

# Hellenic Association of Space Industries

*Strategic Development Initiatives for National  
Economic Growth*



# KEY SPACE MARKET INPUTS

- **Growing International Market**

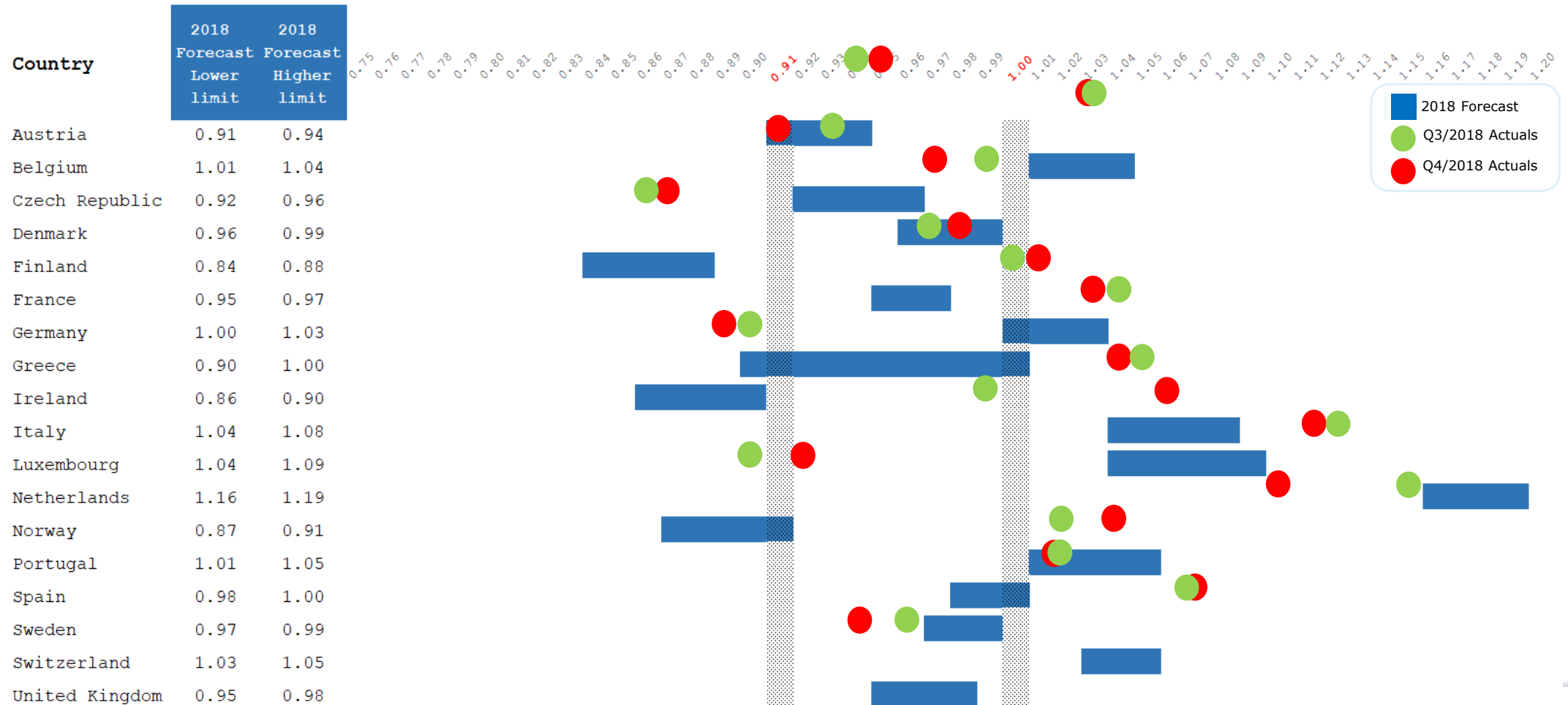
- International Space Industry Market in 2017 had a turn over that **exceeded 329 Billion USD**
- European Space Industry Market had a turn over of **8 Billion Euros for 2018**
- The development rate for 2015 was **7%**

- **Future Potentials**

- **Era of Space 4.0** (increasing number of private actors and synergies, space privatization)
- Space related private initiatives like SPACE X and AMAZON will allow private industry to utilize space for immediate business activities
- Space technology is becoming more and more “Business Driven” rather than “National Driven”

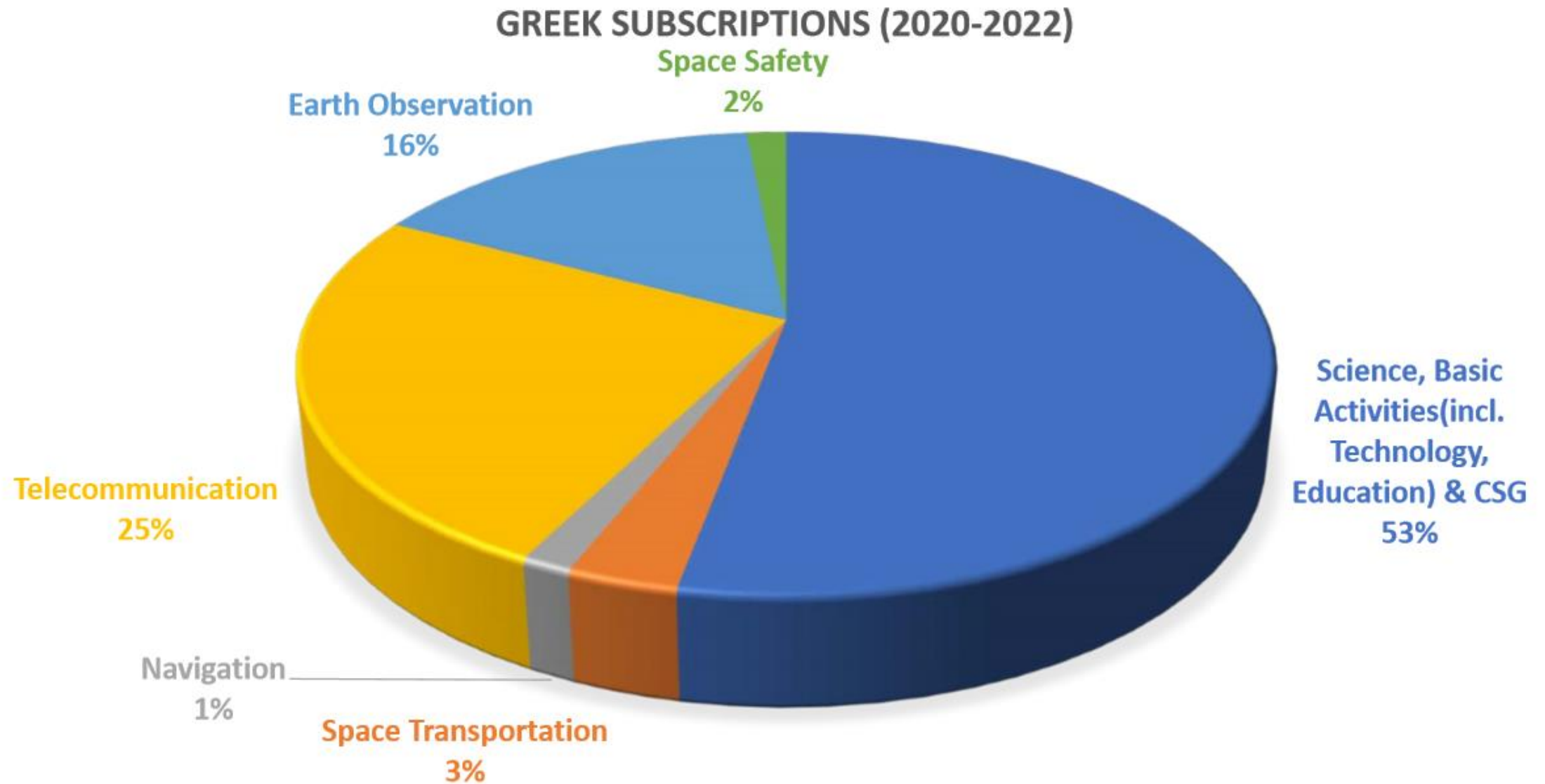


# Geographical Return Coefficient (GRC) in ESA Programs over the last 5 years



- This achievement during the period of financial crisis in Greece: Is due to a number of ESA call/tenders “Restricted to Greece”
- But it shows the existing capabilities of Greece Space Sector

- 63.6 M Euros for three years



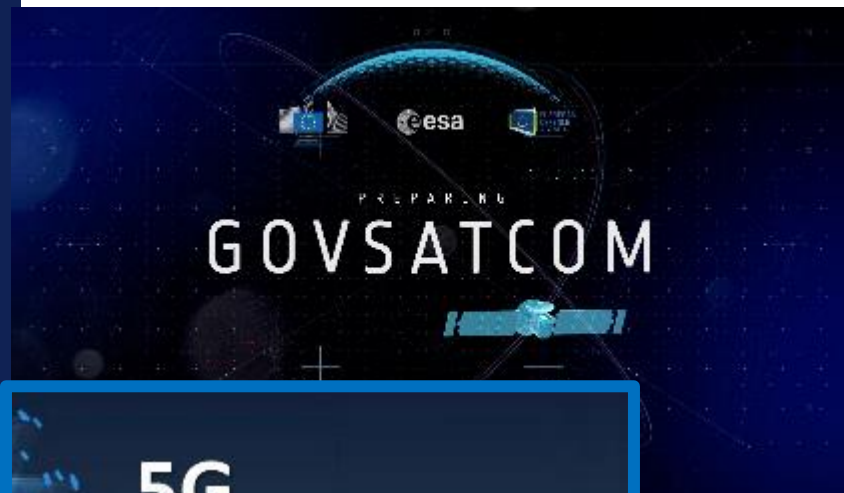
- 33 M Euros for three years

<b>PROGRAMME</b>	<b>M Euro</b>
Earth Observation	10
Telecommunication and Integrated Applications	16
Technology	2.4
Space Transportation	2
Navigation	0.9
Safety and Security	1
Science and Exploration (Prodex)	0.4
Human Spaceflight and Robotic Exploration	0.3

# EUROPEAN UNION INVESTMENTS ON SPACE GNSS & SECURITY



2000 to 2024 program  
cost will exceed 22  
billion euros



1998 to 2020 program  
cost estimated at 6.7  
billion euros

**5G**

Anything, Anytime Anywhere

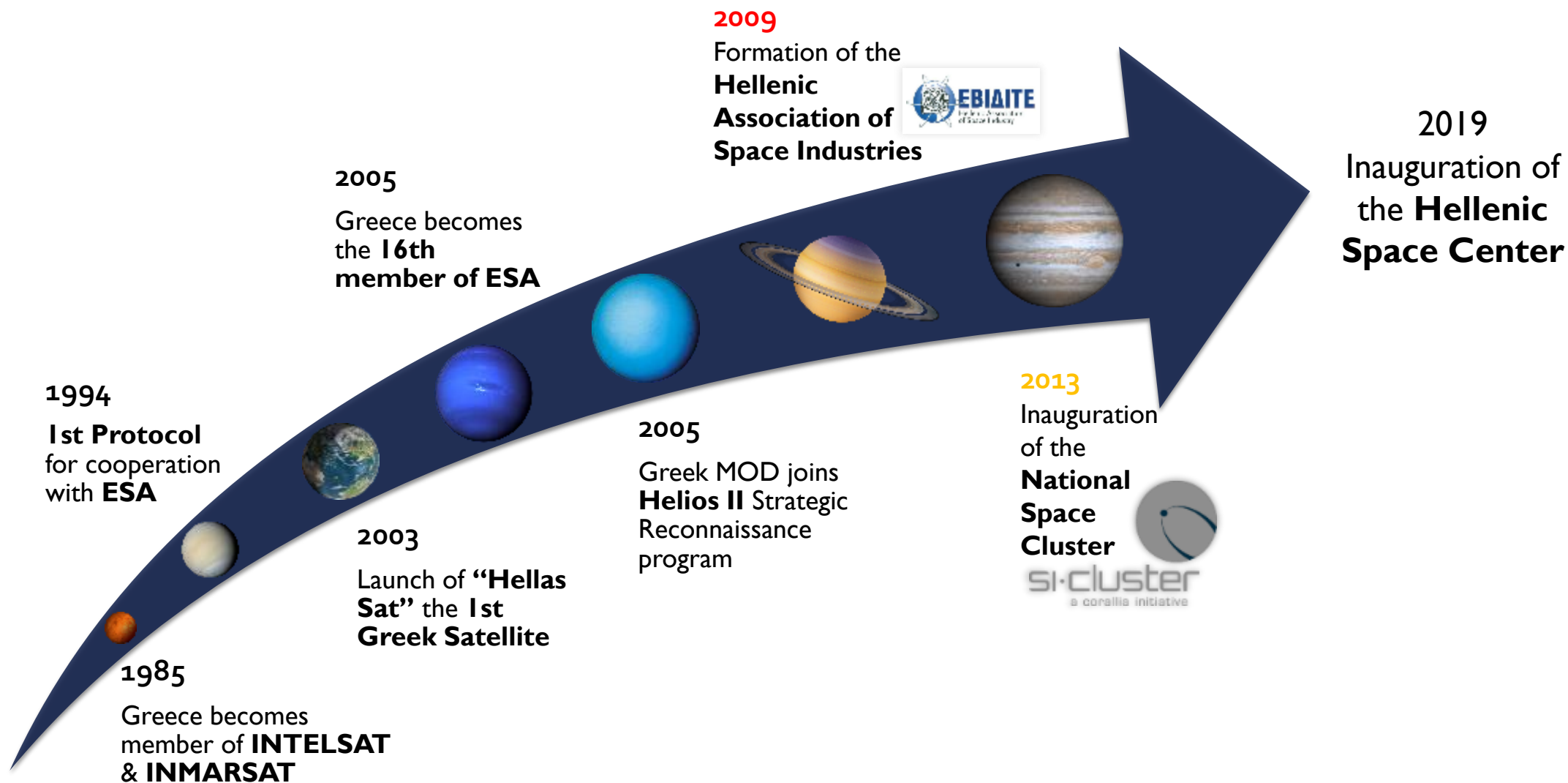
# OPEN CALL FOR PROJECTS ON EDA FOR SPACE & SECURITY



- ✓ Europe has recently changed its policy approving R&D programs related to Space and Security mainly in cooperation with ESA
- ✓ The next three years EU through EDA R&D programs up to 200MEuros will be financed.
- ✓ Successful implementation of the pilot next three years will allow EDA (Defense and Security) programs to get larger funding form 2022 and thus providing an additional source of funding for the Greek Aerospace Industry



# GREECE AND SPACE





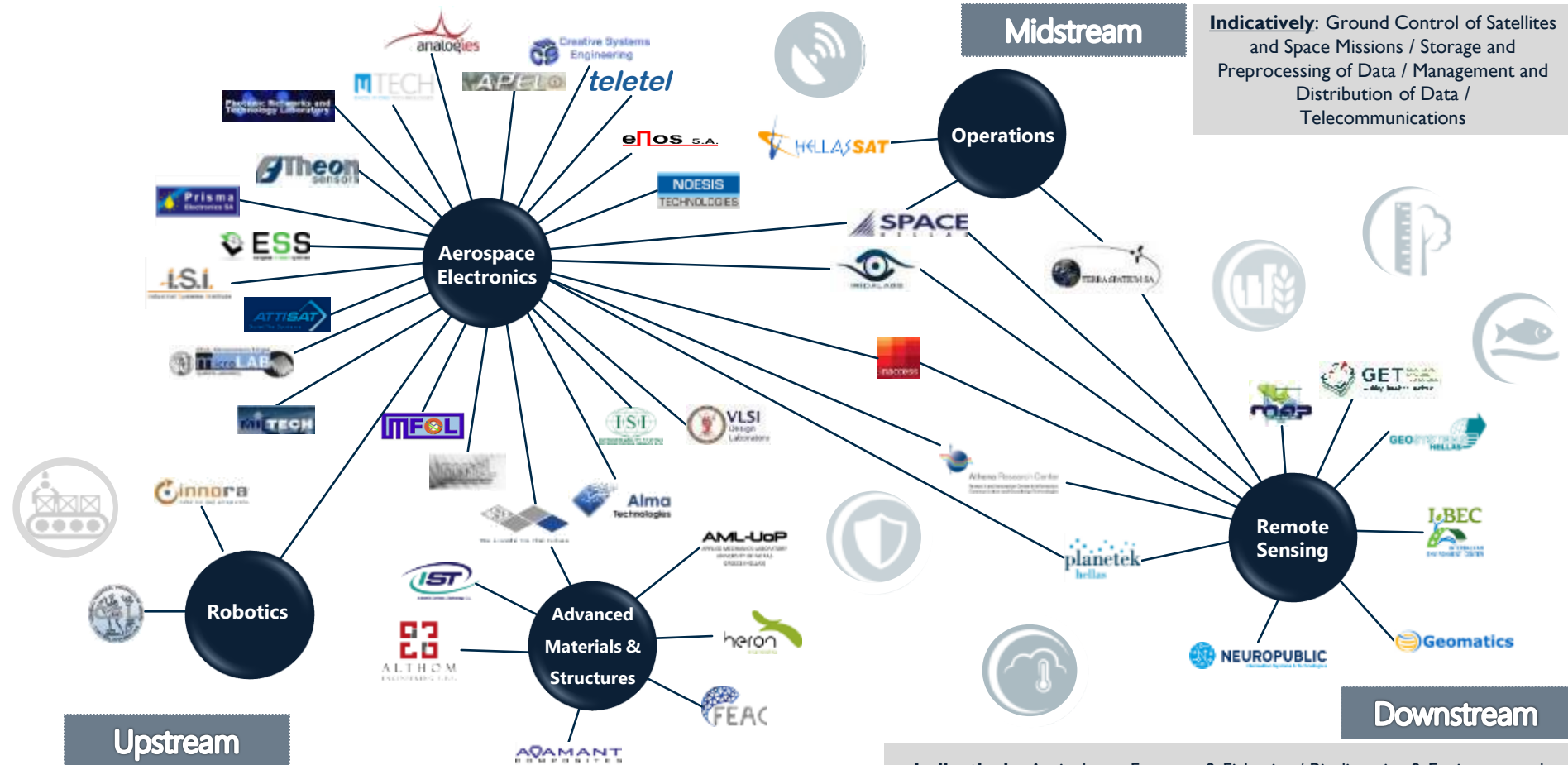
# HELLENIC ASSOCIATION OF SPACE INDUSTRY



- Non-for profit organization approved by the Greek-laws
- 45 local SME companies with long standing experience and know how on space technology
- More than 2500 high level educated personnel
- More than 90% of ESA-Greek cooperation programs run by HASI members
- Permanente open call for new members



# THEMATIC FOCUS



## Upstream

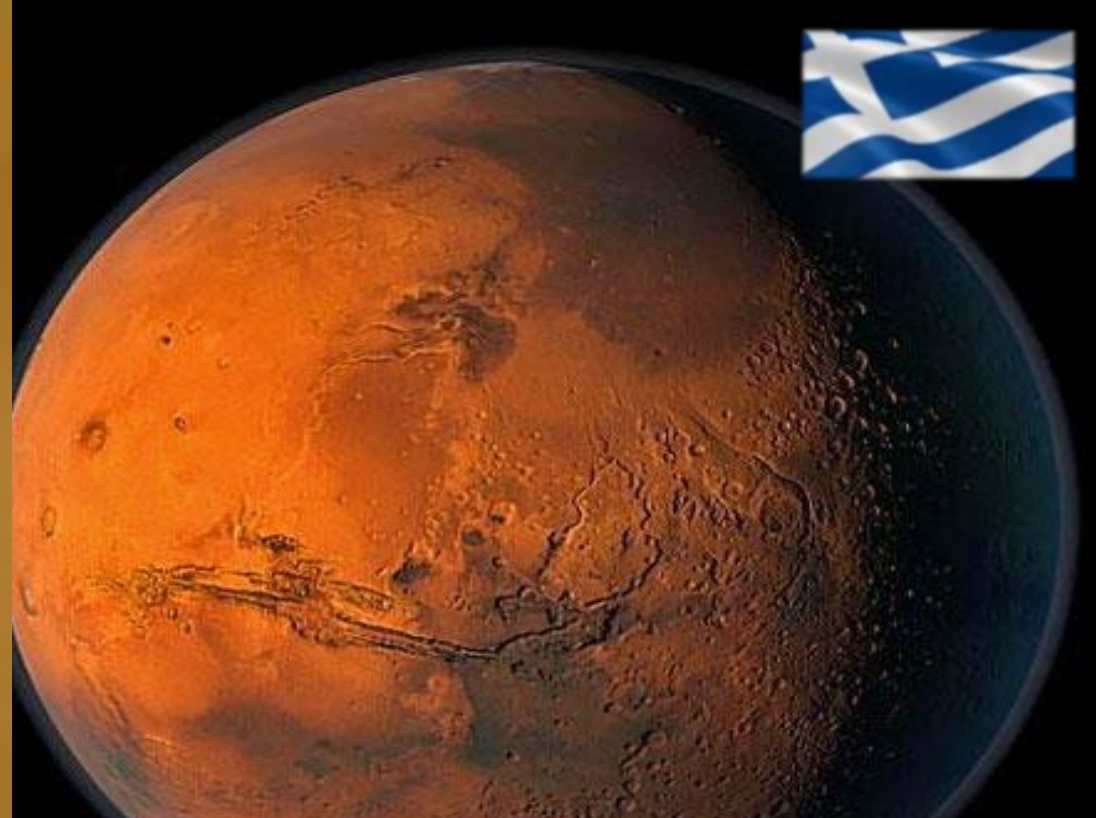
**Indicatively:** Design, Development and Manufacturing of Satellite Subsystems & Components (Structures, Mechanisms, Power Control, Telemetry Tracking & Control, Attitude & Orbital Control Systems, Communications, Thermal Control, On-Board Computers, etc.) / Payload Development (for Downstream Applications and Space Science) / Ground Control Equipment / Launchers / Life Support Equipment

## Midstream

**Indicatively:** Ground Control of Satellites and Space Missions / Storage and Preprocessing of Data / Management and Distribution of Data / Telecommunications

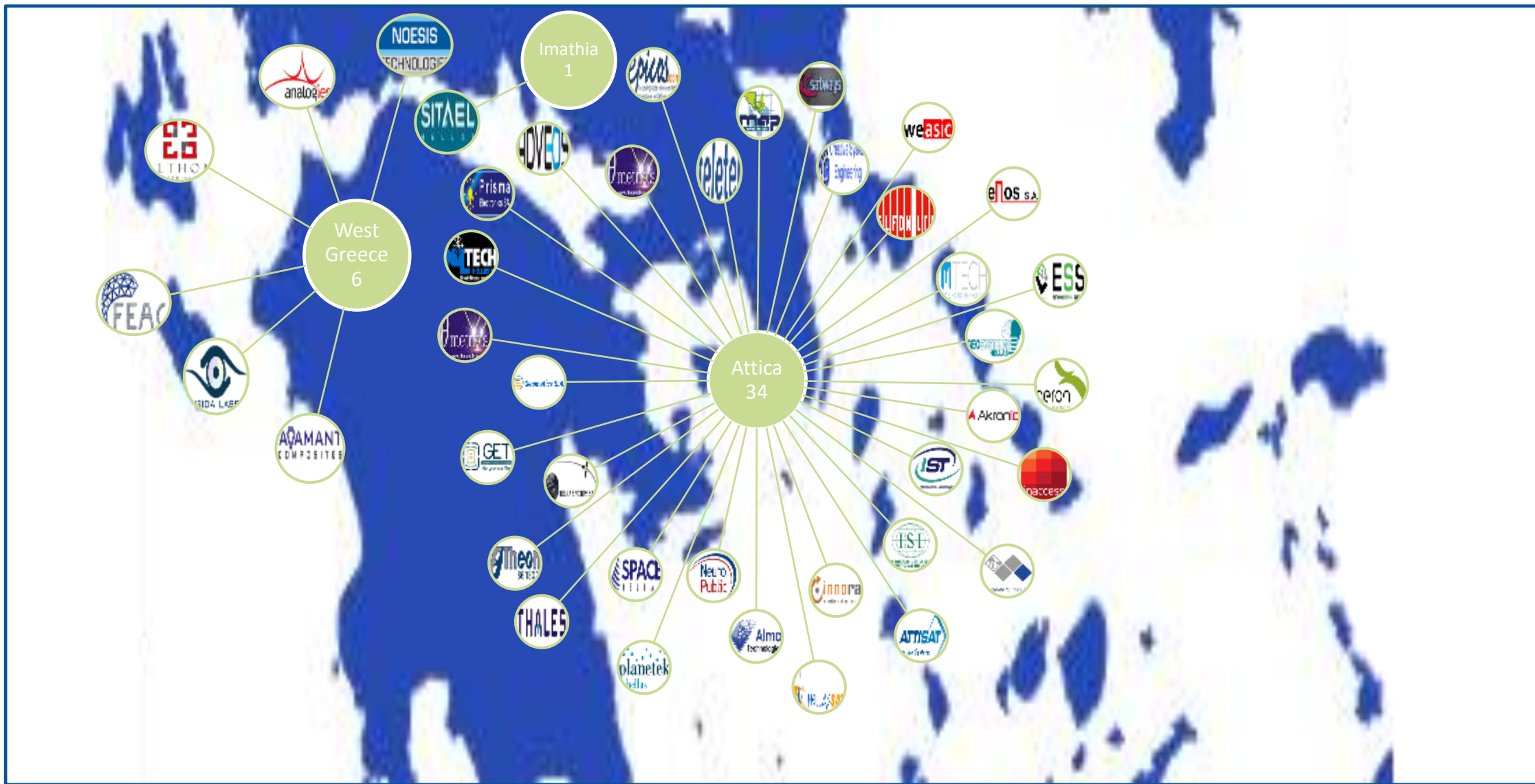
## Downstream

**Indicatively:** Agriculture, Forestry & Fisheries / Biodiversity & Environmental Protection / Climate & Energy / Civil Protection & Humanitarian Aid, Security & Border Control / Public Health, Disease Control / Tourism / Transport & Safety / Urban & Regional Planning / Navigation / Air Traffic Control / Telecommunications / Space Science / Technology Transfer to Earth Applications



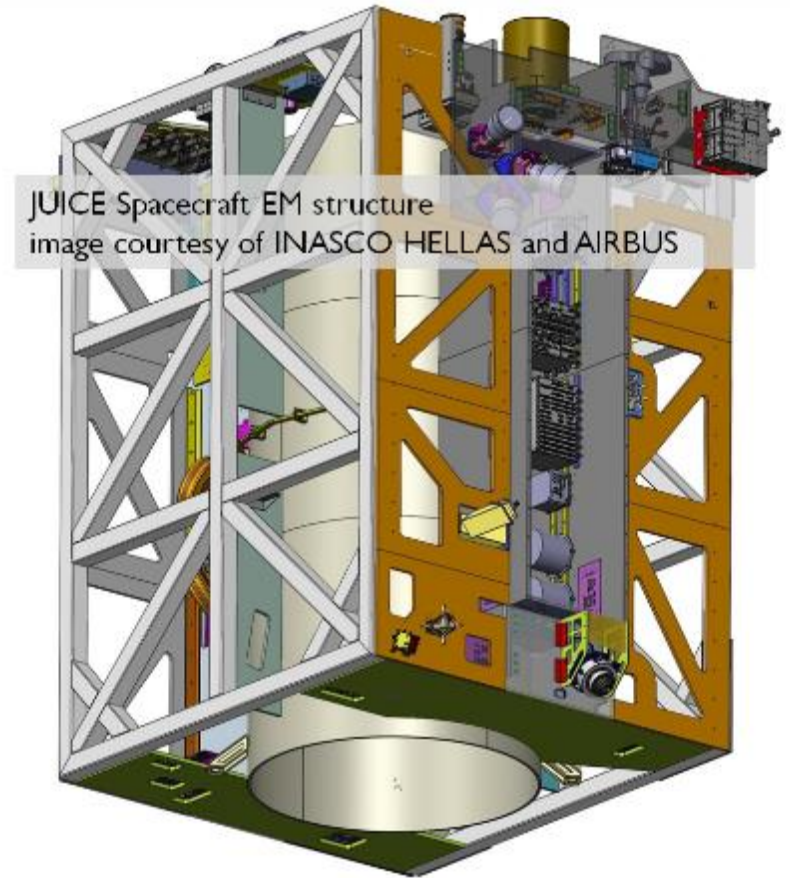
**Alma**  
**Technologies**

# REGIONAL FOCUS



# AREAS OF EXPERTISE

- ✓ **Sensors**
  - MEMs based sensors for aerospace applications
- ✓ **ASICS Designs**
  - Analogue and Digital ASICS for aerospace applications
- ✓ **Advanced Structures and Mechanisms**
  - Sandwich panels, Walls, enclosures, struts, fittings, brackets and joints
  - Spacecraft EM structures
  - Composites Material Engineering Support
- ✓ **Mechanical Ground Support Equipment and Transportation Containers**
- ✓ **Novel Materials and Processes**
  - Nano-enabled products (prepregs, adhesives, coatings etc)
  - Advanced Ceramics and Metals (Aluminium, Titanium)
- ✓ **Electrical Ground Support Equipment**
  - - AOCS, TM/TC, CDMU SCOEs
  - - SpW, MIL-STD-1553, CAN recorders
- ✓ **On board Software**
  - Development of AOCS, Central Software, Power Control etc.
  - ISVV, Software Validation, Engineering services
- ✓ **Electric Propulsion Systems**
  - PPU Design, manufacture, testing and certification for Low Power EP
- ✓ **Remote Sensing Applications**
  - Synthetic Aperture Radar (SAR) core signal processing
  - Optical images processing
  - Data Fusion for automatic classification





# NEW POLICY FOR THE SPACE INDUSTRY IN GREECE

**Hellenic Association of Space Industry is launching a new space industrial policy supporting current and future needs and targets of the local space Industry**

- Greece
- Development innovative products supporting development of local economy (more exports, increased GDP)
  - Reverse the “Brain Drain” negative effect by providing high value jobs to new scientists and engineers
  - Support National Security Program

## Space Technology for:

- Globe
- Participation at international space programs and missions
  - Developing Government to Government joint development space programs
  - Support international space technology program including market segments like logistic support, maritime technology etc.



# Space Objectives, Strategies and Actions



Version 06/05/2020



**si-cluster**  
a corallia initiative

# The Greek Space Technologies and Applications Cluster



**ATHENA** Research & Innovation  
Information Technologies

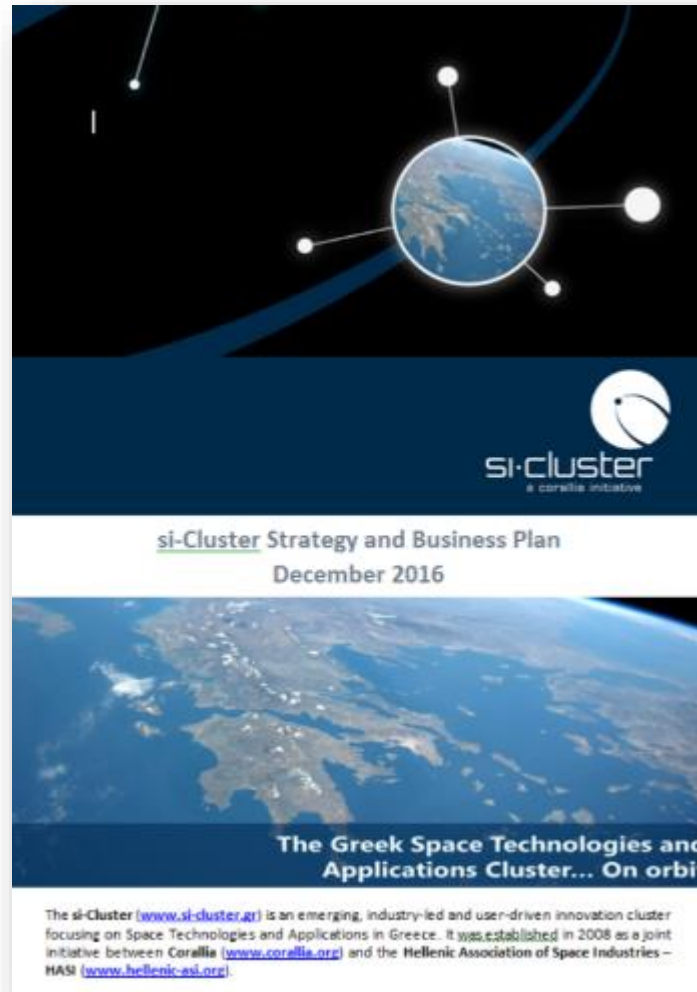


**eubic**  
certified by ebn



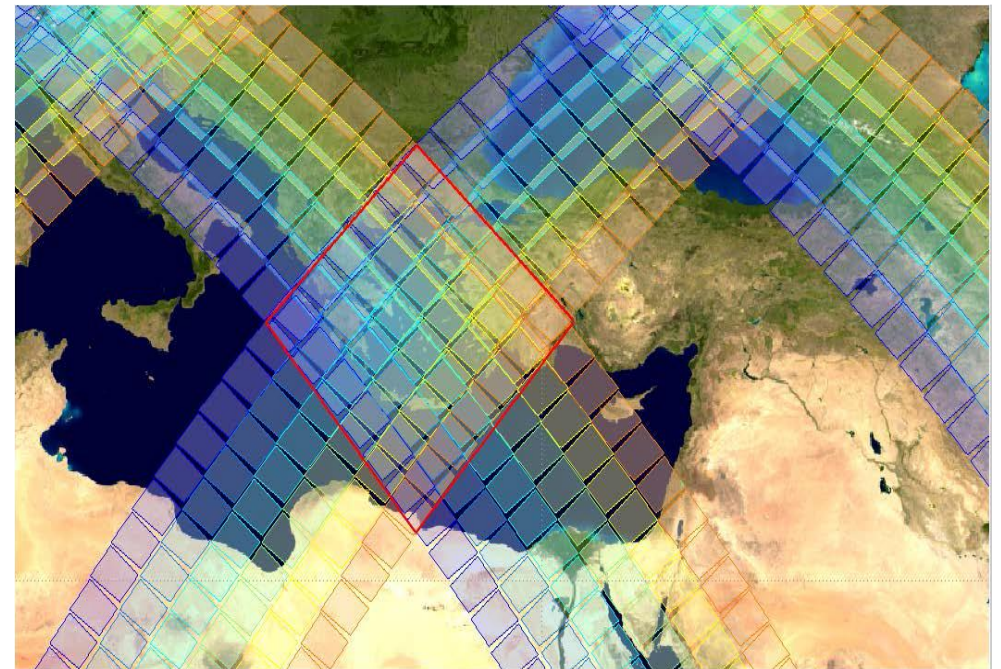
**Cluster Management Excellence**





# NATIONAL MICROSATELLITES

- ❑ **Program included into the National Digital Bible for implementation**
- ❑ **Program budget of ~ 200MEuros**
- ❑ **Program applications according to EU Connectivity Initiative**
  - ✓ **Supports National Security Targets**
  - ✓ **Supports Industrial Strategic Development Targets**
  - ✓ **Supports Research & Development Activities**
  - ✓ **Supports ESA participation and related targets**
  - ✓ **Supports EU participation to large programs**
  - ✓ **Supports the local Start-up space ecosystem**



# SUPPORT NATIONAL 5G PLAN

- ✓ Satellite systems have useful attributes for 5G in terms of security, resilience, coverage, mobility and delivery of broadband;
- ✓ In this future environment the choice of communication technology should be transparent to the end user and based upon location, type of service and cost efficiency.
- ✓ 5G provides a major opportunity for the space sector to deliver parts of the future generation of communications networks and services



5G

# SUPPORT EU OPTICAL COMMUNICATIONS PLAN



- ✓ European Union is investing on high bandwidth, high reliability optical communication networks
- ✓ Several Bln Euros will be invested in order to connect high bandwidth networks.
- ✓ New satellites will support optical links (up and down) and will be connected with a widely spread of terrestrial ground optical stations
- ✓ Greece will participate offering the first ground optical station through the modification of the Aristarchos Telescope



The logo for 'scylight' is displayed in a large, bold, blue font. The word 'scylight' is written in a lowercase, sans-serif typeface. Above the letters 'y' and 'l', there are several horizontal blue lines that fan out to the right, resembling light rays or a signal beam. The background is white.

# SPACE TECHNOLOGIES ON MARITIME

European Space Agency initiated cooperation with Rolls Royce on Maritime



30<sup>th</sup> of November 2017

*“Rolls-Royce and the European Space Agency (ESA) have signed a ground-breaking cooperation agreement aimed at pursuing space activities in support of autonomous, remote controlled shipping and promoting innovation in European digital logistics.”*

Develop and validate new solutions for:

- **communication between vessel systems and shore based systems** in addition to ship-to-ship communication.
- **The next generation of 5G communications** will rely on seamless integration of telecom networks and services, and ESA's Satellite for 5G Initiative exists to support the technical and supply chain progress required

30 November 2017

**Rolls-Royce and the European Space Agency to collaborate on shipping's digital future**

More about: [Press release](#) [Marine](#) [Ship Intelligence](#) [Digital](#) [Global](#)

Rolls-Royce and the European Space Agency (ESA) have signed a ground-breaking cooperation agreement aimed at pursuing space activities in support of autonomous, remote controlled shipping and promoting innovation in European digital logistics.

The Memorandum of Intent (MOI) forms part of ESA's wider strategy. Jan Wörner, ESA's Director General stated that, "ESA has a long history of working internationally with our partners across Europe. This agreement is another demonstration of the positive application of Space 4.0 and the desire for a United Space in Europe; maximising the integration of space into our economy and society."

Karim Tenovic, Rolls-Royce, SWP Ship Intelligence, said: "The space industry has been operating assets remotely for many decades. The information, software and satellite based



# SPACE TECHNOLOGIES ON MARITIME

## Internal Technological Developments



Shipbuilding

Propulsion & Powering

Smart Ship

## External Technological Developments

Advanced Materials

Big data Analytics

Robotics

Sensors

Communications



# SPACE TECHNOLOGIES ON MARITIME

## External Technological Developments

Advanced Materials

Big data Analytics

Robotics

Sensors

Communications



# GREECE SPACE INVESTMENT 5.0 PLAN



## ➤ Five Main Investment Programs – Initiatives

1. Increase Participation to ESA programs (2021)
2. Initiate G2G Non EU Strategic Industrial Cooperation on Space Technologies
3. Inaugurate first ESA BIC in Greece (2021)
4. Initiate National Microsatellites Program (2021)
5. Develop activities on Space for 5G
6. Develop activities on SkyLight Program
7. Inaugurate Space for Maritime future Technologies Innovation Cluster





# HELLENIC ASSOCIATION OF SPACE INDUSTRIES

Your point of contact for industrial space activities in Greece



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