

# The Investing in Industrial Innovation (InCubed) Programme

EO Info Days: 9<sup>th</sup> March 2021

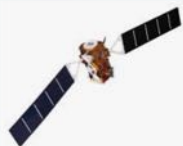
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Head of  $\phi$ -lab Invest Office & InCubed Programme Manager

ESA-ESRIN

European Space Agency

- Lower access costs
- Smart sensors, better performance, lower SWaP-C
- Commercial constellations
- Cloud computing
- Huge computational power available in space
- Artificial Intelligence and IOT in space



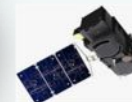
- Huge data availability and easiest access
- Constellations with richer sensors
- Copernicus free and open data policy
- IoT in space is coming



Major  
technology  
advancements

New  
entrepreneurial  
spirit

- New Space players
- Broaden customer base
- Large risk capital investments
- From data services to actionable insight and information



More EO data  
than ever  
before

Connected  
thinking

- Centralised vs distributed and connected thinking
- Openness toward risky innovation
- Policy makers more open to commercial space vs institutional space solutions



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- Commercial constellations
- Cloud computing
- Huge computational power available in space
- Artificial Intelligence

## Earth Observation

- New Space players
- Broaden customer base
- Large risk capital investments
- From data services to actionable insight and information

## From Earth Observation

to

## Earth Intelligence / Earth Analytics

- Huge data available
- Constellations with richer sensors
- Copernicus free and open data policy
- IoT in space is coming

**commoditised intelligence**

- Centralised vs distributed and connected thinking
- Openness toward risky innovation
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## $\Phi$ -lab Explore Office

Explore the innovation universe  
and connect EO sensor revolution  
with the digital revolution e.g. AI4EO, DTE



## $\Phi$ -lab Invest Office

Stimulate competitiveness growth  
fostering entrepreneurial initiatives  
by investment actions from ESA member  
states and external investors  
(InCubed)

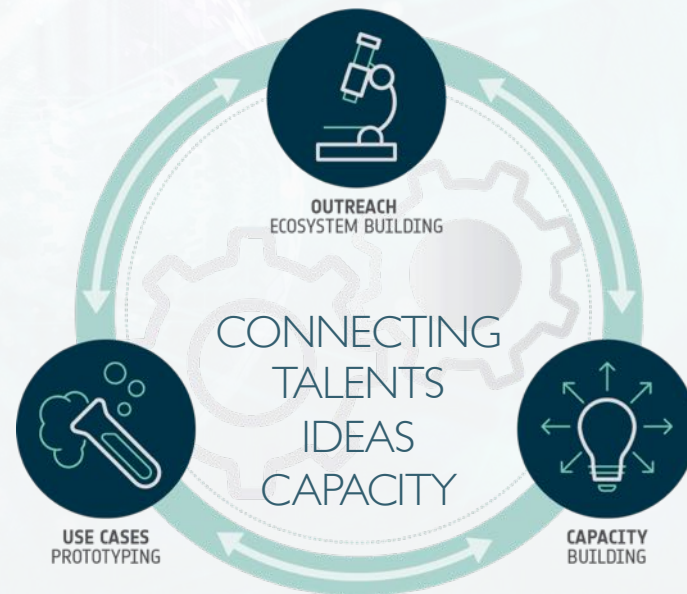
# Innovation cycle to deliver transformative and viable ideas

## We work on



The innovation cycle within the  $\Phi$ -lab Explore office is:

- Focus on a meaningful problem
- Connect expert partners
- Enable solutions developing capacity
- Experiment “fail and recover fast” on use cases





Accelerate the future of Earth Observation  
via transformational innovation\*  
strengthening Europe's world-leading competitiveness





- **Visiting Fellows (Industrial, Scientific and Research)**

We host representatives from industry, or academia who can propose to work with us on their own innovative case study, getting access to ESA EO huge competence, our computing resources, and facilities. They usually stay with us from 4 weeks for a full immersion up to 2 years for a more strategic partnership

- **Visiting Professors**

Visiting Professors help  $\Phi$ -lab in setting the research agenda identifying the most valuable scientific problems and methodologies. We count now in 10 among the most representative professional researchers in Europe

- **Research Fellowships**

ESA's postdoctoral Research Fellowship offers scientists and engineers the possibility of two years in the lab to carry out research on case studies of yours and  $\Phi$ -lab interest

- **Young Graduate Traineeships (YGT)**

ESA's YGT scheme is aimed at Master degree graduates to work with us for one year to gain valuable experience in cutting edge EO activities

# Is InCubed right for me?

If you have a **commercially focused EO based product or service** in mind, you are doing something **innovative** and you have **potential commercial customers already engaged** then InCubed is a great tool to help you **de-risk** your development (overall end to end developments, satellites, instruments, sub-systems, platforms, data delivery systems)

InCubed partnership aims to support your idea up to at **least minimum viable product** level so that its added value can be demonstrated to commercial customers or potential investors

For satellite developments, e.g. we can help you to de-risk the first demonstrator unit - you can then seek further investment for a full constellation roll out



**Intellectual  
Property  
Rights stay  
100% with  
you!**



# Investing in Industrial Innovation (InCubed)



Industry-led PPP programme in ESA Earth Observation subscribed by 18 countries  
with a total of 99 M Euros



Managed: by the  $\Phi$ -Lab in ESRIN (Frascati, Italy)

Focus: To stimulate & development the EO commercial sector (products & services)

We look for 3 things:

1. Commercial viability (aim to generate revenue with development)
2. Innovation (doing something new)
3. Commercial customer engagement at proposal stage (beta testers, validators)

Wide scope: end to end commercial developments (from satellites to data platforms & everything in between)

Aim: To de-risk your development and reach, at least, a minimum viable product to showcase capabilities to potential customers / potential investors

Co-funding: Typically 50%/50%, up to 80% SMEs (depending on your member state)

Present portfolio: 40 activities - ranges 70k to 8.6MEuros (co-funding)





# For EO commercial developments InCubed offers



**Zero-equity co-funding (agreed with your participating Member State)**



**Personalised guidance from world-class technical expertise & commercial support**



**ESA stamp of credibility (e.g. use of the ESA logo,...)**



**Access to ESA Earth observation facilities and to the Phi-Lab (EO and AI expertise)**



**Connect with private investors**



**Membership of the InCubed community with access to networks and dedicated events**

# Two types of Development Cycles

Entry depends on the maturity of the of the development being proposed:

## De-risking Cycle

- This cycle results in a credible technical concept with identified commercial customers who show tangible interest and a robust product development roadmap.
- Developments are typically less mature and require support to reach a credible commercial product/service.

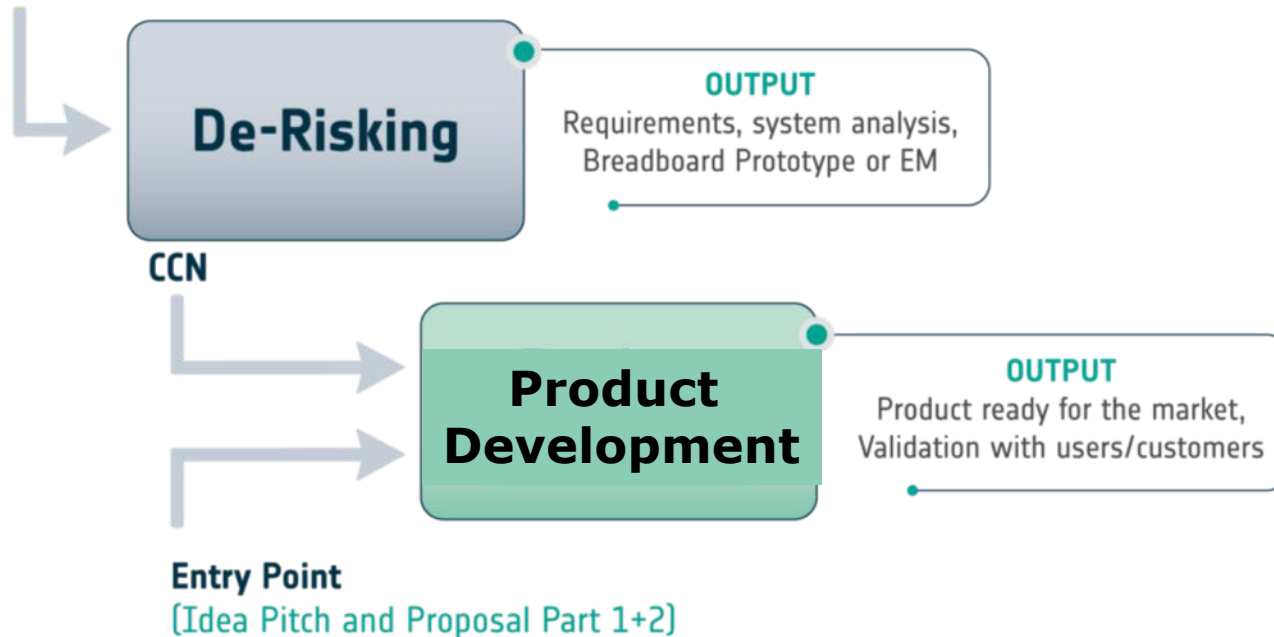
## Product Development Cycle

- This cycle results in a credible product or service which can be shown to be commercially viable without any further public funding.
- Developments are typically more mature.

# Two types of Development Cycles

## Entry Point

[Idea Pitch and Proposal Part 1+2]



- It is possible to move from one cycle to another as development matures
- If development is mature enough, it can enter the product development cycle directly



# Funding Options and Conditions

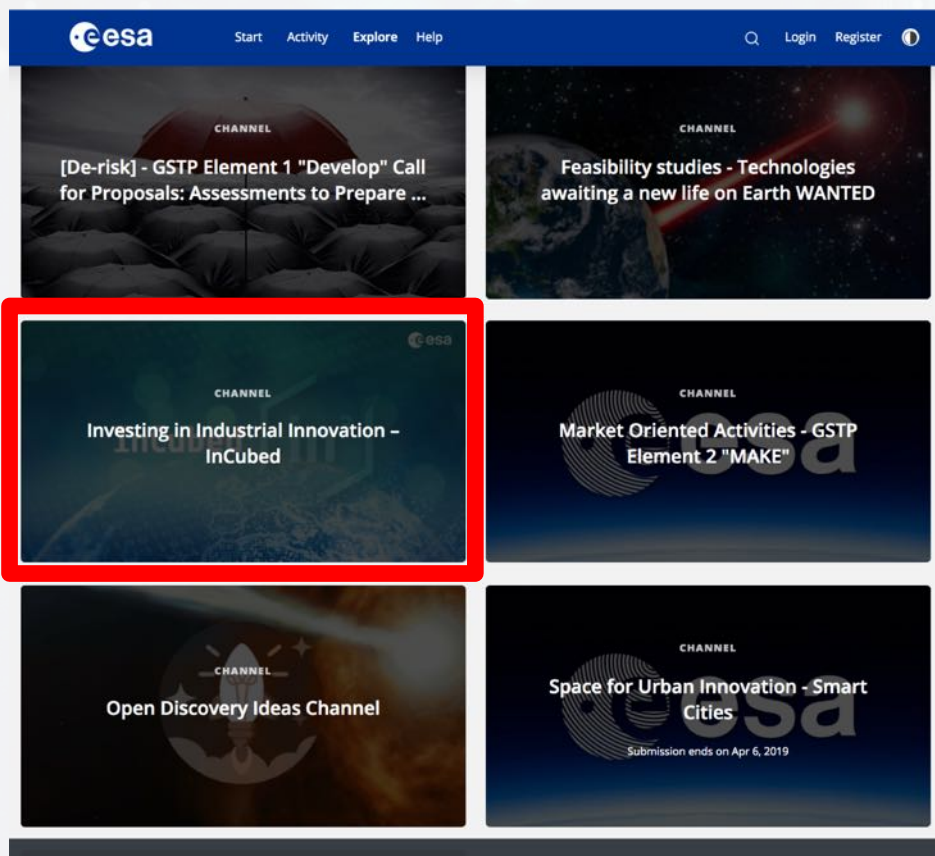
- Typically co-funding is 50/50 with some additional support for SMEs (but depends upon the Member State)
- ESA can support up to 80% of the total allowable costs

**See [ideas.esa.int](https://ideas.esa.int) for all info**

Cycle	Technology Readiness Level	Application Service Readiness Level
De-risking	Up to 4-6*	Up to 3
Product Development	Up to 7 (8 for IOV)	4 up to 8

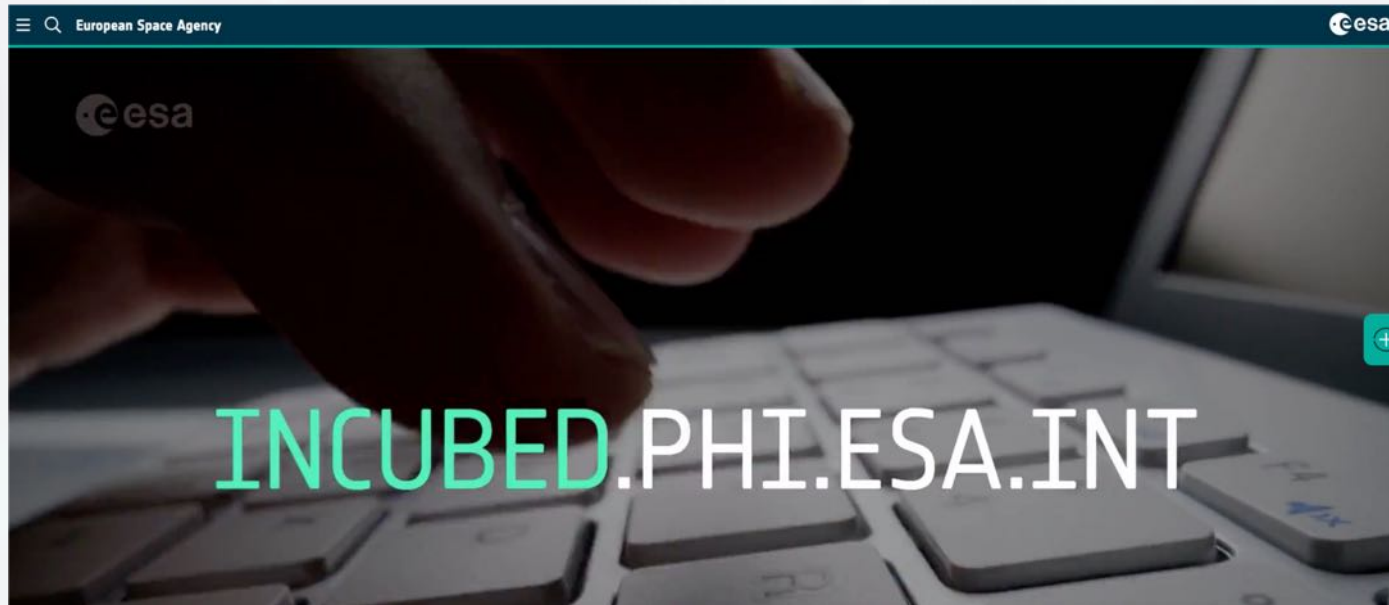
\* Depending on the technological or market risks assessed by the Agency

The Announcement of Partnership Opportunity is published on  
EMITS under  
“Open Invitations to Tender”  
reference AO9090



Start by registering on [ideas.esa.int](https://ideas.esa.int) and following the InCubed channel





All details can be found here including the InCubed video on the homepage



All proposal templates & docs can be found at the bottom of the homepage



# How to Apply?

- InCubed is a partnership between Industry / National Delegations and ESA
- InCubed Announcement of Partnership Opportunity is always open on EMITS
- Entities can apply at any time (depending on Member State rules)
- Fill out the Idea Pitch Template on [ideas.esa.int](https://ideas.esa.int)
- Invite you to a video pitch meeting where you can pitch your idea to the InCubed team and the delegation.
- All Ideas will be strictly confidential



[ideas.esa.int](https://ideas.esa.int)



# Participating ESA Member States



Austria



Belgium



Czech Republic



Denmark\*



Estonia



Finland



Germany



Greece



Ireland



Italy



Luxembourg



Netherlands



Norway



Portugal



Romania



Spain\*



Sweden\*



United Kingdom\*

\* Member States subscribed to the InCubed pilot phase. These Member States can increase their contribution to co-fund further activities at any time.



# Some examples taken from the portfolio



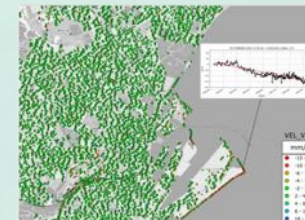
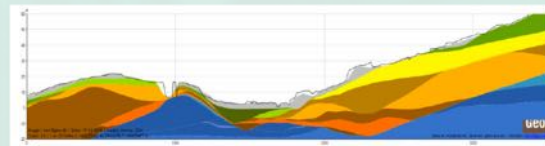
## EO PLUG-IN



A paradigm change for Earth observation integration in the agro-food industry leading to a spun out start-up



Integration of InSAR ground motion products with subsurface geotechnical models (InSARinSub)

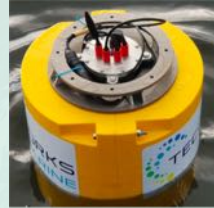


HyperScout-2 for the FSSCAT mission.  
Miniaturized hyperspectral & thermal imaging coupled with Artificial Intelligence for breakthrough operational space missions



Mission and Agile Nanosatellite for Terrestrial Imagery Services focused on serving the energy sector

CoastEO aims to a validated water quality commercial service using low cost buoy platforms & satellite data



AI Data Enhancement toolkit helps to remove phenomena such as haze, colour distortion and poor resolution using AI techniques



sobolt 



Architecture for future EO space component (AFFRESKO) - High speed (> 100 Gbps) optical modem and novel networking methodologies to provide real time linking for future EO satellite constellations



SAT4EO Critical Elements: Very High Resolution Payload, TDI CMOS detector, agile AOCS, ground processor & exploitation platform





The Unibap SpaceCloud™ Services (USS) aims to support and augment future space systems with a radiation tolerant / flexible infrastructure for mesh networks, app deployment, AI and IoT capabilities



Development & qualification testing of a high reliability version of electric propulsion IFM nano and micro COTS thrusters



Mission Planning function offered as a service to enable mission planning and operations to be outsourced

Online platform to globally visualise levee failure risk combining high resolution soil moisture info with InSAR deformation data & other EO data







**SAVE THE DATE**  
**March 24<sup>th</sup>, 10h30 – 12h00 CET**

***Run your app in space***  
***and get the chance to be onboard***

**AI-eXpress ESA Incubed activity**  
**Customers and stakeholders online**  
**Workshop**



**Registration: [www.aiexpress.eu](http://www.aiexpress.eu)**  
**Info: [aiexpress@planetek.it](mailto:aiexpress@planetek.it)**



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# Thank you for your attention!

[www.esa.int](http://www.esa.int)



# Additional Slide

[www.esa.int](http://www.esa.int)

# ESA Co-Funding programmes – InCubed Positioning

