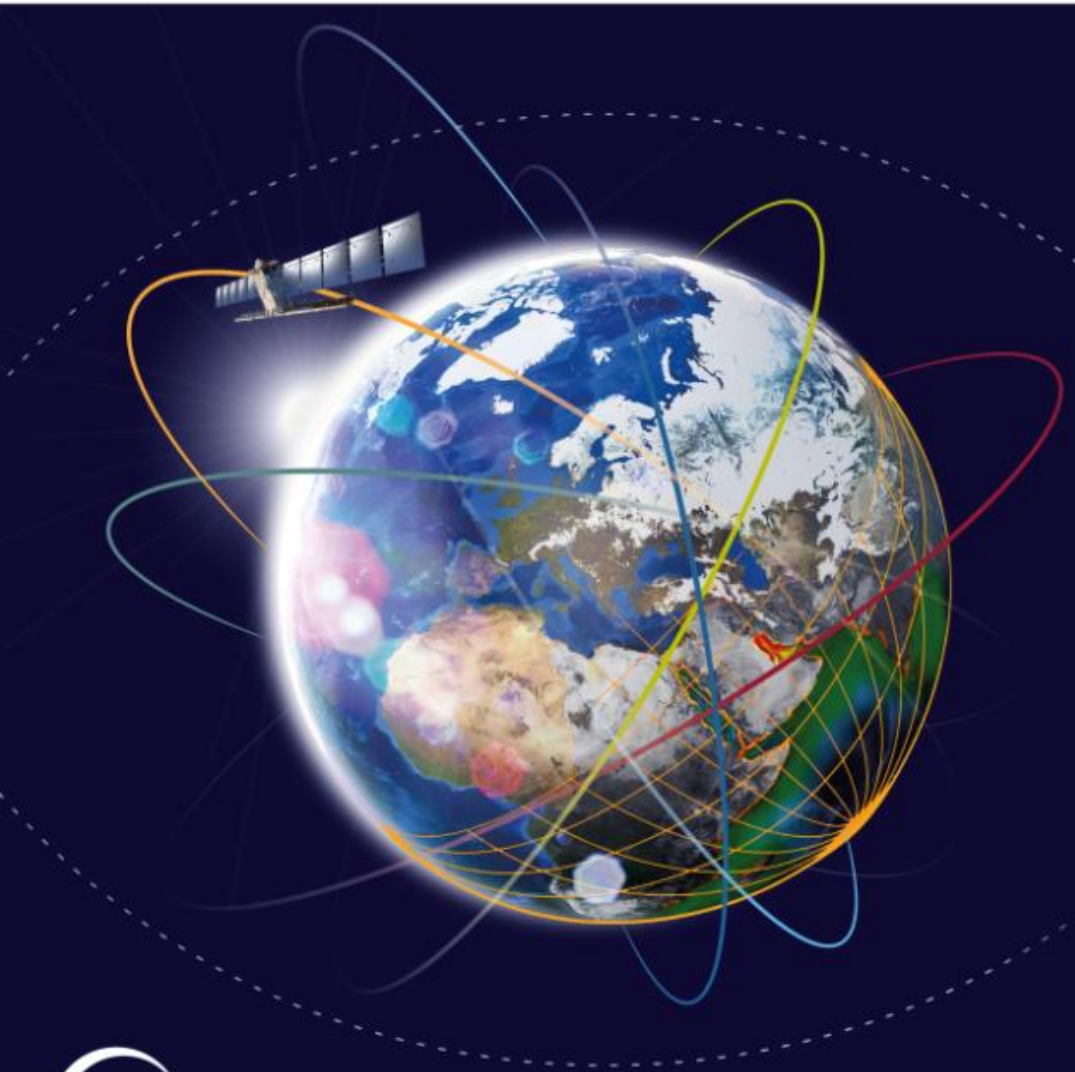

Copernicus

News and Updates

GeoIT Round Table NRW, Copernicus-Relay-Workshop, 14. Sep. 2021

Hugo ZUNKER
Earth Observation Unit
Directorate-General for Defence Industry and Space
European Commission

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European Commission

Space

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The new EU Space Programme

The new EU space programme 2021-2027

Goals:

- provide space-related services to users and support EU political priorities
- strengthen the EU's role as a leading global player
- boost an innovative space industry
- maintain the EU's autonomous access to space

Space Regulation 696/2021

- Adopted by the Council and the European Parliament on 28 April 2021.
- Entered into force retroactively on 1 January 2021.
- New **EU space programme** for the years 2021-2027.
- Budget €14.88 billion.
- Simplifies the existing EU legal framework and governance system and standardizes the security framework.
- Improves and brings together existing EU programmes such as Copernicus, Galileo and EGNOS under one umbrella.

The new EU Space Programme

COPERNICUS

Earth Observation (EO) and monitoring based on satellite and non-space data

Nr.1 world provider of space data and information

GALILEO

Global satellite navigation and positioning system (GNSS)

10% of the EU GDP enabled by satellite navigation

EGNOS

Reliable navigation signals for safety of life use

Operational in 360+ airports & helipads in 23 countries

SSA

Space situational awareness monitoring and protecting space assets

Providing surveillance and tracking services to 210+ satellites

GOVSATCOM

Secure satellite communications for EU security actors

Delivering rapid support over crisis areas

AN INVESTMENT IN A
FUTURE READY EUROPE

Competitive edge

Completing current satellite constellations, developing and launching the next-generation of satellites

Research **innovation**

Ambitious research and innovation programme benefiting from Horizon Europe

Fighting Climate Change

Monitoring biodiversity, environmental compliance and CO_2 emissions (Paris Agreement)

EU as a **global actor**

Supporting disaster relief, humanitarian assistance and security operations

The new EU Space Programme

AN ENABLER FOR THE DIGITAL TRANSITION

The EU Space programme provides critical infrastructure for the digital transformation. Space data is a key enabler of digital innovations such as **Autonomous vehicles, smart solutions and 5G wireless telecommunication networks**.

Galileo **20cm** high accuracy

game changer for autonomous driving and commercial drones

Copernicus **16 TB** of data/day

training Artificial Intelligence and enabling big data analytics in many areas of application

SOME AREAS OF APPLICATION

Agriculture

EU Space enables precision agriculture and integrated farming solutions. It helps farmers increase yields by 10%+ and save 20%+ on fertilizer, fuel and pesticides, and enables safe landings and autonomous machines.

Response to Natural disasters

EU Space supports rescue operations during floods, fires, earthquakes and hurricanes as well as man-made disasters.

Smart Cities

EU Space is crucial for urban mapping, planning and infrastructure monitoring, notably enabling better urban transport and smart waste management.

Renewable Energies

EU Space supports the siting of renewable energy facilities assessing potential energy generation and environmental impacts.

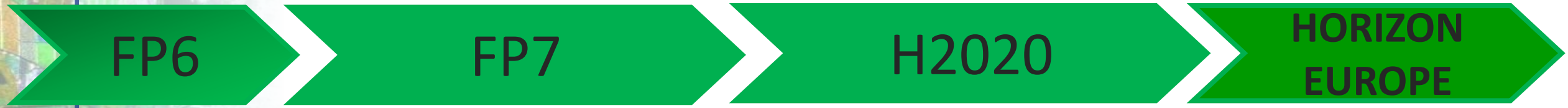
Health

EU Space helps to forecast air quality and UV radiation having impact on our health.


Kangerlussuaq Fjord
Copernicus
Europe's eyes on Earth
5 km

Copernicus timeline … an other perspective

From research to operations

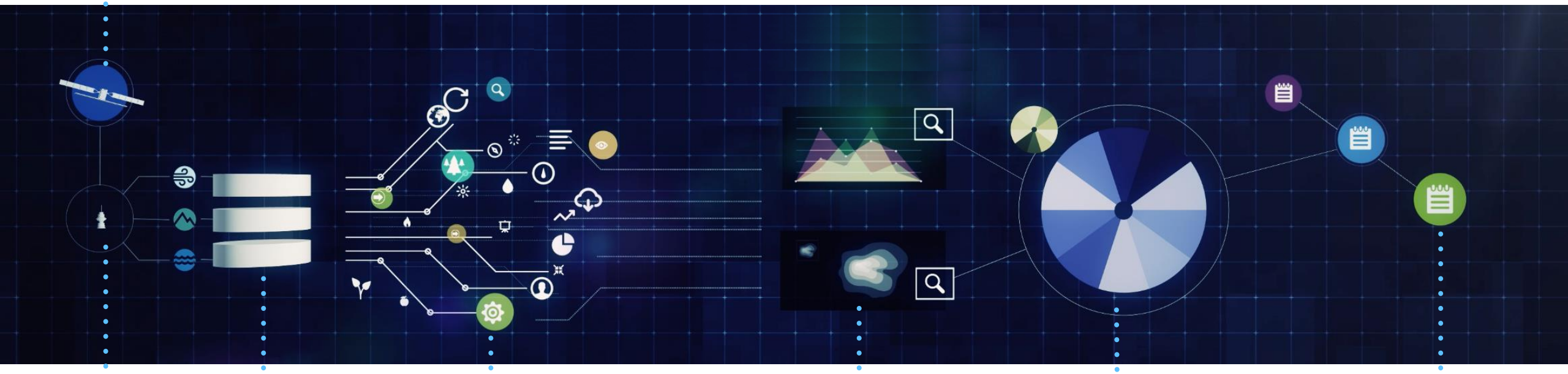


ESA contributes with additional 25-30 %

COPERNICUS COMPONENTS

FROM GLOBAL EARTH OBSERVATION DATA TO LOCAL INFORMATION AND PRODUCTS

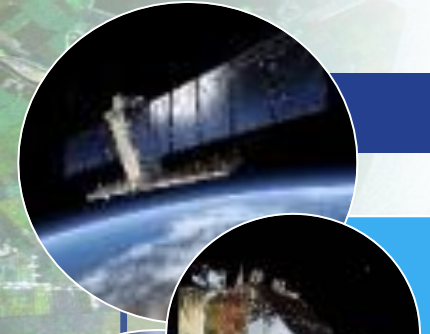
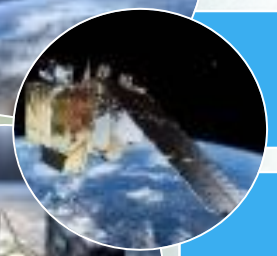
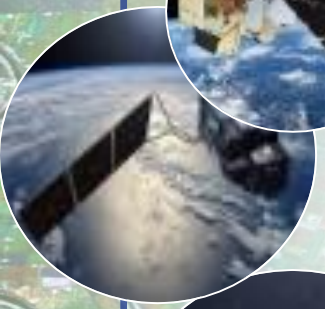
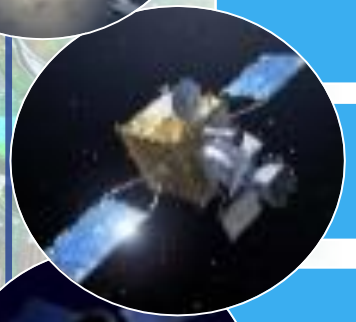
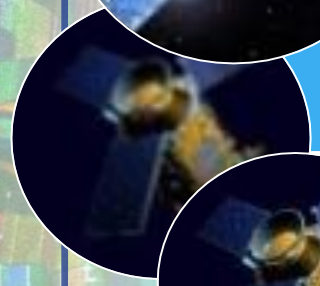
SENTINELS & CONTRIBUTING MISSIONS



IN SITU SENSORS | DATA | SERVICES | INFORMATION | TAILORED PROCESSES | PRODUCTS

Copernicus Europe's eyes on Earth

European Commission

THE SENTINELS

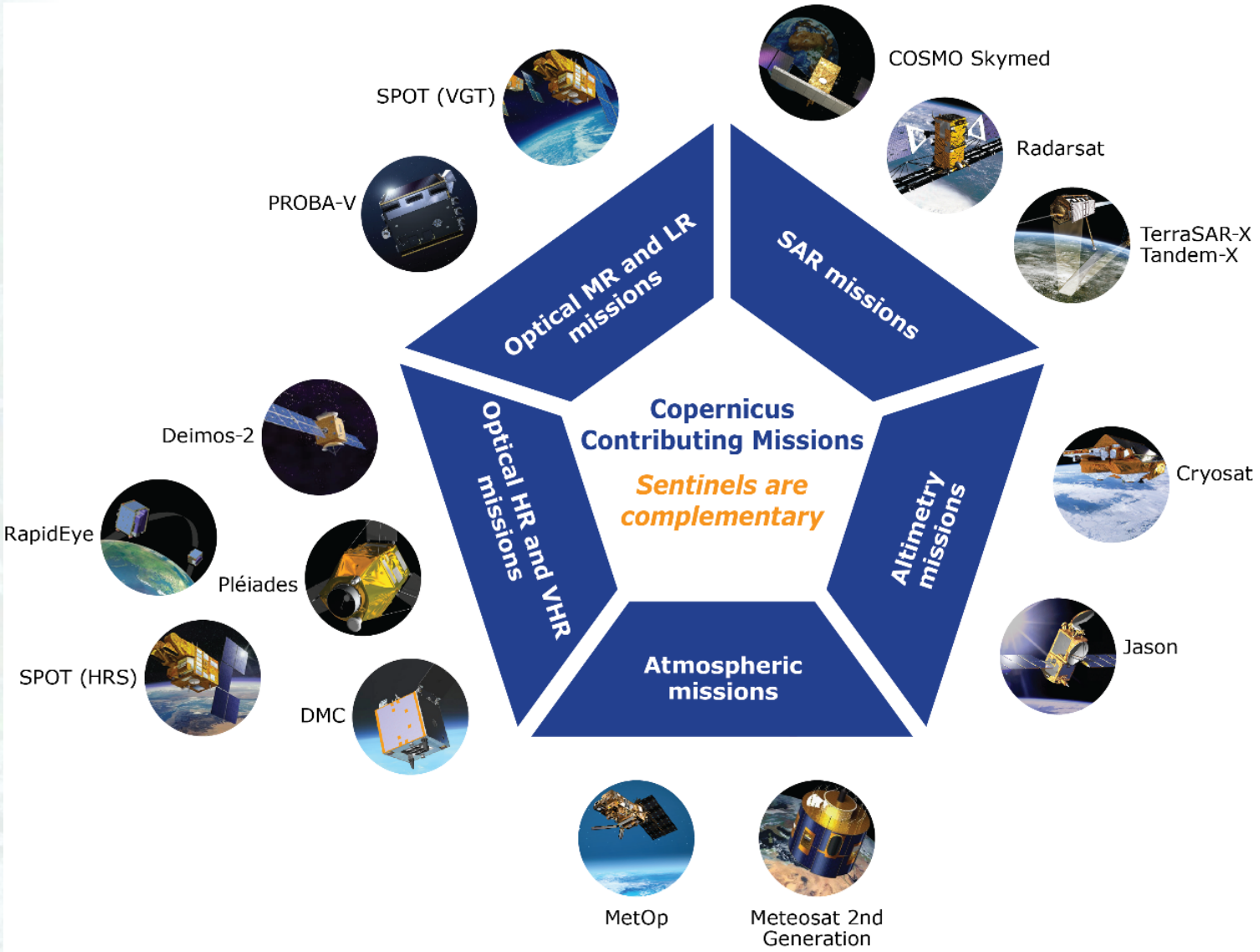
Full, free and open data policy

Sentinel Mission and Status		Key Features
SENTINEL-1: 4-40m resolution, 3 day revisit at equator	*2 Sats in orbit*	Polar-orbiting, all-weather, day-and-night radar imaging
SENTINEL-2: 10-60m resolution, 5 days revisit time	*2 Sats in Orbit*	Polar-orbiting, multispectral optical, high-res imaging
SENTINEL-3: 300-1200m resolution, <2 days revisit	*2 Sats in Orbit*	Optical and altimeter mission monitoring sea and land parameters
SENTINEL-4: 8km resolution, 60 min revisit time	*1st Launch in 2022*	Payload for atmosphere chemistry monitoring on MTG-S
SENTINEL-5p: 7-68km resolution, 1 day revisit	*1 Sat in Orbit*	Mission to reduce data gaps between Envisat, and S-5
SENTINEL-5: 7.5-50km resolution, 1 day revisit	*1st Launch in 2022*	Payload for atmosphere chemistry monitoring on MetOp 2ndGen
SENTINEL-6: 10 day revisit time	*1 Sat in Orbit*	Radar altimeter to measure sea-surface height globally

Copernicus Europe's eyes on Earth

European Commission

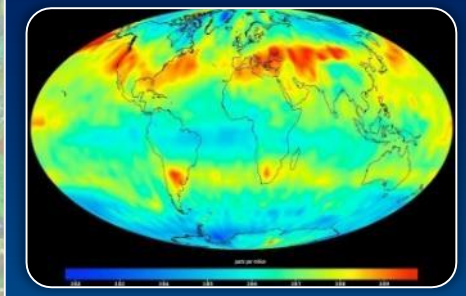
THE CONTRIBUTING MISSIONS



Subject to Data Owner's Data Policy

Copernicus expansion missions

Full, free and open data policy



CO2M

optical

Copernicus Anthropogenic CO2 Monitoring

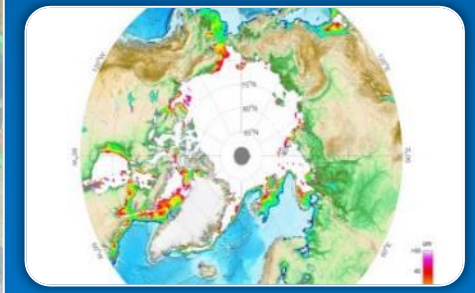
CO_2, NO_2, Aerosols Imaging Spectrometer (VNIR/SWIR), Polarimeter

CRISTAL

Copernicus Polar Ice & Snow Topography

Radar altimeter

HR microwave radiometer

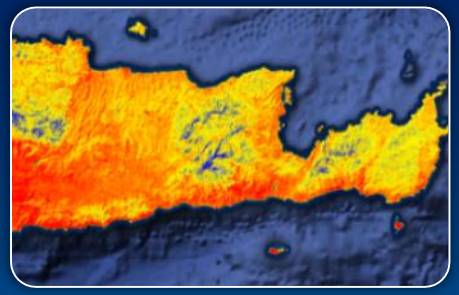


CIMR

Sea-ice, sea surface temperature, salinity

Copernicus Imaging Microwave Radiometer

Multi-frequency L-band Radiometer

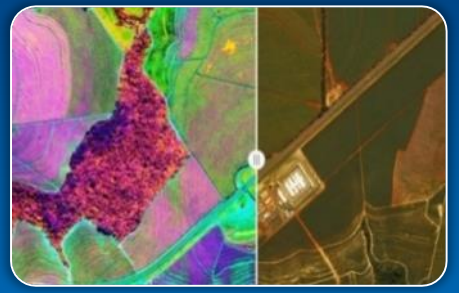


LSTM

optical

Land Surface Temperature Monitoring

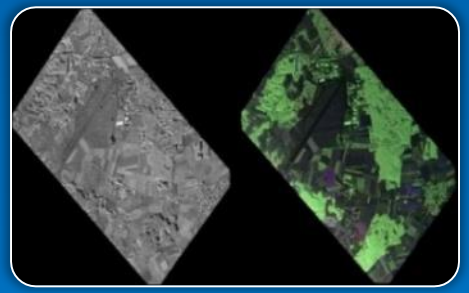
VNIR/TIR scanning radiometer



CHIME

optical

Copernicus Hyperspectral Imaging Mission for the Environment (VNIR/SWIR)



ROSE-L

Observation under vegetation, cryosphere, soil

L-band SAR

IN-SITU: OVERVIEW

- *In situ* data = observation data from ground-, sea-, or air-borne sensors, reference and ancillary data licensed for use in Copernicus
- Use of *In situ* data:
  - Validate & calibrate Copernicus products
  - Reliable information services
- Implementation in two tiers:
  - Tailored *in situ* data for each Copernicus service level
  - Cross-cutting coordination across services by the EEA

Subject to Data Owner's Data Policy





COPERNICUS SERVICES

Full, free and open data policy

Monitoring the State of the Earth System Environment …

… Six cross-cutting Thematic Services

Copernicus Europe's eyes on Earth

European Commission

EUSPA: Core Tasks (Art. 30)

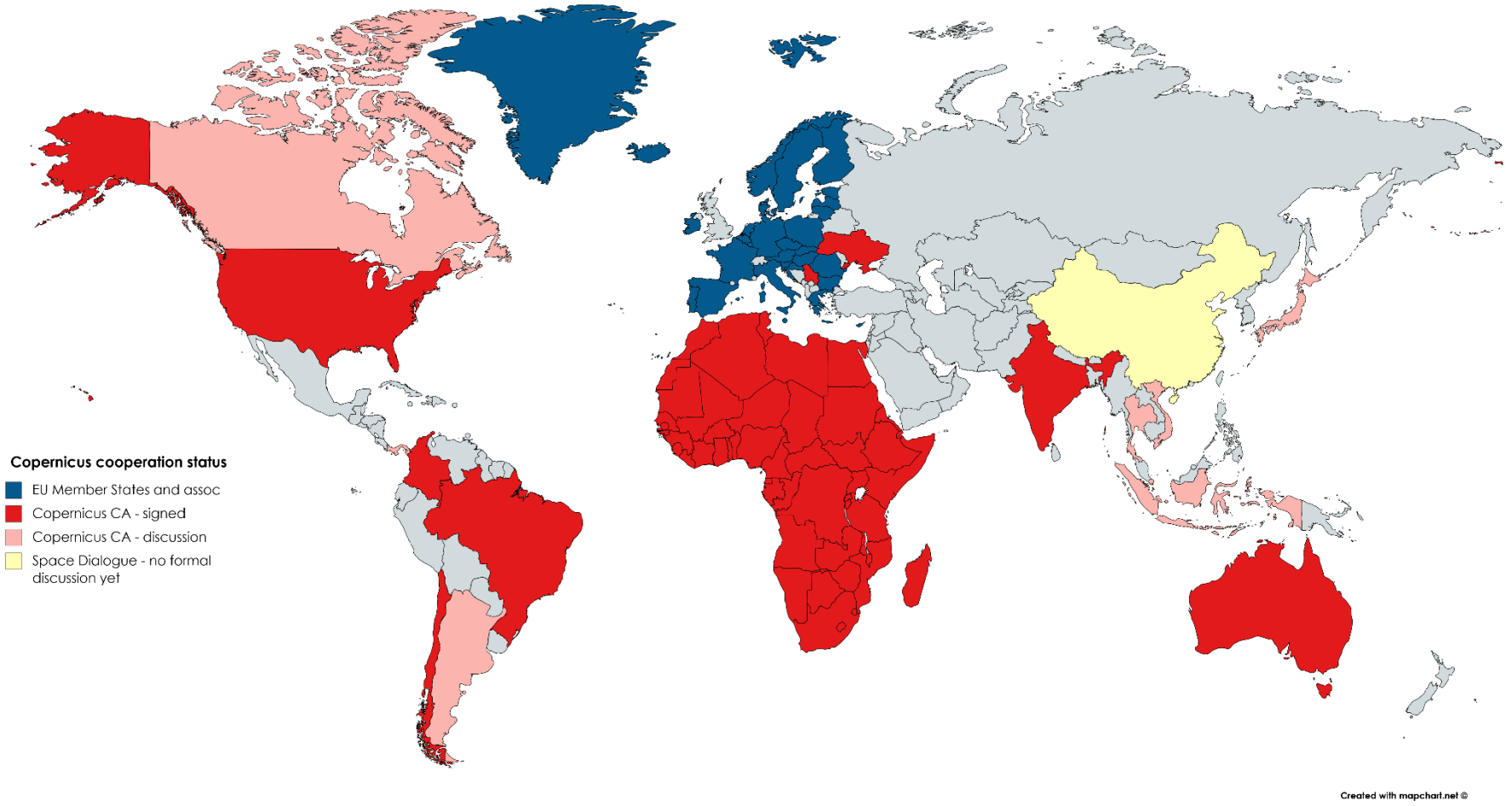
- Security accreditation of all components of the space programme, through the SAB;
- Operational security of Galileo and EGNOS;
- Operations of the Galileo Security Monitoring Centre;
- […]
- Communications, market development and promotion of
  - Galileo and EGNOS, in particular market uptake and user needs' coordination;
  - Data, information and services offered by Copernicus (except for those performed by other entrusted entities and the Commission);
- Provide expertise to EC, incl. preparation of the downstream space related research priorities.

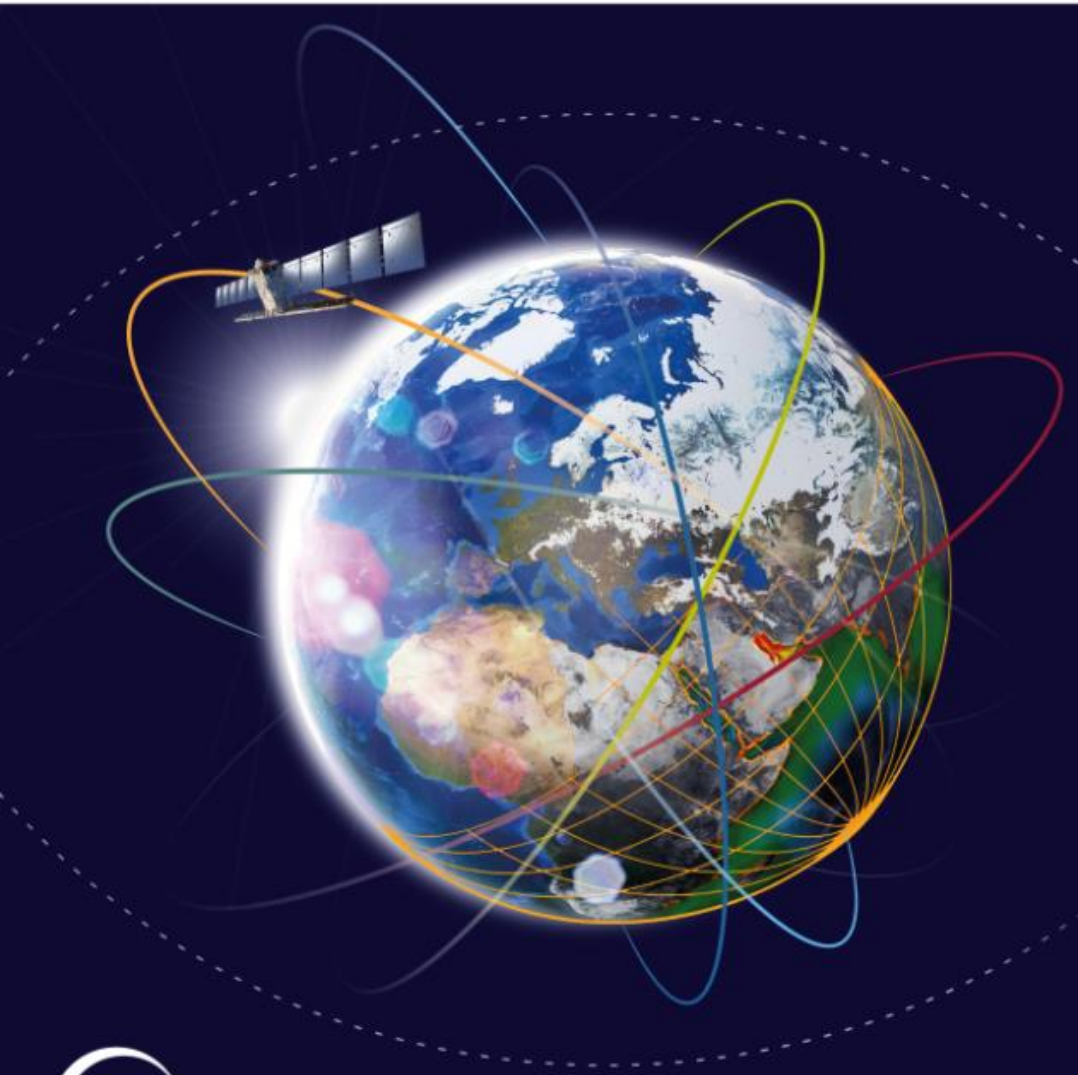
EUSPA: Delegated Tasks (Art. 30 and 43)

- Exploitation Manager of Galileo and EGNOS
  - Management, operation, maintenance, improvement, evolution, and protection of infrastructure
  - Continuous provision of services
- Coordination of GovSatCom, including user-related aspects and hub
- Development of downstream and integrated applications based on Galileo, EGNOS and Copernicus;
- User uptake of data, information and services of Copernicus (except those covered by Entrusted Entities);
- Innovation (Art. 6): Actions in support of an innovative and competitive Union space sector;
- EC may entrust other tasks to EUSPA in the areas of SSA, EuroQCI, Connectivity, …

Copernicus international cooperation

Status February 2021





Thank you

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Space

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