

A central graphic featuring a globe with a digital grid pattern, surrounded by glowing blue lines and spheres, set against a background of binary code and abstract light patterns.

**-lab**

**ACCELERATING TRANSFORMATIONAL  
INNOVATION IN EARTH OBSERVATION**

# FOSTERING NEW TRANSFORMATIVE CAPABILITIES

With the availability of a huge volume of increasingly rich Earth observation data, growing computational power, and the untapped potential of transformative technologies such as artificial intelligence (AI), and Quantum Computing (QC), exciting 'New Space' and scientific opportunities are opening up for the new generation of data and digital entrepreneurs.

ESA  $\Phi$ -lab provides an open, dynamic and fast-moving environment where people can develop transformative ideas, from blue-sky thinking to entering the market, that will accelerate EO future delivering capabilities and strengthen 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,  $\Phi$ -lab embraces the 'innovate and apply under one roof' approach to foster, scale up and promote successful ideas.

With a focus on transformative technologies,  $\Phi$ -lab manages the whole innovation pipeline to help

shape, nurture and drive radical innovation in Earth observation up to the point of delivering commercial or scientific solutions.

Business support and applied research teams can 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

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

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

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 researchers, industry, ICT players, investors and talented innovators to foster scalable innovations from EO data, Earth Science and Computer Science.

**$\Phi$ -lab Invest Office's** goal is to stimulate and develop all transformative actions that ESA can leverage to strengthen European EO industrial competitiveness and leadership. In this role ESA acts as a de-risking partner and facilitator, stimulating competitive growth for economic operators.

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



## OUR SUCCESSSES

**30**

Funded Activities  
valuing €55M  
at 60% average  
co-funding

**10**

Visiting  
Professors

**30**

Publications in  
peer reviewed  
journals and at  
conferences

**12**

Visiting  
researchers

**12**

External  
Collaborations

**2**

Contributions to AI  
powered satellites  
(Φ-sat-1 and  
Φ-sat-2)

**AI4EO**

setting the  
European R&D  
agenda  
on AI4EO

**€103M**

InCubed  
programme  
value

## BOOSTING COMMERCIALISATION FOR A GREEN AND DIGITAL EUROPE

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

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

which underpins scientific and business growth. Commercialisation is the second of the five priorities within ESA Agenda 2025. In this context, the Agency will create a dynamic network of Φ-labs across ESA and Europe, focusing on delivering disruptive innovation ready for market adoption and embracing an 'innovate and apply under one roof' approach by teaming up with European partners.

# FLAGSHIP PROGRAMMES

Φ-lab manages or contributes to six flagship programmes, with each expected to deliver huge changes 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*

## Φ-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

Φ-lab connects innovative talent from industry, private investors, research centres and academia to foster compelling partnerships delivering concrete transformative innovation.

- We are the **bridge** between European start-ups, academic and industrial researchers, New Space operators, Investors, ICT players, EO global leaders and ESA
- We **connect** ideas to industry, investors and academia to foster, connect 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 viable products and services via the InCubed programme ([incubed.phi.esa.int](http://incubed.phi.esa.int))
- We **attract** Earth observation academic and industrial researchers to generate transformative ideas
- We **create** an **inspirational** and **informal** but rigorous, multi-disciplinary and collaborative environment where concepts can be rapidly prototyped
- We act as a **facilitator** to foster competitive growth and entrepreneurial initiatives



- Discover
- Nurture
- Develop
- Fund
- Enter market

CONNECT WITH US!

[philab@esa.int](mailto:philab@esa.int)  
[philab.esa.int](http://philab.esa.int)