

The COMETA Grid Infrastructure and its Services for Digital Cultural Heritage Applications

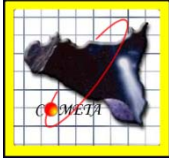
Roberto Barbera (roberto.barbera@ct.infn.it)

COMETA Chief Technical Officer

DC-NET Concertation Seminar

Tallinn , 13-14.01.2011





- **The Italian e-Infrastructure**
- **The COMETA Grid and Applications**
- **The COMETA Services for Cultural Heritage**
 - gLibrary
- **COMETA, DC-NET and INDICATE**
- **The INDICATE Virtual Organisation**
- **The INDICATE e-Culture Science Gateway**
- **Summary and Conclusions**

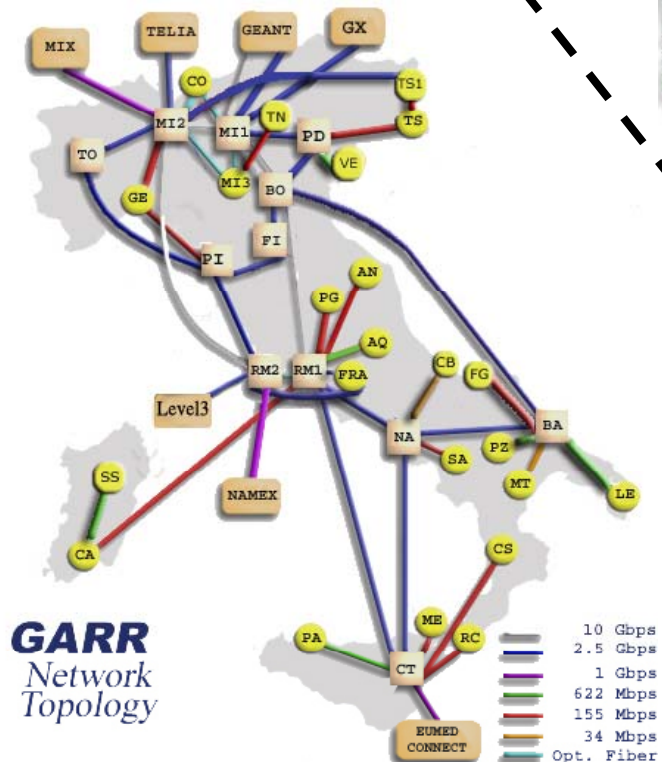


The Italian e-Infrastructure

(interoperable with gLite as common communication protocol)



The Network



The Grid

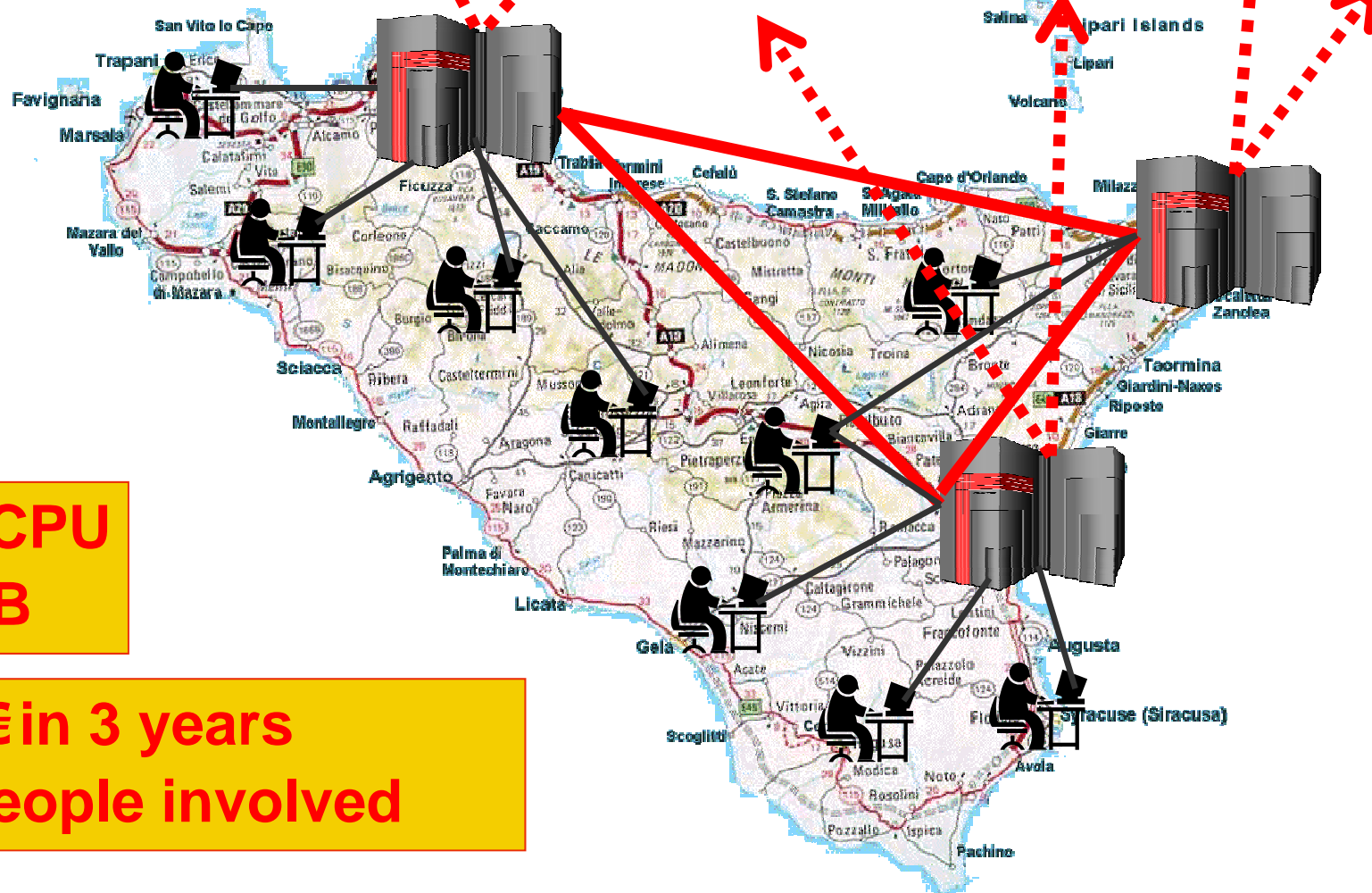




The Sicilian Grid in one slide...

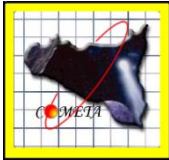


Ministero
dell'Università e della Ricerca



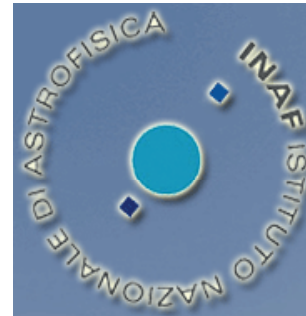
~2000 CPU
~250 TB

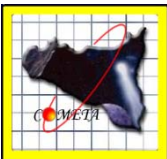
~12 M€ in 3 years
>270 people involved



The COMETA Consortium

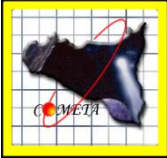
(www.consorzio-cometa.it)





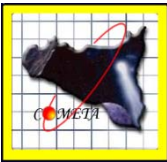
The Sicilian e-Infrastructure (1/2)





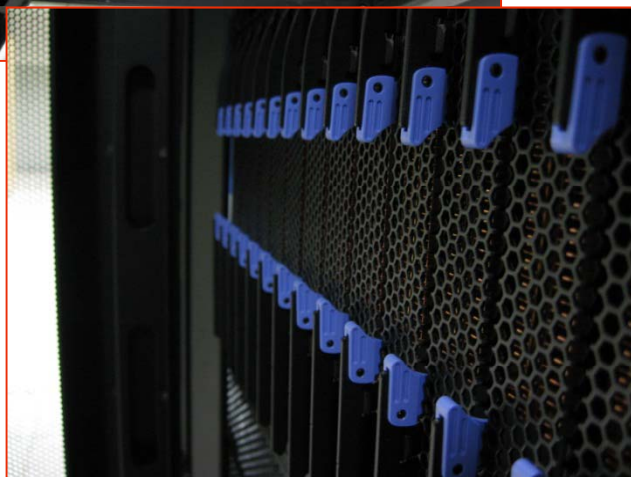
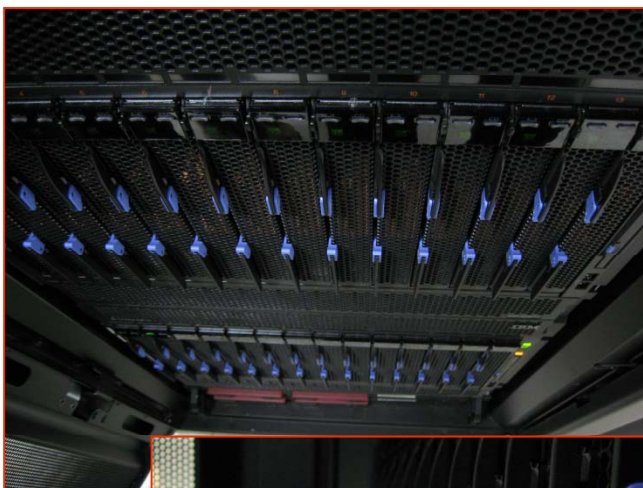
The Sicilian e-Infrastructure (2/2)





Computing and Storage resources available

1. ~2000 cores AMD Opteron 2218 rev. F
2. 2 GB of RAM per core
3. Commercial LRMS (LSF)
4. Infiniband-4X (for MPI applications)



1. ~250+ TB of storage
2. Distributed parallel filesystem (GPFS)

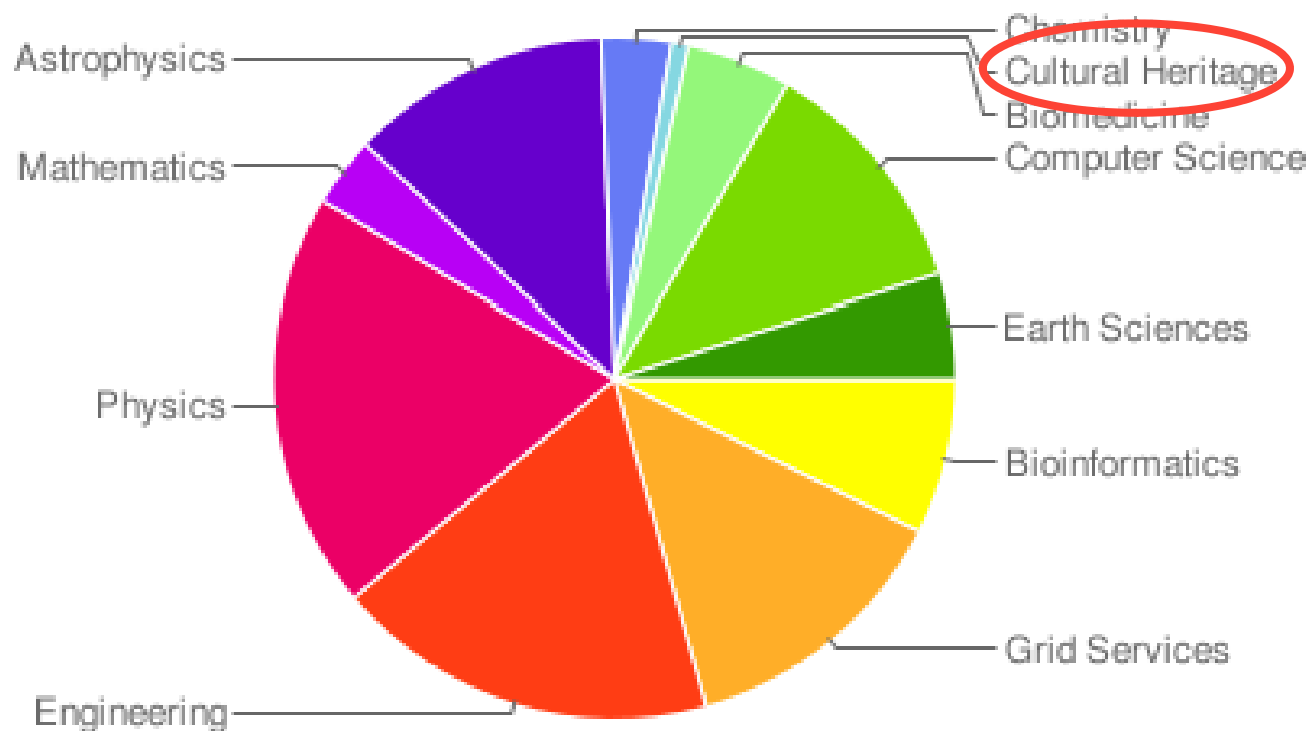


COMETA Applications

- A comprehensive database is available at:

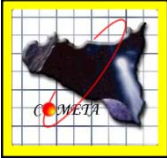
- www.pi2s2.it/applications (**122** entries)

Distribution by domain



- To know more, look at:

- agenda.ct.infn.it/materialDisplay.py?materialId=12&confId=24
- agenda.ct.infn.it/materialDisplay.py?materialId=20&confId=87



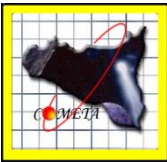
Why Grids for Digital Cultural Heritage ?

- **High performance storage systems:**
 - Geographically distributed replicas of files
 - Fault-tolerant digital preservation;
- **Simplified authentication systems:**
 - Single sign-on;
- **Fine-grained authorization systems:**
 - Allow to define exactly who:
 - Individual user(s), group(s), organization(s), the whole world;
 - And what:
 - Read/edit/delete data and metadata;
 - Search, browse;
 - Creation of new repositories;
 - Role assignments;
 - Etc.



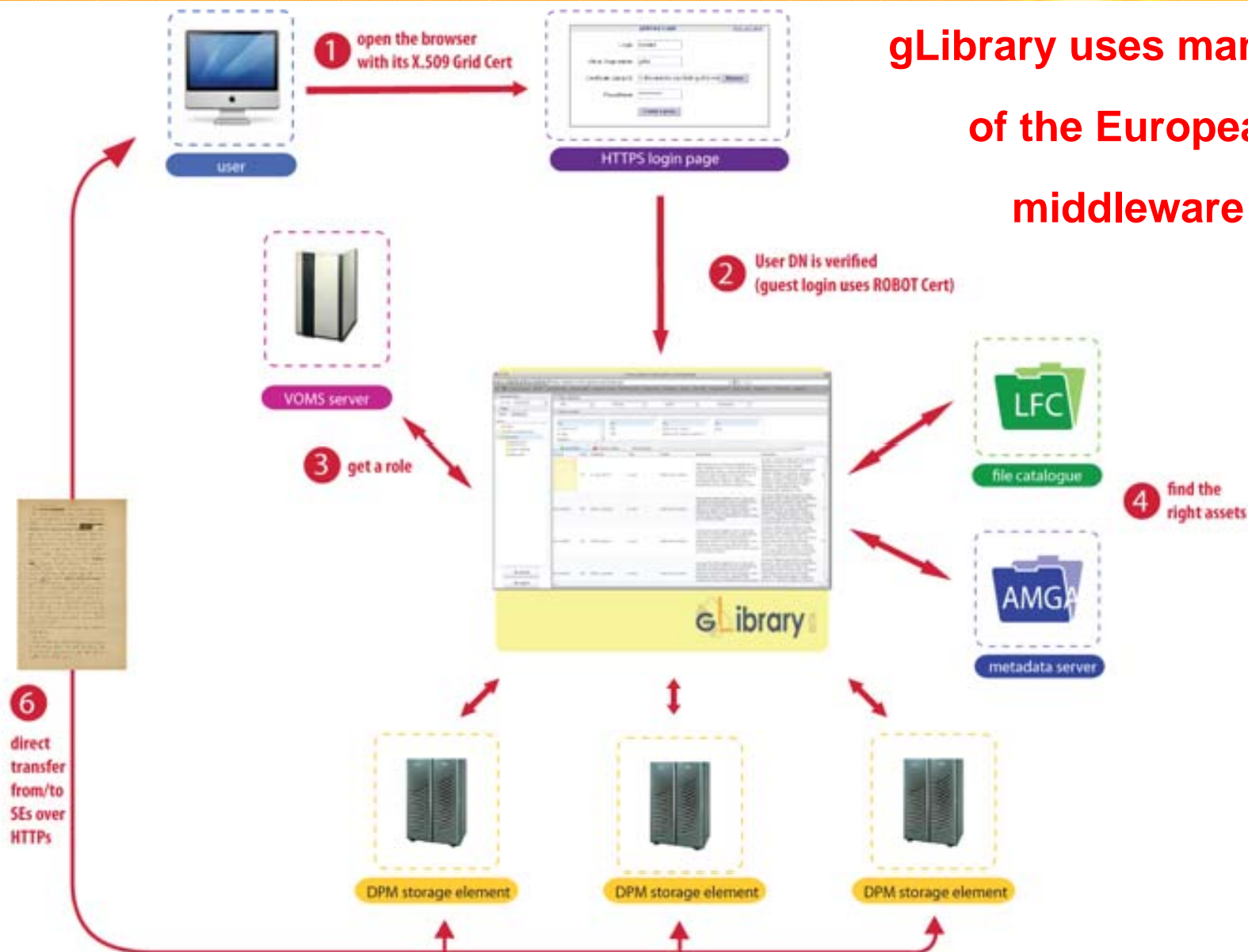
- gLibrary is the INFN/COMETA **platform** that provides a simple yet powerful system to **store, organize, search** and **retrieve** “**digital assets**” in repositories built on e-Infrastructures
 - hides the underlying technical details to the users
- What we mean by “**digital asset**”:
 - data + metadata





gLibrary architecture

**gLibrary uses many services
of the European Grid
middleware gLite**



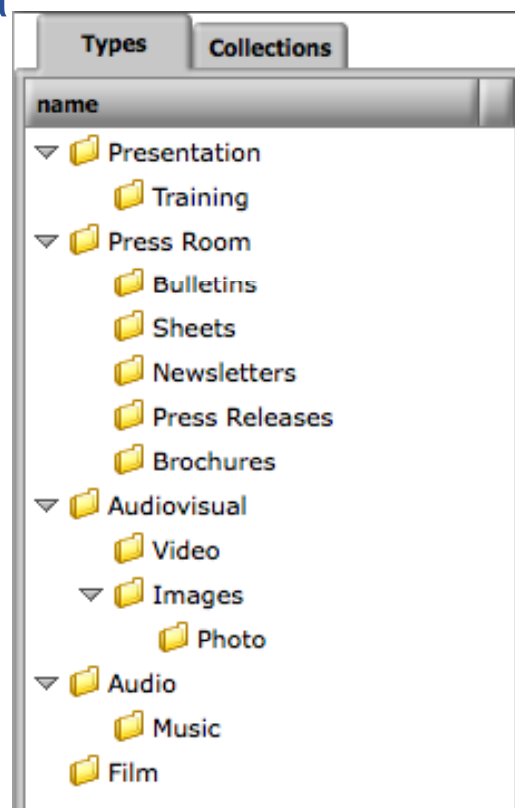


Asset organization

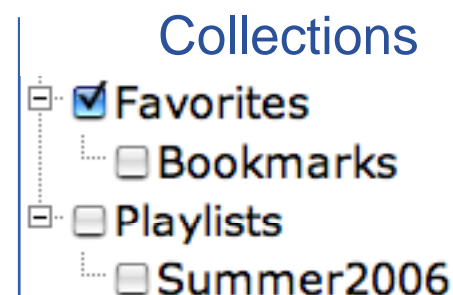
- Digital Asset of different kind (or type) are organized into **repositories**:
 - “**types**” e “**collections**” definition by the administrator(s) of a given **repository**. Assets organized by:
 - **type**:
 - a list of attributes to describe a given kind of asset
 - hierarchical (a child type shares and extend parent’s attributes)
 - **filters**: subset of attributes queried during browsing
 - and/or **collection**:
 - group together related assets belonging to different **types**
 - useful to define subsets of assets of the same type (i.e. favorites, playlists)
 - the same asset can belong to multiple collection (sort-of tagging)

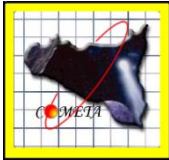
EXAMPLE OF TYPES AND ATTRIBUTES’ LIST

Type	Attributes’ list
Audio Music	Format, Bitrate, Samplerate, Time (Format, Bitrate, Samplerate, Time), Name, Artist, Album, Genre, Tracknumber, Year, Artwork, Lyric, Rating
Presentation	Format, NumOfPages
Training	(Format, NumOfPages), Title, Runtime, Speaker, Author, Subject, Event, Date, Type
Root	FileFormat, SubmissionDate, Description, Keywords, LastModificationDate, Size



Repository





gLibrary browser

“à la iTunes”

- Assets are browsed selecting a **type** (or a **collection**) and then one of its **filter**:
 - attributes of the selected types/collection, chosen from a defined list, used to narrow the result set
- Filter application is cascading: the selection of a filter value dynamically influences subsequent filter values (“à la iTunes” browsing)

Repositories: Current : EELA test repo

Trees: Types Collections

Name

- Audiovisual
 - Video
 - Film
 - Trailers
 - Images
 - Audio
 - Music
 - Press Room
 - Bulletins
 - Sheets
 - Newsletters
 - Press Releases
 - Brochures
 - Presentation
 - Training

Filter attributes

Event Speaker Subject Format

Values

ALL

Cyclops first workshop

gLite Application Developer Co

gLite Embrace-Egee

gLite Tutorial for Health-e-Child

ALL

Gianni Ricciardi

Giuseppe La Rocca

Giuseppe Platania

ALL

gLite DPM installation

gLite generalities

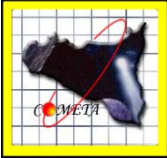
gLite Yam

ALL

PowerPoint

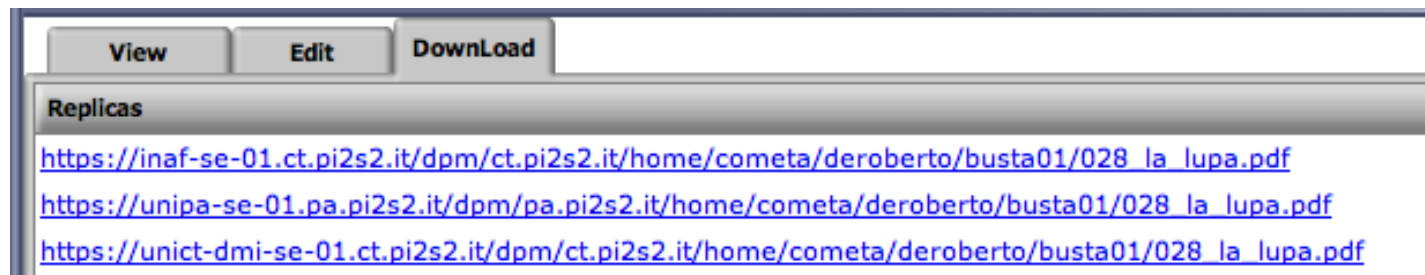
Add Filter Remove Filter Save display

Title	Runtime	Speaker	Subject	Event	Author	tcaland
DPM installation, configuration and testing	60	Gianni Ricciardi	gLite DPM installation	gLite Embrace-Egee	Gianni Ricciardi	2006-10-09 00:00:0
Overview of the gLite middleware	45	Giuseppe La Rocca	gLite generalities	gLite Embrace-Egee	Giuseppe La Rocca	2006-10-09 00:00:0
Yam/Hands-on	120	Giuseppe Platania	gLite Yam	gLite Embrace-Egee	Giuseppe Platania	2006-10-09 00:00:0

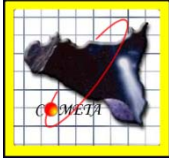


Asset upload and retrieval

- Users can **upload** their local assets to one or more (i.e., creating replicas) Storage Elements of the Grid;
- **Download** from Grid storage to user PC/laptop with a click:
 - choosing a replica from a list:



- future functionalities: storage maps, closer storage;
- Transfers (handled over HTTPS) are authorized by the digital certificate imported into the user's browser:
 - only authorized users can download a given assets;
 - guest access is supported through **robot certificates**.

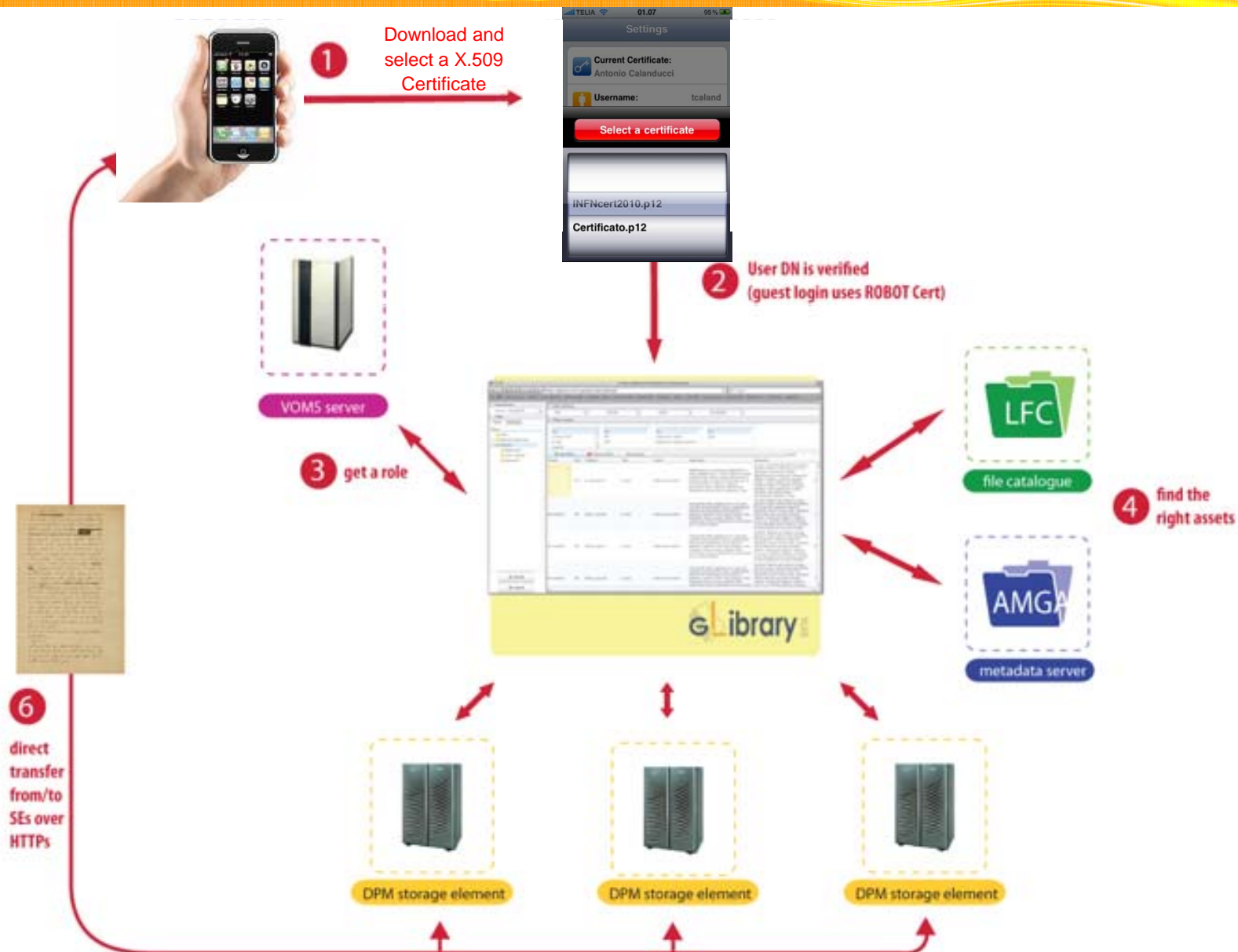


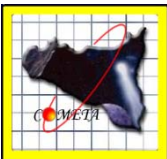
- **Mobile interface to access Grid Digital Libraries:**
 - *iPhone, iPod Touch, iPad;*
- **Advantages:**
 - provides an extremely **intuitive** and **touch-based** user interface to Grid storage elements and metadata, especially for non-expert users;
 - (to do) automatic selection of the closest replica, according to the user physical location retrieved by the integrated GPS;
 - offline access to the assets already downloaded.

In collaboration with Dr. C. Pistagna

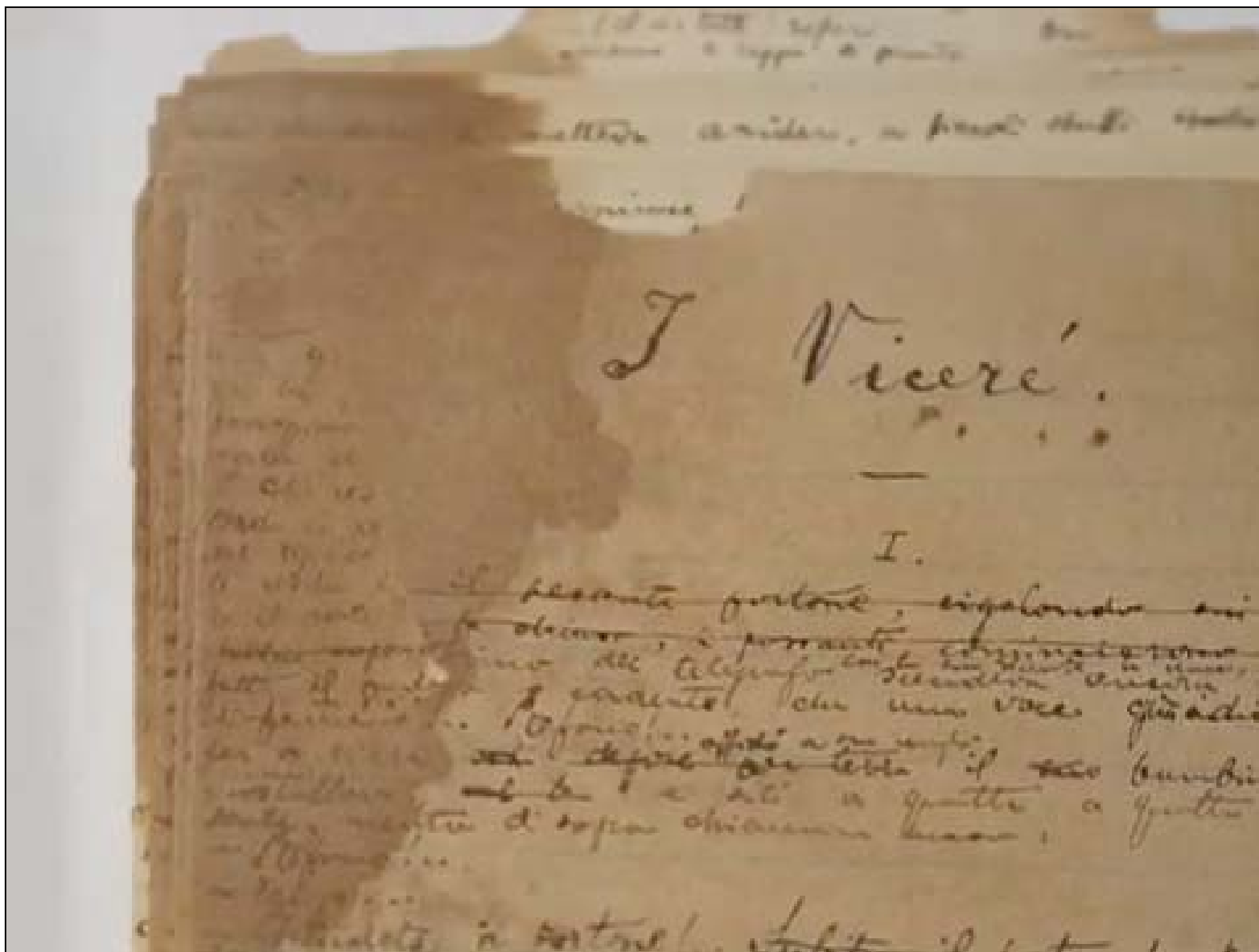


gLibrary mobile architecture





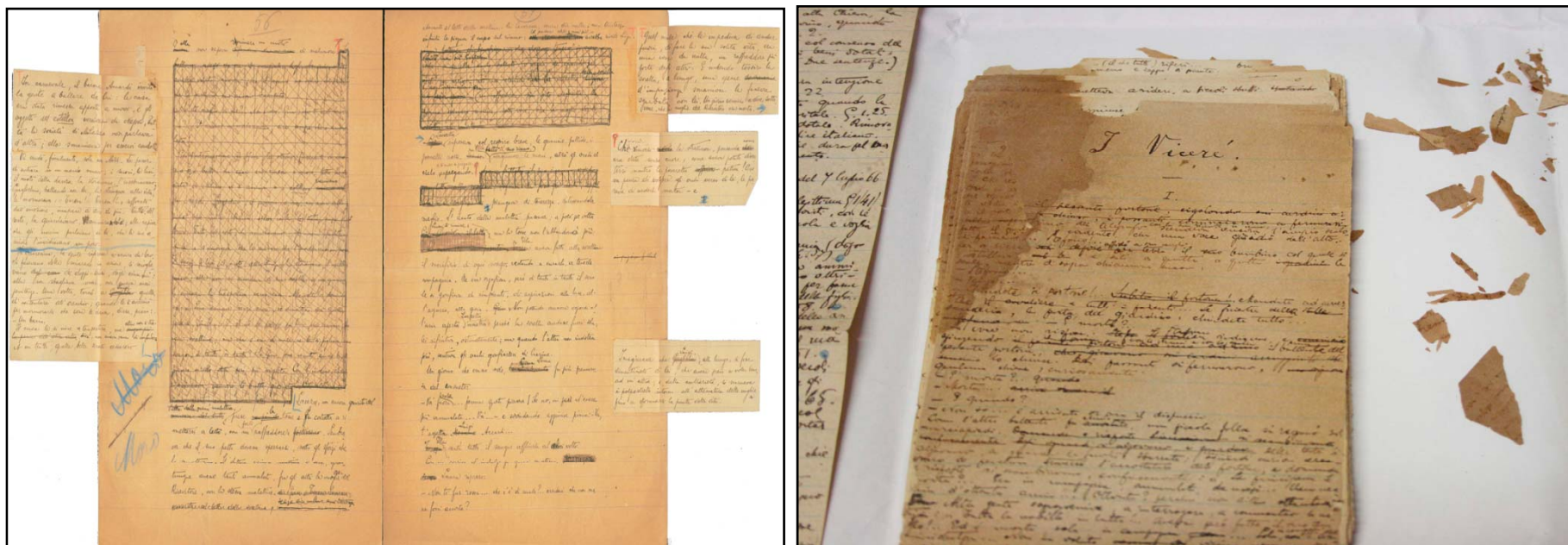
A use case: Federico De Roberto works





Digitise to preserve

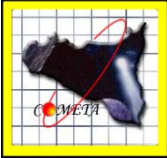
- Some sheets are damaged (mold, crumbed pieces) and need physical restoration;
- Digitisation is mandatory to avoid the loss of this heritage; some works are still unpublished and relevant for the humanistic community.





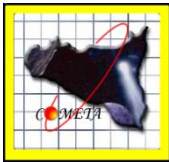
Digitisation phase @ University of Catania





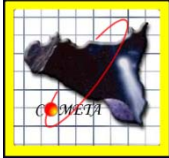
Acquisition stage

- **Digitalization of manuscripts, typescripts, printed works:**
 - TIFF Files, one per page, 600 dpi, about 100 MB for A3
 - High resolution scans for in-depth examination;
 - PDF, one per work, 300 dpi, varying file sizes 40-400MB
 - Overall examination of works;
 - 8000 sheets/scans, 3 Terabyte of disk space;
 - Different physical formats, A3/A4/custom size;
- **Embedded Metadata:**
 - TIFF with embedded metadata to provide scan physical features and information about the content:
 - ImageWidth, ImageHeight, XResolution, FileSize, CreationDate, ModifyDate
 - Description, Keywords, CaptionWriter, Title, Author, Copyright Status, Copyright Notice;
 - Added with Photoshop after the digitisation phase (Adobe XMP format).



Goals and requirements

- **Make manuscripts accessible to the humanistic community**
 - Always on-line: 24 x 365
 - Available from everywhere
 - Simple and easy-to-use interface for non-expert people
- **Quickly find the desired document**
 - Document organization according the physical and semantic metadata
 - Organization by type/collections
 - Dynamic filtering of search result sets according the selection of one or more document metadata
- **Long-term preservation (digital preservation)**
 - Multiple copies (replicas) spread over different geographical sites
 - Reliability of storage systems and replica redundancy to achieve real preservation

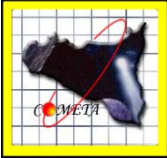


De Roberto DR on Grid with gLibrary

- **Goals:**

- store the 8000 scans of De Roberto Heritage
----> **Data Grid Storage Elements**
- enable an ubiquitous and 24/24h access to scientists ---> **Web Application**
- document organization for a quick search
---> **Metadata Services**
- long-term digital preservation of data
---> redundancy through **Replicas** of files on several Storage Elements
- simple and easy-to-use system for searches, organization, upload and download of digitalized documents on the Grid ----->





Technologies used

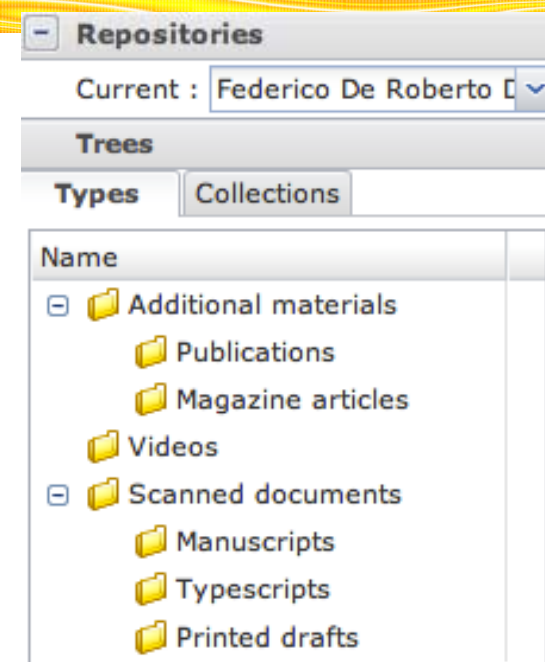
- **Web 2.0 standards:**
 - Javascript/AJAX/JSON on the client side;
 - PHP5 classes to implement business logic on the server side;
- **Grid technologies:**
 - Storage Element SRM interface to get the TURLs (Transfer URLs);
 - Transfers handled with GridFTP and X.509 cert auth HTTPS;
 - X.509 based Globus Security Infrastructure with the VOMS extensions to handle authentication and authorization (ACL based) on Metadata and Storage Elements;
 - All grid services implemented with the EGEE gLite middleware (DPM Storage Elements, AMGA Metadata Catalogue, LFC File Catalogue, VOMS Services);
- **Other standards:**
 - Subset of XMP Metadata:
 - Dublin Core Metadata set will be included in the next release:



Metadata used in the DR digital library

- **Type** tree definition for the DR repository
- **Attributes** definition per type (e.g., manuscripts):

Attribute	Value
Title	la lupa
Author	federico de roberto, giovanni verga
Description	manoscritto della tragedia lirica ...
Keywords	verismo, federico de roberto, la lupa, ...
CaptionWriter	stefania iannizzotto, alessandro ...
CopyrightStatus	copyrighted
PageNum	5
TotalPages	34
DocumentGenre	tragedia lirica
PublicationYear	1916
Publisher	officine tipo-litografiche barravecchia e balestrini
FileType	PDF
Resolution	300
ScanQuality	good



Filter defined per type. Es:

- DocumentGenre
- Title
- FileType
- ScanQuality
- DocumentType
- PublicationYear
- Publisher
- Location



Some screenshots...

http://glibrary.ct.infn.it/glibrary_new/browse.php

http://glibrary.ct.infn.it/glibrary_new/browse.php

cultural heritage

DE ROBERTO digital repository

home browse search upload logout

Repositories

Current : Federico De Roberto

Trees

Types Collections

Name

- Additional materials
 - Publications
 - Magazine articles
 - Videos
- Scanned documents
 - Manuscripts
 - Typescripts
 - Printed drafts

Filter attributes

Title FileType Author ScanQuality

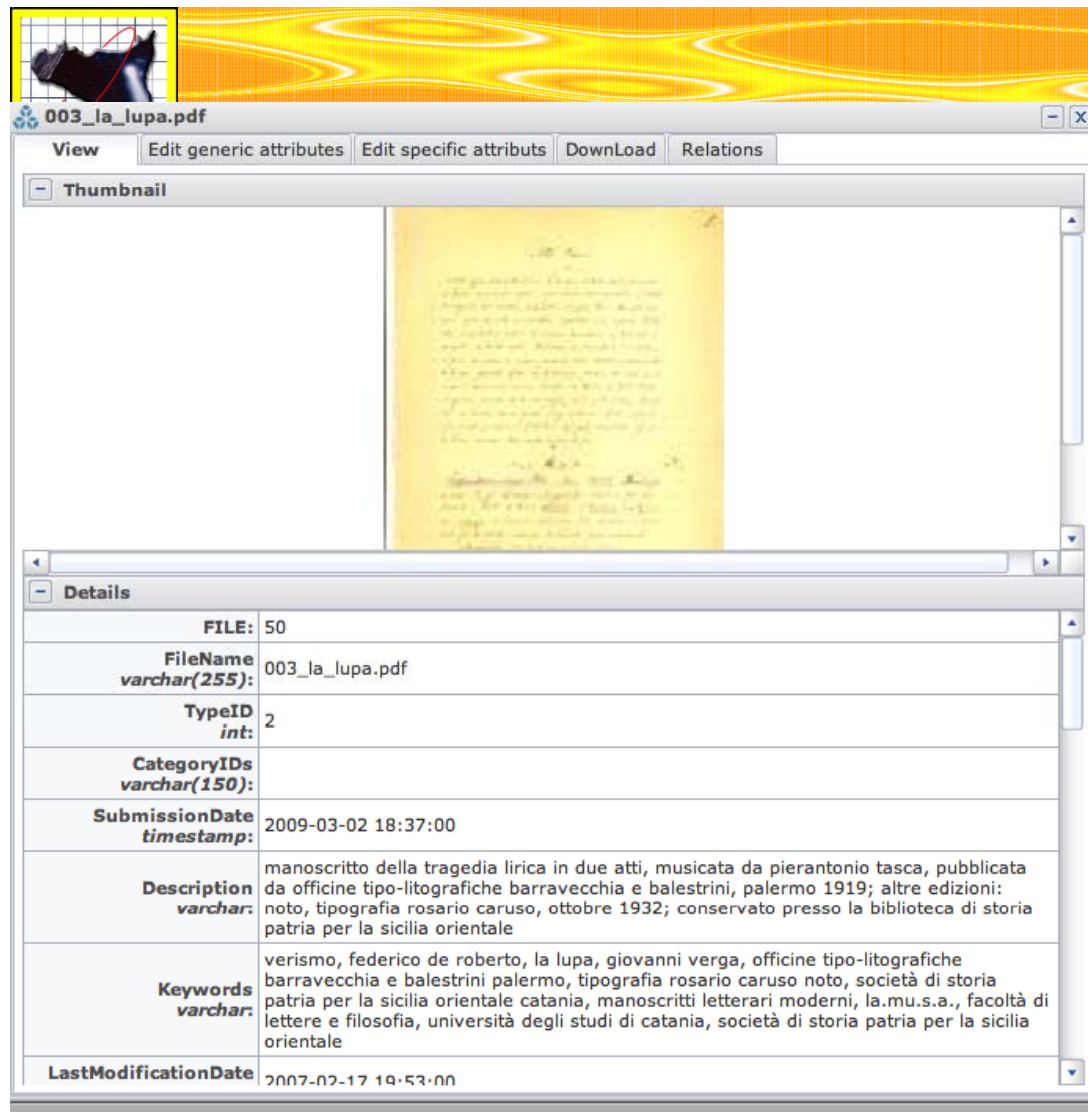
Values

ALL	ALL	ALL	ALL
ermanno raeli	JPEG	Adobe Photoshop CS2 Window	excellent
i carbonari della montagna	PDF	federico de roberto	good
il gran rifiuto	TIFF	federico de roberto, giovanni v	

+ Add Filter - Remove Filter Save display

Thumb	FileName	Title	Author	Description	PagNum	FileType	Docume
	002_la_lupa.tif	la lupa	federico de roberto	manoscritto della tragedia lirica in due atti, musicata da pierantonio tasca, pubblicata da officine tipo-litografiche barravecchia e balestrini, palermo 1919; altre edizioni: noto, tipografia rosario caruso, ottobre 1932; conservato presso la biblioteca di storia patria per la sicilia orientale	2	TIFF	tragedia
	003_la_lupa.pdf	la lupa	federico de roberto	manoscritto della tragedia lirica in due atti, musicata da pierantonio tasca, pubblicata da officine tipo-litografiche barravecchia e balestrini, palermo 1919; altre edizioni: noto, tipografia rosario caruso, ottobre 1932; conservato presso la biblioteca di storia patria per la sicilia orientale	3	PDF	tragedia
	003_la_lupa.tif	la lupa	federico de roberto	manoscritto della tragedia lirica in due atti, musicata da pierantonio tasca, pubblicata da officine tipo-litografiche barravecchia e balestrini, palermo 1919; altre edizioni: noto, tipografia rosario caruso, ottobre 1932; conservato presso la biblioteca di storia patria per la sicilia orientale	3	TIFF	tragedia

More screenshots...



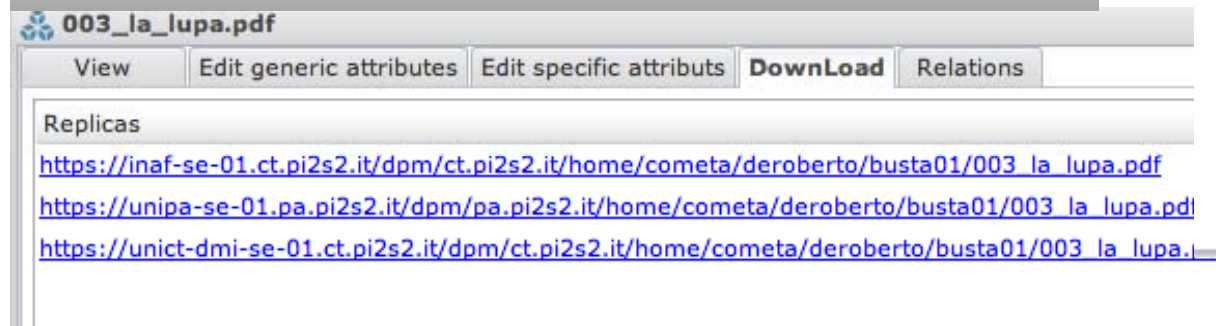
003_la_lupa.pdf

View Edit generic attributes Edit specific attributs Download Relations

Thumbnail

Details

FILE:	50
FileName varchar(255):	003_la_lupa.pdf
TypeID int:	2
CategoryIDs varchar(150):	
SubmissionDate timestamp:	2009-03-02 18:37:00
Description varchar:	manoscritto della tragedia lirica in due atti, musicata da pierantonio tasca, pubblicata da officine tipo-litografiche barravecchia e balestrini, palermo 1919; altre edizioni: noto, tipografia rosario caruso, ottobre 1932; conservato presso la biblioteca di storia patria per la sicilia orientale
Keywords varchar:	verismo, federico de roberto, la lupa, giovanni verga, officine tipo-litografiche barravecchia e balestrini palermo, tipografia rosario caruso noto, società di storia patria per la sicilia orientale catania, manoscritti letterari moderni, la.mu.s.a., facoltà di lettere e filosofia, università degli studi di catania, società di storia patria per la sicilia orientale
LastModificationDate	2007-02-17 19:53:00



003_la_lupa.pdf

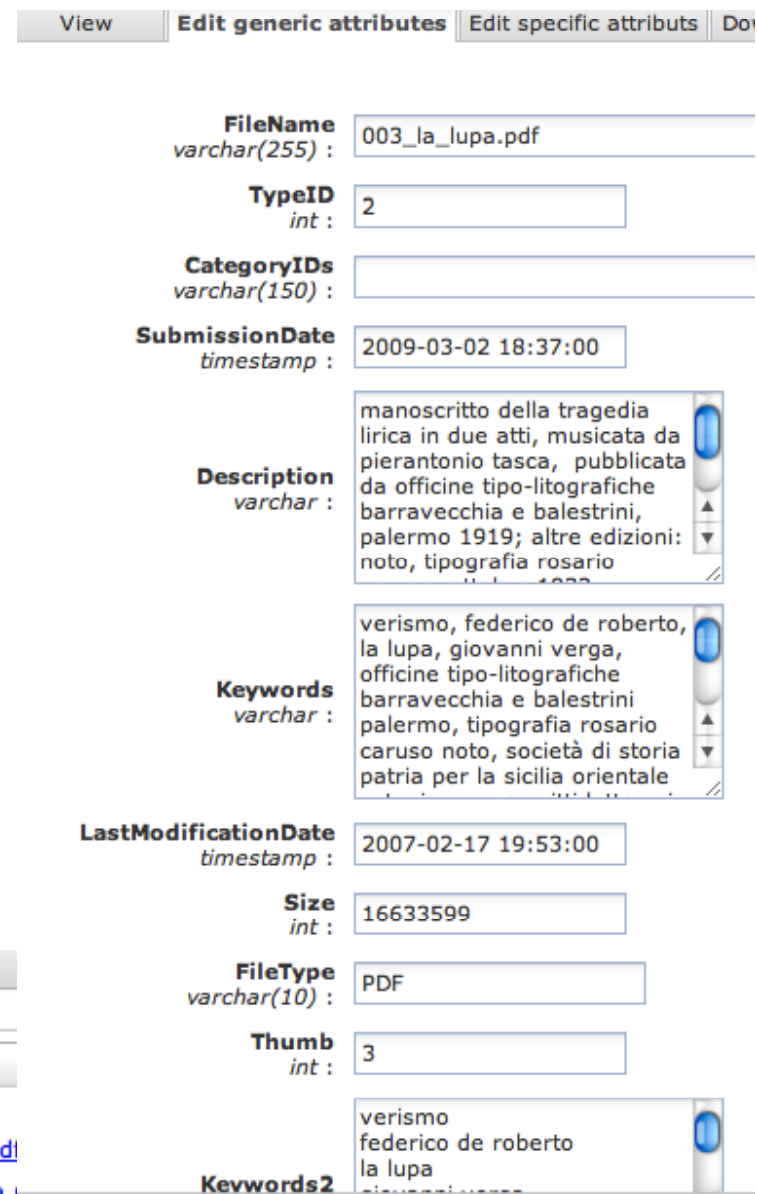
View Edit generic attributes Edit specific attributs Download Relations

Replicas

https://inaf-se-01.ct.pi2s2.it/dpm/ct.pi2s2.it/home/cometa/deroberto/busta01/003_la_lupa.pdf

https://unipa-se-01.pa.pi2s2.it/dpm/pa.pi2s2.it/home/cometa/deroberto/busta01/003_la_lupa.pdf

https://unict-dmi-se-01.ct.pi2s2.it/dpm/ct.pi2s2.it/home/cometa/deroberto/busta01/003_la_lupa.pdf



View Edit generic attributes Edit specific attributs Do

FileName
varchar(255): 003_la_lupa.pdf

TypeID
int: 2

CategoryIDs
varchar(150):

SubmissionDate
timestamp: 2009-03-02 18:37:00

Description
varchar: manoscritto della tragedia lirica in due atti, musicata da pierantonio tasca, pubblicata da officine tipo-litografiche barravecchia e balestrini, palermo 1919; altre edizioni: noto, tipografia rosario caruso, ottobre 1932; conservato presso la biblioteca di storia patria per la sicilia orientale

Keywords
varchar: verismo, federico de roberto, la lupa, giovanni verga, officine tipo-litografiche barravecchia e balestrini palermo, tipografia rosario caruso noto, società di storia patria per la sicilia orientale

LastModificationDate
timestamp: 2007-02-17 19:53:00

Size
int: 16633599

FileType
varchar(10): PDF

Thumb
int: 3

Keywords2
verismo
federico de roberto
la lupa



More screenshots...

http://unict-dmi-se-01.ct.pi2s2.it:777/gpfs/cometa/2009-03-02/029_la_lupa.pdf.1...TlcSOu+LUm15HVZf0lYBqnCJs7KAlloQnt

Google

http://unict-dmi-se-01.ct.pi2s2.it:777/gpfs/cometa/2009-03-02/029_la_lupa.pdf.1069362.0?httpstoken=/dp

Invio SMS Alice gLibrary NEW Facebook Home De Roberto DR Google Maps Wikipedia Macity Voda SMS Usingmac.com gLibra

A T T O P R I M O

Nell'ala
sull'imbrunire.

A destra la capanna dei mietitori, a sinistra una gran bica ed attrezzi rurali sparsi qua e là. In fondo, l'ampia distesa carica di masse, già velata dalla sera, e il corso sinuoso dei giunchi e le cime palustri. S'odono passare in lontananza canzoni straziate, il tintinnio dei campanacci delle mandre abbozzare e di tanto in tanto l'uggiolare dei cani sparsi sulla quale scorrono delle folate di vento, con un fruscio maturo. Negli intervalli di silenzio sembra sorgere e diffondersi delle acque e il trillare dei grilli, incessante. La luna è accesa, sbiancandosi man mano, in un alone afoso.

SCENA I.

Bruno, Malerba, Neli, Grazia, contadini
duti sulla paglia e su barili vuoti e ces
intorno a **Filomena** che sta narrando

Basta coi pianti!

Mara (con passione, piangendo): Sì... poi vedrete quando un'orfanello al mondo lascerà'!

Nanni (furioso): « Maledetto sia Giuda! È proprio bella questa festa ch'io fo! »

Mara (amaramente): « Ed io? ed io? »

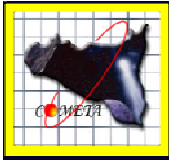
Nanni: « Non è ver!... Che intendi? »

Mara (c. s.): « E negate! negate! »

Nanni: « Non è vero! Che cosa hai visto, di? »

More s

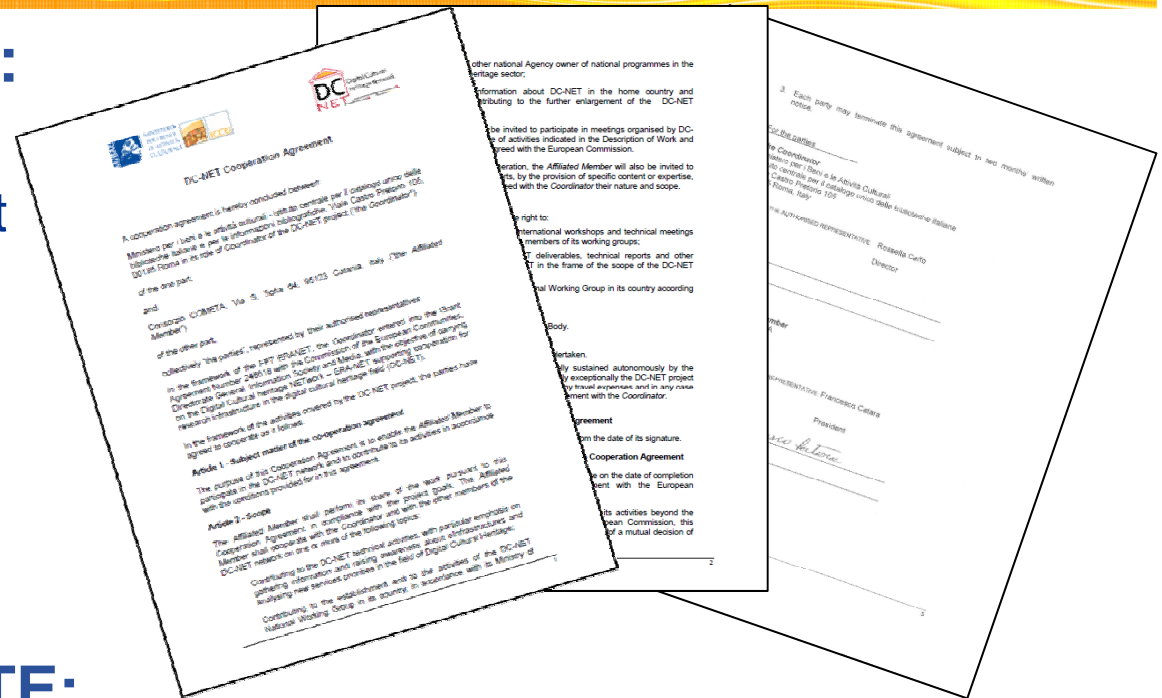




COMETA, DC-NET and INDICATE

- **COMETA and DC-NET:**

- COMETA has signed a Cooperation Agreement with DC-NET;



- **COMETA and INDICATE:**

- Develop an e-Culture Science Gateway (eCSG) with general user authentication and authorisation schemas;
- Make two Digital Cultural Heritage pilot use cases available through the eCSG:
 - Digital Repository of Federico De Roberto works;
 - Digital Repository of the Architectural and Archaeological Heritage in the Mediterranean Area.



The INDICATE Virtual Organisation

Voms-Admin 2.0 - Mozilla Firefox

File Edit View History Bookmarks Tools Help

https://voms.ct.infn.it:8443/voms/vo.indicate-project.eu/SearchUser.do?sessionId=E2j

WebMail 1 Webmail 2 Ovi.com FastWeb AP 3COM trip MySite AmmINFN GILDA Monitors Progetti Liste email Dizionari

Voms-Admin 2.0

voms admin for VO: vo.indicate-project.eu Current user: Roberto Barbera

Register! VO management Subscriptions Configuration Other VOs on this server

Manage Search users Create a new user

Users:

Antonio Calanducci	delete user
Roberto Barbera	delete user
Robot	delete user
Robot	delete user

1-4 of 4

User details

delete this user

User's DN & CA: /C=IT/O=INFN/OU=Personal Certificate/L=Catania/CN=Roberto Barbera

User's common name: Roberto Barbera

User's email address: roberto.barbera@ct.infn.it

Save changes

Membership details

Group name	Roles
/vo.indicate-project.eu	VO-Admin

User details

delete this user

User's DN & CA: /C=IT/O=INFN/OU=Robot/L=COMETA/CN=Robot: Digital Repository of Federico De Roberto works - Antonio Calanducci

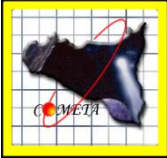
User's common name: Robot: Digital Repository of Federico De Roberto works -

User's email address: antonio.calanducci@ct.infn.it

Save changes

Membership details

Group name	Roles
/vo.indicate-project.eu	VO-Admin Assign role



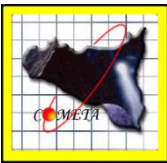
Robot certificates “in a nutshell”

Robot certificates have been introduced to allow users, who do not have/want personal certificates and do not belong to any Virtual Organisation, to use the **Grid**; they are usually issued on smart-cards to be plugged on the machine where the service(s) is(are) executed.



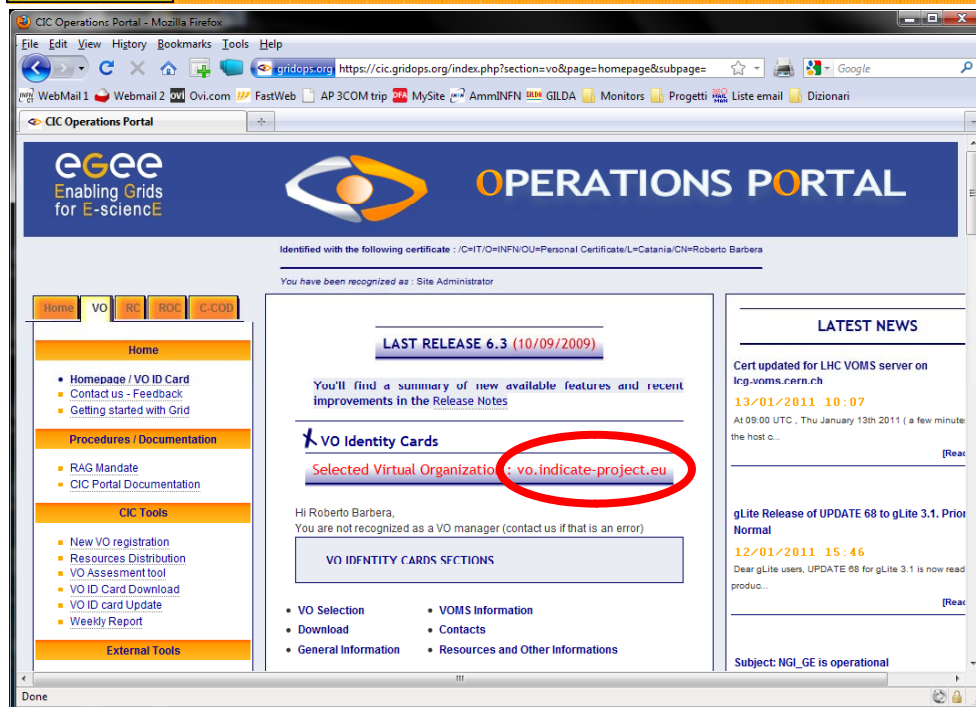
Basically, these certificates can be used to identify a person responsible for an unattended service or process acting as client and/or server for a Virtual Research Community.

Function	Subscriber Name
Your identity: /C=IT/O=GILDA/OU=Robots/L=INFN Catania/CN=Robot:MrBayes - Giuseppe La Rocca	
Creating temporary proxy Done	
Contacting voms.ct.infn.it:15001 [/C=IT/O=INFN/OU=Host/L=Catania/CN=voms.ct.infn.it] "gilda" Done	
Creating proxy Done	
Your proxy is valid until Thu May 8 21:42:05 2008	

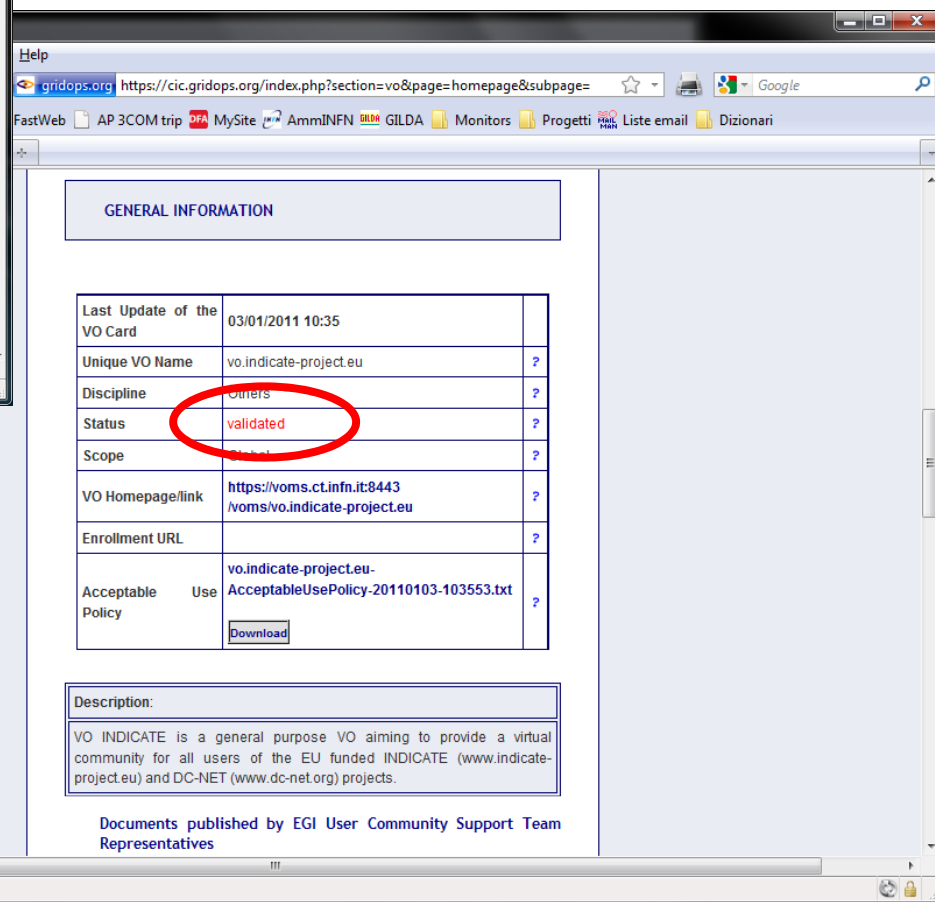


The INDICATE VO registered on the CIC

1) Now there is a «virtual home» for all DC-NET and INDICATE users and for all other people interested in DCH

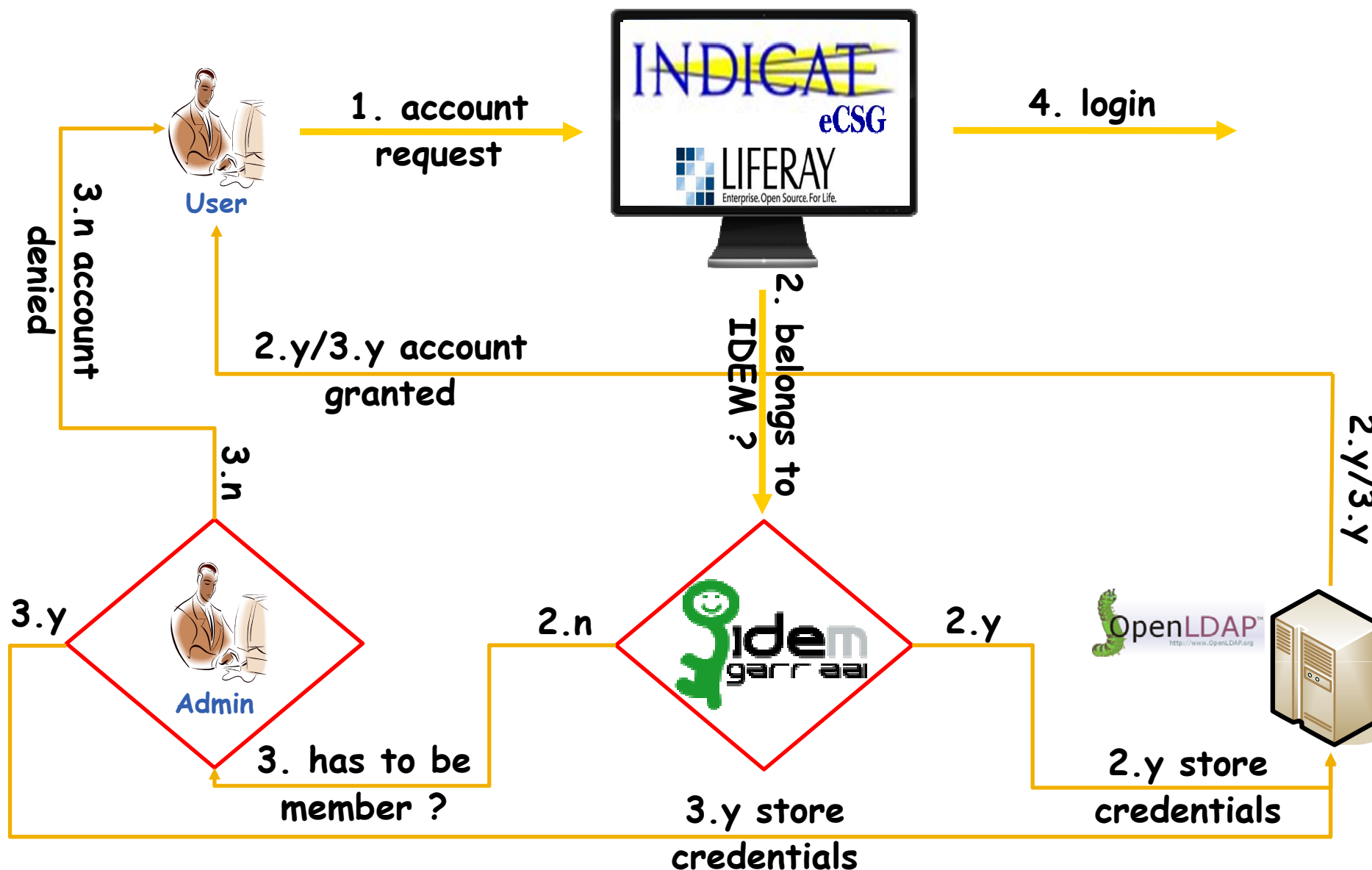


2) Now more NGIs/sites can contribute with their storage resources



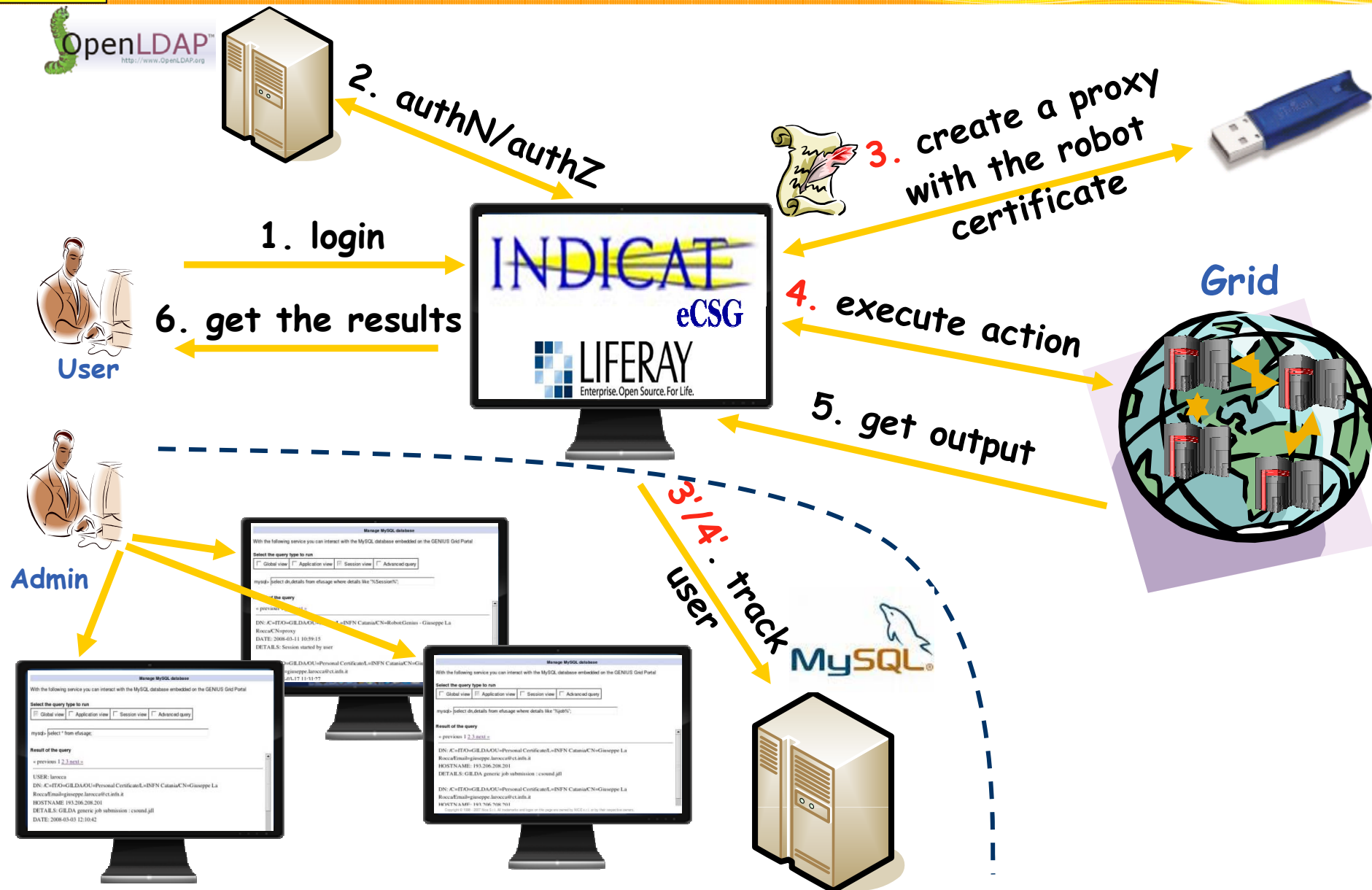


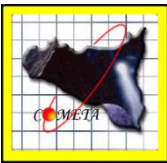
The INDICATE e-Culture Science Gateway (1/5)





The INDICATE e-Culture Science Gateway (2/5)

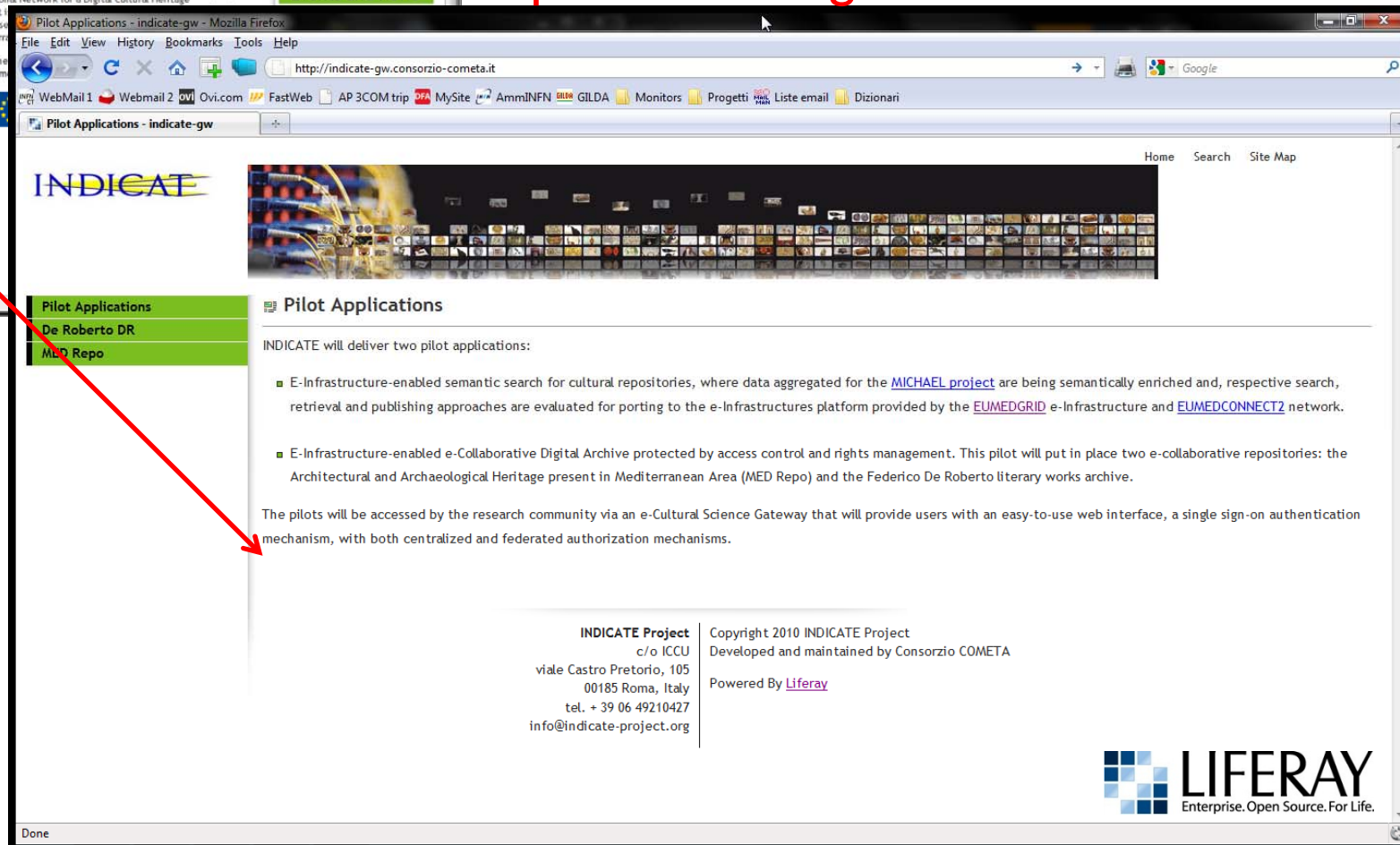




The INDICATE e-Culture Science Gateway (3/5)

<http://www.indicate-project.eu>

<http://indicate-gw.consortio-cometa.it>





The INDICATE e-Culture Science Gateway (4/5)

<http://indicate-gw.consortio-cometa.it>

INDICATE

Pilot Applications

INDICATE will deliver two pilot applications:

- E-Infrastructure-enabled semantic search for cultural repositories, where data aggregated for the **MECHAFI project** are being semantically enriched. retrieval and publishing approaches are evaluated for porting to the e-Infrastructures platform provided by the **EU-MEDGRID** e-Infrastructure and E-Infrastructures.
- E-Infrastructure-enabled e-Collaborative Digital Archive protected by access control and rights management. This pilot will put in place two e-collaborative Digital Archives: the Digital Architectural and Archaeological Heritage present in the Mediterranean Area (**MED Repo**) and the Federico De Roberto literary works archive.

The pilots will be accessed by the research community via an e-Cultural Science Gateway that will provide users with an easy-to-use web interface, a user authentication mechanism, with both centralized and federated authorization mechanisms.

INDICATE

Pilot Applications

Digital Repository of the Architectural and Archaeological Heritage in the Mediterranean Area

- **Acronym:** MED Repo
- **Name:** Digital Repository of the Architectural and Archaeological Heritage in the Mediterranean Area
- **Domain:** Cultural Heritage
- **Status:** S3

■ **APPLICATION DESCRIPTION**

The Mediterranean Network for Cultural Heritage aims at creating a distributed digital repository for more than 7,100 items of cultural heritage belonging to about 20 countries around the Mediterranean (besides Italy). The initiative's idea was born from the awareness that peoples of the Mediterranean established an osmosis of knowledge, over the millennia, through cultural and social exchanges which enabled the "Community of the Mediterranean area" that goes well beyond the geographical boundaries. The exchanges carried out in the past are visible on the shores of the Mediterranean, where even today there are architectural and archaeological military, religious, and cultural heritage belonging to different traditions but with obvious stylistic and geometric similarities. The initiative has been undertaken by the Digital Architectural and Archaeological Heritage (DA2rCA) team of researchers at the Department of Architecture and Urbanism of the University of Catania (Italy) and the first pilot project is the Digital Architectural and Archaeological Heritage of Taormina. The Centre for Design and Restoration of Palermo to determine a risk map of the famous archaeological area of Taormina. The pilot project will involve the creation of hundreds of 3D laser scans and thousands of pictures of about 30 monuments located in the Taormina's area and the creation of a digital repository.

■ **RESEARCH GROUP**

Dr. Antonio Calanducci email : antonio.calanducci@ct.infn.it [Consorzio COMETA](http://consorzio-cometa.it) ITALY

■ **REFERENCE**

INDICATE

Pilot Applications

De Roberto Digital Repository

- **Acronym:** De Roberto DR
- **Name:** Digital Repository of Federico De Roberto works
- **Domain:** Cultural Heritage
- **Status:** S4 [\[Learn More\]](#)

■ **APPLICATION DESCRIPTION**

Federico De Roberto, an Italian writer of the XIX/XX century, left many works of relevant value to the humanistic community digitized by La.m.u.s.a team, a group of researchers from the Faculty of Letters and Philosophy in Catania. With gLibrary, this cultural heritage, replicated on several storages in a grid, will be preserved and it is now accessible to everyone

■ **RESEARCH GROUP**

Dr. Antonio Calanducci email : antonio.calanducci@ct.infn.it [Consorzio COMETA](http://consorzio-cometa.it) ITALY

■ **APPLICATION VIDEO**

DeRoberto on the Grid con g. digital libraries on the Grid Federico De Roberto difficulty in sourcing documents

There will soon be the possibility to run the applications on the Grid from within the eCSG



The INDICATE e-Culture Science Gateway (5/5)

test-glibray - liferay-test

iceage-wn-14.ct.infn.it/test-glibray

Macity Facebook INFN WebMail Apple Yahoo! Google Maps YouTube Wikipedia News Popular javascript:isc.showLo Other

LIFERAY
Enterprise. Open Source. For Life.

Welcome test-glibray

liferay-test test-glibray

gLibrary Test Portlet

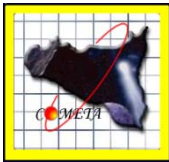
This is the gLibrary Test Portlet portlet.

Thumb	FileName	Title	Author	Description	PagNum	FileType	DocumentGenre	DocumentType	Size
	004_la_lupa.tif	la lupa	federico de roberto	manoscritto della tragedia lirica in due atti, musicat...	4	TIFF	tragedia lirica	manoscritto	1...
	005_la_lupa.tif	la lupa	federico de roberto	manoscritto della tragedia lirica in due atti, musicat...	5	TIFF	tragedia lirica	manoscritto	1...
	001_la_lupa.tif	la lupa	federico de roberto, ...	manoscritto della tragedia lirica in due atti, musicat...	1	TIFF			
	010_la_lupa.tif	la lupa	federico					manoscritto	1...

Page 1 of 1

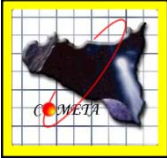
Displaying 1 - 50 of 50

**Federico De Roberto repository on Liferay.
Very preliminary!**



Summary and Conclusions

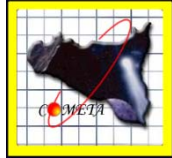
- **COMETA is one of the Grid resource providers of the Italian e-Infrastructure and, through it, of the European Grid Infrastructure;**
- **COMETA has a long experience in developing services for Virtual Research Communities, also in the field of Digital Cultural Heritage;**
- **gLibrary is entirely based on gLite, one the most adopted middleware in the world;**
- **In the context of DC-NET and, mainly, INDICATE projects, COMETA will concretely show, through exemplar use cases, how Grid infrastructures can effectively be used by the Digital Cultural Heritage community in a simple and intuitive way;**
- **I'm at your disposal to discuss all possible ways of collaboration.**



Thank you for your kind attention !

Any questions ?





References

- **gLibrary contacts:**
 - antonio.calanducci@ct.infn.it, glibrary@ct.infn.it
- **Federico De Roberto repository:**
 - <https://glibrary.ct.infn.it/>
- **Videos:**
 - <http://www.youtube.com/watch?v=VNN3OnpmUUU>
 - <http://www.youtube.com/watch?v=IhFFjHD8IsI>
- **Publications:**
 - A.Calanducci, R.Barbera, J.Sevilla, A. De Filippo, M.Saso, S. Iannizzotto, F. De Mattia, F.Vicinanza. “Data Grids for Conservation of Cultural Inheritance”, 1st International Workshop on Data Grids for e-Science (DaGreS09) at ACM International Conference on Computing Frontiers, May 18-20, 2009 (<http://www.computingfrontiers.org/2009/>)
 - <https://glibrary.ct.infn.it/m/DaGRes-editor.pdf>
 - A. Calanducci, C. Cherubino, L. N. Ciuffo, D. Scardaci, “A Digital Library Management System for the Grid”, Fourth International Workshop on Emerging Technologies for Next-generation GRID (ETNGRID 2007) at 16th IEEE International Workshops on Enabling Technologies: Infrastructures for Collaborative Enterprises (WETICE-2007), GET/INT Paris, France, June 18-20, 2007 (<http://etngrid.diit.unict.it/2007/index.html>).
 - https://glibrary.ct.infn.it/glibrary/downloads/gLibrary_paper_v2.pdf