ICT for EU-India Cross Cultural Dissemination

EU-India
Economic
Cross
Cultural
Programme

Working Group 2:
E-Contents for cultural dissemination: Heritage and Science

E-Contents Platform for Heritage and Science

UNIVERSIDAD
POLITECNICA
DE VALENCIA
- Spain -

University of Udine
- Italy -

B.M. Birla
Science Centre
- India -

dott. Paolo Omero

WG2: E-Contents for cultural dissemination: Heritage and Science

Starting date: Year 1, Month 4

Duration: Seven months

Partner responsible: Hyderabad

Other partners: Udine, Valencia

Exchange: 1 post-graduate (10 days), 1 expert (10 days)

Workshop: Hyderabad - Year 1, Month 11

Deliverable: prototypes of digital museum, codes of conduct and protocols for e-contents creation

People involved: F. Honsell, B.G. Sidharth, P. Omero

Project background

- Institutions and other actors have a considerable amount of assets and educational materials in the areas of popularization and promotion of exact sciences and heritage

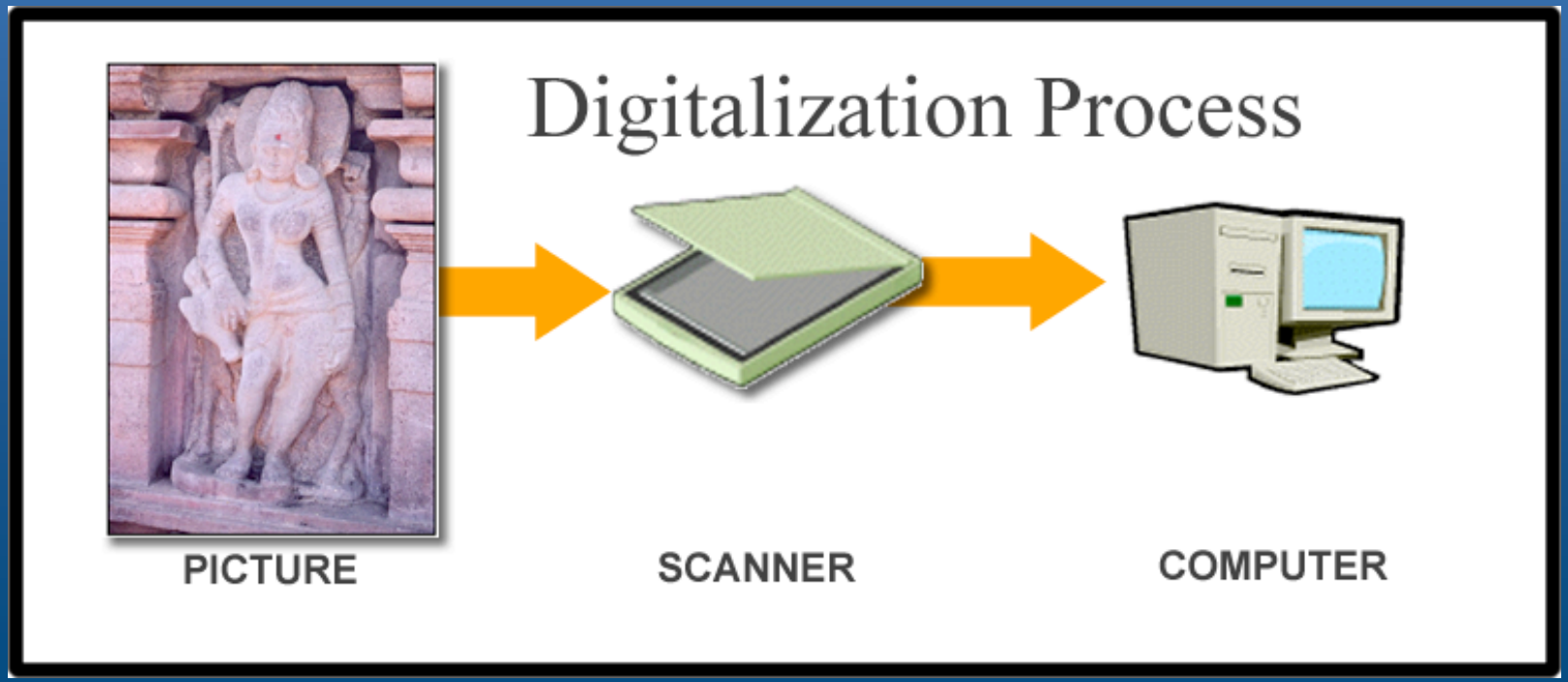
- Currently there are several projects to
  - Digitalize the cultural materials
  - Identify international standards (information structures) to describe the cultural materials

Project goals

- To facilitate the cultural dissemination trough the utilization of the cultural assets, hosted in museums, by using a digital archive
- To study the peculiar problems deriving from the design of digital archives for cultural dissemination
- To increase the knowledge and cultural awareness, particularly of the youngsters
- To design new solutions that will make artefacts and other cultural items more effectively utilizable
- To analyze the most appropriate formats to describe, store and share the cultural materials
- To develop a cross cultural dialog and dissemination

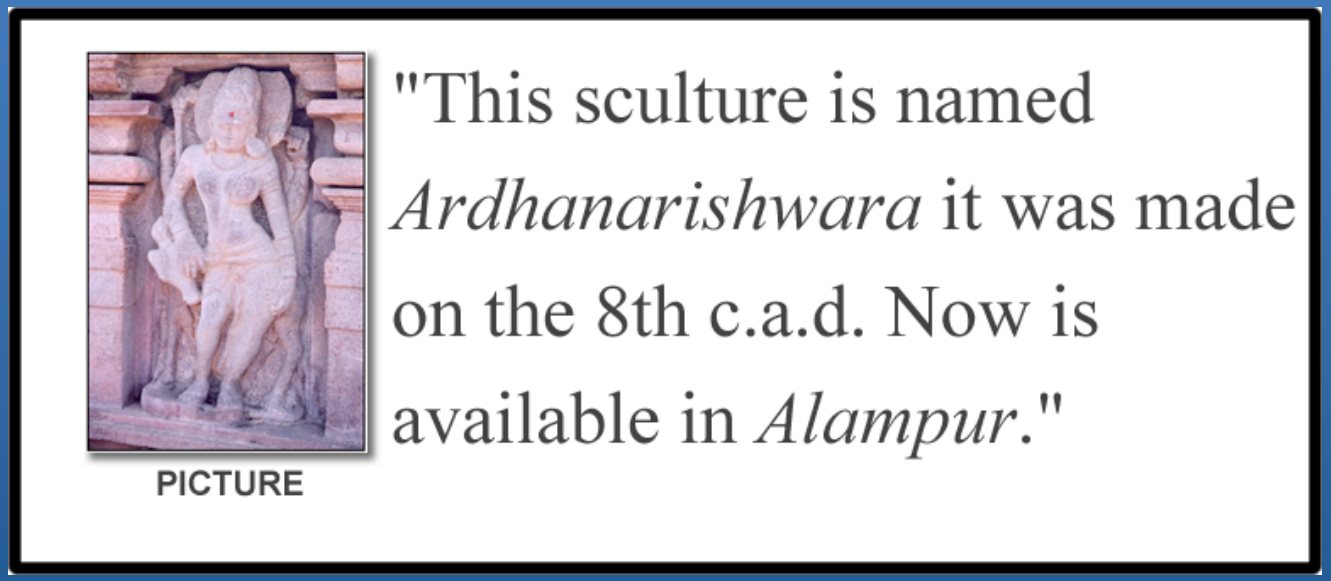
E-Content
(an example)

- Goal: to disseminate culture and to make these artworks more effectively utilizable
- Is digitalization sufficient?



E-Content

- NO, because It is necessary to describe the artwork



- Still not sufficient (for example you cannot search all items made in a specific period of time)
- It is necessary to add SEMANTIC (give a meaning to something) to the data
- Metadata

E-Content
(an example)

- METADATA

PICTURE

Title: *Ardhanarishwara*

Period: 8th c.a.d.

Location: *Alampur*

- XML representation

```
<title>ardhanarishwara</title>
<period>8th c.a.d.</period>
<location>Alampur</location>
```

- This type of e-content representation allows a flexible
  - storing in a digital archive,
  - showing on WWW and searching

Designing a digital archive
The traditional approach

- Problem analysis
- Designing the data structure
- Designing a specific solution:
  - Specific data set
  - Specific data base architecture
  - Specific procedures and interfaces for the data entry
  - Specific interfaces for the utilization of the contents

Pros and Cons of the traditional approach

PROS	CONS
• Effective personalization of interfaces for the entry and utilization of the contents	• Difficult application of the solution to archives of materials of different nature • Difficult integration with other archives with different metadata sets

Our approach

- Employment of an online digital archive
  - To store various types of materials relating to different types of cultural heritages
  - To allow an effective utilization (browsing, searching, visiting a virtual museum,..) of contents independently of user location
  - To ensure compatibility and allow integration with other archives

Functional requirements

STORAGE

- Flexibility and personalization of the storing process
- simplicity and effectiveness of
  - Procedure of the definition of the metadata structure
  - Procedure of data entry
- Personalization of interfaces of data entry and contents utilization
- Open to standards and possibility of integration with other archives

researcher

SEARCH

- Search effectiveness: (intelligent and personalized information filtering tools)
- A single platform allows transversal types of searching across different archives

researcher

student

UTILIZATION

- Web Portals, Virtual museum, hands on museum,…
- To increase the knowledge and cultural awareness particularly of the youngsters
- Effective utilization of contents by final users

final users

Technological choices

STORAGE

- XML schema or DTD to define data structures
- XML for data storage

- XSLT to produce automatically the data entry forms
- XSLT to export data to other archives (using international standars)

SEARCH

- Intelligent systems for personalized information filtering

UTILIZATION

XML → XSLT

- Web interfaces
- Flash interfaces
- 3D interfaces

Viewing
Browsing
Interacting
…

Why XML & XSLT?

- Main idea: separate contents from presentation of contents

- XML:
  - Define data structure
  - Represent data
- XSLT:
  - generate personalized interface to show and utilize data

XML

- XML (eXtensible Markup Language) is now the most powerful and used tool for data description.
- allows hierarchical data structure definition: digital information could be rich, detailed and precise
- Easy data interchange between Institution Archives without complex conversion procedures
- Operating systems independence, high data portability
- Availability of open source software and tools to develop applications xml-driven.
- International Standard are defined using DTD or XML Schemas

Standards

Standard set of metadata to archive something (f.i. photos, book, …)

NATIONAL STANDARDS

from ICCU (Central Institute for Unique Catalogue)

INTERNATIONAL STANDARDS

Marc, Unimarc, Isbd, Dublin Core, ect.

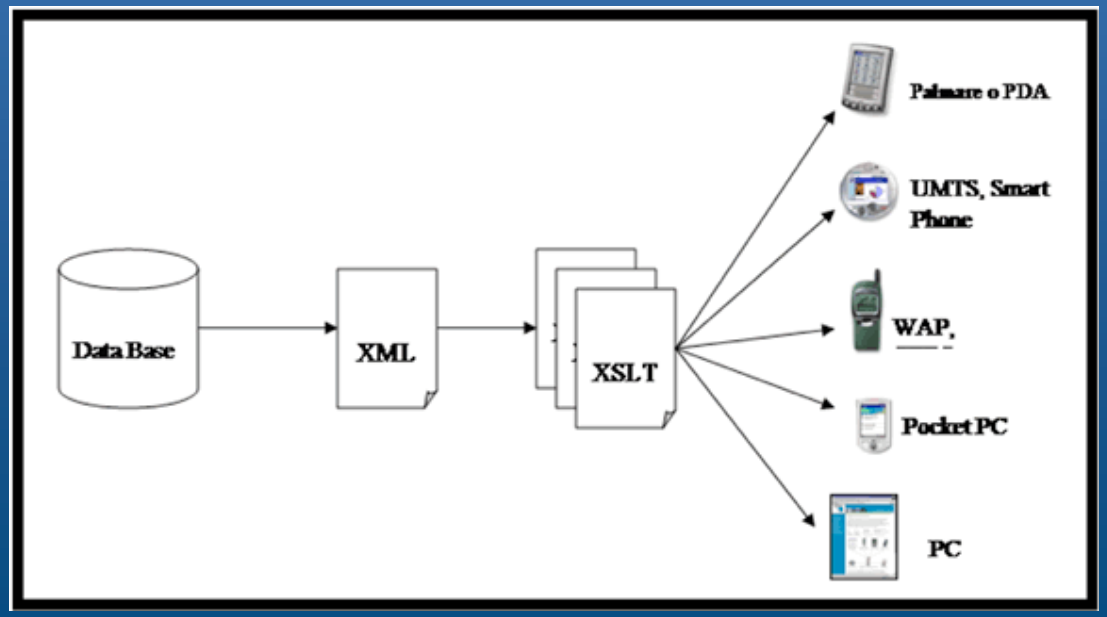
PROJECTS

- COVAX (Contemporary Culture Virtual Archive in XML)
- XML-SPECTRUM SCHEMA project of CIMI (Consortium for Computer Interchange of Museum Information) aimed to store items in the field of archaeology, biology, paleontology,…

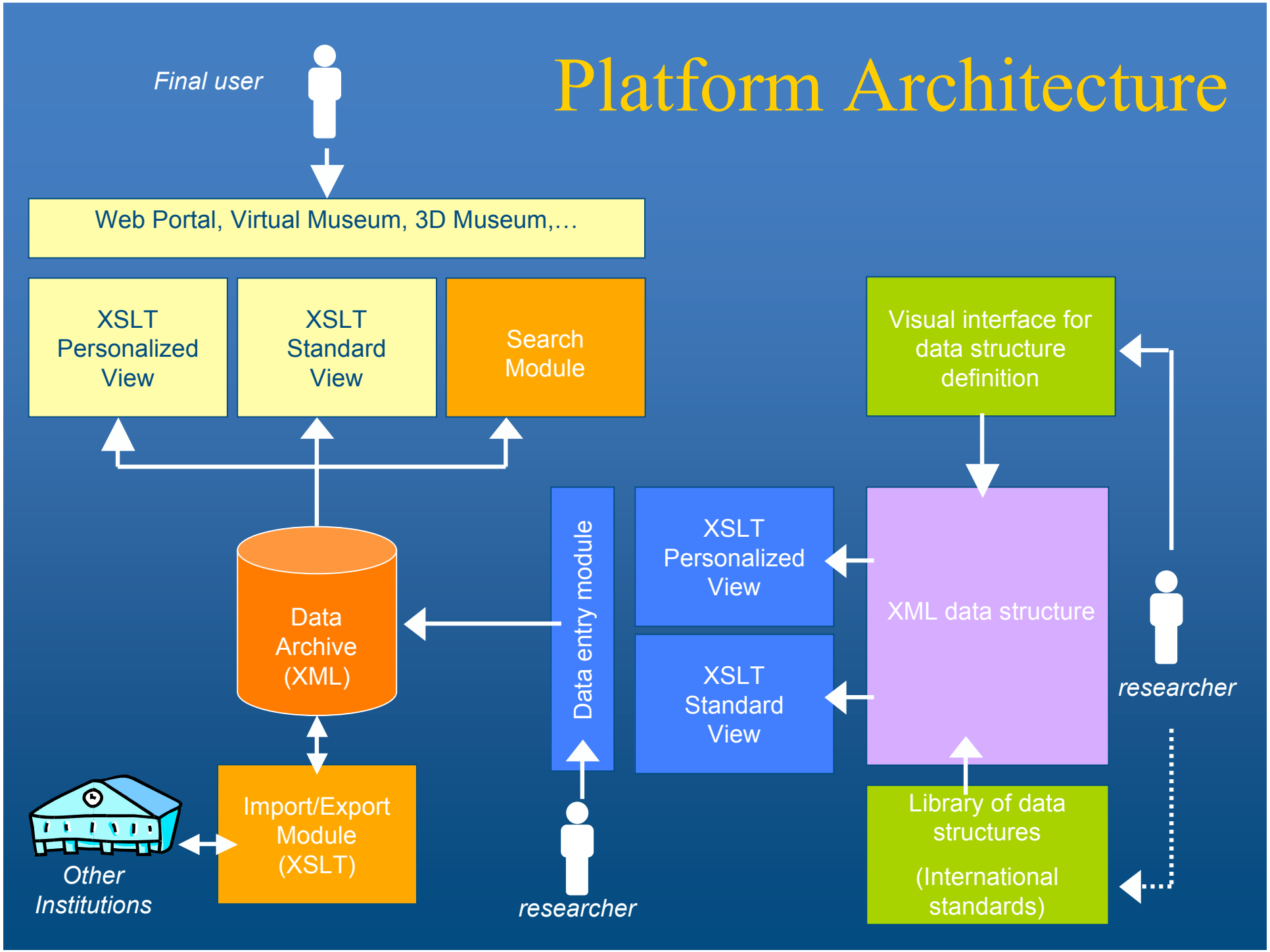
XSLT

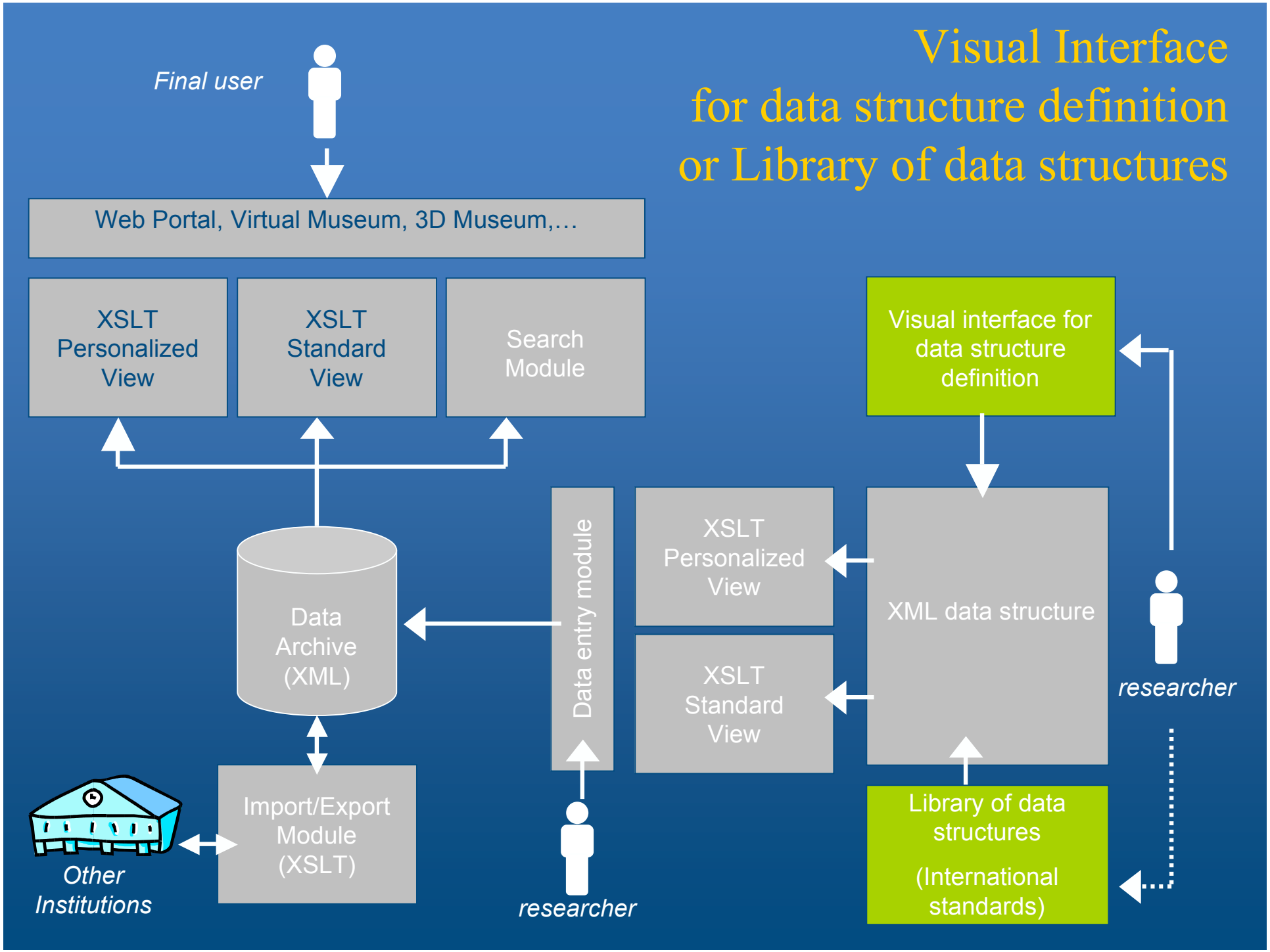
XSLT is a powerful transformation language
Using XSLT is possible:

- To transform XML to obtain xHTML, WML, Pdf, etc…
- To view XML data in different ways using different devices
- To obtain different and personalized interfaces to access to the data or add other contents to the archive

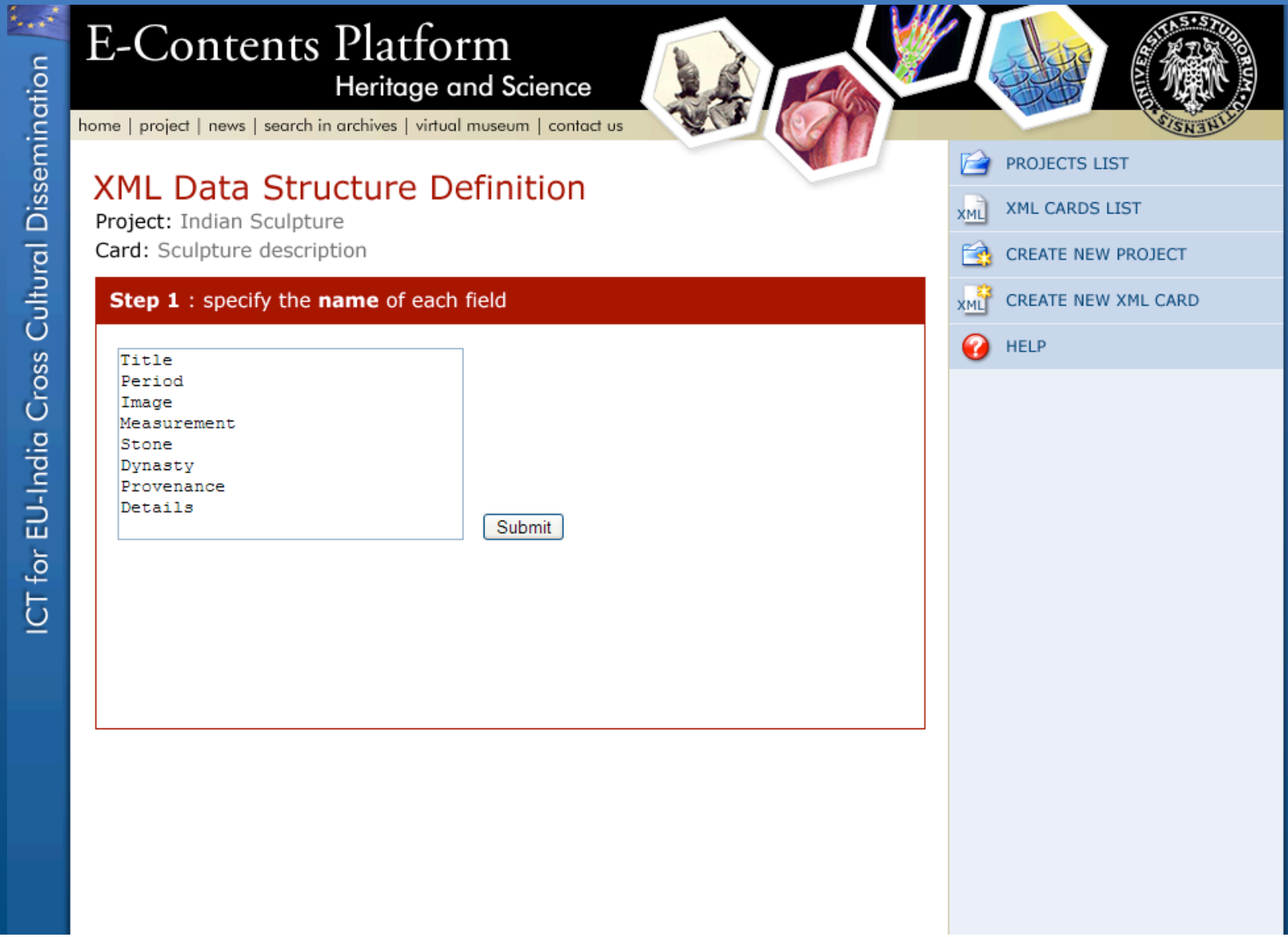


Platform Architecture

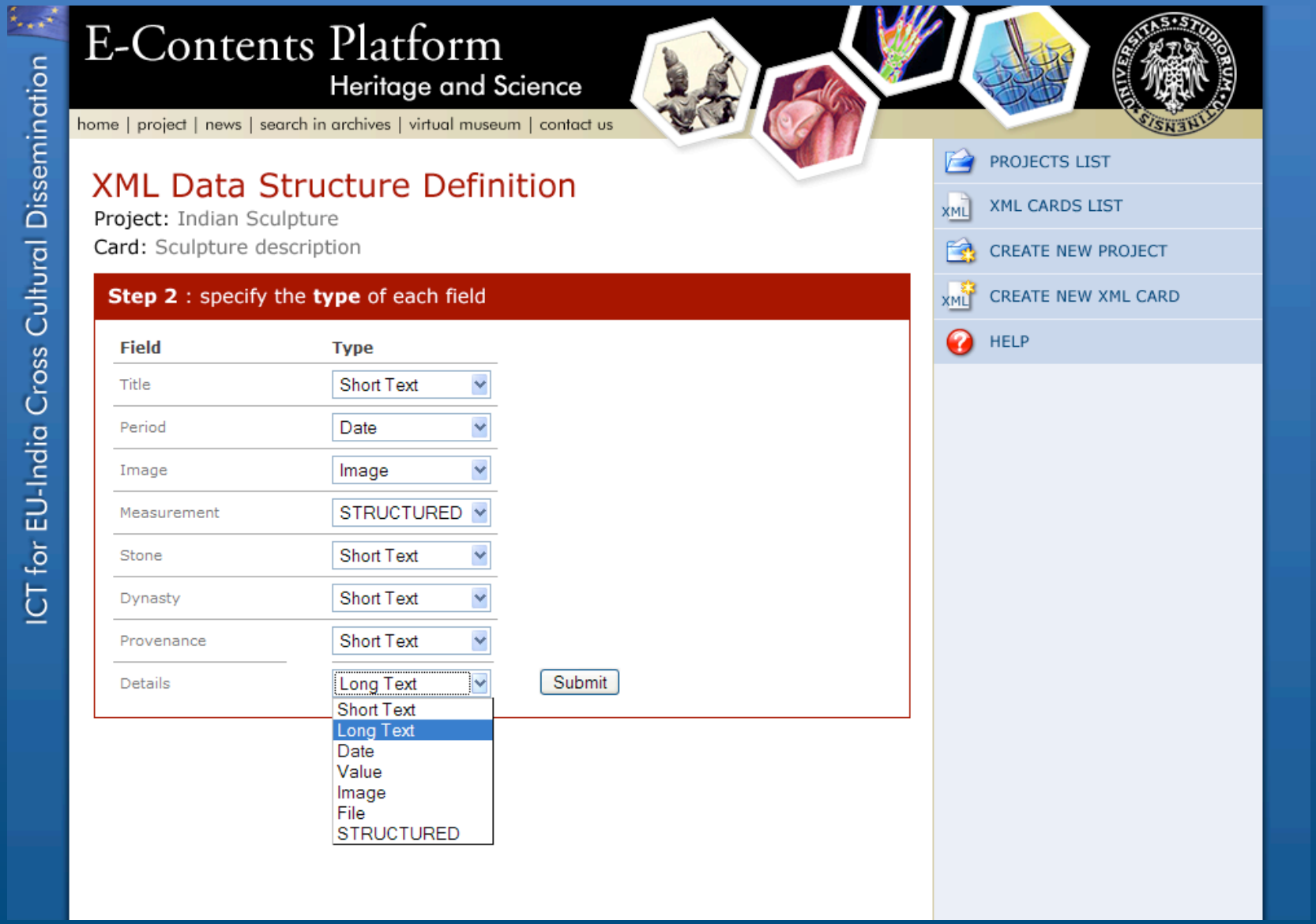



Visual Interface
for data structure definition
or Library of data structures
Final user
Web Portal, Virtual Museum, 3D Museum,…
XSLT Personalized View
XSLT Standard View
Search Module
Visual interface for data structure definition
Data Archive (XML)
Data entry module
XSLT Personalized View
XSLT Standard View
XML data structure
researcher
Other Institutions
Import/Export Module (XSLT)
researcher
Library of data structures
(International standards)

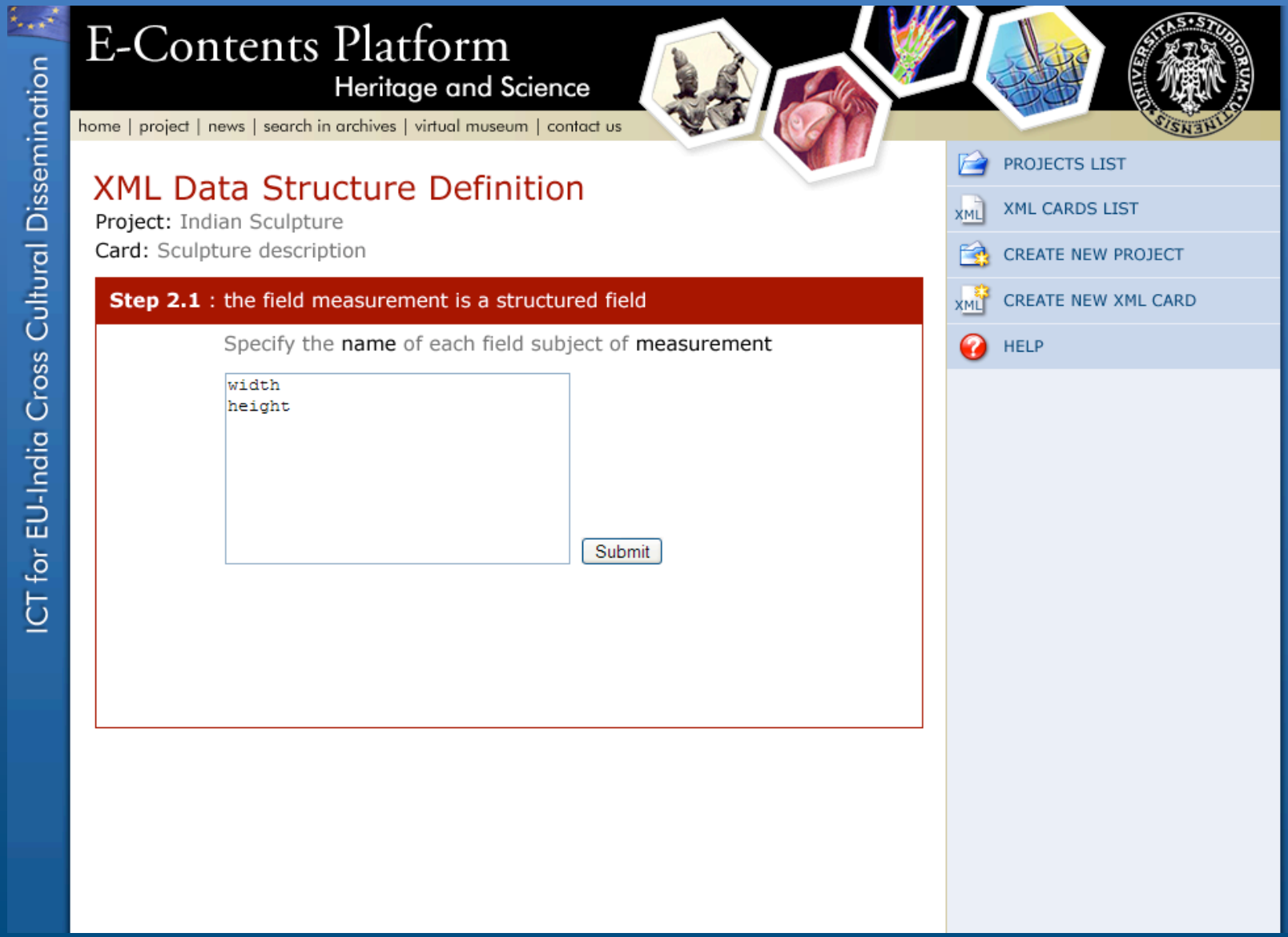
Visual interface for data definition



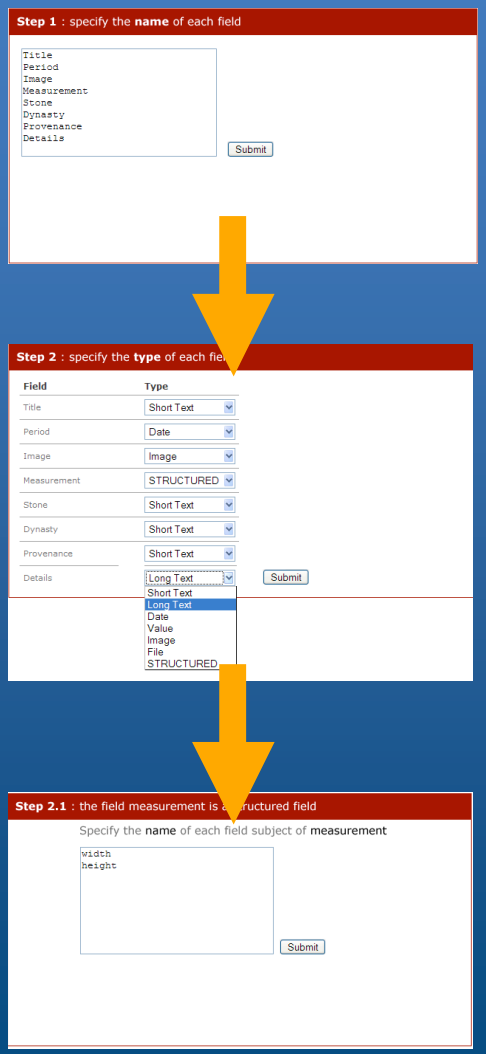
Visual interface for data definition



Visual interface for data definition



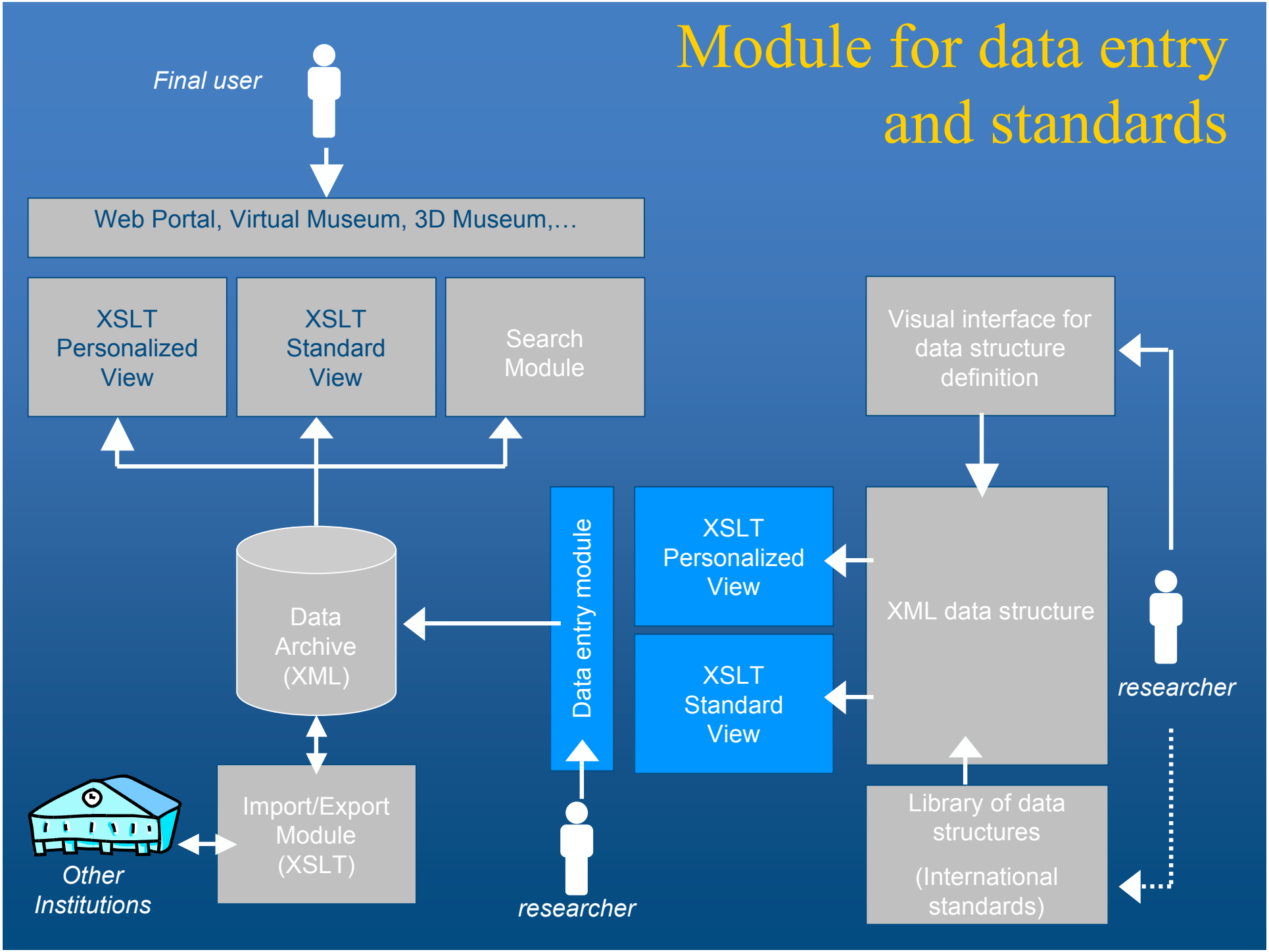
Visual interface for data definition



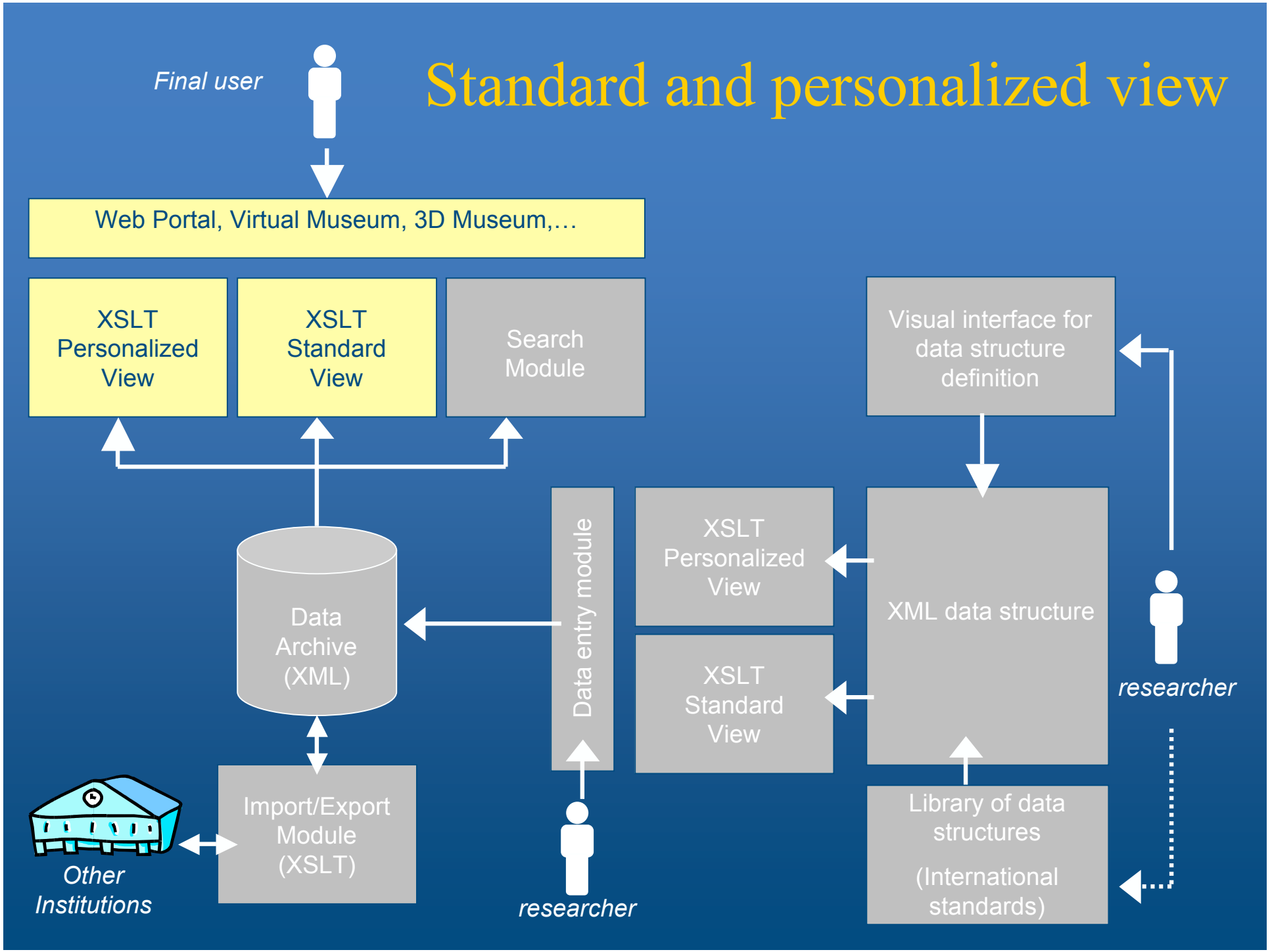
Automatic generation of DTD or XML Schema

```
<!DOCTYPE indianSculptures [
<!ELEMENT indianSculptures (sculpture*)>
<!ELEMENT sculpture (title, image, period,
                     measurement, stone, dynasty, provenance,
                     details)>
<!ELEMENT measurement (width, height)>
<!ELEMENT title (#PCDATA)>
<!ELEMENT image (#PCDATA)>
<!ELEMENT period (#PCDATA)>
<!ELEMENT width (#PCDATA)>
<!ELEMENT height (#PCDATA)>
<!ELEMENT stone (#PCDATA)>
…
<!ATTLIST title type CDATA #FIXED “shortText”>
<!ATTLIST image type CDATA #FIXED “image”>
<!ATTLIST period type CDATA #FIXED “date”>
…
]>
```

Module for data entry and standards



Standard and personalized view



ICT for EU-India Cross Cultural Dissemination

E-Contents Platform

Heritage and Science

What is an E-Contents Platform?

We analyze how to address portability of existing cultural dissemination assets such as Science and Heritage museums on a digital platform. In particular, we address the problem of e-contents for Science and Heritage popularization, i.e. of making accesible on the net the kind of experiences which can raise the awareness of the youngsters and the laymen in these areas. Special emphasis goes also in the direction of experimenting with existing solutions for enhancing digitally the fruition of cultural artifacts.

This platform is an archive of cultural and scientific contets in dital format. In particular it includes some samples from the Archeological Museum Hyderabad, Modern collection, Numeri e macchine (Udine) and more.

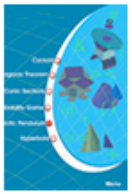
Access to Archives

- Fototeca University of Udine
- LIDA University of Udine
- Numeri e Macchine
- Kurnool Project
- Birla Archaeological Musem

Virtual museum

Birla Archeological Museum

It is possible to access to the collections of the Birla Archaeological Museum and find several information about each item.



Kurnool Museum

It is online the "Kurnool Museum" where you can find virtual experiments in several fields, including mechanics, optics, mathematics, etc.

Platform login

In order to include digital e-contents in the archives of the platform, login using your userid and password.

USERID

PASSWORD

enter

News

4-11-2004

The archives of LIDA projects will be available on this platform soon. You can find more information on LIDA Web Site

28-08-2004

Is under construction a new 3D virtual museum including the collections of Bira Modern Art Gallery

Link

- Fototeca University of Udine
- LIDA University of Udine
- Numeri e Macchine
- Kurnool Project

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E-Contents Platform

Heritage and Science

Italian Modern Art (1944)

(click for enlarge)

Title: natura morta

Year: 1929

City: Brescia

Collection: Avv. Pietro Feroldi

Subject: natura morta

Contents

Arturo Tosi, [A cura di] Ugo Bernasconi, Milano, Ulrico Hoepli – Editore, 1944, 3° edizione.

Saggio

Ugo Bernasconi

Saggio

Ugo Bernasconi

Natura Morta

Brescia, 1929

Indian Sculpture

(click for enlarge)

Title: Veerabhadra

Period: 16th C.A.D

Measurement: H:141cms W:74

Stone: Dolerite

Dynasty: Kakatiyan

Provenance:

Munnanoor (Mahaboobnagar Dist.) Telengana Area – A.P

Details:

Veerabhadra, eight handed in standing posture. He carries in his left hands a trident, bow, shield and a mace. The mace is rested to the ground. The right hands carry a sword, damaru, arrow and a sword. He is well ornamented with makuta, kundalas, haras, keyuras, valayas, kankanas, yagnopavita, katibandha, long mundamala going down the knees, ardhoruka, manjiras and high heeled foot wear. There is a prabhavali (?) behind with a central kirtimukha. At the base Daksha and his consort are depicted one on either side. A well carved and preserved sculpture.

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Next list ->

Next list ->

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E-Contents Platform

Heritage and Science

Modern Indian Sculpture

(click for enlarge)

Title: Meera Mukherjee

Period: Contemporary

Location: Hyderabad

Material: Bronze

Contents


Somnath Hoare


Tarak Gharai


Sunil Kumar Das

Next list ->>

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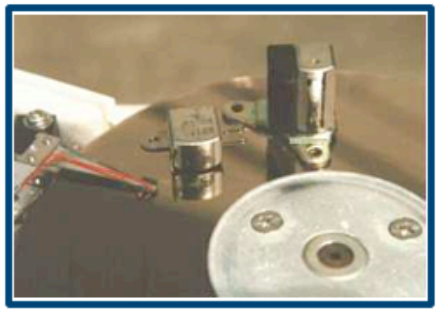
E-Contents Platform

Heritage and Science

Museo dell'informatica

Room: La memoria secondaria dei computer



(click for enlarge)

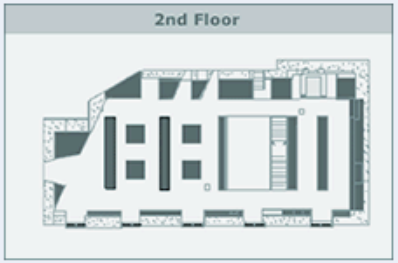
Attualmente la memorizzazione delle informazioni mediante il principio magnetico costituisce una delle tecniche più importanti per realizzare la memoria secondaria. Le informazioni vengono memorizzate su una superficie ferromagnetica e possono essere lette o modificate mediante un'opportuna testina di scrittura e lettura.

A partire dalla fine degli anni '80, si è diffusa anche la memoria di tipo ottico, con l'introduzione del CD-ROM. Questo tipo di memoria offre supporti con una notevole capienza, ad un prezzo estrememamente contenuto. I primi supporti di tipo ottico erano scrivibili una sola volta, mentre oggi si stanno diffondendo anche i dischi ottici riscrivibili.

(click for enlarge)

Fig. 112. Testina di lettura e scrittura di un disco rigido vicino a due testine per unità a nastro magnetico. Le informazioni vengono lette e registrate da una o più testine leggerissime e velocissime che sfiorano la superficie del disco a distanza di 0,5 micron. Il movimento in rotazione del disco e al tempo stesso lo scorrimento radiale della testina permette di accedere in modo rapido a qualunque informazione presente sul disco. Attualmente la memorizzazione delle informazioni mediante il principio magnetico costituisce una delle tecniche più importanti per la memoria secondaria. Le informazioni vengono memorizzate su microscopiche areole di una superficie ferromagnetica e possono essere lette o modificate mediante un'opportuna testina di scrittura e lettura. Una testina di questo tipo assomiglia, almeno in linea di principio, ad un'elettrocalamita miniaturizzata che agisce sulle singole areole magnetizzandole in uno dei due versi possibili.

Virtual Museum



first floor third floor

Contents

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E-Contents Platform

Heritage and Science

Vase gallery

COPPA LACONICA

Material: Clay

Origin: Laconia

Period: VI century B.C.

Notes:

KYLIX

Material: Ceramics

Origin:

Period:

Notes:

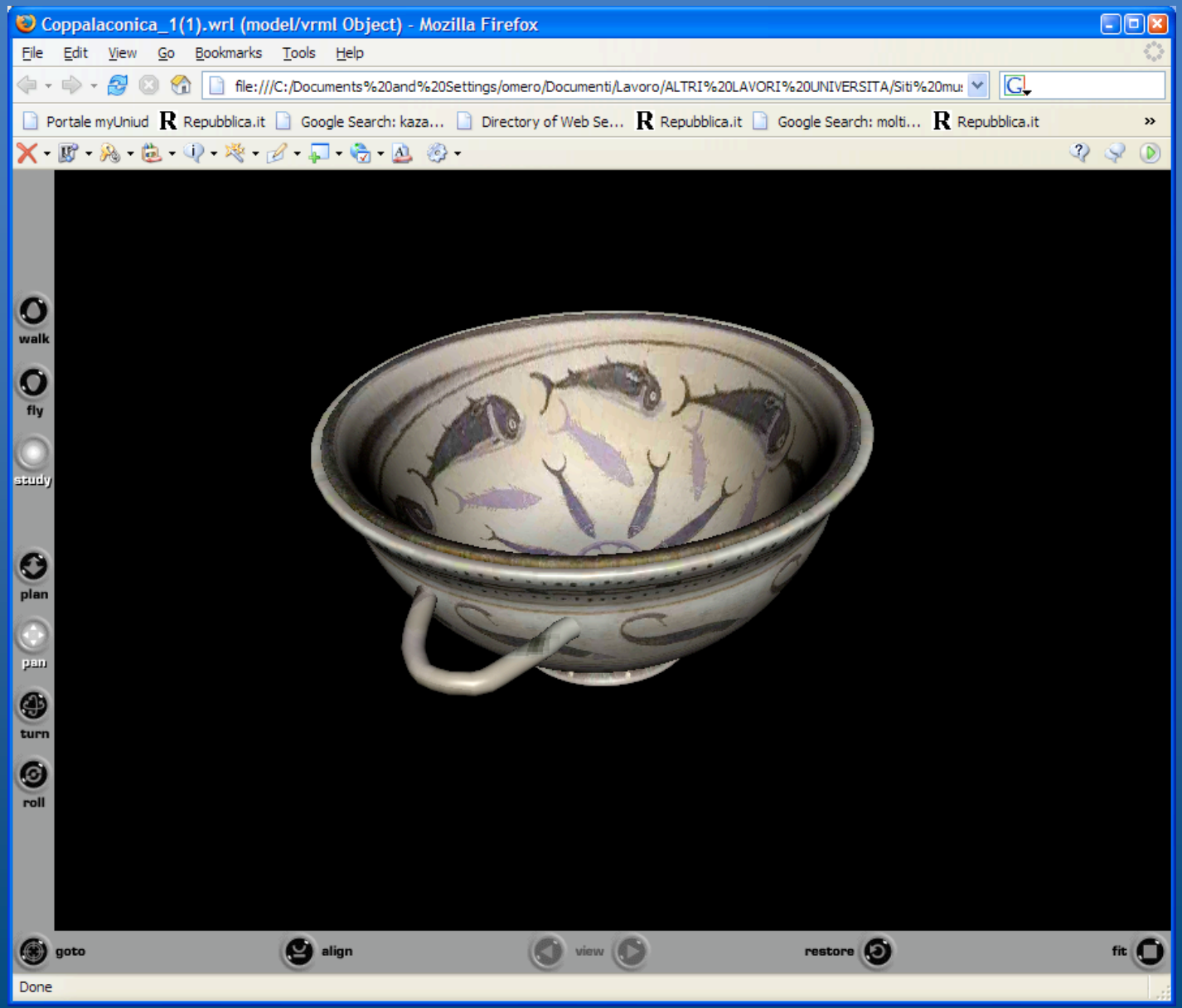
Instructions for 3D Visualization

For visualising objects in three dimensions, please use the CORTONA VRML CLIENT.

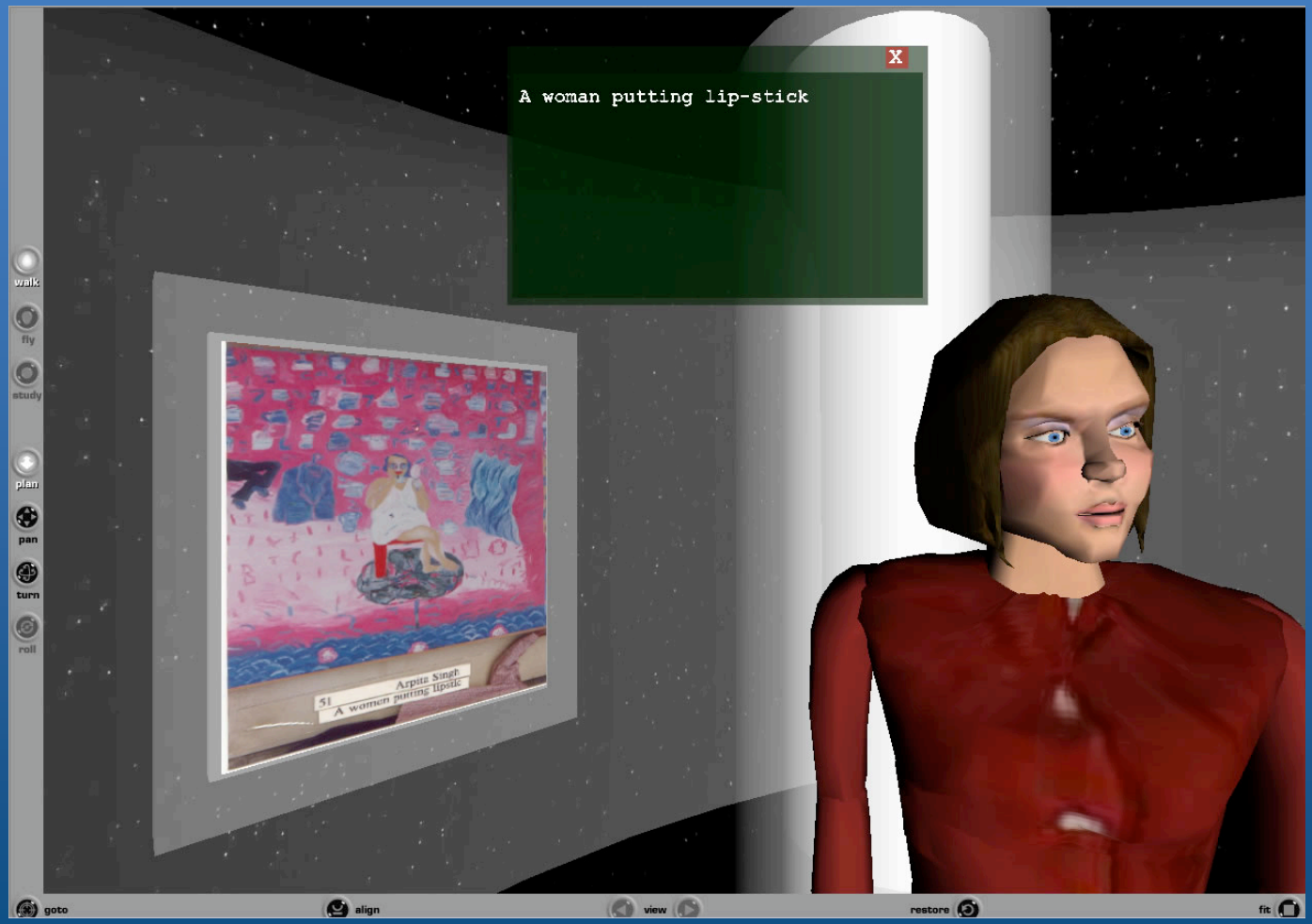
You can download it from this page.

Have a Good Navigation!

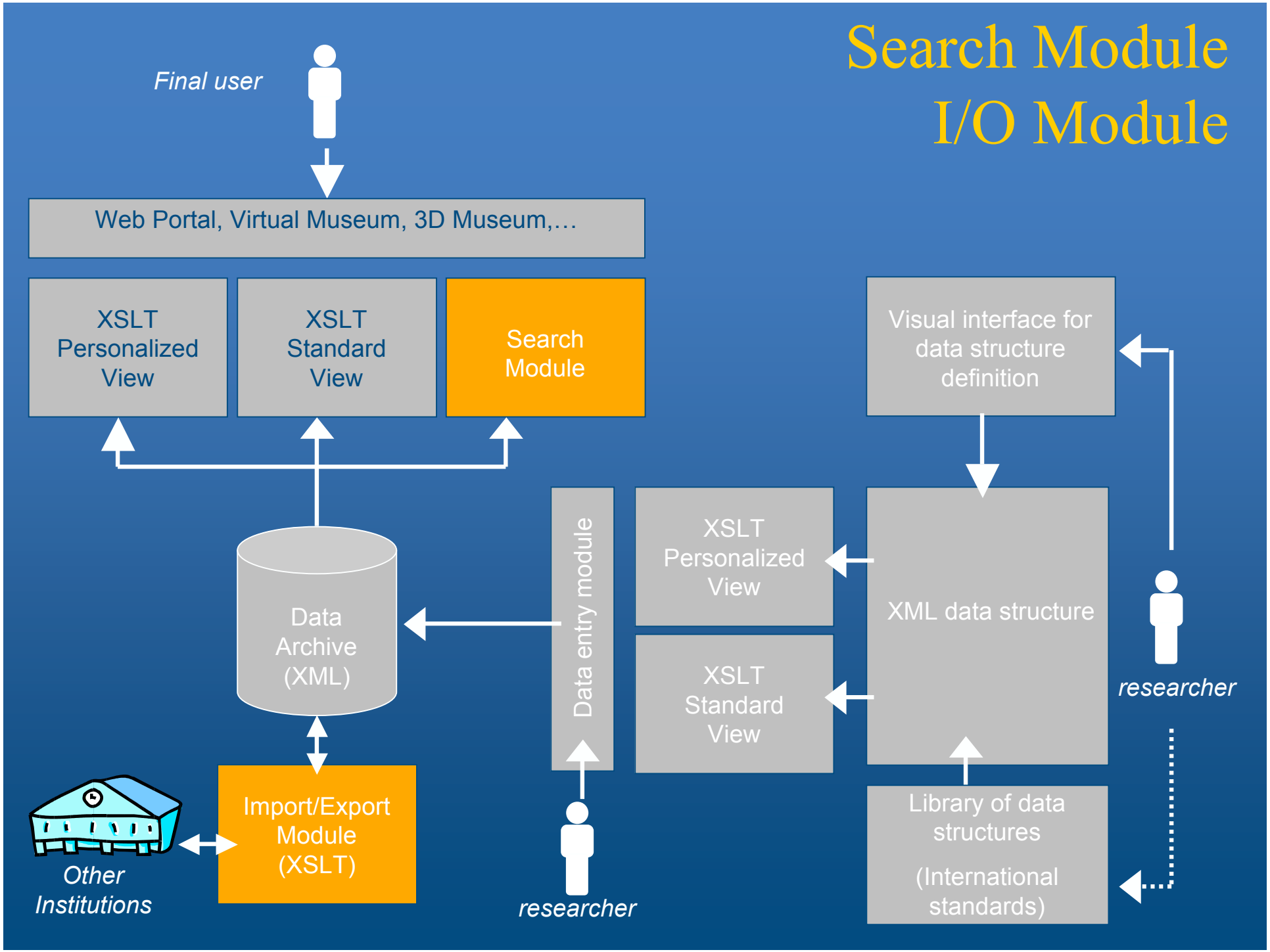
3D VRML object



3D Virtual Museum



(dott. Roberto Ranon - WG1: Web 3D Technologies)


Search Module
I/O Module
Final user
Web Portal, Virtual Museum, 3D Museum,…
XSLT Personalized View
XSLT Standard View
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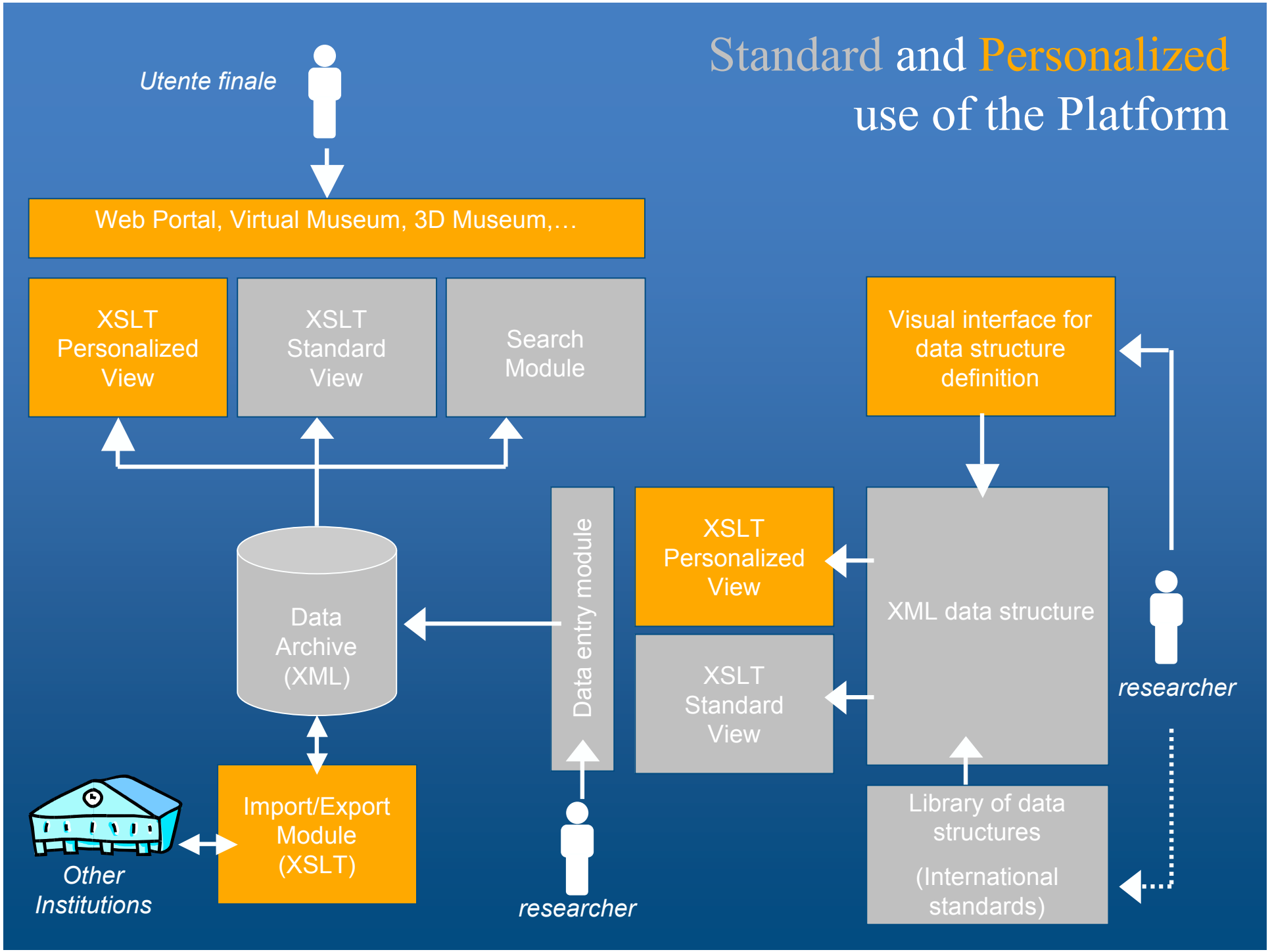
Visual interface for data structure definition
Data Archive (XML)
Data entry module
XSLT Personalized View
XSLT Standard View
XML data structure
researcher
Other Institutions
Import/Export Module (XSLT)
researcher
Library of data structures
(International standards)

Searching features

- Using intelligent system of information filtering of infoFACTORY (prof. Carlo Tasso)
  - Search by concept (high precision)
  - Transversal search on multiple archives
  - Construction of personalized and tematic data banks
  - Search hints by automatic extraction of related data
  - Automatic discovery of related information on WWW


Standard and Personalized use of the Platform
Utente finale
Web Portal, Virtual Museum, 3D Museum,…
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User interaction

- Hands on museum
  - virtual experiments (attachment of flash file)
  - Physics, Computer science,
- Contributes of visitors
  - Save comments and info provided by users about items exposed in virtual museum
  - Other visitors can read comments and write other opinions or provide other info
  - Rating quality/contents of museum

Automatic verification of web sites

- The Platform provide contents trough web site and portals
- It could be useful to have methodologies and tools to
  - verify syntactic and semantic properties of Web sites
  - repair Web sites automatically
- Prof. Moreno Falaschi (WG3)

Conclusions: innovative elements

- The general approach allows to solve the problem of storing materials of different nature
- The platform can be used in a personalized way according to the user needs

- Extendibility:
  - Data set definition
  - Interface for the utilization
  - Searching capabilities
  - Import/Export of data
  - Interoperability with other archives

- Open to international standards of data definition
- Utilize of intelligent system to collect relevant document and provide advanced capabilities of search
- High interactivity with users

Contacts

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