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Author(s):	Diofantos G. Hadjimitsis, Evagoras Evagorou, Athos Agapiou, Vasiliki Lysandrou, Andreas Christofe, Kyriacos Themistocleous, Argyro Nisantzi, Christiana Papoutsas	
Contributor(s):	Rosa Lasaponara, Nicola Masini, Thomas Krauss, Gunter Schreier	
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DRAFT	Marios Tzouvaras, Christiana Papoutsas, Evagoras Evagorou, Athos Agapiou, Vasiliki Lysandrou, Andreas Christofe, Kyriacos Themistocleous, Argyro Nisantzi, Diofantos G. Hadjimitsis	Coordinator	CUT	02/11/2018
REVIEWED	Rosa Lasaponara, Nicola Masini, Thomas Krauss, Gunter Schreier	Partner 2 & 3	DLR and CNR	20/11/2018
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## Abbreviations and Acronyms

CNR	Italian National Research Council
CUT	Cyprus University of Technology
DLR	German Aerospace Center
EO	Earth Observation
ERC	Eratosthenes Research Centre
ESA	European Space Agency
ETEK	Cyprus Scientific and Technical Chamber
GEO	Group on Earth Observation
GEO-CRADLE	Coordinating and integRating state-of-the-art Earth Observation Activities in the regions of North Africa, Middle East, and Balkans and Developing Links with GEO related initiatives towards GEOSS
GIS	Geographic Information System
MTCW	Ministry of Transport, Communications and Works
NASA	National Aeronautics and Space Administration
NEREUS	Network of European Regions Using Space Technologies
NGO	Non-Governmental Organisation
NGO	Non-Governmental Organization
PECS	Proposals under the plan for European Cooperating States
RPF	Research Promotion Foundation
RS	Remote Sensing
RSCy	International Conference on Remote Sensing and Geo-information of the Environment
WP	Work Package

## 1 Introduction

The 'ATHENA' H2020 project having as a primary objective to establish a Center of Excellence in the field of Remote Sensing for Cultural Heritage in the areas of Archaeology and Cultural Heritage followed a strategy to promote the project at local and international level. The close collaboration between CUT, partners and other experts in the field of Remote Sensing for Cultural Heritage in the EU, formed a synergic network that permitted the transfer of knowledge and training of the existing personnel of CUT.

The International Promotion Strategy is part of WP5: Promotion of the centre locally and internationally, with main objectives the promotion of the centre both locally and internationally in an effort to create networking for the Centre's future activities. Through promotion activities of WP5, the Centre established a strong collaborative network (locally and internationally) by the end of the project. The International Promotion Strategy had strong inter-dependencies with other WPs of the project – especially in relation to the different needs of the various stakeholders and interested parties.

The present report describes in detail the International Promotion Strategy that was implemented in the framework of ATHENA project along with the targets set at the beginning of the project. Thereafter, the international promotion events and activities, via which the project was disseminated and promoted, are showcased.

## 2 International Promotion Strategy

### 2.1 How to promote the Centre Internationally?

'ATHENA' centre aims to be established beyond the borders of Cyprus and therefore to be a key partner in the areas of RS and CH. For this reason, special focus was given to the promotion of the centre in international level as well in the area of eastern Mediterranean basin. To maximise its research potential, the Centre will seek collaborations with other research institutions and the industry sourced through existing collaborations of the project partners, entry into research networks and participation in research clusters. To this end, a key strength of ATHENA is the strategy for networking and collaboration with different sectors beyond the CH field, such as tourism; environment; hazards etc.

As one of the objectives of ATHENA project is to ensure sustainability, it was important to involve beneficiaries, stakeholders and CH users, both locally as well internationally who were informed about ATHENA centre of excellence and its advanced capabilities and will

collaborate with CUT in future proposals or for further services. Expanding the network for ATHENA, favours sustainability after the project ends. The visits of CUT team to the partner organizations were seen as an opportunity to promote ATHENA in targeted presentations for network expansion and future collaboration, as well as the conference attendance within the dissemination framework (WP6). Already, during WP2 a database with all potential partners was defined while at this stage of the project, the most relevant key partners were identified.

In WP2 and more specifically in D2.2: Database of the outcomes with potential partners, a list of research organizations, research institutions, laboratories involved in the use of earth observation technologies and methodologies applied to archaeology and cultural heritage management was created. This database includes contact information as well as characteristics of each institution/laboratory/center useful for creating a network and facilitating future potential collaborations. Additionally, information on projects (including scientific expeditions and scientific missions) focused on Earth Observation tools was considered. The current database contains data information concerning 143 institutions of different states and 14 projects along with predefined queries to facilitate the search and use of the database. Specific queries can be created for specific needs and requests.

Table 1. List of interested parties

	<b>Name of Organisation / Institution</b>		<b>Name of Organisation / Institution</b>
1	Cyprus University of Technology	17	English Heritage
2	IBAM CNR GISeARCHLab	18	Holstebro Museum
3	German Aerospace Center	19	State Office for Cultural Heritage Management Baden-Württemberg
4	Ministry of Tourism and Antiquities MOTA	20	Scientific Research Centre of the Slovenian Academy of Sciences and Arts
5	University of Stirling	21	Leiden University
6	German Archaeological Institute DAI	22	Landscape & Geophysical Services LGS
7	Italian Space Agency Rome	23	Aerial Archaeology Research Group AARG
8	Alma Sistemi sas	24	University of Siena
9	University of Copenhagen	25	University of Glasgow
10	Natural Environment Research Council NERC	26	University of Exeter
11	Italian National Institute for Environmental Protection and Research	27	Janus Pannonius Museum JPM (former Directorate of Baranya County Museums)
12	Università degli Studi di Milano Bicocca	28	Dutch Expertise Centre for Archaeological Remote Sensing
13	Instituto Geológico y Minero de España IGME	29	Discovery Programme Centre for Archaeology and Innovation Ireland
14	Institute for Mediterranean Studies/Foundation for Research and Technologies	30	University of Ljubljana
15	Kykkos Museum	31	Instituto de Estudos Galegos Padre Sarmiento IEGPS/ Heritage Laboratory
16	Paphos Municipality	32	University of Vienna
33	In Flanders Fields Museum	67	University College Dublin

34	Norwegian Institute for Cultural Heritage Research	68	CNRS - Centre national de la recherche scientifique
35	Royal Commission on the Ancient and Historical Monuments of Scotland	69	University of Cyprus
36	Institute of Archaeology	70	The Cyprus Institute
37	UCD School of Archaeology	71	IBAM CNR ITLAB
38	University of Foggia	72	IMAA CNR ARGON Lab
39	University of Salento	73	ITABC CNR Ground Remote Sensing Lab (GRS-Lab)
40	University of Klaipeda	74	Academy of Athens AOA
41	Adam Mickiewicz University Poznan	75	Department of Antiquities DA
42	Institutul de Memorie Culturala CIMEC	76	Committee on Missing Persons in Cyprus CMPC
43	Archaeological Institute of Slovak Academy of Sciences	77	Bavarian State Dept. of Monuments and Sites Archaeological Prospection
44	Spanish National Research Council CSIC	78	Institut für Klassische Archäologie Uni Wien
45	University of West Bohemia	79	International Centre on Space Technologies for Natural and Cultural Heritage
46	National Heritage Board of Estonia	80	Geocart srl
47	National Museum of Faroe Islands	81	RADI
48	Aalto University School of Science and Technology	82	CNR - Consiglio Nazionale delle Ricerche
49	Université de Franche Comté	83	University of Bologna, Dept. of Civil, Chemical, Environmental and Materials
50	University of Applied Sciences - i3 mainz	84	University Mediterranean of Reggio Calabria, DICEAM Department
51	University of Bamberg	85	University IUAV of Venice, Faculty of Regional Planning
52	University of Frankfurt	86	Czech Technical University in Prague, Faculty of Civil Engineering, Dep. Of
53	International Cultural Expertise	87	Astronomical Institute of the Academy of Sciences of the Czech Republic,
54	Dundalk Institute of Technology	88	Research Institute for Geodesy, Topography and Cartography CEDR
55	Latvian Academy of Culture	89	IREA CNR
56	University of Granada	90	Istanbul University, Engineering Department
57	University of Uppsala	91	Consortium of Research on Advanced Remote Sensing Systems CO.RI.S.T.A.
58	University of Ulster	92	University of Rome "Sapienza", Dep of Civil, Constructional, Environ.
59	Macquarie University	93	Institut d'électronique et de télécommunications de Rennes IETR University of
60	University of Leeds	94	University of Cagliari, Dep of Civil Engin., Environ. Engin., Archit DICAAR
61	Leuven University	95	University of Rome "Sapienza", DICEA, SURVEY LAB
62	VU Amsterdam	96	MEEO Srl
63	Moesgaard Museum	97	Harokopio University, Department of Geography
64	The Rathcroghan Heritage Centre	98	IDASC CNR Institute of Acoustics and Sensor "O.M. Corbino"
65	The Landscape Research Centre	99	ISSIA CNR Institute of Intelligent Systems for Automation
66	Polytechnic Institute of Tomar University	100	Norwegian Computing Center, Section for Earth Observation
101	Directorate for Cultural Heritage	130	The Netherlands Institute for the Near East NINO

102	GeoSat ReSeArch Lab – IMS FORTH	131	Pierides Foundation PF
103	Computer Application & Quantitative Methods in Archaeology CCA	132	Program in Aegean Scripts and Prehistory PASP
104	The American Research Center in Egypt ARCE	133	Shelby White and Leon Levy, Program for Archaeological Publications Harvard
105	The American School of Classical Studies at Athens ASCSA	134	Society of Cypriot Studies SCS
106	Center for the Ancient Mediterranean CAM	135	Arab League Educational, Cultural and Scientific Organization ALECSO
107	Center for Mediterranean Civilizations CMC	136	Society for the Presevation of the Greek Heritage SPGH
108	A. G. Leventis Foundation	137	Society for the Promotion of Hellenic Studies SPSH
109	The Australian Archaeological Institute at Athens	138	Society for the Promotion of Roman Studies SPRS
110	British Institute of Archaeology at Ankara BIAA	139	Swedish Institute at Athens SIA
111	The British School at Athens	140	Syrian Studies Association SSA
112	Cyprus American Archaeology Research Institute CAARI	141	School of Archaeology
113	Nautical Archaeology Society NAS	142	Libyan Centre for Remote Sensing and Space Sciences LCRSSS
114	Danish Institute at Athens DIA	143	School of Archaeology and Ancient History SAAH
115	Council for British Research in the Levant CBRL		
116	Belgian School at Athens BSA		
117	Swiss School of Archaeology in Greece ESAG		
118	The Finish Institute at Athens FIA		
119	Foundation of the Hellenic World FHW		
120	European Association of Archaeologists EAA		
121	Hellenic Institute of Marine Archaeology HIMA		
122	Hellenic Society for Law and Archaeology HSLA		
123	Institute for Aegean Prehistory, Study Center for East Crete INSTAP-SCEC		
124	Ministry of Culture and Sports MCS		
125	International Centre for the Study of the Preservation and Restoration of Cultural		
126	International Council on Monuments and Sites ICOMOS		
127	International Association of Egyptologists IAE		
128	Irish Institute of Hellenic Studies at Athens IIHSA		
129	Nemea Center NC		

The distribution of these organisations geographically at a European level is presented in the figure below.

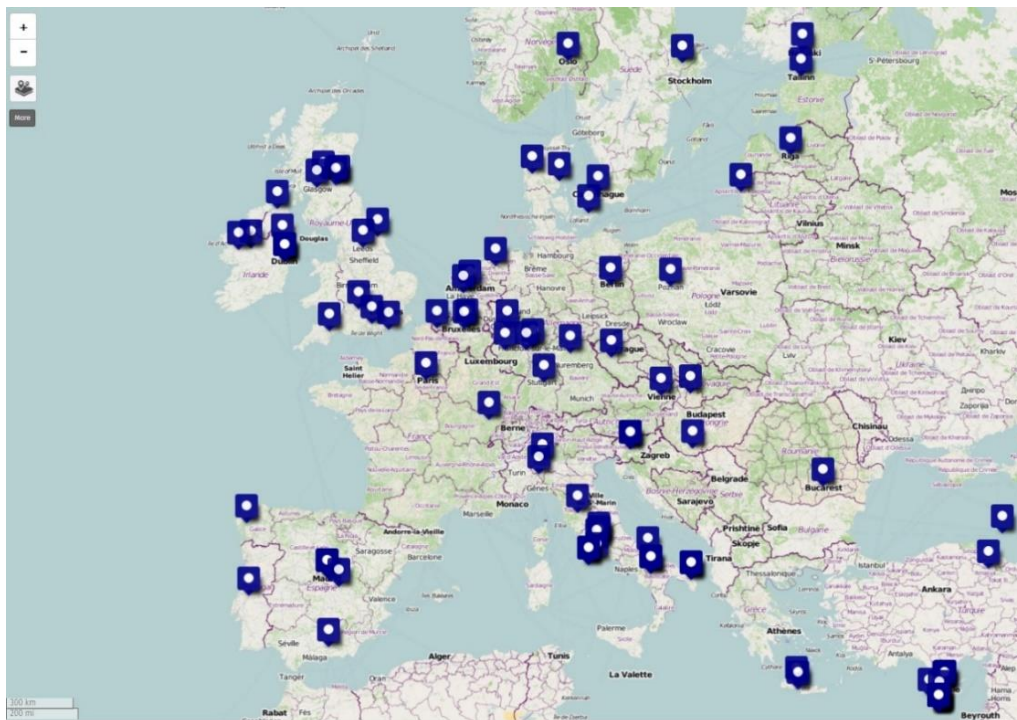


Figure 1. Location of possible interested parties/stakeholders

Following the identification of the target groups, the following actions were planned to promote the Center internationally and specifically in the eastern Mediterranean and Middle East area:

- Invitation to participate in outreach activities (see WP6, tasks 6.5 and 6.6).
- Invite key archaeologists excavating both in Cyprus as well as in other eastern Mediterranean countries, e.g. Mesopotamian.
- Contact for collaboration for future common activities organisations operating in war conflict countries such as UNESCO.
- Establish an International network related with RS and CH

During this promotion special leaflets of the ATHENA center were designed and sent to stakeholders and other parties. These leaflets are available online at <https://athena2020.eu/leaflets/>. In addition, during the lifetime of ATHENA project, all interested parties and stakeholders were informed via WP6 deliverables (e.g. website / brochures / presentations, etc.).



## 2.2 Strategy for networking beyond Cultural Heritage

Through ATHENA project, we had the opportunity, based on the multi-disciplinary benefit of dealing with Earth Observation (EO), to network and collaborate with key players in remote sensing on the wider area of the environment (natural, built environment), natural hazards and disaster management, tourism etc.

Our strategy was to approach key networks of remote sensing, key academics in the wider area of remote sensing, through participation in scientific conferences on remote sensing that cover a wide area of topics including environment, natural hazards, etc. Some of them are the following:

- 5th International Conference LE NOTRE Landscape Forum
- Cyprus Embraces Space 2016 Conference
- EGU 2016, EGU 2017, EGU 2018
- RSCy 2016, RSCy 2017, RSCy 2018
- ISRSE-37
- 11th EARSEL Symposium
- CAA 2018
- GEOCRADLE Workshop 2018
- 38th annual EARSEL Symposium
- SPIE Remote Sensing 2018
- International Symposium on the use of Space Technologies Campeche 2018
- RSPSoc 2017

Moreover, our research laboratory is involved in various projects and project proposals that deal with several applications of remote sensing other than Cultural Heritage. Indeed, we have collaborated with the Aristotle University of Thessaloniki (Prof. Ioannis Gitas) on fire detection and natural hazards; with the DLR earth observation centre on SAR applications for land subsidence; with the University of Aegean on water pollution and waste detection monitoring, with TROPOS – Leibniz Institute for Tropospheric Research on air quality monitoring.

These synergies that were created can be considered as an added value to the project, strengthening the position of ATHENA Center of Excellence through networking and collaboration with different sectors beyond the CH field.

## 2.3 Communication tools

A set of communication tools were developed for the local and international promotion of ATHENA project. These are presented in this section of the report.

### 2.3.1 ATHENA project visual identity

A logo was developed at the beginning of the project presenting a graphical representation of the project goals, acronym and title. The logo was used in different layouts: website, leaflets, newsletters brochure, templates for final deliverables, templates for presentations, etc.



Figure 2. ATHENA project logo

### 2.3.2 Website

The ATHENA website (<https://athena2020.eu/>) was developed to promote the objectives, activities and achievements of ATHENA project.

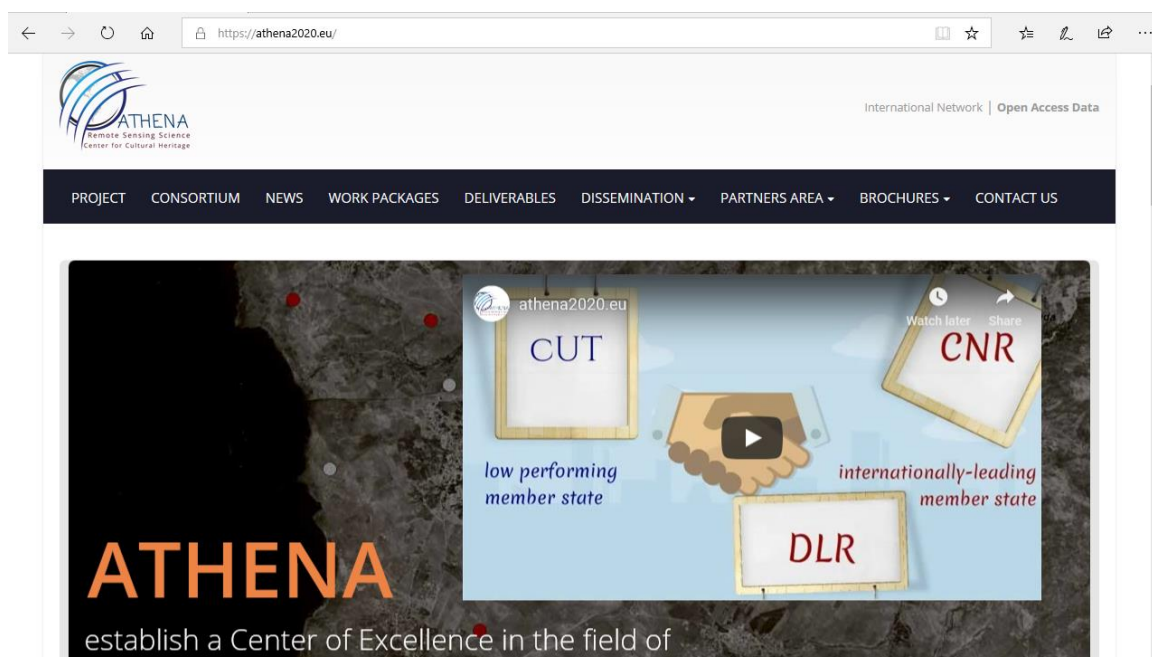


Figure 3. ATHENA project website

It addressed all partners and participants of the project, such as scientists, end-users and the general public including schools (students and teachers). Interested parties were able to sign-up to receive an electronic newsletter once a year. One of the first actions that were carried out with the start of the project was to continuously update its agenda, according to the progress of the project. A media online database was also included in the website.

### 2.3.3 Social networks

Facebook and Twitter accounts were created for ATHENA, with the project logo as profile image, in order to reach greater audiences and inform interested parties and the general public about “ATHENA” goals, updates, activities, news and upcoming events.



Figure 4. ATHENA Twitter account

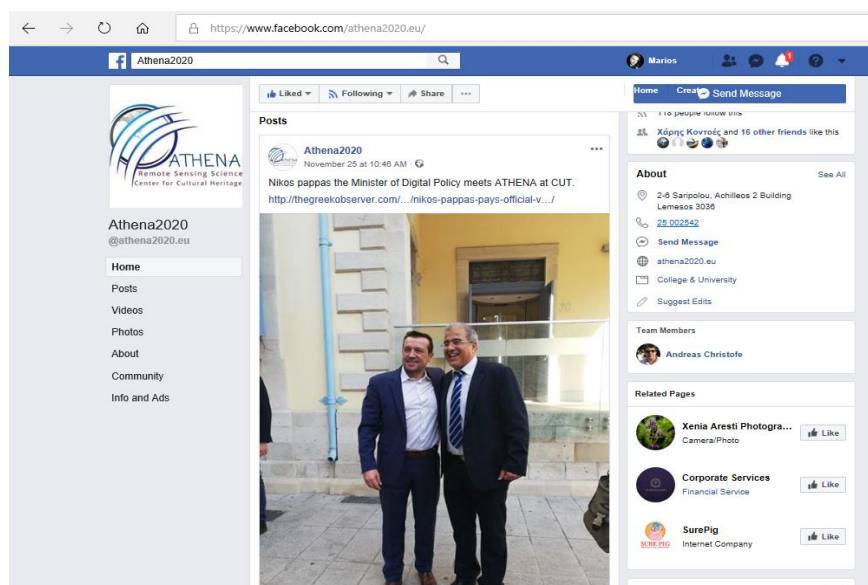


Figure 5. ATHENA Facebook account

### 2.3.4 ATHENA video

For promotion and communication purposes, a promotion video was created for the promotion of ATHENA project activities. The ATHENA video along with other videos that were prepared for promotion and dissemination purposes are available at <https://athena2020.eu/dissemination/videos/>.

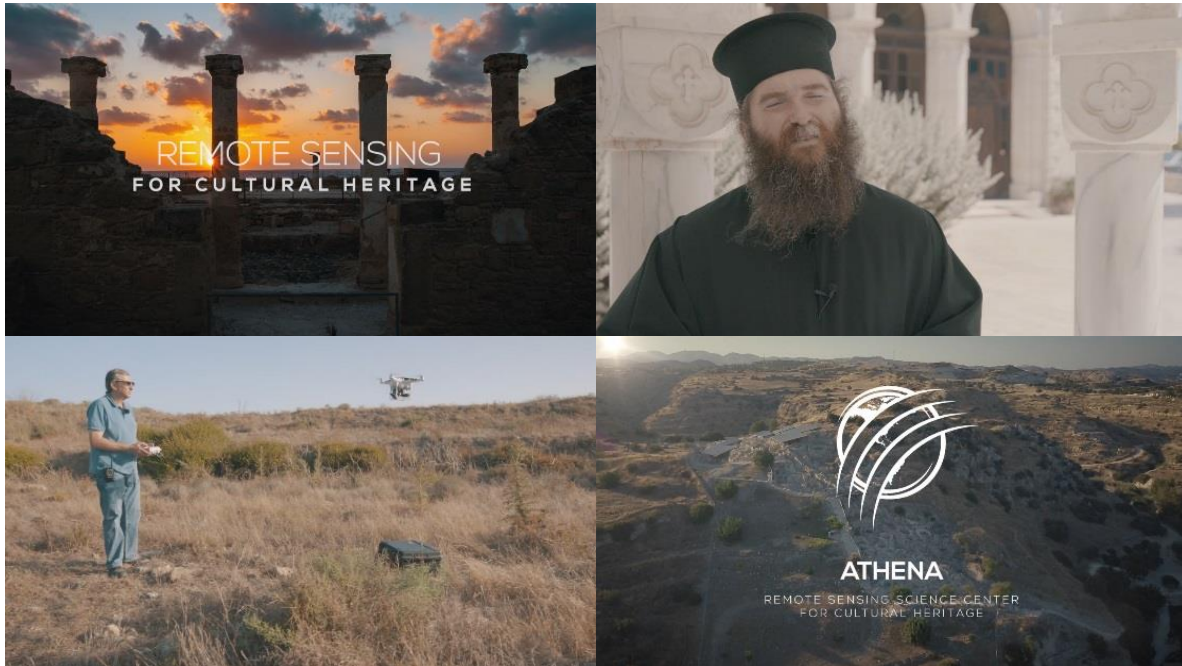


Figure 6: ATHENA project video

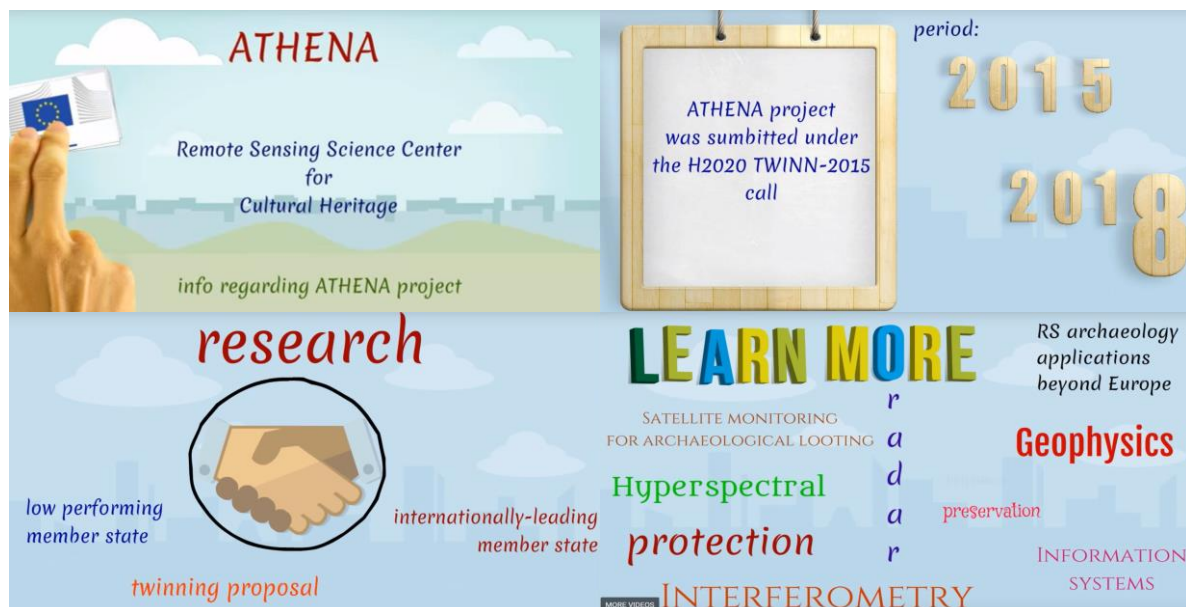


Figure 7: ATHENA promotional video

### 2.3.5 Newsletters

Three digital newsletters were produced, 1 each year, providing information on the project and its progress. These newsletters were prepared by the CUT with the support of the other two partners. The primary aim of the newsletters was to promote the ATHENA project's activities among the identified interested parties and stakeholders. All newsletters are available online (<https://athena2020.eu/leaflets/>) on the project website and distributed through the project database of contacts.



Figure 8. ATHENA newsletters



### 2.3.6 Brochures / Leaflets

One of the main goals of the International Promotion Strategy was to develop a set of promotional / communication materials designed specifically to appeal to the stakeholders. Brochures and special leaflets were developed to promote ATHENA at workshops, conferences, and other promotional events to attract the attention of interested parties.

- **Brochures:** Three project's brochures were developed and disseminated at the events attended or organised by ATHENA. They contain a description of the main objectives and impacts of the project. They are presented in full in D6.9.



Figure 9: ATHENA brochures

- **Leaflets:** Fourteen special leaflets were produced in order to disseminate the ATHENA project and its activities at conferences, meetings and other promotional events since September 2017 etc. They are available online (<https://athena2020.eu/leaflets/>) and also presented in deliverable D5.1: Leaflets.

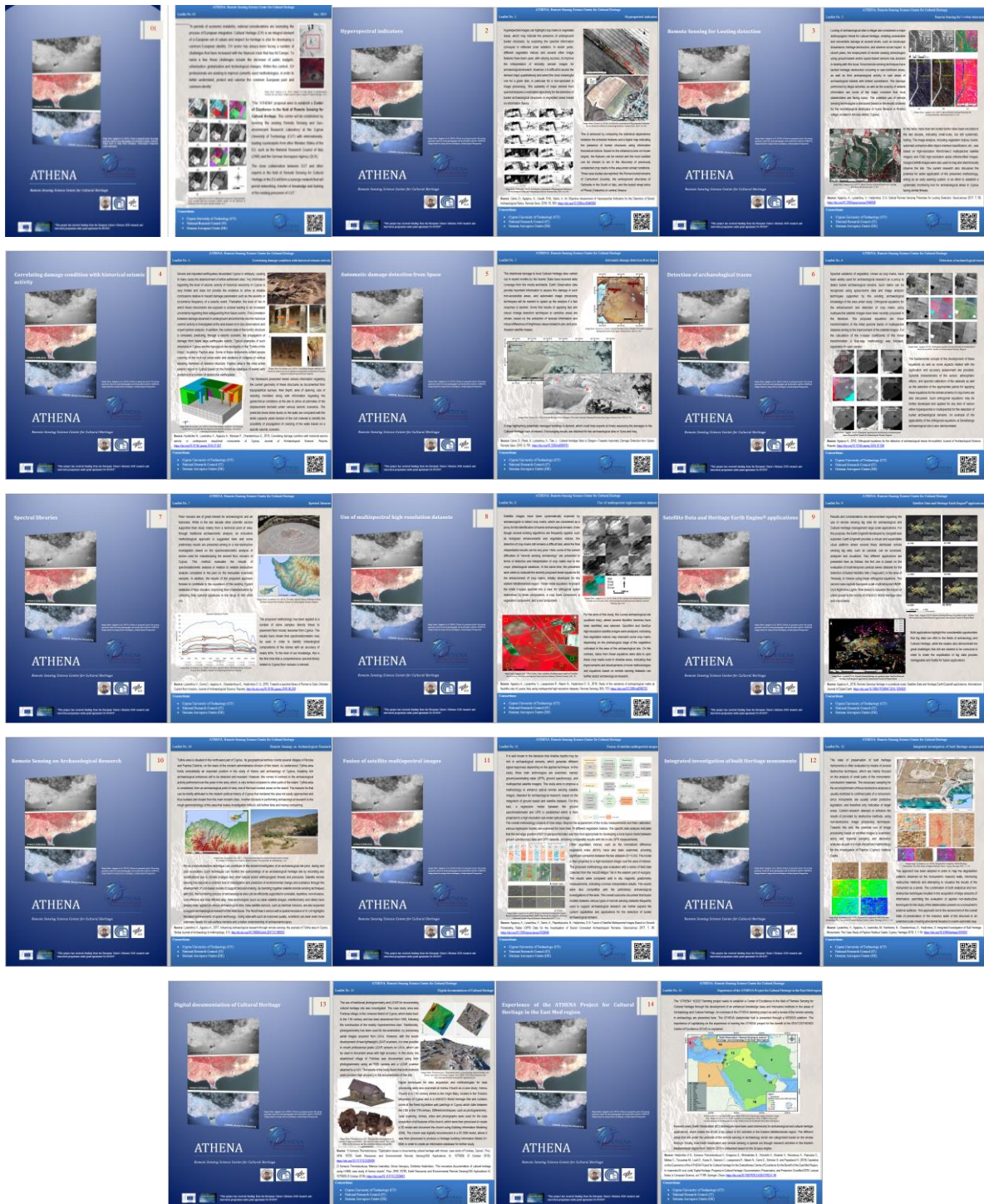


Figure 10: ATHENA leaflets

## 2.4 Communication and dissemination strategy during international promotion

The communication efforts were carried out on the basis of the following principles:

- **Communication and dissemination activities** to address the target groups, taking into account their requirements, and explain the benefits of ATHENA project
- **Communication messages** taking into account and adapting to the target groups
- **Synergies and Networking with other H2020 or other funded projects** to maximize the impact of the ATHENA project. These actions have been also supported by other initiatives of the Remote Sensing and Geo-Environment Lab such as the H2020 Teaming Excelsior Phase 1 project, Joint Initiatives Programmes for Cultural Heritage (JPI-CH) “CLIMA” and “PROTHEGO” as well as H2020 MSC Rise program. In addition to these, recent programs obtained by the research group such as the COST and new H2020 MSC Rise program have been exploited.
- **Organisation of dedicated Events / Workshops / training events** to attract experts in the fields of Remote Sensing and Cultural Heritage/Archaeology and promote synergies between scientists, researchers and academia. Dissemination events in the form of targeted workshops were organized to maximise awareness and engagement amongst the scientific community but also a wider audience. Specifically, ATHENA organised four workshops and target groups and stakeholders were invited to be informed on the ATHENA project activities and outcomes and to receive feedback.
- **Participation in dedicated conferences / workshops / network meetings** to interact with experts (scientists, researchers, etc.) exchange knowledge and skills in the benefit of Cultural Heritage and Remote Sensing. Partner representatives participated in external meetings and scientific conferences related to the ATHENA objectives, such as EUROMED, RSCy – SPIE, CAA, EARSeL, EGU, SPIE, etc. Their presentations focused on promoting ATHENA project outcomes and activities. During these conferences ATHENA met several partners from research and academic community, local authorities, and governmental authorities.
- **Use existing stakeholder hubs from previous or currently running projects** (e.g. CLIMA, PROTHEGO, GEOCRADLE, RISE, RESEARCH, etc.) to promote the ATHENA activities and finding through the ERC associates and collaborators in other project consortia.
- **Participation in international archaeological excavation campaigns** (see D5.2 - Report from the local promotion strategy) Kourion, Amathus and Palepaphos



The table below provides an overview of how the communication tools described before were utilised in the course of the project towards the engagement of different target groups.

Table 2. Communication tools

International Target							Purpose
Communication Tools	Decision Makers	Research	Industry	End-users	Media	Public & Networks	
Website	X	X	X	X	X	X	Raising awareness of project goals and activities, publishing news and enabling subscribers to the Newsletters
Newsletters	X	X	X	X	X	X	Communicating project highlights, maintaining the interest and awareness of subscribers, disseminating results
Leaflets/ Brochure	X	X	X	X	X	X	Raising awareness of ATHENA especially in workshops/ conferences organized or attended by the consortium
Presentations	X	X	X	X	X	X	Communication ATHENA project importance, objectives, invitations for collaboration
Social Networks	X	X	X	X	X	X	Create dialogue with target groups, announce events and utilize modern communication means
Invitations for collaboration and meetings	X	X	X	X	X	X	New opportunities to capitalise on ATHENA project outputs and results

Having identified the interested parties and stakeholders and developed the promotional/communication material described above, specific goals were set regarding the number of events we would participate, such as conferences, workshops, exhibitions, other project meetings. The achieved numbers are grouped and presented in the table below.

Table 3. International promotional events

Means of promotion	No.	Description
International conferences / Workshops	24	<ul style="list-style-type: none"> <li>• First workshop of ATHENA</li> <li>• Second workshop of ATHENA</li> <li>• Third Workshop of ATHENA</li> <li>• Fourth Workshop of ATHENA</li> <li>• 5th International Conference LE NOTRE Landscape Forum</li> </ul>

		<ul style="list-style-type: none"> <li>• Cyprus Embraces Space 2016 Conference</li> <li>• EuroMED 2016</li> <li>• EGU 2016</li> <li>• EGU 2017</li> <li>• EGU 2018</li> <li>• RSPSoc 2017</li> <li>• RSCy 2016 – SPIE</li> <li>• RSCy 2017 – SPIE</li> <li>• RSCy 2018 – SPIE</li> <li>• ISRSE-37</li> <li>• MONUBASIN 2017</li> <li>• 11th EARSEL Symposium</li> <li>• EuroMed 2017</li> <li>• CAA 2018</li> <li>• GEOCRADLE Workshop 2018</li> <li>• 38th annual EARSEL Symposium</li> <li>• SPIE Remote Sensing 2018</li> <li>• International Symposium on the use of Space Technologies Campeche 2018</li> <li>• EUROMED 2018</li> </ul>
Local conferences	7	<ul style="list-style-type: none"> <li>• 5th International Conference LE NOTRE Landscape Forum</li> <li>• Cyprus Embraces Space 2016 Conference</li> <li>• RSCy 2016 – SPIE</li> <li>• EuroMED 2016</li> <li>• RSCy 2017 – SPIE</li> <li>• RSCy 2018 – SPIE</li> <li>• EUROMED 2018</li> </ul>
Publications	11	<ul style="list-style-type: none"> <li>• Peer reviewed journal publications</li> </ul>
Conferences Abstracts / Posters	31	<ul style="list-style-type: none"> <li>• Conference publications – posters</li> </ul>
Book	1	<ul style="list-style-type: none"> <li>• Springer book (submitted)</li> </ul>
Summer Schools	3	<ul style="list-style-type: none"> <li>• Geophysics and Remote Sensing for Archaeology – May 2016</li> <li>• Surveying Modelling Monitoring Management BIM-GIS based: Cultural Heritage &amp; Built Environment – July 2016</li> <li>• Summer School: Geophysics – September 2018</li> </ul>
Archaeological Excavation Campaigns	3	<ul style="list-style-type: none"> <li>• Palepaphos</li> <li>• Amathus</li> <li>• Kourion</li> </ul>
Through other projects	11	<ul style="list-style-type: none"> <li>• PROTHEGO</li> <li>• CLIMA</li> <li>• EXCELSIOR</li> <li>• FABSPACE 2.0</li> <li>• MSP 2</li> <li>• FP7 – ITACA</li> <li>• MSCA-RISE 2017 SEO-DWARF</li> </ul>

		<ul style="list-style-type: none"> <li>• GEOCRADLE</li> <li>• SEREN 3</li> <li>• MSCA-RISE 2018 RESEARCH</li> <li>• CopHub.AC – H2020</li> </ul>
Info kiosks	6	<ul style="list-style-type: none"> <li>• RSCy 2016 – SPIE</li> <li>• RSCy 2017 – SPIE</li> <li>• RSCy 2018 – SPIE</li> <li>• 11th EARSEL Symposium</li> <li>• GEO CRADLE</li> <li>• EUROMED 2018</li> </ul>
Meetings in conferences / Events	200	<ul style="list-style-type: none"> <li>• More than 200 meetings in conferences, exhibitions and promotional events</li> </ul>
Key people met	87	<p>More than 50 key people met in conferences, exhibitions, project meetings, promotional events, archaeological in situ visits:</p> <ul style="list-style-type: none"> <li>• Barbara Ryan – GEO</li> <li>• Mr Vincent Ambrosia – NASA (member of the advisory board of EXCELSIOR project)</li> <li>• Mr Marcelo Maranesi – FabSpace 2.0 (member of the advisory board of EXCELSIOR project)</li> <li>• Dr Peter Zeil – Spatial Services GmbH, (member of the advisory board of EXCELSIOR project)</li> <li>• Dr Lena Halounova – Czech Technical University (member of the advisory board of EXCELSIOR project)</li> <li>• Dr Nicola Masini – CNR</li> <li>• Dr Rosa Lasaponara – CNR</li> <li>• Dr. Francesco Soldovieri – CNR</li> <li>• Dr. Ilaria Catapano – CNR</li> <li>• Dr Albert Ansmann – TROPOS</li> <li>• Dr Haris Kontoes – NOA</li> <li>• Mr Gunter Schreier – DLR</li> <li>• Mr Thomas Krauss – DLR</li> <li>• Mr Simon Jutzon behalf of ESA</li> <li>• Mr Sakellaris Houdras – European Commission (Copernicus)</li> <li>• Mr Rui Meneses – European Commission (Copernicus)</li> <li>• Dr Verena Jaspersen – DLR</li> <li>• Mrs Oriana Grasso – Copernicus</li> <li>• Mr Chrysanthos Pissaridis – ICOMOS</li> <li>• Dr Nili Mandelblit – ISERD; Israel-Europe R&amp;D Directorate</li> <li>• Mr Daniel Barok – Adviser for International Collaboration at Israel Space Agency</li> <li>• Mr Jérôme Béquignon – ESA</li> <li>• Mr Nicolae Mitu – EC; Copernicus</li> <li>• Dr Athanassios Ganas – NOA</li> <li>• Mr Felix Puls - Leica Geosystems AG</li> <li>• Mr Stephano La Terra Bella – Copernicus</li> </ul>

	<ul style="list-style-type: none"> <li>• Dr Daniele Cerra – DLR</li> <li>• Dr George Mitri – University of Balamand Lebanon</li> <li>• Dr Jesus San-Miquel-Ayanz – European Commission, JRC Italy</li> <li>• Dr Vincent Ambrosia – NASA</li> <li>• Dr. Klaus Komp – EARSeL Chair</li> <li>• Prof. Giannis Gitas – Aristotle University of Thessaloniki</li> <li>• Dr David Roy – NASA</li> <li>• Dr Dimitrios Alexakis – Technical University of Crete</li> <li>• Prof. George Zalides – i-BEC</li> <li>• Prof. Theodore Laopoulos – Aristotle University of Thessaloniki</li> <li>• Prof. Dr.-Ing. Thomas P. Kersten – HafenCity Universität Hamburg</li> <li>• Mrs Angelina Bekasova – Copernicus Support Office</li> <li>• Mrs Jenny Malig – TWT GmbH Science &amp; Innovation</li> <li>• Mr Dominik Grether – TWT GmbH Science &amp; Innovation</li> <li>• Dr Vito De Pasquale – Planetek Italia S.r.l.</li> <li>• Mrs Aurelie Dehouck – I-SEA SAS</li> <li>• Mrs Virginie Lafon – I-SEA SAS</li> <li>• Mr Dimitris Sykas – Planetek Hellas EPE</li> <li>• Mr K. Karamvasis – Planetek Hellas EPE</li> <li>• Mr Peter Gray – CloudSigma AG</li> <li>• Mr Bogdan Despotov – CloudSigma AG</li> <li>• Prof. Vasilias Karathanassi – Laboratory of Remote Sensing, NTUA</li> <li>• Dr Pol Kolokousis – Laboratory of Remote Sensing, NTUA</li> <li>• Prof Konstantinos Topouzelis, Department of Marine studies, University of the Aegean</li> <li>• Dr Basilis Kopsacheilis – Department of Marine studies, University of the Aegean</li> <li>• Prof. Marco De Gemmis – University of Bari “Aldo Moro”, Department of Computer Science</li> <li>• Mr Marco Polignano – University of Bari “Aldo Moro”, Department of Computer Science</li> <li>• Prof Stefano De Angeli – Università degli Studi della Tuscia</li> <li>• Dr Massimo Romanelli – Università degli Studi della Tuscia</li> <li>• Prof. Clare Wilson – University of Stirling</li> <li>• Dr Adam Varley – University of Stirling</li> <li>• Mr Alessio di Orio – Alma Sistemi SAS</li> <li>• Dr Oscar Perez-Punzano – Research Programme Officer / European Commission;</li> <li>• Dr Marcello Coradini – Space Systems Solutions S3</li> <li>• Mr Christos Kontopoulos – Geosystems Hellas</li> <li>• Mrs Maria Karamichalaki – Geosystems Hellas</li> <li>• Prof. Apostolos Sarris – Foundation for Research &amp; Technology</li> <li>• Prof. Włodzimierz Rączkowski – Institute of Archaeology / Adam Mickiewicz University</li> </ul>
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		<ul style="list-style-type: none"> <li>• Dr Stefan Lang – PLUS, University of Salzburg</li> <li>• Dr Christoph Schroder – UMA</li> <li>• Mrs Nefeli Politi-Stergiou – EVENFLOW</li> <li>• Dr Valerio Tramutoli – UNIBAS</li> <li>• Mr Giorgio Saio – GISIG</li> <li>• Mrs Monica Miguei-Lago – EARSC</li> <li>• Mr Peter Baumann – RASDAMAN</li> <li>• Dr Diana Vaiciute – KU MRI</li> <li>• Dr Martynas Bucas – KU MRI</li> <li>• Prof Danny Vandenbroucke – KU LEUVEN</li> <li>• Prof. R. Brumana – Politecnico di Milano</li> <li>• Ass. Prof. B. Cuca – Politecnico di Milano</li> <li>• Ass. Prof. L. Barazzetti – Politecnico di Milano</li> <li>• Mr Giovanni Boccardi – UNESCO, Chief Emergency Preparedness and Response Unit</li> <li>• Mr Maud Moullec – PWC, Paris</li> <li>• Prof. Jörg W. E. Fabbinder – Ludwig-Maximilians University, Department of Earth and Environmental Sciences</li> <li>• Prof. Uwe Stilla – Technical University of Munich</li> <li>• Mr Thorsten Rudolph – CEO of the Anwendungszentrum GmbH Oberpfaffenhofen</li> <li>• Mr Samuel Barisch - GAF AG, Technical manager of Earth Observation &amp; image Processing</li> <li>• Prof. Dan Blumberg – Ben-Gurion university, Israel</li> <li>• Dr. Shimrit Maman – Ben-Gurion university, Israel</li> <li>• Prof. Ioannis Gitas – Aristotle University of Thessaloniki</li> <li>• Dr Marinos Ioannides – Digital Heritage Lab, CUT</li> <li>• Prof. Gerasimos Pavlogeorgatos – University of Aegean</li> </ul>
Research Institutions/ Universities/ Organisations	102	<ul style="list-style-type: none"> <li>• ESA – European Space Energy</li> <li>• Copernicus</li> <li>• DLR – German Aerospace Center, Germany</li> <li>• CNR – National Research Council, Italy</li> <li>• Korean National University of Cultural Heritage, South Korea</li> <li>• Czech Technical University, Czech Republic</li> <li>• Ben-Gurion university, Israel</li> <li>• Università degli Studi della Tuscia, Italy</li> <li>• University of Stirling, Scotland</li> <li>• ALMA Sistemi Srl, Italy</li> <li>• University of Copenhagen, Denmark</li> <li>• Politecnico di Milano, Italy</li> <li>• ISPRA – Institute for Environmental Protection and Research, Italy</li> <li>• NERC — Natural Environment Research Council, UK</li> <li>• UNIMIB — University of Milano-Bicocca, Italy</li> <li>• IGME — Geological Survey of Spain</li> <li>• NOA – National Observatory of Athens, Greece</li> </ul>

	<ul style="list-style-type: none"> <li>• TROPOS – Leibniz Institute for Tropospheric Research, Germany</li> <li>• MTCW-DEC – Department of Electronic Communications of the Ministry of Transport, Communications and Works, Cyprus</li> <li>• UPS – University of Toulouse III – Paul Sabatier, France</li> <li>• UORT – Università degli Studi di Roma, Italy</li> <li>• UOL – Universite de Liege, Belgium</li> <li>• TUDA – Technische Universitat Darmstadt, Germany</li> <li>• WUT – Warsaw University of Technology, Poland</li> <li>• ICSS – Institute of Communication and Computer Systems Ludwig-Maximilians University, Germany</li> <li>• TUM – Technical University of Munich, Germany</li> <li>• Anwendungszentrum GmbH Oberpfaffenhofen, Germany</li> <li>• GAF AG, Germany</li> <li>• AV – Aerospace Valley, France</li> <li>• BIC Lazio SPA, Italy</li> <li>• WSL SA, Belgium</li> <li>• CESAH – GMBH Centrum fur Satellitennavigation Hessen, Germany</li> <li>• OPGK - Opegieka SP. Z.O.O., Poland</li> <li>• CORALLIA – Athena Research and Innovation Center in Information &amp; Knowledge Technologies, Greece</li> <li>• TERRANIS SAS, France</li> <li>• IDGEO, France</li> <li>• EBN – European Business and Innovation Centre Network, Belgium</li> <li>• University of Aegean, Greece</li> <li>• Planetek Hellas, Greece</li> <li>• KELL SRL, Italy</li> <li>• NEXTANT APPLICATIONS &amp; INNOVATIVE SOLUTION SRL, Italy</li> <li>• DHI GRAS AS, Denmark</li> <li>• INSTITOYTO ENALION ARCHAIOLOGIKON EREYNON SOMATEO, Greece</li> <li>• INESC ID - INSTITUTO DE ENGENHARIADE SISTEMAS E COMPUTADORES, INVESTIGACAO E DESENVOLVIMENTO EM LISBOA, Portugal</li> <li>• ANESTI LIMITED, UK</li> <li>• CODEVINTEC ITALIANA COMPAGNIA PER LO SVILUPPO INDUSTRIALE E TECNICO, Italy</li> <li>• SME4SPACE VZW, Belgium</li> <li>• FUNDACAO DA FACULDADE DE CIENCIAS DA UNIVERSIDADE DE LISBOA FP, Portugal</li> <li>• TWT GmbH – Science &amp; Innovation, Germany</li> <li>• NTUA – Laboratory of Remote Sensing, National Technical University of Athens, Greece</li> <li>• I-SEA SAS, France</li> <li>• Planetek Italia S.r.l., Italy</li> </ul>
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	<ul style="list-style-type: none"> <li>• University of Bari “Aldo Moro”, Italy</li> <li>• CloudSigma AG</li> <li>• i-BEC – InterBalkan Environment Center, Greece</li> <li>• CEDARE – Centre for Environment and Development for the Arab Region and Europe, Egypt</li> <li>• CERT – Telecommunications Research and Studies Centre, Tunisia</li> <li>• TAU – Tel Aviv University, Israel</li> <li>• UZAY – Scientific and Technological Research Council of Turkey Space Technologies Research Institute, Turkey</li> <li>• SRTI – Space Research and Technology Institute, Bulgaria</li> <li>• INOE – National Institute of R&amp;D for Optoelectronics, Romania</li> <li>• USCM - Ss. Cyril and Methodius University, Skopje</li> <li>• INCA – Institute of Nature Conservation in Albania</li> <li>• IPB – Institute of Physics Belgrade, Serbia</li> <li>• CIMA – International Centre on Environmental Monitoring, Italy</li> <li>• AOA – Biomedical Research Foundation of the Academy of Athens, Greece</li> <li>• INS – InoSens doo, Serbia</li> <li>• EARSC - European Association of Remote Sensing Companies</li> <li>• EURISY, France</li> <li>• EGS – EuroGeoSurveys, Brussels</li> <li>• PMOD/WRC – Physikalisch-Meteorologisches Observatorium Davos and World Radiation Center”, Switzerland</li> <li>• DIENST VOOR WETENSCHAPPELIJKE EN TECHNISCHE INFORMATIE- SERVICE D'INFORMATION SCIENTIFIQUE ET TECHNIQUE, Belgium</li> <li>• COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH, South Africa</li> <li>• CENTRUM VEDECKO TECHNICKYCH INFORMACII SLOVENSKEJ REPUBLIKY, Slovakia</li> <li>• IDRYMA PROOTHISIS EREVNAS, Cyprus</li> <li>• SIHTASUTUS EESTI TEADUSAGENTUUR, Estonia</li> <li>• FOUNDATION FOR RESEARCH AND TECHNOLOGY HELLAS, Greece</li> <li>• AGENCE BRUXELLOISE POUR L'ACCOMPAGNEMENT DE L'ENTREPRISE, Belgium</li> <li>• AGENCE BRUXELLOISE POUR L'ENTREPRISE, Belgium</li> <li>• INSTYTUT PODSTAWOWYCH PROBLEMOW TECHNIKI POLSKIEJ AKADEMII NAUK, Poland</li> <li>• MATIMOP, ISRAELI INDUSTRY CENTER FOR RESEARCH &amp; DEVELOPMENT, Israel</li> <li>• RANNSOKNAMIDSTOD ISLANDS, Iceland</li> <li>• ROMANIAN SPACE AGENCY, Romania</li> <li>• RIGAS TEHNISKA UNIVERSITATE, Latvia</li> </ul>
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		<ul style="list-style-type: none"> <li>• TECHNOLOGICKE CENTRUM AKADEMIE VED CESKE REPUBLIKY, Czechia</li> <li>• TURKIYE BILIMSEL VE TEKNOLOJIK ARASTIRMA KURUMU, Turkey</li> <li>• AGENCIJA ZA MOBILNOST I PROGRAME EUROPSKE UNIJE, Croatia</li> <li>• CENTRO PARA EL DESARROLLO TECNOLOGICO INDUSTRIAL, Spain</li> <li>• SPACE SYSTEMS SOLUTIONS, Cyprus</li> <li>• GEOSYSTEMS HELLAS, Greece</li> <li>• IM. ADAMA MICKIEWICZA W POZNANIU, Poland</li> <li>• Z_GIS – Paris-Lodron University Salzburg, Austria</li> <li>• Spatial Services GmbH, Austria</li> <li>• European Topic Centre – University of Malaga, Spain</li> <li>• EVF – Evenflow SPRL, Belgium</li> <li>• UNIBAS – School of Engineering – University of Basilicata, Italy</li> <li>• Climate-KIC, Netherlands</li> <li>• GISIG – Geographical Information Systems International Group, Italy</li> <li>• Rasdaman GmbH, Germany</li> <li>• Marine Research Institute – Klaipeda University, Lithuania</li> <li>• Katholieke Universiteit Leuven, Belgium</li> <li>• TEI of Western Greece</li> </ul>
Networks met	11	<ul style="list-style-type: none"> <li>• Copernicus (Academies, Relays, etc.)</li> <li>• MedRIN</li> <li>• ESA</li> <li>• GEOCRADLE</li> <li>• FABSPACE 2.0</li> <li>• EARSeL</li> <li>• NEREUS</li> <li>• ISPRS</li> <li>• ACTRIS</li> <li>• UNESCO</li> <li>• NASA</li> <li>• GEO</li> <li>• ArcLand</li> </ul>
Banners	5	<ul style="list-style-type: none"> <li>• RSCy 2016 – SPIE</li> <li>• EUROMED 2016</li> <li>• RSCy 2017 – SPIE</li> <li>• RSCy 2018 – SPIE</li> <li>• EUROMED 2018</li> </ul>
Brochures leaflets distributed	600	<ul style="list-style-type: none"> <li>• Approximately 600 leaflets / brochures and newsletters were distributed in conferences, exhibitions, project meetings and promotional events</li> </ul>



From the above table, it is clear that ATHENA project and its activities were promoted internationally via various means. The specific events that ATHENA was communicated and promoted are presented in the next section of the report.

### 3 International promotion events and activities

During the implementation of the ATHENA project, several activities and actions were implemented to achieve the promotion strategy of the project. Below are the main international activities and actions of project implementation.

#### 3.1 Workshops organised by ATHENA

Four thematic workshops were organised by ATHENA during the 3 years of activities of ATHENA project and are described in detail here below.

##### 3.1.1 First Workshop of ATHENA – April 2016

The 1<sup>st</sup> Workshop of ATHENA project was successfully accomplished in line to the timeline of the project. The Workshop was leaded by DLR and hosted by CUT during the ‘Forth International Conference on Remote Sensing and Geoinformation of Environment’ – RSCy 2016 – SPIE on April 4-8, 2016.



Figure 11: ATHENA workshop at RSCy 2016

The conference took place at the King Evelthon Beach Hotel in Paphos, Cyprus. Since the topics of both the aforementioned conference and workshop are correlated, the partners of the ATHENA project decided to combine the two events in order to attract more scientists interested on the subject and consequently provide an added value for the 1<sup>st</sup> workshop of ATHENA. Further, through the RSCy 2016 – SPIE dissemination of the ATHENA project to the international scientific community and to local stakeholders was accomplished successfully. Mr Gunter Schreier as representative of the ATHENA twinning partner DLR and guest speakers:

- Mr Simon Jutzon behalf of ESA;
- Mr Sakellaris Houdras & Mr Rui Meneses on behalf of the European Commission presented and introduced the aspects of Copernicus.



Figure 12. Dr Athos Agapiou from CUT (left) and Prof. Rosa Lasaponara from IBAM-CNR (right) during the 1<sup>st</sup> ATHENA Workshop at the RSCy2016

The workshop entitled ‘Copernicus contribution to Cultural Heritage’, was a full day workshop where the participants had the opportunity to get informed about Copernicus opportunities such as 1) Sentinel space segment; 2) Contributing missions and access to their data; 3) Core and collaborative ground segment; 4) Data policy and access to the data and 5) Core Service with focus on those of relevance to ATHENA. The workshop concluded with interesting discussions and future expectations. The material from the Workshop can be found in this link: [Material from Workshop ‘Copernicus contribution to Cultural Heritage’](#).

Time	Topic	Speaker
9:30	Welcome and Introduction to the Workshop	Barbar Schauer, DLR
9:45	Chairman of Copernicus Framework, policy and strategy	Sakellaris HOUDRAS, EC
10:15	The Copernicus Space Component Services and Core Ground Segment	Simon Jutz, ESA
10:45	A Copernicus In-orbit Segment – Example of OLP: Core and collaborative ground segment	Barbar Schauer, DLR
11:00	Coffee Break (available for registered participants)	
11:30	Overview of European Earth Observation missions	Barbar Schauer, DLR
12:15	Access to Copernicus Data and Contributing Missions	Simon Jutz, ESA
12:45	Free D & B session	
13:00	Lunch (available for registered participants)	
14:30	German EO mission contributions to Copernicus and DLR	Barbar Schauer, DLR
14:45	Copernicus projects	Barbar Schauer, DLR
15:00	Overview of the Copernicus Security Service	Rui MENESSES, EC
15:30	Summary and potential contributions of Copernicus to enhance the world cultural heritage	Barbar Schauer, DLR
16:00	Coffee Break (available for registered participants)	
16:30	Round Table Discussion: USA from the participants	All speakers, Moderator: Barbar Schauer
17:30	End of Workshop	

Figure 13. Agenda of the ATHENA Copernicus Workshop at the RSCy2016

### 3.1.2 Second workshop of ATHENA – March 2017

The second workshop of the ATHENA project, entitled “Remote sensing for Cultural Heritage beyond Europe”, was successfully carried out during the ‘Fifth International Conference on Remote Sensing and Geo-information of Environment’ in Cyprus on March 20-23, 2017. The RSCy 2017 – SPIE conference took place at the Annabelle Hotel in Paphos, Cyprus. The workshop attracted several scientists dealing both with remote sensing and Cultural Heritage protection. Interesting examples and applications for ‘Remote Sensing for Cultural Heritage from areas Beyond Europe and the Enjoyment of Cultural Heritage by Means of New and Old Media’ was presented.



Figure 14. Presentations during ATHENA 2<sup>nd</sup> workshop during RSCy 2017



The workshop ‘Remote Sensing for Cultural Heritage Beyond Europe’, was co-organized by IBAM and IMAA of the National Research Council of Italy (CNR), the German Aerospace Center (DLR) and the Cyprus University of Technology (CUT) in the framework of the ATHENA Project.



Figure 15. Participants at the ATHENA 2<sup>nd</sup> workshop during RSCy 2017

5th International Conference on Remote Sensing and Geo-information of Environment Conference Program March 20-23 2017 Annabelle hotel - Paphos, Cyprus www.cyprusremotesensing.org/rscy2017/			
Monday 20 March 2017			
08:00-17:00	REGISTRATION		
09:15 - 10:30	Opening Ceremony	ATHENAEUM BALLROOM	
	Welcome, Greetings and Opening Speech		
10:30-11:00	Keynote Speakers		
	Melanie Bougeon - ESA - 2017 - A Promising Year For Earth Observation		
11:00-11:30	COFFEE BREAK - POSTER PRESENTATIONS		
11:30-11:00	Keynote Speakers		
	Vicent Arribas, NASA - NASA Earth Science and Applications: New Perspective and Opportunities in a Changing World		
	Nicola Mito, Copernicus - Copernicus for Cultural Heritage		
13:00-14:30	LUNCH		
WORKSHOPS - ATHENAEUM BALLROOM			
14:30-16:00	Workshop: 1. Remote Sensing for Cultural Heritage Beyond Europe 2. Employment of Cultural Heritage By Means of New and Old Media	Chair: Rosa Lanaponara (CNR-IMAA) Nicola Mito (CNR-IBAM / CAS-RAI)	ATHENAEUM BALLROOM
		Authors	
	INTRODUCTION TO THE WORKSHOPS		
14:30-14:45	Remote sensing for a smart management of cultural heritage from site detection to monitoring and documentation: the case studies of Via Road Project.	R. Lanaponara	
14:45-15:00	Sensing beyond frontiers: remote sensing applications for archaeological heritage detection and management	A. Tsiriglis	
15:00-15:15	On the use of remote sensing in areas selected in Georgia, Pakistan and Jordan (Paper)	D. Spachos	
15:15-15:30	GIS and satellite data for urban sprawl: close to archaeological areas in Iran	B. Margolis	
15:30-15:45	An Overview of remote sensing in Alta archaeological area	J. Burgoin	
15:45-16:00	SAR applications in Egypt	C. Stewart	
16:00-16:30	COFFEE BREAK - POSTER PRESENTATIONS		
16:30 - 19:00	Workshop: 1. Remote Sensing for Cultural Heritage Beyond Europe 2. Employment of Cultural Heritage By Means of New and Old Media	Chair: Rosa Lanaponara (CNR-IMAA) Nicola Mito (CNR-IBAM / CAS-RAI)	ATHENAEUM BALLROOM
		Authors	
	THE CHRISTIAN MUSE OF THE EGYPTIAN TEMPLES AND KEEPING METHODS USING REMOTE SENSING AND GIS TECHNIQUES IN Luxor city, Egypt		
16:30-16:45		D. Wafiq Abdel	
16:45-17:00	Remote sensing for urban archaeological areas	Mohelli et al.	
17:00-17:15	Remote sensing based archaeological research in Naxos and in Pachnassa	N. Masini	
17:15-17:30	Exploitation of big data cloud infrastructures for earth observation cultural heritage applications: mapping the land use changes patterns in the vicinity of the great pyramid of Giza	A. Aggou	
17:30-17:45	Automatic damage detection for sensitive Cultural Heritage Sites in Syria and Iraq	D. Corra, J. Tian, V. Lypanidou, S. Piani & T. Knoll	
17:45-18:00	Qualitative assessment of the medieval fortification conditions with the use of Remote Sensing data (Republic of Tatarstan)	I. Galvillo, B. Cismaru & A. Steklov	
18:00-18:15	The Copernicus Programme and World Cultural Heritage presentation	G. Schreier	
18:15-19:00	Round Table Discussion		

Figure 16. ATHENA flyer and Agenda of the second Workshop during the RSCy 2017

The aim of the workshop was to have a look outside of Europe and discuss the use, potential and specificities of remote sensing techniques for the study of human past and management of cultural heritage in the various regions of the world. Presentations on behalf of the ATHENA consortium were given by Prof. Rosa Lasaponara and Prof. Nicola Masini on behalf of the CNR, Mr Thomas Krauss on behalf of DLR and Dr Athos Agapiou on behalf of CUT.

### 3.1.3 Third Workshop of ATHENA – March 2018

ATHENA GIS Workshop “Fundamentals of GIS-QGIS”, successfully completed during the Sixth International Conference on Remote Sensing and Geoinformation of Environment in Cyprus on the 27<sup>th</sup> of March 2018. The RSCy 2018 – SPIE took place at Aliathon Holiday Village in Paphos, Cyprus. Dr Verena Jaspersen from DLR presented ATHENA activities and EO techniques used on Cultural Heritage.



Figure 17. Participants at the workshop of ATHENA at RSCy 2018. Dr Verena Jaspersen, presenter from DLR (bottom right)

ATHENA workshop covered the fundamentals of GIS What is GIS? What is it used for? What are the main parts of a GIS? Which software can be used to set up a GIS? Examples of web-



based GIS which was applied in different case studies were presented in order to explain how GIS can be used to disseminate data and information to a wide group of users.

Furthermore, the audience had the opportunity to learn about Open Geospatial Consortium and their standards such as Web Mapping Service (WMS) and Catalogue Service for the Web (CSW) to make GIS work in a distributed world. After a general introduction to QGIS and its plugin mechanism, the workshop concluded with a hands-on session based on the acquired knowledge. <http://www.cyprusremotesensing.com/rscy2018/Workshop>

Sixth International Conference on Remote Sensing and Geoinformation of Environment - RSCy2018										
Conference Program March 26-29 2018 Allathon Hotel Village - Paphos, Cyprus <a href="http://www.cyprusremotesensing.com/rscy2018">www.cyprusremotesensing.com/rscy2018</a>										
Day Time	Monday 26/3/2018			Tuesday 27/3/2018			Wednesday 28/3/2018			Thursday 29/3/2018
8:00 - 17:00	Registration ARION BAR Right Side			Registration ARION BAR Right Side			Registration ARION BAR Right Side			Registration ARION BAR Right Side
9:00 - 11:00	Opening Ceremony 9:15 - 10:30 Aphrodite Hall  Keynote Speakers: GEO - Barbara Ryan ESA - Rosemarie Lecne Aphrodite Hall			Parallel Sessions  Copernicus Infession Aphrodite Hall			Parallel Sessions  Remote Sensing Adonis Room			Parallel Sessions  Forest Aphrodite Hall
11:00 - 11:30	Coffee Break - 11:50 - 12:20 ARION BAR			Coffee Break - Poster presentations			Coffee Break - Poster presentations			Coffee Break - Poster presentations
11:30 - 13:00	Keynote Speakers: COPERNICUS - Stefano La Terra Bella NASA - Vincent Antonis EXCELSIOR - Diofantos Hadjimitsis Aphrodite Hall			Parallel Sessions  Copernicus Infession Aphrodite Hall			Parallel Sessions  Remote Sensing Adonis Room			Parallel Sessions  Coastal Adonis Room
13:00 - 14:30	Lunch Pantheon Restaurant			Lunch Pantheon Restaurant			Organized Trip with Lunch Archaeological Park and Agios Neophytos Monastery			Closing Ceremony Best paper, best poster award Aphrodite Hall
14:30 - 16:00	Research, Educational and Entrepreneurial Opportunities in Earth Observation: Interactive Networking and Collaboration EXCELSIOR Workshop Aphrodite Hall			Parallel Sessions  Copernicus Infession Aphrodite Hall			Parallel Sessions  GIS Zeus Room			Sponsors: Cesa DEC CYRIC
16:00 - 16:30	Coffee Break - Poster presentations			Coffee Break - Poster presentations			Parallel Sessions  Athena GIS Workshop Fundamentals of GIS - QGIS Zeus Room			Supporters: Copernicus Copernicus Copernicus Academy EUROPEAN COMMISSION PROTEGO CLIMA FAB SPACE 2.0 SCENELAB Gravity OPTIMUS SPIE DIGITAL LIBRARY EVERETT
16:30 - 19:00	Parallel Sessions  SEO-DWARF WORKSHOP Aphrodite Hall			Parallel Sessions  Atmospheric Adonis Room			Parallel Sessions  Information Extraction from Laser Scanning Data Workshop Zeus Room			Parallel Sessions  Land Cover & Urban Areas Adonis Room
19:00 - 20:00	Free			Free			Free			
20:00 - ...				Social Dinner						

Figure 18. Programme of the RSCy 2018 indicating ATHENA GIS Workshop

### 3.1.4 Fourth Workshop of ATHENA – October 2018

The workshop of the ATHENA project on Remote Sensing and Archaeology: Future and Expectations has been successfully accomplished during the 7th International Euro-Mediterranean Conference EuroMed 2018 on 30 October 2018 at Filoxenia Conference Centre, Nicosia (<https://www.euromed2018.eu>). Gunter Schreier presented the ATHENA video, prepared by Peter Folie and Nils Sparwasser (DLR).

Euromed participants had the opportunity to be informed about the ATHENA project. Concluding the general introduction to the theme and to the ATHENA project by Cyprus

University of Technology, the presentations included the derived results by German Aerospace Centre (DLR) and National Research Council of Italy.



**ATHENA: Remote Sensing and archaeology:  
future and expectations**

**Date:** October 30, 2018

**Venue:** Filoxenia Conference Centre

**Hosted by:** 7th International Euro-Mediterranean Conference EuroMed 2018



**Project Coordination Team**

This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under grant agreement No 691936. Work programme H2020 under "Spreading Excellence and Widening Participation", call: H2020-TWINN-2015: Twinning (Coordination and Support Action)



#### About ATHENA project

The "ATHENA" project aims to promote Remote Sensing for Cultural Heritage through the development of an enhanced knowledge base and innovative methods. This will be achieved by twinning the existing Remote Sensing and Geo-environment Research Laboratory at the Cyprus University of Technology (CUT) with internationally-leading counterparts from other Member States of the EU, such as the Institute of Archaeological and Architectural Heritage of the National Research Council of Italy (IBAM- CNR) and the German Aerospace Centre (DLR). The goals of the project are aligned with the Smart Specialization Strategy of Cyprus. The close collaboration between CUT and other experts in the field of Remote Sensing for Cultural Heritage in the EU will form a synergic network that will permit the transfer of knowledge and training of the existing personnel of CUT. As a result, the ATHENA project will have both direct and indirect social, scientific, and economic outcomes. In addition, the implementation of the project will facilitate future collaborations with experts of the Archaeology and Cultural Heritage sector in an EU level, increase the Centers' research capabilities, as well as enhance the research and academic profile of all participants. It is noteworthy to underline the importance of the geographical position of the Center in the region of eastern Mediterranean, a region inhabited thousands of years before and therefore abundant in archaeological residues.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691936. Work programme H2020 under "Spreading Excellence and Widening Participation", call: H2020-TWINN-2015: Twinning (Coordination and Support Action).

#### Programme:

- Introduction to the topic and ATHENA by Cyprus University of Technology
- Presentation on ATHENA results by German Aerospace Centre
- Presentation on ATHENA results by National Research Council of Italy
- Presentation of ATHENA Video
- Overview of Earth Observation data sources
- On-going work of Horizon 2020 and cultural heritage
- Cultural Heritage as potential new Copernicus Service
- Discussion

Figure 19. Invitation and agenda of the 4th ATHENA Workshop implemented during the EuroMED 2018

Mr Thomas Krauss presented the ATHENA results by the DLR and Dr. Nicola Masini from CNR presented his organizational activities during ATHENA project.



Figure 20: Mr Thomas Krauss from DLR (left) and Dr. Nicola Masini from IBAM-CNR (right) at the 4<sup>th</sup> ATHENA workshop



Mr. Gunter Schreier from DLR presented an Overview of Earth Observation data sources and Dr. Kyriacos Themistocleous from CUT on the right presented the On-going work of Horizon 2020 and cultural heritage.



Figure 21: Mr. Gunter Schreier from DLR (left) and Dr. Kyriacos Themistocleous from CUT (right) presenting ATHENA outputs at the 4<sup>th</sup> ATHENA workshop

In addition to the presentations of ATHENA, a video overview of Earth Observation data sources and on-going work of Horizon 2020 in relevance to cultural heritage were followed.



Figure 22. Presentation of the ATHENA video at the 4th ATHENA Workshop at the EuroMED 2018 conference

The workshop concluded with a discussion about Cultural Heritage as a potential service for Copernicus with Oriana Grasso.



Figure 23: Mrs. Oriana Grasso from the Copernicus Unit 12 presenting on the Final ATHENA workshop

ATHENA team members, Prof. Hadjimitsis, Dr. Themistocleous, Dr. Athos Agapiou, Dr Vasiliki Lysandrou and Mr. Andreas Christofe met with board director of ICOMOS, Mr. Chrysanthos Pissaridis.



Figure 24: Prof. Hadjimitsis, on the 4<sup>th</sup> 'ATHENA' workshop presenting about the project outcomes.

### 3.2 Promoting ATHENA through participation in other Conferences and Workshops

ATHENA's activities have been presented in many conferences and workshops with poster and oral presentations. ATHENA partner representatives participated in 18 meetings and conferences related to the ATHENA objectives, such as EUROMED, RSCy, CAA, EARSeL, EGU, SPIE, etc. Their presentations focused on promoting ATHENA project outcomes and activities. During these conferences ATHENA met several partners from research and academic community, local authorities, and governmental authorities.

#### 3.2.1 5th International Conference LE NOTRE Landscape Forum – March 2016

The 5<sup>th</sup> International Conference LE NOTRE Landscape Forum was hosted by Neapolis University on 16-20 March 2016. The event aimed to provide a discussion platform for a wide range of landscape issues at a European and global level. The forum was titled: "Landscape: From Natural to Cultural," and aimed to encourage the exchange of contemporary critical thinking and to provide the foundation for interdisciplinary collaboration and innovation.



Figure 25: Prof. Hadjimitsis and Dr Branka Cuca at the 5th International Conference LE NOTRE Landscape Forum

The initiative's target groups included: researchers and practitioners from landscape architecture and related disciplines, academics and educators involved in teaching and research from many different disciplinary perspectives, members of public institutions or authorities and NGO's, and doctorate and masters students from landscape architecture and related disciplines. The themes, which will result in a number of site visits, include; 'urban growth and peri-urban sprawl' and will examine the walkability in the everyday landscape of Paphos. 'Sustainable tourism' will include, waterfront and Hotel resorts, 'Heritage and identities', will include Kato Paphos Archaeological Park, 'Rural change', will encompass, landscapes, circular economy and local food production.



The coordinator of ATHENA, Prof. Diofantos Hadjimitsis, in La Notre conference in Cyprus, informed them regarding the project.

### 3.2.2 Cyprus Embraces Space 2016 Conference – May 2016

Dr. Kyriakos Themistocleous at the “Cyprus Embraces Space 2016” Conference, under the auspices of the Honourable Minister of Transport, Communications & Works on 18 May 2016. “Cyprus Embraces Space 2016” is organized by the Cyprus Research Promotion Foundation, the Department of Electronic Communications (DEC - Ministry of Transport, Communications and Works) and the Department of Computer Science & Engineering of European University Cyprus.



Figure 26. Presentation of ATHENA during “Cyprus Embraces Space 2016” Conference

The subject of his presentation was “Space and Remote Sensing Technologies: The Applications and Benefits for the Society and Economy in Cyprus”, where the Eratosthenes Research Center past and present activities were presented in the field of remote sensing. A special mention was given to the ATHENA project, which focuses on creating a center of excellence on remote sensing for archaeology in Cyprus. Presentation were given by delegates from DLR, the European Commission, H2020 Space and Cosmos2020.

### 3.2.3 EuroMed 2016 – October 2016

During the first year of ATHENA project a poster presentation under the title “Establishing a remote sensing science center in Cyprus” was presented at the 6th International Euro-Mediterranean Conference (EuroMed 2016) took place in Nicosia, Cyprus. The EuroMED 2016 lasted from the 31<sup>st</sup> of October until the 5<sup>th</sup> of November 2016 giving the opportunity to



### 3.2.4 European Geosciences Union (EGU) - 2016, 2017 and 2018

The ATHENA was presented for three years 2016, 2017, 2018 at the European Geosciences Union – EGU, General Assembly taking place in Vienna, Austria. The EGU brought together geoscientists from all over the world at one meeting covering all disciplines of the Earth, planetary and space sciences. The EGU aims to provide a forum where scientists, especially early career researchers, can present their work and discuss their ideas with experts in all fields of geoscience.

- **EGU General Assembly 2016**

ATHENA was presented at the General Assembly 2016 (17 – 22 April 2016) by Dr Nicola Masini with a poster presentation entitled ‘Remote Sensing Science Center for Cultural Heritage in Cyprus’.

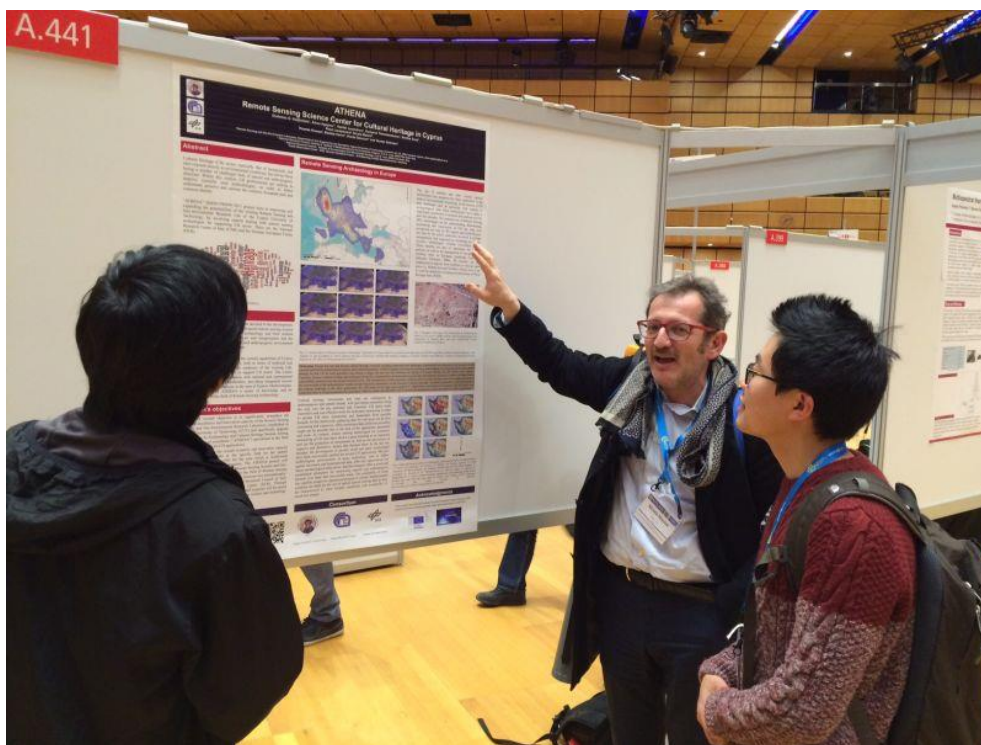


Figure 29. Nicola Masini from CNR in EGU General Assembly 2016

- **EGU General Assembly 2017**

In EGU General Assembly 2017 (<https://egu2017.eu/home.html>) held in Vienna, Austria on 23-28 April 2017, ATHENA supported the EGU Special Session “Assessment of climate hazards’ impact on natural and cultural environment: Remote sensing and GIS applications”. The organizers were:



- Technical University of Crete, School of Environmental Engineering, Greece
- Cyprus University of Technology, Department of Civil Engineering and Geomatics, Cyprus
- Politecnico di Milano, Department of Architecture, Built Environment and Construction Engineering, Italy



Figure 30. EGU General Assembly 2017

## European Geosciences Union General Assembly 2017

Vienna | Austria | 23–28 April 2017

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**NH6.4/BG9.34/CL2.24/HS11.32**  
**Assessment of climate hazards' impact on natural and cultural environment: Remote sensing and GIS applications (co-organized)**

Convener: Dimitrios Alexakis Q  
 Co-Conveners: Athos Agapliou Q, Branka Cuca Q, Luigi Barazzetti Q, Ioannis Tsanis Q, Diofantos G. Hadjimitsis Q

📄 [Posters](#) / **Attendance Fri, 28 Apr, 17:30-19:00 / Hall X3**

★ Add this session to your [Personal programme](#)

GIS and remote sensing have been proved to be extremely powerful tools in facing major environmental problems. They have the great advantage of providing large amount of data for extended areas, with minimum cost and regular revisit capability. Furthermore, such tools offer the opportunity to gain fresh insights into biophysical systems through the spatial, temporal, spectral and radiometric resolutions of remote sensing systems and through the analytical and data integration capability of GIS. When it comes to impact of hazards on natural and cultural environment, it could be noticed that the number of these events has significantly increased in the past decades. The main causes for this increase can be attributed to a higher frequency of extreme events, most probably related to global changes in climate. For example, developing countries suffer more than 95 per cent of all deaths caused by natural disasters. To reduce disaster losses, more efforts should be applied towards disaster-risk management, with a focus on hazard assessment, elements-at-risk mapping, and vulnerability and risk assessment, all of which strongly rely on the availability of relevant geospatial information. The main goal of this session is to examine the advancements in design, development, experimentation and validation of new techniques in the fields of remote sensing (active and passive remote sensing, Lidar, UAVs, thermal etc.) and GIS for the analysis, monitoring, mapping and modeling of climate hazards' impact on natural and cultural environment. This session intent to give the floor to novel studies in the use of Earth Observation (EO) data in mitigating climate changes affect both in natural and cultural environment. In particular new approaches of remote sensing / GIS in the fields of detection, monitoring and modeling of natural disasters phenomena (floods, earthquakes, landslides, erosion, fires, and volcanic eruption), water resources management, archaeology, cultural and heritage management and agriculture towards extreme conditions will be thoroughly discussed. The session aims to serve a diverse community of research scientists, practitioners, end users and decision makers. Early stage researchers are strongly encouraged to present their research

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Figure 31. EGU 2017 – Special session supported by ATHENA

- **EGU General Assembly 2018**

In EGU General Assembly 2018 (<https://www.egu2018.eu/>) held in Vienna, Austria on 8-13 April 2018, 15,075 scientists from 106 countries participated. ATHENA project was presented during this session with 2 poster abstracts:

- “Knowledge transfer through the ATHENA Twinning project: Remote sensing for cultural heritage”, Geophysical Research Abstracts, EGU2018, Vienna, Austria
- “ATHENA project: training activities for the detection of looted archaeological sites”, Geophysical Research Abstracts, EGU2018, Vienna, Austria



Figure 32. The two posters-abstracts of ATHENA project at EGU 2018

### 3.2.5 Remote Sensing & Photogrammetry Society (RSPSoc) – September 2017

ATHENA was presented at the RSPSoc 2017 organized by the Imperial College London on 5-8 September 2017. RSPSoc is the UK's leading Society for remote sensing and photogrammetry and their application to education, science, research, industry, commerce and the public service.



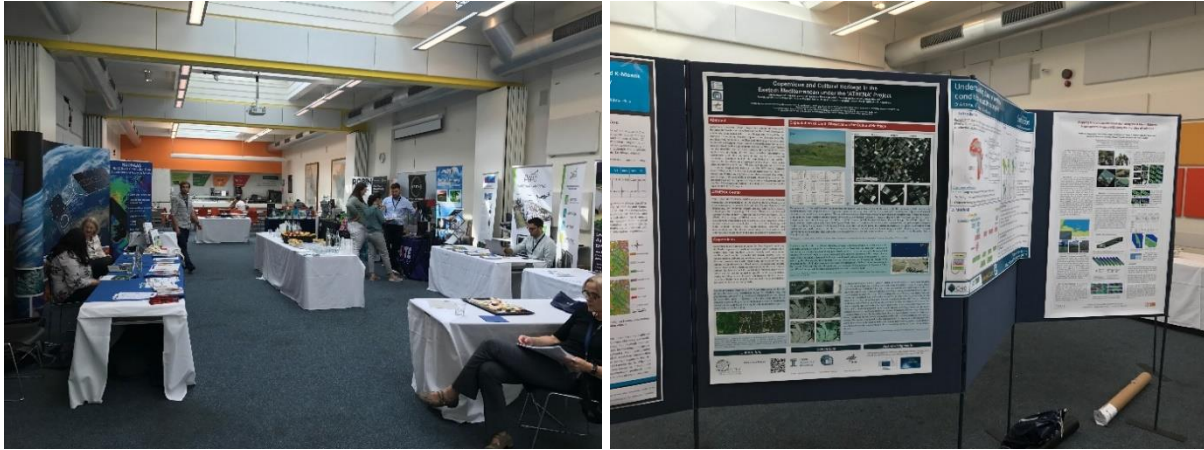


Figure 33. The poster-abstract of ATHENA project at RSPSoc 2017

Mr. Dimitris Kouhartsiouk presented the conference poster titled “Copernicus and Cultural Heritage in the Eastern Mediterranean under the ‘ATHENA’ Project”.

### 3.2.6 International Conference on Remote Sensing and Geoinformation of Environment – Cyprus (RSCY) 2016, 2017 and 2018

- The Fourth International Conference on Remote Sensing and Geoinformation of Environment – RSCy 2016 – SPIE

RSCy 2016 – SPIE (<http://www.cyprusremotesensing.com/rscy2016/>) took place at the King Evelthon Beach Hotel in Paphos, Cyprus on April 4-8, 2016 with leading experts in the field of Remote Sensing and Geo-information.



Figure 34. Nili Mandelblit (left), Daniel Barok (middle left), Diofantos Hadjimitsis (middle right) and George Papadavid (right) at RSCy 2016

170 scientists from 35 countries participated in the event. Amongst them, there were scientists from NASA, ESA, DLR, ISRAEL SPACE AGENCY, AIRBUS DEFENCE & SPACE, COPERNICUS and GEO.



Figure 35. Vasiliki Lysandrou (left), Athos Agapiou (middle left), Vincent Ambrosia (middle right) and Diofantos Hadjimitsis (right) at RSCy 2016

The Minister of Transport, Communication and Works, Mr. Marios Demetriades gave the inaugural speech at the RSCy 2016 – SPIE. The Ministry was one of the co-organisers/supporters of the RSCy 2016 – SPIE conference.



Figure 36. Minister of Transport, Communication and Works, Mr. Marios Demetriades giving the inaugural speech at RSCy 2016

The Technical Program was open to all topics in Remote Sensing and Geo-information of Environment and related techniques and applications. It is worth noting that Vince Ambrosia, Senior Researcher Scientist from NASA, Dr Nili Mandelblit (Director of Space, Aeronautics, Transport, Nano-Materials- Production Israel-ISERD; Israel-Europe R&D Directorate; representative of HORIZON 2020) as well Daniel Barok (Adviser for International Collaboration at Israel Space Agency) participated in the RSCy2016 – SPIE conference and were informed about ATHENA project.



Figure 37. Special sessions during RSCy 2016

Special sessions were held during RSCy 2016 – SPIE, such as “Sensing the past: remote monitoring for archaeology and cultural heritage”, “Remote sensing applications related to natural hazards / natural disasters” and “Copernicus contribution to Cultural Heritage” where ATHENA project was promoted.

- **The Fifth International Conference on Remote Sensing and Geoinformation of Environment – RSCy 2017 – SPIE**

RSCy 2017 – SPIE (<http://www.cyprusremotesensing.com/rscy2017/>) conference took place at the Annabelle Hotel in Paphos, Cyprus on March 20-23, 2017 with leading experts in the fields of Remote Sensing and Geo-information.

A workshop was held on Remote Sensing for Cultural Heritage Beyond Europe, co-organized by IBAM and IMAA of the National Research Council of Italy (CNR), the German Aerospace Center (DLR) and the Cyprus University of Technology (CUT) in the framework of the ATHENA Project, for a look outside of Europe to discuss the use, potential and specificities of remote sensing techniques for the study of human past and management of cultural heritage in the various regions of the world.





Figure 38. RSCy 2018 attendees

Keynote speakers were Jérôme Béquignon, (European Space Agency); Nicolae Mitu (EC, Copernicus), Vincent Ambrosia (NASA), Athanassios Ganas (National Observatory of Athens) and Felix Puls (Leica Geosystems AG).



Figure 39. Jérôme Béquignon, from European Space Agency giving a keynote speech (top left), Nicolae Mitu from European Commission Belgium. Copernicus For Cultural Heritage (top right) and Vincent Ambrosia from NASA – NASA Earth Science and Applications (bottom)

- **The Sixth International Conference on Remote Sensing and Geoinformation of Environment – RSCy 2018 – SPIE**

RSCy 2018 – SPIE (<http://www.cyprusremotesensing.com/rscy2018/>) conference took place at the Aliathon Holiday Village in Paphos, Cyprus on March 26-29, 2018 with leading experts

in the field of Remote Sensing and Geo-information. 'ATHENA' was included as one of the supporters of the RSCy 2018 – SPIE.



Figure 40. RSCy 2018 conference room

Keynote speakers of the event were Barbara Ryan (GEO), Vincent Ambrosia (NASA) and Stephano La Terra Bella (Copernicus)



Figure 41. RSCy 2018 keynote speakers. Barbara Ryan from GEO (top left), Vincent Ambrosia from NASA (right) and Stephano La Terra Bella from Copernicus (bottom left)



Six thematic workshops took place in RSCy 2018 – SPIE:

- Copernicus Information and Training Session
- Research, Educational and Entrepreneurial Opportunities in Earth Observation: Interactive Networking and Collaboration – EXCELSIOR Workshop
- Cultural Heritage Workshop – PROTHEGO National Event
- Information Extraction from Laser Scanning Data Workshop (organized with the ISPRS WG III/5)
- Earth Observation for the Coastal and Marine Environment (organized with SEODWARF)
- ATHENA Workshop on Geo Information Systems (GIS)

The Copernicus info session was attended by more than 200 participants. Dr Diofantos Hadjimitsis gave a presentation related to the activities of the Eratosthenes Research Centre including the ATHENA project as an initiative of the lab to get trained and earn knowledge through the collaboration of top-leading organisations of the consortium DLR and CNR. During the RSCy 2018 – SPIE the members of our group, as Copernicus Academy members, had the opportunity to arrange a meeting with the representatives of the Copernicus support office. During the meeting existing and future activities of the lab were mentioned including also activities related to the ATHENA project.



Figure 42. Meeting with representatives of the Copernicus Support Office during the RSCy 2018



An Info kiosk of our group with group portfolio and brochures including ATHENA, EXCELSIOR etc. The CUT team presented the ATHENA and EXCELSIOR Projects at the information desk which was available at the RScy 2018 – SPIE International Conference.



Figure 43. Promotion of ATHENA during the RScy2018 at International level

ATHENA brochures were included at the info kiosk of ERATOSTHENES group portfolio. In addition, ATHENA leaflets and project brochures were included in every conference bag, while ATHENA logo was promoted through the banners in all the conference rooms.



Figure 44. Info kiosk of our team including leaflets of Athena, EXCELSIOR and other projects

A poster of ATHENA was presented at the RSCy 2018 – SPIE conference on the Benefits arising from ATHENA project on the field of Cultural Heritage through Remote Sensing (in greek).

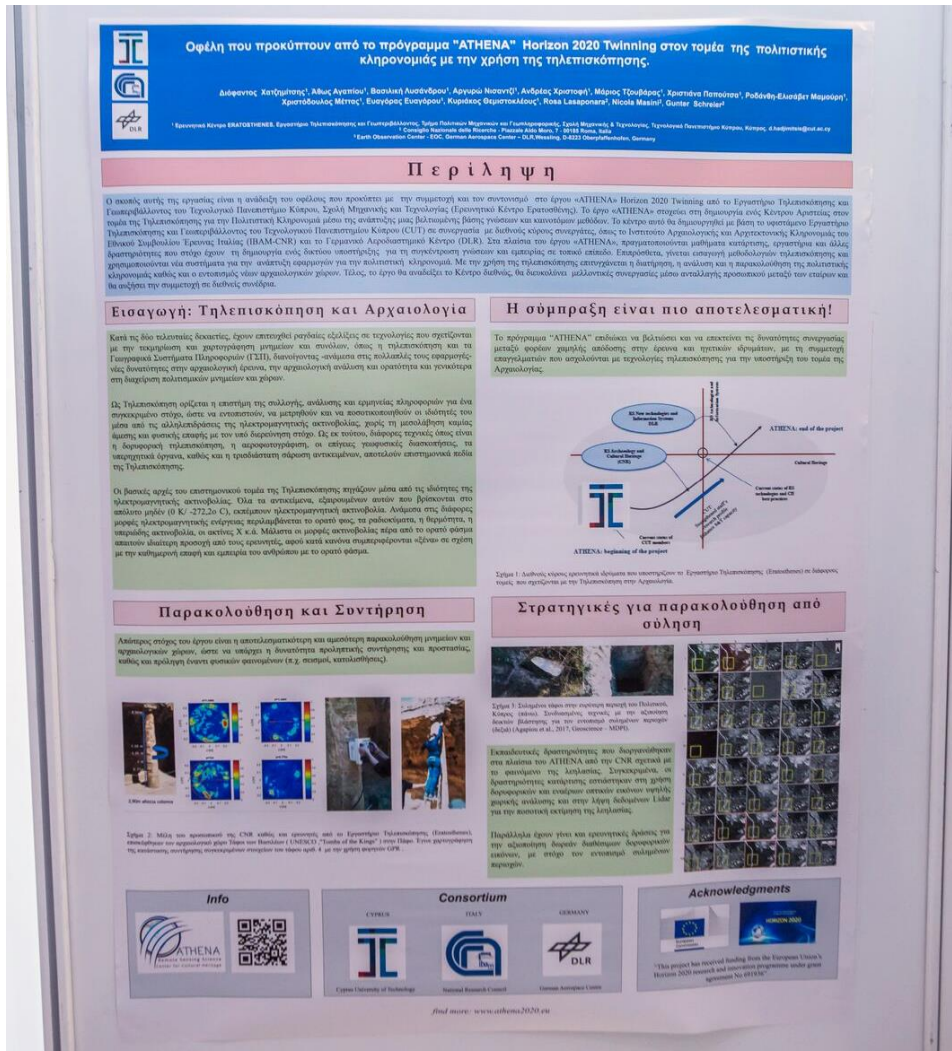


Figure 45. ATHENA poster at RSCy 2018

### 3.2.7 37<sup>th</sup> International Symposium on Remote Sensing of Environment (ISRSE-37) – May 2017

ISRSE is widely acknowledged to be one of the most significant gatherings of the international remote sensing community. The Symposium attracts senior staff of space agencies and international Earth observation programmes and thereby provides a global overview of advances in Earth observation and the consequential societal benefits.

ISRSE-37 (<http://isrse37.org/>) took place in Tshwane, South Africa from 8 to 12 of May 2017. The 2017 Symposium was the second time in this millennium that the African continent



hosted ISRSE. It coincided with the implementation of the recently adopted African Space Policy and Strategy, as well as rapid development in African space science and technology programmes. The theme of the conference was “Earth Observation for Development and Adaptation to a Changing World”.



Figure 46. Kyriacos Themistocleous (left), Gunter Schreier (middle), Rosa Lasaponara (right) at ISRSE

Day one of the International Symposium of remote Sensing of Environment was exceptionally well supported and highly informative for the hundreds of delegates who attended the sessions. The symposium was officially opened by Minister of Science and Technology, Mrs Naledi Pandor who shared the significance of symposiums of this nature to the South African and African communities for the collaborative opportunities they offer with international partners.



Figure 47. Barbara Ryan from GEO (left), Barbara Ryan from GEO and Vincent Ambrosia from NASA (right) at ISRSE

Representatives from the City of Tshwane executive team, ICORSE and ISPRS were also a part of the opening ceremony panel who welcomed the delegates to the 37th Symposium, being held in South Africa for the second time. The first plenary provided a global oversight of the programmes by various space agencies in addressing the UN Sustainable development goals. This session proved informative and inspiring to delegates as they were

taken through the extensive investment by space programmes to address local and global societal challenges.

The technical sessions that followed showcased the EO programmes from various space agencies, the significance of mapping vegetation, monitoring of climate change, EO in urban planning and infrastructure with an overarching theme of sustainability.



Figure 48. Dr. Themistocleous presenting ATHENA activities (left) and Dr. Cerra from DLR (right) at ISRSE

ATHENA project was promoted to this diverse audience by Dr Kyriacos Themistocleous (CUT) and Dr Danielle Cerra (DLR) via an oral presentation with title: “From Detection of Underground Archaeological Relics to Monitoring of World Heritage Sites in Danger: Ongoing Research Activities in the Frame of the ATHENA Twinning Project”.

### **3.2.8 International Symposium on the Conservation of Monuments in the Mediterranean Basin (MONUBASIN) – September 2017**

Activities of the ATHENA were presented in the International Symposium on the Conservation of Monuments in the Mediterranean Basin – MONUBASIN (<http://conference2017.monubasin.com/>).

The Symposium addresses research work from restoration engineers, architects, geologists, restorers and conservators of stone artifacts and other specialists in the decay and restoration of monuments, as well as archaeologists, art historians and scientists in the fields of physics, chemistry and biology. The theme of this Symposium is "Natural and Anthropogenic Hazards and Sustainable Preservation" and refers to the natural and anthropogenic hazards on monuments, as well as to the technologies used for damage rehabilitation in the direction of sustainable, long-lasting preservation.

The event was organized by the National Technical University of Athens from 20 to 22 of September 2017 following previous symposia in Bari (1989), Geneva (1991), Venice (1994), Rhodes (1997), Seville (2000), Lisbon (2004), Orléans (2007), Patras (2010) and Ankara (2014).



Figure 49. MONUBASIN 2017

Dr Agapiou presented a poster titled “From space to ground. Digital techniques or the investigation of monuments and sites” promoting ATHENA activities to all symposium attendees.

### 3.2.9 11th EARSEL Symposium on Fires – September 2017

Prof. Diofantos Hadjimitsis and Mr Andreas Christofe, a PhD Candidate, attended the 11<sup>th</sup>EARSEL Symposium on Fires (<http://ffsig2017.maich.gr>) which was held in Chania, Greece on the 25-27 of September 2017 having the opportunity to network with leading experts in the field of Remote Sensing and Geo-information and promote the ATHENA initiative. Some of the people met during the 11<sup>th</sup> EARSEL Symposium and were informed regarding ATHENA and its activities were as follows:

- Dr George Mitri – University of Balamand Lebanon
- Dr Jesus San-Miquel-Ayanz – European Commission Joint Research Centre in Italy
- Dr Vincent Ambrosia – NASA
- Dr. Klaus Komp – EARSEL Chair
- Prof. Giannis Gitas – Aristotle University of Thessaloniki
- Dr Ioannis Papoutsis – NOA
- Dr David Roy – NASA
- Dr Dimitrios Alexakis – Technical University of Crete





Figure 50. Prof. D.G. Hadjimitsis met with Dr Jesus San-Miquel-Ayanz from European Commission JRC in Italy (top left), Ioannis Papoustis from NOA (top right) and Dr. Klaus Komp, EARSeL Chair (bottom)

ATHENA project was promoted at the 11<sup>th</sup> EARSeL Symposium both with a poster entitled 'Exploring the importance of monitoring fire risk in the vicinity of cultural heritage sites in Cyprus using Sentinel remote sensing data' and an oral presentation as part of the EXCELSIOR Teaming Project [www.excelsior2020.eu](http://www.excelsior2020.eu).

Prof. Hadjimitsis during his presentation related to the EXCELSIOR Project highlighted the background of the Eratosthenes Research Centre mentioning that one of the major research pillars of his research group is the use of Remote Sensing techniques in the field of Archaeology and Culture Heritage. He highlighted the importance of the collaboration with two of the top-leading organisations such as DLR and CNR in the framework of ATHENA



project and the experience and transfer of knowledge earned through the implementation of workshops and training activities during the last 2 years running the ATHENA project.

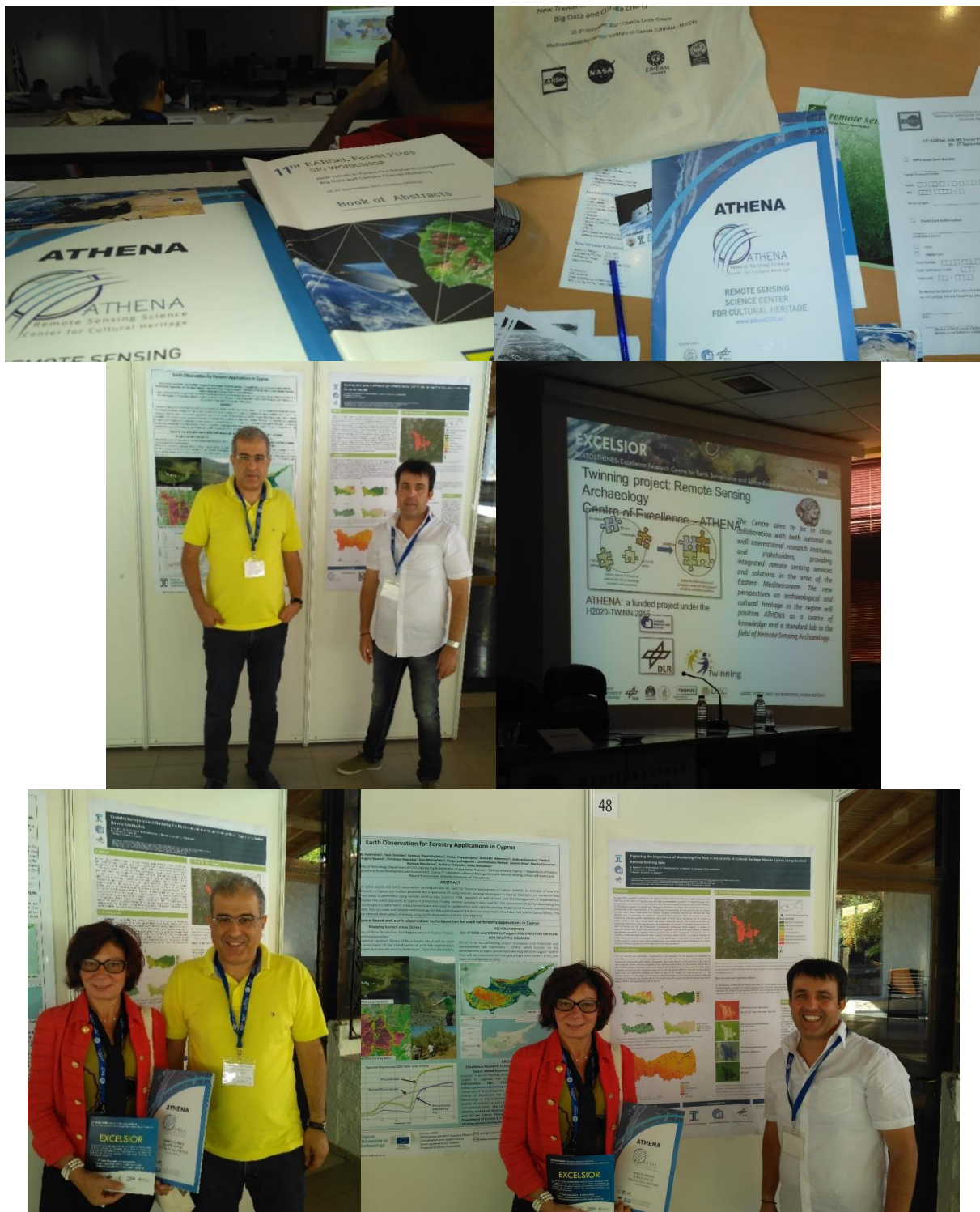


Figure 51. 11<sup>th</sup> EARSeL Symposium on Fires. Photos of promotional material of ATHENA. Oral presentation by Prof. Hadjimitsis promoting ATHENA project through EXCELSIOR. Photos of the team with the poster, Prof. Hadjimitsis and Mr Christofe on behalf of CUT and Prof. Lasaponara on behalf of CNR.

### 3.2.10 EuroMed 2017 – December 2017

EuroMed 2017 (<http://euromed2017.eu>) took place in Volos, Greece from 1<sup>st</sup> to 3<sup>rd</sup> December of 2017. ATHENA was presented through a poster and oral presentation by Dr. Kyriacos Themistocleous. The theme of the conference was Cultural Heritage Digitization. The title of the ATHENA presentation was: Benefits derived from “ATHENA” Horizon 2020 Twinning project in the field of Remote Sensing for Cultural Heritage



Figure 52. Dr Kyriacos Themistocleous presenting ATHENA project

### 3.2.11 Computer Applications and Quantitative Methods in Archaeology (CAA) international conference 2018 - March 2018

Gunter Schreier from DLR was invited as a speaker on 20<sup>th</sup> of March 2018 at the Computer Applications and Quantitative Methods in Archaeology (CAA) international conference and presented ATHENA Twinning and Excelsior Teaming projects in which earth observation use to support cultural heritage management in the East Med and Cyprus regions. ATHENA project was part also of the CAA 2018 (<https://2018.caaconference.org/>) book of abstracts.

The title of the presentation was Earth observation technologies and cultural heritage needs through the "ATHENA TWINNING PROJECT".

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Abstracts CAA Tübingen 2018

### **Earth observation technologies and cultural heritage needs through the "ATHENA TWINNING PROJECT"**

*(Andreas Christofe, Diofantos Hadjimitsis, Athos Agapiou, Vasiliki Lysandrou, Argyro Nisantzi, Marios Tzouvaras, Christiana Papoutsas, Rodanthi-Elisavet Mamouri, Christodoulos Mettas, Evagoras Evagorou, Kyriacos Themistocleous, Rosa Lasaponara, Nicola Masini, Gunter Schreier, Daniele Cerra, Ursula Gessner, Maria Danese, Maria Sileo)*

This paper presents the main outcomes of the on-going Horizon 2020 ATHENA Twinning project, which aims to establish a "Remote Sensing Science Centre for Cultural Heritage" in Cyprus. The Centre foresees to support the current cultural heritage needs through the systematic exploitation of earth observation technologies. For the establishment of the centre, the existing Remote Sensing and Geo-Environment Research Laboratory- of the Eratosthenes Research Centre (ERC) based at the Cyprus University of Technology (CUT), is twinned with internationally-leading counterparts from the EU, the National Research Council of Italy (CNR, through IMAA and IBAM) and the German Aerospace Centre (DLR). Through this networking, the ATHENA twinning project strengthens the remote sensing capacity in cultural heritage at CUT's ERC. A core element within ATHENA is knowledge transfer, achieved primarily through intense training activities (including virtual training courses, workshops and summer schools) with an ultimate scope to: enhance the scientific profile of the research staff; to accelerate the development of research capabilities of the ERC as well as to promote earth observation knowledge and best practices intended for Cultural Heritage. Active and passive remote sensing data for archaeology, SAR for change and deformation detection, satellite monitoring for archaeological looting, integration of remote sensing data for protection and preservation of cultural heritage are also presented. The scientific strengthening and networking achieved in Cyprus through the ATHENA project, could be of great benefit for the entire Eastern Mediterranean Region bearing a plethora of archaeological sites and monuments urgently calling for monitoring and safeguarding.



Figure 53. 2018 ATHENA abstract included in the CAA 2018 international conference book of abstracts

### **3.2.12 GEO Workshop – June 2018 (through other funded project GEO-CRADLE)**

ATHENA was promoted at the 3<sup>rd</sup> South - Eastern Europe GEO Workshop under the theme "Uptake of GEO and Copernicus in South - Eastern Europe, North Africa and Middle East." 3-4 June 2018, Thessaloniki Greece (<http://www.copernicus.eu/events/3rd-south-eastern-europe-geo-workshop>). Prof. Diofantos Hadjimitsis participated at the round table discussion where he gave an oral presentation. During the meeting Prof. Hadjimitsis and Mr Andreas Christofe had the opportunity to meet with stakeholders and experts on earth observation and remote sensing expanding the current network of ATHENA and promoting the ATHENA



initiative through leaflets, presentation and discussion. Athena team had the opportunity to meet with the Vice-Rector of the Aristotle University of Thessaloniki and the I-BEC centre.



Figure 54. Meetings of Prof. Hadjimitsis and Mr. Christofe with Prof Zalides from i-BEC and Vice-Rector Prof Laopoulos from AUTH (left) and Dr Kontoes from NOA and Prof Zalides from i-BEC (right)



Figure 55. Participants at 3<sup>rd</sup> South-Eastern Europe Geo Workshop which took place in Thessaloniki, Greece

### 3.2.13 38<sup>th</sup> annual EARSEL Symposium – July 2018

The 38th annual EARSeL Symposium (<http://symposium.earsel.org/38th-symposium-Chania/>) follows a long series of successful symposia, with the last ones being held in Prague (2017), Bonn (2016) and Stockholm (2015). The symposium, held on 9-12 July 2018, was organised by European Association of Remote Sensing Laboratories (EARSeL) and hosted by the Mediterranean Agronomic Institute of Chania (MAICh), member of International Center for Advanced Mediterranean Agronomic Studies (CIHEAM).



Figure 56: Mrs Eleni Loulli at the 38<sup>th</sup> EARSEL symposium presenting applications of the ATHENA Project

ATHENA project was promoted at the 38<sup>th</sup> annual EARSEL Symposium in Chania on Wednesday 12 July 2018. Mrs Eleni Louli, PhD candidate gave an oral presentation on behalf of CUT entitled ‘The use of Copernicus data to support archaeological research in the Eastern Mediterranean’.

### 3.2.14 SPIE Remote Sensing 2018 – September 2018

Dr Kyriacos Themistocleous presented ATHENA project through a poster and oral presentation at SPIE Remote Sensing 2018 (<https://spie.org/conferences-and-exhibitions/remote-sensing>) in Berlin 10<sup>th</sup> – 13<sup>th</sup> of September.



Figure 57: Dr Kyriacos Themistocleous at SPIE 2018 - Remote Sensing oral & poster presentation

The topic of the presentation was “Remote Sensing Archaeology knowledge transfer: examples from the ATHENA Twinning project” (<http://optics.org/events/2018/755>).



### 3.2.15 International Symposium on the use of Space Technologies for Natural and Cultural Sites Campeche 2018 – September 2018

Gunter Schreier from DLR was invited as a keynote speaker at the International Symposium on the use of Space Technologies for Natural and Cultural Sites (<http://www.simposio.coesicydet.com/index.php?action=home&idioma=en>) in Campeche, Mexico on 18th – 20th of September.

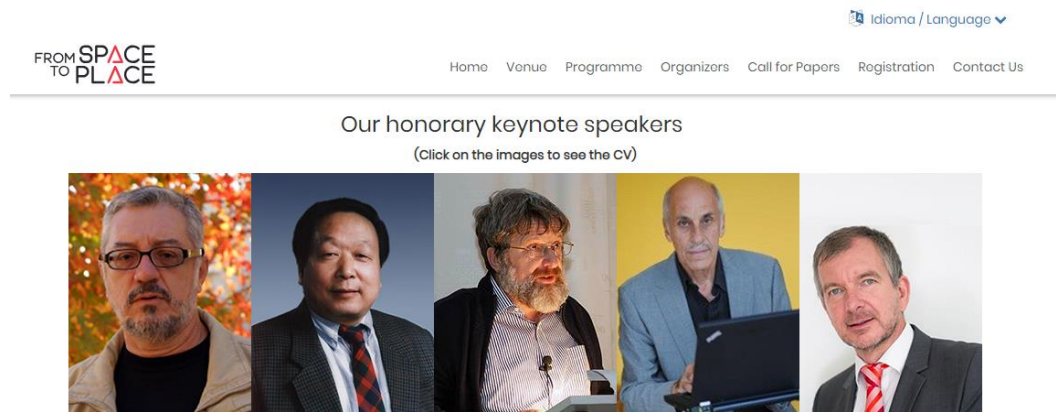


Figure 58: Mr Gunter Schreier (DLR) as an honorary keynote speaker at the International Symposium on the use of Space Technologies for Natural and Cultural Sites Campeche

The use of space technologies, as non-invasive tools for the management, monitoring, documentation, modelling, education, presentation, promotion and dissemination of protected areas (natural and cultural) was discussed among international experts, end-users, national authorities, conservation authorities and researchers. ATHENA project was promoted at this conference.



Figure 59: Participants from the International Symposium on the use of Space Technologies for Natural and Cultural Sites Campeche

### 3.2.16 EuroMed 2018 – October 2018

A paper was presented at the EuroMed 2018 conference (29th of October 2018 in Cyprus) entitled as “Capitalize on the experience of the ATHENA project for Cultural Heritage for the Eratosthenes Centre of Excellence for the benefit of the East Med region”.



Figure 60: Presentation from EuroMED 2018 conference

Prof. Hadjimitsis participated at the EuroMED 2018 Conference taking the advantage to enlarge the existing network of ATHENA. He met with Prof. Dr.-Ing. Thomas P. Kersten from the HafenCity Universität Hamburg as well as Mrs Angelina Bekasova from the Copernicus support office.



Figure 61. Prof. Diofantos Hadjimitsis with Prof. Dr.-Ing. Thomas P. Kersten (left) and with Mrs Angelina Bekasova (right) during EuroMED 2018

### 3.3 Promoting ATHENA through other European projects

In this section, the projects through which ATHENA was promoted are presented in brief.

#### 3.3.1 EXCELSIOR H2020 Teaming project – Phase 1

During the phase 1 of the EXCELSIOR H2020 Teaming project ([www.excelsior2020.eu](http://www.excelsior2020.eu)) several promotional and dissemination activities were carried out. Within these events, among the other activities of the ERATOSTHENES Research Centre, ATHENA project was promoted.



Figure 62. EXCELSIOR Project kick-off meeting

The 'EXCELSIOR' TEAMING project is built on the existing ERATOSTHENES Research Centre capacities. The aim of the proposed TEAMING project is to further promote the existing ERATOSTHENES Research Centre (ERC), established within the Cyprus University of Technology (CUT) into a sustainable, viable and autonomous Centre of Excellence (CoE) for Earth Surveillance and Space-Based Monitoring of the Environment, which will provide the highest quality of related services on the National, European and International levels.

The 'EXCELSIOR' Teaming project addresses a specific challenge defined by the work program – namely, the reduction of substantial disparities in the European Union by supporting research and innovation activities and systems in low performing countries. It also aims at establishing long-term and strategic partnerships between the Teaming partners, thus reducing internal research and innovation disparities within European Research and Innovation landscape. The project is fully aligned with the Smart Specialization Strategy of Cyprus (S3Cy) in many areas, significantly enhancing the impact of the targeted regional and national investments, namely, Environment and ICT. The ERATOSTHENES CoE – with its



expertise and infrastructure could be a hub for the earth observation activities in the eastern Mediterranean area due to the key geostrategic position of Cyprus. The Excelsior Teaming proposal was ranked 1<sup>st</sup> (attaining full marks 15/15, “Excellent”) on a pan-European scale, among 208 proposals submitted to Programme “Teaming for Excellence” Phase 1, part of European Union’s (EU) Horizon 2020 framework for Research and Innovation. The programme “Teaming for Excellence” (Teaming) aims at connecting, via the creation of new or the major upgrade of existing Centers of Excellence, renowned research institutions from countries with a strong tradition in Research and Innovation with institutions from countries with developing research activity, so that the latter countries become more competitive in securing research funds. The Excelsior proposal was awarded 0.4 million euros for a period of one year (Phase 1 of the Programme) in order to develop a business plan for promoting further the existing ERATOSTHENES Research Centre to a ‘**EX**cellence Research **C**entre for **E**arth SurveiLlance and **S**pace-Based MonItoring **O**f the EnviRonment’. The business plan has been submitted during Phase 1. Phase 2 proposal has been submitted on 15/11/2018 seeking funding of 15 million euros for a period of 5-7 years, with the additional equal amount of national co-funding for a period of 15 years and commitments from other parties, totalling of 50 million euros.

ATHENA was promoted at Phase 1 of EXCELSIOR project through its website, social media, newsletters and other promotion activities.

- **MSCA-RISE 2017 SEO-DWARF Mid-Term Meeting – October 2017**

Dr Christiana Papoutsas from the Cyprus University of Technology gave a presentation of the ATHENA and EXCELSIOR projects during the MID TERM meeting of the MSCA-RISE ‘SEO-DWARF’ project (<https://seo-dwarf.eu/>) which took place in Bari, Italy.

During her presentation she mentioned the vision of the upcoming Centre of Excellence ‘EXCELSIOR’ and she pointed out other activities of the Eratosthenes Research Centre such as the ‘ATHENA’ project that can offer future ways of collaboration with the partners in the area of Earth Observation for Culture Heritage. The consortium comprises 5 industrial and 4 academic partners coming from Greece, Italy, Germany, France, Cyprus and Bulgaria.

Industrial partners: (1) Mrs Jenny Malig, Mr Dominik Grether - TWT GmbH Science & Innovation; (2) Mr Sergio Samarelli, Dr Vito De Pasquale, Ilias Ioannou - Planetek Italia S.r.l.; (3) Aurelie Dehouck and Virginie Lafon - I-SEA SAS; (4) Dimitris Sykas and K. Karamvasis - Planetek Hellas EPE; and (5) Mr Peter Gray, Mr Bogdan Despotov - CloudSigma AG and

Academic partners: (1) Prof. Vasilias Karathanassi and Dr Pol Kolokousis- Laboratory of Remote Sensing, National Technical University of Athens (NTUA); (2) Dr Christiana Papoutsas and Dr Milto Miltiadou - Cyprus University of Technology (CUT); (3) Prof Konstantinos Topouzelis, Kopsacheilis Basilis, - Department of Marine studies, University of the Aegean; and (4) Prof. Marco De Gemmis and Mr Marco Polignano - University of Bari “Aldo Moro”, Department of Computer Science.



Figure 63. Informing SEO-DWARF Partners about ATHENA and EXCELSIOR Projects

- **CLIMA project meeting in Italy – November 2017**

Mr. Marios Tzouvaras, Research Associate at the ERATOSTHENES Research Centre (CUT) attended CLIMA project (<http://www.clima-project.eu/>) meeting in Italy which took place on the 14<sup>th</sup> of November 2017. He presented the current activities of the Eratosthenes Research Centre and described the vision to upgrade the existing Research Centre into a sustainable and autonomous Centre of Excellence in the field of Earth Observation and Space-Based Monitoring of the Environment, in the framework of EXCELSIOR project. During his presentation he mentioned the other existing projects of the ERC in the field of Cultural Heritage and Earth Observation highlighting the added-value from the ATHENA Twinning Project through several workshops, training activities and short-term staff exchange visits between the consortium partners CUT, DLR and CNR.

Participants were Prof Stefano De Angeli, Dr Massimo Romanelli, Mrs Fabiana Batistin and Mrs Ilaria Miccoli from the Università degli Studi della Tuscia, Prof. Clare Wilson and Dr



Adam Varley from the University of Stirling, and Mr Alessio di Orio and Mrs Maria Cristina Salvi from Alma Sistemi SAS.



Figure 64. Group photo of the CLIMA partners participated at the project meeting in Italy (November 2017).

- **PROTHEGO workshop and 5th consortium meeting in Petra, Jordan – November 2017**

Dr Kyriacos Themistocleous attended the 5<sup>th</sup> internal meeting of the PROTHEGO project (<http://www.prothego.eu/>) in Petra, Jordan. During his presentation he mention the importance for the CUT to participate in the EXCELSIOR Teaming and ATHENA Twinning projects presenting the main aims and vision of the two projects as well as emphases on the capabilities and capacity building through the two projects. The participants included representatives from Al-Hussein Bin Talal University, Petra archeological park, CH European Joint Program Initiative on Cultural Heritage, the Italian scientific attaché Il Cairo Embassy, the Institute for Environmental Protection and Research in Italy, the British Geological Survey, Natural Environment Research Council in the UK, the University of Milano-Bicocca in Italy and the Geological Survey of Spain.

The PROTHEGO project is funded in the framework of the Joint Programming Initiative on Cultural Heritage and Global Change (JPICH) – HERITAGE PLUS, under ERA-NET Plus and the Seventh Framework Programme (FP7) of the European Commission and aims to

make an innovative contribution towards the analysis of geohazards in areas of cultural heritage in Europe.



Figure 65. PROTHEGO meeting in Petra, Jordan - November 2017

### 3.3.2 FP7 - ITACA project – June 2016

ATHENA project was presented during the invited lecture of Dr. Athos Agapiou at the Hellenic Maritime Museum, Piraeus, Greece organized in the framework of the FP7 ITACA (<http://www.itaca-fp7.eu/>) Final Conference on June 24, 2016.



Figure 66. ITACA project logo and ITACA Final Conference venue – June 2016

The ITACA (Innovation Technologies and Applications for Coastal Archaeological sites) project (Grant Agreement n. 606805) aimed to prove a management system for underwater archaeological sites in coastal regions. The discovering and monitoring service uses innovative satellite remote sensing techniques combined with image processing algorithms.



### 3.3.3 GEO-CRADLE Project Meeting – November 2016

ATHENA project was promoted during the GEOCRADLE project meeting in Limassol, Cyprus hosted by the partner Cyprus University of Technology (CUT), (<http://geocradle.eu>) at 16<sup>th</sup> to 17<sup>th</sup> November 2016.



Figure 67. Promotional material of ATHENA project disseminated during the GeoCradle Workshop in Limassol, Cyprus (2016)

The dissemination of the ATHENA project through the GEO-CRADLE Network is very important since it consists a network of stakeholders and a Data Hub for Earth Observation (EO) in North Africa, Middle East and the Balkans. GEO-CRADLE has proactively engaged with the relevant regional stakeholders (data/service providers, decision makers, and SMEs) in a series of consultation activities including surveys, interviews, workshops and bilateral exchanges, in order to identify the regional needs.



Figure 68. Group photo of the Participants of GeoCradle Workshop that took place in Limassol, Cyprus (2016).

### 3.3.4 SEREN 3 – April 2018

ATHENA was introduced to the representatives of the SEREN 3 project (<http://www.seren-project.eu/>) under the H2020 Secure Societies call during their visit to the Eratosthenes Research Centre in CUT. The event was supported by the Research Promotion Foundation of Cyprus. SEREN3 is a Coordination and Support Action with the overall aim of facilitating transnational co-operation among NCPs for Secure Societies, identifying and sharing good practices, and raising the general standard of the support to programme applicants across the EU, Associated and Third countries.



Figure 69: Discussion during the meeting of SEREN 3 project team at CUT premises



Figure 70: Participants on the SEREN 3 project meeting.



### 3.3.5 CopHub.AC Kick-Off Meeting – October 2018

The ATHENA project was presented during the kick-off meeting of Horizon2020 CopHub.AC project (<http://www.cophub-ac.eu/>) on 11-12 October 2018 in Brussels. Mr Marios Tzouvaras presented the activities of the ERC Lab and the activities of ATHENA project to the 12 partner organizations in the field of Space Technologies and Remote Sensing.



Figure 71. CopHub.AC kick-off meeting participants group photo

Participants to the kick-off meeting were Dr Stefan Lang, Mrs Petra Jenewein-Bogensperger and Dr Barbara Riedler – PLUS, Dr Peter Zeil and Mrs Kerstin Kulesa – Spatial Services GmbH, Dr Christoph Schroder – UMA, Mrs Nefeli Politi-Stergiou – EVENFLOW, Dr Valerio Tramutoli – UNIBAS, Mr Giorgio Saio – GISIG, Mrs Monica Miguei-Lago – EARSC, Mr Peter Baumann – RASDAMAN, Dr Diana Vaiciute – KU MRI, Dr Martynas Bucas – KU MRI, Prof. Danny Vandenbroucke and Mr Marc Olijslagers – KU LEUVEN.

### 3.3.6 MSCA-RISE 2018 RESEARCH Kick-Off Meeting – November 2018

The ATHENA project was presented at the kick-off meeting of MSCA-RISE 2018 RESEARCH. Dr Christiana Papoutsas highlighted the previous experience of the CUT's team in the area of archaeology and remote sensing. She mentioned the importance for the Eratosthenes Research Centre to collaborate with internationally-leading counterparts, such as the Institute of Archaeological and Architectural Heritage of the National Research Council of Italy (IBAM-CNR) and the German Aerospace Centre (DLR).



Figure 72. Informing Partners of MSCA-RISE 2018 RESEARCH about ATHENA Project

[People met: Dr Oscar Perez-Punzano – Research Programme Officer / European Commission; Mr Alessio Di Iorio - ALMA Sistemi srl (Italy); Dr Marcello Coradini - Space Systems Solutions S3 (Cyprus); Mr Christos Kontopoulos and Mrs Maria Karamichalaki - Geosystems Hellas (Greece); Prof. De Angeli Stefano and Mrs Marcella Barone - University of Tuscia (Italy); Prof. Apostolos Sarris – Foundation for Research & Technology (Greece); Prof. Włodzimierz Rączkowski – Institute of Archaeology / Adam Mickiewicz University (Poland)].

### 3.4 ATHENA dissemination through summer schools

#### 3.4.1 *Geophysics and Remote Sensing for Archaeology – May 2016*

ATHENA project joined the ‘Geophysics and Remote Sensing for Archaeology’ school held in Pompeii between 9<sup>th</sup> and 13<sup>th</sup> of May 2016. During the course ATHENA team members presented an overview, objective and goals of the project to the school participants, while they followed some interesting courses related to data collection, processing and interpretation for geophysical techniques (GPR, magnetic, ERT), passive and active remote sensing and low-cost approaches based on the use of UAV, all oriented for preservation and monitoring for cultural heritage sites and monuments. In addition, a specific invited lecture entitled “Ground-truth spectroradiometric data for archaeological applications” was given by Dr. Athos Agapiou, from CUT. ATHENA project supported the event.



*Figure 73: ATHENA team participated in the International School of Pompeii.*

#### 3.4.2 *Surveying Modelling Monitoring Management BIM-GIS based: Cultural Heritage & Built Environment – July 2016*

ATHENA project supported the PhD Summer School course “Surveying Modelling Monitoring Management BIM-GIS based: Cultural Heritage & Built Environment” (19-22 July, 2016). The course was organized by Politecnico di Milano (dABC) with Visiting Lecturers from Carleton University (Canada), FORTH Institute (Greece) and Cyprus University of Technology (Cyprus). Dr. Branka Cuca from CUT presented the session “Societal Challenges, Copernicus Programme Opportunities & Archaeolandscape”. Moreover, ATHENA project supported the Summer School Course “CULTURAL HERITAGE AND BUILT



ENVIRONMENT SURVEYING, MODELLING AND MONITORING” held at Politecnico di Milano between June 20<sup>th</sup> and 23<sup>rd</sup> 2017.



Figure 74: ATHENA supported PhD summer school “Surveying Modelling Monitoring Management BIM-GIS based”

The topic of summer school was “Multi-Temporal, Multi-Source, Multi-Scale Remote Sensing Data for Built Environment, Cultural Heritage and Archaeology”. During the summer school Dr. Athos Agapiou from CUT and Dr. Daniele Cerra from DLR presented and provided hands on experience in the participants. The summer school was organized by Prof. R. Brumana, Ass. Prof. B. Cuca and Ass. Prof. L. Barazzetti.

### 3.4.3 Geophysics – September 2018

The summer School took place in Cyprus University of Technology premises in Limassol, Cyprus between the 4th and 5th of September 2018 with on-site visit to the UNESCO World Heritage Site of “Tombs of the Kings”. For this reason, a specific permission was asked and provided by the supporter of the project, Department of Antiquities of Cyprus, responsible for the management of all archaeological sites of the island.



Figure 75: Researchers and post-graduate students attending the Training Geophysics Summer School, Dr Francesco Soldovieri from CNR is presenting.



The summer school was organized by the team of the National Research Centre of Italy (CNR) and was composed by Dr. Rosa Lasaponara, Dr. Nicola Masini, Dr. Francesco Soldovieri and Dr. Ilaria Catapano. The Italian team visited the members of the Remote Sensing and Geo-Environment Lab of the Department of Civil Engineering and Geomatics to introduce them the basic principles of geophysical prospection, as well as to provide hands on training via real measurements taken in the field.



Figure 76: In-situ measurements at the archaeological site of the “Tombs of the Kings” in Paphos

The first day of the event, the team met at the archaeological site of the “Tombs of the Kings” to take the necessary measurements. The campaign was focused in two important monuments of the site, namely the “Tomb 3” and “Tomb 4”. The in-situ campaign involved the acquisition of ground penetrating radar (GPR) measurements using the MALA equipment at the peristyle atrium of the tombs, while in parallel GPR investigations (equipped with 2 GhZ frequency antenna) were performed to the columns of the tombs along vertical and

transversal profiles. After the end of these measurements, a fast 3-D documentation was carried out by the team of CUT to have a 3D photorealistic result of the case study

The next day, the partners met in the premises of CUT, to elaborate the measurements and further discuss on the geophysical prospection for archaeological sites and monuments. The day involved both a theoretical part and a hands-on on MATLAB environment.

## 4 Through other networks and meetings with research organisations and academia

### 4.1 International networks that ERC participates

The ERATOSTHENES Research Centre is a member of or participates in various international organisations. Its activities, including ATHENA, were promoted to all other members of these networks.



Figure 77: International networks that ATHENA was promoted

### 4.2 Meeting with the interBalkan Environment Center – March 2016

Prof. Diofantos Hadjimitsis (PC and Vice Rector for Academic Affairs of CUT) visited the interBalkan Environment Center (i-BEC) on 10th of March 2016 and met with the Scientific Coordinator of the Centre Prof. George Zalidis. He presented the ATHENA project's objectives and activities to the research team.



Figure 78: Meeting at i-BEC premises

#### 4.3 Meeting with the rector principles of Aristotle University of Thessaloniki – March 2016

On 28 of March 2016, Professor Diofantos Hadjimitsis, the coordinator of ATHENA's project and Vice Rector for Academic Affairs of CUT met with the rector principles of Aristotle University of Thessaloniki and visited the University Laboratories.



Figure 79: Meeting with Prof. Gitas and his research team at Aristotle University of Thessaloniki

Professor Hadjimitsis presented the aims and goals of ATHENA project along with its planned activities during the 3 years of the project's duration.



#### 4.4 Meeting with University of Aegean at CUT – November 2016

On 11 November 2016, Prof. Diofantos Hadjimitsis, coordinator of the ATHENA project briefed Dr. Gerasimos Pavlogeorgatos, Associate Professor at the Department of Cultural Technology and Communication (University of the Aegean) regarding the activities and outcomes of ATHENA project.



Figure 80: Meeting of ATHENA project coordinator with representative from the University of Aegean

#### 4.5 FABSPACE 2.0 Workshop, Warsaw, Poland – February 2018

After having selected 14 new FabSpaces in various countries worldwide at the end of 2017, the FabSpace 2.0 project officially inaugurated the first joint activity of the fourteen new FabSpaces during the FabSpace 2.0 Workshop on Sharing Practices to Spread the FabSpace Spirit. The workshop was held in Centre for Innovation and Technology Transfer Management of Warsaw University of Technology, Warsaw, Poland. Learn more about the workshop here: <http://bit.ly/FirstJointActivity>.

Eratosthenes Research Center from the CUT was one of the 14 new FabSpaces introduced to the FabSpace 2.0 Network. On behalf of the ERC, Dr Kyriakos Themistocleous attended the meeting in Poland where he presented the research activities of the team highlighted the added value for Cyprus to participate at the following on-going projects the 'EXCELSIOR' and 'ATHENA'.



Figure 81. Dr Marcello Maranessi presented the vision of the FabSpace 2.0 Network

Upon officially inaugurated, each FabSpace could offer a “Space Science Shop” service that collects the needs and the societal challenges of external stakeholders, linked to application domains of EO and satellite navigation uses. The scope is to provide independent participatory research support in response to concerns experienced by external stakeholders, offering a demand-driven and bottom-up approach to the FabSpace facility and screening questions provided by these stakeholders.



Figure 82. Group photo at the FabSpace 2.0 Workshop in Poland

#### 4.6 UNESCO, Paris – March 2018



Dr Kyriacos Themistocleous visited UNESCO premises at France. Dr Themistocleous presented ATHENA project among the other activities of the group in cultural heritage such as the CLIMA and PROTHEGO Projects running by the Cyprus University of Technology. Dr Themistocleous had the opportunity to discuss future collaboration with other projects consortiums (Under <http://www.prothego.eu/>).



Figure 83: Dr Kyriacos Themistocleous at the UNESCO premises - France

During the PROTHEGO meeting in France on 23<sup>rd</sup> of March 2018, Dr. Themistocleous discussed future collaboration with other project consortiums. Dr. Themistocleous presented the case study of protecting the Choirokoita world heritage site in Cyprus from geohazards. Dr. Themistocleous had productive meetings with Giovanni Boccardi, UNESCO, Chief Emergency Preparedness and Response Unit - Culture Sector in Paris. Dr. K. Themistocleous met with Maud Moullec PWC in Paris and discussed issues related to the Copernicus cultural heritage and the potential of a further collaboration, especially through the proposed ECoE.

#### 4.7 Networking activities between the DLR and the Cyprus University of Technology (linking Cyprus to Germany)

- **1st Visit to DLR – 20th to 22nd of March 2018**

- i) ATHENA – Old town Munich tour (historical, cultural heritage monuments) with DLR

On 20<sup>th</sup> of March 2018, under the 'ATHENA' H2020 Twinning project Prof. Diofantos Hadjimitsis, Dr. Kyriacos Themistocleous and Mr Andreas Christofe (Cyprus University of



Technology) along with Mr Gunter Schreier and Mr Thomas Krauss (DLR) had the opportunity for a guided tour at Munich old town.



Figure 84. ATHENA tour at Munich old town center

#### ii) ATHENA project at the Bavarian State Dept. of Monuments & Sites (Munich)

On 21<sup>st</sup> of March 2018 Prof. Diofantos Hadjimitsis with Dr Kyriacos Themistocleous and Mr Andreas Christofe (ATHENA, Cyprus University of Technology) with Gunter Schreier from DLR had the opportunity to meet with Prof. Jörg W. E. Fabbinder from the Department of Earth and Environmental Sciences which is located at the Ludwig-Maximilians-University in Munich, Germany and the Bavarian State Dept. of Monuments & Sites (Munich).



Figure 85. ATHENA team with Prof. Jörg W. E. Fabbinder at the Bavarian State Dept. of Monuments & Sites (Munich)



The Archaeological Prospection Group Munich at the Bavarian State Department for Monuments and Sites (BLFD) has been responsible for non-destructive geophysical survey methods for archaeology in Bavaria since 1982. Prof. Fabbinder made a presentation as well short visits at the labs and premises of the Bavarian State Dept. of Monuments & Sites (Munich) explaining the different ways of remote sensing that they are using to manage the Bavarian cultural heritage. Indeed, the following research topics have been explained by Prof. Fabbinder Archaeological Geophysics, Soil Magnetism, Magnetometer Prospektion for possible collaboration through the 'ATHENA'.

iii) ATHENA team at Leonhard Obermeyer Center / Department of Civil, Geo and Environmental Engineering of the Technical University of Munich

The ATHENA team had the opportunity to visit the Department of Civil, Geo and Environmental Engineering of the Technical University of Munich which is responsible for tuition and research in the field of civil and environmental engineering, surveying and geology at the TUM. Prof. Uwe Stilla presented to the ATHENA members the activities and the structure of the Department of Civil, Geo and Environmental Engineering that includes Photogrammetry and Remote Sensing Labs. Several site visits to the different labs such as BIM, Cartography and Remote sensing labs have been made.



Figure 86: ATHENA team with Prof. Uwe Stilla at TUM premises

iv) ATHENA at DLR, Oberpfaffenhofen – 22<sup>nd</sup> March 2018

On the 22<sup>nd</sup> of March ATHENA team, visited the Earth Observation Data Centre Department of DLR in Munich, Germany. DLR team guided ATHENA team to DLR premises and gave a description on how an organization like this is working.



Figure 87: Mr. Gunter Schreier with Prof. Diofantos Hadjimitsis at DLR premises (Oberpfaffenhofen)



Figure 88: The ATHENA team discussed with Mr. Nils Sparwasser and Mr. Peter Folie for the upcoming video production for the ATHENA deliverable by DLR



Figure 89: Simon Plank presented to the ATHENA team the ZKI center for crisis information, International Charter Space & Disasters



Figure 90: Mr Andreas Christofe at the Robotics laboratories by Mr. Kondak to the 'Athena' Team



Figure 91: ATHENA at the German Space Operations Center [GSOC] which is responsible for operating spacecraft for more than 35 years and plays a key role in countless manned and unmanned missions as the Galileo control center for the European GNSS.

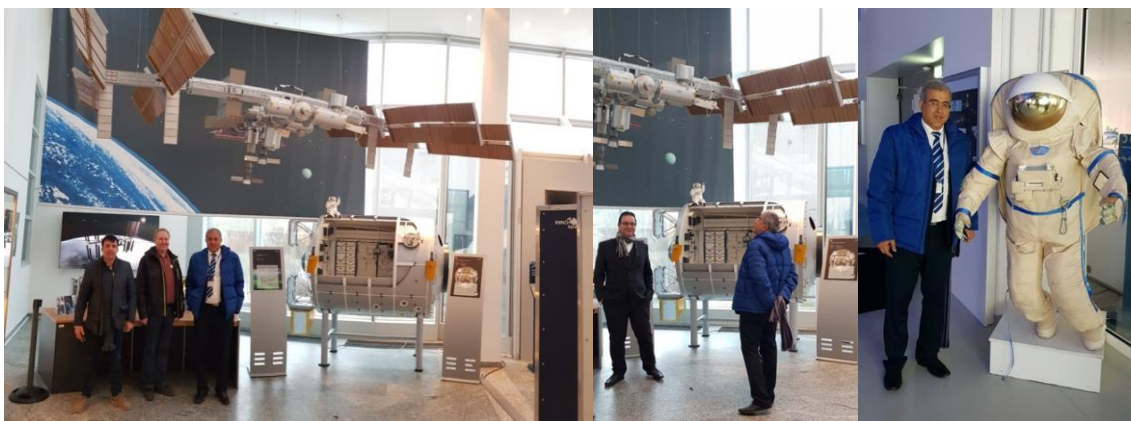


Figure 92: ATHENA team in the GSOC Columbus mission control, exhibitions

#### v) ATHENA visits ESA Business Incubation Centre

The ATHENA H2020 Twinning visited the headquarters in Oberpfaffenhofen on 22 of March 2018 and met with Thorsten Rudolph, Stefanie Hermann and Daniela Dobрева-Nielsen. Mr



Rudolph, who is the CEO of the Anwendungszentrum GmbH Oberpfaffenhofen, presented the activities of the ESA BIC.



Figure 93: Thorsten Rudolph, Stefanie Hermann, Daniela Dobрева-Nielsen on the right meet with ATHENA team at ESA Business Incubation Centre in Oberpfaffenhofen

- **2nd Visit to DLR - November 2018**

- i) ATHENA at DLR-Sensors – 20<sup>th</sup> November 2018

On the 20<sup>th</sup> of November ATHENA team, visited DLR premises with in the third short Staff Exchange of the ATHENA project. Mr. Andreas Christofe, Dr Kyriacos Themistocleous and Ass. Prof. Chris Danezis visited sensors and laboratories and the European Space Imaging (EUSI) ground station at DLR facilities in Munich, Germany.



Figure 94 : Mr Andreas Christofe, Dr Kyriacos Themistocleous and Ass. Prof. Chris Danezis from CUT at DLR premises on the 2<sup>nd</sup> short staff visit to DLR in the framework of the ATHENA project





Figure 95: ATHENA team had a general Introduction presentation to DLR sensors by Maxwell



Figure 96: Dominik Rosenbaum present 3K/4K-camera to the ATHENA team



Figure 97: DLR Airborne Remote Sensing team Claas Köhler, Stefan Plattner & Jürgen Wörishofer presented HySpex camera and UAVs.

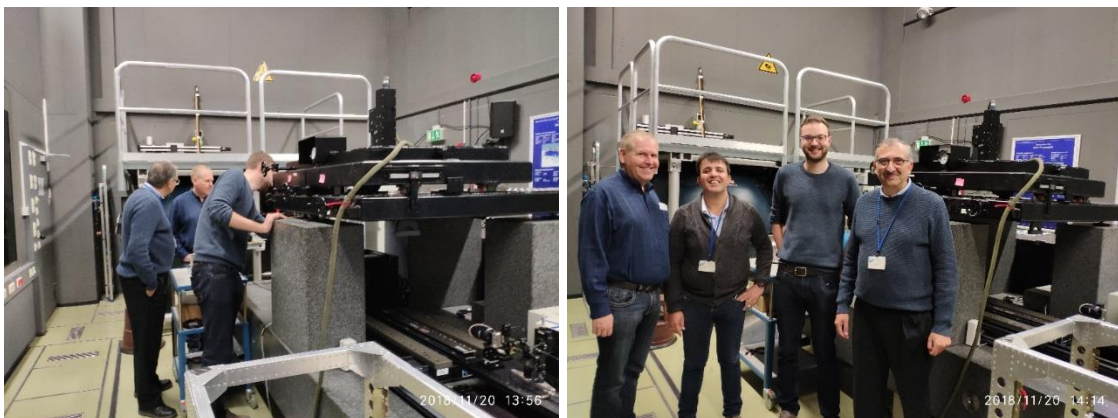


Figure 98: Andreas Baumgartner explained to the ATHENA team the importance of the Calibration Home Base at DLR facilities.

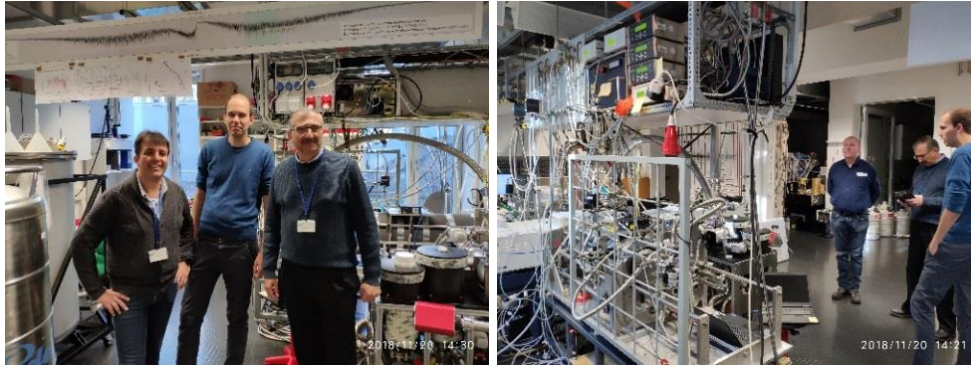


Figure 99: Christian Röske introduced the ATHENA team to the Spectroscopy lab



Figure 100: ATHENA team at the European Space Imaging (EUSI) receiving station at DLR premises

ii) ATHENA team visited the GAF AG and the European Space Imaging (EUSI) in Munich – 21<sup>st</sup> November 2018

On the 21<sup>st</sup> of November ATHENA team, visited GAF AG and the European Space Imaging (EUSI) in Munich with in the third short Staff Exchange of the ATHENA project. Mr Samuel Barisch, the technical manager of Earth Observation & image Processing of GAF AG presented the company to the ATHENA team. GAF has developed into a European leader with outstanding skills in the geo-information industry. Being a part of the Telespazio Space Service Grouping, the company still follows its successful strategy of having a flat decision-making hierarchy, lean internal management structures and a quick-to-market strategy. <https://www.gaf.de>





Figure 101: Mr Samuel Barisch (GAF AG) discussing with Dr Kyriacos Themistocleous and Ass. Prof. Chris Danezis (CUT) at GAF AG premises.



Figure 102: ATHENA team with Mr. Samuel Barisch, the technical manager of Earth Observation & image Processing of GAF AG

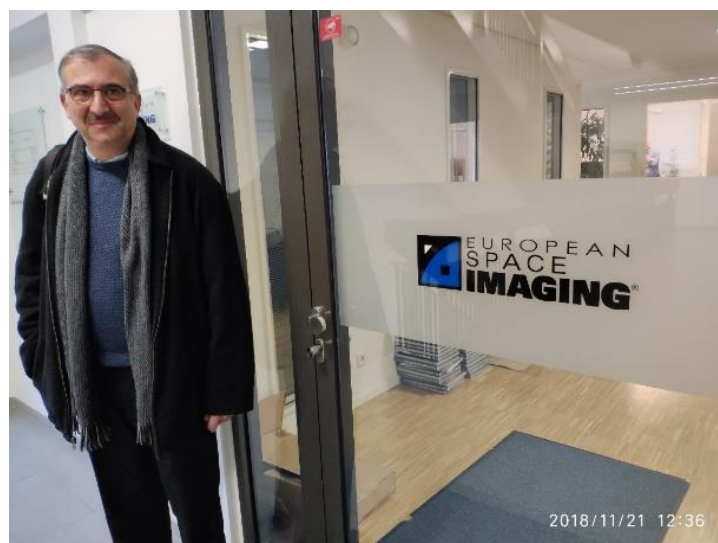


Figure 103: Dr Kyriacos Themistocleous at European Space Imaging (EUSI) office in Munich.

#### 4.8 Networking activities between the Ben-Gurion University of the Negev and the Cyprus University of Technology (linking Cyprus to Israel)

- Cyprus University of Technology, Limassol, Cyprus – July 2017



Dr Shimrit Maman, Research, Associate and Laboratory manager from the Earth and Planetary Image Facility (EPIF) of the Ben-Gurion University of the Negev visited the 'Remote Sensing & Geo-Environment Lab'/ ERATOSTHENES Research Centre at the Cyprus University of Technology from 10th of July to 15 July 2017. During the visit Dr Shimrit Maman had the opportunity to come across with the various activities of the group for the last 10 years in the areas of earth observation. Based on the existing MOU between the two universities, it was agreed to further promote common activities between the two groups. Presentation of both the EXCELSIOR Teaming and ATHENA Twinning Projects have been made by Prof. Diofantos G. Hadjimitsis. Dr Mammouri, Dr Nisantzi and Dr Themistocleous were also attended the meeting on behalf of CUT with Dr Maman on behalf of the Ben-Gurion University of the Negev.



Figure 104. Dr Shimrit Maman from Ben Gurion University of Negev with Prof. Diofantos Hadjimitsis from the CUT

- Ben-Gurion University, Tel-Aviv, Israel - April 2018

Prof. Hadjimitsis, the ATHENA project coordinator and Vice-Rector of Academic Affairs of the Cyprus University of Technology (CUT) visited, following a formal invitation, the Ben-Gurion University in Israel between 23 and 25 April 2018. Prof. Hadjimitsis met Prof. Yuval Goren of



the Department of Bible, Archaeology and Ancient Near Eastern Studies and discussed possible future collaboration with the 'ATHENA' project and their team.  
<http://in.bgu.ac.il/en/Pages/default.aspx>



Figure 105: Prof. Dan Blumberg and Dr. Shimrit Maman with Prof. D. Hadjimitsis at the Ben-Gurion University in Israel

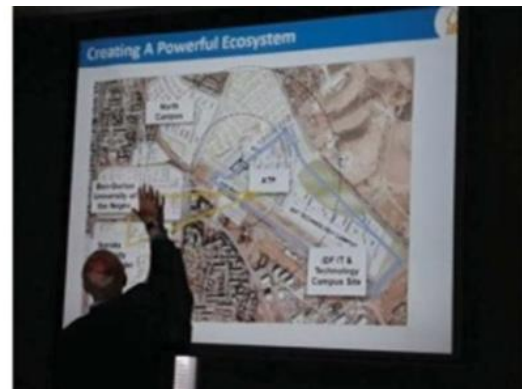


Figure 106: Prof. Hadjimitsis at the Ben-Gurion University in Israel

#### 4.9 UNESCO Chair and ATHENA – May 2018



Prof. Diofantos Hadjimitsis presented ATHENA in his official talk during the first UNESCO Chair in Digital Cultural Heritage at the Cyprus University of Technology premises during 8-9 May 2018. The UNESCO Chair ceremony has been also joined by Mr Gunter Schreier. Three members of the ATHENA have been selected to assist the UNESCO Chair. Athena team discussed with Dr Ioannides future collaborations. [www.digitalheritagelab.eu](http://www.digitalheritagelab.eu)



Figure 107 : Prof. Diofantos Hadjimitsis delivers the opening speech at the inauguration of the UNESCO Chair (right)



Figure 108 : Dr Kontoes from NOA and Prof. Hadjimitsis with the ERA-Chair and Unesco Chair holder Dr Marinos Ioannidis (left), Mr Gunter Schreier from DLR with Prof. Hadjimitsis

#### 4.10 ATHENA meets the Head of the European Commissions' Representation in Cyprus – May 2018

Prof. Diofantos Hadjimitsis promoted ATHENA to the Head of the European Commissions' Representation in Cyprus Mr Ierotheos Papadopoulos within the framework of the UNESCO Chair in Digital Cultural Heritage ceremony at the Cyprus University of Technology premises on the 8<sup>th</sup> of May 2018.



Figure 109: Prof. Diofantos Hadjimitsis, Mr Ierotheos Papadopoulos, Mr Marinos Ioannidis and Mr Nicolas Iordanou at UNESCO Chair in Digital Cultural Heritage ceremony

#### 4.11 ATHENA meets Korean National University of Cultural Heritage – May 2018

The Korean National University of Cultural Heritage (<https://www.nuch.ac.kr/english/main.do>) aspires to promote traditional culture in both theory and practice by enhancing creative inheritance and development of traditional culture and preservation, management and utilization of cultural properties.

During their visit to Cyprus University of Technology they met with the coordinator of the ATHENA project Prof. Hadjimitsis who informed them about the activities of the project and its objectives. The representatives of the Korean University were given an informative talk and expressed their interest for future collaboration with ATHENA center.





Figure 110: Members of the Korean University in Cultural Heritage during their visit at the Cyprus University of Technology. Meeting with the Rector, academic and administrative staff of CUT and Prof. Hadjimitsis, Coordinator of the ATHENA Twinning Project.

#### 4.12 NASA Mediterranean Regional Information Network (MedRIN) – July 2018

The MedRIN Kick-off Meeting took place in the premises of the Mediterranean Agronomic Institute of Chania, in Chania / Greece during 13-14 July 2018. Participants coming both from academic and industry sectors such as universities, agencies and organisations attended the MedRIN kick-off meeting representing Greece, Cyprus, Israel, Turkey and Italy.



Figure 111. NASA - MedRIN Map

Several presentations were given by the participants and fruitful discussions were followed in order to set the strategy of the MedRIN initiative. One of the main goals of the members/partners is the development of a network which will collaborate on issues that are of high priority for the region. The stakeholders are already known and focus groups can



serve specific objectives of the network. The additional benefit outcomes from the foundation of the MedRIN will be the synergies coming out of the collaborative efforts. The current participants should only be the founding members and aim to attract others to join this effort.



Figure 112. Presentation of ATHENA project at MedRIN meeting

During the meeting oral presentations were given by the participants. Prof. Diofantos Hadjimitsis during his oral presentation at the MedRIN kick-off meeting mentioned the importance of capitalizing the Experience earned from the 'ATHENA' H2020 Twinning & 'Excelsior' H2020 Teaming projects as well as the benefit of using the existing Stakeholder Hub created through the aforementioned initiatives in order to promote the establishment of the Mediterranean Regional Information Network.



Figure 113: Participants on the kick-off meeting of MedRIN

#### 4.13 Technological Educational Institute of Western Greece – November 2018

On 29 November 2019, the Technological Educational Institute of Western Greece visited the 'Remote Sensing & Geo-Environment Lab'/ ERATOSTHENES Research Centre at the Cyprus University of Technology. Prof. Diofantos Hadjimitsis promoted ATHENA and its activities to the delegates from the TEI of Western Greece.



Figure 114: Visit from TEI of West Greece at CUT

## 5 Scientific publications

ATHENA project, its activities and outputs were promoted via publications in peer-reviewed journals, conference presentations and abstracts/posters. The list of all scientific publications on the ATHENA project in journals, conferences and posters/abstracts can be seen below:

### 5.1 Journals Publications

- 1) Lysandrou V., Agapiou A., Ioannides M., Kantiranis N., Charalambous E., 2018, A multi-disciplinary approach for the investigation of Paphos (Cyprus) harbour Castle, Heritage, (accepted)
- 2) Agapiou A., Lysandrou V., Sarris A., Papadopoulos N., Hadjimitsis D. G., 2017, Fusion of satellite multispectral images based on Ground Penetrating Radar (GPR) data for the investigation of buried concealed archaeological remains, Geosciences, 2017, 7(2), 40; doi:10.3390/geosciences7020040
- 3) Lysandrou V., Agapiou A., 2017, Advancing archaeological research through remote sensing: the example of Tylliria area in Cyprus, Global Journal of Archaeology & Anthropology, 1(1).
- 4) Agapiou A., 2016, Remote Sensing Heritage in a petabyte-scale: Satellite Data and Heritage Earth Engine© applications, International Journal of Digital Earth, 10.1080/17538947.2016.1250829.
- 5) Agapiou A., Lysandrou V., Lasaponara R., Masini N., Hadjimitsis D. G., 2016, Study of the variations of archaeological marks at Neolithic site of Lucera, Italy using multispectral high resolution datasets, Remote Sensing, 8(9), 723; doi:10.3390/rs8090723.
- 6) Lysandrou V., Cerra D., Agapiou A., Charalambous E., Hadjimitsis D. G., 2016, Towards a spectral library of Roman to Early Christian Cypriot floor mosaics, Journal of Archaeological Science: Reports, <http://dx.doi.org/10.1016/j.jasrep.2016.06.029>
- 7) Agapiou A., 2016, Orthogonal equations for the detection of archaeological traces demystified, Journal of Archaeological Science: Reports, doi:10.1016/j.jasrep.2016.07.004
- 8) Cerra, D.; Plank, S.; Lysandrou, V.; Tian, J. Cultural Heritage Sites in Danger- Towards Automatic Damage Detection from Space. Remote Sens. 2016, 8, 781.
- 9) Kyriakides N., Lysandrou V., Agapiou A., Illampas P., Charalambous E., 2016, Correlating damage condition with historical seismic activity in underground sepulchral monuments of Cyprus, Journal of Archaeological Science: Reports, doi:10.1016/j.jasrep.2016.07.007.

- 10) Agapiou, A.; Lysandrou, V.; Hadjimitsis, D.G. Optical Remote Sensing Potentials for Looting Detection. *Geosciences* 2017, 7, 98.
- 11) Cerra, D.; Agapiou, A.; Cavalli, R.M.; Sarris, A. An Objective Assessment of Hyperspectral Indicators for the Detection of Buried Archaeological Relics. *Remote Sens.* 2018, 10, 500.

## 5.2 Conferences

- 1) Capitalize on the Experience of the ATHENA Project for Cultural Heritage for the Eratosthenes Centre of Excellence for the Benefit of the East Med Region, Hadjimitsis D. G., Themistocleous K., Evagorou E., Michaelides S., Christofe A., Nisantzi A., Neocleous K., Papoutsas C., Mettas C., Tzouvaras M., Loulli E., Kouta G., Danezis C., Lasaponara R., Masini N., Cerra D., Schreier G. and Papadavid G., 7th International Conference, EuroMed 2018, Nicosia, Cyprus, October 29–November 3 - In book: *Digital Heritage. Progress in Cultural Heritage: Documentation, Preservation, and Protection* - DOI: 10.1007/978-3-030-01762-0\_56.
- 2) Remote sensing archaeology knowledge transfer: examples from the ATHENA twinning project, Hadjimitsis D. G., Agapiou A., Lysandrou V., Nisantzi A., Christofe A., Tzouvaras M., Papoutsas C., Mamouri R.E., Mettas C., Evagorou E., Themistocleous K., Papageorgiou N., Lasaponara R., Masini N., Biscione M., Danese M., Sileo M., Krauss T., Cerra Gessner U., Schreier G. and Michaelides S., *Remote Sensing Technologies and Applications in Urban Environments* - SPIE Remote Sensing 2018, Berlin, Germany - DOI: 10.1117/12.2325532.
- 3) Monitoring cultural heritage sites affected by geohazards, Themistocleous K and C. Danezis, *Earth Resources and Environmental Remote Sensing/GIS Applications* - SPIE Remote Sensing 2018, Berlin, Germany - DOI: 10.1117/12.2325455.
- 4) Digitization issues in documenting cultural heritage with drones: case study of Foinikas, Cyprus - Conference: *Earth Resources and Environmental Remote Sensing/GIS Applications* - SPIE Remote Sensing 2018, Berlin, Germany - DOI: 10.1117/12.2325459
- 5) The innovative documentation of cultural heritage using H-BIM: case study of Asinou church, Themistocleous K., *Earth Resources and Environmental Remote Sensing/GIS Applications* - SPIE Remote Sensing 2018, Berlin, Germany - DOI: 10.1117/12.2325453
- 6) Study of ancient monuments' seismic performance based on Passive and Remote Techniques, Kyriakides N., Illampas R., Lysandrou V., Agapiou A., Masini N., Sileo



- M., Catapano I., Gennarelli G., Lasaponara R., Soldovieri F., Hadjimitsis D. G., 16th European Conference on Earthquake Engineering (16ECEE), 18-21, June 2018, Thessaloniki, Greece.
- 7) From space to ground. Digital techniques or the investigation of monuments and sites, 10th MONUBASIN “Natural and Anthropogenic Hazards and Sustainable Preservation”, Lysandrou V., Agapiou A., Kyriakides N., Hadjimitsis D. G., 20-22 September 2017, Athens, Greece.
  - 8) Benefits derived from “ATHENA” Horizon 2020 Twinning project in the field of Remote Sensing for Cultural Heritage, Hadjimitsis D.G., Agapiou A., Lysandrou V., Nisantzi A., Christofe A., Tzouvaras M., Papoutsas C., Mamouri R., Mettas C., Evagorou E., Themistocleous K. EUROMED 2017, pp 727-731.
  - 9) ATHENA: Center of Excellence in Cyprus in the Field of Remote Sensing for Cultural Heritage in the Areas of Archaeology and Cultural Heritage, Hadjimitsis D. G., Agapiou A., Lysandrou V., Branka C., Themistocleous K., Nisantzi A., Lasaponara R., Masini N., Krauss T., Cerra D., Gessner U., Schreier G., 6th GEOBIA 2016, 14-16 September 2016 / Enschede, The Netherlands.
  - 10) Satellite based investigation for detection of ancient tombs’ looting in Cyprus, Agapiou A., Lysandrou V., 2nd Computer Applications and Quantitative Methods in Archaeology (CAA GR) 2016, Athens, Greece 20-21 December 2016.
  - 11) Observing the changes in landscape around the historical capital of Nicosia using multi-spectral multi-temporal datasets Cuca B., Agapiou A., Hadjimitsis D.G., 6th International Euro-Mediterranean Conference (EuroMed 2016), 31 Oct. – 05 November 2016, Nicosia, Cyprus.
  - 12) 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), 4-8 April 2016, Cyprus.
  - 13) Automatic damage detection for sensitive cultural heritage sites, Cerra D., Tian J., Lysandrou V., Plank S., XXIII ISPRS Congress 2016, 12-19 July 2016, Prague.

### 5.3 Posters – Abstracts

- 1) Research and support for knowledge transfer in the ATHENA Twinning project: Remote sensing for cultural heritage, Hadjimitsis D. G., Agapiou A., Lysandrou V., Nisantzi A., Christofe A., Tzouvaras M., Papoutsas C., Mamouri R.-E., Mettas C.,

- Evagorou E., Themistocleous K., Lasaponara R., Masini N., Danese M., Sileo M., Krauss T., Cerra D., Gessner U., Schreier G., GEOBIA 2018
- 2) The use of Copernicus data to support archeological research in the Eastern Mediterranean, Hadjimitsis D. G., Christofe A., Agapiou A., Nisantzi A., Tzouvaras M., Papoutsas C., Mettas C., Evagorou E., Themistocleous K., Lysandrou V., Kouta G., Lasaponara R., Masini N., Schreier G., EARSEL 2018.
  - 3) ATHENA project: training activities for the detection of looted archaeological sites, Hadjimitsis D. G., Christofe A., Agapiou A., Lysandrou V., Themistocleous K., Lasaponara R., Masini N., Geophysical Research Abstracts, EGU2018, Vienna, Austria.
  - 4) Knowledge transfer through the ATHENA Twinning project: Remote sensing for cultural heritage, Hadjimitsis D. G., Christofe A., Agapiou A., Lysandrou V., Nisantzi A., Tzouvaras M., Papoutsas C., Mamouri R.-E., Mettas C., Evagorou E., Themistocleous K., Lasaponara R., Masini N., Danese M., Sileo M., Krauss T., Cerra D., Gessner U., Schreier G., Geophysical Research Abstracts, EGU2018, Vienna, Austria.
  - 5) Earth observation technologies and cultural heritage needs through the ATHENA TWINNING PROJECT”, Hadjimitsis D. G., Agapiou A., Lysandrou V., Nisantzi A., Christofe A., Tzouvaras M., Papoutsas C., Mamouri R., Mettas C., Evagorou E., Themistocleous K., Lasaponara R., Masini N., Danese M., Sileo M., Krauss T., Cerra D., Gessner U., Schreier G., CAA 2018, 19-23 March 2018, Tubingen, Germany.
  - 6) Exploring the Importance of Monitoring the Fire Risk Index in the vicinity of Cultural Heritage Sites in Cyprus using Sentinel Remote Sensing data, Kouhartsiouk D., Agapiou A., Lysandrou V., Themistocleous K., Nisantzi A., Hadjimitsis D. G., Lasaponara R., Masini N., Krauss T., Cerra D., Gessner U., 11th EARSEL Workshop, 25-27 September 2017 Chania, Crete.
  - 7) Copernicus and Cultural Heritage in the Eastern Mediterranean under the ‘ATHENA’ Project, Agapiou A., Lysandrou V., Themistocleous, K.; Kouhartsiouk D., Nisantzi A., Cerra D., Gessner U., Krauss T., Schreier G., Lasaponara R., Masini N., Hadjimitsis D. G., RSPSoc 2017 Annual Conference Earth & Planets: making the most of our observations, 5th – 8th September 2017, Imperial College London, UK.
  - 8) From Detection of Underground Archeological Relics to Monitoring of World Heritage Sites in Danger: Ongoing Research Activities in the Frame of the ATHENA Twinning Project, Cerra D., Agapiou A., Plank S., Lysandrou V., Tian J., Schreier G., the 37th International Symposium on Remote Sensing of Environment -ISRSE 2017, 8-12 May 2017.

- 9) Exploitation of big data cloud infrastructures for earth observations: mapping the land use changes patterns in the vicinity of the Great Pyramid at Giza, Agapiou A., Fifth International Conference on Remote Sensing and Geo-information of the Environment 2017, 20-23 March 2017, Cyprus.
- 10) Active Satellite Sensors for the needs of Cultural Heritage: Introducing SAR applications in Cyprus through ATHENA project, Kouhartsiouk D., Agapiou A., Lysandrou V., Themistocleous K., Nisantzi A., Hadjimitsis D. G., Lasaponara R., Masini N., Brcic R., Eineder M., Krauss T., Cerra D., Gessner U., Schreier G., Geophysical Research Abstracts Vol. 19, EGU2017, Vienna, Austria
- 11) Coastal archaeological sites and coastline changes: a multi-temporal GIS study based on aerial and satellite imageries in Cyprus, Agapiou A., Lysandrou V., Zorpas E., Hadjimitsis D.G., Geophysical Research Abstracts Vol. 19, EGU2017, Vienna, Austria
- 12) Elaborating latent and apparent knowledge configurations in Hellenistic-and Roman landscape of Cyprus, Lysandrou V., Agapiou A., 2nd Computer Applications and Quantitative Methods in Archaeology (CAA GR) 2016, Athens, Greece 20-21 December 2016.
- 13) Urban landscapes: temporal changes around the historical capital of Nicosia, Cuca B., Agapiou A., Hadjimitsis D. G., Aerial Archaeology Research Group (AARG) annual meeting, Pilsen, Czech Republic, 7-9, September 2016.
- 14) ATHENA: Remote Sensing Science Center for Cultural Heritage in Cyprus. Hadjimitsis D. G., Agapiou A., Lysandrou V., Branka C., Themistocleous K., Lasaponara R., Masini N., Krauss T., Cerra D., Gessner U., Schreier G., European Geosciences Union – EGU, General Assembly 2016, 17 – 22 April 2016, Vienna, Austria.
- 15) Establishing a remote sensing science center in Cyprus: first year of activities of ATHENA project, Hadjimitsis D., Agapiou A., Lysandrou V., Themistocleous K., Lasaponara R., Masini N., Krauss T., Cerra D., Gessner U., Schreier G., 6th International Euro-Mediterranean Conference (EuroMed 2016), 31 Oct. – 05 November 2016, Nicosia, Cyprus.
- 16) Establishment of a center of excellence in the field of remote sensing for cultural heritage at the Cyprus university of technology: the 'ATHENA' Horizon 2020 Twinning project, Hadjimitsis D. G., Agapiou A., Lysandrou V., Branka C., Themistocleous K., Nisantzi A., Lasaponara R., Masini N., Krauss T., Cerra D., Gessner U., Schreier G., Fourth International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2016), 4-8 April, 2016, Cyprus.

- 17) Educational activities of remote sensing archaeology, Hadjimitsis D. G., Agapiou A., Lysandrou V., Themistocleous K., Branka C., Nisantzi A., Lasaponara R., Masini N., Krauss T., Cerra D., Gessner U., Schreier G., (Conference Presentation), Proc. SPIE 10005, Earth Resources and Environmental Remote Sensing/GIS Applications VII, 100050L (December 9, 2016); doi:10.1117/12.2242109.
- 18) Orthogonal equations for the detection of archaeological traces de-mystified, Agapiou A., Fourth International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2016), 4-8 April 2016, Cyprus.

#### 5.4 ATHENA springer book



Through the ATHENA project, the book "Remote Sensing for Archaeology and Cultural Landscapes" was prepared and is currently in print. The book is part of the "Springer Remote Sensing/Photogrammetry" book series, which is published by Springer.