



INTRODUCION TO THE WORKSHOP

and to DARIAH ARCHETIPO WORKING GROUP

Elena Gigliarelli

INTERNATIONAL WORKSHOP

DIGITAL INTEGRATED STRATEGIES TO SAFEGUARD
HERITAGE CONSTRUCTION TECHNOLOGIES

September 30 - October 5, 2024 | Poggioreale, Trapani



Università
di Catania



Introducion to the Workshop and to DARIAH ARCHETIPO WORKING GROUP



Archetipo WORKING GROUP

**ARChitectural HEritage Thesaurus through
Integrated digital Procedures and Open data**



explores new methods of
digital documentation of
"Built Knowledge" – cultural
heritage embedded in
architectural heritage



spans interdisciplinary
domains, involving the
expertise of professionals in
Digital Humanities,
Architecture and
Information Sciences

CHAIRED BY



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Georgios Artopoulos

Associate Professor, Science and Technology in
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DARIAH in a Nutshell

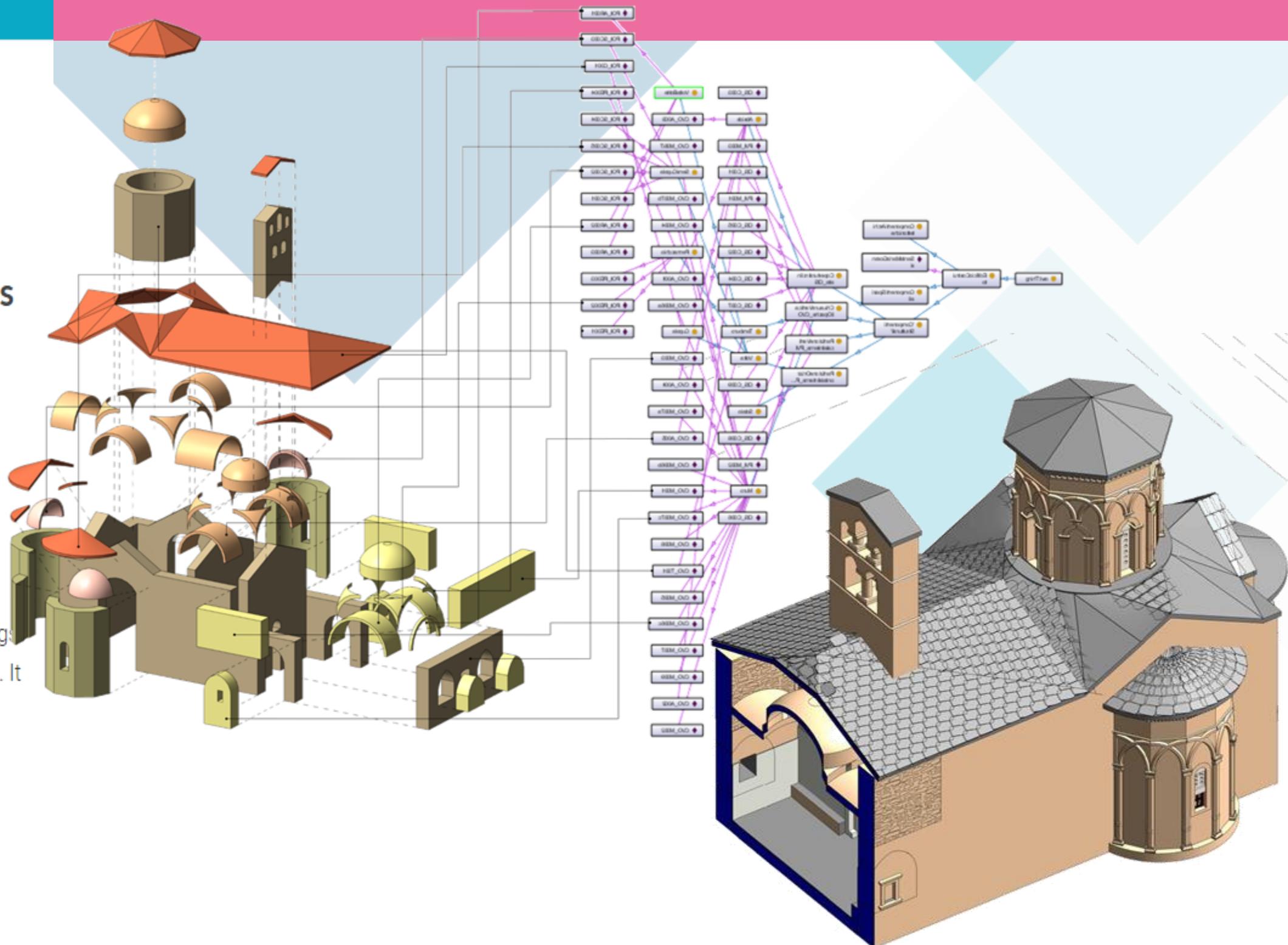
DARIAH ERIC: A research infrastructure that enhances and supports digitally enabled research and teaching across the Arts and Humanities

Description

The Digital Research Infrastructure for the Arts and Humanities (DARIAH) aims to enhance and support digitally-enabled research and teaching across the arts and humanities. DARIAH is a network of people, expertise, information, knowledge, content, methods, tools and technologies from its member countries. It develops, maintains and operates an infrastructure in support of ICT-based research practices and sustains researchers in using them to build, analyse and interpret digital resources. By working with communities of practice, DARIAH brings together individual state-of-the-art digital arts and humanities activities and scales their results to a European level. It preserves, provides access to and disseminates research that stems from these collaborations and ensures that best practices, methodological and technical standards are followed.

DARIAH was established as a European Research Infrastructure Consortium (ERIC) in August 2014. Currently, DARIAH has 22 Members and several Cooperating Partners in eleven non-member countries.

ARChitectural HERitage Thesaurus through Integrated digital Procedures and Open data (ARCHETIPO)



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PROGRAM

September 30 - October 5, 2024

Poggiooreale, Trapani

MUNICIPAL COUNCIL HALL

SEP 30

- 10:00 - 13:00
Welcome Greetings,
Theoretical Discourse
and Lectures
13:00 - 14:00
Lunch break
14:00 - 18:00
Practical Field Activities
in Ancient Poggiooreale
by E-RIHS.it - MOLAB
facilities

OCT 1

- 10:00 - 13:00
Theoretical Discourse
and Lectures
13:00 - 14:00
Lunch break
15:00 - 18:00
Practical Field Activities
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OCT 2

- 10:00 - 13:00
Theoretical Discourse
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13:00 - 14:00
Lunch break
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OCT 3

- 10:00 - 13:00
Theoretical Discourse
and Lectures
13:00 - 14:00
Lunch break
14:00 - 17:00
Presentation session
17:00 - 18:00
Round table &
Conclusion

OCT 4

- 09:30 - 16:30 
GIORNATA
INTERNAZIONALE DI
STUDI INSEDIAMENTI
STORICI
ABBANDONATI
a cura di Caterina
Carocci e Maria Rosaria
Vitale

OCT 5

- 10:00 - 13:00
Study tour of the Belice
Valley historic villages



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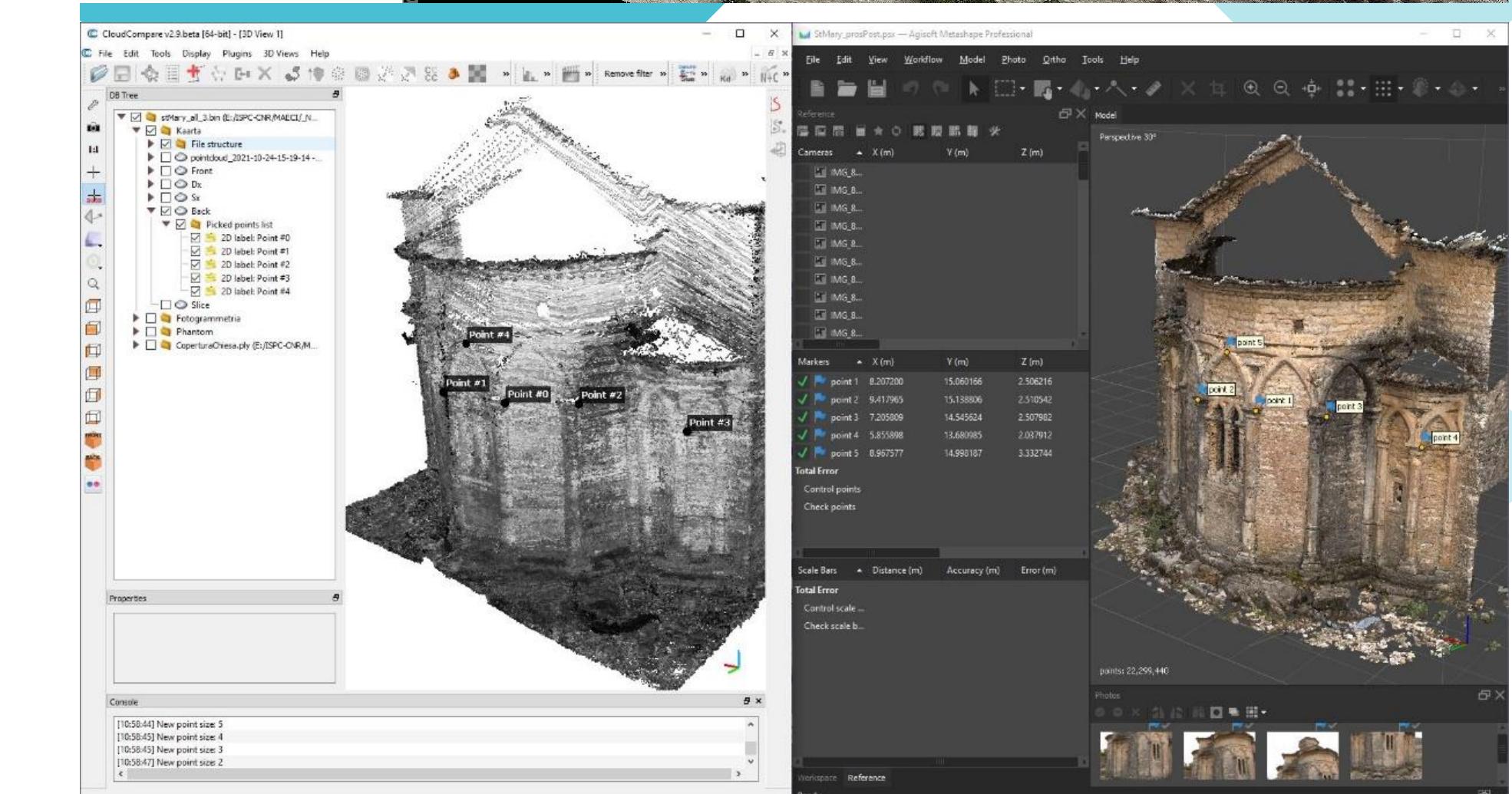
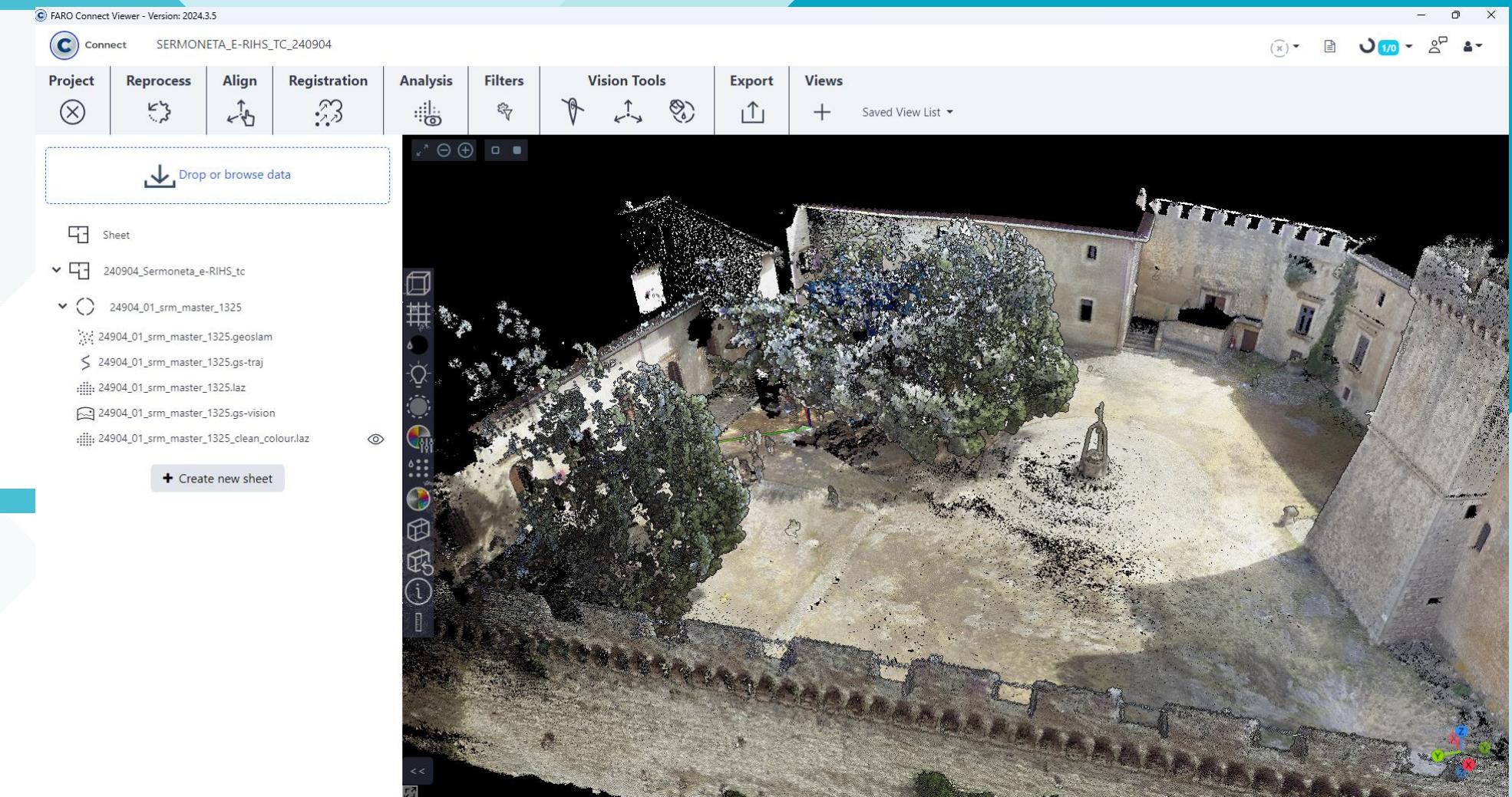
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**Consiglio Nazionale
delle Ricerche**



**Istituto di Scienze del
Patrimonio Culturale**

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7**Locations**

Our numbers

205**Permanent Staff**

- & 61 research fellows



An interdisciplinary hub for heritage-led innovation



14 Member Countries
Belgium
Cyprus
Czech Republic
Denmark
France
Germany
Greece
Hungary
Poland
Portugal
Slovenia
Spain
The Netherlands
United Kingdom

E-RIHS

EUROPEAN RESEARCH INFRASTRUCTURE
FOR HERITAGE SCIENCE



ISTITUTO DI SCIENZA E TECNOLOGIE
DELL'INFORMAZIONE "A. FAEDO"



STUDIO DI SCIENZE E TECNOLOGIE CHIMICHE GIULIO Natta



ISTITUTO NAZIONALE DI OTTICA
CONSIGLIO NAZIONALE DELLE RICERCHE

Open Access to a cross-disciplinary collection of advanced tools and competences serving a cross-disciplinary community of researchers



MOLAB

Mobile laboratory for
in-situ diagnostics



FIXLAB

Access to large-
scale facilities



ARCHLAB

Scientific archives for
heritage science



DIGILAB

Digital scientific datasets
for heritage science

H²IOSC

Humanities and cultural Heritage Italian Open Science Cloud

Funded by:



BHiLab: where we are



BHiLab: who we are



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RESEARCH ASSOCIATE
Conservation, valorisation



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HBIM, environmental
design, technology



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SENIOR RESEARCHER
Structural engineering,
mathematical modelling



Elena Gigliarelli
LAB HEAD
SENIOR RESEARCHER
Conservation, valorisation
Geometric Survey, HBIM

BHiLab: areas of expertise



Conservation and Diagnostics
of the built heritage, analysis
of architectural, historical,
structural and functional
characteristics



**Energy-environmental
analysis and improvement,**
technological adaptation,
simulation-based design, DSS,
interoperability



Knowledge management
of the conservation process
on shared platforms



Innovative and multimedia
display design for **museums**
and **archaeological sites**

DIGITAL TOOLS for
evaluation, management
and decision making

BHiLab

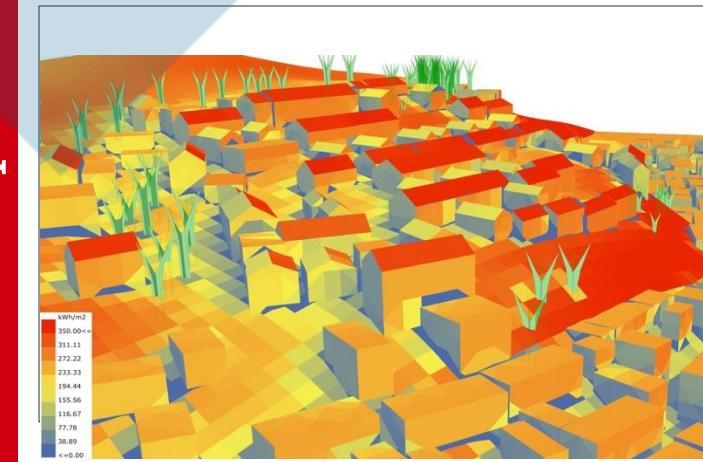
METHODS for
documentation and
analysis

Interdisciplinary research on built heritage documentation,
conservation, valorisation and sensitive renovation.

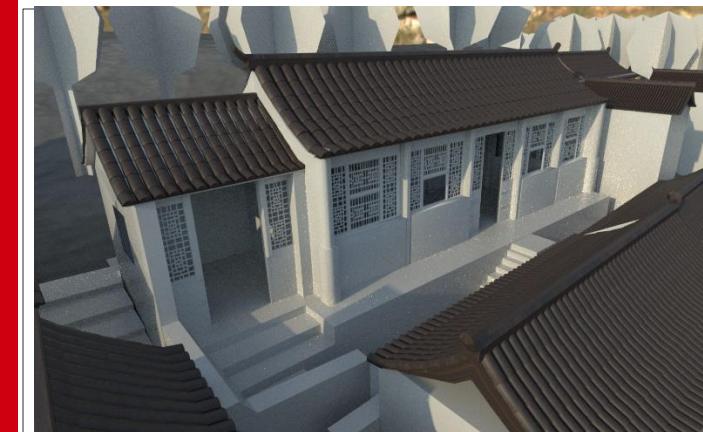
CONSERVATION , RESTORATION



ENERGY-ENVIRONMENTAL ANALYSIS



URBAN ANALYSIS AND REGENERATION



**DIGITAL TOOLS
(HERITAGE BIM – SCAN TO BIM)**



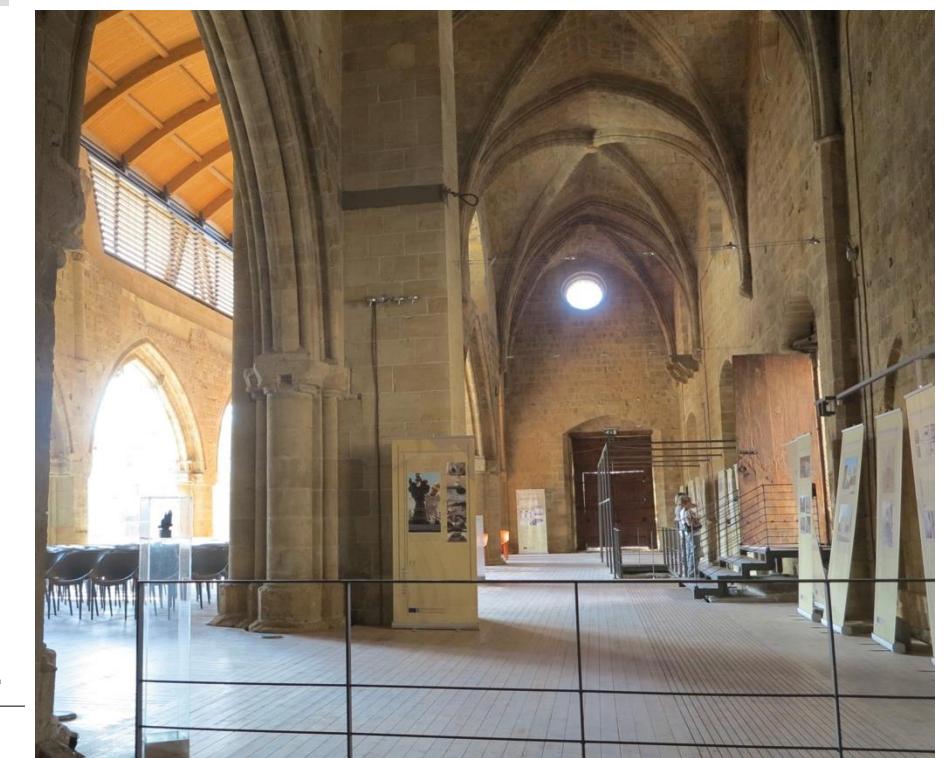
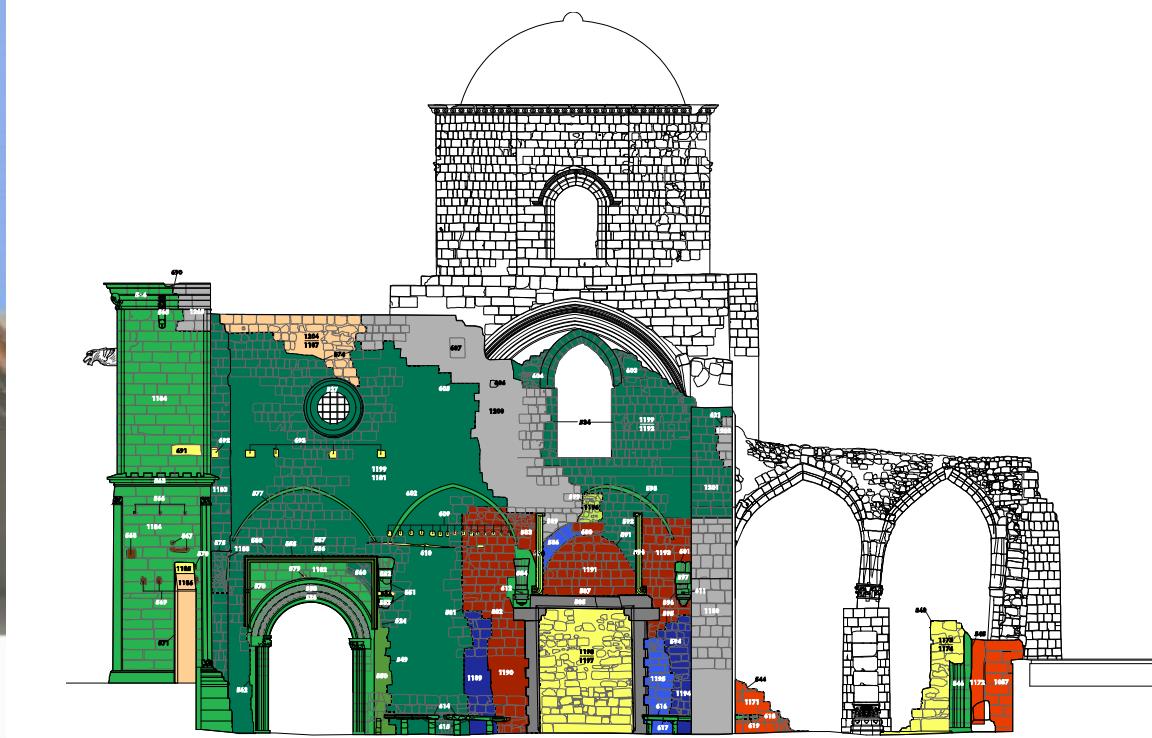
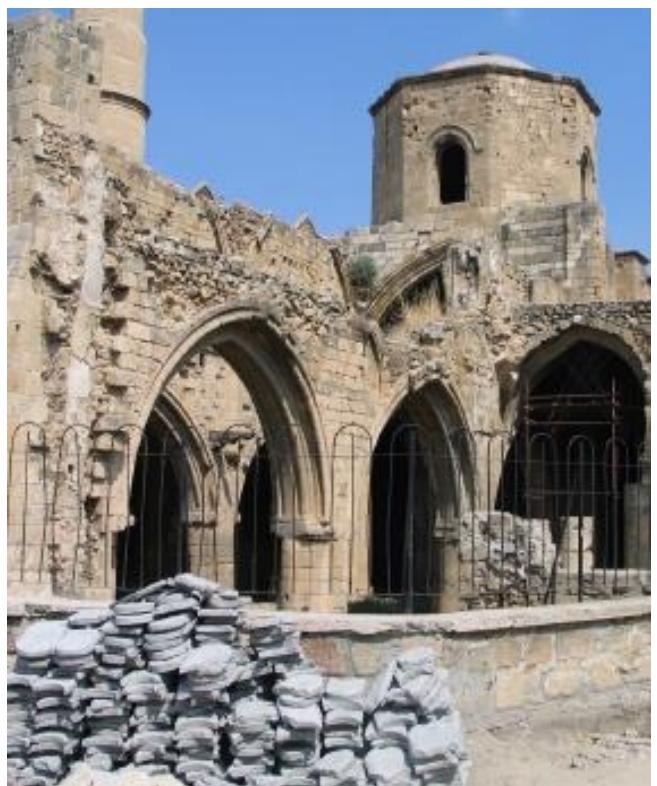
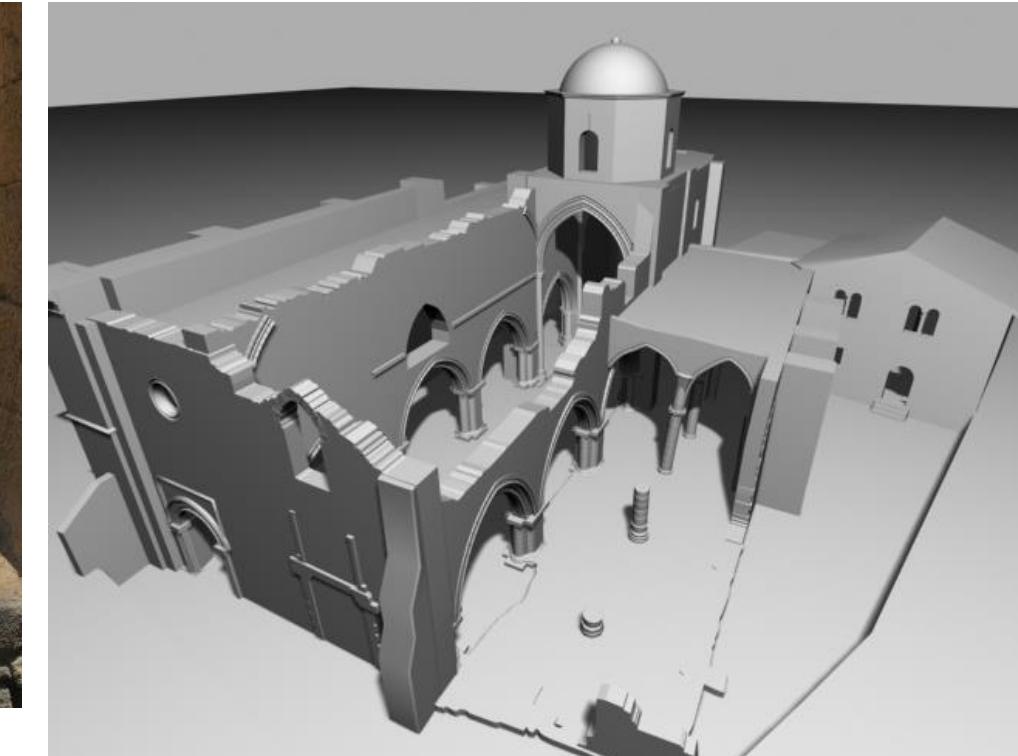
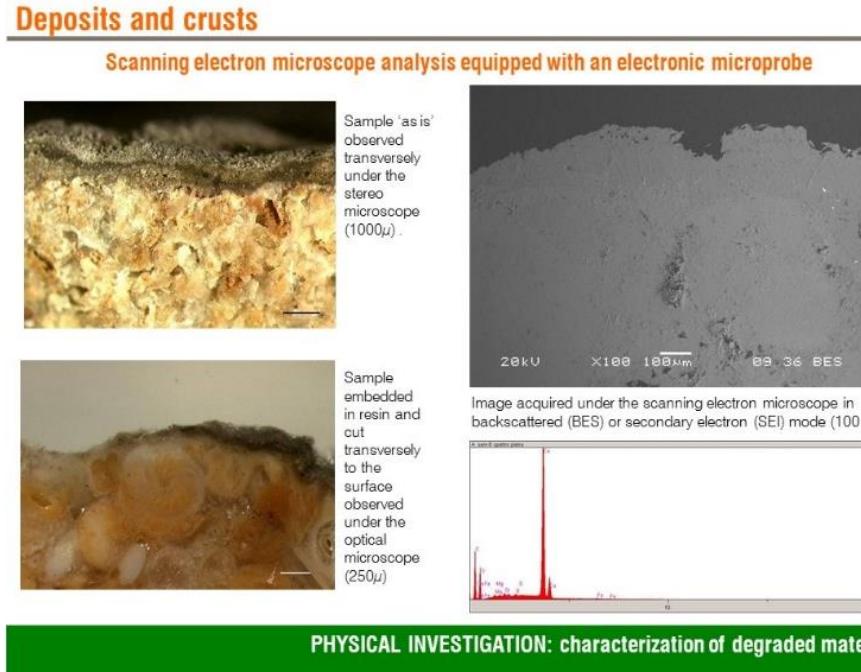
**SMART MUSEUMS
(IoT -IA - HBIM ITNTEGRATION)**



EXHIBIT, MUSEUM AND ARCHEOLOGICAL SITE DESIGN

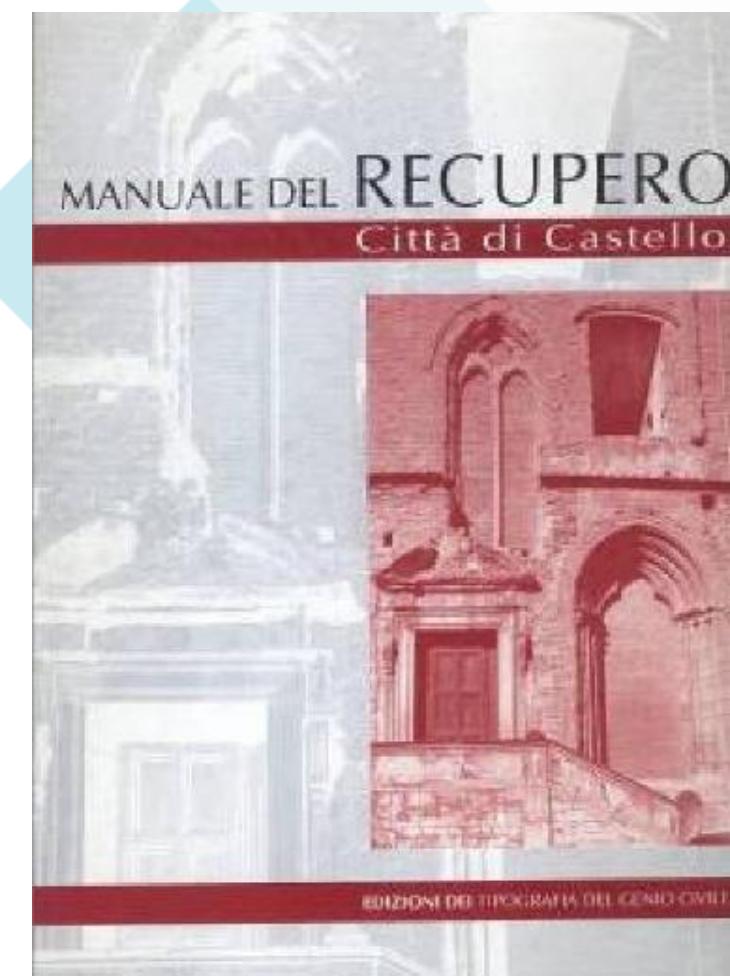
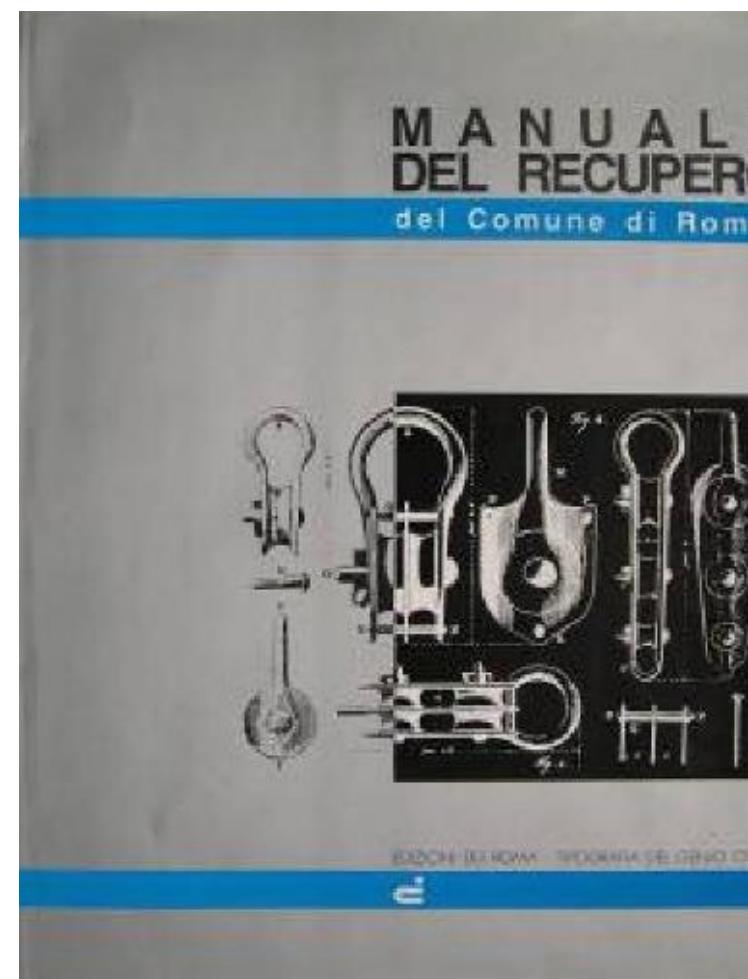


Restoration and refunctionalization of the Church of St. Nicholas in Nicosia (Cyprus)



BHiLab activities and area of research

The starting point : i Manuali del recupero

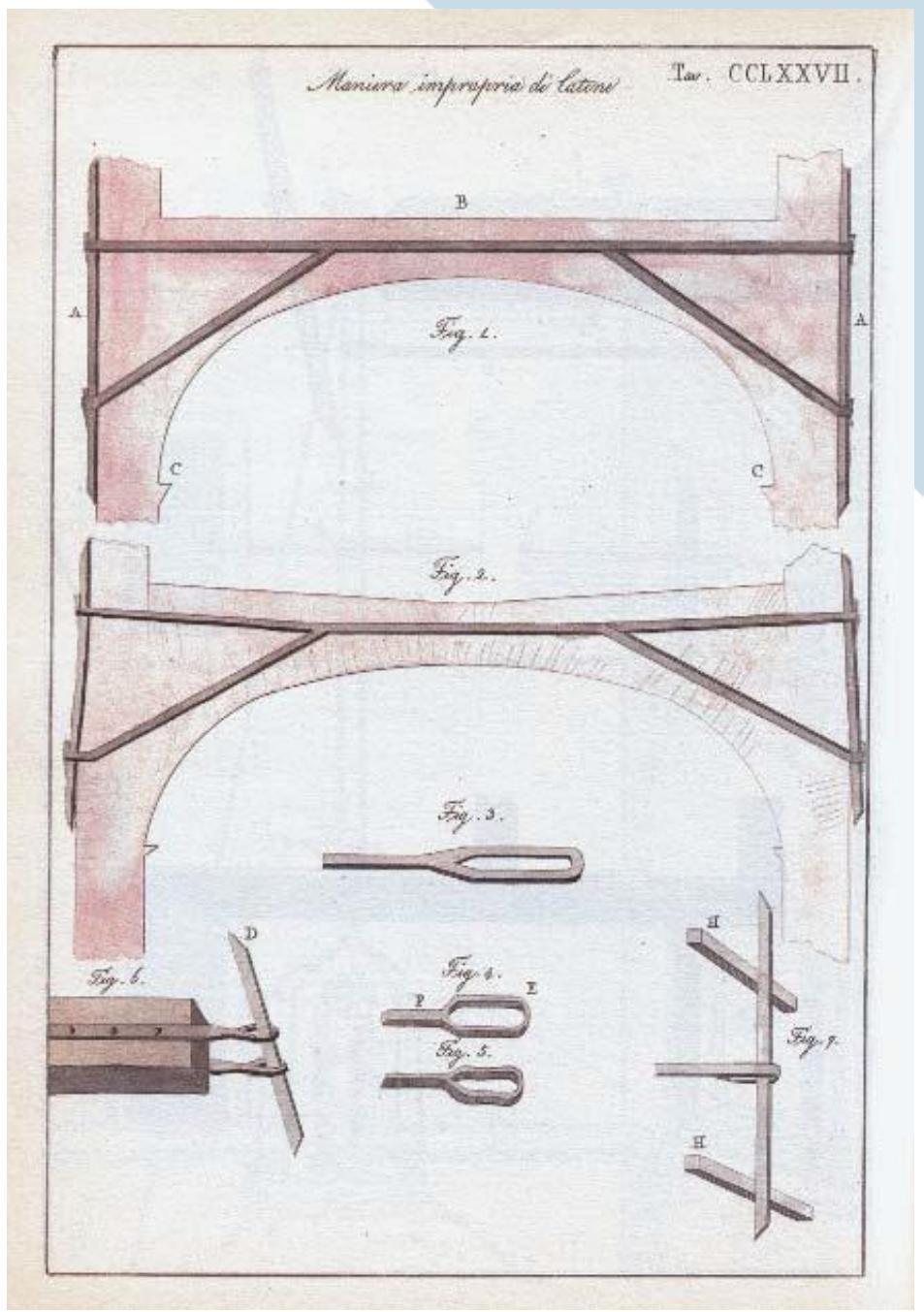


Approach to the preservation of Historical Centers

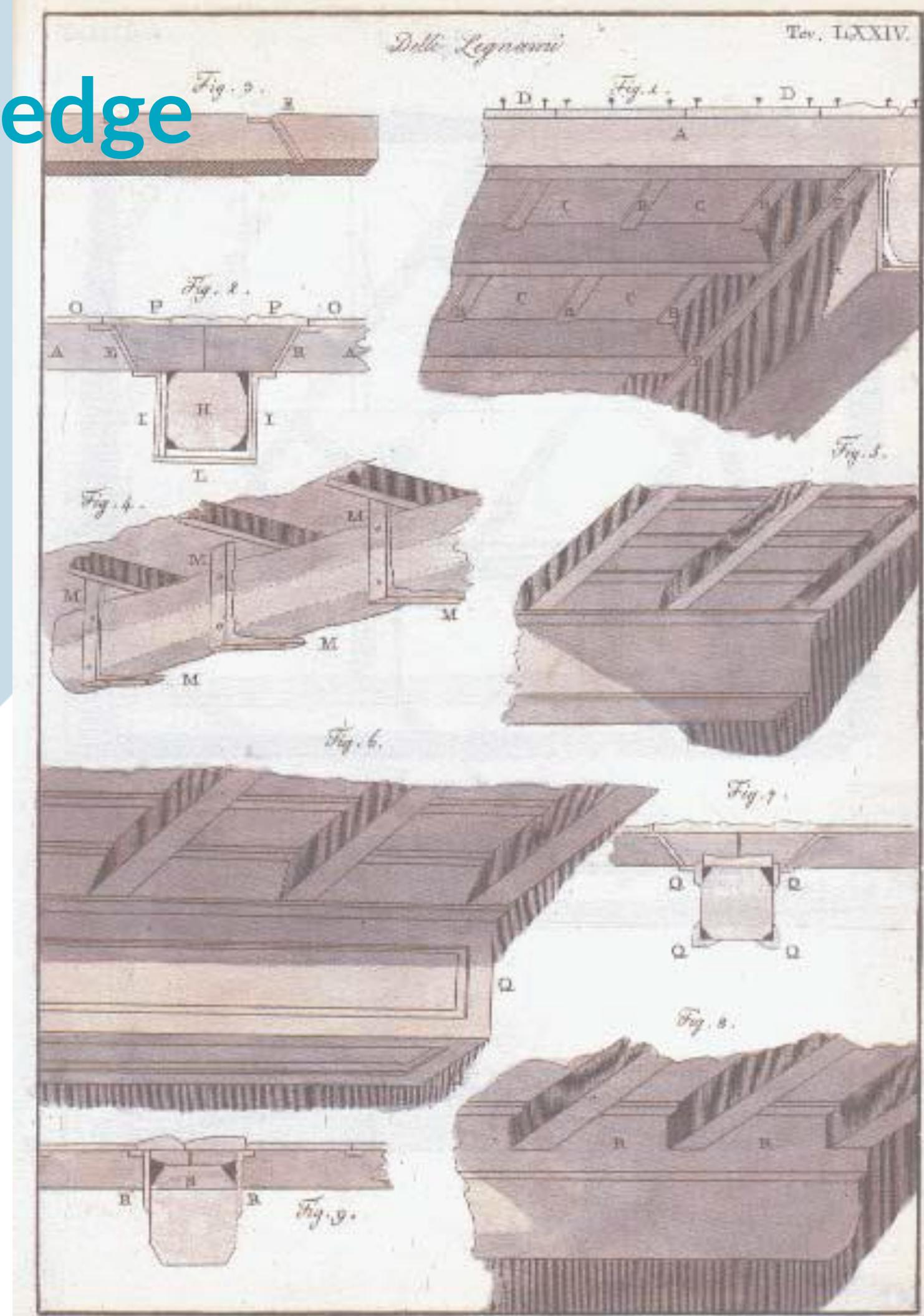


Technical and Cultural Knowledge

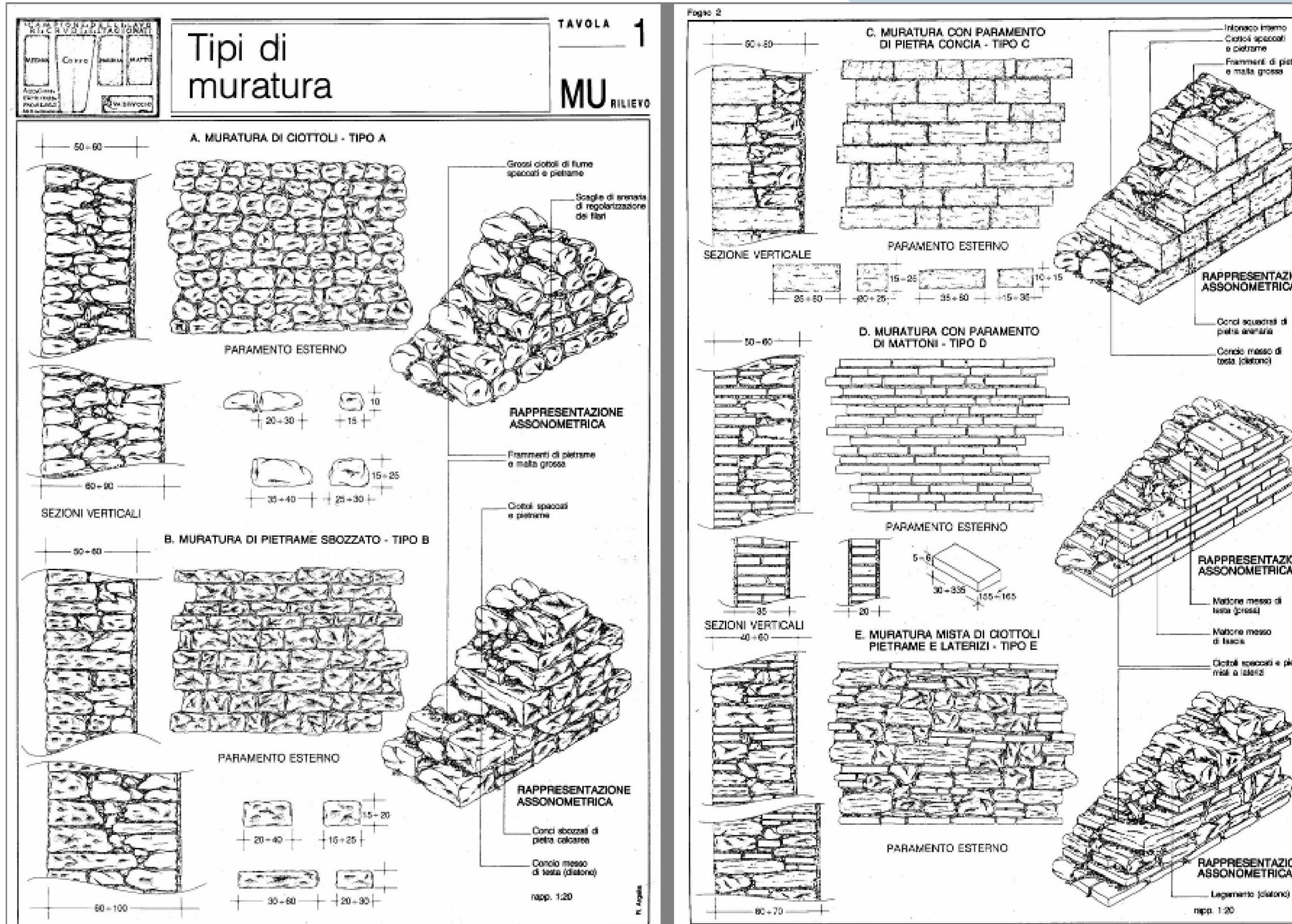
Their goal wasn't just to preserve physical materials, but to document a heritage of technical and cultural knowledge. These manuals laid the foundation for a systematic approach to conservation, identifying traditional construction practices and creating a guide for future interventions.



G. Valadier, *L'architettura pratica* ..., 1828-39



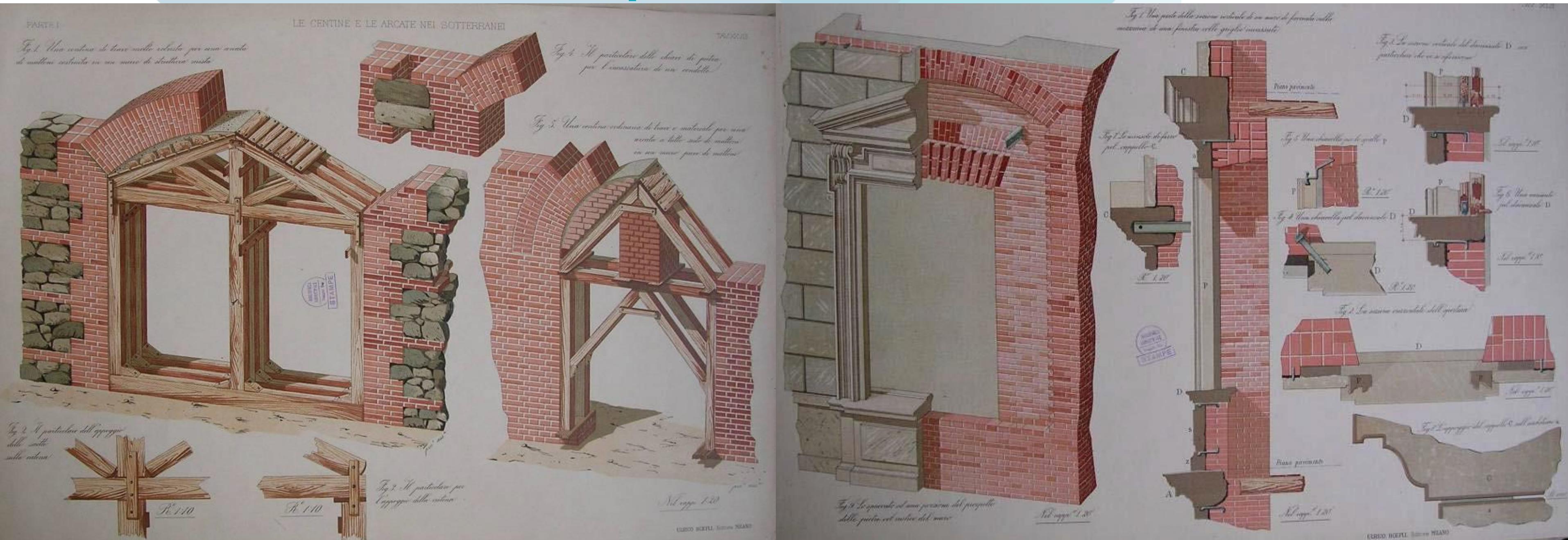
Technical and Cultural Knowledge



The first significant example is the 1985 Recovery Manual for Rome, which paved the way for other similar interventions, such as those in Città di Castello and Palermo in the 1990s.

The core idea is to create a connection between the past and the present, keeping traditional construction practices alive while still embracing modern functionality.

The manuals as operational tools



The three main areas of work related to the manuals:

- The "taxonomy," which involves identifying and cataloging the typical architectural features of a region.
- The "systematic" area, which is more technical and focuses on reconstructing ancient construction practices.
- The "application" area, focused on practically introducing ancient techniques into modern production processes.

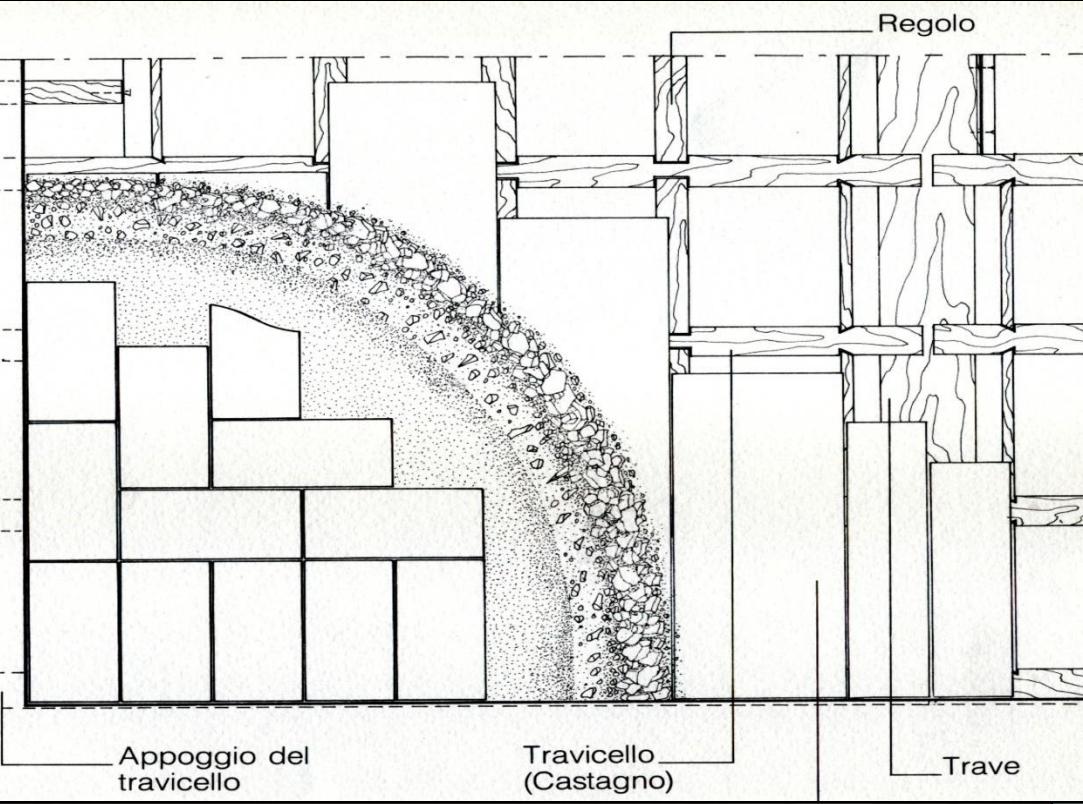
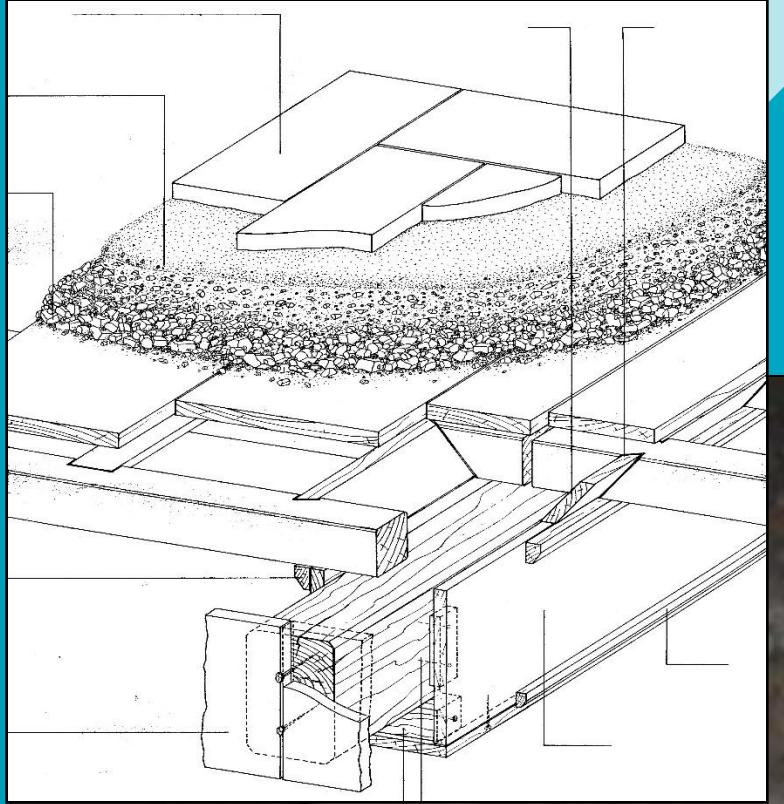
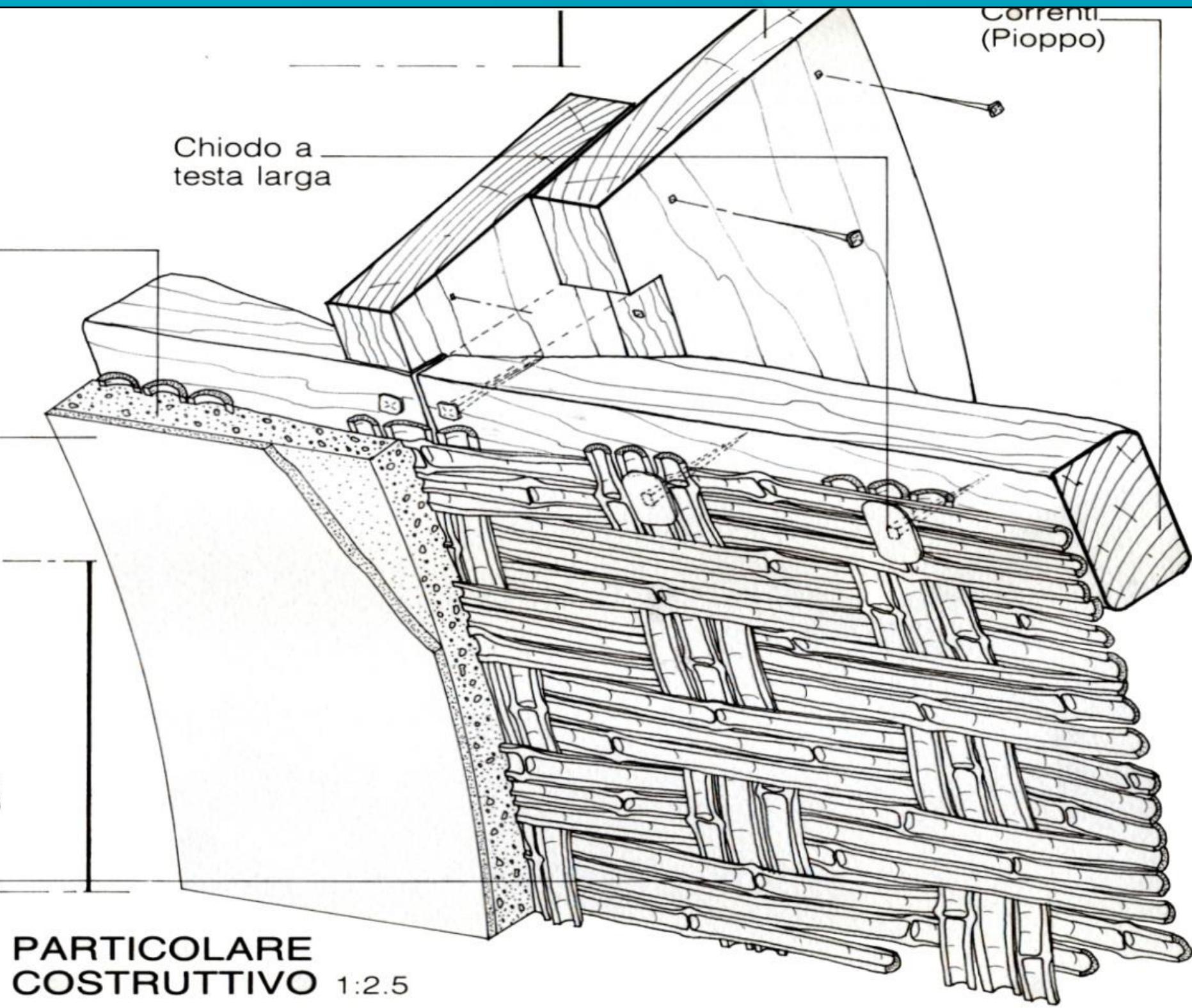
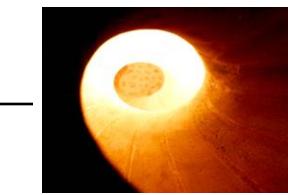
Castellammare del Golfo

LINEE GUIDA PIANO DI RECUPERO
CASTELLAMMARE DEL GOLFO

VOLTA IN CAMERA CANNA

TECNICHE COSTRUTTIVE

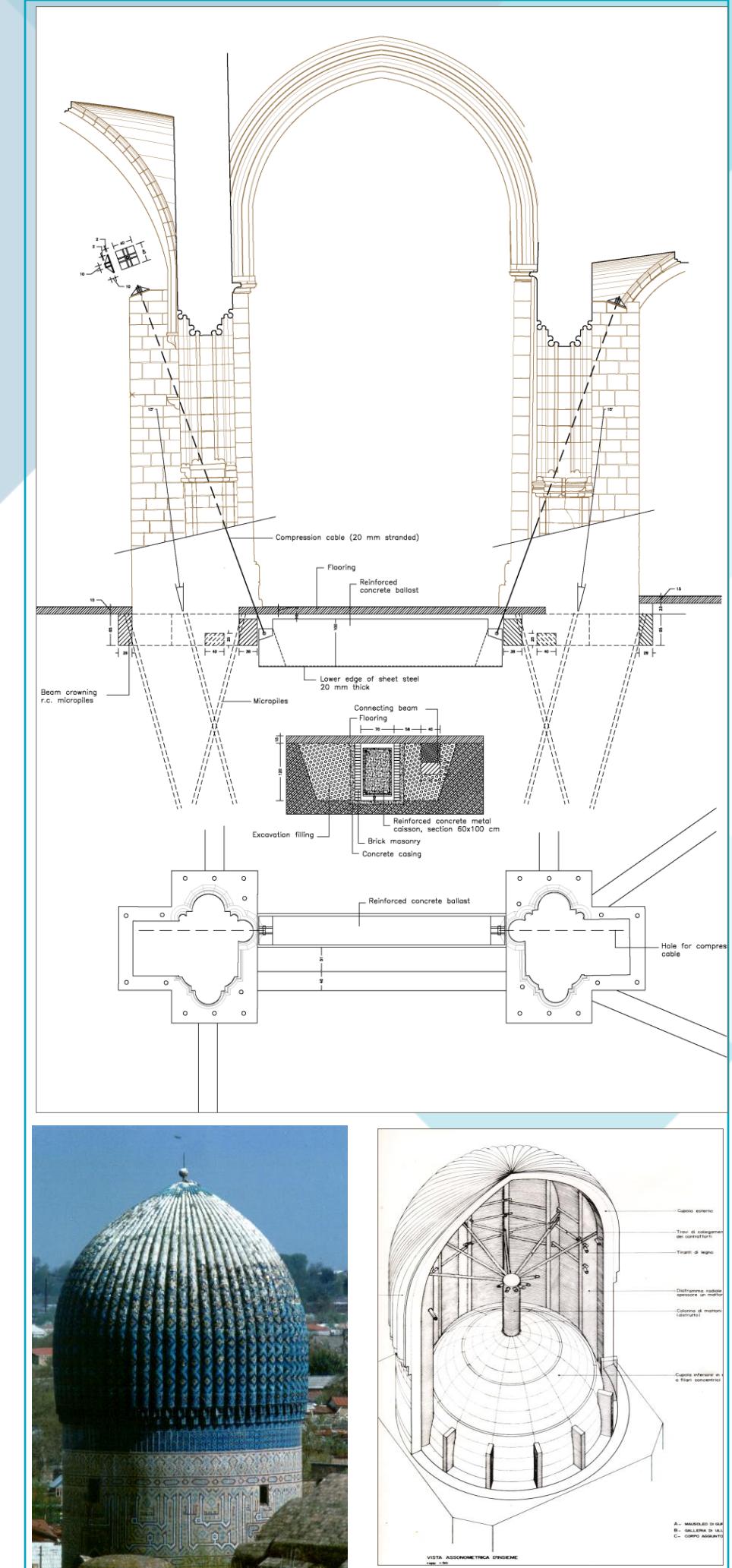
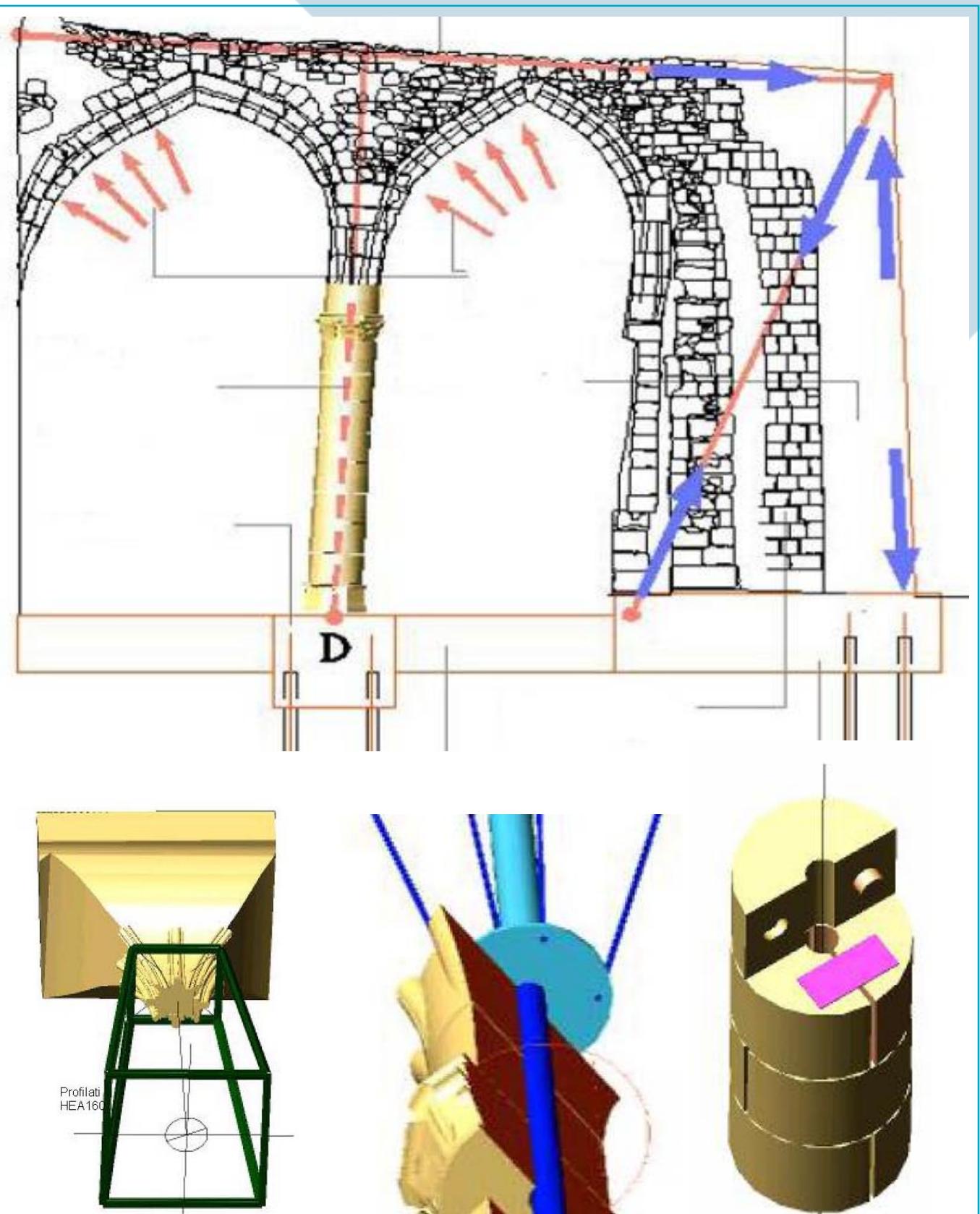
SCHEDA TCv1



The manuals as operational tools

The third area, the "application" aspect, focuses on practically introducing ancient techniques into current production processes. The idea is not to relegate premodern technologies to the past but to make them useful and functional again, adapting them to today's needs.

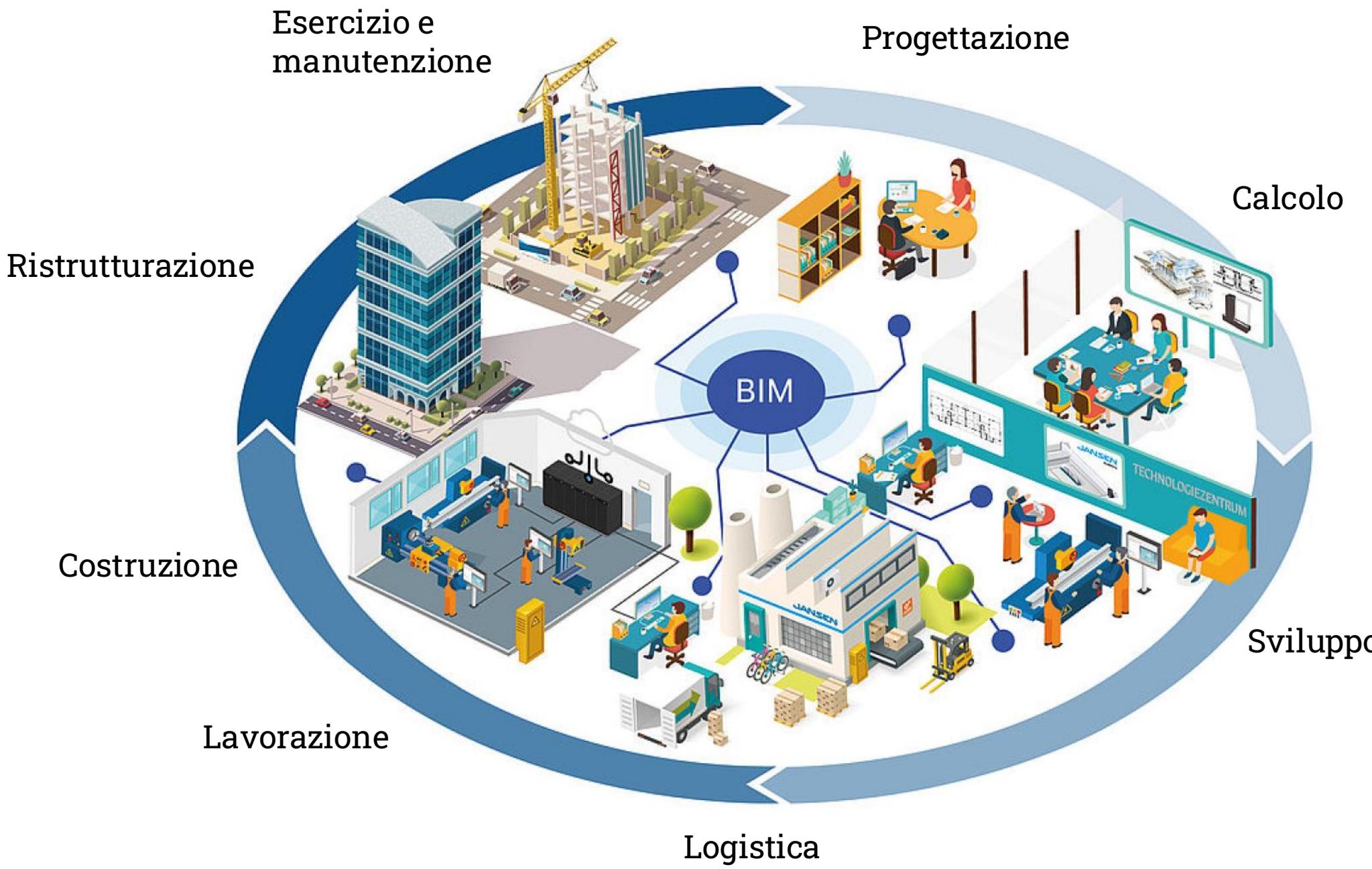
Here, we see an example of how ancient construction techniques can inspire modern solutions for structural reinforcement and seismic improvements. A significant case is the use of the pendulum, originally applied in the domes of the Gur-e Amir in Samarkand, which we reintroduced during the restoration of the Church of San Nicola as a seismic safety system.



What is BIM

BIM stands for **Building Information Modeling** - "digital representation of physical and functional characteristics of an object" (NIBS National Institute of Building Sciences)

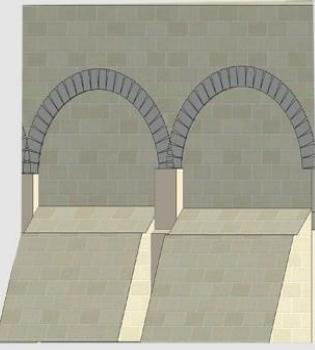
It is based on the creation and updating of **a digital information system of a building**, combining geometric and semantic information, associating a dynamic and implementable data system with the 3D representation of the construction elements.



L'ex stabilimento Florio a Favignana

Murature portanti

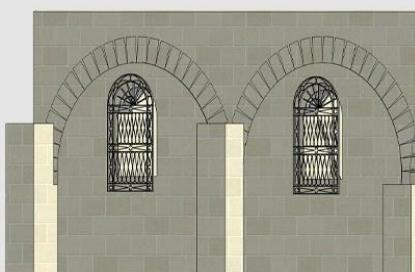
MURO NORD



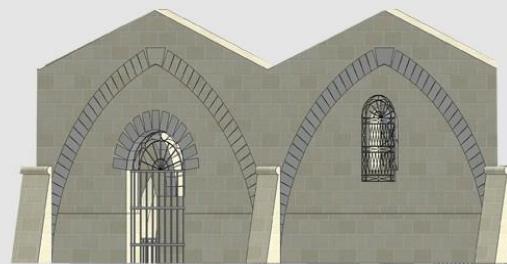
MURO EST



MURO SUD

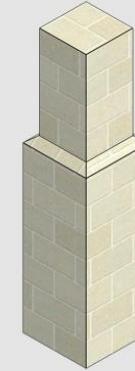


MURO OVEST



Pilastri

RASTREMATO



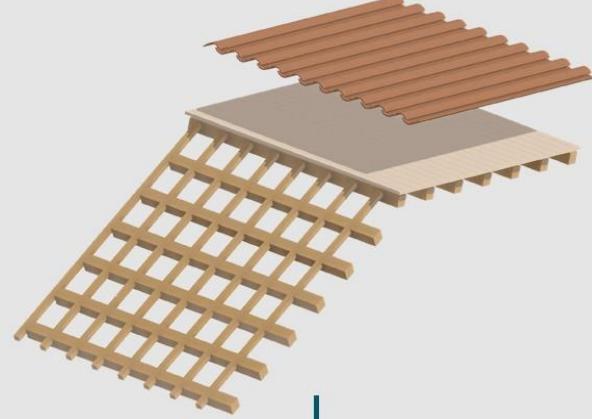
Archi

A SESTO ACUTO



Copertura

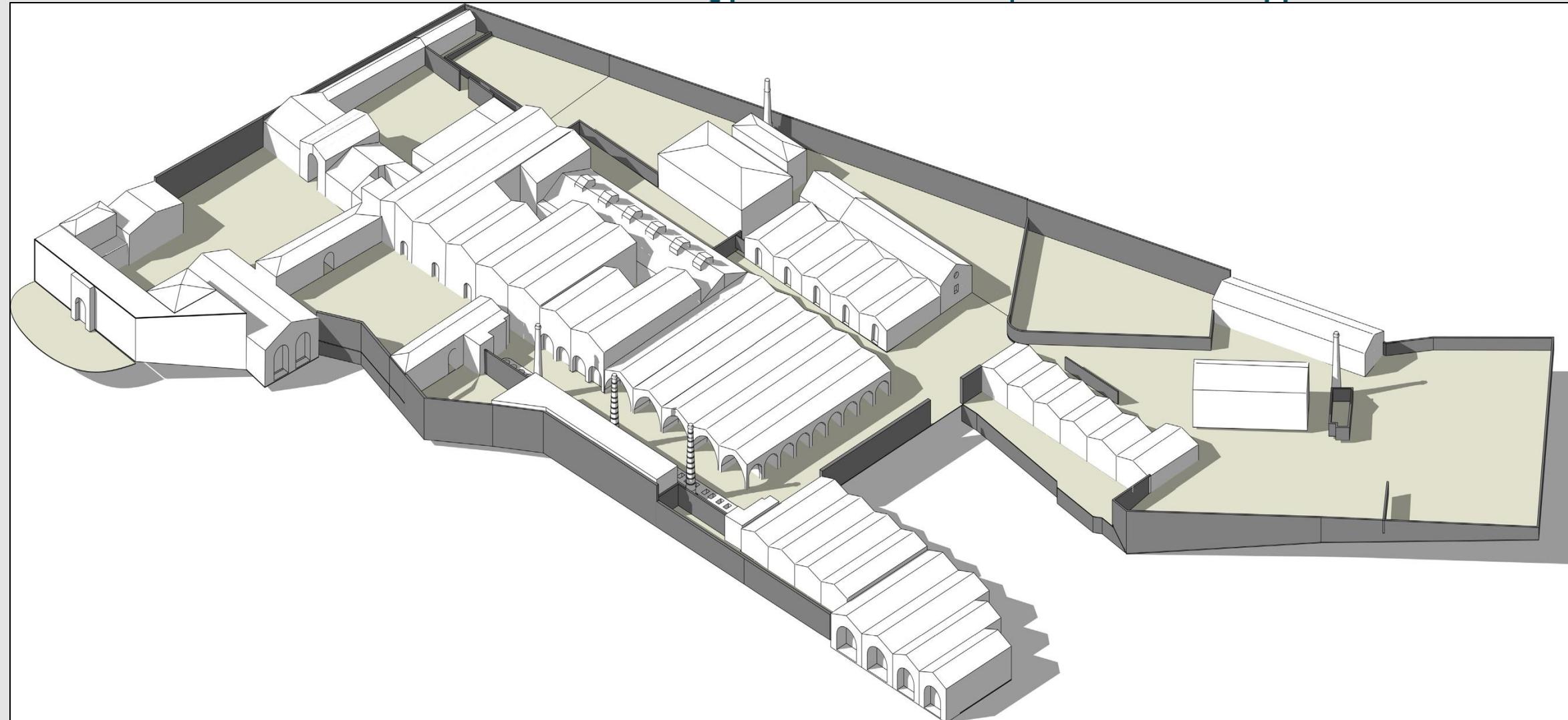
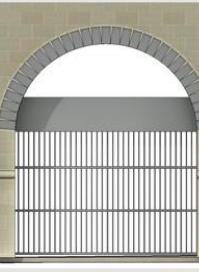
SISTEMA TRADIZIONALE



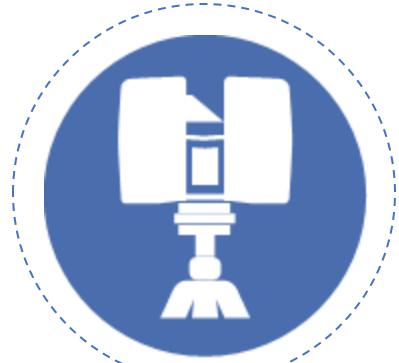
Finestre

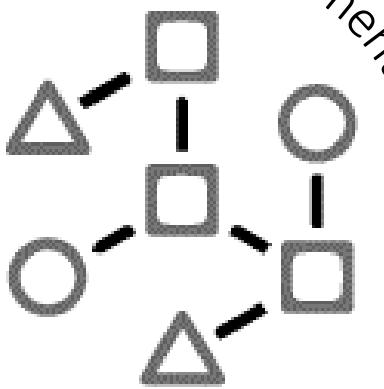


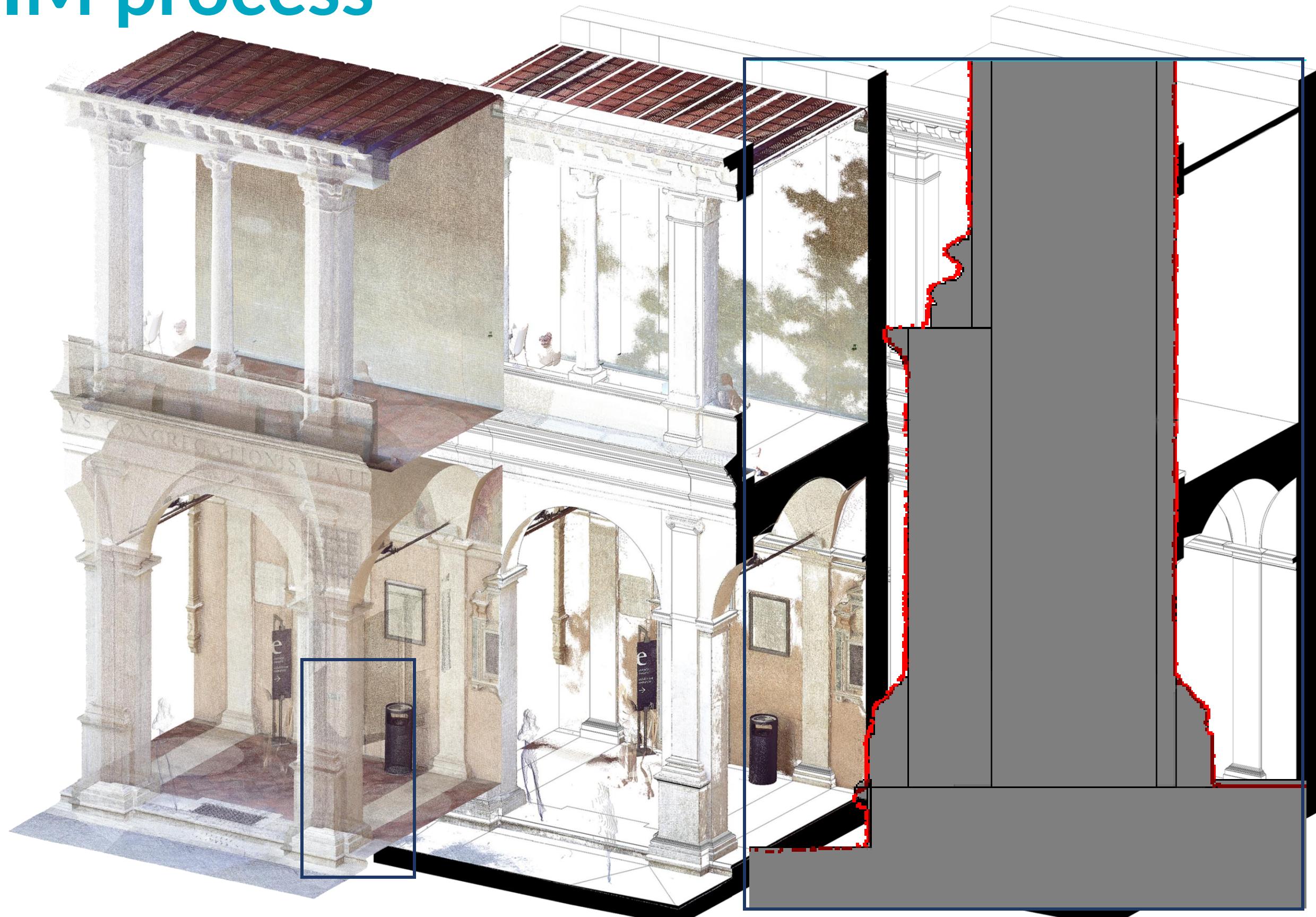
Porte



Scan-toBIM process

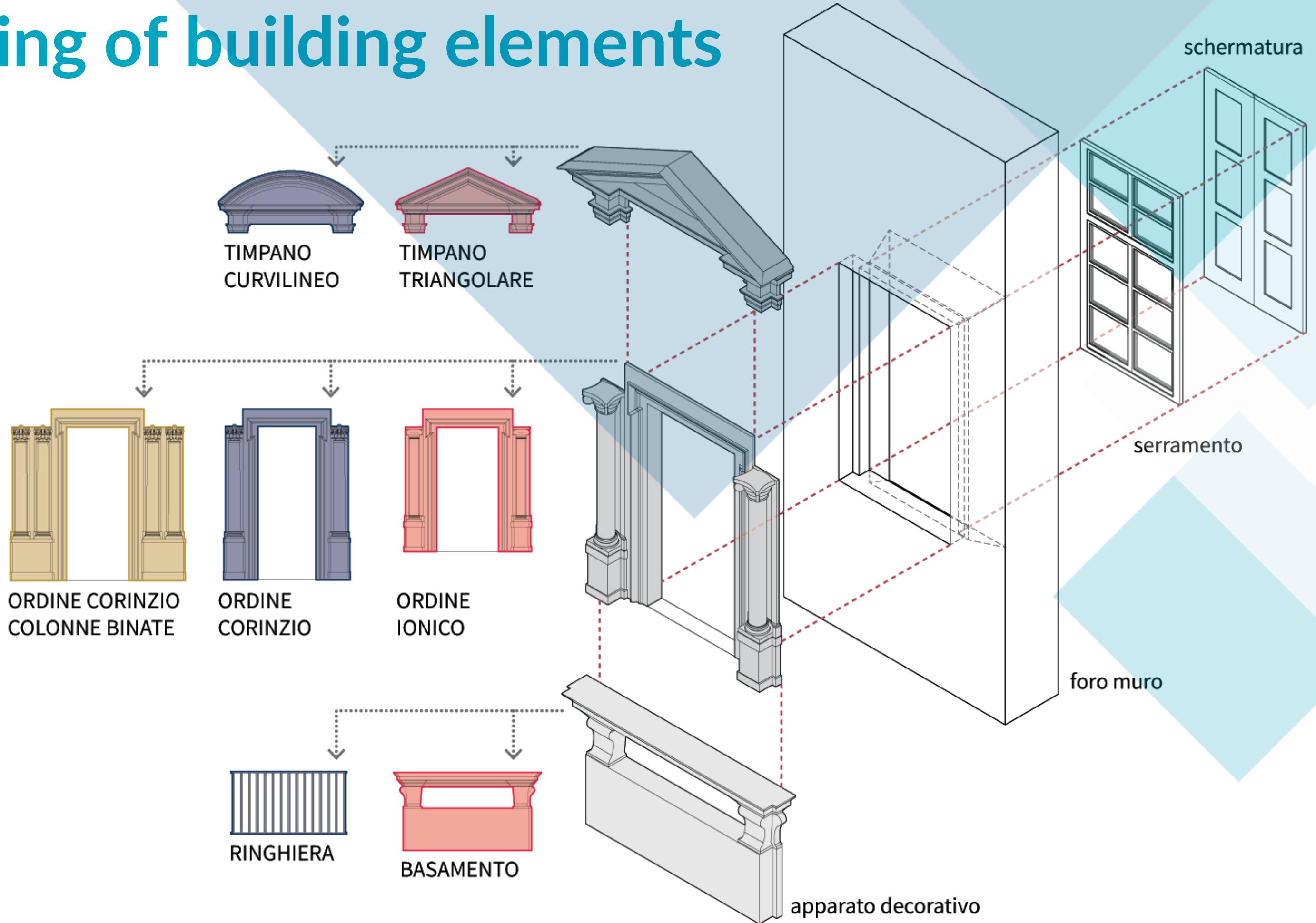
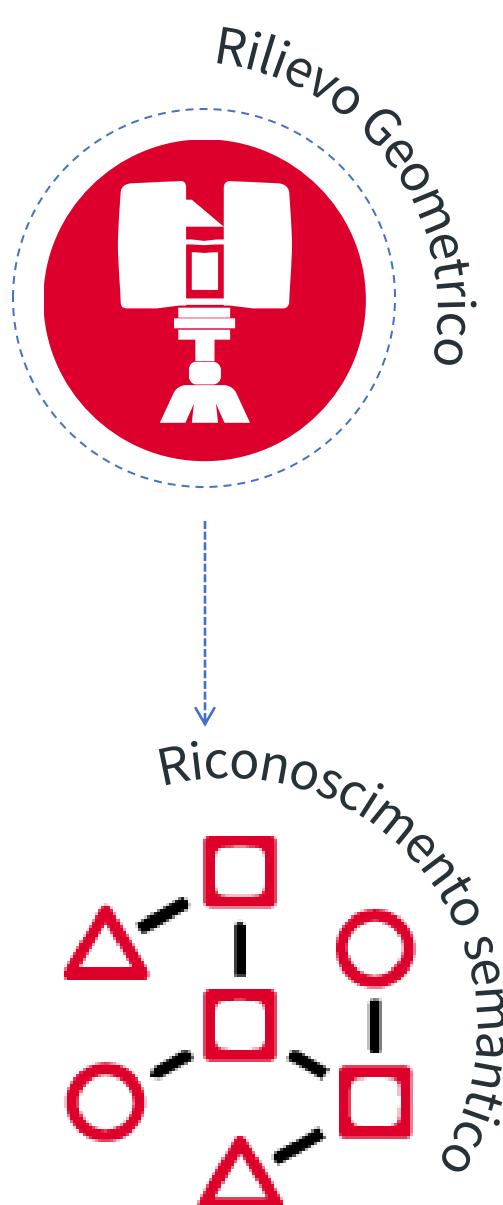


Riconoscimento semantico


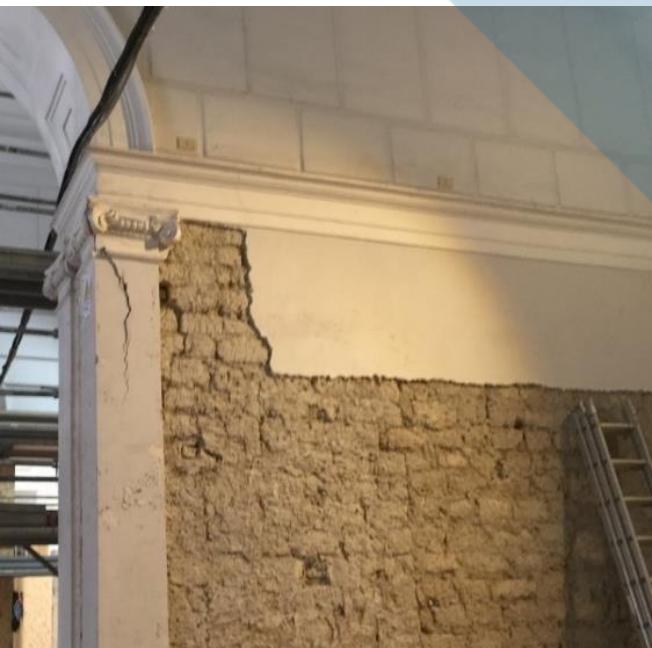
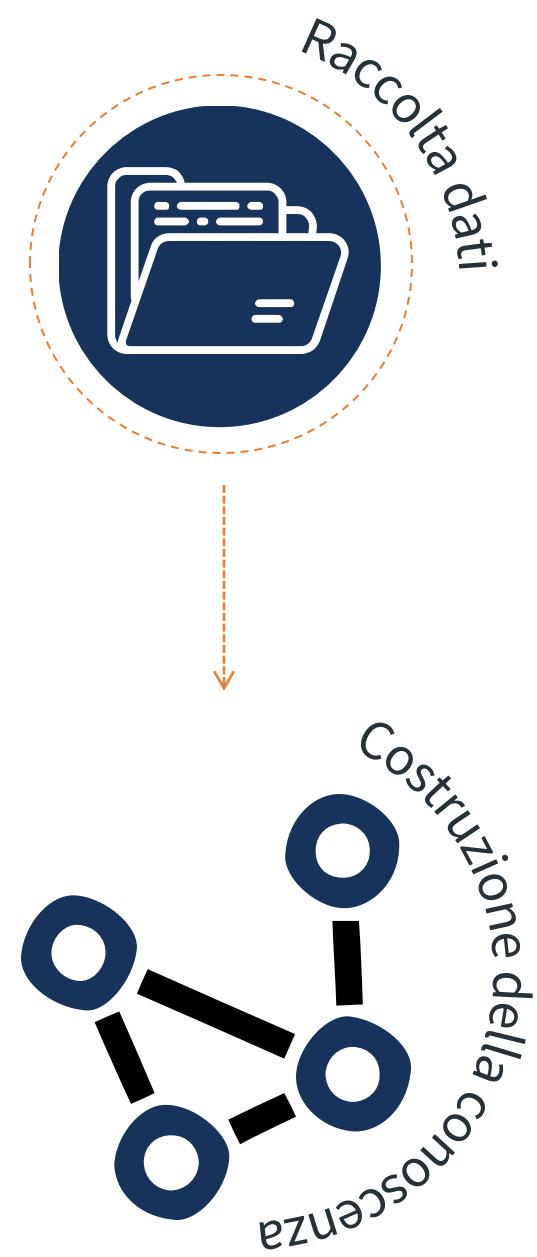


Modello numerico - Sovraposizione del modello numerico e del modello H - Modello-BIM - Modello-Autodesk Revit

Modeling of building elements

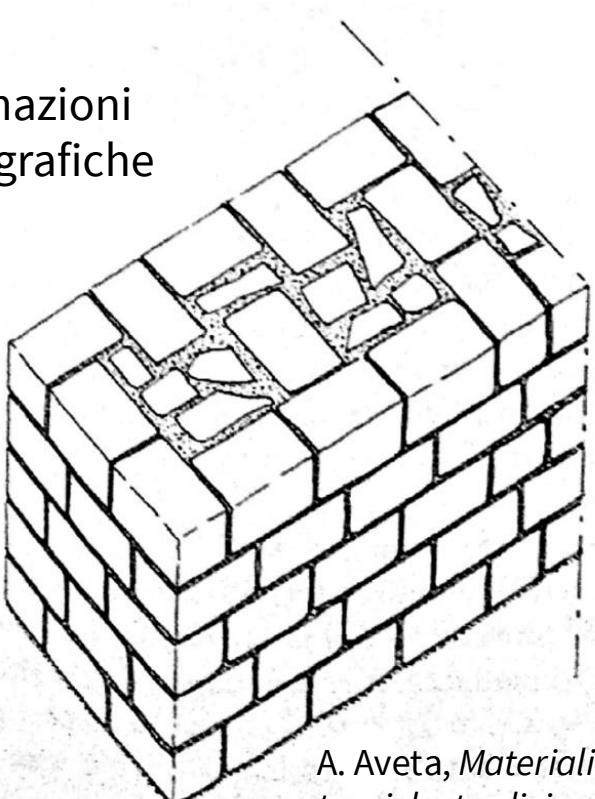


Semantic enrichment



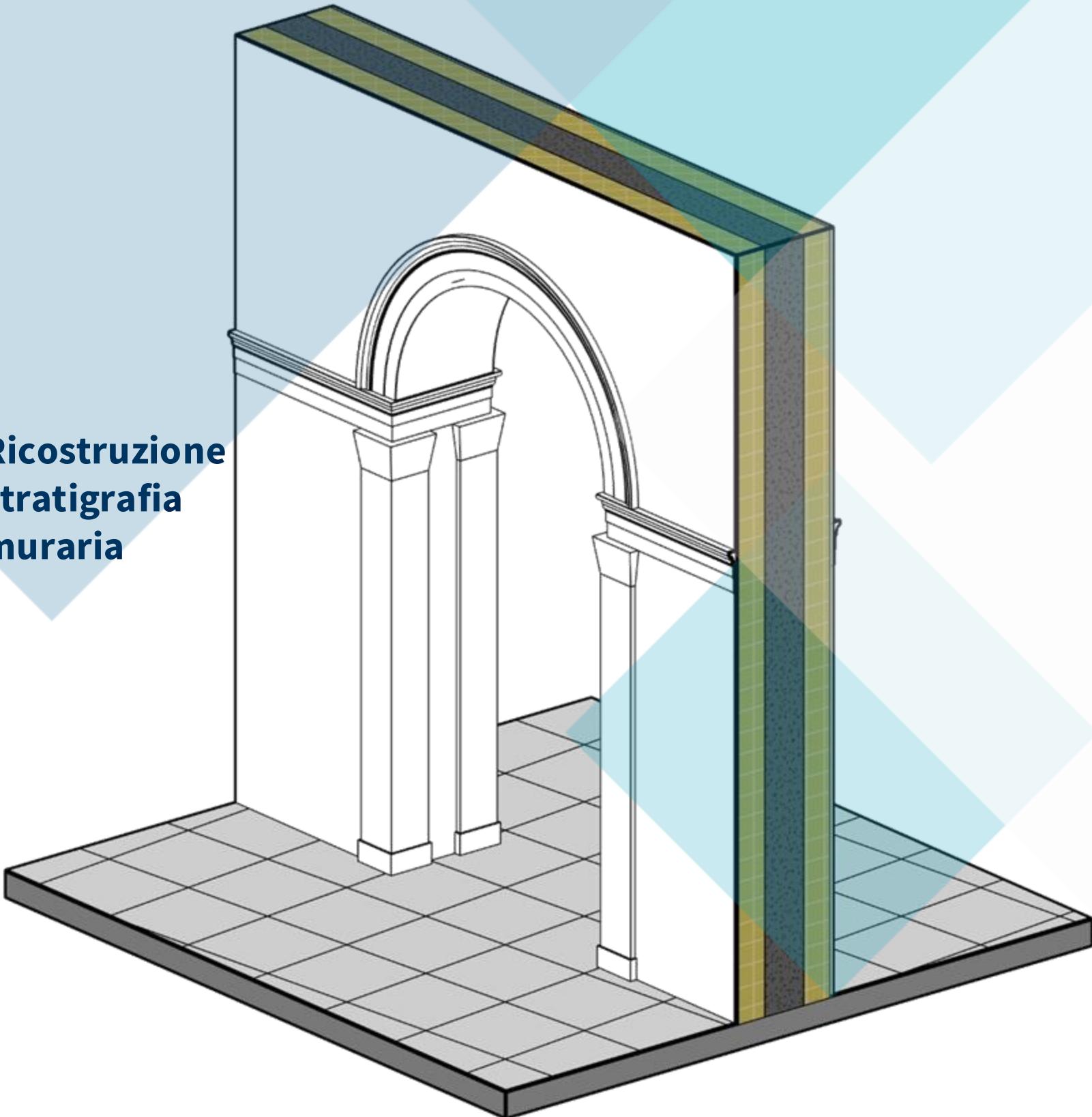
Sopralluogo - analisi
diagnostiche

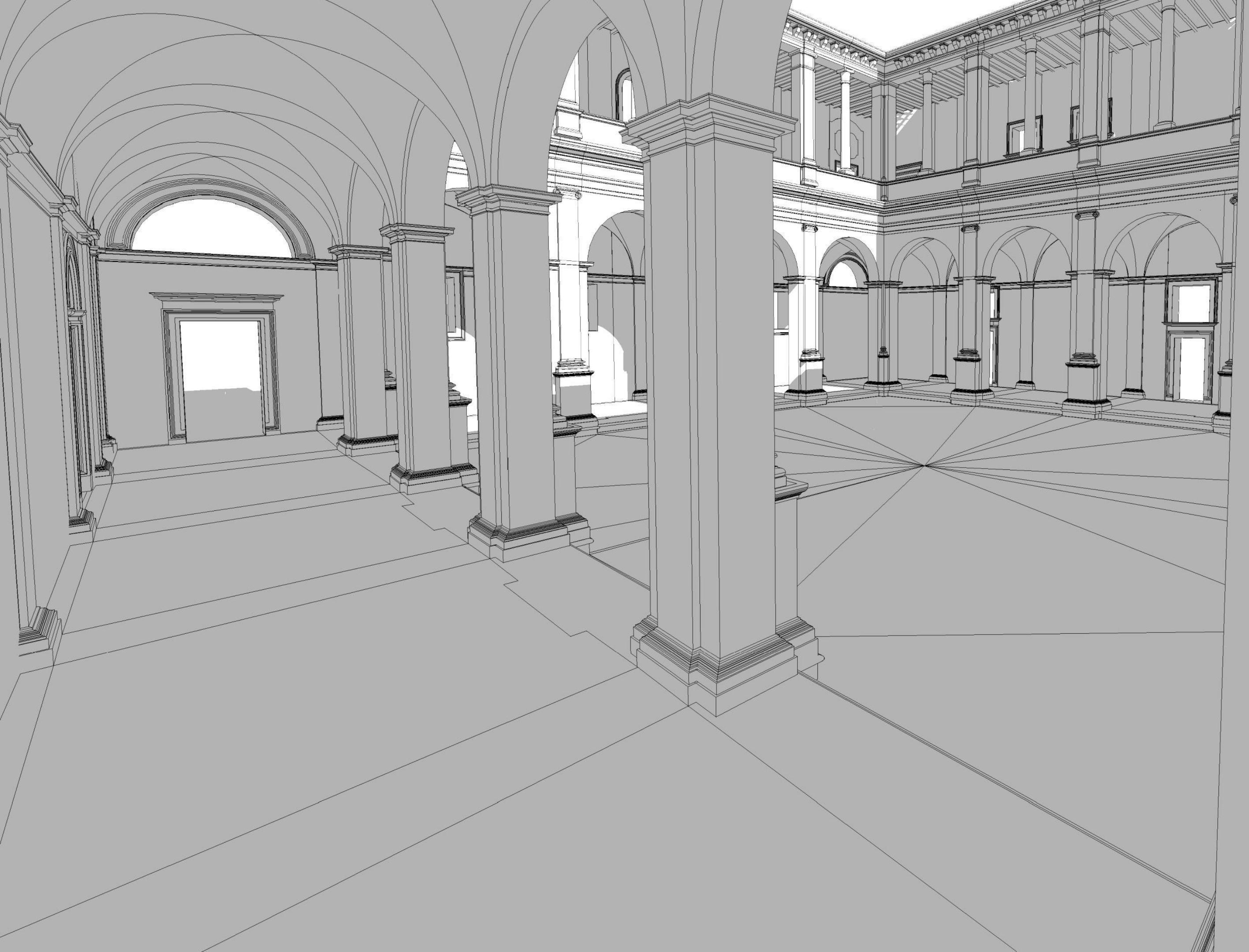
Informazioni
bibliografiche



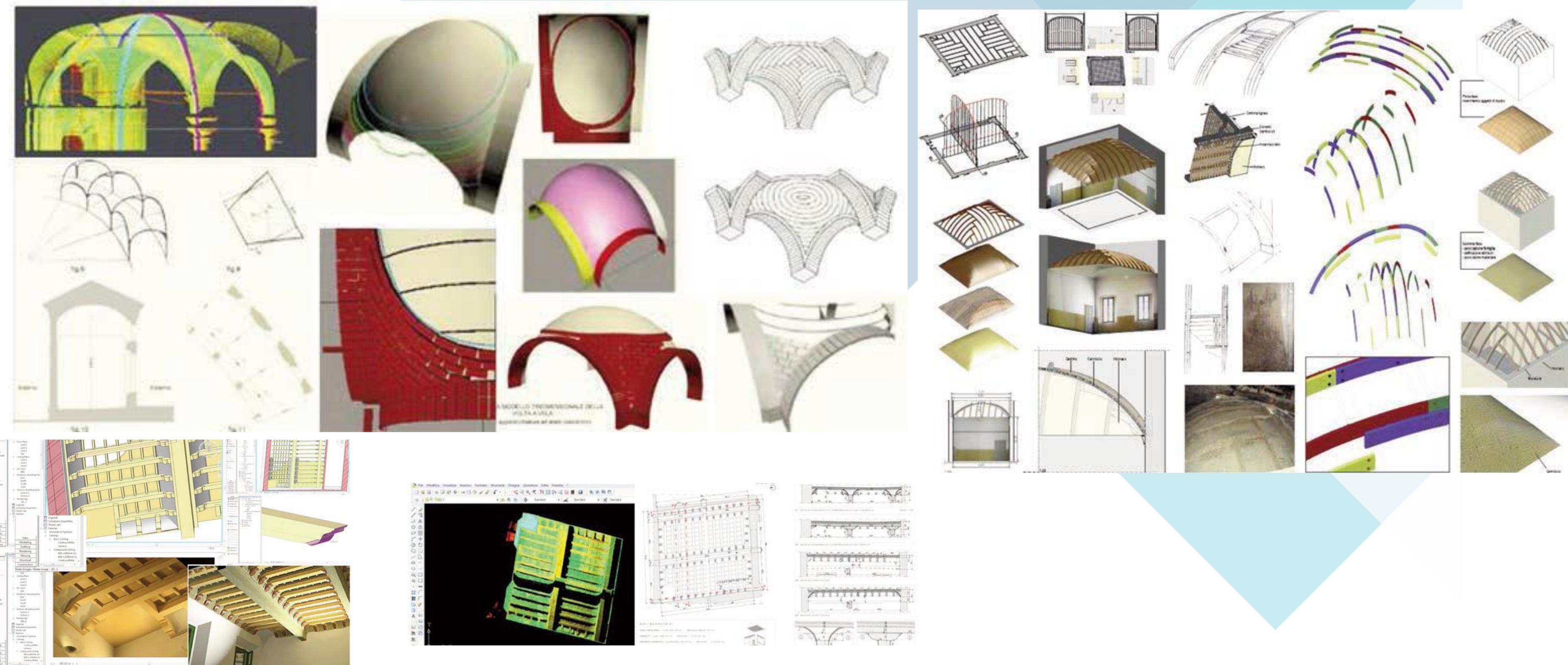
A. Aveta, *Materiali e tecniche tradizionali nel napoletano*, Arte Tipografica, Napoli 1987

Ricostruzione
stratigrafia
muraria





HBIM Library Objects for Conservation and Management of Built Heritage



HBIM Library Objects for Conservation and Management of Built Heritage

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Thanks for your attention!