

Space It Up!

*Space It Up!
Coordination and
monitoring*



AGENZIA SPAZIALE ITALIANA



Ministero
dell'Università
e della Ricerca

SPACE IT UP! DAYS

*Polo delle Scienze Sociali of the University of Florence, Novoli
district
26-28 January 2026*



*The Space It Up! project is funded by the Italian Space Agency (ASI) and the Ministry of
University and Research (MUR), under contract no. 2024-5-E.0 – CUP I53D24000060005.*

The Space It Up! Project

The consortium (SCARL)

- Legal entity dedicated to project management
- Point of reference for partners and activities
- Coordination and reporting

Purpose and Governance

- Management of resources and objectives
- Partner alignment and milestones
- Supervision and progress



The HUB

The operational heart of the consortium is the multidisciplinary HUB, structured into three key departments that work in synergy:

General Director
❖ Ivano Musso



Technical Scientific Department

❖ Mirco Bartolomei ❖ Rebecca Masia ❖ Marianna Valente ❖ Margherita Righini ❖ Silvia Della Torre ❖ Suomi Bez Baruah



Communication Department

❖ Nicoleta Bors



Administration Department

❖ Simona de Mari ❖ EY (Iacopo De Angelis)

CDA

President

❖ Erasmo Carrera

Vice-President

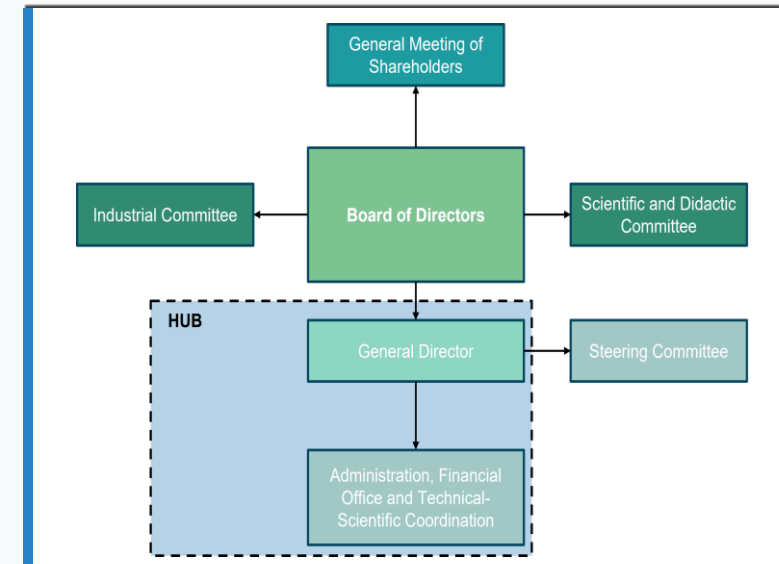
❖ Maria Cristina Lupi

Members

❖ Antonella Belmonte

❖ Luciano Iess

❖ Antonio Moccia



Numbers, Funding and Location within the territory

FUNDING
€80M

Funding by



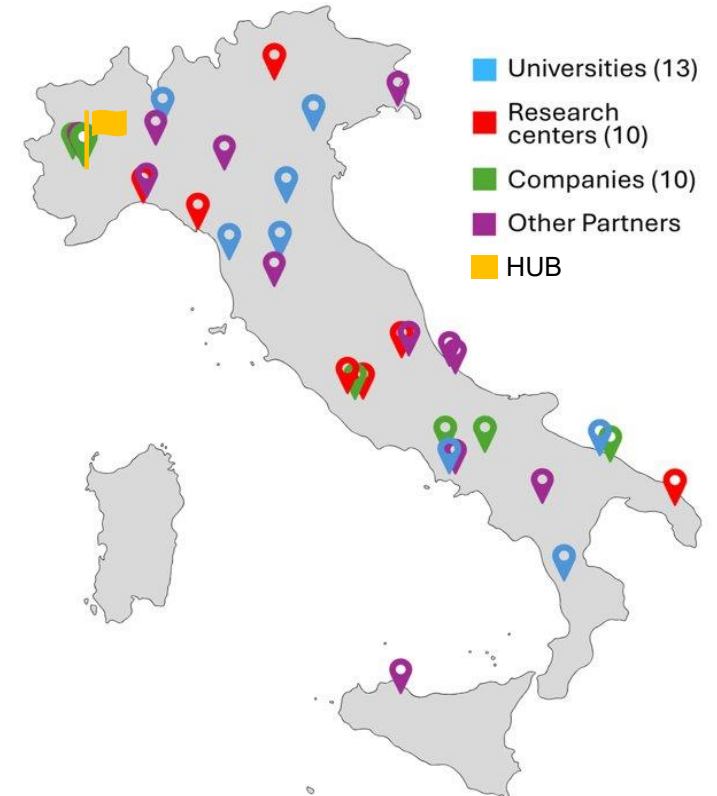
Agenzia
Spaziale
Italiana



Timeframe
4 Anni



July 2024 — July 2028



PUBLICATIONS
200+



Scientific articles in
high-impact
international journals

AUTHORS
500+



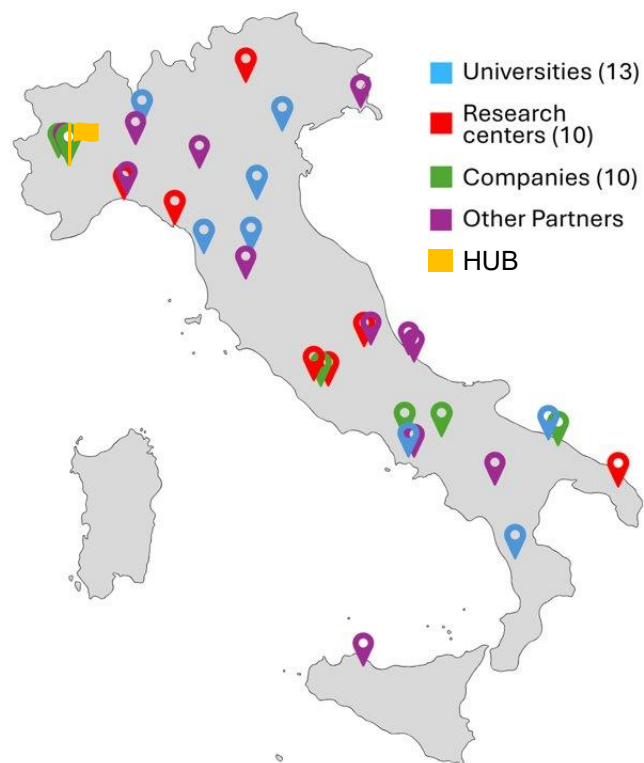
Researchers and
scientists involved in
scientific production

PARTNERS
32



Academic partners,
research centres and
companies

Partner del progetto



Companies



Universities



Research Centers



Project Objectives



Scientific Innovation

Developing advanced solutions and cutting-edge technologies to enable future space activities.



Sustainability & Climate

Observing climate change, predicting extreme events and increasing the resilience of terrestrial infrastructure.



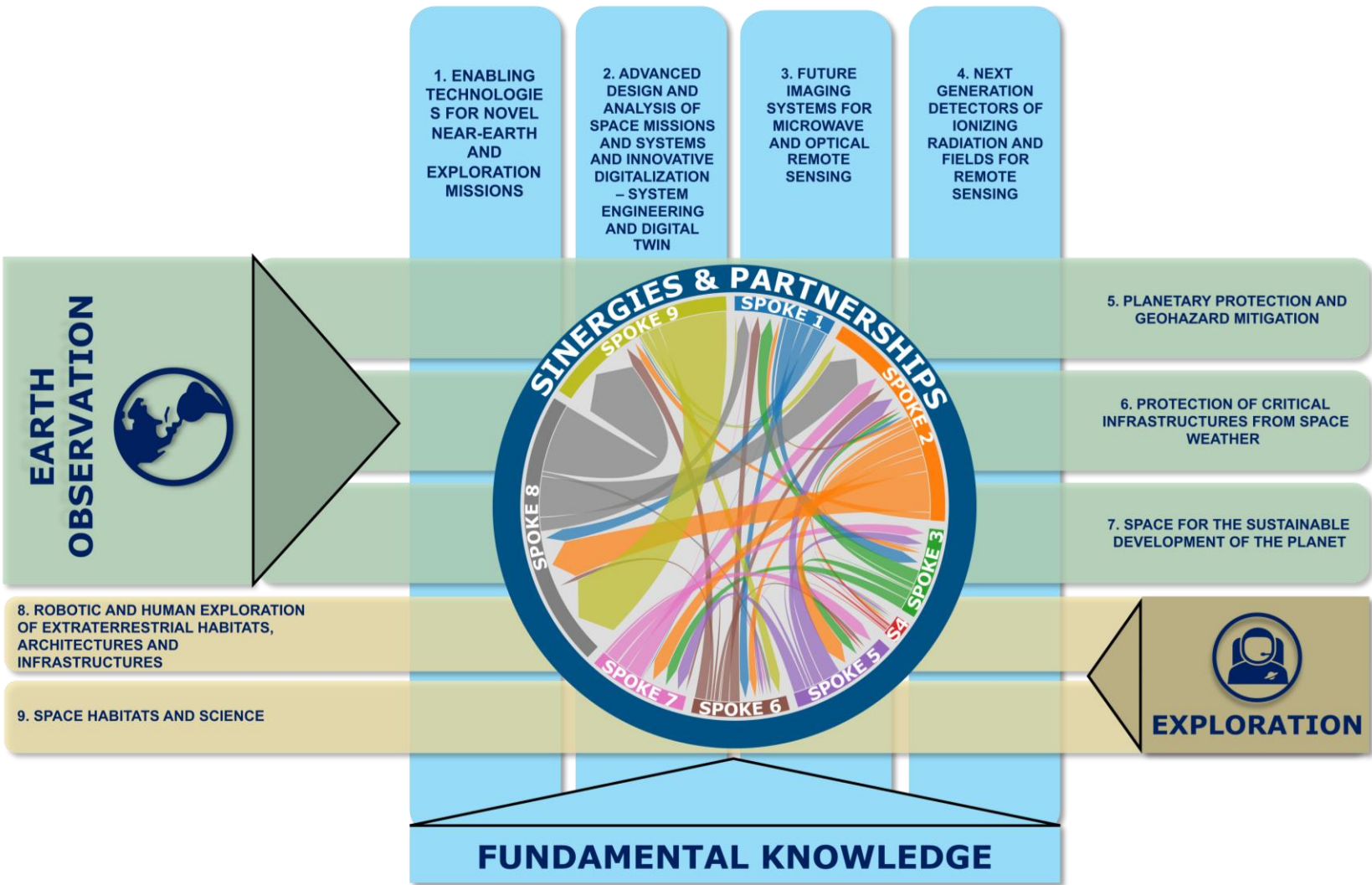
Human Exploration

Ensure long-term presence in space (Moon/Mars) through safe habitats, ISRU and life support systems.



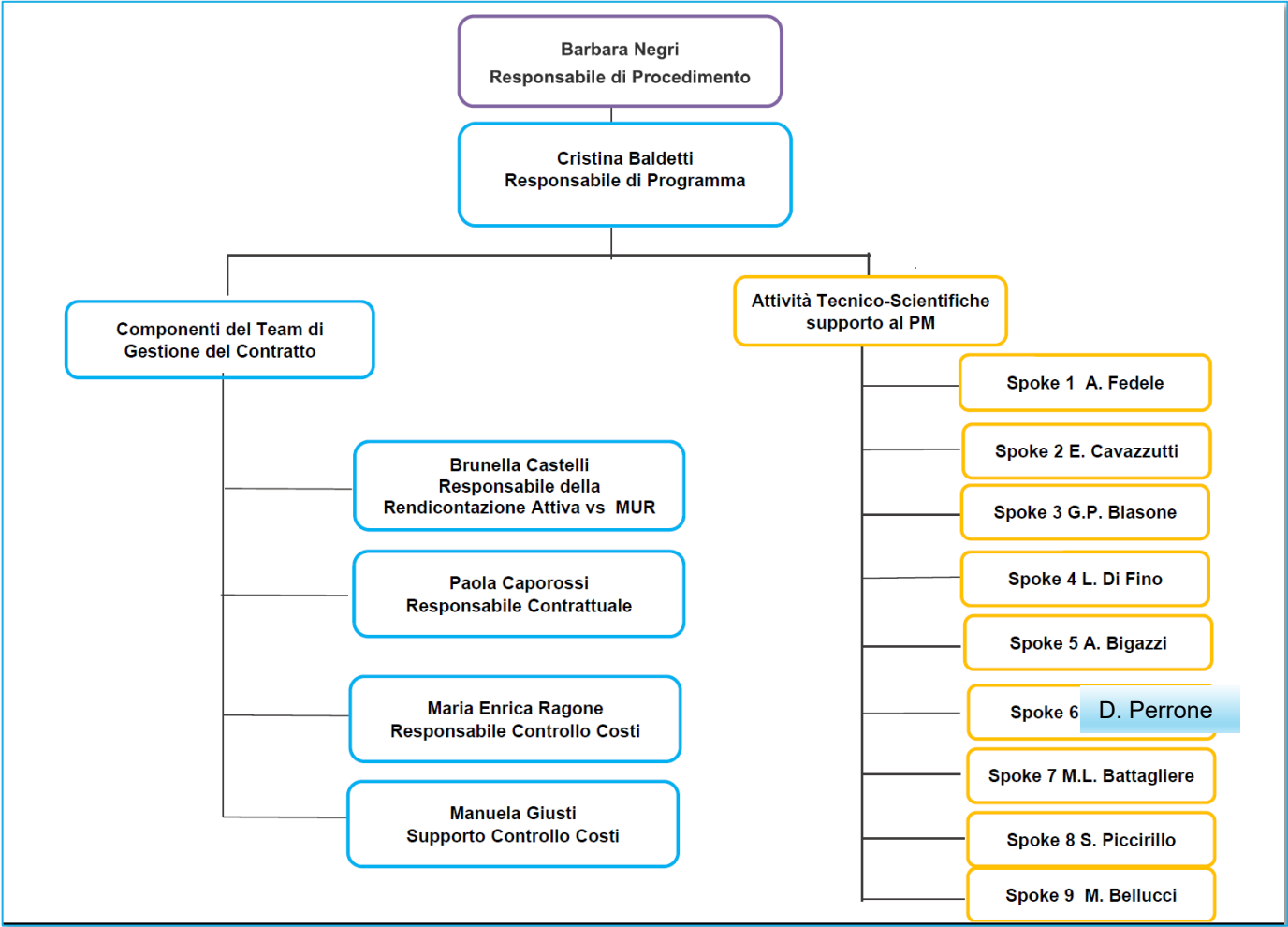
National Ecosystem

Strengthen coordination between universities, research centers and businesses, promoting training and technology transfer.



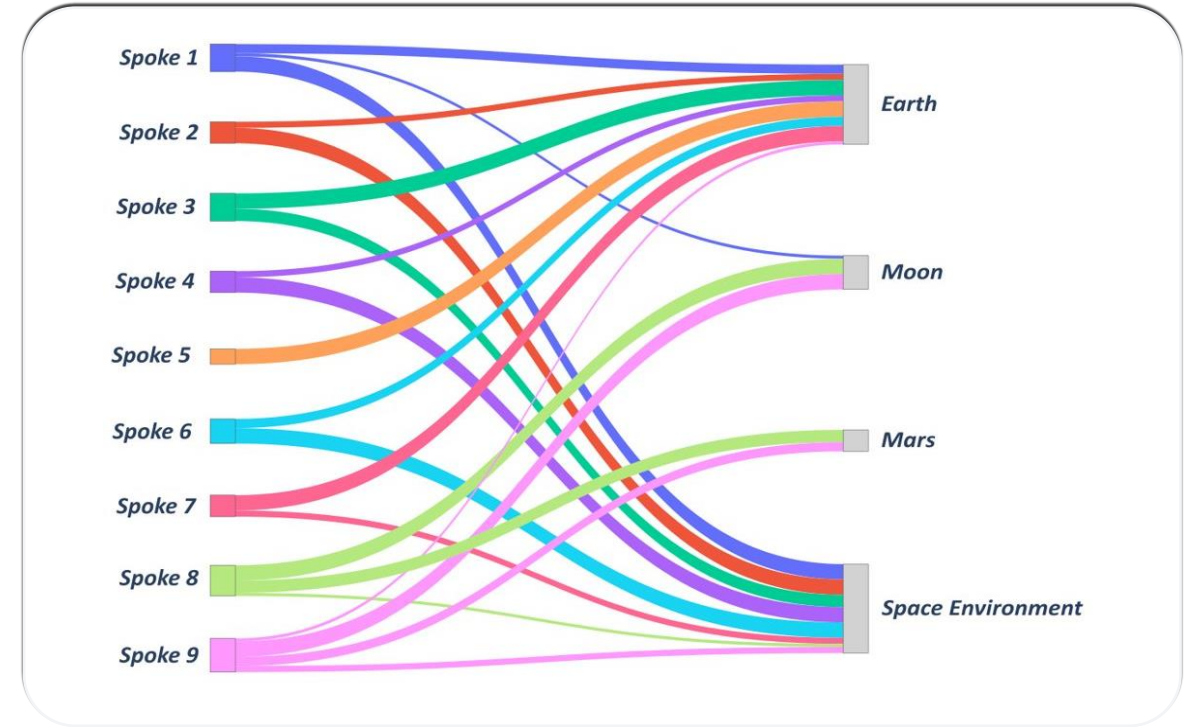
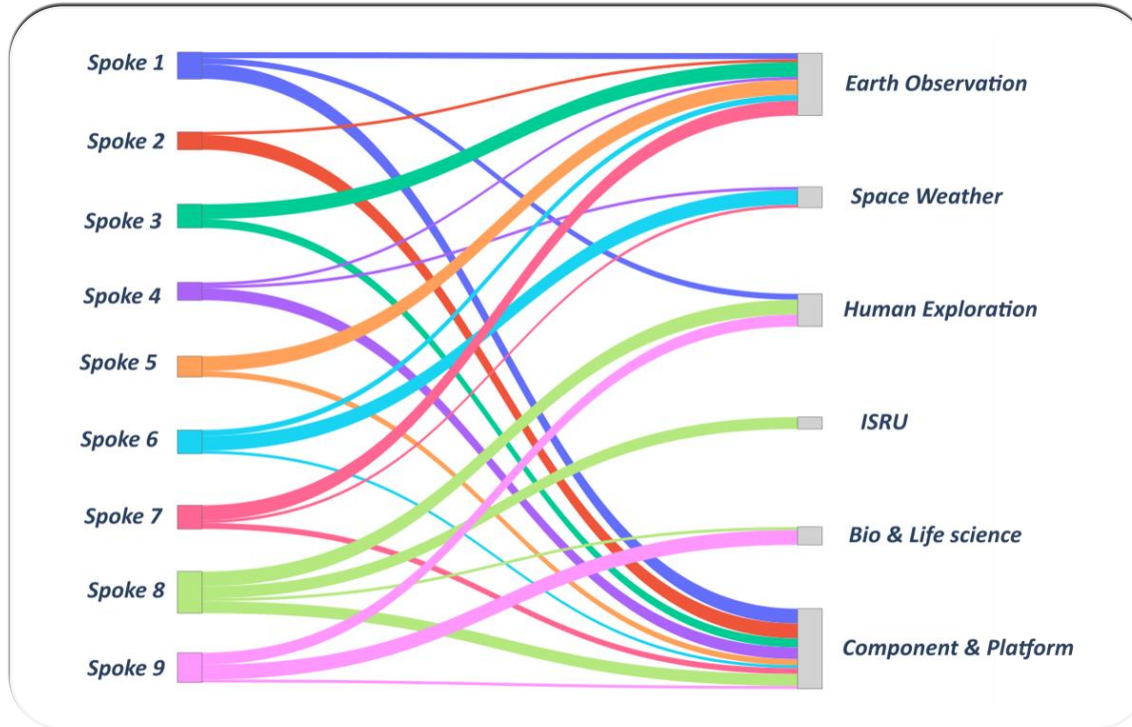
Ruolo ASI nel Progetto Space it UP !

L'ASI partecipa attivamente al progetto con un **team di 15 esperti**, responsabile della supervisione scientifica, tecnica e amministrativa, garantendo coerenza strategica e integrazione operativa tra le diverse linee di ricerca.



Macrothemes of Research

Goals and Targets



Goals

Components & Platforms: subsystems, platforms, and enabling technologies
Earth Observation: technologies and methods for environmental monitoring.
Human Exploration: human presence support, security, and operations.
ISRU: extraction/use of in-situ resources (Moon/Mars).
BIO & Science: biological and scientific space research.
Space Weather: monitoring solar and heliospheric events.

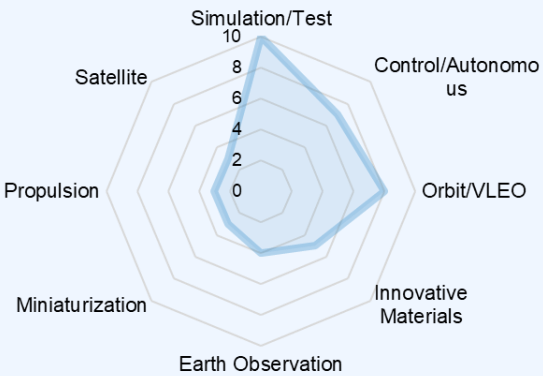
Targets

Earth: technologies for missions and services on terrestrial applications.
Space Environment: systems for Earth orbit (LEO/GEO) and deep space.
Moon: surface operations, mobility and lunar infrastructure.
Mars: Technologies supports robotic and human missions.

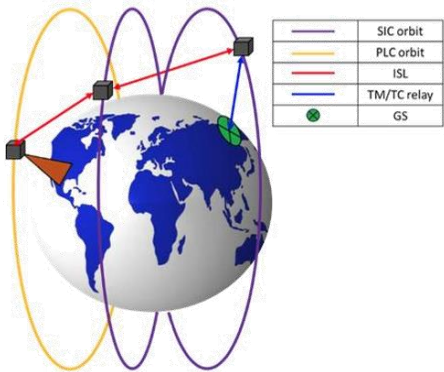
**The thickness of the flows indicates the intensity of the technological and scientific contribution.*

Advancements from the Spokes

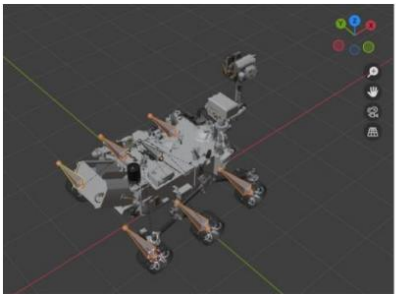
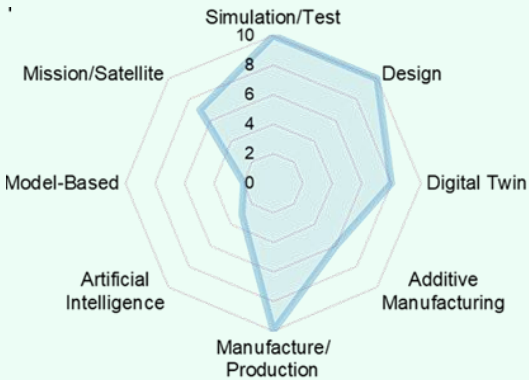
Spoke 1 - Enabling Technologies for Novel Near-Earth and Exploration Missions



Conceptual diagram of a distributed space platform: a satellite constellation on differentiated orbits cooperates through ISL and telemetry/telecommand relay to a ground station, enabling advanced GNC functions, multi-satellite coordination, and mission performance optimization in LEO.

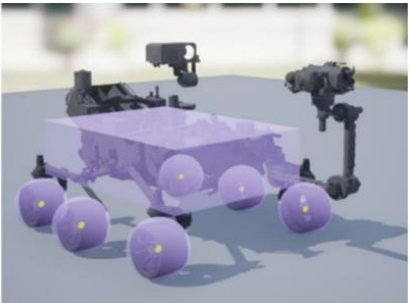


Spoke 2 - Advanced Design and Analysis of Space Missions and Systems

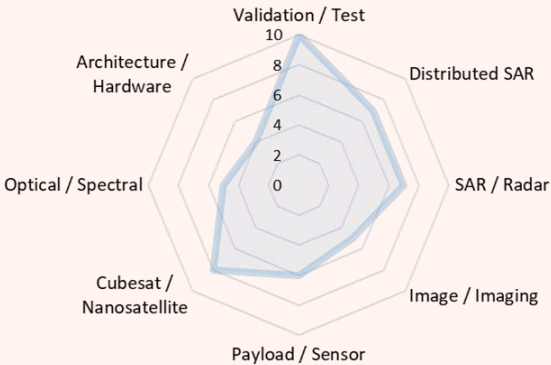


High-fidelity **Digital Twin** of a planetary rover and operational environment, supporting AI- and ML-based information retrieval,

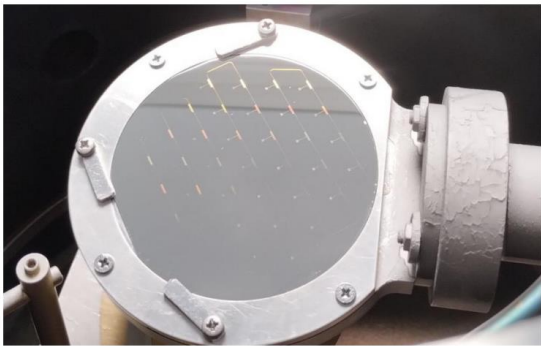
structural health monitoring, and autonomous inspection within space system design and operations workflows.



Spoke 3 - Future imaging systems for microwave and optical remote sensing

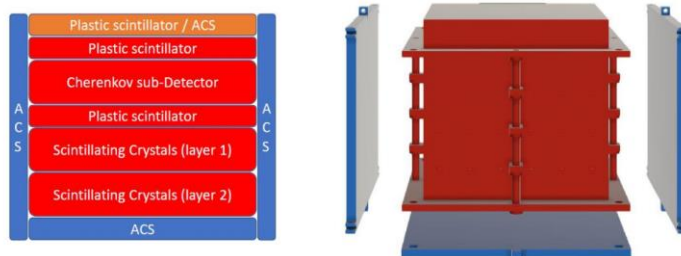
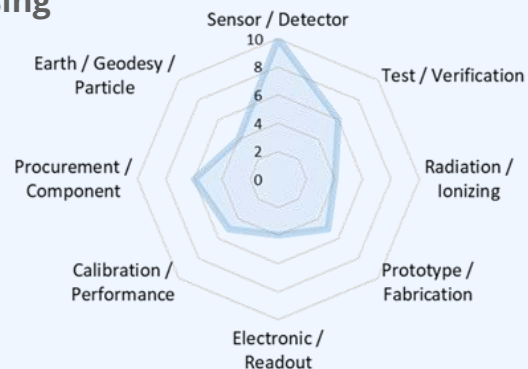


Breadboard wafer and mechanical holder of an on-chip sub-millimeter spectrometer, integrating feedline, resonators, connectors, and thermal/electrical interfaces for fabrication validation and cryogenic performance testing.



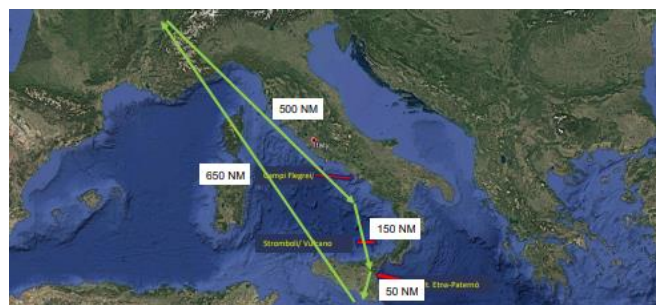
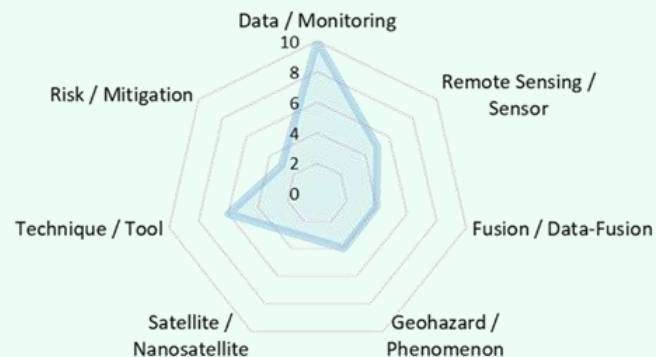
Advancements from the Spokes

Spoke 4 - Next generation detectors of ionizing radiation and fields for remote sensing



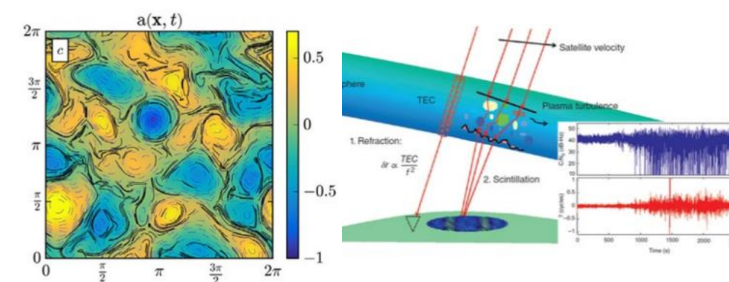
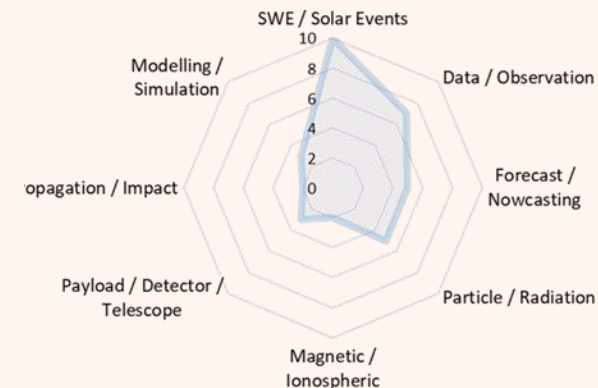
A compact modular ionizing-radiation detector is designed using scintillators + SiPM readout and a Cherenkov stage. The objective is to measure 0.1–10 MeV photons (gamma transients, TGFs) and <100–200 MeV electrons/protons relevant to space weather. The work includes component characterization and prototype-oriented design for tagging/veto, low-power readout, wide dynamic range, and radiation hardness.

Spoke 5 - Planetary protection and geohazards mitigation



INGV is running the AIR Campaign 2025 over Italian volcanoes with an airborne hyperspectral to collect high-resolution data on gas emissions and thermal anomalies and to benchmark performance for future satellite monitoring of eruption precursors. A second campaign planned for 2026 will use MWIR-LWIR to refine instrument requirements and improve retrievals of lava temperature, point-source gases, and surface mineralogy.

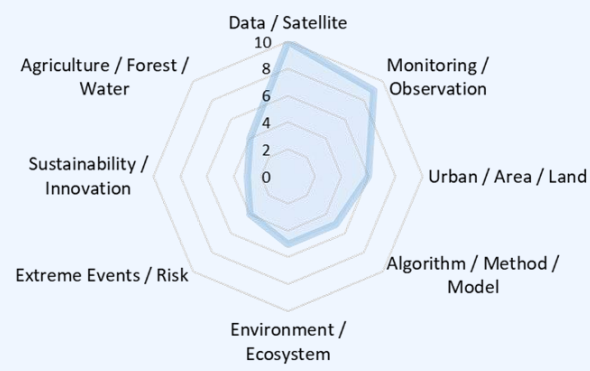
Spoke 6 - Protection of critical infrastructures and Space Weather



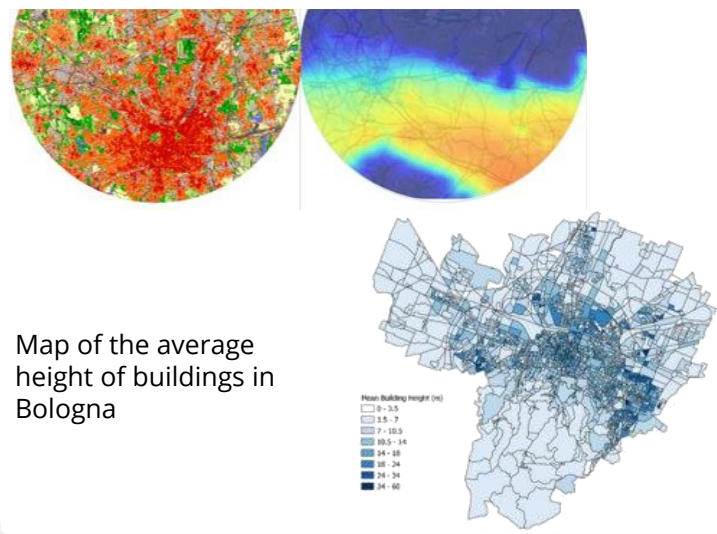
Solar wind-magnetosphere-ionosphere coupling is studied through plasma-physics analyses (reconnection, turbulence, tail dynamics) and storm-case testbeds (May 2024, Oct 2024, Jan 2025), supported by stochastic modelling. The objective is to quantify storm-driven ionospheric effects and translate them into impact assessments for space assets and GNSS across orbital regimes.

Advancements from the Spokes

Spoke 7 – Space for the sustainable development of the planet

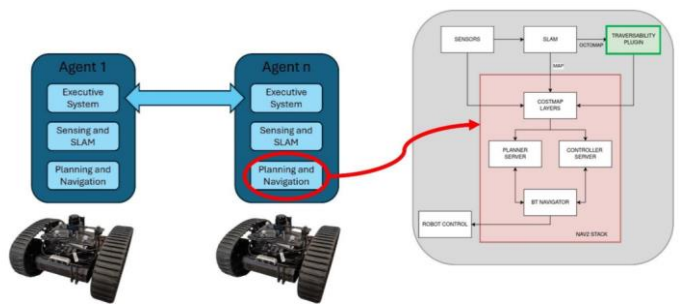
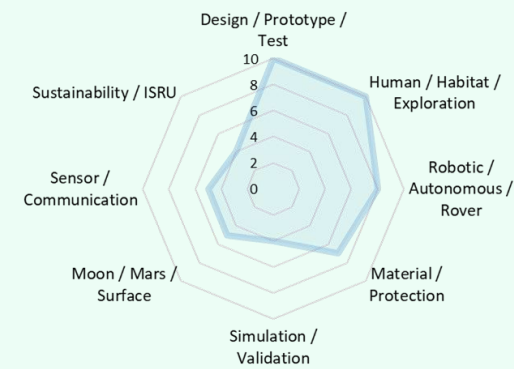


Mapping of local climate zones using a combined GIS/OT method and use of climate reanalysis data on heat waves and climate stress



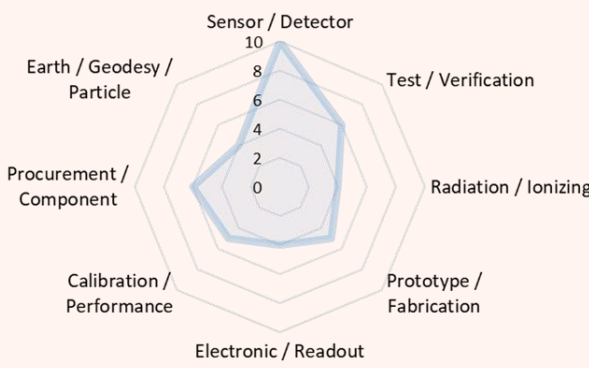
Map of the average height of buildings in Bologna

Spoke 8 - Robotic and Human Exploration of Extraterrestrial Habitats, Architectures and Infrastructures



A rover-side executive layer was developed to translate high-level objectives into capability-driven motion and communication primitives, supporting both independent and cooperative execution. Each rover includes an autonomous navigation pipeline (SLAM plus path and motion planning). A capability-aware traversability plugin was implemented to adaptively classify 3D free space according to each rover's locomotion constraints, ensuring platform-consistent planning.

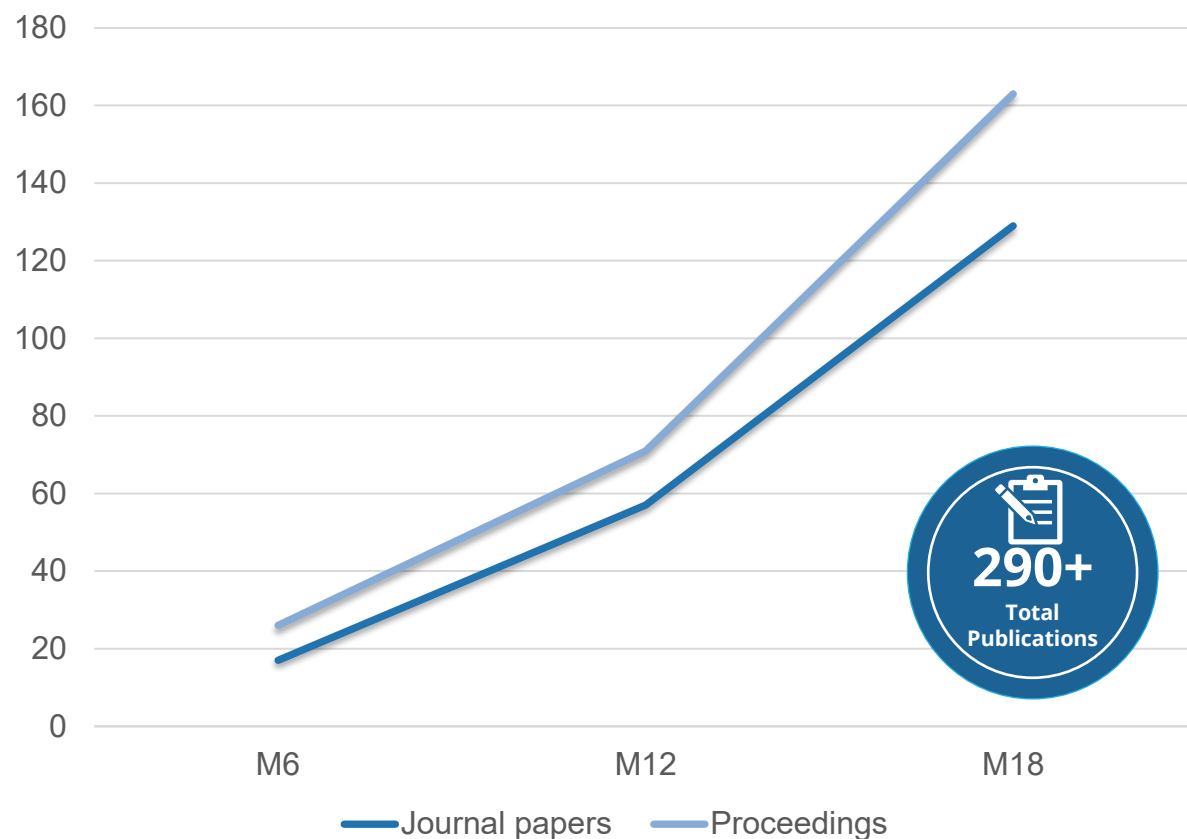
Spoke 9 - Habitat space and science



Investigation of Mars-analog hydrothermal and saline systems (Vulcano and Atacama) to understand how fluids generate and modify key volatiles and organics. The objective is to quantify microbial and abiotic

contributions to methane and prebiotic chemistry, and to constrain fluid circulation and water-gas-rock reactions linked to habitability indicators and critical-element enrichment.

Scientific outputs



Balanced mix: ~44% journal papers, ~56% conference proceedings



Publications highlights

- Peer-reviewed outputs & high-impact journals
- Strong international scientific visibility through publications
- Commitment to open-access dissemination of scientific results

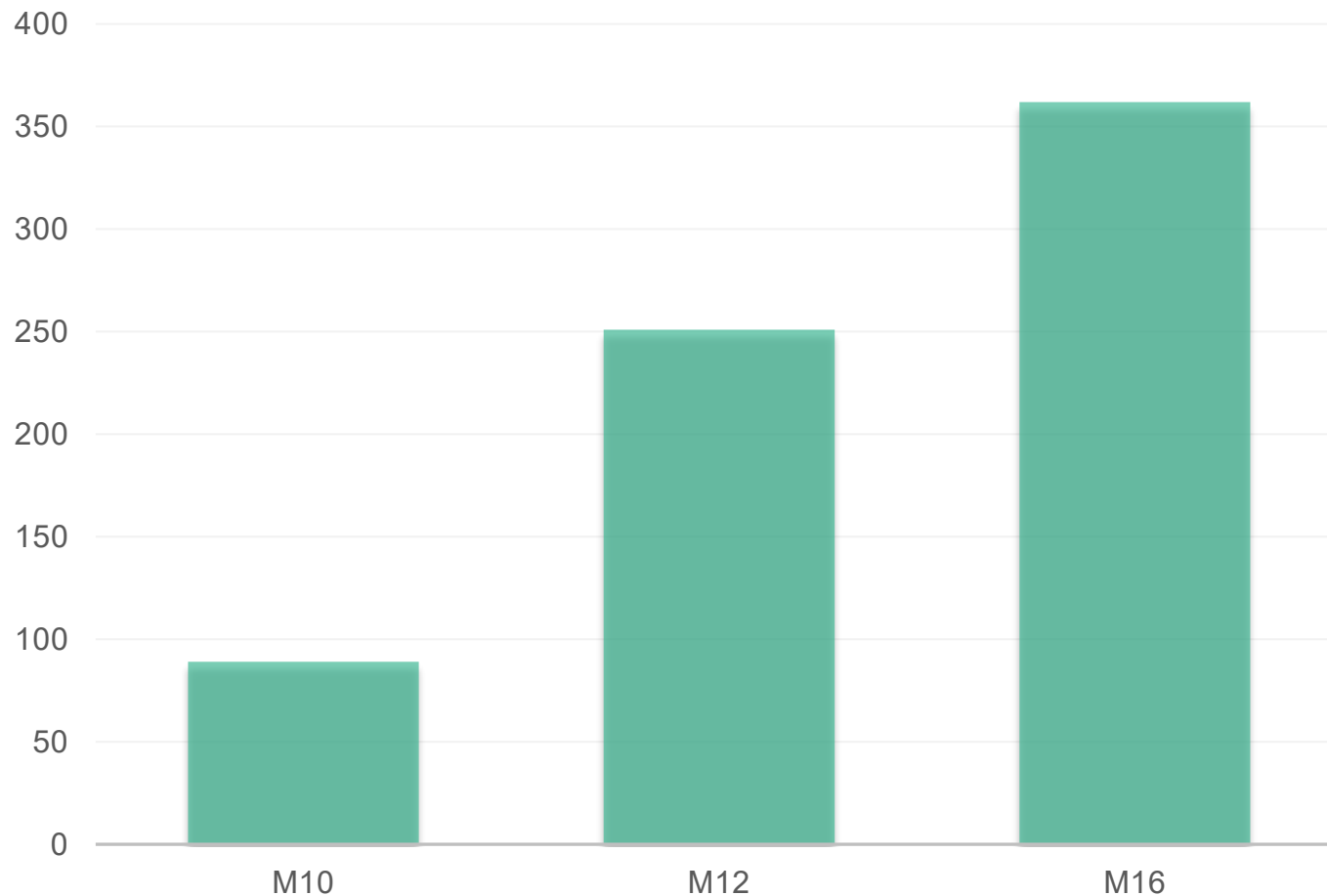


International Scientific Conferences

- 100+ participations in major international scientific congresses
- Broad collaboration and visibility across research communities
- Scientific findings shared in presentations and dedicated sessions

Project Synergies Status

Synergies Evolution



Current Status

The network has reached **362** potential synergies, quadrupling the number of the first release (M10).

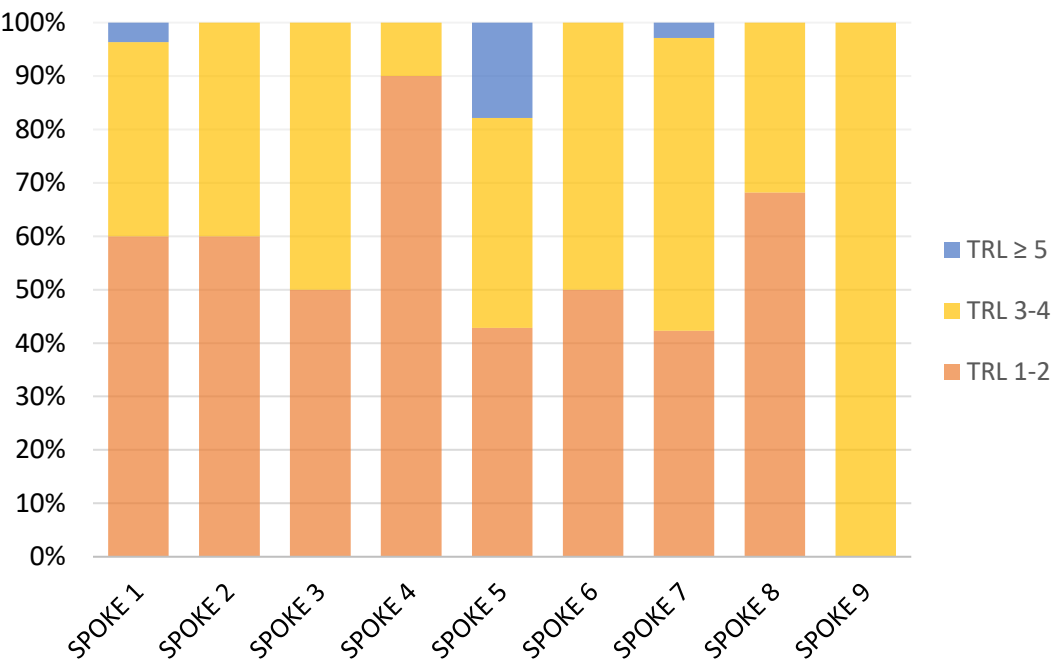


Next Steps (M19)

In view of the upcoming **M19** release, the goals are the following:

- ✓ Precise verification of actually **activated** synergies.
- ▼ Identification of collaborations that remained only planned.
- 🔧 Consolidation of the operational network.

TRL Assessment at M18



Insight:

Most Spokes are dominated by **early (TRL 1-2)** and **mid (TRL 3-4)** maturity levels, consistent with the current R&D phase. Higher TRL results (≥ 5) are currently concentrated in specific **Spokes (5, 7, 1)**.

ASSESSMENT METHODOLOGY

TRL values are based on **self-assessments** provided by the Spokes using a standardized template coordinated by the HUB. Intermediate TRLs have been split between adjacent levels to ensure consistent aggregation in the numerical breakdown.

	TRL 1	TRL 2	TRL 3	TRL 4	TRL 5	TRL 6	TRL 7	TRL 8	TOTAL
SPOKE 1	5	28	16,5	3,5	0,5	0,5	0,5	0,5	55
SPOKE 2	0	6	4	0	0	0	0	0	10
SPOKE 3	0	4	3	1	0	0	0	0	8
SPOKE 4	0	9	1	0	0	0	0	0	10
SPOKE 5	3	9	9	2	1	3	1	0	28
SPOKE 6	1	1	2	0	0	0	0	0	4
SPOKE 7	1	21	25	3,5	1,5	0	0	0	52
SPOKE 8	8,5	6,5	2,5	4,5	0	0	0	0	22
SPOKE 9	0	0	2	0	0	0	0	0	2

Financial Data

32

Partners who have reported

+7,5mIn

Reported Amount
(RA1 + RA2)

+8,5mIn

Amount to be reported at
RA3

20

Approved requests for
compensatory
modifications



It is essential that Partners continue to report, increasing the amount of their reporting for RA.

Milestone	Maximum amount authorised for RA/RF		ASI Funding Report		Residue
RA1	€	35.000.000,00	€	1.819.211,69	€ 33.180.788,31
RA2	€	14.567.777,14	€	5.903.537,38	€ 41.845.028,07
RA3	€	15.000.000,00	€	8.698.607,45	€ 48.146.420,62
RA4	€	7.800.000,00			€ 55.946.420,62
RF	€	7.200.000,00			€ 63.146.420,62
TOTAL	€	79.567.777,14	€	16.421.356	€ 63.146.420,62

Reporting must comply with the MUR fund restriction whereby general and personnel expenses cannot exceed 30% of the budget. This restriction is to be understood as comprehensive and cumulative for RA and Partners.

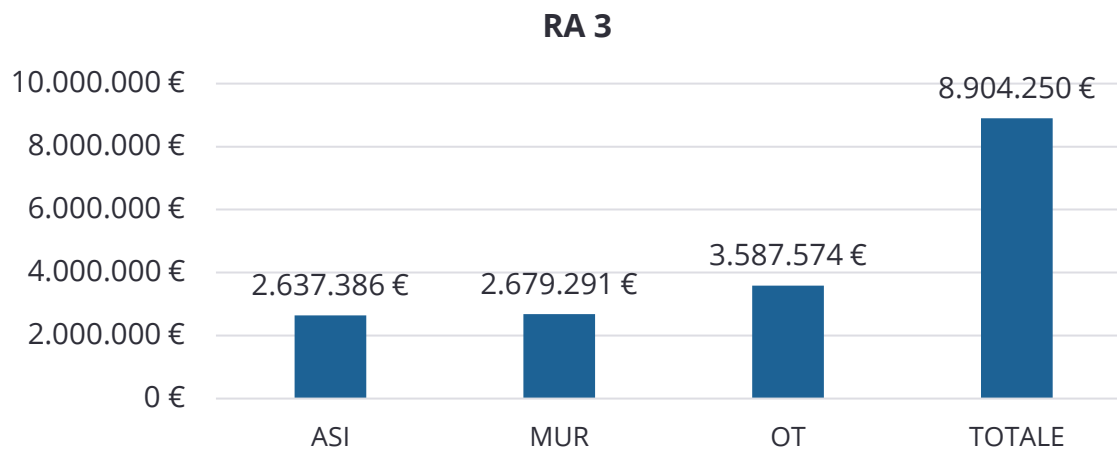
Milestone	General expenses	Labour costs	Total Reported	% vincolo MUR
RA1	55.408,78 €	399.602,95 €	460.795,31 €	98,74%
RA2	118.434,85 €	949.898,64 €	1.289.787,13 €	82,83%
RA3	69.969,71 €	456.749,24 €	1.068.991,54 €	49,27%
RA4	-	-	-	-
RF	-	-	-	-
TOTAL	243.813,34 €	1.806.250,83 €	2.819.573,98 €	72,71%

Financial Data

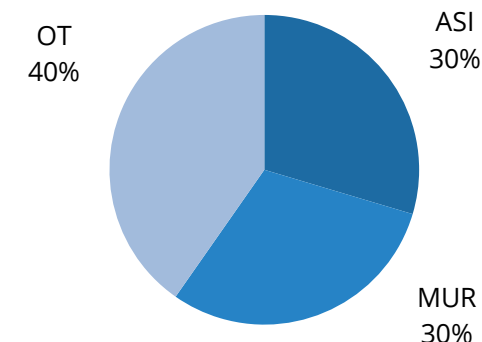


TOTAL REPORT *(in progress)*:*

- **ASI Fund:** 2.637.386 €
- **MUR Fund:** € 2.679.291
- **OT Fund:** € 3.587.574
- **TOTAL:** € 8.904.250



Funds Allocation



EXPENSE CATEGORIES *(in progress)*:*

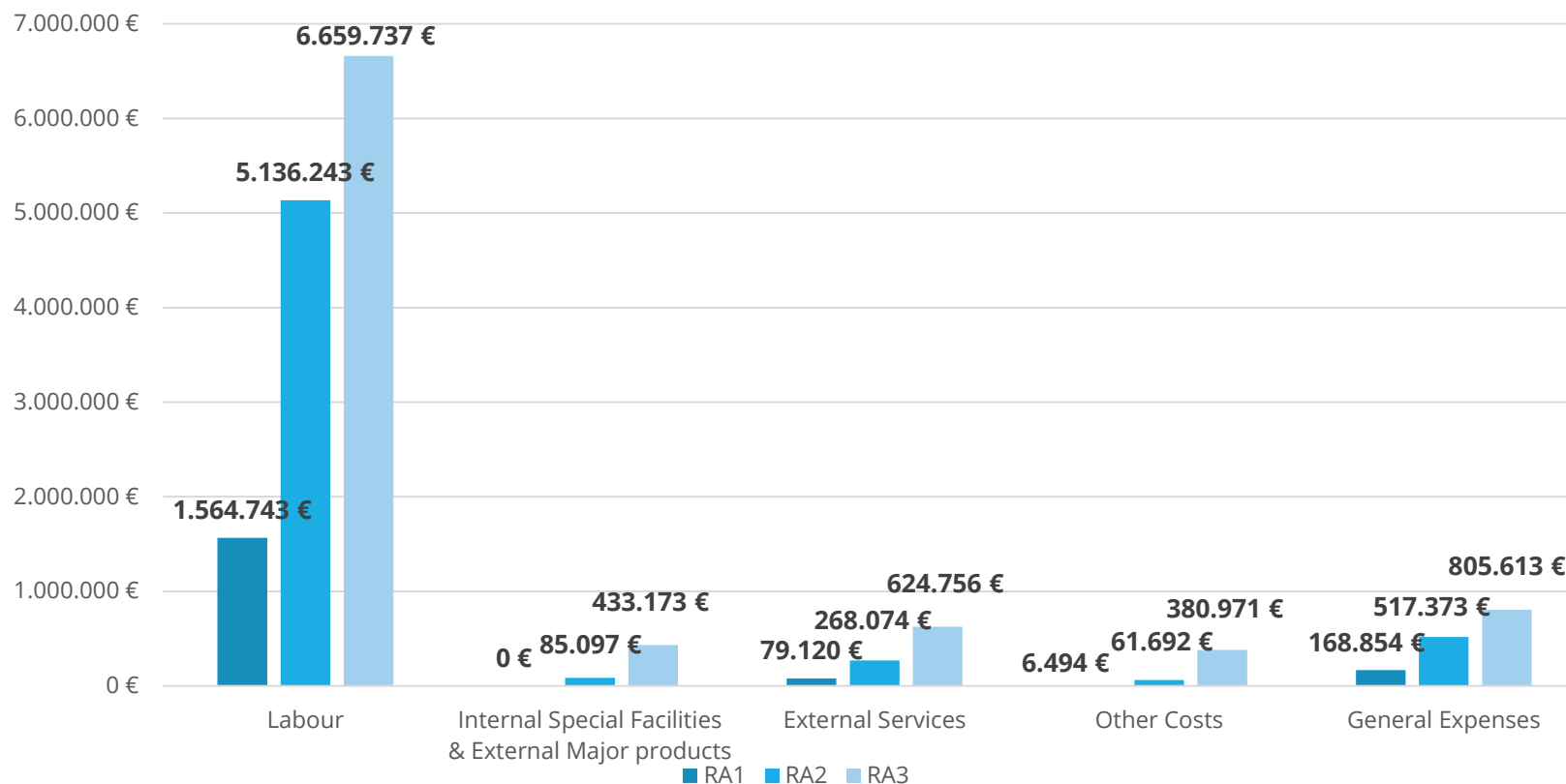
- **Labour:** € 6.659.737 (74.8%)
- **Internal Special Facilities & External Major Products:** € 433.173 (4.9%)
- **External Services:** € 624.756 (7.0%)
- **Other Costs:** € 380.971 (4.3%)
- **General Expenses:** € 805.613 (9.0%)
- **TOTALE:** € 8.904.250 (100%)



Financial Data

The data below are cumulative for RA1, RA2 and RA3. While RA1 and RA2 are closed, RA3 has not yet been transmitted. The data referring to RA3 refer to what has been acquired up to 20/01/2026 and are therefore subject to change.

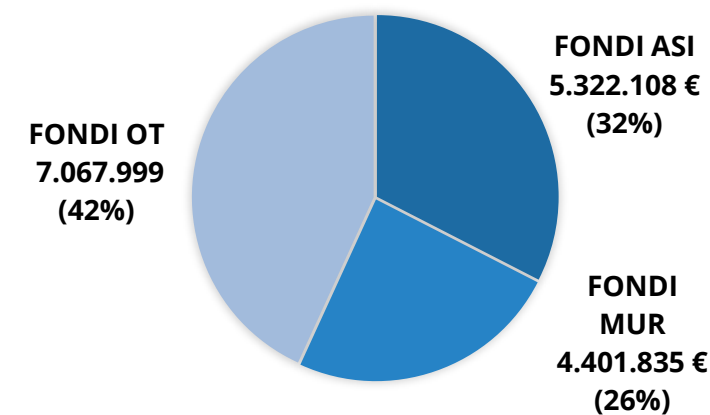
Expense Categories



Spent monitored at
20/01/2026

+16,7mln

FUNDS ALLOCATION



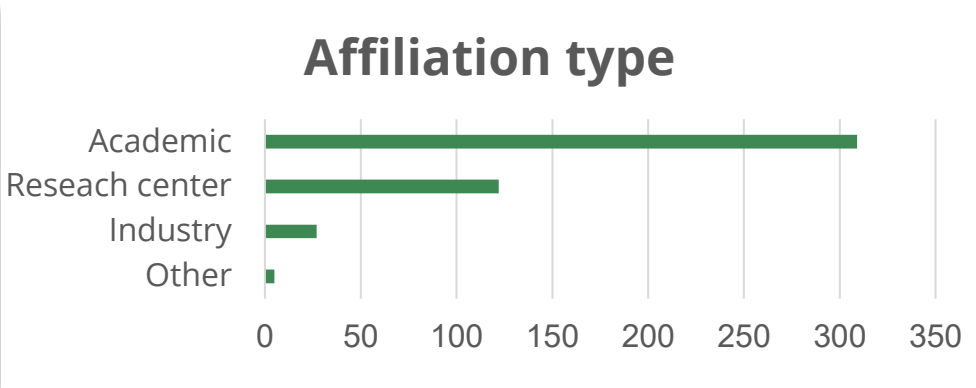
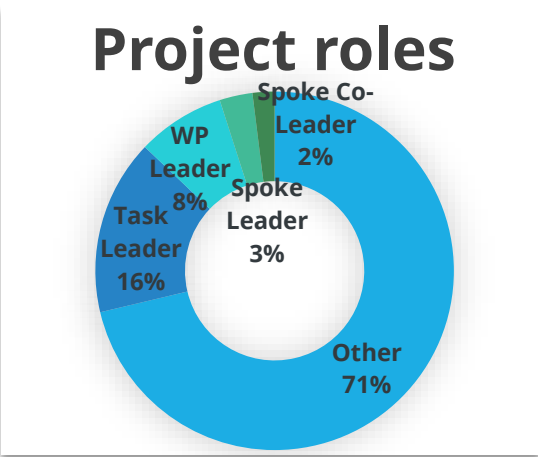
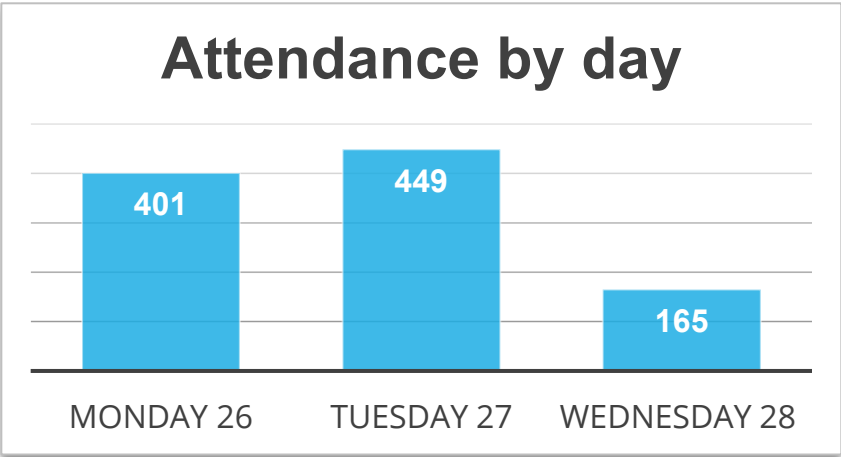
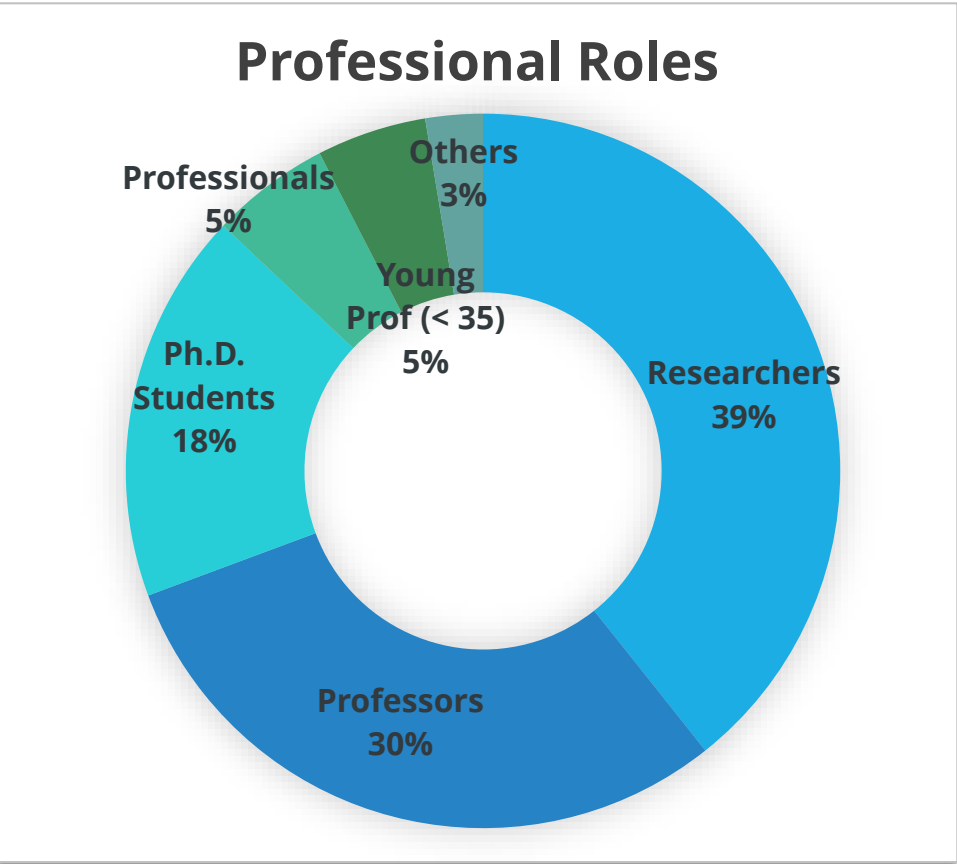
SIU! DAYS – Numbers from the Event



460+
Total attendees

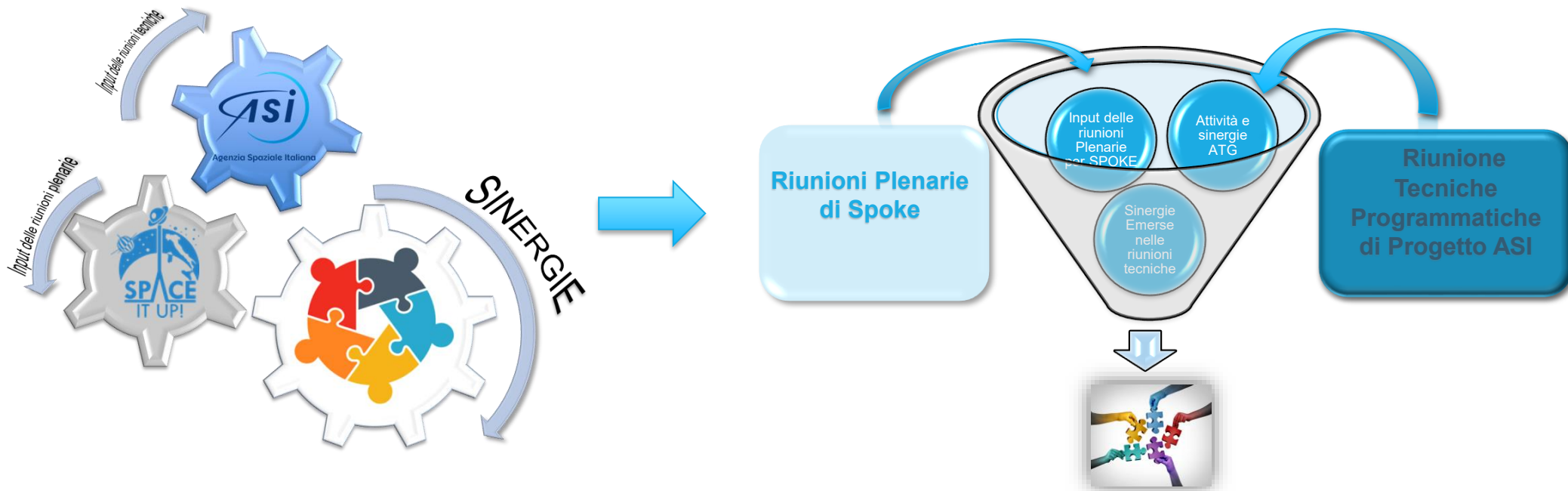
170+
Total posters

41
Affiliations

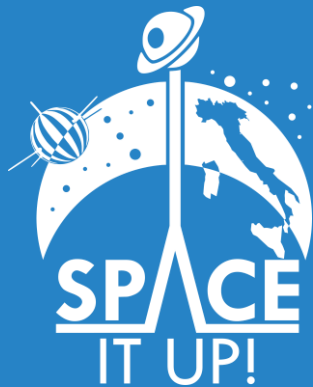


Processo di creazione delle Sinergie nel progetto Space It UP!

In questi **18 mesi** dall'avvio del progetto, i **9 Spoke** hanno lavorato secondo una visione sinergica, attivando un vero e proprio processo di creazione delle collaborazioni, in cui competenze, dati tecnologie vengono condivisi e messi a sistema



È proprio all'interno di questo contesto, e in particolare dello **Spoke 9, dedicato a Habitat, Space and Science**, che nasce la prima campagna nazionale di catalogazione del materiale extraterrestre, con un focus sulle meteoriti, sviluppata dal **Work Package 9.3 "Planetary Resources"**, coordinato dal **Professor Giovanni Pratesi (UNIFI)** in collaborazione con **l' Istituto Centrale per il Catalogo e la Documentazione (ICCD) del Ministero della Cultura (MIC)**.



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26-28 January 2026*



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