools available
  - ⇒ fine grained access control
  - ⇒ large user community

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No new standards : enough available for our goals

- Guidelines for exchange and preservation of sound & images (audio, vector graphics, 2D images, video)
  - see Epoch web site
- Proposal for exchange of 3D
  - Collada for data (Epoch uses “Collada light”)
  - U3D for 3D data compression

Note: These guidelines will evolve over time, also for preservation formats



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## Tool chains

- Purpose
  - testing tool interoperability
  - gaining more experience in exchange problems and formats
- Fedora as content management system in the tool chains:
  - A virtual visitor centre (also multimedia dissemination)
  - Archaeological field survey
  - Semantic browsing of 3D artefacts

- Epoch provides some guidelines
  - for data exchange formats
  - to select a proper content management system, such as Fedora
- These guidelines
  - allow application specific optimal solutions
  - anticipate new technologies and solutions