C.P.T. Studio s.r.l.
Via di Santa Cornelia n 5/a - 00060 Formello - Roma
Tel/Fax + 39 (0)6 9075528 - info@cptstudio.it - www.cptstudio.it

2024

C. P. T. Studio S.r.l.
Via di Santa Cornelia n 5/a 00060 Formello Rome - Italy
Tel/Fax +396 9075528 - info@cptstudio.it - www.cptstudio.it

COMPANY PROFILE

C.P.T. Studio provides services in the surveying, documentation and planning sector for the conservation of cultural heritage and architectural design.
In the last twenty years the activities of the studio have been focused on cultural heritage sector.
The most advanced technologies and methodology and our research activities allow us to provide the highest quality and result in the field of 3D documentation of cultural heritage.

SERVICES
The main area of activity of the firm is the survey and documentation for the conservation of cultural heritage, focusing on the use of advanced technologies (3D laser scanning and photogrammetry; production of digital and full-scale replica; GIS projects for documentation management; video simulations, navigable 3D models also in augmented reality AR and virtual reality VR, production of Apps for the management of three-dimensional models and environments).
Our work has been carried out in some of the most important sites all over the world:

- *archaeological sites* - Roman Forum and Palatine hill, Pompeii, Ostia Antica and Villa Adriana in Italy; Mausoleum of Emperor Gallienus, Appia Antica – Rome; Leptis Magna, Villa Silin in Libia; Mut Temple at Gebel Barkal, Sudan; Cyrus the Great Tomb and Private Palace, Pasargadae, Iran; Khonsu Temple in the archaeological complex of Karnak and Colossi of Memnon, Luxor, Osireion and Seti I Temple in Abydos, Egypt.
- *main Italian architectural heritage complexes* - Upper Basilica of St. Francesco in Assisi, St. Maria della Pace, St. Maria in Aracoeli, St. Clemente, St. Francesca Romana, St. Bernardo alle Terme and St. Cecilia in Trastevere in Rome; St. Michele and Collegio Romano Complexes in Rome; Gardens of Villa d'Este in Tivoli; Scrovegni Chapel, Padova; Museo Nazionale Romano, Palazzo Massimo and Crypta Balbi, Rome; San Carlino alle Quattro Fontane complex, Rome; Fontana di Trevi, Rome;
- *several foreign cultural heritage sites*: Erbil Citadel, Iraqi Kurdistan; Zhalan Cemetery, China; Gesher Bridge on Jordan river, Jordan, Israel; Red Monastery and White Monastery, Egypt;
- *main Kosovo and Serbian orthodox complexes* – Decani Monastery, Prizren, Church of Bogorodica Ljeviska, Patriarchate of Pec/Peja, Gracanica Monastery in Kosovo, UNESCO World Heritage sites; Bojani Monastery and Bac Monastery in Serbia.

Our services are financed by national and international companies, organizations and donors, e.g.: Central Institute of Conservation and Restoration (ISCR); Ministry of Interior; Italian Directorate General for Development Cooperation (DGCS – Ministry of Foreign Affairs); Central Institute for Catalogue and Documentation (ICCD); Italian Ministry of Culture; ARCE - American Research Center in Egypt; Yale University in Egypt; WMF - World Monuments Fund; UNESCO; U.S. Department of State (Embassy of the United States, Kossovo); Save Venice inc., Soprintendenza per i Beni Artistici e Storici del Lazio (BSAE); ARS Progetti S.p.A; Fintecna S.p.A; INTERSOS ong; Sorgente R.E.M. S.p.A.; Qatar Foundation, Abu Dhabi Tourism and Culture Authority (TCA).

SAMPLES OF OUR ACTIVITIES IN THE FIELD OF THE INTEGRATED SURVEY OF CULTURAL HERITAGE

https://www.youtube.com/watch?app=desktop&v=OOjHmCAY3v4&t=7s	Osireion and Seti I Temple in Abydos, Egypt
https://egyptology.yale.edu/expeditions/white-monastery-project/area-1	White Monastery in Sohag, Egypt
https://www.youtube.com/watch?v=v4_MY-vy0pg	
https://www.youtube.com/watch?v=f5MjajY8U3s	Khonsu Temple in the Karnak in Luxor, Egypt
https://www.youtube.com/watch?v=oQEWdUc8IYU	Arch of Janus in in Roma, Italy
https://www.forbes.com/sites/drsarahbond/2018/01/20/taking-a-3d-virtual-tour-of-a-colorful-ancient-egyptian-monastery/#5a1039b66b24	Red Monastery in Sohag, Egypt

Clients: private clients, cultural institutions and international organizations in Italy and abroad.
Our works were mainly carried out in the following countries: Serbia, Albania, Kosovo, Iraq, Iran, Lebanon, Jordan, Israel, China, Libya, Sudan, Qatar, United Arab Emirates, Turkey, Egypt, Poland.
Our field experience and the use of the most up-to-date technologies, guarantee a highly advanced approach to the analysis and surveying of the heritage, basis for studies and any further action (condition surveys, work planning and cost estimate, structural investigations, production of digital and full-scale replica, etc.).
Moreover, an accurate survey helps achieving a proper knowledge of the cultural site/monument, increasing its possibilities of interpretation, conservation and presentation to the public.
Since 2000 our activity focuses on the research of solutions for multi-sensor 3D surveying and documentation, contributing to the development of several highly innovative technical systems, currently used in the cultural heritage sector.
Below, the list of our works in the field of Cultural Heritage.

2024

- Roman Bridge in the Tre Ponti Site in Civita Castellana (VT) – Italy – Three-dimensional laser scanning, topographic and photogrammetric survey and restitution of plans, sections and elevations.
Client: Soprintendenza Archeologia, Belle Arti e Paesaggio per la Provincia di Viterbo e per l'Etruria Meridionale

- Church of San Salvatore in Norcia (PG) – Italy – 3D survey of the archaeological structures and restitution of orthophotographic and cad elevations, sections and plans.
Client: ISCR Istituto Superiore per la Conservazione ed il Restauro

- Crypt of the Church of the SS Stimmate di San Francesco in Roma - Three-dimensional laser scanning, topographic and photogrammetric survey and restitution of plans, sections and elevations.
Client: Private

- Domus of Jupiter Fulmiantor, Domus of the Fishes, Domus of Via della Caupona, Nymphaeum of the Erotes, Peacock's Caupona in the Ostia Antica Site; Tomb n. 57 in the Necropolis of Isola Sacra; "Capitaneria di Porto" in the Imperial Harbor of Claudius and Trajan – 3D survey of the archaeological structures and modern additions, restitution of orthophotographic and cad elevations, sections and plans, prodactions of 3D replicas of the sites.
Client: Parco Archeologico di Ostia Antica

- Church of Santa Maria della Pace in Rome - Italy – Three-dimensional laser scanning, topographic and photogrammetric survey and restitution of the external elevations in orthophotographic and cad format.
Client: Soprint. Spec. Archeologia Belle Arti e Paesaggio di Roma

2023

- Marymount Complex in via Nomentana in Rome – Italy – Three-dimensional laser scanning, topographic and photogrammetric survey and restitution of plans, sections and elevations.
Client: Fondazione Istituto Marymount, Roma

- Church of San Nicola in San Vittore nel Lazio (FR) – Italy – Three-dimensional laser scanning, topographic and photogrammetric survey and restitution of plans, sections and elevations.
Client: Soprint. Archeologia Belle Arti e Paesaggio delle Provincie di Frosinone e Latina

- Complex of the "Sala dei Capitelli" in the Palatine Hill Archaeological Area in Rome – Italy – 3D survey of the archaeological structures and modern additions, restitution of orthophotographic and cad elevations, sections and plans.
Client: Parco Archeologico del Colosseo

- Filippo Castle in Porto Ercole (GR) – Italy – Three-dimensional laser scanning, topographic and photogrammetric survey of the north tower.
Client: Private

- Complex of the Temple of Seti I and Osireion in Abydos, Sohag - Egypt –
Multi-sensor 3D and orthophotographic survey of the Osireion and surrounding structures, restitution of orthophotographic and cad elevations, sections and plans and production of video simulations from the 3D models
Client: ARCE American Research Center in Egypt

- Schola Praeconum in the Palatine Hill Archaeological Area in Rome – Italy - 3D survey of the archaeological structures and modern additions before and after the conservation works, restitution of orthophotographic and cad elevations, sections and plans and production of video simulations.
Client: Parco Archeologico del Colosseo

- House of Griffins in the Palatine Hill Archaeological Area in Rome – Italy – 3D survey of the archaeological structures and modern additions, restitution of orthophotographic and cad elevations, sections and plans and production of video simulations and models for the visualization in Virtual Reality mode
Client: Parco Archeologico del Colosseo

- Replica of the House of Serenos- Oasi di Dakhla, Egypt – 3D survey of the replica for the production of video simulations of the model and the visualization of the whole complex in Virtual Reality mode
Client: The University of Hong Kong

2022
- Church of San Bernardo alle Terme in Rome – Italy – Three-dimensional laser scanning, topographic and photogrammetric survey and restitution of plans, sections and elevations.
Client: Soprint. Spec. Archeologia Belle Arti e Paesaggio di Roma

- Statue of "La Verità" of Gian Lorenzo Bernini in Borghese Gallery in Rome – Italy – Detailed three-Dimensional survey of the statue and virtual simulation of the conservation works,, according to the cleaning tests carried out.
Client : Borghese Gallery

- Church of Santa Maria della Strada - Barbarano Romano, Viterbo – Italy – Three-dimensional laser scanning, topographic and photogrammetric survey and restitution of plans, sections and elevations.
Client: Soprint. Spec. Archeologia Belle Arti e Paesaggio per l'area metropolitana di Roma, la provincia di Viterbo e l'Etruria meridionale

- San Tarasio Chapel in San Zaccaria Church – Venice – Italy – three-dimensional survey of the chapel and flat reproduction of all the surfacesec of the vaults and walls; implementation of a complete 3D mesh model of the chapel.
Client: ISCR Istituto Superiore per la Conservazione ed il Restauro

- Palazzo Nardini – **Rome - Italy** – three-dimensional survey and architectural detailed restitution of the building called Palazzo Nardini in via del Governo Vecchio – adding of the new spaces of the ground floor, basement and first floor.
Client: Private

- Shrine of Ikhwat Yusuf - Cairo – Egypt – Detailed 3D survey of the mausoleum and surrounding areas.
Client: ARCE American Research Center in Egypt

- Imperial Harbours of Claudius and Trajan - Ostia Antica, Rome - Italy – 3D survey of the buildings, archaeological structures and modern additions in the areas named Antemurale, Trajan warehouses, portico of Claudio and Severian warehouses in the Imperial Harbours site and of the baths in the Monte Giulio site.
Client: Ministry of Culture - Parco Archeologico di Ostia Antica

- The Rock on the Capitoline Hill - Rome – Italy – Integrated three-dimensional laser scanning and photogrammetric survey of the ancient structures and slope.
Client: Private for Sovrintendenza Capitolina ai Beni Culturali

- Villa Balella by Andrea Busiri Vici – **Ansedonia (GR) – Italy** – Survey of the exteriors and interiors of the villa and restitution of plans, elevations and sections.
Client: Private

- Villa in via Aniene, 6/8 – **Rome - Italy** – Architectural laser scanner survey of the exteriors and interiors of the villa and restitution of plans, elevations and sections.
Client: Private

- Colossi of Memnon - Luxor – Egypt – Integrated 3D survey of the Colossi.
Client: The Colossi of Memnon and Amenhotep III Temple Conservation Project at Kom el Hettan on the West Bank - Dr. Hourig Sourouzian

- Karnak, Luxor – Egypt – Khonsu Temple – 3D and orthophotographic survey of the Khonsu Temple and of the whole area of the Khonsu Temple, Opet Temple and Euergetes Gate.
Client: ARCE American Research Center in Egypt

2021
- Basilica Ulpia in the Forum of Trajani – Roma - Anastylosis of the first and second order of the facade of the main nave of the Basilica – Design of the complete 3D model of the replica, composed of the original architectural fragments and the simplified completion parts.
Client: Sovrintendenza Capitolina ai Beni Culturali.

- Palazzo M – Latina – Italy – Laser scanner survey and restitution of plans, sections and elevations.
Client: Ministry of infrastructures and transport – Provveditorato interregionale alle opere pubbliche per il Lazio, l'Abruzzo e la Sardegna

- Church of Sant'Eusebio - **Rome - Italy –** Three-dimensional laser scanning, topographic and photogrammetric survey and restitution of plans, sections and elevations.
Client: Ministy of Culture – Soprint. Spec. Archeologia Belle Arti e Paesaggio di Roma

- Reggia di Caserta - Caserta – Italy – Consultancy for the execution of the "Combined survey of the Parco Reale and the Giardino Inglese" of the Reggia di Caserta park.
Client: Ministry of Culture - Reggia di Caserta

- Epiphanius abbot's crypt in the archaeological area of the San Vincenzo al Volturno monastery – **Castel San Vincenzo (IS) – Italy -** Three-dimensional and orthophotographic survey with the purpose of the securing and restoration of the frescoes of the crypt.
Client: Ministry of Culture – Soprint. Archeologia Belle Arti e Paesaggio del Molise

- Buildings in via Cesati, 94-98 - Rome – Italy – Survey of the external elevations and roof with laser scanner technology and restitution of cad elevations.
Client: Private

- Building in via Isole Figi, 37 – **Lido di Ostia (RM) – Italy –** Survey of the external elevations and roof with laser scanner technology and drone photogrammetry.
Client: Private

- Palazzo Ruspoli – Flat in via della Fontanella di Borghese, 56 – Rome – Italy – Laser scanner survey and restitution of plans, sections and elevations.
Client: Private

- Building in via Clitunno, 32 – Rome – Italy – Survey of the external elevations and roof with laser scanner technology and restitution of cad elevations.
Client: Private

- Palatine Hill and Roman Forum - Domus Tiberiana – Rome - Italy - **Neronian** area. Laser scanner survey of new excavations and integration of the existing drawings.
Client: Ministry of Culture - Parco Archeologico del Colosseo

- Building in via dei Condotti, 61A – **Rome - Italy –** Three-dimensional survey and orthophotographic and cad restitution of the courtyard elevations of the building.
Client: Private

- Ex INPS building in piazza Augusto Imperatore – **Rome – Italy –** Three-dimensional survey and cad restitution of the external elevations of the building.
Client: Private

- Palazzo Nardini – **Rome - Italy** – Topographic and three-dimensional survey and architectural detailed restitution of the building called Palazzo Nardini in via del Governo Vecchio.
Client: Private

- Museo Nazionale Romano – Crypta Balbi – Rome – Italy – Three-dimensional laser scanning, topographic and photogrammetric survey and restitution of orthophotographic and cad elevations, sections and plans.
Client: Ministry of Culture - Museo Nazionale Romano

- Al Tahira Church - Mosul – IRAQ – Three-dimensional laser scanning, topographic and photogrammetric survey and restitution of orthophotographic and cad drawings.
Client: A.R.S. Progetti S.p.A. for UNESCO

- Al Aghawat and minaret - Mosul – IRAQ - Three-dimensional laser scanning, topographic and photogrammetric survey and restitution of orthophotographic and cad drawings.
Client: A.R.S. Progetti S.p.A. for UNESCO

- Doria Pamphilj Palace in Valmontone – Rome - Italy – Seismic Risk Assessment by three-dimensional laser scanning and topographic survey and restitution of cad elevations, sections and plans and cracking pattern.
Client: Soprintendenza Archeologica Belle Arti e Paesaggio per l'Area Metropolitana di Roma, la provincia di Viterbo e l'Etruria Meridionale

2020

- Palatine Hill and Roman Forum - Domus Tiberiana – Rome - Italy - Three-dimensional laser scanning survey and restitution of orthophotographic and cad elevations, sections and plans of the Hadrian complex
Client: Parco Archeologico del Colosseo

- Flavian Amphitheater – Pozzuoli, Naples - Italy - Executive design for the restoration and enhancement of the amphitheater - Restitution of the project survey bases consisting of plans, sections and orthophotographic and cad drawings.
Client: Parco Archeologico dei Campi Flegrei

- Capitoline Museums – Palazzo dei Conservatori, Hall of the Captains – Rome - Italy – Three-dimensional survey of the room and painted surfaces
Client: CBC Coop – Capitoline Museum

- Torre Maggiore – Medieval tower – **Pomezia, Rome - Italy** – Three-dimensional laser scanning, topographic and photogrammetric survey and restitution of orthophotographic and cad elevations, sections and plans.
Client: Private for Soprintendenza Archeologia, Belle Arti e Paesaggio per l'area metropolitana di Roma, la provincia di Viterbo e l'Etruria meridionale

- School "A. Cadlolo" - Lungotevere Tor di Nona - Rome - Italy – Three-dimensional survey of the external and courtyard facades.
Client: Urban Vision S.p.A. and Sorgente REM S.p.A. for Comune di Roma, Municipio I

- Sacred area of the Tempio di Ercole e dell'Ara Rotonda - Ostia Antica, Rome - Italy – Three-dimensional laser scanning survey and restitution of orthophotographic and cad elevations, sections and plans.
Client: Parco Archeologico di Ostia Antica

- Roman Theatre - Ostia Antica, Rome – Italy - Three-dimensional laser scanning survey and restitution of orthophotographic and cad elevations, sections and plans.
Client: Parco Archeologico di Ostia Antica

- Roman Forum – Arch of Septimius Severus – Rome - Italy - Three-dimensional laser scanning survey, restitution of orthophotographic and cad elevations, sections and plans and condition mapping drawings.
Client: Parco Archeologico del Colosseo

- Chigi Chapel – Church of Santa Maria della Pace - Rome - Italy – Three-dimensional laser scanning and photogrammetric survey of the chapel and of Sibyls paintings by Raphael.
Client: Antonio Forcellino Restauri

- San Carlino alle Quattro Fontane complex – Rome - Italy – Three-dimensional laser scanning and topographic survey and restitution of cad elevations, sections, plans and crack pattern.
Client: Soprintendenza Speciale Archeologia Belle Arti e Paesaggio di Roma

2019
- Red Monastery – Sohag – Egypt – Three-dimensional laser scanning, topographic and photogrammetric survey of the Monastery after the restoration works and survey of the surrounding archaeological areas.
Client: ARCE - American Research Center in Egypt

- Hercules statue in the Galleria Borghese Museum - Rome – Italy – Three-dimensional laser scanning, topographic and photogrammetric detailed survey of the Hercules' statue.
Client: Galleria Borghese

- Jacobello del Fiore's polyptych in the Teramo's Cathedral - Teramo – Italy - Photogrammetric survey of the structure.
Client: CBC Coop - Restauro e Conservazione Beni Culturali

- Church of San Salvatore in Campi - Norcia, Perugia – Italy - Three-dimensional laser scanning, topographic and photogrammetric survey of the iconostasis.
Client: Istituto Superiore per la Conservazione ed il Restauro

- Palazzo Massimo - National Roman Museum - Rome - Italy - Three-dimensional laser scanning and topographic survey of the ground and underground floor of the palace.
Client: Museo Nazionale Romano

- Bisentina Island in Bolsena Lake - Viterbo - Italy – Three-dimensional laser scanning and topographic survey of some buildings and archaeological remains.
Client: Fidim s.r.l.

- Church of Sant'Anna - Borbona, Rieti – Italy - Three-dimensional laser scanning, topographic and photogrammetric survey of the structures and of the ceiling coffer.
Client: Private for Segretariato Regionale del MIBAC del Lazio
- Palazzo del Capitano del Popolo - Perugia – Italy - Three-dimensional laser scanning and photogrammetric survey of the palace's facades.
Client: Private for MIBACT

- Reggia di Caserta – Caserta – Italy – Consultancy for the tendering of the "Combined survey of the Parco Reale and the Giardino Inglese" of the Reggia di Caserta park: terms of reference, bill of quantities.
Client: MIBACT - Reggia di Caserta

- Mausoleum in Via Appia Antica n. 139 – Rome – Italy – Three-dimensional laser scanning and photogrammetric survey and restitution of orthophotographic and cad elevations, sections and plans.
Client: Private

– Church of St. Peter and Palazzo dei Canonici - Tuscania, Viterbo – Italy – Consultancy for the design of the new setting of the room of the painting fragments in Palazzo dei Canonici. Three-dimensional survey of the palace and church's apse. Detailed design.
Client: ISCR - Istituto Superiore per la Conservazione ed il Restauro

- White Monastery and archaeological sites – Sohag – Egypt –Three-dimensional laser scanning, topographic and photogrammetric survey and restitution of general and detailed elevations, sections and plans of the complex and four archaeological areas.
Client: Yale University, White Monastery Conservation Project – ARCE American Research Center in Egypt

– Red Monastery – New shelter project – Sohag – Egypt - Rendering of different solutions for the roof of the aisles of the church.
Client: ARCE American Research Center in Egypt

- Hospitalia Complex - Villa Adriana - Tivoli (Rome) – Italy – Three-dimensional and orthophotographic survey of the mosaic floors of three rooms and of the walls of the main room.
Client: Private for Villa d'Este and Villa Adriana

- Sheikh Mohammed Bin Khalifa's palace - Al Ain - United Arab Emirates –Three-dimensional laser scanning and topographic survey and restitution of orthophotographic and cad elevations and sections.
Client: A.R.S. Progetti S.p.A.

– Palatine Hill and Roman Forum - Sacred area of the temple of the Magna Mater and the archaic huts - Rome – Italy – Three-dimensional survey and restitution of orthophotographic and cad elevations, sections and plans.
Client: Parco Archeologico del Colosseo
- Terme di Diocleziano complex – Magazzino Laurentino – Rome – Italy – Three-dimensional laser scanning and restitution of orthophotographic and cad drawings of the pottery stored in the warehouse.
Client: Private

2018
- Monastery and church of Saint James and Saint Christopher, The Rocchina of Saint Catherine and The Malta dei Papi in Bisentina Island in Bolsena Lake - Viterbo - Italy - Three-dimensional laser scanning, terrestrial and aerial imaging and mapping and topographic survey of the complex and restitution of all elevations, sections and plans.7
Client: Fidim S.r.l. Rovati Fondation

- Church of Santa Maria della Misericordia – **Accumuli, Rieti – Italy -** Three -dimensional laser scanning and orthophotographic survey of the paintings in the church of St. Maria della Misericordia.
Client: Ministero per i Beni e le Attività Culturali - Segretariato Regionale del MIBAC del Lazio

- Church of Santa Marta at Collegio Romano – Rome – Italy – Three-dimensional laser scanning and orthophotographic survey of the paintings in the lab
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

– Building in via Dandolo – Rome – Italy – Three -dimensional laser scanning and restitution of all the elevations, sections and plans of the buildings in the complex.
Client: Paolo Rocchi Architetto s.r.l. f Sorgente Group.

- Church of Santi Andrea e Claudio dei Borgognoni – Rome – Italy - Three-dimensional laser scanning, terrestrial and aerial imaging and mapping and topographic survey of church.
Client: Embassy of France in Italy.

- Front Aventine to the Tiber River, at the Giardino degli Aranci and Clivo Rocca Savella - Lungotevere Aventino n. 5-6 - Rome – Italy - Three-dimensional laser scanning and orthophotographic survey of the wall and buildings on the top.
Client: Sorgente Group - Paolo Rocchi Architetto s.r.l.

- Accumuli, Cassino - Rieti - Italy - three-dimensional survey with integrated technologies, laser scanning and terrestrial and aerial imaging and mapping, and advanced post processing.
Client: Private - Paolo Rocchi Architetto s.r.l.

- Statue of St. Bibiana by Gian Lorenzo Bernini in the Church of St. Bibiana - Rome - Italy - three-dimensional survey of the sculpture and 3D modelling of the niche for the new positioning of the statue.
Client: Associazione di promozione sociale - "Piazza Vittorio" APS.

- Architectural Complex in Via Margutta n. 51 - Rome - Italy - three-dimensional laser scanning and topographic survey of the historical complex.
Client: Sorgente SGR S.p.A. – Sorgente Group.

- Historical building in Lungotevere Raffaello Sanzio n. 15 - Rome - Italy - three-dimensional laser scanning, topographic survey and orthophotos of the complex.
Client: Sorgente SGR S.p.A. - Sorgente Group.

– Church of San Salvatore – Campi di Norcia - Perugia – Italy – Three-dimensional laser scanning, photogrammetric and topographic survey of the church after the earthquake security measures.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR.

2017
– Architectural Complex of the Archaeological Museum in Corso Vittorio Emanuele - L'Aquila - Italy – 3D laser scanning, architectural measured survey and orthophotos of the Palace.
Client: Private for L'Aquila Municipality

– Colonna-Sordi Gallery Palace, Head Quarter of the Italian Presidency of the Council of Ministers - Rome - Italy – 3D laser scanning, architectural measured survey and orthophotos of the Palace.
Client: Sorgente REM S.p.A. – Sorgente Group.

– Palatine Hill and Roman Forum – Rome – Italy - 3D survey and consultant services for the study and conservation of the archaeological site.
Client: Soprintendenza Speciale per il Colosseo, il Museo Nazionale Romano e l'Area Archeologica di Roma.

– Ceva Palace in Via IV Novembre - Rome - Italy – Topographical and measured survey of the south wing of the palace
Client: Sorgente REM S.p.A. – Sorgente Group.

– Baths of Diocletian - Rome - Italy - Detailed survey of the Aula n. I, II, III, VI and deformation analysis of the walls and vaults.
Client: Archedim s.r.l. for Soprintendenza Speciale per il Colosseo e l'Area Archeologica Centrale di Roma.

– Church of San Sebastiano - Venice - Italy - Three-dimensional laser scanning and photogrammetric survey of the dome lunettes and paintings.
Client: CBC Conservazione Beni Culturali

– Convicinio di Sant'Antonio Complex - Matera - Italy - three-dimensional laser scanning, photogrammetric and topographic survey of the four rupestrian churches.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR.

– Church of Santa Maria Assunta - Amatrice - Italy - Earthquake of August 2016 -, three-dimensional laser scanning, photogrammetric and topographic survey of the church.
Client: Segretariato Regionale del Ministero dei Beni e delle Attività Culturali e del Turismo per il Lazio.

– Museum Cola Filotesio Church of Sant'Emidio - Amatrice - Italy – Earthquake of August 2016 -, three-dimensional laser scanning, photogrammetric and topographic survey of the ruins of the tower and Museum.
Client: Soprintendenza Archeologia Belle Arti e Paesaggio per le provincie di Frosinone, Latina e Rieti

- Church of San Salvatore a Campi di Norcia - Norcia - Italy – Earthquake of October 2016, three-dimensional laser scanning, photogrammetric and topographic survey of the ruins of the church and analysis of the documentation methodologies.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

- **Sacred area of the temple of the Magna Mater and the archaic huts - Palatine Hill and Roman Forum - Rome - Italy.** three-dimensional model of the site and 3d Printing of archaeological ruins.
Client: Soprintendenza Speciale per il Colosseo e l'Area Centrale di Roma.

- Vicus Tuscus and Basilica Julia in the Roman Forum - Roma - Italy – Three-dimensional survey for the new entrance design of the archaeological site.
Client: Soprintendenza Speciale per il Colosseo e l'Area Centrale di Roma.

2016

- Vittore Carpaccio's Saint Ursula Cycle - Venice - Italy - 3D survey and high definition orthophotos of the paintings.
Client: Save Venice Inc.

- Arch of Janus in the Forum Boarium - Rome - Italy - 3D survey of the site and restitution of all elevations, sections and plans of the arch and surrounding areas.
Client: Private for World Monuments Fund and Sovrintendenza Speciale per il Colosseo e l'Area Archeologica Centrale di Roma (funding: World Monuments Fund, American Express)

- Palazzo Maccarani Stati - Senate of the Italian Republic - Rome - Italy – 3D laser scanning, architectural measured survey and orthophotos of the Palace.
Client: Private for the Italian Ministry of Infrastructure

- Church of San Pietro Apostolo, Tramonti - Salerno - Italy – 3D survey and orthophoto of the floor of the church.
Client: Private

- Garden of Oranges (Parco Savello) – Rome – Italy. Topographic and 3D survey of the medieval walls of Rocca Savelli along the walkway Clivo di Rocca Savella and inside the Garden of Oranges, finalized to the archaeological survey of the area.
Client: Sorgente Group SpA

– Schola of Trajan (seat of the shipwrights' guild) - Ostia Antica, Rome – Italy. 3D survey and orthophoto of ancient Roman mosaics.
Client: Archires Architettura e Restauro srl (a Sorgente Group SpA Company)

– Villa Adriana – Tivoli – Italy. 3D survey and orthophoto of the main elevation and two cross sections of the northern side of the archaeological complex.
Client: Private

– Memorial to the Italian victims of Nazi Concentration Camp, Block 21 – Auschwitz – Poland. 3D survey and execution drawings for reassembling the memorial in a different site.
Client: CBC s.c. for the Istituto Superiore per la Conservazione ed il Restauro – ISCR

– Mausoleum of Emperor Gallienus, Appia Antica – Rome – Italy. General measured survey, ortho-photographic survey and graphic reconstruction of the geometry of the structures preserved.
Client: Private for Soprintendenza Speciale per i Beni Archeologici di Roma.

2015

- Conservation works, Trevi Fountain – Rome – Italy. 3D survey and restitution of the Statue of Oceanus and of the area around the fountain; video extracted from the tridimensional model
Client: Sovrintendenza Capitolina ai Beni Culturali

- **Domus Tiberiana Complex on Palatine Hill – Rome – Italy.** Topographical, measured and orthophoto survey and restitution of all the elevations, sections and plans of the archaeological site.
Client: Soprintendenza Speciale per il Colosseo, il Museo Nazionale Romano e l'Area Archeologica di Roma.

- **Complex on Palatine Hill and Roman Forum – Rome – Italy.** - Topographical, measured and ortho-photographic survey and restitution of all the elevations, sections and plans of the Clivo Palatino area, west from the Arch of Titus.
Client: Soprintendenza Speciale per il Colosseo, il Museo Nazionale Romano e l'Area Archeologica di Roma.
– Palazzo Orlandi – Busseto (Parma) – Italy. 3D laser scanning, architectural measured survey and orthophotos of the building.
Client: Archires Architettura e Restauro srl (a Sorgente Group SpA Company)

– Measures for the conservation of Pasargadae World Heritage Site and of Cyrus' Tomb – Pasargadae – Iran. Laser scanning and orthophoto of the Tomb of Cyrus the Great and Palace "P"; video extracted from the tridimensional model of Cyrus' Tomb.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

– Red Monastery – Sohag – Egypt. 3D survey of the site and restitution of all elevations, sections and plans of the complex; video extracted from the tridimensional model
Client: ARCE - American Research Center in Egypt

– White Monastery – Sohag – Egypt. 3D scanning of the north wall of church and deformation analysis of the structures of the facade
Client: White Monastery Conservation Project - Yale University - ARCE - American Research Center in Egypt

- Villa of Silin – Leptis Magna – Libya. Studies and 3D reconstruction of the Villa at the time of the archaeological excavation; video extracted from the tridimensional model
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

2014
- **Domus Tiberiana Complex on Palatine Hill and Roman Forum – Rome – Italy.** 3D survey of 17,000 square meters of structures and restitution of all the elevations, sections and plans of the archaeological site; video extracted from the tridimensional model
Client: Soprintendenza Speciale per i Beni Archeologici di Roma.

- Scrovegni Chapel – Padova – Italy. Three-dimensional measurement of the complex and orthophotographic reproduction of the wall paintings of the crypt.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

- Conservation Services for the Al Ain Souks and National Museum– Al Ain – United Arab Emirates. Survey of the National Museum, Sultan Fort and Souks.
Client: ARS Progetti SPA for TCA Abu Dhabi

- Conservation works, Trevi Fountain – Rome – Italy. 3D survey and restitution of all the elevations, sections and plans of the fountain; video extracted from the tridimensional model
Client: CBC s.c. for the Sovrintendenza Capitolina ai Beni Culturali

- Statue of Christ Deposed in the Museum of the Opera Primaziale Pisana – Pisa – Italy. Detailed survey of the statue.
Client: Opera della Primaziale Pisana

- Baptistery of S. Giovanni in Fonte in the Cathedral of Naples – Italy. 3D survey and restitution of all the elevations, sections and plans of the baptistery.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

- Church of S. Aspreno – Naples - Italy. 3D survey and restitution of all the elevations, sections and plans of the hypogeum.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

- Palazzo Sacchetti - Rome – Italy – 3D laser scanning of decorated surfaces finalized to their geometrical studies.
Client: Unione Internazionale degli Istituti di Archeologia, Storia e Storia dell'Arte in Roma;

- **Temple of Mut at Gebel Barkal – Karima – Sudan**. 3D laser scanning of collapsing parts and of the new supporting structures at the entrance, after excavation and debris removal.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

- Restoration of Historical Structures in Education City – Doha – Qatar. Topographical and 3D laser scanner survey of 20 historical buildings in the premises of the new College.
Client: ARS Progetti SPA for Qatar Foundation

- Jaser Almaima'ah Gesher Bridge on Jordan River - Israel/Jordan. Final conservation design of the main arch of the bridge and structural design of the supporting beam of the arch.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

- Collegio Romano (Headquarter of the Italian Ministry of Cultural Heritage and Activities)- Rome – Italy. Topographical and measured survey (by laser scanning) of the complex; video extracted from the tridimensional model
Client: Italian Ministry of Cultural Heritage – Direzione Generale

- Jaser Almaima'ah Gesher Bridge on Jordan River - Israel/Jordan. Final conservation design of the main arch of the bridge and structural design of the main arch rib.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

2013

- **Temple of Mut at Gebel Barkal – Karima – Sudan**. 3D laser scanning of the archaeological site.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

- San Michele a Ripa Grande (Headquarter of the Italian Ministry of Cultural Heritage and Activities) - Rome – Italy. Topographical and measured survey of the eastern wing of the complex.
Client: Istituto Centrale per il Catalogo e la Documentazione – ICCD

- Villa of Silin – Leptis Magna – Libya. Laser scanning and photogrammetric survey of the painted surfaces and mosaics of the Villa and generation of sections, elevations and plan in ortho-photographic and vector format.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

- Archaeological complex of the furnaces of Vetriolo - Bagnoregio (VT) – Italy. Laser scanning of the archaeological site and generation of sections, elevations and plan in RGB color format.
Client: Archeomedia s.c.

- Church of St. Cecilia in Trastevere – Rome – Italy. Three-dimensional survey of the tomb of Niccolò Forteguerri.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

- Church of St. Francesca Romana, Church of St. Clemente, Church of St. Cecilia in Trastevere – Rome – Italy. Three-dimensional survey of the mosaics of the apses and flat restitution of the surfaces in ortho-photographic format.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

- Roman Villa of Gneo Pompeo Magno and Villa Doria Park – Albano laziale (RM) – Italy. Topographic survey and laser scanning of the roman structures.
Client: Dott. Laurenza for Municipality of Albano Laziale

- Crypt of the Church of Santa Prisca in Rome - Italy. 3D photogrammetric survey of wall paintings after conservation works.
Client: Soprintendenza per il Patrimonio Storico Artistico ed Etnoantropologico per il Lazio

2012

- Wall paintings in Bojani Monastery – Bojani – Serbia. 3D Laser scanning; video extracted from the tridimensional model
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

- Bac Monastery – Bac – Serbia. General survey (Laser scanner and total station) ; video extracted from the tridimensional model
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

- San Michele a Ripa Grande Complex – Rome. General survey (Laser scanner, GPS and total station).
Client: Istituto Centrale per il Catalogo e la Documentazione - ICCD

- Archaeological site in Viterbo – Rome. 3D Laser scanning.
Client: Archeomedia sc

- Archaeological Site of S. Clemente – Rome. 3D Laser scanning.
Client: Istituto Superiore per la Conservazione – ISCR

- **Residential block in the historic town - L'Aquila – Italy -** Rilievo 3D photogrammetric survey of the external elevations and the inner court façades
Client: private

- Gracanica Monastery – Kosovo. 3D Laser scanning and photogrammetric survey.
Client: Intersos NGO for US Embassy

2011

- Flavian Amphitheater (Colosseo) – Rome – Italy. Methodological proposal for the bid "Flavian Amphitheatre - Colosseo: Detailed design and implementation of the conservation of the north and south facades, design and construction of the gates of the fornix of the first order." Proposal for survey methodology and sample of three-dimensional survey of the north side of the façades.
Client: ARS Progetti SPA

- Studies for the stabilization of the Erbil Citadel slope and the perimeter facades - Erbil – Iraq. General topographic survey of the Citadel Slope, three-dimensional survey of the Citadel, generation of sections, elevations and plan in ortho-photographic and vector format (Laser scanner, GPS, total station and photogrammetric systems).
Client: ARS Progetti S.P.A. for UNESCO

- Kahn El Echle - Saida – Lebanon. Topographic and three-dimensional photogrammetric survey of the Khan.
Client: ARS Progetti S.P.A. for Council for Development and Reconstruction (CDR), Lebanon

- Church of S. Eligio degli Orefici – Rome - Italy. 3D Laser scanning and photogrammetric survey.
Client: R.O.M.A. Consorzio

- Church of S. Maria della Strada – Matrice (Campobasso) - Italy. 3D Laser scanning and photogrammetric survey.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

- Jaser Almaima'ah Gesher Bridge on Jordan River (Israel/Jordan). 3D photogrammetric survey.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

- Vigna la Piazza Necropolis - Grotte di Castro (Viterbo) – Italy. N° Vlp 31 Tomb: 3D photogrammetric survey.
Client: Archeomedia sc for Soprintendenza per i Beni Archeologici per l'Etruria meridionale

2010
- Zhalan Cemetery and Tomb of Fr. Matteo Ricci – Beijing – China. 3D photogrammetric survey.
Client: Istituto Superiore per la Conservazione ed il Restauro – Italian Ministry of Foreign Affairs

- Domus e Mitreo delle Pareti Dipinte - Ostia Antica – Rome – Italy. 3D photogrammetric survey.
Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR

- Crypt of the Church of Santa Prisca in Rome - Italy. 3D photogrammetric survey of wall paintings.
Client: Soprintendenza per il Patrimonio Storico Artistico ed Etnoantropologico per il Lazio

- Etruscans Water Channel System (*cunicula*) in Veio, Santa Cornelia, Rome - Italy. General topographic survey.
Client: Tecnoconsult International srl

2009-2008
- Church of Bogorodica Ljeviska – Prizren – Kosovo. 3D survey of wall paintings.
Client: Istituto Centrale per il Restauro (ISCR) – Intersos ONG for UNESCO

- Patriarchate of Pec-Peja – Pec/Peja – Kosovo. Photogrammetric survey for the project "Study and investigations about the structural conditions of Patriarchate of Pec-Peja.
Client: Istituto Centrale per il Restauro (ISCR) – Intersos ONG for UNESCO

- Decani Monastery – Decani – Kosovo. 3D survey of wall paintings.
Client: Unesco - Istituto Centrale per il Restauro – ISCR – Intersos ONG for UNESCO

2007-2005
- Pec Patriarchate – Kosovo. Coordinator of documentation works for the restoration of wall paintings.
Client: Istituto Centrale per il Restauro (ISCR) – Intersos ONG for Italian Ministry of Foreign Affairs

- Pec Patriarchate – Kosovo. Photogrammetric survey of orthodox and byzantine frescoes of the monastery.
Client: Istituto Centrale per il Restauro (ISCR) – Intersos ONG for Italian Ministry of Foreign Affairs

2004
- Industrial archaeology site in Viale Fulvio Testi – Milan - Italy. Survey of the complex and calculation of interior areas of each building.
Client: FINTECNA S.p.A

- Palazzo Rivaldi at Fori Imperiali – Rome - Italy. Photogrammetric and measured survey of ground floor rooms finalized to plan the conservation interventions on the XVI century frescoed surfaces.
Client: Istituto Centrale per il Restauro – ISCR

2003
- Casa dei Vettii - Pompeii – Italy. Technical drawings for the design of the new roofing system of the *domus*.
Client: Istituto Centrale per il Restauro – ISCR
- Villa D'Este – Tivoli (RM)– Italy. Restoration of the fountain "della Rometta"- Survey of the panoramic viewpoint and hydraulic system of the architectural complex
Client: Istituto Centrale per il Restauro – ISCR

2002
- Broadcasting Offices of Bloomberg at Poli Palace, Fontana di Trevi, Rome – Italy.
Measured survey of historical building's interiors.
Client: Studios Architecture – England

2001
- S. Maria in Aracoeli – Rome - Italy. Measured and photogrammetric architectural survey of Baylon chapel. Photogrammetric survey of the frescoed surfaces.
Client: Soprintendenza per i Beni Artistici e Storici di Roma

2000
- Upper Basilica of San Francesco – Assisi – Italy. Digital restitution of the shop drawings of the reconstruction of Giotto's painted vaults.
Client: Istituto Centrale per il Restauro – ISCR

1999-2000

- Villa D'Este – Tivoli (RM) – Italy. Digital restitution of the decay mapping and conservation design of the fountain "della Rometta".
Client: Istituto Centrale per il Restauro – ISCR

- Archaeological Site of Arslantepe - Malatya – Turkey. Consultancy for the Italian Archaeological mission in Oriental Anatolia for the conservation of the IV millennium B.C. palaces' structures.
Client: Università degli Studi di Roma "La Sapienza"

- Upper Basilica of San Francesco – Assisi – Italy. Digital restitution of the decay mapping and the restoration design of Giotto's painted vaults.
Client: Istituto Centrale per il Restauro – ISCR

URBAN AND ARCHITECTURAL DESIGN

The services encompass urban planning, architecture design, feasibility studies and phasing activities for the rehabilitation projects of property assets, for private clients and public bodies or companies of national and international relevance.
In each planning and research project advanced systems have been studied and utilized on a case-by-case basis, in order to optimize the efficiency of the operation.
Every single project starts with the cultural assumption that each work has its specific social, cultural and environmental context, which results in the specific nature of each site and each intervention to carry out on the physical place. Specific projects deeply grounded to the sites are thus proposed against the tendency of modern planning to homologate designs worldwide, notwithstanding the deep differences among the sites, with the result of distorting the local characteristics and cause a generalized drop in quality, both of places and of life.

Real Estate Rehabilitation Projects

2008-2009

- Cattleya Headquarter in Rome – Italy. Measured survey, works supervision, shop drawings for the roofing system and plant design for the new headquarter of the Cattleya Film production company.
Project founded by: Cattleya S.p.A.

2007

- Faida Complex in Pontida (BG) – Italy. Preliminary Design for the rehabilitation design of the historic buildings and adaptive reuse into touristic complex.
Client: Gruppo Ergon Italia

2005

- Manufactory Complex in Mazzano Romano (RM) – Italy. Preliminary design for the adaptive reuse of the complex into residential and commercial spaces.
Client: Immobiliare Sviluppo S.p.A.;

2004

- Tobacco Manufactory Complex in Milan – Italy. Feasibility study, Preliminary design - reuse of the Tobacco Manufactory Complex in residential and commercial spaces.
Client: Fintecna S.p.A.

2003

- Exedra Luxury Hotel in Rome – Italy. Preliminary design of the multipurpose centre in the Terme di Diocleziano in Rome.
Client: Gruppo Ergon Italia for Boscolo Group

- Tobacco Manufactory C.R.T.S. Complex in Via Ostiense in Rome – Italy. Feasibility study, Preliminary design, Final and Execution design and Works Supervision – partial adaptive reuse of the complex.
Client: ETI S.p.A. – Ente Tabacchi Italiani

2002

- Tobacco Manufactory Complex in Piazza G. Da Verrazzano, Rome – Italy. Feasibility study, Preliminary design – adaptive reuse of the Tobacco manufactory complex into multipurpose centre.
Client: ETI S.p.A. – Ente Tabacchi Italiani

- Tobacco Manufactory Complex in Milan – Italy. Feasibility Study, Preliminary Design - reuse of the complex into "Città del Patrimonio Archivistico, Librario e Documentario" e "Città Universitaria" - in joint venture with Regione Lombardia, Archivio di Stato di Milano, Biblioteca Nazionale Braidense, Comune di Milano, Università degli Studi di Milano Bicocca.
Client: ETI S.p.A. – Ente Tabacchi Italiani

Urban Design

2011-2012

- Integrated Plan "Open Media Park" - Formello (RM) – Italy. Urban design for 240,000 cubic meters of new multipurpose buildings.
Client: Tecnoconsult International srl

2010

- Master Plan "Grottefranca"- Formello (RM) – Italy. Housing design for n. 560 predicted inhabitants.
Client: Private

2009-2007

- Master Plan "Le Nocette"- Formello (RM) – Italy. Housing design for n. 120 predicted inhabitants.
Client: Private

- Master Plan "Terre di Ronca"- Formello RM – Italy. Housing design for n. 160 predicted inhabitants
Client: Private

2000-2001

- Organic development plan of Comune di Premariacco UD – Italy. Extension of the Master Plan in order to develop the territory respecting environmental-natural and anthropic aspects.
Client: C.P.T. S.r.l. Centro per la Pianificazione Territoriale for Comune di Premariacco (Italy).

Architectural Design

2010-2012

- Design of "Praticello" Housing Complex – Formello (RM), Italy
Client: Private

2008

- Preliminary Design of "Selviata" Housing Complex – Formello (RM), Italy
Client: Pegaris S.r.l.;

- Design of three housing complexes - Formello (RM) – The overall 45 units are located in "Selviata", "Terre di Ronca" and besides the historic town
Client: Santofin S.r.l.;

2005-2007

- Design and Works Supervision of Housing Complex in Via della Villa Formello (RM), Italy.
Client: Rigamonti Real Estate S.r.l.;

- Design of a private detached house in "Borgo Piccolo"– Formello (RM), Italy
Client: Private

- Feasibility Study and Preliminary Design for the rehabilitation of a car park in Viale Regina Margherita, Rome, Italy - 5000 sqm
Client: Sidera Real Estate S.r.l.;

- Feasibility Study and Preliminary Design for the rehabilitation of a car park in Via Nizza, Rome, Italy - 5000 sqm
Client: Private.;

- Design and Works Supervision of a detached house in Campagnano (RM), Italy
Client: Private;

- Design of n. 4 headquarters of companies in the manufacturing-directional area of the town - Formello (RM) - Italy
Clients: GE.RO. S.r.l., Masper Police S.r.l., Buccali S.r.l., Sunshop s.r.l.;

- Design of Office Building in Via di Santa Cornelia Formello (RM), Italy – 15.000 sqm
Clients: GE.RO. S.r.l.,

2004

- House design in Ponte di Nona, Rome, Italy.
Client: Private

2003 - 2005

- Boscolo Group "Exedra Luxory Hotel"– Rome - Italy. Final and detailed design of the multipurpose center and Beauty Farm in the exedra of the Terme di Diocleziano in Rome
Client: Ergon Group Italia

2002

- Private palace in Corso Vittorio Emanuele III, Farnese (VT), Italy. Survey and preliminary design for the adaptive reuse of the building.
Client: Private

2001

- Multipurpose and residential complex in Premariacco (UD) – Italy – The building includes: private housing, assisted housing for elderly people, public spaces, commercial area, hotel services, conference rooms, etc.
Client: CER Progetti S.r.l.;

1999

- Design of a Multifunctional Centre specialized in housing and care of elderly people and social services - Campagnano (RM) - Italy.

- Residential Complex in the Archaeological Area of "Celle" - Pozzuoli (Na) – Italy. Rehabilitation design of the abandoned complex.
Client: private.

1997-1998

- Conservation and interior design of an agricultural and residential village, composed by N. 7 units in Le Nocette - Formello (RM) - Italy

TRAINING AND LECTURES

On top of the constant commitment in the field of applied research, our technicians carry out training activities in national as well international contexts. Courses and lessons address topics as documentation and use of advanced technologies for surveying and conservation purposes. In particular, the CEO held the following courses:

2023 - Training in the Digital Documentation of Architectural Remains – Lecture "3D Laser Scanning of Architectural and Archaeological Material(guest lecturer) – Luxor - Egypt
Committente: ARCE – American Research Center in Egypt.

2019
International Training Project (ITP) at the "Istituto Superiore per la Conservazione ed il Restauro" - Rome – Italy
Training Course "Techniques and instruments for 3D documentation and three-dimensional properties" - Title of the lectures: "*Laser scanner and APR technology for the survey of Cultural Heritage*".
Client: Istituto Superiore per la Conservazione ed il Restauro - ISCR.

2018
International Training Project (ITP) at the "Istituto Superiore per la Conservazione ed il Restauro" - Rome - Italy - Training Course "Techniques and instruments for 3D documentation and three dimensional properties", countries Georgia - Egypt. Title of the lectures: "*Laser scanner for architecture: scanning, aligning and inserting control points. Case studies*".
Client: Istituto Superiore per la Conservazione ed il Restauro - ISCR.

2017
Lectures at RE-ART - Course "Il cantiere di Restauro" - Title of the lectures: "Tecnologie avanzate per il rilievo. Advanced technologies for surveying".
Client: Centro Studi Turistici - Firenze.

2005-2019
Lectures on advanced technologies for surveying and documentation for Cultural Heritage at the "Istituto Superiore per la Conservazione ed il Restauro" - Rome - Italy. Client: Istituto Superiore per la Conservazione ed il Restauro – ISCR.

2012
Project for the establishment of the Central Institute for the Conservation in Belgrade – CIK
Title of the lectures: "*Control Survey – 3D Laser Scanning - Data Collection*" - course "*Architectural Heritage Conservation*" in the Central Institute for Conservation in Belgrade.
Project founded by: Italian Development Cooperation, Italian Ministry of Foreign Affairs - Istituto Superiore per la Conservazione ed il Restauro (ISCR)

2011
Project for the establishment of the Central Institute for the Conservation in Belgrade – CIK
Title of the lectures: "*Documentation for Conservation - Graphical Documentation*" - course "*Architectural Heritage Conservation*" in the Central Institute for Conservation in Belgrade
Project founded by: Italian Development Cooperation, Italian Ministry of Foreign Affairs - Istituto Superiore per la Conservazione ed il Restauro (ISCR)

2008
Project of development of the Centre for Restoration of the Monuments in Tirana within the Institute for Monuments of Culture of Albania
Title of the lectures: "*Drawing, Survey and Documentation - Advanced Course of Autocad*"
Project founded by: UNESCO

2006-2017
Lectures on advanced technologies for surveying and documentation for cultural heritage at the "Istituto Superiore per la Conservazione ed il Restauro" – Rome – Italy.
Client: Istituto Superiore per la Conservazione ed il Restauro (ISCR).

In compliance with the GDPR and the Italian Legislative Decree no. 196 dated 30/06/2003, I hereby authorize you to use and process my personal details contained in this document
Rome, October 2024

C. P. T. Studio S.r.l.
Via di Santa Cornelia n 5/a 00060 Formello Rome - Italy
Tel/Fax + 396 9075528 - info@cptstudio.it - www.cptstudio.it

INTEGRATED ARCHAEOLOGICAL SURVEY

Luxor, Egypt - Karnak complex - Three-dimensional and orthophotographic survey of the Khonsu Temple. 2022

A complete high resolution integrated survey of the Temple allowed us to produce a complete three-dimensional model of all the structures and surfaces of the Khonsu Temple. Stating from the model was possible to extract sixtyeight detailed orthophotographic sections, orthophotographic plans and elevations of the temple on scale 1:20. The orthophotos of the surfaces have a resolution between 1 and 0.5 millimeters each pixel and are able to describe both the architecture and the decorated surfaces of the temple.

Notes:
- Objective of the assignment: Three-dimensional survey of the Temple of Khonsu;
- Client: ARCE - American Research Center in Egypt.

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HIEROGLYPHIC'S DETAIL 1

ORTHOPHOTOGRAPHIC SECTION OF THE TEMPLE 2

FIELD SURVEY OF THE DECORATED SURFACES 3

CHAPEL'S 3D MODEL VIEW 4

INTEGRATED ARCHAEOLOGICAL SURVEY

Luxor, Egypt - Karnak complex - Three-dimensional and orthophotographic survey of the Khonsu Temple. 2022

The Khonsu Temple is located in The Karnak Temple Complex in Luxor; It is an example of an almost complete New Kingdom temple. The entrance of the temple is at the end of the avenue of sphinxes that ran to the Luxor Temple. At the entrance of the Enclosure Wall is located the Evergete Gate and on his west, the Temple of Opet. The scope of service was to produce the survey of all the structures in this area, focusing on the detail of the Khonsu Temple. General sections and plans of the site in cad format, and a detailed survey of all the surfaces of the Khonsu Temple were produced. All the temple were reproduced in orthophotographic format in high detail and a video simulation and other 3D outputs were extracted from the 3D model.

Notes:
- Objective of the assignment: Three-dimensional survey of the Temple of Khonsu;
- Client: ARCE - American Research Center in Egypt.

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ORTHOPHOTOGRAPHIC SECTION OF THE TEMPLE 1

FIELD SURVEY 2

PERSPECTIVE CROSS SECTION OF THE TEMPLE 3

INTEGRATED ARCHAEOLOGICAL SURVEY

Roma, Italy - Domus of Jupiter Fulmiantor, Domus of the Fishes, Domus of Via della Caupona, Nymphaeum of the Erotes, Peacock's Caupona in the Ostia Antica Site; Tomb n. 57 in the Necropolis of Isola Sacra; "Capitaneria di Porto" in the Imperial Harbor of Claudius and Trajan. 2024

The S.T.Ar.T. project aims to document a wide range of ancient Roman sites and monuments to support their restoration and conservation works. Our task involved all phases of surveying and three-dimensional documentation for each site. We applied innovative techniques and carried out targeted experiments to ensure the best results. Over 270 orthophotographic and CAD drawings illustrate the structures in both plan and section views. Additionally, highly detailed, navigable 3D models were created for each context. For Tomb No. 57 at the Isola Sacra Necropolis, the survey of the painted panels preserved in storage, along with the tomb's in-situ structures, enabled us to reconstruct the whole structure in 3D.

Notes:
- Objective of the assignment: 3D survey of the archaeological structures and modern additions, restitution of orthophotographic and cad elevations, sections and plans, prodactions of 3D replicas of the sites;
- Client: Parco Acrheologico di Ostia Antica, Italy.

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PEACOCK'S CAUPONA 1
ORTHOPHOTOGRAPHIC SECTION

RECONSTRUCTION OF THE TOMB OF ISOLA SACRA 2
ORTHOPHOTOGRAPHIC SECTION

NYMPHAEUM OF THE EROTES 3
ORTHOPHOTOGRAPHIC SECTION

PEACOCK'S CAUPONA 4
VIEW OF THE 3D MODEL

DOMUS OF THE FISHES AND DOMUS OF VIA DELLA CAUPONA 5
VIEW OF THE 3D MODEL

INTEGRATED ARCHAEOLOGICAL SURVEY

Kom el-Hettan, West Bank, Luxor, Egypt - Colossi di Memnon - Architectural and archaeological survey by laser scanner and photogrammetric systems. 2022

The Colossi of Memnon are two massive stone statues located in the West Bank in Luxor. The 720 tons single block statues were transported from a distance of 600 kilometers, from the quarry to here, 3400 years ago. The statues represent the pharaoh Amenhotep III. The original function of the Colossi was to stand at the entrance to Amenhotep's mortuary temple. At that time, the temple complex was the largest in Ancient Egypt, covering a total of 35 hectares area.

The scope of service was to document the statues in 3D format and to produce plans, sections and elevations both in orthophotographic and cad format. Starting from the 3D model of the statues and of the site was possible to produce a video simulation. The laser scanner survey will alow to monitoring any movement and loss of material form the surfaces of the statues in the future.

Notes:
- Objective of the assignment: Integrated 3D Survey;
- Client: Colossi of Memnon & Amenhotep III Temple Conservation Project


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3D MODEL'S VIEW OF THE COLOSSI AND SURROUNDING AREAS 1

CAD ELEVATION OF THE SOUTH STATUE 2

PERSPECTIVE VIEW OF THE 3D MODEL 3

DETAIL OF THE SIDE OF THE SOUTH STATUE 4

FULL-SCALE AND DIGITAL REPLICA

Oasis of Dakhla, Egypt - House of Serenos - Three-dimensional survey of the Replica. 2023

The House of Serenos was excavated at the Oasis of Dakhla between 2004 and 2006. Inside the house, wall paintings depicted scenes from Greco-Roman mythology.
Our assignment included the production of a three-dimensional digital copy of the replica to guarantee the access to the replica for public or scholars. The replica and the archaeological site are in fact difficult to reach because they are located in the desert about 7 hours by car from the Nile. The model is also navigable in virtual reality and can be enriched with additional documentation that can be viewed directly from inside the model.

Notes:
- Objective of the assignment: Full-scale replica of the House of Serenos - 3D survey of the replica;
- Clinet: Hong Kong University with the scientific supervision of the New York University

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EXTERNAL VIEW OF THE 3D MODEL 1

FIELD SURVEY - LASER SCANNING FROM THE TOP OF THE ROOF 2

VIEW OF THE 3D MODEL - THE MAIN ROOM 3

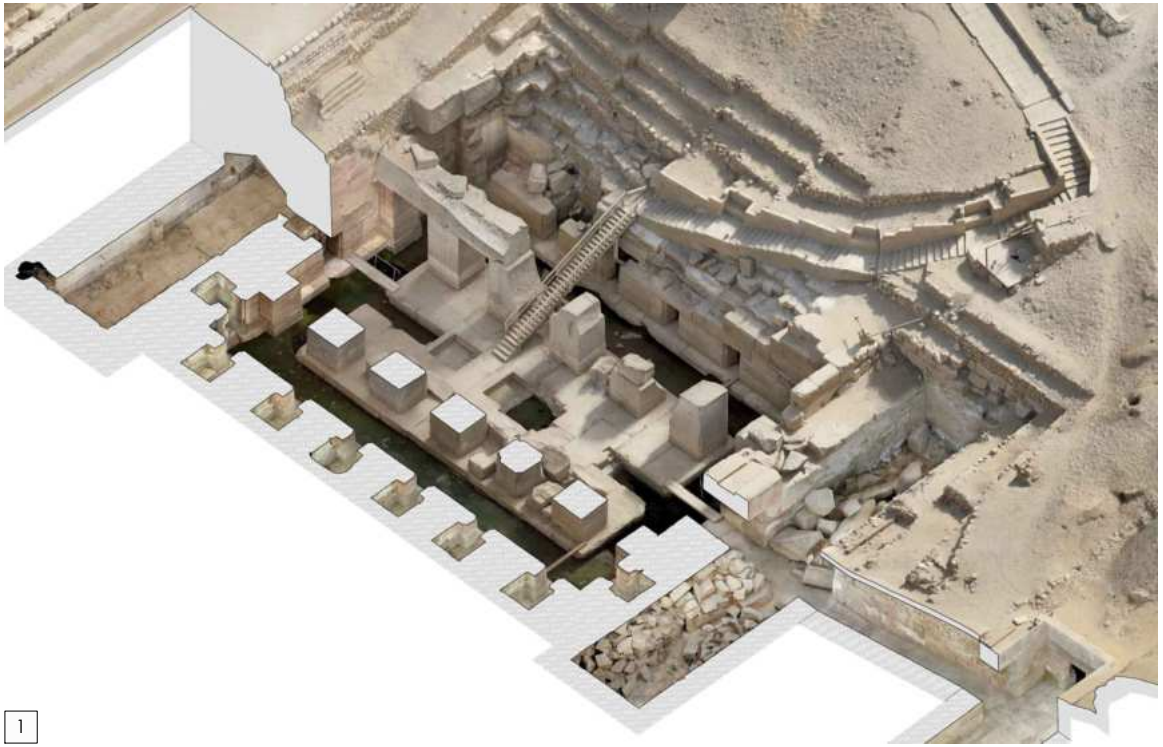
INTEGRATED ARCHAEOLOGICAL SURVEY

Abydos, Egypt - Osireion and Merenptah tunnel - Three-dimensional survey of the Osireion and Merenptah tunnel. 2023

The Osireion and the Merenptah tunnel were subterranean structures located at the back of the temple of Seti I, discovered during excavations in the early 20th century. The Merenptah tunnel, which leads to the main body of the Osireion, is 110 meters long and is decorated with hieroglyphics from the "Book of the Dead" and the "Book of Caverns."
We carried out a three-dimensional survey of the whole area. About an houndred of outputs, primary CAD drawings and orthophotographic sections and plans, illustrate all the site.
Starting from the 3D model, we produced a video that shows the entire monument.

Osireion and Seti I Temple - 3D survey video
https://www.youtube.com/watch?v=OOjHmCAY3v4

Notes:
- Objective of the assignment: Three- dimensional surey of the Osireion and Merenptah tunnel;
- Client: ARCE - American Research Center in Egypt - WMF World Monuments Found



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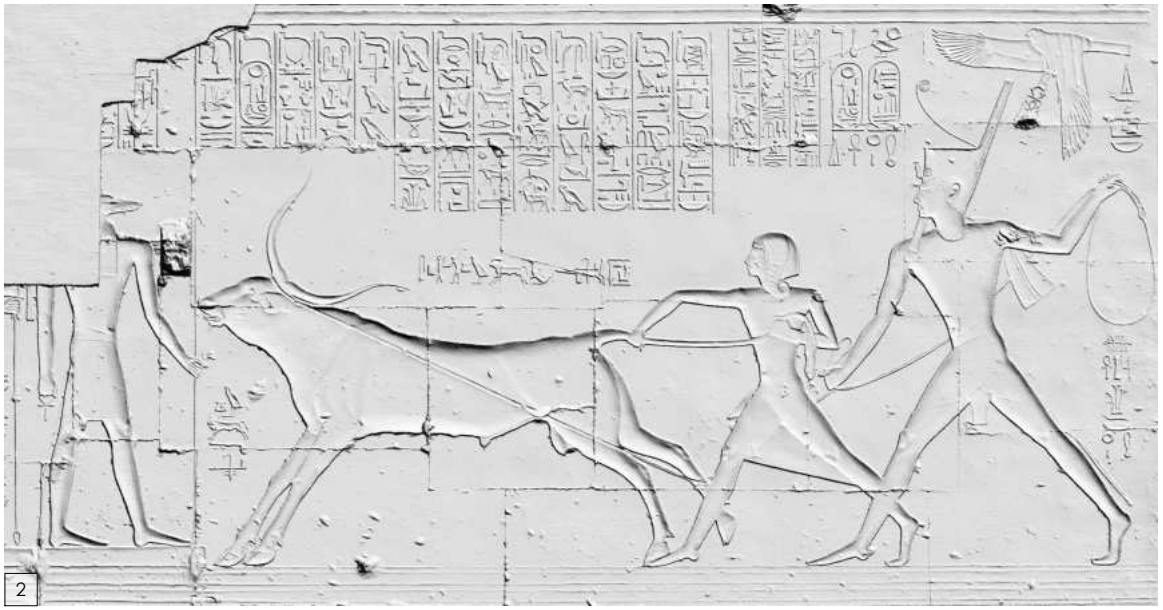

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OSIREION'S AXONOMETRIC CROSS-SECTION 1

SETI I TEMPLE - WALL OF THE BULL - ELEVATION OF THE 3D MODEL IN FALSE-SHADOWS VIEW 2

ORTHOPHOTOGRAPHIC ELEVATION OF THE FACADE OF THE SARCOPHAGUS ROOM - EXCERPT 3

INTEGRATED ARCHAEOLOGICAL SURVEY

Roma, Italia - Casa dei Grifi - 3D and orthophotographic survey and production of a video from the 3D model of the Casa dei Grifi in the Parco Archeologico del Colosseo. 2023

The '*Casa dei Grifi*' is an ancient Roman habitation located on Palatine Hill, beneath the northern wing of the Palace of Domitian. It is the best-preserved example of a house from the Republican era in Rome, and its name comes from a stucco decoration featuring griffins.

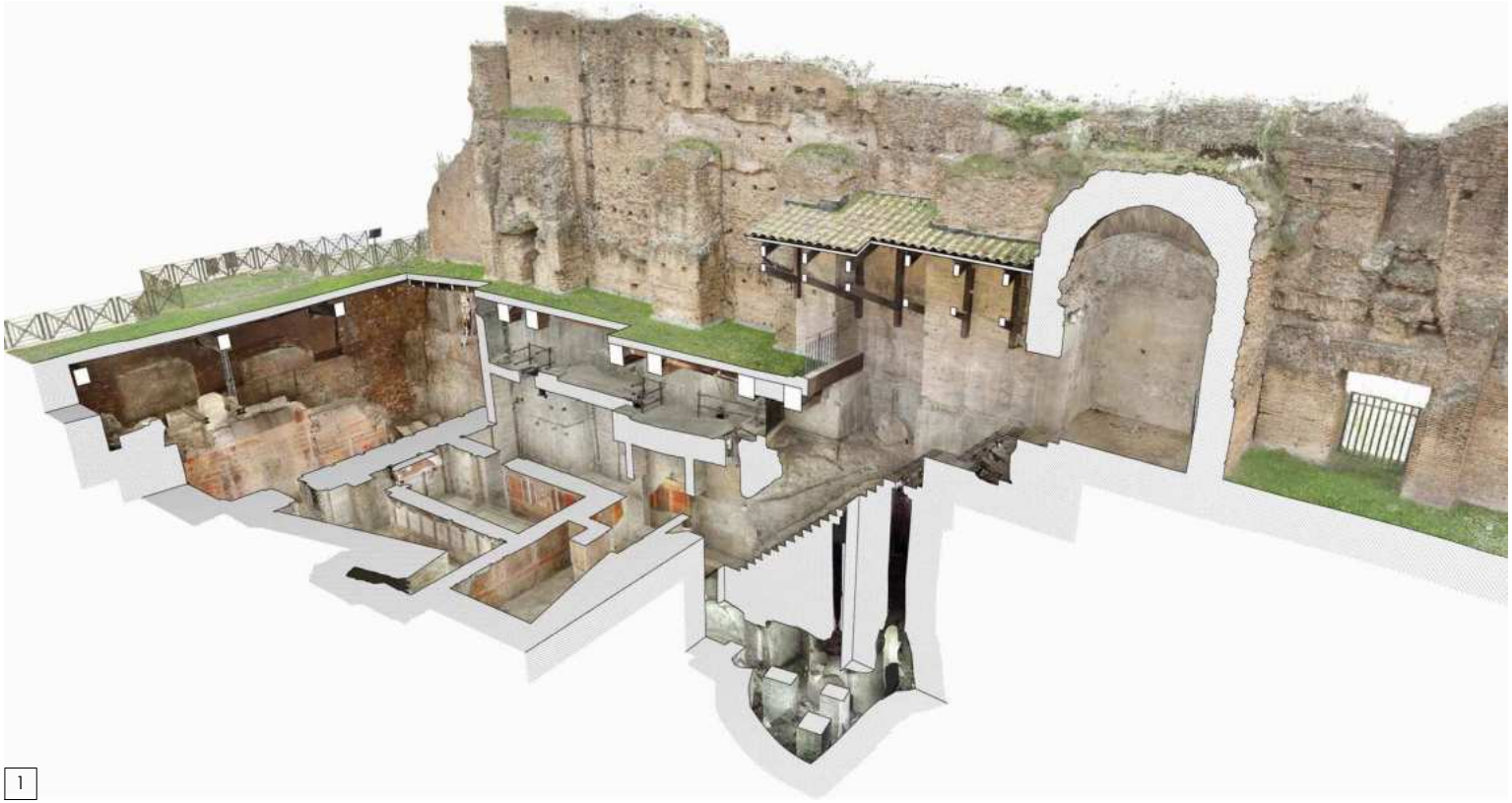
The three-dimensional survey of the habitation and the surrounding areas was carried out using several laser scanners, a total station and high-resolution digital cameras. Starting from the 3D model, we fully illustrated the Roman house with 4 plans at different heights, along with 27 orthophotographic sections.

A video simulation extracted from the three-dimensional model allows to frame the '*Casa dei Grifi*' inside the Palatino Hill. The 3D model of the individual rooms can be navigated on the web even in virtual reality.

Notes:

- Objective of the assignment: 3D survey, graphic and orthophotographic restitution and production of video from 3D model of Casa dei Grifi and Schola Praeconum, Parco Archeologico del Colosseo;

- Client: Parco Archeologico del Colosseo



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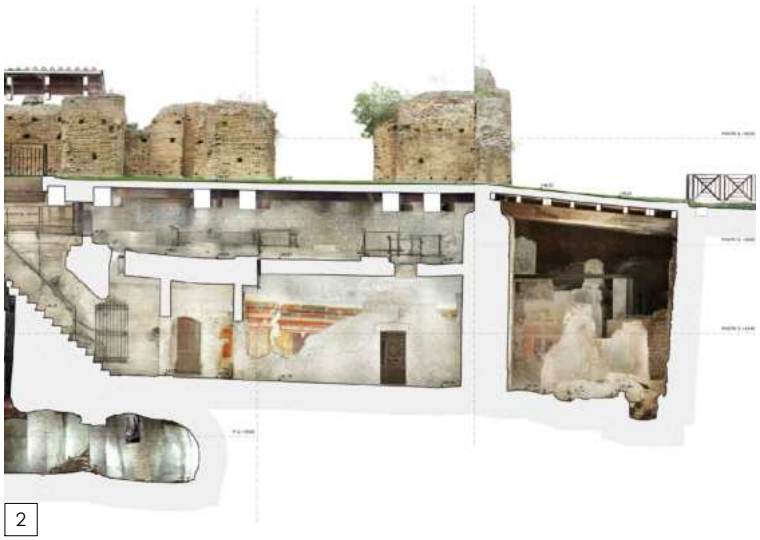

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PERSPECTIVE SECTION 1

ORTHOPHOTOGRAPHIC SECTION OF THE INTERIOR OF THE HOUSE 2

3D MODEL VIEW 3

INTEGRATED ARCHAEOLOGICAL SURVEY

Rome, Italy - Schola Praeconum - 3D and orthophotographic survey and production of a video from the 3D model of the Schola Praeconum in the Parco Archeologico del Colosseo. 2023

Schola Praeconum, dated to the 3rd century A.D., is located in the lowest terrace of the southern side of the Palatino Hill, setting itself on pre-existing buildings. It was the seat of the corporation of heralds, the *praecones*.

The survey has been carried out by the integration of topographic, laser scan and photogrammetric system. From the 3D model, 11 sections an 4 plans, one of which is hypographic, have been extraced to fully describe the external part of the Schola and the internal part characterized by a mosaic flooring.

Notes:
- Objective of the assignment: 3D survey, graphic and orthophotographic restitution and production of video from 3D model of Schola Praeconum;
- Client: Parco Archeologico del Colosseo

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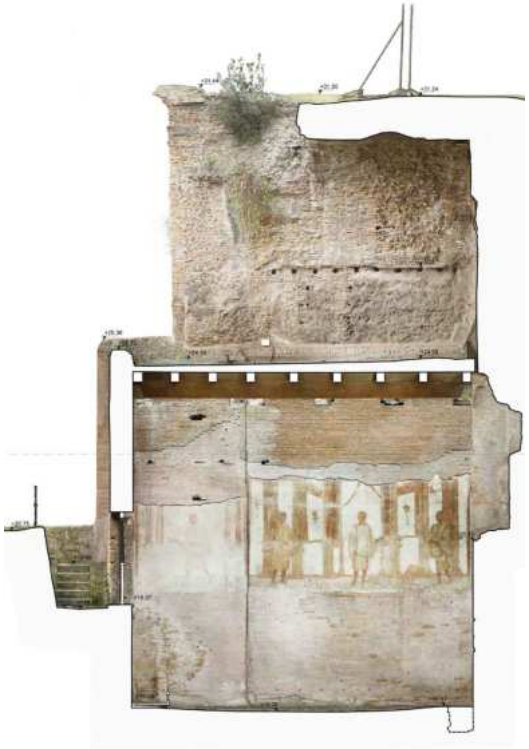

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ORTHOPHOTOGRAPHIC SECTION 1

SECTION OF THE INNER ROOM 2

ORTHOPHOTOGRAPHIC DETAIL OF THE MOSAIC OF THE HERALDS 3

INTEGRATED ARCHAEOLOGICAL SURVEY

Fiumicino (RM), Italy - Imperial Harbours of Claudius and Trajan - Three-dimensional laser scanning, photogrammetric and topographic survey . 2022.

The Imperial Harbours of Claudius and Trajan were built between I and II century A.C. to respond to Roma's new needs. The planning of Claudius consisted of a 150 hectare port basin with two piers, docks, two artificial canals and a lighthouse; it was expanded by Trajan with a 33 hectares hexagonal basin, a warehouse complex (Magazzini Severiani, Magazzini Traianei), a dock and an Imperial Palace.

We used an integrated system of technologies (two laser scanners, a total station, GPS and a three-dimensional photogrammetric survey system) for the survey. The entire site was surveyed: we produced 2.5 kilometers of orthophotographic sections, a general plan, a plan of archaeological structures whit a reflected ceiling plan in cad and orthophotographic format.

Note:
- Objective of the assignment: Rilievo 3D dei monumenti archeologici ed eventuali annessi (coperture, integrazioni contemporanee) denominati Antemurale, Magazzini Traianei e Portico di Claudio, Magazzini Severiani nel sito dei Porti Imperiali, Edificio termale e cisterna nel sito di Monte Giulio;
- Client: Parco Archeologico di Ostia Antica.

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ORTHOPHOTOGRAPHIC SECTION OF ANTEMURALE'S AREA 1

ORTHOPHOTOGRAPHIC ELEVATION OF MAGAZZINI SEVERIANI 2

FIELD SURVEY 3

INTEGRATED ARCHAEOLOGICAL SURVEY

Ostia Antica, Rome, Italy - Theatre - Architectural and archaeological survey by laser scanner and photogrammetric systems. 2020

The Theatre in the Ostia Antica site was entirely surveyed using the integration of topography, laser scanning and photogrammetric systems.
In order to describe all the parts of the monument, we produced 54 orthophotographic and cad sections and 3 plans.
During the field work we used a phase shift laser scanner, high resolution cameras and drones for detailed three-dimensional surveys.

Notes:
- Objective of the assignment: Architectural and archaeological survey with topographic, scanner laser and photogrammetric systems;
- Client: Parco Archeologico di Ostia Antica.

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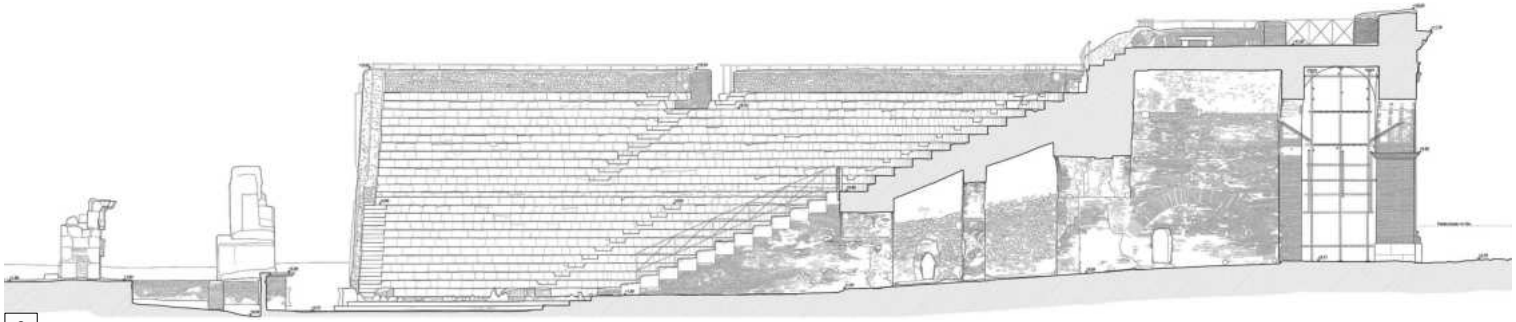

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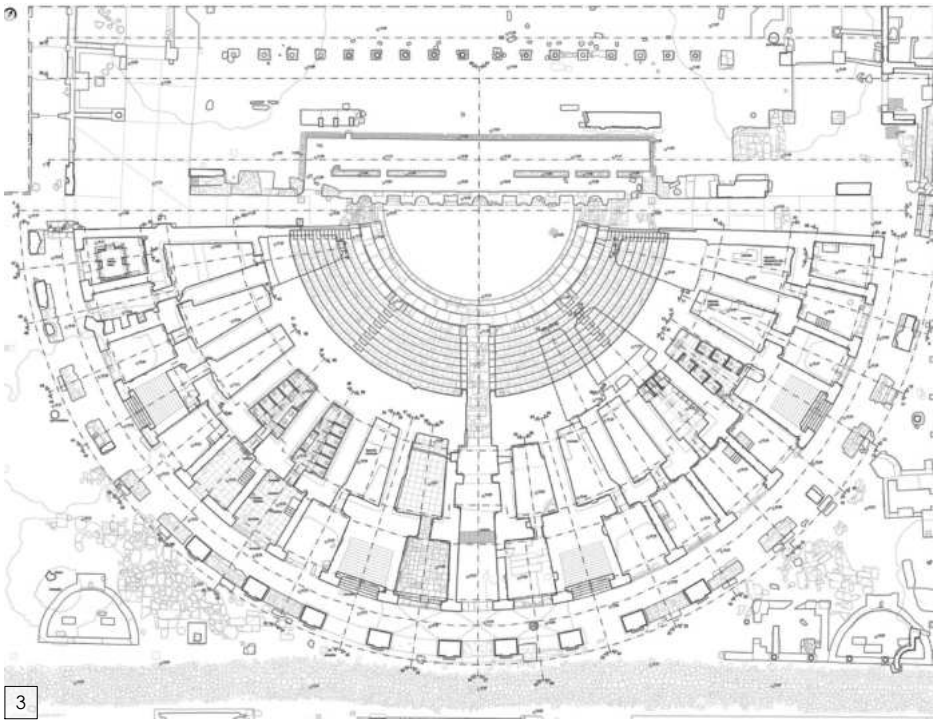

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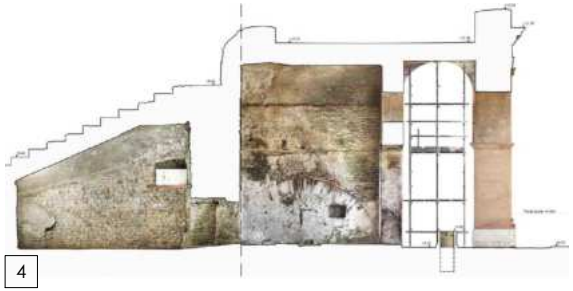

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INTEGRATED ARCHAEOLOGICAL SURVEY

Ostia Antica, Rome, Italy - Sacred Area of the Republican Temples - Temple of Hercules and temple of the Round Altar - Georeferenced survey with laser scanner 3D and photogrammetry. 2020

The survey of the Temple of Hercules and temple of the Round Altar was preliminary to the conservation of the ancient structures.

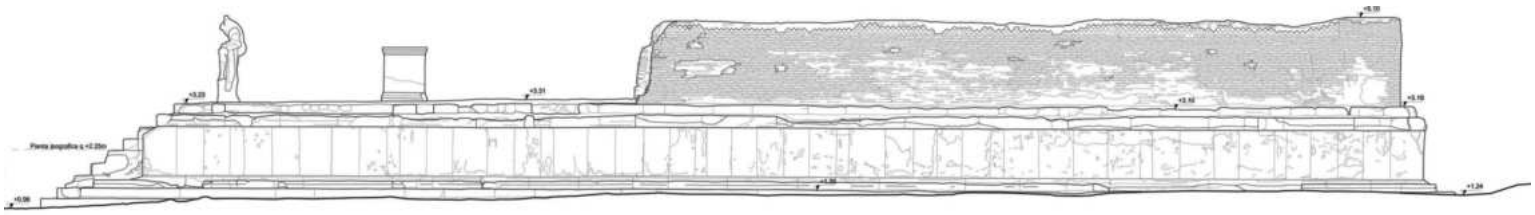
We carried out a georeferenced topographic survey of the site and the architectural and archaeological survey of the temples.

We produced orthophotographic and cad drawings of both temples in 1:50 and 1:20 scale and a study of all the ancient sewer tunnels in the area.

The altars and architectural remains were surveyed and catalogued on sheet in 1:10 scale.

Using the best topographic, laser and photogrammetric technologies, we reached the most detailed results.

Notes:
- Objective of the assignment: Georeferenced survey with laser scanner 3D;
- Client: Parco Archeologico di Ostia Antica.



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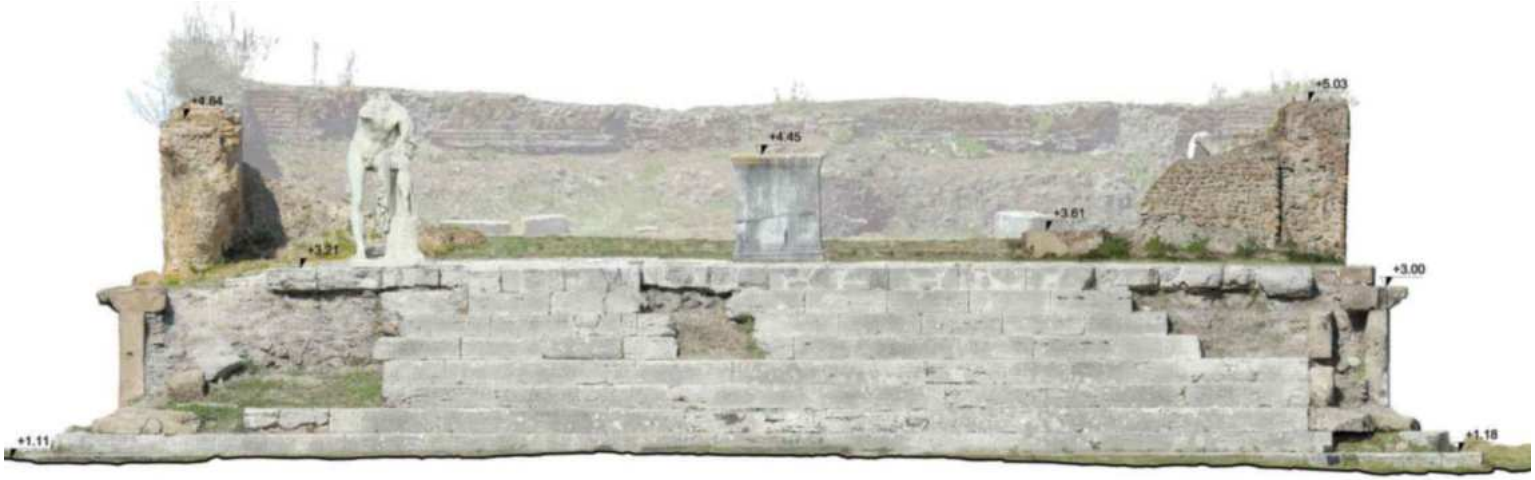

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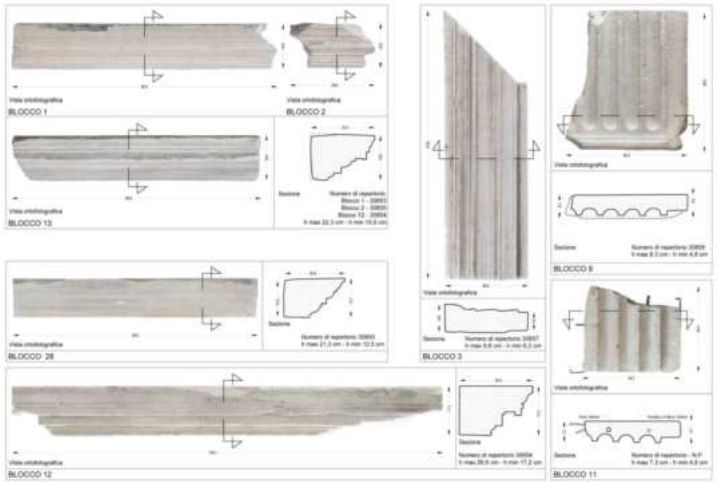

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TEMPLE OF HERCULES'S CAD ELEVATION 1

TEMPLE OF HERCULES'S ORTHOPHOTOGRAPHIC ELEVATION 2

3D MODEL'S VIEW OF THE SITE 3

ABACUS OF THE ARCHITECTURAL REMAINS 4

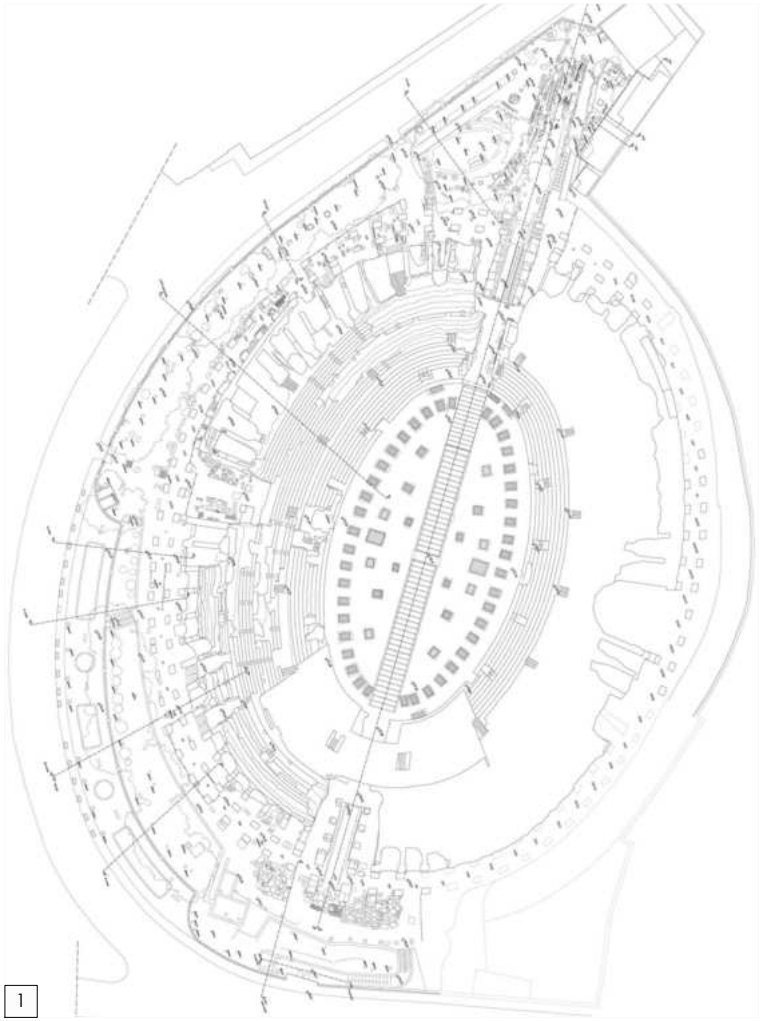
INTEGRATED ARCHAEOLOGICAL SURVEY

Pozzuoli, Italy - Amphitheater - Architectural and archaeological survey by laser scanner and photogrammetric systems. 2020

The Flavian amphitheater is one of two roman Pozzuoli's amphitheaters. Dating from the second half of the first century AD, it was built to cope the demographic increase of the city. Second only to the Colosseum and Capua's amphitheater, it stands at the intersection of Via Domiziana and Via per Napoli.

The amphitheater was surveyed using the integration of topography, laser scanning and photogrammetric systems. The data acquired on the field in collaboration whit an other firm were used to produce a complete set of orthophotos and drawings to describe the whole monument.

Notes:
- Objective of the assignment: Pozzuoli: Anfiteatro Flavio interventi di miglioramento dell'accessibiltà e nuova fruizione - lavori di restauro e valorizzazione;
- Client: Parco Archeologico dei Campi Flegrei



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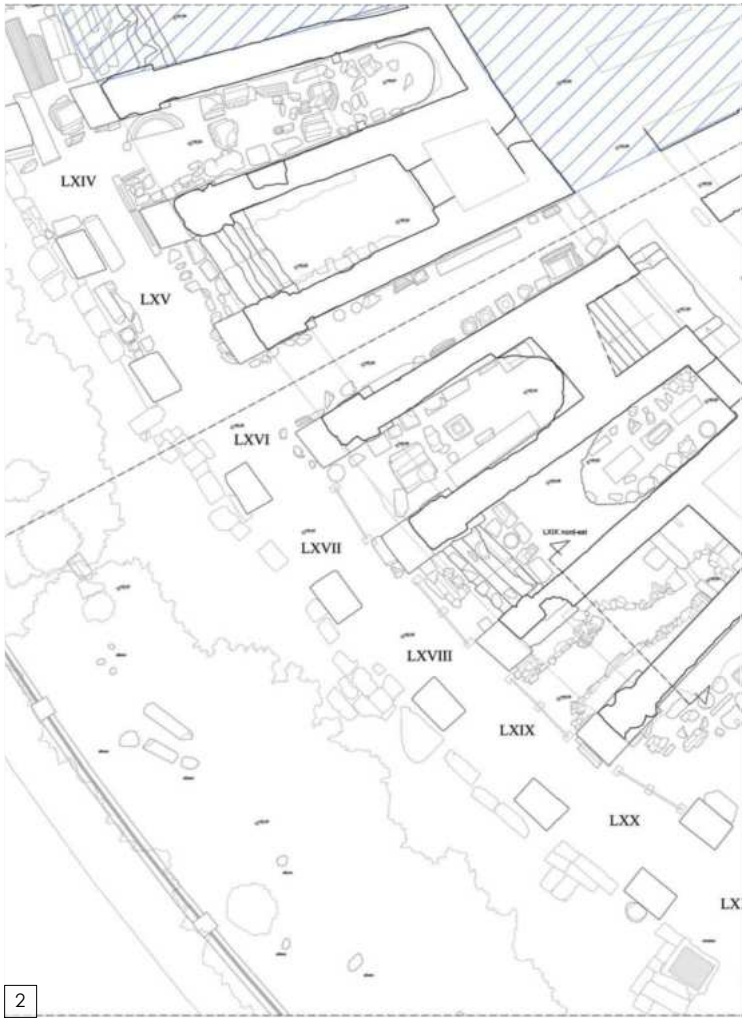

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GENERAL PLAN -LEVEL III - CAD DRAWING 1

DETAIL OF THE PLAN OF THE LEVEL II 2

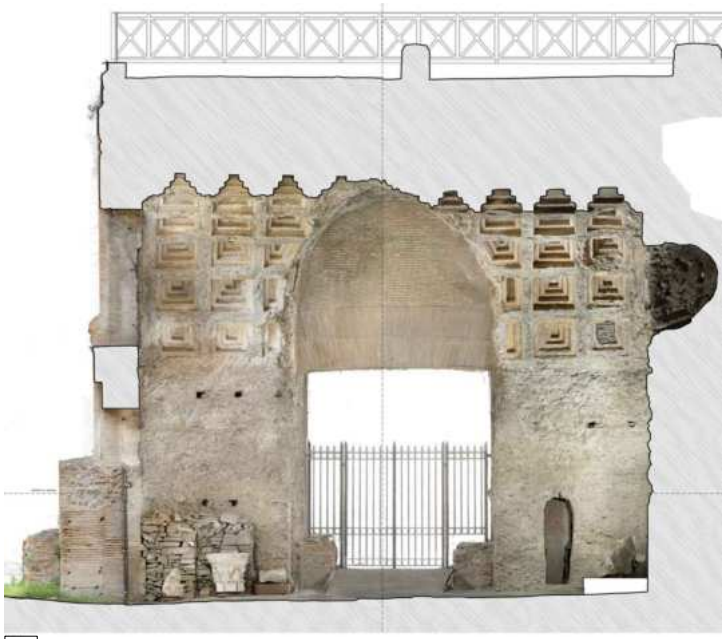
ORTHOPHOTOGRAPHIC SECTION 3

INTEGRATED ARCHAEOLOGICAL SURVEY

Rome, Italiy - Sala dei Capitelli - Three-dimensional graphic and orthographic survey of Sala dei Capitelli and of the surrounding environments . 2023

The "*Sala dei Capitelli*" (Hall of Capitals) is located on Palatino Hill and was part of the imperial palaces complex. Here, it is possible to see many capitals made in different styles, and the Hall is decorated with a beautiful coffered ceiling.
We carried out a 3D survey of the area with laser scanning, total station and photogrammetry. Twenty orthophotographic and CAD drawings at scales of 1:50 and 1:20 illustrate the Hall and the surrounding spaces in both plan and section views. The three-dimensional models have a very high resolution and are set up for the virtual reality navigation. Below are shown some drawings related just to the Sala dei Capitelli.

Notes:
- Objective of the assignment: Three-dimensional graphic and orthographic survey of Sala dei Capitelli and of the surrounding environments;
- Client: Parco Archeologico del Colosseo



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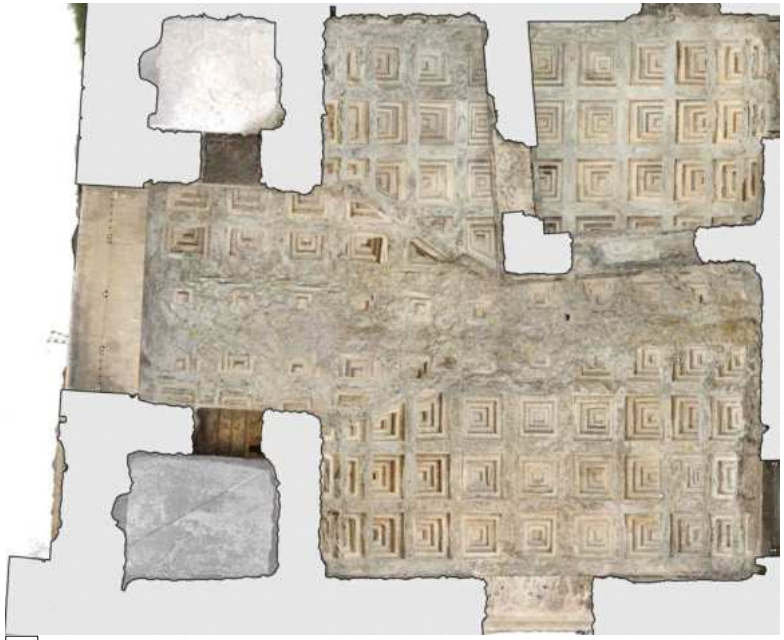

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ORTHOPHOTOGRAPHIC SECTION 1

ORTHOPHOTOGRAPHIC HYPOGRAPHIC PLAN 2

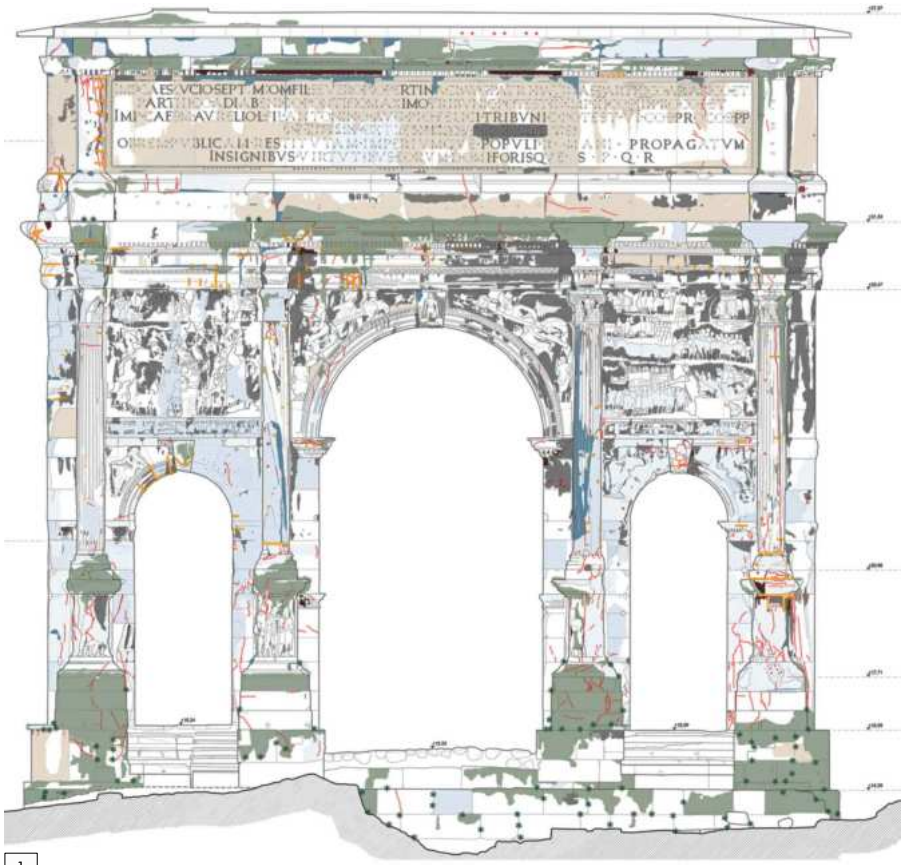
VIEW OF THE 3D MODEL - WITHOUT WALLS RELATED TO A SECOND PHASE OF CONSTRUCTION 3

3D AND ORTHOPHOTOGRAPHIC SURVEY

Rome, Italy - Roman Forum - Arch of Septimius Severus - Three-dimensional laser scanning survey, restitution of orthophotographic and cad elevations, sections and plans and condition mapping drawings. 2020

The Arch of Septimius Severus was surveyed using an integrated technology that involves photogrammetric, laser scanning and topographic systems.
We produced scale 1:50 plans, orthophotographic sections and elevations and CAD drawings.
The condition mapping was useful in view of the conservation interventions.
Using two different photogrammetric drones, we took high resolution photos of all the surfaces of the monument. The condition mapping was carried out using the overlay of the orthophotographic and cad drawings directly on CAD.

Notes:
- Objective of the assignment: Three-dimensional laser scanning survey, restitution of orthophotographic and cad elevations, sections and plans and condition mapping drawings;
- Clien: Parco Archeologico del Colosseo.



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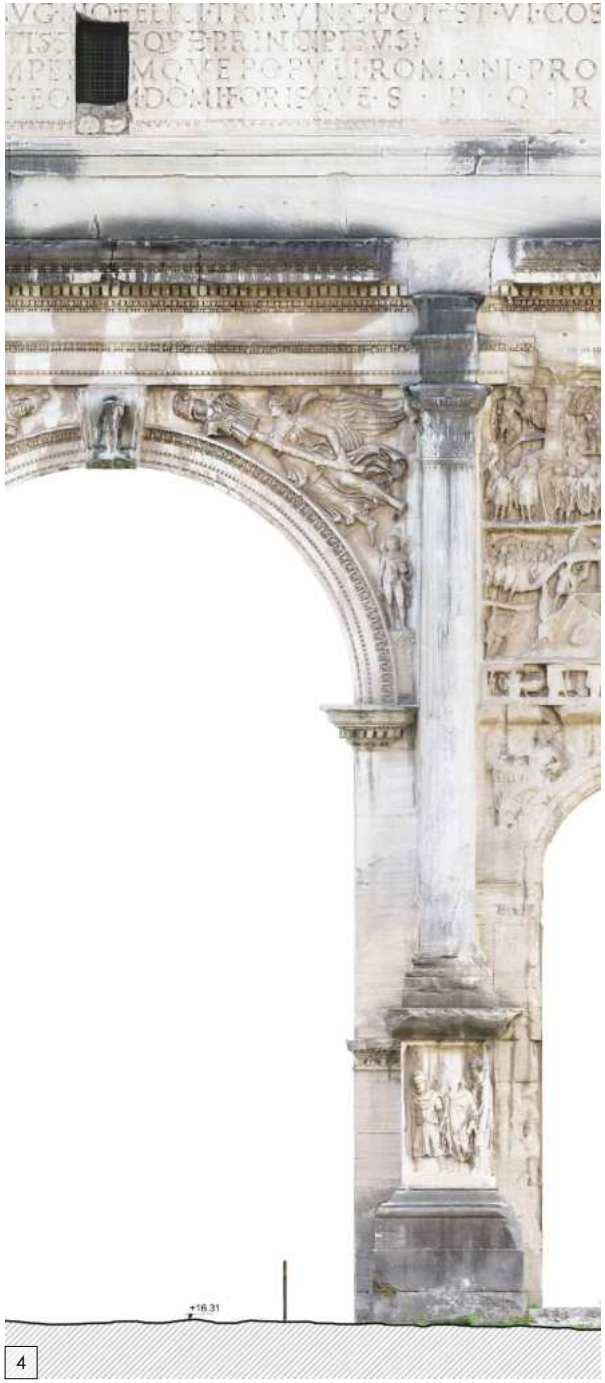

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SOUTH-EAST ELEVATION AND CONDITION MAPPING 1

DRONE PHOTO 2

PHOTO FROM THE GROUND 3

NORTH-WEST ORTHOPHOTOGRAPHIC ELEVATION 4

ARCHITECTURAL 3D SURVEY

Sohag, Egypt - White Monastery - Three-dimensional survey of the church and archaeological areas. 2019

The White Monastery is a byzantine sanctuary composed of a rectangular courtyard surrounded by some halls and a triconch chuch.

The entire building was measured. Plans, sections and elevations CAD drawings, orthophotographic images and digital drawings were produced (11.000 sq m of plans and 26.600 sq m of sections). They were exported by a 3D model of the building made integrating the use of a 3D laser scanner, topographical surveys and a three-dimensional photogrammetric system.

We produced two orthophotographic abacuses: one of the niches (scale 1:20) and one of the hieroglyphic blocks (scale 1:10).

We also examined the geometry of the perimetral walls of the monastery and compared it with the data collected with some scans taken in 2015, carrying out a deformation analysis.

Notes:
- Objective of the assignment: Three-dimensional survey of the church and archaeological areas of the White Monastery (Sohag, Egypt);
- Client: Yale in Egypt - Yale Monastic Archaeology Project (South).

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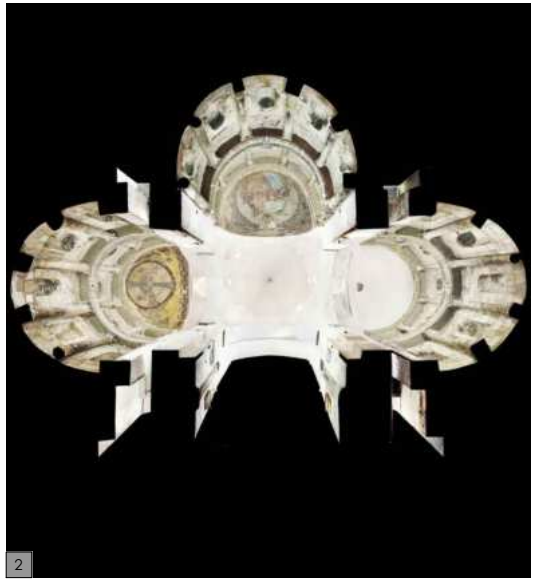

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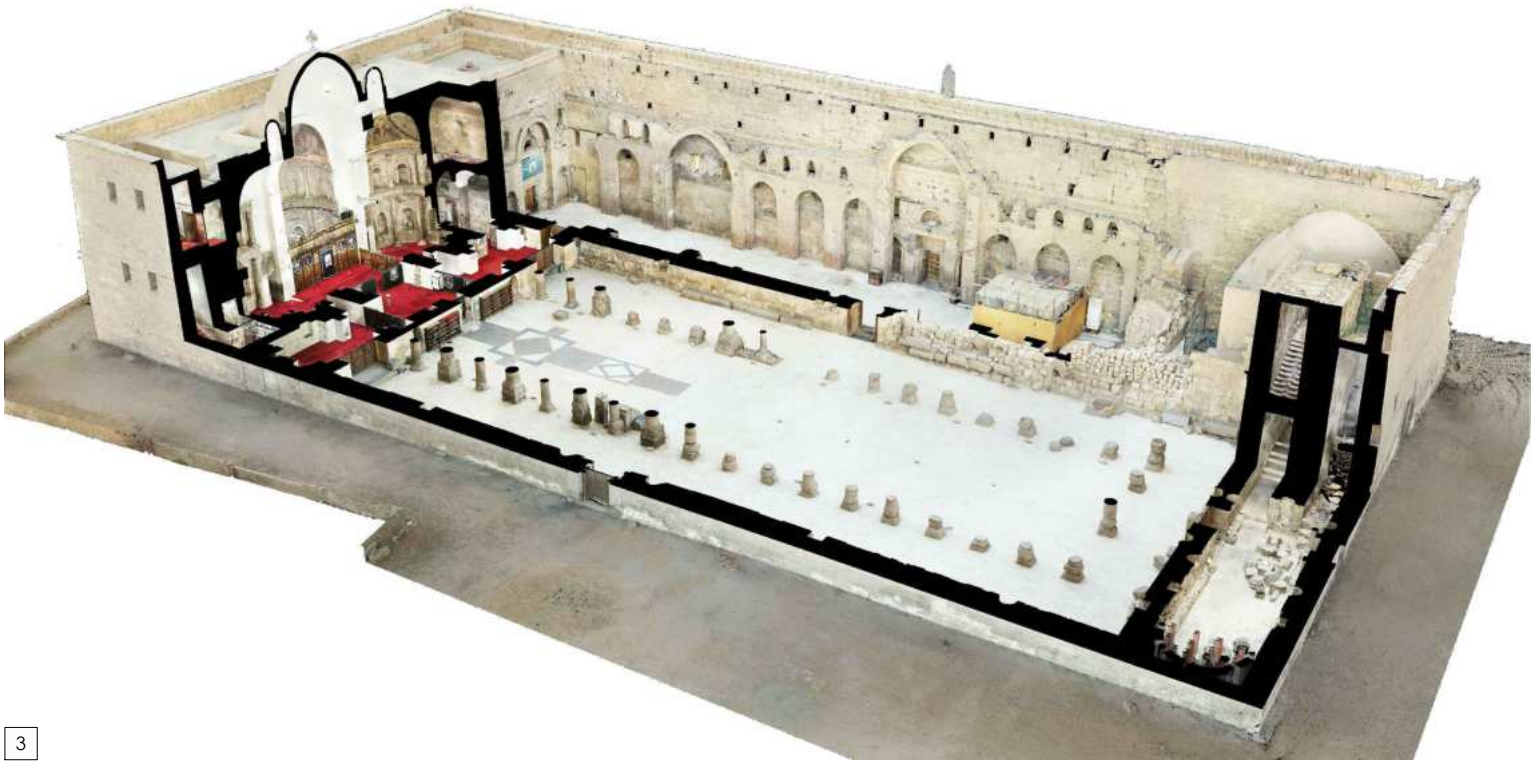

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ORTHOPHOTOGRAPHIC SECTION 1

CUTAWAY PERSPECTIVE VIEW OF THE CEILING 2

CUTAQWAY PERPECTIVE VIEW OF THE MODEL 3

INTEGRATED ARCHAEOLOGICAL SURVEY

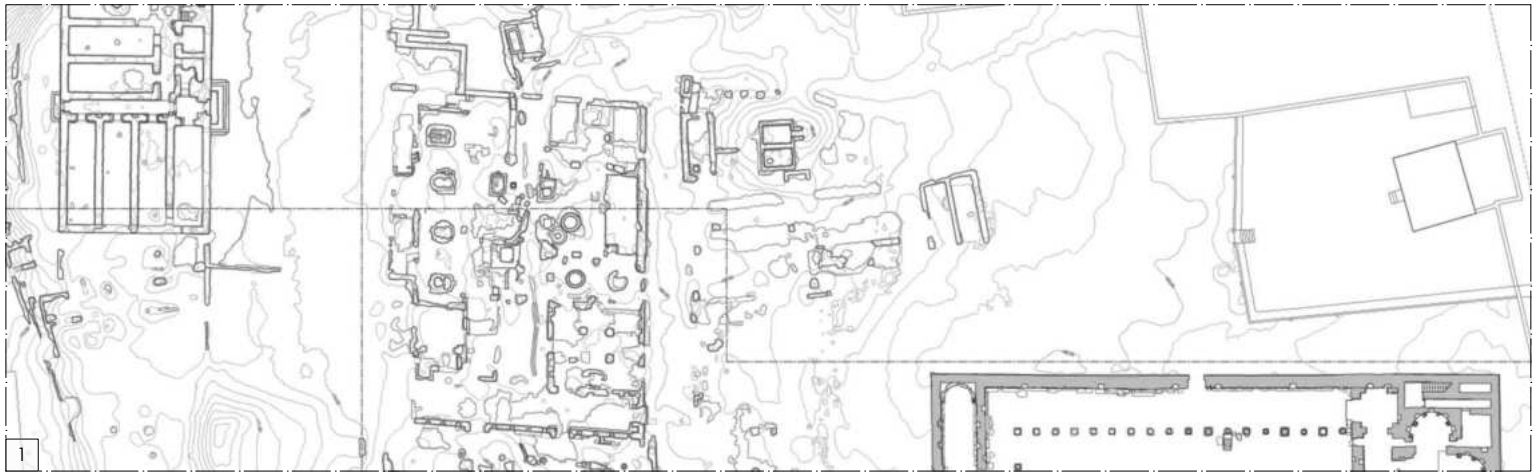
Sohag, Egypt - White Monastery - Three-dimensional survey of the church and archaeological areas. 2019

We measured the entire extension of the White Monastery archaeological area (about 55 sq m).

We produced a general plan and some topographic sections (about 600 lm) in scale 1:200, the orthophotographic plans of the entire area in scale 1:50 and some detail drawings of the most relevant structures in scale 1:50 and 1:10.

We applyed an highly advanced working methodology to acquire and process data, based on the integration of the use of a 3D laser scanner, a total station and a three-dimensional photogrammetric system. We thus generated an high resolution 3D model from which we exported plans, sections, elevations drawings and orthophotographic images.

Notes:
- Objective of the assignment: Three-dimensional survey of the church and archaeological areas of the White Monastery (Sohag, Egypt);
- Client: Yale in Egypt - Yale Monastic Archaeology Project (South).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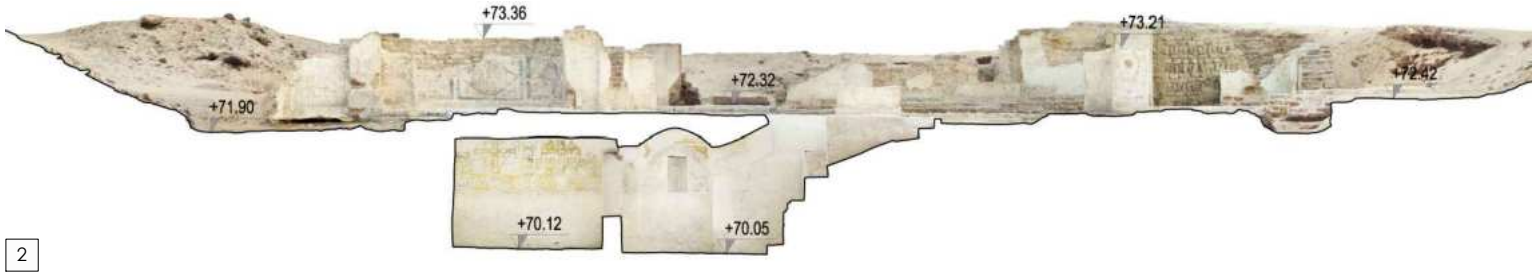

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PLAN EXCERPT OF THE ARCHEOLOGICAL SITE 1

ORTHOPHOTOGRAPHIC SECTION 2

DETAIL OF A HIEROGLYPHIC BLOCK 3

3D MODEL VIEW OF THE ARCHEOLOGICAL SITE 4

3D AND ORTHOPHOTOGRAPHIC SURVEY

Arch of Janus - Forum Boarium, Rome, Italy
World Monuments Fund Watch List - 2016

The Arch of Janus is the only surviving quadrifrons arch in Rome. It located in the Forum Boarium, in the center of ancient Rome and is 15 meters high. The work was funded by the World Monuments Fund and it is the last monument of the Forum Boarium to be restored.

We used an integrated technology that involves photogrammetric, laser scanning and topographic systems. The 3D model reproduce the morphology of the Arch with the highest level of detail.

Note:
- Objective of the assignment : 3D survey and restitution of all the elevations, sections and plans of the monument:.
- Client: Private for World Monuments Fund and Sovrintendenza Speciale per il Colosseo e l'Area Archeologica Centrale di Roma
- Funding: World Monuments Fund, American Express


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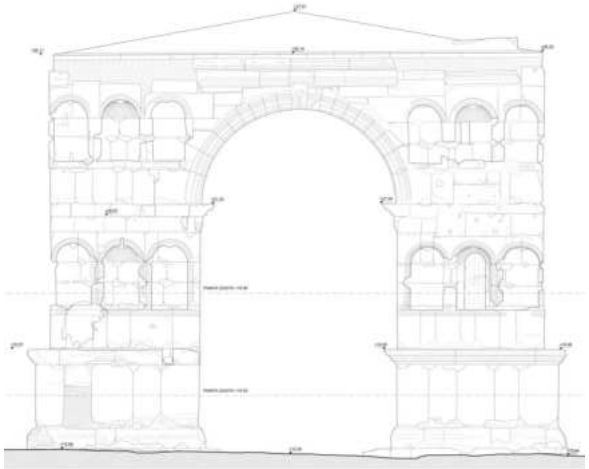

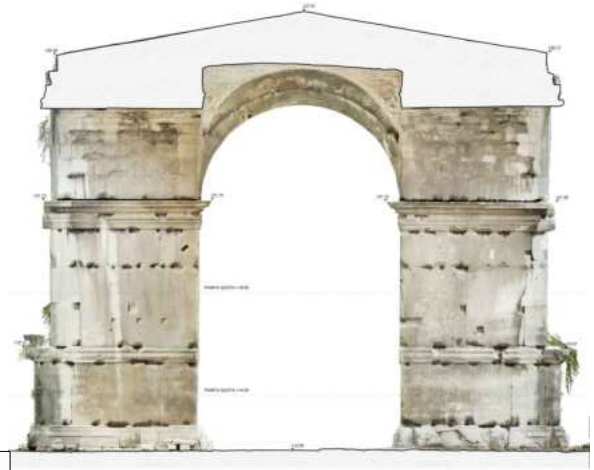
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3D MODEL'S VIEW 1

3D MODEL'S VIEW 2

FIELD SURVEY - LASER SCANNING 3

PLANS, ELEVATIONS AND SECTION EXTRACTED FROM THE 3D MODEL 4

FRAMES EXTRACTED FROM THE VIDEO PRESENTATION 5

INTEGRATED ARCHAEOLOGICAL SURVEY

Rome - Italy - Archaeological Area of the Roman Forum and Palatine Hill - Three-dimensional survey of the Temple of the Magna Mater and the archaic huts on the Palatine Hill. 2019

The area of the Magna Mater Temple preserves some of the oldest and best preserved archaeological remains on the Palatine. Located in the north-west corner of the Palatine, near the House of Livia and the House of Augustus, the site preserves archaeological evidence of over a thousand years of history. The republican structures and those of the imperial age are overlapped on the funds of archaic huts.

The surveys involved all the structures and involved topographic, photogrammetric and laser scanner instruments.

The 3D model was integrated with other 3D models of previous surveys of areas, in order to produce plans and sections including the structures that are no longer visible.

Note:
- Objective of the assignment: Santuario della Magna Mater - Interventi conservativi e di consolidamento strutturale - Rilievi, accertamenti e indagini preliminari;
- Client: MIBACT - Parco Archeologico del Colosseo.

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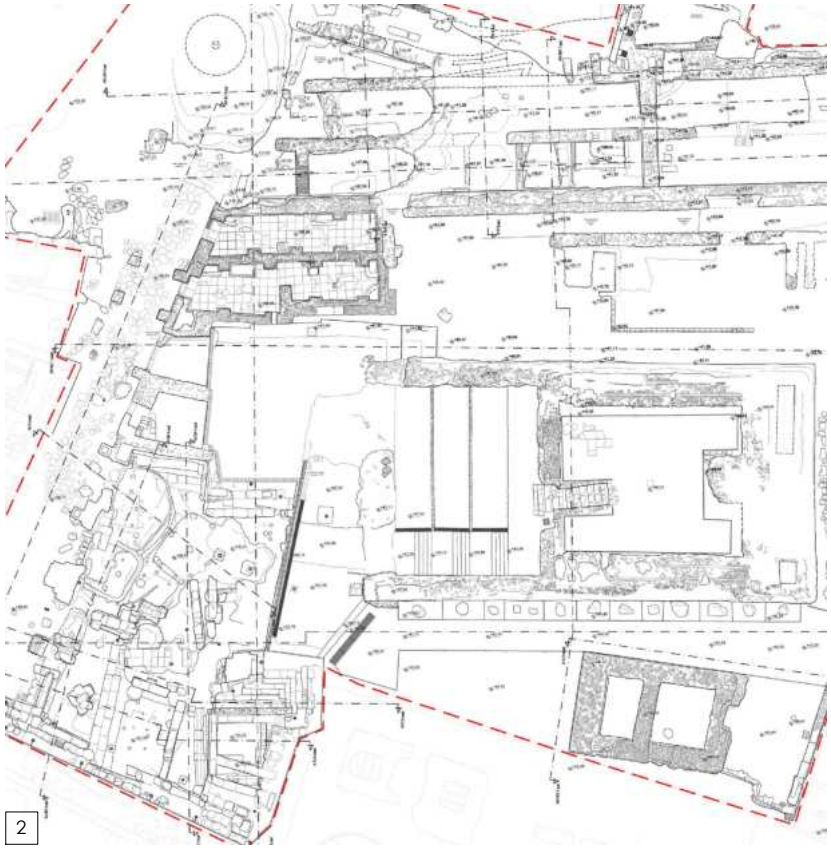

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GENERAL ORTHOPHOTOGRAPHIC PLAN - DETAIL OF THE AREA OF THE ARCHAIC HUTS 1

GENERAL PLAN OF THE AREA - EXCERPT 2

ORTHOPHOTOGRAPHIC SECTION 3

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INTEGRATED ARCHAEOLOGICAL SURVEY

Rome - Italy - Domus Tiberiana - Palatine Hill
Laser scanning and photogrammetric survey of the archeological site. 2014 - 2015

The work consists of the topographic and three-dimesional survey of the whole archaeological site and the detailed restitution of each elevation and plan. Sections and plans are drawn at 1:50 scale.
During the survey we produced about 150 general sections of the site and the plan of each level.

Notes:
- Objective of the assignment: 3d Laser scanning and photogrammetric survey of the whole Domus Tiberiana archaeological complex;
- Client: Soprintendenza Speciale per i Beni Archeologici di Roma

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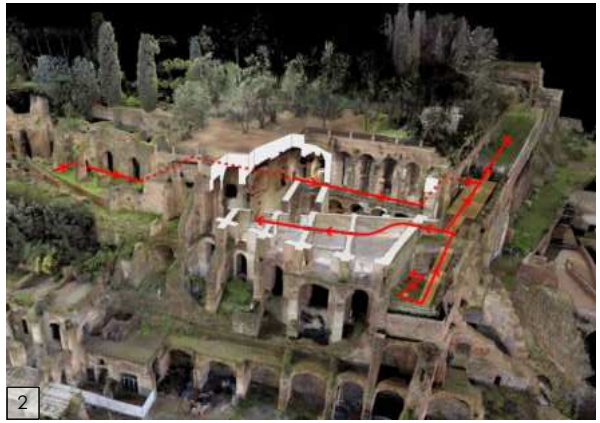

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INTEGRATED ARCHAEOLOGICAL SURVEY

Rome - Italy - Domus Tiberiana - Palatine Hill
Laser scanning and photogrammetric survey of the archeological site. 2014 - 2015

This table shows same examples of the general outputs delivered.
Image 1 is an orthographic general section extracted directly from the three-dimensional model. Image 3 is a 3D view of the color point clouds.

Notes:
- Objective of the assignment: 3D Laser scanning and photogrammetric survey of the the Domus Tiberiana Complex;
- Client: Soprintendenza Speciale per i Beni Archeologici di Roma

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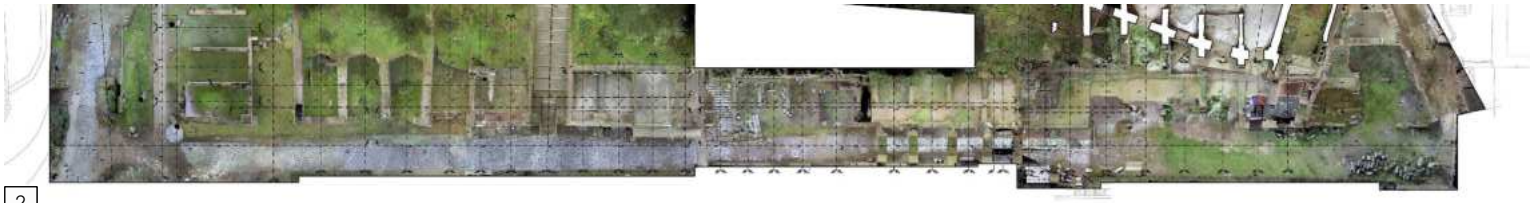

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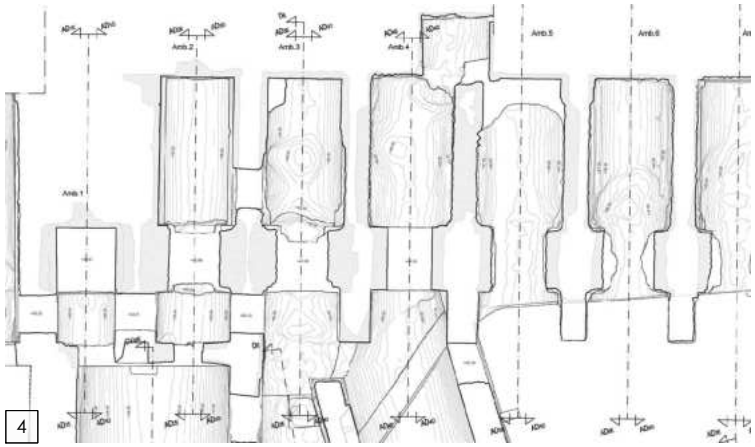

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INTEGRATED ARCHAEOLOGICAL SURVEY

Rome, Italy - Mausoleum of Emperor Gallienus, Appia Antica.
Laser scanning and photogrammetric survey. 2016

The survey included the acquisition and the graphic restitution of the Emperor Gallienus' Mausoleum, now in ruins.
The survey was carried out to produce orthophotos and cad drawings, useful for the knowledge of the monument and the conservation design.
An integrated system of technologies was used, based on the use of photogrammetry, laser scanning and topographic systems. The scaffolding around the circular structure of the Mausoleum made the survey and post-processing operations of the acquired data particularly complex. It was possible to obtain a single color and high resolution 3D model, from which the necessary two-dimensional and three-dimensional drawings were extracted.

Notes:
- Objective of the assignment: General measured survey, ortho-photographic survey and graphic reconstruction of the geometry of the structures preserved;
- Client: private for Soprintendenza Speciale per i Beni Archeologici di Roma.

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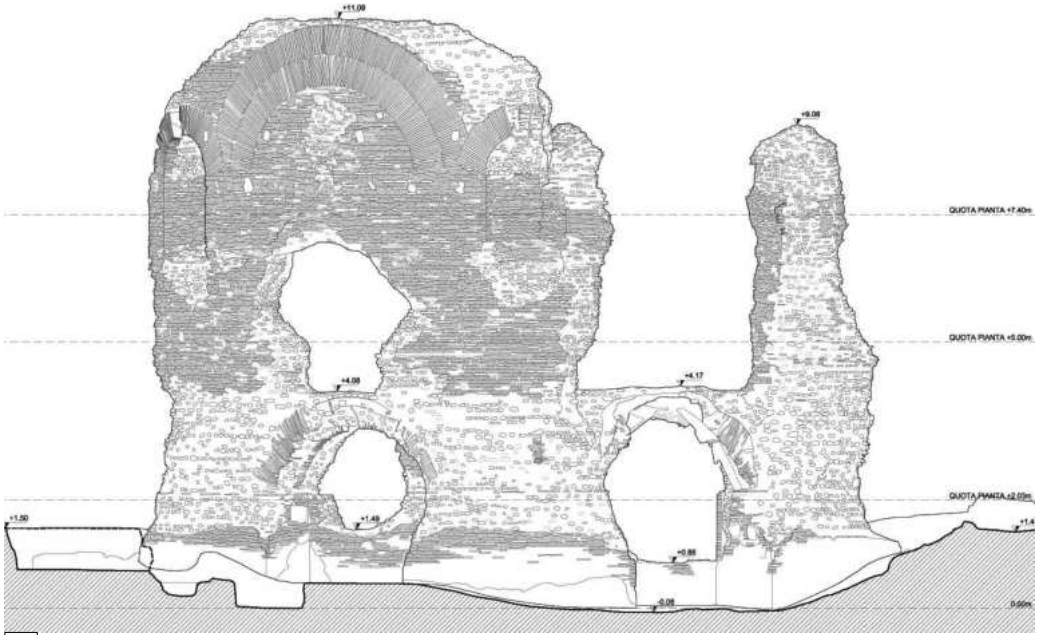

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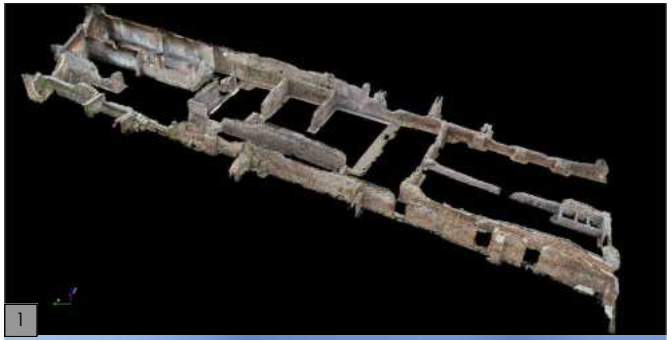
INTEGRATED ARCHAEOLOGICAL SURVEY

Ostia Antica - Roma - Italy - Survey of the Domus of the Mithraeum of painted walls. 2010

Field survey consisted in the use of topographic instruments - GPS and total station - and three-dimensional photogrammetric techniques. The output consisted in the survey of all the walls and the following informatization of masonry stratigraphic units of the Domus.

Notes:
- Objective of the assignment: Survey of the Domus of the Mithraeum of painted walls
- Client: ISCR - Istituto Superiore per la Conservazione ed Il Restauro.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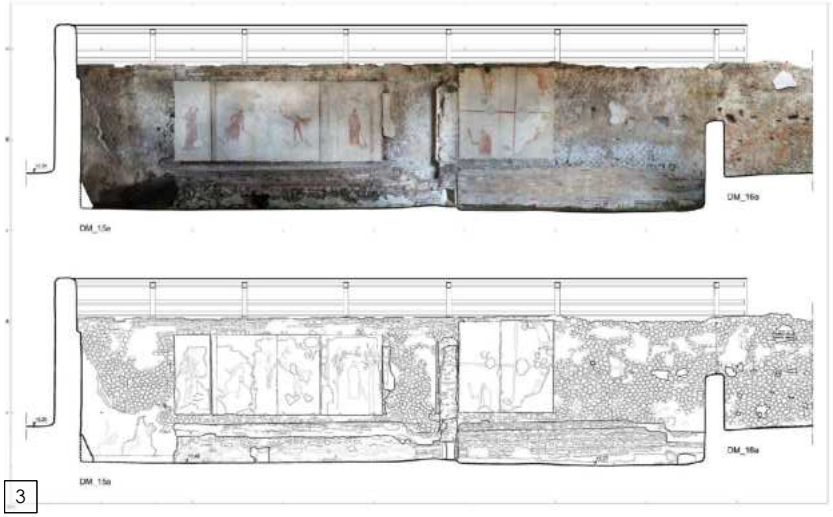
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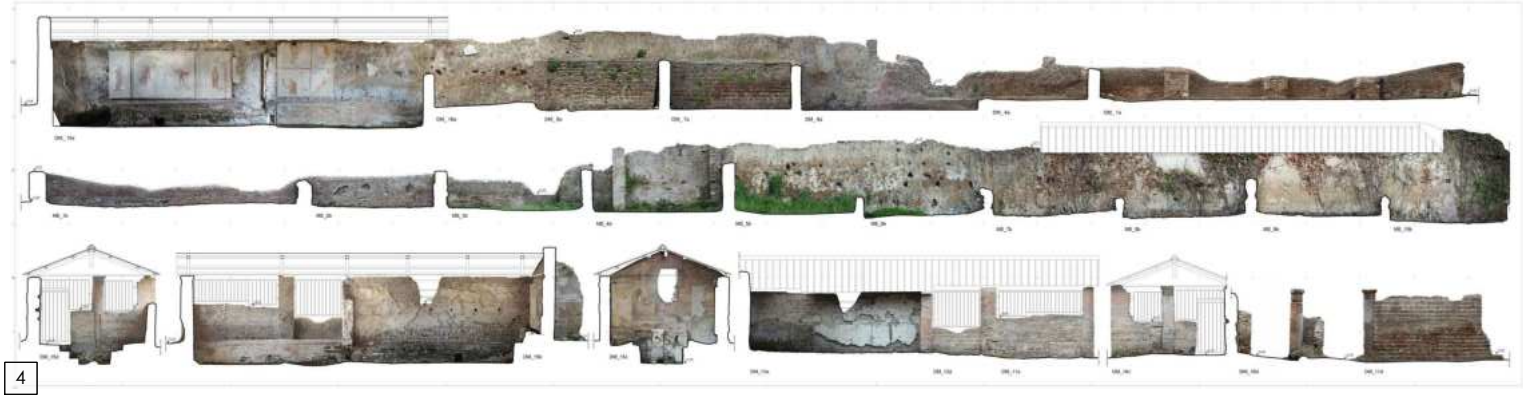
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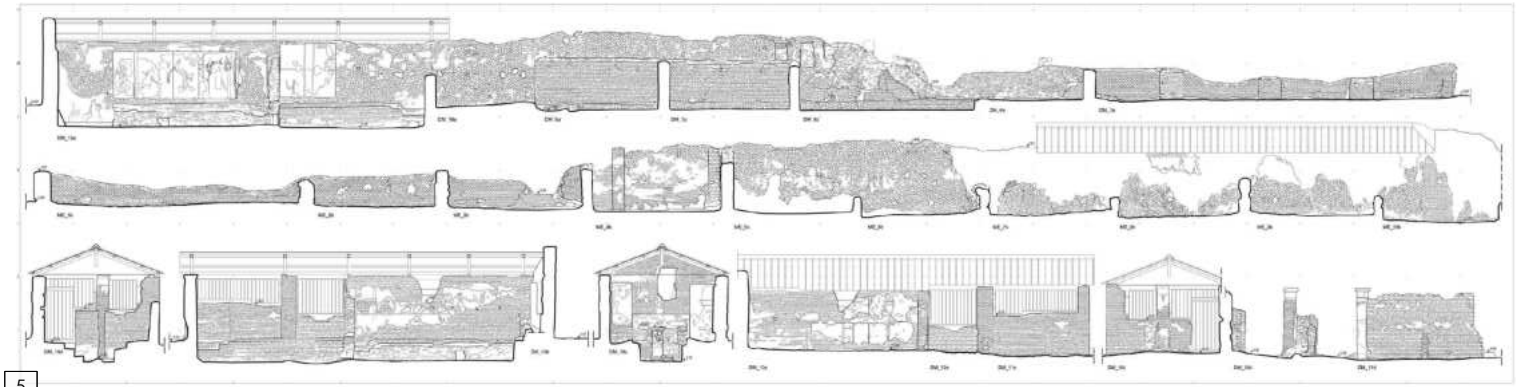
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3D PHOTOGRAMMETRIC MODEL OF THE WALLS 1

VIEW OF THE SITE 2

ORTHOPHOTOGRAPHIC SECTION AND CAD DRAWING 3

ORTHOPHOTOGRAPHIC CROSS SECTION 4

CROSS SECTION CAD DRAWINGS 5

Ostia Antica - Italy - Schola of Trajan: Laser scanning and photogrammetric survey of the mosaics. 2015

This is an example of orthophotographic restitution of a mosaic floor in scale 1:5-1:1, here shown out of scale. The resolution of the raster image of 0.5mm/pixel allows to view in high definition each mosaic tile.
The work also included the deformation analysis of surfaces, a non-invasive technique to assess the deterioration of the structures under the floor.

Notes:
- Objective of the assignment: 3d Laser scanning and photogrammetric survey of the mosaics of the Schola of Trajan
- Client: Archires Architettura e Restauro srl


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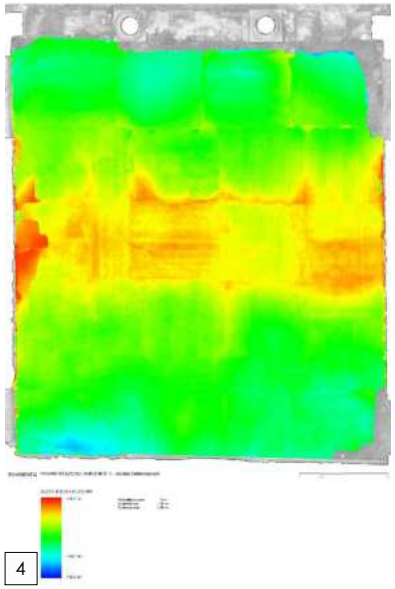
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ORTHOPHOTO OF THE MAIN ROOM'S MOSAIC 1

ORTHOPHOTO'S DETAILS 2

3D MODEL 3

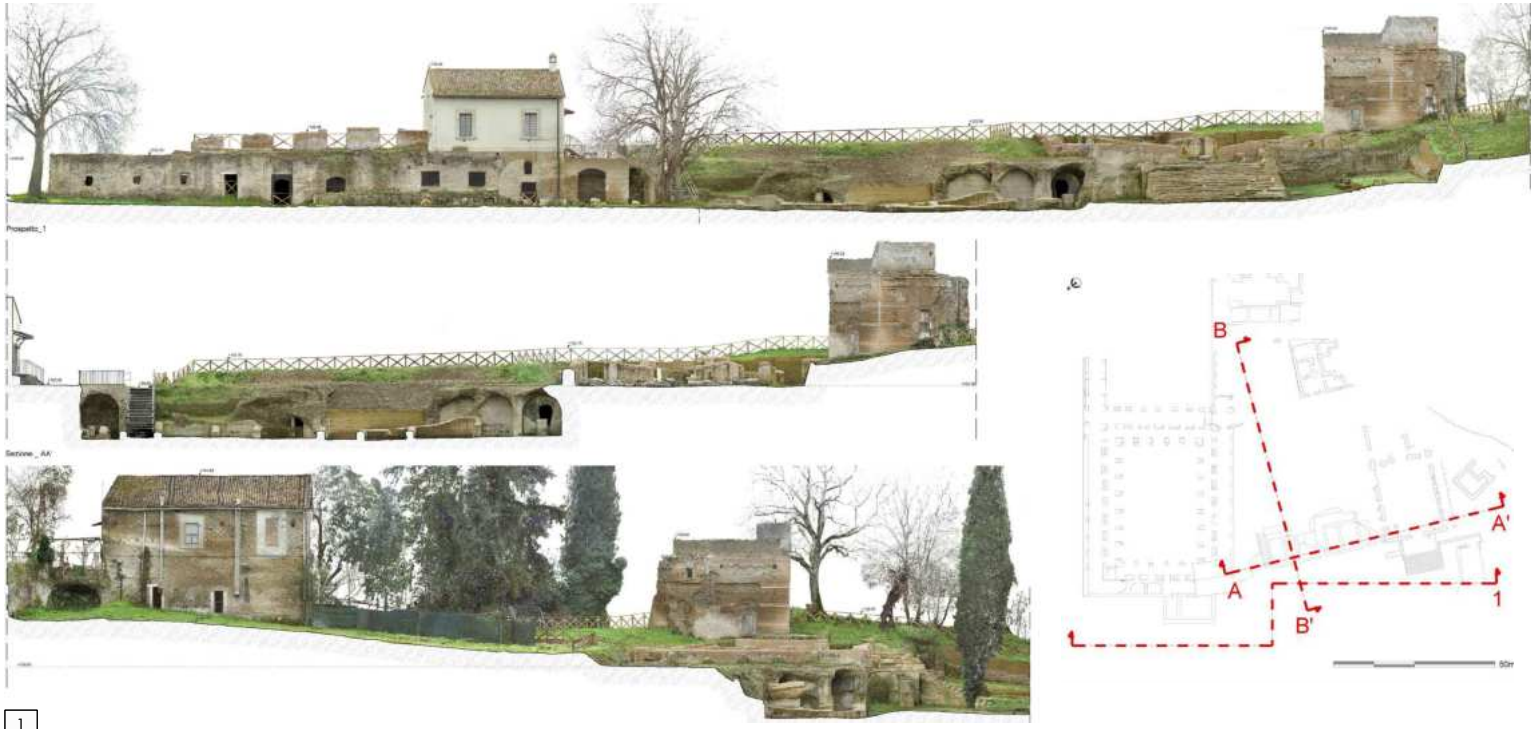
DEFORMATION ANALYSIS OF THE FLOOR 4

INTEGRATED ARCHAEOLOGICAL SURVEY

Villa Adriana, Tivoli (RM) - Italia - Excavation area in North corner of the complex. Topographic survey and laser scanning to produce orthophographic elevation and sections of the site. 2016

The work includes the general survey of the Villa and the graphic restitution of sections and elevations.
Image 1 shows orthophotographic sections extracted from the three-dimensional model.
Image 3 offers a view of the 3D model.

Notes:
- Objective of the assignment: Topographic survey and laser scanning to produce orthophotographic elevation and sections of the site;
- Client: Private



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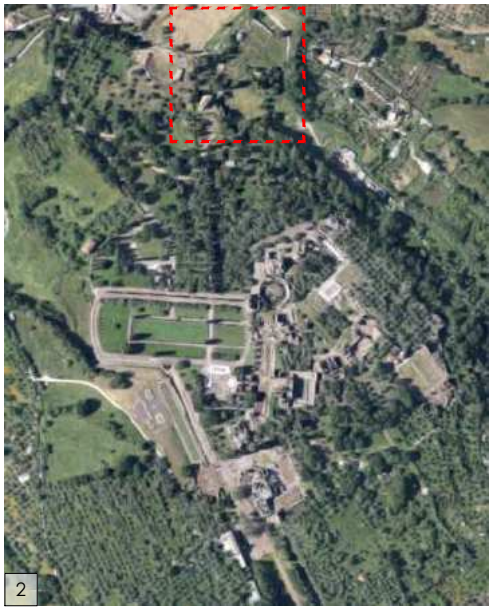

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ORTHOPHOTOGRAPHIC ELEVATION AND SECTION 1

GENERAL SITE PLAN OF VILLA ADRIANA ARCHEOLOGICAL AREA 2

3D MODEL VIEW 3

INTEGRATED ARCHAEOLOGICAL SURVEY

Leptis Magna - Libya - Villa Silin
Laser scanning and photogrammetric survey of the painted surfaces and mosaics. 2013

The work includes the general survey of the Villa and the graphic restitution of mosaic pavements and painted walls. Sections and plans are drawn at 1:10/1:5 scale.
Image 1 shows orthophotographic sections extracted from the three-dimensional model, partially integrated with high resolution pictures.
Image 2 is the general site plan, extracted from the three-dimensional model too.

Notes:
- Objective of the assignment: 3d Laser scanning and photogrammetric survey of the whole complex of the Villa Silin, Leptis Magna;
- Client: ISCR - Istituto Superiore per la Conservazione ed il Restauro


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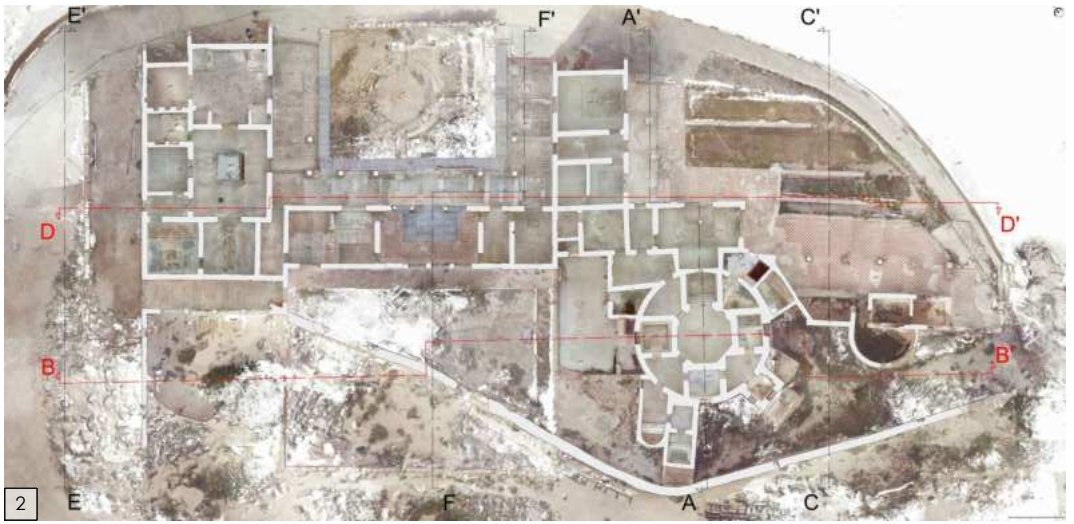

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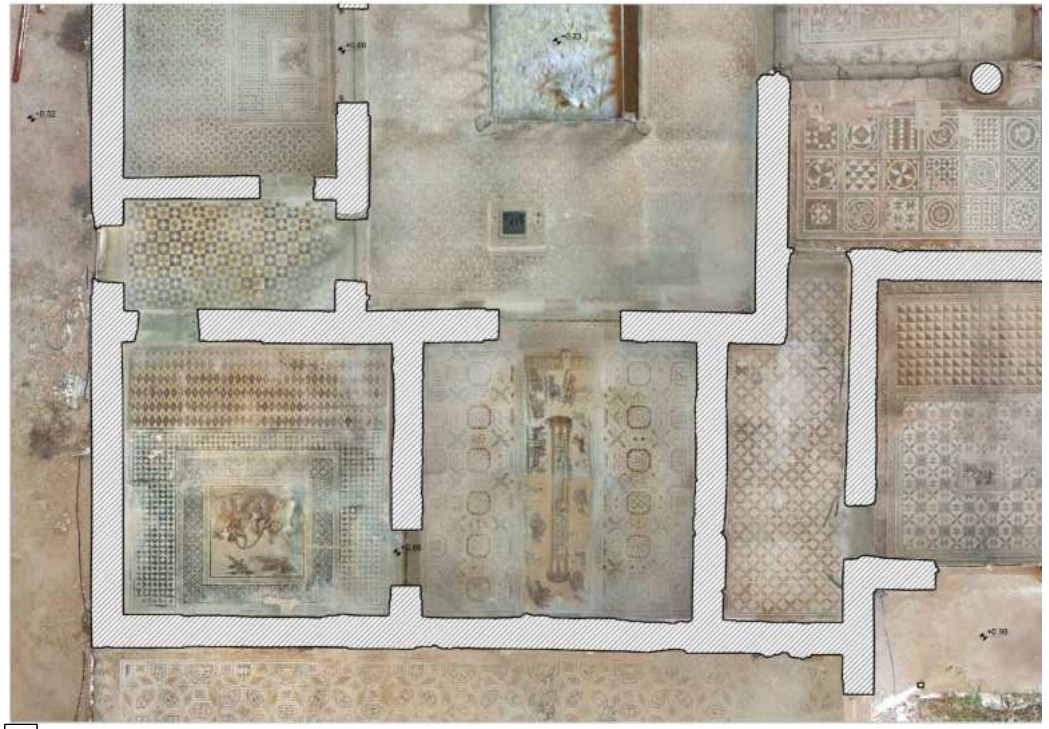
INTEGRATED ARCHAEOLOGICAL SURVEY

Leptis Magna - Libya - Villa of Silin
Laser scanning and photogrammetric survey of the painted surfaces and mosaics. 2013

This is an example of orthophotographic restitution of a mosaic floor in scale 1:5, here shown out of scale. The resolution of the raster image of 1mm/pixel allows to view in high resolution each mosaic tile, also in the central carpet, where the tile dimension is approx. 3mm.

Note:
- Objective of the assignment: 3d Laser scanning and photogrammetric survey of the whole complex of the Villa of Silin;
- Client: ISCR - Istituto Superiore per la Conservazione ed il Restauro



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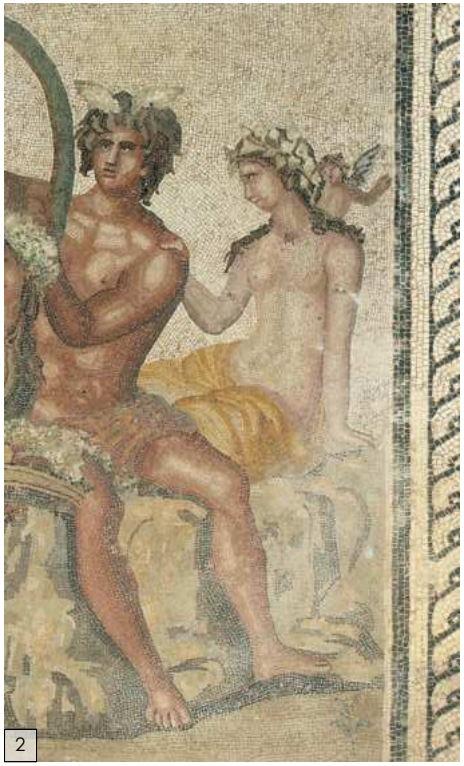

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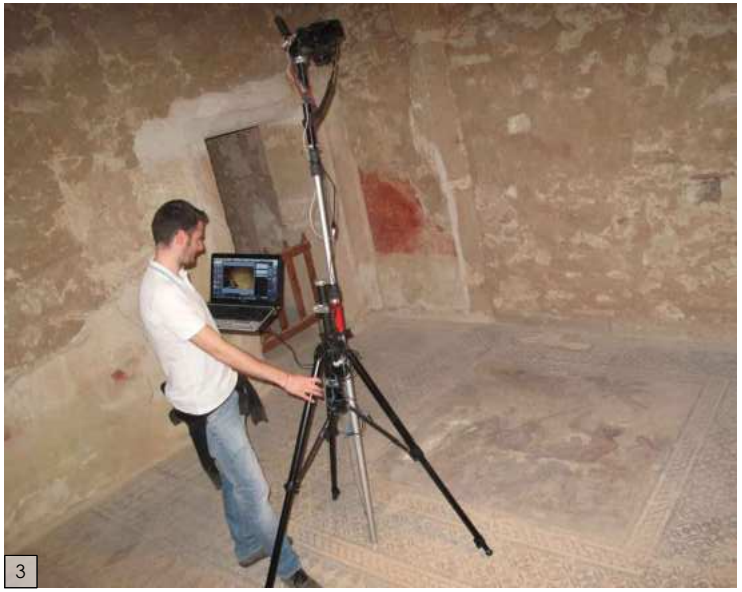

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DETAIL FROM THE ORTHOPHOTOGRAPHIC GENERAL PLAN 1

ORTHOPHOTOGRAPHIC GENERAL PLAN, DETAIL OF THE MOSAIC FLOOR 2

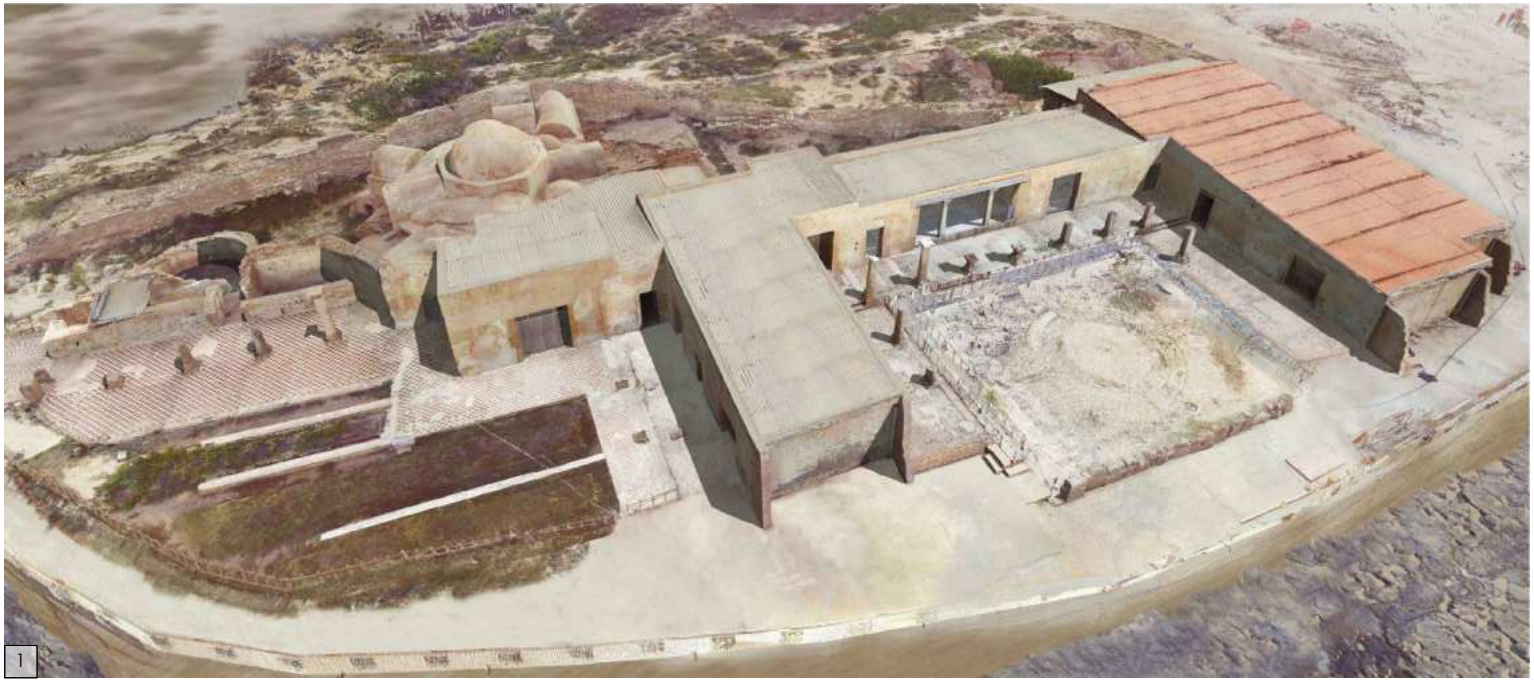
FIELD SURVEY 3

ORTHOPHOTOGRAPHIC GENERAL PLAN, DETAIL OF THE MOSAIC FLOOR 4

Leptis Magna - Libya - Villa of Silin
Studies on the phases of the walls and the reconstruction of the roofs. 2015

This table shows two images of the Villa focusing on the modern integration phases of roofing and walls. The first image refers to the three-dimensional model of the villa at the present; the second one is the site reconstruction in the 70s.

Note:
- Objective of the assignment: Studies on the phases of the walls and the reconstruction of the roofs of the whole complex of the Villa of Silin;
- Client: ISCR - Istituto Superiore per la Conservazione ed il Restauro



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3D MODEL VIEW OF THE VILLA 1

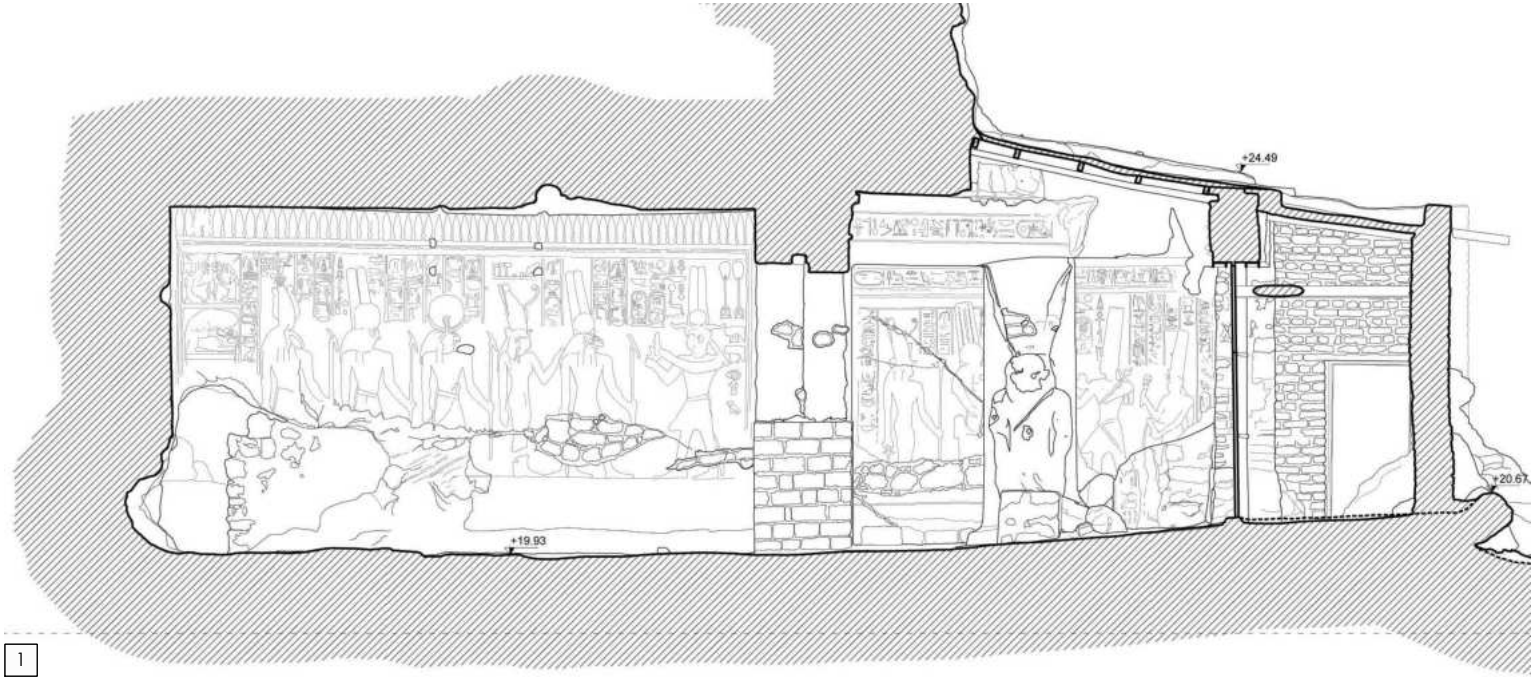
THE VILLA AT THE END OF THE 70S 2

INTEGRATED ARCHAEOLOGICAL SURVEY

Karima - Sudan - Temple of Mut - Gebel Barkal
Laser scanning and photogrammetric survey. 2015

The Gebel Barkal is an Unesco World Heritage site since 2003. It has been a sacred mountain from 1500 BC. The Mut Temple is located on the south side of the mountain and It has been built around 690 BC, during the XXV Taharka dynasty. Images to the side show a detail of a section and a detail of the general plan with contour lines each 20 centimeters.

Notes:
- Objective of the assignment : "Three dimensional survey of Temple of Mut";
- Client: ISCR - Istituto Superiore per la Conservazione ed il Restauro
- UNESCO World Heritage Site.



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CROSS SECTION 1

DETAIL OF THE SITE PLAN 2

ORTHOPHOTOGRAPHIC DETAIL OF THE HIEROGLYPH DECORATION 3

FIELD SURVEY 4

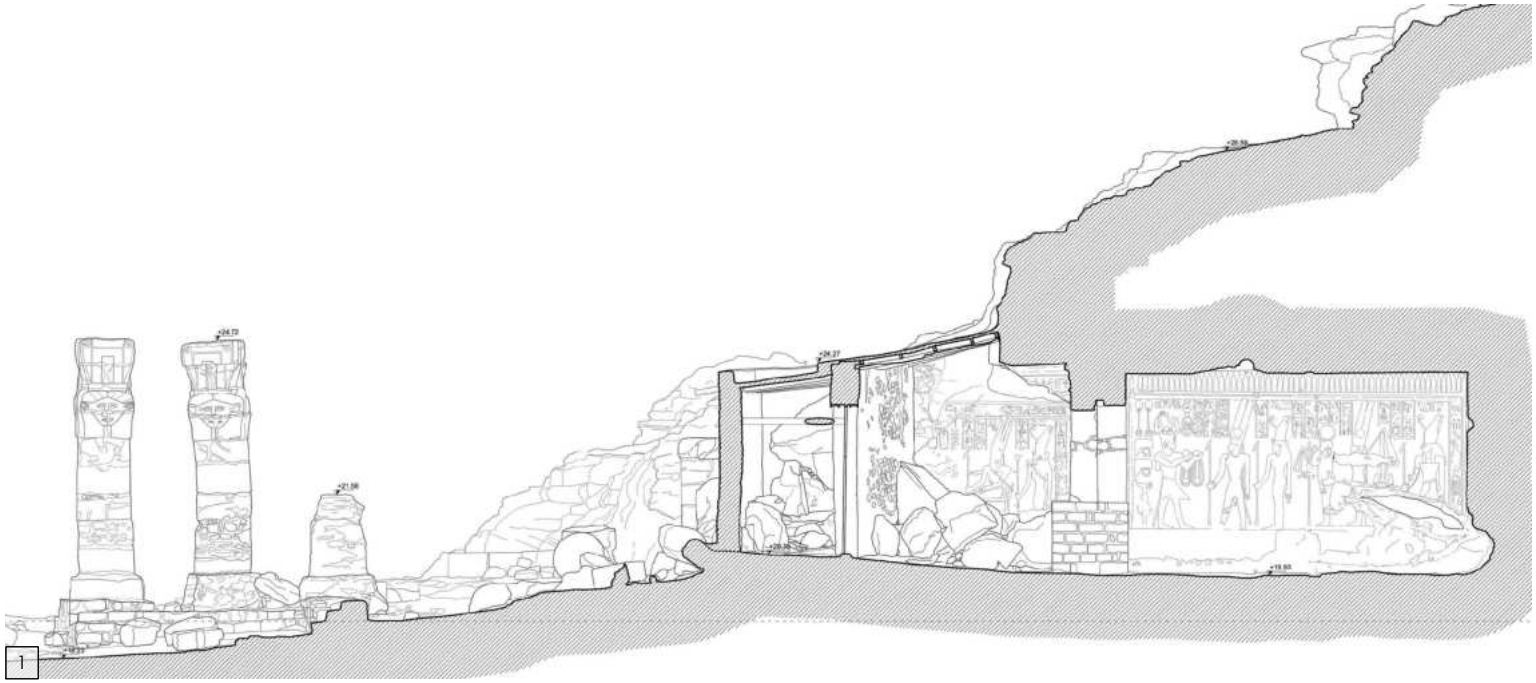
INTEGRATED ARCHAEOLOGICAL SURVEY

Karima - Sudan - Temple of Mut - Laser scanning and photogrammetric survey. 2013-2015

The three-dimensional model was obtained combining the point cloud with the color information acquired apart. The use of these two technologies guarantees a high image definition and precision.

Images to the side show the result of the whole process. The image 1 is the section where we can see the high definition of drawing result at the end of the work. The image 2 is the orthophotografic section extracted from the point cloud. In this kind of orthographic image we can appreciate the texture of materials.

Notes:
- Objective of the assignment : "Three dimensional survey of Temple of Mut";
- Client: ISCR - Istituto Superiore per la Conservazione ed il Restauro
- UNESCO World Heritage Site.



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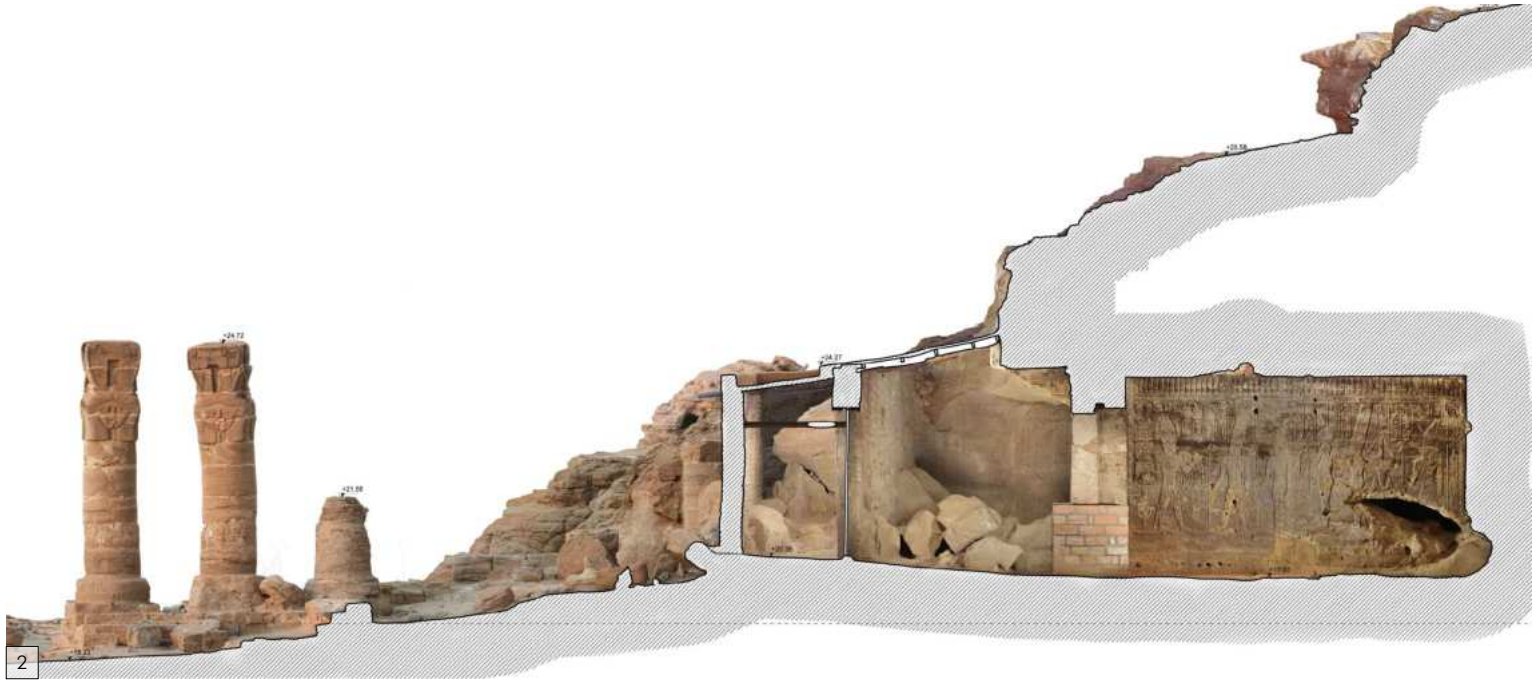

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CAD DRAWING SECTION 1

ORTHOPHOTOGRAPHIC SECTION 2

INTEGRATED ARCHAEOLOGICAL SURVEY

Pasargadae - Iran - Tomb of Cyrus the Great and Palace "P": Laser scanning and photogrammetric survey of the Archaeological site. 2015

The archaeological site of Pasargadae includes ancient structures of the capital of the Achaemenid Empire, founded by Cyrus II the Great. It is inscribed in UNESCO World Heritage List since 2004.

The survey allowed to document the conservation works on the Tomb and to design the new presentation of the Palace "P" area.

The assignment included the graphic restitution of plans, sections and elevations and the deformation analysis of the structures.

Notes:
- Objective of the assignment: 3D Laser scanning and orthophoto of the Tomb of Cyrus the Great and Palace "P";
- Client: ISCR - Istituto Superiore per la Conservazione ed il Restauro
- UNESCO World Heritage Site.


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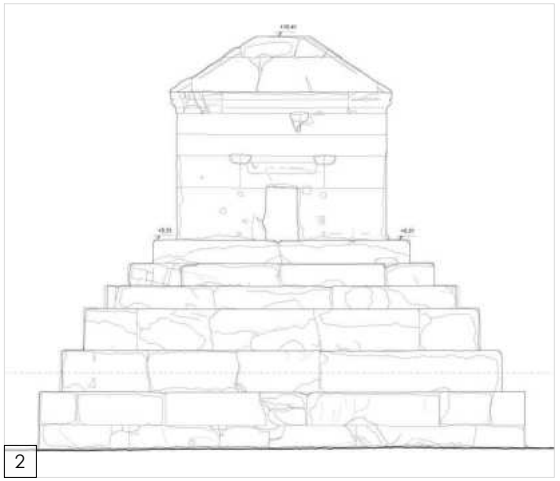
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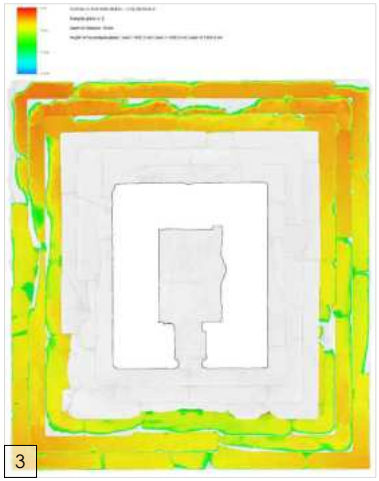
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3D MODEL OF THE TOMB OF CYRUS THE GREAT 1

TOMB'S MAIN ELEVATION 2

DEFORMATION ANALYSIS OF THE STEPS OF THE TOMB 3

"P" PALACE - DETAIL OF THE PLAN EXTRACTED FROM THE POINT CLOUD 4

"P" PALACE - VIEWS OF THE POINT CLOUD 5

EARTHQUAKE AND WAR DAMAGES

Mosul, Iraq - Al Tahera Church and Al Aghawat Mosque - Architectural and topographic survey for the restoration of the buildings. 2021

The survey of these monuments is part of UNESCO's project called "Reviving the Spirit of Mosul". The project aims to reconstruct the historic landmarks of the old city destroyed during the IS occupation.
We produced scale 1:50 plans, orthophotographic sections and elevations and CAD drawings.
The survey was particularly accurate in order to describe and measure the remains of the destroyed parts of the structures.

Notes:
- Objective of the assignment: Three-dimensional laser scanning, topographic and photogrammetric survey and restitution of orthophotographic and cad elevations, sections and plans;
- Client: A.R.S. Progetti s.p.a. for UNESCO.


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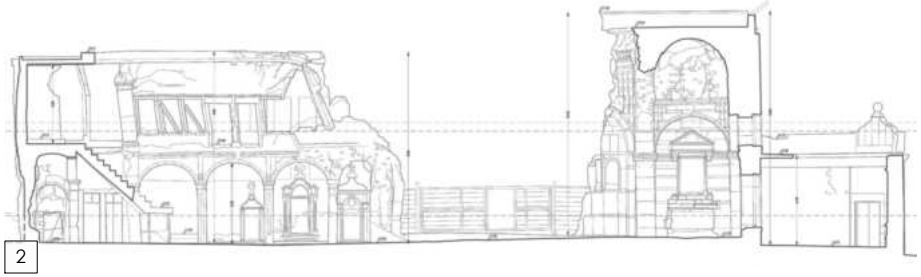
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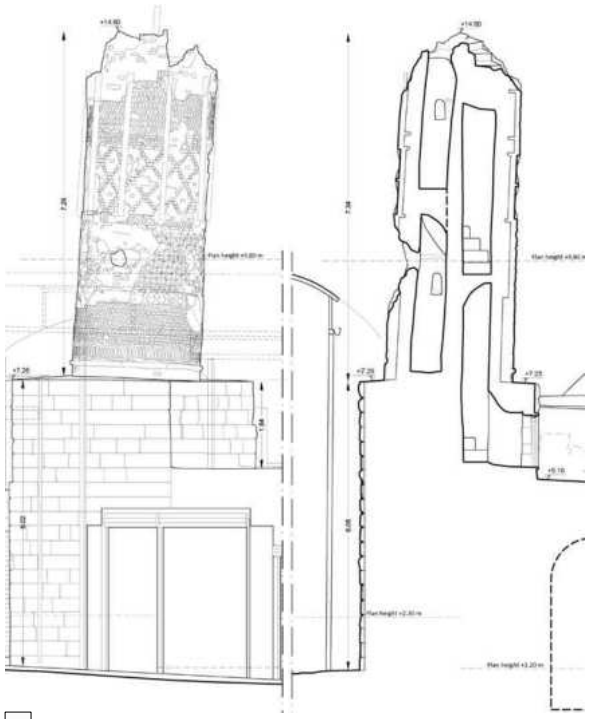
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AL TAHERA CHURCH AFTER THE DESTRUCTION 1

CROSS SECTION OF THE CLOISTER, NAVE AND NARTEX 2

AL AGHAWAT MINARET'S ELEVATION AND CROSS SECTION 3

ORTHOPHOTOGRAPHIC SECTION 4

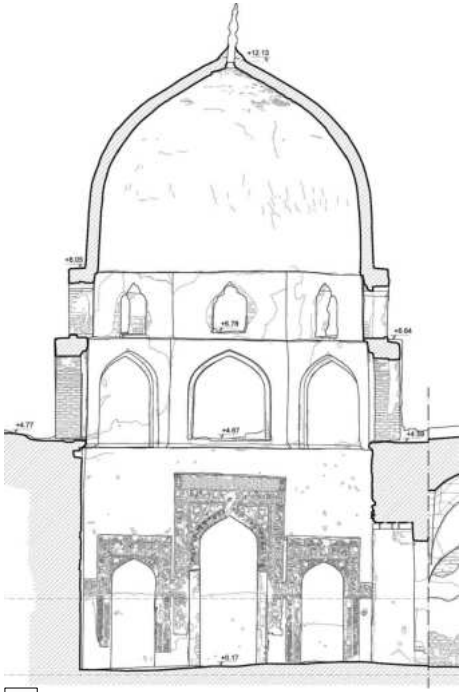
ARCHITECTURAL 3D SURVEY

Cairo, Egypt - Ikhwat Yusuf Mausoleum - Three-dimensional laser Scanning and photogrammetric survey. 2022.

The Mausoleum of Ikhwat Yusuf is a Fatimid monument with later Ottoman additions located in Cairo's Southern Cemetery at the foot of the Mokattam outcrop. The mausoleum is one of very few surviving Fatimid period (AD 969-1171) monuments in Egypt and contains an carved stucco triple mihrab, a brick dome, stone arches, vaults, and secondary domes.

The survey was focused on the documentation of the surfaces and on the architectural survey of the structures, base for the conservation works. An integrated system of technologies was used for the generation of a high-resolution three-dimensional model, from which all the graphic and orthophotographic drawings were extracted. One laser scanner and a three-dimensional photogrammetric survey system were used in the field survey.

Notes:
- Objective of the assignment: Three-dimensional survey of the Mausoleum of the Ikhwat Yusuf;
- Client: ARCE - American Research Center in Egypt.



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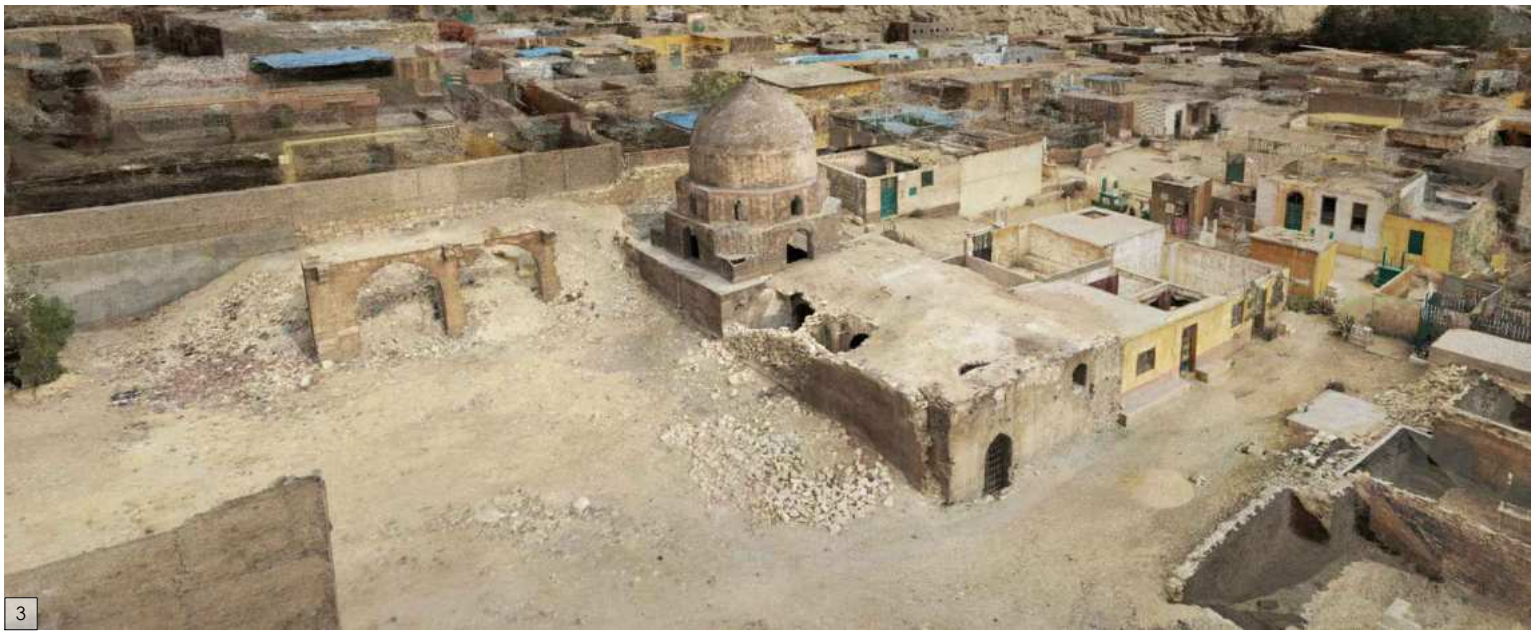

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MAUSOLEUM'S CAD SECTION 1

MAUSOLEUM'S PERSPECTIVE CROSS SECTION 2

3D MODEL OF THE SITE 3

ARCHITECTURAL 3D SURVEY

Rome, Italy - Chiesa di Sant'Eusebio - Architectural survey and detailed drawings. 2021

The complex of Chiesa di Sant'Eusebio is one of the oldest churchs in Rome and it is located next to Piazza Vittorio Emanuele II, along via Napoleone III. According to tradition, the buildings stand on the domus of roman priest Eusebio (319-357?), opponent of Arianism and for this reason sentenced to death by the Imperator Costanzo II.
In order to describe all the complex, we produced 25 cad sections, plans of all levels (including the plan of the hypogeum) and drawings of the decorative elements.
The survey started with a topographical net; an integrated system of technologies was used for the generation of a high-resolution three-dimensional model, from which all the graphic drawings were extracted.

Notes:
- Objective of the assignment: Architectural survey;
- Client: Soprintendenza speciale archeologia belle arti e paesaggio di Roma

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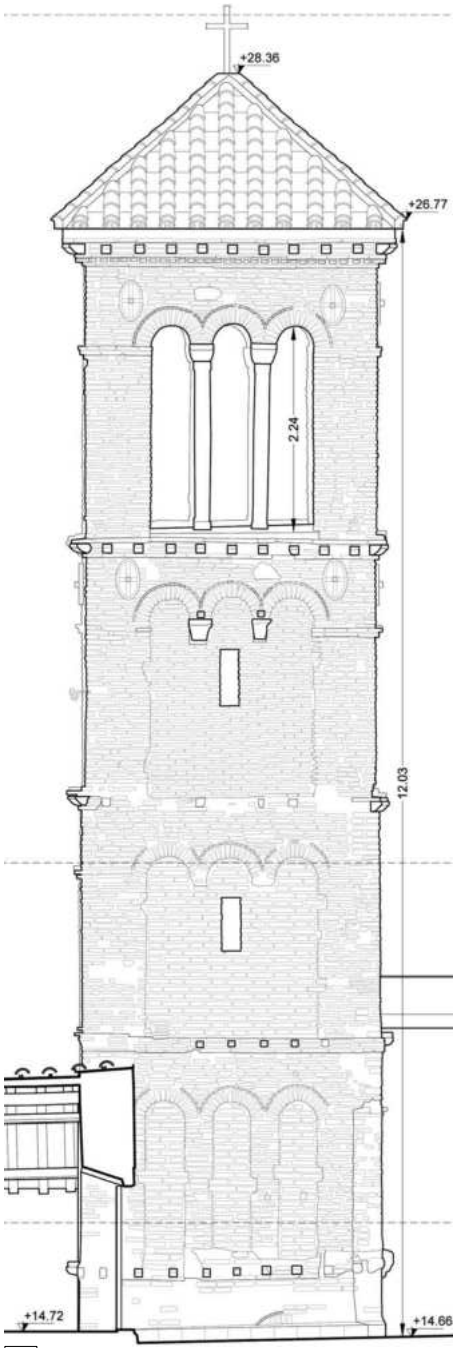

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ARCHITECTURAL 3D SURVEY

Roma, Italy - Church of Santa Maria della Pace - Three-dimensional and orthophotographic survey of the external elevations of the church. 2024

The external facade of Santa Maria della Pace and the square in front of the church, designed by Pietro da Cortona, are one of the most important works of the Roman Baroque. Its dynamic interplay of curves and straight lines and integration with the surrounding environment represent a crucial evolution in urban Baroque architecture.
Our assignment focused on the survey of the square and of all the external elevations of the church.
A multi-sensor 3D survey was carried out. A phase shift laser scanner, two high resolution cameras, a total station and one drone allowed us to acquire all the surfaces in high definition.
Staring from the 3D model, a complete set of orthophotos and drawings were extracted to describe the facades and the square in front of the church.
Drawings and orthophotos are the main outputs available for the design of the conservation works.

Notes:
- Objective of the assignment: Architectural survey of the external facades of the church;
- Client: Soprintendenza Speciale Archeologia Belle Arti e Paesaggio di Roma.

MAIN FACADE, EXCERPT OF THE ORTHOPHOTO 1

EAST ELEVATION, CAD DRAWING 2

PERSPECTIVE VIEW OF THE MODEL OF THE SQUARE 3

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ARCHITECTURAL 3D SURVEY

San Vittore del Lazio (FR), Italia - Chiesa di San Nicola - 3D and orthophotographic survey of the church and of the wall paintings inside it. 2024

The church was probably built in X century. It originally consisted of a single nave and an aisle was added during the XIV century. Both of them are decorated with frescoes realized between XII and XIV century and dredge up in 1875.
The survey was carried out using photogrammetric systems, laser scans and a drone. Starting from the data, a 3D integrated model has been realized, and the interior of the church has been described by two orthophotographic sections. At the end of the conservation work, all the documentation produced for the survey will be organized in a GIS project.

Notes:
- Objective of the assignment: Survey, graphic and photographic documentation for the "Completamento del restauro delle pitture murali e adeguamento funzionale degli impianti elettrici e di illuminazione" della chiesa di San Nicola, San Vittore del Lazio;
- Client: Ministero della Cultura - Soprintendenza Archeologia, Belle Arti e Paesaggio per le Province di Frosinone e Latina

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ORTHOPHOTOGRAPHIC SECTION OF THE NAVE 1

3D MODEL'S PERSPECTIVE CROSS-SECTION 2

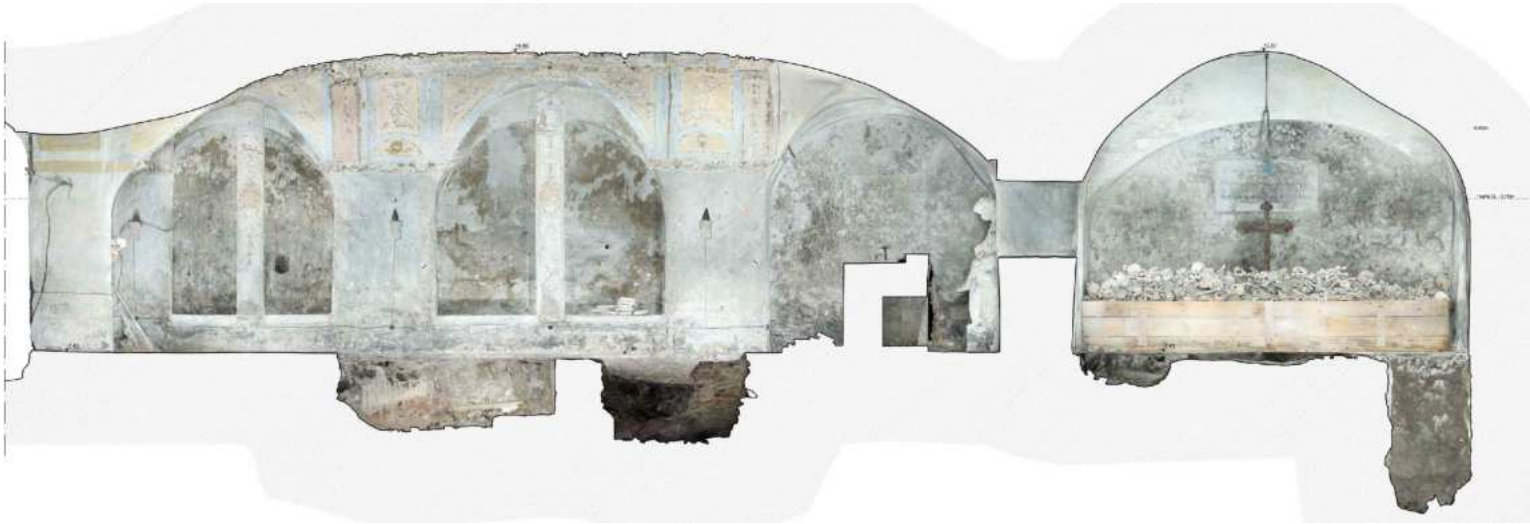
ORTHOPHOTOGRAPHIC DETAIL OF THE AISLE'S WALL PAINTING 3

ARCHITECTURAL 3D SURVEY

Roma, Italy - Crypt of the Church of the SS Stimmate di San Francesco . 2024

The crypt was built in the 16th century inside rooms that rest on structures from the Roman era.
The walls and vaults are decorated with compositions created with bones. Piles of skulls, various bones and teethes compose strange and macabre designs. In the innermost room, hundreds of bones are piled up, mainly femurs and skulls.
The 3D survey allow us to describe all the surfaces in funtion of the oncoming conservation works. The scope of the project is to make all the spaces of the crypt visitable and accessible.
A phase shift laser scanner and two high resolution cameras are the main devices used for the field survey. Staring from the 3D model, a complete set of orthophotos and drawings were extracted to describe the crypt.

Notes:
- Objective of the assignment: Architectural and orthophotographic survey of the crypt;
- Client: Private.



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ORTHOPHOTOGRAPHIC SECTION 1

COMPOSITION OF SKULLS AND STUCCO - POINT CLOUD 2

SKULLS AND BONES - VIEW OF THE 3D MODEL 3

ARCHITECTURAL 3D SURVEY

Barbarano Romano (VT), Italy - Church of Santa Maria del Piano - Three-dimensional integrated survey of the church. 2023

Santa Maria del Piano is a church dating back to the 16th century and is located 300 meters outside the town. It was part of a convent that was demolished during the 20th century.
A three-dimensional integrated survey was carried out for both the exterior and interior of the church, using two laser scanners, some high-resolution cameras, a total station and a drone. A complete set of drawings was extracted starting from the integrated 3D model.

Notes:
- Object of the assignment: Three-dimensional integrated survey of the church of Santa Maria del Piano, Barbarano Romano;
- Client: Soprintendenza archeologica, belle arti e paesaggio per la provincia di Viterbo e per l'Etruria meridionale

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ORTHOPHOTOGRAPHIC SECTION 1

ORTHOPHOTOGRAPHIC ELEVATION EXCERPT OF THE MAIN FACADE 2

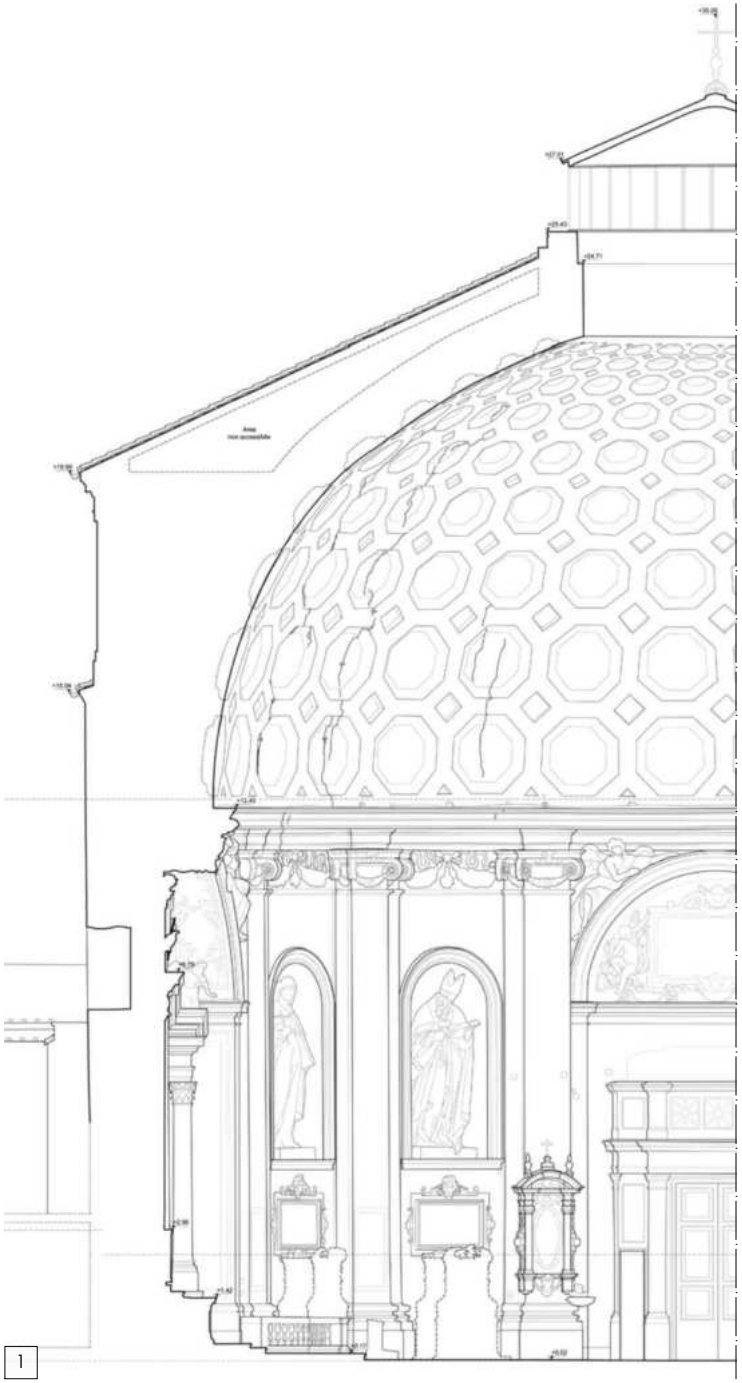
PERSPECTIVE VIEW OF THE INTEGRATED 3D MODEL 3

ARCHITECTURAL 3D SURVEY

Rome, Italy - Church of San Bernardo alle Terme - 3D graphic and orthophotographic survey of the church of San Bernardo alle Terme. 2023

San Bernardo was built in 1598 within the structure of the Baths of Diocletian. The diameter of the cylindrical-shaped of the roman structure is 22 meters, and the dome features an oculus at the top, similar to that of the Pantheon.
For data acquisition inside and outside San Bernardo, we used four laser scanners, one drone and some high-definition cameras.

Notes:
- Objective of the assignment: Laser scanner survey and graphic restitution of the church of San Bernardo alle Terme;
- Client: Soprintendenza speciale archeologia belle arti e paesaggio di Roma



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EARTHQUAKE AND WAR DAMAGES

Amatrice, Rieti - Civic Museum "Cola Filotesio" - Earthquake of August 2016 - Three-dimensional laser scanning, terrestrial and aerial imaging and 3D mapping, topographic survey of the ruins of the tower and Museum 2017.

Further to the earthquakes that struck central Italy between 2016 and 2017, we undertook the survey of some deeply damaged historical buildings. The Civic Museum of Amatrice is one of the most significant buildings among those devastated by the earthquake.

The survey carried out in 2017 had the main purpose of providing a precise and complete basis for safety interventions on the tower and on the building. The greatest difficulty in carrying out the work was linked to the inaccessibility of the area, due to safety reasons. Thus, the most advanced technologies have been used, to remotely survey the site with absolute precision. In addition to two phase-difference laser scanners, 3D and topographic photogrammetric systems, we used two photogrammetric drones, one of which has been programmed and driven to penetrate unsafe buildings without any danger for the operators.

Notes:
- Client: MIBACT - Soprintendenza Archeologica Belle Arti e Paesaggio per le Provincie di Frosinone, Latina e Rieti.

ORTHOPHOTOGRAPHIC ELEVATION OF THE SOUTH SIDE 1

ORTHOPHOTOGRAPHIC CROSS SECTION 2

PHOTOGRAPHIC VIEW OF THE TOWER'S UPPER PART 3

PHOTOGRAPHIC VIEW OF THE MUSEUM IN STATE OF COLLAPSE 4

CAD CROSS SECTION 5

DRONE SURVEY 6


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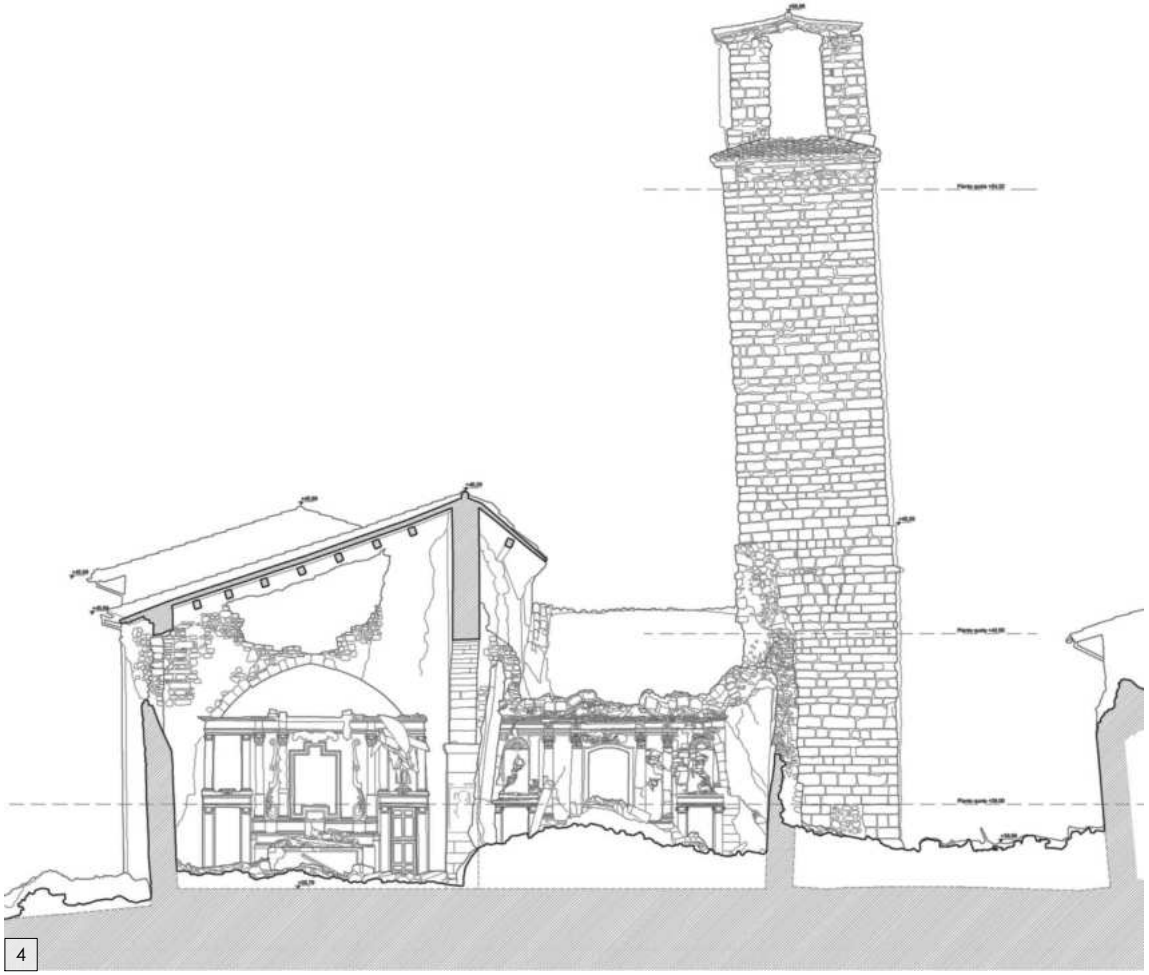
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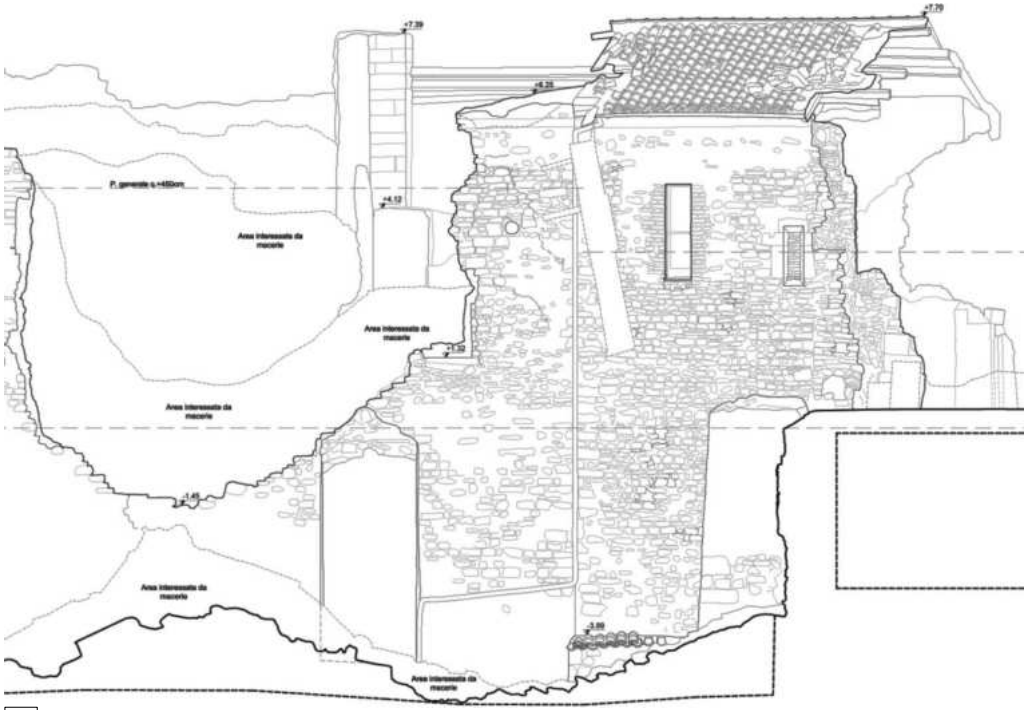
EARTHQUAKE AND WAR DAMAGES

Accumuli (RI), Italy - Church of S. Maria della Misericordia. Three-dimensional and orthophotographic survey of the painting in the church and of the collapsed structures. 2018

In 2018 we carried out the survey of the Church of S. Maria della Misericordia, damaged by the 2017 earthquake. Particular attention was paid to the early 16th century fresco, placed inside a niche in the sacristy of the church, for which the experts from Ministry of Cultural Heritage foresaw studies aimed at conservation.

Also in this case, as in other earthquake interventions, we applied a highly advanced working methodology that allowed us to acquire the interior and external spaces of the church in 3D by means of integrated remote survey systems. The aim was that of exporting plants, elevations and sections, as orthophotographic images and drawings, useful for the consolidation and restoration programme.

Notes:
- Objective of the assignment: Three-dimensional and topographic survey of the painting in the church;
- Client: Ministero per i Beni e le Attività Culturali - Segretariato Regionale del MIBAC del Lazio



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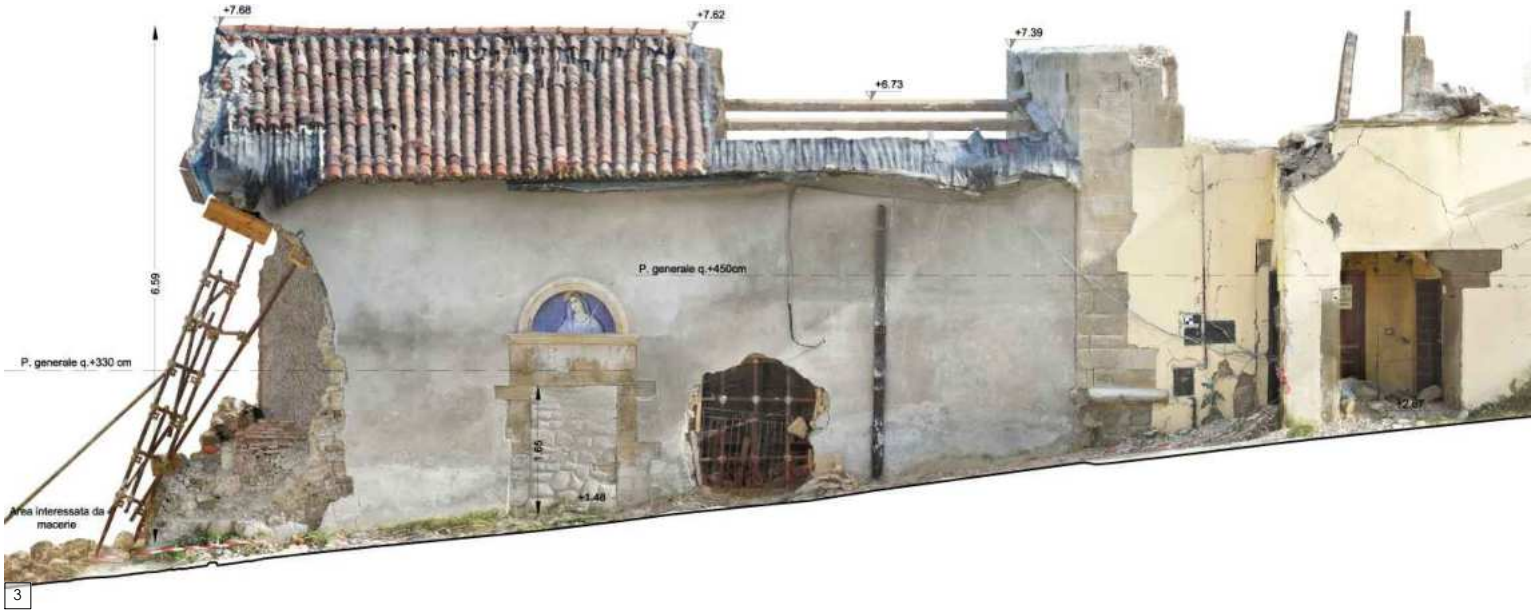

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CAD CROSS SECTION 1

NICHE'S ORTHOPHOTOGRAPHIC DETAIL 2

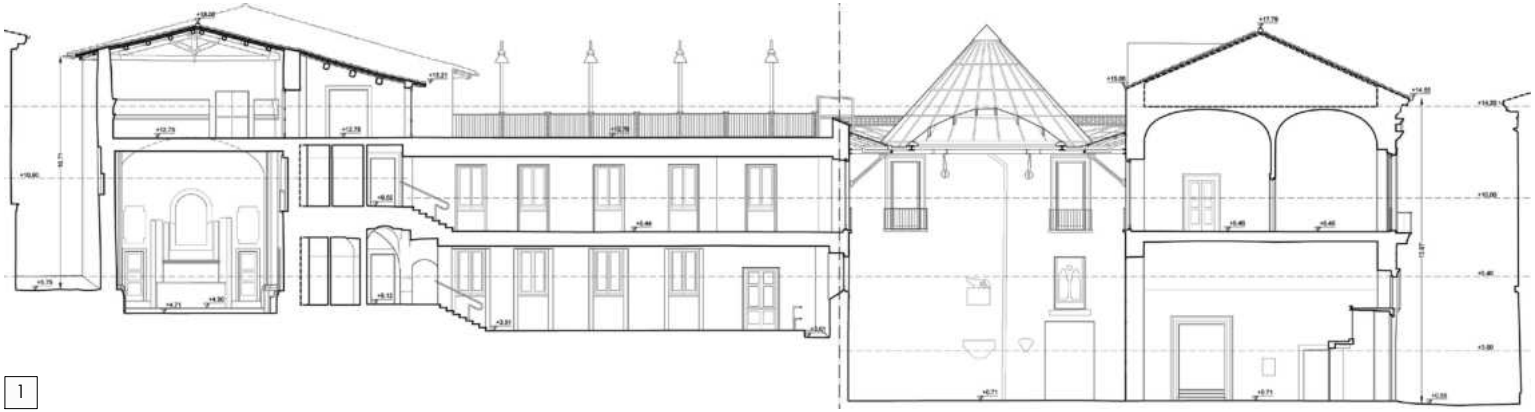
ORTHOPHOTOGRAPHIC SECTION 3

EARTHQUAKE AND WAR DAMAGES

L'Aquila, Italy - Architectural Complex of the Archaeological Museum.
3D laser scanning, architectural measured survey and orthophotos of the Palace. 2017

In 2017 we carried out the three-dimensional, architectural and orthophotographic survey of the architectural complex of the Archaeological Museum, damaged by the earthquake.
The work integrated the use of 3D laser scans, topographical surveys and three-dimensional photogrammetric system. From the 3D model we exported plans, including the roof plan, sections and elevations, orthophotographic images and digital drawings, useful for the conservation design.

Notes:
- Objective of the assignment: 3D laser scanning, architectural measured survey of the Archaeological Museum with integrated technologies;
- Client: Private for the Comune dell'Aquila.



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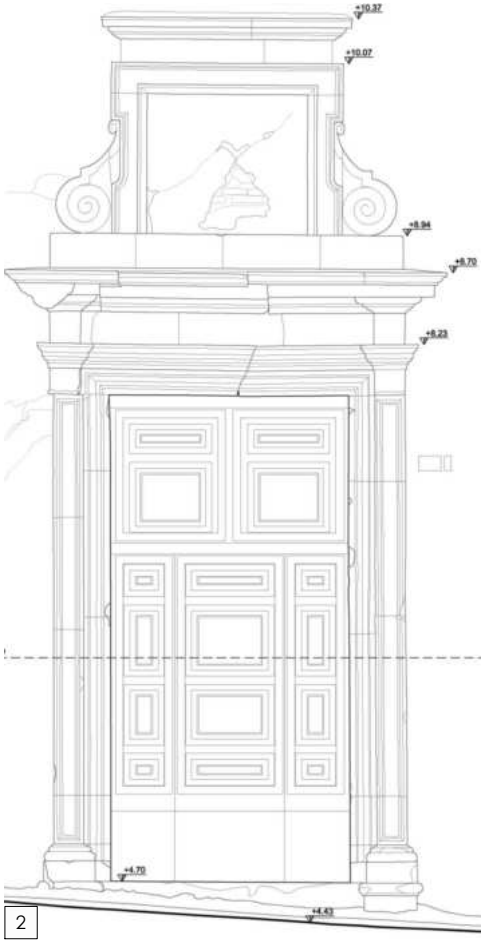

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CAD CROSS SECTION 1

DETAIL OF ONE OF THE ARCHITECTURAL PORTALS 2

POINT CLOUD AND SCANS SECTION 3

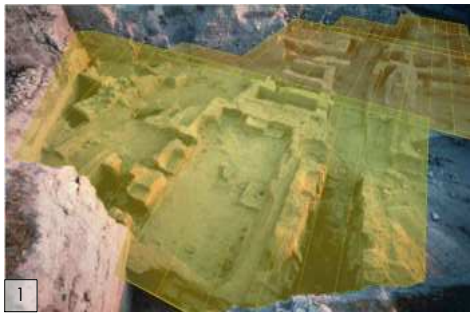
3D MODEL'S VIEW 4

PROTECTION OF ARCHAEOLOGICAL SITE

Archaeological Site of Arslantepe - Malatya - Turkey. 2000
Casa dei Vettii - Pompeii - Italy. 2005
Drawings and design of new roofing system.

The conservation of archaeological structures often requires the construction of roof structures above the findings. We took part to many projects of this kind. Among the others, we cooperated to the protection interventions of the Archeological site of Arslantepe in Turkey and of the House of the Vettii in the archaeological site of Pompeii.
The roofing systems were designed taking into consideration the best practice in the use of local materials and most appropriate construction techniques.

- Objective of the assignment :Archaeological Site of Arslantepe - Protection roof design for the archaeological site, in collaboration with Arch. C. Prosperi Porta (Italian Ministry of Cultural Heritage and Activities and Tourism).
- Client: Università degli Studi di Roma "La Sapienza" - Dipartimento di Scienze Storiche Archeologiche ed Antropologiche dell'Antichità
- Objective of the assignment : House of the Vettii - Cad drawings of the new roofing system design.
- Client: Istituto Superiore per la Conservazione ed il Restauro - ISCR.
- UNESCO World Heritage Site.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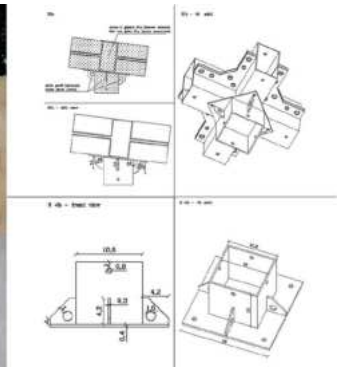

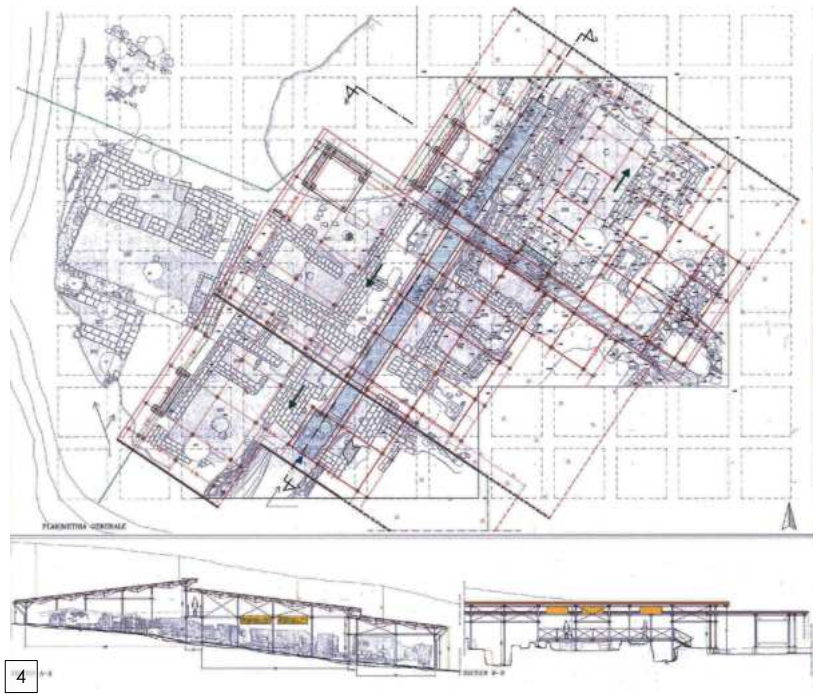
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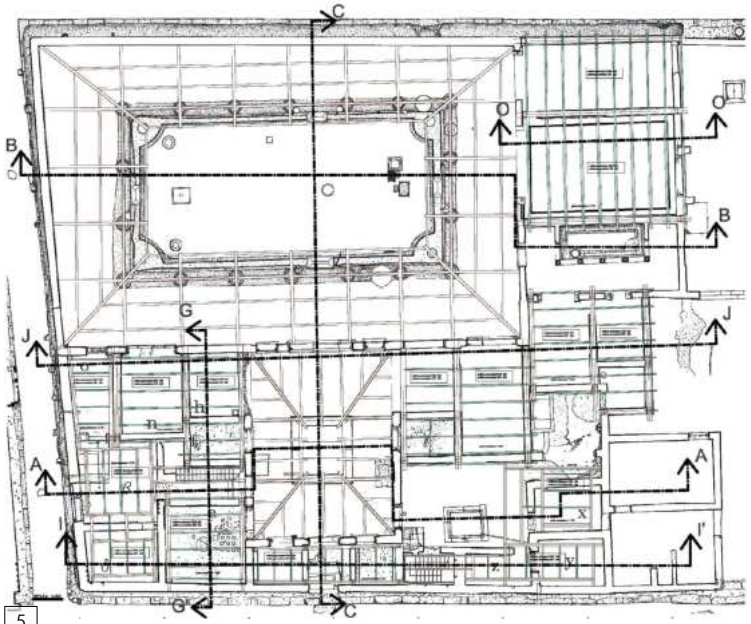
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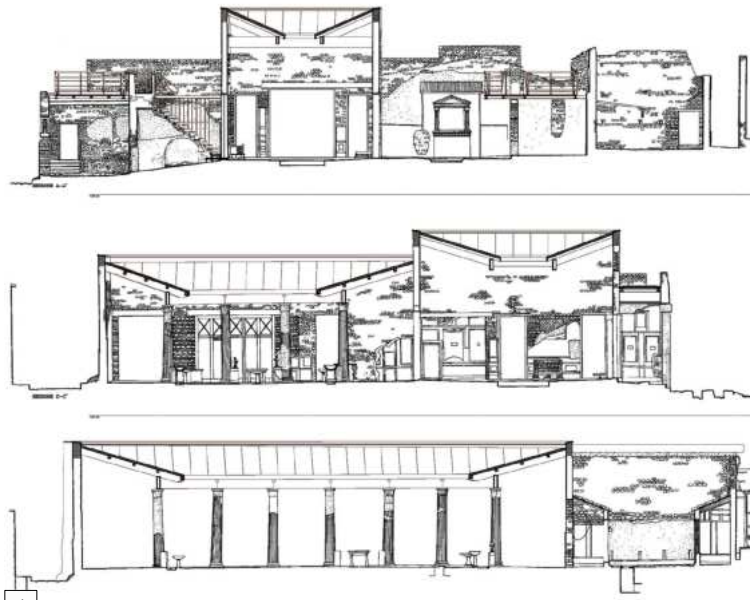
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ARCHITECTURAL 3D SURVEY

Rome, Italy - Marymount Complex in Via Nomentana 355 - Architectural survey of the single buildings of the complex with laser scanner technology. 2024

Marymount complex is located next to the church of Sant'Agnese in Rome and it comprehend seven buildings and one and a half hectare park.
The aim of our assignment was the survey of every single building of the complex and of the park, to reproduce plans, elevations and sections of each structure.
The field survey has been carried out using five laser scanners, two total stations and two GPSs in base/rover modality.

Notes:
- Objective of the assignment: Architectural survey with laser scanner technology;
- Client: Marymonut Foundation.

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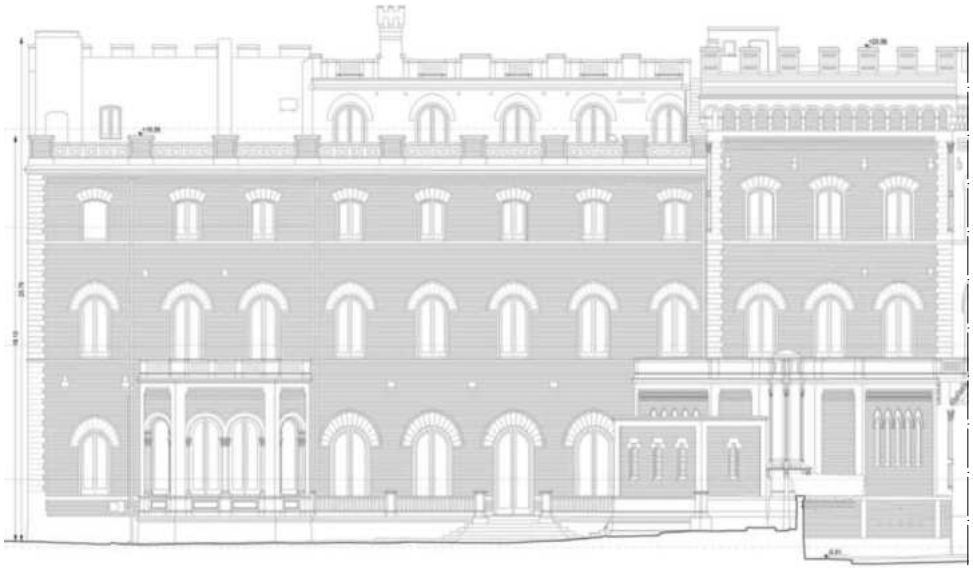

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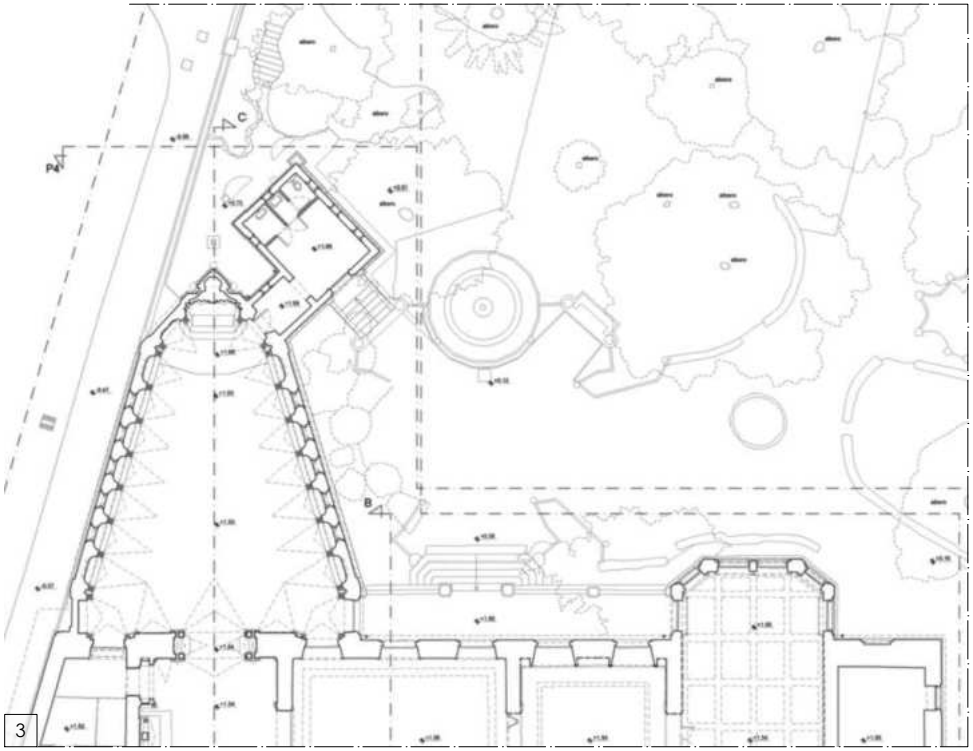

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BEZIERS HALL - ELEVATION EXCERPT FROM LASER SCANNER 1

BEZIERS HALL - CAD DRAWING ELEVATION 2

BEZIERS HALL - GROUND PLAN EXCERPT 3

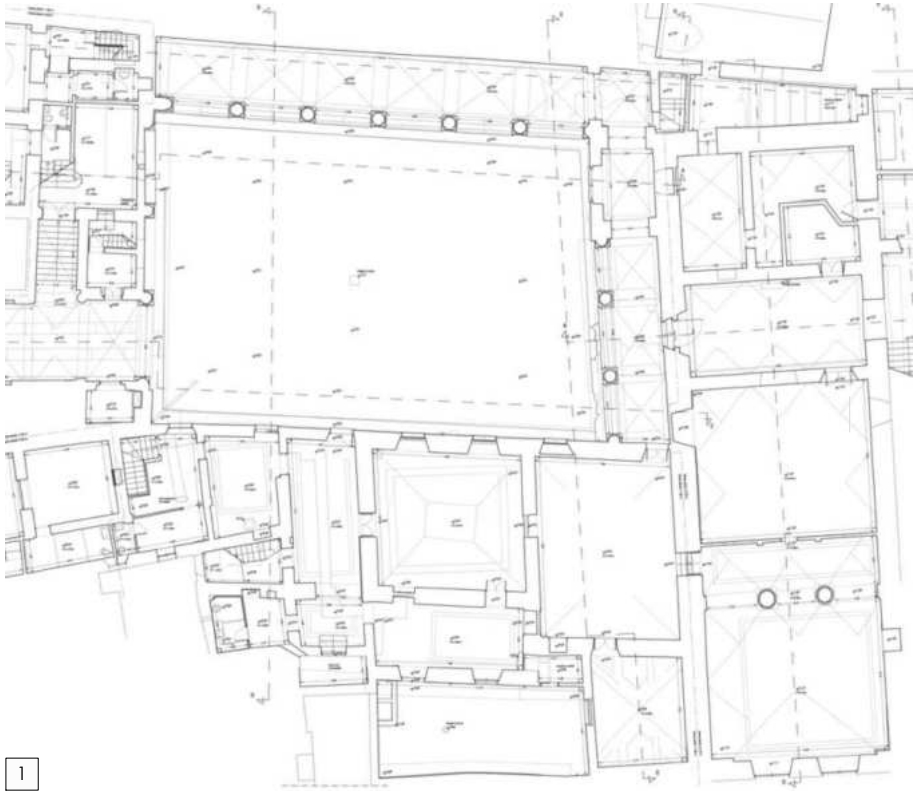
ARCHITECTURAL 3D SURVEY

Rome, Italy - Palazzo Nardini - Three-dimensional survey and detailed drawings of the complex named Palazzo Nardini in Rome. 2021

The complex of buildings named Palazzo Nardini is a fifteenth-century palace, along via del Governo Vecchio in Rome. Built by Cardinal Stefano Nardini as seat of the Papal Government, it is an uncommon example of the prime private Renaissance architecture in Rome.

The survey started with a topographical net. We also used two laser scanners and a drone to reach the higher parts of the buildings for the photogrammetric survey. In order to describe all the parts of the building, we produced 8 plans (one for each level) in 1:50 and 1:100 scale, external elevations and 16 cad sections in 1:50 scale.

Notes:
- Objective of the assignment: Three-dimensional survey and detailed drawings of the building named Palazzo Nardini in Rome, via del Governo Vecchio;
- Client: private.



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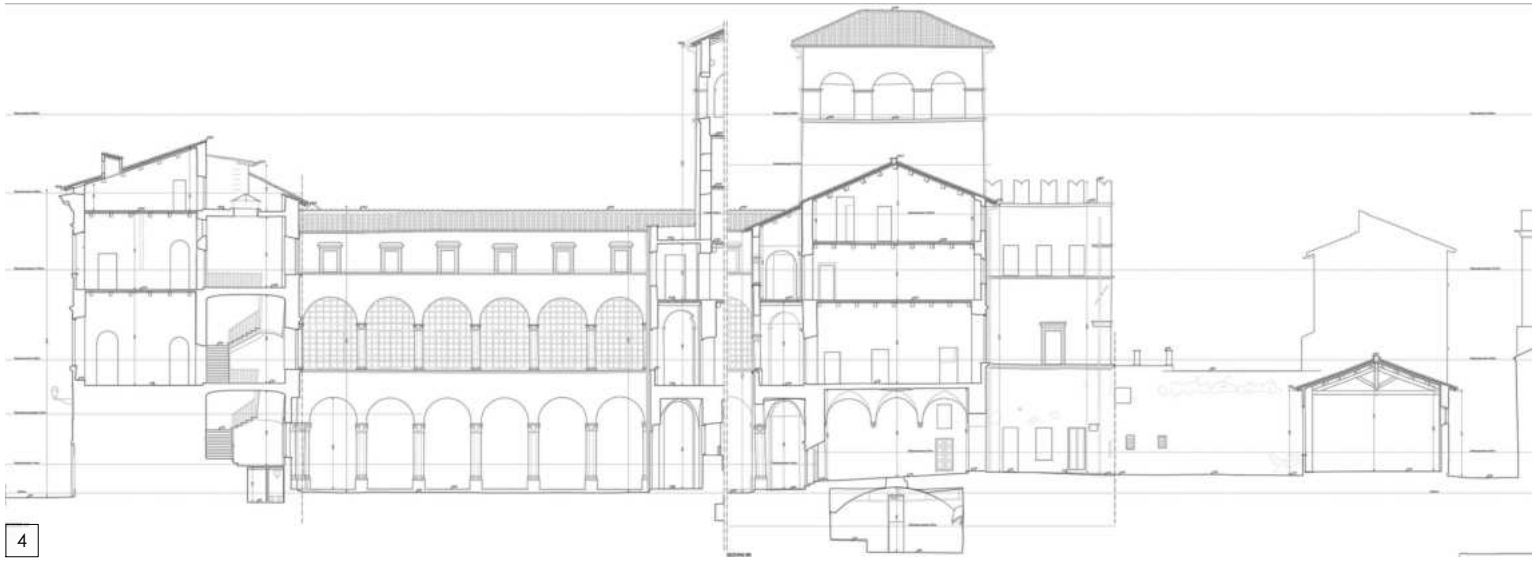

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FIRST FLOOR'S PLAN, EXCERPT 1:50 SCALE 1

3D MODEL VIEW OF THE RENAISSANCE COURTYARD 2

PAINTED WALL'S DETAIL

PALACE'S CAD SECTION 4

ARCHITECTURAL 3D SURVEY

Rome, Italy - The National Roman Museum - Crypta Balbi
Three-dimensional laser scanning and topographic survey and restitution of cad elevations, sections and plans. 2021

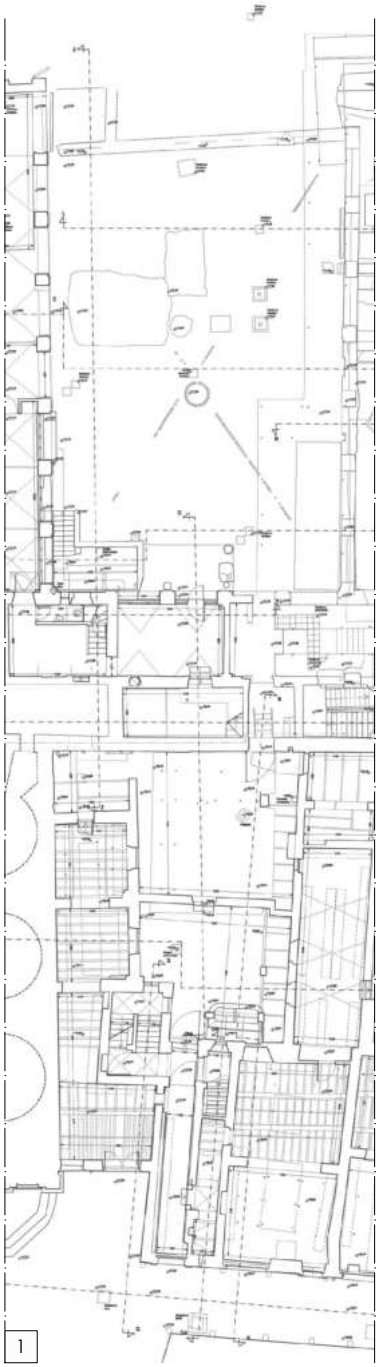
Crypta Balbi is one of the locations of The National Roman Museum in the center of Rome. It is a complex made of ancient, medieval and modern structures and remains.
The area to be surveyed was of about 23,000 square meters. Despite the location of the complex, more than half of the buildings were in ruin. The survey was the first step of a project of restoration that involves the spaces of the museum and the unused structures.
The entire block has been described by cad plans, sections and elevations on 1:50 scale.
We used an high resolution drone to survey the highest structures and roofs and a two laser scanners and one total station to produce a complete 3D model of the inner and external spaces.

Notes:
- Objective of the assignment: Three-dimensional laser scanning and topographic survey and restitution of cad elevations, sections and plans;
- Client: The National Roman Museum, Crypta Balbi.

GROUND FLOOR PLAN 1

CAD SECTION 2

POINT CLOUD'S SECTION 3



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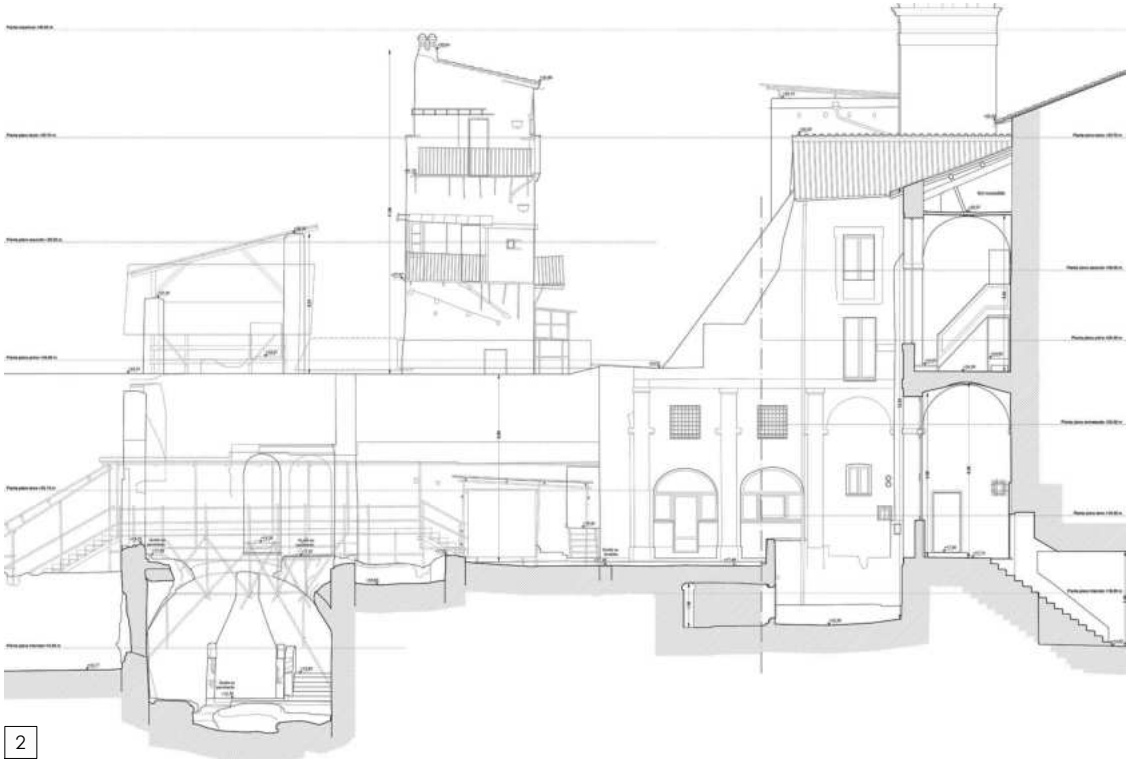

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ARCHITECTURAL 3D SURVEY

Valmontone (RM), Italy - Doria Pamphilj Palace - Seismic Risk Assessment by three-dimensional laser scanning and topographic survey and restitution of cad elevations, sections and plans and cracking pattern. 2021

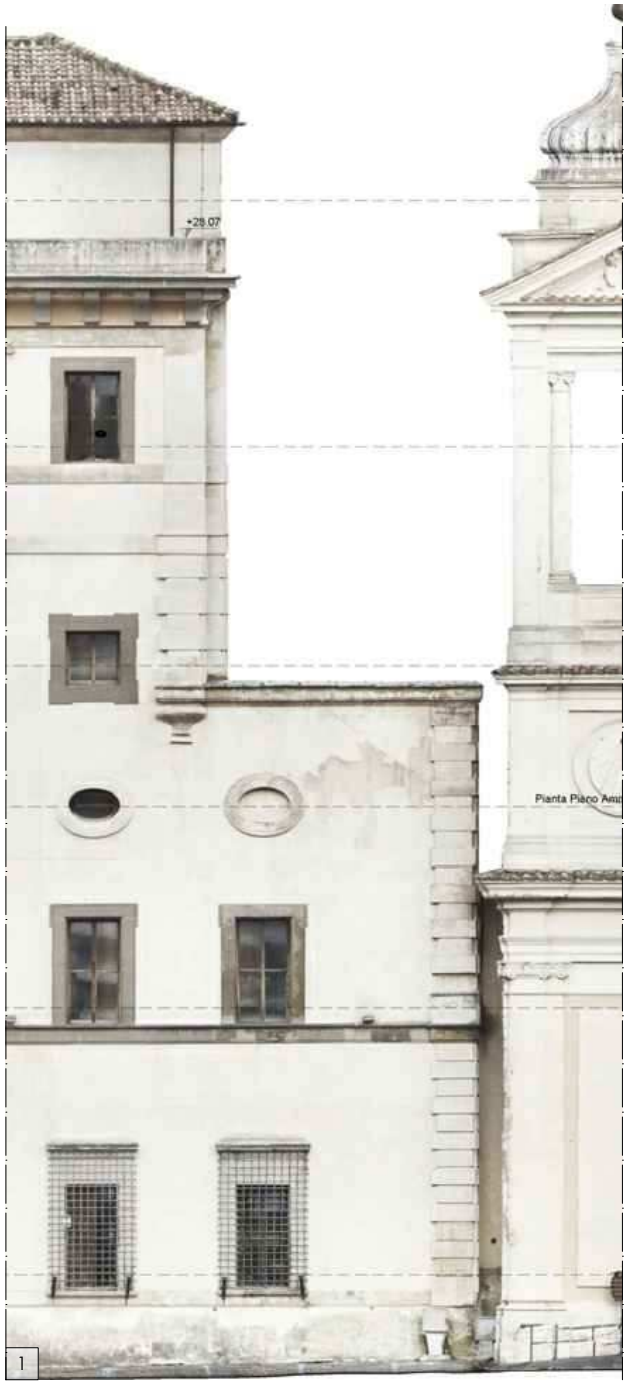
The Doria Pamphilj Palace in Valmontone was surveyed in order to produce scale 1:50 drawings. The drawings were used as a basis for the structural diagnosis and consolidation design. All elevations and sections contain the crack pattern on the walls. The plans were enriched with the information about the underlying floor walls' position in order to support the structural diagnosis.
The high quality of the scans allowed also to produce a ceiling orthophotographic plan of the first foor, which is decorated with very interesting frescoes.
The survey of the higher parts of the building was carried out with a drone.

Notes:
- Objective of the assignment: Seismic Risk Assessment by three-dimensional laser scanning and topographic survey and restitution of cad elevations, sections and plans and cracking pattern;
- Client: Ministero per i Beni e le Attività Culturali e per il Turismo - Soprintendenza Archeologia Belle Arti e Paesaggio per l'area metropolitana di Roma, la Provincia di Viterbo e l'Etruria meridionale.

ORTHOPHOTOGRAPHIC ELEVATION OF THE PALACE 1

NORTHERN WING'S CAD SECTION 2

ORTHOPHOTOGRAPHIC FIRST FLOOR CEILING PLAN 3



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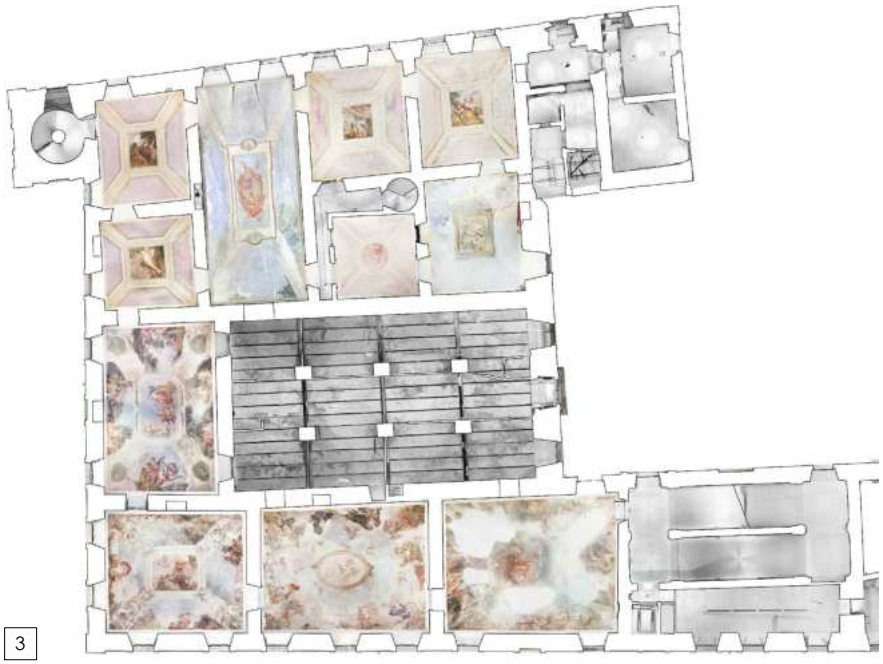
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ARCHITECTURAL 3D SURVEY

Latina, Italy - Palazzo M - Three-dimensional survey with laser scanner. 2021

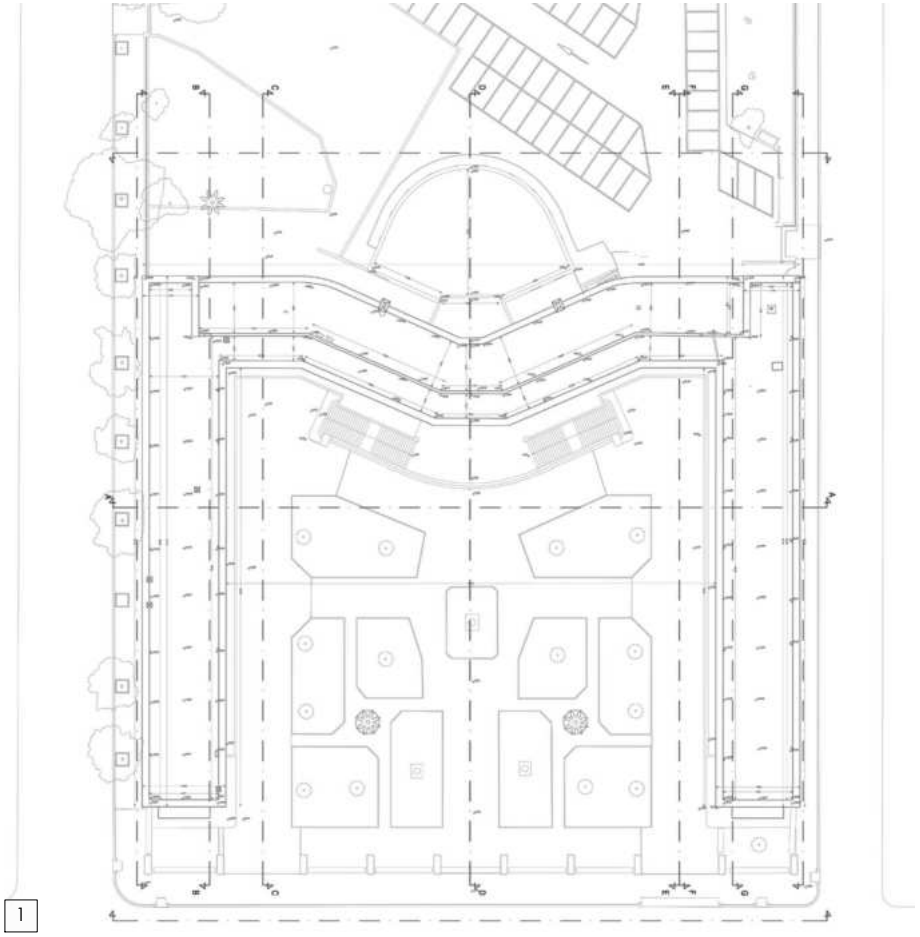
'Palazzo M' or 'Casa del Fascio' was part of a 1930s project of the center of the city of Littoria. The name results from the shape of the letter of the alphabet and form the name of Mussolini.

The survey started with a topographical net for the placement of the buildings in the block. An integrated system of technologies was used for the generation of a high-resolution three-dimensional model, from which all the graphic drawings were extracted. There was a focus on the 3D and graphic reconstruction of structural elements, in reason of the study of the vulnerability to earthquakes .

Notes:

- Objective of the assignment: Ristrutturazione edificio denominato Palazzo M. Rilievo strumentale con laser scanner;

- Client: Ministero delle Infrastrutture e della Mobilità Sostenibili.



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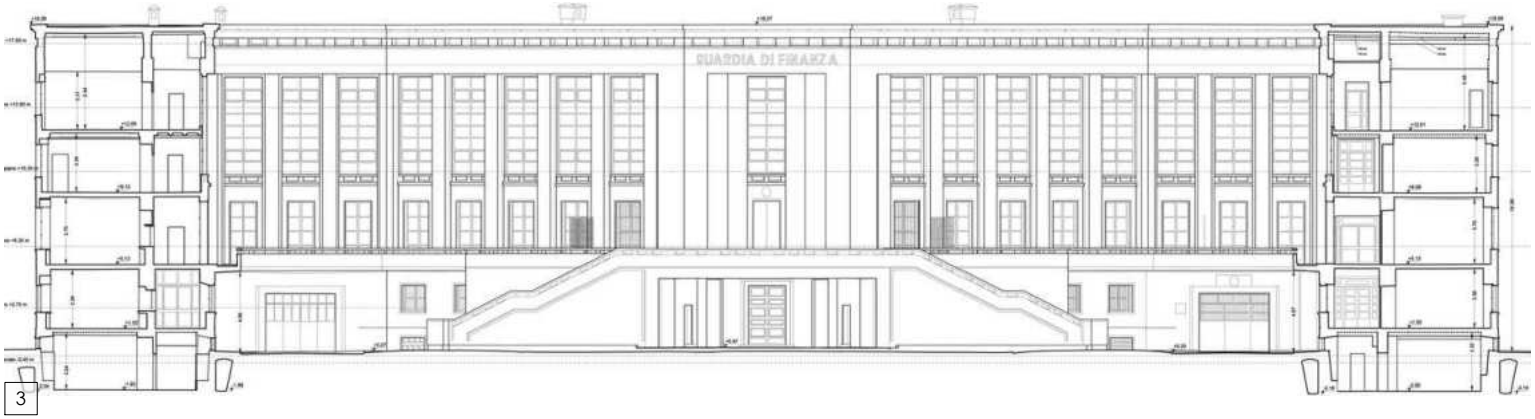

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GENERAL SITE PLAN 1

PHOTO OF THE MAIN ELEVATION 2

BUILDING'S CAD SECTION 3

ARCHITECTURAL 3D SURVEY

Rome, Italy - Palazzo ex INPS in piazza Augusto Imperatore. Three-dimensional survey and cad drawing of the elevations. 2021

The three-dimensional architectural survey of the building was mainly focused on the facades. We used an integrated system of technologies to create an high-resolution three-dimensional model. From the 3D model we extracted the basis for the cad drawings of the elevations and plans. All the cad drawings were used for the conservation design of the building.

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Notes:
- Objective of the assignment: Three-dimensional survey and cad drawing of the elevations;
- Client: private.

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CAD ELEVATION OF THE BUILDING 1

3D VIEW OF THE MODEL 2

Jordan - Jaser Almaima'ah Gesher Bridge on Jordan River. Photogrammetric and laser scanner survey.2011

Gesher bridge is located at the border between Jordan and Israel on the Jordan River. The main arch had been severely damaged during last century war. In 2011 we were commissioned for the survey. The objective was to produce plans, sections and two elevations, both as drawing and as orthophoto. The survey was intended to document the condition of the monument and to facilitate the conservation design and works, which were implemented in 2014. The technologies chosen for this work are laser scanning and 3D photogrammetry. Images on the right show the condition of the site before the restoration works.

- Objective of the assignment: 3D survey of the bridge and generation of sections, elevations and plan in ortho-photographic and vector format
- Client: ISCR Istituto Superiore per la Conservazione e il Restauro


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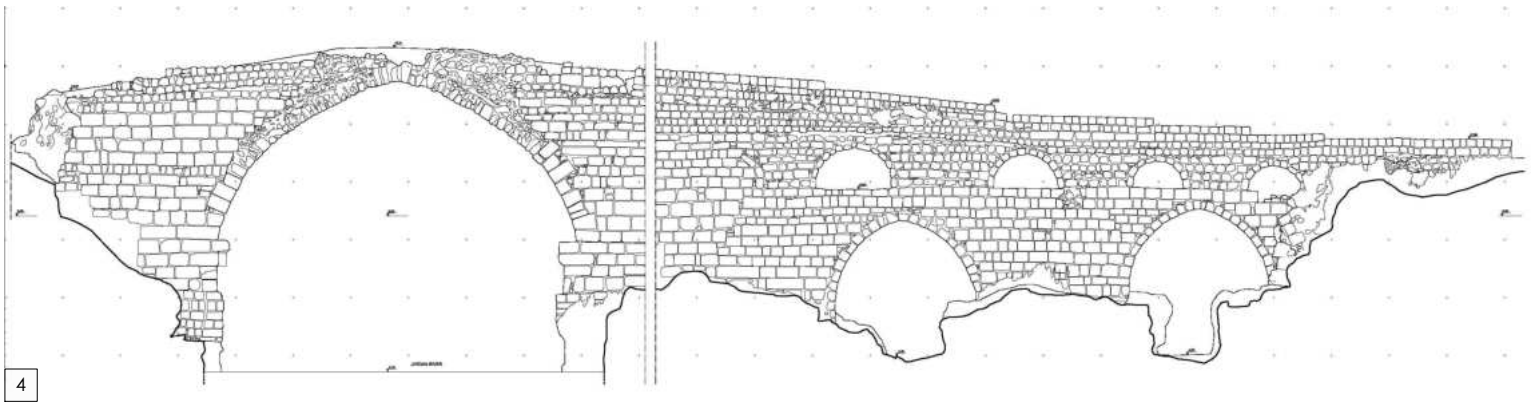
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BRIDGE'S PICTURE 1

BRIDGE'S PICTURE 2

BRIDGE'S PICTURE 3

SOUTH ELEVATION 4

THE BRIDGE DURING THE RESTORATION WORK - RGB POINT CLOUD SECTION 5

THE BRIDGE DURING THE RESTORATION WORK - RGB POINT CLOUD ELEVATION 6

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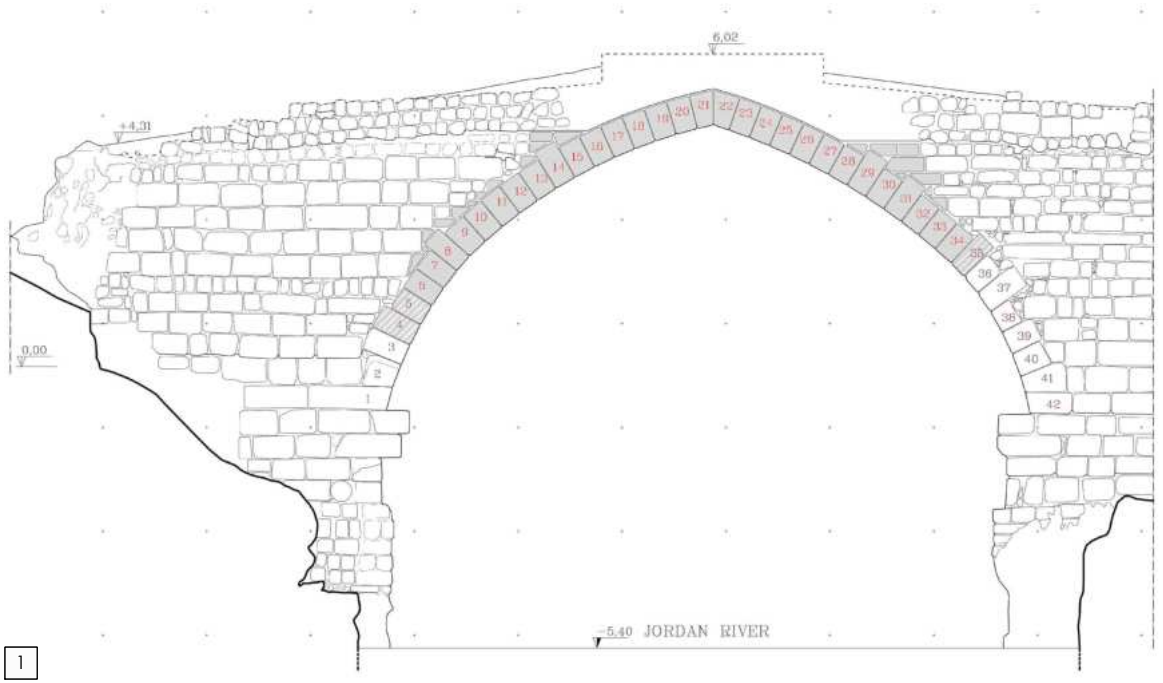
Jaser Almaima'ah Gesher Bridge on Jordan River - Jordan. Restoration design. 2014

Further to the architectural survey of the bridge Gesher, we also assisted the design team. The technical assistance consisted in the design of the arch rib and the reconstruction of the main arch.

Notes:
- Objective of the assignment: Conservation design of the main arch of the bridge;
- Client: MIBACT Ministero dei Beni e delle Attività Culturali e del Turismo



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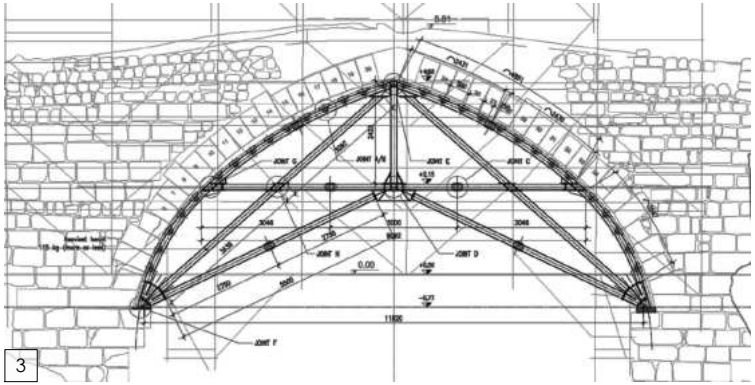
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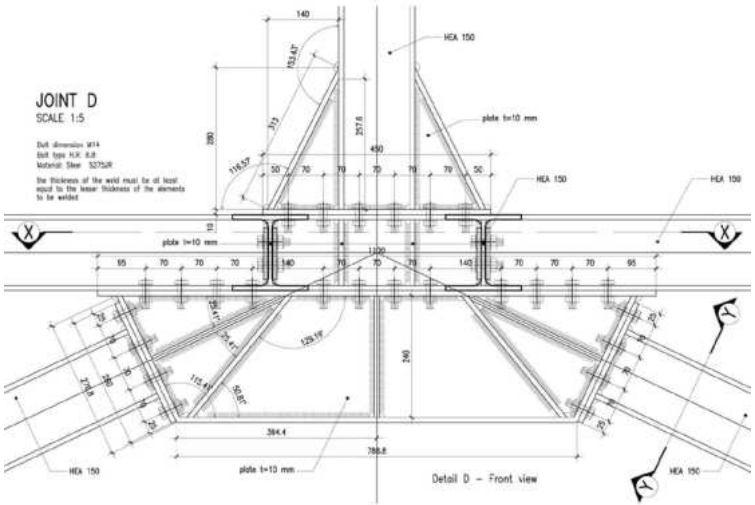

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ARCHITECTURAL 3D SURVEY

Rome, Italy - Church of Santi Andrea e Claudio dei Borgognoni.
Three-dimensional laser scanning and topographic survey of the complex. 2018

In 2018 we carried out the three-dimensional architectural and orthophotographic survey of architectural complex of the church. The methodology we used is one of the most advanced now available, based on an integrated technology that involves photogrammetry, laser scanning and topographic systems. This methodology is the ultimate step of the technical progress in the field of the detailed architectural survey related to the cultural heritage. In addition to two phase-difference laser scanners, 3D and topographic photogrammetric systems, we used aphotogrammetric drone, programmed and driven to penetrate in the church without any danger for the paintings. The aim was exporting plants, elevations and sections, as well as orthophotographic images and digital drawings.

Notes:
- Objective of the assignment: Architectural survey of the complex;
- Client: Ministère de la Culture, Ambassade de France près le Saint-Siège

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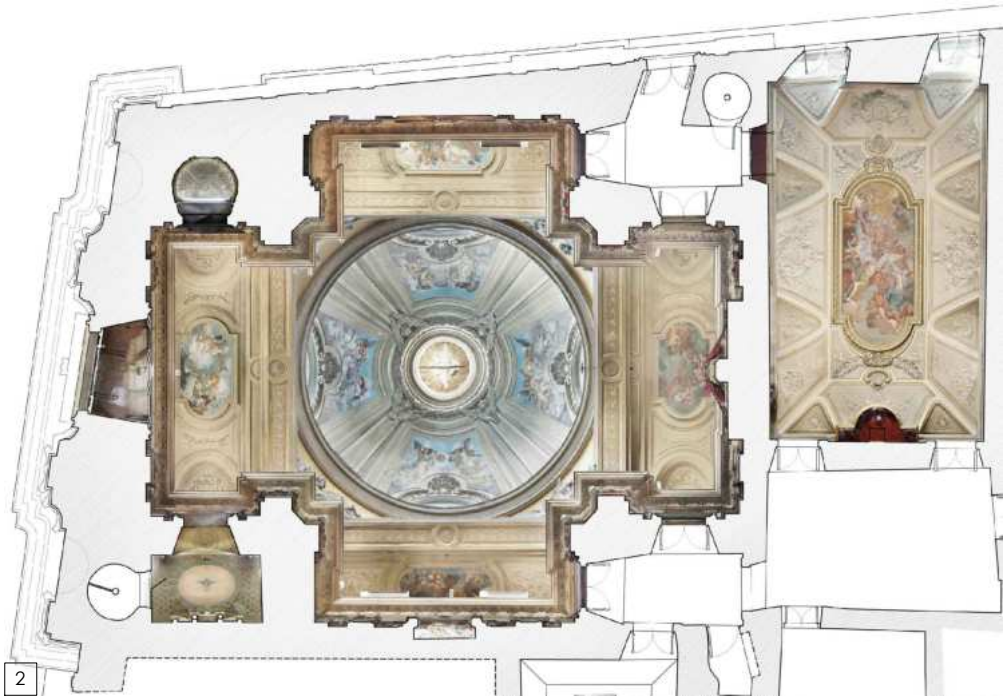
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Colonna-Sordi Gallery Palace - Rome - Italy
Three-dimensional and orthophotographic survey of the facades with laser scanning and topographic system. 2017

The Colonna-Sordi Palace is located in piazza Colonna in Rome and was built in 1922. It is one of the headquarters of the Italian Presidency of the Council of Ministers.

In 2017 we carried out the three-dimensional, architectural and orthophotographic survey of the facades of the Palace, necessary for the conservation design of the external surfaces of the building.

Note:
- Client: Sorgente GROUP.


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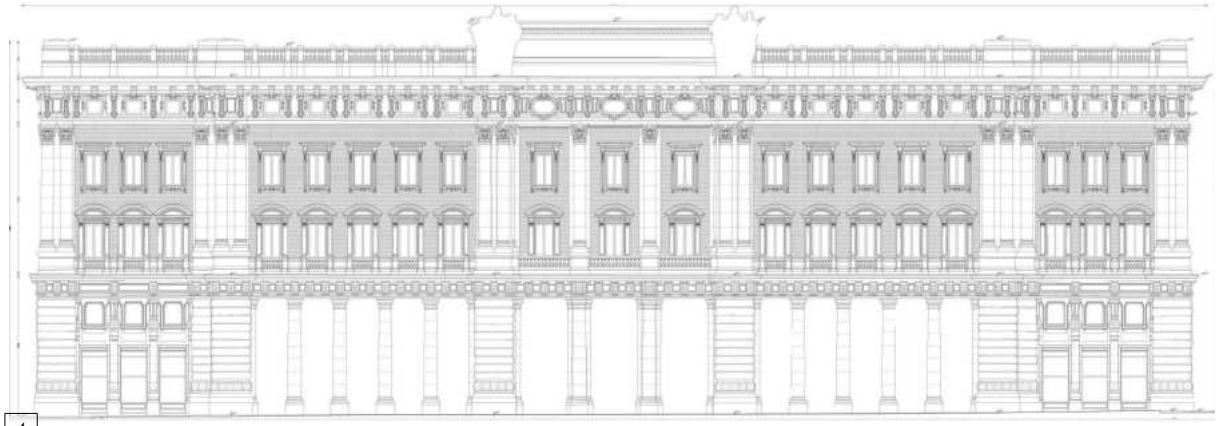
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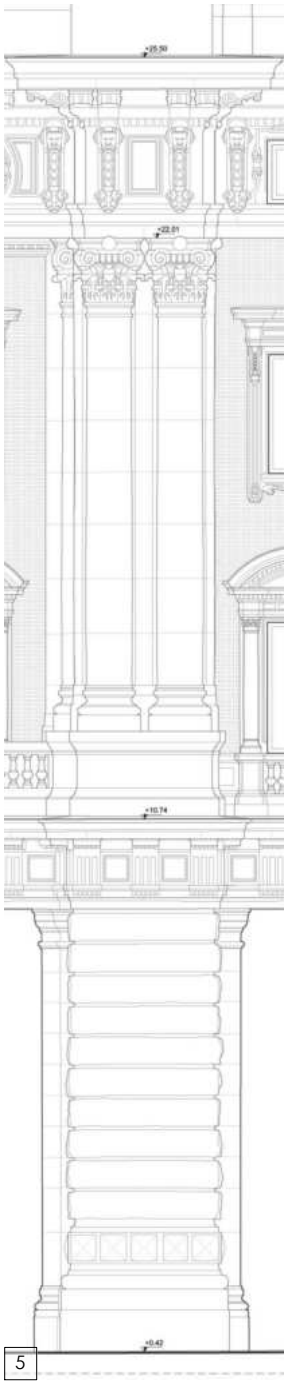
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ARCHITECTURAL 3D SURVEY

Palazzo Maccarani Stati - Senate of the Italian Republic, Rome, Italy, 2016

The Palace is one of the last work in Rome of the Renaissance master, the architect Giulio Romano. The Renaissance palace is currently home to the offices of the Senate of the Italian Republic.

On September, 2016 we carried out the threedimensional, architectural and orthophotographic survey of the Palace.

The survey was carried out to produce orthophotos and cad drawings, usefull for the conservation design and works of the external surfaces of the building.

Note:

- Objective of the assignment : 3D survey and restitution of all the elevations of the building;

- Client: Private for Ministero delle Infrastrutture e dei Trasporti . Provveditorato interregionale alle OO.PP. per il Lazio, Abruzzo, Sardegna

MAIN FACADE, EXCERPT OF THE ORTHOPHOTO 1

ELEVATION CAD DRAWING 2

3D MODEL'S VIEW 3

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ARCHITECTURAL 3D SURVEY

Collegio Romano Complex - Headquarter of the Italian Ministry of Cultural Heritage and Activities and Tourism- Rome - Italy - Architectural survey. 2014

The survey was developed as part of the functional adaptation interventions on electrical, mechanical and special systems of the building.
The work focused on the structures within the Ministry Headquarters, only marginally affecting other properties in the area.
The overall extension of the complex, drawn in plan, is approx. 26,000 square meters. A series of longitudinal and cross sections were also delivered, together with the three elevations facing on the Piazza del Collegio Romano, via del Collegio Romano and Via del Caravita.

- Objective of the assignment : Topographic and architectural measured survey, through three-dimensional technology;
- Client: Italian Ministry of Cultural Heritage and Activities and Tourism.


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FIELD SURVEY 1

FIELD SURVEY 2

3D MODEL VIEW 3

3D MODEL VIEW 4

MAIN FACADE - POINT CLOUD IN COLOUR RGB 5

MAIN FACADE - CAD DRAWING 6

ARCHITECTURAL 3D SURVEY

Collegio Romano Complex - Headquarter of the Italian Ministry of Cultural Heritage and Activities and Tourism- Rome - Italy - Architectural survey. 2014

The methodology that we applied for the assignment guarantees the best results to date, both in terms of accuracy and of speed of field and desk operations.
The work has included the use of an integrated system of 3D laser scans, topographic surveys and direct surveys of architectural details. The point clouds acquired by laser scanners were combined in a single three-dimensional model, from which we extracted all the ortho-rectified images used as the basis of measured architectural drawings (plans, sections and elevations).

- Object of the assignment: Architectural survey, topographic and three-dimensional survey;
- Client: Italian Ministry of Cultural Heritage - Direzione Generale.


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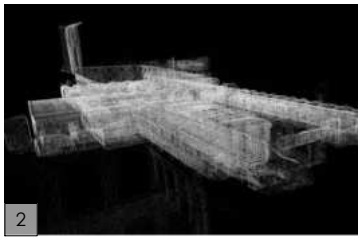
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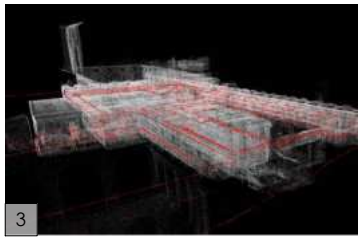
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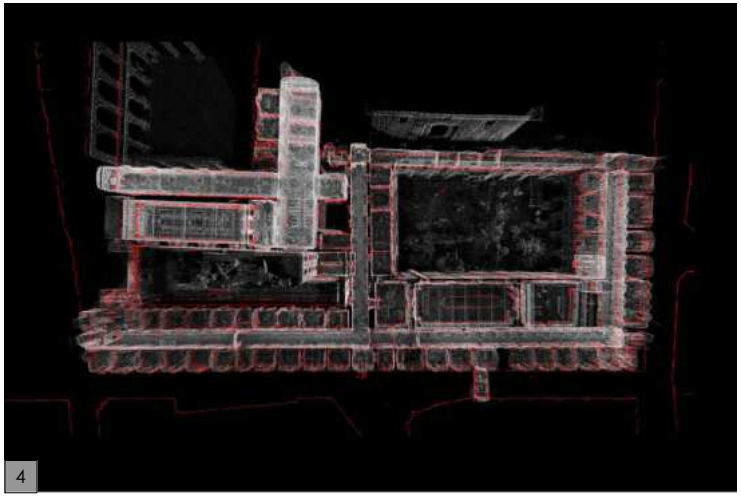
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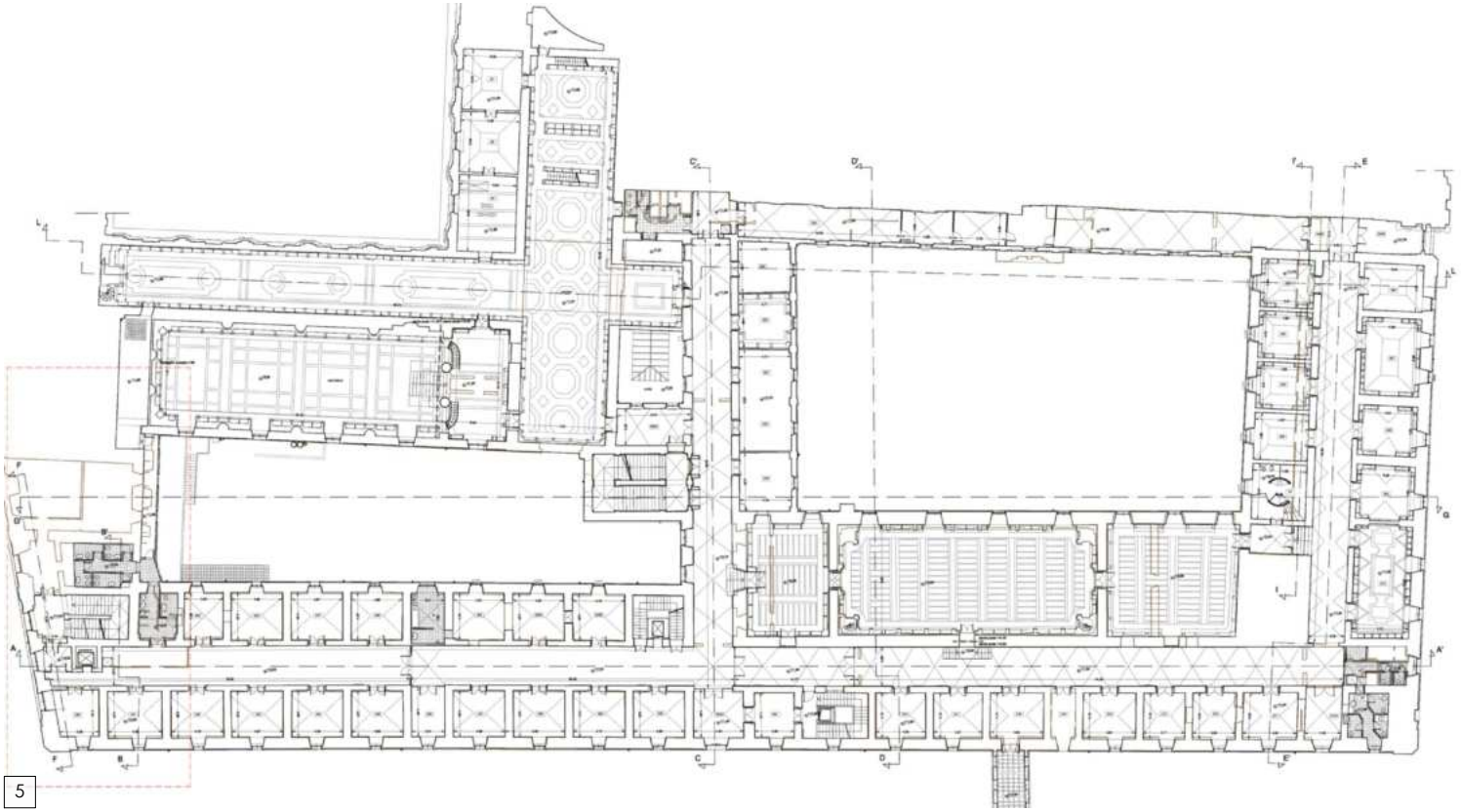
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FIELD SURVEY 1

POINT CLOUD 2

FROM THE POINT CLOUD TO THE CAD PLAN 3

FROM THE POINT CLOUD TO THE CAD PLAN (SECTION LINE HIGHLIGHTED IN RED) 4

SECOND FLOOR PLAN CAD DRAWING 5

ARCHITECTURAL 3D SURVEY

Qatar - Doha - Restoration of the Historic Structures in Education City - Doha. Geometrical and Dimensional/3D survey and Photogrammetric Survey. 2013

This page shows the survey of one historic building inside the Education City - a courtyard house - Each three-dimensional model has been georeferenced to the topographic benchmarks of the municipality of Doha.

Notes:
- Objective of the assignment : "Restoration of Historical Structures in Education City". Architectural survey, topographic and three-dimensional photogrammetric survey;
- Client: ARS Progetti SPA for Qatar Foundation


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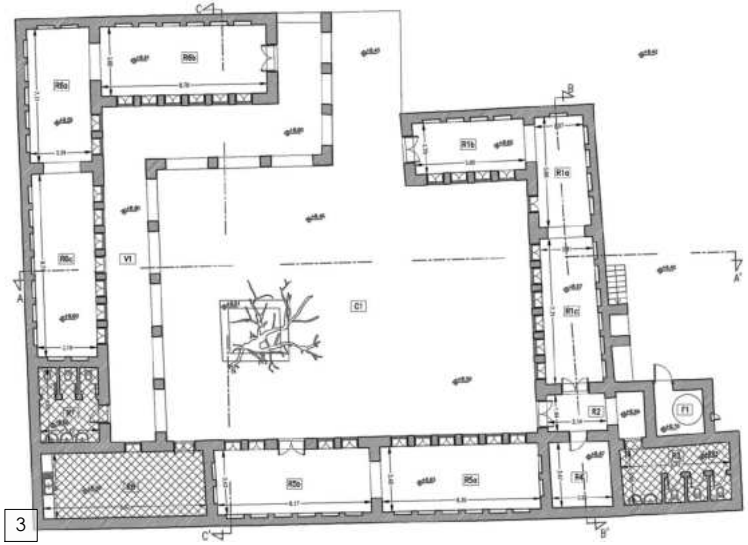
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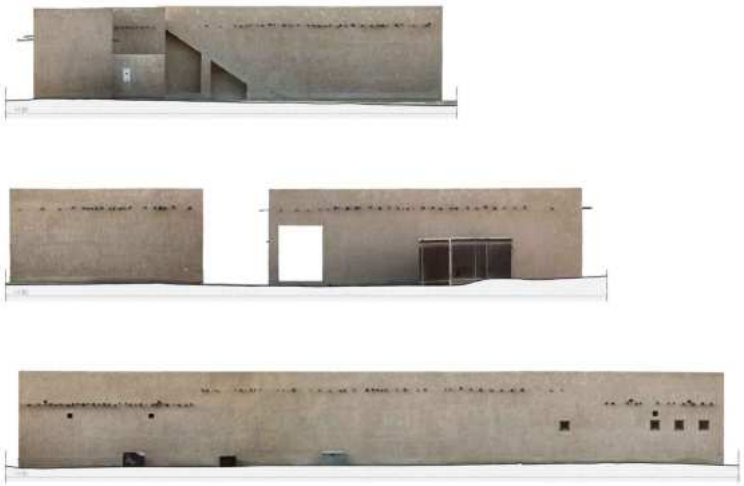
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ARCHITECTURAL 3D SURVEY

Qatar - Doha - Restoration of the Historic Structures in Education City - Doha. Geometrical and Dimensional/3D survey and Photogrammetric Survey. 2013

In December 2013 we undertook the survey and architectural measured drawings of the buildings within the area of the Education City in Doha. The survey aimed to document the consistency of the historical and architectural heritage of the area by means of two-dimensional drawings and orthophotos. Here are some pictures of one of the buildings.

The task encompassed the survey of the sites in 3D format, to produce a model usable in BIM software.

Notes:

- Objective of the assignment : "Restoration of Historical Structures in Education City". Architectural survey, topographic and three-dimensional photogrammetric survey;

- Client: ARS Progetti SPA for Qatar Foundation

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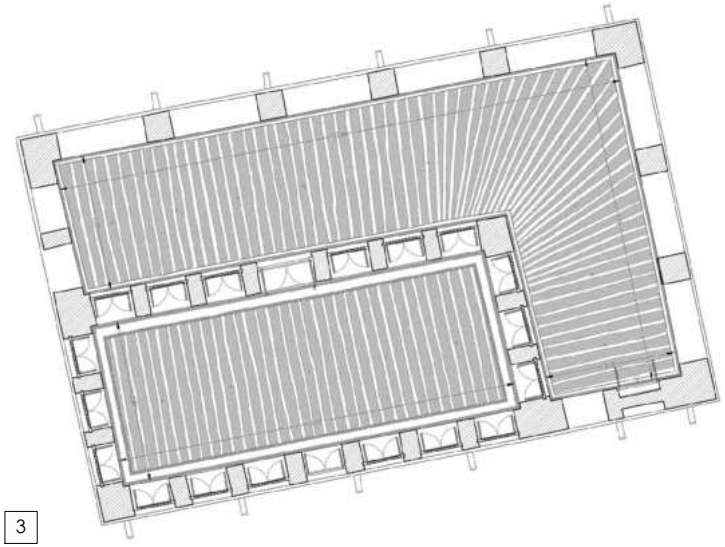

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ARCHITECTURAL 3D SURVEY

Sultan Fort, National Museum and Souks in Al Ain - United Arab Emirates. "Conservation Services for the Al Ain Souks and National Museum". 2014

In July 2014 we undertook the topographic and measured architectural survey of Al Ain National Museum, Sultan Fort and Old Souks, in the Abu Dhabi U.A.E.
Plans, sections and elevations of each building of the complex were drawn at 1:50-1:100 scale. Images on the right refer to the field campaign and to a selection of outputs delivered for the Sultan Fort.

- Objective of the assignment : *Architectural survey, topographic and three-dimensional survey;*
- *Client: ARS Progetti SPA for TCA Abu Dhabi.*


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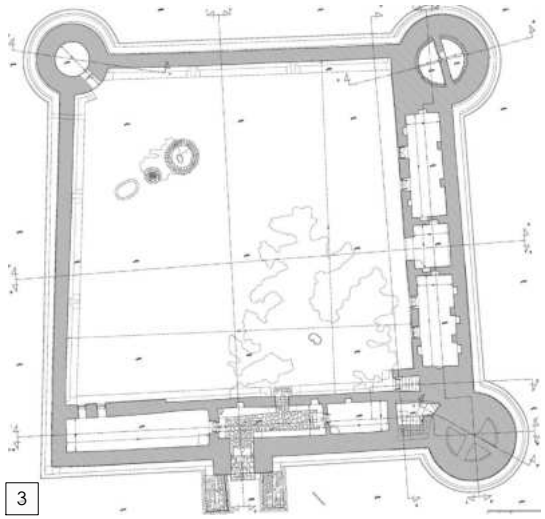
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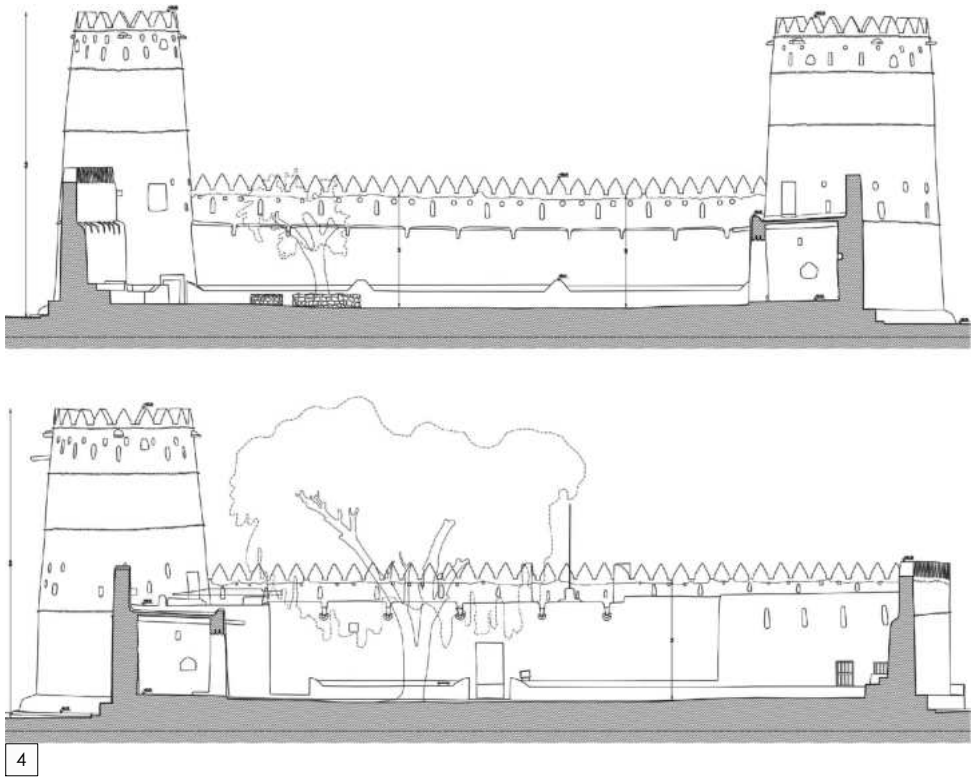
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FIELD SURVEY 1

FIELD SURVEY 2

GROUND FLOOR PLAN 3

SECTIONS 4

MAIN FACADE - RGB COLOUR 5

ARCHITECTURAL 3D SURVEY

Sultan Fort, National Museum and Souks in Al Ain - United Arab Emirates. "Conservation Services for the Al Ain Souks and National Museum". 2014

Images on the right refer to the main elevation of Al Ain National Museum, together with some of the drawings describing the building.The overall extension of the surveyed areas (National Museum, Sultan Fort, Souks) is approx. 30.000 square meters. Field work lasted ten working days. Seven technicians collected all needed data by means of three laser scanners, two GPS (base and rover) and two total stations.

- Objective of the assignment : *Architectural survey, topographic and three-dimensional survey;*
- *Client: ARS Progetti SPA for TCA Abu Dhabi.*


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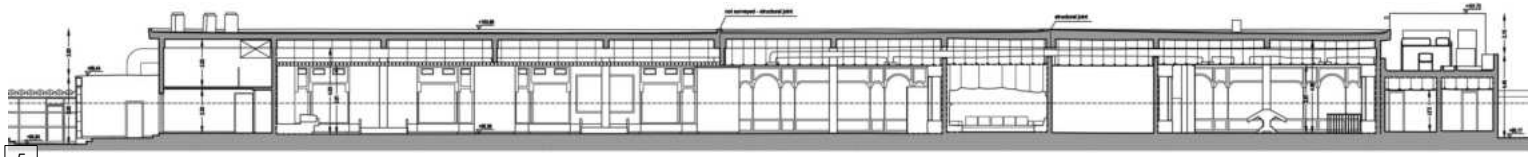
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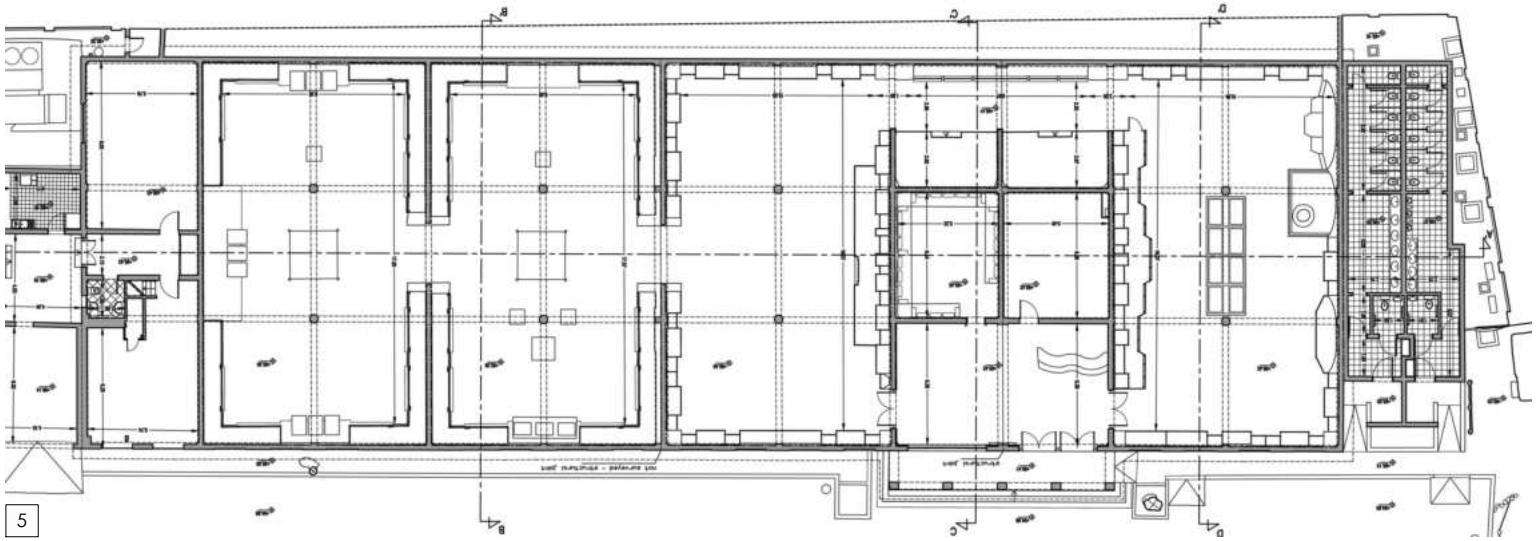
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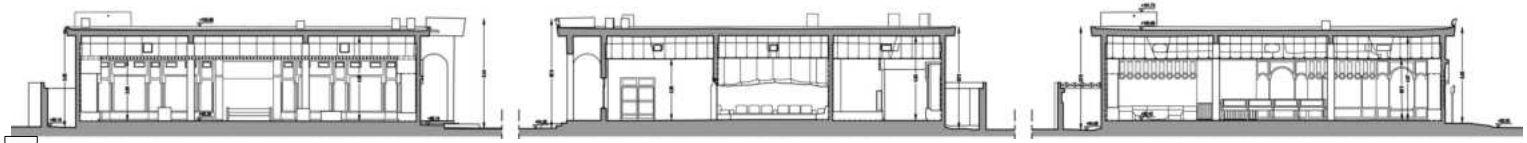
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3D MODEL - RGB COLOR 1

PICTURE OF THE MAIN FACADE 2

PICTURE OF THE MAIN FACADE 3

MAIN FACADE - RGB COLOR 4

SECTION 5

GROUND FLOOR PLAN 6

CROSS SECTION 7

ARCHITECTURAL 3D SURVEY

San Michele a Ripa Grande Complex - Roma - Italy- Architectural survey. 2013-2014

The Complex of San Michele a Ripa Grande is one of the largest architectural structures of Rome. It was built between the late seventeenth and early eighteenth century as a multipurpose facility. Between 2013 and 2014 we undertook the survey of the Central Institute for Cataloguing and Documentation headquarters, finalized to the structural analysis of the complex.

The drawings (plans, sections, elevations), at 1:50 scale, cover an area of approx. 22,000 square meters.

The images here on the right show the field work and some processing details.

- Objective of the assignment : *Topographic, 3D and architectural survey;*
- *Client: Istituto Centrale per il Catalogo e la Documentazione - ICCD*


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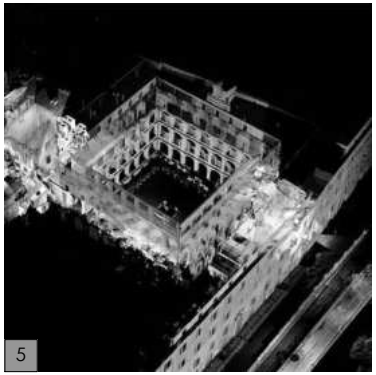
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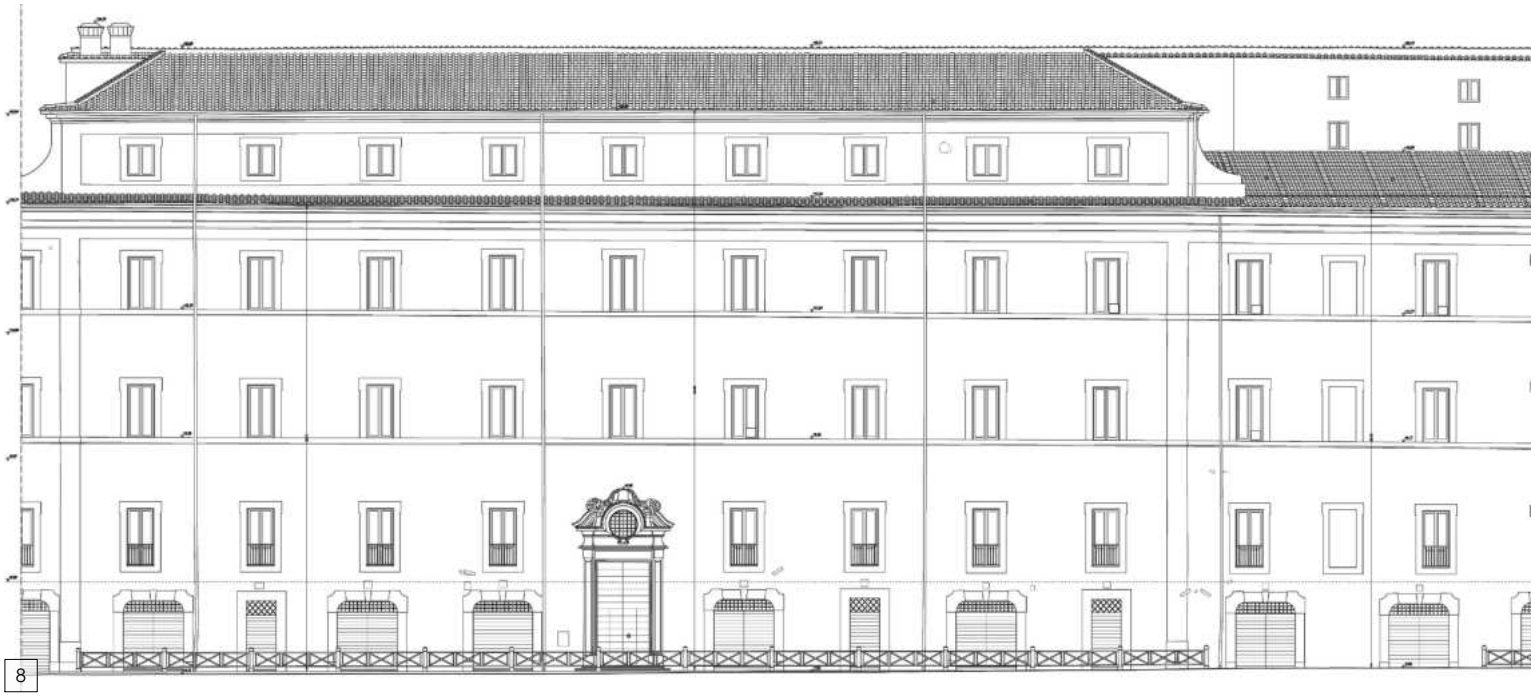
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PICTURE OF THE MAIN COURTYARD OF THE COMPLEX 1

3D MODEL OF THE COURTYARD 2

FIELD SURVEY 3

FIELD SURVEY 4

COURTYARD AND FACADE - 3D MODEL 5

VIEW OF THE FACADE - RGB POINT CLOUDS 6

DETAIL - RGB POINT CLOUDS 7

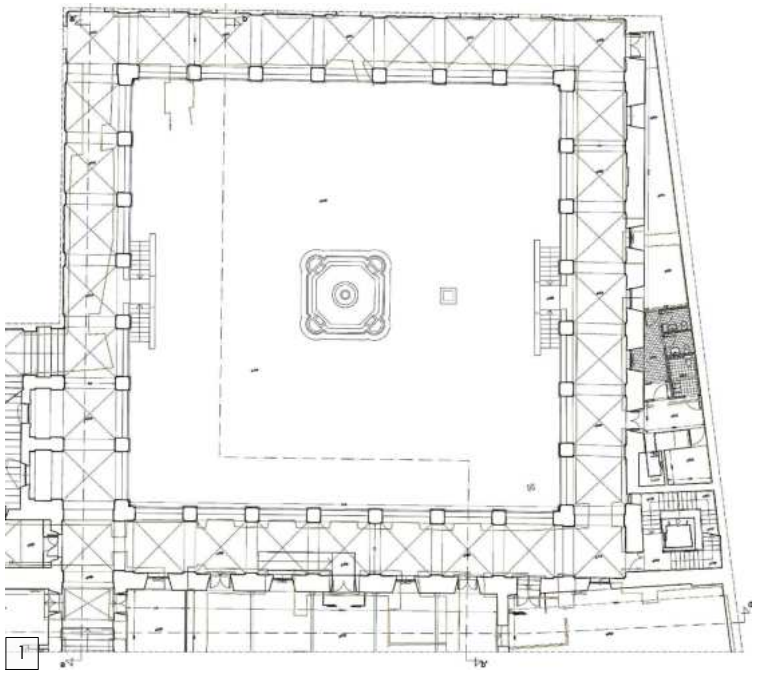
FACADE - CAD DRAWING 8

ARCHITECTURAL 3D SURVEY

San Michele a Ripa Grande Complex - Roma - Italy- Architectural survey. 2013-2014

Measured drawings are the last step in the post-processing operations. This phase of work has also required photographic documentation and direct surveys of architectural details.
This methodology allowed to produce extremely detailed and precise outputs very quickly.

- Objective of the assignment : Topographic, 3D and architectural survey;
- Client: Istituto Centrale per il Catalogo e la Documentazione - ICCD



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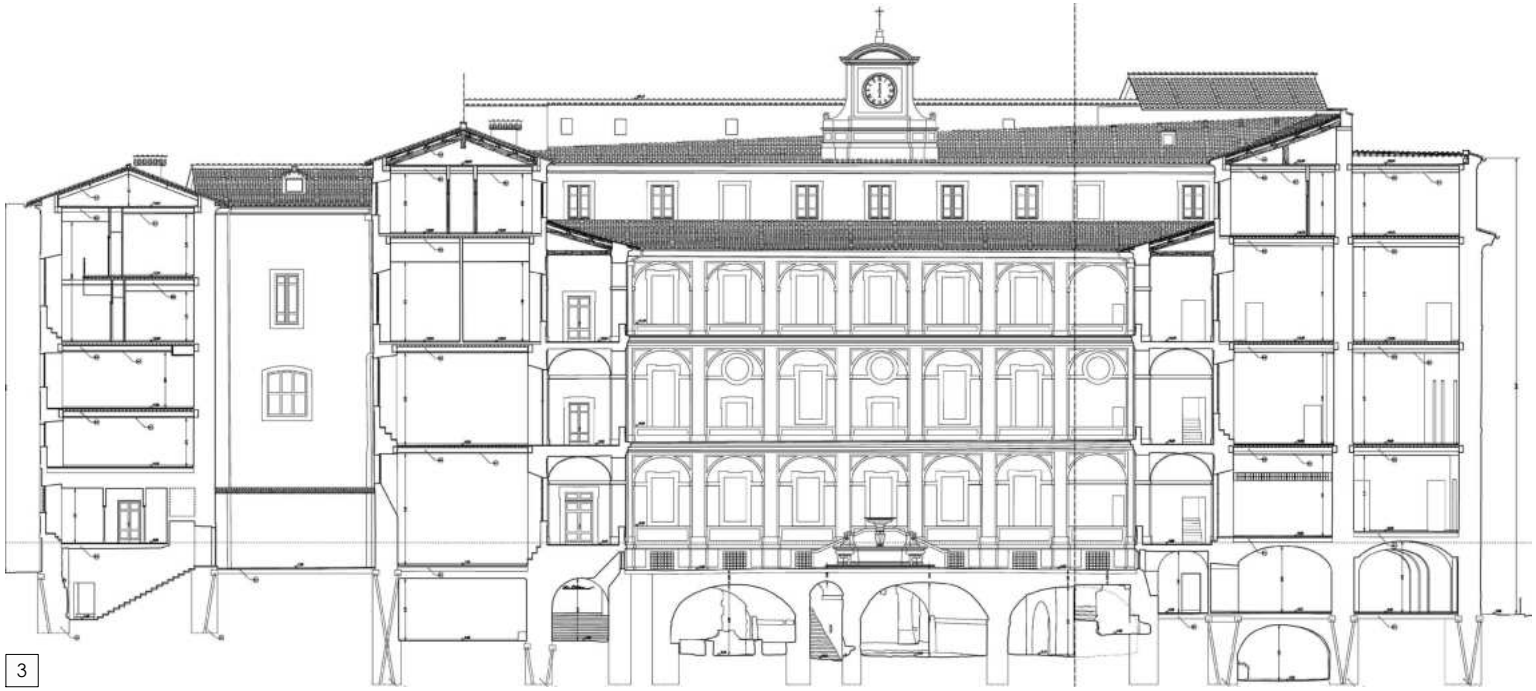

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BASEMENT - DETAIL OF THE CAD DRAWING 1

DETAIL - RGB COLOR SECTION 2

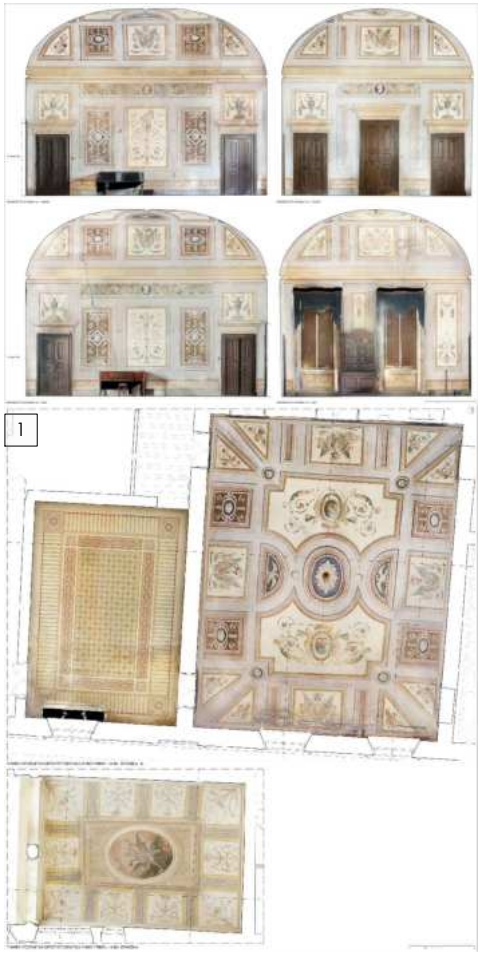
CROSS SECTION 3

ARCHITECTURAL 3D SURVEY

Busseto (Parma) - Italia - Palazzo Orlandi - 3D laser scanner survey, measured architectural drawings and orthophotos of Palazzo Orlandi in Busseto (PR). 2015

The methodology that we applied for the assignment guarantees the best results to date, both in terms of accuracy and of speed of field and desk operations.
The work has included the use of an integrated system of 3D laser scans, topographic surveys and direct surveys of architectural details. The point clouds acquired by laser scanners were combined in a single three-dimensional model, from which we extracted all the ortho-rectified images used as the basis of measured architectural drawings (plans, sections and elevations).

Notes:
- Objective of the assignment: 3D laser scanner survey, measured architectural drawings and orthophotos of Palazzo Orlandi in Busseto (PR);
- Client: Archires srl - Sorgente Group SpA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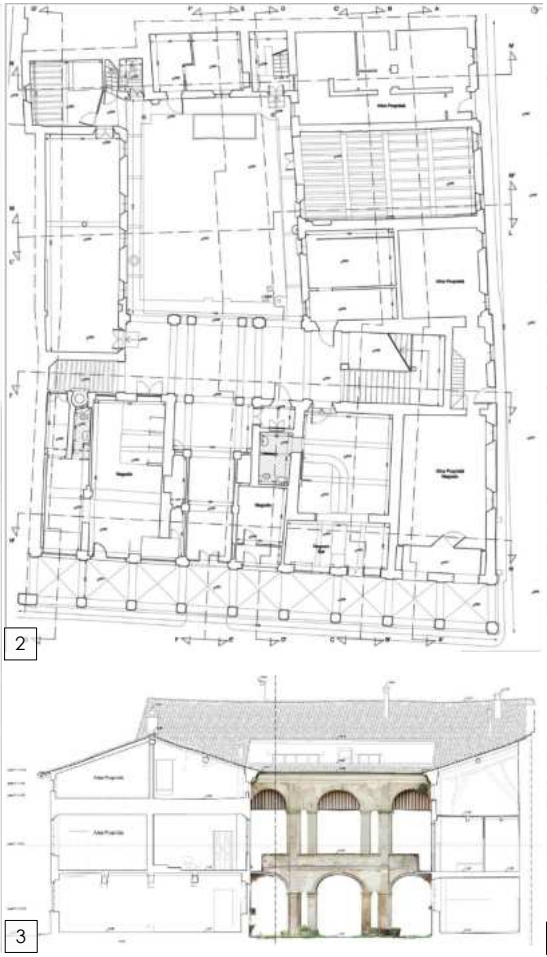
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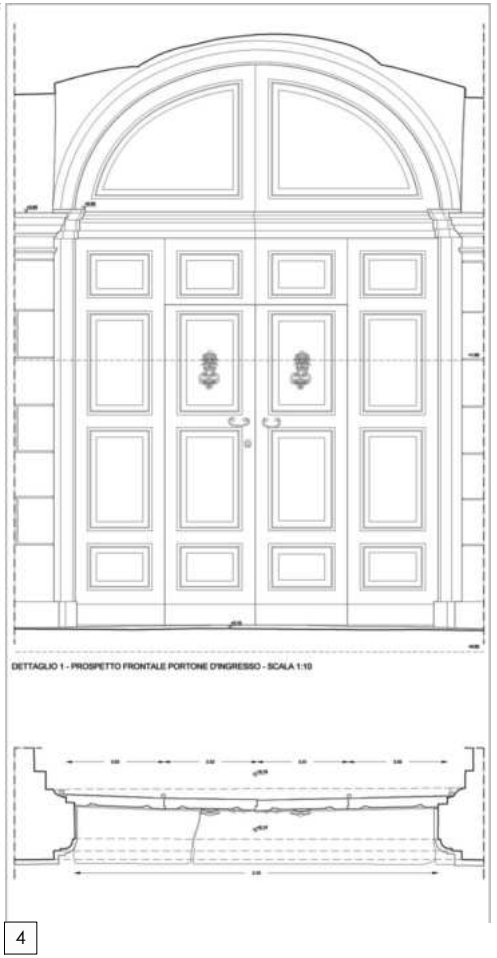

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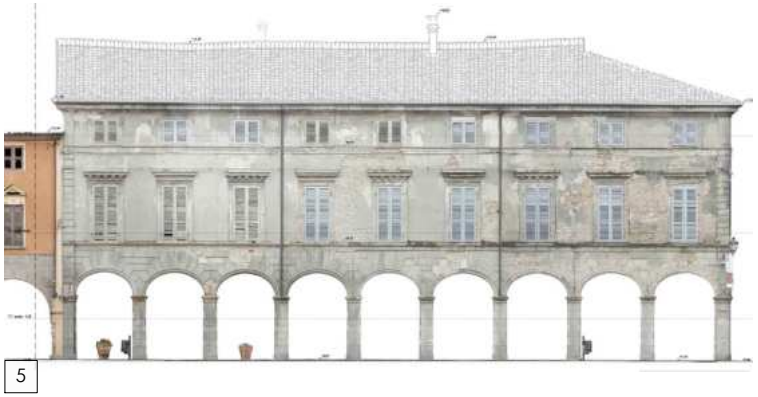
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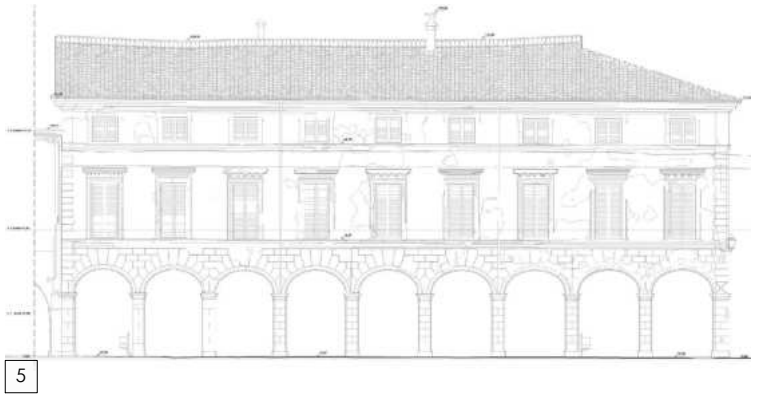
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ORTHOPHOTOS OF THE MAIN HALL AND SOME FRESCOED VAULTE CEILINGS 1

GROUND FLOOR PLAN 2

CROSS SECTION E ORTHOPHOTO THROUGH THE COURTYARD 3

DETAIL OF THE FRONT DOOR 4

ELEVATION ON VIA ROMA, ORTHOPHOTOS AND CAD DRAWING 5

EARTHQUAKE AND WAR DAMAGES

Amatrice, Rieti - Church of St. Maria Assunta - Urgent earthquake protection measures. Three-dimensional laser scanning, terrestrial and aerial imaging and 3D mapping, topographic survey 2017.

The Don Minozzi Complex with the Church of Santa Maria Assunta suffered severe damages because of 2016 and 2017 earthquakes. In 2017 we carried out the survey of the complex for securing the site. Also in this case, as in other earthquake interventions, we applied a highly advanced working methodology that allowed us to acquire the interior and external spaces of the building in 3D by means of integrated remote survey systems. The aim was that of exporting plants, elevations and sections, as orthophotographic images and digital drawings. Further to the measured and architectonic survey of the site after the seismic event, a detailed analysis of the geometry of the elevations was produced to highlight the major structural deformations.

Note:
- Client: MIBACT - Segretariato Regionale del Ministero dei Beni e delle Attività Culturali e del Turismo per il Lazio.

ORTHOPHOTOGRAPHIC EXCERPT OF THE MAIN FACADE 1

RIGHT SIDE CAD ELEVATION 2

DRONE SURVEY INSIDE THE CHURCH 3

3D MODEL'S GENERAL VIEW 4

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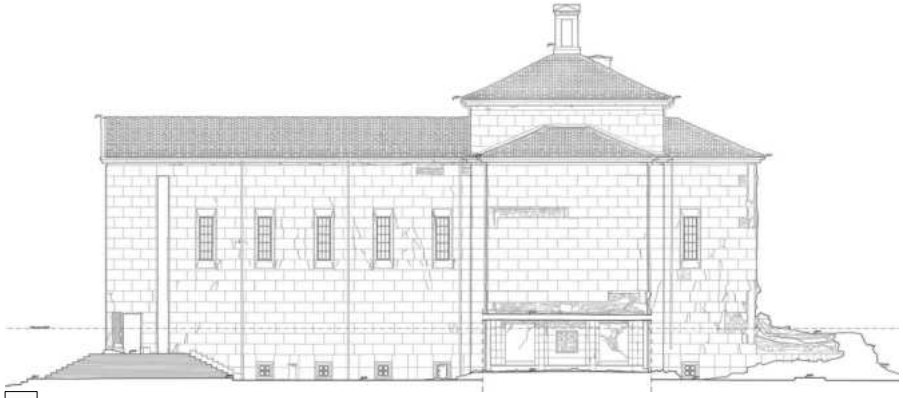

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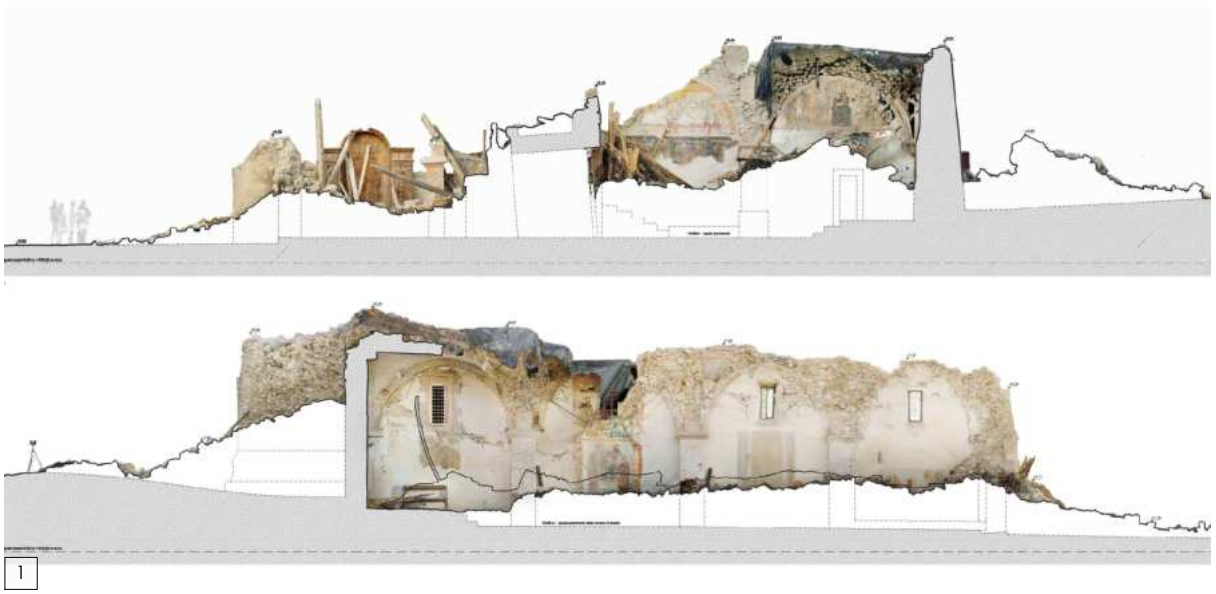
EARTHQUAKE AND WAR DAMAGES

Campi di Norcia - Perugia - Church of San Salvatore - Three-dimensional laser scanning, terrestrial and aerial imaging and 3D mapping, topographic survey of the ruins of the church and analysis of the documentation methodologies. 2016

In 2016, we surveyed the San Salvatore site, before, during and after the first operations, providing support for structural strenghtening, securing, rubble removal and cataloging of scattered material, construction of protective structures, etc.
It was necessary to penetrate into collapsed areas, which made the work very complex. The structures were no longer visible having been covered by rubble and debris, but it was mandatory to indicate even those parts in the drawings. So we used the most advanced technologies, to be able to remotely survey the site with absolute precision and no risks for operators.
Here are proposed some drawings of the first phase of the survey.

Notes:
- Client: ISCR Istituto Superiore per la Conservazione ed il Restauro.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ORTHOPHOTOGRAPHIC CROSS SECTIONS AA' - BB' 1

ORTHOPHOTOGRAPHIC PLAN 2

FIELD SURVEY - LASER SCANNING 3

FIELD SURVEY - HEXACOPTER DRONE 4

FRAMES EXTRACTED FROM THE VIDEO PRESENTATION 5

ARCHITECTURAL 3D SURVEY

Complex of Convicinio di Sant'Antonio - Matera - Italy - three-dimensional laser scanning, photogrammetric and topographic survey of the four rupestrian churches. 2017.

The Convicinio di Sant'Antonio is a complex of four rupestrian churches, built inside the rock between the 12th and 13th centuries. In the churches there are wall paintings preserved in various conditions of conservation.
The survey was focused on the documentation of the wall paintings and on the architectural survey of the structures. An integrated system of technologies was used for the generation of a high-resolution three-dimensional model, from which all the graphic and orthophotographic drawings were extracted. Two laser scanners, a total station and a three-dimensional photogrammetric survey system were used in the field survey.

Note:
- Client: ISCR - Istituto Superiore per la Conservazione ed il Restauro.

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ORTHOPHOTOGRAPHIC ELEVATION 1

WALL PAINTING'S DETAIL OF CHURCH N.2 2

GENERAL PLAN OF THE COMPLEX 3

3D AND ORTHOPHOTOGRAPHIC SURVEY

Venezia, Italy - Chiesa di San Zaccaria, Cappella di San Tarasio - Cad and Ortophotographic survey of the chapel and the frescoes. 2022

San Tarasio's Chapel is located in San Zaccaria's Church and it's known as Golden Chapel for the surfaces's richness. The chapel was built between 1440 and 1443 to replace the first apse of the church, destroyed in a fire in 1105.

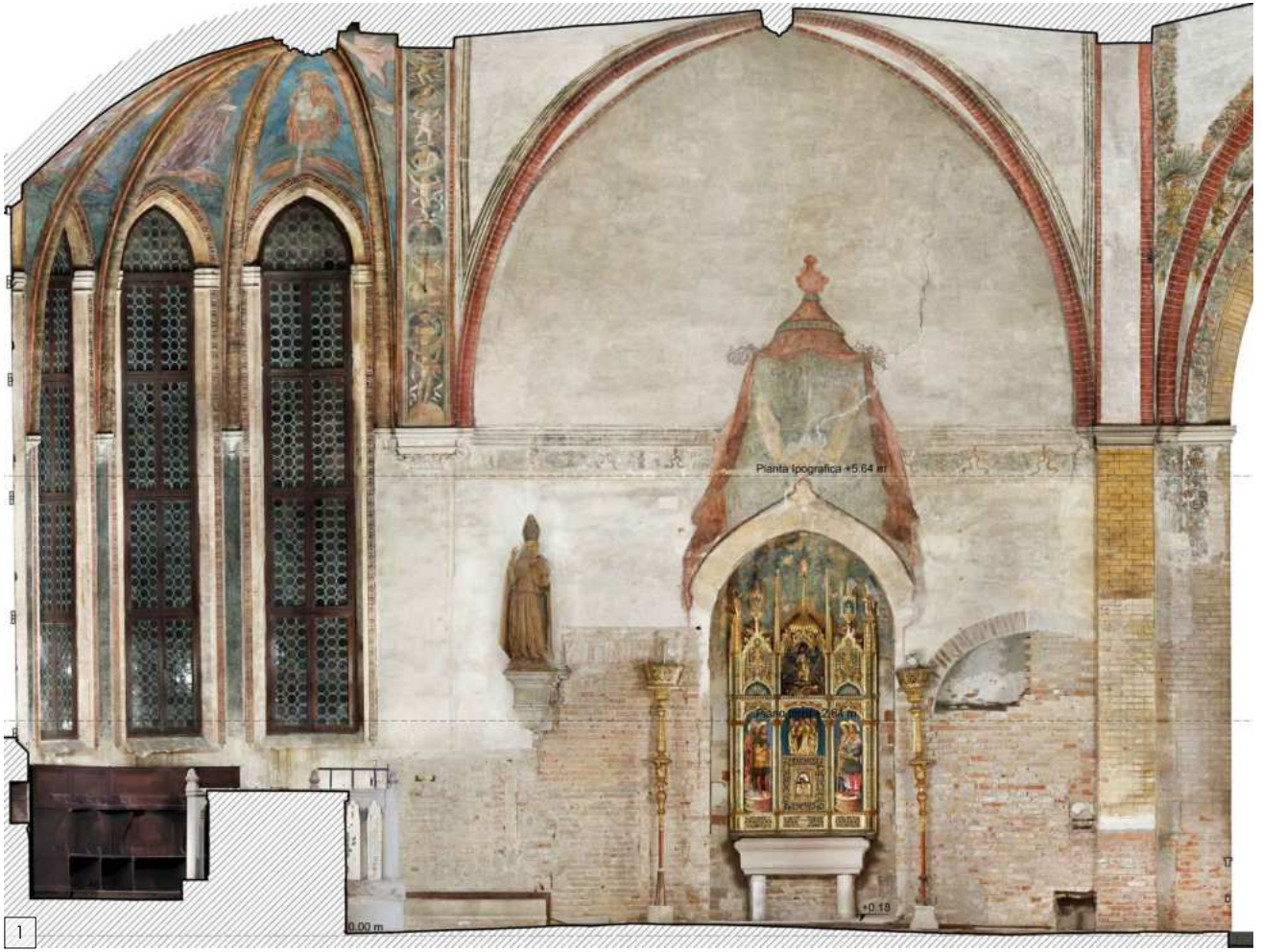
We produced a detailed three-dimensional and orthophotographic survey of the chapel.

The aim of the survey was to produce high resolution orthophotographic elevations and the flat orthophotographic reproduction of all the painted surfaces, in order to produce the basis for the conservation mapping and project. The orthophotographic images have a resolution of 1:1 scale. Plans and sections of the chapel were produced in cad format too.

For the field survey we used a phase shift laser scanner and a high resolution camera for detailed three-dimensional photogrammetric survey.

Note:

- Objective of the assignment: Three-dimensional survey and orthophotographic restitution of the frescoes;
- Client: ISCR - Istituto Superiore per la Conservazione ed il Restauro.



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ORTHOPHOTOGRAPHIC SECTION OF THE CHAPEL 1

VIEW OF THE 3D MODEL OF THE APSE 2

VIEW OF THE 3D MODEL OF THE CHAPEL 3

FLAT REPRODUCTION OF THE APSE'S SIDE OF THE ARCH 4

3D AND ORTHOPHOTOGRAPHIC SURVEY

Rome, Italy - Capitoline Museums - Palazzo dei Conservatori - Sala dei Capitani - Ortophotographic survey of the frescoes. 2020

We produced a detailed three-dimensional and orthophotographic survey of the "Sala dei Capitani" in the Capitoline Museums.

The aim of the survey was to produce four high resolution orthophotographic elevations of the painted walls and statues for the conservation design of the hall.

The orthophotographic images have a resolution of 1:1 scale.

For the field survey we used a phase shift laser scanner and a high resolution camera for detailed three-dimensional photogrammetric surveys.

Note:

- Objective of the assignment: Three-dimensional survey and orthophotographic restitution of the frescoes;
- Client: CBC Conservazione Beni Culturali Soc. Coop.

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PAINTING'S ORTHOPHOTO "LA BATTAGLIA DEL PONTE REGILLO" 1

2

3D MODEL'S VIEW OF THE ROOM 2

3

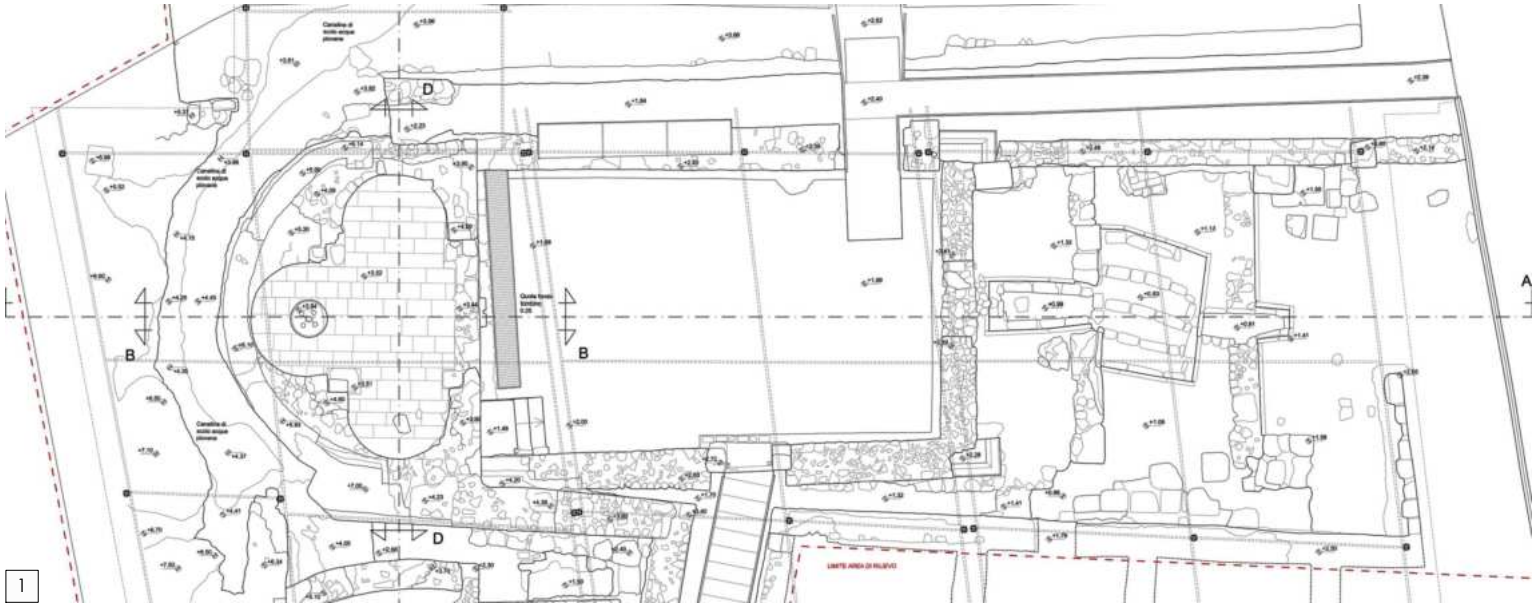
DETAIL OF THE PAINTING "ORAZIO COCLITE AL PONTE SUBLICIO" 3

3D AND ORTHOPHOTOGRAPHIC SURVEY

Archaeological area of the San Vincenzo al Volturno Monastery, Castel San Vincenzo (IS), Italy - Three-dimensional and orthophotographic survey of the frescoes of the Epiphanius abbot's crypt. 2021

The Epiphanius abbot's crypt contains one of the most importand frescoes cycle of the early Middle Ages (9th century A.D.).
We carried out the 3D laser scanner and orthophotographic survey of the frescoes and the flat orthophotographic reproduction of the painted surfaces in order to produce the basis for the conservation mapping and project. The ruins of the curch and the west triconch were surveyed too, in order to produce plans, sections and elevations of the the complex both in orthophotographic and cad format.

Notes:
- Objective of the assignment: Three-dimensional survey of the frescoes of the Epiphanius abbot's crypt inside the archaeological area of the San Vincenzo al Volturno Monastery;
- Client: Ministry of Culture, Soprintendenza Archeologia Belle Arti e Paesaggio del Molise.



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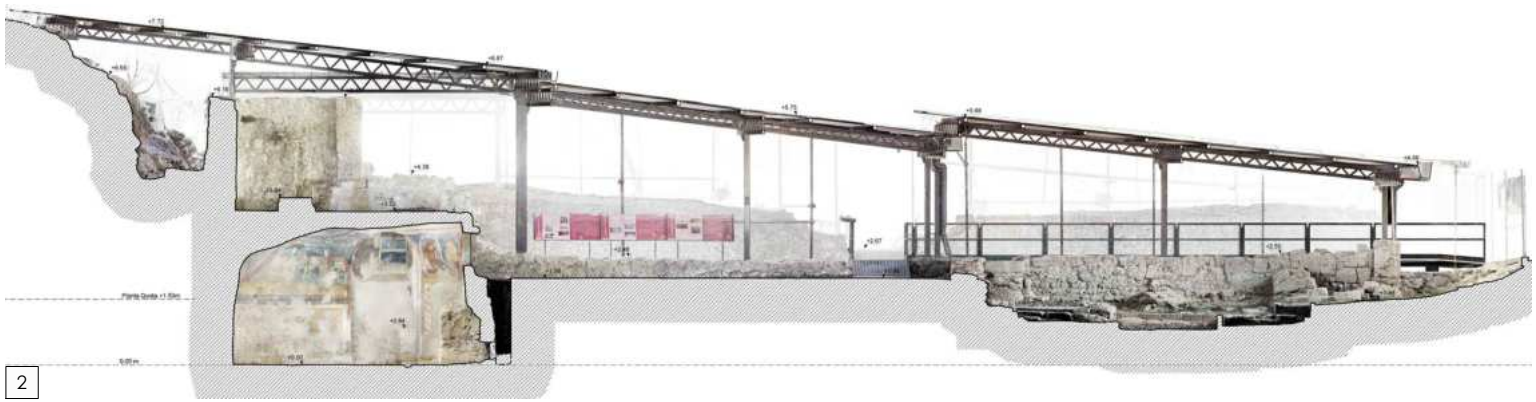
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PLAN OF THE ARCHEOLOGICAL RUIN 1

CRYPT'S ORTHOPHOTOGRAPHIC SECTION 2

ORTHOPHOTOGRAPHIC REPRODUCTION OF THE FRESCOES 3

LASER SCAN DURING THE SURVEY OF THE CHURCH 'S TRICONCH 4

3D AND ORTHOPHOTOGRAPHIC SURVEY

Rome - Church of Santa Maria della Pace - Chigi Chapel - Three-dimensional and orthophotographic survey. 2019

The Chigi Chapel is a Raphael work and has an elevation of about 11 metres.
The survey was realized before the restoration works in order to have an high resolution orthophotographic reproduction of the surfaces and the best color rendering.
On field we used a phase shift laser scanner, an high resolution camera and two professional photographic lamps.
The acquisition was realized with a 4 pixel/mm^2 resolution.

Notes:
- Objective of the assignment: Three-dimensional and orthophotographic survey;
- Client: Forcellino restauri.

CHAPEL'S ORTHOPHOTOGRAPHIC ELEVATION 1

CHAPEL'S SECTION 2

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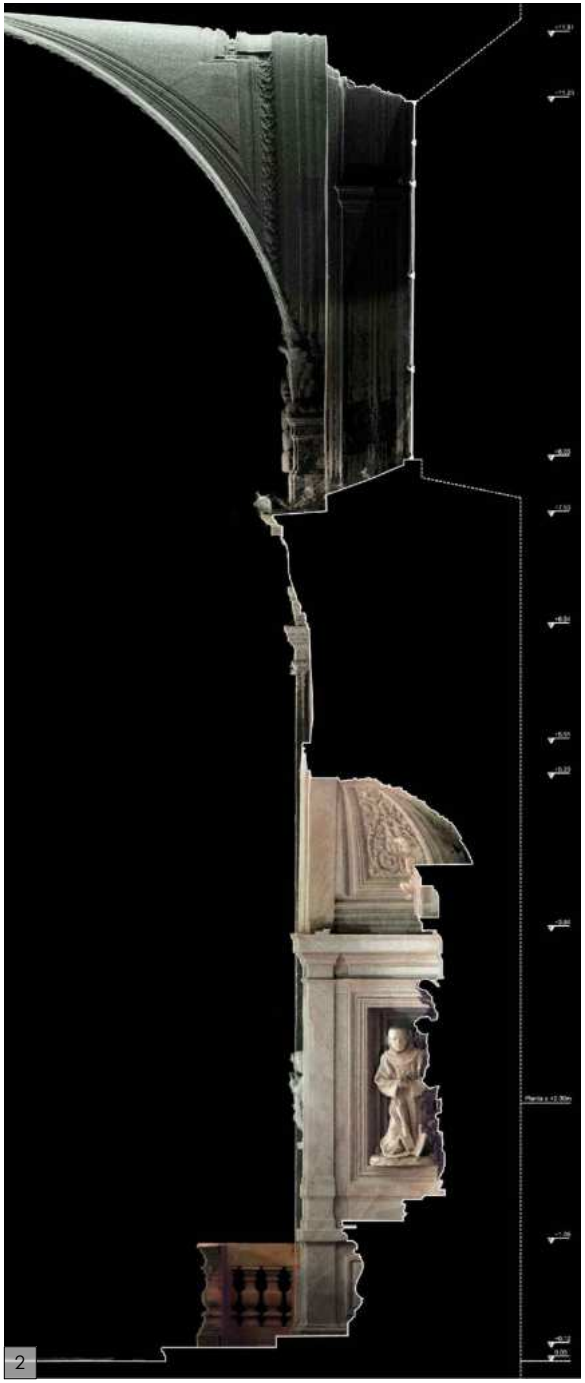
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3D AND ORTHOPHOTOGRAPHIC SURVEY

Venice - Gallerie dell'Accademia - Vittore Carpaccio's Saint Ursula Cycle - Ortophotographic survey of the paintings. 2016

For the conservation programme of the Saint Ursula cycle by Vittore Carpaccio we produced a detailed three-dimensional and orthophotographic survey of the paintings of the room. The aim of the survey was to obtain an high resolution orthophotographic reproduction of the paintings and the best color rendering, to be used as a basis for the study of the paintings and for the documentation of conservation works. The orthophotographic images had a resolution of 1:1 scale.
For the field survey we used a phase shift laser scanner and a high resolution camera for detailed three-dimensional photogrammetric surveys.

Note:
- Client: SAVE VENICE Inc.

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ORTHOPHOTO OF THE PAINTING "RITORNO DEGLI AMBASCIATORI ALLA CORTE INGLESE 1

ORTHOPHOTO'S DETAIL 2

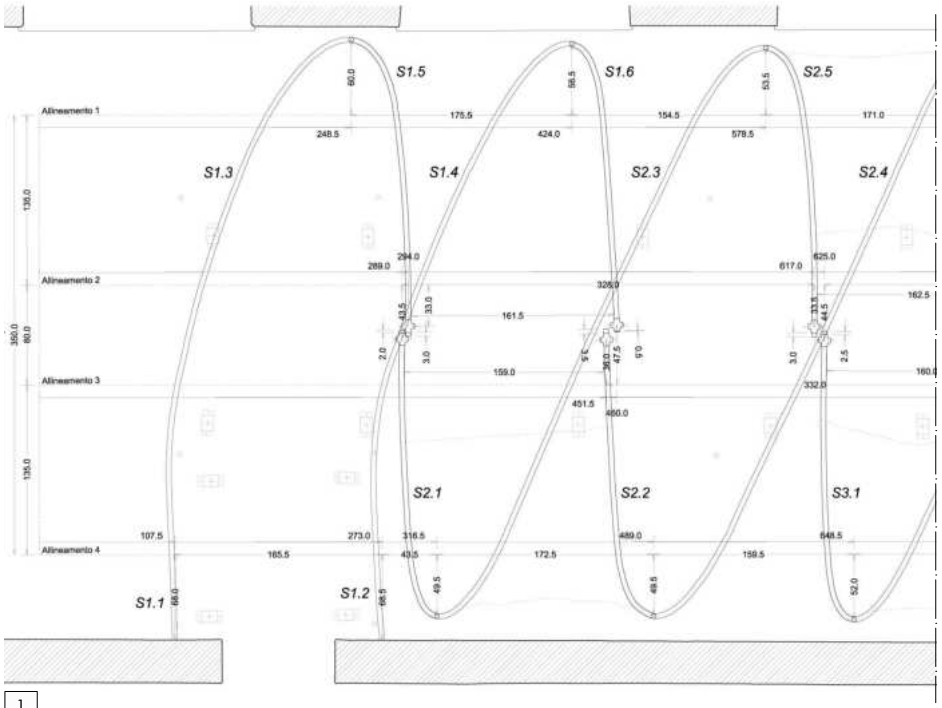
3D MODEL'S VIEW OF THE ROOM 3

Auschwitz, Poland - Italian Auschwitz memorial, Block 21- Survey and production of detailed design of the reconstruction of the memorial. 2016

The Italian Auschwitz memorial, inaugurated in 1980, commemorates all the Italians who died in Nazi concentration camps. The project, designed by BBPR studio, features a spiral helix covered with a painted canvas and a platform that crosses it.

We carried out the survey using laser scans, with the aim of producing detailed desing useful for the disassembly of the memorial and its reassembly in Florence in 2016. The memorial is divided into Zones A, B, and E, each of which has been represented in CAD drawings, both in plan and sections, at a scale of 1:20. We used a scale of 1:5 for the construction details.

Notes:
- Objective of the assignment: Detailed design for the reassembly of the monument;
- Client: Ministero dei Beni e delle Attività Culturali ed il Turismo - ISCR



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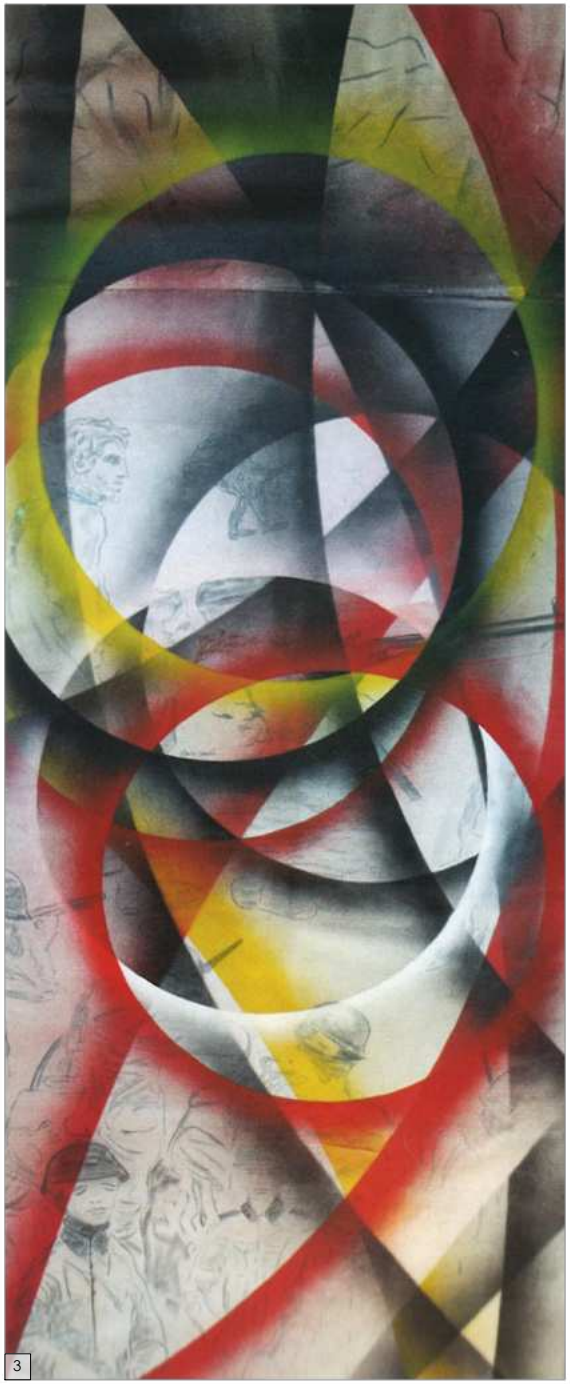

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PLAN EXCERPT OF THE SPIRAL SITUATED IN "ZONE A" 1

PHOTO OF THE S17 CANVAS REASSEMBLED AFTER RESTORATION 2

DETAIL OF THE S12 CANVAS 3

FULL-SCALE AND DIGITAL REPLICA

Rome, Italy - Basilica Ulpia in the Trajan's Forum - Design of the complete 3D model of the replica, composed of the original architectural fragments and the simplified completion parts of the inner facade of the main nave of the Basilica. 2021-2022

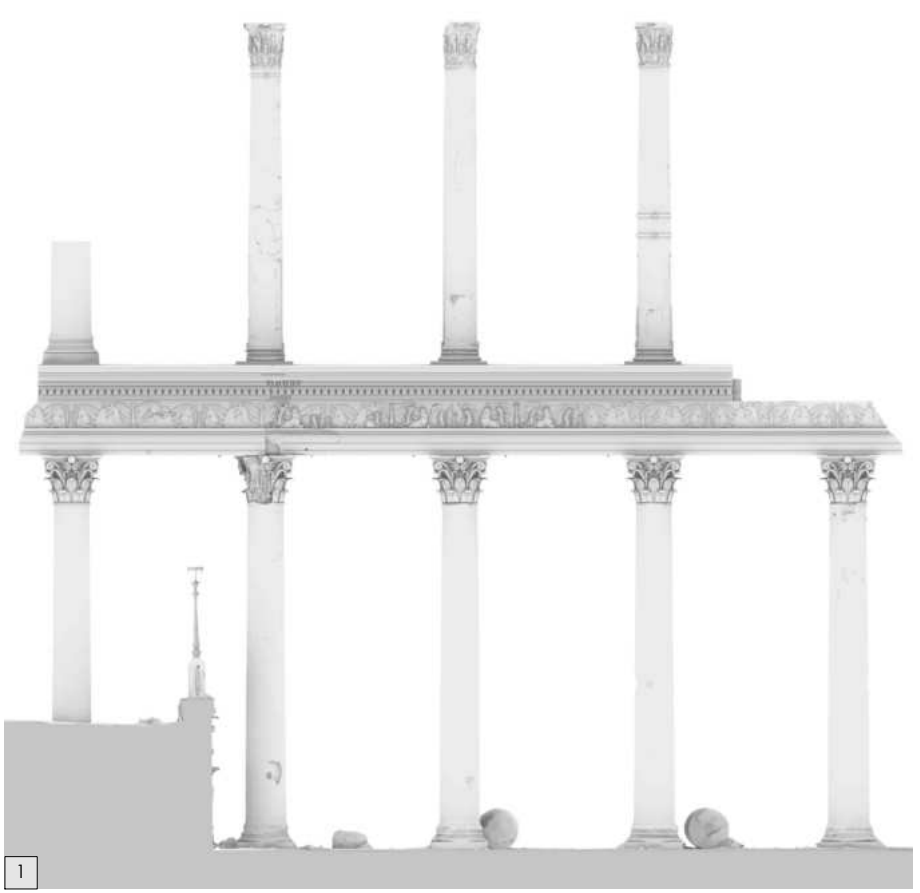
Trajan's Forum was the largest complex in the ancient center of Rome. The Basilica Ulpia covered an area of approximately 10,200 square meters.

We produced the anastylosis of the internal facade of the basilica including the stairways and surrounding arrangements. The two reconstructed architectural structures have a total height of approximately 22 meters. Starting from the 3D survey of the site and the detailed survey of the fragments, we produced the study of the geometry of the carved decorations in order to propose several solutions of the simplified parts.

The full-scale replicas have been produced starting from the 3D models, using CNC stone carving machines. In particular, the original parts were reproduced in marble and inserted into the completion parts. The completion parts were produced using counterforms extracted from the three-dimensional models.

Note:

- Objective of the assignment: Anastylosis of the first and second order of the facade of the main nave of the Basilica ;
- Client: Sovrintendenza Capitolina ai Beni Culturali.



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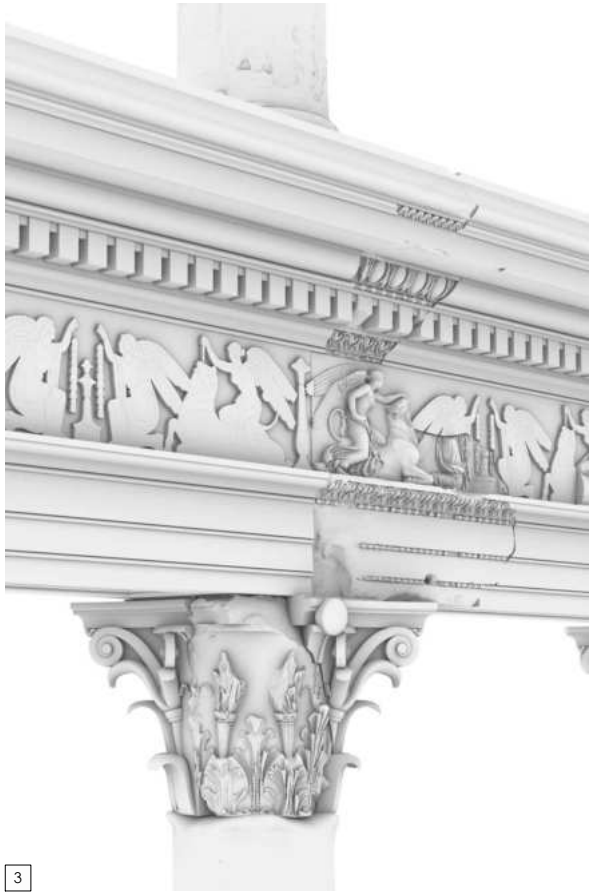

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FULL-SCALE AND DIGITAL REPLICA

Rome, Italy - Galleria Borghese - Three-dimensional survey and photomodeling of "La Verità" for the virtual evaluation of the results of a complete restoration. 2022

"*La Verità*" is a sculpture created by Gian Lorenzo Bernini between 1646 and 1652, currently exhibited at the Galleria Borghese. She is depicted as a naked girl with a smile on her face, sitting on a rock.

The three-dimensional survey of the statue and the surrounding environment was carried out using laser scanning and photogrammetry. A high-resolution digital reflex allowed us to have a detail of 100 pixels per square millimeter. All the acquired data have been integrated into a 3D model.

The aim of the survey and photomodeling was to simulate a restoration project on the 3D model.

Notes:
- Objective of the assignment: Three-dimensional survey and photomodeling for the virtual evaluation of the results of a complete restoration;
- Client: Galleria Borghese

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FULL-SCALE AND DIGITAL REPLICA

Rome, Italy - Galleria Borghese Museum - 3D Laser scanning of the Hercules statue. 2020

The Hercules statue is a roman work located in the Galleria Borghese Museum in Rome.
The aim of this survey was to produce a full-scale replica of the statue for conservation reasons.
The original statue had to be moved to the interior of the Museum and the administration wanted to keep a replica of it on the terrace.
We carried out a phase shift laser scanner 3D survey and a photogrammetric 3D survey with an high resolution camera. Starting from the 3D digital copy of the statue, it was possible to produce the full-scale replica.

Note:
- Objective of the assignment: 3D laser scanning of the Hercules statue;

- Client: Galleria Borghese.


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FULL-SCALE AND DIGITAL REPLICA

Roma - Sistemazione Necropoli e Magazzino Laurentino - Three-dimensional survey, graphic and orthophotographic restitution. 2019

This assignment consisted of surveying archaeological objects archived in the warehouses of the Diocletian's Bath. These objects included Roman vases of small to medium dimensions, mainly from the 3rd century B.C., some of which were fragmented.

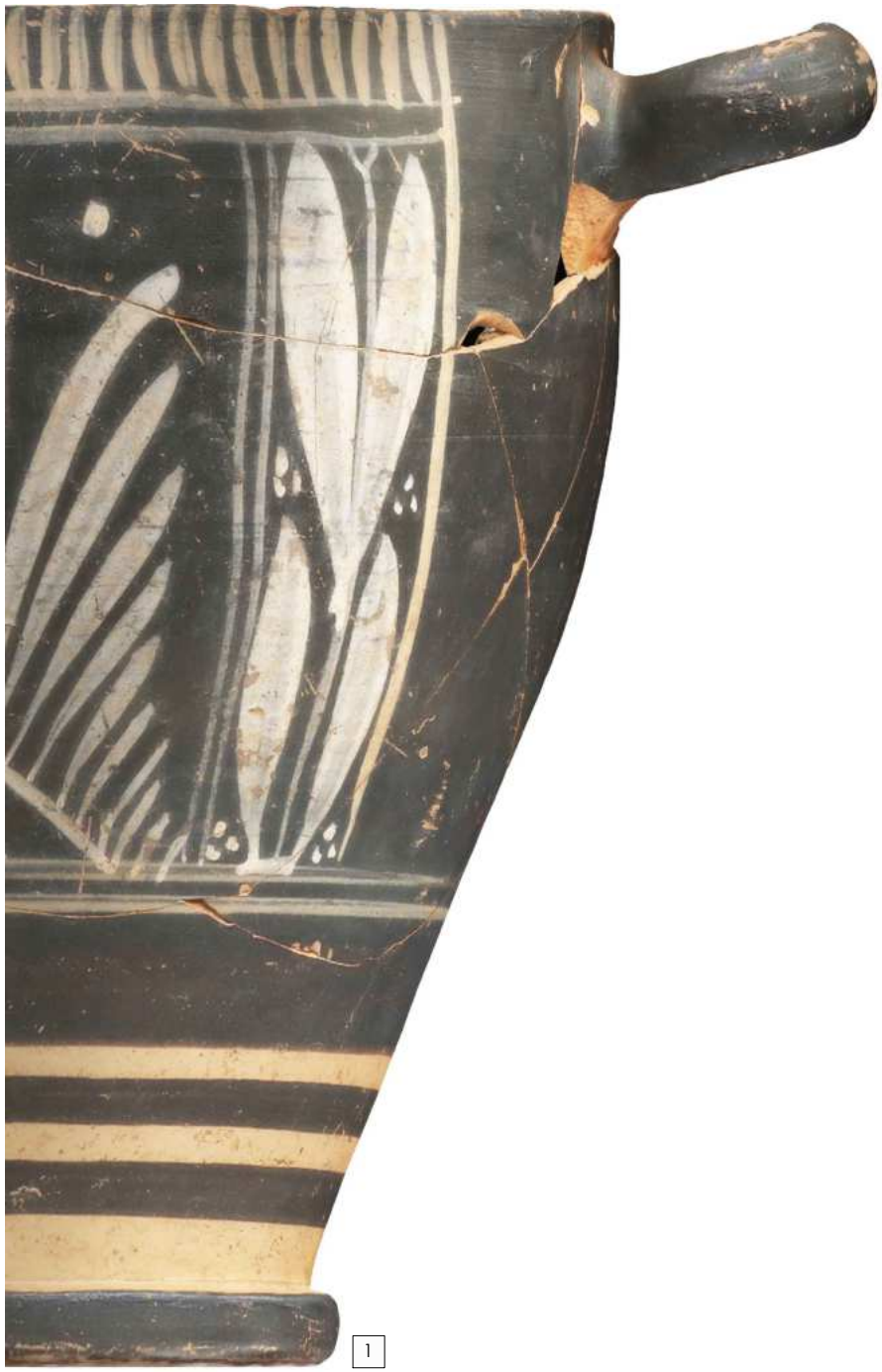
The survey was carried out using laser scanning and photogrammetry with a high-resolution digital reflex camera. Subsequently we produced three-dimensional models of each vase. Starting from the 3D models, we illustrated each vase with orthophotographic elevations, as well as sections and elevations in CAD drawings.

Notes:
- Objective of the assignment: Sistemazione Necropoli e Magazzino Laurentino - Three-dimensional survey, graphic and orthophotographic restitution;
- Client: Private

ORTHOPHOTOGRAPHIC ELEVATION EXCERPT "*VASE 3*" 1

CAD DRAWING SECTION - ELEVATION "*VASE 9*" 2

CAD DRAWING ELEVATION "*VASE 8*" 3



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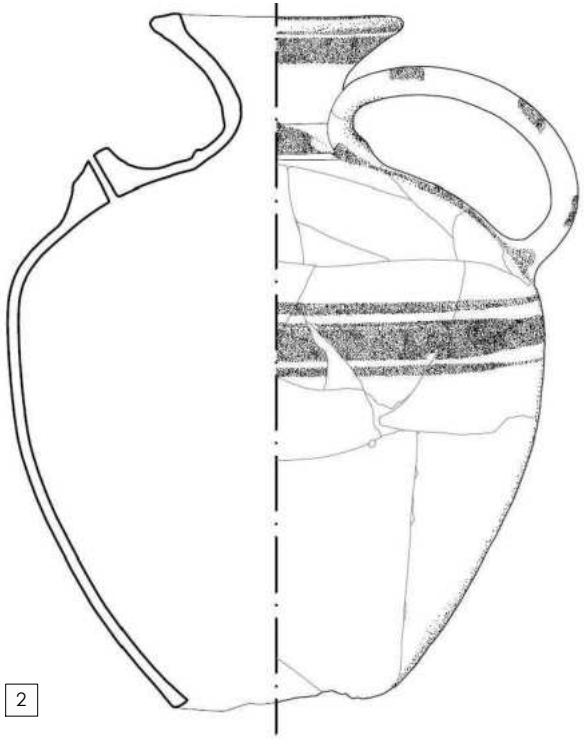

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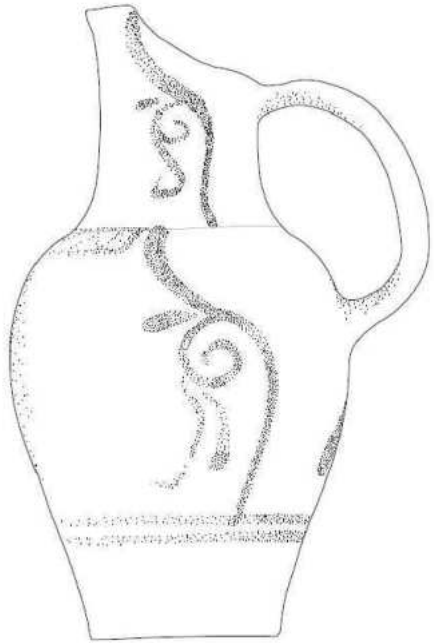

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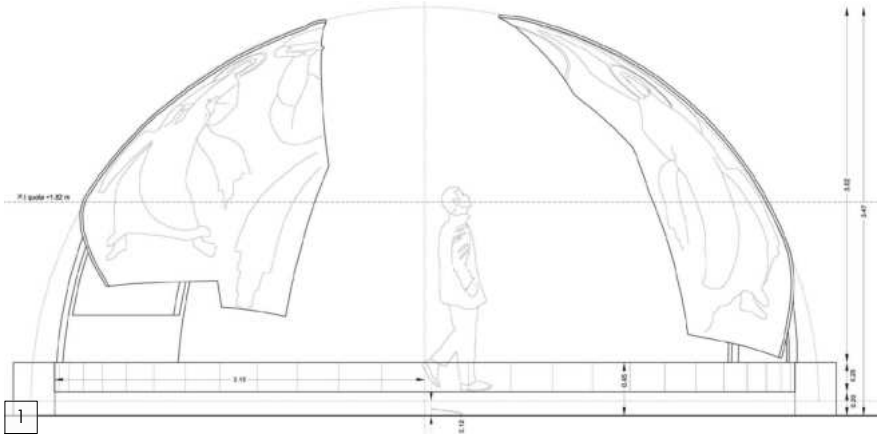
Tuscania (VT) - Church of Saint Peter and Palazzo dei Canonici - Support in the design of the new setting of the painted fragments' room in the Palazzo dei Canonici. 2019

The scope of service was:
- the 3D survey of the Palazzo dei Canonici building;
- the 3D survey of the apse of the church;
- the 3D modeling of the design elements;
- the support in the design of the setting of the room.

A very interesting side of the work was the geometrical study we conducted on the two parts of the apse, collapsed in the 1971 earthquake. The study was necessary for the modeling of the parts in order to plan the new positioning of them and the design of their supports.

Note:
- Objective of the assignment: Support in the design of the new setting of the painted fragments' room in the Palazzo dei Canonici.;
- Client: ISCR - Istituto Superiore per la Conservazione ed il Restauro.



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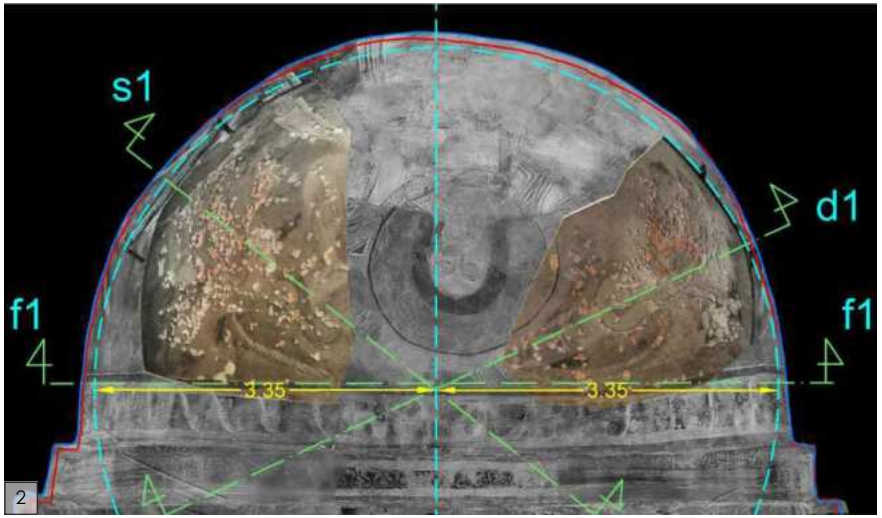

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FULL-SCALE AND DIGITAL REPLICA

Rome, Italy - Statue of St. Bibiana by Gian Lorenzo Bernini in the church of Santa Bibiana.
Three-dimensional survey of the sculpture and 3D modelling of the niche for the new placement of the statue. 2018

In 18th century, after the base of the statue of Santa Bibiana, by Gian Lorenzo Bernini, was damaged, it was relocated to an incorrect position and inclination. After an important conservation work, in September 2018, it was decided to study a new location within the niche, based on the existing historical iconography. Therefore we made two 3D surveys, one of the niche and one of the sculpture, in order to simulate the different admissible solutions, correcting the rotation of the axis of the statue to the original position. The three-dimensional models was used to verify, in an indirect and non-invasive way, the best placement of the statue.

Notes:
- Objective of the assignment: Three-dimensional survey of the sculpture and 3D modelling of the niche for the new positioning of the statue of St. Bibiana;
- Client: Associazione "Piazza Vittorio APS"


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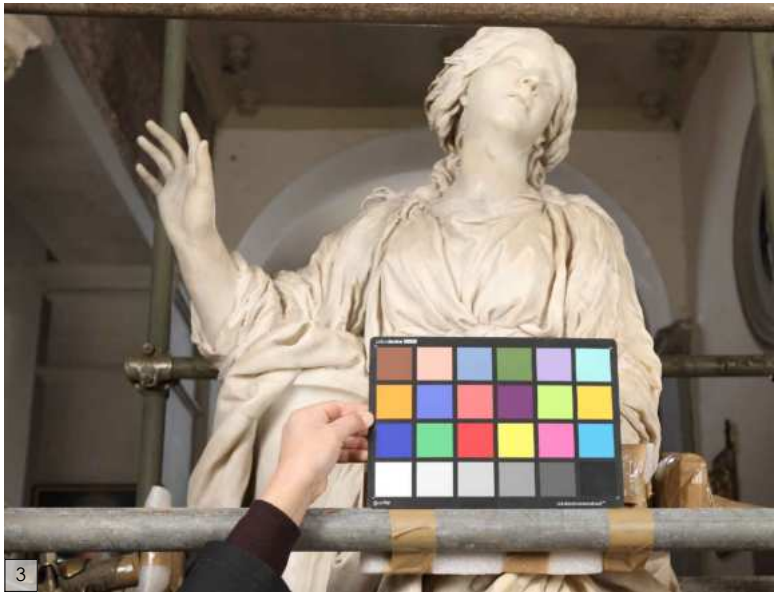
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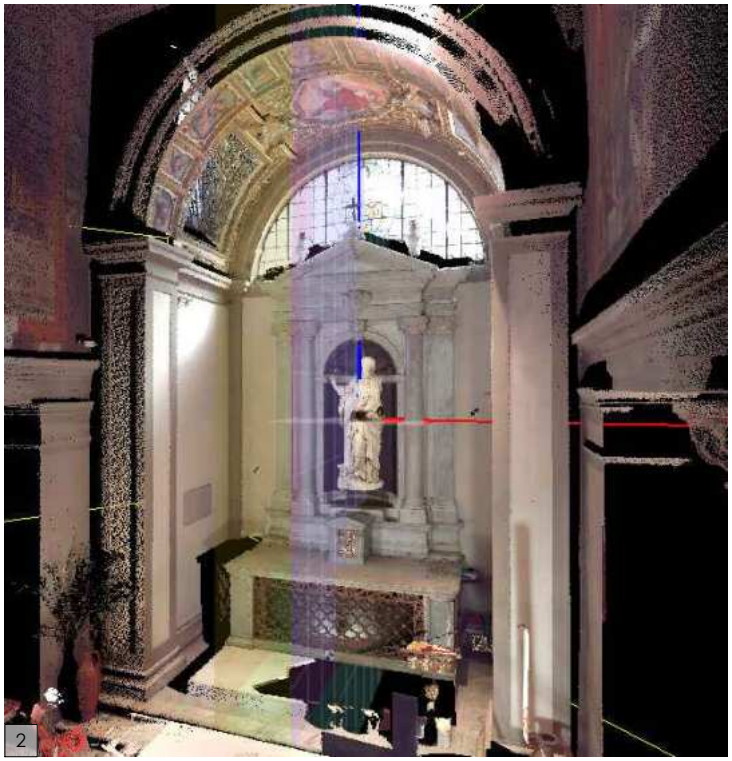
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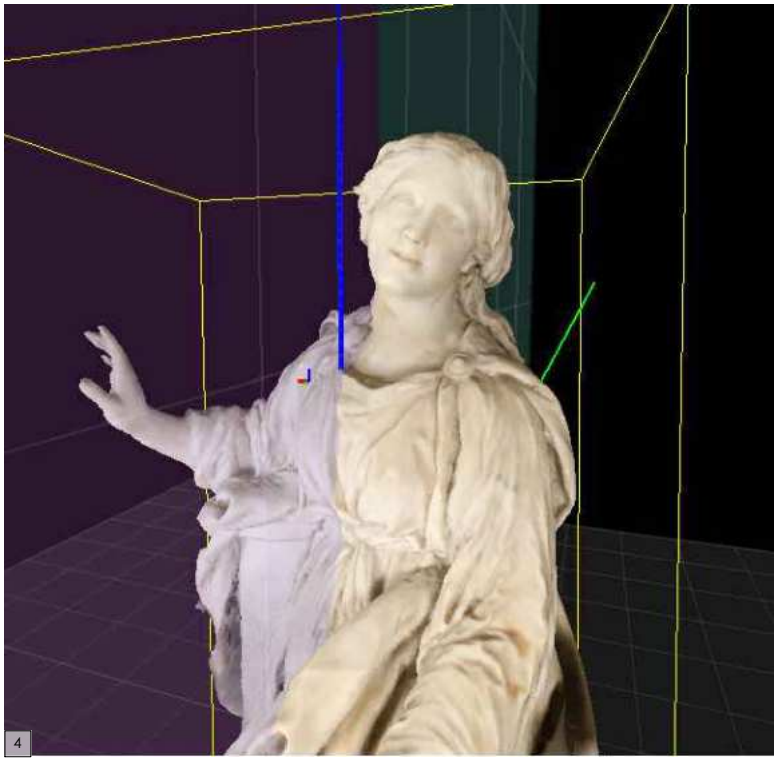
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REPOSITIONING OF THE STAUTE'S 3D MODEL IN THE NICHE 1

3D MODEL'S GENERAL VIEW 2

SAMPLING OF THE COLORS WITH COLORCHECKER 3

STATUE'S 3D MODEL 4

3D AND ORTHOPHOTOGRAPHIC SURVEY

Pisa - Italy - Cristo Deposto - Museo dell'Opera del Duomo
2014

In October 2014 we carried out the survey and graphic restitution of the wooden sculpture of the Cristo Deposto, dating from the 12th century. It is stored in the Museo dell'Opera del Duomo of Pisa, which planned a new museum set-up and conservative restoration interventions on the sculpture. We made a three-dimensional model of the sculpture, from which all the drawings were produced: front, lateral and back elevations, orthophotographic images and drawings.

An altitude analysis was also conducted to highlight the various elements that make up the wooden sculpture.

Notes:
- Subject appointed: CPT Studio and Chief Executive - Arch. Pietro Gasparri;
- Client: MIBACT - ISCR - Istituto Superiore per la Conservazione ed il Restauro

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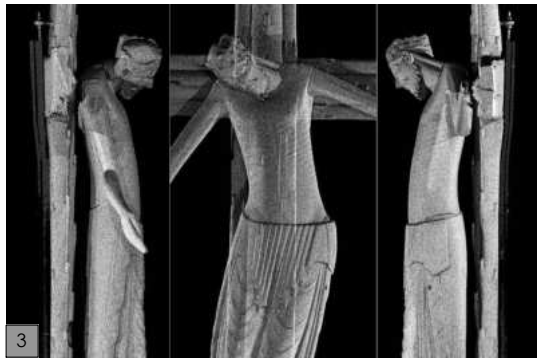

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ORTHOPHOTOGRAPHIC FRONTAL VIEW 1

ORTHOPHOTOGRAPHIC DETAIL OF THE SCULPTURE 2

POINT CLOUD 3D MODEL 3

FIELD SURVEY - LASER SCANNING AND PHOTOGRAMMETRY 4

3D AND ORTHOPHOTOGRAPHIC SURVEY

Iraq - Tell and Erbil Citadel

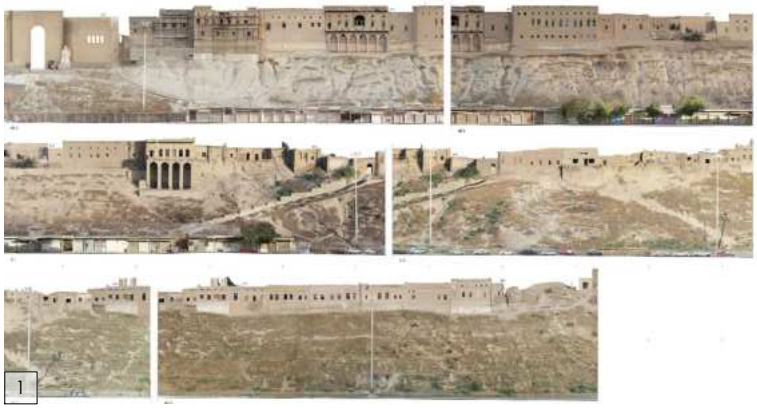
Studies for the stabilization of the Erbil Citadel Slope and Perimeter Facades. 2011

The Erbil Citadel was inserted in the UNESCO World Heritage List in 2014. The survey here shown is part of the documents produced for inscribing the Citadel in the List.

The survey was focused on the analysis of the tell and perimeter facades.

The field work was conducted by a team of three technicians in nine working days using an integrated system of technologies. A general polygonal net around the Citadel was realized using two GPS. At the same time the laser scans of the whole site were produced. A topographic survey were carried out by a tototal station, in order to georeference the scans. A photographic survey both from the ground and from 20 meters above, from an aerial lift truck, was necessary to generate the orthophoto of all the facades of the perimeter of the tell. The post processing phase lasted about two months to produce the topographic maps and the elevations of about 45,000 sqm both in orthographic and cad format.

- Objective of the assignment: Studies for the Stabilization of the Erbil Citadel and the Perimeter Façades;
- Client: ARS Progetti SpA for UNESCO
- UNESCO World Heritage Site.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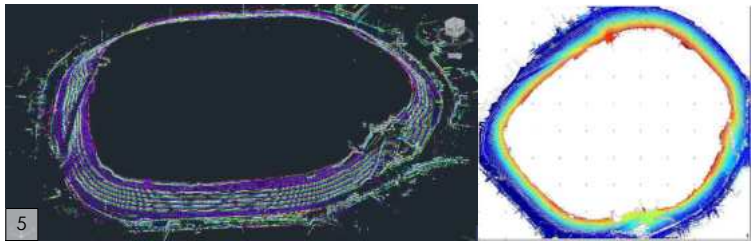
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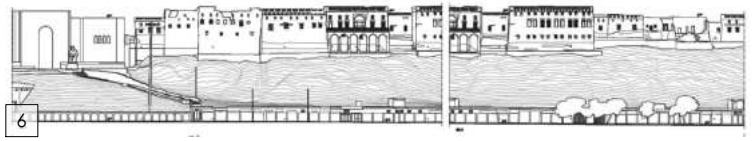
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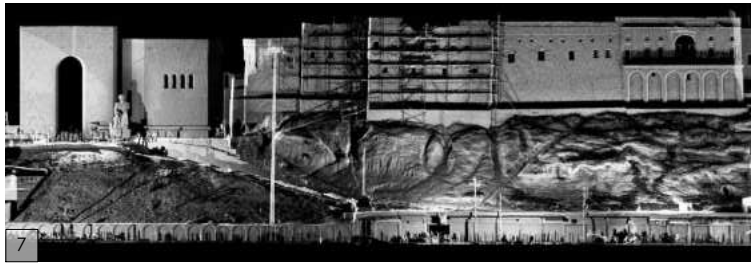
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3D AND ORTHOPHOTOGRAPHIC SURVEY

Scrovegni Chapel - Padova - Three-dimensional survey of the complex. 2014

The Scrovegni Chapel in Padova is known for the fresco cycle, one of the most important masterpieces painted by Giotto in the early 14th century. In April, 2014 we carried out the survey and the orthographic restitution of all the wall paintings of the Chapel's crypt. Within this assignment we also implemented the three-dimensional model of the upper chapel. All painted surfaces of the crypt were drawn in scale 1:20/50.

All the drawings were extracted from the three-dimensional model of the complex.

Note:
- Objective of the assignment: Survey of the Scrovegni Chapel crypt and ortophotographic reproduction of the wall paintings of the crypt. Laser scanner, topographic and photogrammetric technologies;
- Client: ISCR Istituto Superiore per la Conservazione e il Restauro

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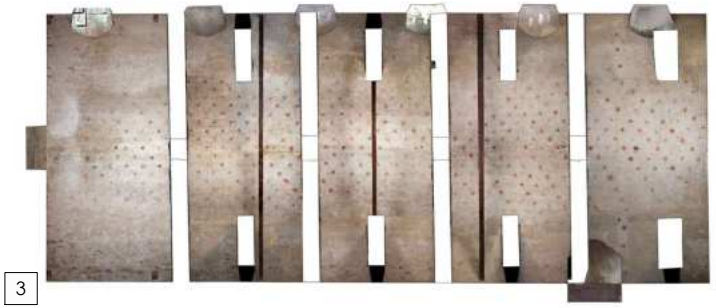

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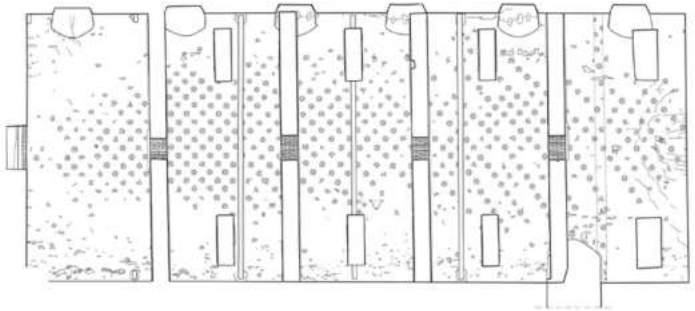

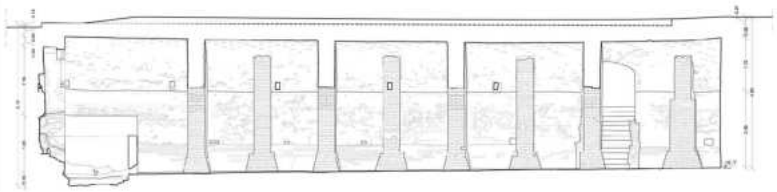

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CHAPEL 3D MODEL 1

CROSS SECTION - POINT CLOUD IN RGB COLOURS 2

IPOGRAPHIC PLAN, ORTHOPHOTOGRAPHIC VIEW AND CAD DRAWING 3

SECTION, ORTHOPHOTOGRAPHIC VIEW AND CAD DRAWING 4

3D AND ORTHOPHOTOGRAPHIC SURVEY

Survey of Decani Monastery and Pec Patriarcate by photogrammetry- Kosovo. 2009

Between 2006 and 2012 we carried out the 3D survey, orthophoto and measured drawings of all the painted surfaces of the Byzantine complexes ,inscribed on UNESCO's World Heritage List since 2004. The assignment included the static monitoring of the walls by means of photogrammetric and topographic technologies.

The frescoed surfaces (more than 7000 square meters) were drawn at 1:20 - 1:10 scale.

The images refer to Decani Monastery (2009); they have been acquired by three-dimensional photogrammetric techniques for generating point clouds.

Notes:
- Objective of the assignment: Survey of the frescoed surfaces of Decani Monastery, Kosovo
- Client: INTERSOS ngo for Unesco
- UNESCO World Heritage Site.

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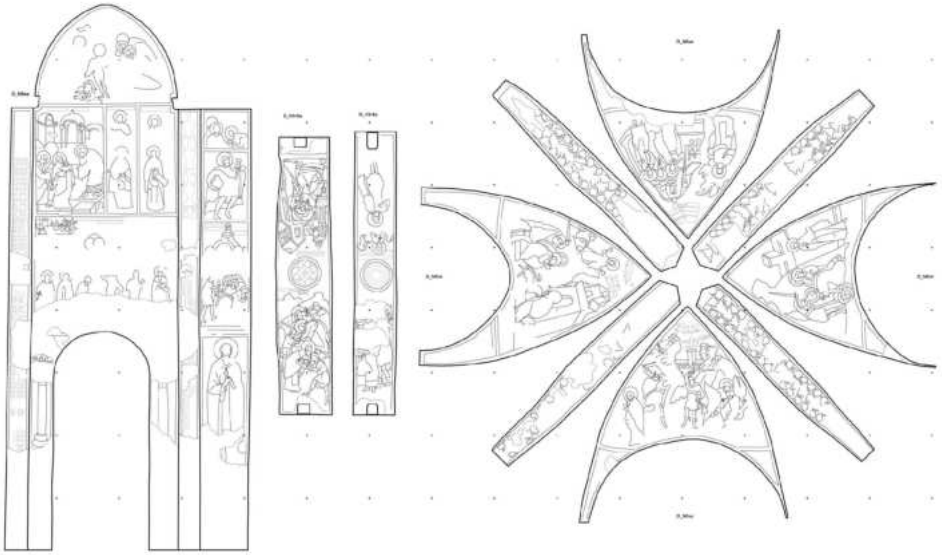

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REFLECTEN CEILING PLAN 1

VIEW OF THE PHOTOGRAMMETRIC POINT CLOUD 2

CAD DROWINGS 3

ORTHOPHOTO 4

3D AND ORTHOPHOTOGRAPHIC SURVEY

Gracanica - Kosovo - Gracanica Monastery - Topographic, 3D laser scanning and photogrammetric survey, flat reproduction of the iconography of the wall paintings. 2012

Gracanica Monastery is one of Kosovo monuments in the UNESCO's World Heritage List. The survey was carried out to document all the painted cycles. Image n.7 is an ortophotographic section, in scale 1:20, here shown out of scale. All sections are produced from the tridimentional model. The perspective views of the church are extracted from the points clouds, shown in RGB colors. The colors of images are obtained directly from the internal camera of the laser scanner. Inside the church, we carried out the survey by using two different techniques: laser scanning integrated with high resolution pictures, taken from a professional camera.

- Objective of the assignement : 3D laser scanning and photogrammetric survey of the wall paintings of Gracanica Monastery in Kosovo;

- Client: INTERSOS ong for US Embassy in Kosovo.


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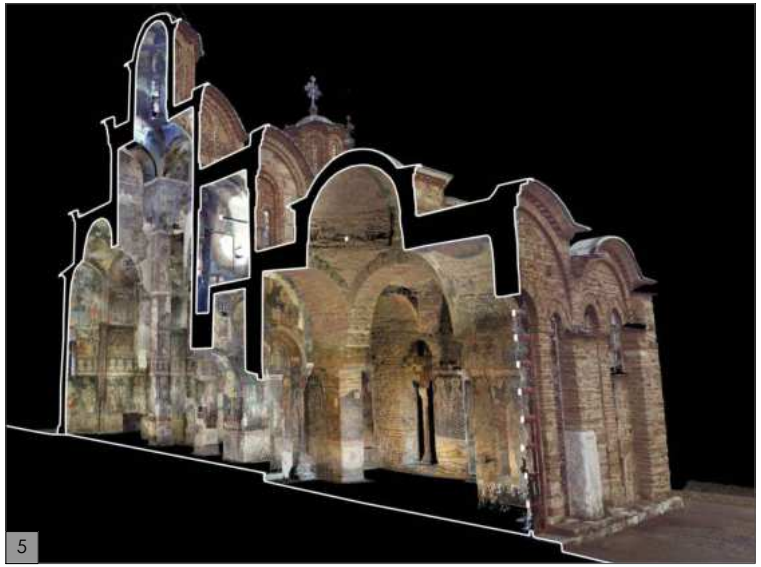
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3D MODEL'S VIEW 1

3D MODEL'S VIEW 2

3D MODEL'S VIEW 3

3D MODEL'S VIEW 4

AXONOMETRIC CUTAWAY 3D 5

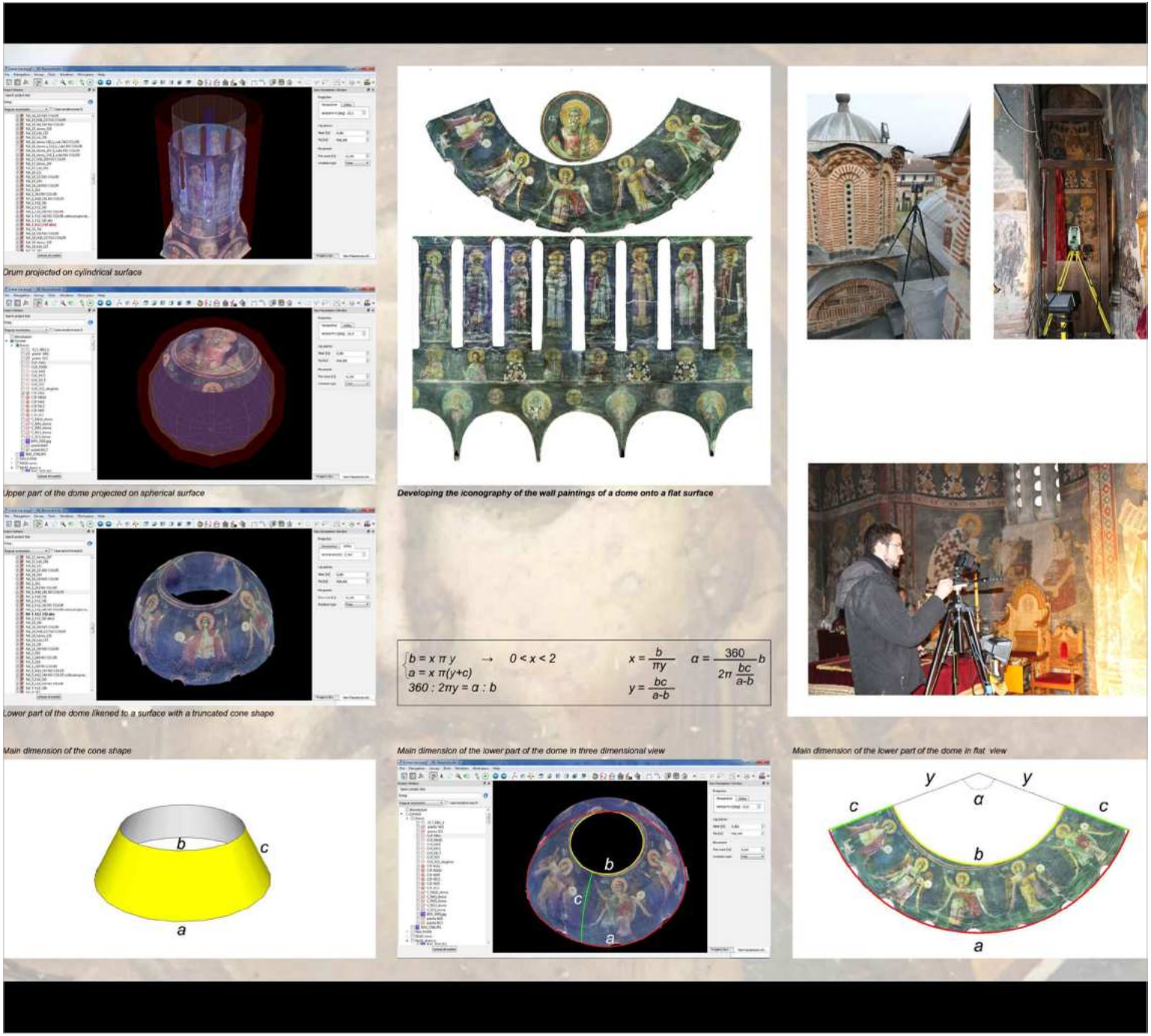
ORTHOPHOTOGRAPHIC SECTOIN 6

ORTHOPHOTOGRAPHIC SECTION 7

Gracanica - Kosovo - Gracanica Monastery - Topographic, 3D laser scanning and photogrammetric survey, flat reproduction of the iconography of the wall paintings. 2012

The church contains seven domes, five of which are set on painted drums. These architectonic elements make a curved surface form that can be likened to a cylinder. We found the way to develop curve surfaces and vaults with complex shapes, with specific solution in regard to the geometry and iconographic division of the paintings. In the following images are shown some examples of the flat reproduction of curved surfaces.

Note:
- Object of the assignement : 3D laser scanning and photogrammetric survey of the wall paintings of Gracanica Monastery in Kosovo ;
- Client: INTERSOS ong; Founded: US Embassy in Kosovo.



3D AND ORTHOPHOTOGRAPHIC SURVEY

S. Cecilia, S. Clemente, S. Francesca Romana - Rome - Survey of the apses, laser scanner technology. 2013

Within the frame of the ISCR's studies on mosaic decorations in early Christian basilicas of S. Cecilia, S. Clemente and S. Francesca Romana, in 2013 we surveyed and drew the decorations in CAD. We focused on the survey and on producing a flat view of the churches' apses. The images on the right show some examples of orthographic plans and flat projection of the apses, with different geometries, according to the iconography of the mosaics.

- Objective of the assignment: Survey of the apses of the basilicas of S. Cecilia, S. Clemente and S. Francesca Romana;
- Client: ISCR Istituto Superiore per la Conservazione e il Restauro.

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3D AND ORTHOPHOTOGRAPHIC SURVEY

Naples - Italy - Battistero di San Giovanni in Fonte -
General survey of the complex with laser scanner and photogrammetric technology. 2014

The aim of the general survey of the Battistero di San Giovanni in Fonte in Naples was an accurate documentation of the mosaics dated back to the V century a.D. We produced ortophotographic elevations, sections and plan, drawn in cad in scale 1:50-1:10. The flat drawing of the dome mosaics derived from the study of the irregular geometry of the surfaces.

Notes:
- Objective of the assignment: Survey of Battistero di San Giovanni in Fonte ;
- Client: ISCR - Istituto Superiore per la Conservazione ed il Restauro

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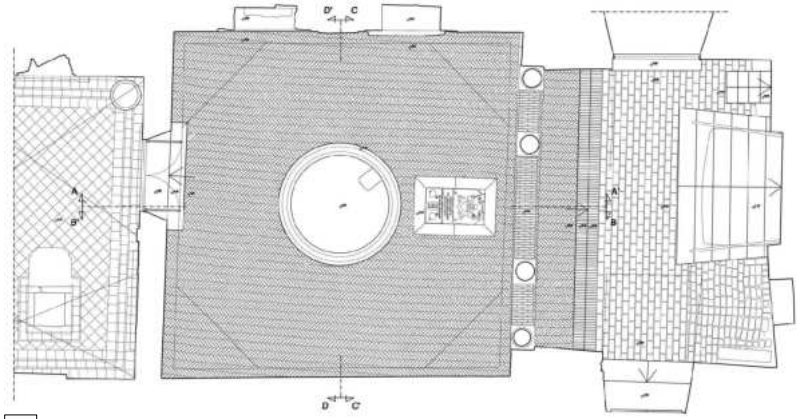

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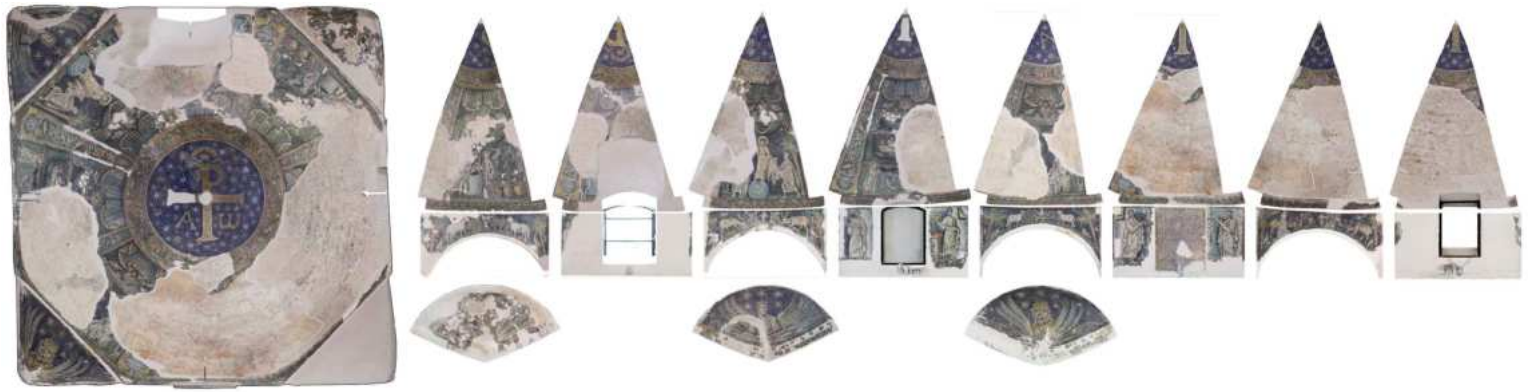

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3D MODEL'S PERSPECTIVE VIEW 1

GENERAL PLAN - CAD DRAWING 2

ORTHOPHOTOGRAPHIC SECTIONS 3

IPOGRAPHIC PLAN AND FLAT DRAWING OF THE DOME 4

3D AND ORTHOPHOTOGRAPHIC SURVEY

Niccolò Forteguerri's funerary monument - Church of S. Cecilia in Trastevere, Rome - Italy. Measured survey mixing laser scanning and photogrammetric techniques. 2013

The monument shows a very complex geometry, given by a all-round sarcophagus made of two overlying parts inserted into a niche.
The work consisted in the measured survey, scale 1:10/5, of the monument before and after the conservation works, and in the general survey of the church.
Images on the right refer to the monument acquired by photogrammetic technique and laser scanner.

Notes:
- Object of the assignment : Three-dimensional survey of the monument and restitution of sections, elevations and plan in ortho-photographic and vector format.
- Client: Istituto Superiore per la Conservazione ed il Restauro - ISCR;

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3D AND ORTHOPHOTOGRAPHIC SURVEY

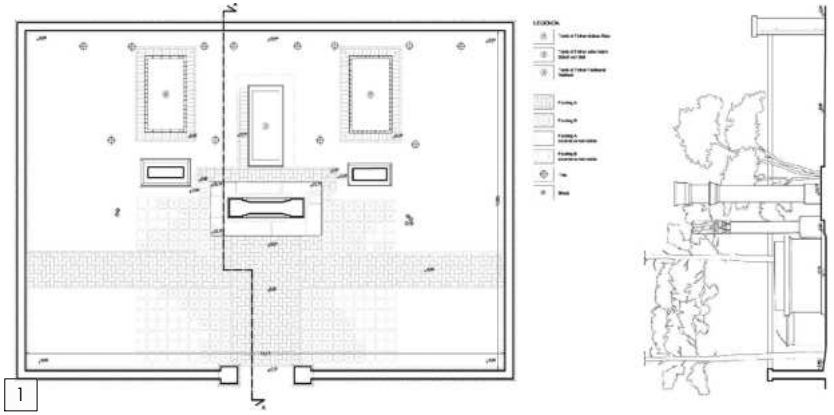
Beijing - China - 3D photogrammetric survey of Zhalan Cemetery and Tomb of Father Matteo Ricci. 2010.

As part of the Italo-Chinese cooperation project for the conservation of the Funeral Monument of Father Matteo Ricci, CPT Studio developed the general survey of the site and the orthophotos and drawings of all the elevations and plants extracted from photogrammetric three-dimensional models, scale 1:10.

A further step consisted in the vectorization of materials and condition survey of the monument.

Thanks to the procedures we applied, field work was carried out in a single working day.

Notes:
- Subject appointed: Arch. Pietro Gasparri, C.P.T. Studio srl CEO;
- Objective of the assignment: "Beijing - China. Conservation works of the Funeral Monument of Father Matteo Ricci";
- Client: ISCR - Istituto Superiore per la Conservazione ed il Restauro



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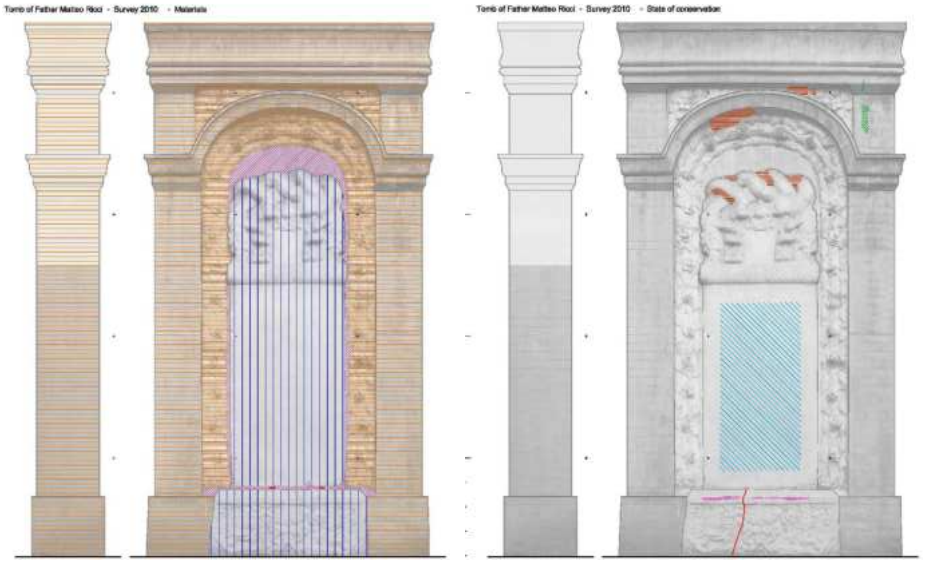

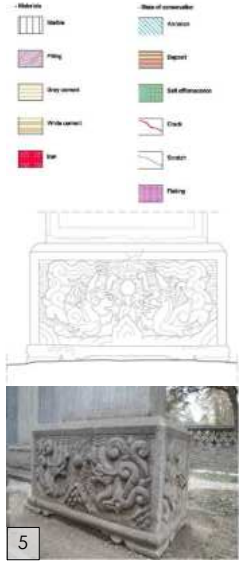

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PIANTA GENERALE E SEZIONE DELL'AREA RILEVATA 1

VISTA FRONTALE DEL SITO 2

NUVOLA DI PUNTI ED ELABORATI A TRATTO CAD DELLA TOMBA DI PADRE VERBIEST 3

DISEGNO A TRATTO CAD, MAPPATURA DEL DEGRADO E DELLO STATO DI CONSERVAZIONE DELLA TOMBA DI MATTEO RICCI 4

DETTAGLIO DELLA BASE DELLA TOMBA DI PADRE VERBIEST, DISEGNO A TRATTO CAD E FOTOGRAFIA 5

Bojani, Kalemegdal, Bac - Serbia - Laser scanning survey in the framework of the training course "Control survey - 3D Laser scanning" and "Documentation for conservation - Graphical documentation", held at the Central Institute for Conservation (CIK) in Belgrade. 2011-2012

Between 2011 and 2012 the CEO of C.P.T. Studio, Arch. Pietro Gasparri held training in the CIK Belgrade for the technicians in the field of documentation and use of advanced technologies for surveying and conservation purposes. Besides the specific courses, he carried out the survey of some Serbian sites.

Notes:
- Objective of the assignment: Workshop for the conservation of wall painting;
- Client: Italian Ministery of Foreign Affairs (MAE), General Directorate for International Cooperation (DGCS); Istituto Superiore per la Conservazione e il Restauro (ISCR)


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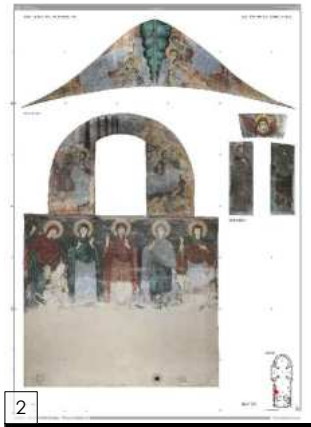
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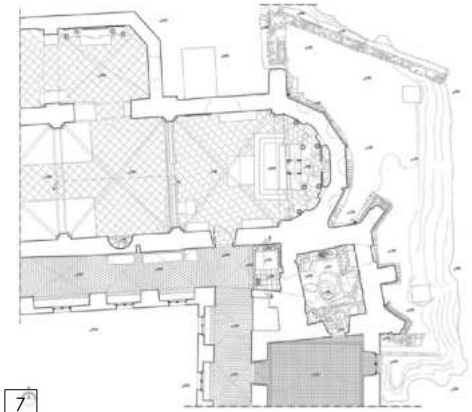
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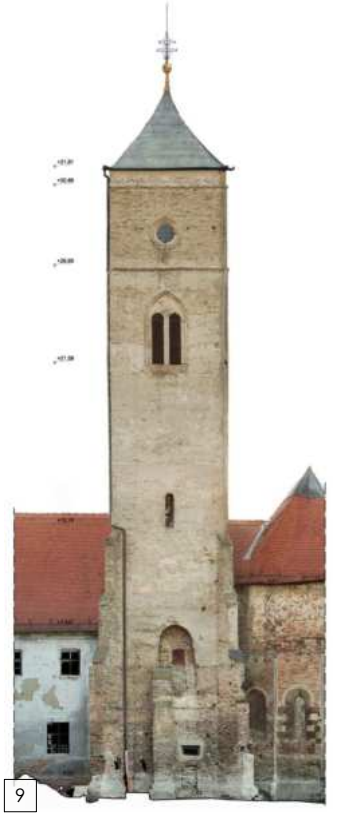
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Red Monastery - Sohag - Egypt. Architectural survey by Laser Scanner technology. 2015

The integrated methodology of 3D scans, topographic surveys and direct surveys ensures maximum results in terms of accuracy and speed. The whole field work was carried out in 7 working days by two technicians. The points clouds acquired by laser scanners were registered in a single three-dimensional model. All two-dimensional drawings (plans, sections, elevations) and three-dimensional views were extracted from the global 3D model.

Notes:
- Objective of the assignment: Architectural survey of the Red Monastery;
- Client: ARCE - American Research Center in Egypt

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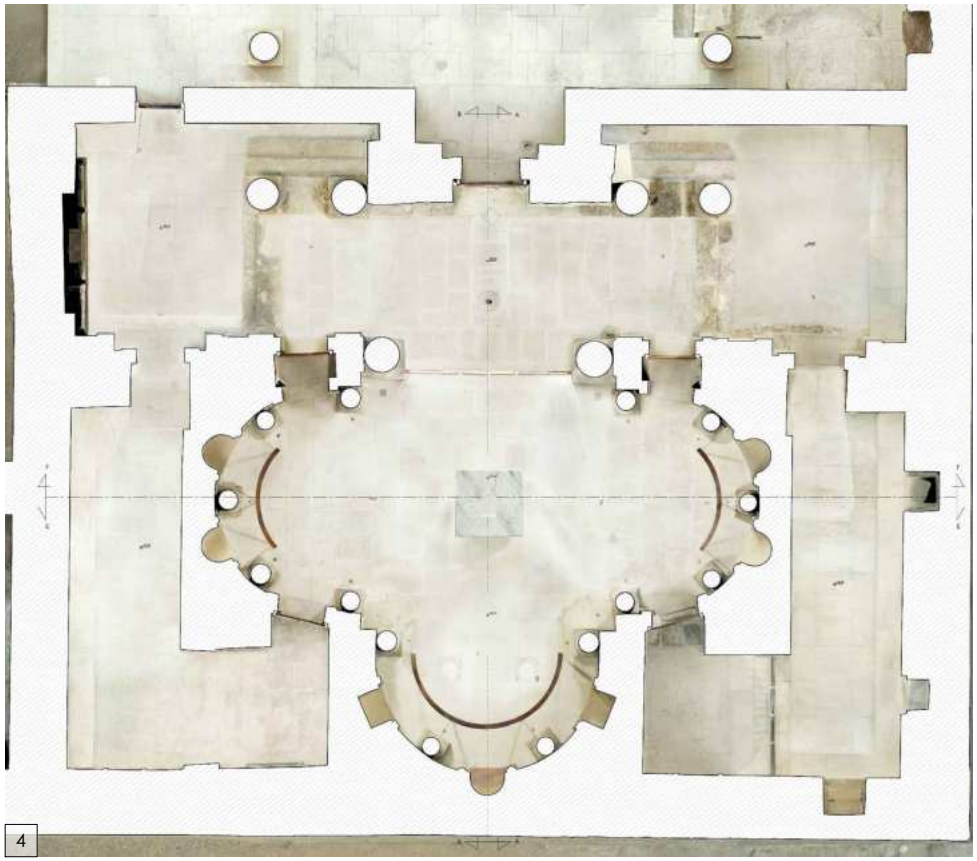

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3D MODEL 1

3D MODEL 2

ORTHOPHOTOGRAPHIC CROSS SECTION 3

TRICONCH - PLAN 4

ARCHITECTURAL 3D SURVEY

Red Monastery - Sohag - Egypt. Architectural survey by Laser Scanner technology. 2015

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Notes:
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AXONOMETRIC SECTION 1

3D MODEL PERSPECTIVE VIEW 2

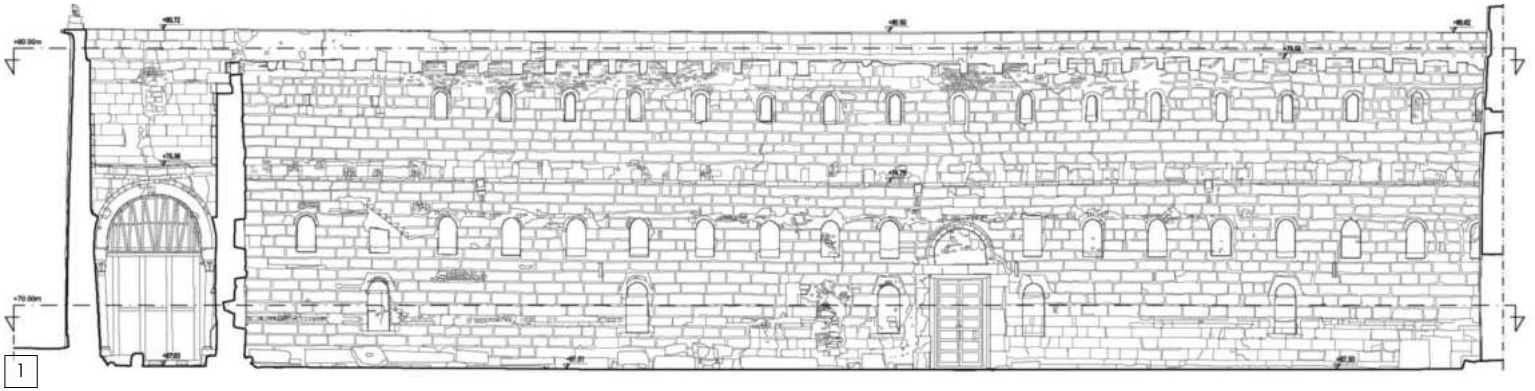
PERSPECTIVE VIEW OF THE TRICONCH 3

3D AND ORTHOPHOTOGRAPHIC SURVEY

White monastery - Sohag - Egypt. Laser scanner survey of the north facade. 2015

The topographic and laser scanner survey of the north wall of the White Monastery aimed to the architectural drawing of the wall, but also to the documentation of its deformation. Thus, we used specific software to produce the contour lines describing the out of plumb and deformation phenomena affecting the wall (fig. 2).

Notes:
- Objective of the assignment: Measured survey of the north elevation of the White Monastery;
- Client: White Monastery Conservation Project - Yale University



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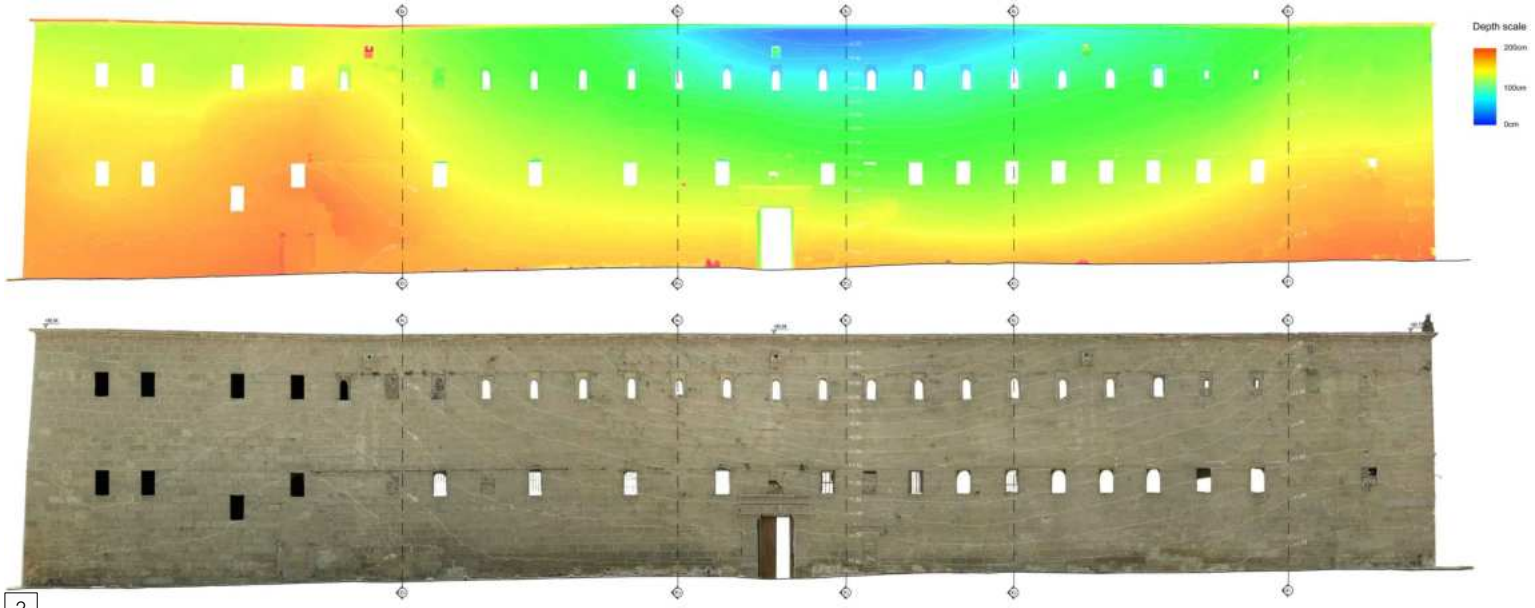

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CAD DRAWING OF THE ELEVATION 1

WALL DEFORMATION'S ANALYSIS AND ORTHOPHOYTOGRAPHIC ELEVATION 2

CROSS SECTION - RGB COLOUR POINT CLOUD 3

3D MODEL VIEW 4

3D MODEL VIEW 5

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3D AND ORTHOPHOTOGRAPHIC SURVEY

Trevi Fountain - Roma - Italy. 3D survey. 2014-2015

Between April 2014 and September 2015 we carried out the survey and graphic restitution of the Trevi Fountain in Rome. The survey was meant to provide a graphical basis to develop the conservation project of the whole monument.
Images here on the right illustrate the field work carried out by laser scanner technology and photogrammetry. The methodology ensures precision and speed of data processing. From the three-dimensional model the drawings for the documentation of the conservation work were produced: front and lateral elevations, plans , two cross sections and details.

Notes:
- Objective of the assignment : 3D survey and restitution of all the elevations, sections and plans of the fountain.
- Client: CBC Conservazione Beni Culturali s.c.


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3D MODEL VIEW 1

FIELD SURVEY 2

FIELD SURVEY 3

ELEVATION EXTRACTED FROM THE 3D MODEL 4

3D AND ORTHOPHOTOGRAPHIC SURVEY

Trevi Fountain - Rome - Italy. 3D survey 2014-2015

The purpose of the survey was to provide details of each architectural element composing the fountain. This paper shows the orthophotos of detail of individual sculptures. The statues' details were directly extracted from the point cloud, and the orthophotos' resolution allowed to print at 1:20 scale.

Notes:

- Objective of the assignment : 3D survey and restitution of all elevations, cross sections and plans of the fountain.
- Client: CBC Conservazione Beni Culturali s.c.

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3D MODEL - LOW RESOLUTION POINT CLOUD 1

OCEANO STATUE - DETAIL - HIGH RESOLUTION POINT CLOUD 2

TRITON STATUES - DETAIL - HIGH RESOLUTION POINT CLOUD 3