

HORIZON EUROPE · TEAMING FOR EXCELLENCE · PHASE 2

SPACE ✦ Crete

CRETAN CENTRE OF EXCELLENCE IN EMERGING SPACE TECHNOLOGIES

SHAPING THE FUTURE FROM CRETE

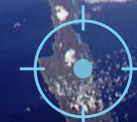
€34.08M ✦ STARTING JANUARY 2027

Panagiotis Tsakalides · SPACE-Crete Coordinator · FORTH

· [Heraklion · 02/10/2026]



HERAKLION · CRETE
35.30° N 25.07° E



Why space — and why Crete?

A real gap, a strong base, and the right instrument to close it.



01 Greece and Europe need sovereign, secure space links

A fast-growing space economy and a clear push for quantum-secure and high-bandwidth optical communications.



02 A strong but untapped research base

World-class research at FORTH and the University of Crete, yet no dedicated space-technology centre exists today.



03 Geography on our side

Southern-Mediterranean clear skies suit optical & quantum ground links as well as space traffic management infrastructure; Crete is a natural gateway location.



04 Teaming is the vehicle

Pair local strengths with Europe's leading space institutions to build lasting, self-standing capacity.



Vision & Mission



VISION

To establish Crete and Greece as a recognized European hub for emerging space technologies and smart satellites.



MISSION

To build an independent, self-sustaining Centre of Excellence advancing quantum/optical communications and sensing, onboard AI, attracting and training highly skilled and talented people, raising technologies toward flight readiness, and seeding a regional space economy.

Excellence

◆ Sovereignty

◆ Talent

◆ Sustainability

THE PROJECT AT A GLANCE

Key facts



72

MONTHS



5

PARTNER ORGANISATIONS



3

COUNTRIES



7

WORK PACKAGES



Funding model €34.08M total investment — EU Teaming for Excellence grant with Greek complementary co-funding from GSRI, the Ministry of Digital Governance, the Region of Crete and Motor Oil Hellas.

◆ Becomes an independent Greek legal entity early in the project — the foundation for long-term sustainability.

◆ THE PARTNERSHIP

A Teaming consortium across three countries

Leading European institutions help build a lasting Cretan Centre of Excellence.

CRETAN CORE · GREECE



FORTH

GR · COORD.

Coordinator



University of Crete

GREECE

Research, education,
talent



OHB-Hellas

GREECE

Space industry &
systems

ADVANCED EUROPEAN PARTNERS



CEA

FRANCE

Advanced partner · space systems & R&D



DLR

GERMANY

Advanced partner · optical & quantum
technologies



SPACE-Crete

CCEST · HORIZON EUROPE TEAMING · PHASE 2

35.30°N 25.07°E

Three technological frontiers



FRONTIER 1

Optical & Quantum Communications

Ultra-secure links using quantum key distribution; First integrated space-ground optical testbed in SE Europe



FRONTIER 2

Computational & Quantum Sensing

Computational sensing through the co-design of optics, detectors, and reconstruction algorithms



FRONTIER 3

Intelligent Space Systems

Intelligent processing and autonomy on the satellite itself; sending down only what matters



Built on space-grade engineering: designed to European standards (ESA / ECSS) and advance towards flight readiness.

Communications & sensing that are fast and secure



Quantum communications

Security guaranteed by physics

- ◆ Laser (free-space optical) links carry far more data than radio.
- ◆ Number of LEO satellites with data downlink needs increasing substantially, driven by 50-fold decrease in the cost of launching assets in space.
- ◆ Eases radio-spectrum congestion as data volumes surge.
- ◆ Quantum key distribution (QKD): any eavesdropping disturbs the signal and is detected.
- ◆ Contributes to Europe's sovereign quantum network (EuroQCI).
- ◆ Satellite links served by optical ground stations on Crete.

Why it matters — trust you don't have to take on faith.



Quantum sensing

The high-capacity backbone

- ◆ Co-design of hardware (optics, detectors) and software (reconstruction algorithms).
- ◆ Shift complexity from hardware to software.
- ◆ Extend operation in low-light regimes, enable longer duration optical links, and improve detection capabilities for faint/fast-moving objects.
- ◆ Fully aligned with the *New Space* paradigm.

Why it matters — the data pipe future missions will need.

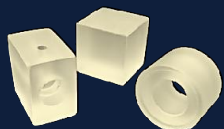
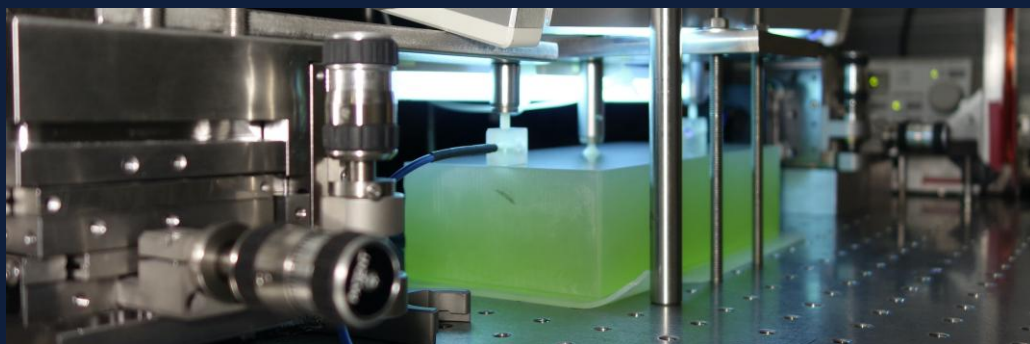
BEC and SOL lab experience & heritage



Optical breadboard beam steering technology for Space-Based Quantum Sensors and quantum Memories

OBST1 & OBST2

Developing novel beam steering technologies to be used in optically complex quantum space missions.



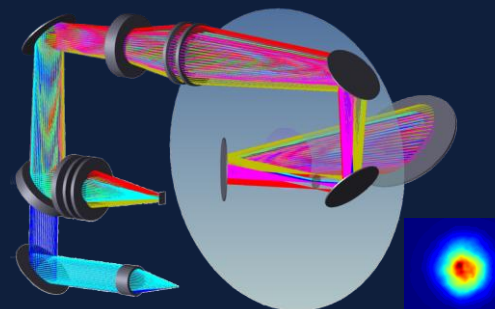
Stability under relevant environment (+/- 1K)
0.13 %_{RMS} in 135 h



Skinakas Observatory upgrade for optical and quantum communication

22SkinUp

Upgraded the 1.3m telescope of the Skinakas Observatory to an Optical Ground Station (OGS) using a versatile optical breadboard.



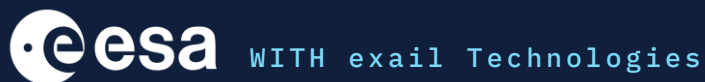
optical design



Breadboard installed at the 1.3 telescope

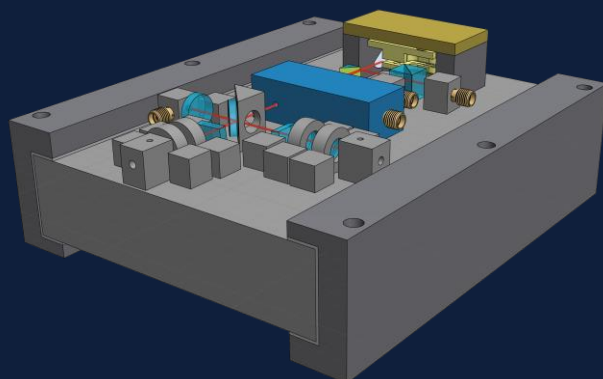
◆ Frontiers 1, 2 starts from TRL 6 technologies.

BEC and SOL lab experience & heritage



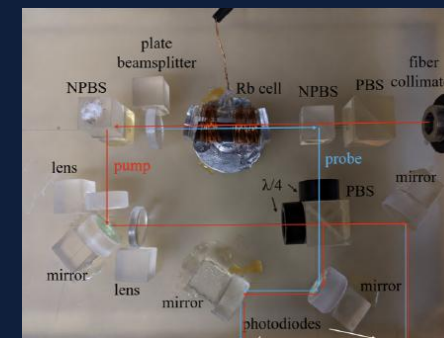
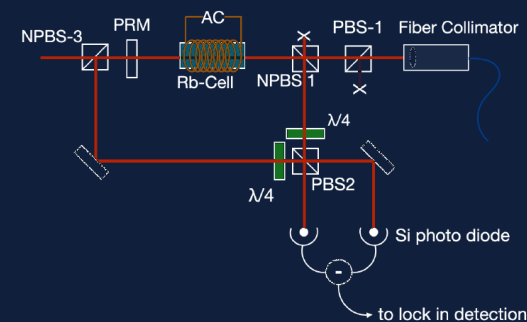
RamanBC

Development of an optical bread board which combines the light from two optical fibers via an acousto-optic modulator into a third fiber. The technology that we are creating is aimed at the first space mission, including a quantum gravity sensor (CARIOQA).



QMem & SpaceTools

Development of a magneto-optical trap (MOT) to produce a cold atomic gas, which can serve as a platform for a quantum memory. SOL builds the cooling laser system



◆ Frontier 1, 2 start from TRL 6 technologies, and the industrial partners that will exploit them are already collaborating with us



Smarter satellites, space-ready engineering



Onboard AI & autonomy

Satellites that analyse data in orbit, act autonomously, and downlink only what matters saving bandwidth and reaction time.



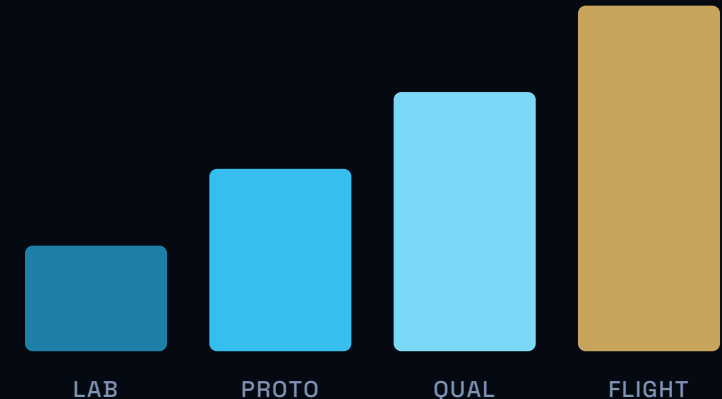
Space-grade engineering

Designed and qualified to ESA / ECSS standards, moving key technologies from the laboratory toward space missions.

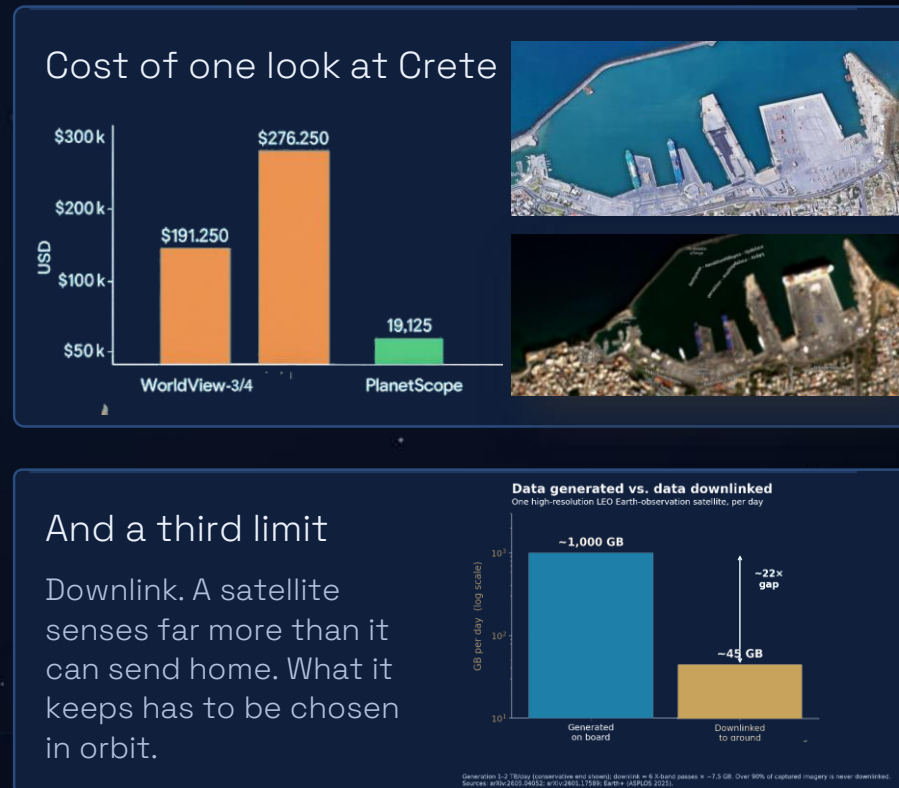
Why it matters — bringing satellites to the digital era.

Climbing the readiness ladder

Advancing technologies from lab to flight (TRL)



Resolution, revisit, coverage tradeoffs



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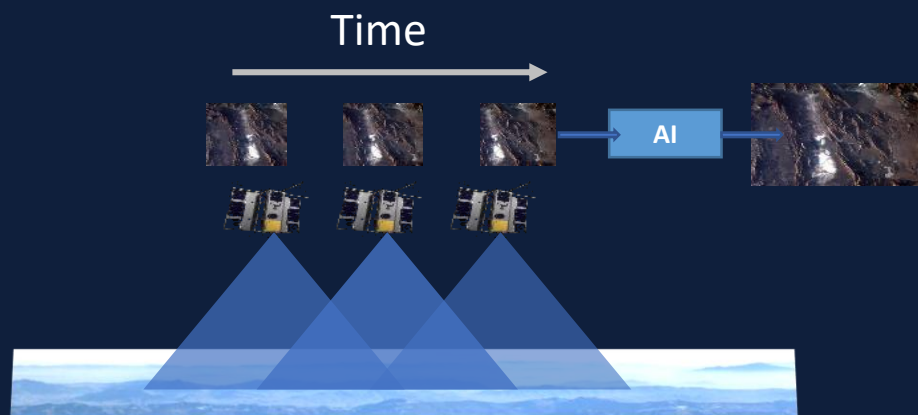
Joint SPL/OHB-Hellas experience & heritage



IN ORBIT · 2022-2024

ESA OPS-SAT

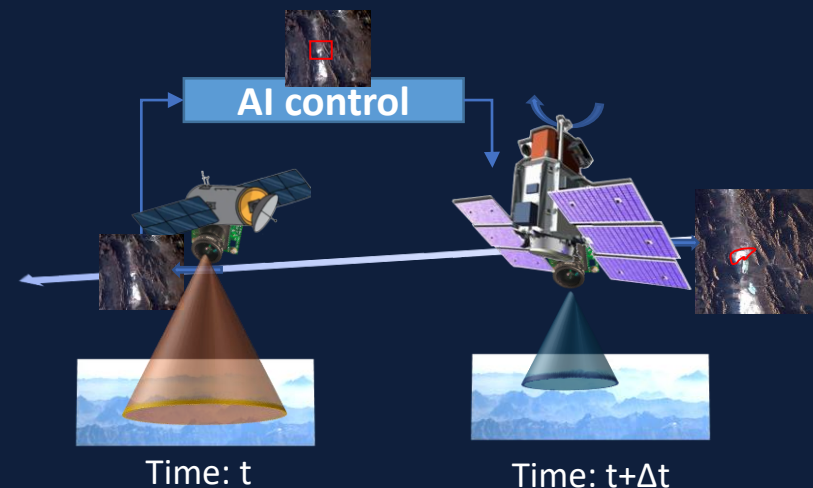
FORTH's SPL and OHB-Hellas ran their own algorithms on ESA's in-orbit testbed on live data.



WITH OHB-HELLAS

Autonomous acquisition chain

AI intelligence for Quality estimation, change detection, area-of-interest selection, fine pointing and high-resolution re-acquisition



◆ Frontier 3 starts from flight-proven code, and the industrial partner that will exploit it is already building the chain with us.

From demos to operational services

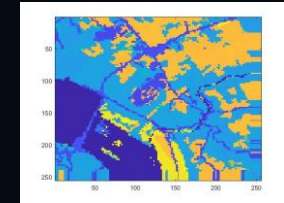
OPERATIONAL TODAY

OrbitalMosaic

Persistent monitoring on Sentinel-1 and Sentinel-2, e.g., water monitoring, changes in land cover, is served in the browser.



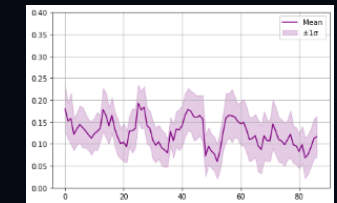
Flood mapping
Sentinel-1, all weather



Land cover
Per-pixel classification



Asset detection
Infrastructure from orbit



Forecasting
Time-series prediction

Where does the money come from?

HORIZON EUROPE TEAMING

€15.00M



EU grant. Funds people, research, training, governance and networking.

◆ TOTAL PROJECT INVESTMENT €34.08M

COMPLEMENTARY FUNDING

€19.08M



National, regional and private commitments.
Funds infrastructure, equipment and operations.

SECURED THROUGH BINDING LETTERS OF COMMITMENT



HELLENIC REPUBLIC
MINISTRY OF DEVELOPMENT

€15.00M



HELLENIC REPUBLIC
Ministry of Digital Governance

€1.48M



ΠΕΡΙΦΕΡΕΙΑ ΚΡΗΤΗΣ
REGION OF CRETE

€2.50M



€100K

◆ Amounts exclude in-kind contributions and future competitive funding.

COMPLEMENTARITY

Who pays for what

HORIZON EUROPE

€15.00M

The programme



Governance and
legal entity



Researchers,
technical and
administrative
staff



Scientific and
innovation
programme



Training, mobility
and
graduate
programmes



Networking,
industry
links, open science

COMPLEMENTARY FUNDING

€19.08M

The capability



ESA-compliant
AI&T facilities



Skinakas
Observatory
upgrade



HPC and
data backbone



Specialised
instruments
and equipment



SPACE-Crib,
secondments
and outreach

Horizon Europe funds six years of work. **Complementary funding leaves a permanent centre behind.**



COMPLEMENTARY FUNDING

Where the €19.08M goes

SHARE OF COMPLEMENTARY FUNDING



● €10.24M

Technical research infrastructure

WP3 · 53.7% of CF

● €1.90M

Knowledge transfer, valorisation, IPR

WP6 · 10.0% of CF

● €1.75M

Specialised smaller equipment

WP3 · 9.2% of CF

● €1.75M

Innovation projects

WP3 · 9.2% of CF

● €1.74M

Communication and outreach

WP7 · 9.1% of CF

● €1.70M

Human resources development

WP4 · 8.9% of CF

◆ More than half of complementary funding — €10.24M — goes into research infrastructure. It is the single largest commitment in the project.



Skinakas becomes an all-day research asset

SPACE-Crete upgrades a proven site for complementary missions.



The €2.80M SPACE-Crete upgrade

Builds on IA's ESA-backed operational work.



Robotic telescope and control upgrades for faster acquisition and tracking.



Wide-field camera and spectrograph for detection and characterisation.



Mirror re-aluminisation and grid connection for reliable, high-throughput operations and high-quality services.

Allocation: €1.10M + €0.70M + €0.50M + €0.50M.



4

optical telescopes

1,750m

mountain site

€2.80M

upgrade

- night: astronomy
- twilight: satellites
- day: telecom

One asset, more value

Beyond the infrastructure



Knowledge transfer & IPR management

€1.90M

WP 6

SPACE-Crib core team (180 PM)

€1.05M

Fit-out and IP systems

€0.30M

IPR and test-before-invest

€0.55M



Innovation projects

€1.75M

WP 3

Computational & quantum sensing

€0.58M

Secure optical & quantum comms

€0.58M

Intelligent space systems

€0.59M



Communication and outreach

€1.74M

WP 7

Interactive Open Space Days

€1.04M

School visits and career talks

€0.35M

Citizen science & hackathons

€0.35M



Human resources development

€1.70M

WP 4

Secondments to OHB (72 PM)

€0.60M

Industrial internships (4/year)

€0.40M

Industrial PhD track with UoC

€0.32M

QuantSpaceTeX Multievent

€0.38M

◆ **€7.09M across four programmes, nearly all running to M72.** This is what turns facilities into services, income and people.



Education & the Industrial PhD programme

Training the people who will build and sustain a space sector in Crete.



The Industrial PhD

A doctorate with one foot in the lab and one inside a space company.



Co-supervised by the University of Crete and an industry partner: OHB-Hellas as well as other interested space / EO / telecom SMEs.



6–18 months in industry on real company problems, with company data, tools and missions.



A real pathway a joint training plan plus an agreed IP & exploitation route to market.

Joint PhDs with CEA and DLR, dual supervision and research-stays abroad.



≥15

doctorates

≥3

industrial

≥30

MSc theses

Brain-Gain: bring ≥ 10 diaspora scientists home

INNOVATION

SPACE-Crib — turning research into companies

From the lab, to the launchpad, to the market.



01

Incubate

A 12-month programme, co-working, lab access and mentorship (OHB-Hellas + FORTH STEP-C).

TARGETS BY M60

5

spin-off companies



02

Prove

Test-before-invest on CCEST facilities. OHB, Safran & Airbus try our systems.



03

Spin out

IP & licensing, demo days and investor pitches research becomes companies.

6

patents filed

2

licensing deals

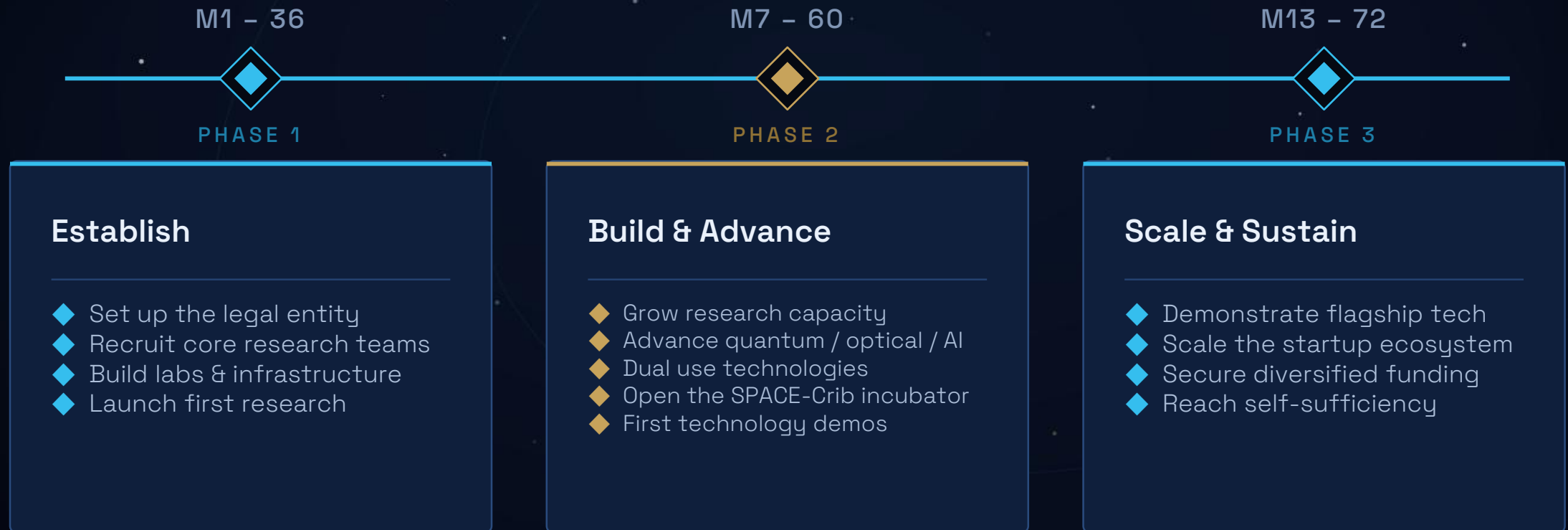
≥1

orbital demo

PLUGGED INTO THE ECOSYSTEM



72 months, three phases



Four formal reporting periods close at M18 · M36 · M54 · M72.

From project to permanent institution

01



An institution, not just an initiative

Becomes an independent Greek legal entity early in the project lifecycle.

02



A diversified funding base

EU programmes · Greece 2.0 / RRF · ERDF · ESA contracts · industry & services.

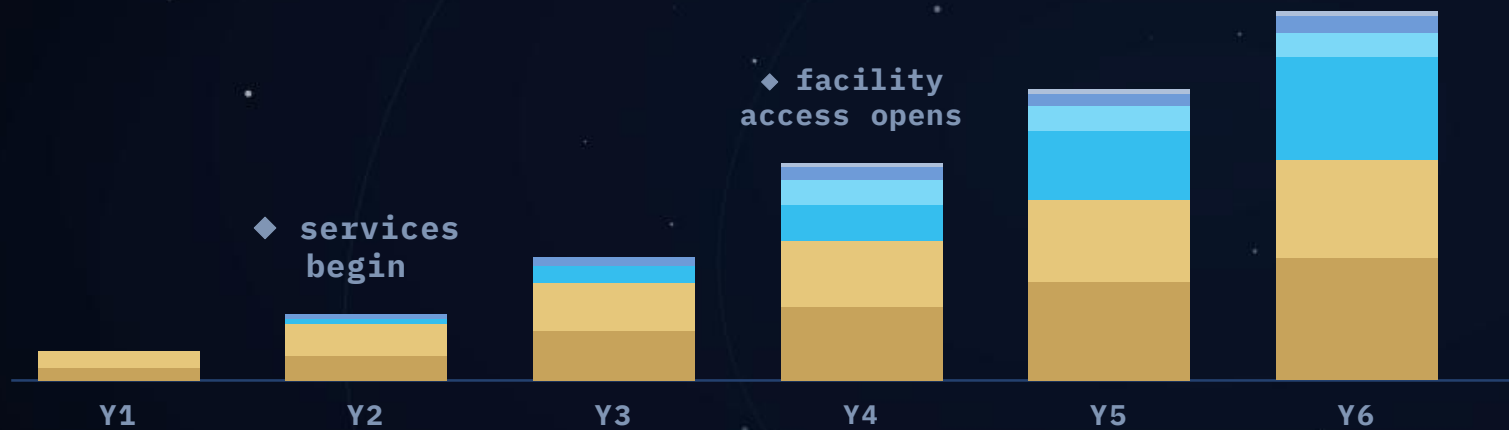
03



A credible path to self-sufficiency

Financial sustainability targeted by month 72 — the core promise of Teaming.

How the Centre earns its keep



COMPETITIVE FUNDING

- EU research grants
- ESA competitive tenders

EARNED SERVICES

- Development & qualification
- Equipment & facility access
- Industry training
- Incubation (SPACE-Crib)

THE GAP WE FILL

Greece has limited ESA-compliant integration and testing facilities, limited space-grade environmental qualification laboratories, and no certified optical or quantum ground station.

THE MARKETS

- ◆ Earth observation
- ◆ Satellite communications
- ◆ Space safety and surveillance
- ◆ Secure communications
- ◆ Space systems AI&T

THE DIRECTION

- ◆ Global market tripling by 2035
- ◆ €22.3B committed at ESA CM25
- ◆ Greek sector doubled since 2020
- ◆ EU: retain and expand market share

◆ The mix shifts from competitive funding to earned services as the facilities come online. 80% of operating costs self-funded by M72.

The Team Behind the Proposal

From Vision to SPACE-Crete



HERAKLION · CRETE
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THANK YOU

Let's build Europe's next space hub together!



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