

FIG

FIG WORKING WEEK 2017

Helsinki Finland

29 May - 2 June 2017

Presented at the FIG Working Week 2017,
May 29 - June 2, 2017 in Helsinki, Finland

A WebGIS for the knowledge and conservation of the historical wall structures of the 13th - 18th centuries

Giuseppina Vacca

D. Pili, D. R. Fiorino, V. Pintus

DICAAR, Dep. of Civil and Environmental Engineering and Architecture University of Cagliari (Italy)

vaccag@unica.it

Surveying the world of tomorrow -
From digitalisation to augmented reality

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General aims of the multi-disciplinary research project “Traditional building techniques: from knowledge to conservation and performance improvement” are

1. To Study the building techniques in the 13th - 18th centuries in Sardinia region (Italy)
2. To Study the performance and the improvement of the examined buildings or structures on both the structural and the energetic use sides.

The multi-disciplinary approach of this project involving several specialists that are integrating their expertise and providing their input to the knowledge of the dimensional, technical-constructive, mensio-chronological, material, physical-mechanical and energy-performance features in order to define the peculiarities and behavior of the examined structures, their performance levels, and then direct the interventions toward innovative, mindful and ethically correct solutions.



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In this research project all data acquired in the distinct steps and in different topics have been organized in a GeoDatabase and in a WebGIS.

This infrastructure is built in according to the standards and specifications of the Sardinia region (Italy) and CISIS (Italian interregional center for GIS and statistical services) .

This infrastructure was entirely built using Open Source software.



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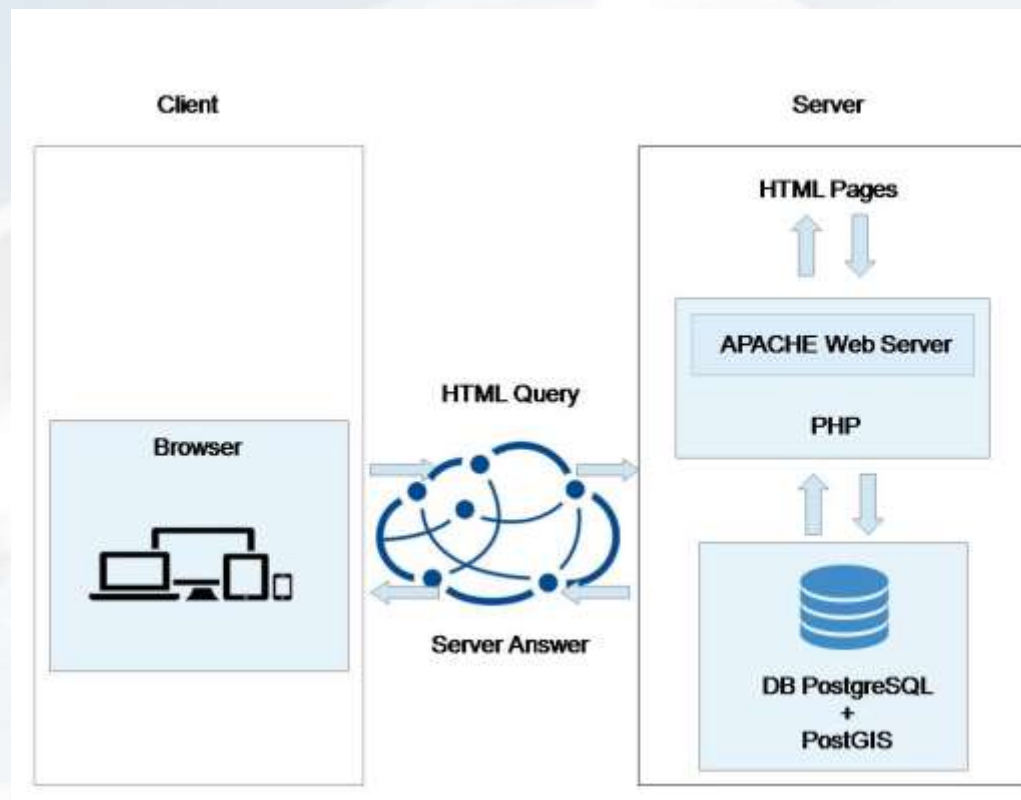
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The infrastructure:

- A database
- A WebGIS
- QGIS



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The Database

Inserisci bene Visualizza in mappa Modifica schede

Naviga sui contenuti

Unità architettonica

Inserisci Visualizza

Strutture

Inserisci Visualizza

Infisso

Inserisci Visualizza

Campione murario

Inserisci Visualizza



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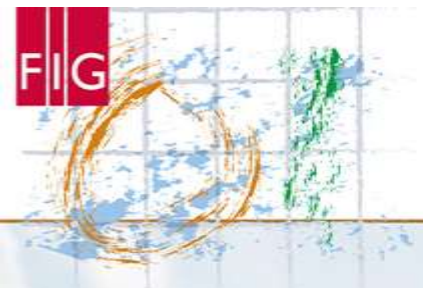


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From digitalisation to

The architectural unit

Inserisci bene Visualizza in mappa Mod

Unità architettonica

Inserisci Visualizza

Ve alla mappa Inserimento multiplo

Inserisci i dati per l'unità architettonica

L'ultimo ID inserito è: 5

ID bene

CODICI

Livello della mappa

Validazione

Ente escludente

Bene codice

Catálogo MBACT

Completare

OGGETTO

Metro categoria

Definizione

Qualificazione amministrativa

Denominazione

Descrizione

Qualificazione morfologica/funcionale

Immagine

Georeferenziazione tramite punto

Coordinate Nord (UTM)

Coordinate Est (UTM)

Tavola di georeferenziazione

LOCALIZZAZIONE GEOGRAFICO AMMINISTRATIVA

Provincia

Comune

Località

Denominazione area urbana

Indirizzo

Altre vie di comunicazione

Altri indirizzi - affacci spazi pubblici

Distanza

DEFINIZIONE CRONOLOGICA



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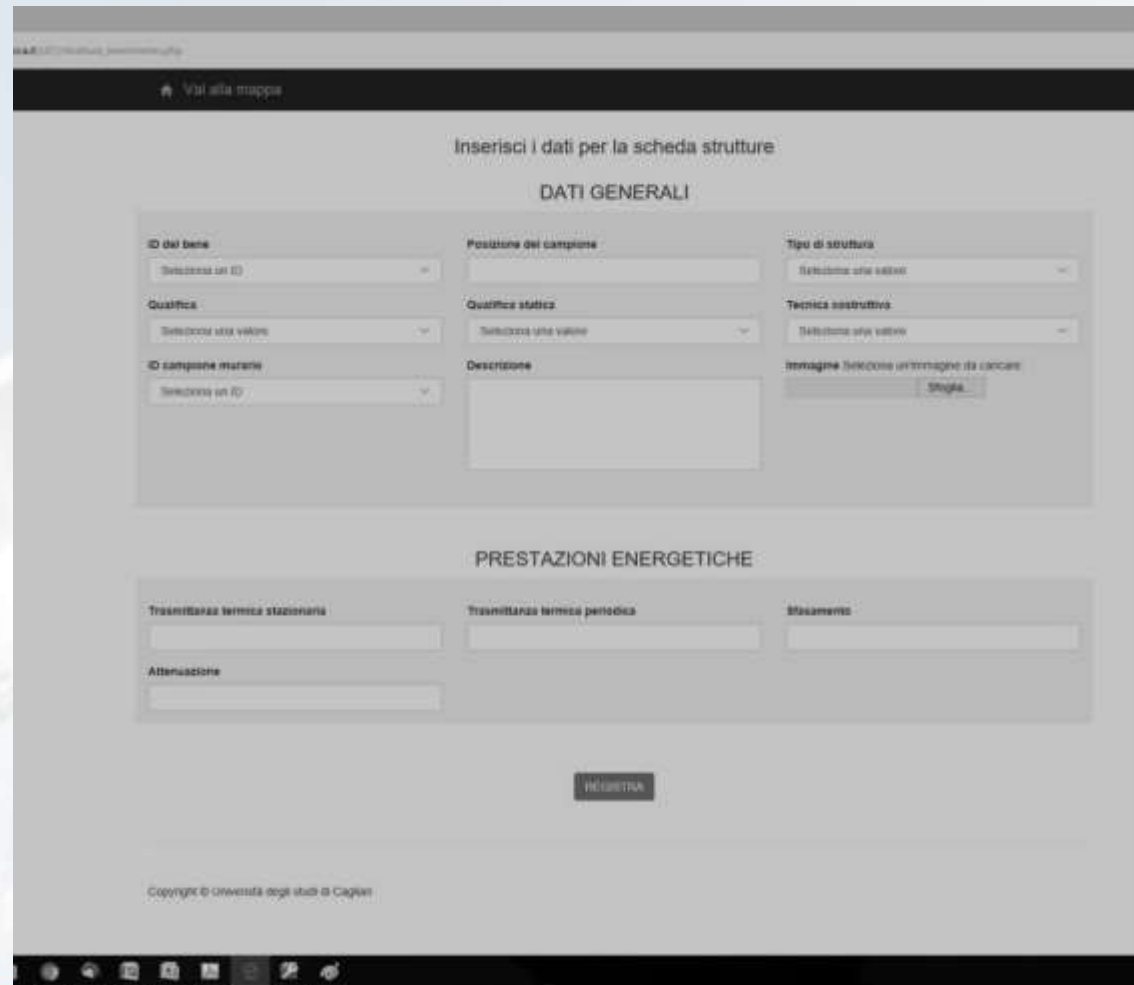
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The structures



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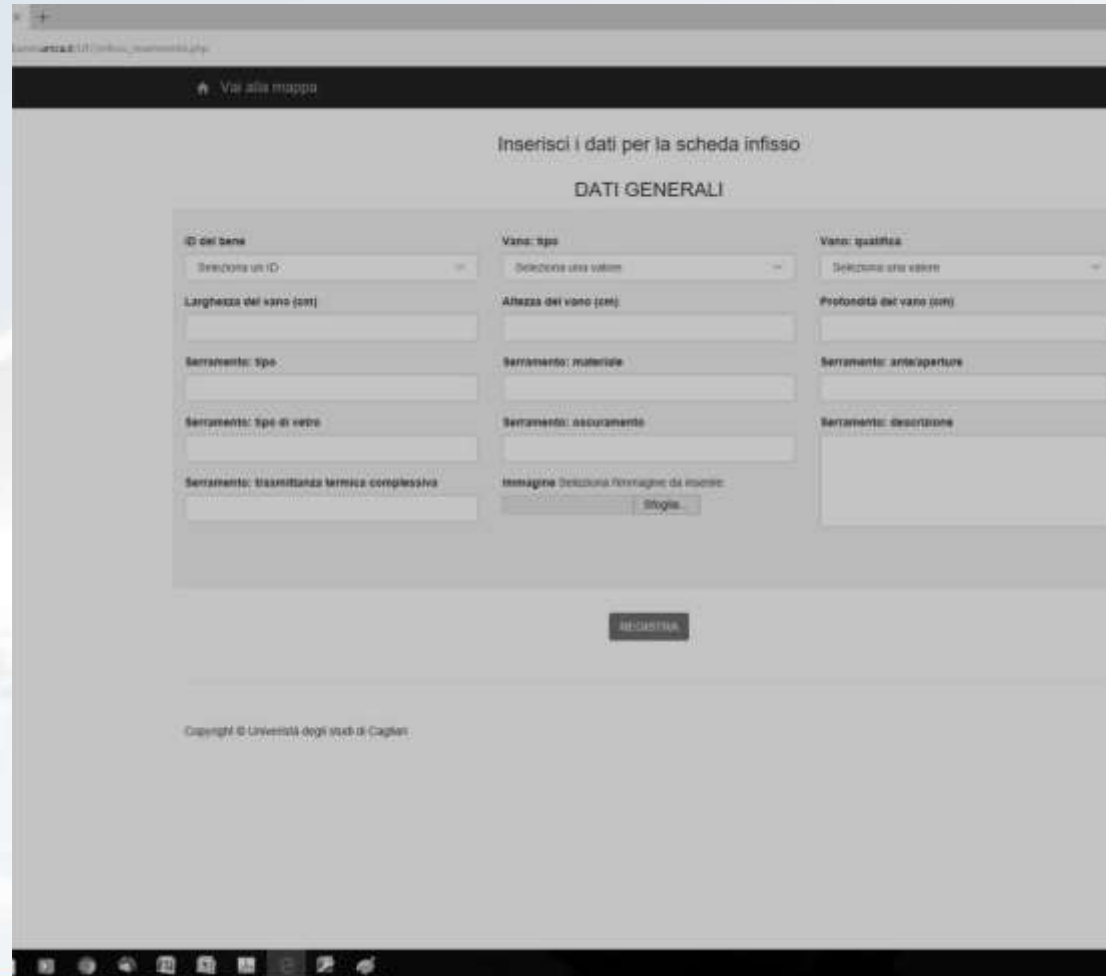
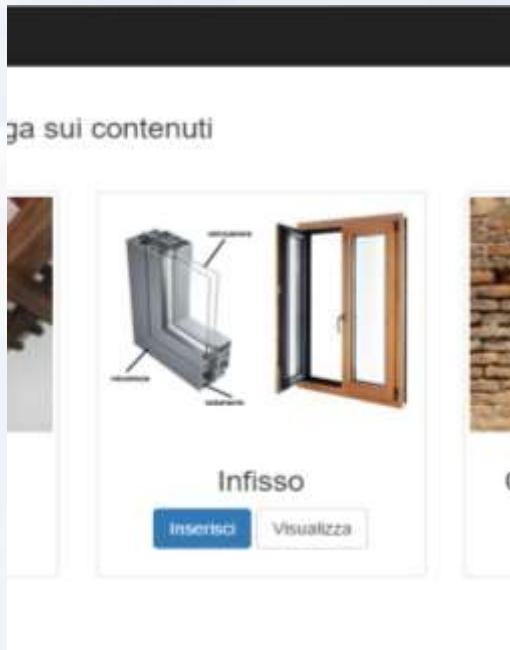
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The windows



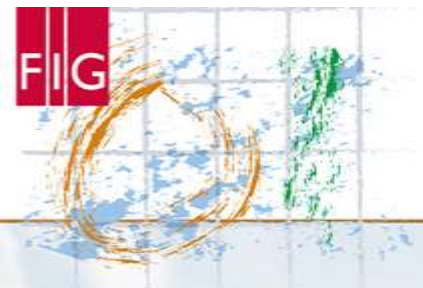


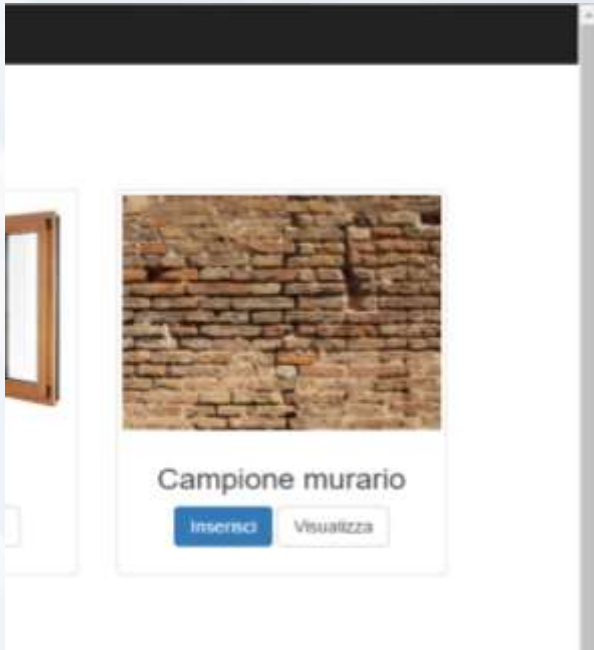
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From digitalisation to

The Masonry Sample



Visa alla mappa - Intervento multiplo

Inserisci i dati per il campione murario

DATI GENERALI

ID Data Seleziona un valore	Posizione campione Seleziona un valore	Stato Seleziona un valore
Tipo di materiale Seleziona un valore	Elemento costruttivo di riferimento Seleziona un valore	Elementi di riferimento Seleziona un valore
Cronologia secolo Seleziona un valore	Cronologia parte di secolo Seleziona un valore	Dettaglio Seleziona un valore
Materialità Seleziona un valore	Progettista Seleziona un valore	Immagine Seleziona l'immagine da inserire [Inserisci]

RILIEVO E RESTITUZIONE GRAFICA

Restituzione grafica Seleziona un valore	Tipo di rilevamento Seleziona un valore	Dimensione del campione Seleziona un valore
Scala di restituzione Seleziona un valore	Rilevatore Seleziona un valore	Data del rilevamento Seleziona un valore
Descrizione del rilievo Seleziona un valore		

APPARECCHIATURA

Apparecchiatura Seleziona un valore	Forma elemento Seleziona un valore	Disposizione degli elementi Seleziona un valore
Rosa Seleziona un valore	Elementi puntuali singolari Seleziona un valore	Angoli orizzontali Seleziona un valore
Fili Seleziona un valore	Fili altezza Seleziona un valore	Cartelli Seleziona un valore
Cartelli altezza Seleziona un valore	Dati Seleziona un valore	Frequenza dei rilievi Seleziona un valore
Zeppe Seleziona un valore	Zeppe materiali Seleziona un valore	Zeppe orientamenti Seleziona un valore
Zeppe posizioni Seleziona un valore	Bacche puntuali Seleziona un valore	Bacche puntuali forme Seleziona un valore



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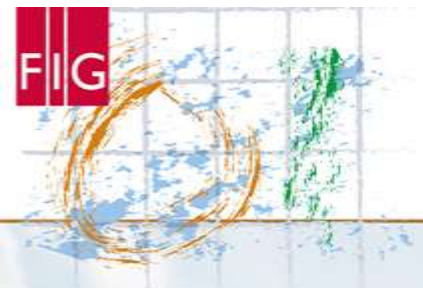


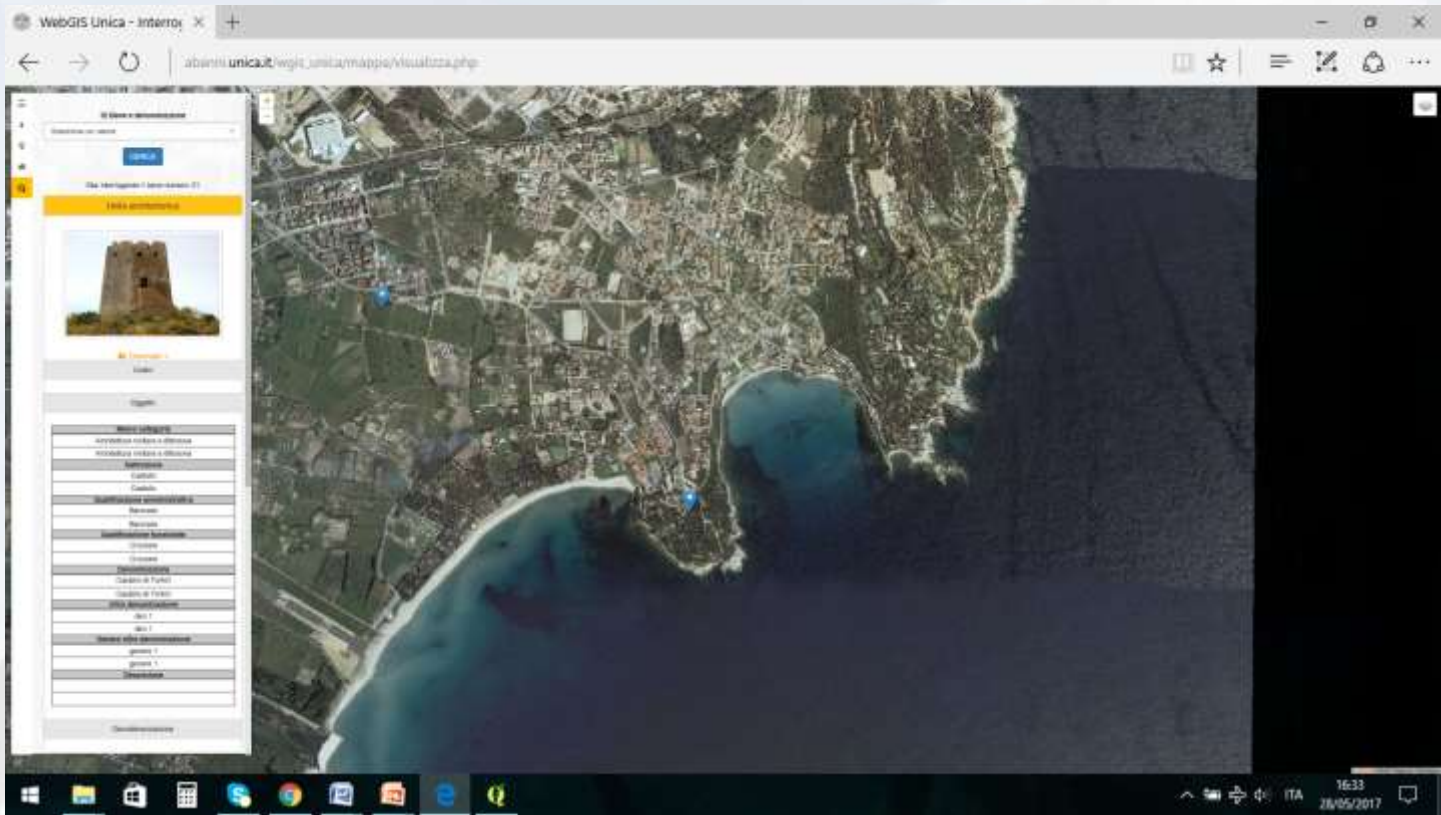
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The WebGIS



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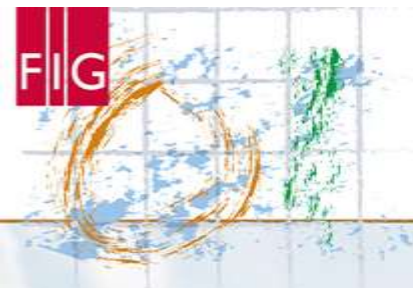


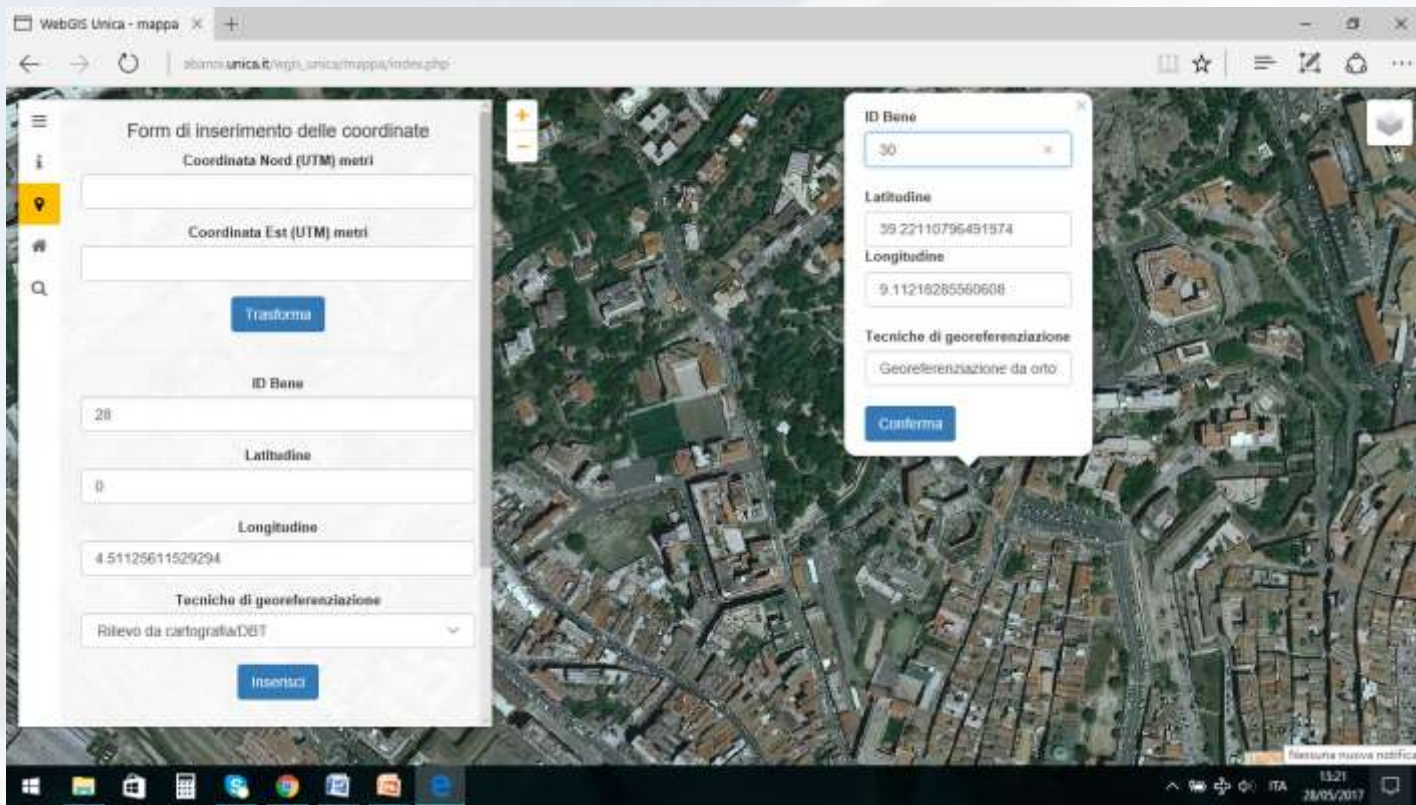
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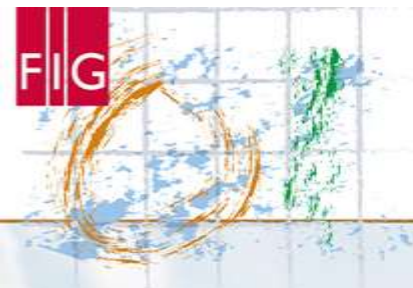
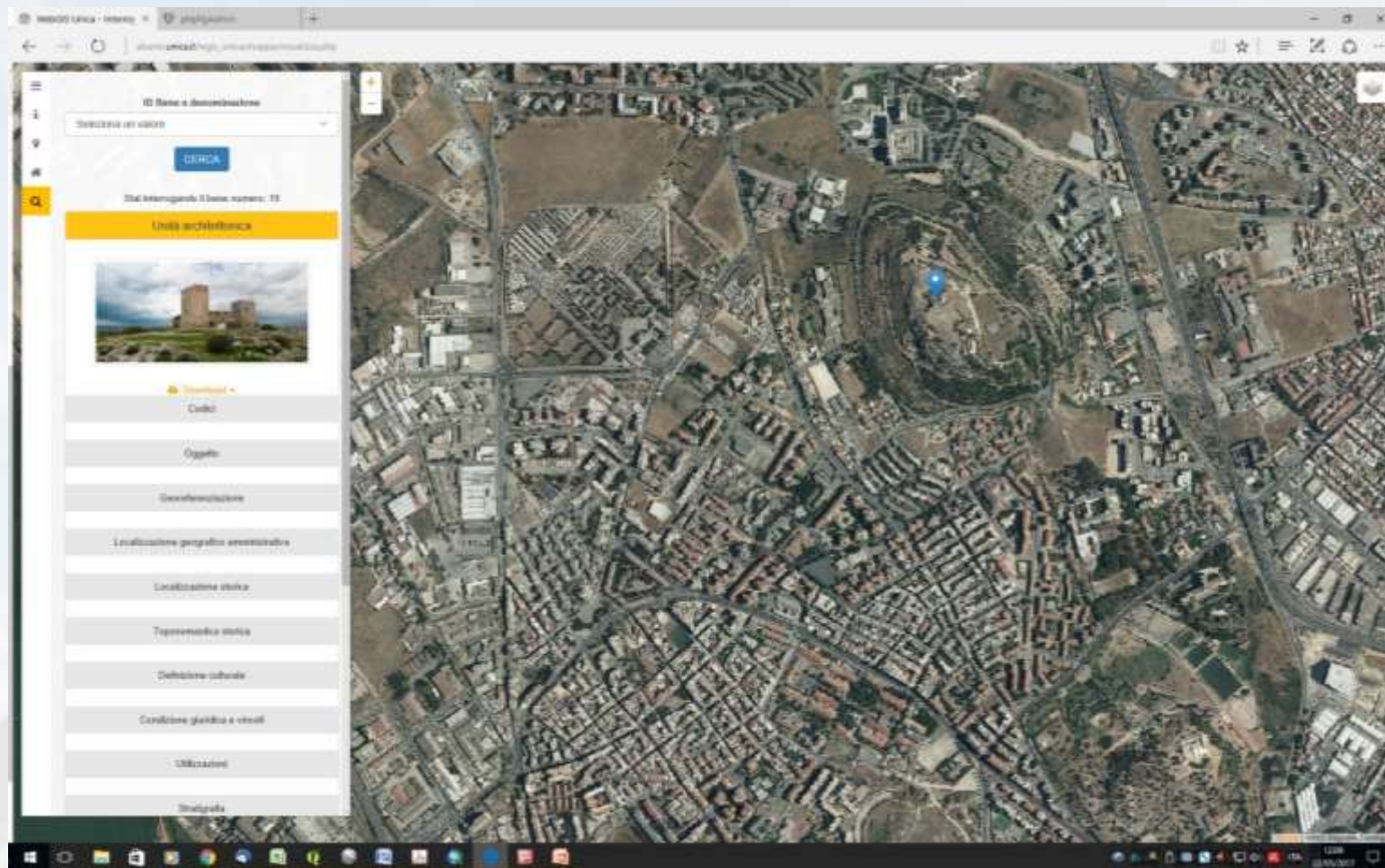


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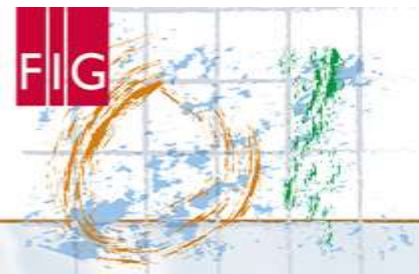


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The screenshot shows a web browser window with the following elements:

- Browser Tab:** WebGIS Unica - mappa
- Address Bar:** `albanini.unica.it/wgii_unica/mappa/index.php`
- Form Panel (Left):**
 - Title:** Form di inserimento delle coordinate
 - Field 1:** Coordinata Nord (UTM) metri (empty)
 - Field 2:** Coordinata Est (UTM) metri (empty)
 - Button:** Trasforma
 - Field 3:** ID Bene (value: 14)
 - Field 4:** Latitudine (value: 0)
 - Field 5:** Longitudine (value: 4.51125611529294)
 - Dropdown:** Tecniche di georeferenziazione (selected: Rilievo da cartografia/DBT)
 - Button:** Inserisci
- Map Panel (Right):** A map of Sardinia, Italy, with several blue location pins placed across the island. Labels on the map include Sassari, Alghero, Cagliari, and Capoterra.
- System Tray (Bottom):** Windows taskbar with icons for File Explorer, Calculator, Chrome, and other applications. System clock shows 19:27 on 21/05/2017.



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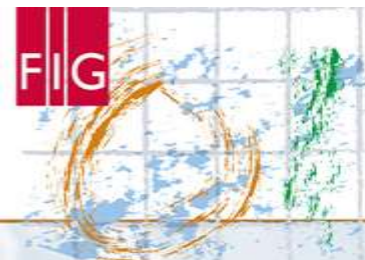
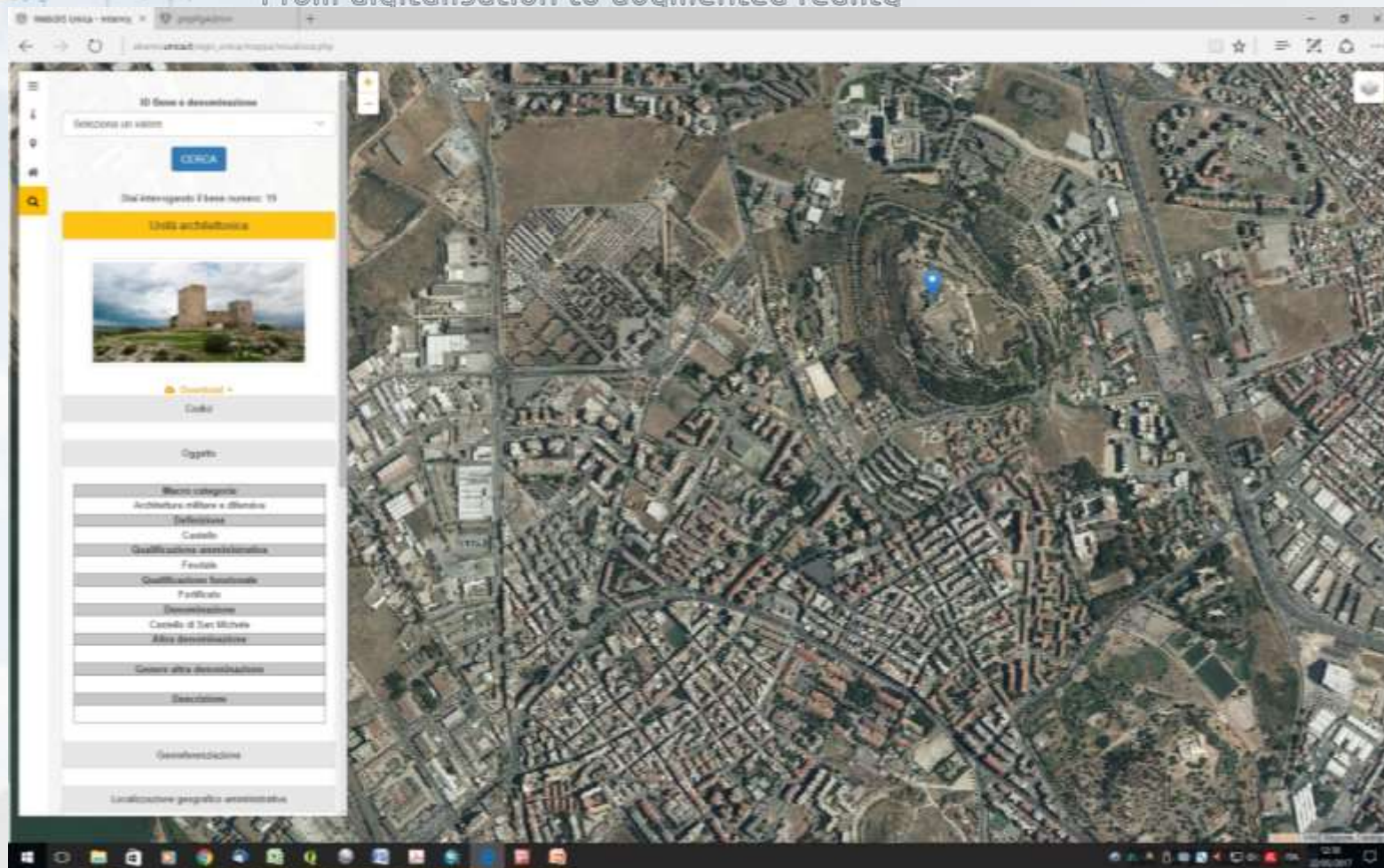


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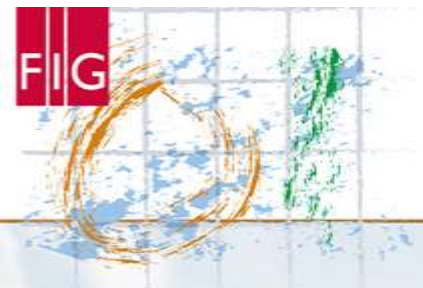


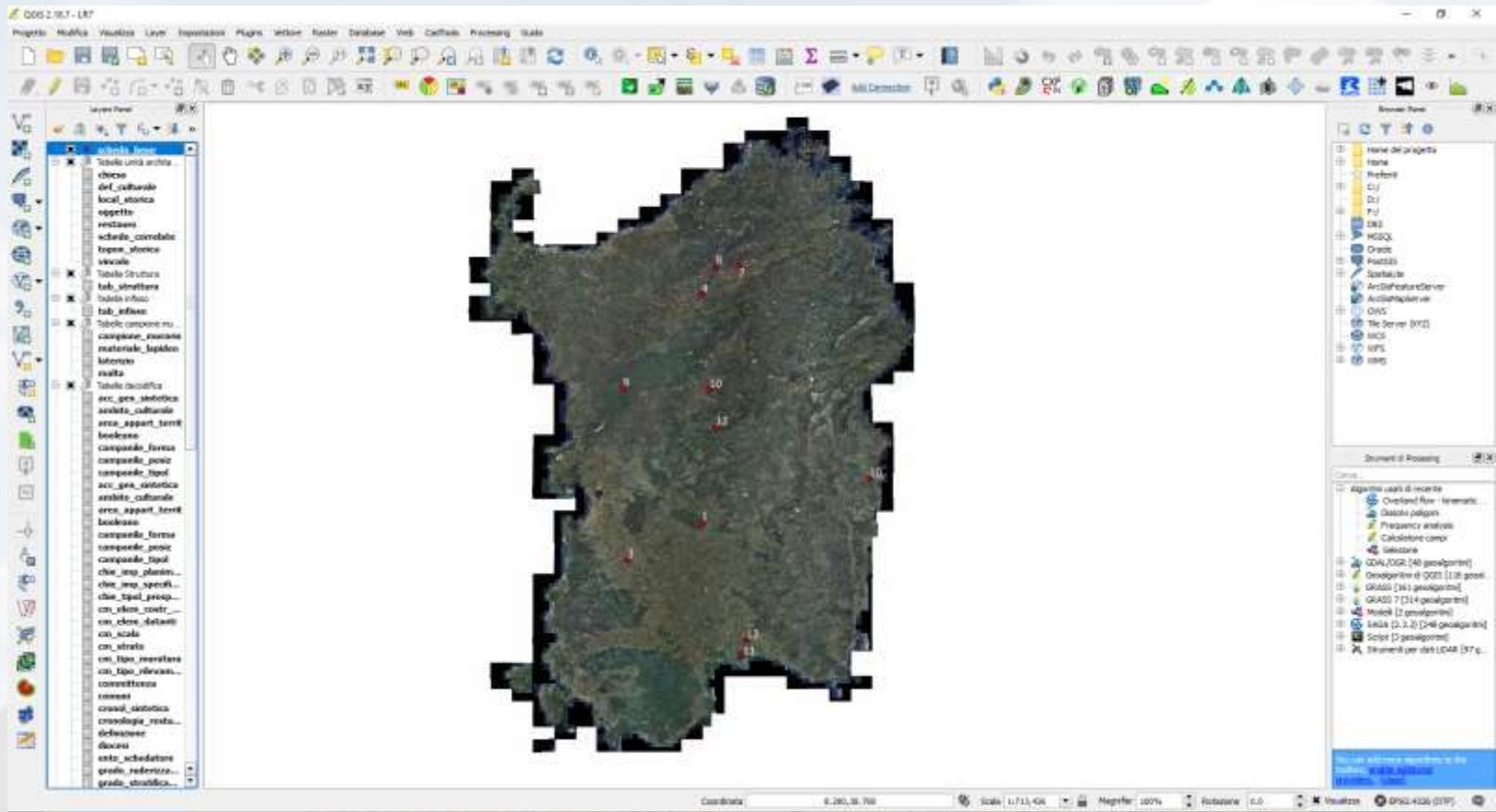
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Implementation of the database in QGIS



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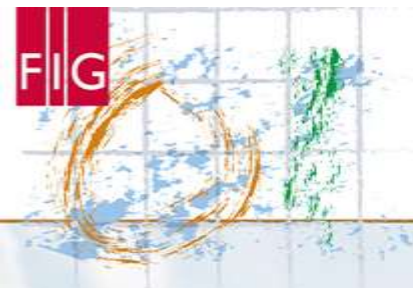


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Insert new data in QGIS from different users
automatically the database is upload

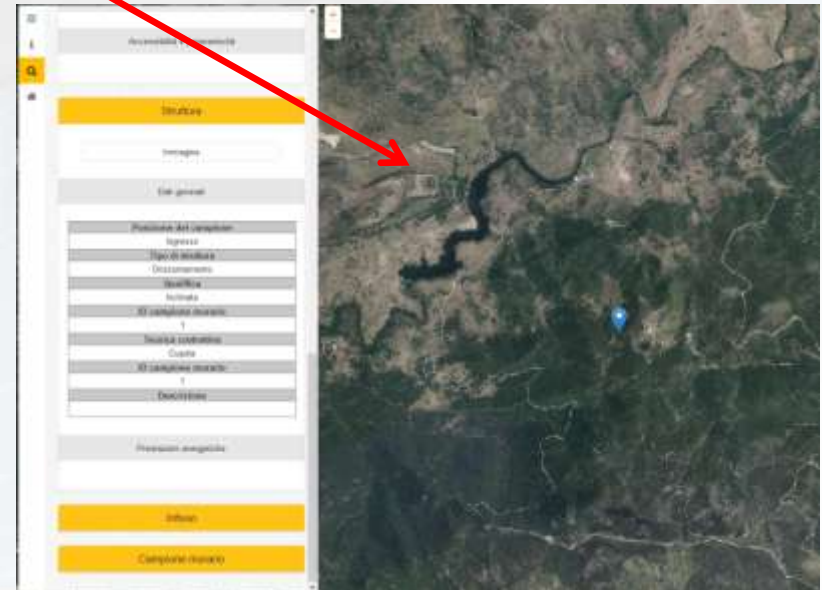
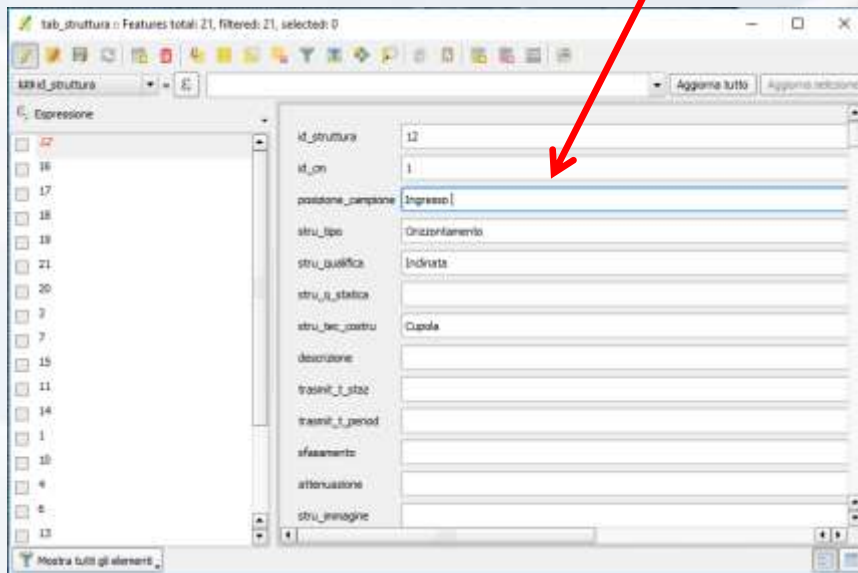




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At the present time we have uploaded the data of over 300 architectural units belonging to three main categories: military, religious and civil-residential. The samples examined on the architectural units, regarding the construction techniques, are over 150

The Database is visible at the web address

a.banni.unica.it/webgis_unica/



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Future implementation

In the next months we are implementing the WebGIS in Geoserver to realize a Web Map Service to sharing our geodatabase with different users and different browsers and GIS Desktop software.



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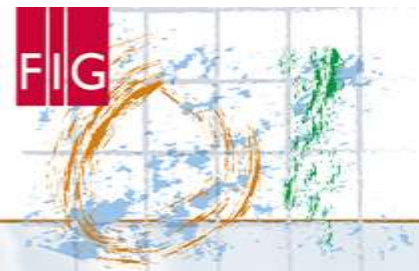


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Conclusion

The work presented today is an integral part of a multidisciplinary research project for the study of buildings made in Sardinia between the 13th and 18th century.

This multi-disciplinary approach is the main strength of this infrastructure, which may become a very useful tool to reach a complete knowledge of the historical structures and contribute to define methods and techniques supporting the maintenance, conservation, consolidation, promotion and static and energetic improvement of this important building.



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