



**-lab**

**ACCELERATING TRANSFORMATIONAL  
INNOVATION IN EARTH OBSERVATION**

# FOSTERING NEW TRANSFORMATIVE CAPABILITIES

Exciting New Space and scientific opportunities are opening up for the latest generation of digital entrepreneurs and data scientists, driven by a growing volume of increasingly rich Earth observation (EO) data, growing computational power in space and the untapped potential of game-changing technologies such as artificial intelligence (AI) and Quantum and Edge Computing.

ESA  $\Phi$ -lab provides an open, dynamic and fast-moving innovation environment where talented people can develop transformative ideas – from blue-sky thinking through to entering the market – that will accelerate future EO by delivering enhanced capabilities and strengthening Europe's world-leading competitiveness.

***“ We strongly believe in truly transformative ideas and the power of compelling partnerships to accelerate the future of Earth observation ”***



# PUSHING THE INNOVATION PIPELINE

Bringing together industry, researchers, investors and academia, ESA  $\Phi$ -lab embraces the *innovate and apply under one roof* approach in order to foster, scale up and apply successful ideas. With a focus on transformative technologies,  $\Phi$ -lab is the only ESA organisation that manages the entire innovation pipeline

to help shape, nurture and drive radical innovation in Earth observation up to the point of delivering market-ready or scientific solutions. Business support and applied research teams work together in the same location to develop and accelerate the space business and scientific ideas of tomorrow.

- Discover
- Nurture
- Develop
- Fund
- Enter market

# EXPLORE AND INVEST

ESA  $\Phi$ -lab comprises two offices that explore and invest in innovative ideas:

**The  $\Phi$ -lab Explore Office** is an open research environment offering a range of collaboration opportunities, including internships, co-funded PhDs, Postdoc research and schemes for visiting professors and visiting researchers from industry and academia.

Operating as an ESA hub within the network of EO academic and industrial researchers across Europe and globally, the Explore Office brings together expertise and ideas from universities, industry, ICT players, investors and talented innovators to foster scalable innovations from EO data, Earth Science and Computer Science.

The goal of the  **$\Phi$ -lab Invest Office's** is to support entrepreneurial initiatives aiming to develop new business opportunities in Earth Observation, thereby improving European economic operators' competitiveness in global markets. As such, the Invest Office forms part of ESA's EOP role as a de-risking partner and facilitator.

The Invest Office is the home of the ESA InCubed EO programme ([incubed.esa.int](http://incubed.esa.int)), which offers entrepreneurs innovation co-funding (equity and IPR free), together with technical and business support for the development of commercially successful products and services.



## OUR SUCCESSSES

56

Funded Activities  
valuing €73M  
at 61% average  
co-funding

10+

Visiting  
Professors

70+

Publications in  
peer-reviewed  
journals and at  
conferences

20+

Visiting  
researchers

19

External  
Collaborations

4

Contributions to  
AI-powered satellites  
Φ-sat-1, Φ-sat-2,  
OPS-SAT and ESA  
operational  
mission

AI4EO  
QC4EO

setting the  
European R&D  
agenda on AI4EO  
& QC4EO

€106M

InCubed  
programme  
value

## BOOSTING COMMERCIALISATION FOR A GREEN AND DIGITAL EUROPE

ESA Φ-lab was established in 2017 and has already become a key player in the Earth observation sector, driving transformational innovation and business investment and delivering a series of successful outcomes.

These successes have paved the way for ESA Φ-lab to become a reference model for the whole of ESA and its Member States in generating innovation

that underpins scientific and business growth. Commercialisation is the second of the five priorities within ESA Agenda 2025, and in this context the Agency is creating a dynamic network of national Φ-labs across Europe. Each Φ-lab focuses on delivering disruptive innovation ready for market adoption and embracing an *innovate and apply under one roof* approach by teaming up with European players.

# FLAGSHIP PROGRAMMES

ESA  $\Phi$ -lab manages or contributes to a number of flagship programmes, with each designed to deliver significant innovation in the way Earth observation benefits society and technology.

## AI4EO

*Strengthening European Earth observation assets with AI*

## QC4EO

*Exploiting AI-enhanced quantum computing for Earth observation*

## Destination Earth

*A European Commission initiative to develop an AI-enhanced digital replica of our planet*

## $\Phi$ -sat

*Transformative AI satellite-based technologies tested in-orbit*

## InCubed

*Investing in Industrial Innovation to support and develop commercially viable products and services*

## Earth sensing system

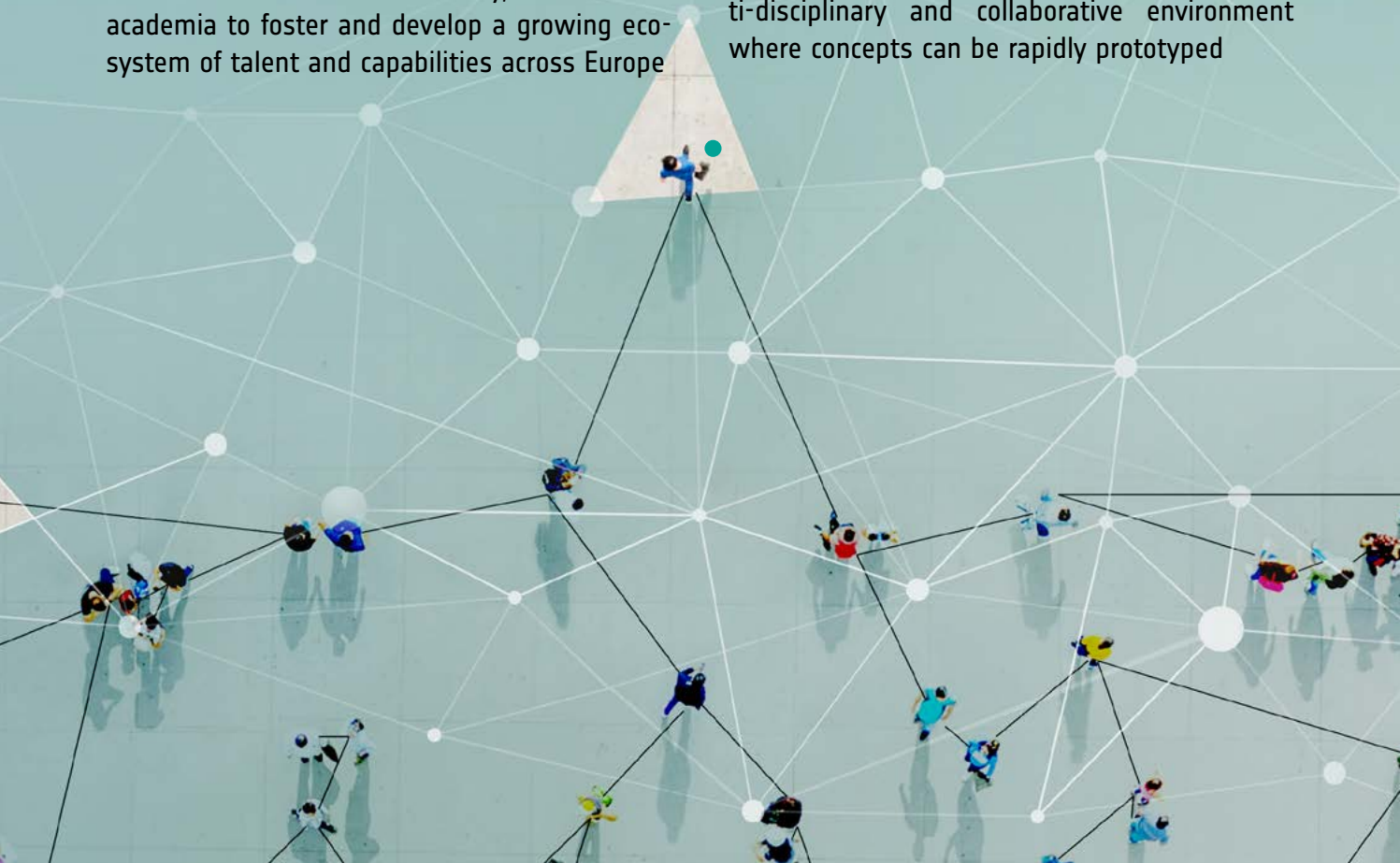
*Supporting citizen science and AI activities related to space-enabled Internet of Things*

# THE POWER OF COMPELLING PARTNERSHIPS

ESA  $\Phi$ -lab connects together leading-edge talent from industry, the investor community, research centres and academia to foster compelling partnerships delivering tangible innovation

- We are the **bridge** between European start-ups, academic and industrial researchers, New Space operators, private investors, ICT players, EO global leaders and ESA
- We **connect** ideas within industry, investors and academia to foster and develop a growing ecosystem of talent and capabilities across Europe

- We **provide** entrepreneurs with innovation **funding** (equity and IPR free), together with technical and commercial support to develop commercially successful products and services via the InCubed programme ([incubed.esa.int](http://incubed.esa.int))
- We **stimulate** Earth observation academic and industrial researchers' interest in order to generate transformative ideas within ESA  $\Phi$ -lab's **inspirational** and **informal**, but rigorous, multi-disciplinary and collaborative environment where concepts can be rapidly prototyped



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CONNECT WITH US!

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