

EDICULA

Educational Digital Innovative Cultural heritage related Learning Activities

Project Code: 2020-1-EL01-KA203-079108



NATIONAL
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AUTHORITY
[ISRAEL]



HELLENIC RESEARCH
INSTITUTE OF THE
ALEXANDRIAN
CIVILIZATION
[GREECE]

INTELLECTUAL OUTPUT:
DELIVERABLE:
LEAD ORGANIZATION:
DATE:

O5 EDICULA SYNTHESIS
D5.3 New training approaches to address societal grand challenges
NTUA
31 August 2023



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Introduction

Innovation serves as the enabling factor to successfully address the various challenges in the field of cultural heritage protection and enhance its sustainability. This was demonstrated by the scientific and engineering achievements in the project of the Holy Aedicule rehabilitation, where a holistic approach was adopted to reach the project objectives.

Innovation in research can be transformed into new knowledge and corresponds to new mechanisms in education. Cultural Heritage protection is a major European and international challenge, not only for enhancing the social identity and social participation, but also for the introduction of cultural assets in the development process and cyclic economy.

Equally important is the fact that Innovation is transmitted and demonstrated to the Society. In this framework, the public event planned as part of E1 highlighted to the general public and stakeholders how knowledge was developed and targets were reached (in the Holy Aedicule rehabilitation and the IAA's archaeological sites) through a combination of innovative solutions, technical and scientific expertise and close-cooperation with Society and Cultural Heritage stakeholders. This transfer of Innovation, a demanding process, is achieved gradually through curricula reformation (O2), through educational tools (toolkit O1, hands-on framework O3, digital games O4) and through a synthetic cooperation (O5) of the diverse participants in this Science-Society interaction. It has amalgamated into a concise "educational instrument" (Teachers' Course) that can further diffuse this whole experience to a wider audience, within a longer and more sustainable term.

The appropriate target groups and the means to transfer innovation to society, in an efficient and holistic approach were identified. Furthermore, a new training approach was developed to address societal grand challenges, utilizing innovation in the field of cultural heritage protection.

This deliverable is related to **Task 5.3. Transfer innovation to society through Education.**

This task is connected to the Multiplier Event E3. The new EDICULA training approach was applied during the EDICULA Teachers' course.

1. Transdisciplinary education addressing societal grand challenges

The new EDICULA training approach (D5.3) developed has integrated the address of grand societal challenges through education. It will explicate how new professional profiles will be educated to address grand societal challenges. TMM_CH issues concern grand societal challenges.

Real world learning regards the acquisition of skills required for the management of complex real-world problems that involve a much larger variety of disciplines. In this context, the EDICULA use-cases act as the stepping stone for open-minded and constructive thinking that not only designs solutions on the actual cases, but also analyses the overall environment and consequences that might emerge from any potential intervention. Know-how transfer regards the development of a methodological transdisciplinary mentality, as an issues resolution, rather than a duplication of a depository of knowledge.

Sharing knowledge, experiences, and recommendations about sustainable cultural heritage approaches and practices at a moment of great conflicts and climate change, energy, environment and socio-economic risks, the sustainable preservation of cultural heritage is addressing challenges through mutual understanding and international cooperation.



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The input of the EDICULA partners, especially regarding social responsibility, has been valuable. Moreover, the New European Bauhaus creative and interdisciplinary initiative, as well as the new reuse and preservation strategies applying Circular Economy, will be further discussed.

2. Innovation transmitted to the Society through Education

Equally important is the fact that Innovation is transmitted and demonstrated to the Society. In this framework, the public event planned as part of E1 will highlight to the general public and stakeholders how knowledge was developed and targets were reached (in the Holy Aedicule rehabilitation and the IAA's archaeological sites) through a combination of innovative solutions, technical and scientific expertise and close-cooperation with Society and CH stakeholders. This transfer of Innovation, a demanding process, is achieved gradually through curricula reformation (O2), through educational tools (O1, O3, O4) and through a synthetic cooperation (O5) of the diverse participants in this Science-Society interaction. It will amalgamate into a concise "educational instrument" (Teachers' Course) that can further diffuse this whole experience to a wider audience, within a longer and more sustainable term.

2.1 Know-how transfer via Alexandria immersive experience



The "EDICULA Immersive Event" has opened the discussion to other case studies. Innovative scientific methodologies developed within the emblematic rehabilitation of the Holy Aedicule of the Holy Sepulchre in Jerusalem are marking future trends in the protection of cultural heritage. They do initiate a universal conversation within a holistic approach, merging competence from the scientific fields of architecture, civil engineering, surveying engineering, materials science and engineering, information technology and archaeology, as well as heritage professionals on restoration and conservation, stakeholders, industry representatives and policy makers. The combined utilization of digital documentation technologies with innovative analytical and non-destructive techniques, numerical, computational and 3D techniques, archaeometric and archaeogene methods, supports the creation of a transdisciplinary multispectral methodology for the sustainable preservation of cultural heritage. Innovation is enhancing and revealing a critical dimension of the preservation of cultural heritage along with social participation and communication.

This event was complimentary to the EDICULA Hands-on experience (in Jerusalem and Alexandria) and the EDICULA digital games, while expanding the EDICULA framework into other grand challenges in cultural heritage and bridging the gap between XR community and cultural heritage end-users. It included:

- The presentation of the EDICULA innovative interdisciplinary synthetic methodology with reference to the Holy Aedicule rehabilitation project



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- The presentation of the excavation at the Shallalat Gardens in Alexandria immersive experience through:
(i) the presentation of the excavation works and the new perspectives that they can advance in excavation strategies through the EDICULA innovative approach, (ii) the interdisciplinary immersive approach through the 3Dimensional geometric documentation and the hands-on methodology using NDTs, combined with the EDICULA digital games as means to better comprehend real-time, real-scale grand challenges like an excavation.
- The presentation of the case of the Varnakova Monastery in Fokis rehabilitation of the Katholikon, where the transdisciplinary EDICULA methodology is also being transferred taking into consideration the challenges of big scale and emblematic monuments rehabilitation.
- Panel discussion with the speakers, invited stakeholders and the EDICULA Erasmus+ partners.

The EDICULA Immersive Event was co-organized by the Hellenic Research Institute of the Alexandrian Civilization, the National Technical University of Athens and the General Directorate for the Restoration, Museums and Technical Works of the Ministry of Culture and Sports of Greece.



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19 December 2022 || 10:30-14:30

NTUA, Patission Campus, Averof Building, Kaftatzoglou Ceremony Hall

10:30-10:45 || Inauguration

Prof. Andreas Boudouvis, NTUA Rector

Dr. Amalia Androulidaki, General Director for the Restoration, Museums and Technical Works, Ministry of Culture and Sports of Greece

10:45-11:15 || Introductory lecture

EDICULA Innovative Interdisciplinary Synthetic Methodology with reference to the Holy Aedicule of the Holy Sepulchre rehabilitation project in Jerusalem

Prof. Antonia Moropoulou, EDICULA Coordinator

11:15-11:45 || The Alexandria Immersive Experience

The excavation works at the Shalalat Gardens in Alexandria. Meeting the innovations of the Holy Aedicule rehabilitation within EDICULA: New perspectives in excavation strategies

Dr. Kalliopi Papakosta, Hellenic Research Institute of the Alexandrian Civilization

11:45-12:30 || The Alexandria Immersive Experience

Assoc. Prof. Anastasios Doulamis || Bridging the gap between XR community and CH end-users

Margarita Skamantzari - Ioannis Georgoulas || Digital Games of the Holy Sepulchre

Prof. Andreas Georgopoulos - Dr. Sevasti Tapinaki || 3Dimensional geometric documentation in Alexandria: A challenge for EDICULA

Dr. Ekaterini Delegou || Hands-on methodology in Alexandria using Non-Destructive Techniques

12:30-13:30 || EDICULA methodology transfer for the rehabilitation and restoration of Monuments

The case of the Varnakova Monastery in Fokis: The rehabilitation of the Katholikon

Athanasia Psalti || The archaeological approach and supervision

Timoleon Koumizoglou || Architectural survey and documentation

Julia Vohiri - Georgios Andriotakis || Architectural approach

Assoc. Prof. Haris Mouzakis || Structural integrity and earthquake protection aspects

Dr. Maria Apostolopoulou || Interdisciplinary methodology

13:30-14:30 || Panel Discussion

Moderators || **Dr. Kalliopi Papakosta - Prof. Antonia Moropoulou - Dr. Amalia Androulidaki**

Conclusive discussion by the speakers and invited stakeholders and EDICULA Erasmus+ partners





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2.1.1 The excavation at the Shallalat Gardens in Alexandria

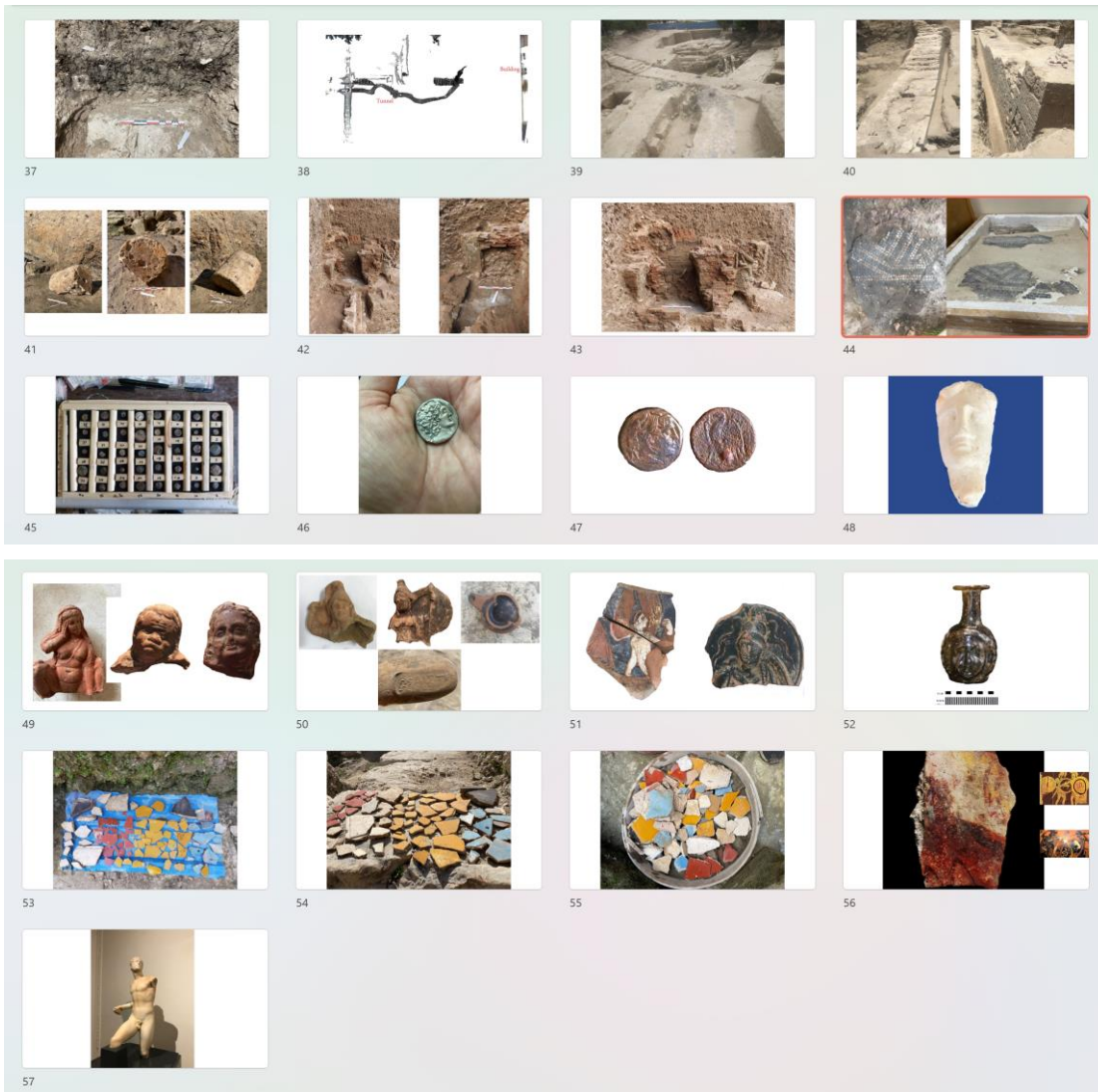
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2.1.2 Bridging the gap between XR community and CH end-users

Extended reality (XR) Technologies

- VR refers to all real and virtual environments, properly combined together, where the interaction between human and machine occurs through interactions generated by computer technology and hardware.
- Virtual Reality (VR), Mixed Reality (MR), Augmented Reality (AR)

The EDICULA Immersive Expert, 19th December 2019, 10:40, 14:30

VR, MR, AR

- VR is a computer-generated experience that replaces the user's perception completely from the real world to a virtual or completely different virtual world.
- It forces the user leaves the physical space in a different environment the lesser degree of immersion.
- Using a head-mounted display (HMD) or headset, the user experiences a computer-generated world of images and sounds in which the user can interact with and move around using hand controllers with buttons or a joystick or PC.
- All contents are virtual and digital elements. Usually, the user wears a head-mounted display (HMD).
- VR allows the user to explore in the combination of real and virtual using their own hands.
- It focuses the user's attention on the objects in the virtual world, and the user can interact with them, breaking their real contact between the real and virtual.
- All augmented reality is a virtual object, object and environment are mixed with the real world.
- The user interacts with the environment along with computer-generated perspective information.
- All content is digital information on real-world objects. Augmented reality enhances the real world experience with other digital details, opening the door of perception.

The EDICULA Immersive Expert, 19th December 2019, 10:50, 14:30

Examples

A Comparative Study of VR, MR & AR

Feature	Virtual Reality	Mixed Reality	Augmented Reality
Environment	Completely virtual	Combination of real and virtual	Virtual objects overlaid on the real world
Interaction	Handheld controllers or motion tracking	Handheld controllers or motion tracking	Handheld controllers or motion tracking
Use Case	Virtual tours, training, simulation	Virtual tours, training, simulation	Virtual tours, training, simulation
Hardware	Head-mounted display (HMD)	Head-mounted display (HMD)	Head-mounted display (HMD)
Software	VR-specific software	VR-specific software	VR-specific software
Cost	High	High	High
Accessibility	Low	Low	Low
Portability	Low	Low	Low
Scalability	Low	Low	Low
Security	Low	Low	Low
Privacy	Low	Low	Low
Performance	Low	Low	Low
Integration	Low	Low	Low
Interactivity	Low	Low	Low
Immersiveness	High	High	High
Realism	High	High	High
Flexibility	Low	Low	Low
Customization	Low	Low	Low
Personalization	Low	Low	Low
Adaptability	Low	Low	Low
Compatibility	Low	Low	Low
Interoperability	Low	Low	Low
Integration	Low	Low	Low
Interactivity	Low	Low	Low
Immersiveness	High	High	High
Realism	High	High	High
Flexibility	Low	Low	Low
Customization	Low	Low	Low
Personalization	Low	Low	Low
Adaptability	Low	Low	Low
Compatibility	Low	Low	Low
Interoperability	Low	Low	Low

The EDICULA Immersive Expert, 19th December 2019, 10:50, 14:30

Immersive Technologies & Cultural/Creative Industry: 3D Modeling (1)

3D Reconstruction of the City of Cologne in Germany using images and photogrammetry methods

Fig. 1 (a) Color market square, taken from (b) point cloud.

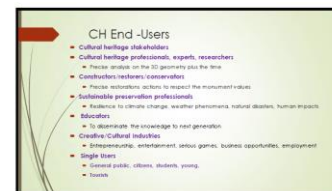
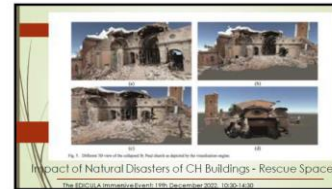
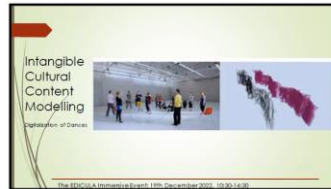
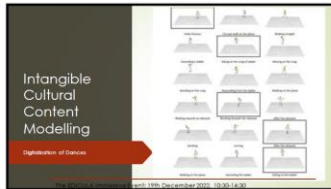
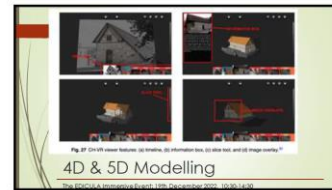
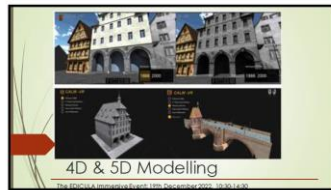
The EDICULA Immersive Expert, 19th December 2019, 10:50, 14:30

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The EDICULA Immersive Expert, 19th December 2019, 10:50, 14:30



2.2 Know-how transfer via TMM-CH

The know-how transfer of the rehabilitation of the Holy Aedicule, through EDICULA project has kept up with the need to preserve Cultural Heritage at large, applying the innovations developed. We are discussing today, promoting future research and education projects.

A big part of the panel discussions have been included in EDICULA educational toolkit as points of reference.

2.2.1 TMM_CH Conferences

Innovative scientific methodologies and challenging projects marking future trends in the protection of cultural heritage, have initiated a universal conversation within a holistic approach, merging competence from the scientific fields of architecture, civil engineering, surveying engineering, materials science and engineering, information technology and archaeology, as well as heritage professionals on restoration and conservation, stakeholders, industry representatives and policy makers. The combined utilization of digital documentation technologies with innovative analytical and non-destructive techniques, numerical, computational and 3D techniques, archaeometric and archaeogene methods, supports the creation of a transdisciplinary multispectral modeling towards the sustainable preservation of cultural heritage. Innovation is enhancing and revealing a critical dimension of the preservation of cultural heritage along with social participation and communication, and supporting peace through culture.

The National Technical University of Athens interdisciplinary team “Protection of monuments” [Prof. A. Moropoulou, Prof. M. Korres, Prof. A. Georgopoulos, Prof. C. Spyarakos, Ass. Prof. C. Mouzakis], scientific responsible for the Holy Aedicule’s rehabilitation of the Holy Sepulchre in Jerusalem, and the Technical Chamber of Greece, in collaboration with international and Greek Organisations and Universities, organized the 3rd TMM_CH International Conference on “Transdisciplinary Multispectral Modelling and Cooperation for the Preservation of Cultural Heritage: Recapturing the World in Conflict through Culture, promoting mutual understanding and Peace”, on 20-23 March 2023 in Athens, Greece, discussing modern trends in the original agora of our technological and democratic roots.

The Conference was organized by the National Technical University of Athens in cooperation with the Technical Chamber of Greece, under the patronage of H.E. the President of the Hellenic Republic, Ms Katerina



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Sakellaropoulou, with benedictions bestowed by His All Holiness, Ecumenical Patriarch, Bartholomew I of Constantinople, His Beatitude Patriarch of Jerusalem Theophilos III, and His Beatitude Archbishop Hieronymus II of Athens and All Greece.

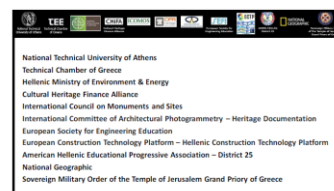
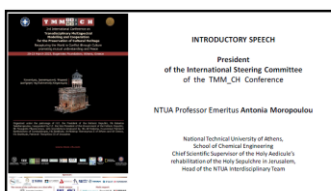
Distinguished scientists and representatives of the National Geographic Society, the Cultural Heritage Finance Alliance, the International Council of Monuments and Sites ICOMOS, the Organization of World Heritage Cities OWHC, the European Society for Engineering Education SEFI, the European Construction Technology Platform ECTP, the International Federation of Surveyors FIG, the International Committee CIPA Heritage Documentation, the World Monuments Fund, AHEPA Hellas and other major International and European Organizations, Associations, networks Universities and Research Centers in the field of cultural heritage preservation, participated in the International Steering and Scientific Committees which had successfully organized the 1st and 2nd TMM_CH Conferences.

The conference was held at the Eugenides Foundation. Scientific walk and talk visits on 23 March 2023 to Acropolis monuments and site was included.

At the 1st and the 2nd TMM_CH Conferences, which were held with great success in October 2018 and December 2021 respectively at the Eugenides Foundation in Athens, with the presence of 350/650 delegates from 22/33 countries from all continents, and over five thousand viewers the emblematic rehabilitation of the Holy Aedicule of the Holy Sepulchre in Jerusalem was presented as an exemplary application, in the field of monuments' protection, of interdisciplinary and multispectral collaboration, as an outcome of innovation, not only on Research, but in the implementation process as well, with emphasis on technological advancements, not only intersecting all the scientific fields of engineers and natural scientists, but also initiating an ongoing dialogue with humanities, such as Archaeology, Theology, Sociology, Diplomacy and Tourism. Innovative knowledge transfer through practice and education is continuing the venture for the rehabilitation projects in the Holy Sepulchre Church, adjoining the National Technical University of Athens and La Sapienza University of Rome with Bezalel Academy of Science and Arts in Jerusalem, in cooperation with Israeli Antiquities Authority, through the Erasmus+ Strategic Alliance EDICULA "Educational Digital Innovative Cultural Heritage related Learning Alliance".

Further to the achievements of the 2nd TMM_CH Conference the latest developments in research and innovation that identify novel trends to build an interdisciplinary approach to conservation and holistic digital documentation of cultural heritage were presented at the 3rd TMM_CH. The utilization and reuse of monuments, historic cities and sites, forms the framework of a sustainable preservation of cultural heritage, in accordance with the principles of circular economy; in terms of respect and protection of values, materials, structures, architecture and landscape; with an informed society, able to participate effectively in the policies that will design and implement the new strategies required.

Sharing knowledge, experiences, and recommendations about sustainable cultural heritage approaches and practices at a moment of great conflicts and climate change, energy, environment and socio-economic risks, the sustainable preservation of cultural heritage has been addressing challenges through mutual understanding and international cooperation.





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The European Commissioner for Innovation, Research, Culture, Education and Youth, Mariya Gabriel is addressing the Conference

EU through the Directorates for Innovation and Research, Culture, Education and Youth, has acknowledged in 2018 the rehabilitation of the Holy Sepulchre as an emblematic restoration work and presented as such inaugurating the 2018 European Year of Cultural Heritage

HORIZON
The EU Research & Innovation Programme

SOCIAL SCIENCES

TMMCH

Written statement by
European Commissioner for Innovation, Research, Culture, Education and Youth
Mariya Gabriel

Παναγιώτης Πιταράκης
Αντιπρόεδρος της Κυβέρνησης

TMMCH

Benediction bestowed by H.A. Ecumenical Patriarch Bartholomew of Constantinople

TMMCH

Benediction bestowed by H.B. Patriarch Theophilos III of Jerusalem

TMMCH

Benediction bestowed by H.B. Archbishop Hieronymos II of Athens and All Greece

• The emblematic rehabilitation of the Holy Aedicule of the Holy Sepulchre in Jerusalem was presented as an exemplary application, in the field of monuments' protection, of interdisciplinary and multispectral collaboration, as an outcome of innovation, on Research, and in the implementation process as well.

• Innovative knowledge transfer through practice and education is continuing the venture, adjoining the National Technical University of Athens and La Sapienza University of Rome with Beialai Academy of Science and Arts in Jerusalem, in cooperation with Israel Antiquities Authority, through the Erasmus+ Strategic Alliance EDICULA "Educational Digital Innovative Cultural Heritage related Learning Alliance".

The 3rd TMM_CH Conference intends to investigate the latest developments in research and innovation. The utilization and repair of monuments, historic cities and sites, forms the framework of a sustainable preservation of cultural heritage and local development, in accordance with the principles of green and circular economy, in terms of respect and protection of values, integrity of materials and structures, authenticity of architecture and landscape, with an informed society, able to participate effectively in the policies that will design and implement the new strategies required.

Sharing knowledge, experiences, and recommendations about sustainable cultural heritage approaches and practices at a moment of great conflicts and climate change, energy, environment and socio-economic crisis, the preservation of cultural heritage promoting sustainable development is addressing challenge through mutual understanding, international cooperation and Peace

2018

Conference Proceedings

13 Sessions
4 Panel Discussions
350 Conference attendees
22 countries from all continents

Transdisciplinary Multispectral Modeling and Cooperation for the Preservation of Cultural Heritage
Architectural Conservation and Restoration
Archaeology
Heritage
Digital Cultural Heritage
Sustainable Development

2021

14 Sessions
14 Panel Discussions
124 papers accepted out of 310 submitted from 37 authors from 33 countries

PROCEEDINGS
• Springer Proceedings in Communications in Computer and Information Science - Transdisciplinary Multispectral Modeling and Cooperation for the Preservation of Cultural Heritage
• Springer Proceedings in Materials - Material Non Destructive and Structural Techniques for Diagnosis, Redesign and Health Monitoring for the Preservation of Cultural Heritage

JOURNALS
• Developments in the Built Environment - Special Issue on Monitoring and Assessment for the Sustainable Preservation of the Built Environment
• Heritage - Special Issue on Transdisciplinary Multispectral Modeling and Cooperation for the Preservation of Cultural Heritage
• Journal of Applied Sciences & Technology for Cultural Heritage Issues - Special Issue on Reconfiguring the World in Crisis through Culture
• Land - Special Issue - Preservation, Reuse and Revival of Cultural Heritage through Sustainable and Management, Rural and Urban Development
• Technical Analysis - Special Issue on Transdisciplinary Multispectral Modeling and Cooperation for the Preservation of Cultural Heritage

2023

13 Sessions
13 Panel Discussions
487 authors from 31 countries and 5 continents
163 papers accepted out of 416 submitted

PROCEEDINGS
• Springer Proceedings in Communications in Computer and Information Science - Transdisciplinary Multispectral Modeling and Cooperation for the Preservation of Cultural Heritage
• Springer Proceedings in Materials - Material Non Destructive and Structural Techniques for Diagnosis, Redesign and Health Monitoring for the Preservation of Cultural Heritage

JOURNALS
• Building - Sustainable Preservation of Buildings and Infrastructure - Heritage - Special Issue on Transdisciplinary Multispectral Modeling and Cooperation for the Preservation of Cultural Heritage
• Scientific Culture - Journal of Applied Sciences & Technology to Cultural Heritage Issues - Special Issue on Reconfiguring the World in Crisis through Culture
• Land - Special Issue - Preservation, Reuse and Revival of Cultural Heritage through Sustainable and Management, Rural and Urban Development
• Technical Analysis - Special Issue on Transdisciplinary Multispectral Modeling and Cooperation for the Preservation of Cultural Heritage
• ACM Journal on Computing and Cultural Heritage - Special Issue - Research - International Journal of Architectural Conservation and Restoration

TMMCH

• The sessions are accessible by the registered conference participants
• The opening session and all panel discussions are addressed to the general public and will additionally be presented through livestreaming with free access via the conference's YouTube channel and website

TMM-CH 2023 - Day 1 - 20.03.2023 <https://www.youtube.com/watch?v=42701a604>
TMM-CH 2023 - Day 2 - 21.03.2023 <https://www.youtube.com/watch?v=12701a604>
TMM-CH 2023 - Day 3 - 22.03.2023 <https://www.youtube.com/watch?v=22701a604>

TMMCH

Conference Proceedings

13 Sessions
4 Panel Discussions
350 Conference attendees
22 countries from all continents

TMMCH

Conference Proceedings

13 Sessions
4 Panel Discussions
350 Conference attendees
22 countries from all continents

TMMCH

Conference Proceedings

13 Sessions
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350 Conference attendees
22 countries from all continents

2.2.2 TMM_CH dialogue

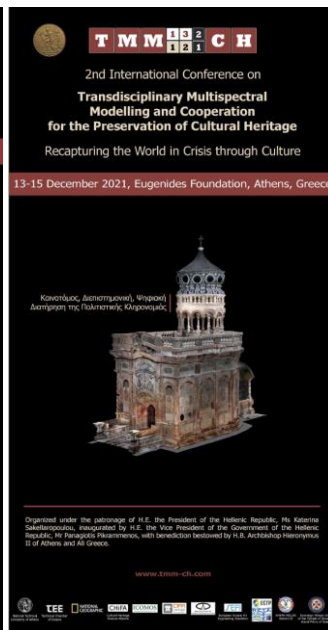
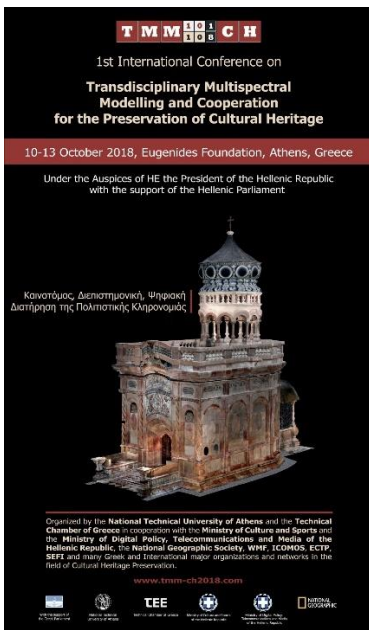
The TMM_CH International Conferences have further opened a universal discussion with national interest, investigating preservation and management strategies regarding cultural assets in the scale of historic cities, local and regional development through reuse, land and urban management, applying circular economy principles with social participation, and highlights that the World in crisis and conflict can indeed recapture through Culture.



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2.2.3 TMM_CH topics

The TMM_CH International Conference further opens a universal discussion with national interest, investigating preservation and management strategies regarding cultural assets in the scale of historic cities, local and regional development through reuse, land and urban management, applying circular economy principles with social participation, and highlights that the World in crisis and conflict can indeed recapture through Culture.

- Emblematic works as source of innovation and transdisciplinarity
- Resilience to Climate Change, Natural Hazards and Pandemic Risks - Biosafety
- Novel Educational Approach for the Preservation of Cultural Heritage
- Preserving Compatibility, the Materiality and Integrity of Structures and Architectural Authenticity
- Advanced Non-Destructive and Structural Techniques for Diagnosis, Redesign and Health Monitoring
- Earthquake and structural rehabilitation
- Bridging Heritage Stakeholders, Art, Science and Industry
- Transdisciplinary dialogue for World Heritage at risk and conflict
- Digital Heritage: a holistic approach
- Green and blue deal for local and regional Sustainable Development
- The New European Bauhaus creative and interdisciplinary initiative
- Historic cities and centers: New Reuse and preservation strategies applying Circular Economy
- Cultural heritage preservation addressing energy challenges
- Recapturing the World in conflict through Culture, promoting mutual understanding and Peace



The 3rd International Scientific Conference TMM_CH on “Transdisciplinary Multispectral Modelling and Cooperation for the Preservation of Cultural Heritage Recapturing the World in Conflict through Culture promoting mutual understanding and Peace”, organized by the National Technical University of Athens, **from the 20th to the 23rd of March 2023 at Eugenides Foundation Athens, Greece**, continues for the second day. The International Conference, with President Professor Emeritus Antonia Moropoulou, co-organized with the Technical Chamber of Greece, in collaboration with international organizations and councils, scientific associations and cultural heritage protection bodies.

“**Preserving compatibility, the materiality and integrity of structures and architectural authenticity**” was the subject of Panel Discussion 6, which was dedicated to the memory of **Guido Biscontin**, Professor of the Ca' Foscari University of Venice in Chemistry of Restoration of Monuments, in the Department of Environmental Sciences, who passed away last June.

The discussion was moderated by his successor at the Ca' Foscari University of Venice, Professor **Elisabetta Zendri**, who, like his students, **Stelios Bakolas**, Associate Professor at the National Technical University of Athens, and **Noni Maravelaki**, Professor at the Technical University of Crete, presented his multifaceted work and his curious personality, who was constantly asking questions and researching to get answers, creating new materials on an industrial scale and applying and evaluating them on monuments.

As the President of the Conference, **Tonia Moropoulou**, highlighted, “*with Guido Biscontin we studied 400 monuments in the Mediterranean and around the world, we certified the negative effects of incompatible materials and conservation interventions, such as in Knossos from the conservation of Evans with reinforced concrete, and we highlighted the need for conservation interventions and preservation of Cultural Heritage to be carried out with compatible materials. In particular, restoration mortars should be composed using the methodology of "reverse engineering", based on historic mortars to ensure the structural integrity of historic structures and their sustainable preservation, such as the Hagia Sophia in Istanbul, which survived the great earthquake of 1999, and the rehabilitation project of the Holy Aedicule of the Holy Sepulchre.*”



Panel Discussion in the memory of Professor Guido Biscontin

Next, Professor **Stefano della Torre**, from the Polytechnic University of Milan, stressed the need to manage incompatibility. The Professors of Architecture of the National Technical University of Athens, Mrs. **Irini Efesiou** and Mrs. **Androniki Militiadou**, Professor **Panagiotis Spathis** of the Department of Chemistry of the Aristotle University of Thessaloniki, Professor **Vlatka Rajčić** of the Faculty of Civil Engineering of the University of Zagreb, Lecturer **Adi Sela Wiener**, of the Bezalel Academy of Arts and Design in Israel, presented their well-founded views that the preservation of architectural authenticity is linked to original materials and constructions and the possibility of their restoration in a compatible way, in terms of materials and environment. Finally, Ms. **Vasiliki Eleftheriou**, Director of the Acropolis Monuments Conservation Service, gave an example of the multidimensional but integrated approach to the Acropolis monuments in Athens.



Panel Discussion 6

With the participation of Prof. Emeritus **Stephanos Dritsos**, of the Department of Civil Engineering, University of Patras, Associate Professor **Charis Mouzakis**, Director of the Laboratory of Earthquake Engineering, NTUA, Associate Professor **Daniel Oliveira**, of the Department of Civil Engineering, University of Minho, Associate Professor **Corina Papanikolaou**, of the Department of Civil Engineering, University of Patras, Professor Emeritus **Dr. George Peneli**, of the Department of Civil Engineering, Aristotle University of Thessaloniki, Associate Professor **Antonella Saisi**, of the Department of Architecture, Polytechnic University of Milan, and Professor **George Stavroulakis**, of the School of Production Engineering and Management, Polytechnic University of Crete, and coordinated by Professor **Marco Corradi**, of the Department of Mechanical and Construction Engineering, University of Northumbria, Panel Discussion 37 under the theme “Earthquake protection and structural rehabilitation”, raised important questions such as: Are numerical analysis - finite element models reliable to assess vulnerability and redesign monuments while achieving seismic protection? How can priorities for seismic protection projects be documented?



Panel Discussion 7

The discussion highlighted the need to feed the finite element models with both the response data of historical structures to seismic vibrations or artificial accelerations by installing sensors, and the actual data of the strength and elasticity of materials at critical points of the structures. With these data, utilizing modern technologies, the scientific documentation of the really necessary priorities for the seismic rehabilitation of monuments can properly support political decision-making, setting aside logical and tactical correlation of forces and power exercises of expediency, as emphasized by Professor Emeritus **George Penelis** of the Aristotle University of Thessaloniki.

In the Panel Discussion 8 on "Resilience of Cultural Heritage mitigating Climate Change, Natural Hazards and Pandemic Risks and ensuring Biosafety", the moderators Ms. **Betty Charalampopoulou**, President of Geosystems Hellas, and Prof. **Charalambos Ioannidis**, Dean of the School of Surveying and Geoinformatics Engineering of NTUA, presented the European Research Project TRIQUETRA "Assessing and mitigating



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climate change risks and natural hazards threatening cultural heritage", which, as they stressed, aims to identify, measure, assess and address climate change risks, while TRIQUERTA members, Assoc. Prof. **Salvatore Martino**, from the Sapienza University of Rome, Mr. **Daniele Cerra**, from the German Aerospace Center, Mr. **Kyriakos Themistokleous** from the Eratosthenes Centre of Excellence in Cyprus, presented specific cases of such applications, utilizing innovative high technology and even aerospace.

Mr. **George Alexandrakis**, referred to the results of research by the Foundation for Research and Technology, which confirm the dramatic changes in the environment caused by climate change, while Professor **George Deodatis**, from Columbia University, documented a series of environmental, economic and humanitarian disasters, as well as infrastructure disasters of modern cities in the US, due to the natural catastrophic phenomena caused by climate change. Professor **Phoebe Kountouri**, from the Athens University of Economics and Business, Director of Sustainable Development at the Athena Research Center, developed the framework of International and European strategies, both for reducing threats and for adapting the world to protect itself from them. Ms. **Anastasia Chasapi**, from DNASequences, presented state-of-the-art applications of metagenomics and bioinformatics that achieve and document biosecurity and elevated the company from start-up innovation to Company of the Year internationally in Life Science.



Panel Discussion 8

The President of the Conference, Professor **Antonia Moropoulou**, closing the discussion, asked: How much can we control and address climate change, or perhaps have a chance of reversing the phenomena, if we do not drastically combat the causes that cause it, such as the carbonization of the functions of the modern world by radically changing the energy-intensive and environmentally damaging processes of development, in modern cities, industries, energy economy? The necessary pathway is visible and requires the engagement of the scientific community, local and central government and society. She informed that 30,000 attended the 3rd TMM_CH International Conference on the first and second day of work and that in parallel BCI Media Toronto was broadcasting around the world and that Cultural Heritage is not an issue within the walls, but is being watched by humanity.

Continued for the third day and completed are the works of the 3rd International Scientific Conference TMM_CH on "Transdisciplinary Multispectral Modelling and Cooperation for the Preservation of Cultural Heritage Recapturing the World in Conflict through Culture promoting mutual understanding and Peace", organized by the National Technical University of Athens, **from the 20th to the 23rd of March 2023 at Eugenides Foundation Athens, Greece**. The International Conference, with President Professor Emeritus Antonia Moropoulou, co-organized with the Technical Chamber of Greece, in collaboration with international organizations and councils, scientific associations and cultural heritage protection bodies.



The President of the Conference TMM_CH, Emeritus Professor Tonia Moropoulou

The morning discussion was Panel Discussion 9 under the coordination of Professor **Emanuele Piaia**, of the Faculty of Architecture of the University of Ferrara, on the «New European Bauhaus initiative for Green Deal addressing energy challenges», presented by Associate Professor **Charis Doukas** of the School of Electrical and Computer Engineering of the National Technical University of Athens.



Panel Discussion 9

Dr **Agoritsa Konstantis**, member of the Laboratory Teaching Staff of the School of Chemical Engineering of the National Technical University of Athens, presented the new European Initiative as a necessary strategy to address the energy and environmental crisis, especially in cities. Mr. **Vasilios Kapareliotis**, representative of the start-up Topos System, presented the architectural methodology developed by pioneering architectural firms, like Doxiadis and others, for the energy upgrade and efficiency of buildings. Lecturer **Stavroula Thravalou**, from the University of Cyprus Architecture, focused on the need for dialogue with local communities, while Professor **Anthimos Xenidis** from the School of Metallurgical Engineering of the National Technical University of Athens, presented technological innovations of materials with low levels of energy integration, compatible with structures and the environment, capable of contributing to the reduction of energy losses and energy saving.

The President of the Conference, Professor **Antonia Moropoulou**, summarized that cultural heritage can be an exemplary field of innovation for the required energy efficiency of historic buildings and cities, because despite the corrosion, the historic materials have minimal embodied energy. The Head of the European Competence Centre 4CH for the conservation of cultural heritage, Professor **Roberto di Giulio**, University of Ferrara, pledged to carry the message.

The Pane Discussion 10 «Green and blue deal for local and regional Sustainable Development», which was co-organized with Researchers' Night NTUA and the Research program AEI of GSRI, under the coordination of NTUA and under the auspices of the Ministry of Environment, was coordinated by the Secretary General



of Energy and Mineral Resources, Ms **Alexandra Sdoukou**, and the President of the Conference, Professor **Antonia Moropoulou**.

With reference to the Research Programme AEI, as the scientific coordinator, Professor Antonia Moropoulou, stressed that from the documentation of the cultural and environmental heritage, the modelling and the formulation of proposals for local development through its exploitation with the contribution of local communities, local authorities and productive bodies in the regions where it was implemented - in Aitokarnania, North and Central Evia, East Mani, Chios and the small Dodecanese, the Heroic Island of Kassos, Halki, Symi and Kastelorizo - it is clear that with intelligent planning and low costs, sustainable local development can be supported by attracting external economies from tourism, and support sustainable local development. She said that the tools – platforms, informational development systems and geo-information systems- exist, and that political will and new financial tools are needed to keep young people in their area.



Panel Discussion 10

The General Secretary of Energy and Mineral Resources, Ms **Alexandra Sdoukou**, presenting the policy of the Ministry of Environment and Energy, stressed: *"The Gr-Eco Islands initiative is a visionary programme of strategic importance to tackle climate change, towards the green and digital transition of the Greek islands in a holistic way, in order to exploit the unique environmental resources and beauty of the islands and improve the quality of life and cohesion of local communities. The initiative applies to all Greek islands, with priority for implementation in the smaller islands. We aim for the development model to achieve specific objectives so that the energy sector in Greece can turn risk into opportunity and emerge through new designs and applications into a more resilient, greener, sustainable one."* The CEO of the Hellenic Development Bank, Ms **Athina Hatzipetrou**, spoke about the role of the Hellenic Development Bank in sustainable development, and the financial tools that support Greek entrepreneurship to achieve this goal. "At Hellenic Development Bank we have designed products to finance investments with a green, digital and innovative footprint with very low financing costs," she pointed out.

The President of the Bank of Attica and TMEDE, Mr. **Konstantinos Makedos**, mentioned that the banking sector has a leading role in the implementation of the strategy for the "Green Transition" and the "Blue Growth" of the less developed regions according to the OECD. At the same time, he pointed out the critical role of the construction sector in promoting the sustainable development of underprivileged areas, while he stressed that the Bank of Attica and TMEDE can make a catalytic contribution in this direction, by developing new tools to meet the financing needs of the technical world. Mr. **Dimitrios Pappas** conveyed the message of the Secretary General of EU Resources and Infrastructure of the Ministry of Rural Development and Food, Mr. **Dimitrios Papagiannidis**, presenting funding programmes of interest to cultural heritage, such as for the protection of terraces of agricultural infrastructure, etc.



From the Research Programme AEI, Mrs. **Betty Charalampopoulou**, President of Geosystem Hellas, Professor **Georgios Petrakos**, from Panteion University, Director General of the Institute of Tourism Research and Forecasting, and Dr. **Nikolaos Kambanis**, Head of the Laboratory for Coastal and Marine Research of the Foundation for Research and Technology-Hellas, presented their own contribution, while Professor Emeritus **Sophia Avgerinou**, of Architecture, National Technical University of Athens, spoke about Mediterranean designs for enhancing the resilience of historic cities. The Panel Discussion concluded with the message that technology, social participation and new financial tools can bring soft and sustainable development to isolated, mountainous and island regions by exploiting cultural heritage.

In the Panel Discussion 11 on "Bridging Heritage Stakeholders, Science and Industry", moderated by the Head of the General Directorate of Restoration, Museums and Technical Works of the Ministry of Culture and Sports, Dr. **Amalia Androulidaki**, and the participation of Dr. **Yuval Baruch**, Archaeologist, representative of the Ephorate of Antiquities of Israel, Mr. **Platonos Stylianos**, General Secretary of the Cyprus Technical Chamber, Mr **Michalis Dachtlydis**, President of PEDMEDE, Mrs **Maria Dalkafouki**, CEO of Dalkafoukis Oikos, Mr **Fokionas Tasoulas**, General Manager of the International Research and Innovation Department of Titan Cement Group, Mr. **Anastasios Tosios**, Deputy Director of EYDAP, Ms. **Melina Daskalaki**, from the Tourism and Development Company of the Municipality of Athens, and Ms. **Mahi Vani**, Head of Strategic Planning of the Growth Fund, demonstrated the multidimensional management of cultural heritage both by the construction and industry operators and by the public sector operators, such as the Growth Fund, EYDAP and the Municipality of Athens.



Panel Discussion 11

In Panel Discussion 12 on "Advanced Non Destructive and Structural Techniques for Diagnosis, Redesign, Health Monitoring and Quality Assessment of Materials and Preservation Interventions", moderated by the Elected Assistant Professor at the School of Chemical Engineering of the National Technical University of Athens, Dr. **Kyriakos Lambropoulos**, and with the participation of Associate Professor **Michele Betti**, from the University of Florence, Professor **Eleni Tsagouri**, from the Vrije Universiteit of Brussels, Mr. **Georgios Karagiannis**, Director of the Ormylia Foundation, Mr **Athanasios Mouza**, representative of TÜV Hellas, Professor **Kosmas Sideris**, from the Democritus University of Thrace, Professor **Evangelos Christoforou**, from the National Technical University of Athens, and Professor **Theodoros Matika**, from the Department of Materials Science Engineering and Vice Rector for Research, Innovation and Development of the University of Ioannina, presented non-destructive testing methods, construction and infrastructure quality control standards. The discussion resulted in the necessity of on-site non-destructive inspection of cultural heritage monuments. Consideration of the management of the large amount of data showed the way forward in the establishment of a system of signifiers, so that the non-destructive testing data can contribute to the interpretation of the state of conservation of monuments in the digital backgrounds of their 3D documentation.



Panel Discussion 12

In the closing Panel Discussion 13 on "Recapturing the World in Conflict through Culture promoting mutual understanding and Peace", moderated by the President of the Conference, Professor Emeritus of the National Technical University of Athens **Antonia Moropoulou**, the participants, Archimandrite **Aristarchos Grekas**, Assistant Professor of Theology of the National Kapodistrian University of Athens and member of the Hellenic Institute of Cultural Diplomacy, Professor Emeritus and former Rector of Panteion University, Mrs. **Ismi Kriari**, Professor Emeritus of Architecture of Fatih Sultan Mehmet Vakif University, Mr. **Hasan Firat Diker**, Ambassador Emeritus, Mr. **Theodoros Theodorou**, the Professor of the University of Delft and representative of the European Association of Polytechnics SEFI, Mr. **Pieter de Vries**, the President of Heritage & Museums International, Ms. **Lila De Chaves-Chronopoulou**, the representative of the International Centre for the Conservation and Restoration of Cultural Heritage ICCROM, Mr. **Rohit Jugyasu**, and the President of the Cyprus Branch of ICOMOS, Dr. **Chrysanthos Pissarides**, highlighted from many sides the potential for understanding what the cultural heritage can offer, by bringing together different values in different historical periods of monuments, with different cultural, religious or national references.



Panel Discussion 13

It was highlighted that **Monuments unite**, even when political leaders are in conflict. Emblematic is the example of the work of the Interdisciplinary Team of the National Technical University of Athens for the rehabilitation of the Holy Aedicule of the Holy Sepulchre in Jerusalem, based on the unity and historical decision of the three Christian Communities, the tolerance and cooperation of the two peoples and their three religions.



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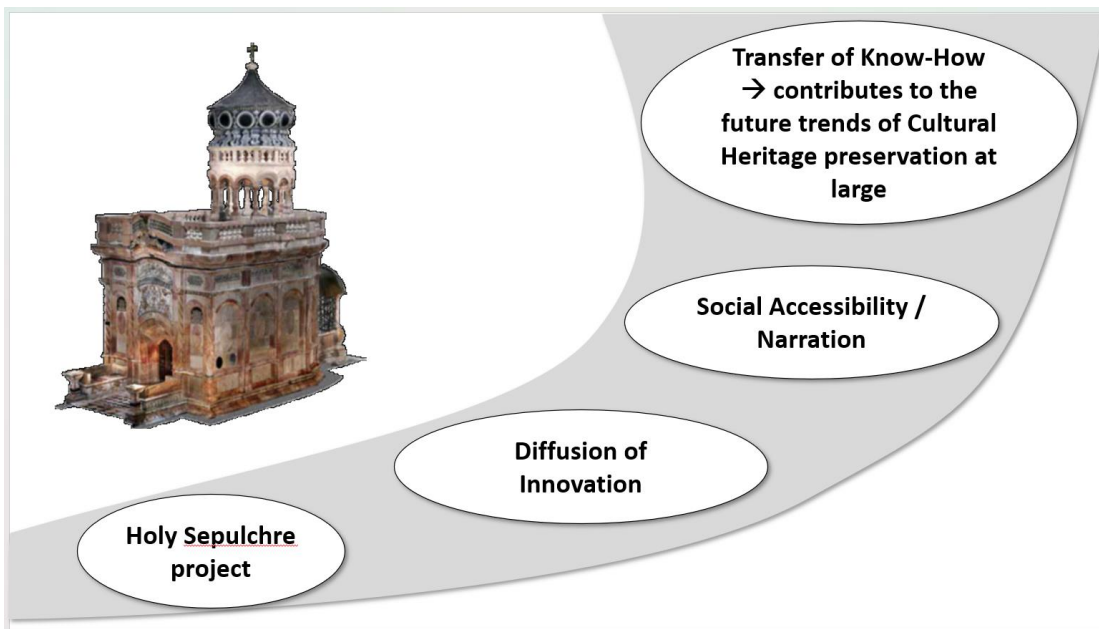


2.2.4 Holistic transdisciplinary approach

Innovative scientific methodologies and challenging projects marking future trends in the protection of cultural heritage, have initiated a universal conversation within a holistic approach merging competences from the scientific fields of architecture, civil engineering, surveying engineering, materials science and engineering, information technology and archaeology, as well as heritage professionals on restoration and conservation, stakeholders, industry representatives and policy makers.

The combined utilization of digital documentation technologies with innovative analytical and non-destructive techniques, numerical, computational and 3D techniques, archaeometric and archaeogene methods, supports the creation of a transdisciplinary multispectral modeling towards the sustainable preservation of cultural heritage.

Innovation is enhancing and revealing a critical dimension of the preservation of cultural heritage along with social participation and communication, supporting mutual understanding and peace through culture.





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2.2.5 TMM_CH panels

TMMCH PANEL DISCUSSIONS

- 1: Historic cities and centers: New reuse and preservation strategies applying Circular Economy
- 2: Digital Heritage a holistic approach
 - RESPECT Research Program, 1st 2014-2020
 - 4CH Project – Competence Center for the Conservation of Cultural Heritage
- 3: Machine learning techniques for Cultural Heritage Preservation
- 4: The Holy Sepulchre rehabilitation project: Transdisciplinarity and innovation in research and education
- 5: Archaeology - Archaeometry - Archaeogenetics
- 6: Honorary Session in memory Prof. Guido Roccon: Preserving compatibility, the materiality and integrity of structures and architectural authenticity
- 7: Earthquake protection and structural rehabilitation

TMMCH PANEL DISCUSSIONS

- 8: Resilience of Cultural Heritage mitigating Climate Change, Natural Hazards and Pandemic Risks and ensuring Biosecurity
 - Triquetra Horizon Project
- 9: New European Bauhaus Initiative for Green Deal addressing energy challenges
- 10: Green and Blue deal for local and regional Sustainable Development
 - Researchers' Night at NTUA 2023 first event
 - Receiving and Preserving Cultural and Natural Assets for Isolated Areas Development with Social Participation
 - Research Program AEI, 1st 2014-2020

TMMCH PANEL DISCUSSIONS

- 11: Bridging Heritage Stakeholders, Science and Industry
- 12: Advanced Non Destructive and Structural Techniques for Diagnosis, Redesign, Health Monitoring and Quality Assessment of Materials and Preservation Interventions
- 13: Reconciling the World in Conflict through Culture promoting mutual understanding and Peace

The synergy with important European projects, as evidenced in the Conference, emphasizes the impact of the emblematic Holy Sepulchre project to European Research, Innovation and Education.

The Synergy with important European projects like 4CH Competence Centre for the Conservation of Cultural Heritage, Triquetra, Respect, AEI, Researchers' Night – Marie, Erasmus+ EDICULA, et als emphasizes the impact of the Holy Aedicule rehabilitation to European Research, Innovation and Education



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3. Teachers Course



The **scope** of the EDICULA Teachers' Course is to train higher education teachers - educators to promote the transdisciplinary scientific synthesis as the key element of innovative education. Innovation can serve as the catalyst to transform research into novel educational approaches to achieve authentic learning. The importance of innovative transdisciplinary scientific synthesis is accentuated to teachers - educators in post-graduate programs in scientific fields other than Cultural Heritage. The EDICULA Teachers' Course approaches higher education teachers - educators in the field of Cultural Heritage since they are the stepping stone to transfer this framework. Higher education is the only area that combines education and research in order to embed innovation achieved through research within education in real-time, as well as promotes transdisciplinarity within interdepartmental programs. Two factors that are not yet fulfilled in primary and secondary education. EDICULA Teachers' Course includes principles to be addressed and directions to be followed towards an innovative education in the field of protection of monuments. The curricula applied should be adaptive to the relevant audiences needs, and thus specific curricula should not included.

EDICULA Teachers' Course **trainers** are professors and educators from the EDICULA stakeholders, the National Technical University of Athens, Sapienza University of Rome, Bezalel Academy of Arts and Design, as well as the Israel Antiquities Authority. EDICULA Teachers' Course **trainees** are higher education teachers in different fields in order to promote the EDICULA educational framework for transdisciplinarity through innovation. The training group consists of 20 participants representatives of post-graduate programs, that have been selected as relevant to the disciplines that can be applied in cultural heritage protection, but can also transfer the EDICULA framework into other scientific fields as well.

EDICULA Teachers' Course is implemented within EDICULA project "Educational Digital Innovative Cultural heritage related Learning Activities", co-funded by the Erasmus+ Program of the European Union. <http://edicula.eu/>

EDICULA project opens the discussion to other case studies. Innovative scientific methodologies developed within the emblematic rehabilitation of the Holy Aedicule of the Holy Sepulchre in Jerusalem are marking future trends in the protection of cultural heritage. They have initiated a universal conversation within a holistic approach, merging competence from the scientific fields of architecture, civil engineering, surveying engineering, materials science and engineering, information technology and archaeology, as well as heritage professionals on restoration and conservation, stakeholders, industry representatives and policy makers.

The combined utilization of digital documentation technologies with innovative analytical and non-destructive techniques, numerical, computational and 3D techniques, archaeometric and archaeogene methods, supports the creation of a transdisciplinary multispectral methodology for the sustainable preservation of cultural heritage. Innovation enhances and reveals a critical dimension of the preservation of cultural heritage along with social participation and communication. EDICULA is an innovative educational approach that fuses the interdisciplinary collaboration among the sectors of applied sciences in the



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protection of monuments with humanities disciplines using extended reality technologies and hands on experience, by developing an educational framework advancing scientific transdisciplinary synthesis.

Real world learning regards the acquisition of skills required for the management of complex real-world problems that involve a much larger variety of disciplines. In this context, the EDICULA use-cases act as the stepping stone for open-minded and constructive thinking that not only designs solutions on the actual cases, but also analyses the overall environment and consequences that might emerge from any potential intervention. Know-how transfer regards the development of a **methodological transdisciplinary mentality**, as an issues resolution, rather than a duplication of a depository of knowledge. The change-of-mentality highlights the innovations applied and the transdisciplinary approaches adopted to address the multi-level challenges of elaborate projects of built cultural heritage protection, such as the emblematic Holy Sepulchre rehabilitation, i.e. complex projects which entail challenges that cannot be addressed efficiently without the coordinated involvement of various complementary scientific disciplines.

Transdisciplinarity and innovation in research and education

- The theory of restoration in the first half of the twentieth century has allowed to lay the foundations of a scientific approach to conservation
- Today restorers understand the properties of the material of which an artistic artifact is made and develop the conservative approach starting from that nature
- Despite the differences between the profiles of restorers and conservation scientists, both professionals come out from a transdisciplinary educational approach

EDICULA: a step further in transdisciplinary education

- EDICULA brings to the educational field the idea that a cultural asset is not only matter to care of, to protect and to hand over to posterity but is also the expression of a culture and often the stratification of complex historical events
- The Edicula itself, the whole building of the Basilica of the Holy Sepulchre, the entire city of Jerusalem are not only stone, mortar and environmental parameters but the fruit of the history and tradition they represent.
- It is not only about respect for the material and form but also about respect for the material culture that has brought the object to us

Introduction to advanced didactic design was presented by Prof. Gabriele Favero.

(See link: https://drive.google.com/file/d/1zzTv_TLxAi4V9M2cs9AT_MZhKKunCCEx/view?usp=sharing)

The Tools for teaching, training and learning on different levels of education were presented by the UNIROMA1 team.

(See link: <https://drive.google.com/file/d/16bTjKuCKfBoorwy619mdT2DR1seQv8PY/view?usp=sharing>)



The **scope** of the EDICULA Teachers' Course is to train higher education teachers - educators to promote the transdisciplinary scientific synthesis as the key element of innovative education. Innovation can serve as the catalyst to transform research into novel educational approaches to achieve authentic learning. The importance of innovative transdisciplinary scientific synthesis is accentuated to teachers - educators in post-graduate programs in scientific fields other than Cultural Heritage. The EDICULA Teachers' Course approaches higher education teachers - educators in the field of Cultural Heritage since they are the stepping stone to transfer this framework. Higher education is the only area that combines education and research in order to embed innovation achieved through research within education in real-time, as well as promotes transdisciplinarity within interdepartmental programs. Two factors that are not yet fulfilled in primary and secondary education. EDICULA Teachers' Course includes principles to be addressed and directions to be followed towards an innovative education in the field of protection of monuments. The curricula applied should be adaptive to the relevant audiences needs, and thus specific curricula should not included.

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[Πληκτρολογήστε εδώ]

a critical dimension of the preservation of cultural heritage along with social participation and communication. EDICULA is an innovative educational approach that fuses the interdisciplinary collaboration among the sectors of applied sciences in the protection of monuments with humanities disciplines using extended reality technologies and hands on experience, by developing an educational framework advancing scientific transdisciplinary synthesis.

Real world learning regards the acquisition of skills required for the management of complex real-world problems that involve a much larger variety of disciplines. In this context, the EDICULA use-cases act as the stepping stone for open-minded and constructive thinking that not only designs solutions on the actual cases, but also analyses the overall environment and consequences that might emerge from any potential intervention. Know-how transfer regards the development of a **methodological transdisciplinary mentality**, as an issues resolution, rather than a duplication of a depository of knowledge. The change-of-mentality highlights the innovations applied and the transdisciplinary approaches adopted to address the multi-level challenges of elaborate projects of built cultural heritage protection, such as the emblematic Holy Sepulchre rehabilitation, i.e. complex projects which entail challenges that cannot be addressed efficiently without the coordinated involvement of various complementary scientific disciplines.

EDICULA Teachers' Course is a short course that expands into three parts.

EDICULA TEACHERS' COURSE PART 1

The first part is a theoretical approach where the EDICULA trainers teach through lectures the EDICULA concept.

EDICULA TEACHERS' COURSE PART 2

The second part is a primary approach to apply the concept in the trainees' field of study. Initially, the trainees work separately in a joint hypothesis case study with the support of EDICULA trainers (Part 2A). Afterwards, the trainees share their approach and merge their input (Part 2B).

EDICULA TEACHERS' COURSE PART 3

The third part is the creation of added value by asking the trainees to investigate the possibilities to transfer the EDICULA concept of innovative transdisciplinary scientific synthesis in their respective post-graduate programs.

The EDICULA Teachers' Course will be held in Athens, Greece from 19 to 23 March 2023. It will be held at the National Technical University of Athens and the Eugenides Foundation, including a scientific visit at the Acropolis of Athens.

[Πληκτρολογήστε εδώ]



TIMETABLE

DAY 1 | 19.03.2023

National Technical University of Athens – School of Chemical Engineering				
17:00-17:30	EDICULA Teachers' Course introduction. Scope and structure – housekeeping rules [NTUA]			
17:30-18:15	Introduction to advanced didactic design [SAPIENZA] part 1			
18:15-19:00	Tools for teaching, training and learning on different levels of education [SAPIENZA] part 1			

DAY 2 | 20.03.2023

	Eugenides Foundation Auditorium		Eugenides Foundation Hall 1		Eugenides Foundation Hall 2
09:00-10:30	Plenary Session – Addresses by the Organizers				

[Πληκτρολογήστε εδώ]

	Eugenides Foundation Auditorium		Eugenides Foundation Hall 1		Eugenides Foundation Hall 2
		10:30-10:45	A holistic framework for Cultural Heritage data management [210]		
		10:45-11:00	The islet of Klissova and the church of Agia Triada [414]		
11:00-12:30	Historic cities and centers: New Reuse and preservation strategies applying Circular Economy				
				12:30-12:45	Learning from the Jerusalem Workshop of the EDICULA Project: Promoting Hands-on Experience as part of CH learning and training activities [20]
				12:45-13:00	Innovative educational methodology in the field of cultural heritage protection in an interdisciplinary, problem-based, hands-on framework [224]
13:00-14:00	Digital Heritage a holistic approach				
14:15-15:30	LUNCH BREAK				
				15:45-16:00	'Deconstructing' and conceptualising the 'rock-art fleet' of Astypalaia. Case study for the application of interdisciplinary tools in Archaeology [391]
16:00-18:30	The Holy Sepulchre rehabilitation project: Transdisciplinarity and innovation in research and education				
18:30-20:00	Archaeology - Archaeometry – Archaeogene				

[Πληκτρολογήστε εδώ]

	Eugenides Foundation Auditorium		Eugenides Foundation Hall 1		Eugenides Foundation Hall 2

DAY 3 | 21.03.2023

	Eugenides Foundation Auditorium		Eugenides Foundation Hall 1		Eugenides Foundation Hall 2
09:00-12:00	Preserving Compatibility, the Materiality and Integrity of Structures and Architectural Authenticity				
		12:00-12:15	More than meets the eye – compatible materialities of Jerusalem Stone [31]		
				12:15-12:45	Documentation and data management of archaeological excavations and historic reconstruction of monuments and sites [IAA]
				12:45-13:15	On authenticity and integrity [BEZALEL]
				13:15-13:45	Urban Heritage – from Historic Cities to HUL [BEZALEL]
				13:45-14:15	Aspects of conservation in planning processes [BEZALEL]

[Πληκτρολογήστε εδώ]

	Eugenides Foundation Auditorium		Eugenides Foundation Hall 1		Eugenides Foundation Hall 2
14:15-15:15	LUNCH BREAK				
15:15-15:30	NYMPHA - Microalgae polysaccharides for cultural heritage preservation [36]				
15:30-15:45	A novel approach to control biodeterioration of wooden made materials based on chitosan nanoparticles loaded with R-(+)-pulegone [49]				
		15:45-16:00	Stone Deterioration of the Western Wall: Chemical and Mineralogical Characterization of Salts [407]		
		16:00-16:15	Analysis of historical mortars to design compatible restoration ones: application to the Raymond Bastion in Corfu [201]		
		16:15-16:30	A simple green strategy to produce a nanocomposite with consolidation and hydrophobic ability to calcareous substrates [406]		
		16:30-16:45	A superamphiphobic composite coating for the protection of marble [409]		
		16:45-17:00	Murat Reis complex: Survey, Documentation and Restoration of the Mosque [415]		
				17:00-17:30	Introduction to advanced didactic design [SAPIENZA] part 2
				17:30-18:00	Tools for teaching, training and learning on different levels of education [SAPIENZA] part 2
18:00-18:30	Resilience of Cultural Heritage mitigating Climate Change, Natural Hazards and Pandemic Risks and ensuring Biosafety				
18:30-18:45	Development of a Support System for Improved Resilience and Sustainable Urban areas to cope with Climate Change and Extreme Events based on GEOSS and Advanced Modelling Tools [193]				
18:45-19:00	Assessment of soil pollution and contamination at the historic former Hellenikon airport in Athens, through correlation of analytical measurements and metagenomics analysis [213]				

DAY 4 | 22.03.2023

	Eugenides Foundation Auditorium		Eugenides Foundation Hall 1		Eugenides Foundation Hall 2
				09:00-10:00	Practical activities with the involvement of attendants: Didactic design elaboration, writing learning outcomes, rethinking courses, building a tuning matrix [SAPIENZA]
10:00-10:30	New European Bauhaus initiative for Green Deal addressing energy challenges				
		10:30-10:45	Portable NMR applications: non-destructive and non-invasive porosity investigations on carbonatic stone materials [37]		
		10:45-11:00	Evaluation of materials and techniques of a 19th century hieratic manuscript [80]		
		11:00-11:15	Nondestructive assessment of hidden information in a post-byzantine icon [82]		
		11:15-11:30	Nano-reinforced ternary lime-based composites for structural health monitoring of Cultural Heritage Monuments [225]		
11:30-13:00	EDICULA STEERING COMMITTEE MEETING				
				13:00-14:00	Technical skills for didactic purpose: Voice use lab [SAPIENZA]
14:00-15:00	LUNCH BREAK				
15:00-16:30	Bridging Heritage Stakeholders, Science and Industry				

[Πληκτρολογήστε εδώ]

	Eugenides Foundation Auditorium		Eugenides Foundation Hall 1		Eugenides Foundation Hall 2
16:30-18:00	Advanced Non Destructive and Structural Techniques for Diagnosis, Redesign and Health Monitoring and Quality Assessment of Materials and Preservation Interventions				
18:00-19:30	Recapturing the World in Conflict through Culture promoting mutual understanding and Peace				
19:30-19:45	Enhanced documentation and evaluation of grouting process, through the fusion of non-destructive testing and evaluation information. The case study of the Katholikon of the Monastery of Panagia Varnakova [190]				
19:45-20:00	The interventions for the main dome of Hagia Sophia throughout its history and a preservation proposal [200]				
20:00-20:15	The historical materials of the Varnakova Monastery Catholicon and restoration proposals [211]				
20:15-20:30	Interdisciplinary approach: Evolution of rehabilitation works, supervision, monitoring and control at the Varnakova Monastery Catholicon [417]				

DAY 5 | 23.03.2023

	Acropolis of Athens				
08:30-10:30	SCIENTIFIC FIELD VISIT by the Acropolis Restoration Service				



ANALYTICAL PROGRAM

EDICULA TEACHERS' COURSE PART 1

The first part is a theoretical approach where the EDICULA trainers will teach through lectures the EDICULA concept.

DAY 1

19.03.23 | 17:00-19:00 NTUA School of Chemical Engineering

Introductory lectures	
EDICULA Teachers' Course introduction. Scope and structure – housekeeping rules	Antonia Moropoulou, Kyriakos Lampropoulos and Antonia Lampropoulou National Technical University of Athens
Introduction to advanced didactic design – PART 1	Gabriele Favero Sapienza University of Rome
Tools for teaching, training and learning on different levels of education – PART 1	Medeghini Laura, Masi Alessia Sapienza University of Rome

[Πληκτρολογήστε εδώ]

DAY 2

20.03.23 | 09:00-10:30

Eugenides Foundation Auditorium

Opening Session	
Introductory speech	
President of the International TMM_CH Conferences, Professor Emeritus Moropoulou Antonia, National Technical University of Athens - Head of the Interdisciplinary Team and Chief Scientific Supervisor of the Holy Sepulchre's Holy Aedicule's rehabilitation - Technical Chamber of Greece Executive Committee - Governing Council of the University of Ioannina Member	
Welcome Address	
Rector of the National Technical University of Athens, Professor Andreas Boudouvis	President of TCG Technical Chamber of Greece, Giorgos Stasinou
Inauguration of the Conference	
H.E. the Vice President of the Greek Government, Mr Panagiotis Pikrammenos	
Benedictions	
His All-Holiness, Ecumenical Patriarch Bartholomew of Constantinople	
His Beatitude, Archbishop Hieronymus II of Athens and All Greece	
His Beatitude, Patriarch Theophilos III of Jerusalem	
Addresses	
European Commissioner for Innovation, Research, Culture, Education and Youth, Mariya Gabriel	
Secretary General of ICOMOS International Council of Monuments and Sites, Professor Mario Santana Quintero – Carleton University	
Director General of Israel Antiquities Authority, Eli Eskosido	
President of ETEK Cyprus Scientific and Technical Chamber, Constantinos Constanti	
Rector of the University of Ioannina, Professor Anna Batistatou	
Founder and President of CHiFA Cultural Heritage Finance Alliance, Bonnie Burnham – President Emerita of WMF World Monuments Fund	

[Πληκτρολογήστε εδώ]

President of the International Committee CIPA Heritage Documentation, Professor Efstratios Stylianidis - Vice Rector for Research and Lifelong Learning of the Aristotle University of Thessaloniki

Director of UNESCO Chair on “Digital Cultural Heritage”, Dr Marinos Ioannides - Cyprus University of Technology

20.03.23 | 11:00-12:30 Eugenides Foundation Auditorium

Historic cities and centers: New Reuse and preservation strategies applying Circular Economy

Bakoyannis Kostas, Mayor of Athens

Kampourakis Antonis, Mayor of Rhodes

Minaidis Lee, Advisor to the Secretary General of the Organization of World Heritage Cities OWHC

Burnham Bonnie, Cultural Heritage Finance Alliance, President - World Monuments Fund WMF, President Emerita

Akritidis Chronis, CEO of ANAPLASI ATHINAS S.A.

Gravari-Barbas Maria, UNESCO Chair on “Culture, Tourism, Development”, Director -Paris 1 Panthéon-Sorbonne University - Institute of Research and Higher Studies on Tourism IREST

Drakos Stefanos, Deputy Mayor of Rhodes, Head of Medieval City

Maistrou Eleni, Professor Emeritus, National Technical University of Athens - Society for the Environmental and Cultural Heritage, Council of Architectural Heritage, President

Moropoulou Antonia, Professor, National Technical University of Athens, School of Chemical Engineering

Turner Mike, Professor, Bezalel Academy of Arts and Design Jerusalem - UNESCO Chair in Urban Design and Conservation Studies

Della Torre Stefano, Professor, Polytechnic University of Milan, Department of Architecture, Built Environment and Construction Engineering

Karavasili Margarita, ECOCITY Voluntary Organization for the Urban Environment, council member

Coccosis Harry, Professor Emeritus, University of Thessaly, Department of Planning and Regional Development – EC consultant on spatial planning and environment, tourism, sustainable development, insular development

20.03.23 | 13:00-14:00 Eugenides Foundation Auditorium

Digital Heritage a holistic approach

Ioannides Marinos, UNESCO Chair on “Digital Cultural Heritage”, Director - Cyprus University of Technology

Amditis Angelos, National Technical University of Athens, Institute of Communication and Computer Systems, Research Director

Anagnostopoulos Dimosthenis, Secretary General at GSIS, Ministry of Finance and Economics of the Hellenic Republic - Professor, Harokopio University, Department of Informatics and Telematics

Delegou Ekaterini, Scientific and Teaching Staff, National Technical University of Athens, School of Chemical Engineering

Di Giulio Roberto, University of Ferrara, Department of Architecture - Research Project "Inclusive Cultural Heritage in Europe through 3D semantic modeling INCEPTION", Scientific Coordinator

[Πληκτρολογήστε εδώ]

Georgopoulos Andreas, Professor, National Technical University of Athens, School of Rural, Surveying and Geoinformatics Engineering - International Council of Monuments and Sites ICOMOS, Member of the International Board
Kyriazis Dimosthenis, Associate Professor, Vice Rector University of Piraeus – Representative, Research Program RESPECT An exemplary information system and methodology for the integrated management, analysis and dissemination of digital cultural heritage data coming from the rehabilitation of the Holy Aedicule
Tokmakidis Konstantinos, Professor, Aristotle University of Thessaloniki, School of Rural and Surveying Engineering

20.03.23 | 15:30-16:00 Eugenides Foundation Hall 2

Art, Archaeology - Archaeometry – Archaeogene		
391	'Deconstructing' and conceptualising the 'rock-art fleet' of Astypalaea: a case study for the application of interdisciplinary tools in Archaeology	Andreas Vlachopoulos and Panagiotis Tzovaras University of Ioannina, University of Southampton

20.03.23 | 18:30-20:00 Eugenides Foundation Auditorium

Archaeology - Archaeometry – Archaeogene		
Korka Elena, Dr Archaeologist, Ministry of Culture and Sports of the Hellenic Republic, General Directorate of Antiquities and Cultural Heritage, Honorary Director General – Hellenic Blue Shield, President		
Simosi Aggeliki, Hellenic Ministry of Culture and Sports of the Hellenic Republic, Ephorate of Antiquities of Piraeus and Islands, Director		
Psalti Athanasia, Hellenic Ministry of Culture and Sports of the Hellenic Republic, Ephorate of Antiquities of Phocis, Director		
Vlachopoulos Andreas, Associate Professor, University of Ioannina, Department of History and Archaeology, Chair		
Liritzis Ioannis, Professor, University of the Aegean, Department of Mediterranean Studies, Laboratory of Archaeometry, Director		
Karapiperis Christos, DNASequences SRL		
Mertzani Maria, Hellenic Ministry of Culture and Sports of the Hellenic Republic, Directorate of Conservation of ancient and Modern Monuments, Director		
Terlixi Agni, Deputy Head of the Work's of Arts Conservation and Reability Director, National Gallery of Greece		
Zacharias Nikos, Professor, University of Peloponnese, Department of History, Archaeology and Cultural Resources Management - School of Humanities and Cultural Studies, Dean – MSc Program "Cultural Heritage Materials and Technologies", Director		

[Πληκτρολογήστε εδώ]

DAY 3

21.03.23 | 09:00-12:00 **Eugenides Foundation Auditorium**

Preserving Compatibility, the Materiality and Integrity of Structures and Architectural Authenticity	
Zendri Elisabetta, Professor, University Ca' Foscari of Venice, Department of Environmental Engineering, Informatics and Statistics	
Bakolas Stelios, Associate Professor, National Technical University of Athens, School of Chemical Engineering, Laboratory of Materials Science and Engineering, Director - NTUA Post-Graduate MSc Program "Protection of Monuments" Direction "Materials and Conservation Interventions" Studies Director	
Della Torre Stefano, Professor, Polytechnic University of Milan, Department of Architecture, Built Environment and Construction Engineering	
Moropoulou Antonia, Professor, National Technical University of Athens, School of Chemical Engineering - President of the TMM-CH Conferences	
Maravelaki Pagona-Noni, Professor, Technical University of Crete, School of Architecture, Laboratory of Materials for Cultural Heritage and Modern Building, Head	
Vlachoulis Themistoklis, Ministry of Culture and Sports of the Hellenic Republic, Directorate for the Restoration of Byzantine and Post-byzantine Monuments, Director	
Efesiou Irene, Professor Emeritus, National Technical University of Athens, School of Architecture	
Eleftheriou Vasiliki, Ministry of Culture and Sports of the Hellenic Republic, Acropolis Restoration Service, Director	
Konstantinidou Elena, Associate Professor, National Technical University of Athens, School of Architecture - NTUA Post-Graduate MSc Program "Protection of Monuments" representative	
Miltiadou-Fezans Androniki, Associate Professor, National Technical University of Athens, School of Architecture	
Spathis Panagiotis, Professor, Aristotle University of Thessaloniki, MSc Program "Physico-chemical diagnostic methods for Cultural Heritage materials"	
Rajčić Vlatka, Professor, University of Zagreb, Faculty of Civil Engineering	
Sela Wiener Adi, Architect, Lecturer at Bezalel Academy of Arts and Design Jerusalem, School of Architecture, Master's Program in Urban Design; ICOMOS Israel, Head of the Cultural Routes Scientific Committee – Edicula Consortium	
Smyris Georgios, Associate Professor, University of Ioannina, Department of Architecture, Chair	

21.03.23 | 12:15-14:15 **Eugenides Foundation Hall 2**

Lectures	
Documentation and data management of archaeological excavations and historic reconstruction of monuments and sites	Yuval Baruch Israel Antiquities Authority
On authenticity and integrity	Mike Turner Bezalel Academy of Arts and Design
Urban Heritage – from Historic Cities to HUL	Adi Sela Wiener Bezalel Academy of Arts and Design
Aspects of conservation in planning processes	Danielah Smits Possek Bezalel Academy of Arts and Design

21.03.23 | 17:00-18:00 **Eugenides Foundation Hall 2**

[Πληκτρολογήστε εδώ]

Introductory lectures	
Introduction to advanced didactic design – PART 2	Gabriele Favero Sapienza University of Rome
Tools for teaching, training and learning on different levels of education – PART 2	Medeghini Laura, Masi Alessia Sapienza University of Rome

21.03.23 | 18:00-18:30 Eugenides Foundation Auditorium

Resilience of Cultural Heritage mitigating Climate Change, Natural Hazards and Pandemic Risks and ensuring Biosafety
Ioannidis Charalambos, Professor, National Technical University of Athens, School of Rural, Surveying and Geoinformatics Engineering, Dean – TRIQUETRA member
Charalampopoulou Betty, CEO / President Geosystems Hellas S.A, TRIQUETRA representative
Alexandrakis Georgios, Foundation for Research and Technology Hellas FORTH, Institute of Applied and Computational Mathematics, Coastal and Marine Research Laboratory
Alexopoulos Konstantinos, retired General, Defense and Civil Emergency Planning expert - The Grand Priory of Greece in the "Sovereign Military Order of the Temple of Jerusalem", representative
Chasapi Anastasia, Research Scientist, Centre for Research and Technology, Hellas CERTH - DNASequences SRL, Bioinformatics Expert
Deodatis George, Columbia University, Department of Civil Engineering and Engineering Mechanics, Santiago and Robertina Calatrava Family Professor of Civil Engineering and Professor of Earth and Environmental Engineering
Martino Salvatore, Associate Professor, Sapienza University of Rome - TRIQUETRA member
Cerra Daniele, German Aerospace Center - TRIQUETRA member
Themistocleous Kyriacos, Eratosthenes Centre of Excellence - TRIQUETRA member
Deodatis George, Columbia University, Department of Civil Engineering and Engineering Mechanics, Santiago and Robertina Calatrava Family Professor of Civil Engineering and Professor of Earth and Environmental Engineering
Moropoulou Antonia, Professor, National Technical University of Athens
Koundouri Phoebe, Professor and Director of ReSEES Research Laboratory, Athens University of Economics and Business - Director of Sustainable Development Unit and EIT Climate-KIC Hub Greece, Athena Information Technology Research Center – President-Elect of the European Association of Environmental and Resource Economists - Fellow World Academy of Art and Science - Co-chair SDSN Europe & SDSN Greece

EDICULA TEACHERS' COURSE PART 2

The second part is a primary approach to apply the concept in the trainees' field of study. Initially, the trainees will work separately in a joint hypothesis case study with the support of EDICULA trainers (Part 2A). Afterwards, the trainees will share their approach and merge their input (Part 2B).

DAY 2

20.03.23 | 09:00-10:30

Eugenides Foundation Auditorium

Plenary Session – Addresses by the Organizers

President of the International TMM_CH Conferences, Professor Emeritus Moropoulou Antonia, National Technical University of Athens - Head of the Interdisciplinary Team and Chief Scientific Supervisor of the Holy Sepulchre's Holy Aedicule's rehabilitation – Technical Chamber of Greece Executive Committee

Rector of the National Technical University of Athens, Professor Andreas Boudouvis

President of TCG Technical Chamber of Greece, Giorgos Stasinou

H.E. the Vice President of the Greek Government, Mr Panagiotis Pikrammenos

His All-Holiness, Ecumenical Patriarch Bartholomew of Constantinople

His Beatitude, Archbishop Hieronymus II of Athens and All Greece

His Beatitude, Patriarch Theophilos III of Jerusalem

European Commissioner for Innovation, Research, Culture, Education and Youth, Mariya Gabriel

Secretary General of ICOMOS International Council of Monuments and Sites, Professor Mario Santana Quintero – Carleton University

Director General of Israel Antiquities Authority, Eli Eskosido

President of ETEK Cyprus Scientific and Technical Chamber, Constantinos Constanti

Rector of the University of Ioannina, Professor Anna Batistatou

Founder and President of CHiFA Cultural Heritage Finance Alliance, Bonnie Burnham – President Emerita of WMF World Monuments Fund

President of the International Committee CIPA Heritage Documentation, Associate Professor Efstratios Stylianidis - Vice Rector for Research and Lifelong Learning of the Aristotle University of Thessaloniki

Director of UNESCO Chair on “Digital Cultural Heritage”, Dr Marinos Ioannides - Cyprus University of Technology

20.03.2023 | 10:30-11:00 Eugenides Foundation Hall 1

Digital Heritage: a holistic approach

210	A holistic framework for Cultural Heritage data management	Emmanouil Alexakis, Philip Mavrepis, Alexandros Raikos, Antonis Rifios, Dimosthenis Kyriazis and Antonia Moropoulou National Technical University of Athens-University of Piraeus
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[Πληκτρολογήστε εδώ]

414	The Islet of Klissova and the Church of Agia Triada	Anastasia Papoutsaki, Vayia Panagiotidis, Nikolaos Zacharias, Aggeliki Kompoti and Anastasios Kazolias University of Peloponnese
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DAY 3

21.03.2023 | 12:00-12:15 Eugenides Foundation Hall 1

Preserving Compatibility, the Materiality and Integrity of Structures and Architectural Authenticity		
31	More than meets the eye – compatible materialities of Jerusalem Stone	Adi Sela Wiener, Laura Medeghini and Gabriele Favero Sapienza University of Rome, Bezalel Academy of Arts and Design

21.03.2023 | 15:15-15:45 Eugenides Foundation Auditorium

Resilience to Climate Change, Natural Hazards and Pandemic Risks - Biosafety		
36	NYMPHA - Microalgae polysaccharides for cultural heritage preservation	Laura Medeghini, Melania Di Fazio, Alessia Masi, Laura Sadori, Eleonora Cerafogli, Cristina Chiarucci, Francesca Leonoelli, Amina Antonacci, Annalisa Masi, Daniele Di Luca, Teresa Rinaldi, Marcella Ioele, Carolina Rigon, Eleonora Gioventù, Miriam Pitocco, Antonella Di Giovanni, Maria Speranza Storace, Gabriella Pace and Gabriele Favero Sapienza University of Rome, Institute of Crystallography, National Research Council, Central Institute for Restoration (ICR)
49	A novel approach to control biodeterioration of wooden made materials based on chitosan nanoparticles loaded with R-(+)-pulegone	Chiara Genova, Marzia Beccaccioli, Alessandro Lazzara, Alessandro Ciccola, Gabriele Favero, Alessia Masi and Simona Sennato Sapienza University of Rome, Institute for Complex Systems (ISC-CNR), National Research Council

21.03.2023 | 15:45-17:00 Eugenides Foundation Hall 1

Preserving Compatibility, the Materiality and Integrity of Structures and Architectural Authenticity		
407	Stone Deterioration of the Western Wall: Chemical and Mineralogical Characterization of Salts	Meidad Shor, Aliza van Zuiden, Nimrod Wieler and Yotam Asscher Israel Antiquities Authority
201	Analysis of historical mortars to design compatible restoration ones: application to the Raymond Bastion in Corfu	Noni Maravelaki, Kali Kapetanaki and Tenia Rigakou University of Thessaly
406	A simple green strategy to produce a nanocomposite with consolidation and hydrophobic ability to calcareous substrates	Areti Kotsoni, Stavros Lagkadinou, Dimitrios Stefanakis, Ioannis Karapanagiotis and Pagona-Noni Maravelaki

[Πληκτρολογήστε εδώ]

		Technical University of Crete, Aristotle University of Thessaloniki
409	A superamphiphobic composite coating for the protection of marble	Panagiotis Spathis, Panagiotis Manoudis, Zebunnisa Chughtai, Vasilios Tsiridis, Avraam Konstantinidis, Sotiris Evgenidis, Kyriaki Devlioti, Ioannis Karapanagiotis and Thodoris Karapantsios Aristotle University of Thessaloniki
415	Murat Reis complex: Survey, Documentation and Restoration of the Mosque	Anna Chrysidis, Elena Konstantinidou, Androniki Miltiadou Fezans and Eleftheria Tsakanika free lance engineer, National Technical University of Athens

21.03.23 | 17:00-18:30 Eugenides Foundation Hall 2

Lectures		
	Introduction to advanced didactic design – PART 2	Gabriele Favero Sapienza University of Rome
	Tools for teaching, training and learning on different levels of education – PART 2	Medeghini Laura, Masi Alessia Sapienza University of Rome

21.03.2023 | 18:30-19:00 Eugenides Foundation Auditorium

Resilience to Climate Change, Natural Hazards and Pandemic Risks - Biosafety		
193	Development of a Support System for Improved Resilience and Sustainable Urban areas to cope with Climate Change and Extreme Events based on GEOSS and Advanced Modelling Tools	Charalampos Zafeiropoulos, Ioannis Tzortzis, Rallis Ioannis and Anastasios Doulamis National Technical University of Athens
213	Assessment of soil pollution and contamination at the historic former Hellenikon airport in Athens, through correlation of analytical measurements and metagenomics analysis	Kyriakos Lampropoulos, Ekaterini Delegou, Antonios Samiotakis, Jelica Novakovic, Maria Loizidou, Antonios Salakidis, Christos Karapiperis, Anastasia Chasapi, Dimitrios Valasiadis and Antonia Moropoulou National Technical University of Athens, DNASequencing SRL Hellas, Aristotle University of Thessaloniki, Chemical Process & Energy Resources Institute

[Πληκτρολογήστε εδώ]

DAY 4

22.03.23 | 09:00-10:00 Eugenides Foundation Hall 2

Lectures	
Practical activities with the involvement of attendants: Didactic design elaboration, writing learning outcomes, rethinking courses, building a tuning matrix	Gabriele Favero, Medeghini Laura, Ciccola Alessandro Sapienza University of Rome, National Technical University of Athens

22.03.23 | 10:00-10:30 Eugenides Foundation Auditorium

New European Bauhaus initiative for Green Deal addressing energy challenges	
Piaia Emanuele, Associate Professor, University of Ferrara, Department of Architecture	
Touliatos Panagiotis, Professor, Frederick University, Department of Architecture, Head - Professor Emeritus, National Technical University of Athens, School of Architecture	
Konstanti Agoritsa, Scientific and Teaching Staff, National Technical University of Athens, School of Chemical Engineering, Laboratory of Materials Science and Engineering	
Kaparelitis Vassilis, Topos Systems (start up Greece)	
Xenidis Anthimos, Professor, National Technical University of Athens, School of Mining and Metallurgical Engineering	
Nikolovgenis Andreas, Assistant Professor, University of Ioannina, Architecture and Urban Design Department of Architecture	
Thralou Stavroula, Adjunct Teaching Staff University of Cyprus, Department of Architecture	
TERNA representative	
Doukas Haris, Associate Professor, National Technical University of Athens, School of Electrical and Computer Engineering	

22.03.2023 | 10:30-11:30 Eugenides Foundation Hall 1

Advanced Non Destructive and Structural Techniques for Diagnosis, Redesign and Health Monitoring		
37	Portable NMR applications: non-destructive and non-invasive porosity investigations on carbonatic stone materials.	Laura Giuliani, Valeria Stagno, Chiara Genova, Alessandro Ciccola, Silvia Capuani and Gabriele Favero Università La Sapienza, CNR ISC
80	Evaluation of materials and techniques of a 19th century hieratic manuscript	Georgia Varfi, Spyridoula Farmaki, Dimitrios Moschovas, Dimitrios Exarchos and Theodore Matikas University of Ioannina
82	Nondestructive assessment of hidden information in a post-byzantine icon.	Georgia Varfi, Spyridoula Farmaki, Theofanis Gerodimos, Dimitrios Exarchos, George Mastrotheodoros, Dimitrios Anagnostopoulos and Theodore Matikas University of Ioannina, University of West Attika
225	Nano-reinforced ternary lime-based composites for structural health monitoring of Cultural Heritage Monuments	Maria Evangelia Stogia, Stavros Kourkoulis and Nikolaos Alexopoulos University of the Aegean-National Technical University of Athens

[Πληκτρολογήστε εδώ]

22.03.23 | 13:00-14:00 Eugenides Foundation Hall2

Lectures	
Technical skills for didactic purpose: Voice use lab	Ciccola Alessandro Sapienza University of Rome

22.03.23 | 16:30-18:00 Eugenides Foundation Auditorium

Advanced Non Destructive and Structural Techniques for Diagnosis, Redesign and Health Monitoring and Quality Assessment of Materials and Preservation Interventions	
Osman Ahmad, Professor, University of Applied Sciences in Saarbrücken - Fraunhofer Institute for Nondestructive Testing IZFP	
Betti Michele, Associate Professor, University of Florence, Department of Civil and Environmental Engineering	
Zhang Hai, Professor, Harbin Institute of Technology	
Tsangouri Eleni, Professor, Free University of Brussels	
Karagiannis Georgios, "ORMYLIA" Foundation, Scientific Director	
Lampropoulos Kyriakos, elected Assistant Professor, National Technical University of Athens, School of Chemical Engineering	
Mouzas Athanasios, Civil Engineer TÜV HELLAS (TÜV NORD), Buildings & Infrastructure Projects Inspector	
Sideris Kosmas, Professor, Democritus University of Thrace, Department of Civil Engineering	
Matikas Theodoros, Professor, University of Ioannina, Department of Materials Science and Engineering, Laboratory of Mechanics, Smart Sensors and Nondestructive Evaluation, Vice Rector for Research, Innovation and Development	
Hristoforou Evangelos, Professor, National Technical University of Athens, School of Electrical and Computer Engineering – Hellenic Society of Non-Destructive Testing HSNT, representative	

22.03.2023 | 19:30-20:30 Eugenides Foundation Auditorium

Emblematic works as source of innovation and transdisciplinarity		
190	Enhanced documentation and evaluation of grouting process, through the fusion of non-destructive testing and evaluation information. The case study of the Katholikon of the Monastery of Panagia Varnakova	Kyriakos Lampropoulos, Ekaterini Delegou, Stergios Roumeliotis, Vasileios Keramidas and Antonia Moropoulou National Technical University of Athens
200	The interventions for the main dome of Hagia Sophia throughout its history and a preservation proposal	Hasan Firat Diker, Mehmet Halis Günel and Beyza Kapucu Güzelbulut Fatih Sultan Mehmet Vakıf University, Middle East Technical University, Istanbul Technical University
211	The historical materials of the Varnakova Monastery Katholikon and restoration proposals	Maria Apostolopoulou, Ekaterini T. Delegou, Christoforos Michalaros, Vasileios Keramidas, Elisavet Tsilimantou, Christos Papatrechas and Antonia Moropoulou

[Πληκτρολογήστε εδώ]

		National Technical University of Athens, Hellenic Survey of Geology & Mineral Exploration
417	Interdisciplinary approach: Evolution of rehabilitation works, supervision, monitoring and control at the Varnakova Monastery Catholicon	Antonia Moropoulou, Charalampos Mouzakis, Georgios Andriotakis, Julia Vobiri, Vassilios Zafeiris, Maria Apostolopoulou, Vassilios Keramidas, Ekaterini Delegou, Kyriakos Lampropoulos, Stergios Roumeliotis, Marilena Tsakoumaki and Athanasia Psalti National Technical University of Athens, Ephorate of Antiquities of Phocis, free lance engineers

DAY 5

23.03.23 | 08:30-10:30 **Acropolis of Athens**

Scientific Field Visit to the Acropolis of Athens	Vasiliki Eleftheriou, Eleni Aggelakopoulou and Maria Apostolopoulou Acropolis Restoration Service, Ministry of Culture and Sports

EDICULA TEACHERS' COURSE PART 3

The third part is the creation of added value by asking the trainees to investigate the possibilities to transfer the EDICULA concept of innovative transdisciplinary scientific synthesis in their respective post-graduate programs.

DAY 2

20.03.2023 | 12:30-13:00 Hall 2

Novel educational Approach for the Preservation of Cultural Heritage		
20	Learning from the Jerusalem Workshop of the EDICULA Project: promoting Hands-on Experience as part of Cultural Heritage learning and training activities	Adi Sela Wiener and Liat Weinblum Bezalel Academy of Arts and Design; Sapienza University of Rome, Israel Antiquity Authority
224	Innovative educational methodology in the field of cultural heritage protection in an interdisciplinary, problem-based, hands-on framework	Antonia Lampropoulou, Ioannis Rallis, Agoritsa Konstanti, Ekaterini Delegou, Kyriakos Lampropoulos and Antonia Moropoulou National Technical University of Athens

20.03.23 | 16:00-18:30 Eugenides Foundation Auditorium

The Holy Sepulchre rehabilitation project: Transdisciplinarity and innovation in research and education	
Moropoulou Antonia, Professor, National Technical University of Athens, School of Chemical Engineering - Head of the NTUA Interdisciplinary Team and Chief Scientific Supervisor of the Holy Aedicule's rehabilitation in the Holy Sepulchre in Jerusalem	
Dimas Christos, Deputy Minister for Research and Innovation, Ministry of Development and Investments of the Hellenic Republic	
Hiebert Fredrik, Dr. Archaeologist at the Project as National Geographic Society	
Favero Gabriele, Professor, Sapienza University of Rome, Master's Degree Programme, Science and Technologies for the Conservation of Cultural Heritage - EDICULA Erasmus+ Strategic Partnership, Steering Committee member	
Sanmartín Fulgencio, Policy Officer at European Commission, Competence Centre for Conservation of Cultural Heritage	
Smits Possek Danielah, Architect, Bezalel Academy of Arts, School of Architecture, Master's Program in Urban Design Studies, Head	
Järvinen Hannu-Matti, Professor Tampere University, President of SEFI European Society for Engineering Education	
Belavilas Nikolaos, Professor, National Technical University of Athens, School of Architecture - NTUA Post-Graduate MSc Program "Protection of Monuments", Director	
Bakolas Stelios, Associate Professor, National Technical University of Athens, School of Chemical Engineering - NTUA Post-Graduate MSc Program "Protection of Monuments" Direction "Materials and Conservation Interventions", Studies Director	
Papayianni Ioanna, Professor Emeritus, Aristotle University of Thessaloniki, School of Civil Engineering - MSc Program "Protection, Conservation and Restoration of Civilization Monuments" representative	
Georgopoulos Andreas Professor of National Technical University of Athens, Board member of the International Council of Monuments and Sites ICOMOS	

[Πληκτρολογήστε εδώ]

Maravelaki Pagona-Noni, Professor, Technical University of Crete, School of Architecture – MSc Program “Protection, valorization and conservation of Monuments and Sites”, representative
Stavrakos Christos, Professor, University of Ioannina, Department of History and Archaeology – MSc Program “Byzantine Studies”, Secretary General of the International Association of Byzantine Studies
Zacharias Nikos, Professor, University of Peloponnese, Department of History, Archaeology and Cultural Resources Management - School of Humanities and Cultural Studies, Dean – MSc Program “Cultural Heritage Materials and Technologies”, Director
Lampropoulou Antonia, National Technical University of Athens - EDICULA Erasmus+ Strategic Partnership

DAY 4

22.03.23 | 15:00-16:30 Eugenides Foundation Auditorium

Bridging Heritage Stakeholders, Science and Industry
Androulidaki Amalia, Ministry of Culture and Sports of the Hellenic Republic, General Directorate for the Restoration, Museums and Technical Works, General Director
Baruch Yuval, Dr Archaeologist, Israel Antiquities Authority, Directorate General representative
Stylianou Platonas, Cyprus Scientific and Technical Chamber ETEK, General Secretary of the Executive Board
Daktylidis Michail, Panhellenic Association of Engineers Contractors of Public Works PEDMEDE, President
Zafeiri Styliani, Sons P. Zafiri Techniki Ltd
Dalkafouki Maria, Dalkafouki House Ltd, Chief Executive Officer
Katsiotis Marios, PhD, TITAN Cement Group, Research & Innovation Manager
Komnitsas Konstantinos, Professor, Technical University of Crete, School of Mineral Resources Engineering
Tosios Anastasios, Deputy Chief Executive Officer, EYDAP Athens Water Supply and Sewerage Company
Daskalaki Melina, Athens Development and Destination Management Agency, Member of the Board of Directors
Vani Maxie, Chief Strategy Officer, Growthfund (HCAP)
Rodriguez-Maribona Isabel, European Construction Technology Platform ECTP, Heritage and Regeneration Committee, Chair

22.03.23 | 18:00-19:30 Eugenides Foundation Auditorium

Recapturing the World in Conflict through Culture promoting mutual understanding and Peace
Nikoltsiou Maria, Journalist, Alpha TV
Tasoulas Constantine, President of the Hellenic Parliament
Georgiadis Adonis, Minister for Development and Investment of the Hellenic Republic
Pappas Spyros, Dr European Lawyer - European Commission, Directorate General of Education and Culture, former Director General - Argo the Hellenic Network in Belgium, President

[Πληκτρολογήστε εδώ]

Moropoulou Antonia, Professor Emeritus, National Technical University of Athens - Head of the Interdisciplinary Team and Chief Scientific Supervisor of the Holy Sepulchre's Holy Aedicule's rehabilitation - Technical Chamber of Greece Executive Committee – President of TMM_CH Conferences
Grekas Aristarchos, Archimandrite of the Holy Archdiocese of Athens - Assistant Professor, National and Kapodistrian University of Athens, Department of Theology - Hellenic Institute of Cultural Diplomacy
Kriari Ismini, Professor Emeritus, Panteion University of Social and Political Sciences, former Rector – European Research and Educational Centre of Bioethics and Legislation
Diker Hasan Firat, Fatih Sultan Mehmet Vakif University, Faculty of Architecture and Design, Professor
Giannini Evgenia, Assistant Professor, National Technical University of Athens, School of Applied Mathematical and Physical Sciences, Department of Humanities Social Sciences and Law
Theodorou Theodoros, Ambassador on Honors
De Vries Pieter, Assistant Professor, Delft University of Technology - European Society for Engineering Education SEFI, Treasurer
De Chaves-Chronopoulos Lila, Heritage & Museums International, President
Jugyasu Rohit, International Centre for the Study of the Preservation and Restoration of Cultural Heritage in Rome ICCROM, heritage conservation professional
Pissaridis Chrysanthos, ICOMOS-Cyprus, President

[Πληκτρολογήστε εδώ]



The EDICULA Educational Committee responsible for the Teachers' Course

National Technical University of Athens

Professor Antonia Moropoulou – Coordinator of EDICULA Project
Elected Assistant Professor Kyriakos Lampropoulos
Antonia Lampropoulou

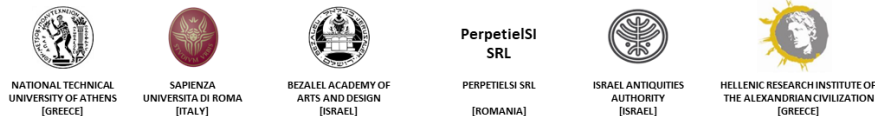
Bezalel Academy of Arts and Design

Professor Mike Turner
Lecturer Adi Sela Wiener
Danielah Smits Possek – Head M. Urb. Des

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Sapienza University of Rome

Professor Gabriele Favero
Dr Alessandro Ciccola
Dr Alessia Masi
Dr Laura Medeghini

Israel Antiquities Authority

Dr Yuval Baruch
Dr Yotam Asscher
Liat Weinblum



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4. National Network



Tuesday 11 July 2023 – 14.00-16.30

Technical Chamber of Greece

Steering Committee Room, Nikis 4, 10563, Athens, 8th Floor

Link: [Livestreaming](#)

<https://www.youtube.com/watch?v=8k-p6cDraZw>

The scientific and technical achievements of the Rehabilitation of the Holy Aedicule of the Holy Sepulcher in Jerusalem were the outcome of a holistic approach where Innovation functioned as the utmost crucial factor for combating the challenges of such an emblematic and complex project. Innovation is indeed the basic element for the generation of new Knowledge. This new knowledge can be diffused effectively to the general public through Education, instead of Research.

The project of the Rehabilitation of the Holy Aedicule, which includes a complete diagnostic study, planning of interventions and their implementation, constitutes an exemplary application in the field of protection of monuments, of the interdisciplinary cooperation, a result of Innovation, not only Research, but also of the process of implementation, with emphasis at the technological developments, which develops and demonstrates a multi-level scientific, technical, and political management, scientifically sound and applicable in real-time.

The introduction of the concepts of sustainability and design through a holistic approach is of pivotal importance as for the modern built environment, as for the protection of the tangible cultural heritage, which are evaluated and analyzed with appropriate techniques and methods, based on compatibility and performance criteria, which establishes the necessity of scientific support in the decision making for the management and addressing challenges in variable environments, under risks, within limited time and conditions, as well as under severe sociopolitical and religious situations and conflicts.

Therefore, the innovation that is implemented in such an emblematic monument has created a new interdisciplinary field and professional profile for the sustainable protection and management of cultural heritage through digital documentation and strategic planning of interventions, which allows the multispectral innovative management of data that are related to the construction of the asset, materials, and history.



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ANALYTICAL PROGRAM

Welcome Address on behalf of the Technical Chamber of Greece:

- **George Stasinou**, President TEE

Address on behalf of the National Technical University of Athens:

- Prof. **Evangelos Sapountzakis**, Vice-Rector for Finance, Planning, and Development at NTUA

Address on behalf of Technical University of Crete:

- Prof. **Michalis Zervakis**, Rector of the Technical University of Crete

Introductory Speech

- Prof. Emeritus **Antonia Moropoulou**, Scientific Responsible for the Project Professor Emeritus - National Technical University of Athens,

Opening Speeches

- **Zetta Makri**, Deputy Minister of Education, Religious Affairs, and Sports
- Prof. **Atanasios Kyriazis**, General Secretary for Research and Innovation
- Dr. **Amalia Androulidaki**, General Directorate for the Restoration, Museums and Technical Works, Ministry of Culture
- **Antonis Kotsonis**, General Director at the Ministry of Infrastructure & Transport

Speeches of the Deans of the National Technical University of Athens (NTUA)

- Prof. **Nikolaos Lagaros**, Dean at the School of Civil Engineering NTUA
- Prof. **Nektarios Koziris**, Dean of the School of Electrical and Computer Engineering NTUA
- Assoc. Prof. **Elena Kwnstantinidou**, on behalf of the Dean of the School of Architectural Engineering NTUA, Professor Eirini Klabatsea
- Assis. Prof. **Kyriakos Labropoulos**, on behalf of the Dean of the School of Chemical Engineering NTUA, Professor Glykeria Kakali
- Prof. **Charalabos Ioannidis**, Dean of the School of Agronomists and Topographical Engineers - Geoinformatics Engineers NTUA
- Prof. **Stavros Kourkoulis**, Dean of School of Applied Mathematical and Physical Sciences NTUA
- Prof. **George Pantazis**, President of the NTUA Teaching and Research Staff Association

Speeches of the representatives of Scientific Associations

- **Giorgos Mademochorit**, Vice-President of the Association of Graduate Architects - Panhellenic Union of Architects
- **Vasilis Mpardakis**, President of the Civil Engineers Association of Greece
- **Anastasios Efstathiou**, President of the Panhellenic Association of Mechanical and Electrical Engineers
- **Nikos Konstas**, representative of the Panhellenic Association of Chemical Engineers, on behalf of the President Aris Gorogias
- **Vassilis Diamantis**, President of the Panhellenic Association of Environmental Engineers



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- **Dimitris Petropoulos**, President of the Panhellenic Federation of Unions of Public Officials Engineers Graduated from Higher Schools
- **Anna Gianniou**, representative of the Greek Association of Town Planning, Spatial Planning and Regional Development Engineers
- **Athanasios Katsouras**, President of the Panhellenic Association of Materials Science Engineers
- **Michalis Daktilidis**, President of the Panhellenic Union of Graduate Engineers of Public Works Contractors
- **Andreas Gerakakis**, President at the Association of Greek Contracting Companies
- **Michalis Kalogiannakis**, Secretary General of the Council of European Geodetic Surveyors

Speeches of the Curators of the Scientific Committees of Specialization TEE

- **Vasiliki Anagnostopoulou**, Curator of the Scientific Committee of Civil Engineering Specialty
- Prof. **Eirini Koronaki**, Curator of the Mechanical Engineering Specialization Scientific Committee
- **Christos Gounaris**, Curator of the Scientific Committee of Agronomists and Topographical Engineers
- Prof. Emeritus **Maria Loizidou**, Member of the Chemical Engineering Specialty Scientific Committee
- Prof. **Anthimos Ksenidis**, Curator of the Scientific Committee of the Specialty of Mining Engineers - Metallurgists
- Assoc. Prof. **Nikolaos Ventikos**, Curator of the Scientific Committee of Naval Engineering Specialty
- **Eutuxia Antoniou**, Member of the Scientific Committee of Spatial Planning, Urban Planning and Development Engineering
- **Antonis Samiotakis**, Curator of the Environmental Engineering Specialty Scientific Committee
- **George Mpazdanis**, Curator of the Mineral Resources Engineering Specialty Scientific Committee
- **Nikolaos Zafeiropoulos**, Coordinator of the Standing Committee on Education
- Assoc. Prof. **Χρήστος Ακράτος**, Deputy Coordinator of the Standing Committee on Education
- Prof. **Christos Manolopoulos**, Member of the Standing Committee on Education

Speeches of the partners of the Project EDICULA Erasmus+

- **Antonis Salakidis**, CEO PerpetieISI Srl
- Dr. **Kalliopi Papakosta**, Hellenic Research Institute of Alexandrian Civilization HRIAC
- Prof. **Gabriele Favero**, University La Sapienza of Rome
- Dr **Yuval Baruch**, Head of the Archaeological Division Israel– Israel Antiquities Authority
- Prof. **Mike Turner**, University Bezalel Academy of Arts and Design of Jerusalem



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On Tuesday, 11th of July 2023, from 2:00 to 5:00 p.m., at the Technical Chamber of Greece (TCG), was held the Event of the European Program Erasmus+, of the IKY, EDICULA on the topic: "Advanced know-how, interdisciplinarity and professional profiles that respond to the challenges of sustainable conservation of cultural heritage".

The project of the Rehabilitation of the Holy Edicule of the Holy Sepulcher, included a comprehensive diagnostic study, planning of interventions, their implementation and their evaluation, is therefore an exemplary application of interdisciplinary cooperation in the protection of monuments with the focus on the one hand on the digital 3D documentation models where the contributions of all specializations and on the other hand innovation, developing and demonstrating a multi-level, scientific, technical, political management, scientifically intact and applicable in real time. EDICULA is an innovative educational approach that merges interdisciplinary collaboration and fieldwork, using both artificial intelligence and augmented and extended reality AR & XR technologies.

After the welcome speech of **George Stasinou**, President of the Technical Chamber of Greece on behalf of the Technical Chamber of Greece, the greeting of **Evangelos Sapountzakis**, Vice-Rector for Finance, Planning, and Development at NTUA, on behalf of the National Technical University of Athens and the greeting of **Michalis Zervakis**, Rector of the Technical University of Crete, on behalf of the Technical University of Crete, the Scientific Responsible for the Project Professor Emeritus - National Technical University of Athens, Member of the Executive Committee - Technical Chamber of Greece, **Antonia Moropoulou**, highlighted, *"Today at the Technical Chamber of Greece we discussed the establishment of the interdisciplinary cooperation between studies and projects related to the protection of cultural heritage, maintaining the specifications of the individual studies and establishing the ones that are further required. The institutional framework for the formation of the Interdisciplinary Working Groups is foreseen in the P.D. 99/2018 (Article 1, par. 6) under the coordination of a licensed engineer"*.

LINK of Prof. Moropoulou presentation:

<https://drive.google.com/file/d/1TY6CclfHR6YpFRUK0oPSwHwo1dEDYGxK/view?usp=sharing>

TCG and the technical world have contributed to the modernization of the institutional framework of studies and projects in general and in particular to the protection of monuments in collaboration with the Ministry of Culture (Law 30/28/2022 on the specifications of studies and implementation on systems for the quality check of projects), which must be updated according to the proposals that will result from the synergy of all.

We welcome the presence of all the representatives of all specializations and technical bodies here today, as the start of a national network that will be connected to the Capacity Building at European Level and will be interconnected with the European Competence Center that we are currently preparing with the program 4CH for the Cultural Heritage. The program Erasmus+ EDICULA Educational Digital Innovative Cultural Heritage related Learning Activities in synergy with our foreign partners (Sapienza Università di Roma, Bezalel Academy of Arts and Design, PerpetielSI SRL, Israel Antiquities Authority, Hellenic Research Institute of the Alexandrian Civilization), under the coordination of the National Technical University of Athens allowed us to record the relevant know-how that today is in full disposal of everyone". <http://edicula.eu>, <http://holysepulchreproject.ntua.gr>

The **Deputy Minister of Education, Religious Affairs, and Sports of Greece, Mrs Zetta Makri**, in her opening speech, stated.. *"It is with great joy that I am here today among all of you, on behalf of the Minister of*



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Education, Religious Affairs and Sports of Greece Mr Kyriakos Pierrakakis, at today's event «EDICULA Synthesis Event», because the program EDICULA is part of the European Program Erasmus+, a Strategic Partnership in the field of Higher Education, which boosts the internalization and mobility and strengthens the bond between education, research, and innovation.

«EDICULA» is driven by the priorities of the program Erasmus+ for the period of 2021-2027 for the protection of the environment, the combating of the climate crisis as well as the innovative practices of the digital era, and the promotion of the social and educational values for the preservation of the European Cultural Heritage. It develops an innovative learning mechanism that supports the development of skills, social inclusion, critical thinking and the activation of the new generation.

For all the above, the Ministry of Education, Religious Affairs and Sports stands by Edicula, as in all actions and programs that have as a goal to provide high-quality education, and I hope it will be a source of inspiration for new innovative journeys".

Dr. **Amalia Androulidaki, General Director for the Restoration, Museums and Technical Works**, referred to the regulatory framework for the preparation of studies and the execution of works on immovable monuments and specifically to YPPOA/ATNEKE/356112/929/02-07-2019 (Government Gazette 2837/B/05-07-2019). She underlined the need to complete and update it by utilizing the cooperation of all the parties present at the event. That is why she insisted on the organization through the networking of the works of the potential national network to contribute both to the strengthening of interdisciplinarity and to the horizontal cooperation of parties, Ministries, and others. She also suggested the expansion of the network with control and certification bodies for on-site measurements at the monuments. She referred to the need of including more emblematic projects, such as the Restoration project of the Plaka Bridge in Arachthos awarded by Europa Nostra, and some among the 840 rehabilitation, conservation and restoration projects carried out by the Ministry of Culture.

Antonis Kotsonis, General Director at Ministry of Infrastructure & Transport, underlined as well the need for horizontal cooperation between the ministries for the joint protection of the country's cultural heritage and infrastructure with advanced, innovative technologies and know-how, the digitization and expansion of building registers and he underlined the need for quality education such as the five-year studies of engineers for the interdisciplinary collaboration and the introduction of innovation in studies and projects. He underlined the importance of networking in the implementation of interdisciplinarity policies that will respond to the challenges of sustainable conservation of cultural heritage and infrastructure.

Then on behalf of the Schools of the Technical University of Athens the following expressed their opinion: Assoc. Professor **Elena Konstantinidou**, on behalf of the Dean of the School of Architectural Engineering of NTUA, Prof. Eirini Klabatsea, Assis. Professor **Kyriakos Labropoulos**, on behalf of the Dean of the School of Chemical Engineering NTUA, Prof. Glykeria Kakali, Professor **Charalabos Ioannidis**, Dean of the School of Agronomists and Topographical Engineers - Geoinformatics Engineers NTUA, Prof. **George Pantazis**, President of the NTUA Teaching and Research Staff Association.

The representatives of scientific associations also expressed their opinion: **Giorgos Mademochoritis**, Vice-President of the Association of Graduate Architects - Panhellenic Union of Architects, **Vasilis Mpardakis**, President of the Civil Engineers Association of Greece, **Vassilis Diamantis**, President of the Panhellenic Association of Certified Environmental Engineers, Anna Gianniou, representative of the Greek Association of Town Planning, Spatial Planning and Regional Development Engineers, **Athanasios Katsouras**, President of the Panhellenic Association of Materials Science Engineers, **Michalis Daktilidis**, President of the Panhellenic



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Union of Graduate Engineers of Public Works Contractors, **Despoina Kallidromitou**, President of the Association of Greek Companies - Research Offices.

Following, the Curators of the Scientific Committees of Specialization TCG, as well as of the TCG Permanent Education Committee, expressed opinion: Prof. **Irini Koronaki**, Moderator of the Scientific Committee of Mechanical Engineering, Christos Gounaris, Moderator of the Scientific Committee of Agronomists and Surveying Engineers, Prof. **Anthimos Xenidis**, Moderator of the Scientific Committee of Mining and Metallurgical Engineering, Prof. **Nikolaos Ventikos**, Moderator of the Scientific Committee of Shipbuilding of Engineering, **Eftychia Antoniou**, Member of the Scientific Committee of Spatial Planning, Urban Planning and Development Engineering, **Giorgos Bazdanis**, Curator of the Scientific Committee of Mineral Resources Engineering, Prof. UoI **Nikolaos Zafeiropoulos**, Coordinator of the Education Standing Committee, Associate Professor DUTH **Christos Akratos**, Deputy Coordinator of the Standing Committee of Education, NTUA Prof. **Christos Manopoulos**, Member of the Permanent Education Committee. The Vice-President of the TCG **Nikos Andredakis** summarized the need for interdisciplinary processing of the specifications of studies and projects for the Protection and Cultural Heritage.

This was followed by the presentations of the partners of the Edicula program: **Antonis Salakidis**, CEO of PerpetielSI Srl, Dr. **Kalliopi Papakosta**, Hellenic Research Institute of Alexandrian Culture HRIAC, Prof. **Gabriele Favero**, La Sapienza University of Rome, Dr. **Yuval Baruch**, Director of the Israel Archaeological Service – Israel Antiquities Authority, Prof. **Mike Turner**, Bezalel University Academy of Arts and Design, Jerusalem.

The Scientifically Responsible Professor Emeritus **Antonia Moropoulou** underlined as a conclusion the continuation of the international cooperation Edicula in a new program as well as the declaration of the availability of everyone to participate in the national network for the interdisciplinary cooperation for the sustainable preservation of the cultural heritage.



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Deputy Minister of Education, Religious Affairs, and Sports of Greece, Zetta Makri, Professor Emeritus NTUA Responsible of EDICULA Erasmus+ project, Member of the Executive Committee - Technical Chamber of Greece Antonia Moropoulou, and General Directorate for the Restoration, Museums and Technical Works, Dr. Amalia Androulidaki.

Directorate for the Restoration, Museums and Technical Works, Dr. Amalia Androulidaki.



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From the left: Giorgos Mademochoritis, Vice-President of the Association of Graduate Architects - Panhellenic Union of Architects, Athanasios Katsouras, President of the Panhellenic Association of Materials Science Engineers, Prof. PI Nikolaos Zafeiropoulos, Coordinator of the Education Standing Committee (TEE), Michalis Daktilidis, President of the Panhellenic Union of Graduate Engineers of Public Works Contractors, Prof. Anthimos Xenidis, Moderator of the Scientific Committee of Mining and Metallurgical Engineering, George Mpazdanis, Curator of the TEE Mineral Resources Engineering Specialty Scientific Committee



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From the right: Associate Professor of NTUA Elena Konstantinidou, on behalf of the Dean of NTUA School of Architecture, Professor Eirini Klabatsea, NTUA Professor Giorgos Pantazis, President of NTUA Teaching and Research Staff Association, NTUA Assistant Professor Kyriakos Lambropoulos, on behalf of NTUA Dean of Chemistry School NTUA of Engineering, Prof. Glykeria Kakali, Dr. Katerina Delegou, EDIP of Chemical Engineering NTUA, NTUA Prof. Charalambos Ioannidis, Dean of the School of Agronomists and Topographical Engineers - Geoinformatics Engineering NTUA, Dr. Kalliopi Papakosta, Hellenic Research Institute of Alexandrian Culture HRIAC, Vassilis Bardakis, President of the Civil Engineers Association of Greece, Despina Kallidromitou, President of the Association of Greek Research Firms