

The **3D Archaeo** provides digital acquisition and construction of three-dimensional models of archaeological finds, environments and sites of the Salento Peninsula.

Therefore the creation of several databases, as for instance the **3D stelae and cippus** database and others, concerning in particular the archaeological excavations of Cavallino (LE), is expected.



Two three-dimensional models of stelae, one with and one without texture



A fresco of Santa Cristina Crypt of Carpignano (LE)

The **3D Byzantine** provides digital acquisition and construction of three-dimensional models of structures and environments of subterranean and sub divo Byzantine churches of the Salento Peninsula. 3D Byzantine includes, therefore, the databases **3D Crypts** and the **3D Subdivo**, mainly inspired by the Santa Cristina Crypt of Carpignano (LE) and from the San Pietro Church of Otranto (LE).

The **3D Laboratory** (three-dimensional acquisition and processing) of the SIBA Coordination is endowed with HW e SW equipment, integrated with the existing equipment at the other laboratories of SIBA. It is endowed with a system for the digital acquisition and processing, within the field of Cultural heritage, of objects and environments, archaeological finds and architectonic structures, restoration and construction of virtual three-dimensional models. Such system includes a 3D laser scanner Mensi SOISIC 2000, equipped with a control station, acquisition SW and relative accessories. The scanner allows the acquisition of objects of size varying from 50x50x50 cm up to 10x10x10 m, with an accuracy varying from 0.2 to 2 mm. The system includes also a 3D laser scanner Minolta VIVID 900.

Besides, the system is equipped with other workstations and SW for the three-dimensional modelling (3Dipsos, Alias/Wavefront Studio, Okino Polytrans, InnovMetric PolyWorks, Rhino, Geomagic Studio, Autodesk Auto-cad 2000 - <http://siba2.unile.it/sedi/lab3d.html>).

COORDINATED PROJECT OF THE UNIVERSITIES OF CATANIA AND LECCE



The **Coordinated Project of the Universities of Catania and Lecce** (<http://siba3.unile.it/ctle/>) is co-financed by the European Union. It is a wide, complex and ambitious project, structured in various initiatives that involve both Lecce and Catania Universities. Among others, the following activities are scheduled within this project:

- the digital acquisition and processing of bibliographic and documentary information
- the digital reproduction of archaeological objects and finds of particular importance
- the acquisition and processing of images and three-dimensional models and environments, for virtual restoration and reconstruction.

Another important project, started within the above mentioned one, is the **Learning Resource Centre**, for the integration of the traditional library services with technologically advanced services, for the integration of printed and electronic resources with hypermedia services made available by the information and communication technologies, for study and didactic purposes.

This project aims at the creation of a unique University service for the production and the diffusion of information and didactical material related to all the University courses. It therefore provides: set up of a video room for the recording of the Faculty lectures and for the digital coding of the recordings, for their on-line diffusion, by satellite and/or optic media; highly advanced laboratories, equipment and technologies for the processing and electronic publication of didactic material; connection to the Satellite Transmission Centre of the University of Lecce (<http://siba3.unile.it/ctle/learning/>).



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Coordinamento Servizi Informatici Bibliotecari
Universitari ed Interuniversitari

Università degli Studi di Lecce (Italy)

SIBA Coordination is the structure of the University of Lecce that co-ordinates, manages and develops the Telematic Information System for Research and Education.

It moreover coordinates the development of the University libraries computerization and of the relations with other national and international Universities and Research Centres for the achievement of information systems and other shared projects.

SIBA Coordination offers to scholars and students the possibility to access a coordinated system of bibliographical and documentation resources in digital format and full-text.

SIBA Coordination is involved in the coordination and development of numerous activities and national and international projects for the retrieval and the assessment through electronic media of archaeological finds, books, and documentary material of high historical value and archival rarity. It is therefore engaged in the development of coordinated services aimed at:

- digital reproduction
- digital preservation
- virtual restoration
- assessment of the historical, scientific and cultural holdings of the University.

It is also engaged in the development of methodologies for the use of digital technologies within the cultural heritage field by means of the use of innovative technological and computerized systems.

SIBA LABORATORIES

SIBA Coordination has set up several laboratories provided with the high technological HW and SW equipment. Among them:

➤ **Server Laboratory:**

http://siba2.unile.it/sedi/lab_serv.html

➤ **Laboratory for the acquisition and processing of bibliographical and documentary information:**

<http://siba2.unile.it/sedi/labelbib.html>

➤ **Laboratory for the digital acquisition and processing of images:**

<http://siba2.unile.it/sedi/labdig1.html>

➤ **GIS Lab (Geographic Information Systems):**

<http://siba2.unile.it/sedi/labgis.html>

➤ **3D Lab (acquisition and processing of three-dimensional images):**

<http://siba2.unile.it/sedi/lab3d.html>

SIBA 2D PROJECTS

The **"PUL" Project (Papyrologica Universitatis Lupiensis)** is aimed at the digital reproduction and assessment of the papyri owned by the Centre of Papyrological Studies of the University of Lecce.

The **archives of papyrus material** already realized contain, besides the descriptive records, the images of Greek and Demotic papyri, both in a high resolution TIFF format (6000x7000 pixels) allowing in-depth studies and a virtual restoration by the experts, and in a low resolution JPEG format (550x850 pixels), for on-line consultation by the community of users.

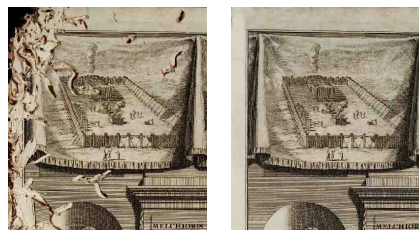


Detail of a fragment of a Greek papyrus, of the Ptolemaic period (III/II b.C.) before and after the virtual restoration.

The **Project "Terra d'Otranto Data Base"** for the retrieval and the assessment through electronic media of parchment and paper material (hand written and printed), of high rarity and value, present at the University and in the Salento territory (<http://siba2.unile.it/progetti/todb.html>).

The **archives of the old printed books** contain bibliographic descriptions according to the ISBD(A) standard, of the antique, rare and valuable editions (1450-1830) owned by the libraries of the University of Lecce, and by the public and private libraries of Terra d'Otranto. They contain also the partial or complete digital reproduction of many of these editions, information on the libraries in whose possession they are and the links to the relative sites (<http://siba3.unile.it/archives/asearch.html>).

The resolution of the digital pictures (in JPEG format) in the archives, accessible on-line, consists of about 550x850 pixel; the resolution of the digital pictures in the historical archives, for the purposes of advanced studies of interest to scholars, consists of about 2000x3000 pixel.



Detail of an antiporta of an old printed book, before and after the virtual restoration.

The **Laboratory for the digital acquisition and processing of images** of the SIBA Coordination is one of the most advanced in Italy. It possesses sophisticated HW and SW equipment, which allows the acquisition of digital images at both low and high resolutions. The balancing platform and the HMI cold light lamps allow the acquisition of images in compliance with the regulations for the preservation of the documents. The Dicomed digital back allows the acquisition of colours and information invisible to the naked eye at a very high resolution, and to obtain images of 7520x6000 pixels (129 Mb). The dedicated software and workstation allow the processing of digital images, the virtual documents restoration and the creation of new images.

The System of acquisition and digital processing used at the SIBA Coordination:

➤ guarantees the protection and the preservation of the documents of particular value, as well as the safeguard from further damage provoked by repeated consultation, while allowing its immediate assessment

➤ optimizes the quality and the quantity of information and guarantees the reading of informative data in a stable, unchanged and lasting way for what concerns the colour and the characters

➤ allows the acquisition of information, not perfectly visible for the naked eye, and increases the possibilities for study and research.

The **virtual restoration** is not in contrast with the "traditional" restoration performed on the physical document.

The virtual restoration represents a tool of cognitive integration, to obtain the information that went lost or that is unlikely deducible from the original copy. It allows the optimization of the legibility of the textual and artistic informative data, without turning to interventions often traumatic for the original copy.

Besides, the virtual restoration, always and anyhow reversible unlike the traditional one, allows a in-depth study on possible interventions of traditional restoration.

SIBA 3D PROJECTS

The **3D Database Project**, started by the SIBA Coordination within the coordinated project of the Universities of Lecce and Catania (<http://siba3.unile.it/ctle/>), provides the digital acquisition, processing and three-dimensional reconstruction of particularly valuable objects of high historical and artistic value, their preservation, enhanced knowledge and wide assessment (<http://siba3.unile.it/ctle/3ddb/index.html>).

Within the 3D Database Project, SIBA Coordination has started the development of the databases **3D Archaeo** and **3D Byzantine**.