

TASI PRESENTATION

CN HPC, BIG DATA AND QUANTUM COMPUTING SPOKE 2/3: INTEROPERABLE DATA LAKE PROJECT

Kick-off meeting, Bologna 06/10/2023



FROM EARTH TO DEEP SPACE...

36 000 KM

23 000 KM

8 000 KM

800 KM

700 KM

400 KM

Date : 06/10/2023

Ref :

Rif. Modulo : 83230347-DOC-TAS-IT-011

PROPRIETARY INFORMATION

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JOINT VENTURE



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Date : 06/10/2023

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THALES ALENIA SPACE NEL 2021

2,15

BN € VENDITE



8,000

DIPENDENTI



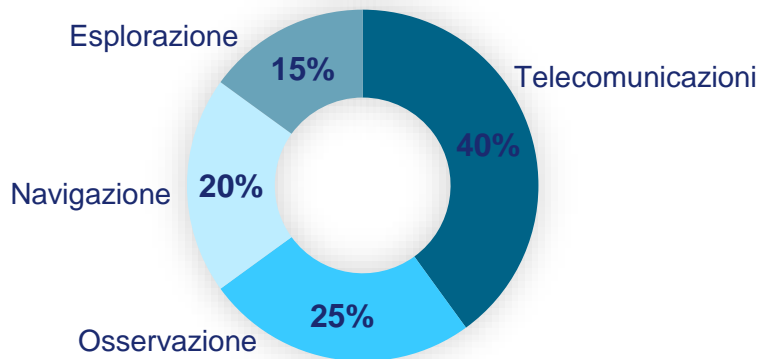
18 SITI

NEL MONDO

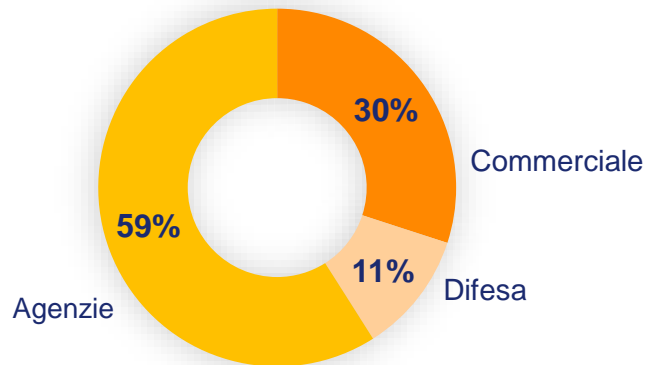


ATTIVITA' DI BUSINESS 2021

SETTORE



MERCATO



**SPACE
FOR
LIFE ///**

**SPACE TO
CONNECT**

**SPACE TO
SECURE
& DEFEND**



**SPACE TO
OBSERVE
& PROTECT**



**SPACE TO
EXPLORE**



**SPACE TO
TRAVEL
& NAVIGATE**



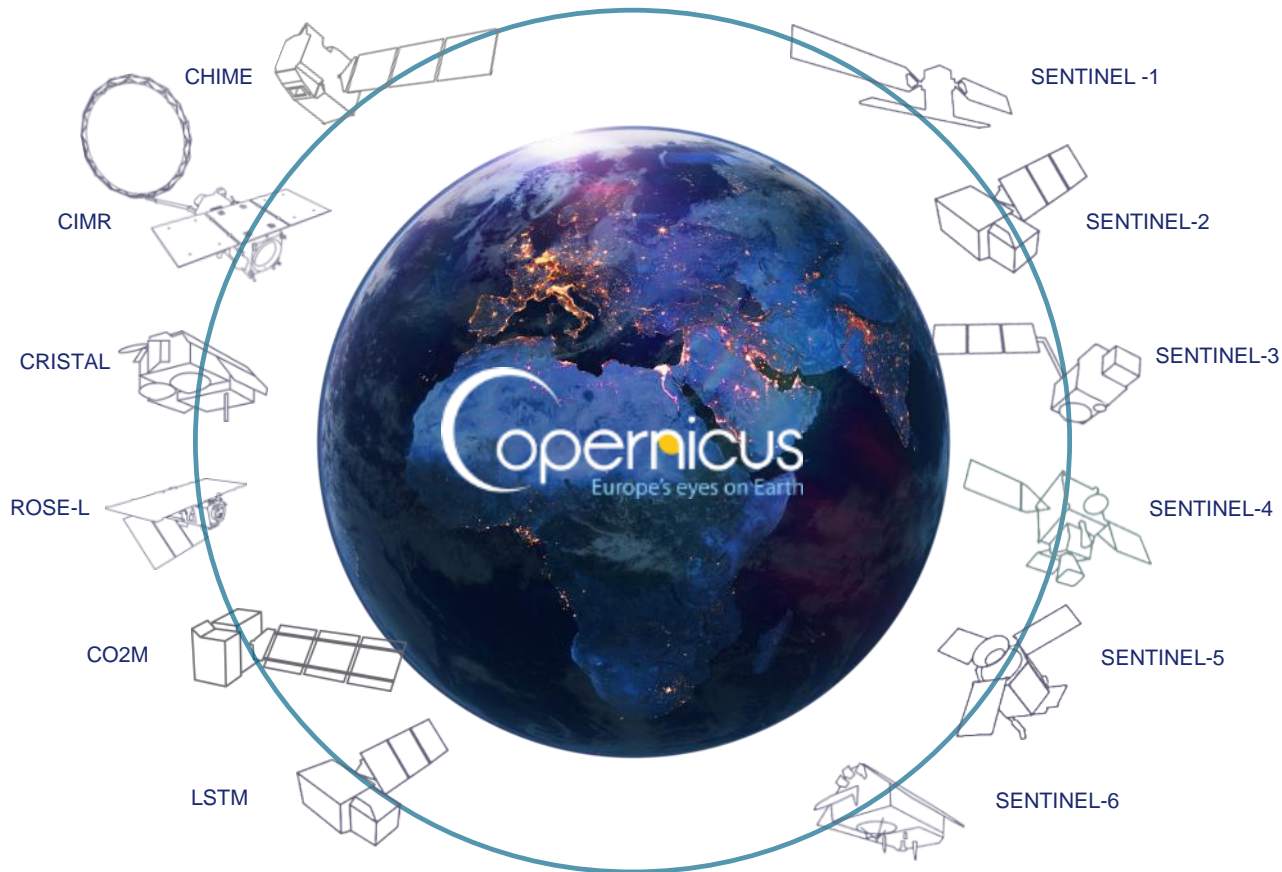
SPACE TO SECURE & DEFEND

/// Safety & security in space

- / Space Situational Awareness
- / Satellite protection against in-situ intentional threats
- / On-orbit active defense



SPACE TO OBSERVE & PROTECT



TAS-I: INDUSTRIAL RESEARCH AREAS - SYNERGY WITH ICSC

/// State-of-the-art **digital technologies** in Space Systems

- ! Design, development, manufacturing, integration, deployment and space operations

/// Development of **cutting-edge computation capabilities**

- ! move part of computing workload closer to sensors to reduce latency

/// To evolve system concepts of operations to support **on-board autonomous processes** and **data exploitation solutions**

/// High performance computing solutions for upstream space sector

- ! to **embark space probes** and in **orbit sensors generating data**, e.g. in Earth observation radar and satellite constellations
- ! on-board early processing through edge computing capabilities
- ! space mission management

/// Space systems advanced modelling and simulation solutions

- ! support to mission analyses, design and development engineering processes



TAS-I: PARTNER OF THE FOUNDATION ICSC – IG PROJECTS

SPOKE	PROPOSAL	LEADING PARTNER	CONTRIBUTORS	UNIVERSITY / RESEARCH CENTRE
1	High performance RISC-V satellite processor	TASI	LDO	UNIBO
2/3	Data lake for space data for Space Situational Awareness (SSA) applications	LDO	TASI	INFN, INAF
2	Risk management and scoring methodology and tools	ISP	TASI	UNIBA, UNINA, INFN
6	Analysis and monitoring (PHM) of multi-scale critical systems through Artificial Intelligence	TASI	LDO, ENI, TERNA, Ferrovie, Autostrade, Engineering, IFAB	UNIBO, UNIPI, UNITO, POLIMI
6	Reactive and Adaptive EO space distributed constellations systems: HPC modelling, design optimization and simulation	TASI	LDO, TERNA	POLIMI
9	Technologies for smart city	LDO	TASI	UNIBO
10	Mission Planning Empowering via Quantum Computing	TASI	LDO	UNIPD
10	Quantum Algorithms for the solution of differential equations: Backscattering of radar EM waves from generic complex-shaped target	LDO	ENI, TASI	UNIPD, IIT, UNIBA, CINECA, IFAB (IBM)