

Prefazione al Convegno

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ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

CENTRO
INTERDIPARTIMENTALE
DI RICERCA INDUSTRIALE
AEROSPAZIALE – AEROSPACE

Con il patrocinio di:



* Con importanti contributi da:
L. Calabri (ART-ER), L. Ciapetti (Centro Antares)
E. D'Aversa, A. Cramarossa (ASI)

L'ecosistema Regionale Aerospaziale



La strategia Regionale per l'Aerospazio (1/2)

- **Aerospace** recognised as **most promising sector for regional growth** – included in Smart Specialization Strategy 2021-2027.
- Participation in **trans-regional programmes** in the framework of the Italian Space Economy initiative (Mirror Copernicus; Mirror GovSatCom; I-Cios).
- **Aerospace Strategic Forum** – regional community, a platform for awareness, partnership and collaboration among regional aerospace organizations.
- Institutional and Business **Missions** (Washington 2022; Houston, Canada, Japan 2023; South Korea 2024).
- Membership of **CTNA** (National Cluster AEROSPACE): national working groups on innovative topics (i.e., Fuel Cell powertrain; Autonomous vehicles; Data processing, Lunar exploration, Robotics, Additive Manufacturing, etc.)
- Activity within the **Copernicus User Forum** and application to become a **Copernicus Relays**
- Membership of **European network NEREUS** (Network of European Regions Using Space Technologies), with operative director of ART-ER in the board.
- Agreement with **Italian Air Force** for developing **Commercial Spaceflight** applications
- MoU with **AXIOM** to support regional companies
- **VC Fly.ER** in **Clust-ER MECH** and **WG Downstream** in **Clust-ER INNOVATE**
- Consortium **ANSER**



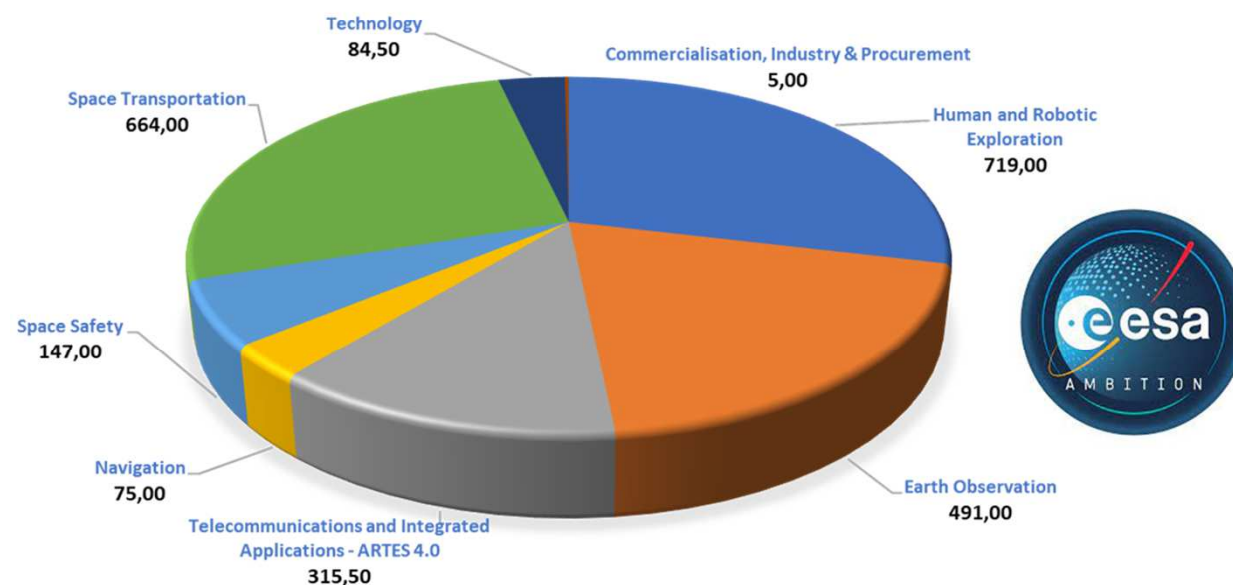
La strategia Regionale per l'Aerospazio (2/2)

- **Data Valley Hub** – Manifattura Technopole (ECMWF, CINECA – Leonardo, IFAB, ...)
- Investment of the Region for **Digital Twins projects** (Air Quality, Environmental impact, decarbonisation, fight against the effects of climate change, Slow Tourism)
- **HPC MarghERita** for regional Public Administration
- NEXT Gen EU **IRIDE Project**: E-R as a pilot user for Air Quality and Soil Organic Carbon.
- **AI Factory IT4LIA** - The initiative will promote the adoption of AI solutions in key sectors such as agribusiness, cybersecurity, earth science and manufacturing. This will simplify access to high-value data and a wide range of services, encouraging collaboration between researchers, developers, startups and SMEs.
- **Mercury** Foundation (established in March 2025 in Forlì)



Lo «SPAZIO» italiano in Europa

- Italy founding Member ESA
- overall 3rd contributor and 1st contributor in optional programs
- Italy hosts the ESA Center ESRIN in Frascati (Rome)

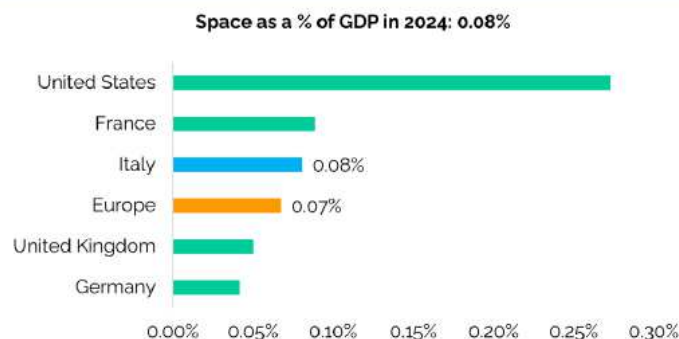


Italy Priorities and Subscription ESA CMIN 22 Optional Programs - 3 years (2501 M€) *



Lo «SPAZIO» italiano in Europa - evoluzione

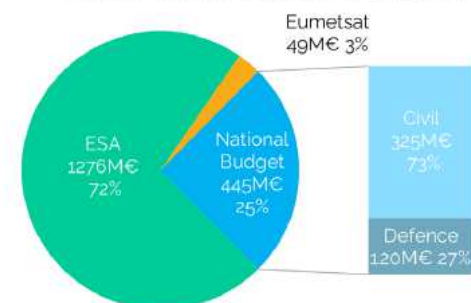
National Public Investment in Space



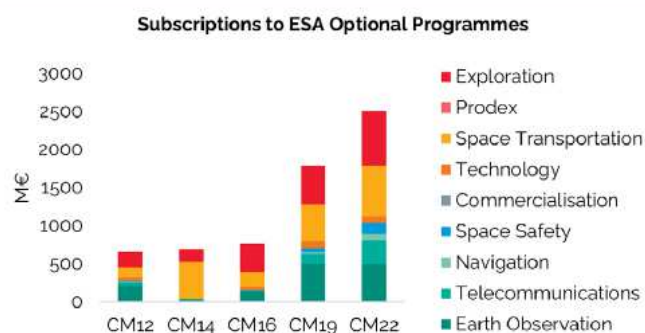
Note: Europe includes EU27, Norway, Switzerland and the United Kingdom.

Note: The data includes the budget to the national space programmes, civil and defence, as well as national contributions to ESA (incl. 3rd Party activities) and EUMETSAT. National contributions to EU space activities are not included.

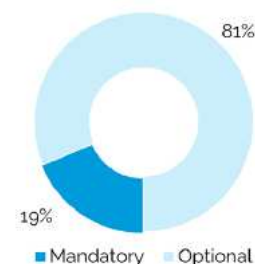
Public Investment in Space in 2024: 1770 M€



National Subscriptions to ESA Ministerial Councils



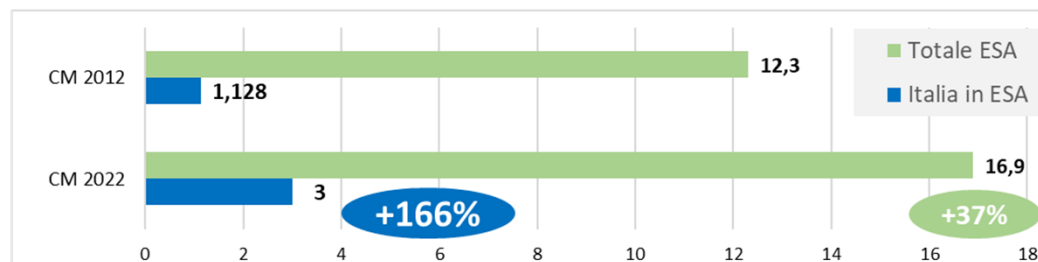
Subscriptions to ESA CM22: 3083 M€



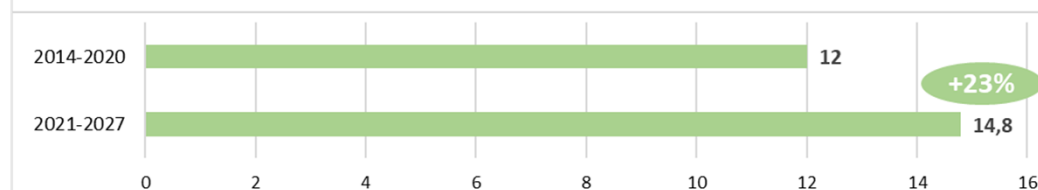
Note: Data in economic conditions of the Ministerial year. Additional subscriptions in between Ministerial Councils are not included.

Il Budget ASI - trends

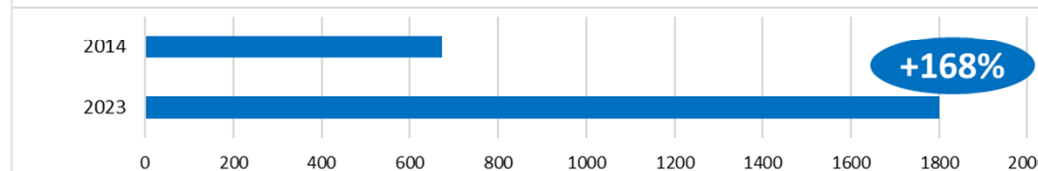
ESA Subscription [B€]



Budget UE
(FP + Space Programmes) [B€]



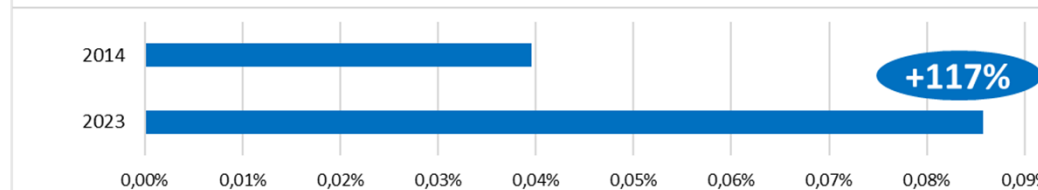
ASI Budget [M€]



Italy GDP [B€]

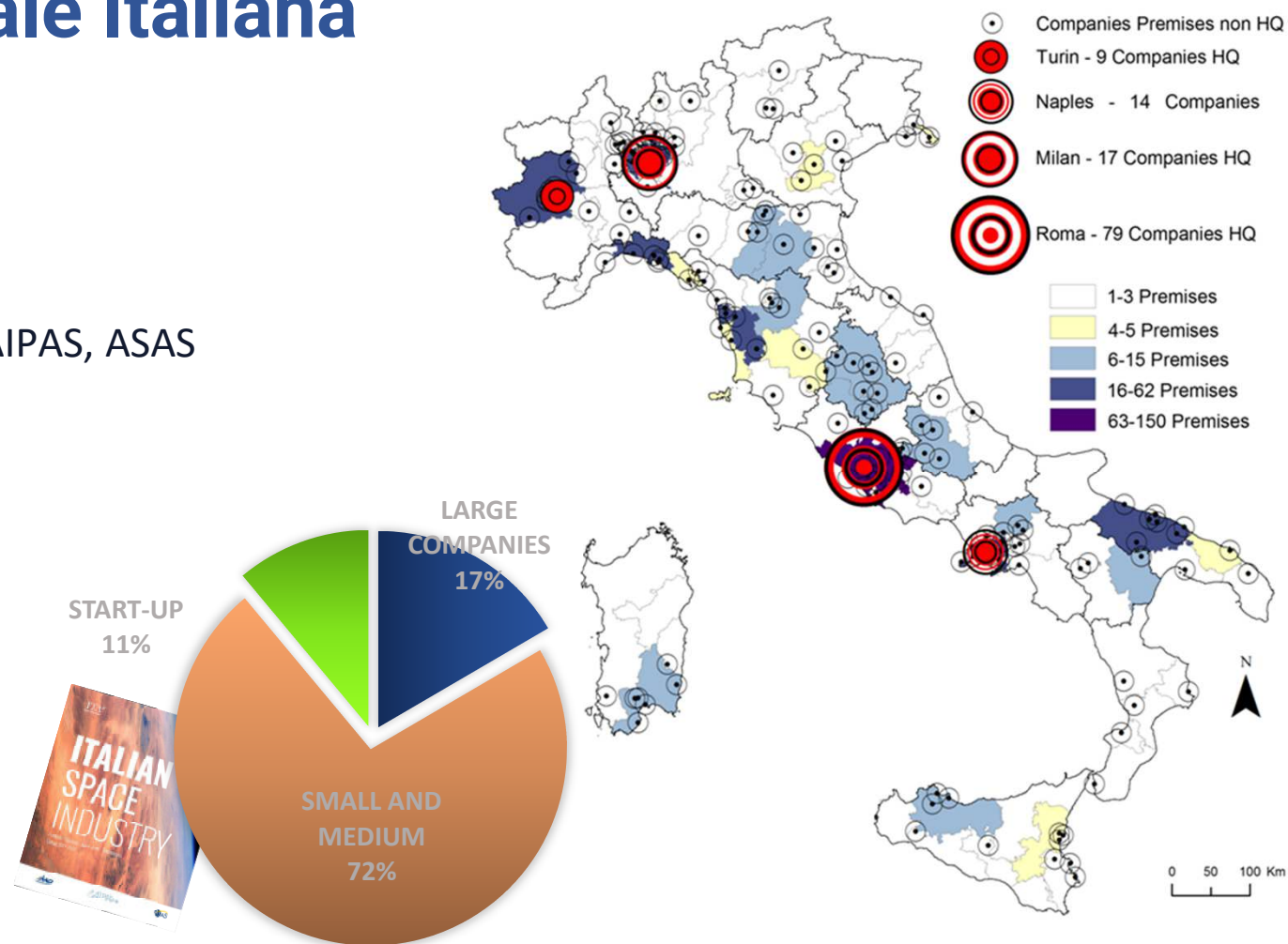


ASI BDG / Italy GDP



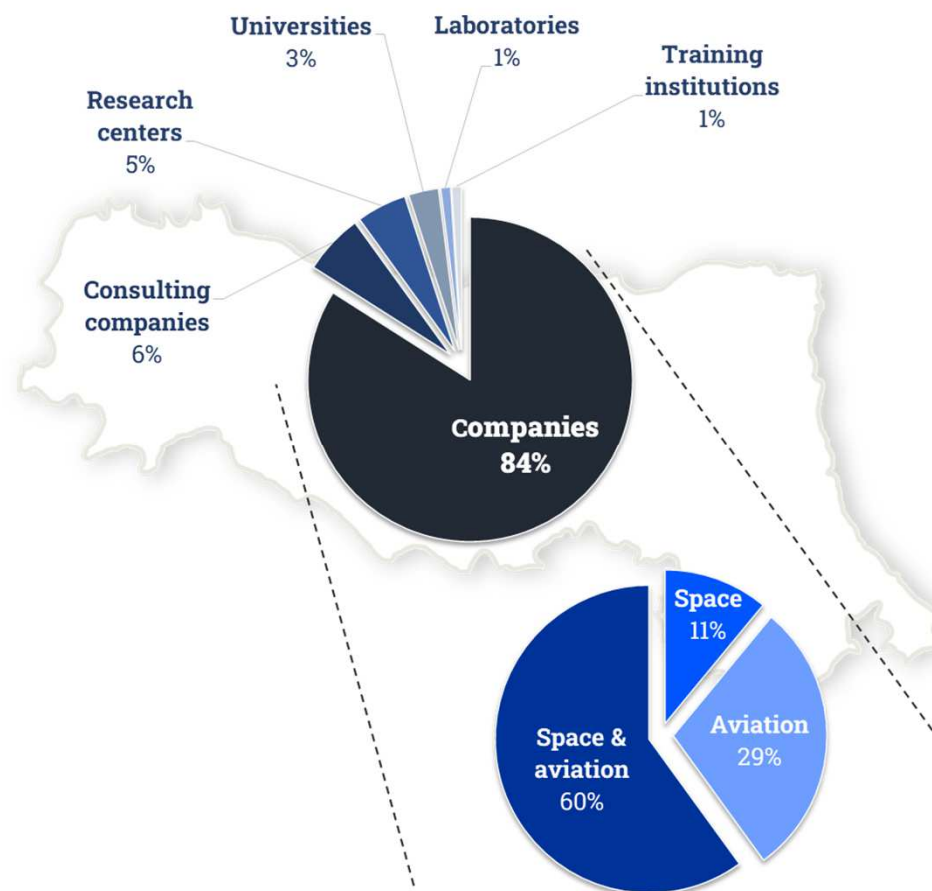
L'industria Spaziale Italiana

- ≈ **300** companies
- ≈ **8000** employees
- **3** National Association: AIAD, AIPAS, ASAS
- **15** Tech District
- **1** National Cluster: CTNA
- **5** ASI/ESA Incubators
- **2** Space Acceleration Programs



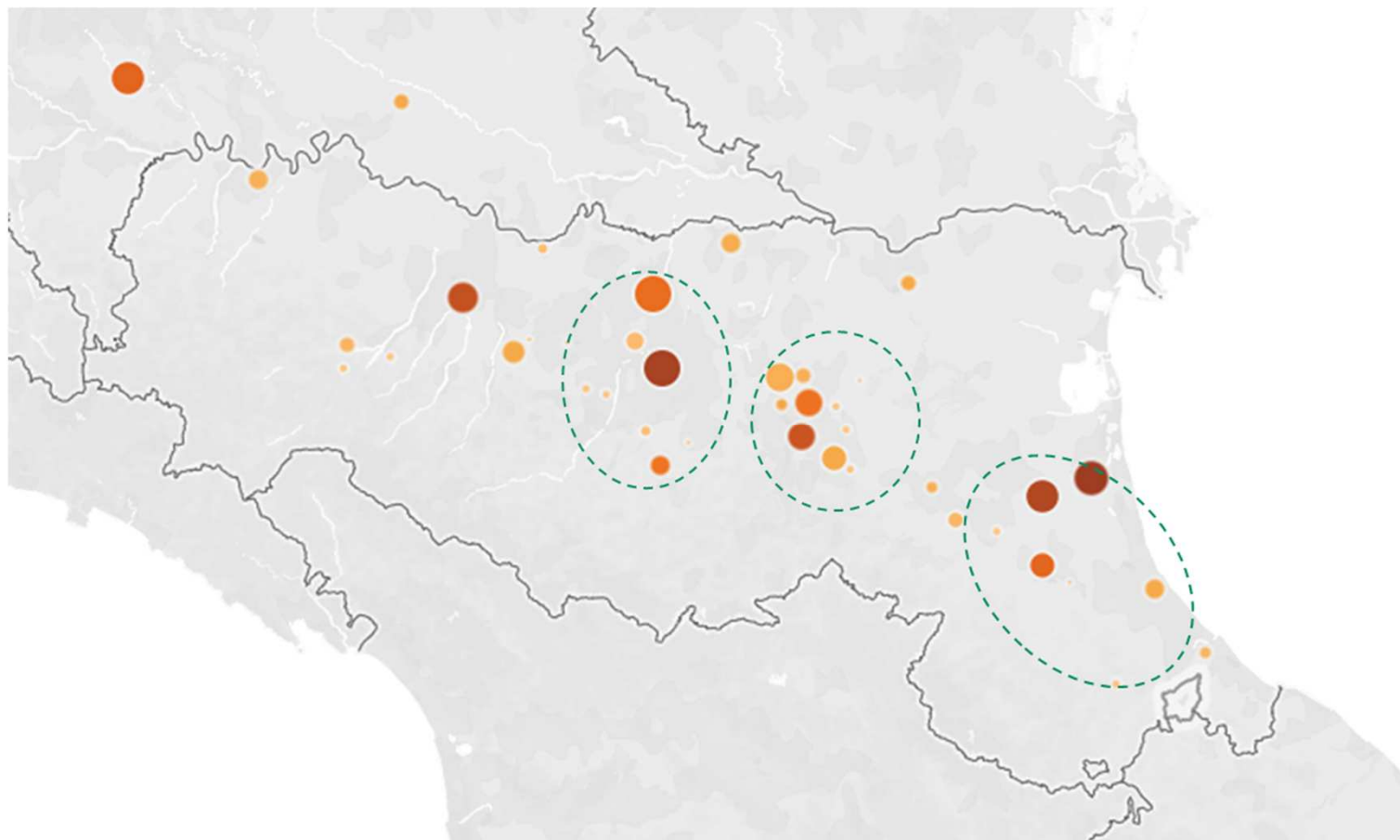
Un Ecosistema Aerospaziale Regionale Completo

- ❑ The aerospace economy is a sector of strategic interest for Italy in which it holds a global leadership position, with a **turnover** of about **EUR 13.5 billion** and a direct workforce of over 50,000. The country ranks **7th in the world and 4th in Europe**.
- ❑ The companies are based in E-R employing about **4500 employees** and having a **turnover of 1%** of the regional GDP.
- ❑ The **E-R stakeholders** are divided into: 148 companies, 11 Consulting Societies, 9 Research Centres, 4 Universities, 2 Laboratories and 2 Training Institutions.
- ❑ About **29%** of companies are active exclusively in the **aviation sector**, about **11%** exclusively in the **space sector** while around **60%** operate in **both sectors**.



Un Ecosistema Aerospaziale Regionale Completo

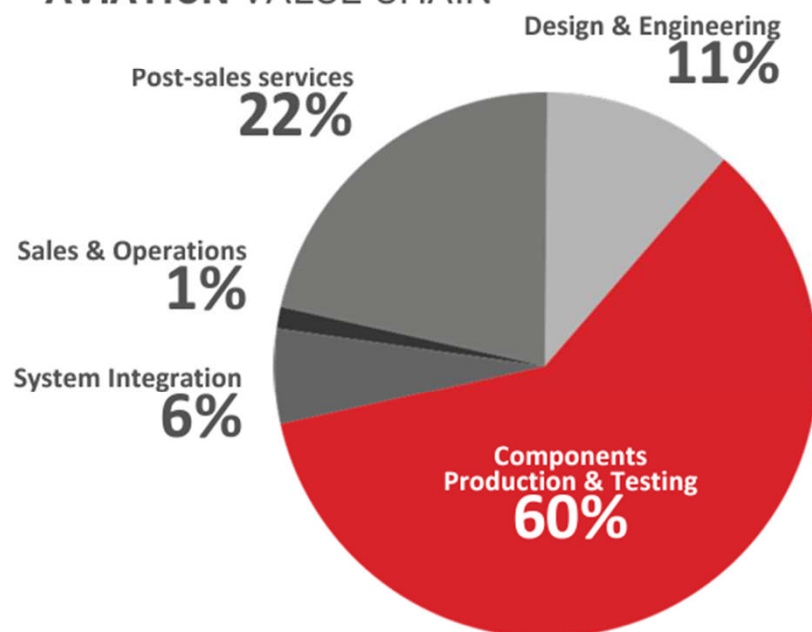
- ❑ There is no significant **territorial pattern** for regional Aerospace.
- ❑ The geographic correlation analysis delivers factors of dispersion.
- ❑ However, it is possible to recognize **three potential clusters**: around **Bologna**, around **Modena**, and in **Romagna**



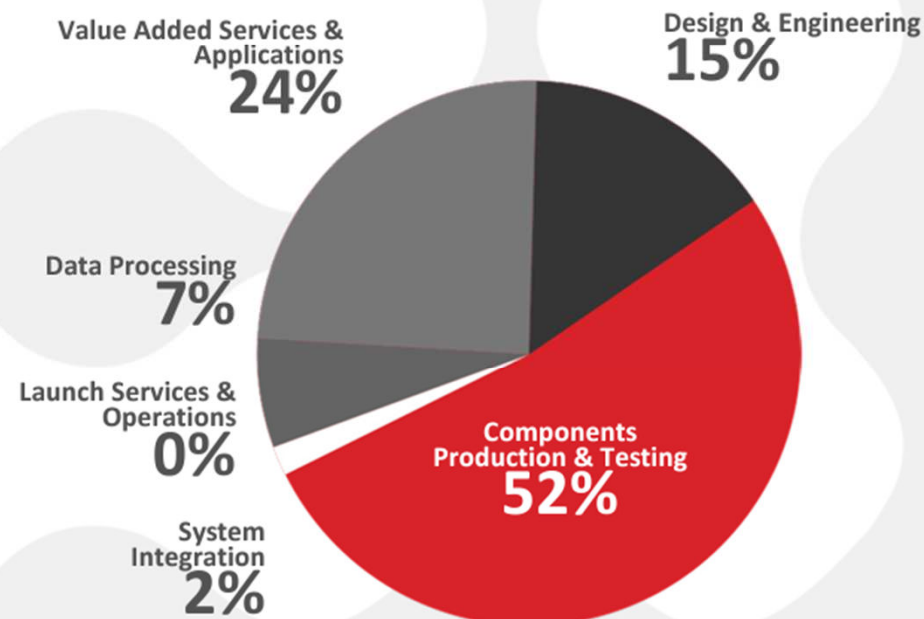
Un Ecosistema Aerospaziale Regionale Completo

AEROSPACE VALUE CHAIN

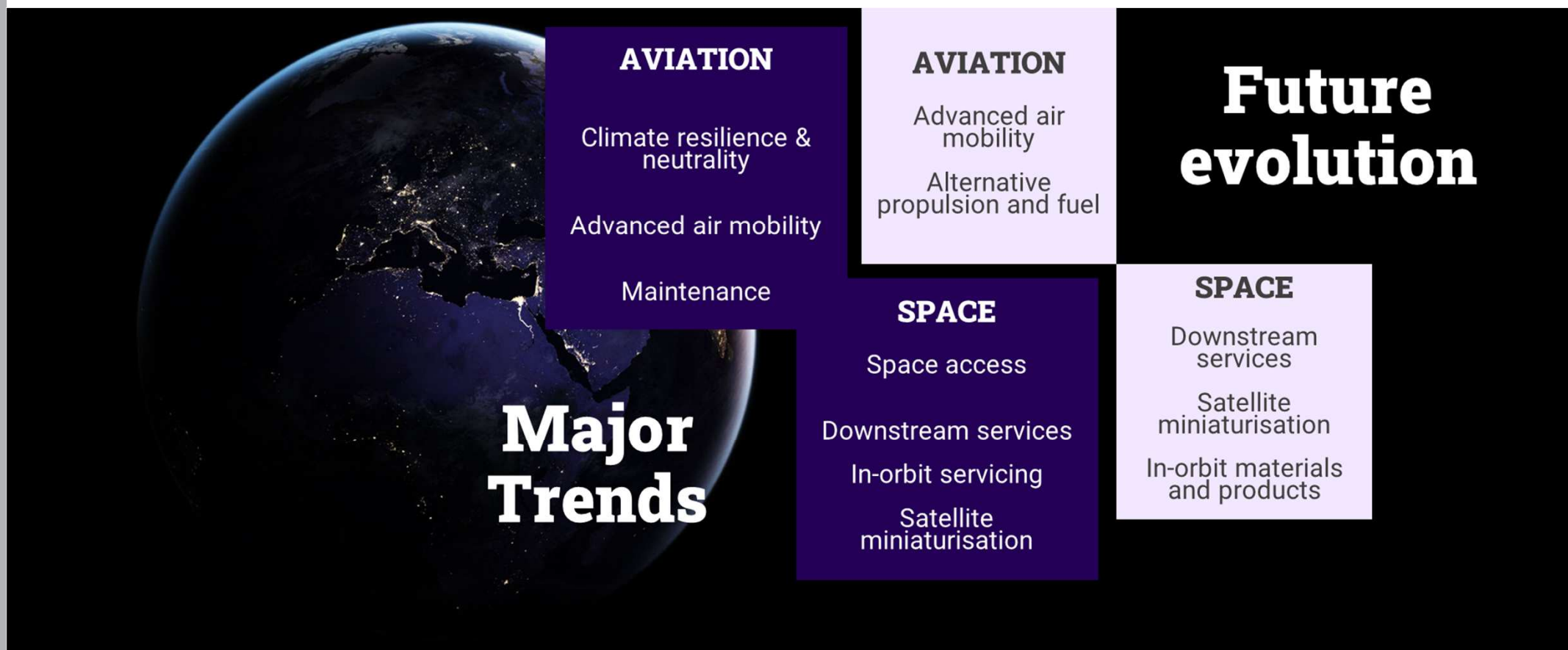
AVIATION VALUE CHAIN



SPACE VALUE CHAIN



Trends Regionali

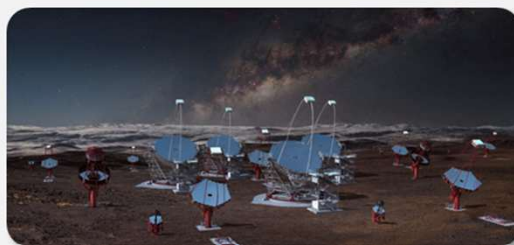


Infrastrutture Internazionali



SKA Observatory
(Square Kilometer Array)

- A **next-generation radio astronomy-driven Big Data facility** that will revolutionise our understanding of the Universe and the laws of fundamental physics.
- **Bologna** is candidate to host important facilities, including one of the **hubs of the worldwide network** of SKA Regional Centers.



CTA
(Cherenkov Telescope Array)

- Will be an **international infrastructure** for the construction of two large astronomical observatories.
- CTA will **study the Universe** through high-energy gamma rays (TeraElectronVolts) revealed through the Cherenkov effect. The headquarter is currently in Bologna.



CICLoPE
(Centre for International Cooperation in Long Pipe Experiments)

- Is a research laboratory which allows the worldwide best **space and time resolved measurements in turbulent pipe flows**.
- The main objective of CICLoPE is to **study high Reynolds numbers** turbulent flows.



Grazie per l'attenzione!