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EXCELSIOR Project

H2020-WIDESPREAD-2018-2020 | Grant Agreement No 857510	
Project full title:	**ERATOSTHENES: Excellence Research Centre for Earth Surveillance and Space-Based Monitoring of the Environment**
Project acronym:	**EXCELSIOR**
Work Package:	**WP1 Project Management and Coordination**
Deliverable:	**D1.14 Impact Assessment Report for RP 1**
Version:	**Final D1.14**
Dissemination level:	**Public**

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Call / Topic:	**H2020-WIDESPREAD-2018-01 /** **WIDESPREAD-01-2018-2019** **Teaming Phase 2**
Project full title:	**ERATOSTHENES: Excellence Research Centre for Earth Surveillance and Space-Based Monitoring of the Environment**
Project acronym:	**EXCELSIOR**
Work Package (WP): Task (T):	**WP1 Project Management and Coordination** **T1.4 Impact Monitoring and Re-assessment**
Deliverable (D):	**D1.14 Impact Assessment Report for RP 1**
Due date of deliverable:	**31 December 2020** **(Month 15 of the project)** — **Version: Final D1.14**
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Document Sign-off

Nature	Name	Role	Partner	Date
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REVIEWED	Kyriacos NEOCLEOUS	Quality Assurance	CUT	24/12/2020
APPROVED	All partners			30/12/2020

Work Package 1: Project Management and Coordination

D1.14: Impact Assessment Report for RP 1

Sections to be protected	Description	Owner	Access Rights	
			Period	**Type***
2.4	Section includes names of PhD students and should not be disclosed to the public.		**2030**	**CA**

*PD: Public dissemination CA: Confidentiality Agreement required for disclosure

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Executive Summary

This deliverable provides the impact assessment report for RP1. It provides an update on the overall and specific objectives of the EXCELSIOR project that have been achieved within RP1. This task undertakes the establishment of a methodology for the yearly monitoring of the impact of the different activities carried out by Eratosthenes Centre of Excellence (ECoE) and its partners through EXCELSIOR against a set of quantified targets. The list of Key Performance Indicators established in D1.12 will be updated to reflect the activities of RP1. By monitoring the impact for the RP1, it will provide direction of the activities needed to fulfil the KPIs for the next reporting periods. The impact assessment report will be used to assess the implementation of the work plan and adjust the activities in agreement with WP and task Leaders to ensure the achievement of the Project's strategic objectives. WP1 provides the KPI monitoring framework and general quality processes, while the WP3 defines concrete actions affecting all other WPs for meeting the Impact KPIs. This task's activities will be coordinated with WP3 activities on strategy definition as a continuous process, in order to update the human resources, infrastructure acquisition and overall work plan and to meet new priorities identified. The analysis outputs will update the Project Action Plan of Task 1.1.

The following activities were examined and assessed according to the KPIs. These activities include proposals, dissemination events, publications, academia, networks, etc. The impact for each activity were also included.

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Abbreviations

ACTRIS	The Aerosol, Clouds and Trace Gases Research Infrastructure
ACTRIS IMP	ACTRIS Implementation project
AI	Artificial Intelligence
BIC	Business Incubation Centre
CARO	Cyprus Atmospheric Remote Sensing Observatory
CCRSS	Concrete Corrosion Remote sensing system
CUT	Cyprus University of Technology
CyDI-Hub	Cyprus Digital Innovation Hub
DEC	Department of Electronic Communications
DGEPCD	Directorate General for European Programmes, Coordination and Development
DLR	German Aerospace Centre
EARLINET	European Aerosol Research Lidar Network
ECoE	Eratosthenes Centre of Excellence
EO	Earth Observation
ERC	ERATOSTHENES Research Centre
EXCELSIOR	Eratosthenes: Excellence Research Centre for Earth Surveillance and Space-based Monitoring of the Environment
GBS	Ground-based Remote Sensing Station
GEO	Group on Earth Observations
HPC	High-Performance Computing
IA	Impact Assessment
IAC	Interim ACTRIS Council
IEEE	Institute of Electrical and Electronics Engineers
IEEE GRSS	IEEE Geomatics and Remote Sensing Society
IEEE SA	IEEE Standards Association
KPIs	Key Performance Indicators
MedRIN	Mediterranean Regional Information Network
MTCW	Ministry of Transport, Communications and Works
NAMEBA	North Africa, Middle East, and Balkans
NEREUS	Network of European Regions Using Space Technologies
NITCA	Novel Integrated Technology for the Characterization of Asphalt
NOA	National Observatory of Athens
RI	Research Infrastructure
RIF	Research and Innovation Foundation
RP	Reporting Period
RS	Remote Sensing
SCWV	Smart 'CropWATER' Valve
SDGs	Sustainable Development Goals
TROPOS	German Leibniz Institute for Tropospheric Research
YFEKIP	Ministry of Research, Innovation and Digital Policy

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1 Introduction

Impact assessment (IA) involves the assessment of short to long-term actions brought about through the development intervention or series of interventions during the phase or project considered. IA focuses on change and pathways towards change, rather than on activities or deliverables. IA includes:

- determining the nature of impact
- describing activities and potential impacts and,
- the expected magnitude of impact

In addition, it considers the potential for project impacts to combine with other impacts associated with existing or planned developments and the potential for project impacts to extend across national boundaries. Key performance indicators (KPIs), which describe how well a project is achieving its objectives, play a key role in this process. They are an indispensable management tool, allowing monitoring of progress, enabling evidence-based decision-making, and aiding in the development of future strategies.

Phase 1 of the EXCELSIOR project started on 1 September 2017 and ended with the submission of the Business Plan on 31 August 2018, as seen in CORDIS[1]. The second phase proposal was submitted on 15 November 2018 and EXCELSIOR project – Phase 2 started officially on 1 October 2019 (*Figure 1*). The project is a team effort between the Cyprus University of Technology (CUT), acting as the coordinator, the German Aerospace Centre (DLR), the National Observatory of Athens (NOA), the German Leibniz Institute for Tropospheric Research (TROPOS) and the Ministry of Transport, Communications and Works (MTCW) of Republic of Cyprus, through the Department of Electronic Communications (DEC).

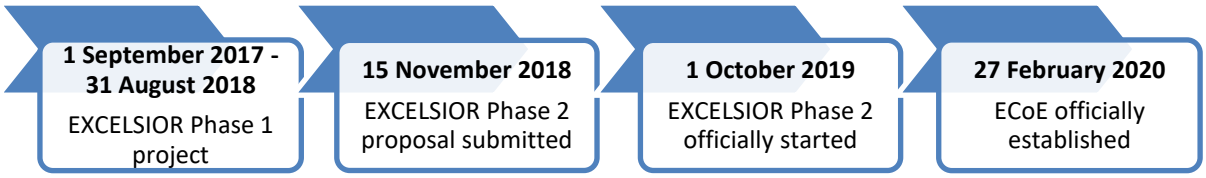

Figure 1: EXCELSIOR project and ECoE legal entity official establishment timeline

Through the 'ERATOSTHENES: Excellence Research Centre for Earth Surveillance and Space-Based Monitoring of the Environment' with the acronym: 'EXCELSIOR', Horizon 2020 Widespread Teaming Phase 2 project, a new, autonomous and self-sustained Centre of Excellence entitled as 'ERATOSTHENES Centre of Excellence (ECoE)' is created, as a result of upgrading the existing Remote Sensing and Geo-Environment Lab, operating within the Department of Civil Engineering and Geomatics, Faculty of Engineering and Technology of CUT since 2007.

The Key Performance Indicators (KPIs) refer to CUT and the ECoE together until the full independence of the newly developed Centre of Excellence. The ECoE was officially established on 27 February 2020

[1] CORDIS: https://cordis.europa.eu/project/id/763643

as a legal entity by the Registrar of Companies and Official Receiver[2] of the Republic of Cyprus, under the name ERATOSTHENES CENTRE OF EXCELLENCE. From that point forward, double affiliations in meetings, presentations and publications commenced.

1.1 Key Performance Indicators

The impacts assessed in this report focus on the future results of the Eratosthenes Centre of Excellence (ECoE). In order to measure these impacts, a longitudinal IA will need to be conducted that will require at least a decade to show impact and will not be able to be definitively measured. **Key Performance Indicators (KPIs) are the critical (key) indicators of progress toward an intended result.** They are an indispensable management tool, allowing monitoring of progress, enabling evidence-based decision-making, and aiding in the development of future strategies. As well, they can also significantly contribute to the successful communication of results and achievements, and thus to the financial sustainability of institutions, as well as to increased transparency. KPIs provide a focus for strategic and operational improvement, create an analytical basis for decision making and help focus attention on what is most important. Essentially, KPIs are quantifiable measures used to evaluate the success of an organization in meeting objectives for performance. Once a KPI is defined, methods of measuring and assessing performance need to be defined and carried out in practice. Often, the assessment needs to be broken down into segments, quantified within the desired time frame and are consistently measured and assessed.

KPIs play a key role in the evaluation of socio-economic return of the expected impacts of the ECoE. KPIs provide the measure against which impact is assessed. Therefore, if KPIs are not met, the objectives and goals need to be re-examined to see the extent to which they are unable to meet the KPIs set out for that particular objective or goal. Throughout the ECoE, it is expected that the KPIs will need to be modified due to the combination of objectives and impacts. As a result, the EXCELSIOR project, in anticipation of challenges that may arise, has included tasks in order to insure the validity and effectiveness of the Impact KPIs. The KPIs will be re-evaluated and corrective actions will take place if impacts for Research, Innovation and Economic KPIs are not met. What were considered acceptable KPIs with workable goals and impacts in the beginning of the program may not be as realistic as they were prior to the commencement of the ECoE.

1.2 Metrics for evaluating impacts

The practice of IA relies upon a family of instruments and tools in order to predict future expected consequences of possible decisions. Depending on the level of effort and significance with which the process is undertaken, different degrees of success are achieved. Also important to the success of IA is the process of follow-up, which assures that recommendations of the IA are implemented and effective.

[2] Registrar of Companies and Official Receiver, Republic of Cyprus: https://efiling.drcor.mcit.gov.cy/DrcorPublic/SearchResults.aspx?name=eratosthenes&number=%25&searchtype=optStartMatch&index=1&tname=%25&sc=0

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The appropriate impact metrics can differ significantly, depending on the purpose of the evaluation. IA creates the key dashboard for sustainability; therefore, it is vital to choose an assessment approach that will generate information consistent with its intended use. The goal of IA measurement is to deliver insights to inform strategy and improve program effectiveness (*Figure 2*).

Figure 2: Strategy for measuring impact assessment

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2 Activities and Impact Assessment for RP1

In order to determine the impact of the newly established ECoE using the KPIs for RP1, information is provided on the activities that were completed during the RP1. The positioning and capacities, the human capital creation, the scientific level, the innovation, the societal impact and the direct economic growth aspects are presented and analysed in detail along with other supporting information to quantify the KPIs, as listed in Table 2.1 of the Grant Agreement. Direct reference in the following sections of this chapter, is provided to the various Key Performance Indicators listed in *Table 8*.

2.1 Infrastructure and equipment

KPI **R01** refers to the acquisition of all necessary equipment for the operation of the Centre of Excellence, that are essential to conduct cutting-edge research and create applications through a satellite ground receiving station, a Ground-based atmospheric remote sensing station (GBS), that is a supersite for aerosol and cloud monitoring (GBS) as well as all other equipment that are essential to conduct cutting-edge research and thus be more competitive in receiving research proposals and creating tailor-made applications for stakeholders.

For a more efficient monitoring of the progress of the activities, this indicator is divided into three parts, i.e. the satellite ground receiving station, the supersite for aerosol and cloud monitoring and all other equipment (e.g. geodetic equipment, sensors, spectroradiometers, etc.).

During RP1, the **specifications for the satellite ground receiving station were prepared and the tender is currently in preparation by CUT and DLR**. Regarding the establishment of a supersite for aerosol and cloud monitoring (GBS), the **specifications and tender have already been prepared and submitted** to the CUT tendering committee. Indeed, the coordinator sent an official letter to the Deputy Ministry of Research and Innovation requesting €1.73 million mostly to cover the tender for the GBS (see *Appendix A – Letter for payment*). Moreover, a part of this supersite, the PollyXT lidar, which was part of TROPOS' commitment was received on 27 October 2020 from Leipzig. Finally, a **market research** is currently in progress for the purchase of all other equipment.

2.2 Numerical models and tools

The operation of numerical models and tools that are necessary to carry out data analysis is also being monitored in terms of KPIs (**R02**). During the RP1, Cloudnet (https://cloudnet.fmi.fi/, https://github.com/CloudNetService/CloudNet), an algorithm actively co-developed by CUT and TROPOS, that will be used by the ECoE to process lidar, radar and radiometer data. It has methods implemented for direct evaluation of weather models. Therefore, in *Table 8*, the number of numerical models and tools necessary to conduct data analysis is **1 (R02)**.

The ECoE are also planned to share the "PICASSO" lidar/photometer processing scheme of TROPOS (http://picasso.tropos.de/) and LARDA, derived from pyLARDA, (https://github.com/lacros-tropos/larda), developed by TROPOS, which is a software for handling the results of both software

packages in a unified way. A complete list of software packages that are mandatory for the operation of the GBS can be seen in - *Research infrastructure software and tools*.

2.3 Network memberships

In this section, the research institute networks and the monitoring networks that the ECoE is either in the process of joining or have already joined, are presented in detail along with the status of ECoE. More information can be seen in *Appendix C – Networks*.

2.3.1 Research institute networks

The ECoE, through their Managing Director, Professor Diofantos G. Hadjimitsis participated in the Climate Change Working Group of the **Group on Earth Observations (GEO)**[3], and more specifically in subgroup 1, which deals with the coordination of climate issues across the GEO Work Programme and synergies with key partners. Professor Hadjimitsis acts as a Co-Chair of the specific Working Group. Subgroup 1 will focus on enhancing coordination of climate-related activities across the GEO Work Programme and synergies with key partners such as the UN Framework Convention on Climate Change (UNFCCC), the Intergovernmental Panel on Climate Change (IPCC), the World Meteorological Organization (WMO), the United Nations Environment Programme (UN Environment), and the Committee on Earth Observation Satellites (CEOS). These efforts will help ensure that national, regional and global climate action efforts are implemented in a sustainable manner for the benefit of the society.

The ECoE has been invited to join as a consortium member at the **Cyprus Digital Innovation Hub (CyDI-Hub)** [4] . CyDI-Hub is a regional network hub of research, innovation, business and industry organisations, utilizing state of the art infrastructure, in order to bring the fourth digital revolution in Cyprus by offering cutting-edge digital technology innovations and services to the manufacturing industry. CyDI-Hub acts as a first regional point of contact and strengthen the innovation ecosystem. It is a regional multi-partner cooperation including organizations such as RTOs, universities, industry associations, chambers of commerce, incubators, regional development agencies and vocational training institutes and also shares strong connections with service providers supporting companies with access to their services.

ECoE with CyRIC and another 20 organisations submitted a call of expression to the Research and Innovation Foundation (RIF). Call for Expressions of Interest for the selection of organizations from Cyprus will have the right to submit a Proposal, under the "Digital Europe Program 2021-2027" (Digital Europe Program 2021-2027), for the development of Digital Innovation Hubs (DIHs), which were announced by the Ministry of Research, Innovation and Digital Policy (YFEKIP) and the Research and Innovation Foundation (RIF). It is noted that the EU, with the new multiannual financing program "Digital Europe 2021-2027" (DEP 2021-2027), aims to strengthen the EU's digital capacity and facilitate

[3] Group on Earth Observations: https://www.earthobservations.org/index.php
[4] Cyprus Digital Innovation Hub: https://www.cyric.eu/cydi_hub/

the wide integration of digital technologies in European businesses and citizens. More specifically, it seeks to boost investments in the areas of High-Performance Computing (HPC), Artificial Intelligence (AI), Cyber Security, the development of advanced digital skills and digital skills. widespread use of digital technologies in society and the economy. The ECoE will be a founding member of the CyDI-Hub and it is expected that the second stage proposal will be submitted in April 2021 to the European Commission.

An invitation to establish a collaboration between the ECoE and the **IEEE Geomatics and Remote Sensing Society (IEEE GRSS)**[5] was received during RP1. The fields of interest of the IEEE-GRSS are the theory, concepts, and techniques of science and engineering as they apply to the remote sensing of the earth, oceans, atmosphere, and space, as well as the processing, interpretation, and dissemination of this information. The Society sponsors various conferences throughout the year, most notably the annual International Geoscience and Remote Sensing Symposium. Discussions started on 4 November 2020 and at the moment, a Memorandum of Understanding (MoU) is being prepared to develop closer relationships between participants in the two organisations and establish a long-term cooperation.

The EXCELSIOR project participated virtually at the P4005 – Standards and protocols for soil spectroscopy Working Group kick-off meeting of the **IEEE Standards Association (IEEE SA)**[6] on 4 June 2020. IEEE SA is a leading consensus building organization that nurtures, develops and advances global technologies, through IEEE. A broad range of individuals and organizations are brought together from a wide range of technical and geographic points of origin to facilitate standards development and standards related collaboration. Researchers and academics from more than 40 different universities and research centres participated in the Working Group. On behalf of the ECoE, Professor Diofantos G. Hadjimitsis, Dr Kyriacos Themistocleous and Mr Andreas Christofe are members of the IEEE-SA P4005 Working Group.

The ERATOSTHENES Research Centre of the Cyprus University of Technology is a **Copernicus Academy**[7] network member. The Copernicus Academy connects universities, research institutions, business schools, both private and non-profit organisations, in the Copernicus Participating Countries (EU28 + Norway & Iceland) and beyond. The goal of the network is to link research and academic institutions with authorities and service providers, facilitate collaborative research, develop lectures, training sessions, traineeships as well as educational and training material to empower the next generation of researchers, scientists, and entrepreneurs with suitable skill sets to use Copernicus data and information services to their full potential. The ECoE has already applied to become a Copernicus Academy member.

The Cyprus University of Technology is a founding member of the **Mediterranean Regional Information Network (MedRIN)**[8]. MedRIN constitutes one of the GOFC-GOLD Regional Networks which will keep its members abreast with the latest advancements in Earth Observation applications

[5] IEEE Geomatics and Remote Sensing Society: http://www.grss-ieee.org/
[6] IEEE Standards Association: https://standards.ieee.org/
[7] Copernicus Academy: https://www.copernicus.eu/en/opportunities/education/copernicus-academy
[8] Mediterranean Regional Information Network: http://web.cut.ac.cy/medrin/

based on NASA and ESA satellite data and data products. The Network will support tackling regional and local challenges, as described by the United Nations' Sustainable Development Goals (SDGs). MedRIN will not replace existing networks in the region but will leverage additional networking capacity and build on the existing networks and systems with actions and ways that may support the utilization of Earth Observation in citizen's everyday life. Vincent Ambrosia from NASA, member of the Advisory Board of ESCELSIOR project, is a leader of the MedRIN in USA, Professor Diofantos G. Hadjimitsis is the MedRIN Europe leader, with Professor Ioannis Gitas from the Aristotle University of Thessaloniki as the co-leader. Extensive reference to the EXCELSIOR – Phase 2 project can be found in the 2nd MedRIN newsletter[9] and the START ProSus magazine[10]. The ECoE have already registered as a member of the MedRIN network in 2020.

The Cyprus University of Technology is an associate member of the **NEREUS**[11] (Network of European Regions Using Space Technologies). NEREUS is the only European association of its kind in that the responsibilities for governing the network lie with the regions that comprise its membership. NEREUS represents the interests of European regions that use space technologies whilst simultaneously highlighting the regional dimension of European space policy and programmes. It is the key mission of NEREUS, as a unique thematic network for matters of regional Space Uses, to explore the benefits of space technologies for European Regions and their citizens as well as to promote the use of space and its applications.

The Cyprus University of Technology is a member of the **GEO-CRADLE**[12] network. This Initiative is a continuation and extension of the work of the GEO CRADLE Community Activity, which provided EO capacity building in the North Africa, Middle East, and Balkans (NAMEBA) region, with potential to expand to the Black Sea. The Initiative will capitalise, sustain and scale up the results mainly achieved during the implementation of the 3-year H2020 GEO-CRADLE project, as well as key outcomes of other relevant EU flagship projects and initiatives (e.g. NextGEOSS, ERAPLANET, EuroGEOSS), in support of the three GEOSS priorities, namely CC, DRR and SDGs.

In total, the ECoE and the CUT are members in **7 RI networks** (**R03**) and are in the process to join a seventh one (IEEE GRSS) through the signature of a MoU.

2.3.2 Calibration/ Validation capacities – Monitoring networks

During RP1 of the EXCELSIOR Phase 2 project, the newly established ECoE have joined **1 monitoring network (PollyNET)** and are in the process to join **another monitoring network (ACTRIS)** (**R04**) in their way to create and utilise a world-class calibration and validation centre. Additionally, the Cyprus University of Technology is already a member of the **EARLINET** network.

[9] MedRIN newsletter: https://gofcgold.org/sites/default/files/2020-06/MedRIN-NEWSLETTER-2020_Final3.pdf
[10] START ProSus magazine: http://start.org/wp-content/uploads/publication/ProSus-4-FINAL-LR2.pdf
[11] NEREUS Regions: https://www.nereus-regions.eu/
[12] GEO-CRADLE network: http://geocradle.eu/en/

The PollyXT lidar, which is part of the supersite for aerosol and cloud monitoring that is planned to be established in the ECoE, arrived from TROPOS (Leipzig) on 27 October 2020. It is part of the atmospheric remote sensing station of CUT, through which the ERATOSTHENES Centre of Excellence with the support of the EXCELSIOR H2020 Teaming Project the Leibniz Institute for Tropospheric Research (TROPOS) is now a member of the **PollyNet**[13] **network** and provides uninterrupted information on the composition and structure of the atmosphere.

The Aerosol, Clouds and Trace Gases Research Infrastructure (**ACTRIS**[14]) is a pan-European research infrastructure producing high-quality data and information on short-lived atmospheric constituents and on the processes leading to the variability of these constituents in natural and controlled atmospheres. ACTRIS supports scientific advances in the field of atmospheric research, helping to respond to the grand challenges faced by the society by enabling a deeper understanding of atmospheric processes, improving the resilience to climate change, and air quality, and contributing to reducing the effects of air pollution on public health and eco systems. ACTRIS is currently supported by a number of European Commission-funded projects until ACTRIS will obtain the legal entity status, becoming ACTRIS ERIC. This will be achieved through the ACTRIS Implementation project (ACTRIS IMP) that builds on the achievements of the successful ACTRIS PPP and on the scientific and technical deliveries of the ACTRIS-2 and EUROCHAMP-2020 projects. Moreover, the ACTRIS IMP project will elevate ACTRIS to a new level of maturity and will set the required coordinated structures for coherent implementation actions, to be performed at both the national and European level.

At the moment, 22 countries have shown their commitment at organizational or state level and the overall ACTRIS community involves more than 100 research performing organizations. Each country participates in the Interim ACTRIS Council (IAC), which is the superior decision-making body for ACTRIS as a research infrastructure prior to ERIC has been established. ACTRIS-Cy has been ranked first of the ESFRI projects in the Expression of Interest coordinated in July 2017 by the Directorate General for European Programmes, Coordination and Development (DGEPCD) in the framework of the 2016 National Roadmap of the Republic of Cyprus. The governance structure of ACTRIS-Cy is currently being set up. The Cyprus Atmospheric Remote Sensing Observatory (CARO) of the ECoE has proposed to be included in the ACTRIS-Cy National Facilities as the Aerosol and Cloud Remote sensing Observational Platform. In the present, the DGEPCD, have been requested by ACTRIS head office to finalize the list of the Cypriot National Facilities.

Currently, the ERATOSTHENES Centre of Excellence (of the Cyprus University of Technology) is in the process of joining the Associate Partnership Program of ACTRIS-IMP. The Associate Partners are expected to participate actively in ACTRIS IMP and strengthen the voice of ACTRIS data originators and ACTRIS service users. The participation of the ECoE as Associate Partner will act as a channel to participate and affect the shaping of the future research infrastructure ACTRIS. Associate Partners signing the Confidentiality Agreements contribute their expertise to the project's objectives and benefit from the activities undertaken within the project.

[13] PollyNet network: http://polly.tropos.de/?p=home
[14] ACTRIS: http://actris.net/

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The Cyprus University of Technology is a member of the **EARLINET**[15] (European Aerosol Research Lidar Network). EARLINET was established in 2000 as a research project with the goal of creating a quantitative, comprehensive, and statistically significant database for the horizontal, vertical, and temporal distribution of aerosols on a continental scale. Since then, EARLINET has continued to provide the most extensive collection of ground-based data for the aerosol vertical distribution over Europe. At present, 31 active stations distributed over Europe are part of the network, including the one at the premises of the Cyprus University of Technology.

2.4 PhD candidates

Fifteen (15) PhD candidates registered in 2020 in the Cyprus University of Technology and 1 PhD candidate from abroad are co-supervised based on a departmental decision. Details[16] of these PhD candidates are presented in *Table 1* below. New PhD positions were announced in November 2020[17] and therefore, new PhD candidates will register shortly. Therefore, in *Table 8*, **R05**, i.e. the number of PhD candidates registered annually at the Cyprus University of Technology carrying out research at CUT/ECoE is **16**.

Table 1: PhD registrations during RP1

#	Research area	Gender	PhD supervisor	Semester
1	Issues of Digital Preservation and their intersection with Use and Reuse	F	Marinos IOANNIDES	1st
2	Digital Cultural Heritage Data Modelling	F	Marinos IOANNIDES	1st
3	Digital Cultural Heritage Data Processing	F	Marinos IOANNIDES	1st
4	3D technologies and GIS Cultural Heritage Protection	M	Marinos IOANNIDES	1st
5	Geospatial Big Data Processing and analytics	M	Phaedon KYRIAKIDIS	1st
6	Earth Observation / Desertification	M	Diofantos G. HADJIMITSIS	1st
7	Remote Sensing and GIS	M	Chris DANEZIS	1st
8	Earth Observation / Cultural Heritage / Archaeology	M	Diofantos G. HADJIMITSIS	1st
9	Earth Observation / Urban Heat	M	Diofantos G. HADJIMITSIS	1st
10	SAR Satellite Data in Deformation Monitoring Applications	F	Chris DANEZIS	2nd
11	Satellite Altimetry	F	Chris DANEZIS	2nd
12	Cognitive module of the Geoinformatics and Geohazards	M	Chris DANEZIS	2nd

[15] EARLINET: https://www.earlinet.org/index.php?id=earlinet_homepage
[16] Due to the General Data Protection Regulation, details do not include name/surname of each PhD candidate.
[17] PhD positions announcement: https://www.cut.ac.cy/studies/phd/PhD+vacant+positions/ceg-pg/

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#	Research area	Gender	PhD supervisor	Semester
13	Mapping Satellite Data Processing and the Observation of Forest Areas	M	Diofantos G. HADJIMITSIS	2nd
14	Earth Observation in Education	M	Diofantos G. HADJIMITSIS	2nd
15	Earth Observation in education	M	Diofantos G. HADJIMITSIS	2nd
16	Multi-sensor and Multi-scale Big Spatial Data Management Framework in the field of Remote Sensing	M*	Diofantos G. HADJIMITSIS	N/A

* Co-supervision at CUT based on departmental decision

It is worth noting, that a PhD candidate at the University Polytechnic of Bari in Risk and Environmental, Territorial and Building Development (XXXIV° cycle), works remotely at the Remote Sensing and Geo-environment Research Lab for the period 02/10/2020 to 02/04/2021 (*Figure 3*).

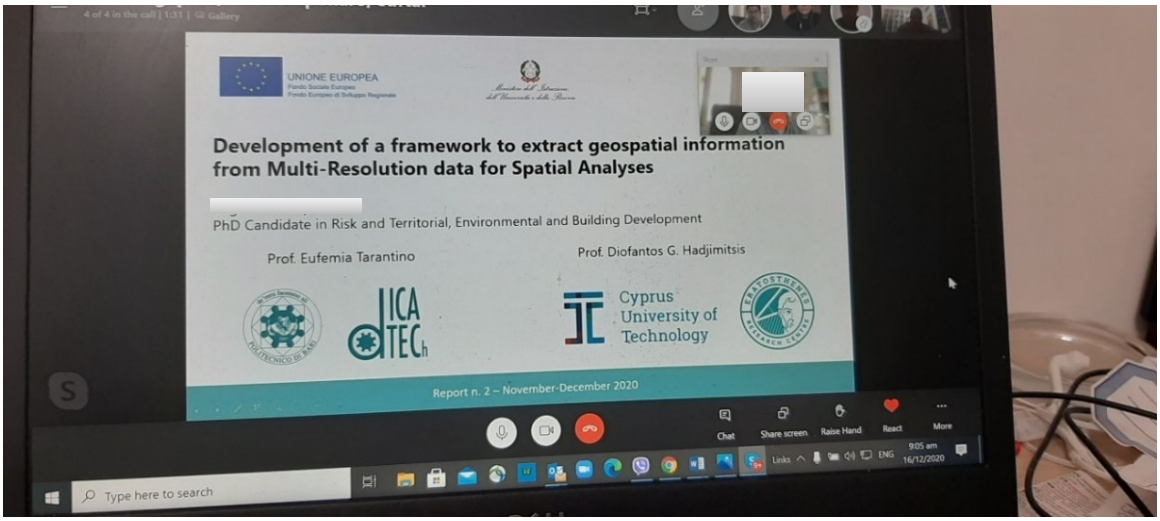

Figure 3: Online presentation of jointly-supervised PhD candidate to CUT/ECoE

Currently, there are approximately **41 students** (undergraduate, MSc and PhD candidates) using the RI and facilities of the CUT/ECoE for their thesis (**R06**). From these, 13 are undergraduate students studying BEng Surveying Engineering and Geoinformatics Engineering. Three MSc students are attending the two MSc courses offered by the Department of Civil Engineering and Geomatics (CUT); i.e. the MSc in Civil Engineering and Sustainable Design and the MSc in Geoinformatics and Geospatial Technologies, and 25 PhD candidates, with this number expected to increase based on the new PhD student positions that were announced in November 2020.

In total, 28 graduate students, 3 MSc students and 25 PhD candidates, were trained at CUT/ECoE RI facilities during RP1. Ten of these are from Greece (6), Italy (2), Serbia (1) and the UK (1) and compose **35.7%** of the total number of students (**R08**). Moreover, **3 PhD graduates**, graduated in 2020, as presented in *section 2.7*, and **12 Postdoctoral Research Fellows** have trained on CUT/ECoE RI and facilities in the various sectors of EO during RP1 (**R07**).

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2.5 Researchers

The ECoE has planned to host researchers (MSC fellows, European Research Council grants ERC, etc.) to increase the exchange of ideas, develop knowledge transfer and capacity building, in various sectors of EO. More specifically, there are plans to host 4 MSC fellows by year 4 of the project. However, in RP1, the number of MSC Fellows, European Research Council grants, etc. that will be hosted at the ECoE is **0** (**R09**).

Another goal of the ECoE is to attract and employ high calibre research and technical staff, thereby avoiding the 'Brain Drain' phenomenon. Fifteen researchers and academic staff from CUT were employed on a part-time basis on the EXCELSIOR project. The total full-time equivalent (FTE) for the RP1 was **3.06 person-years** (**R10**). Moreover, in order to attract research and technical staff from abroad, 9 positions for researchers, administrative and technical staff have been announced on the ECoE website[18] and 31 applications have already been received and are currently under review (**R11, E01**). From these positions, **3** open positions announcements were for **Senior Researchers A or B** (**E02**), equivalent to Full Professor or Associate Professor respectively, one for each department of the ECoE (***Error! Reference source not found.***), as presented in *Appendix D – Open positions announcements.* T hese positions are:

- Senior Researcher in Earth Observations and Remote Sensing at the Environment and Climate Department
- Senior Researcher in Earth Observation, Space and Geospatial technologies at the Resilient Society Department
- Senior Researcher in Information extraction, Visual exploration and visualisation, Crowdsourcing and Data Fusion, Geoinformatics, Remote Sensing at the Big Earth Data Analytics Department

[18] ECoE open positions: https://eratosthenes.org.cy/open-positions/

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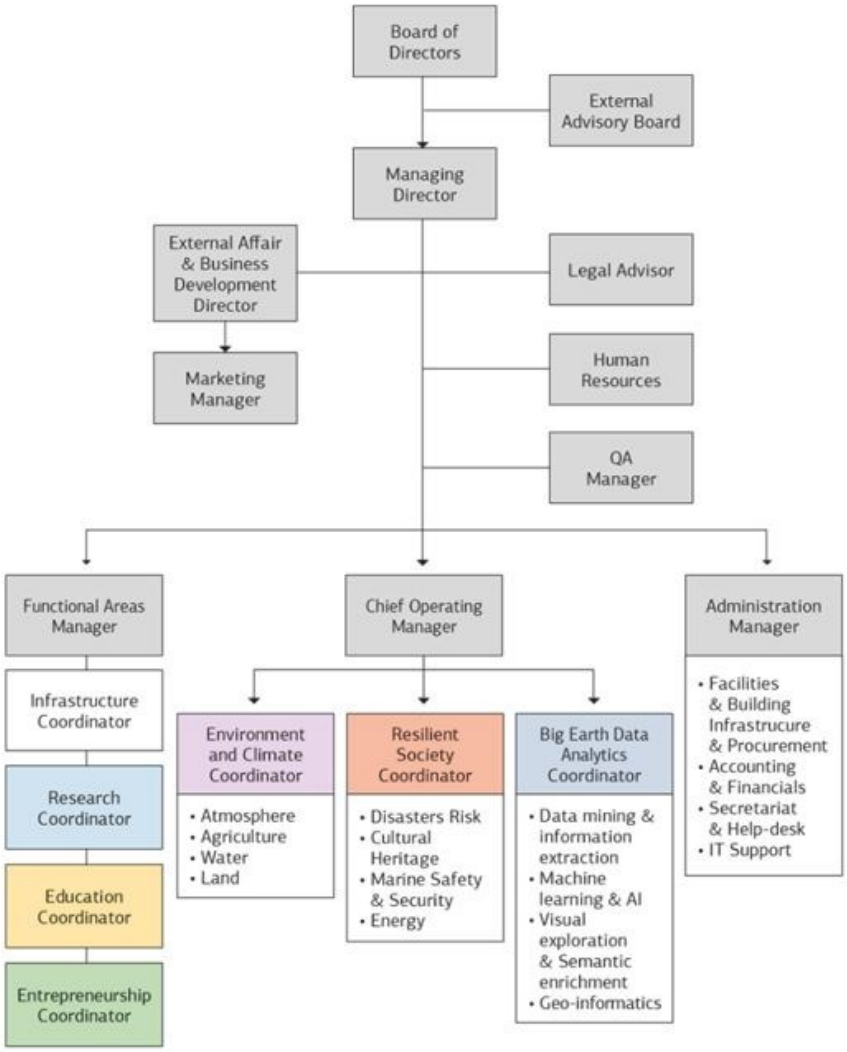

Figure 4: The ECoE organisation chart

Apart from the announcements for the 9 open positions, the ECoE management team[19], as seen in ***Error! Reference source not found.***, was appointed by the Board of Directors of the ECoE (**E01**) as f ollows:

1. Professor Diofantos G. Hadjimitsis (Managing Director)
2. Dr Silas Michaelides (Chief Operating Manager)
3. Dr Kyriacos Themistocleous (External Affairs & Business Development Director)
4. Dr Kyriacos Neocleous (Quality Assurance Manager)
5. Professor Phaedon Kyriakidis (Research Coordinator)
6. Professor Christos Danezis (Infrastructure Coordinator)
7. Professor Andreas Anayiotos (Functional Areas Manager)
8. Professor Nicholas Kyriakides (Education Coordinator)

[19] The ECoE management team: https://eratosthenes.org.cy/the-project/eratosthenes-coe-management-team/

9. Dr Ioannis Papoutsis (Entrepreneurship Coordinator)
10. Mr Gunter Schreier (Big Earth Data Analytics Coordinator)
11. Dr Haris Kontoes (Resilient Society Coordinator)
12. Dr Albert Ansmann (Environment and Climate Coordinator)

2.6 Publications

Furthermore, 105 journal papers, conference papers and book sections have been published by the 27 researchers of the ERATOSTHENES Research Centre, after the submission of the Phase 1 Business plan (31 August 2018), either directly acknowledging the ERATOSTHENES Centre of Excellence (ECoE) or through affiliation with the ECoE. As mentioned in the previous sections, during this time, there is a transition period from CUT to ECoE. Therefore, double affiliations can be seen in most publications after the establishment of the ECoE as a legal entity. A full list of the publications in the form of citations is provided in *Table 2*, together with the date of publication, the journal or conference they were published in, and the potential impact that they have.

Table 2: Publications during period 1/9/2018 – 31/12/2020

#	Citation	Date	Journal/ Conference	Impact
1	(Cuca and Agapiou, 2018)	20.09.2018	Journal paper (Applied Geomatics)	Network development/ Innovation
2	(Melillos, Themistocleous, *et al.*, 2018)	21.09.2018	Journal paper (Advances in Remote Sensing)	Network development/ Innovation
3	(Polydorou, Neocleous, Illampas, *et al.*, 2019)	07-11.10.2018	Conference paper (FIB 2018 - Proceedings for the 2018 fib Congress: Better, Smarter, Stronger)	Network development/ Innovation
4	(Hadjimitsis, Agapiou, *et al.*, 2018)	09.10.2018	Conference paper (SPIE Remote Sensing 2018, Remote Sensing Technologies and Applications in Urban Environments III)	Network development/ Dissemination
5	(Melillos, Themistocleous and Hadjimitsis, 2018)	09.10.2018	Conference paper (SPIE Security + Defence 2018, Target and Background Signatures IV)	Network development/ Innovation
6	(Themistocleous, 2018)	09.10.2018	Conference paper (SPIE Remote Sensing 2018, Earth Resources and Environmental Remote Sensing/GIS Applications IX)	Network development/ Innovation
7	(Themistocleous, Ioannides, Georgiou and Hadjimitsis, 2018)	09.10.2018	Conference paper (SPIE Remote Sensing, 2018, Earth Resources and Environmental Remote Sensing/GIS Applications IX)	Network development/ Innovation
8	(Hadjimitsis, Kouta, *et al.*, 2018)	16.10.2018	Conference paper (EuroMed 2018: Digital Heritage. Progress in Cultural Heritage: Documentation, Preservation, and Protection)	Network development/ Dissemination
9	(Hadjimitsis, Themistocleous, *et al.*, 2018)	16.10.2018	Conference paper (EuroMed 2018: Digital Heritage. Progress in Cultural	Network development/ Dissemination

			Heritage: Documentation, Preservation, and Protection)	
10	(Themistocleous, Ioannides, Georgiou and Athanasiou, 2018)	16.10.2018	Conference paper (EuroMed 2018: Digital Heritage. Progress in Cultural Heritage: Documentation, Preservation, and Protection)	Network development/ Innovation
11	(Alverti *et al.*, 2018)	22.10.2018	Journal paper (Advances in Geosciences)	Network development/ Innovation
12	(Agapiou and Sarris, 2018)	08.11.2018	Journal paper (Remote Sensing MDPI)	Network development/ Innovation
13	(Melillos, Agapiou, *et al.*, 2018)	21.11.2018	Journal paper (Advances in Geosciences)	Network development/ Innovation
14	(Vacanas and Danezis, 2018)	22.11.2018	Journal paper (International Journal of Construction Management)	Network development/ Innovation
15	(Evagorou *et al.*, 2019)	09.01.2019	Journal paper (Advances in Geosciences)	Network development/ Innovation
16	(Poullis *et al.*, 2019)	11.01.2019	Journal paper (Digital Applications in Archaeology and Cultural Heritage)	Network development/ Innovation
17	(Polydorou, Neocleous, Koutsokeras, *et al.*, 2019)	18-22.03.2019	Conference paper (2nd RILEM Spring Convention & International Conference on Sustainable Materials, Systems and Structures (SMSS2019))	Network development/ Innovation
18	(Melillos, Hadjimitsis and Michaelides, 2019)	10.05.2019	Conference paper (SPIE Defense + Commercial Sensing, Detection and Sensing of Mines, Explosive Objects, and Obscured Targets)	Network development/ Innovation
19	(Agapiou *et al.*, 2019)	13-17.05.2019	Conference paper (ESA Living Planet Symposium 2019)	Network development/ Dissemination
20	(Danezis *et al.*, 2019)	15-17.05.2019	Conference paper (4th Joint International Symposium on Deformation Monitoring (JISDM))	Network development/ Dissemination
21	(Danezis, Chatzinikos and Kotsakis, 2019)	15-17.05.2019	Conference paper (4th Joint International Symposium on Deformation Monitoring (JISDM))	Network development/ Innovation
22	(Sarris, Gravanis and Ioannou, 2019)	21.05.2019	Journal paper (Journal of Petroleum Science and Engineering)	Network development/ Innovation
23	(Melillos, Agapiou, *et al.*, 2019)	03.06.2019	Journal paper (European Journal of Remote Sensing)	Network development/ Innovation
24	(Gravanis and Pantelidis, 2019)	04.06.2019	Journal paper (Geosciences MDPI)	Network development/ Innovation
25	(Themistocleous, 2019b)	08.06.2019	Book section (Remote Sensing for Archaeology and Cultural Landscapes)	Network development/ Innovation
26	(Themistocleous and Danezis, 2019)	08.06.2019	Book section (Remote Sensing for Archaeology and Cultural Landscapes)	Network development/ Innovation
27	(Patsalidis, Agapiou and Hadjimitsis, 2019)	17-20.06.2019	Conference paper (22nd AGILE International Conference on Geographic Information Science)	Network development/ Innovation
28	(Ansmann, Mamouri, Bühl, Seifert,	18.06.2019	Conference paper (Central Asian DUst Conference (CADUC 2019))	Network development/ Innovation

	Engelmann, Nisantzi, *et al.*, 2019)			
29	(Haarig *et al.*, 2019)	18.06.2019	Conference paper (Central Asian DUst Conference (CADUC 2019))	Network development/ Innovation
30	(Park and Kyriakidis, 2019)	19.06.2019	Journal paper (Journal of Sensors)	Network development/ Innovation
31	(Moutsiou and Agapiou, 2019)	25.06.2019	Journal paper (Journal of Archaeological Science: Reports)	Network development/ Innovation
32	(Themistocleous, 2019a)	27.06.2019	Conference paper (Seventh International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2019))	Network development/ Innovation
33	(Yfantidou and Hadjimitsis, 2019)	27.06.2019	Conference paper (Seventh International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2019))	Network development/ Innovation
34	(Tzouvaras *et al.*, 2019)	26.07.2019	Journal paper (Remote Sensing MDPI)	Network development/ Innovation
35	(Melillos, Themistocleous, Agapiou, Michaelides, Papadavid, *et al.*, 2019)	28.07-02.08.2019	Conference paper (2019 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2019))	Network development/ Innovation
36	(Sarris and Gravanis, 2019)	01.08.2019	Journal paper (Energies MDPI)	Network development/ Innovation
37	(Agapiou and Sarris, 2019)	13.08.2019	Journal paper (Remote Sensing MDPI)	Network development/ Innovation
38	(Alsaif *et al.*, 2019)	15.08.2019	Journal paper (Engineering Structures)	Network development/ Innovation
39	(Sarris, Gravanis and Papaloizou, 2019)	28.08.2019	Conference paper (53rd U.S. Rock Mechanics/Geomechanics Symposium)	Network development/ Innovation
40	(Ansmann, Mamouri, Hofer, *et al.*, 2019)	10.09.2019	Journal paper (Atmospheric Measurement Techniques)	Network development/ Innovation
41	(Agapiou, Alexakis and Hadjimitsis, 2019)	20.09.2019	Journal paper (Sensors MDPI)	Network development/ Innovation
42	(Themistocleous *et al.*, 2019b)	03.10.2019	Conference paper (SPIE Remote Sensing, 2019, Earth Resources and Environmental Remote Sensing/GIS Applications X)	Network development/ Innovation
43	(Themistocleous *et al.*, 2019a)	03.10.2019	Conference paper (SPIE Remote Sensing, 2019, Earth Resources and Environmental Remote Sensing/GIS Applications X)	Network development/ Innovation
44	(Papageorgiou, Hadjimitsis and Themistocleous, 2019)	04.10.2019	Conference paper (SPIE Remote Sensing 2019, Earth Resources and Environmental Remote Sensing/GIS Applications X)	Network development/ Innovation
45	(Melillos and Themistocleous, 2019)	17.10.2019	Conference paper (SPIE Security + Defence 2019, Target and Background Signatures V)	Network development/ Innovation
46	(Melillos, Themistocleous,	31.10.2019	Book section (Military Engineering, IntechOpen)	Network development/ Innovation

	Agapiou, Michaelides and Hadjimitsis, 2019)			
47	(Gravanis *et al.*, 2019)	07.11.2019	Journal paper (Entropy MDPI)	Network development/ Innovation
48	(Christodoulou, Pantelidis and Gravanis, 2019)	18.11.2019	Journal paper (Applied Sciences MDPI)	Network development/ Innovation
49	(Leventis, 2019)	25-28.11.2019	Conference paper (5th AGILE PhD School 2019)	Network development/ Dissemination
50	(Ansmann, Mamouri, Bühl, Seifert, Engelmann, Hofer, *et al.*, 2019)	13.12.2019	Journal paper (Atmospheric Chemistry and Physics)	Network development/ Innovation
51	(Baars *et al.*, 2019)	13.12.2019	Journal paper (Atmospheric Chemistry and Physics)	Network development/ Innovation
52	(Agapiou, 2020e)	01.01.2020	Journal paper (Remote Sensing MDPI)	Network development/ Innovation
53	(Andrikou *et al.*, 2019)	*In press*	Journal paper (ADeltion)	Network development/ Dissemination
54	(Miltiadou *et al.*, 2020)	31.01.2020	Journal paper (Forests MDPI)	Network development/ Innovation
55	(Agapiou, 2020d)	10.02.2020	Journal paper (Remote Sensing MDPI)	Network development/ Innovation
56	(Christodoulou, Pantelidis and Gravanis, 2020a)	15.02.2020	Journal paper (Archives of Computational Methods in Engineering)	Network development/ Innovation
57	(Alverti *et al.*, 2020)	17.02.2020	Journal paper (Smart cities MDPI)	Network development/ Innovation
58	(Agapiou, Lysandrou and Hadjimitsis, 2020a)	18.02.2020	Journal paper (Remote Sensing MDPI)	Network development/ Innovation
59	(Danezis, Chatzinikos and Kotsakis, 2020)	22.03.2020	Journal paper (Sensors MDPI)	Network development/ Innovation
60	(Agapiou, Lysandrou and Hadjimitsis, 2020c)	22.04.2020	Journal paper (Remote Sensing MDPI)	Network development/ Innovation
61	(Hadjimitsis, Schreier, *et al.*, 2020)	24.04.2020	Conference paper (SPIE Defense + Commercial Sensing 2020, Detection and Sensing of Mines, Explosive Objects, and Obscured Targets XXV)	Network development/ Dissemination
62	(Melillos and Hadjimitsis, 2020a)	24.04.2020	Conference paper (SPIE Defense + Commercial Sensing 2020, Detection and Sensing of Mines, Explosive Objects, and Obscured Targets XXV)	Network development/ Innovation
63	(Melillos and Hadjimitsis, 2020c)	24.04.2020	Conference paper (SPIE Defense + Commercial Sensing 2020, Detection and Sensing of Mines, Explosive Objects, and Obscured Targets XXV)	Network development/ Innovation
64	(Melillos, Themistocleous, Chris Danezis, *et al.*, 2020)	24.04.2020	Conference paper (SPIE Defense + Commercial Sensing 2020, Detection and Sensing of Mines, Explosive Objects, and Obscured Targets XXV)	Network development/ Innovation

65	(Christodoulou, Pantelidis and Gravanis, 2020b)	29.04.2020	Journal paper (Geosciences MDPI)	Network development/ Innovation
66	(Yeseul, Kyriakidis and Park, 2020)	13.05.2020	Journal paper (Remote Sensing MDPI)	Network development/ Innovation
67	(Tzouvaras, Danezis and Hadjimitsis, 2020b)	14.05.2020	Journal paper (Remote Sensing MDPI)	Network development/ Innovation
68	(Gravanis, Akylas and Livadiotis, 2020)	03.06.2020	Journal paper (Europhysics Letters)	Network development/ Innovation
69	(Agapiou, 2019)	17.06.2019	Journal paper (Sustainability MDPI)	Network development/ Innovation
70	(Tzouvaras, Danezis and Hadjimitsis, 2020a)	18.06.2020	Journal paper (Geosciences MDPI)	Network development/ Innovation
71	(Agapiou, 2020f)	26.06.2020	Journal paper (Drones MDPI)	Network development/ Innovation
72	(Themistocleous, Danezis and Gikas, 2020)	30.06.2020	Journal paper (Applied Geomatics)	Network development/ Innovation
73	(Agapiou, 2020c)	10.07.2020	Journal paper (Applied Sciences MDPI)	Network development/ Innovation
74	(Christofe, Danezis and Hadjimitsis, 2020)	03-08.08.2020	Conference paper (International Structural Engineering and Construction)	Network development/ Innovation
75	(Agapiou, 2020b)	11.08.2020	Journal paper (Journal of Computer Applications in Archaeology)	Network development/ Innovation
76	(Themistocleous, Christiana Papoutsa, Michaelides and Hadjimitsis, 2020)	17.08.2020	Journal paper (Remote Sensing MDPI)	Network development/ Innovation
77	(Riedler *et al.*, 2020)	24.08.2020	Conference paper (International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences (ISPRS 2020))	Network development/ Dissemination
78	(Fotiou and Danezis, 2020)	26.08.2020	Conference paper (Eighth International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2020))	Network development/ Innovation
79	(Hadjipetrou *et al.*, 2020)	26.08.2020	Conference paper (Eighth International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2020))	Network development/ Innovation
80	(Kakoullis and Danezis, 2020)	26.08.2020	Conference paper (Eighth International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2020))	Network development/ Innovation
81	(Kosta *et al.*, 2020)	26.08.2020	Conference paper (Eighth International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2020))	Network development/ Innovation
82	(Nikolaidis and Danezis, 2020)	26.08.2020	Conference paper (Eighth International Conference on Remote	Network development/ Innovation

			Sensing and Geoinformation of the Environment (RSCy2020))	
83	(Pekri and Danezis, 2020)	26.08.2020	Conference paper (Eighth International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2020))	Network development/ Innovation
84	(Themistocleous, Evagorou, Mettas, Prodromou, *et al.*, 2020)	26.08.2020	Conference paper (Eighth International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2020))	Network development/ Innovation
85	(Themistocleous, Diofantos G. Hadjimitsis, Michaelides, Neocleous, *et al.*, 2020)	26.08.2020	Conference paper (Eighth International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2020))	Network development/ Dissemination
86	(Themistocleous, Maria Prodomou, Mettas, Evagorou, *et al.*, 2020)	26.08.2020	Conference paper (Eighth International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2020))	Network development/ Innovation
87	(Evagorou *et al.*, 2020)	02.09.2020	Journal paper (European journal of remote Sensing)	Network development/ Innovation
88	(Polydorou *et al.*, 2020)	10.09.2020	Journal paper (Construction and Building Materials)	Network development/ Innovation
89	(Hadjimitsis, Kyriakides, *et al.*, 2020)	20.09.2020	Conference paper (SPIE Remote Sensing 2020, Earth Resources and Environmental Remote Sensing/GIS Applications XI)	Network development/ Dissemination
90	(Melillos, Themistocleous, Christos Danezis, *et al.*, 2020a)	20.09.2020	Conference paper (SPIE Security + Defence 2020, Counterterrorism, Crime Fighting, Forensics, and Surveillance Technologies IV)	Network development/ Innovation
91	(Melillos, Themistocleous, Christos Danezis, *et al.*, 2020b)	20.09.2020	Conference paper (SPIE Security + Defence 2020, Counterterrorism, Crime Fighting, Forensics, and Surveillance Technologies IV)	Network development/ Innovation
92	(Themistocleous, Diofantos G. Hadjimitsis, Schreier, Krauss, *et al.*, 2020)	20.09.2020	Conference paper (SPIE Remote Sensing 2020, Earth Resources and Environmental Remote Sensing/GIS Applications XI)	Network development/ Innovation
93	(Themistocleous, Evagorou, Mettas and Hadjimitsis, 2020)	22.09.2020	Conference paper (SPIE Remote Sensing 2020, Earth Resources and Environmental Remote Sensing/GIS Applications XI)	Network development/ Innovation
94	(Papoutsa *et al.*, 2020)	24-27.09.2020	Conference paper (9th International Conference on Information and Communication Technologies in Agriculture, Food & Environment (HAICTA))	Network development/ Dissemination
95	(Melillos, Themistocleous and Hadjimitsis, 2020)	26.09.2020	Conference paper (Eighth International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2020))	Network development/ Innovation

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96	(Melillos and Hadjimitsis, 2020b)	26.09-02.10.2020	Conference paper (2020 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2020))	Network development/ Innovation
97	(Agapiou and Lysandrou, 2020)	01.10.2020	Journal paper (IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing)	Network development/ Innovation
98	(Agapiou, Lysandrou and Hadjimitsis, 2020b)	22-24.10.2020	Conference paper (2020 IMEKO TC-4 International Conference on Metrology for Archaeology and Cultural Heritage)	Network development/ Innovation
99	(Cerra *et al.*, 2020)	02-05.11.2020	Conference paper (8th International Euro-Mediterranean Conference (EuroMed 2020))	Network development/ Innovation
100	(Makri *et al.*, 2020)	02-05.11.2020	Conference paper (8th International Euro-Mediterranean Conference (EuroMed 2020))	Network development/ Innovation
101	(Agapiou, 2020a)	09.11.2020	Journal paper (Sensors MDPI)	Network development/ Innovation
102	(Mettas *et al.*, 2020)	28.11.2020	Journal paper (Remote Sensing MDPI)	Network development/ Innovation
103	(Michaelides, 2020)	23.12.2020	Journal paper (Remote Sensing MDPI)	Network development/ Dissemination
104	(Lysandrou and Agapiou, 2020)	*Accepted*	Journal paper (Open Archaeology)	Network development/ Innovation
105	(Kassianidou, Agapiou and Manning, 2020)	*Accepted*	Journal paper (Antiquity)	Network development/ Innovation

From these 105 publications, 51 are journal papers, 51 are conference papers and 3 book sections, as shown in *Figure 5*.

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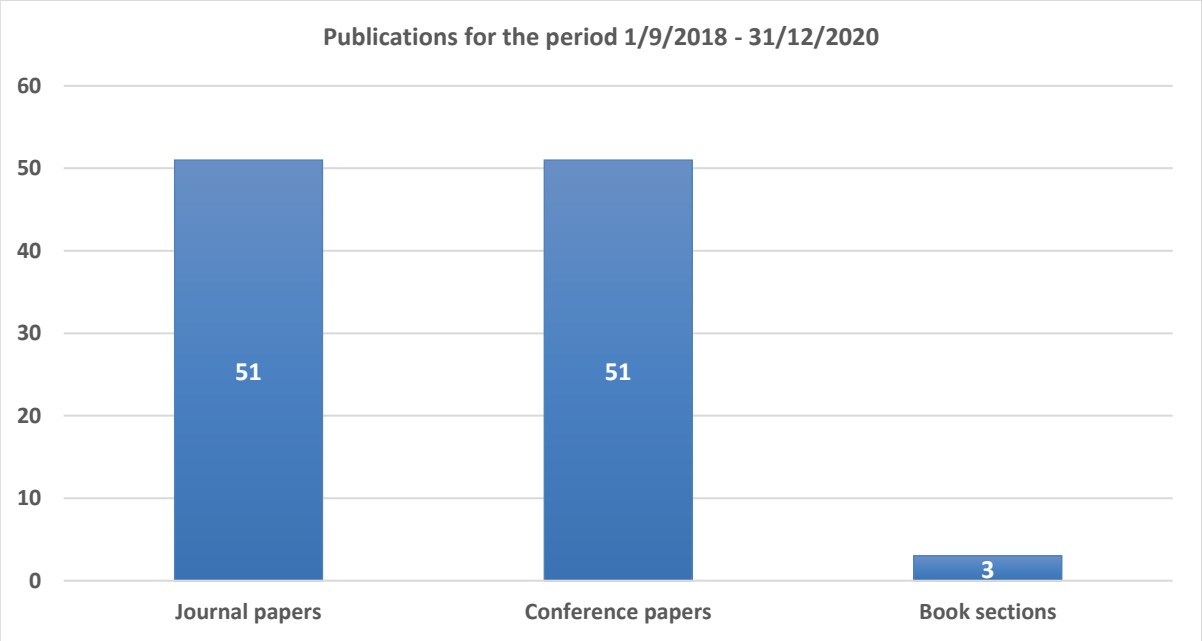

Figure 5: Publications of the ECoE for the period 1/9/2018-31/12/2020

During the period 1/9/2018-30/9/2019, 40 publications were submitted from CUT and ERATOSTHENES Research Centre (ERC) personnel, of which 19 journal papers, 19 conference papers and 2 book sections, while for the second period (1/10/2019-26/02/2020), prior to the establishment of the ECoE 10 publications were submitted (4 journal papers, 5 conference papers and 1 book section,). As soon as the ECoE was established, and for the period 27/02/2020-31/12/2020, 55 publications using double affiliations (CUT and ECoE) were submitted to several journal and conferences relevant to the scientific pillars of the centre (28 journal papers and 27 conference papers).

The aforementioned publications fall under the ECoE's departments (*Figure 6*), where the majority of them (58) belong to the Resilient Society department, while 32 (out of 105) are linked to the Big Earth Data Analytics department and the remaining 15 are focused on Environment and Climate.

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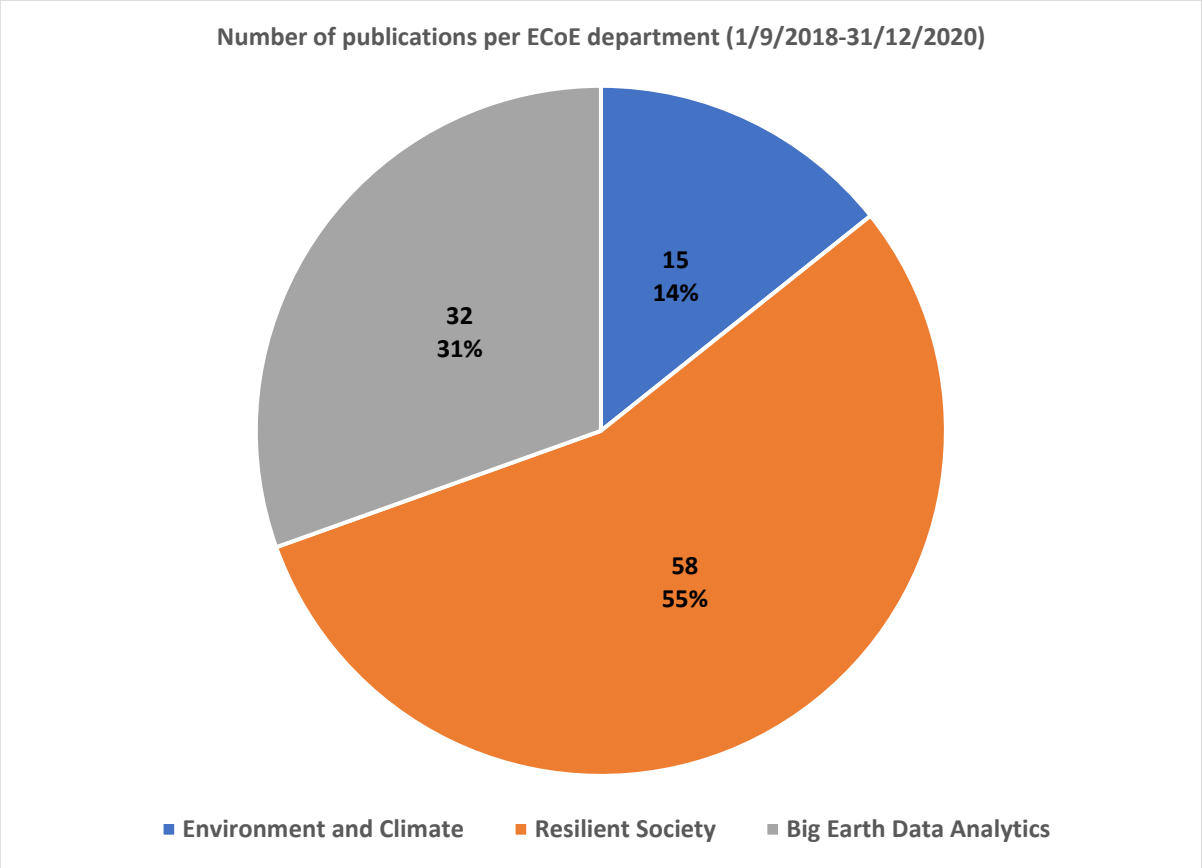

Figure 6: Publications per ECoE department for the period 1/9/2018-31/12/2020

A more thorough analysis sheds light on the type of publication per research department. As far as the Environment and Climate department is concerned (*Figure 7*), the type of publications are almost equally divided, 8 journal papers and 7 conference papers (15 in total); to date, there is no book section published.

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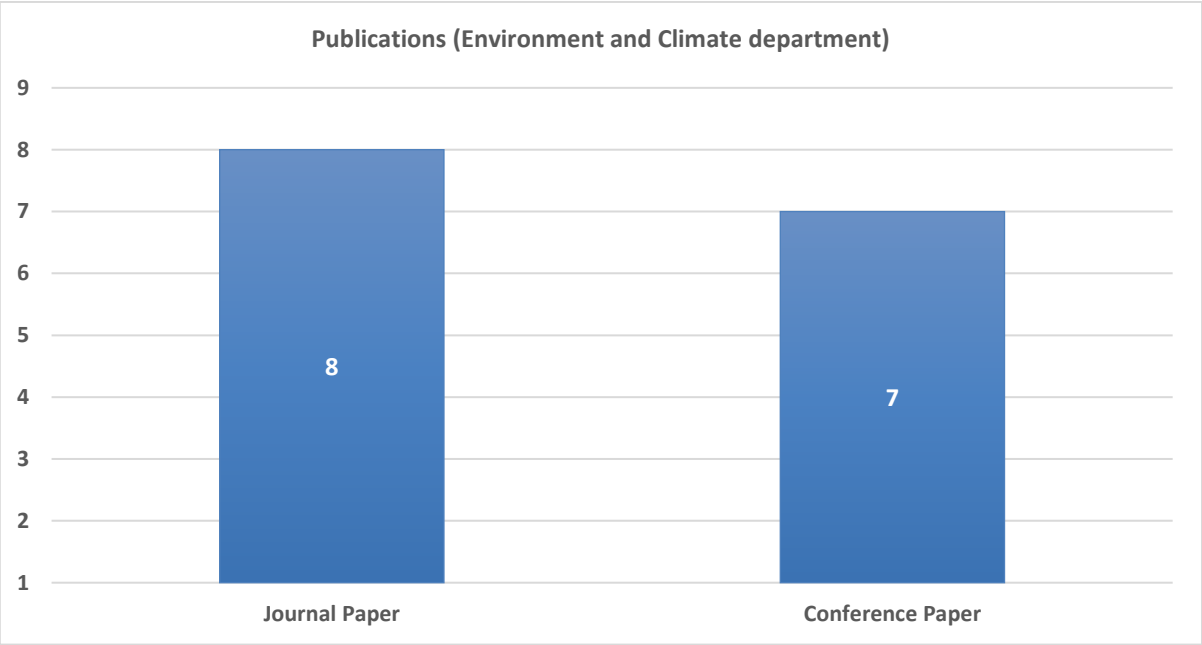

Figure 7: Publication types in Environment and Climate department (1/9/2018-31/12/2020)

In contrast to the previous figure, where the journal papers outnumbered the conference papers, as shown in *Figure 8*, the 58 publications of the Resilient Society pillar are distinguished into 27 journal papers, 28 conference papers and 3 book sections/chapters.

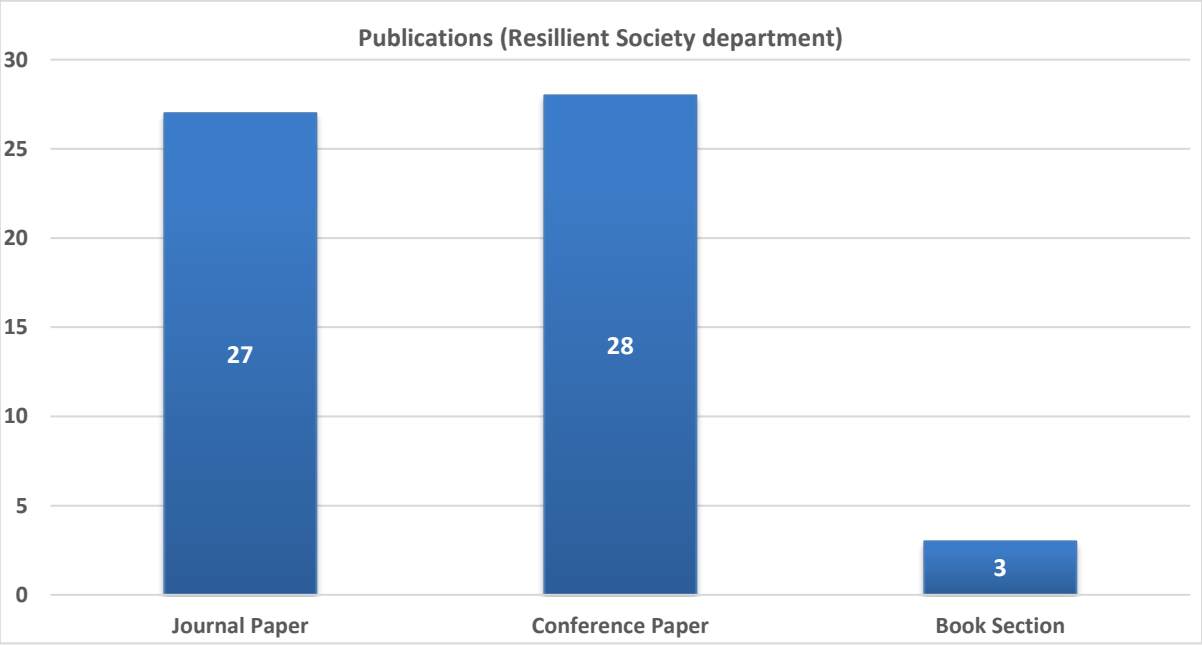

Figure 8: Publication types in Resilient Society department (1/9/2018-31/12/2020)

In the Big Earth Data Analytics department, as seen in *Figure 9,* the total 32 publications are equally split into journal publications and conference papers (16), and there is no book section currently submitted.

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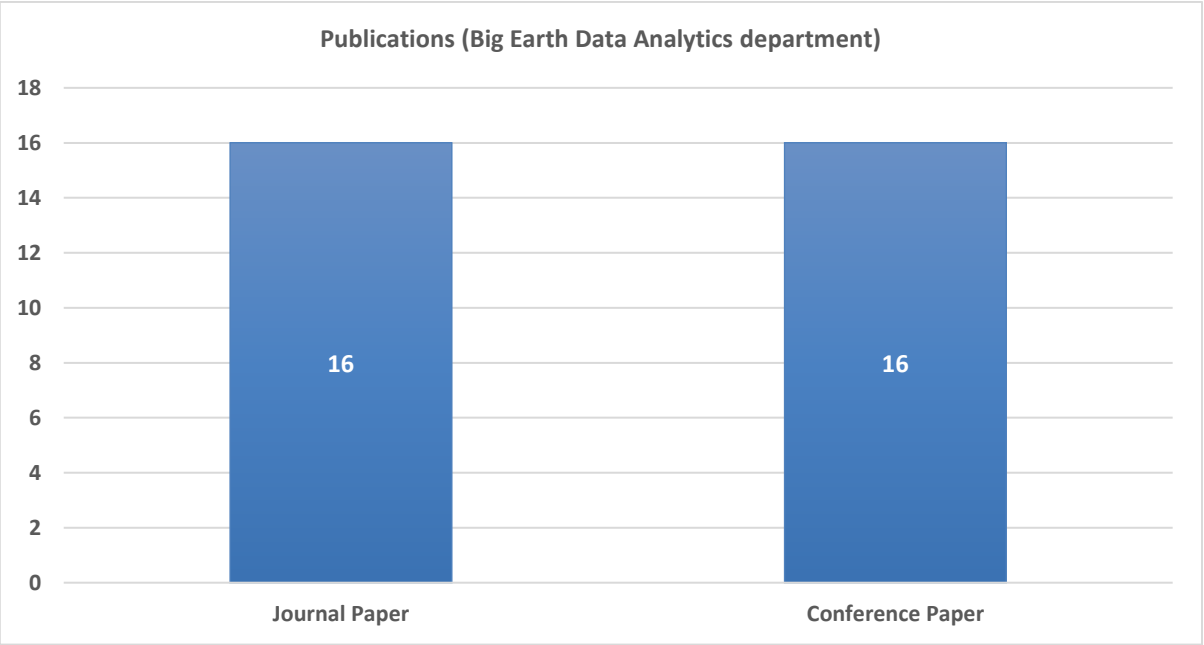

Figure 9: Publication types in Big Earth Data Analytics department (1/9/2018-31/12/2020)

More specifically, during RP1, **32 journal papers** (**R12**), **32 conference papers** (**R13**) and 1 book section were published, as seen in *Figure 10*.

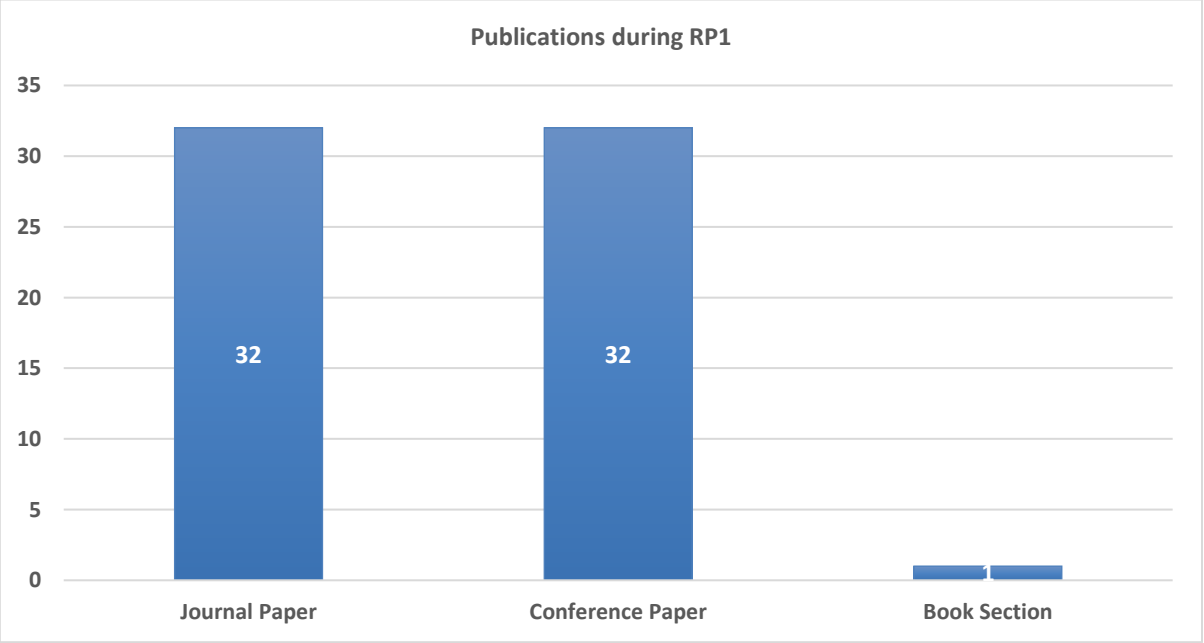

Figure 10: Publications per type during RP1

These publications fall under the three ECoE's departments (*Figure 11*), where the majority of them (34) belong to the Resilient Society department, while 23 out of the total 65 publications are linked to the Big Earth Data Analytics department and the remaining 8 are focused on Environment and Climate.

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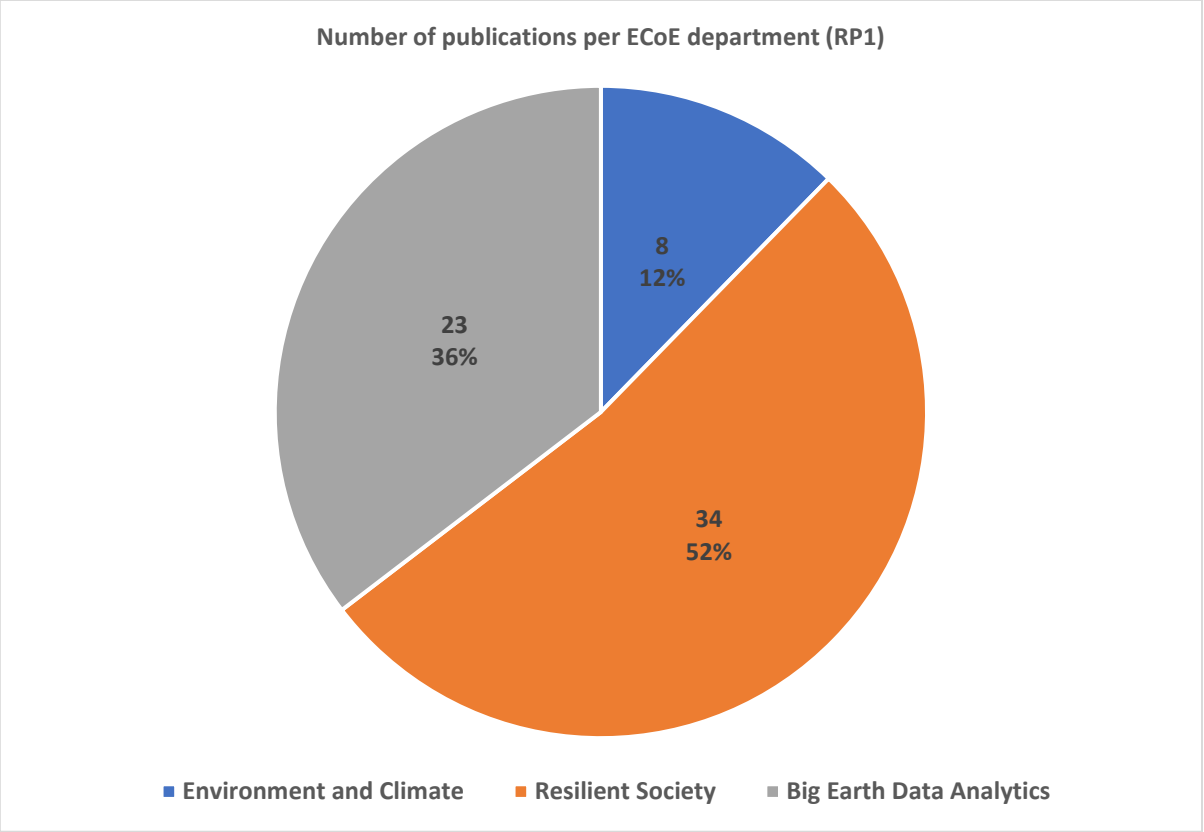

Figure 11: Publications per ECoE department during RP1

Regarding the Environmental and Climate department, 8 papers were published in total, of which 5 were journal papers, while the remaining 3 conference papers, as seen in *Figure 12*.

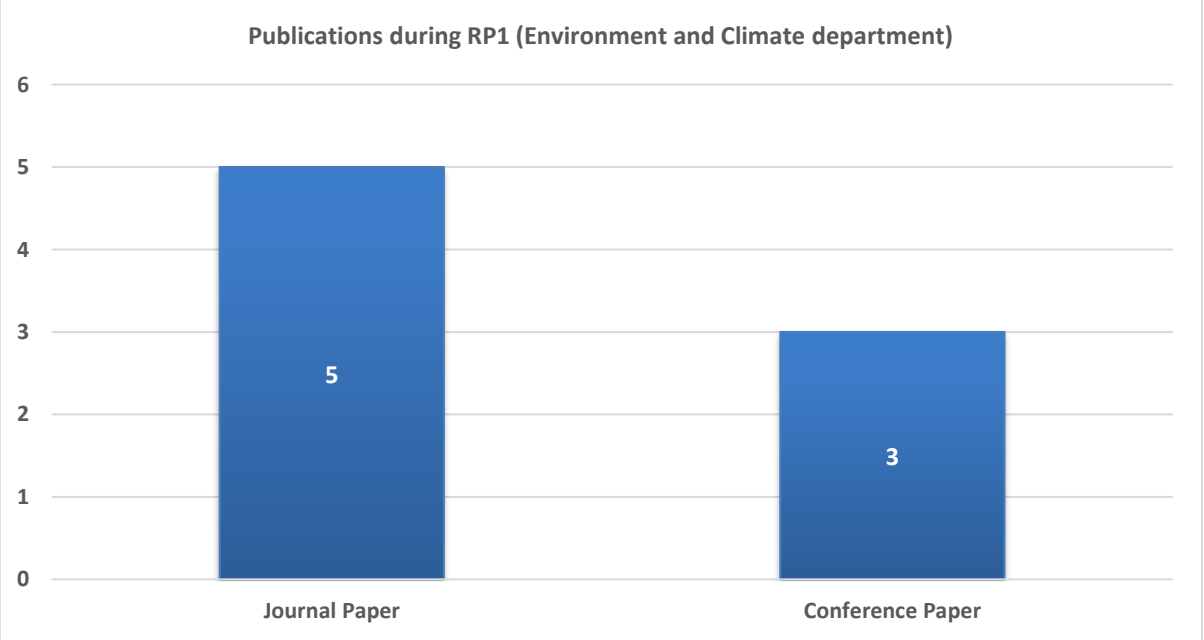

Figure 12: Publication types during RP1 (Environment and Climate department)

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The Resilient Society department shows a significant number of publications in RP1, i.e. 16 journal papers, 17 conference papers and 1 book section/chapter, as seen in *Figure 13*.

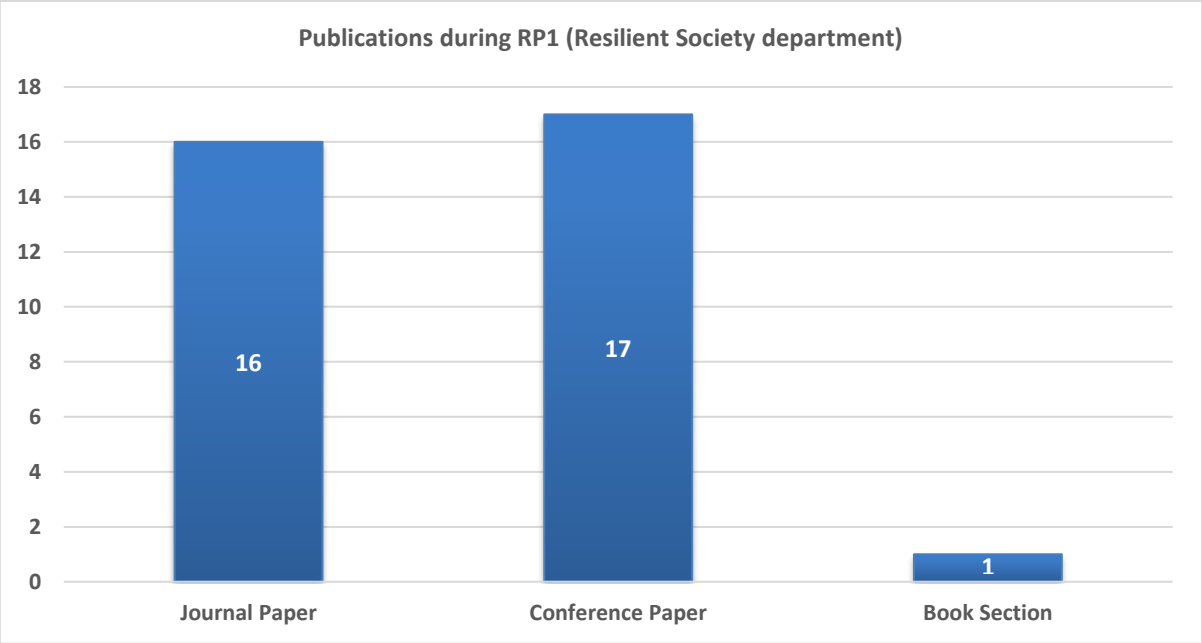

Figure 13: Publication types during RP1 (Resilient Society department)

Concluding, for the Big Earth Data Analytics department, 11 journal papers and 12 conference papers were published during RP1, as seen in *Figure 14*.

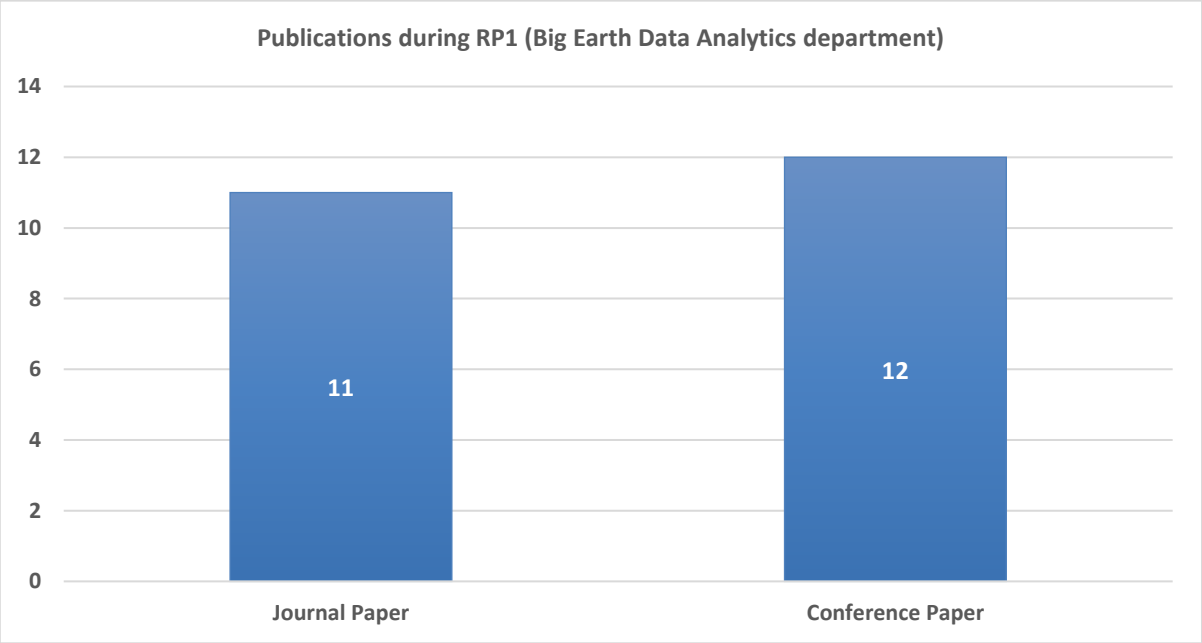

Figure 14: Publication types during RP1 (Big Earth Data Analytics department)

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Scopus[20] was used to calculate the grouped h-index and the citations during RP1. To export these statistics from Scopus, the following 27 researchers were used: Diofantos Hadjimitsis, Phaedon Kyriakidis, Evangelos Akylas, Chris Danezis, Nicholas Kyriakides, Kyriacos Themistocleous, Kyriacos Neocleous, Rodanthi-Elisavet Mamouri, Athos Agapiou, Argyro Nisantzi, Christiana Papoutsa, Vasiliki Lysandrou, Thomaida Polydorou, George Melillos, Milto Miltiadou, Marios Tzouvaras, Christodoulos Mettas, Evagoras Evagorou, Andreas Christofe, Georgios Leventis, Eleni Loulli, Anastasia Yfantidou, Maria Prodromou, Despina Makri, Stylianos Hadjipetrou, Christos Theocharidis and Dimitris Antoniades. The **grouped h-index** (**R15**) of the ECoE researchers is **47**, as presented in *Figure 15*.

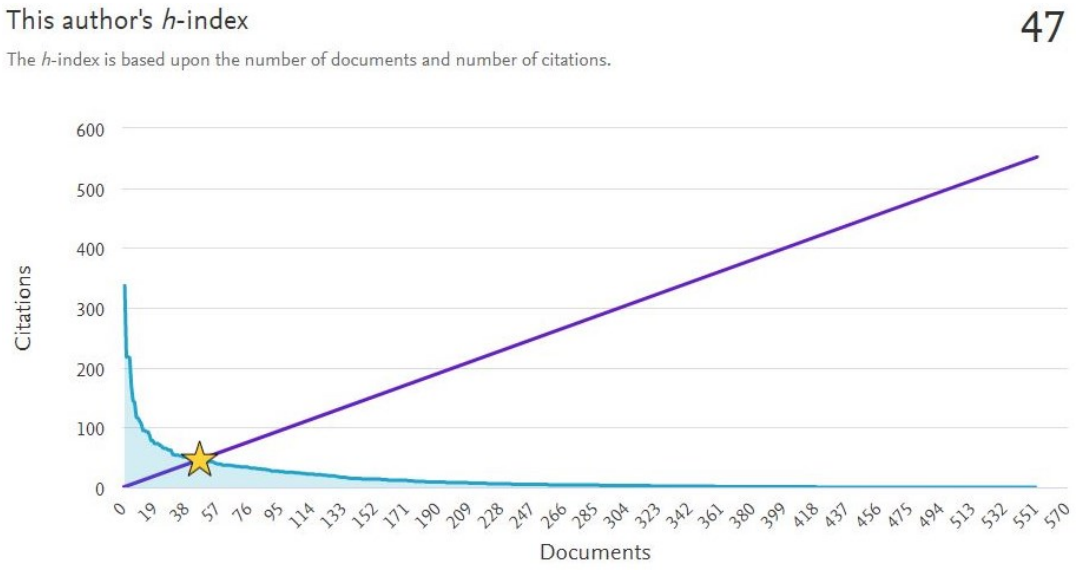

Figure 15: ECoE authors grouped h-index as calculated in Scopus

Moreover, the publications of the ECoE researchers (27 authors) have been cited 8,175 times over a period of 20 years, i.e. since 2000, as seen in *Figure 16*.

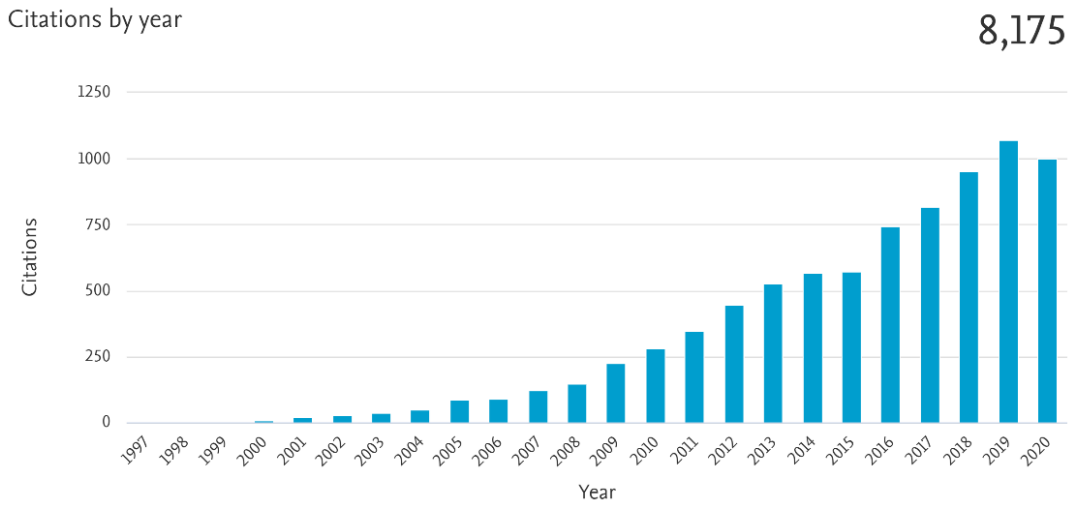

Figure 16: ECoE citations per year as calculated in Scopus

[20] Scopus: https://www.scopus.com/

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During 2018, the publications from the researchers of EXCELSIOR – Phase 1 were cited 952 times. For years 2019 and 2020, that the EXCELSIOR – Phase 2 project is in progress, citations are 1070 and 1000 respectively, as presented in *Figure 17*. The number of citations for year 2020 is expected to increase as the year is not over yet.

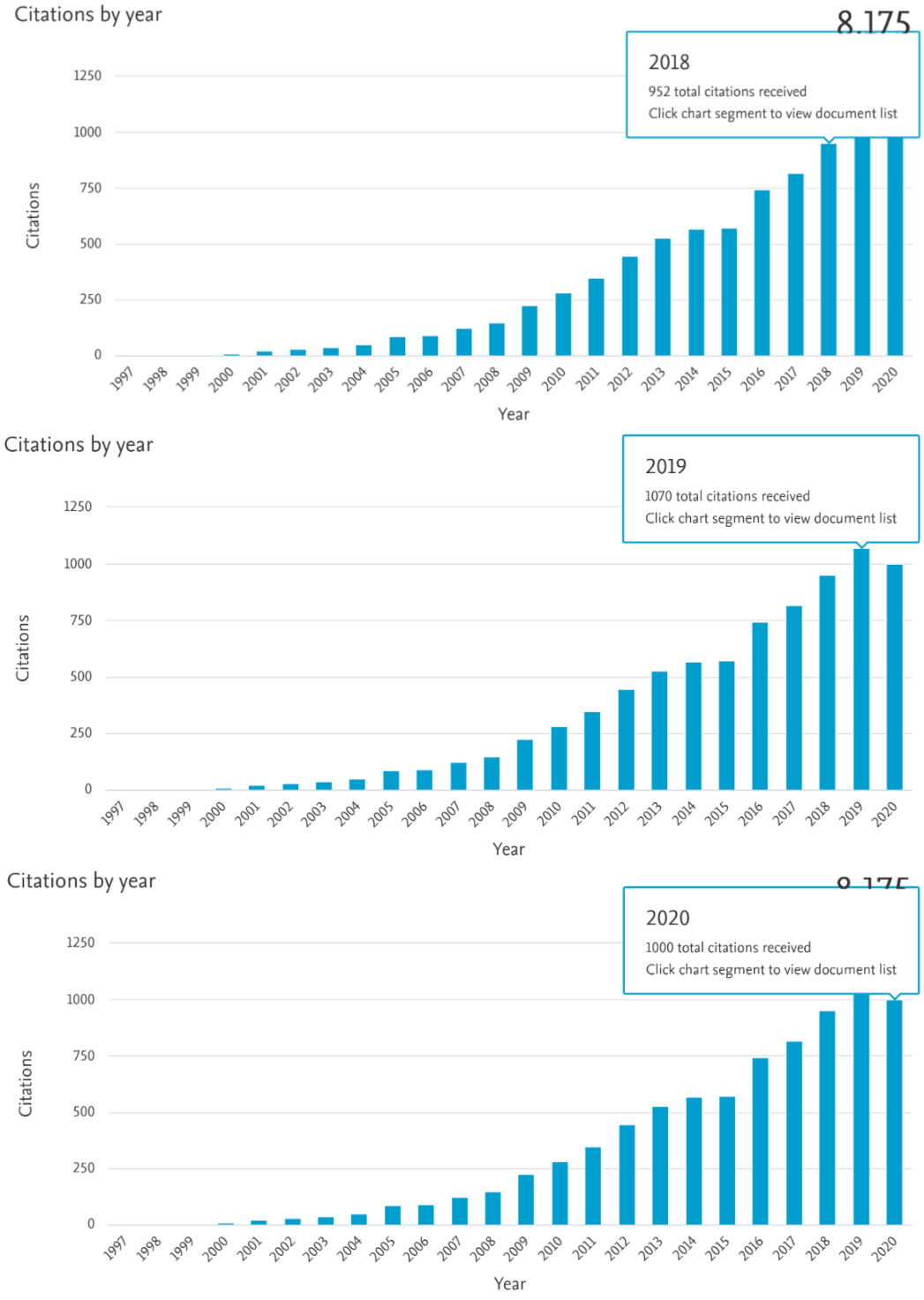

Figure 17: Citations for 2018, 2019 and 2020 as calculated in Scopus

It is worth noting that the number of publications, the h-index and citations values would be higher as Dr Andreas Anayiotos, Dr Vassilis Fotopoulos and Dr Marinos Ioannidis and their research staff are not included, although they participate in the EXCELSIOR project.

In August 2018, as submitted in the Business Plan at the end of Phase 1 project, the citations of the CUT ERATOSTHENES group publications were 600. As seen in *Table 3*, in RP1, there are **1268 citations** listed in Scopus from publications related to CUT/ECoE (**R16**). It is noted that based on the KPIs of the three departments, i.e. Environment and Climate, Resilient Society and Big Earth Data Analytics, the cumulative citations for the first four years of the EXCELSIOR – Phase 2 project are expected to be 3000. Thus, the target of 750 citations per year is achieved.

Table 3: Total citations listed in SCOPUS from publications related to CUT/ECoE

	August 2018	October-December 2019*	2020
Citations	600	268	1000

* The citations for year 2019 were 1070, as seen in *Figure 17*. The citations for the period October-December 2019 (268) were calculated as 3/12 of the total citations of 2019.

2.7 PhD theses

During the RP1 of EXCELSIOR Phase 2 project, **3 PhD candidates** (2 male and 1 female)**,** supervised by Professor Diofantos G. Hadjimitsis, completed and defended successfully their PhD theses (**R14**) in 2020.

PhD Theses:

- "Monitoring and Assessment of the Impact of Natural Hazards on Infrastructure Resilience using Earth Observation Techniques".
- "Human Centric Approach in local policy agenda for Euro Mediterranean Smart Cities".
- "Critical Investigation of Novel Computational Techniques for Automated Valuations of Real Estate Properties in Cyprus".

2.8 Patents

The ERATOSTHENES Centre of Excellence (ECoE) aims to explore the commercial value potential of the results of its ongoing research in several projects. Being a technology-based innovation developer, we seek to become an organization utilizing and applying the technology for marketable products and define the strategy of exploitation for various technologies that combine remote sensing and Earth Observation .

Three current technologies of the ECoE have been identified and we anticipate that they may have an exploitation potential. A Smart 'CropWATER' Valve system (SCWV), a Concrete Corrosion Remote Sensing System (CCRSS) and a Novel Integrated Technology for the Characterization of Asphalt system (NITCA). Currently, the project is undergoing the various stages to determine the exploitation potential

for the proposed products, investigate if similar products are patented or are used in the market and determine the optimum method to proceed with their commercialization. It is expected that filing for a patent for at least the CCRSS system will take place in early 2021.

The ECoE has applied to obtain advice and consulting from the IP Booster-META group[21], and have been provided with the Basic IP Audit/ IP Evaluation and the Patent landscaping services for two of the technologies. The ECoE is currently in the process to obtain Comprehensive IP evaluation/ due diligence for the CCRSS technology prior to submitting for IPR protection. Therefore, substantial progress is made for **3 services** to be patented as prototypes (**I01**).

Moreover, the CCRSS was submitted under the RESTART 2016-2020: Industrial Property call of the Research and Innovation Foundation (RIF). The «Industrial Property» Programme aims to the increase of the number of patents and industrial designs that are filed by Cypriot entities, with the long-term objective of maximising the benefits generated by the results of research and innovation activities.

2.9 Start-ups and spin-offs

No start-ups and/or spin-offs and therefore **no turnover** was achieved during RP1 (**I02, I03**). However, several meetings took place with CyRIC[22], the GRAVITY[23] incubator and the Cyprus Association of Research and Innovation Enterprises[24] (CARIE) in that direction. The development of an ESA Business Incubation Centre (BIC) in Cyprus has been extensively discussed and is currently **in progress** (**E03**).

2.10 Activities, meetings and other events

In this section, a list of the conferences, workshops, meetings, interviews and presentations that the EXCELSIOR partners participated and/or organised in the first 15 months of the EXCELSIOR project, i.e. from 1 October 2019 until 31 December 2020, and the impact that they had is provided in *Table 4*. All events are disseminated through the ECoE's website[25]; more specifically under the News & Events section. Moreover, all events are also communicated through the EXCELSIOR project newsletters[26].

In general, nearly all activities in this section are expected to have an impact in terms of network development. However, meetings and events (conferences, presentations, etc.) where the EXCELSIOR project and its activities were presented were also considered to have a dissemination impact. Meetings with public authorities and governmental departments, as well as presentations to students, have an educational or societal impact. Finally, presentations in conferences where research findings were presented were categorised as events having an innovation impact.

[21] Intellectual Property Booster-META group: https://ipbooster.meta-group.com/
[22] CyRIC: https://www.cyric.eu/
[23] GRAVITY incubator: https://gravity.ventures/
[24] CARIE: https://carie.eurocynergy.com/
[25] ECoE website: https://eratosthenes.org.cy/
[26] EXCELSIOR Newsletters: https://eratosthenes.org.cy/newsletters/

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Table 4: Events and meetings of the first 15 months of EXCELSIOR project

#	Activity	Date	Impact
1	Participation and presentation at the Iufro 2019 conference in Curitiba, Brazil	02.10.2019	Network development/ Innovation
2	Participation and presentation at the SilviLazer 2019 Conference in Iguazu Falls, Brazil	08.10.2019	Network development/ Innovation
3	Presentation of the EXCELSIOR Project to MSc students in Limassol, Cyprus	15.10.2019	Educational or societal
4	Meeting with the Director of the Department of Lands and Surveys in Nicosia, Cyprus	16.10.2019	Network development/ Educational or societal/ Dissemination
5	Participation at the stakeholder presentations regarding the 6 Centres of Excellence through the H2020 project in Nicosia, Cyprus	17.10.2019	Network development
6	Meeting with the Director of VODA ai regarding detection of water leaks in water utility systems using space technology in Nicosia, Cyprus	17.10.2019	Network development/ Dissemination
7	Participation at the conference "Agrifood Innovation Setting the Context in Cyprus" in Limassol, Cyprus	22.10.2019	Network development/ Dissemination
8	Participation at the workshop "Possibilities and challenges of Copernicus products and services in marine industry, research and management" in Bergen, Norway	23.10.2019	Network development/ Dissemination
9	Participation at the third general meeting of the International Network to Encourage the Use of Monitoring and Forecasting Dust Products in Porto, Portugal	25.10.2019	Network development/ Dissemination
10	Presentation and meeting with the University of Brighton in Brighton, UK	30.10.2019	Network development
11	Presentation at the "Cyprus in Germany" event (attended by the German Ambassador in Cyprus) in Limassol, Cyprus	31.10.2019	Network development/ Educational or societal/ Dissemination
12	Meeting with EXCELSIOR Strategic Partner, NOA in Athens, Greece	05.11.2019	Network development
13	Meeting with the Hellenic Quality Assurance and Accreditation Agency and the Aristotle University of Thessaloniki in Athens, Greece	05.11.2019	Network development
14	Presentation at the annual meeting of the " Remote Sensing Techniques for Archaeology" H2020 MSCA RISE project in Athens, Greece	06.11.2019	Network development/ Dissemination
15	Meeting at the School of Rural and Surveying Engineering of the National Technical University of Athens in Athens, Greece	06.11.2019	Network development
16	Meeting with the Deputy Minister of Education of Greece Prof. Vassilios Digalakis in Athens, Greece	08.11.2019	Network development/ Dissemination
17	Participation at the 135th EuroSDR Board of Delegates 2019 Meeting in Nicosia, Cyprus	13.11.2019	Network development/ Educational or societal
18	Organisation of the Public Inauguration Event of the EXCELSIOR H2020 Teaming Phase 2 Project under the auspices of the President of the Republic of Cyprus, H.E. Mr Nicos Anastasiades	22.11.2019	Network development/ Educational or societal/ Dissemination

19	Organisation of the EXCELSIOR stakeholder engagement workshop in Limassol, Cyprus	22.11.2019	Network development/ Educational or societal/ Dissemination
20	Visit at CYTA's Makarios Satellite Earth Station in Nicosia, Cyprus	23.11.2019	Network development/ Educational or societal
21	Participation at the event "Expansion of EURAXESS National Network Researchers from Third Countries" in Nicosia, Cyprus	23.11.2019	Network development
22	Participation at meeting "Towards Horizon Europe Dialogue on Implementation Strategy European Partnerships" in Nicosia, Cyprus	04.12.2019	Network development
23	Presentation during meeting with representatives of the Jinan University, China in Limassol, Cyprus	09.12.2019	Network development
24	Presentation at the 3rd Conference of Geographic Information Systems and Spatial Analysis in Agriculture and the Environment in Athens, Greece	11.12.2019	Network development
25	Presentation at conference "Sustainable Conservation of UNESCO and Other Heritage Sites through Proactive Geosciences" in Aswan, Egypt	10-12.12.2019	Network development
26	Presentation during the 1st Workshop of the Marine Spatial Planning "THAL CHOR 2" project in Limassol, Cyprus	12.12.2019	Network development/ Educational or societal/ Dissemination
27	Presentation of Earth Observation applications, benefits of using Copernicus and the EXCELSIOR Phase 2 Project at the Gymnasium of Polis Chrysochous in Paphos, Cyprus	17.12.2019	Educational or societal
28	Presentation at the Alexander College in Paphos, Cyprus	18.12.2019	Educational or societal
29	Presentation at the Gymnasium of Apostolou Pavlou in Paphos, Cyprus	20.12.2019	Educational or societal
30	Presentation at the Esperino Gymnasium/Lyceum in Paphos, Cyprus	23.12.2019	Educational or societal
31	Presentation at Hystore Tech Ltd premises and meeting with Korean experts in UAVs in Nicosia, Cyprus	09.01.2020	Network development/ Dissemination
32	Participation at the project meeting "Portal for hERItage buildings integration into the COntemPorary built Environment" in Nicosia, Cyprus	09.01.2020	Network development
33	Meeting with the CMMI Cyprus Marine Maritime Institute in Limassol, Cyprus	16.01.2020	Network development
34	Presentation at the 25th Copernicus User Forum in Brussels, Belgium	29.01.2020	Network development/ Dissemination
35	Meeting with the Fameline Holding Group (FHG) in Limassol, Cyprus	29.01.2020	Network development
36	Presentation to the undergraduate students of the Department of Civil Engineering Geomatics of CUT in Limassol, Cyprus	30.01.2020	Educational or societal
37	Meeting with the Director of Asteroscholeio in Nicosia, Cyprus	02.02.2020	Network development/ Educational or societal
38	Meeting with the Director of RTD Talos in Nicosia, Cyprus	05.02.2020	Network development
39	Meeting with the Department of Lands and Surveys, Cartography Branch in Limassol, Cyprus	12.02.2020	Network development/ Educational or societal
40	Meeting with Limassol Chamber of Commerce and Industry in Limassol, Cyprus	12.02.2020	Network development

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41	Meeting with Prof. Alain Pagani (AV DFKI) in Kaiserslautern, Germany	14.02.2020	Network development
42	Meeting with ATLANTIS Consulting Cyprus Ltd in Limassol, Cyprus	17.02.2020	Network development
43	Presentation at monthly webinar for Copernicus Academy and Copernicus Relays members, Online	20.02.2020	Network development/ Dissemination
44	Meeting with CyRIC in Limassol, Cyprus	26.02.2020	Network development
45	Meeting with RTD Talos in Limassol, Cyprus	26.02.2020	Network development
46	Meeting with the Centre of Excellence in Risk Decision Sciences (CERES) at the European University Cyprus in Limassol, Cyprus	27.02.2020	Network development
47	Participation at the ceremony for the appointment of the first Deputy Minister of Research, Innovation and Digital Policy Kyriacos Kokkinos in Nicosia, Cyprus	28.02.2020	Network development
48	Invited talk at the Workshop on Computational approaches to archaeological site detection and monitoring in Cambridge, UK.	29.02.2020	Network development/ Dissemination
49	Meeting with the Mayor of Aradippou Municipality in Larnaca, Cyprus	03.03.2020	Educational or societal/ Dissemination
50	Invited talk by Prof. Hadjimitsis at the ACTRIS IMP kick-off meeting in Larnaca, Cyprus	03.03.2020	Network development/ Dissemination
51	Presentation of EXCELSIOR project at the Limassol Chamber of Commerce Industry in Limassol, Cyprus	04.03.2020	Network development/ Educational or societal/ Dissemination
52	Scientific lecture by TROPOS Senior Researcher, Dr. Ulla Wandinger in Limassol, Cyprus	09.03.2020	Network development/ Educational or societal
53	Development of WebGIS service to trace the origins of COVID-19[27]	01.04.2020	Educational or societal
54	Presentation to the MSc students, Online	06.04.2020	Educational or societal
55	Co-organisation of the ICOMOS-CYPRUS seminar, Online	24.04.2020	Network development/ Dissemination
56	Presentations at the EGU General Assembly 2020, Online	04-08.05.2020	Network development/ Innovation/ Dissemination
57	Participation at the Copernicus Academy video conference, Online	20.05.2020	Network development/ Dissemination
58	Presentation to the Chief Scientist, Online	29.05.2020	Dissemination
59	Participation at the Pan-European COVID-19 ACTRIS-EARLINET campaign, Online	30.05.2020	Network development/ Educational or societal/ Dissemination
60	Participation at the Teaming Club meeting, Online	03.06.2020	Network development
61	Participation at the kick-off meeting of the IEEE-SA, Online	04.06.2020	Network development/ Dissemination
62	Meeting with Aristotle University of Thessaloniki and Interbalkan Environmental Centre (i-BEC), Online	11.06.2020	Network development
63	Meeting with Ben-Gurion University of the Negev, Online	17.06.2020	Network development/ Dissemination
64	Participation at the Aeolus L2A working group 2nd meeting, Online	30.06.2020	Network development/ Innovation/ Dissemination
65	MedRIN newsletter, Online	01.07.2020	Network development/ Dissemination

[27] COVID-19 web services: (https://excelsior2020.eu/covid-19-web-services/)

66	Article in the fourth issue of START's ProSus Magazine, Online	01.07.2020	Educational or societal/ Dissemination
67	Invited talk by Prof. Rosa Lasaponara "Remote sensing for natural and cultural heritage: Data, Science and operational applications", Online	09.07.2020	Network development/ Innovation/ Educational or societal
68	Organisation of the 1st virtual EXCELSIOR International Technical Workshop, Online	15.07.2020	Network development/ Innovation/ Educational or societal
69	Keynote Speech at the EURO-MED-SEC-3 conference, Online	05.08.2020	Network development/ Innovation/ Dissemination
70	Appointment of ECoE coordinator as one of the Deputy chairs at GEO	07.08.2020	Network development
71	Interview about EXCELSIOR and ECoE at the CYBC RIK 3 RADIO, Online	19.08.2020	Educational or societal/ Dissemination
72	Presentation at the online event of NCP_WIDENET Talks, Online	07.09.2020	Network development/ Dissemination
73	Presentation at workshop "Strengthening the industry in Cyprus" in Nicosia, Cyprus	22.09.2020	Network development/ Educational or societal/ Dissemination
74	Conference presentation at CAA-GR 2020 Sessions – "Greece, Cyprus, Turkey", Online	09.10.2020	Network development/ Innovation/ Dissemination
75	Presentation at CERES Earth Observation Workshop in Nicosia, Cyprus and online	20.10.2020	Network development/ Dissemination
76	Meeting with the other five Cypriot Centres of Excellence/Teaming Projects, Online	27.10.2020	Network development/ Dissemination
77	Meeting with CyRIC, Online	03.11.2020	Network development
78	Conference presentation at EUROMED2020 conference, Online	04.11.2020	Network development/ Innovation/ Dissemination
79	Meeting with IEEE-GRSS, Online	05.11.2020	Network development/ Dissemination
80	Invited talk by Dr Nektarios Chrysoulakis "Cities and Climate Change", Online	16.11.2020	Network development/ Innovation/ Educational or societal
81	Presentation at Nicosia Risk Forum, Cyprus, Online	26.11.2020	Network development/ Dissemination
82	Participation at the European Researcher's Night with a virtual booth titled "Earth Observation, Space Technologies & Geoinformatics for Green and Smart Cities Applications", Online	27.11.2020	Network development/ Educational or societal/ Dissemination
83	Invited talk by Dr Skevi Perdikou "Landslide susceptibility mapping using satellite radar interferometry", Online	03.12.2020	Network development/ Innovation/ Educational or societal
84	Presentation at Pafos General Assembly Meeting of SPOLMIK (Cyprus Civil Engineers Association), Online	07.12.2020	Network development/ Educational or societal/ Dissemination
85	Invited talk by Dr Kleanthis Nicolaides "The science of Meteorology and Remote Sensing Applications", Online	10.12.2020	Network development/ Innovation/ Educational or societal
86	ESA WEB TV TWO invited talk for the Seminar: Space for Twin Cities - Cultural Heritage, Online	10.12.2020	Network development/ Innovation/ Dissemination

CUT/ECoE organised and/or participated in 86 events in total during the RP1 with the aim to expand their network, disseminate the EXCELSIOR project outputs, promote innovation and promote the activities of the ECoE to public authorities, governmental departments, and schools to increase the societal and educational impact. Through the attendance of the ECoE team in conferences as well as organisation of meetings with several networks, various **Thematic networks and Technological Platforms** have been addressed for potential collaboration (**S01**). Approximately **22 activities** have contributed to the further development of the ECoE network. These include the participation in various conferences, seminars and forums, such as the EGU2020, the EURO-MED-SEC-3 and Nicosia Risk Forum (*Figure 18*), as well as the appointment of EXCELSIOR H2020 Coordinator, Professor Diofantos Hadjimitsis as one of the Deputy Co-Chairs of the GEO under Subgroup 1: Coordination of climate issues across the GEO Work Programme & Synergies with key partners.

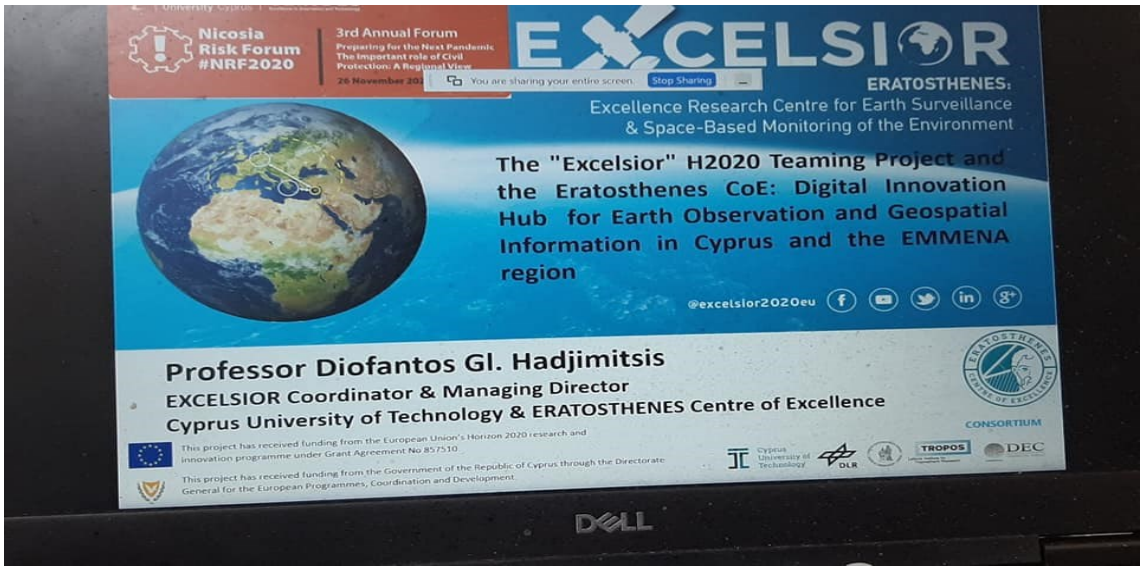

Figure 18: EXCELSIOR H2020 Project at Nicosia Risk Forum 2020

Moreover, the organisation of the 1st virtual EXCELSIOR International Technical Workshop (*Figure 19*) on 15 July 2020, attracted large audiences from the scientific community and academia, the public sector and the Industry. In particular, the workshop attracted in total 346 registrations and reached up to 210 unique viewers and 105 maximum concurrent viewers. The workshop was welcomed by the coordinator of the EXCELSIOR Project and the Chief Scientist of the Republic of Cyprus and included a number of 27 presentations both from academia and industry on the local, regional and global level.

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Figure 19: Screenshot from the 1st virtual International Technical Workshop

Furthermore, it is worth mentioning that Dr Athos Agapiou, a EXCELSIOR team member was hosted by the internet television of the European Space Agency (ESA WEB TV TWO) for the Online Seminar: Space for Twin Cities - Cultural Heritage (*Figure 20*).

Figure 20: Dr Athos Agapiou hosted by the European Space Agency WEB TV TWO

Local networks have been addressed as well, not only by meetings, but also by the co-organisation of informational events (**S02**). Approximately **20 organized activities** have addressed **local networks**. Some indicational activities are the presentation of EXCELSIOR to the Chief Scientist of Cyprus (*Figure 21*) and to the Limassol Chamber of Commerce and Industry (*Figure 22*). These actions are expected to attract more networks for membership.

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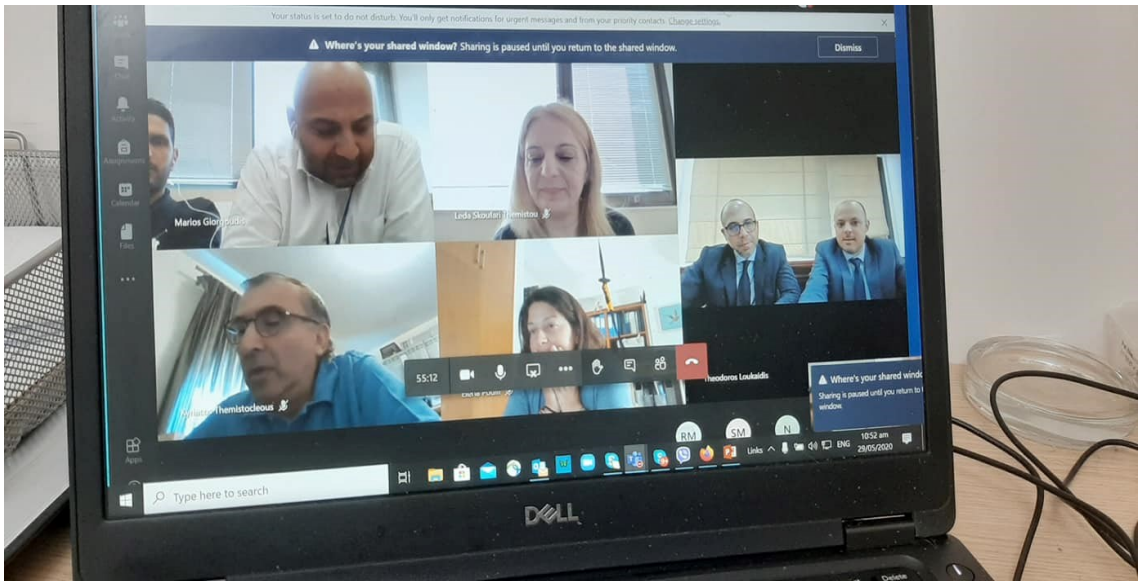


Figure 21: EXCELSIOR H2020 presentation to the Chief Scientist of Cyprus and the RIF

Figure 22: EXCELSIOR H2020 presentation at the Limassol Chamber of Commerce and Industry

Regarding local non-academic audience (**S03**), around **25 activities** have been organized, i.e. meetings with municipalities and local authorities, such as the Municipality of Aradippou (*Figure 23*) and Municipality of Peyia, and meetings with local stakeholders from the business sector, such as the Fameline Holding Group and Hystore Technologies Ltd (*Figure 24*). The target of these meetings was to give an overview to the stakeholders about the capacity of ECoE and the potential collaborations that can be conducted, and to identify sectors of common interest, where ECoE can be beneficial to

non-academic stakeholders. These meetings have already led to some collaborations, such as research project proposals and the development of services by the ECoE team.

Figure 23: EXCELSIOR H2020 Project presentation to the mayor of the Municipality of Aradippou

Figure 24: EXCELSIOR H2020 Project team meeting with Hystore Technologies Ltd.

Moreover, members of the ECoE have carried out approximately **10 presentations** at schools and other research institutes to educate teachers, students, and professionals about EO activities and provide them with know-how in this field (**S05**). These included presentations, not only to undergraduate and postgraduate students at the Cyprus University of Technology (*Figure 25*), but also to students at public

schools, such as the Technical School of Paphos, and private institutes, such as the Alexander College in Paphos.

Figure 25: Presentation of EO applications to MSc students at CUT

A significant event was the participation of the ECoE via a virtual booth at the European Researcher's Night on 27 November 2020 (*Figure 26*), where its activities were communicated to larger audiences due to the nature of the event. The ERATOSTHENES Centre of Excellence of the Cyprus University of Technology (CUT), the Department of Civil Engineering and Geomatics (CUT), and the EXCELSIOR H2020 Teaming Project hosted 8 virtual booths.

- #47 Forest monitoring using satellite imagery for understanding the effects of climate change.
- #48 Cyclops RPF: Cyprus Continuously Operating Natural Hazards Monitoring and Prevention System.
- #49 EXCELSIOR: Space Technologies, Earth Observation & Geo-informatics for Green and Smart Cities applications (e.g. land, climate, air quality, etc.).
- #50 Sarocy: Simulating prehistoric seagoing to/from Cyprus.
- #52 Copernicus: Earth Observation and Big Data for Cultural Heritage - Navigator Funded Project.
- #54 Geowindsat: Satellite-based offshore wind resource assessment.
- #55 Θαλάσσιος Χωροταξικός Σχεδιασμός: Πρόγραμμα ΘΑΛ – ΧΩΡ: Implementation of Maritime Spatial Planning (MSP) in Cyprus.
- #56 Sirocco Restart: Aerosol-cloud interaction and Cloud formation.

The booth of ECoE included six videos, which provided information about what is Remote Sensing, what is the ECoE and how it started, and applications of Remote Sensing related to the environment and the climate, burned area mapping and smart cities. The visitors were also provided with quizzes

that were prepared in the form of presentations. In addition to the material provided, visitors also had the chance to chat with around 15 members of the ECoE team through the chat function of the online platform. Due to the success of the event, the Research and Innovation Foundation (RIF) extended the access to the virtual event until the end of December 2020.

Figure 26: The 8 virtual booths of the ECoE and CUT at the European Researchers' Night 2020

During the European Researcher's Night 2020, Booth #49 titled 'EXCELSIOR: Space Technologies, Earth Observation & Geo-informatics for Green and Smart Cities applications (e.g. land, climate, air quality, etc.)' received 142 visits (90 unique), with the 31 documents and 33 videos being viewed over the duration of the event. Moreover, Booth # 47, organised by the ECoE team members Dr Chris Danezis,

Dr Milto Miltiadou and Mr Christos Theocharidis and titled " Forest monitoring using satellite imagery for understanding the effects of climate change" was awarded with the audience's favourite booth prize. The booth contained educational videos, which were part of the ASTARTE project [28] (EXCELLENCE/0918/0341).

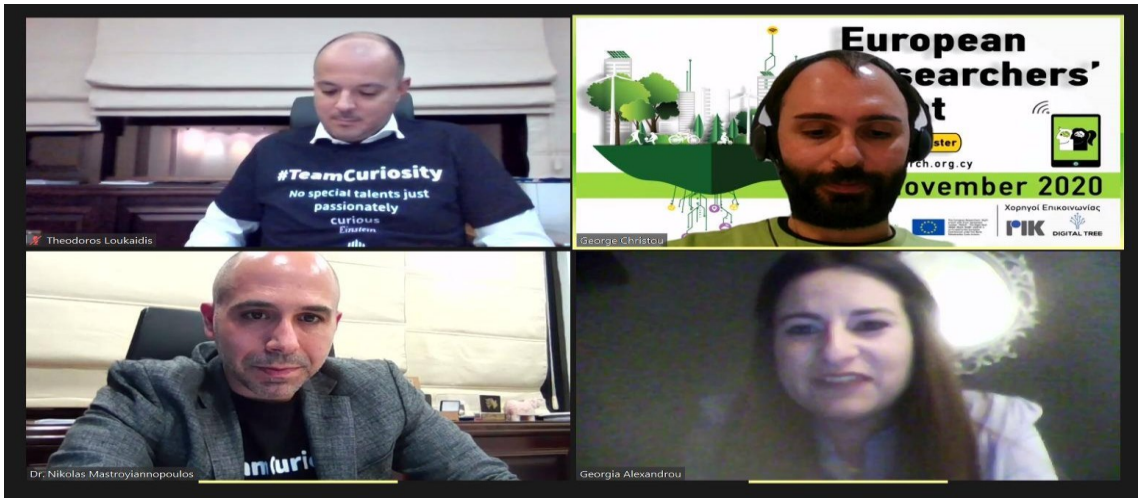


Figure 27: CUT MSc student Georgia Alexandrou awarded with the 1st prize at the Student Research Competition in the area of Natural Sciences and Engineering

Furthermore, MSc student Georgia Alexandrou from the Department of Civil Engineering and Geomatics of the Cyprus University of Technology and EXCELSIOR was awarded during the European Researcher's Night with the 1st Prize at the Student Research Competition in the area of Natural Sciences and Engineering (*Figure 27*).

2.11 Project proposals, services, partnerships and funding

In this section, the proposals submitted and/or the research projects that started since 1 September 2018 are presented in *Table 5* below. As mentioned earlier, CUT proposals and projects after this date are accounted for as ECoE ones, as the ECoE was only established as a legal entity on 27 February 2020. Additionally, the funding received, the partnerships formed with the Industry and the public sector as well as the services developed by the ECoE, during RP1, are presented in detail.

Table 5: Proposals submitted for research projects

#	Funding source	Date submitted	Project starting date	Project acronym	CUT/ECoE budget (€)	Coordinator / Partner	Funded
1	ESA-PECS	11-11-2016	01-02-2019	SWSOIP	158,633.26	Coordinator	Yes
2	RPF/RIF	13-01-2017	01-10-2018	PLEICY	0	Partner	Yes
3	RPF/RIF	27-01-2017	06-12-2018	AQ-SERVE	90,000	Partner	Yes
4	Interreg	24-02-2017	01-09-2018	THAL-CHOR 2	70,000	Partner	Yes

[28] ASTARTE project: http://astarte.cut.ac.cy

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 857510.

This project has received funding from the Government of the Republic of Cyprus through the Directorate General for the European Programmes, Coordination and Development.

5	Interreg	24-02-2017	01-09-2018	Digital Aposphragisma (Imprint) of Hagionymous Islands	125,000	Partner	Yes
6	RPF/RIF	10-03-2017	01-01-2019	SIROCCO	213,958	Coordinator	Yes
7	RPF/RIF Restart 2016-2020	31-03-2017	02-01-2019	PVrosion	181,200	Partner	Yes
8	RPF/RIF Restart 2016-2020	04-04-2017	03-12-2018	CyCLOPS	899,280	Coordinator	Yes
9	H2020	06-03-2018	01-10-2018	CopHub.AC	69,616.25	Partner	Yes
10	H2020	21-03-2018	01-10-2018	ReSeArch	165,600	Partner	Yes
11	ERASMUS +	31-03-2018	01-12-2018	ARINFUSE	47,948	Partner	Yes
12	RPF/RIF	12-04-18	01-02-2019	GEOWINDSAT	80,000	Coordinator	Yes
13	ESA-PECS	25-06-2018	17-05-2019	SOFIA	24,969	Partner	Yes
14	RPF/RIF	04-09-2018	01-09-2019	MedSAL	80,000	Partner	Yes
15	H2020	11-09-2018	-	ResInnoHub	705,875	Partner	No
16	H2020	12-09-2018	-	geoffWIND	236,911	Host	No
17	COST European Cooperation in Science & Technology	02-10-2018	-	ForLidar	Budget for meetings	Secondary proposer	No
18	RPF	09-11-2018	-	AEROPOL	159,344	Coordinator	No
19	RPF/RIF	09-11-2018	-	C-FORESTS	160,000	Coordinator	No
20	H2020	15-11-2018	-	AVOID	2,500,000	Coordinator	No
21	RPF/RIF	25-01-2019	02-10-2019	NAVIGATOR	250,000	Coordinator	Yes
22	RPF/RIF	25-01-2019	-	A2HBM	150,000	Coordinator	No
23	RPF/RIF	25-01-2019	02-12-2019	ASTARTE	250,000	Coordinator	Yes
24	RPF/RIF	25-01-2019	02-09-2019	SaRoCy	96,360	Coordinator	Yes
25	RPF/RIF	25-01-2019	-	GeoPop	146,359	Coordinator	No
26	RPF/RIF	27-01-2019	01-12-2019	PERISCOPE	140,972	Partner	Yes
27	ERASMUS +	07-02-2019	-	ExAMINE	64,855.3	Partner	No
28	ERASMUS +	07-02-2019	-	DNCH	80,000	Partner	No
29	RPF/RIF	21-02-2019	-	iControl	905,108	Coordinator	No
30	RPF/RIF	22-02-2019	-	SMARTER	498,234	Coordinator	No
31	RPF/RIF	22-02-2019	-	ERMIS	433,128	Coordinator	No
32	RPF/RIF	22-02-2019	01-07-2020	OenoWatch	86,184	Partner	Yes
33	RPF/RIF	15-03-2019	-	PLACES	60,000	Coordinator	Yes
34	H2020	02-04-2019	-	INSTASCIENCE		Partner	No
35	H2020	04-04-2019	-	HazProfit	199,437.3	Coordinator	No
36	H2020	04-04-2019	-	BEPREPARED	-	Partner	No
37	ESA-PECS	07-06-2019	-	FEASIBILITY STUDY OF	26,644	Coordinator	No

				CYPRUS SPACE SECTOR DEVELOPMENT			
38	ESA-PECS	18-06-2019	-	EDAFOS	81,508	Partner	No
39	ESA-PECS	18-06-2019	-	SPEK	35,422	Partner	No
40	ESA-PECS	18-06-2019	-	SHARE	245,078	Coordinator	No
41	ESA-PECS	18-06-2019	20-07-2020	CROSS	76,177	Coordinator	Yes
42	European Bank for Reconstruction and Development	24-07-2019	-	EBRD - Waterleaks	63,572.52	Partner	No
43	H2020-SU-SEC-2018-2019-2020	22-08-2019	-	SafeBridge	25,000	Partner	No
44	H2020	22-08-2019	-	CRISES	270,750	Partner	No
45	H2020	22-08-2019	-	FOC2S	116,875	Partner	No
46	COST European Cooperation in Science & Technology	01-10-2019	-	ForLidar	Budget for meetings only	Secondary proposer	No
47	COST European Cooperation in Science & Technology	02-10-2019	-	Marintnet	Budget for meetings only	Secondary proposer	No
48	RIF Restart 2016-2020	03-10-2019	-	VISIBLE	119,400	Partner	No
49	H2020 ERC-2020-STG	16-10-2019	-	Reflections	1,500,000	Coordinator	No
50	Interreg	01-11-2019	-	BEACHTECH	184,740	Partner	No
51	P2P/JPICH_CPU	09-11-2019	-	PROTHEGO4RM	175,000	Partner	No
52	P2P/JPICH_CPU	09-11-2019	-	TIRESIA	175,000	Partner	No
53	H2020-MSCA-IF-2019	09-11-2019	-	FROM AFAR	2 months secondments in Cyprus	Partner	No
54	H2020 ERA Chair	14-11-2019	-	ARISTOTELE	2,500,000	Coordinator	No
55	H2020	14-11-2019	01-10-2020	ISTOS	200,000	Partner	Yes
56	H2020	14-11-2019	-	ENRICH	228,750	Coordinator	No
57	EACEA 32/2019	30-11-2019	-	ReST-Art	245,565	Partner	No
58	H2020-ICT-2018-20	16-01-2020	-	GENie	456,072.5	Partner	No
59	H2020	29-01-2020	-	SMARTMED	203,250	Partner	No
60	H2020	18-03-2020	-	PORTAL	-	Partner	No
61	H2020 - PRIMA	06-05-2020		De Aquis	300,000 (ECoE)	Partner	No

62	H2020 - PRIMA	06-05-2020	-	MEDIMAR	290,935.75 (ECoE)	Partner	No
63	European Commission tender	11-05-2020	10-08-2020	Study on quality in 3D digitisation of tangible cultural heritage	99,980	Coordinator	Yes
64	RPF/RIF	18-05-2020	-	MIRIDA	250,000 (ECoE)	Coordinator	No
65	RPF/RIF	18-05-2020	-	CovidAir	46,200 (ECoE)	Partner	No
66	ERDF programme of Basilicata (2014-20)	31-05-2020	-	MaD4Archeo	12,000	Partner	No
67	RPF/RIF	30-06-2020	-	Stavros Patsalides	1,500	Supervisor	No
68	RPF/RIF	30-06-2020	-	THREAT	1,500	Supervisor	Yes
69	H2020	27-08-2020	-	GUARDIAN	110,312.5 (ECoE)	Partner	Under review
70	H2020	27-08-2020	-	CANARY	130,000 (ECoE)	Partner	Under review
71	ESA-PECS	31-08-2020	-	EVCTEMON	106,098 (CUT) 100,004 (ECoE)	Coordinator	No
72	ESA-PECS	31-08-2020	Not defined yet	CROSS II	134,305	Coordinator	Yes
73	ESA-PECS	31-08-2020	-	MGClimate	215,889 (ECoE)	Coordinator	No
74	ESA-PECS	31-08-2020	-	COPERNICUS SPACE PROGRAMME FOR CULTURAL HERITAGE: A PROOF OF CONCEPT	170,105 (ECoE)	Coordinator	No
75	ESA-PECS	31-08-2020	-	FIREWARN	124,895 (ECoE)	Partner	No
76	ESA-PECS	31-08-2020	-	EDAFOS	99,868 (ECoE)	Partner	No
77	ESA-PECS	31-08-2020	-	EXCELSIORSAT*	180,156 (ECoE)	Coordinator	No
78	COST European Cooperation in Science & Technology	01-10-2020	-	ForLidar	Budget for meetings only	Secondary proposer	Under review
79	COST European Cooperation in	02-10-2020	-	Marintnet	Budget for meetings only	Secondary proposer	Under review

	Science & Technology						
80	ERASMUS +	29-10-2020	-	Methods for Effective Remote Training	48,000	Partner	Under review
81	Cost-European cooperation in science and technology	Nov-20	-	SIRENA	Budget for meetings only	Secondary proposer	Yes
82	Cost-European cooperation in science and technology	Nov-20	-	ESRA-NET	Budget for meetings only	Secondary proposer	Yes
83	RIF/RPF	18-12-2020	-	CCRSS	18,600 (ECoE)	Coordinator	Under review

Seventy project proposals were submitted after the submission of the EXCELSIOR Business Plan on 31 August 2018 and until the end of the RP1, as presented in *Figure 28*. From those, 32 proposals were submitted during the period 1/9/2018 – 30/09/2019 and 38 project proposals were submitted during the RP1 (1/10/2019 – 31/12/2020). From those proposals submitted during RP1, 14 proposals were submitted before and 24 proposals after the establishment of the ECoE as a legal entity on 27 February 2020. In total, during RP1, €8,428,125.75 were budgeted for the activities of CUT and/or ECoE for these 38 proposals.

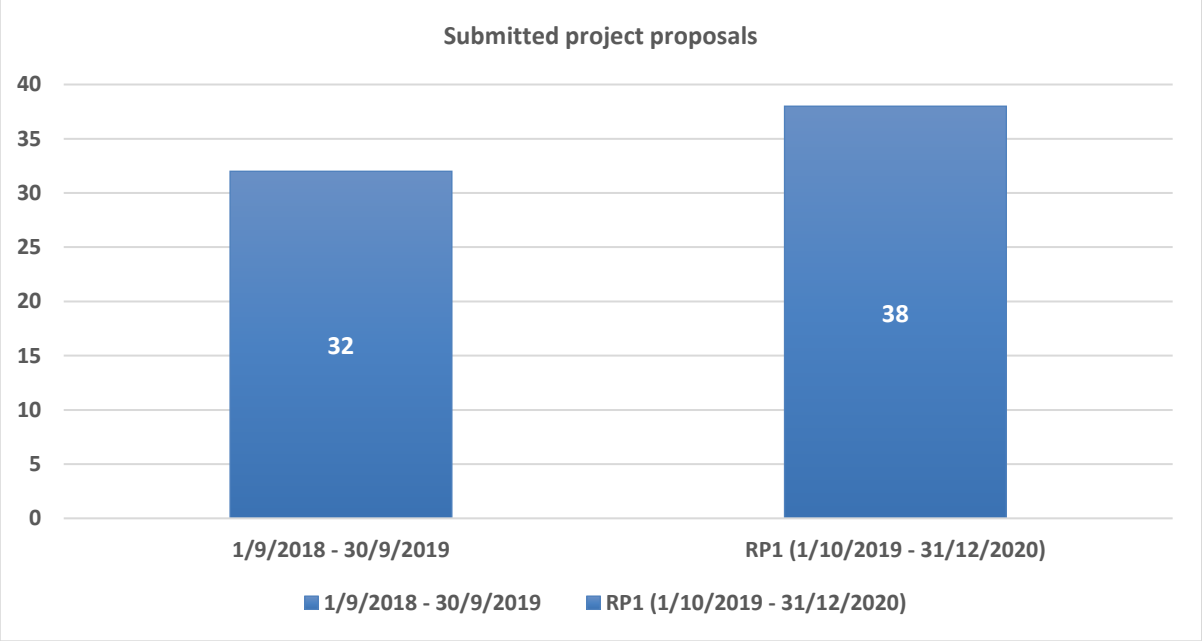


Figure 28: Number of submitted project proposals

Thirteen proposals were submitted before 1/9/2018 with the funded projects starting during the period 1/9/2018 – 30/9/2019. Moreover, 8 project proposals were funded before the start of

EXCELSIOR – Phase 2 (1/9/2018-30/9/2019) and 6 proposals during the RP1 of the project, as shown in *Figure 29*.

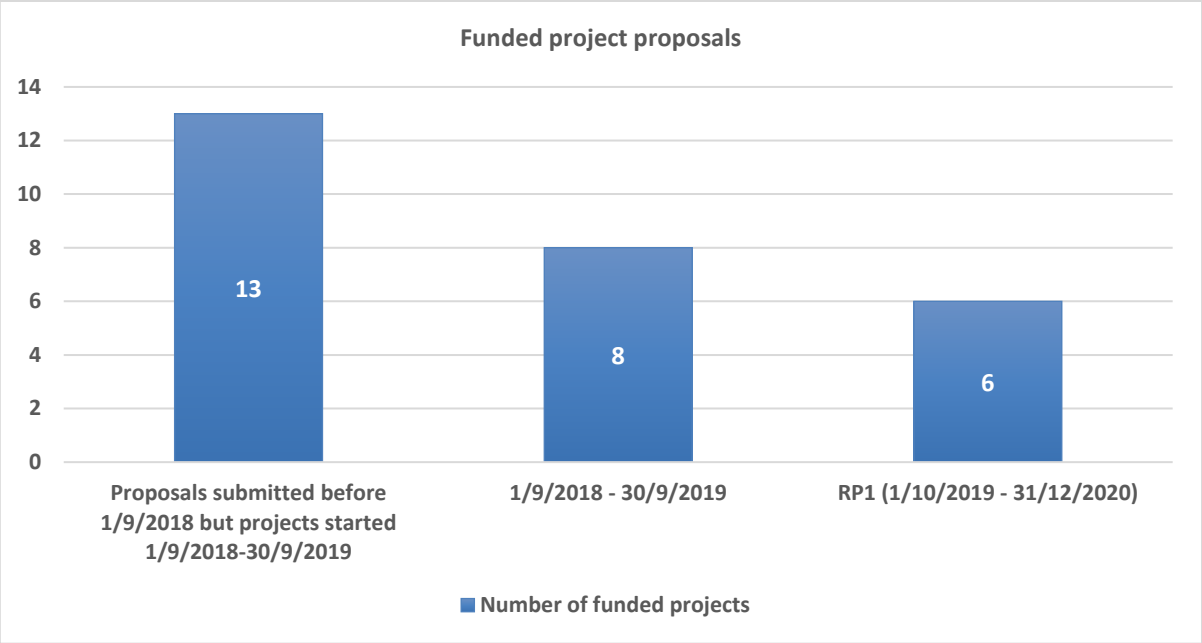
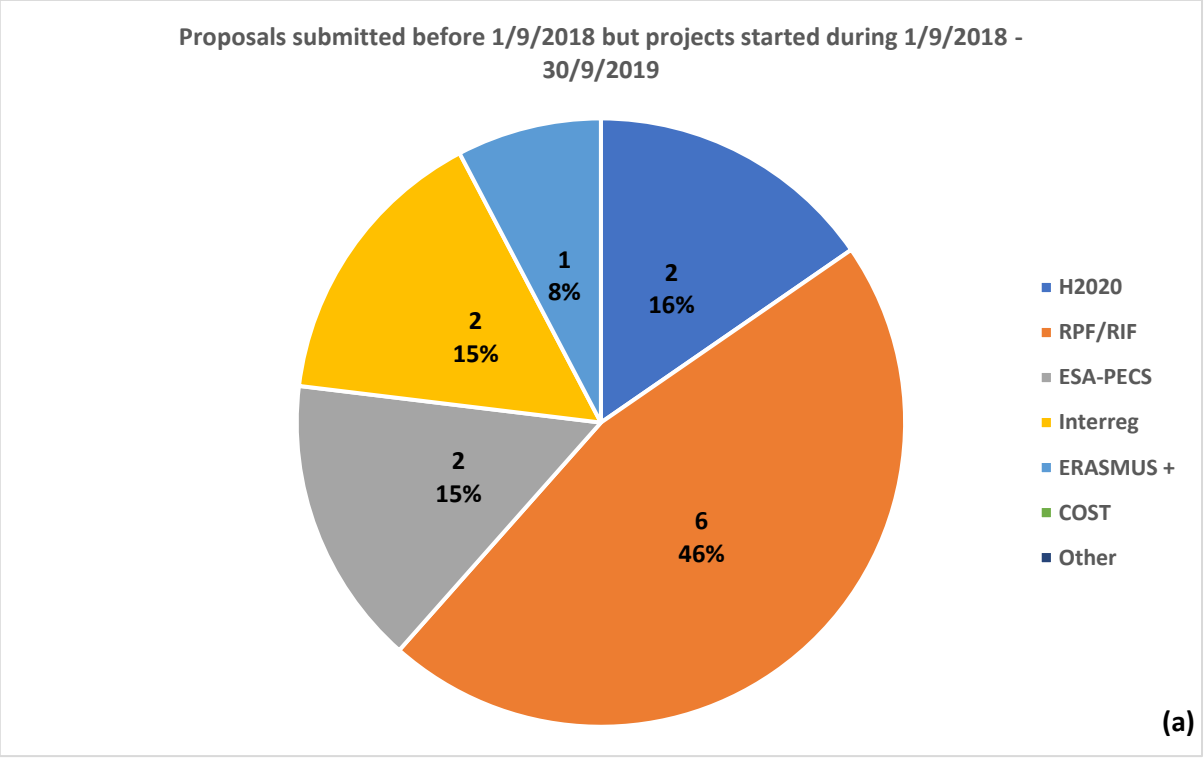


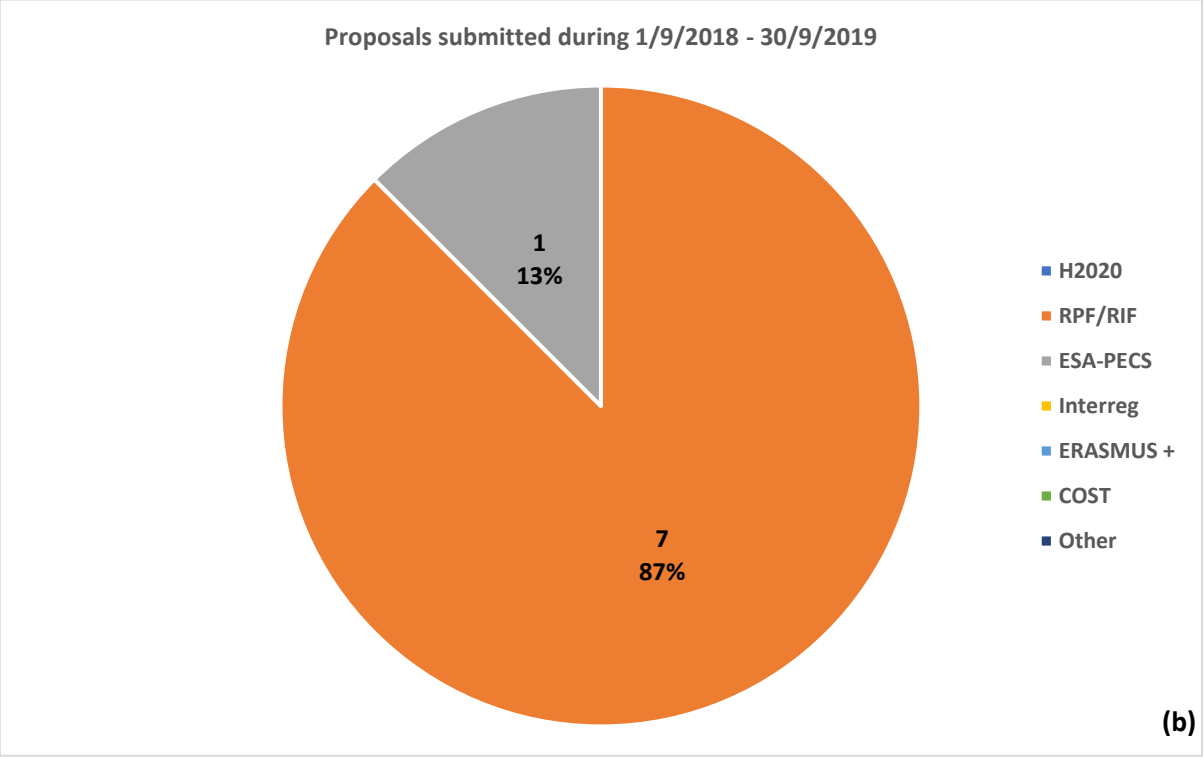
Figure 29: Number of funded project proposals

From those 6 proposals, 1 funded proposal was submitted before and 5 funded proposals after the establishment of the ECoE as a legal entity on 27 February 2020. Currently, 6 research project proposals, 2 H2020, 2 COST, 1 ERASMUS+ and 1 RIF/RPF, where the ECoE is either a partner or a coordinator, are still under review. These proposals, if accepted, are expected to bring €306,912.5 to the ECoE. An analysis of the funding sources from which the funds were secured for the three time periods is presented in *Figure 30* below.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 857510.

This project has received funding from the Government of the Republic of Cyprus through the Directorate General for the European Programmes, Coordination and Development.





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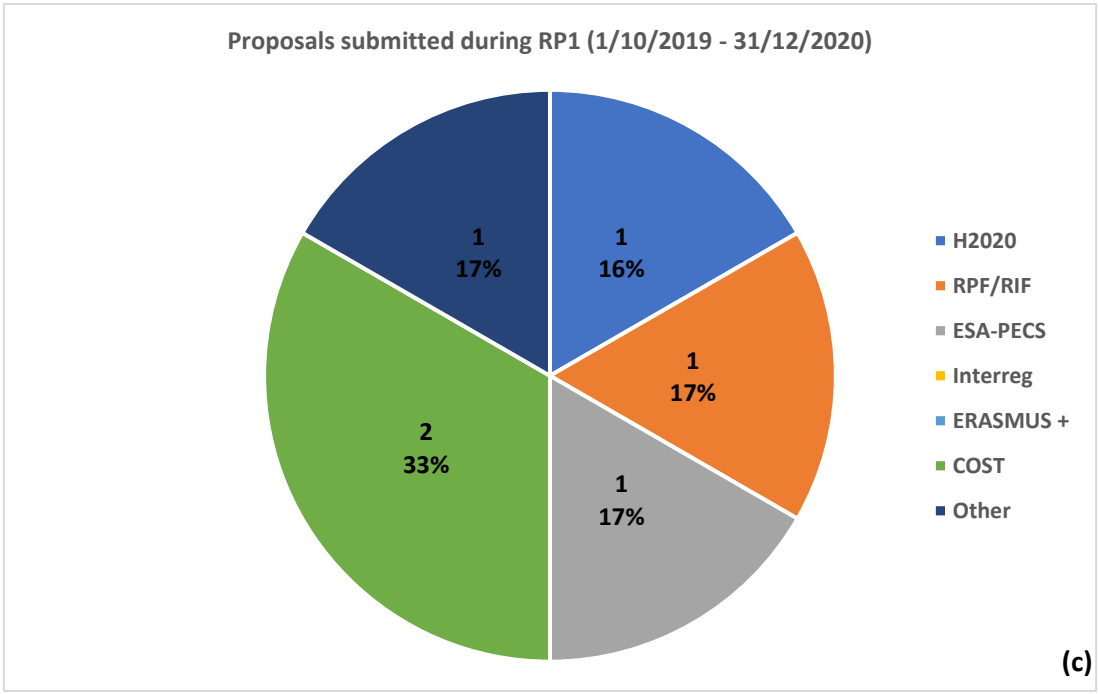

Figure 30: Funding sources for (a) proposals submitted before 1/9/2018 but with projects starting during 1/9/2018 - 30/9/2019; (b) proposals submitted during 1/9/2018 - 30/9/2019; and (c) proposals submitted during RP1 (1/10/2019 - 31/12/2020)

Since 1/9/2018, funding for the amount of €3,601,682.51 has been secured through 27 research project proposals. The majority of the funds (€3,165,897.51) were secured prior to the start of EXCELSIOR project – Phase 2, with €1,039,693 secured through the 8 proposals submitted following the submission of the EXCELSIOR Business Plan on 31 August 2018, as presented in *Figure 30b*. This amount does not include the funding received for either one of the EXCELSIOR – Phase 1 and Phase 2 projects.

During the RP1 of the EXCELSIOR – Phase 2 project, a total of €435,785 has been secured from funding from various sources, as shown in *Figure 30c*, among which H2020, RPF/RIF, ESA-PECS and COST. €200,000 were secured before and €235,785 after the establishment of the ECoE as a legal entity on 27 February 2020. Moreover, an additional €306,912.5 are currently under review. A summary of the submitted and funded proposals as well as the funds received is provided in *Table 6* below.

Table 6: Number of proposals submitted, funded and the funds received

	1/9/2018 – 30/9/2019	1/10/2019 – 31/12/2020	TOTAL
Number of submitted proposals	32	38	**70**
Number of funded proposals	21*	6	**27**
Funding (€)	3,165,897.51	435,785	**3,601,682.51**

*13 of these proposals were submitted before 1/9/2018, as seen in *Figure 29*, but the projects started during 1/9/2018-30/9/2019

Based on the above, for the RP1 of EXCELSIOR Phase 2 project, KPI **E06**: Number of CUT/ECoE proposals submitted for competitive research funding (coordinator or partner) is **38 project proposals** (see *Table 8*). These values are after consideration of the fact that the ECoE was only established as a legal entity on 27 February 2020. Thus, the funding and the submission of project proposals were carried out by the Cyprus University of Technology as well. As submitted in the Business Plan on 31 August 2018, the total volume of funding associated with R&D projects commissioned to the CUT/ECoE is calculated as the yearly average of the funds received. Therefore, the goal of €5,000,000 until year 4 of the project, i.e. €1,250,000 per year, is achieved as the €3,601,682.51 should be averaged over a period of 28 months. Therefore, the average amount of funds received by the CUT/ECoE is **€1,543,578.22** (**E05**).

Partnerships with public authorities, governmental departments, and ministries, as well as with the Industry and the private sector in general, have been achieved through the submission of research proposals in which the aforementioned organisations and agencies are part as members of the proposal consortium.

More specifically, during RP1, several research projects are under way, where the CUT actively participates. These project consortia include more than **14 companies** (**E04**) , assisting in the formation of strong partnerships between the CUT/ECoE and the Industry. Seven of them, i.e. Signal Generix Ltd. (https://www.signalgenerix.com/), Advanced Integrated Technology Solutions & Services Ltd (https://aditess.com/main/), NetU Consultants Ltd. (https://www.netugroup.com/), HIT Hypertech Innovations Ltd. (https://www.hit-innovations.com/), RTD Talos Ltd. (http://www.talos-rtd.com/), Nortest Cy (https://www.nortest.com.cy/en/home) and Geoimaging Ltd. (https://geoimaging.com.cy/), are included in consortia of projects that started in the period 1/9/2018-30/9/2019. Moreover, numerous research project proposals have been submitted in collaboration with seven companies in their consortia, during the RP1, such as AFB SolarTec Ltd., ATLANTIS Consulting (http://atlantis-consulting.eu/el/arxiki/), CELLOCK Ltd. (https://cellock.com/), CyRIC (https://www.cyric.eu/), GEOFEM (https://www.geofem.com/), Geosystems GmbH (https://www.geosystems-hellas.gr/el/archiki/) and NOVATEX Solutions Ltd. (https://www.novatexsolutions.eu/).

Moreover, during RP1, the ECoE and CUT have participated in research project proposals and projects with **9 public authorities** (**S06**) and **18 governmental departments** (**S07**) and have also developed services for them. Most of them have supported the EXCELSIOR project initiative through letters of support or commitment during the proposal submission stage. A list of the organisations follows:

Public authorities and non-governmental organisations:

- Cyprus Agricultural Payments Organisation
- Geroskipou Municipality
- Peyia Municipality
- Municipality of Paralimni
- Municipality of Strovolos
- Limassol Municipality
- Cyprus Health and Safety Association

- Holy Bishopric of Limassol
- Sewerage Board of Nicosia

<u>Ministries and governmental departments:</u>

- Ministry of Health
- Deputy Ministry of Tourism
- Department of Lands and Surveys (Ministry of Interior)
- Department of Forests (Ministry of Agriculture, Rural Development and Environment)
- Department of Electronic Communications (Ministry of Transport, Communications and Works)
- Joint Rescue Coordination Centre (Ministry of Defence)
- Ministry of Transport, Communications and Works
- Ministry of Interior
- Cyprus Shipping Deputy Ministry
- Department of Meteorology (Ministry of Agriculture, Rural Development and Environment)
- Geological Survey Department (Ministry of Agriculture, Rural Development and Environment)
- Department of Environment (Ministry of Agriculture, Rural Development and Environment)
- Agricultural Research Institute (Ministry of Agriculture, Rural Development and Environment)
- Water Development Department (Ministry of Agriculture, Rural Development and Environment)
- Department of Labour Inspection (Ministry of Labour, Welfare and Social Insurance)
- Public Works Department (Ministry of Transport, Communications and Works)
- Department of Antiquities (Ministry of Transport, Communications and Works)
- Cyprus Civil Defence (Ministry of Interior)

As mentioned earlier, CUT and/or ECoE have submitted proposals for the development of services that will be used by public authorities and governmental departments. During RP1, **4 services** have been developed and another one for the Department of Forests of the Ministry of Agriculture, Rural Development and Environment, is currently under review (**S04**). A tender for the development of a web-based GIS tool for mapping municipal solid waste in Armenia that was submitted in August 2020 was not funded. A full list of these services is provided in *Table 7* below.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 857510.

This project has received funding from the Government of the Republic of Cyprus through the Directorate General for the European Programmes, Coordination and Development.

Table 7: Services provided to public authorities and governmental departments

#	Funding source	Date	Service	CUT/ECoE budget (€)	Funded
1	Deputy Ministry of Tourism	23-07-2020	Flights categorisation (COVID-19) – Myrtis initiative	-	Yes
2	Ministry of Health	24-07-2020	COVID-19 WebGIS services	-	Yes
3	Department of Public Works (Paphos)	03-09-2020	WebGIS and geo-database for road network/ highways maintenance	-	Yes
4	Armenia	06-08-2020	Web-based GIS tool for mapping Municipal solid waste	150,000	No
5	External Services (Bishop Constantia-Famagusta)	25-10-2020	Prospection Survey of Paralimni	3,000	Yes
6	Department of Forests	23-11-2020	Remote Sensing services	70,000	Pending

3 Measuring Impact through KPIs for RP1

Measuring impact is a practice that requires measurement expertise and a transparent participatory process to ensure that the KPIs used in the IA are valid and reliable. A quantitative assessment of the EXCELSIOR project' impact will be made through the definition and monitoring of KPIs. **A KPI is a metric that embeds performance targets so organizations can chart progress toward goals.** KPIs and metrics can be used to think through what counts as evidence, demonstrating whether impact occurred or not. The goal is to use KPIs and metrics as one line of evidence to make better decisions. The advantages of using matrices is that they provide an easy-to-understand visual representation across all the impacts.

Table 8 indicates the KPIs for the EXCELSIOR project during the first 4 years of operation. Note that the KPIs are cumulative, i.e., by Year 7 also includes the KPIs from Year 4. The KPIs are divided into 3 sectors: Economic Impact, Social Impact and Innovation Impact.

Table 8: List of Key Performance Indicators

Impact Domain: Research					
Sector: Positioning and Capacities					
#	**Goals**	**Key Performance Indicators (KPI)**	**Metric**	**Proposed Activity**	**Implemented**
				By YR4 (1-4)	Until RP1
R01	The acquisition of all necessary equipment that are essential to conduct cutting-edge research and create applications through a satellite ground receiving centre.	The acquisition of equipment necessary to establish a Centre of Excellence in Cyprus, including a satellite ground receiving station	The purchase of equipment for the operation of a satellite ground receiving station at the Centre of Excellence	Satellite ground receiving station	**Specs are prepared. The tender is currently in preparation (CUT-DLR)**
R01	The acquisition of all necessary equipment that are essential to conduct cutting-edge research and applications through a supersite for aerosol and cloud monitoring.	The acquisition of equipment necessary to establish a Centre of Excellence in Cyprus, including a supersite for aerosol and cloud monitoring	The purchase of equipment for the operation of research facilities of the Centre of Excellence	Supersite for aerosol and cloud monitoring; advanced aerosol polarization /Raman Lidar	**Specs and tender are prepared and submitted to CUT tendering committee.** **PollyXT lidar, part of TROPOS' commitment has been received**
R01	The acquisition of all necessary equipment that are essential to conduct cutting-edge research and thereby be more competitive in receiving research proposals and creating tailor-made applications for stakeholders.	The acquisition of equipment necessary to establish a Centre of Excellence in Cyprus and utilize equipment that can be used in remote sensing and Earth observation	The purchase of equipment for the operation of research facilities of the Centre of Excellence	Field spectroradiometers and accessories; Aerial, ground and water vehicles; Geodetic equipment; In situ sensors and calibration instruments; IT infrastructure;	**Market Research**

				additional equipment in all areas	
R02	The acquisition of numerical models and tools necessary to conduct data analysis.	The operation of numerical models and tools	Number of models	1	**1 (Cloudnet) Other GBS software/ algorithms in progress**
R03	To network with high-level research institutes, which may lead to future research collaborations.	The participation within research institute networks	The number of research institute networks that EXCELSIOR will participate with	4	**7 (GEO, CyDI-Hub, IEEE SA, Copernicus Academy, MedRIN, NEREUS, GEO-CRADLE) 1 in progress (IEEE GRSS)**
R04	To create a world-class Calibration & validation centre at the ECoE and join in monitoring networks that will utilize the calibration and validation centre.	The type of equipment that will be calibrated and validated; the capacities of the Calibration/ Validation sector; membership in monitoring networks	Number of Calibration and Validation capacities Membership in Monitoring Networks	1	**2 (EARLINET, PollyNet) 1 in progress (ACTRIS)**
	Sector: Human Capital Creation				
	Goals	**Key Performance Indicators (KPI)**	**Metric**	**Proposed Activity** By YR4 (1-4)	**Implemented** Until RP1
R05	To increase the number of PhD students registered at the Cyprus University of Technology who are doing their thesis in Earth observation, in cooperation with the ECoE.	The number of PhD students that are registered each year at the Cyprus University of Technology and are carrying out research at the ECoE.	Number of PhD students registered annually at the Cyprus University of Technology carrying out research at the ECoE	20	**16**
R06	To increase the number of students who use the facilities of the ECoE and its Research Institute networks, in order to develop skills and knowledge in EO.	The number of students using the Research Institute networks of the ECoE, as well as the facilities of the ECoE, to complete their thesis	Number of students using the RI and facilities of the ECoE for their thesis	80	**41**
R07	To increase the number of PhD graduates who are trained at the ECoE, with the	The number of PhD graduates who have been trained at the	Number of graduates trained on ECoE RI and facilities	30	**3 (recent PhD graduates)**

	expectation that they will continue conducting research with the ECoE.	ECoE in the various sectors of EO			**12 Postdoctoral Research Fellows**
R08	To increase the number of MSc/PhD foreign students to train at the facilities of the ECoE, thereby encouraging the development of future collaboration.	The number of MSc/PhD foreign students that are trained at the facilities of the ECoE to increase their EO knowledge and skills	Number of foreign students (PhD/MSc) as % of all students trained on ECoE RI and facilities	10-15%	**35.7% (6 students from Greece, 2 from Italy and 1 from Serbia and UK)**
R09	To increase the exchange of ideas, develop knowledge transfer and capacity building, in various sectors of EO.	The number of MSC Fellows, European Research Council grants, etc. that will be hosted at the ECoE	Hosting of Researchers (MSC Fellows, European Research Council grants ERC)	MSC=4 ERC=0	**In progress MSC=0 ERC=0**
R10	To attract high calibre research and technical staff to be employed by the ECoE, thereby avoiding the 'Brain Drain' phenomenon.	The number of research and technical staff that are employed on a full-time basis at the ECoE	Research and technical staff attracted to be employed by ECoE (Full-time equivalent person-years: FTE)	170 FTE	**FTE=3.06 from CUT 9 positions for researchers and technicians announced (31 applications received)**
R11	To increase the number of high-calibre EO researchers and technical staff from abroad, who will be able to contribute to the ECoE through their ability to prepare effective research proposals and engage in applied research.	The percentage of research and technical staff who are seeking to work with the ECoE	Percentage of the research and technical staff attracted from abroad	10-20%	**In progress (9 positions for researchers and technicians announced and 31 applications received**
	Sector: Scientific Level				
#	**Goals**	**Key Performance Indicators (KPI)**	**Metric**	**Proposed Activity**	**Implemented**
				By YR4 (1-4)	Until RP1
R12	To be recognized as a high-quality Centre of Excellence through the publication of innovative research and applications developed at the ECoE in peer-reviewed journals	Number of articles in peer-reviewed scientific journals which are a result of the research and applications from the ECoE	Record of articles related with research using RI and facilities of the Centre published in peer reviewed scientific journals	80	**32**

R13	The promotion of the research and application excellence of ECoE, as indicated by the research published in the proceedings of International Conferences	The number of articles resulting from research conducted at the ECoE which is published in the proceedings of International Conferences	Record of articles related with research in ECoE published in proceedings of International Conferences	120	**32**
R14	To train new EO researchers who are completing their doctoral thesis using the resources of the ECoE, thereby providing high-quality individuals who are specialized in EO	The number of researchers completing their doctoral thesis who have been trained at the ECoE in all aspects of EO	Number of PhD dissertations completed	3	**3 (Marios Tzouvaras, Thomas Dimopoulos and Maroula Alverti)**
R15	To disseminate high quality publications through the ECoE and their collaborations	The number of citations from publications related to the ECoE, which result in a H-Index	H-index of the ECoE group publications	30	**47**
R16	To increase the number of Citations in SCOPUS, thereby	The number of citations listed in SCOPUS from publications related to the ECoE	Environment and Climate	1500	-
			Resilient Society	1000	-
			Big Earth Data Analytics	500	-
			TOTAL	3000	**1268**
	INNOVATION				
#	**Goals**	**Key Performance Indicators (KPI)**	**Metric**	**Proposed Activity** By YR4 (1-4)	**Implemented** Until RP1
IO1	The ECoE will establish itself as a centre of innovation by developing new research methodologies and collaborating with industry to create new patents, prototypes and designs in relation to EO in the EMMENA region.	The development of EO research methodologies and the number of patents, prototypes and designs developed with industry partners	Number of patents/ new methodologies/prototypes /designs developed	0	**In progress (Significant progress is made for 3 services as CUT and ECoE)**
IO2	The ECoE will establish itself as a centre of innovation by supporting start-ups and spin-off companies that are created from	The direct result of the ECoE is measured by the number of EO start-ups and spin-off	Number of start-ups and/or spin-offs created utilising products or expertise gained	0	**0**

	the products or knowledge gained from the ECoE research areas.	companies created from the products or knowledge gained from the ECoE research areas	from the ECoE Research Areas		
IO3	The ECoE will focus on nurturing start-ups and spin-off companies that are directly related to ECoE activities by providing them with the necessary resources to enhance productivity and innovation.	The turnover (profit) of start-ups and spin-off companies that are directly related to ECoE activities is expected to increase	Turnover (Profit) of companies; start-ups and/or spin-offs directly related to ECoE activities	0	**0**
	Impact Domain: Economic and Societal				
	Sector: Societal Impact				
#	**Goals**	**Key Performance Indicators (KPI)**	**Metric**	**Proposed Activity**	**Implemented**
				By YR4 (1-4)	Until RP1
S01	The ECoE will pursue Excellence via the Thematic Networks and Technological platforms addressed by the ECoE, which will lead to enhanced knowledge transfer and the potential for future collaboration	The number of dynamic Thematic Networks and Technological platforms addressed by the ECoE which will lead to future collaboration	Number of Thematic Networks and Technological platforms addressed by the ECoE	8	**22**
S02	The ECoE will seek out local networks in the field of EO in which both may benefit from the research and innovation of the ECoE	Local networks that will join the ECoE as new members	Local networks addressed for new membership	3	**20**
S03	The ECoE will focus activities to the local public in order to increase interest in the scientific culture of Cyprus	Activities such as workshops, lectures, television appearances, etc. will be used to increase the interest in science in Cyprus	Activities targeting to non-academic audiences to increase of scientific culture of the country	10	**25**
S04	The ECoE will develop EO applications and services for the needs of the Government	Development of services designed for the Government	Services developed for needs of Public Administration on the level of municipality	5	**4 (1 pending)**

	and municipalities, based on the needs of each group	and the local municipalities using EO.			
S05	The ECoE will conduct specialized training to teachers, students and professionals in order to provide know-how in EO activities	Educational and professional EO trainings to teachers, students and professionals	Number of Educational and professional training programmes for Teachers/ Students/ professionals	4	**10**
S06	The ECoE will establish firm partnerships with public authorities, such as municipalities, community organizations and non-government organizations to develop EO applications or share know-how based on the user's need	Establishing partnerships with public authorities in order to develop EO applications and provide information on the applicability of EO data	Partnership with public authorities - Number of municipalities, community councils and Non-Governmental organisations	10	**9**
S07	One of the main goals of the ECoE is to partner with the various Government agencies, including Ministries, Departments, Government organizations, etc. in order to provide them with EO data and effective applications based on EO observations and research.	Establishing strong partnerships with various agencies of the Government of Cyprus, including Ministries, Departments, Government organizations, etc. in order to provide EO data and applications	Partnership with Government (Number of ministries, Departments, Governmental organisations)	5	**18**
	Sector: Direct economic growth				
#	**Goals**	**Key Performance Indicators (KPI)**	**Metric**	**Proposed Activity**	**Implemented**
				By YR4 (1-4)	Until RP1
E01	The ECoE will be a vehicle for economic growth, resulting from the hiring of qualified early and experienced researchers, administrative staff, and jobs directly generated from start-ups/spin-offs associated with research activities of ECoE.	The creation of full-time jobs for early and late stage researchers, as well as the jobs generated by start-ups/spin-offs associated with research activities of ECoE	Jobs directly generated by ECoE or start-ups/spin-offs associated with research activities of ECoE (in full-time equivalent (FTE) person-years for early stage researchers [ESR] and	ESR=47FTE EXP=48FTE	**The ECoE management team was appointed** **Announcement for 9 open positions for researchers and technicians (31 applications were received)**

			experienced researchers [EXP])		
E02	The ECoE will encourage the hiring of qualified experts in the EO field. It is expected that the number of Senior Researchers will increase as the ECoE expands, thus leading to increased Excellence in EO, resulting in successful grant applications	An increase in senior researchers will facilitate the number of successful grant applications	Positions for Senior Researchers	19	**In progress (Announcement for 3 open positions for Senior Researchers A or B)**
E03	The ECoE seeks to increase innovation and industry by supporting start-ups and spin-offs resulting from the experience gained from the ECoE Research Areas	The number of businesses, such as start-ups and spin-offs created as a result of experience gained from the ECoE Research Areas	Number of start-ups and/or spin-offs created utilising products or expertise gained from the ECoE Research Areas	0	**In progress (Meetings with CyRIC, GRAVITY incubator; ESA BIC)**
E04	The ECoE will establish firm partnerships with industry, including companies and SMEs to develop EO applications	Establishing partnerships with industry, including companies and SMEs in order to develop EO applications and provide information on the applicability of EO data	ECoE Partnership/relations with industry (Number of companies, SMEs)	10	**14**
E05	The ECoE will receive funding for EO research and development products including from the Government, Private companies, Industry and Education for the creation of applications and products using EO data	The total amount of funding resulting from the development of research and development products.	Total volume of funding associated with R&D projects commissioned to the ECoE (on the basis of the source of funding)	€5M	**€1,543,578.22 (Yearly average) €306,912.5 under review**
E06	It is expected that, as a result of hiring highly qualified researchers, there will be an increase of successful proposals submitted for competitive research funding, either from the coordinator or EXCELSIOR partner	The number of successful proposals submitted for competitive research funding is expected to increase over time	Number of ECoE proposals submitted for competitive research funding (coordinator or partner)	180	**38 (CUT and ECoE)**

4 Overall Impact

As indicated from *section 2* and *section 3* of this report, the greatest impact in relation to the KPIs is in terms of Societal Impact sector. Through the activities, events and meetings, the number of thematic and local networks, the number of activities targeting non-academic audience, the number of educational/professional training activities as well the number of partnerships formed with public authorities and governmental departments exceeded the goals set by the 4th year of the ESCELSIOR project. Additionally, high impact was observed in terms of the Scientific Level sector. Indeed, the targets of journal and conference papers, the group h-index as well as the total group citations exceeded, in average, the goals set by year 4 of the project.

Regarding the **Societal Impact**, measured mostly through the participation and/or organisation of events by the ECoE during the RP1, the activities of the ECoE have met and surpassed the predetermined goals. More specifically, through activities, events and meetings, the ECoE has addressed approximately 22 thematic networks and 20 local networks. Through these events, at least 9 partnerships with public authorities, and 18 partnerships with Ministries and other governmental departments were created in the form of project proposals, projects or through the provision of 4 services for the needs of Public Administration developed by the ECoE. Last but not least, approximately 25 activities targeting non-academic audiences and 10 educational/professional training events were carried out by members of CUT/ECoE during RP1.

Furthermore, in the **Scientific Level** sector, the number of journal articles and conference papers have met the proposed targets set by year 4 of the project. More specifically, 32 journal papers and 32 conference papers were published, and 3 PhD dissertations were completed in RP1. The h-index of the group consisting of 27 researchers, as presented in *section 2.6*, is 47 and exceeds the target set by year 4 of the EXCELSIOR project; and the number of citations is 1268 for the RP1.

The lowest impact in relation to the KPIs, as seen in *Table 8*, is in terms of Positioning and Capacities, and more specifically in the establishment of the satellite ground receiving station, the GBS and the purchase of other equipment. Additionally, there was low impact in the Human Capital Creation sector, and more specifically in the employment of new research by the ECoE and the hosting of exceptional researchers. Both issues are, however, since it has been only 15 months (RP1) since the beginning of the EXCELSIOR Phase 2 project and the preparation of paperwork for tenders and human resources are quite challenging and time consuming.

Regarding the **Positioning and Capacities** sector (*Table 8*), the specifications are ready for the satellite ground receiving station whereas the tender is currently in joint preparation by CUT and DLR. In the case of the GBS, the specifications and tender are already prepared and submitted to the CUT tendering committee. A highlight is that the PollyXT lidar, part of TROPOS commitment, was received on 27 October 2020. Finally, market research is currently in progress for the purchase of equipment for the operation of research facilities of the Centre of Excellence. Taking into account that the ECoE is at a very early stage, it is expected that the activities that are planned to be carried out in the next years will achieve the goals set at a later stage. The "number of models" target has already been met through the acquisition and operation of Cloudnet software/algorithm as part of the PollyXT lidar that

has already been received. More algorithms/software are expected to be utilised soon with the operation of the GBS and the satellite ground receiving station.

Moreover, as presented in detail in *section 0*, the ECoE, as an upgrade of the previously existing Remote Sensing and Geo-environment lab, has a head start with respect to the research institute and monitoring networks that it will participate in. The goals set have already been met. However, in some cases, the memberships are under the ERATOSTHENES Research Centre (ERC) or the Cyprus University of Technology (CUT).

In the **Human Capital Creation** sector (*Table 8*), there is a significant impact of the ECoE, as through the announcement of PhD positions by CUT on an annual basis, 16 PhD students have already started carrying out research at CUT/ECoE facilities. Fourty-one students (undergraduate, MSc and PhD) have used RI and facilities of CUT/ECoE for their thesis and 35.7% of the total postgraduate (MSc and PhD) students are foreigners, from Greece (6), Italy (2), Serbia (1) and the UK (1). Additionally, 3 recent PhD graduates and 12 Post-doctoral Research Fellows have trained at the ECoE in the various sectors of EO during RP1. The ECoE has planned to host researchers (4 MSC fellows, 0 European Research Council grants ERC) by year 4 of the project to increase the exchange of ideas, develop knowledge transfer and capacity building, in various sectors of EO. In RP1, the number of MSC Fellows, European Research Council grants, etc. that will be hosted at the ECoE is 0. This is reasonable as the ECoE is still at early stage. However, efforts are already made to attract new researchers by announcing Senior Researcher A and/or B positions and achieve the goals set by year 4 of the project. At the moment, staff from the CUT (FTE=3.06) have worked in EXCELSIOR during RP1. This number is expected to increase significantly over the next years after the review of the 31 applications that were received for the 9 open researchers, administrative and technical staff positions.

In the **Innovation** sector, as expected, there is limited impact of the ECoE, as no start-ups and/or spin-offs were created, and thus no profit was received during RP1. However, patent applications for 3 services at CUT/ECoE are currently in progress, an impact that was not expected by year 4 of the project.

Finally, in the **Direct Economic Growth** sector, during RP1, the ECoE management team has already been appointed and 9 open positions have been announced for researchers and technicians (31 applications were received). Three of these positions are for Senior Researchers A or B, one for each ECoE department, as presented in *section 2.5*. The targets set by year 4 are not met yet, however additional positions are planned to be announced in order to employ new personnel from Cyprus and above to fill the needs of the ECoE. In terms of start-ups and/or spin-offs, there is progress through the meetings that were organised with CyRIC and the GRAVITY incubator. In fact, the potential for the establishment of an ESA BIC in Cyprus is currently under study. Additionally, 14 partnerships were formed during RP1 in terms of participation with companies and SMEs in project consortia, exceeding the target of 10 partnerships by year 4 of the project. Overall, 38 project proposals were submitted in RP1 through partnerships with other universities, research institutes, public authorities, governmental departments, the Industry and other organisations, falling slightly lower than the target of 180 proposals by year 4, i.e. 45 proposals per year, of the EXCELSIOR Phase 2 project. These proposals have secured a yearly average of €1,543,578.22, exceeding the goal of €5M set by year 4 of the project. It is worth noting that some of these funds were obtained through proposals submitted before RP1, and in

most cases CUT appears as the coordinator or partner in the project proposals consortia as the ECoE was only established as a legal entity on 27 February 2020.

As the KPI metrics are for a 7-year period, it is to be expected that not all KPIs will be fulfilled during RP1 or RP2. Most of the goals set through the KPIs were met or even exceeded during the RP1. However, the results of this deliverable clearly indicated that the following KPIs need to be further developed in RP2, as seen in *Table 9* below.

Table 9: Current status of KPIs (RP1) and future goals (RP2)

KPI	Current status (RP1)	Next reporting period (RP2)
R01: The acquisition of all necessary equipment that are essential to conduct cutting-edge research and create applications	The specifications are ready for the satellite ground receiving station whereas the tender is currently in joint preparation by CUT and DLR. In the case of the GBS, the specifications and tender are already prepared and submitted to the CUT tendering committee. Last but not least, market research is currently in progress for the purchase of equipment for the operation of research facilities of the Centre of Excellence. that the PollyXT lidar, part of TROPOS commitment, was received on 27 October 2020.	The above issues are due to the fact that it has been only 15 months (RP1) since the beginning of the EXCELSIOR Phase 2 project and the preparation of paperwork for tenders are quite challenging and time consuming. It is expected that the activities that are planned to be carried out in the next years will achieve the goals set at a later stage.
R07: Number of PhD graduates trained on ECoE RI and facilities	3 recent PhD graduates and 12 Postdoctoral Research Fellows have trained on CUT/ECoE RI and facilities during RP1.	The announcement of new PhD positions every year and the co-supervision of PhD students from abroad is expected to increase this value and meet the goal of 30 PhD graduates by year 4 of the project.
R09: Hosting of Researchers (MSC Fellows, European Research Council grants ERC)	No MSC Fellows and ERC researchers were attracted by the ECoE by CUT/ECoE.	As it has only been 15 months before the beginning of the of the EXCELSIOR Phase 2 project and only 10 months since the establishment of the ECoE as a legal entity (27 February 2020), it is reasonable not to attract any exceptional researcher from abroad yet. This is expected to change in the forthcoming year with the target of 4 MSC Fellows being reasonable by year 4.
R10: Research and technical staff attracted to be employed by ECoE (Full-time equivalent person-years: FTE)	In total, 15 researchers and academic staff from CUT were employed on a part-time basis on the EXCELSIOR project with the total full-time equivalent (FTE) for the RP1 being 3.06 person-years. This value is well below the 42.5 FTE per year until year 4 of the project.	The paperwork for the human resources of the ECoE is quite time consuming. At the moment, 9 positions for researchers, administrative and technical staff have been announced on the ECoE website and 31 applications have already been received and are currently under review. Additional positions are planned to be announced over the next years to attract more staff from abroad. This will increase substantially the number of dedicated personnel of the ECoE and thus the FTE person-years of the ECoE in order to meet this target.

R11: Percentage of the research and technical staff attracted from abroad	No research and technical staff were attracted from abroad during RP1, with the target being 10-20% of researchers coming from abroad.	9 positions for researchers, administrative and technical staff have been announced on the ECoE website and 31 applications have already been received and are currently under review. From these positions, 3 open positions announcements are for Senior Researchers A or B, equivalent to Full Professor or Associate Professor respectively, one for each department of the ECoE. Additional positions are planned to be announced over the next years to attract more staff from abroad.
E01: Jobs directly generated by ECoE or start-ups/spin-offs associated with research activities of ECoE (in full-time equivalent (FTE) person-years for early-stage researchers [ESR] and experienced researchers [EXP])	The ECoE management team was appointed during RP1. However, no jobs were directly generated by ECoE or start-ups/spin-offs associated with research activities of ECoE. The goal of early-stage researchers (47FTE) and experienced researchers (48FTE) by year 4 was not met.	Announcement for 9 open positions for researchers and technicians (31 applications were received). 3 open positions announcements are for Senior Researchers A or B, equivalent to Full Professor or Associate Professor respectively, one for each department of the ECoE. Additional positions are planned to be announced over the next years to attract more staff from abroad.
E02: Positions for Senior Researchers	No senior researchers were hired by the ECoE yet.	3 open positions announcements are for Senior Researchers A or B, equivalent to Full Professor or Associate Professor respectively, one for each department of the ECoE. Additional positions are planned to be announced over the next years to attract more staff from abroad.

5 Conclusions

This report establishes the impact assessment monitoring of the impact of the different activities carried out by CUT/ECoE (as mentioned in the previous sections, we are in the transition period from CUT to ECoE) against a set of quantified targets in order to determine if the KPIs have been met. KPIs require effective metrices in order to provide reliable and valid measurements of the impact, as indicated in the list of Key Performance Indicators The impact monitoring report will be re-assessed in every reporting period to determine any changes that are necessary for effective impact monitoring.

Even though the KPIs featured are for years 1-4, there were very good results within RP1. This is especially notable, as the Covid-19 pandemic affected networking and events. However, such activities were carried out via teleconferencing and media, which proved to be effective.

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Appendix A – Letter for payment of Complementary funding by the Republic of Cyprus

Cyprus University of Technology

Faculty of Engineering and Technology
Department of Civil Engineering and Geomatics
www.cut.ac.cy/ceg

Κύριο Στέλιο Χειμώνα **3/12/2020**
Γενικό Διευθυντή
Υφυπουργείου Έρευνας, Καινοτομίας και Ψηφιακής Πολιτικής
Λευκωσία

Υπόψη κ. Χρήστου Ασπρή, Λειτουργού Προγραμματισμού, Διεύθυνση Έρευνας και Καινοτομίας

Υπόψη κ. Μάριο Γιωργούδη, Λειτουργός Έργων

Αγαπητέ Κύριε Χειμώνα,

ΘΕΜΑ: Καταβολή κρατικής χορηγίας για το Ευρωπαϊκό Έργο 'EXCELSIOR' (Grant agreement ID: 857510) για τη δημιουργία του Κέντρου Αριστείας ΈΡΑΤΟΣΘΕΝΗΣ' (ERATOSTHENES CENTRE OF EXCELLENCE) για το έτος 2020

1. Επιθυμώ να αναφερθώ στο πιο πάνω θέμα και να σας ενημερώσω ότι η υλοποίηση των δράσεων του Ευρωπαϊκού Έργου EXCELSIOR (https://www.excelsior2020.eu) που έχει σκοπό τη δημιουργία του Κέντρου Αριστείας Ερατοσθένης (ERATOSTHENES CENTRE OF EXCELLENCE), προχωρά με βάση τον προγραμματισμό που έχουν τεθεί βάσει της Συμφωνίας (Grant Agreement) με την Ευρωπαϊκή Επιτροπή (Grant agreement ID: 857510).

2. Όπως γνωρίζετε, η συμφωνία για την υλοποίηση του έργου έχει ξεκινήσει επίσημα την 1η Οκτωβρίου 2019, με συντονιστή το Τεχνολογικό Πανεπιστήμιο Κύπρου και εταίρους το Κέντρο Αεροδιαστημικής της Γερμανίας (Deutsches Zentrum für Luft- und Raumfahrt - DLR), το Εθνικό Αστεροσκοπείο Αθηνών (National Observatory of Athens, NOA), το Ινστιτούτο Leibniz για έρευνα της Τροπόσφαιρας της Γερμανίας (Leibniz-Institut für Troposphärenforschung, TROPOS) και το Τμήμα Ηλεκτρονικών Επικοινωνιών του Υφυπουργείου Έρευνας, Καινοτομίας και Ψηφιακής Πολιτικής και αναμένεται το ευρωπαϊκό έργο να ολοκληρωθεί 30 Σεπτεμβρίου 2026 (https://cordis.europa.eu/project/id/857510).

3. Η Συμφωνία Χρηματοδότησης προνοεί τη δημιουργία μιας ανεξάρτητης νομικής οντότητας που να έχει τη δυνατότητα ανεξαρτησίας στη λήψη αποφάσεων και διαχείρισης του οργανισμού. Αμέσως μετά την υπογραφή της Συμφωνίας Χρηματοδότησης (Grant agreement ID: 857510), ξεκίνησε η διαδικασία για εγγραφή της προβλεπόμενης νέας οντότητας στον Έφορο Εταιρειών βάσει αποφάσεων του Συμβουλίου του Τεχνολογικού Πανεπιστημίου Κύπρου. Με την έγκριση από τον Έφορο Εταιρειών του Ιδρυτικού και Καταστατικού Εγγράφου του, το Κέντρο Αριστείας «ΕΡΑΤΟΣΘΕΝΗΣ» έχει εγγραφεί στις 27 Φεβρουαρίου 2020 σαν μη-κερδοσκοπική εταιρεία ιδιωτικού δικαίου χωρίς μετοχές, με μόνο μέλος το ΤΕΠΑΚ (αριθμός εγγραφής ΗΕ 407515). Η επίσημη εγγεγραμμένη ονομασία της εταιρείας είναι «ERATOSTHENES CENTRE OF EXCELLENCE LIMITED» (στα Ελληνικά μεταφράζεται ως Κέντρο Αριστείας Ερατοσθένης Λτδ). Επειδή το Κέντρο είναι επιστημονικός-ερευνητικός, μη-κερδοσκοπικός οργανισμός, ζητήθηκε από τον Έφορο Εταιρειών η απαλοιφή του όρου LIMITED, το οποίο έχει ήδη γίνει στις 25/11/2020. Το Κέντρο Αριστείας έχει επταμελές Δ.Σ.(www.eratosthenes.org.cy).

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Cyprus University of Technology

Faculty of Engineering and Technology
Department of Civil Engineering and Geomatics
www.cut.ac.cy/ceg

4. Στην παρούσα φάση, βρισκόμαστε στο στάδιο συλλογής όλων των δεδομένων (π.χ. άνοιγμα λογαριασμών για το Κέντρο Αριστείας κ.α.) έτσι ώστε σε συνεννόηση με το εταιρικό σχήμα του έργου EXCELSIOR και την Ευρωπαϊκή Επιτροπή να γίνει 'Contract Amendment' του έργου EXCELSIOR για προσθήκη του ERATOSTHENES CENTRE OF EXCELLENCE ως εταίρος του έργου (partner).

5. Σε συνέχεια της απόφασης του Υπουργικού Συμβουλίου 85.881 ημερ. 9/10/2018 σχετικά με την ισόποση χρηματοδότηση του Κέντρου Αριστείας από κρατικού πόρους σε ορίζοντα 15ετίας και σε συνέχεια της συνημμένης επιστολής δέσμευσης ***(Βλέπε Συνημμένη)***, παρακαλώ όπως προχωρήσετε με την καταβολή της κρατικής χορηγίας ύψους €1.73 εκατομμύρια για το 2020. Η καταβολή της εν λόγω κρατικής χορηγίας θα γίνει προς τον συντονιστή του έργου ΤΕΠΑΚ και αφορά κυρίως (το μεγαλύτερο ποσό) την αγορά εξοπλισμού για τη δημιουργία του επίγειου σταθμού ατμοσφαιρικής τηλεπισκόπησης (GBS) του Κέντρου Αριστείας "ΕΡΑΤΟΣΘΕΝΗΣ". Για την αγορά του εν λόγω εξοπλισμού, έχει αρχίσει η διαδικασία προσφοροδότησης και ο εν λόγω εξοπλισμός θεωρείται κρίσιμος για τις ερευνητικές ανάγκες του Κέντρου Αριστείας "ΕΡΑΤΟΣΘΕΝΗΣ".

6. Για οποιεσδήποτε διευκρινήσεις ή/και επιπρόσθετες πληροφορίες χρειάζεστε, παρακαλώ επικοινωνήστε μαζί μου στο τηλ. 99469932, 25002548, 25002542. Για λογιστικά/οικονομικά θέματα από το ΤΕΠΑΚ, παρακαλώ επικοινωνήστε με την Λογίστρια Κυρία Μαρία Τέκλου στο τηλ. 25 002214

7. Τέλος, επιθυμώ να σας ευχαριστήσω για τη συνεχή στήριξη, καθοδήγηση και συνεργασία.

Παραμένω στη διάθεση σας για περαιτέρω διευκρινήσεις.

Με εκτίμηση,

Διόφαντος Γλ. Χατζημιτσής
Καθηγητής Τμήματος Πολιτικών Μηχανικών και Μηχανικών Γεωπληροφορικής (ΠΟΜΗΓΕ), Τεχνολογικό Πανεπιστήμιο Κύπρου
Managing Director ERATOSTHENES CENTRE OF EXCELLENCE

Κοιν.

- Πρόεδρο και Μέλη Συμβουλίου Τεχνολογικού Πανεπιστημίου Κύπρου (Δρ. Παναγιώτη Φιλίππου)
- Πρύτανης Τεχνολογικού Πανεπιστημίου Κύπρου (Καθ. Παναγιώτης Ζαφείρης)
- Αντιπρύτανης Οικονομικού Προγραμματισμού και Ανάπτυξης (Καθ. Παναγιώτης Θεοδοσίου)
- Αντιπρύτανης Ακαδημαϊκών Υποθέσεων (Καθ. Παντελής Κελίρης)
- Διευθυντής Διοίκησης και Οικονομικών (Δρ. Κώστας Χόππας)
- Προϊστάμενος Υπηρεσίας Έρευνας και Διεθνούς Συνεργασίας (Δρ. Χαράλαμπος Χρυσοστόμου 25002562)
- Προϊσταμένη Υπηρεσίας Οικονομικών (κ. Στάλω Θεοδώρου 25002077)
- Λογίστρια Υπηρεσίας Οικονομικών (κ. Μαρία Τέκλου, 25 002214)
- Κοσμήτορα Σχολής Μηχανικής και Τεχνολογίας (Καθ. Σωτήρης Καλογήρου)
- Πρόεδρο Τμήματος ΠΟΜΗΓΕ (Αν. Καθ. Ευάγγελος Ακύλας)
- Πρόεδρο και Μέλη του Δ.Σ. ΚΕΝΤΡΟΥ ΑΡΙΣΤΕΙΑΣ ΕΡΑΤΟΣΘΕΝΗΣ

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Appendix B - Research infrastructure software and tools

A complete list of software packages that are mandatory for the operation of the GBS (an attachment from the GBS tendering application) are the following:

- Own software developments of TROPOS for LACROS:
  - LARDA³ data cube for data visualization and evaluation (https://github.com/lacros-tropos/larda)
  - PollyXT profile-based evaluation software
  - Picasso processing subsystem for PollyXT Raman lidar (https://picasso.tropos.de)
  - Wind retrieval routines for cloud radar and Doppler lidar
  - Conversion software for compatibility of ABACUS LiTrA-S with existing Doppler lidar processing software
  - Multi-peak analysis tool for cloud radar (https://github.com/martin-rdz/peakTree)
- Software for compatibility with ACTRIS-Cloudnet network
  - Cloudnet processing chain (https://github.com/actris-cloudnet/cloudnetpy)
- Software of ACTRIS-Earlinet network
  - EARLINET single calculus chain implementation of TROPOS
- Instrument-specific preprocessing routines
  - HALO-Photonics Lidar Toolbox (https://github.com/manninenaj/HALO_lidar_toolbox)

All software has been especially developed for the instruments of LACROS and/or conversion routines exist for the software to be used with LACROS.

Appendix C – Networks

ERATOSTHENES CENTRE OF EXCELLENCE
Achilleos 2 Building, Saropolou 2-8, 3036, Limassol , Cyprus
www.eratosthenes.org.cy

Thursday, 12 November 2020

Letter of Intent supporting Cyprus Digital Innovation Hub (CyDI-Hub)

With this letter of intent we support your application to establish a European Digital Innovation Hub in Cyprus. Our ERATOSTHENES Centre of Excellence accepts your invitation to participate in **CyDI-Hub** as consortium member.

Partner Name
The **ERATOSTHENES Centre of Excellence** (ERATOSTHENES CoE) **is an autonomous Centre of Excellence, with Cyprus University of Technology (CUT)** as its sole stakeholder, aiming to become a viable, sustainable Centre of Excellence in earth observation, space technology and geospatial analysis. Through the 'EXCELSIOR' H2020 Teaming Project (www.excelsior2020.eu) (>38 million euros funding) the ERATOSTHENES CoE aspires to become an excellent Digital Innovation Hub for Earth Observation and Geospatial Information, by offering education, responsible research, open innovation and application services, critically contributing to Cyprus's Research and Innovation development. The ERATOSTHENES CoE aspires to actively contribute to the European Research Area (ERA) priorities in Atmosphere and Climate, Resilient Societies and Big Earth Data Analytics, as well as to become the reference Earth Observation/Geoinformation Centre for research and innovation in the Eastern Mediterranean, Middle East and North Africa (EMMENA) region. The **ERATOSTHENES Centre of Excellence** has an existing stakeholder hub of more than 500 members, including collaborations with NASA, ESA, GEO, DLR, NOA, TROPOS, ISRAEL SPACE AGENCY, EARSeL, CYTA, ISPRS, MEDRIN NASA, COPERNICUS ACADEMY. The **ERATOSTHENES Centre of Excellence** is the evolution of the ERATOSTHENES Research Centre established at the Cyprus University of Technology with participation in more than 100 funded projects from various funding schemes, such as European Funds (e.g. H2020, FP7, FP6, MED, INTERREG, ERASMUS, LIFE+, EUREKA etc), Structural Funds, Cyprus Research and Innovation funds, ESA and industrial funds.

Cyprus Digital Innovation Hub (CyDI-Hub)
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email: info@cydihub.org | web: www.cydihub.org

The Cyprus Digital Innovation Hub (CyDI-Hub)

The CyDI-Hub is the first established DIH in Cyprus in a Fully Operational Evolutionary State[1]. CyDI-Hub is a not-for-profit, one-stop shop that help companies and public organisations become more competitive with regard to their business/production processes, products or services using digital technologies by providing access to technical expertise and experimentation, so that companies can "test before invest". CyDI-Hub also provides innovation services, such as financing and business planning advice, training and skills development which are needed for a successful digital transformation. CyDI-Hub act as a first regional point of contact, a doorway, and strengthen the innovation ecosystem. It is a regional multi-partner cooperation including organizations like RTOs, universities, industry associations, chambers of commerce, incubators, regional development agencies and vocational training institutes and also shares strong connections with service providers supporting companies with access to their services.

CyDI-Hub is already participating in several EU Initiatives and EU Funded DIH related projects. It is structured towards covering several horizontal clusters as presented below:

- Artificial Intelligence (AI) and Data Science
- Internet of Things (IoT)
- Cybersecurity
- Robotics and Smart Manufacturing
- Earth Observation
- High Performance Computing (HPC)

Furthermore, CyDI-Hub will be concentrated in the following industry verticals.

- Health
- ICT
- Energy
- Environment /Circular economy
- Agri-Food
- Tourism
- Construction
- Transport/maritime

CyDI-Hub operational and member structure will allow it to provide all the required services in the local market, industry and public sector in a high quality framework and create new opportunities for its members and potential beneficiaries. Moreover, the already established connections and relationships with relevant European organizations such as other DIHs, European Business Innovation Centers (EU-BICs), Universities, Research Organizations and Private Entities will strengthen its position towards providing the best opportunities for its members.

With this letter of Intent, the **ERATOSTHENES CENTRE OF EXCELLENCE** expresses its commitment to support and cooperate with the CyDI-Hub and join it as a member of the above clusters. The framework of our collaboration with CyDI-Hub will include among others the following:

- Cooperation with the Cluster Leaders and other members towards further establishing and expanding CyDI-Hub's presence and impact in Cyprus Digitization Process and Policy Development

[1] Approved Digital Innovation Hubs by EC: https://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool

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- Contribution of the tangible and intangible infrastructure of the ERATOSTHENES CENTRE OF EXCELLENCE to facilitate the provision of services within the CyDI-Hub scope
- When applicable, offering the facilities and infrastructure of the ERATOSTHENES CENTRE OF EXCELLENCE towards the deployment of new products and services pilots
- Participation, when required, in CyDI-Hub seminars, workshops and other dissemination activities
- Promotion of CyDI-Hub activities within our partners and collaborators network.

Prof. Diofantos Hadjimitsis
Managing Director of the Eratosthenes CoE

c.c. Prof.Evangelos Akylas, Chairman of the BOD of the ERATOSTHENES CoE
Executive Committee of the ERATOSTHENES CoE
Research Director of the ERATOSTHENES CoE

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Appendix D – Open positions announcements

ERATOSTHENES CENTRE OF EXCELLENCE

SENIOR RESEARCHER POSITION IN EARTH OBSERVATIONS AND REMOTE SENSING AT THE ENVIRONMENT AND CLIMATE DEPARTMENT

The ERATOSTHENES Centre of Excellence (ECoE) (www.eratosthenes.org.cy) of the Cyprus University of Technology (www.cut.ac.cy) invites applications for the position of Senior Researcher at the Environment and Climate Department of the ERATOSTHENES CoE. This position is open either on full-time (100%) or part-time employment basis.

This position is open to everyone internationally in the framework of the EU-H2020 "EXCELSIOR" project (Excellence Research Centre for Earth Surveillance and Space-Based Monitoring of the Environment; https://excelsior2020.eu/; TEAMING Grant no. 857510). Through this project, the Cyprus University of Technology is establishing the ERATOSTHENES Centre of Excellence in Space Technology, Earth Observation and Geospatial Technology in the EMMENA (Eastern Mediterranean Middle East North Africa) region, in cooperation with the Department of Electronic Communications (DEC) from the Deputy Ministry of Research, Innovation and Digital Policy (Cyprus) and with EU advanced Partners the German Aerospace Centre (DLR, Germany), TROPOS (Germany) and the National Observatory of Athens (NOA-Greece).

The ERATOSTHENES Centre of Excellence is an autonomous Centre of Excellence with Cyprus University of Technology (CUT) as its sole stakeholder, aiming to become a viable, sustainable Centre of Excellence in earth observation, space technology and geospatial analysis. CUT has a 13-year experience in earth observations and geospatial analysis. Through the "EXCELSIOR" H2020 Teaming Project (2019-2026), the ERATOSTHENES CoE aspires to become an excellent Digital Innovation Hub for Earth Observation and Geospatial Information by offering education, responsible research, open innovation and application services capable of sustaining Cyprus' development. The ERATOSTHENES CoE aspires to actively contribute to the European Research Area (ERA) priorities in Atmosphere and Climate, Resilient Societies and Big Earth Data Analytics, as well as to become the reference Earth Observation/Geoinformation Centre for research and innovation in the Eastern Mediterranean, Middle East and North Africa (EMMENA) region.

Description of the Position

The successful candidate will be assigned to the Department of Environment and Climate within the Centre of Excellence, in which earth observation-based research will be conducted in the following thematic domains: Atmosphere, Agriculture, Water Bodies and Land Surface.

The selected Senior Researcher A or B (qualifications equivalent to Professor or Associate Professor level, respectively) will assume a leading and coordination role in the development of

ERATOSTHENES CoE's research and innovation agenda in remote sensing on environment and climate with emphasis on the Department's thematic areas (Atmosphere, Agriculture, Water Bodies or Land Surface).

In close collaboration with the respective Department's Coordinator, the Senior Researcher will be responsible for providing proposals for actions towards the strategic development of the Department and supporting its sustainability, overseeing the overall scientific progress within the Department, providing guidance to other researchers and technical staff, as well as monitoring research progress through supervision and coordination. The Senior Researcher is expected to promote a spirit of inter-departmental and intra-departmental collaboration within the ECoE.

A core activity of ERATOSTHENES CoE is to conduct high caliber, state-of-the-art research, both basic and applied. A central task is to acquire research funding for the Centre, to provide facilities to the researchers, and to support them to acquire funding for their research independently and via international and local collaborations. Collaborations with industrial partners will be particularly encouraged and facilitated.

At a strategic level, the Senior Researcher will be actively involved, in collaboration with the respective Department's Coordinator and the strategic partners, in the development and overseeing of the execution of the Strategic Research and Strategic Growth plan of the ERATOSTHENES CoE. This plan should be regularly revisited and updated to meet the strategic and long-term plans of the ECoE.

Appropriate measures of success will be collaboratively determined based on the Centre's strategic growth plan and sustainability targets. These will be revised periodically by the Executive Committee and the Board of Directors.

Duties and Responsibilities

The successful candidate will be responsible for helping to shape and advance the ERATOSTHENES CoE's research and innovation agenda by:

1. Developing and implementing R&D strategies appropriate to the ERATOSTHENES CoE's mission to become a regional knowledge hub in the fields of the Department, capitalizing on earth observation, space technologies and geospatial technologies;

2. Actively participating and ultimately leading world-class research programs (bottom-up) in the fields of atmosphere, land surface, water bodies and agriculture, using state-of-the-art methods, data and infrastructure;

3. Aligning the Department's research agenda with ERA priorities, EU, ESA, and International Funding and Regulatory frameworks, e.g., Sustainable goals, open innovation and responsible research;

4. Securing financial and other resources from national, regional and international sources;

5. Establishing local, regional, and international research networks that can support the long-term research agenda and priorities of the Department;

6. Developing activities to support the scientific integration of Europe and to strengthen its international outreach;

7. Foreseeing the European Roadmap for Research Infrastructures (ESFRI) systematically;

8. Support mentoring, educating and providing research guidance to graduate students in the Cyprus University of Technology & ERATOSTHENES CoE PhD programmes;

9. Overseeing the career-development plans of the PhD-candidates of the Department

10. Initiating and sustaining high-level collaborative Coordination and Support Actions (CSA) and Research and Innovation Actions (RIA) projects with leading partners that conduct research in areas related to his/her respective fields;

11. Communicating the results and implications of research conducted at ERATOSTHENES CoE, including the academic community, the public at large and political and economic decision makers;

12. Exercising an active role in the development of the organization-wide strategy of ERATOSTHENES CoE, working towards meeting its mission goals, promote a vigorous research environment and foster inter-departmental effective collaboration;

13. Consulting with the Consortium Partners of the EXCELSIOR project, to formulate and regularly update the ERATOSTHENES CoE research strategy;

14. Engaging with government and industry bodies to raise the profile of ERATOSTHENES CoE as a research-intensive institution;

15. Ensuring that the KPIs and other performance targets as set by the Centre are delivered;

16. Any other relevant duties deemed necessary.

Qualifications:

1. PhD in a relevant subject (for example, Remote Sensing/ Physics/ Meteorology, Data Scientists);

2. The successful candidate is expected to be an outstanding scholar of international standing with a minimum of seven (7) years for the post of Senior Researcher B and eleven (11) years for the post of Senior Researcher A after the acquirement of a doctoral degree, of research experience and important publication record. The candidates must fulfill the requirements of Senior Researchers A & B as described below;

3. At least 7 years of experience assuming leading roles as Manager, or coordinator, or any other managerial position in a large and international research group;

4. An outstanding track record of peer-review scientific publications in the most prestigious journals of her/his field;

5. The successful completion as coordinator of highly competitive research programs;

6. A successful record of raising funds from (inter)national calls for research projects;

7. Experience in working for European Commission / European Space Agency projects will be considered an asset;

8. State-of-the-art scientific expertise in (active) remote sensing with a clear vision of a sustainable blending of spaceborne and ground-based remote sensing of the atmosphere, agriculture, water and land;

9. Teaching experience of post-graduate students and supervision of young (PhD) researchers;

10. The candidate should have an appetite for applied research and its rapid prototyping and management of research to advance the research and innovation profile and publication record of the team;

11. Being an international leader in her/his discipline, the selected candidate must have excellent interpersonal skills aimed at maintaining contacts in academic, business and governmental circles;

12. Excellent knowledge of the English language both verbal and in writing.

The qualifications required for this position are the same as those required for the post of a full Professor & Associate Professor at the Cyprus University of Technology, as follows:

Minimum Requirements for the posts of Senior Researcher A and B

The minimum requirements for the posts of Special Scientist/ Senior Researcher A (equivalent to Professor): **At least eleven years** in total university/research or other equivalent work experience, after the acquisition of a doctoral degree, of which four years must be university work experience or holding a position at the level of Professor in a recognized university, or holding a position as a Special Scientist/ Senior Researcher in a recognized research organization, International recognition of the candidate's scientific work; Important contributions to the University's or Research Centre's educational mission and administrative operation; Coordination of research programmes or supervision of doctoral theses.

The minimum requirements for the posts of Senior Researcher B (equivalent to Associate Professor): **At least seven years** in total university/research or other equivalent work experience, after the acquisition of a doctoral degree, of which four years must be university/research work experience or work experience at a corresponding level of another recognized university or another recognized research organization. Publication of articles in prestigious international scientific journals or monographs and books of recognized publishing houses that substantiate remarkable independent research. Ability to guide and promote research which includes supervising of postgraduate students, guidance or important contribution to research programs or securing funding for research activities. Demonstration of international recognition of the candidate's contribution in specific research fields such as research reports, invitations for scientific talks, assignments of article evaluation, research proposals or doctoral theses, participation in scientific journal publication committees or participation in convention organisation. Previous contribution to the promotion of the Research Centre's or University's educational mission and administrative work.

The appointment will be for a period of twenty-four (24) months with the prospect of renewal for twelve (12) months or up to 60 (sixty) months. The monthly gross salary for the (full-time) position will range from €5,722.12 to €6,907.99, depending on qualifications. It is noted that there is

provision for 13th salary (the cost of the 13th salary has been proportionally incorporated in the monthly remuneration as analysed above).

Interested candidates must submit their application comprising of all documents listed below via email to vacancies@eratosthenes.org.cy, conspicuously entering in the subject line: "*Application for Senior Researcher Position in Earth Observation and Remote Sensing at the Environment and Climate Department*" no later than Friday 25 September 2020 at 14.00 CYPRUS TIME, which is the deadline for the submission of the applications.

1. A letter in which the candidate should state the Department, the rank, the specialization in which he/she is interested in, as well as the date on which he/she can undertake responsibilities in case he/she is appointed, in English;

2. *Curriculum vitae* in English;

3. A short review of the research interests as well as a brief description of the future research plans, in English - up to 1500 words;

4. List of publications in English;

5. Reprints of their three most representative publications;

6. Copies of the candidate's degree certificates;

7. Contact Details;

8. Names and contact details of at least three senior academic/research referees. Candidates should request confidential letters of reference in English from the above senior academic/research referees, which must be sent by the referees themselves directly to the ERATOSTHENE CoE via email to vacancies@eratosthenes.org.cy, by the deadline for the submission of the applications. The names and addresses of the referees should be submitted together with the application because the ERATOSTHENES CoE may also request additional confidential information. The ERATOSTHENES CoE may also request reference letters from independent referees of the choice of members of the Appointed Committee, if considered necessary.

For further information visit the ERATOSTHENES CoE's webpage at http://www.eratosthenes.org.cy

It is noted that:

- For non-EU applicants a work permit will be required;

- Applications will be treated in strict confidence. All information provided will comply with the General Data Protection Regulation (GDPR) of the European Union;

- The job requires that the Senior Researcher is or becomes a resident in the area of employment;

- The ERATOSTHENES CoE adopts an equal opportunity policy at recruitment and the subsequent career stages and encourages both genders to submit an application for all levels of Academic and Administrative Staff;

- The ERATOSTHENES CoE does not discriminate in any way on the basis of gender, religion or belief, ethnic, national or social origin, age, physical ability, marital status and sexual orientation.

- The title of the position: Special Scientist for Research / Senior Researcher A or B may be modified upon approval of the HR regulations of the ERATOSTHENES CoE.

The employment of the successful candidate will start upon approval of the contract amendment for including ERATOSTHENES CoE as a new partner in the "EXCELSIOR" H2020 consortium.

CONSORTIUM

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 857510

This project has received funding from the Government of the Republic of Cyprus through the Directorate General of the European's Programmes, Coordination and Development

ERATOSTHENES CENTRE OF EXCELLENCE

SENIOR RESEARCHER POSITION IN EARTH OBSERVATION, SPACE & GEOSPATIAL TECHNOLOGIES AT THE RESILIENT SOCIETY DEPARTMENT

The ERATOSTHENES Centre of Excellence (ECoE) (**www.eratosthenes.org.cy**) of the Cyprus University of Technology (**www.cut.ac.cy**) invites applications for the position of Senior Researcher at the Resilient Society Department of the ERATOSTHENES CoE. This position is open either on full-time (100%) or part-time employment basis.

This position is open to everyone internationally in the framework of the EU-H2020 "EXCELSIOR" project (Excellence Research Centre for Earth Surveillance and Space-Based Monitoring of the Environment; **https://excelsior2020.eu/**; TEAMING Grant no. 857510). Through this project, the Cyprus University of Technology is establishing the ERATOSTHENES Centre of Excellence in Space Technology, Earth Observation and Geospatial Technology in the EMMENA (Eastern Mediterranean Middle East North Africa) region, in cooperation with the Department of Electronic Communications (DEC) from the Deputy Ministry of Research, Innovation and Digital Policy (Cyprus) and with EU advanced Partners the German Aerospace Centre (DLR, Germany), TROPOS (Germany) and the National Observatory of Athens (NOA-Greece).

The ERATOSTHENES Centre of Excellence is an autonomous Centre of Excellence with Cyprus University of Technology (CUT) as its sole stakeholder, aiming to become a viable, sustainable Centre of Excellence in earth observation, space technology and geospatial analysis. CUT has a 13-year experience in earth observations and geospatial analysis. Through the "EXCELSIOR" H2020 Teaming Project (2019-2026), the ERATOSTHENES CoE aspires to become an excellent Digital Innovation Hub for Earth Observation and Geospatial Information by offering education, responsible research, open innovation and application services capable of sustaining Cyprus' development. The ERATOSTHENES CoE aspires to actively contribute to the European Research Area (ERA) priorities in Atmosphere and Climate, Resilient Societies and Big Earth Data Analytics, as well as to become the reference Earth Observation/Geoinformation Centre for research and innovation in the Eastern Mediterranean, Middle East and North Africa (EMMENA) region.

Description of the Position

The successful candidate will be assigned to the Department of Resilient Society within the Centre of Excellence, in which earth observation-based research will be conducted in the following thematic domains: Disaster Risk Reduction, Cultural Heritage, Marine Safety & Security and Energy.

The selected Senior Researcher A or B (qualifications equivalent to Professor or Associate Professor level, respectively) will assume a leading and coordination role in the development of ERATOSTHENES CoE's research and innovation agenda in remote sensing on resilient society with

emphasis on the Department's thematic areas (Disaster Risk Reduction, Cultural Heritage, Marine Safety & Security and Energy).

In close collaboration with the respective Department's Coordinator, the Senior Researcher will be responsible for providing proposals for actions towards the strategic development of the Department and supporting its sustainability, overseeing the overall scientific progress within the Department, providing guidance to other researchers and technical staff, as well as monitoring research progress through supervision and coordination. The Senior Researcher is expected to promote a spirit of inter-departmental and intra-departmental collaboration within the ECoE.

A core activity of ERATOSTHENES CoE is to conduct high caliber, state-of-the-art research, both basic and applied. A central task is to acquire research funding for the Centre, to provide facilities to the researchers, and to support them to acquire funding for their research independently and via international and local collaborations. Collaborations with industrial partners will be particularly encouraged and facilitated.

At a strategic level, the Senior Researcher will be actively involved, in collaboration with the respective Department's Coordinator and the strategic partners, in the development and overseeing of the execution of the Strategic Research and Strategic Growth plan of the ERATOSTHENES CoE. This plan should be regularly revisited and updated to meet the strategic and long-term plans of the ECoE.

Appropriate measures of success will be collaboratively determined based on the Centre's strategic growth plan and sustainability targets. These will be revised periodically by the Executive Committee and the Board of Directors.

Duties and Responsibilities

The successful candidate will be responsible for helping to shape and advance the ERATOSTHENES CoE's research and innovation agenda by:

1. Developing and implementing R&D strategies appropriate to the ERATOSTHENES CoE's mission to become a regional knowledge hub in the fields of the Department, capitalizing on earth observation, space technologies and geospatial technologies;

2. Actively participating and ultimately leading world-class research programs (bottom-up) in the fields of Disaster Risk Reduction, Cultural Heritage, Marine Safety & Security and Energy, using state-of-the-art infrastructure;

3. Aligning the Department's research agenda with ERA priorities, EU, ESA, and International Funding and Regulatory frameworks, e.g., Sustainable goals, open innovation and responsible research;

4. Securing financial and other resources from national, regional and international sources;

5. Establishing local, regional, and international research networks that can support the long-term research agenda and priorities of the Department;

6. Developing activities to support the scientific integration of Europe and to strengthen its international outreach;

7. Foreseeing the European Roadmap for Research Infrastructures (ESFRI) systematically;

8. Support mentoring, educating and providing research guidance to graduate students in the Cyprus University of Technology & ERATOSTHENES CoE PhD programmes;

9. Overseeing the career-development plans of the PhD-candidates of the Department;

10. Initiating and sustaining high-level collaborative Coordination and support actions (CSA) and Research and Innovation Actions (RIA) projects with leading partners that conduct research in areas related to his/her respective fields;

11. Communicating the results and implications of research conducted at ERATOSTHENES CoE, including the academic community, the public at large and policy and economic decision makers;

12. Exercising an active role in the development of the organization-wide strategy of ERATOSTHENES CoE, working towards meeting its mission goals, promote a vigorous research environment and foster inter-departmental effective collaboration;

13. Consulting with the Consortium Partners of the EXCELSIOR project, to formulate and regularly update the ERATOSTHENES CoE research strategy;

14. Engaging with government and industry bodies and institutions to raise the profile of ERATOSTHENES CoE as a research-intensive institution;

15. Ensuring that the KPIs and other performance targets as set by the Centre are delivered;

16. Any other relevant duties deemed necessary.

Qualifications:

1. PhD in a relevant subject (for example, Computer Science / Remote Sensing / Mathematics / Physics / Geoinformation Engineering or equivalent);

2. The successful candidate is expected to be an outstanding scholar of international standing with a minimum of seven (7) years for the post of Senior Researcher B and eleven (11) years for the post of Senior Researcher A after the acquisition of a doctoral degree, of research experience and important publication record. The candidates must fulfill the requirements of Senior Researchers A & B as described below;

3. At least 7 years of experience assuming leading roles as Manager, or coordinator, or any other managerial position in a large and international research group;

4. An outstanding track record of peer-review scientific publications in the most prestigious journals of her/his field;

5. The successful completion as Coordinator of highly competitive research programs;

6. A successful record of raising funds from (inter)national calls for research projects;

7. Experience in working for European Commission / European Space Agency projects will be considered an asset;

8. State-of-the-art scientific expertise in:

    - Remote sensing / Earth Observation / satellite data processing
    - Exploiting multi-source data EO-based and in-situ/crowd data and development/assimilation of data/models to support cross-sector research and services/solution provision in fields as Environment, Disaster Risk Reduction, Energy, Agriculture, Raw Materials, Health, etc;
    - Risk Analysis/Risk Reduction/ Decision Making;
    - Artificial Intelligence/Machine Learning techniques;
    - Computer Science and Geoinformation Engineering;
    - Big data management and distributed processing of big satellite scientific data;
    - Development of automated application systems will be an asset but not mandatory (experience in relational and non-relational databases, application programming interfaces, Linux scripting, web frameworks);
    - Working for European Commission / European Space Agency projects.

9. Teaching experience of post-graduate students and supervision of young (PhD) researchers;

10. The candidate should have an appetite for applied research and its rapid prototyping and management of research to advance the research and innovation profile and publication record of the team;

11. Being an international leader in her/his discipline, the selected candidate must have excellent interpersonal skills aimed at maintaining contacts in academic, business and governmental circles;

12. Excellent knowledge of the English language both verbal and in writing.

The qualifications required for this position are the same as those required for the post of a full Professor & Associate Professor at the Cyprus University of Technology, as follows:

Minimum Requirements for the posts of Senior Researcher A and B

The minimum requirements for the posts of Special Scientist/ Senior Researcher A (equivalent to Professor): **At least eleven years** in total university/research or other equivalent work experience, after the acquisition of a doctoral degree, of which four years must be university work experience or holding a position at the level of Professor in a recognized university, or holding a position as a Special Scientist/ Senior Researcher in a recognized research organization, International recognition of the candidate's scientific work; Important contributions to the University's or Research Centre's

educational mission and administrative operation; Coordination of research programmes or supervision of doctoral theses.

The minimum requirements for the posts of Senior Researcher B (equivalent to Associate Professor): **At least seven years** in total university/research or other equivalent work experience, after the acquisition of a doctoral degree, of which four years must be university/research work experience or work experience at a corresponding level of another recognized university or another recognized research organization. Publication of articles in prestigious international scientific journals or monographs and books of recognized publishing houses that substantiate remarkable independent research. Ability to guide and promote research which includes supervising of postgraduate students, guidance or important contribution to research programs or securing funding for research activities. Demonstration of international recognition of the candidate's contribution in specific research fields such as research reports, invitations for scientific talks, assignments of article evaluation, research proposals or doctoral theses, participation in scientific journal publication committees or participation in convention organisation. Previous contribution to the promotion of the Research Centre's or University's educational mission and administrative work.

The appointment will be for a period of twenty-four (24) months with the prospect of renewal for twelve (12) months or up to 60 (sixty) months. The monthly gross salary for the (full-time) position will range from €5,722.12 to €6,907.99, depending on qualifications. It is noted that there is provision for 13th salary (the cost of the 13th salary has been proportionally incorporated in the monthly remuneration as analysed above).

Interested candidates must submit their application comprising of all documents listed below via email to vacancies@eratosthenes.org.cy, conspicuously entering in the subject line: "Application for Senior Researcher Position in Earth Observation, Space & Geospatial Technologies at the Resilient Society Department" no later than Friday 25 September 2020 at 14.00 CYPRUS TIME, which is the deadline for the submission of the applications.

1. A letter in which the candidate should state the Department, the rank, the specialization in which he/she is interested in, as well as the date on which he/she can undertake responsibilities in case he/she is appointed, in English;
2. *Curriculum vitae* in English;
3. A short review of the research interests as well as a brief description of the future research plans, in English - up to 1500 words;
4. List of publications in English;
5. Reprints of their three most representative publications;
6. Copies of the candidate's degree certificates;
7. Contact Details;
8. Names and contact details of at least three senior academic/research referees. Candidates should request confidential letters of reference in English from the above senior academic/research referees, which must be sent by the referees themselves directly to the ERATOSTHENE CoE via email to vacancies@eratosthenes.org.cy, by the deadline for the submission of the applications. The names and addresses of the referees should be

submitted together with the application because the ERATOSTHENES CoE may also request additional confidential information. The ERATOSTHENES CoE may also request reference letters from independent referees of the choice of members of the Appointed Committee, if considered necessary.

For further information visit the ERATOSTHENES CoE's webpage at **http://www.eratosthenes.org.cy**

It is noted that:

- For non-EU applicants a work permit will be required;
- Applications will be treated in strict confidence. All information provided will comply with the General Data Protection Regulation (GDPR) of the European Union;
- The job requires that the Senior Researcher is or becomes a resident in the area of employment;
- The ERATOSTHENES CoE adopts an equal opportunity policy at recruitment and the subsequent career stages and encourages both genders to submit an application for all levels of Academic and Administrative Staff;
- The ERATOSTHENES CoE does not discriminate in any way on the basis of gender, religion or belief, ethnic, national or social origin, age, physical ability, marital status and sexual orientation.
- The title of the position: Special Scientist for Research / Senior Researcher A or B may be modified upon approval of the HR regulations of the ERATOSTHENES CoE.

The employment of the successful candidate will start upon approval of the contract amendment for including ERATOSTHENES CoE as a new partner in the "EXCELSIOR" H2020 consortium.

CONSORTIUM

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ERATOSTHENES CENTRE OF EXCELLENCE

SENIOR RESEARCHER POSITION IN INFORMATION EXTRACTION, VISUAL EXLORATION & VISUALIZATION, CROWD SOURCING & DATA FUSION, GEOINFORMATICS, REMOTE SENSING AT THE BIG EARTH DATA ANALYTICS DEPARTMENT

The ERATOSTHENES Centre of Excellence (ECoE) (**www.eratosthenes.org.cy**) of the Cyprus University of Technology (**www.cut.ac.cy**) invites applications for the position of Senior Researcher at the Big Earth Data Analytics Department of the ERATOSTHENES CoE. This position is open either on a full-time (100%) or part-time employment basis.

This position is open to everyone internationally in the framework of the EU-H2020 "EXCELSIOR" project (Excellence Research Centre for Earth Surveillance and Space-Based Monitoring of the Environment; **https://excelsior2020.eu/**; TEAMING Grant no. 857510). Through this project, the Cyprus University of Technology is establishing the ERATOSTHENES Centre of Excellence in Space Technology, Earth Observation and Geospatial Technology in the EMMENA (Eastern Mediterranean Middle East North Africa) region, in cooperation with the Department of Electronic Communications (DEC) from the Deputy Ministry of Research, Innovation and Digital Policy (Cyprus) and with EU advanced Partners the German Aerospace Centre (DLR, Germany), TROPOS (Germany) and the National Observatory of Athens (NOA-Greece).

The ERATOSTHENES Centre of Excellence is an autonomous Centre of Excellence with Cyprus University of Technology (CUT) as its sole stakeholder, aiming to become a viable, sustainable Centre of Excellence in earth observation, space technology and geospatial analysis. CUT has a 13-year experience in earth observations and geospatial analysis. Through the "EXCELSIOR" H2020 Teaming Project (2019-2026), the ERATOSTHENES CoE aspires to become an excellent Digital Innovation Hub for Earth Observation and Geospatial Information by offering education, responsible research, open innovation and application services capable of sustaining Cyprus' development. The ERATOSTHENES CoE aspires to actively contribute to the European Research Area (ERA) priorities in Atmosphere and Climate, Resilient Societies and Big Earth Data Analytics, as well as to become the reference Earth Observation/Geoinformation Centre for research and innovation in the Eastern Mediterranean, Middle East and North Africa (EMMENA) region.

Description of the Position

The successful candidate will be assigned to the Department of Big Earth Data Analytics within the Centre of Excellence, in which earth observation-based research will be conducted in the following thematic domains: information extraction, visual exploration & visualization, Crowd sourcing & data fusion, Geo-informatics and Earth Observation data bases.

The selected Senior Researcher A or B (qualifications equivalent to Professor or Associate Professor level, respectively) will assume a leading and coordination role in the development of ERATOSTHENES CoE's research and innovation agenda in remote sensing on environment and climate with emphasis on the Department's thematic areas (information extraction, visual exploration & visualization, Crowd sourcing & data fusion, Geo-informatics and Earth Observation data bases).

In close collaboration with the respective Department's Coordinator, the Senior Researcher will be responsible for providing proposals for actions towards the strategic development of the Department and supporting its sustainability, overseeing the overall scientific progress within the Department, providing guidance to other researchers and technical staff, as well as monitoring research progress through supervision and coordination. The Senior Researcher is expected to promote a spirit of inter-departmental and intra-departmental collaboration within the ECoE.

A core activity of ERATOSTHENES CoE is to conduct high caliber, state-of-the-art research, both basic and applied. A central task is to acquire research funding for the Centre, to provide facilities to the researchers, and to support them to acquire funding for their research independently and via international and local collaborations. Collaborations with industrial partners will be particularly encouraged and facilitated.

At a strategic level, the Senior Researcher will be actively involved, in collaboration with the respective Department's Coordinator and the strategic partners, in the development and overseeing of the execution of the Strategic Research and Strategic Growth plan of the ERATOSTHENES CoE. This plan should be regularly revisited and updated to meet the strategic and long-term plans of the ECoE.

Appropriate measures of success will be collaboratively determined based on the Centre's strategic growth plan and sustainability targets. These will be revised periodically by the Executive Committee and the Board of Directors.

Duties and Responsibilities

The successful candidate will be responsible for helping to shape and advance the ERATOSTHENES CoE's research and innovation agenda by:

1. Developing and implementing R&D strategies appropriate to the ERATOSTHENES CoE's mission to become a regional knowledge hub in the fields of the Department, capitalizing on earth observation, space technologies and geospatial technologies;

2. Actively participating and ultimately leading world-class research programs (bottom-up) in the fields of information extraction, visual exploration & visualization, crowd sourcing & data fusion, Geo-informatics, using state-of-the-art methods, data and infrastructure;

3. Aligning the Department's research agenda with ERA priorities, EU, ESA, and International Funding and Regulatory frameworks, e.g. Sustainable goals, open innovation, and responsible research;

4. Securing financial and other resources from national, regional and international sources;

5. Establishing local, regional, and international research networks that can support the long-term research agenda and priorities of the Department;

6. Developing activities to support the scientific integration of Europe and to strengthen its international outreach;

7. Foreseeing the European Roadmap for Research Infrastructures (ESFRI) systematically;

8. Support mentoring, educating and providing research guidance to graduate students in the Cyprus University of Technology & ERATOSTHENES CoE PhD programmes;

9. Overseeing the career-development plans of PhD candidates & researchers in the Department;

10. Initiating and sustaining high-level collaborative Coordination and Support Actions (CSA) and Research and Innovation Actions (RIA) projects with leading partners that conduct research in areas related to his/her respective fields;

11. Communicating the results and implications of research conducted at ERATOSTHENES CoE, including the academic community, the public at large and political and economic decision makers;

12. Exercising an active role in the development of the organization-wide strategy of ERATOSTHENES CoE, working towards meeting its mission goals, promote a vigorous research environment and foster inter-departmental effective collaboration;

13. Consulting with the Consortium Partners of the EXCELSIOR project, to formulate and regularly update the ERATOSTHENES CoE research strategy;

14. Engaging with government and industry bodies to raise the profile of ERATOSTHENES CoE as a research-intensive institution;

15. Ensuring that the KPIs and other performance targets as set by the Centre are delivered;

16. Any other relevant duties deemed necessary.

Qualifications:

1. PhD in a relevant subject (for example, Computer Science, Information Technology, Remote Sensing, Applied Mathematics/Statistics, Physics, Geoinformation Engineering, Geospatial Analysis, Data Science or equivalent);

2. The successful candidate is expected to be an outstanding scholar of international standing with a minimum of seven (7) years for the post of Senior Researcher B and eleven (11) years for the post of Senior Researcher A after the acquisition of a doctoral degree, of research experience and important publication record. The candidates must fulfill the requirements of Senior Researchers A & B as described below;

3. At least 7 years of experience assuming leading roles as Manager, or coordinator, or any other managerial position in a large and international research group;

4. An outstanding track record of peer-review scientific publications in the most prestigious journals of her/his field;
5. The successful completion as coordinator of highly competitive research programs;
6. A successful record of raising funds from (inter)national calls for research projects;
7. Experience in working for European Commission / European Space Agency projects will be considered an asset;
8. State-of-the-art scientific expertise in:
    - Data Science / Machine Learning / Artificial Intelligence theory / Geoinfomatics methods and applications;
    - Big data management and distributed processing of big earth observation / remote sensing / satellite scientific data, including data cubes;
    - Exploiting multi-source data EO-based and in-situ/crowd-sourced data and development/assimilation of data/models to support cross-sector research and services/solution provision, in fields as Environment, Disaster Risk Reduction, Energy, Agriculture, Raw Materials, Health, etc;
    - Exploitation of data from Ground based stations for Atmospheric Science and Climate Change Research & Satellite Ground Receiving stations;
    - Working for European Commission / European Space Agency projects.
9. Experience in mentoring post-graduate students and in supervising young (PhD) researchers;
10. The candidate should have an appetite for applied research and its rapid prototyping and management to advance the research and innovation profile and publication record of the team;
11. Being an international leader in her/his discipline, the selected candidate must have excellent interpersonal skills aimed at maintaining contacts in academic, business and governmental circles;
12. Excellent knowledge of the English language both verbal and in writing.

The qualifications required for this position are the same as those required for the post of a full Professor & Associate Professor at the Cyprus University of Technology, as follows:

Minimum Requirements for the posts of Senior Researcher A and B

The minimum requirements for the posts of Special Scientist/ Senior Researcher A (equivalent to Professor): **At least eleven years** in total university/research or other equivalent work experience, after the acquisition of a doctoral degree, of which four years must be university work experience or holding a position at the level of Professor in a recognized university, or holding a position as a

Special Scientist/ Senior Researcher in a recognized research organization, International recognition of the candidate's scientific work; Important contributions to the University's or Research Centre's educational mission and administrative operation; Coordination of research programmes or supervision of doctoral theses.

The minimum requirements for the posts of Senior Researcher B (equivalent to Associate Professor): **At least seven years** in total university/research or other equivalent work experience, after the acquisition of a doctoral degree, of which four years must be university/research work experience or work experience at a corresponding level of another recognized university or another recognized research organization. Publication of articles in prestigious international scientific journals or monographs and books of recognized publishing houses that substantiate remarkable independent research. Ability to guide and promote research which includes supervising of postgraduate students, guidance or important contribution to research programs or securing funding for research activities. Demonstration of international recognition of the candidate's contribution in specific research fields such as research reports, invitations for scientific talks, assignments of article evaluation, research proposals or doctoral theses, participation in scientific journal publication committees or participation in convention organisation. Previous contribution to the promotion of the Research Centre's or University's educational mission and administrative work.

The appointment will be for a period of twenty-four (24) months with the prospect of renewal for twelve (12) months or up to 60 (sixty) months. The monthly gross salary for the (full-time) position will range from €5,722.12 to €6,907.99, depending on qualifications. It is noted that there is provision for 13th salary (the cost of the 13th salary has been proportionally incorporated in the monthly remuneration as analysed above).

Interested candidates must submit their application comprising of all documents listed below via email to vacancies@eratosthenes.org.cy, conspicuously entering in the subject line: "*Application for the position on INFORMATION EXTRACTION, VISUAL EXLORATION & VISUALIZATION, CROWD SOURCING & DATA FUSION, GEOINFORMATICS, REMOTE SENSING at the Big Earth Data Analytics Department*" no later than Friday 25 September 2020 at 14.00 CYPRUS TIME, which is the deadline for the submission of the applications.

1. A letter in which the candidate should state the Department, the rank, the specialization in which he/she is interested in, as well as the date on which he/she can undertake responsibilities in case he/she is appointed, in English;
2. *Curriculum vitae* in English;
3. A short review of the research interests as well as a brief description of the future research plans, in English - up to 1500 words;
4. List of publications in English;
5. Reprints of their three most representative publications;
6. Copies of the candidate's degree certificates;
7. Contact Details;
8. Names and contact details of at least three senior academic/research referees. Candidates should request confidential letters of reference in English from the above senior

academic/research referees, which must be sent by the referees themselves directly to the ERATOSTHENE CoE via email to vacancies@eratosthenes.org.cy, by the deadline for the submission of the applications. The names and addresses of the referees should be submitted together with the application because the ERATOSTHENES CoE may also request additional confidential information. The ERATOSTHENES CoE may also request reference letters from independent referees of the choice of members of the Appointed Committee, if considered necessary.

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It is noted that:

- For non-EU applicants a work permit will be required;
- Applications will be treated in strict confidence. All information provided will comply with the General Data Protection Regulation (GDPR) of the European Union;
- The job requires that the Senior Researcher is or becomes a resident in the area of employment;
- The ERATOSTHENES CoE adopts an equal opportunity policy at recruitment and the subsequent career stages and encourages both genders to submit an application for all levels of Academic and Administrative Staff;
- The ERATOSTHENES CoE does not discriminate in any way on the basis of gender, religion or belief, ethnic, national or social origin, age, physical ability, marital status and sexual orientation.
- The title of the position: Special Scientist for Research / Senior Researcher A or B may be modified upon approval of the HR regulations of the ERATOSTHENES CoE.

The employment of the successful candidate will start upon approval of the contract amendment for including ERATOSTHENES CoE as a new partner in the "EXCELSIOR" H2020 consortium.

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