

# THE TOMB OF CHRIST

## THE MONUMENT AND THE PROJECT

DIGITAL EXHIBITION OF ADVANCED TECHNOLOGY

UNDER THE AUSPICES OF H.E., THE PRESIDENT OF THE HELLENIC REPUBLIC, MISTER PROKOPIOS PAVLOPOULOS

### EXHIBITION CURATORS

NATIONAL TECHNICAL UNIVERSITY OF  
ATHENS INTERDISCIPLINARY TEAM  
NATIONAL GEOGRAPHIC SOCIETY



WITH THE COOPERATION OF THE MINISTRY OF CULTURE AND SPORTS OF THE HELLENIC REPUBLIC  
WITH THE NATIONAL TECHNICAL UNIVERSITY OF ATHENS AND THE MINISTRY OF DIGITAL POLICY,  
TELECOMMUNICATIONS AND MEDIA OF THE HELLENIC REPUBLIC



WITH THE SUPPORT OF  
THE HELLENIC PARLIAMENT



  
Hellenic Ministry of Culture and Sports  
BYZANTINE & CHRISTIAN MUSEUM

 NATIONAL  
GEOGRAPHIC



ΙΕΡΑ ΑΡΧΙΕΠΙΣΚΟΠΗ ΑΘΗΝΩΝ

WITH THE BLESSINGS OF HIS BEATITUDE, ARCHBISHOP  
IERONYMOS II OF ATHENS AND ALL GREECE, AND OF  
THE HOLY SYNOD OF THE CHURCH OF GREECE

# W E L C O M E !

WE ARE INVITING YOU TO THE ADVANCED TECHNOLOGY DIGITAL EXHIBITION TO CONVERSE WITH THE MOST EMBLEMATIC MONUMENT OF CHRISTIANITY, AND NOT ONLY, THE TOMB OF CHRIST. TO SHARE WITH YOU THE GREAT CHALLENGE WE EXPERIENCED WHEN WE WERE INVITED BY THEOPHILOS III, THE PATRIARCH OF JERUSALEM, WITH THE CONSENSUS OF THE CUSTOS OF THE FRANCISCAN ORDER AND THE ARMENIAN PATRIARCH OF JERUSALEM, THE GUARDIANS OF THE HOLY SEPULCHRE, TO STUDY AND CARRY OUT THE REHABILITATION PROJECT.

NATIONAL  
GEOGRAPHIC  
SOCIETY



*Kathryn Keane*  
Vice President  
of National Geographic Society



*Fredrik Hiebert*, Archaeologist  
of National Geographic Society  
Curator of the Exhibition "Tomb of Christ"

*National Geographic was honored to provide coverage for this unique conservation project. Through this exhibition, we are pleased to tell the world about the preservation of this sacred and historic site - keeping the story alive for many years to come.*

Together with 70 Greek scientists, restorers, conservators and masons, we worked day and night, so that in less than 9 months the Holy Aedicule was delivered to the three Christian communities and to the whole World.

National Geographic presented the monument and the rehabilitation project accomplished by the National Technical University of Athens Interdisciplinary Team, at the first virtual exhibition, "Tomb of Christ", in its museum in Washington, opening its doors on 15 November 2017, with high global impact. Today, Greeks, as well as those who visit our country, benefiting from the capabilities of 3D digital technology, interdisciplinarity and interactive modeling will be able to follow the journey of the Church of Resurrection, the Holy Aedicule and the Tomb of Christ over the centuries, as well as the fascinating rehabilitation project. The project is over. The exhibition is a reality. However, the journey of the Tomb of Christ into time continues. The Tomb of Christ and National Geographic transmitted the news all over the world, more than two billion people stood in awe with us and kneeled, in spirit,

in front of the Tomb of Christ. The exhibition, as well as the project, is the result of a collective work. We are grateful to all creators, members of the exhibition team, sponsors and organizers, to the Interdisciplinary Team and the Rector of NTUA, to the Prime Minister of Greece, Mr Alexis Tsipras, who stood next to us during the difficult times of the project and the organization of the exhibition, to the President of the Hellenic Parliament for the warm support of the Parliament, to the Ministry of Culture and Sports, for the substantial support and cooperation, as well as to the Ministry of Digital Policy, Telecommunications and Media.

Primarily, though, we express our gratitude: To His Excellency, the President of the Hellenic Republic, Mr. Prokopios Pavlopoulos, who, under his auspices, "seals" the Greek passport of the exhibition. To His Beatitude, the Archbishop of Athens and All Greece, Ieronymos II, as well as to the Holy Synod of the Church of Greece, for, with their blessings this exhibition is being held. To the leaders of the three Christian communities, Guardians of the Holy Sepulchre, who honored us by entrusting us with the project and blessing this exhibition. To all the people of the Byzantine and Christian Museum who will work next to you for more than 8 months. We are looking forward to your response, your interaction and your impact on the exhibition.

*For the Interdisciplinary Team of the National Technical University of Athens, Curators of the Exhibition.*



*Tonia Morapoulou*  
Professor of NTUA  
Scientific Responsible  
for the rehabilitation of  
the Holy Aedicule

  
Hellenic Ministry of Culture and Sports  
BYZANTINE & CHRISTIAN MUSEUM

The Byzantine and Christian Museum must fulfill what it is implied by its name; thus, it is extremely pleased to host an exhibition, on a Monument of global significance.

Beyond the religious aspect of the monument itself, it is important that the public, as well as the scientific world, learns about the project that was implemented there.

In particular, I would like to emphasize the manner in which the exhibition is presented, which is pioneering in relation to museum practices up to today.

I hope that visitors will emerge benefited in many aspects from this impressive digital representation of the rehabilitation of the Holy Sepulchre.

*Dr. Aikaterini Delaporta*  
Director of the Byzantine  
and Christian Museum



## TECHNOLOGY AS A PARAMETER HIGHLIGHTING THE ECUMENICAL VALUES

ADDRESS OF THE RECTOR OF THE NATIONAL TECHNICAL UNIVERSITY OF ATHENS

The National Technical University of Athens, in its historical course of 180 years, has recorded significant milestones in its contribution to Education, Research and Society. The rehabilitation project of the Holy Aedicule of the Holy Sepulchre holds its place in this course, along with other recent significant NTUA acts of contribution, such as the Bridge of Plaka in Epirus, the birthplace of NTUA's great benefactors. NTUA justifiably prides itself that its high expertise coupled with innovation and the new technologies applied on the demanding project of the Holy Aedicule rehabilitation, allowed for the Holy Aedicule to be delivered to the three Christian Communities that entrusted it to the NTUA Interdisciplinary Team, with structural integrity and highlighted values. It should be stressed out that the applied methodology has a significant impact on the future trends in the Protection of Monuments, and consequently the rehabilitation of the Holy Aedicule being acknowledged as an emblematic project, esteemed worldwide and in the framework of the European Year of Cultural Heritage 2018 by the relevant Directorates General of the European Commission. Scientists from NTUA worked collectively, approaching the project with utmost respect, but also through a productive dialogue with the Christian Communities, Guardians of the Holy Sepulchre, applying in practice the vast expertise and knowhow of NTUA in the field of protection of monuments. Obviously, the preservation of the Ecumenical values of the Holy Sepulchre, that unite the Christian World, does not rely only on technical expertise. The role of Society is decisive, becoming more important with increasing participation. The present exhibition is an effort towards enhancing this role. An effort, which, by utilizing the highly dynamic aspect of technology at an interdisciplinary level, contributes to the enhancement of social access to a monument of unique significance for Christianity and Hellenism, with the aim to highlight the Ecumenical values of this world heritage.

*Rector of the National Technical University of Athens*

**Professor John K. Golias**



## THE RESTORATION OF THE HOLY AEDICULE: AN ECUMENICAL HERITAGE OF HELLENISM

ADDRESS OF THE MINISTER OF CULTURE AND SPORTS OF THE HELLENIC REPUBLIC

The innovative expertise applied by the Interdisciplinary Team of the National Technical University of Athens in the rehabilitation of the Holy Aedicule of the Holy Sepulchre, as emphasized by the Prime Minister of Greece during the project's Completion Ceremony on 22 March 2017 in Jerusalem, is indicative of the great potential of Greece in the protection of Cultural Heritage.

We express our gratitude to the three Christian Communities, and especially to the Greek Orthodox Patriarchate of Jerusalem, for guarding the Tomb of Christ over the centuries, but also for the trust they showed us, providing the NTUA Interdisciplinary Team with the unique opportunity to rehabilitate the Holy Aedicule and to continue the Ecumenical Heritage of Hellenism.

We acknowledge the valuable contribution of the Greek scientists, Greek restorers and conservators, two of whom were disposed from the Ministry of Culture and Sports of the Hellenic Republic to NTUA for the project, and all who gave their soul to this purpose.

The homologous exhibition at the National Geographic Museum in Washington had a great international impact. This unique monument of world cultural heritage, of the Christian world and beyond, along with the awe-inspiring NTUA project, is today available to you, thanks to the great potential of new technologies.

We appreciate the contribution of National Geographic to the dissemination of news and findings regarding the Tomb of Christ, communicating the values of the monument to all humanity.

We are in 2018, the European Year of Cultural Heritage. By conceding the Byzantine and Christian Museum of Athens for the organization of this exhibition in collaboration with the National Technical University of Athens, we give all of you the opportunity to live the experience of this unique monument and project.

*The Minister of Culture and Sports*

**Lydia Koniordou**



# WELCOME TO THE TOMB OF CHRIST IN JERUSALEM



## THE CITY OF JERUSALEM

**FOUNDED IN 3,500 BC.** The city of David hosts, over the centuries, through successive conflicts and reconciliations, destructions and restorations, the most sacred pilgrimage sites of all religions. On Temple Mount, the first Jewish Temple was built around 950 BC by King Solomon; there the Second Temple was rebuilt. The remnant of the Second Temple, the Western Wall, is today the most sacred pilgrimage site of Judaism. At the same site, in Haram al-Sharif, stands the golden Dome of the Rock, where the Prophet Muhammad is worshipped.

Within the walls, in the Old City of Jerusalem, the Church of Resurrection was built by Constantine the Great and Saint Helena in 325 AD, enclosing the Tomb of Christ and the site of Crucifixion at Golgotha (Calvary).

Jerusalem has always been a crossroad for people and civilizations: coming east from Europe, by sea through Rhodes and Cyprus, north from Africa, west from Asia, it is located at the center of the tumultuous Middle East. In the Holy City of Jerusalem, two populations and three religions coexist. In the Church of Resurrection, however, the Status Quo is respected, according to which three Christian communities (the Greek Orthodox Patriarchate of Jerusalem, the Custody of the Holy Land of the Franciscan Order and the Armenian Patriarchate of Jerusalem) guard the most holy pilgrimage sites of Christianity.

The Holy Light, which the Patriarch of Jerusalem transmits on Holy Saturday, illuminates their coexistence, which, more than two centuries later, was expressed through their common agreement regarding the rehabilitation project of the Holy Aedicule of the Holy Sepulchre.

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HOLY AEDICULE OF THE HOLY SEPULCHRE



Cross-Section of the All-Holy Church of Resurrection,  
D. Mpalodimos, A. Georgopoulos, et al NTUA 2003

## THE HISTORY OF THE HOLY AEDICULE OF THE HOLY SEPULCHRE IN THE CHURCH OF RESURRECTION

**THE HISTORY OF THE CHURCH OF RESURRECTION** begins with the Crucifixion and Resurrection of Jesus Christ. According to the ancient scriptures, both Golgotha and the Tomb of Joseph from Arimathea, where Christ was buried and resurrected, were just outside the walls of Jerusalem. When the city walls were later expanded, these great landmarks were found within the walls where the Church of Resurrection was erected. Constantine the Great and Saint Helena, excavating the Temple of Aphrodite built two centuries earlier by the Roman Emperor Hadrian, revealed the tomb that was recognized as the Tomb of Christ, as well as the site of the Crucifixion, and built the Church of Resurrection. The Holy Aedicule, enclosing the Tomb of Christ, evolved over the centuries, the result of successive interventions, disasters and restorations. Its current form dates back to the restoration of 1810 by Kalfa Komnenos from Mytilene.

**THIS EXCEPTIONAL AND EMBLEMATIC PROJECT, CONCERNS NOT ONLY A RELIGIOUS MONUMENT, BUT ALSO A MONUMENT OF THE EXPERTISE OF GREEK SCIENTISTS, A MONUMENT OF EXEMPLARY INTERDISCIPLINARY COOPERATION WORLDWIDE. IT IS OF UTMOST HONOR TO HAVE PARTICIPATED IN THIS PROJECT, COOPERATING WITH ESTEEMED COLLEAGUES, CONTRIBUTING TO ITS SUCCESS.**



**Andreas Georgopoulos**  
NTUA Professor,  
School of Rural and Surveying Engineering  
Member of the NTUA Interdisciplinary Team

**IN THE CENTER OF THE ROTUNDA** of the Church of Resurrection, stands the Holy Aedicule, with an area of approximately 70m<sup>2</sup>, and a height up to its terrace corresponding to a typical two-storey residence. A dome, supported on 12 small columns, reaches even higher.

The interior of the Holy Aedicule is divided into an antechamber, at its eastern part, and a tomb chamber at the west, which corresponds to the original tomb chamber, hewn in the natural rock, a significant part of which has been preserved to this day. This is actually the only preserved part of a much larger rock mass, in which the original tomb was hewn. At its exterior, the monument adopts the architectural style of classicism, however, with elements of Central European architecture, as well as of typical Constantinople architecture of the era. At the exterior, the facades consist mainly of local compact red-hued stones. At the interior a corresponding configuration is observed, with the exception of the domes, however, with white marble from Prokonnesos prevailing. This architectural complex carries the signature by the talented Constantinopolitan architect Komnenos, responsible for the restoration of the Holy Aedicule of the Tomb of Christ, after the devastating fire of 1808.



**Manolis Korres**  
Emeritus Professor, NTUA  
School of Architecture  
Regular Member of the Academy of Athens,  
Member of the NTUA Interdisciplinary Team

**136-137 AD**

The Roman Emperor Hadrian builds a Capitol (Capitolium) in front of the Tomb of Christ, dedicated to four divinities (Jupiter, Juno, Minerva, Venus), as a statement of domination and power.

**325-328 AD**

Constantine the Great and Saint Helena discover the Tomb of Christ, which they enclose in an octagonal structure, known as the Holy Aedicule.

**614 AD**

The Persians conquer the city of Jerusalem and infer severe damages on the Church of Resurrection.

**617 AD**

The Patriarch of Jerusalem, Modestos, reconstructs the Church of Resurrection.

**1099 AD**

The Fatimid Caliph, al-Hakim bi-Amr Allah, conquers Jerusalem and nearly destroys the Holy Pilgrimage Sites.

**1062-1048 AD**

The Byzantine Emperor Constantine IX Monomachos reconstructs the Church of Resurrection.

**1099 AD**

The Crusaders add an antechamber to the Holy Aedicule, known as the Chapel of the Angel, at the spot where the Angel appeared after the burial of Jesus Christ, according to the Gospels.

**1264 AD**

The Mamluks occupy Jerusalem in the name of the Sultan of Egypt and desecrate the Tomb of Christ.

**1555 AD**

The Custos of the Franciscan Order, Fra Bonifacio da Ragusa, restores the Holy Aedicule.

**1808-1810 AD**

The architect Kalfa Komnenos restores the Holy Aedicule, giving it its present form.

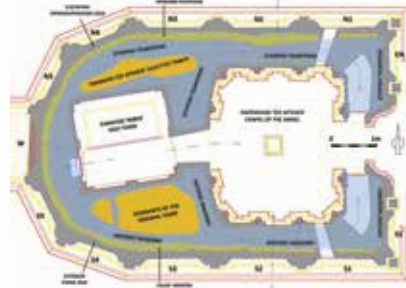
**2010-2017 AD**

The NTUA Interdisciplinary Team, under the supervision of Professor Antonia Moropoulou as scientific responsible, undertakes the rehabilitation of the Holy Aedicule of the Holy Sepulchre, based on the common agreement of the three Christian Communities, Guardians of the Holy Sepulchre.

# THE REHABILITATION PROJECT OF THE HOLY AEDICULE FROM THE NTUA INTERDISCIPLINARY TEAM AT THE FOREFRONT OF SCIENCE, TECHNOLOGY AND INNOVATION

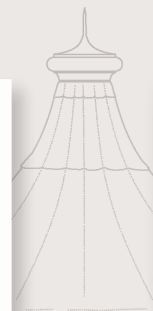
CHIEF SCIENTIFIC SUPERVISOR:  
PROF. A. MOROPOULOU

NTUA INTERDISCIPLINARY TEAM:  
PROF. M. KORRES,  
PROF. A. GEORGOPOULOS  
PROF. A. MOROPOULOU  
ASST. PROF. CH. MOUZAKIS



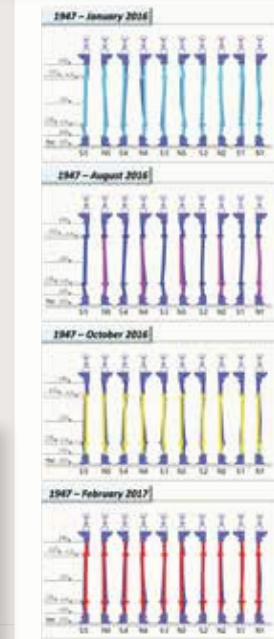
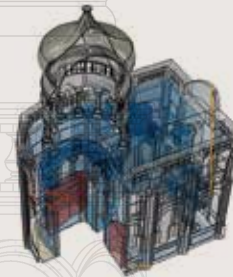
Structural layers of the Holy Aedicule, derived from the analysis of ground penetrating radar results (initial state)

Three-dimensional model of the Holy Aedicule (initial state)



FAITHFUL REHABILITATION WITH COMPATIBLE MATERIALS AND CONSERVATION INTERVENTIONS ENSURING THE STRUCTURAL INTEGRITY OF THE HOLY AEDICULE, PRESERVING AND HIGHLIGHTING ITS VALUES

Finite element model for the evaluation of the rehabilitated Holy Aedicule's structural response



Three-dimensional model of the Holy Aedicule (after the rehabilitation project)

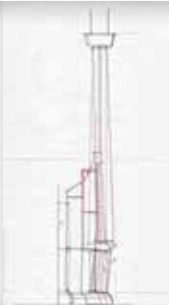
Time evolution of the columns' deviation from verticality



## MAIN STAGES OF THE REHABILITATION PROCESS

Dismantling and removal of the stone panels, removal of disintegrated and incompatible mortars from the revealed masonry, repointing of the masonry, repair and partial reconstruction of part of the masonry, injection of grouts up to 3m, resetting and anchoring of exterior columns, reassembly of stone panels, resetting and anchoring of stone column railing, grouting of top zone and terrace, anchoring of interior marbles, conservation interventions on the Onion Dome, the Dome of the Chapel of the Angel and the Dome of the Burial Chamber, final mortar application, pointing and finishing, cleaning and protection of interior and exterior architectural surfaces and conservation of decorative elements.

Architectural drawing of deformations of the column at the entrance of the Holy Aedicule



It is an utmost honor, exceeding life and science, to contribute as a civil engineer in the NTUA interdisciplinary study, as well as in the Holy Aedicule rehabilitation project, a monument of global significance, timeless value and multidimensional symbolism.

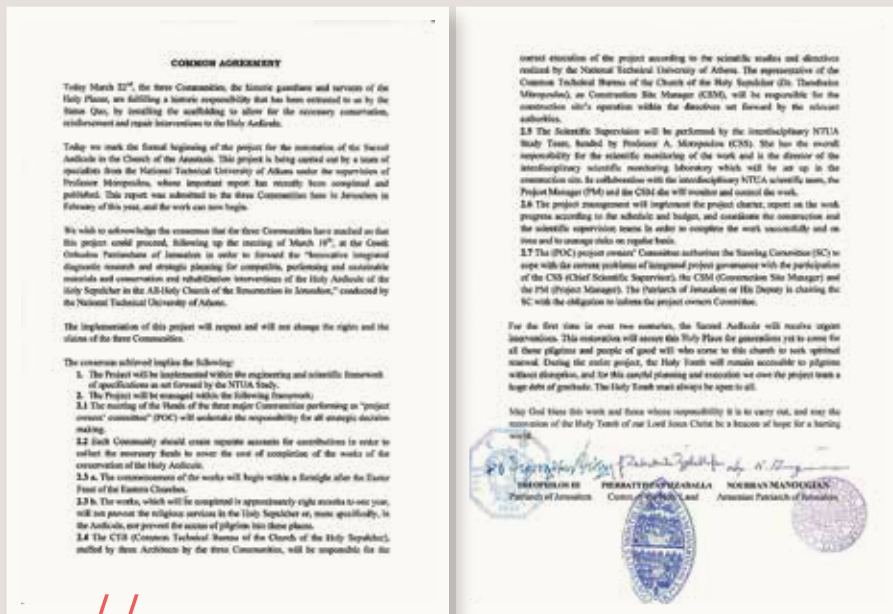
**Constantine Spyrakos**  
Professor, NTUA, School of Civil Engineering  
Member of the NTUA Interdisciplinary Team

The rehabilitation of this monument, a monument of the utmost importance to Christianity, demanded our interdisciplinary cooperation and the use of our hands for its completion, validating the ancient Greek saying *Συν Αθηνά και χείρα κίνειι* (Along with your prayer to the Goddess Athena, also move your hands), *along with your prayers act as well.*

**Charis Mouzakis**  
Assistant Professor NTUA, School of Civil Engineering  
Member of the NTUA Interdisciplinary Team, Deputy Construction Site Manager



THE COMMON AGREEMENT OF THE THREE CHRISTIAN COMMUNITIES

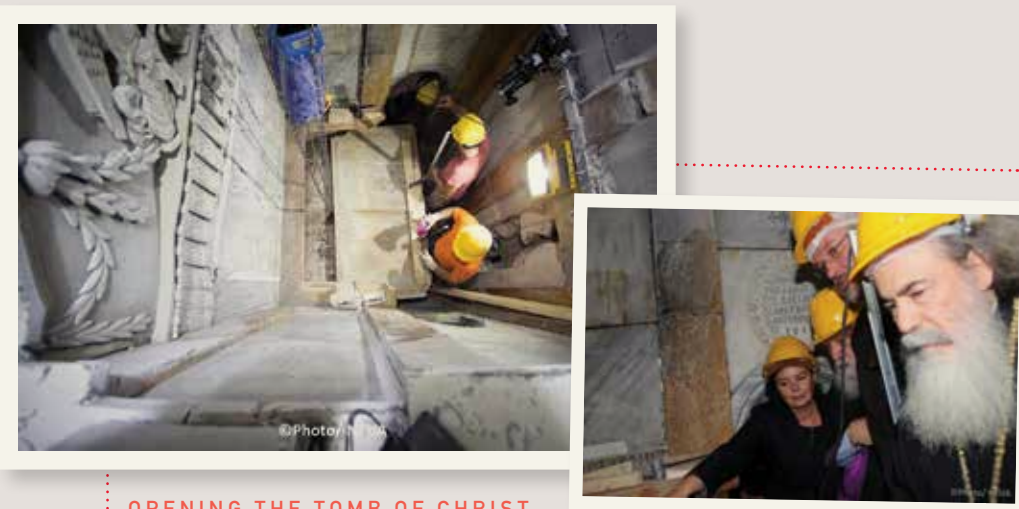


// THE TOMB OF CHRIST: A MONUMENT WHICH UNITES CHRISTIANITY, THE CONFLAGRATED MIDDLE EAST, THE ECUMENE, WITH CONTEMPORARY GREECE AT THE CENTER //

«When, after five centuries, on 26 October 2016, we opened the Tomb of Christ and National Geographic transmitted the news and the image to the world, over two billion people kneeled with us, in spirit, before it. The Tomb of Christ is alive for all humanity»



PRESENTATION UPON THE COMPLETION OF THE HOLY AEDICULE OF THE HOLY SEPULCHRE REHABILITATION PROJECT (Greek Orthodox Patriarchate of Jerusalem, 22 March 2017)



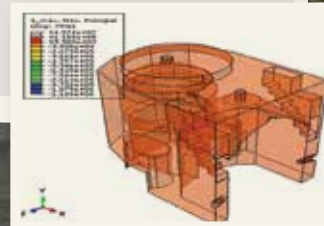
OPENING THE TOMB OF CHRIST

**FROM NON-DESTRUCTIVE TESTING AND 3D DIGITAL TECHNOLOGY AND MODELING. TO THE INTEGRATED INTERDISCIPLINARY APPROACH AT THE WORKSITE**



NTUA Prof. Andreas Georgopoulos: Geometric documentation of the inner cupola of the Holy Aedicule, through laser scanning

Finite Element Model: After the rehabilitation, the Holy Aedicule bears maximum principal stresses efficiently and homogeneously



Ground penetrating radar prospection of the Holy Aedicule of the Holy Sepulchre in order to reveal its internal structural layers

**THE HOLY AEDICULE TODAY:  
ITS JOURNEY INTO LIGHT**



«The advanced technologies of non destructive testing, telematics, multi-sensors and robotics, allowed us to 'see' through the stone facades enveloping the Holy Aedicule and reveal its secrets. They also allowed us to design and assess the effectiveness of the compatible and performing conservation materials and minimum invasive restoration interventions».

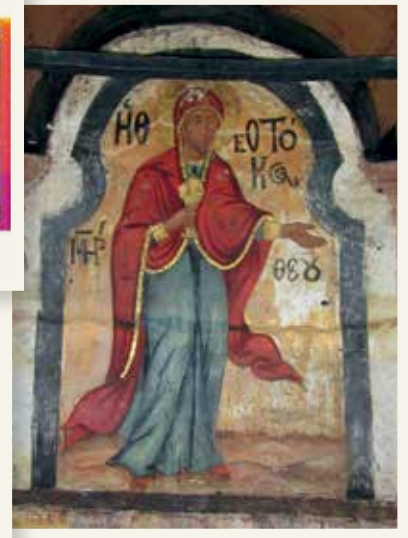
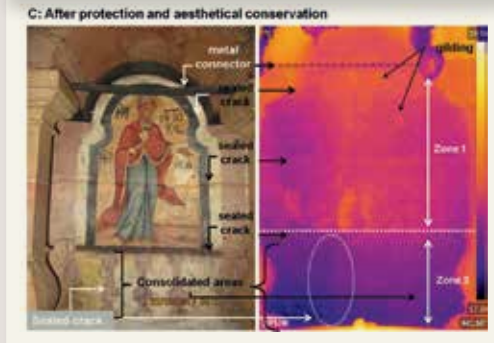
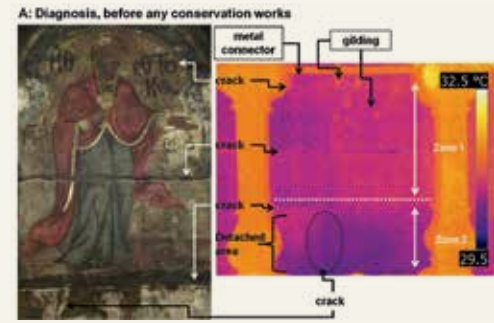
THE TOMB OF CHRIST

PRESERVATION AND HIGHLIGHTING THE VALUES OF THE MONUMENT

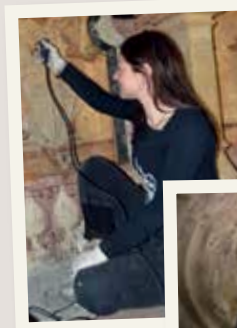


After cleaning interventions | Before cleaning interventions

After cleaning interventions | Before cleaning interventions



After conservation interventions



Conservation of the dome of the Tomb Chamber

«The project has finished. Research continues. Historians, Archeologists, theologians, sociologists from around the world, based on the data of the project, will have a lot to say in the future about the values and the history of the Holy Aedicule and the Tomb of Christ. We have highlighted its values and we have scientifically confirmed its history».

**SUSTAINABILITY OF THE REHABILITATION AND CONTINUATION OF THE PROJECT**

«The advanced technologies of non-destructive testing allowed us to deliver the Holy Aedicule with its structural integrity ensured, with its values preserved and highlighted, and furthermore, it enabled us to deliver the study proposal for the completion of the project throughout the Church of Resurrection to ensure its preservation for the centuries to come»

**ΜΗ ΚΑΤΑΣΤΡΟΦΙΚΗ ΤΡΙΣΔΙΑΣΤΑΤΗ ΨΗΦΙΑΚΗ ΔΙΑΣΚΟΠΗΣΗ ΤΩΝ ΥΠΟΓΕΙΩΝ ΚΙΝΔΥΝΩΝ**  
**3D DIGITAL NON-DESTRUCTIVE PROSPECTION OF UNDERGROUNDS RISKS**

Η χρήση γεωραντάρ, ηλεκτρικής τομογραφίας, ηλεκτρομαγνητικών αισθητήρων και ρομποτικών καμερών επέτρεψε την αποκάλυψη και τεκμηρίωση όλων των υπόγειων δομών που σχετίζονται με τα φαινόμενα μεταφοράς νερού και υγρασίας, στην περιοχή του Ι. Κουβούκλιου

Ground penetrating radar, Electrical Resistivity Survey, Electromagnetic Probe Systems, and Robotic Cameras identified and documented the nature and state of all underground features related to water and humidity transport phenomena below and around the Holy Aedicule

ΠΟΤΕΝΤΙΑΛΗ ΚΑΜΕΡΑ ΠΙΣΩΤΑ ΣΤΟΙΧΕΙΑ ΠΙΣΩΤΑ ΤΩΝ ΑΝΩΣΩΝ  
 POTENTIAL VOID SPACE BEHIND THE CHAPELS OF THE ANOSES

ΤΕΣΤΗΝ ΟΕΚΗ ΤΗ ΔΙΑΣΚΟΠΗΣΗ ΚΑΙ ΠΡΟΣΚΕΥΑΣΗ ΤΩΝ ΣΤΟΙΧΕΙΩΝ ΣΧΕΤΙΚΑ ΜΕ ΤΗΝ ΠΡΟΣΤΑΣΙΑ ΤΩΝ ΜΑΡΜΑΡΩΝ ΜΕΣΩ ΤΗΣ ΚΟΥΒΟΥΚΛΙΟΥ  
 TESTING OF THE PROSPECTION AND EQUIPMENT OF THE DATA RELATED TO THE PROTECTION OF MARBLE WALLS BEHIND THE HOLY AEDICULE

ΜΕΤΑΦΡΑΣΗ ΤΩΝ ΑΝΩΣΩΝ ΚΑΙ ΤΩΝ ΑΝΩΣΩΝ ΚΕ  
 (ΑΝΩΣΩΝ ΜΕΤΑΦΡΑΣΗ ΤΩΝ ΑΝΩΣΩΝ ΚΕ)

ΥΠΟΓΕΙΑ ΔΟΜΗ ΣΤΟ ΝΟΤΙΟ ΤΜΗΜΑ ΤΗΣ ΡΟΤΟΥΝΔΑΣ  
 UNDERGROUND VOID AT THE SOUTH PART OF THE ROTUNDA

**ΠΟΛΥΦΑΣΜΑΤΙΚΗ ΤΗΛΕ-ΠΑΡΑΚΟΛΟΥΘΗΣΗ ΑΠΟΚΡΙΣΗΣ ΔΟΜΗΜΑΤΟΣ**  
**MULTIMODAL PERFORMANCE HEALTH TELEMONITORING**

ΠΡΟΒΛΗΜΑΤΑ ΘΕΜΕΛΙΩΣΗΣ ΙΕΡΟΥ ΚΟΥΒΟΥΚΛΙΟΥ  
 HOLY AEDICULE FOUNDATION RISKS

ΔΙΑΦΟΡΙΚΗ ΚΑΘΙΣΤΙΣΗ ΙΕΡΟΥ ΚΟΥΒΟΥΚΛΙΟΥ  
 DIFFERENTIAL SETTLEMENT

ΕΠΕΜΒΑΣΕΙΣ ΘΕΜΕΛΙΩΣΗΣ ΓΙΑ ΤΗΝ ΥΠΟΣΤΗΡΙΞΗ, ΕΝΙΣΧΥΣΗ ΚΑΙ ΤΟΝ ΕΛΕΓΧΟ ΤΗΣ ΡΟΗΣ ΝΕΡΟΥ ΚΑΙ ΥΓΡΑΣΙΑΣ ΣΤΟ ΙΕΡΟ ΚΟΥΒΟΥΚΛΙΟ  
 FOUNDATION INTERVENTIONS FOR THE UNDERPINNING, REINFORCEMENT, WATER AND HUMIDITY CONTROL OF THE HOLY AEDICULE

ΠΕΡΙΜΕΤΡΙΚΗ ΤΑΦΡΟΣ ΑΠΟΔΡΑΤΤΗΣΗΣ & ΑΕΡΙΣΜΟΥ  
 PERIPHERAL DRAINAGE & VENTILATION GALLERY

ΚΑΤΩΝΗ / TOP VIEW

ΔΑΠΕΔΟ ΡΟΤΟΥΝΔΑΣ  
 ROTUNDA FLOOR

ΙΕΡΟ ΚΟΥΒΟΥΚΛΙΟ  
 HOLY AEDICULE

ΠΕΡΙΜΕΤΡΙΚΗ ΤΑΦΡΟΣ  
 PERIPHERAL GALLERY

ΤΟΜΗ / SECTION

**ΣΗΜΑΣΙΟΛΟΓΙΑ ΤΩΝ ΥΠΟΓΕΙΩΝ ΔΟΜΩΝ ΤΟΥ ΝΑΟΥ ΤΗΣ ΑΝΑΣΤΑΣΕΩΣ**  
**SEMANTICS OF THE UNDERGROUND AREA OF THE CHURCH OF THE HOLY SEPULCHRE**

ΤΟ ΙΕΡΟ ΚΟΥΒΟΥΚΛΙΟ ΒΡΙΣΚΕΤΑΙ ΣΤΟ ΚΕΝΤΡΟ ΚΑΙ ΠΑΝΩ ΑΠΟ ΣΥΣΤΟΙΚΙΑ ΥΠΟΓΕΙΑ ΔΕΣΜΕΝΩΝ, ΑΝΘΡΩΠΟΓΕΝΩΝ ΚΑΙ ΦΥΣΙΚΩΝ ΥΠΟΓΕΙΩΝ ΚΟΙΤΩΤΗΤΩΝ & ΧΩΡΩΝ

THE HOLY AEDICULE IS LOCATED AT THE CENTER AND ABOVE A CLUSTER OF UNDERGROUND CISTERNES, AND NATURAL AND MANMADE UNDERGROUND VOIDS AND SPACES

ΓΕΩΜΕΤΡΙΚΗ ΤΕΚΜΗΡΙΩΣΗ (ΚΑΤΑΚΟΡΦΗ ΤΟΜΗ) ΤΗΣ ΔΕΣΜΕΝΗΣ C1  
 GEOMETRIC DOCUMENTATION (VERTICAL SECTION) OF CISTERN C1

ΓΕΩΜΕΤΡΙΚΗ ΤΕΚΜΗΡΙΩΣΗ ΤΗΣ ΑΝΑΚΑΦΗΣ ΤΟΥ COBBO  
 GEOMETRIC DOCUMENTATION OF COBBO'S EXCAVATION

ΓΕΩΜΕΤΡΙΚΗ ΤΕΚΜΗΡΙΩΣΗ ΕΜΠ  
 GEOMETRIC DOCUMENTATION EMP

ΓΕΩΡΑΝΤΑΡ ΕΜΠ  
 GEOPHONIC DOCUMENTATION EMP

ΤΕΚΜΗΡΙΩΣΗ COBBO  
 COBBO DOCUMENTATION

**ΥΠΟΓΕΙΕΣ ΕΠΕΜΒΑΣΕΙΣ ΣΤΙΣ ΠΕΡΙΟΧΕΣ ΤΗΣ ΡΟΤΟΥΝΔΑΣ ΓΙΑ ΤΗΝ ΑΣΦΑΛΕΙΑ ΚΑΙ ΑΕΙΦΟΡΙΑ ΤΗΣ ΑΠΟΚΑΤΑΣΤΑΣΗΣ ΤΟΥ ΙΕΡΟΥ ΚΟΥΒΟΥΚΛΙΟΥ**  
**UNDERGROUND INTERVENTIONS AT THE HOLY SEPULCHER ROTUNDA AREA TO ASSURE SAFETY AND SUSTAINABILITY OF THE HOLY AEDICULE REHABILITATION**

ΠΡΟΒΛΗΜΑΤΑ ΘΕΜΕΛΙΩΣΗΣ ΙΕΡΟΥ ΚΟΥΒΟΥΚΛΙΟΥ  
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ΔΙΑΦΟΡΙΚΗ ΚΑΘΙΣΤΙΣΗ ΙΕΡΟΥ ΚΟΥΒΟΥΚΛΙΟΥ  
 DIFFERENTIAL SETTLEMENT

ΕΠΕΜΒΑΣΕΙΣ ΘΕΜΕΛΙΩΣΗΣ ΓΙΑ ΤΗΝ ΥΠΟΣΤΗΡΙΞΗ, ΕΝΙΣΧΥΣΗ ΚΑΙ ΤΟΝ ΕΛΕΓΧΟ ΤΗΣ ΡΟΗΣ ΝΕΡΟΥ ΚΑΙ ΥΓΡΑΣΙΑΣ ΣΤΟ ΙΕΡΟ ΚΟΥΒΟΥΚΛΙΟ  
 FOUNDATION INTERVENTIONS FOR THE UNDERPINNING, REINFORCEMENT, WATER AND HUMIDITY CONTROL OF THE HOLY AEDICULE

ΠΕΡΙΜΕΤΡΙΚΗ ΤΑΦΡΟΣ ΑΠΟΔΡΑΤΤΗΣΗΣ & ΑΕΡΙΣΜΟΥ  
 PERIPHERAL DRAINAGE & VENTILATION GALLERY

ΚΑΤΩΝΗ / TOP VIEW

ΔΑΠΕΔΟ ΡΟΤΟΥΝΔΑΣ  
 ROTUNDA FLOOR

ΙΕΡΟ ΚΟΥΒΟΥΚΛΙΟ  
 HOLY AEDICULE

ΠΕΡΙΜΕΤΡΙΚΗ ΤΑΦΡΟΣ  
 PERIPHERAL GALLERY

ΤΟΜΗ / SECTION

THE IMPOSSIBLE BECAME POSSIBLE | DONORS OF THE PROJECT

Thanks to the generous donation of Mica Ertegun, through the World Monuments Fund, as well as the donation of Jack Shear, thanks to the airbridge established by Aegean connecting the National Technical University of Athens and the Tomb of Christ, but also thanks to the contributions of the three Christian Communities and the small and large donations from Greece and around the world.

PROJECT FUNDING

SOURCE OF FUNDS	AMOUNT (EURO)
<b>Donors</b> (see detailed table below)	<b>1,680,781</b>
World Monuments Fund	1,156,202
Contributions of the three Christian Communities in kind	324,495
Contributions of the three Christian Communities in cash	384,180
Aegean Airlines (contribution in kind)	159,000
<i>which exceeded the project cost</i>	
Attica Bank	
Αθανάσιος Μαρτίνος	
Σουλτάνα Παπαδοπούλου	
Eurobank Ergasias S.A.	
Μητροπολίτης Μεσσηνίας	
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Πατήρ Κλεάνθης Παντελής	
Πατήρ Ιωάννης Ιερομόναχος Σκήπτης Αγίας Άννας	
Μητροπολίτης Σερρών κ' Νιγρίτης	
Μητροπολίτης Εδέσσης Αλωανίας κ' Πέλλης	
Ιερά Κοινότης Αγίου Όρους	
Ιερά Μονή Μεγίστης Λαύρας	
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Νικόλαος Αγαθοκλέους	
Ιερά Μονή Φιλοθέου Αγίου Όρους	
The Privy Purse, Amman Jordan (Προσωπική Χορηγία του Βασιλιά της Ιορδανίας)	
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Μητροπολίτης Μαυροβουνίου κ. Αμφιλόχιος	
Archbishop Elisei Ukraine Iziumska	
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Οικουμενικός Πατριάρχης κ.κ. Βαρθολομαίος	
Palestine for Development	



**MICA ERTEGUN**  
Great Benefactor through World Monuments Fund (WMF)



With the blessings of Father Alex Karloutsos from the Greek Orthodox Archdiocese of America and the active participation of World Monuments Fund (former president Bonnie Burnham)



The members of the National Technical University of Athens Interdisciplinary Team offered their scientific expertise and services throughout the study and the project.

The Greek Ministry of Cultural and Sports contributed two conservators to the project.

THE EXHIBITION | CURATORS

**National Technical University of Athens Interdisciplinary Team**

Responsible: Prof. A. Moropoulou, Chief Scientific Supervisor of the Holy Aedicule's rehabilitation  
Prof. Emeritus Emm. Korres, Prof. A. Georgopoulos, Prof. C. Spyarakos, Ass. Prof. Ch. Mouzakis

**National Geographic Society**

Fredrik T. Hiebert, Ph.D. Archaeologist-in-Residence

The data presented in the exhibition "Tomb of Christ: The monument and the project" are provided by the National Technical University of Athens Interdisciplinary Team, acquired during the project and further processed and analyzed, and data that have been bestowed to the NTUA Interdisciplinary Team by National Geographic, deriving from the exhibition "Tomb of Christ" in the NG Museum, Washington DC, where the NTUA Interdisciplinary Team provided project data.

EXHIBITION TEAM

**PANOU SYSTEMS INTEGRATOR (S.A.)**  
Adaptation and installation of electronic, audiovisual and projection equipment

**YIOI P. ZAFEIRI TECHNIKI EPE**  
Configuration of exhibition area: Technical design and implementation, electrical and soundproofing adaptation

**Konstantinos Vaviloussakis, Georgios Vaviloussakis**  
Graphic and exhibition design

**STEFI Productions A.E.**  
Processing and adaptation of audiovisual material

**Dimitrios Balageorgos**  
Asst. Prof. in Byzantine Musicology, NKUA-Kind offer of Hagiotaphite Brotherhood hymns

**Stefanos Tortopoglou**  
Sound composition

**AbFab PRODUCTIONS EPE**  
Translation, narration and coordination of audiovisual material

**Freddy Gizas**  
Kind contribution in Scenography of Hall 1 Entrance

**AMKE "Tomb of Christ: The monument and the project"**

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SUPPORTERS



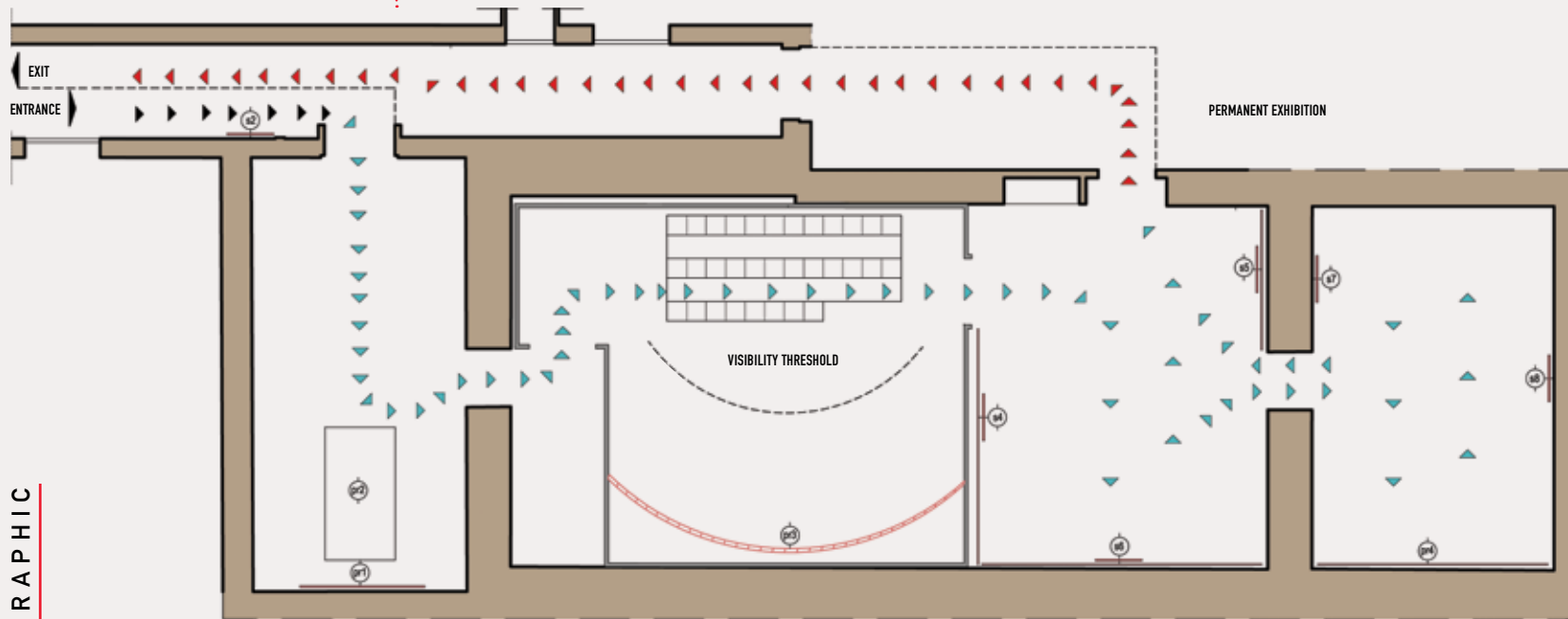
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# EXHIBITION GUIDE

NATIONAL TECHNICAL UNIVERSITY OF ATHENS | NTUA INTERDISCIPLINARY TEAM  
FOR THE REHABILITATION PROJECT OF THE HOLY AEDICULE OF THE HOLY SEPULCHRE

## INTERIOR LAYOUT



## QUEUEING

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Introduction to the exhibition / Guide / Exhibition Team / International impact of the project

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ROOMS 1+2 NATIONAL GEOGRAPHIC

### ROOM 1

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Exploring the history of the city of Jerusalem and introduction to the National Technical University of Athens (NTUA) rehabilitation project

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### ROOM 2

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Three-dimensional historical tour of the Church of Resurrection

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### ROOM 3

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The rehabilitation project of the Holy Aedicule of the Holy Sepulchre by the NTUA Interdisciplinary Team

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Three-dimensional tour of the Holy Aedicule before and after the rehabilitation project

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The rehabilitation project by NTUA

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Interactive knowledge platform

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### ROOM 4

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Preserving and highlighting the values of the Monument

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The NTUA project: Preserving and highlighting the values of the Tomb of Christ

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Opening the Tomb of Christ

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ROOMS 3+4 NATIONAL TECHNICAL UNIVERSITY OF ATHENS



Hellenic Ministry of Culture and Sports  
**BYZANTINE & CHRISTIAN MUSEUM**

**Address:**

22 Vasilissis Sofias Avenue, 106 75 Athens

**Information:**

213 2139572, 213 2139500

**Opening hours:**

Monday-Sunday: 08.00-20.00

*For security reasons, the last visitors may  
enter 15 min before the Museum closes.*



BYZANTINE & CHRISTIAN MUSEUM  
<http://www.byzantinemuseum.gr/>



INFORMATION AND BOOKING  
<http://www.viva.gr/>

