

Global Trends and how they impact our space activities

Space Innovation Forum
29 September 2020

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Director of Earth Observation Programmes

EUROPE'S GATEWAY TO SPACE

WHAT

22 Member States, 5000 employees

WHY

Exploration and use of space for exclusively peaceful purposes

WHERE

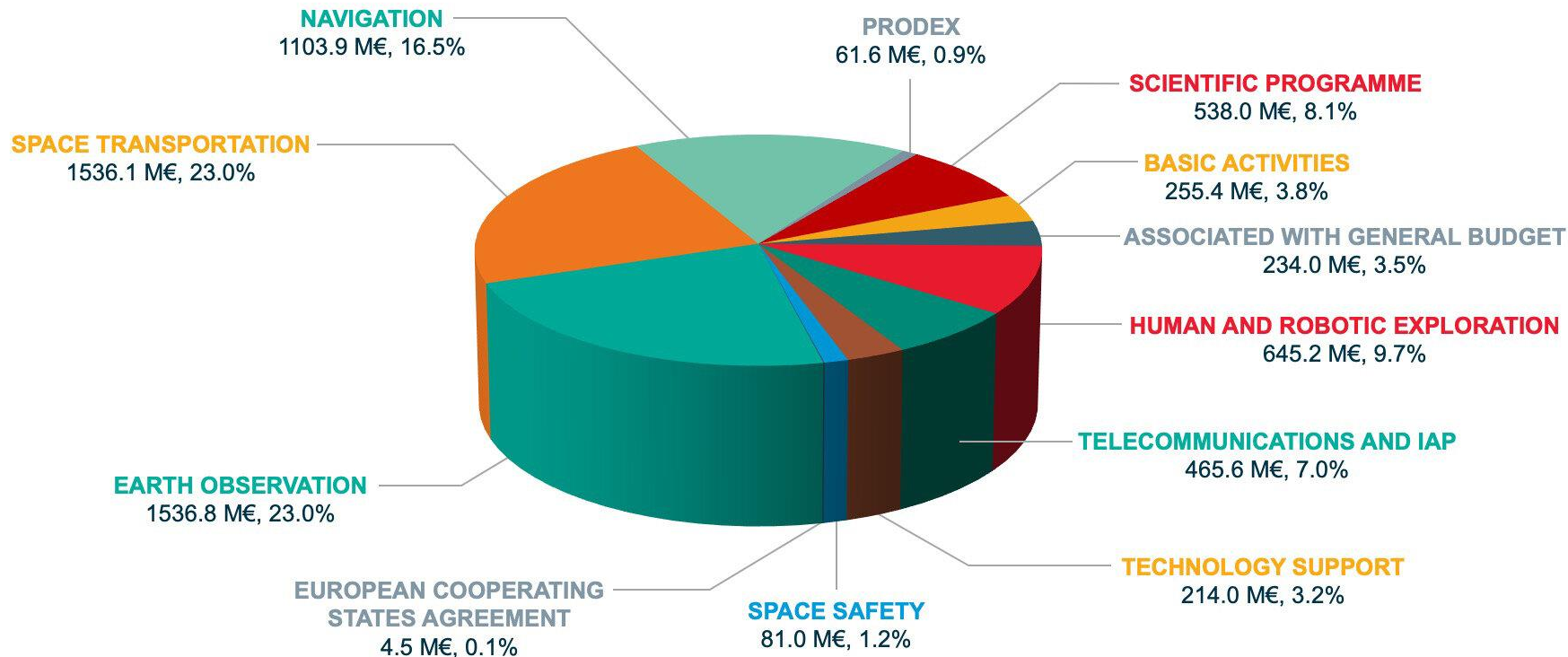
HQ in Paris, 7 sites across Europe and a spaceport in French Guiana

HOW MUCH

€6.68 billion = €12 per European per year



ESA BUDGET BY DOMAIN FOR 2020: 6.68 B€



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European Space Agency

ESA EO Vision:



Taking the Pulse of our Planet

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→ THE EUROPEAN SPACE AGENCY

15 in operation

40 under development

13 under preparation



2015

2020

2025

2030

Science



Copernicus



Meteorology



→ THE EUROPEAN SPACE AGENCY

ESA EO supports European interests



Contributions to:

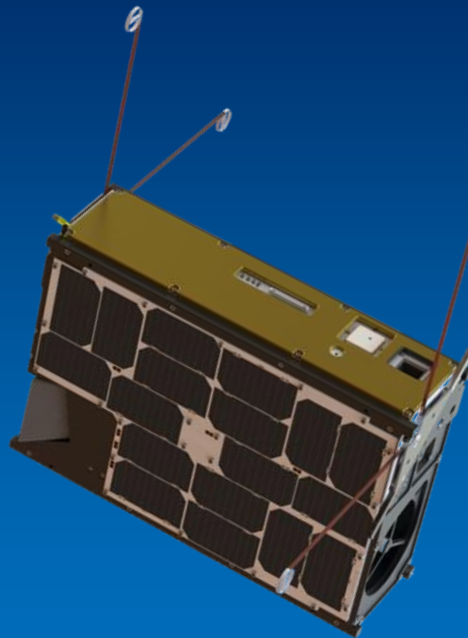
- Paris Agreement & European Green Deal
- Agriculture & Fisheries
- Resource Management
- Air Pollution Monitoring
- Alpine & Maritime
- Earth Science
- Weather forecasting
- Security
- ...



+ industrial innovation, jobs and growth!

ϕ -Sat-1 – ESA-driven Innovation

- First deep Convolutional Neural Network in space performing near-real-time inference thanks to a highly efficient off-the-shelf AI chip
- Φ -sat-1 will perform inference on the Hyperscout hyperspectral images to detect clouds and “remove” the cloudy pixels
- Launched on 3 Sept. on the first Vega rideshare service using the Small Spacecraft Mission Service



The Myriad 2 chip

Image: Maximilien Brice/CERN



€

AGRICULTURE



ENVIRONMEN



COMPANIES

100.000
visitors /

- **Single source of truth** – EO data from **Copernicus Sentinels** and **Third Party Missions**
- **Made in Europe**
- **Straightforward** to use
- **Informative**
- **Engaging** public & community via EuroDataCube contest



EO Architecture

System of Systems



Meteo Satellites

Earth Explorers

Sentinels

constellations

Smallsats

HAPS

Drones

IoT



AI Opening a new Dimension for EO



On Board
Autonomy



Detection/
Classification



Process
Automation



Big Data
Analytics



Data
Science



Super
Resolution



Digital Twin Earth

Observations

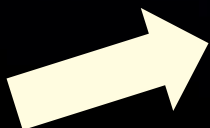
- Public
- Commercial
- NewSpace



AI



Earth System
Science



Scientific knowledge

Predictions

Simulations

Intelligent solutions



The European Downstream EO Market



572 Companies
up from
515 (+11%)



9800+ Employees
up from
8400 (+16%)



€1.38b Revenues
up from
€1.24b (10%)



10% Growth
Sustained

EARSC Industry Survey 2020

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Technology not explicitly mentioned, but it is a key challenge



EARSC Industry Survey 2020

Accelerate the future of Earth Observation

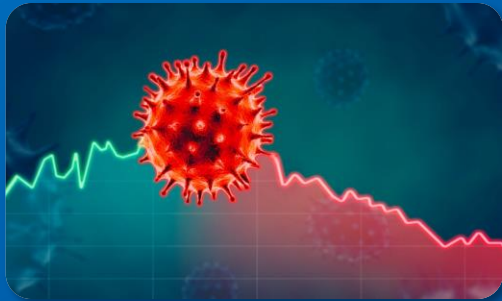
via transformational innovation*

strengthening Europe's world-leading competitiveness



***transformational innovation**: with the ability to completely transform or create entire industries via new technologies

Megatrends in Space and its Industry



Covid-19 impact and economic recovery plans



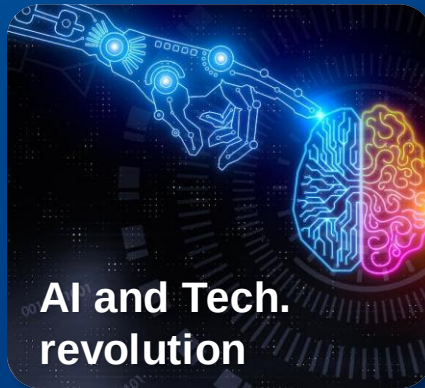
Digitalisation of the global economy



Space as a source of societal benefits



Commercialisation & NewSpace



AI and Tech. revolution

European excellence, autonomy & independent access



Thank you for your attention!

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