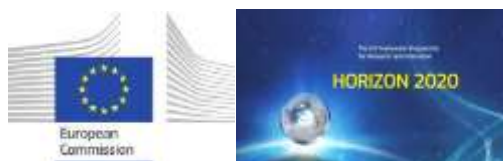




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| <b>Project acronym:</b>                     | ATHENA  |
| <b>Work Package</b>                         | WP5   |
| <b>Deliverable</b>                          | D5.2 Report from the local promotion strategy       |



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| Contributor(s):   | <b>Rosa Lasaponara, Nicola Masini, Thomas Krauss, Gunter Schreier</b>   |                           |
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| Nature            | Name  | Role          | Partner        | Date       |
| DRAFT             | Diofantos G. Hadjimitsis,<br>Athos Agapiou, Vasiliki<br>Lysandrou, Andreas<br>Christofe, Kyriakos<br>Themistokleous,<br>Christodoulos Mettas,<br>Evagoras Evagorou, Argyro<br>Nisantzi, Christiana<br>Papoutsas | Coordinator   | CUT            | 02/11/2018 |
| REVIEWED          | Rosa Lasaponara, Nicola<br>Masini, Thomas Krauss,<br>Gunter Schreier  | Partner 2 & 3 | DLR and<br>CNR | 20/11/2018 |
| APPROVED          | Diofantos G. Hadjimitsis  | Coordinator   | CUT            | 30/11/2018 |



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## 1 Introduction

The present deliverable consists of the report on the local promotion strategy of the ATHENA project, and makes part of WP5 (Promotion of the centre locally and internationally). The strategy, was based on the promotion of the ATHENA locally with the aim to create a substantial and collaborative network, in order to sustain the Centre's future activities.

To achieve this goal, the strategy focused on the promotion and the visibility of the Centre in different levels of the local scientific and societal environment. The steps followed for the design and implementation of the strategy are as follows:

- definition of possible network stakeholders
- promotion of the Centre locally
- establishment of long term cooperation with key partners
- 

Various communication channels and tools have been employed for the fulfillment of the local promotion strategy, such as physical meetings (D3.2), thematic presentations, exploitation of the project's website (refer to D6.1), invitation to round table discussions and to workshops, distribution of printed and other material of the project (i.e. leaflets, brochures, newsletters, refer to D5.1; D6.9; D6.2; D6.3; D6.4), notification of the publications generated by the ATHENA consortium members (refer to D6.5 and D6.6), and other (D6.8 and D6.10).

The local, as the international promotion of ATHENA, through the creation of strong network and synergies, has also supported the action of mapping future activities (refer to Deliverable 6.11 – Business Plan).

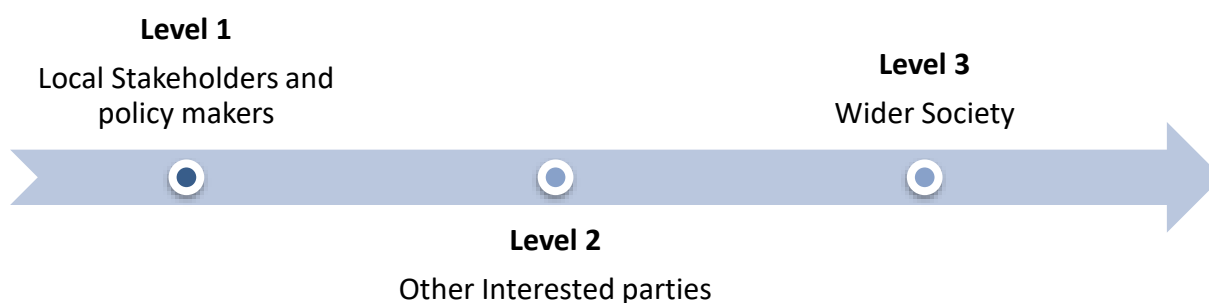
A significant milestone for the future promotion of the ATHENA initiatives is the participation of local key members of the ATHENA project, namely Prof. Diofantos G. Hadjimitsis, Dr. Kyriakos Themistokleous and Dr. Athos Agapiou to the technical committee of the UNESCO Chair in Digital Heritage, hosted at the Cyprus University of Technology. Moreover, as a

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## 2 Outline of the Strategy

The Local promotion strategy is part of WP5 “Promotion of the ATHENA centre locally and internationally” with main objective to create synergies between ATHENA and other parties, by involving beneficiaries, stakeholders and Cultural Heritage users in a local level. Thus, the local promotion strategy aims from one hand to inform other parties about ATHENA and on the other hand to demonstrate the capabilities of remote sensing technologies for cultural heritage and archaeology.

More specifically, the local promotion strategy was based on three different levels of communications, as shown in the following figure:



Brief description of all actions carried-out for each on one of these levels of communication, are shown in Table 1 (Local stakeholders and policy makers), Table 2 (Other Interested parties) and Table 3 (Wider society). Further details can be found in the next section.

**Table 1:** Actions related to the promotion of the ATHENA to local stakeholders and policy makers

| Local Stakeholders and policy makers |  |   |
|--------------------------------------|--|---|
| Name                                 | Communication Channel                  | Relation with ATHENA  |
| Department of Antiquities            | 1. Round-table discussion              | Responsible for cultural heritage management and monuments on the island. |
|                                      | 2. Invitation to Workshops             |   |
| Department of Lands and              | 3. Invitation to Conference            | Oversees more than 40 foreign archaeological excavation at the island.    |
|                                      | 4. Participation in summer schools     |   |
|                                      | 5. Support Letters to common proposals |   |
| Department of Lands and              | 1. Round-table discussion              | Responsible for national cadastral, and mapping                           |
|                                      | 2. Invitation to Workshops             |   |

|   |  |   |
|---|--|---|
| Surveys                                 | 3. Invitation to Conference  | Responsible for archive aerial datasets   |
| Ministry of Communication and Transport | 1. Round-table discussion<br>2. Invitation to Conference   | Oversees activities carried out by the Department of Antiquities and Department of Electronic Communication |
| Department of Electronic Communication  | 1. Round-table discussion<br>2. Invitation to Conference<br>3. Support Letters to common proposals   | Responsible for Space Strategy of Cyprus  |
| Ministry of Education and Cultural      | 1. Round-table discussion<br>2. Support Letters to common proposals  | Responsible for education (all levels) and digitization of cultural objects                                 |
| Committee of Missing People             | 1. Round-table discussion<br>2. Invitation to Workshops<br>3. Invitation to Conference<br>4. Participation to Webinars<br>5. Support Letters to common proposals | Exploitation of forensic archaeology towards the recovery of the remains of missing people                  |
| Municipalities                          | 1. Round-table discussion<br>2. Support Letters to common proposals  | Responsible for wider society and promotion of new technologies in everyday life of citizen                 |

**Table 2:** Actions related to the promotion of the ATHENA to other interested (local) parties

| Other Interested parties                      |  |  |
|---|--|--|
| Name  | Communication Channel  | Relation with ATHENA   |
| Archaeological Research Unit                  | 1. Round-table discussion<br>2. Invitation to Workshops<br>3. Invitation to Conference   | Research and education of future archaeologists and supporting on-going archaeological excavations |
| Archaeological excavations-missions in Cyprus | 1. Invitation to Workshops<br>2. Invitation to Conference<br>3. Common applications<br>4. Support Letters to common proposals    | Engaged with on-going excavations taken place in Cyprus and expanding the network.                 |
| Technical Chamber of Cyprus (ETEK)            | 1. Round-table discussion<br>2. Invitation to Workshops<br>3. Invitation to Conference<br>4. Support Letters to common proposals | Engaged with engineers namely civil engineers, surveyor engineers and architects/.                 |

|  |  |  |
|--|--|--|
| ICOMOS-Cy                              | 1. Round-table discussion<br>2. Invitation to Workshops<br>3. Invitation to Conference<br>4. Support Letters to common proposals | Promote new technologies for cultural heritage applications          |
| Association of Cypriot Archaeologists  | 1. Round-table discussion<br>2. Invitation to Workshops<br>3. Invitation to Conference<br>4. Support Letters to common proposals | Promote remote sensing technologies to the archaeological society    |
| Other Research Institutes and Academia | 1. Invitation to Workshops<br>2. Invitation to Conference  | Promote the ATHENA expertise to the local research and academia area |
| UNESCO chair on Digital Heritage       | 1. Round-table discussion<br>2. Invitation to Workshops<br>3. Invitation to Conference<br>4. Support Letters to common proposals | Promote ATHENA educational activities under the umbrella of UNESCO   |

**Table 3:** Actions related to the promotion of the ATHENA to the wider (local) society

| Wider Society                              |   |                               |
|--|---|-------------------------------|
| Name                                       | Communication Channel                                     | Main - Outcome                |
| High-Schools                               | 1. Invitation to Schools                                  | > 5 schools<br>> 300 students |
| Undergraduate and Postgraduate Departments | 1. Invitation to Workshops<br>2. Invitation to Conference | > 150 students                |
| Researchers' Night /Science Cafe           | 1. Info-Kiosk<br>2. Public presentation                   | 10.000 visitors               |

### 3 Outcomes

#### 3.1 Promotion to local stakeholders and policy makers

##### 3.1.1 Ministry of Transport, Communications and Works



ATHENA project was twice presented at the Ministry of Communication and Transport. Initially, at 2<sup>nd</sup> of November 2016, the ATHENA mission and objectives have been presented to the General Director of the Ministry of Communications and Works Mr. Alecos Michaelides. The Ministry is responsible for Space Strategy in Cyprus and Cultural Heritage.

In the meeting Dr. Anthi Kaldeli from the Department of Antiquities of Cyprus as well as the Director of the Department of Electronic Communications, Mr. George Komodromos participated along with the Officer Mr. Anastasios Elia from the Department of Electronic Communications. The meeting included amongst others the presentation of twinning calls, the ATHENA project's aims and the first year's activities and scientific outcomes. The event concluded with a fruitful discussion regarding the exploitation of the ATHENA project capabilities for both Cyprus and the Eastern Mediterranean area, based on the need of the Ministry.

In a following meeting during July 2018, ATHENA local partners have presented ATHENA to the new Minister, Mrs. Anastasiadou, in the presence of the General Director of the Ministry Mr. Alecos Michaelides and the Director of Department of Electronic Communications (DEC) Mr. Komodromos. The Coordinator of the project had the opportunity to present the group activities including ATHENA project (see Figure 1).



Figure 1: Left: Meeting with the General Director of the Ministry of Transport, Communications and Works. Right: ATHENA team with the Ms. Anastasiadou the Minister of Transport, Communications and Works of the Republic of Cyprus

Representatives from the Ministry were also present during the various conferences organized or supported by the ATHENA project, such as the SPIE-RSCy 2016 -2018 conferences (SPIE). It should be also mentioned that through the Ministry of Communication and Transport, the Coordinator of the project, Prof. Hadjimitsis has briefed the Minister of Digital Policy, Telecommunications and Media of Greece, Mr Nikos Pappas, regarding the capacity of the local partners, during his visit to CUT premises on the 20<sup>th</sup> of November 2018 (see Figure 2 ). Prof. Hadjimitsis presented to the Minister Mr. Pappas (in the presence of the Ambassador of Greece in Cyprus) all of the earth observation activities of the Eratosthenes

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Research Centre for the last 11 years (Excelsior teaming project), including the ATHENA project.



Figure 2: Prof. Hadjimitsis presented to Mr Nikos Pappas the local partner (CUT) scope among others the cultural heritage vision and ATHENA scope.

### 3.1.2 Department of Antiquities (DoA)

The Department of Antiquities (DoA), as one of the supporters of the ATHENA project, has interacted throughout the lifetime of the project, via round-table



discussions, participation to workshops, participation to conferences, participation in summer schools etc. As a result, from the collaboration between the ATHENA project and the DoA, the later has provided its support to new research proposals submitted by the Cyprus University of Technology, and has also participated in joint publications.

In detail, DoA officer (Dr. Anthi Kaldeli) has joined the meeting with the Ministry of Transport, Communications and Works taken place in Nicosia at 2nd November 2016 whereas the ATHENA objectives have been presented to the General Director of the Ministry. Dr. Kaldeli, has expressed some of the needs of the DoA, as well as problems that could be approached from the earth observation point of view, such as the risk assessment of environmentally exposed and vulnerable archaeological sites in Cyprus.

DoA has also participated in conferences that ATHENA members have either supported or organized such as the 'Fourth International Conference on Remote Sensing and Geoinformation of Environment' (RSCy 2016-SPIE), the 'Fifth International Conference on Remote Sensing and Geoinformation of Environment' (RSCy 2017-SPIE), the Sixth



International Conference on Remote Sensing and Geoinformation of Environment' (RSCy 2018-SPIE) and the 'Spreading Excellence in Computer Applications for Archaeology and Cultural Heritage', the CAA-Gr 2018 conference.

Furthermore, DoA officers have participated in workshops organized by the ATHENA project like the 'Remote Sensing and Archaeology: Future and Expectations', accomplished during the 7th International Euro-Mediterranean Conference EuroMed 2018 on 30 October 2018 at Filoxenia Conference Centre, Nicosia (see Figure 3) and the ATHENA GIS Workshop "Fundamentals of GIS-QGIS" during the Sixth International Conference on Remote Sensing and Geoinformation of Environment, SPIE-RSCy2018, 27 March 2018 – Aliathon Holiday Village – Paphos, Cyprus (see Figure 4).



Figure 3: Photo during the fourth workshop of the ATHENA project where DoA has participate



Figure 4: Photo taken at the end of the GIS Workshop "Fundamentals of GIS-QGIS" during the Sixth International Conference on Remote Sensing and Geoinformation of Environment where the DoA has participated.

The DoA, has granted access to cultural heritage sites for training purposes and video shooting (see Deliverable 5.5). The results of these activities have been delivered to the DoA, for their needs, creating thus a strong relation for future collaboration.



Figure 5: Training activities at 'Nea Paphos' archaeological site, which the DoA has provided access for all ATHENA members. The site is listed in the UNESCO World Heritage site

Dr. E. Charalambous, DoA officer specialized in mosaic restoration and conservation has participated in a common study, for creating a spectral library of Roman to Early Christian Cypriot floor mosaics. The results of this study have been published in the Journal of Archaeological Science: Report journal (see more at Lysandrou, V., et al., Towards a spectral library of Roman to Early Christian Cypriot floor mosaics, Journal of Archaeological Science: Reports (2016), <http://dx.doi.org/10.1016/j.jasrep.2016.06.029>). Through this study, an extended database of stone samples used for mosaic has been used (see Figure 6).







|  |  |   |
|--|--|---|
| <p>Sample 1</p>  <p><b>Ash limestone</b></p>            | <p>Sample 2`</p>  <p><b>White limestone</b></p> | <p>Sample 3</p>  <p><b>Green limestone</b></p> |
| <p>Sample 4</p>  <p><b>Chestnut/brown limestone</b></p> | <p>Sample 5</p>  <p><b>Grey limestone</b></p>   | <p>Sample 6</p>  <p><b>Limestone</b></p>       |
| <p>Sample 7</p>  | <p>Sample 8</p>  | <p>Sample 9</p>   |



Figure 6: Stone samples used for the case study with the cooperation of DoA (see more at Lysandrou, V., et al., Towards a spectral library of Roman to Early Christian Cypriot floor mosaics, *Journal of Archaeological Science: Reports* (2016), <http://dx.doi.org/10.1016/j.jasrep.2016.06.029>)

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***Towards a spectral library of Roman to Early Christian Cypriot floor mosaics,***

**Paper Abstract:** Floor mosaics are of great interest for archaeologists and art historians. While in the last decade other scientific sectors supported their study mainly from a technical point of view, through traditional archaeometric analysis, this paper suggests an innovative methodological approach and presents some preliminary results aiming to a non-destructive investigation based on the spectroradiometric analysis of stones used for manufacturing the ancient floor mosaics of Cyprus. This method evaluates the results of spectroradiometric analysis in relation to reliable destructive analysis completed in the past on the hereunder examined samples. In addition, the results of the proposed approach foresee to contribute to the expansion of the existing Cypriot database of floor mosaics, improving their characterization by collecting their spectral signatures in the range of 350–2500 nm. The proposed methodology has been applied to a number of stone samples directly linked to pavement floor mosaic tesserae from Cyprus. The results have shown that spectroradiometers may be used in order to identify mineralogical compositions of the stones with an accuracy of nearly 90%. To the best of our knowledge, this is the first time that a comprehensive spectral library related to Cyprus floor mosaics is derived.



Another joined study and publication has been presented in the Heritage MDPI Scientific Journal, entitled “Integrated Investigation of Built Heritage Monuments: The Case Study of Paphos Harbour Castle, Cyprus”. The abstract of this publication can be found below, while some of the results are shown in Figure 7).

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***Integrated Investigation of Built Heritage Monuments: The Case Study of Paphos Harbour Castle, Cyprus***

The state of preservation of built heritage monuments is often evaluated by means of several destructive techniques, which are mainly focused on the analysis of small parts of the monuments' construction materials. The necessary sampling for the accomplishment of these destructive analyses is usually restricted to confined parts of a monument, since monuments are usually under protective legislation, and therefore only indicative of larger areas. Current research attempts to enhance the results of provided by destructive methods, using non-destructive image processing techniques. Towards this end, the potential use of image processing based on rectified images is examined, along with material sampling and laboratory analyses as part of a multi-disciplinary methodology for the investigation of Paphos (Cyprus) Harbour Castle. This approach has been adopted in order to map the degradation patterns observed on the monument's masonry walls, minimizing destructive methods and attempting to visualize the results of the monument as a whole. The combination of both analytical and non-destructive techniques resulted in the acquisition of large amounts of information, permitting the evaluation of applied non-destructive techniques for the study of the deterioration present on a monument's external surfaces. This approach led to the assessment of the overall state of preservation of the masonry walls of the structure in an extended scale covering all external façades in a semi-automatic way.

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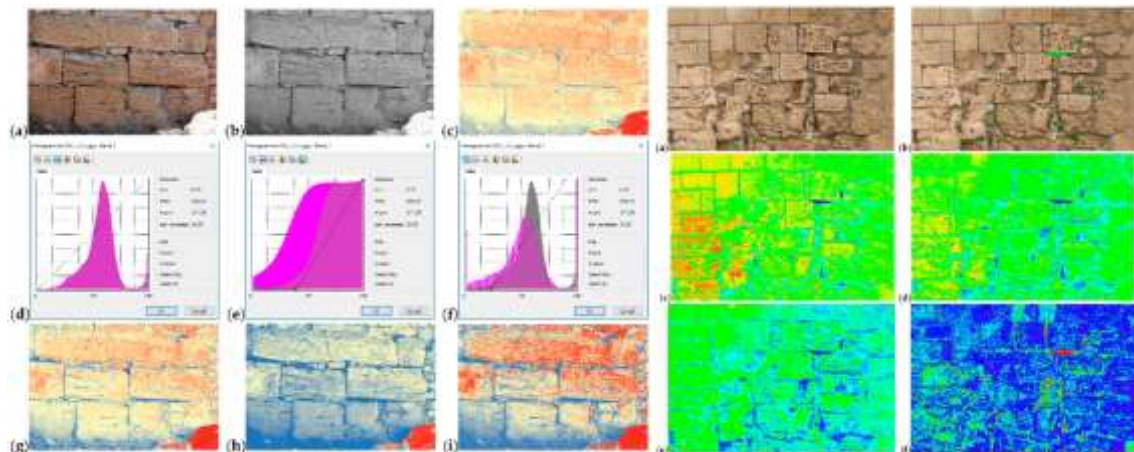
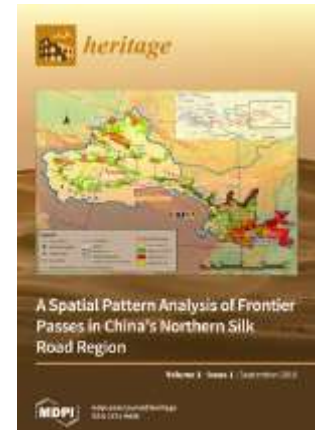


Figure 7: Results from the common study with the DoA regarding the Integrated Investigation of Built Heritage Monuments (see more in Lysandrou, V.; Agapiou, A.; Ioannides, M.; Kantiranis, N.; Charalambous, E.; Hadjimitsis, D. Integrated Investigation of Built Heritage Monuments: The Case Study of Paphos Harbour Castle, Cyprus. *Heritage* 2018, 1, 1-14.)

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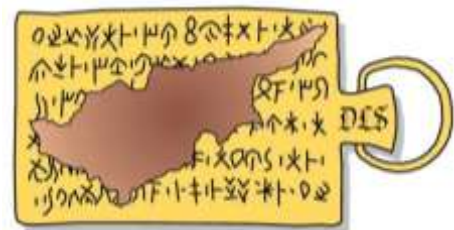
Apart from scientific research, both fundamental and applied, the ATHENA local team has been contacted to support the on-going excavations, carried out by the DoA, in the archaeological sites of Amathus and Castle of Limassol, in order to document archaeological remains during these rescue excavations using remote sensing techniques such as UAV, 3D photogrammetry and GPS measurements (Figure 8)



Figure 8: Archaeological remains at the Amathounda excavation site (top) and Medieval Castle of Limassol (below)

### 3.1.3 Department of Land and Surveying

Officers from the Department of Land and Surveying have shown great interest to the activities carried out through the ATHENA project. Archive aerial images from the 1940's and 1960's have kindly provided to support training activities and to further explore such archive depositories. In this respect a relevant conference paper has been published during the RSCy 2016-SPIE conference (Searching data for supporting archaeolandscape in Cyprus: an overview of aerial, satellite and cartographic datasets of the island, Agapiou A., V. Lysandrou, K. Themistocleous, B. Cuca, R. Lasaponara, N. Masini, T. Krauss, D. Cerra, U. Gessner, G. Schreier, D. Hadjimitsis, Fourth International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2016-SPIE), 4-8 April, 2016, Cyprus). The investigation and catalogued of all available archive and recent aerial datasets over the island was considered one of the main priorities



of the ATHENA team, which can also support other researchers working in the island. The abstract of this conference article is provided below:

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***Searching data for supporting archaeo-landscapes in Cyprus: an overview of aerial, satellite and cartographic datasets of the island***

*The landscape of Cyprus is characterized by transformations that occurred during the 20th century, with many of such changes being still active today. Landscapes' changes are due to a variety of reasons including war conflicts, environmental conditions and modern development that have often caused the alteration or even the total loss of important information that could have assisted the archaeologists to comprehend the archaeo-landscape.*

*The present work aims to provide detailed information regarding the different existing datasets that can be used to support archaeologists in understanding the transformations that the landscape in Cyprus undergone, from a remote sensing perspective. Such datasets may help archaeologists to visualize a lost landscape and try to retrieve valuable information, while they support researchers for future investigations. As such they can further highlight in a predictive manner and consequently assess the impacts of landscape transformation -being of natural or anthropogenic cause- to cultural heritage.*

*Three main datasets are presented here: aerial images, satellite datasets including spy satellite datasets acquired during the Cold War, and cadastral maps. The variety of data is provided in a chronological order (e.g. year of acquisitions), while other important parameters such as the cost and the accuracy are also determined. Individual examples of archaeological sites in Cyprus are also provided for each dataset in order to underline both their importance and performance. Also some pre- and post-processing remote sensing methodologies are briefly described in order to enhance the final results. The paper within the framework of ATHENA project, dedicated to remote sensing archaeology/CH, aims to fill a significant gap in the recent literature of remote sensing archaeology of the island and to assist current and future archaeologists in their quest for remote sensing information to support their research.*

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In addition, CUT members (Prof. D. Hadjimitsis and Dr Kyriacos Themistocleous) have also exchange ideas during the meeting taken place at the Department of Lands and Surveys in Nicosia at the 26 of February 2018 (see Figure 9). In other occasion, discussions with Dr. Athos Agapiou, the Department of Land and Surveying has shown its support to provide access to archive material which includes archive maps (such as the Kitchener map created in the end of the 19<sup>th</sup> century – the first topographic map of Cyprus) archive nadir and oblique aerial photographs of various scales taken by the Royal Air Force (RAF), stereopairs of the first systematic aerial campaign of Cyprus taken in the beginning of the 60s etc. The exploitation of these geo-spatial material is considered as one of the main priorities of the ATHENA, to be accomplished through research actions and funding.

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Figure 9: Prof. Hadjimitsis & Dr Themistocleous at Lands and Surveys department (left).  
Participation of DLS staff to the RSCy conference organized by CUT (right).

The Department has also embraced the ATHENA local team members for securing future funding and provided its support to competitive proposals (Letters of Support).

#### **3.1.4 Department of Electronic Communication**


The Department has shown its strong support to the project from the early stages, as it has provided a Letter of Support for ATHENA during the submission phase. Following the Grant Agreement, the Department was regularly following all activities of the project, with more interest in topics relevant to space technologies and their applications. The interaction with one of the most advanced institutes in Europe, the German Aerospace Centre, was also highlighted as one of the benefits of the ATHENA Twinning project. The director of the Department was also present in the meetings held with the General Director of his Ministry, in relation to space applications and cultural heritage, while other round table discussions were carried out with the Coordinator of the project (see section 3.1.1).

The Department systematically attends to training activities of the project such as the participation to the RSCy 2016-2018 conference (see Figure 10), summer schools etc. The exploitation of the Sentinel sensors and the DIAS platform for the benefits of the local society was one of their priority.

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### Workshop

**H2020-TWINN-2015 ATHENA project:  
Remote Sensing Science Center for Cultural Heritage  
Workshop: "Copernicus contribution to Cultural Heritage"  
April 7th from 9:30 to 17:30**



The ATHENA Workshop is a one day general introduction to the European Copernicus Earth observation program. It puts specific focus on the topics of the H2020 ATHENA project: Establish a Center of Excellence in the field of Remote Sensing for Cultural Heritage

The ATHENA training partner DLR and guest speakers from ESA and the European Commission will present and introduce to the aspects of Copernicus, such as:


- Sentinel space segment
- Contributing missions and access to their data
- Core and collaborative ground segment
- Data policy and access to the data
- Core Services with focus on those of relevance for ATHENA

The speakers and invited experts will be available for questions and answers after the presentation

Participation to the workshop is open to ATHENA participants and registered RSCy2016 attendees. A special registration will be possible for those only attending the workshop.


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**Special Session: Sensing the past: Remote Monitoring for Archaeology and Cultural Heritage (April 6, 2016)**





The special session will present the latest updates related to current archaeological applications of remote sensing and non-invasive investigation, analysis, and monitoring methods, covering the full spectrum of topics, techniques, time span

Organised by:



In Cooperation with:



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### Workshop



**Copernicus Training and Information Session**




The event aims to promote awareness of the many uses of Copernicus data and information, while providing the opportunity for hands on demonstrations and basic training on different topics, such as:

- The data and information available;
- Its potential uses and applications, both generally and amongst specific categories of users or business sectors (Copernicus for Land Monitoring, Marine Monitoring, Coastal Zone Management, Emergency Management, Service Urban Planning etc.);
- Copernicus data potential uses and applications, benefits for local communities and businesses;
- The tools available to access the data and information.

The Copernicus Training and Information Session targets both Copernicus "intermediate" end users (technical) and end user communities (non-technical).

The event is a **free** Copernicus Session **open** to all.




**Research, Interactive Networking and Collaboration - EXCELSIOR Workshop**

The EXCELSIOR project has received funding under the Horizon 2020 Widespread-04-2017 Training Phase 1, Coordination and Support Action, Grant agreement no. 763643.

The event is open and free to all registered participants and invited guests.

Organised by:



In Cooperation with:








Figure 10: The Department of Electronic Communication was supported in various training activities of the ATHENA project such as the Workshop "Copernicus contribution to Cultural Heritage" organized during the RSCy 2016 conference (top), 'Copernicus Training and Information Session' during the RSCy 2017 conference (below) etc.

The Department of Electronic Communication has provided its fully support to several national and European proposals, aiming to assist to the financial sustainability of the



ATHENA. As the national stakeholder for promotion of space applications in Cyprus, its role is significant for the future actions of the ATHENA, as it consists one of the main key stakeholders of the quadruple helix pillar, the model which the Smart Specialized Strategy of Cyprus was developed.

### 3.1.5 Ministry of Education and Cultural



A meeting and a round table discussion between the ATHENA local consortium and the Minister of Education and Culture, Mr K. Kadis and the Director of the Cultural Services Mr Paraskeva, took place on 19<sup>th</sup> of April 2016 (Figure 11). During the meeting, researchers presented the ATHENA project to Mr. Kadi and Mr Paraskeva. In addition, they discussed ways to disseminate the project in the school community of Cyprus, as well as to train and familiarize teachers, and students on issues related to the use of remote sensing tools and geoinformatic techniques for managing and protecting cultural heritage.



Figure 11: Meeting with the minister of education and culture

Following this event, the Ministry has supported competitive research proposals in an international level. It should be also mentioned that with the expected activities of the UNESCO Chair on Digital Heritage (see below, section 3.2.5) which CUT members participate in the technical meeting, other initiatives will be explored.

### 3.1.6 Committee of Missing People (CMP)

CMP and CUT have collaborated in the past in various investigations using Geographic Information Systems and processing of satellite images / archive aerial photographs, as well

COMMITTEE  
ON MISSING  
PERSONS  
IN CYPRUS

**CMP**

as systematic training of the CMP' s staff on geo- information technology / geospatial technologies. Following the round table discussions and based on this continue support to the CMP office, a Memorandum of Understanding between the local ATHENA partner (CUT) and CMP was signed on April 2017 (see Figure 12).

This Protocol formalizes the cooperation of the two entities, covering the following areas in accordance with the mission and role of the two Parties:

1. Joint scientific, educational and cultural activities;
2. Consulting - scientific services and studies;
3. Joint participation in research programs (National - European - International);
4. Volunteer work in workplaces, where feasible;
5. Exchange of information and know-how on issues of common interest.

The results of the cooperation of the two Parties may be presented through joint dissemination actions such as publications, symposia, seminars, websites and more.

The cooperation protocol was signed by the Rector of CUT, Professor Andreas Anagiotos, and Mr. Nestoras Nestoros. The signing of the cooperation protocol was attended by the President-in-Office of the Council Michalis Michael, the Rector of CUT Professor Andreas Anagiotos, the Rector of Academic Affairs Professor Diofantos G. Hadjimitsis (coordinator of the ATHENA project), the Vice-Chancellor of Economic Planning and Development Professor Christis Chrysostomou, the Director of Administration and Economics, Kostas Hoppas, Nikolas Iordanous President of the Interface Committee, Dean of the School of Engineering and Technology Professor Phaedon Kyriakidis, Dr. Athos Agapiou and Dr. Vasiliki Lysandrou Researchers of the Department of Civil Engineering and Geoinformatics and of the Research Center "Eratosthenes" as well as the Consultant of the Greek Cypriot Representative Mrs. Popi Chrysostomou and Mrs. Katerina Lambraki. The Cooperation Protocol is valid for a period of five years from the date of its signature.

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Figure 12: Photo during the signing of the cooperation protocol (Memorandum of Understanding) between CMP and CUT

In addition, CMP staff has participated in various actions carried out during the ATHENA project, such as the last webinar (refer to D6.7) organized by CUT with invited speakers from DLR and CNR, and workshops organized during the RSCy/SPIE conferences (International Conference on Remote Sensing and Geoinformation of Environment).

### 3.1.7 Municipalities

Three main municipalities of Cyprus, namely the Municipality of Limassol, the Municipality of Paralimni and Municipality of Peyia have been contacted and informed about the objectives and mission of the ATHENA project. All municipalities have shown great interest for the project, especially because they host within their area important archaeological sites and monuments.

Through round-table discussions with Municipality Officers, the advantages of new technologies were presented and explained, as well as the need to bring cultural heritage sites and monuments more closely to the wider society and targeted groups (e.g. tourism, using innovative ways of presentation, visualisation and valorisation (e.g. digital applications). The municipalities have provided various endorsement letters to the ATHENA network, in its efforts to maintain its financial sustainability, through the attraction of more funding via new competitive research proposals.

It should be mentioned that all the above key stakeholders and national policy makers were regularly informed and updated through the ATHENA newsletter, leaflets, as well as individual emails of forthcoming ATHENA events.

## 3.2 Promotion to other interested parties

### 3.2.1 Archaeological Research Unit

CUT members have established a long collaboration with archaeologists of the Archaeological Research Unit such as the Paleapaphos project (see below for more details) even before the ATHENA



project. It was not odd therefore that from the early beginning of the project, to organize an event with the ARU members. To this end, a special lecture was organized at the Archaeological Research Unit of the University of Cyprus (see Figure 13), on 01/11/2016 with main speakers the Prof. Rosa Lasaponara, IMAA-CNR (Italian Research Council, Institute for Environmental Monitoring) and the Dr. Gunter Schreier (German Aerospace Center Earth Observation Center) (see Figure 14).

 Πανεπιστήμιο Κύπρου  
University of Cyprus

**Η ΕΡΕΥΝΗΤΙΚΗ ΜΟΝΑΔΑ ΑΡΧΑΙΟΛΟΓΙΑΣ**  
του Πανεπιστημίου Κύπρου  
και το

**ΕΡΓΑΣΤΗΡΙΟ ΤΗΛΕΠΙΣΚΟΠΗΣΗΣ ΚΑΙ ΓΕΩΠΕΡΙΒΑΛΛΟΝΤΟΣ**  
του Τμήματος Πολιτικών Μηχανικών και Μηχανικών Γεωπληροφορικής,  
Τεχνολογικό Πανεπιστήμιο Κύπρου

στις προσκαλούν  
**τη Τρίτη, 1 Νοεμβρίου 2016 και ώρα 19:30**  
στις διαλέξεις των

**Prof. Rosa Lasaponara**  
IMAA-CNR (Italian Research Council), Institute for Environmental Monitoring)  
με τίτλο:  
**"Living in the golden age of digital Heritage:  
from discovery to documentation, management and tourist exploitation"**  
και  
**Dr. Gunter Schreier**  
German Aerospace Center Earth Observation Center  
με τίτλο:  
**"The European Earth Observation Programme COPERNICUS:  
A contribution to the preservation of Cultural Heritage"**

Οι διαλέξεις είναι ανοιχτές για το κοινό και θα δοθούν  
στο κτήριο της Ερευνητικής Μονάδας Αρχαιολογίας, Οδός Παδισιάνων 12, Λευκωσία

**"Living in the golden age of digital Heritage: from discovery to documentation, management and tourist exploitation"**  
(Παράδειγμα)  
The field of digital archaeology is sleeping in its golden age characterized by an increasing growth of both classical and emerging multidisciplinary methodologies, advanced to the study and conservation of cultural heritage. The availability of the new digital technologies have opened new infinite possibilities, unthinkable only a few years ago for archaeology and cultural landscape that is an integral part of our archaeological heritage being that it preserves the main features that identify the evolutionary history of civilization over time. One of the greatest advantages of digital technologies (available from air, space,

ground) is that they gather an immense amount of information on archaeological remains, even those which are buried, in a non-invasive, non-destructive way. At the same time they also contribute to their protection and preservation.



Virtual reconstruction of the medieval village of Ypsons from information obtained from satellite and aerial laser (LiDAR), whereas no evidence is visible in site as shown in the photograph to the right.

**"The European Earth Observation Programme COPERNICUS: A contribution to the preservation of Cultural Heritage"**

Imaging and remote sensing of physical properties have always been a method for archaeology and the preservation of cultural heritage. Advances in sensing and space technologies now enable even to use measurements from space for this purpose. New Earth Observation missions and specifically international initiatives, such as the European Copernicus programme, now enable a wider use of space borne Earth Observation data to detect still unknown and monitor known sites. They contribute to the science understanding of the site, or to monitor effects of natural and man-made destruction to these sites. However, monitoring of Cultural Heritage is a fairly new domain in space data applications. Historians and space engineers need a common understanding of the technologies, approaches and their expectations, in order to take benefit from this new source of information. The lecture will address these issues.



This image captures two scans from the Sentinel-2L satellite on the same day 22 December 2015. Copyright Copernicus Sentinel data (2015)/ESA

Figure 13: Dissemination newsletter from the ARU regarding the invited lectures of Dr. Rosa Lasaponara (CNR) and Dr. Gunter Schreier (DLR) held on 01/11/2016



Figure 14: Photo taken after the lectures at the ARU with the Director of the Archaeological Research Unit (second from the right) Prof. Vasiliki Kassianidou (right) and photo during the lecture of Dr. Rosa Lasaponara (right).

In addition, the Archaeological Research Unit was co-organizer of the regional CAA-Gr conference organized in Limassol in 2018 (Spreading Excellence in Computer Applications for Archaeology and Cultural Heritage, <https://www.caa-gr2018.org>), as well as a supporter / partner in various local and European research proposals. It should be mentioned that CUT members and ARU archaeologists are currently been involved in two new (i.e. 2018-2020/2021) local research proposals, funded by the Research Promotion Foundation, focused on the better understudying of the island through modern technologies. These projects are the Research Promotion Foundation program “Unlocking the Sacred Landscapes of Cyprus/ UnSaLa-CY” (€200 000) and the Research Promotion Foundation program “Water Routes to Human Island Dispersals: Modelling the Pleistocene Exploitation of Cyprus, Eastern Mediterranean” (€120 000).

### 3.2.2 Archaeological excavations – missions in Cyprus

The ATHENA project collaborated with the Kourion Urban Space Project (see more here <http://www.tandyinstitute.org/excavation/archaeological-field-projects/kourion-excavations/>) sponsored by the Southwestern Baptist Theological Seminary and visited the excavations at the Kourion site with the project’s surveyor/architect, Dr Christopher Davey, Tom Davis from the Southwestern Baptist Theological Seminary and Bill Weir from the University of Cincinnati. The ATHENA team carried out GPR measurements at the site in order to assist with future excavations at the site performed this year (see Figure 15). The CUT team is now part of the Kourion Staff (see Figure 16).



Figure 17: Surveying the Palepaphos archaeological area

CUT members are also working closely together with the Palaepaphos Urban Landscape Project (<http://ucy.ac.cy/pulp/>) of the Archaeological Research Unit of the University of Cyprus, directed by Prof. Maria Iacovou. According to the results of the Ancient Pafos landscape analysis project, which has been running since 2006, the Hadjiabdoulla plateau was the administrative-economic centre (i.e. the acropolis) of Ancient Pafos during the Cypro-Classical period. CUT members are responsible for the GIS analysis and UAV flights over the area, providing maps and orthophotos of the wider area.



Figure 18: Results from the 2018 excavation at the Palepaphos site (source: <http://www.mcw.gov.cy/mcw/da/da.nsf/All/05385F0DA523E9FC422577B2003A94BB?OpenDocument>)

The director of the PULP project, Prof. Maria Iacovou, was also the key-note speaker of the 3rd CAA-Gr Conference held in CUT premises taken place in June 2018 (see more at <https://www.caa-gr2018.org>).

### 3.2.3 Technical Chamber of Cyprus (E TEK)

Multiple channels of communication with the Cyprus Scientific and Technical Chamber (E TEK) have been established through the lifetime of the ATHENA project. Round table discussions were made with various members of E TEK promoting the objectives of the ATHENA project. It should be mentioned that E TEK was a supporter of the International Conference on Remote Sensing and Geoinformation of Environment - RSCy)(see Figure 19) organized each year in Cyprus (e.g. 2016: <http://www.cyprusremotesensing.com/rscy2016/>) by the team members of the CUT while special invitations were sent both to the General Council of the E TEK as well as to the thousands of registered engineers of the Chamber. The exploitation of the communication database of E TEK was important for ATHENA objectives to regularly disseminate and communicate with the local engineers working in the island covering the thematic areas of architecture, civil engineers, surveyor engineers etc. E TEK has also provided support letters to local and international research proposals submitted by the ATHENA network. E TEK members have already met with ATHENA members during the ATHENA project and discussed various topics for further collaboration. It is important to mention that members of the Cyprus Civil Engineers Association met with ATHENA members.



Figure 19: E TEK as a supporter of the International Conference on Remote Sensing and Geoinformation of Environment 2016-2018.



### 3.2.4 ICOMOS-Cy, Association of Cypriot Archaeologists

**ICOMOS-Cy:** ICOMOS works for the conservation and protection of cultural heritage places. It is the only global non-government organisation of this kind, which is dedicated to promoting the application of theory, methodology, and scientific techniques to the conservation of the architectural and archaeological heritage. ICOMOS is a network of experts that benefits from the interdisciplinary exchange of its members, among which are architects, historians, archaeologists, art historians, geographers, anthropologists, engineers and town planners. The members of ICOMOS contribute to improving the preservation of heritage, the standards and the techniques for each type of cultural heritage property: buildings, historic cities, cultural landscapes and archaeological sites



**Association of Cypriot Archaeologists:** The Association of Cypriot Archaeologists (ACA) is the largest and oldest scientific association in the field of archeology in Cyprus. It has been a registered as a non-profit scientific association since 1983. Today (2015) the ACA numbers 125 members and is constantly expanding with the registration to the association of new archaeologists.



Similarly, with ETEK, ATHENA has interacted with the national chapter of ICOMOS (ICOMOS -Cy, <http://www.icomos.org.cy/index.php/el/>) and the Association of Cypriot Archaeologists (ACA, <https://aca-cy.org/en>) following round table discussions and invitations to the ICOMOS-Cy and ACA councils as well as their members for the ATHENA dissemination activities. Both associations have shown from the early beginning of the project their interest to follow the activities of the ATHENA project (ACA is already a supporter of ATHENA proposal), and this was evidence in their members' participation to the various workshops and webinars. Both associations have also provided their support in different international research proposals submitted by the local partner, aiming toward the financial sustainability of the ATHENA network.

### 3.2.5 UNESCO chair on digital heritage

**UNESCO Chair in Digital Cultural Heritage:** The main scope of this unique Chair is to extend the successful work of the Digital Heritage Research Lab ([www.digitalheritagelab.eu](http://www.digitalheritagelab.eu)) and address a full range of key aspects of novel research and innovative developments such as: a) the documentation and analysis of cultural heritage data for both tangible and intangible heritage; b) technical areas, including 3D virtual environments, archives and collections management systems, web and museum based interactive applications and language technologies; c) non-technical areas, including testing, economic and social impact evaluation in support of the development of the cultural heritage sector and its opportunities in tourism, entertainment and education.

*The establishment of this exceptional Chair will complement this by introducing and extending higher education programmes in Cultural Informatics, needed to enable CUT to work effectively and build bridges of cooperation in the region, within the European Union and in all the continents. This will lead to a substantial body of PhD and post-doctoral courses in key aspects of DCH, including multidisciplinary, interdisciplinary and intersectoral research in the areas of digitization, data acquisition, processing, modelling, archiving, visualization, preservation and protection, analysis, interpretation, storytelling, use and re-use. Topics of emphasis will include: documentation (metadata, semantics, ontologies, linked data) and the applications of 3D/4D, Virtual, Augmented and Mixed Reality, cognitive computing, artificial intelligence, cloud computing and crowdsourcing/Citizen Science. The needs of audiences' cultural organisations (archives, libraries, museums, monuments and sites) and the communities they serve, will be a primary focus, alongside those of people working in the field of Digital Humanities, including the issues of multilingualism that impact them.*



During 2018, the local partner of the ATHENA project (CUT) has been awarded with the UNESCO chair in Digital Cultural Heritage. The UNESCO Chair was awarded to the Digital Heritage Research Lab (DHRLab (<https://digitalheritagelab.eu/dhrlab/lab-overview/>)). ATHENA team members, namely Prof. Diofantos G. Hadjimitsis, Dr. Athos Agapiou and Dr. Kyriakos Themistocleous were included in the technical committee that supported the proposal (see Figure 20). On the 8th of March 2018 the UNESCO agreement was signed at CUT premises, for the establishment of the first worldwide UNESCO Chair on Digital Heritage/Cultural Informatics, in Limassol, Cyprus and appointed as the UNESCO Chairholder and Director, Dr. Marinos Ioannides. The name of the UNESCO Chair is Mnemosyne. According to the Greek mythology, Mnemosyne was the goddess of memory and the mother of the nine Muses, who were considered the source of the knowledge embodied in the science, in literature and the arts.



Figure 20: Photo during the launch of the UNESCO Chair (left) and front page of the Lab within the CUT that will host the UNESCO Chair holder (Dr. Marinos Ioannides).

The UNESCO Chair has already supported the efforts of the CUT partner in various European and regional funding calls, while the final workshop of the ATHENA project has been hosted during the EuroMED 2018 Conference (<https://www.euromed2018.eu>, see Figure 21). Future collaboration with the UNESCO Chair is expected to be in the fields of education and digital use and re-use of cultural objects and artifacts.



Figure 21: Photos during the 4<sup>th</sup> workshop of the ATHENA project, hosted during the EuroMED 2018 conference, supported also by the UNESCO Chair in Digital Cultural Heritage

### 3.3 Promotion to wider society

#### 3.3.1 ATHENA project at elementary and high schools

ATHENA project was presented to high school students during the summer school organized by the Department of Civil Engineering and Geomatics, Cyprus University of Technology, between 26 and 30 of June 2017. During the lecture various examples from ATHENA project were outlined to the audience.

Additionally, ATHENA researchers visited elementary and high schools promoting the benefits of Earth Observation for Cultural Heritage. These visits were part of the Researcher Week organized by the Researcher Promotion Foundation. The aim of the visits was to support students during their first contact with research, science and technology and encourage them to become young researchers. Additionally, it is important to mention that this kind of activities aim to address the successful steps for implementing a culture of research and to support teachers in collaborating with universities aiming at forming the links between the schools and the Academic sector. The overall purpose is to build effective contact with students with a final goal to support schools to develop a research-engaged culture and finally bridge the gap between the Society and the Academia.



Figure 22: ATHENA's researchers met young scientists and schools (photos modified in purpose)

### 3.3.2 ATHENA project at Undergraduate and Postgraduate Students

ATHENA was presented to the MSc students of the MSc Geoinformatics and Geospatial Technologies of the Department of Civil Engineering and Geomatics of CUT by Prof. Hadjimitsis and Dr Agapiou.



Figure 23: ATHENA presentation at MSc in Geoinformatics and Geospatial Technologies by Prof. Hadjimitsis.

Special lectures dedicated to the exploitation of earth observation and remote sensing technologies for cultural heritage application and archaeological research. Following these lectures, several diploma theses were carried out as indicated below:

#### **Diploma thesis: Investigation and Evaluation of Leica Dual Camera, Huawei P10 Plus, So That It Can Use for Cultural Heritage Documentation (2018)**

This study titled, "Investigation and Evaluation of Leica Dual Camera, Huawei P10 Plus, So That It Can Use for Cultural Heritage Documentation", was elaborated for the Postgraduate Program, of the Department of Civil Engineering and GIS Engineering, of the Technological University of Cyprus. The main focus, was to investigate and evaluate Cultural monuments, by using the Leica dual camera (RGB and panchromatic image) of the Huawei p10 mobile phone, -if this can be achieved-, through the use of different image pan-sharpening method. Initially, mobile's device camera was calibrated, as well as, internal orientation. Afterwards four different pan-sharpening methods were employed, such as, Brovey, Multiplicative, PCA and Wavelet. These methods were applied to photographs taken from Timiou Stavrou Church, in Parekklesia village, in Limassol District, Cyprus, regarding a part of

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St. Constantine and Helen's mural. Later on eight different, image quality methods were employed, such as Bias, CC, DIV, Entropy Diff, ERGAS, Q, RASE and RMSE for each of the four pan-sharpening methods. The overall results were mined and discussed in-depth. It seems the Wavelet pan-sharpening method was the most appropriate for improving the initial RGB image. Keywords: [Calibration, Inside Orientation, Pansharpening Image.] (see Figure 24)



Figure 24: Application of pan-sharpen techniques to frescoes in Church at Pareklissia village, Limassol

**Diploma thesis: Exploitation of satellite remote sensing for detection of buried relics (2017)**

The subject of this study is the ability to use the techniques of Satellite Remote Sensing and with the help of vegetation indices to identify the optimal marker that can help us in the detection of subterranean archaeological remains. For the purposes of this study, some areas of interest have been identified in the archaeological site of << New Paphos >> with the help of the 1945 archival aerial photograph taken by the RAF. Initially, georeferencing of aerial photography based on a modern orthophoto of 2014 was made using homologous signs. Then there were mapped points of interest that showed some significant variations with regard to their surroundings. For the completion of this dissertation, experimental measurements from a similar study were used in the Achilles area (Agapiou A et al., 2012).

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The final results are presented through tables and diagrams for the indicators that help us to identify Underground archaeological remains.

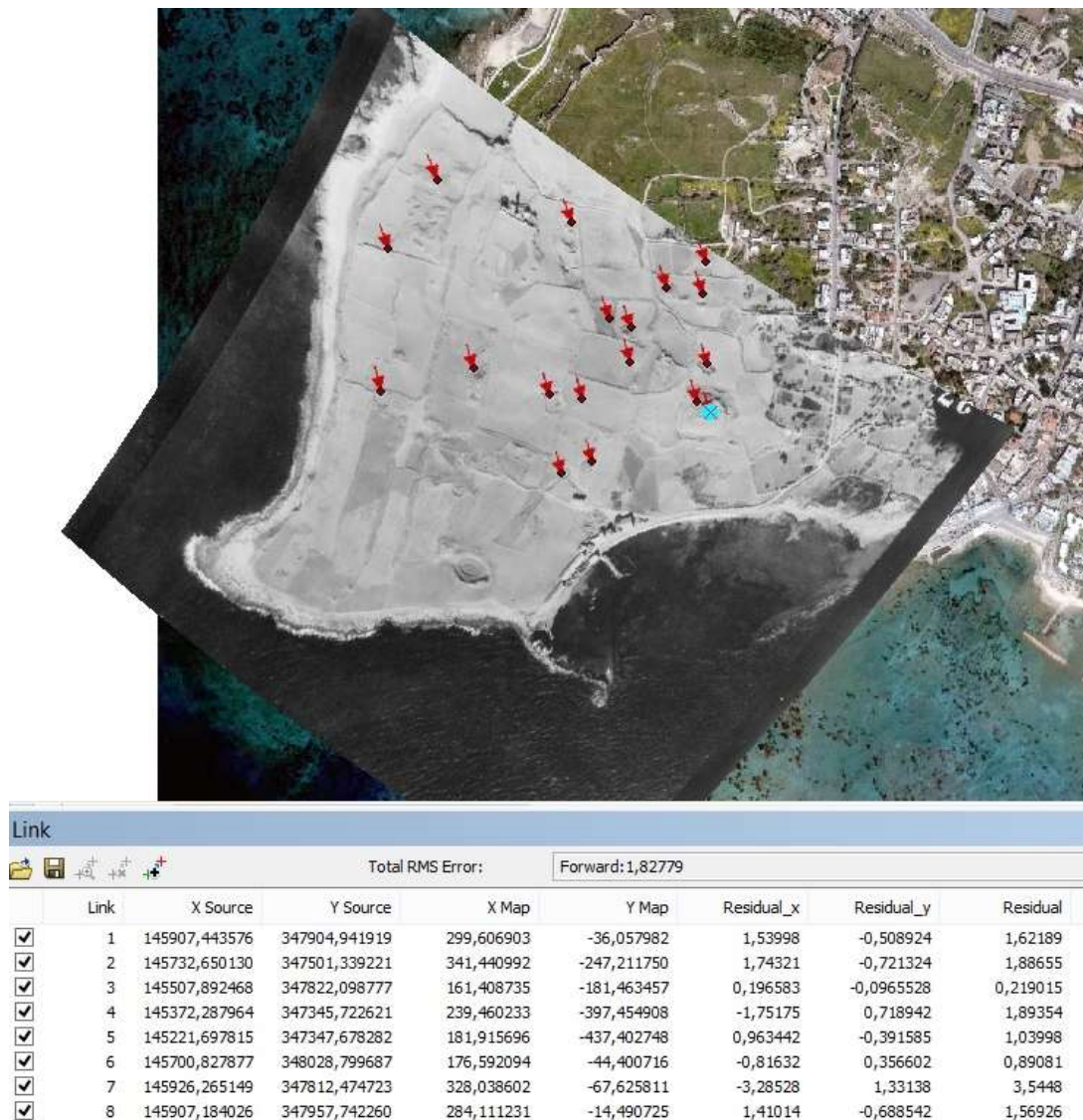


Figure 25: Detection of crop marks using archive aerial and renet satellite products

### Diploma thesis: Calibration of laser point cloud using spectroradiometer (2017)

The paper deals with the calibration of cloud point by a terrestrial laser scanner using terrestrial spectrometry. Specifically, the purpose of the exercise is to calibrate the cloud point reflectivity at 432nm. The spectrometry will be used to generate spectral signatures to identify nine (9) different colour gradations in the first stage and in the second stage, for the reflectivity calibration received by the scanner at different angles. The measurements were taken at the remote sensing laboratory with SVC HR-1024 and EXCEL software were used to process them. In an outdoor environment, the Leica C10 Laser terrestrial scanner was used to observe the intensity difference of the radiation according to the angle of incidence. The CYCLONE program was used to transfer the measurements to the EXCEL software

where the measurements were further processed for the final results. Finally, a comparison of the spectral signatures follows, discussion of radiation intensity results, and a report of the conclusions for each case. Keywords: remote sensing, spectrometry, reflectivity, spectral signatures

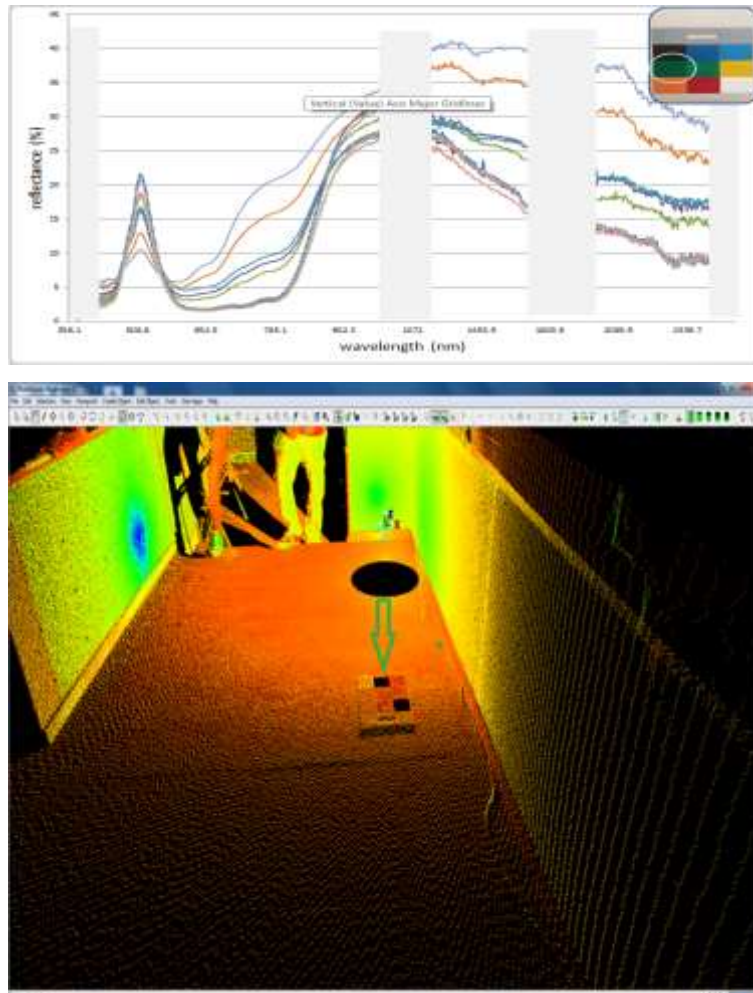


Figure 26: Results of the spectroradiometer (top) and point cloud (below)

### **Diploma thesis: Fusion of remote sensing datasets for detection of buried remains (2018)**

This diploma thesis investigates the superficial layers of an archaeological landscape based on the integration of various remote sensing techniques. In this study three main technologies are examined, namely ground-penetrating radar (GPR), ground spectroscopy, and multispectral satellite imagery. The study aims to identify a strong correlation between ground based and satellite datasets, which may lead to a form of integration that enhances optical remote sensing satellite images intended for archaeological research. For this task, different regression models have been examined between the measurements of a ground spectroradiometer and a GPR. Also, various image analysis techniques have been applied to

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images that represent vegetation indices. The overall methodology that was followed consisted of seven steps. Firstly, several regression models were examined for 6 different vegetation indices and the first 4 bands and 3 coefficients Crop mark, Vegetation and Soil of a GeoEye image in relation with the measurements of a GPR (Step 1-3). At the same time, various image analysis techniques, mainly classifications, have been applied to 18 images that represent vegetation indices (Step 4-5). The final outcomes were evaluated and some of the regression models that have been examined were projected to a high-resolution multispectral satellite image (Step 6-7). The proposed methodology was evaluated with a series of field data collected from the Vészto-Mágó Tell, located in the eastern part of Hungary, and a GeoEye multispectral satellite image that covers the area. The overall results indicate that fusion models between various types of remote sensing datasets frequently used to support archaeological research can further expand the current capabilities and applications for the detection of buried archaeological remains. Keywords: enhancement; fusion; ground spectroscopy; ground-penetrating radar (GPR); GeoEye; remote sensing archaeology; classification (see Figure 27)

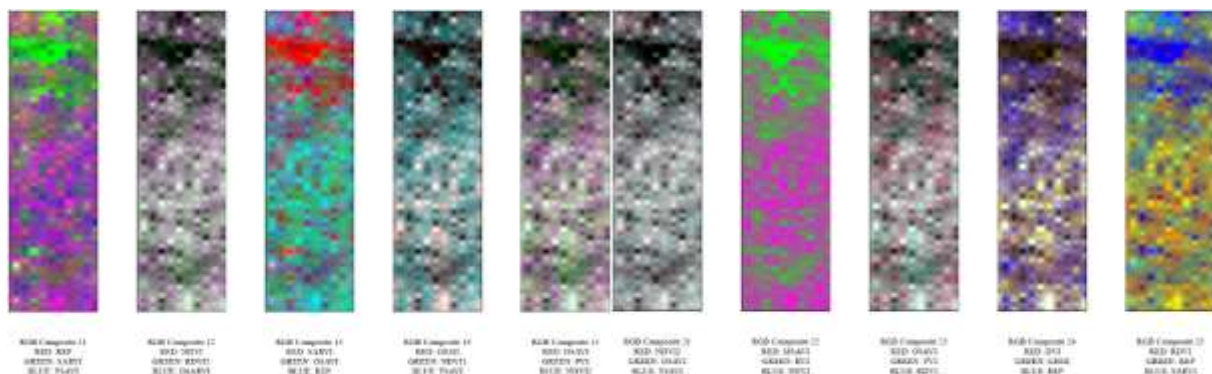


Figure 27: Results from the fusion of GPR and spectroradiometric datasets

### 3.3.3 ATHENA project at Researcher's Night

The "Researcher's Night" is an event organized by the Research Promotion Foundation (RPF) in collaboration with academic and research institutions as well as other organizations in Cyprus. The European Researchers' Night takes place every year all over Europe and neighboring countries. These events take place in over 250 cities. The European Researchers' Nights are events dedicated to popular science and fun learning. They are a unique opportunity to meet researchers, talk to them, and find out what they really do for society, in interactive and engaging ways. This can be through hands-on experiments, science shows, learning activities for children, guided visits of research labs, science quizzes, games, competitions with researchers and more. The Researchers Nights in Cyprus



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### ***Researcher’s night 2016***

Researcher's Night 2016 took place at the FILOXENIA International Conference Centre in Nicosia on the 30th of September 2016. ATHENA was presented at the Researcher's Night with topic “Cyprus from above: History and Heritage” which is coordinated by Eratosthenes Research Centre/Excelsior on 30<sup>th</sup> of October, 2016 (Figure 28).



Figure 28: Research Night 2016

### ***Researcher’s night 2017***

The topic of the Research night 2017 was «Join the Research Cult» and ATHENA project was presented at the Researcher’s Night which is coordinated by Eratosthenes Research Centre/Excelsior on 29<sup>th</sup> of September 2017 (Figure 29).

The ERATOSTHENES Research Centre stand offered a unique experience and the opportunity to visitors to experience the cultural heritage of Cyprus and the wider Mediterranean region through state-of-the-art geo-spatial technologies. People had the opportunity to observe Cyprus from space, map the destruction of cultural heritage in the Middle East, survey ancient cultural monuments and study the impact of time on them. Our tools on display were satellite images, historical aerial photographs, as well as available historical maps. Searching and exploring the past through these technologies can help to preserve and understand Our Past and develop Our Future.

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Figure 29:Researcher's Night 2017

### **Researcher's Night 2018**

ATHENA project presented at the Europeana Researcher's Night 2018 took place at Lanitis Carob Mill Complex in Limassol on the 28th of September 2018 for the "Researcher's Night 2018".



Figure 30:Researcher's Night 2018

During the Researcher's Night 2018, visitors (students, teachers, parents and general public) had the opportunity to get information related to the activities of the ERC and get familiar with terms such as Remote Sensing Applications, Space, Copernicus Academy & ESA, NASA, Satellite Sensors, etc. The visitors expressed interest to get information related to the research activities of the ERC, and to participate in summer schools for all (both students & adults). This annual event comprises the link between the researchers and some teachers, who are impressed about the activities of the ERC and usually they contact us after our first contact to visit their schools and inform the students about the several activities of the ERC. It is noted that this kind of activities can offer the opportunity to build effective contacts with teachers and students, while the next step is to get an invitation to visit the schools with a goal to support schools to develop a research-engaged culture and bridge the gap between the Society and the Academia. These can be the successful steps for implementing a culture of research and support teachers in collaborating with Universities by establishing links between the schools and the Academic sector.

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### 3.3.4 Science Café

The Science Café was organized by Excelsior team on 23th of May2018 in Paphos in the context of the Cyprus Week for Innovation and Research by the Research Promotion Foundation. The main topic of this meeting was "Observing the earth from space". Twinning project ATHENA, coordinated by the Eratosthenes Research Centre (Remote Sensing & Geo-Env. Lab) of the Cyprus University of Technology was also presented (Figure 31). It is worth to mention that the event was attended by a representative from the Cyprus Research Promotion Foundation Mr George Christou, who stressed the importance of such events for the communication of research in a wider public but also, drawing on the guests' questions about secondary education and research, he mentioned that efforts are being made to introduce students in the research culture in a more official manner.



Figure 31: Dr. Christiana Papoutsas presentation at Science Café

## 3.4 Other Targeted presentations of the Athena Centre and its services to other stakeholders through meetings or events

### 3.4.1 ATHENA at Horizon 2020 Cyprus National Event- Work Programmes 2018-2020 - Towards FP9 (January 2018)

The ATHENA project was promoted during the event "Horizon 2020 Cyprus National Event: Work Programmes 2018-2020" aiming to inform researchers and innovative businesses about the opportunities arising from the Horizon 2020 funding scheme for 2018-2020. Prof. Hadjimitsis presented during this event in the 'SPACE' session the activities of the group activity for the last 10 years in EarthObservation, as well the ATHENA project by highlighting

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the importance of space technologies and earth observation at the national, regional and European level. During this event, Dr K. Katzis (European University of Cyprus) and Dr A. Agapiou (CUT) national contact points presented the existing funding opportunities in Space. Athena team had the opportunity to meet more than 50 people during this event regarding future collaboration.



Figure 32: Prof. Hadjimitsis is presenting, and Dr. Agapiou with Dr Katzis are on the panel at Horizon 2020 Cyprus National Event

### 3.4.2 Meeting with Dr.Philimis from CyRIC & Cyprus Association of Research and Innovation Enterprises (March of 2018)

On the 5th of March of 2018, Dr. Papoutsas and Prof. Hadjimitsis had the opportunity to meet-up with Dr. Philimis (CyRIC) <https://www.cyric.eu/> regarding the 'ATHENA Project' and the importance of using space technology for monitoring and management of Cultural Heritage sites. Dr. Papoutsas and Prof. Hadjimitsis promoted ATHENA project to the industry sector as Dr. Philimis the President of the Cyprus Association of Research and Innovation Enterprises with more than 50 members of SMEs and R&D companies.

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Figure 33: Dr. Philimis (CyRIC) with Dr. Papoutsas (CUT)

### 3.4.3 Meetings with other Universities

ATHENA team members had also the opportunity to meet other academics and researchers from universities' and research institutes from Cyprus such as the:

- Neapolis University (Prof. Georgi), <https://www.nup.ac.cy/>
- Frederick University (Prof. Vryonides) <http://www.frederick.ac.cy/>
- European University (Prof. George Boustras) <https://www.euc.ac.cy/>
- Alexander College, Pafos (Mr Palas) <https://alexander.ac.cy/>

The academic and researchers had shown their interest for the topic of ATHENA as well for future collaboration beyond also the area of cultural heritage.

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Figure 34: Meeting with Dr Tzouli Georgi Associate Professor, School of Architecture, Land and Environmental Sciences at Neapolis University (March 2016)

#### 3.4.4 Conferences and Meetings in Cyprus

During the three SPIE-RSCy2016, 2017, 2018 conferences that were taken place in Pafos, Cyprus, the Athena team had the opportunity to meet several local stakeholders either from academia, public, local organizations and industry. Indeed, during the ‘Copernicus’ Training and Information Session that was organized on 27/3/2018 in Pafos, Cyprus, it was a great opportunity to meet local stakeholders especially from the Government and wider public (more than 215 local participants).



Figure 35: Copernicus Training and Information Session, 27 March 2018, Pafos, Cyprus

#### 3.4.5 Copernicus Academy Activities

The group is a member of the Copernicus Academy Network. Indeed, through its activities promoted Athena and other earth observation activities. Moreover, one of our group members Dr. Themistocleous acts as a national representative in Copernicus user forum (nominated by DEC) and national delegate to the cultural heritage Copernicus task force

and has already promoted 'ATHENA' at the national & European level. The group has already participating in the Copernicus Framework Partnership Agreement (FPA) (as a national partner) and one of the proposed earth observation activities for the forthcoming years on the national level includes also cultural heritage. Mr Mettas and Dr. Themistocleous promoted the importance of using space technology for the environment including cultural heritage through the meetings with the Department of Electronic Communications for the FPA.



#### 4 Discussion

All the above described actions, taken place in order to enhance and promote the ATHENA mission in a local level where supported with several communication tools such as the summer schools, workshops, website, newsletters, leaflets etc. These tools were blended with the local promotion to the three different levels as described earlier (Local Stakeholders and policy makers, Other Interested parties and Wider Society).

#### List of associate deliverables linked with the communication tools used for the local promotion of the Centre

| Del Rel. No | Title                              |
|-------------|------------------------------------|
| D4.1        | 1st summer school                  |
| D4.2        | 2nd summer school                  |
| D4.3        | 3rd summer school                  |
| D4.4        | 1st workshop                       |
| D4.5        | 2nd workshop                       |
| D4.6        | 3rd workshop                       |
| D4.7        | 4th workshop                       |
| D6.1        | ATHENA's website                   |
| D6.2        | ATHENA's 1st electronic newsletter |
| D6.3        | ATHENA's 2nd electronic newsletter |
| D6.4        | ATHENA's 3rd electronic newsletter |
| D5.1        | Leaflets                           |

|      |  |
|------|--|
| D4.8 | Virtual training                               |
| D6.5 | 10 journal publications in scientific journals |
| D6.6 | Conference papers                              |
| D6.7 | Webinars                                       |

The local promotion was successfully achieved through the lifetime of the ATHENA project, as this was evidence in the participation of the local stakeholders, end-users, archaeologists, associations to new research proposals either as a consortium partners or supporters. This aspect has been taken into consideration to the financial sustainability of the ATHENA project, beyond 2018, as this is analysed in the Business Plan (see Deliverable 6.11).

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