



Country: Cyprus

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[www.excelsior2020.eu](http://www.excelsior2020.eu)



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.



Pillar: **Spreading excellence and widening participation**

Work Programme Year: **H2020-2018-2020**

Work Programme Part: **Spreading Excellence and Widening Participation**

Call: **H2020-WIDESPREAD-2018-2020**

Topic: **WIDESPREAD-01-2018-2019 Teaming 2**

Type of action: **CSA (Coordination and support action)**

Grant Agreement number: **857510**, Acronym: **EXCELSIOR**

**Total Budget: >38,000,000 €**

**(15 millions from EC+ 15 from Republic of Cyprus+ 8 millions from CUT etc)**

Duration: **7 Years (EC) + 8 years (Republic of Cyprus/RC)**

Start: **1 October 2019** / End: **30 September 2026 (EC) / 30 September 2034 (RC)**

**VISION: The ERATOSTHENES CoE, becomes a world-class Digital Innovation Hub (DIH) for EO and Geospatial Information and develops into the reference Centre in the Eastern Mediterranean, Middle East and North Africa Region (EMMENA).**

[www.cut.ac.cy](http://www.cut.ac.cy) Remote Sensing & Geo-Environment Lab, Department of Civil Engineering and Geomatics, Cyprus University of Technology, 2007

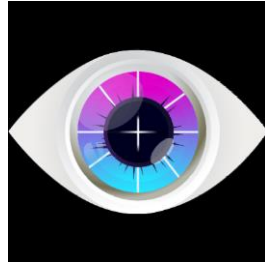
**> 13 years experience in earth observation in Cyprus) / Participation in more than 85 funded projects.**

[www.excelsior2020.eu](http://www.excelsior2020.eu) Excelsior H2020 Teaming Project (2019)

[www.eratosthenes.org.cy](http://www.eratosthenes.org.cy) ERATOSTHENES CoE (2020)

# Remote Sensing priorities or 'hot topics'

- *Forest Fires*
- *Floods*
- *Landslides*
- *Droughts*
- *Agriculture: Carbon footprint, Irrigation Demand, Food Security, Crop Health*
- *Urban heat*
- *Soil Erosion, Coastal erosion*
- *Cultural Heritage (protection, risk assessment)*
- *Water resources Management*
- *Climate Changes*
- *Artificial Intelligence*



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This project has received funding from the European Union's Horizon Europe Framework Programme HORIZON-WIDERA-2021-ACCESS-03 (Twinning) under the Grant Agreement No 101079468.



Funded by the European Union



### **New funded projects / services in Cyprus:**

- **EXCELSIOR (EO), AI-OSBERVER: Artificial Intelligence in EO for Disaster Risk Reduction (AI)**
- **ENFIELD (AI), CARBONICA (carbonfootprint)**
- **CYCLOPS-2 (geohazards)**
- **ENIGMA (Mitigate anthropogenic threats of heritage sites by integrating earth observation techniques and GIS to produce remote sensing tools)**
- **TRIQUETRA (Toolbox for assessing and mitigating Climate Change risks and natural hazards threatening cultural heritage)**
- **CERBERUS (Crop Health)**
- **GREENHIT: A GREEN - HOLISTIC IOT PLATFORM FOR FOREST MANAGEMENT AND MONITORING**
- **NOSTRADAMUS: Open-source solutions for edge, cloud and mixed model applications to strengthen production and administrative capacities in agriculture**
- **LANDSHIFT: Community-Led Creation of Living Spaces in Shifting Landscapes for Climate-Resilient Land Use Management and Supporting the New European Bauhaus**
- **AFROGROW: Informed Decision-Making for Agroforestry Systems in Africa through a Network of Living Labs**

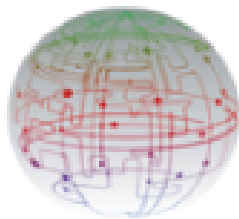
### **Success stories: Platforms and Applications developed:**

- **Regional exploitation platform**
- **Networking / Knowledge Hub**
- **Applications: Earthquake, Irrigation Demand, UV index**
- **Capacity building, Trainings, Webinars (>50 MedRin Members)**
- **Cyprus Geohazards Observatory (e.g. Floods)**
- **Phd Co-supervision in EO with MedRIN members=15**
- **Living Labs (AGRICULTURE & ATMOSPHERE)**
- **Co-design & Co-develop**



# Cyprus Space Strategy: 2022-2027

- The Space Strategy for Cyprus 2022-2027 is an operational document that was collectively developed by the Department of Electronic Communications of the Deputy Ministry of Research, Innovation and Digital Policy. Its aim is to structure and coordinate the space policy related matters in Cyprus, as well as to demonstrate the willingness of the stakeholders to work together for the strengthening of the national space ecosystem.
- Our goal, as set in our National Space Strategy, is to become an ESA Associate Member by 2027 or sooner.



DEPARTMENT OF ELECTRONIC COMMUNICATIONS  

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DEPUTY MINISTRY OF RESEARCH, INNOVATION AND DIGITAL POLICY



# Progress and Statistics with ESA

- The Annual contribution of Cyprus to ESA PECS Programme will reach **3 M euros in 2024 (started with 1.35 in 2017)**.
- In the last 6 years, the Cypriot Government, in collaboration with the European Space Agency (ESA), **has announced 9 Calls** and has financed the implementation of approximately **51 projects with a total cost of approximately 9.92 million euros**.
- Until now, approximately **55 organizations of the private and public sector as well as academic institutions**, are active in the field of Space in Cyprus





# Cyprus University of Technology & Eratosthenes CoE & EXCELSIOR H2020



- American Embassy: The CUTing Edge aims to provide an inspirational place where people can relax and embrace technology, become innovators and present their work to the worldwide community.
- Science Café, Researcher nights every year
- Common proposals submission on USA-CYPRUS (IDEK Calls): EO for Fires



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# EXCELSIOR: Success story

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AFFILIATED ENTITIES



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This project is co-funded by the Cyprus University of Technology.



## Data Acquisition Station: Cyprus

- 9m full-motion Triband Antenna from Safran -France
- To be installed at 35°.049 longitude & 33°.284 latitude
- Simultaneous Reception in S, X & Ka Bands
- Tracking satellites orbiting as low as 400km
- Horizon visibility down to 5° elevation
- Transmit capability in S-Band (both RHCP & LHCP) for TT&C services
- Transmit EIRP up to 60dBW per polarization
- Pointing accuracy: < 0,045° rms
- Tracking accuracy: < 0,015° rms
- Cortex Low & High Data Rate Baseband equipment
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# GBS ATMOSPHERIC REMOTE SENSING STATION IN LIMASSOL: Fully operational



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# Developed applications

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## TECHNOLOGY APPLICATIONS – MATURE/IN PILOT STUDIES

- Agri-Nexus-Hub tool for agricultural applications (TRL5) (ECoE)
- UVI Risk assessment tool for health and agricultural applications (TRL4) (ECoE - PMOD/WRC – NOA)
- Earthquake risk assessment tool (TRL4) (CUT –ECoE – U Sheffield)
- Earth Observation for Cultural Property Documentation and Protection (TRL4) (ECoE – DLR )

## TECHNOLOGY APPLICATIONS AT THE EARLY STAGES OF DEVELOPMENT

- Cyprus Geohazards Observatory (Landslides/Earthquakes) (TRL4) (ECoE – NOA)
- Earth Observation for Cultural Property Documentation and Protection (TRL4) (ECoE – DLR )
- Allocation of Electric Vehicle Charging using GIS (TRL4) (ECoE-FOSS)
- Sowing & Harvesting tool for agricultural applications (ECoE - NOA)
- Carbon Farming Platform (ECoE)
- Cyprus Fire and Flood Observatory (Disaster Risk Reduction Fires, Floods) (ECoE – NOA)
- Atmosphere Identification Tools (GBS infrastructure) (ECoE – TROPOS)
- Marine Identification System (Early Warning System) (ECoE - DLR)
- Marine Pollution Monitor (ECoE - DLR)
- Digital tools for risk assessment of CH sites (ECoE – DLR )
- Digital technology tool for identifying unknown buried archaeological sites (ECoE – DLR )

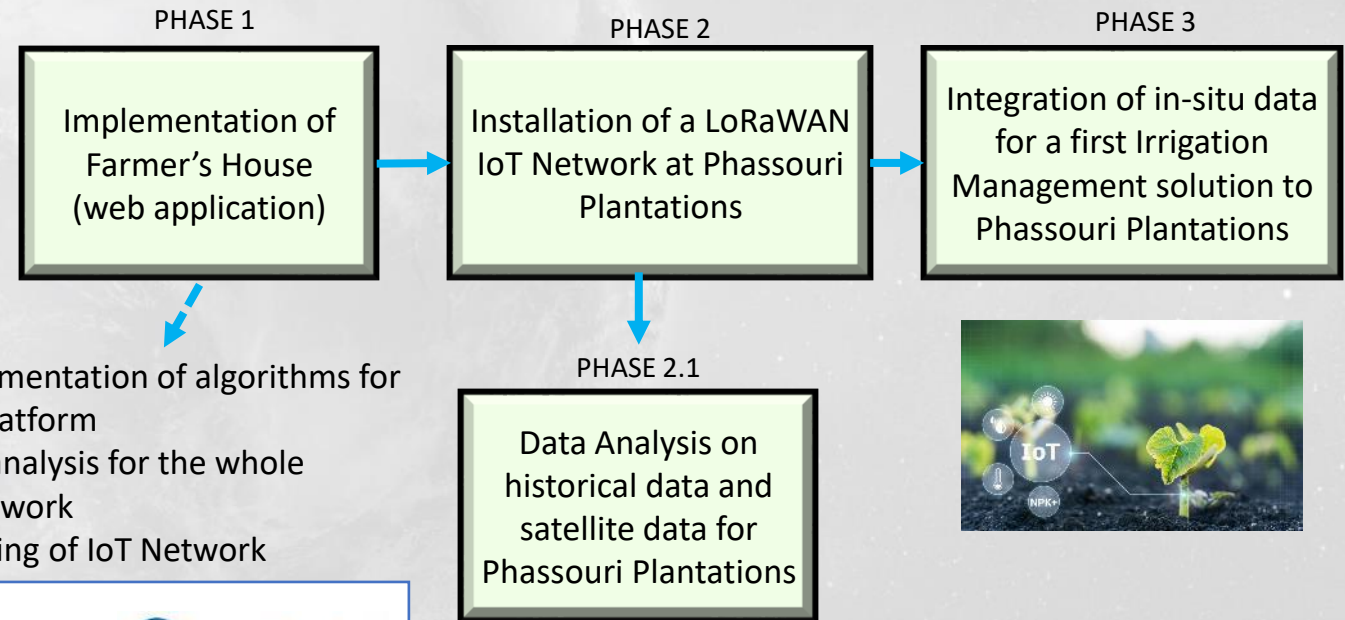


# ERATOSTHENES AgriNexus Hub

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AgriNEXUS is an integrated web application to support stakeholders, governmental partners, local authorities, agricultural organizations and farmers all over Cyprus on adapting optimal irrigation and farming management practices. Demetra AgriHUB will also host a connection with Sentinel Hub API as a satellite imagery data source.

- Improve irrigation and increase yield productivity
- Monitor the largest group of plantations in Cyprus consisting of a total area of about 560 hectares of land Growers, Packers and Exporters of Citrus Fruits  
<https://redseal-quality.com/>
- Test field with citrus trees – valuable data can be collected as a living lab



- Implementation of algorithms for the platform
- Cost analysis for the whole framework
- Planning of IoT Network






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# Existing Funded projects

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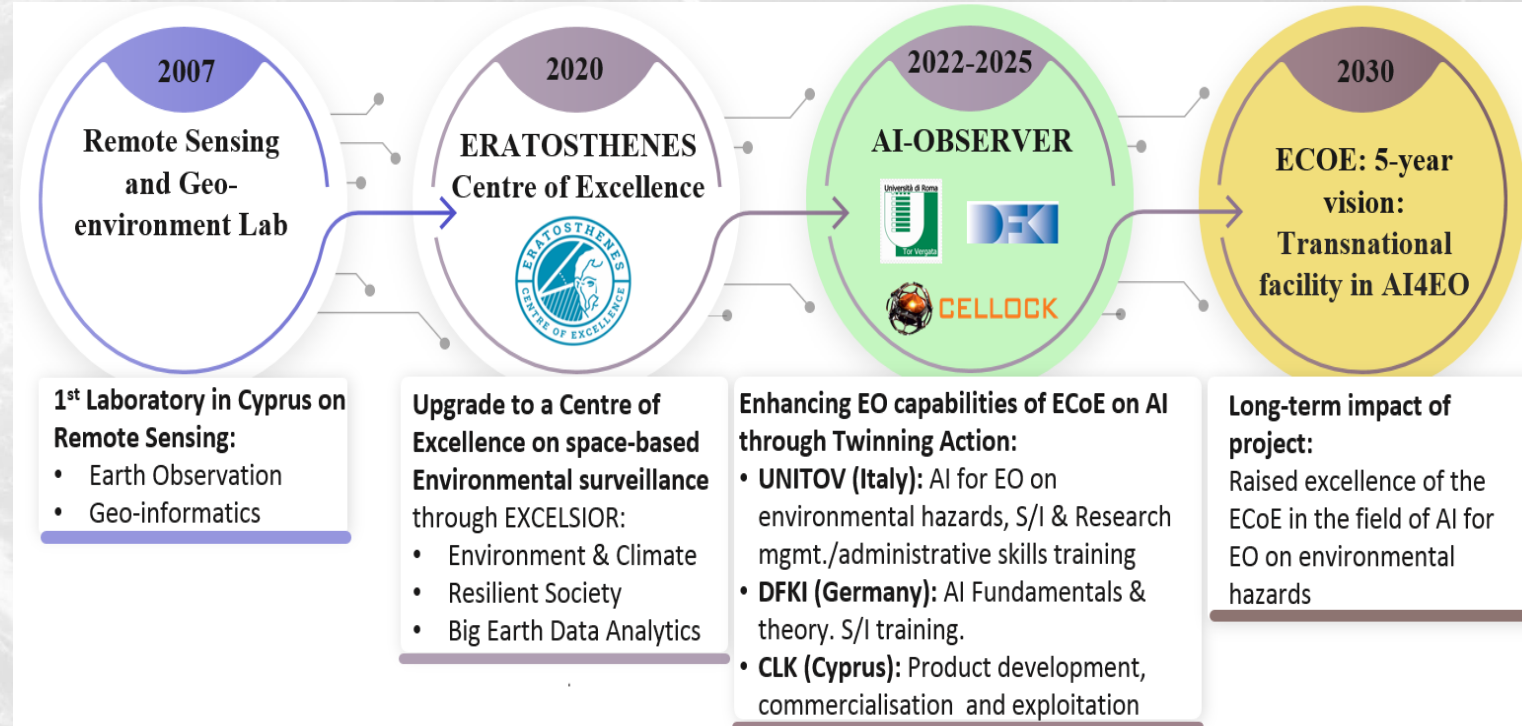


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## 'AI-OBSERVER' HORIZON EUROPE/ TWINNING

- **Call:** HORIZON-WIDERA-2021-ACCESS-03 (Twinning)
- **Type of Action:** HORIZON-CSA
- **Project title (acronym):** Enhancing Earth Observation capabilities of the ERATOSTHENES Centre of Excellence on Disaster Risk Reduction through Artificial Intelligence (AI-OBSERVER)
- **Duration:** 36 months (Starting date: 1 October 2022)
- **Budget:** €1,489,379



Funded by the European Union



TOR VERGATA  
UNIVERSITÀ DEGLI STUDI DI ROMA



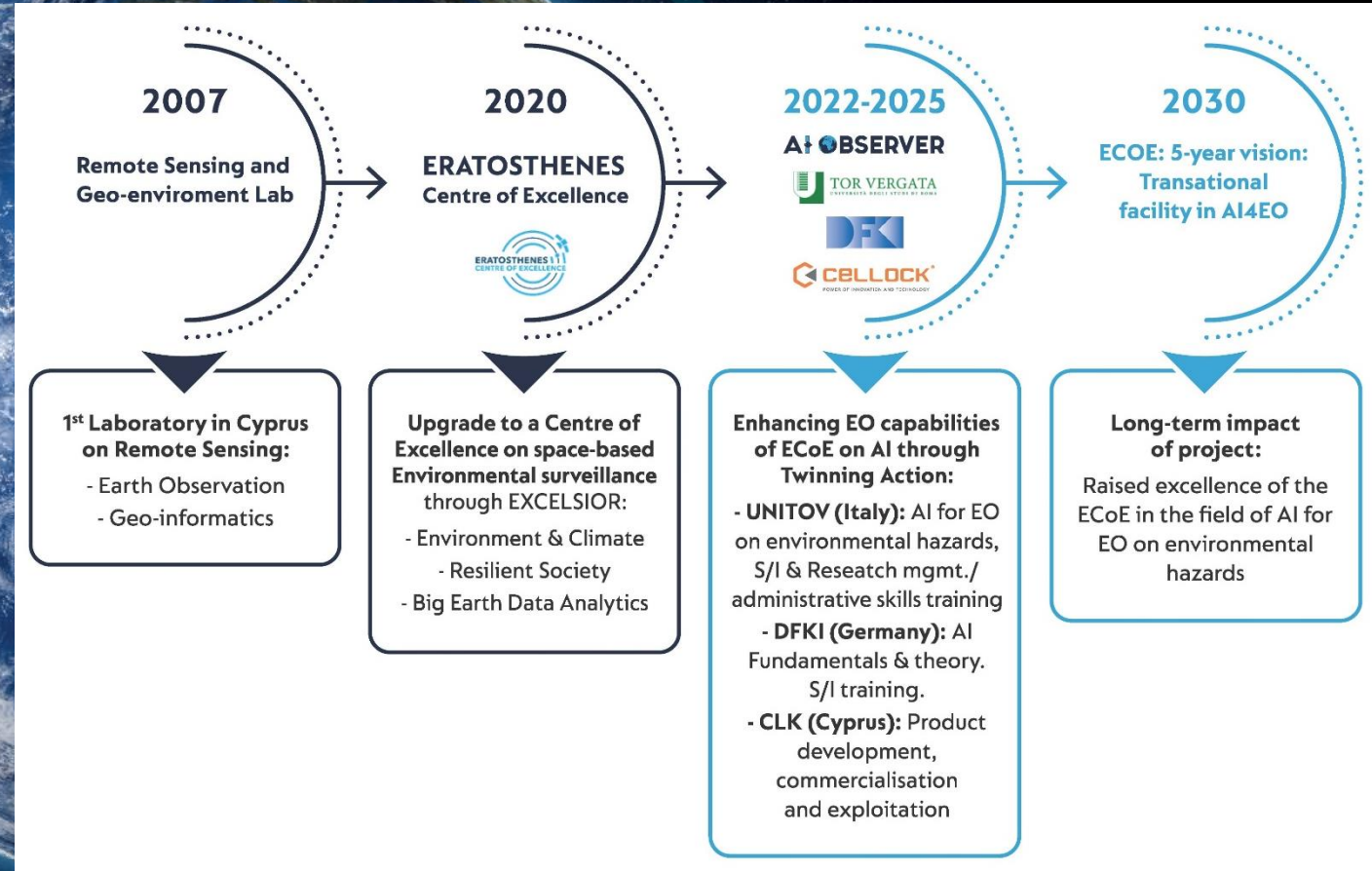
CELLOCK<sup>®</sup>

POWER OF INNOVATION AND TECHNOLOGY



## Project overview

- Collaboration of ERATOSTHENES Centre of Excellence (Cyprus) with:
  - two advanced partners:
    - **German Research Center for Artificial Intelligence (DFKI)** from Germany.
    - **University of Rome Tor Vergata (UNITOV)** from Italy.
  - and the industrial partner **CELLOCK Ltd. (CLK)** from Cyprus.





## Framework Partnership Agreement on Copernicus User Uptake Work Programme





## Coastal erosion due to climate change: assessment and ways to deal effectively with touristic areas of the North Aegean and Cyprus - BEACHTECH

Coastal erosion: a growing environmental problem. Climate projections indicate an overall trend moving towards a more vital threat, which could increase global erosion due to climate change and variability.

Impact of coastal erosion: degradation of tourist beaches → threat for the sustainable development of the coastal areas of Aegean Archipelago and Cyprus.



Website: <https://beachtech.eu/>

Funded by Interreg Greece-Cyprus



## CARBONICA: Carbon Initiative for Climate-resilient Agriculture



FOODSCALE HUB



Panagrotikos  
Association of Cyprus



Carbonica



- Call: HORIZON-WIDERA-2022-ACCESS-04-01 (Excellence Hubs)
- Budget: €674,000 (ECoE partner), €4,985,250 (Total)
- Duration: 4 years

### Objectives:

- Strengthen place-based innovation and excellence in CY, GR and NMK in carbon farming to achieve increased collective understanding and uptake.
- Motivate knowledge transfer, sharpen entrepreneurial skills and expand the collective capacity in carbon farming.
- Design, validate and plan for pilots and demonstrators to underpin the development of the long-term R&I strategy and action plan.
- Create business opportunities in carbon farming.

#### CONSORTIUM



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## Green-HIT: A Green - Holistic IoT platform for Forest Management and Monitoring

- **Call:** CODEVELOP-ICT-HEALTH/0322/ (Cyprus Research and Innovation Foundation)
- **Budget:** €65,280 (ECoE partner), €599,851.36 (Total)
- **Duration:** 2 years
- **Objectives:**



- Create a **big-data ready database** of at least three heterogenous forests in Cyprus.
- Produce at least **one UAV** for forest monitoring.
- Produce at least **200 composite multi-purpose sensors** that will be deployed in the selected pilot sites.
- Deploy a usable holistic IoT platform (**Green-HIT**) for forest management and monitoring that will be validated in a real-life environment.

