A regional perspective from Europe: Funding programmes and opportunities for STEM education, Space research, space technologies, innovations and entrepreneurship

ITTI
Institute for Technology Transfer and Innovations

nereus
network of european regions using space technologies

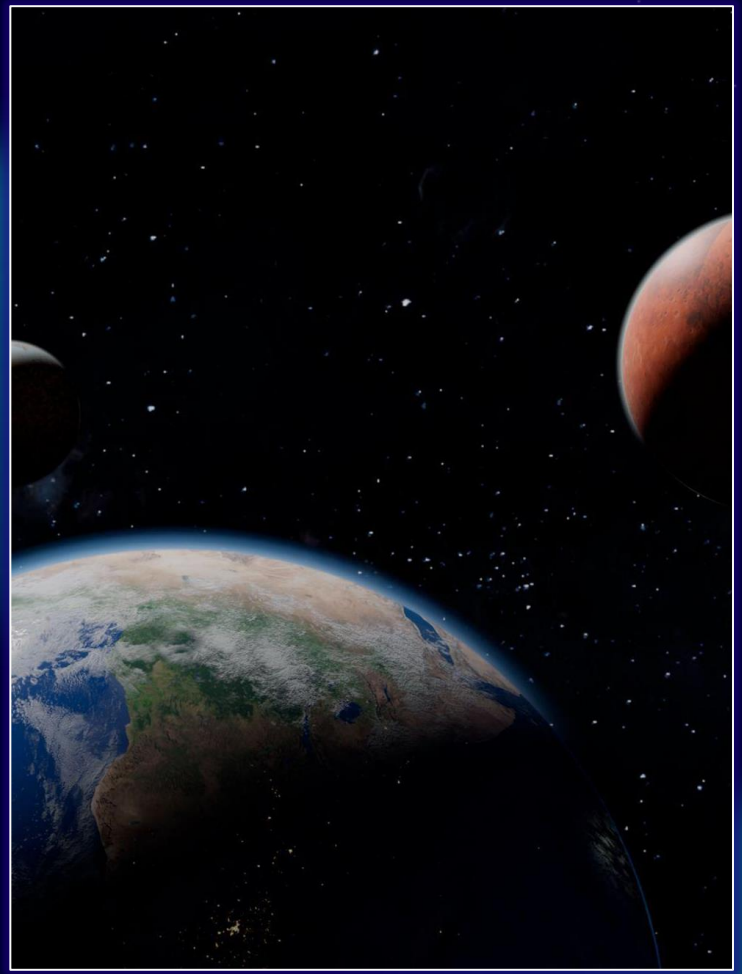
About ITTI

Short description of ITTI

The Institute for Technology Transfer and Innovations (ITTI) is a HUB working towards the creation and the development of a national innovation infrastructure, the spreading of new knowledge, the stimulation of technological entrepreneurship, the transfer of knowledge and technologies and the market application of innovative products.

The activities of the Institute serve as a mechanism for the development and financing of research, development and application of innovations.

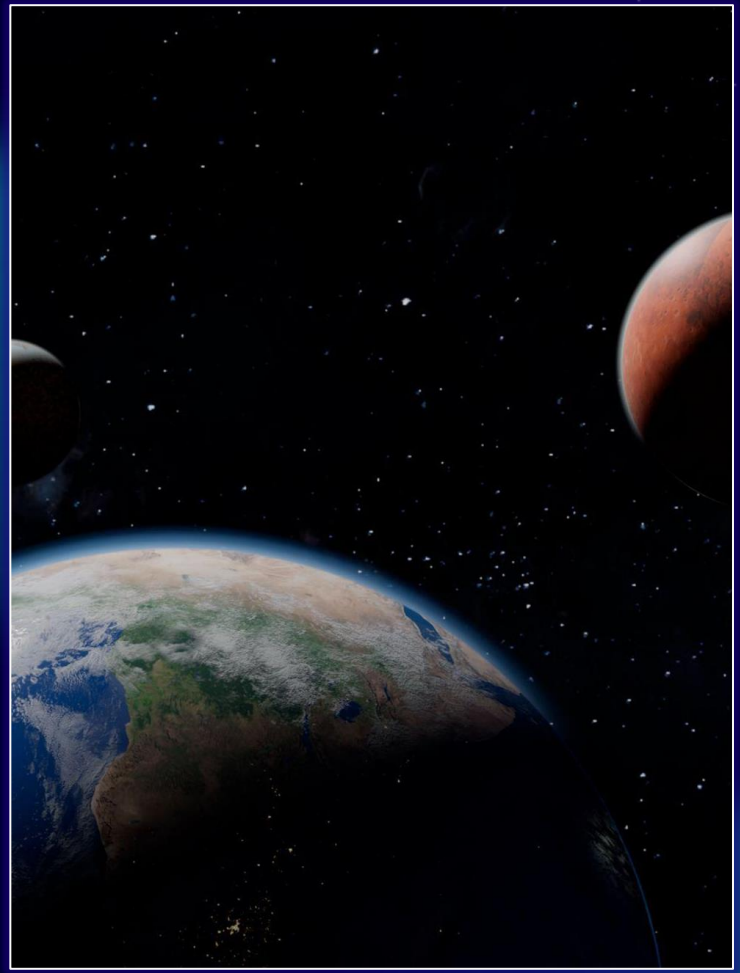
Critical focus in the work of the Institute is the development of cooperation between the business and the scientific community.



ITTI is a key partner of CASTRA- Cluster for AeroSpace Technologies, research and Applications (www.castra.org)- an industry-driven cluster of high-tech SMEs, Universities, R&D institutes and professional NGOs in Bulgaria, established in 2010, and it is located in Sofia. At present, CASTRA members count 22 legal body organizations located across the country, and over 40 physical persons, as associated members.

ITTI is a brand-new associate member of NEREUS https://www.nereus-regions.eu/

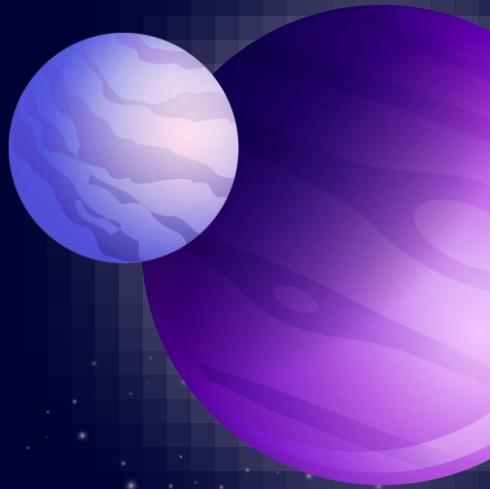
ITTI is a member of EuroSpaceHub (https://www.eurospacehub.com/)- a Digital Platform for Space and Aviation Ecosystem aiming at connecting digitally the space ecosystems in Europe.



EU Space research

The fully integrated European Union (EU) space programme opportunities for the period of 2021-2027 are expected to enhance European competitiveness and sustainable development. The EU Space programme includes several key EU activities: Galileo, European Geostationary Navigation Overlay Service (EGNOS), Copernicus, Space Situational Awareness (SSA) programme and GOVSATCOM.

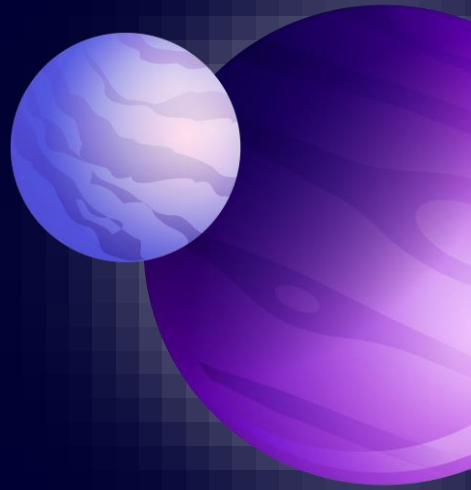
EUSPA (https://www.euspa.europa.eu/) provides safe and secure European satellite navigation services, advances the commercialization of Galileo, EGNOS, and Copernicus data and services, engages in secure SATCOM (GOVSATCOM & IRIS2), and operates the EU SST Front Desk. EUSPA is also responsible for accrediting the security of all EU Space Programme components. By fostering innovation in the space sector and above and collaborating with the EU Space community, EUSPA contributes to the European Green Deal and digital transition, enhances Union safety and security, and strengthens autonomy and resilience.



EU Space research

ESA (https://www.esa.int/)

The European Space Agency (ESA) is Europe's gateway to space. Its mission is to shape the development of Europe's space capability and ensure that investment in space continues to deliver benefits to the citizens of Europe and the world. ESA has been a close partner with the EU in European space for decades – but the two organisations are quite distinct. ESA is an intergovernmental organisation, whereas the EU is supranational. The two institutions have different ranges of competences, different member states and are governed by different rules and procedures. Yet ESA and the EU share a common aim: to strengthen Europe and benefit its citizens.



EU Space research

While ESA and the EU are separate organisations, they work increasingly closely together. Most recently, ESA and the EU signed an agreement to use space to help keep information secure. Called “Iris2” – which stands for “Infrastructure for Resilience, Interconnectivity and Security by Satellite” – the system will promote digital autonomy and provide a strategic asset for the EU. It envisages a constellation of satellites – supported by information-relaying infrastructure on the ground – that will be used by European governments and businesses to keep information secure and confidential. ESA’s activities fall into two categories – ‘mandatory’ and ‘optional’. Programmes carried out under the General Budget and the Space Science programme budget are ‘mandatory’; they include the agency’s basic activities (studies on future projects, technology research, shared technical investments, information systems and training programmes).

Space funding programmes

CASSINI (https://www.cassini.eu/cassini-initiative)

CASSINI is the European Commission's initiative to support entrepreneurs, start-ups and SMEs in the space industry, including New Space, during 2021-2027. The initiative is open to all areas of the EU Space Programme, and covers both upstream (i.e. nanosats, launchers, etc. and downstream (i.e. products/services enabled by space data, etc.). CASSINI includes a €1 billion EU seeds and growth fund, hackathons and mentoring, prizes, a business accelerator, partnering and matchmaking.

CASSINI SPACE ENTREPRENEURSHIP INITIATIVE

CASSINI is the European Commission's initiative to support entrepreneurs, start-ups and SMEs in the space industry, including New Space, during 2021-2027. The initiative is open to all areas of the EU Space Programme, and covers both upstream (i.e. nanosats, launchers, etc. and downstream (i.e. products/services enabled by space data, etc.). CASSINI includes a €1 billion EU seeds and growth fund, hackathons and mentoring, prizes, a business accelerator, partnering and matchmaking.

HACKATHONS & MENTORING

Europe-wide CASSINI Hackathons are a major opportunity to develop ideas for a digital application building on space data, including satellite images and positioning services.

Read more >

Impact'24
15 May 2024 > 16 May 2024

EBAN CONGRESS TALLINN 2024
20 May 2024 > 22 May 2024

Rover Challenge
06 September 2024 > 08 September 2024

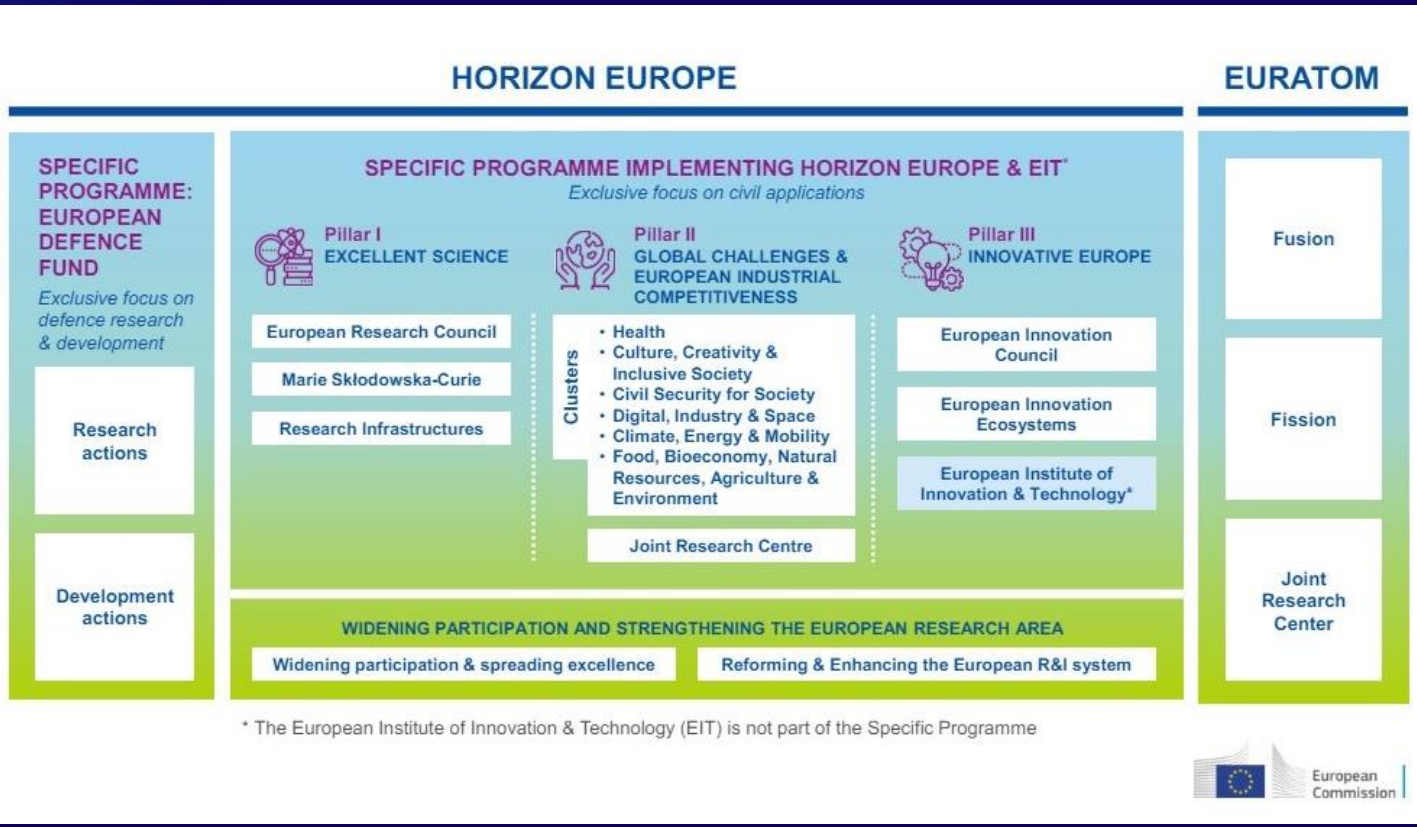
Hightech Venture Days
08 October 2024 > 09 October 2024

Space Tech Expo Europe
19 November 2024 > 21 November 2024

SLUSH

Horizon Europe

Horizon Europe is the EU's key funding programme for research and innovation with a budget of €95.5 billion. The programme facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies while tackling global challenges. It supports creating and better dispersing of excellent knowledge and technologies.


HORIZON EUROPE
EURATOM
SPECIFIC PROGRAMME: EUROPEAN DEFENCE FUND
Exclusive focus on defence research & development
Research actions
Development actions
SPECIFIC PROGRAMME IMPLEMENTING HORIZON EUROPE & EIT*
Exclusive focus on civil applications
Pillar I
EXCELLENT SCIENCE
European Research Council
Marie Skłodowska-Curie
Research Infrastructures
Pillar II
GLOBAL CHALLENGES & EUROPEAN INDUSTRIAL COMPETITIVENESS
Clusters
• Health
• Culture, Creativity & Inclusive Society
• Civil Security for Society
• Digital, Industry & Space
• Climate, Energy & Mobility
• Food, Bioeconomy, Natural Resources, Agriculture & Environment
Joint Research Centre
Pillar III
INNOVATIVE EUROPE
European Innovation Council
European Innovation Ecosystems
European Institute of Innovation & Technology*
WIDENING PARTICIPATION AND STRENGTHENING THE EUROPEAN RESEARCH AREA
Widening participation & spreading excellence
Reforming & Enhancing the European R&I system
Fusion
Fission
Joint Research Center
* The European Institute of Innovation & Technology (EIT) is not part of the Specific Programme
European Commission


#EUSpaceResearch
IN-SPACE OPERATIONS AND SERVICES
INTRODUCING THE FUTURE SPACE ECOSYSTEM AND OUR STRATEGIC CAPACITY TO
ACT IN SPACE
Horizon Europe, a programme of the European Union

Horizon Europe,
a programme of the
European Union

#EUSpaceResearch

IN-SPACE OPERATIONS AND SERVICES

Introducing the future space ecosystem and our strategic capacity to **ACT IN SPACE**

In-Space Operations and Services (ISOS), including satellite servicing, assembly, manufacturing, recycling and logistics in space, will enhance the **adaptivity, resilience and sustainability of space assets.** Related technologies will increase reliability, safety, and performance, bringing space from a "static" to a "flexible, cost-efficient and sustainable space". The European Commission recognises the **strategic importance of ISOS**, in particular with regards to commercialisation and protection of the infrastructure in space and the space environment.

ISOS aims at creating a new in-space economy and at fostering the protection of space assets, safeguarding the EU's freedom to act in space.

Towards a strategic flagship

Foreign interference and technological dependence pose a significant threat to Europe's technological sovereignty, freedom of action in space and overall security. As global competition intensifies, it is necessary to maintain Europe's capabilities on par with competitors. ***Act in Space*** is a key strategic capacity for the EU as a space power, that needs to be capitalised promptly. The EU is aligning objectives and acting towards a **new strategic flagship** for service provision to the European infrastructure in space that will also foster a new in-space economy. A pioneering pilot mission including technology and service demonstration is already under development. It will be the seed point for this future flagship.

ISOS pilot detailed design and further R&I

Act in Space

This strategic capacity will bring the EU to the forefront of emerging service applications, including inspection, rendez-vous and docking, grasping, repair, reconfiguration, assembly and disassembly, manufacturing, resource extraction, reuse/recycling, removal and transport

Game-changing innovations and enabling technologies

The paradigm shift towards adaptive space systems builds on **automation and robotics, AI, electric propulsion and modular and reconfigurable spacecraft concepts.** Together with other enabling technologies such as electric propulsion, they will change how space assets are designed, produced, tested, transported, and operated. Different means realised with AppStore-like approaches, will benefit the future space ecosystem and foster a **circular economy.**

Synergies between civil and defence sector

Autonomous, robotic, real-time and onboard decision-making ISOS technologies illustrate their **dual-use potential.** ISOS, leveraging in-space servicing, assembly, manufacturing, and transport technologies, foster the reliability, safety, security, sustainability, and flexibility of space missions.

Promoting rules and standardisation for an ISOS market

Appropriate regulation and standardisation are crucial for the growth of global ISOS, addressing aspects such as liability, licenses, and insurance. The European Commission works towards

Introducing EU-funded space R&I projects

EROSS IOD seeks to enable the repair of satellites in orbit through autonomous robots, covering tasks like rendezvous, refueling, and component replacement to extend satellite lifespans.

STARFAB is developing an automated orbital warehouse unit that will enable the handling of goods in space, supporting sustainable on-orbit servicing, assembly and manufacturing (OSAM) business models.

EU-RISE is analysing the market for in-space services to develop and refine European capabilities in space robotics, thereby establishing a significant OSAM capacity in Europe.

SPACE USB aims to develop a flexible, universal interface akin to USB for on-orbit servicing and assembly, focusing on compactness, docking symmetry, and interoperability with existing space connectors.

Be part of the EU-funded space R&I

Horizon Europe is the EU's key funding programme for research and innovation, with a budget of around €95 billion over 2021-2027, of which close to €1.6

Pillar III

INNOVATIVE EUROPE:

stimulating **market-creating breakthroughs** and **ecosystems** conducive to innovation

European Innovation Council

Support to innovations with breakthrough and market creating potential

European innovation ecosystems

Connecting with regional and national innovation actors

European Institute of Innovation and Technology (EIT)

Bringing key actors (research, education and business) together around a common goal for nurturing innovation

The budget: **€10.6 billion**, incl. up to **€527 million** for ecosystems (including NGEU – Recovery Fund parts dedicated to EIC).

circa **€3 billion**

European Commission

CLUSTER 4

Cluster 4: Digital, Industry and Space

Areas of intervention:

- manufacturing technologies
- key digital technologies including quantum technologies
- emerging enabling technologies
- advanced materials
- artificial intelligence and robotics
- next generation internet
- advanced computing and Big Data
- circular industries
- low carbon and clean industries
- space including earth observation

European Institute for Innovation and Technology- EIT

EIT (https://eit.europa.eu/)

Europe's largest innovation network strengthening innovation since 2008

It's mission is to create jobs and deliver sustainable and smart growth. We're an integral part of Horizon Europe, the EU's Framework Programme for Research and Innovation.

A model based on partnerships across industries

It is an unique EU body in that our method for driving innovation involves bringing together organisations across business, education, and research. The goal of these partnerships is to find and commercialise solutions to pressing global challenges. For each global challenge, there is an ecosystem of partnerships called Knowledge and Innovation Communities.

Partnerships that foster talent and ingenuity

To face these global challenges, its community of partners offers a wide range of education courses, business creation and acceleration services, and innovation-driven research projects.

European Institute of Innovation & Technology

A body of the European Union

Light Theme | Search | Menu

Making innovation happen

Powering you

- Entrepreneurial education
- Innovation driven research
- Business creation
- Opportunities & Funding

EIT impact

View EIT in numbers

Success stories

In the spotlight

EIT trains 40 000 young women in 'STEM' across 33 countries in record timing

25/04/2024 news

Never miss any of EI

Privacy settings

EIT Community solutions to global challenges

European Innovation Council- EIC

EIC-(https://eic.ec.europa.eu/about-european-innovation-council_en)

The EIC is Europe's flagship innovation programme to identify, develop and scale up breakthrough technologies and game changing innovations. The European Innovation Council (EIC) has been established under the EU Horizon Europe programme. It has a budget of €10.1 billion to support game changing innovations throughout the lifecycle from early-stage research, to proof of concept, technology transfer, and the financing and scale up of start-ups and SMEs.

European Innovation Council

Support to innovations with breakthrough and disruptive nature and scale up potential that are too risky for private investors **(70% of the budget earmarked for SMEs)**

European Innovation Council – a one-stop-shop

- **Helping researchers and innovators create markets of the future, leverage private finance, scale up their companies**
- **Innovation centric, risk taking & agile, pro-active management and follow up**
- **Mostly 'bottom up', but also targeting strategic challenges**
- **EIC Programme Managers to develop visions for breakthroughs and steer portfolios**

Complementary instruments bridging the gap from idea to market

PATHFINDER	TRANSITION	ACCELERATOR
R&I grants (from early technology to proof of concept)	**R&I grants** (proof of concept to pre-commercial)	**Grants & investment (via EIC Fund) for single SMEs & start-ups** (from pre-commercial to market & scale-up)

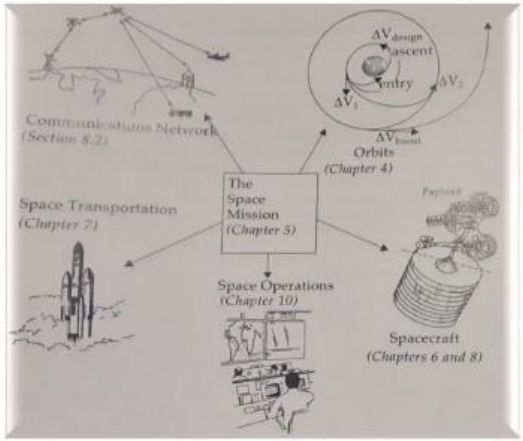
European Commission

European Innovation Council

EIC role in the European Space Industry – Part I

- EIC funds **game-changing innovations** and **high-risk ideas** of space SMEs & start-ups, provides support in developing game-changing innovations, demonstration and commercialization through the complementary EIC schemes

- **EIC funds a diverse space portfolio**



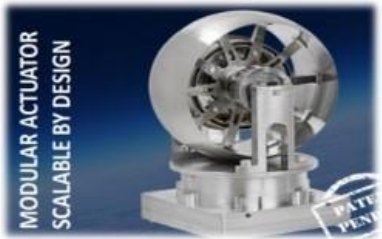
Courtesy: ISU, Keys to Space

EIC Space Portfolio

European Innovation Council

- **Space Debris Sustainability** - space debris monitoring, in orbit satellite servicing, etc.
- **Enabling Space Technologies** - actuators, high temperature superconductors, propulsion technologies, ionic liquid electrospray propulsion, optical intersatellite links, etc.
- **Earth Observation & Meteorology -** thermal infrared p/l, AI algorithms for precision agriculture, satellite-based SaaS, predictive monitoring

Courtesy: E.T.Pack-F project – EIC Transition



Courtesy: SATAGILITY - GO2Market – EIC Accelerator , VEQWARE

Courtesy: EMBRACE II-EIC Accelerator, THRUST ME

Courtesy: CASSIOPEE - EIC Accelerator, Share My Space

ERASMUS +

Erasmus + (https://erasmus-plus.ec.europa.eu/)

Erasmus+ is the EU's programme to support education, training, youth and sport in Europe. It has an estimated budget of €26.2 billion. This is nearly double the funding compared to its predecessor programme (2014-2020). The 2021-2027 programme places a strong focus on social inclusion, the green and digital transitions, and promoting young people's participation in democratic life. It supports priorities and activities set out in the European Education Area, Digital Education Action Plan and the European Skills Agenda. The programme also supports the European Pillar of Social Rights, implements the EU Youth Strategy 2019-2027 and develops the European dimension in sport.

COST

COST (https://www.cost.eu/)

A COST Action is an interdisciplinary research network that brings researchers and innovators together to investigate a topic of their choice for 4 years. COST Actions are typically made up of researchers from academia, SMEs, public institutions and other relevant organisations or interested parties. Open to all science and technology fields, including new and emerging fields; COST Actions offer an inclusive, pan-European environment for individuals of all levels of seniority to grow their professional research networks and boost their careers.

The next collection date will be 23 October 2024 at 12.00 (noon) CEST.

EUREKA

Eureka https://eurekanetwork.org/ was established in 1985 as an agreement between 18 countries and the European Commission to foster competitiveness and market integration and to encourage R&D cooperation. Since then, it has expanded to include 47 countries (in Europe and beyond) who share the same goals and provide national funding to organisations who apply through Eureka programmes. Over the years, we it tailored programmes to best support international industry-led R&D. These offer flexibility for international partners (Network projects and Globalstars), encourage mixed consortia with large companies (Clusters), allow SMEs to aim higher (Eurostars), support research and business ventures in new markets (Innowwide) and drive companies towards private investment (investment readiness). Eureka countries share a common goal of increasing the productivity and excellence of industries and supporting lasting employment and national economic growth by encouraging international collaboration between companies, research organisations and universities.

EUROSTARS

Eurostars (https://eurekanetwork.org/programmes/eurostars/)

Eurostars is part of the European Partnership on Innovative SMEs. The partnership is co-funded by the European Union through Horizon Europe. Eurostars is the largest international funding programme for SMEs wishing to collaborate on R&D projects that create innovative products, processes or services for commercialisation. Your consortium must spotlight an innovative SME as the main project participant. Choose project partners from SMEs, universities and research centres from any of the programme's 37 participating countries. Organisations in non-participating countries can still join a Eurostars consortium.

DIGITAL EUROPE PROGRAMME

The Digital Europe Programme (DIGITAL) https://digital-strategy.ec.europa.eu/en/activities/digital-programme is an EU funding programme focused on bringing digital technology to businesses, citizens and public administrations. The Digital Europe Programme (DIGITAL) provides strategic funding support to projects in key capacity areas such as: supercomputing, artificial intelligence, cyber security, advanced digital skills, and ensuring a wide use of digital technologies across the economy and society. It supports industry, small and medium-sized enterprises (SMEs), and public administration in their digital transformation with a reinforced network of European Digital Innovation Hubs (EDIH).

A new capacity area on semiconductors was added in September 2023. Under the Chips Act, DIGITAL funding was mobilised to address a semiconductor shortage by promoting capacity building through the Chips for Europe Initiative.

EO SECTOR IN BULGARIA

Space-based applications and services support environmental protection, infrastructure and transport safety, precision farming, shipping route monitoring, urban and regional planning and development, and many other public sectors. The potential areas of EO data application are enormous and not yet fully developed and employed.

On February 15, 2022, the Ministry of Innovation and Growth signed a European Cooperating State (ECS) Agreement between the Government of the Republic of Bulgaria and the European Space Agency (ESA), which was ratified by the National Assembly on June 8, 2022. The agreement continues the partnership from the previous five-year period for the active participation of Bulgarian companies and research organisations in the space industry of Europe. The country's micro, small and medium-sized enterprises, universities and academic institutions will participate in the creation of new space technologies, applications, data usage and space engineering curricula.

EO SECTOR IN BULGARIA

The management structure of Bulgarian participation in space activities is spread amongst different governmental bodies such as the Ministry of Economy and Industry, Ministry of innovation and Growth which coordinate the space policy at the national and European levels. Some other ministries are also involved in space activities: Ministry of Education and Science (MES), Ministry of Interior, Ministry of Foreign Affairs, Ministry of Transport and Communications, Ministry of Defence, and Ministry of Environment and Water.

Other very important key actors are the Bulgarian Academy of science (https://www.bas.bg/?lang=en), Space Research and Technology Institute (http://space.bas.bg/), Sofia University (https://www.uni-sofia.bg), University of telecommunications and post (https://www.utp.bg/en/), Burgas free university (https://www.bfu.bg/en)

Cluster organisations- CASTRA (www.castra.org)

Civil society organisations and industrial companies

ITTI LOCAL PROJECTS AND PARTNERSHIP INITIATIVES

STEM education projects and initiatives: SAPPHIRE project supported by Erasmus + programme– STEM education platform project aim was to motivate young people to study STEM subjects and to raise achievement in these areas. The project focus was on empowering the creative and entrepreneurial students by generating inspiring work spaces. It also promoted cooperation between educational institutions and business and developed innovative curricula and educational methods.

https://sapphire.virtual-campus.eu/

ITTI LOCAL PROJECTS AND PARTNERSHIP INITIATIVES

ITTI in partnership with CASTRA and Planet Earth Crew is planning to organise Space for life on earth satellite remote sensing laboratories open educational STEM programme.

Key element of laboratory is receiving station. It allows you to receive Earth images from space in real time. Antenna can be professional or educational.

Professional one potentially can receive VHR (very high resolution data and has viewing radius more than 2000 km.

Educational antennas can be assembled by the students.

STEM-CLUSTER «SPACE FOR LIFE ON THE EARTH»

«SILYBUM»
HARDWARE &
SOFTWARE COMPLEX

«PLANUM»
HARDWARE &
SOFTWARE COMPLEX

«PLANUM»
ENGINEERING
CONSTRUCTOR

LINK2SPACE
ENGINEERING
CONSTRUCTOR

MOPS
ENGINEERING
CONSTRUCTOR

COPTER4SPACE
ENGINEERING
CONSTRUCTOR

LEX
COMPLEX-
CONSTRUCTOR

RADIO TRANSPARENCY
AND TRANSMISSION
MEASURING STAND

IMAGES OF THE EARTH FROM SPACE IN REAL TIME (ZERO LATENCY)

PLANET EARTH CREW
ЕКИПАЖ НА ПЛАНЕТАТА ЗЕМЯ

OPERATIONAL SATELLITE MONITORING FOR EDUCATION

ITTI'S KEY PRIORITIES AND STRATEGIC PLAN

Our strategic plan is focused on facilitating and increasing space innovation and technology transfer by connecting educational institutions, academia, research centers, space accelerator and funding networks, industry and start-ups. We intend to increase space competitiveness and sustainability by:

- Offering new, innovative and collaborative tools to integrate all the space communities;
- Mapping of the industry and academia actors of the space ecosystem in Bulgaria;
- Implementation of technology audit for companies in order to test and validate their potential to work for the space sector;
- Carry out capacity building activities- trainings, seminars, information campaigns, hackathons and conferences;
- Perform knowledge and technology transfer activities (including IP management) to unlock the potential for Space Innovation and Technologies.

ITTI'S KEY PRIORITIES AND STRATEGIC PLAN

ITTI team will work for the development of local Space innovation ecosystem. The programmes and services that we will offer will be:

- Space Incubator ;
- Acceleration programme;
- Educational academy;
- STEM center;
- Testing Labs;
- Simulation center;
- Co-working space

Thank you for your attention!

CONTACT DETAILS:


gkolaksazov@gmail.com


https://www.linkedin.com/in/gancho-kolaksazov-77b60645/


Institute for Technology Transfer and Innovations(ITTI)


www.ittibg.org