

Space for Decom and transition to Green Energy

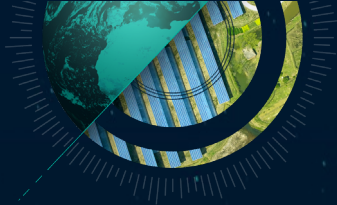
Decom Offshore Conference, 26th August 2020

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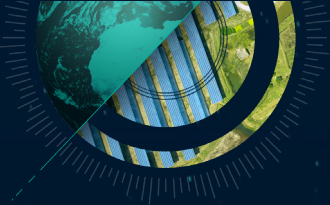




AGENDA

- 🚀 ESA introduction
- 🚀 “Decommissioning of Energy Assets” Invitation to Tender
- 🚀 “Marine Energy” Invitation to Tender





THE EUROPEAN SPACE AGENCY

Purpose of ESA

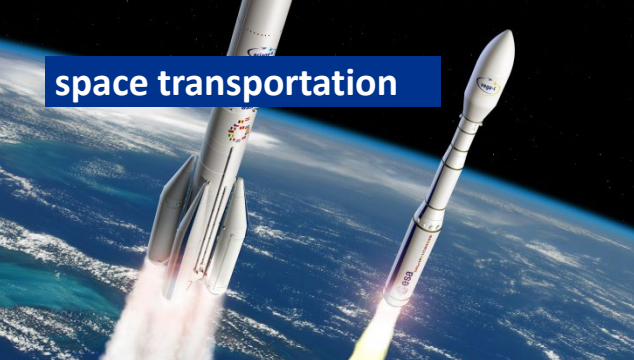
To provide for and promote, for exclusively peaceful purposes, cooperation among European states in space research and technology and their space applications.

Facts and figures

- Over 50 years of experience
- 22 Member States
- 8 sites across Europe and a spaceport in French Guiana
- Over 80 satellites designed, tested and operated in flight



space transportation



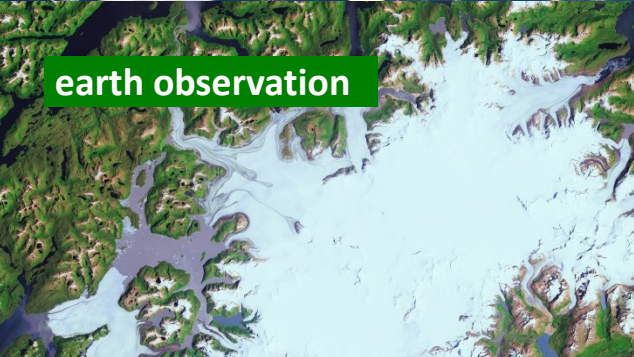
science



human spaceflight



earth observation



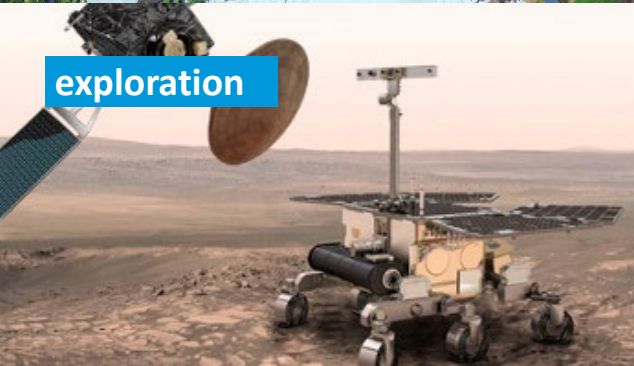
telecommunications
and applications



navigation



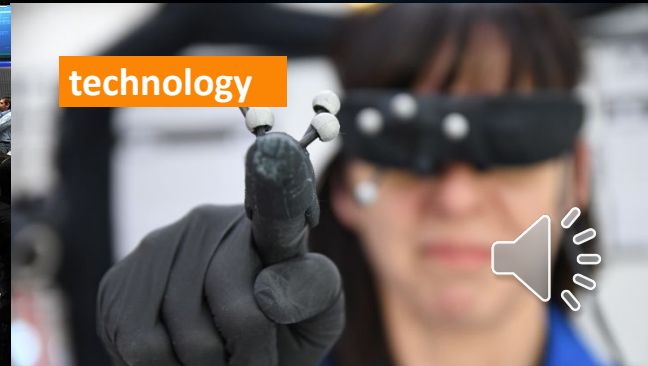
exploration



operations



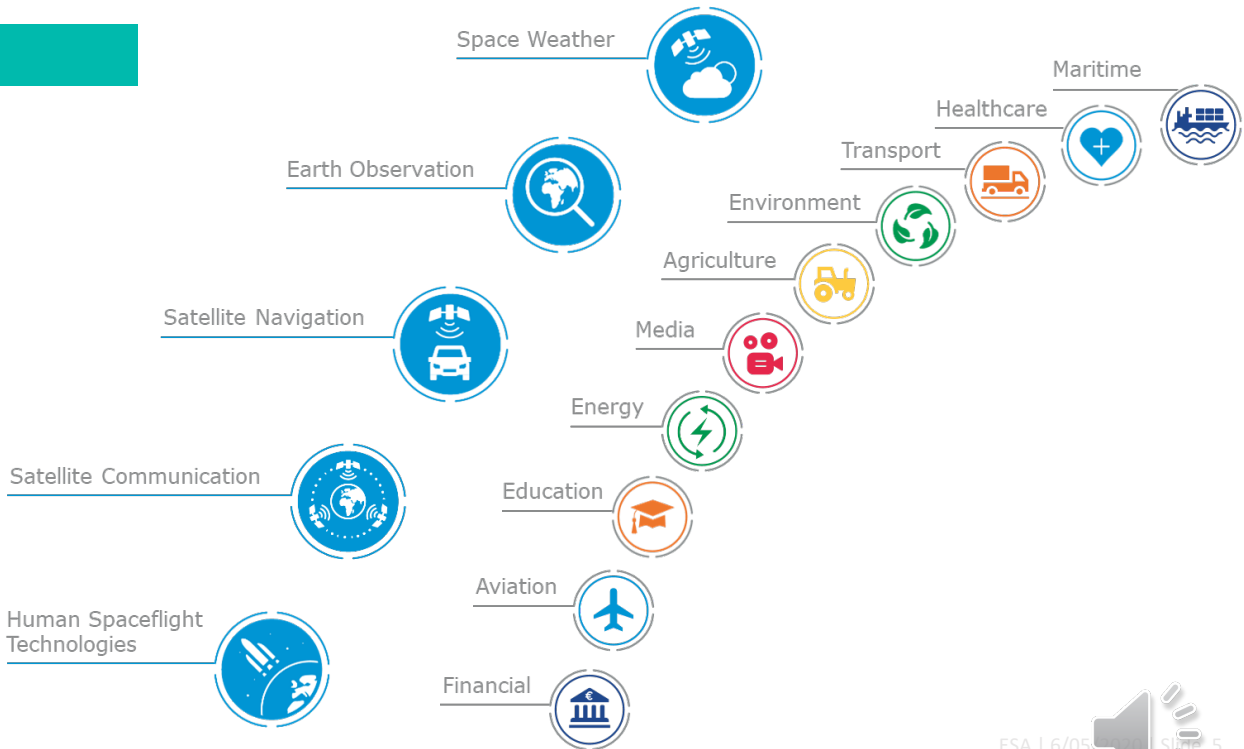
technology





ESA SPACE SOLUTIONS

Could you be leveraging Space technology and data for the benefit of life on Earth?



ESA Space Solutions: framework

User
Demand

Contact with ESA:

- business.esa.int
- Conferences
- ESA Ambassadors
- Call for user ideas
- Webinars

Feasibility
Study

Funding by ESA:

- 50%* - initiated by industry / partner, involving users, continuous open call
- 75% - Kick-Start activities
- 100% - ESA initiated tenders in close collaboration with users

Demo
Project

Funding by ESA:

50%* - initiated by ESA or industry, dedicated tender or continuous open call

* SMEs can be funded up to 80% upon authorisation by National Delegations

Operational
Service

Support from ESA:

PR News Item, Awareness
Access to investors



STRATEGIC PARTNERSHIPS (EXAMPLES)

European Institutional Actors

Frontex
EMSA
EU SatCen
EDA
EASA



Vertical Industry and Associations

ENTSO
ENEL
Friends of the Supergrid
CarbonTrust
Indian Energy Storage Alliance
OneSea Alliance
Decom North Sea



Platforms/Foundations

Toilet Board Coalition
Genius 100 Foundation



International Institutional Actors

UNICRI
IOM
Eurocontrol



Space Agencies

JAXA
AMS
SANSa

Technology toppers



Smart Cities/Regions



A large offshore oil rig is shown at sea under a clear blue sky. The rig's complex structure of yellow and blue steel beams and towers is prominent. In the foreground, the back of a worker wearing a white hard hat and an orange safety vest is visible, looking out over the rig. The ocean is a deep blue, and the sun is visible on the right side of the frame, creating a bright glow.

Decommissioning of Energy Assets

ESA's funded invitation to tender



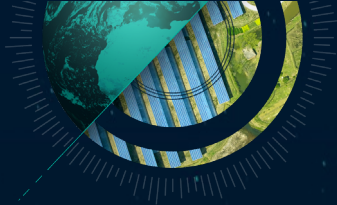
Decommissioning of energy assets

The decommissioning of offshore assets is a relevant issue worldwide. BCG estimates that the bill for operators and governments could amount up to \$ 100 billion in the North Sea alone and about 2 billion in the Mediterranean Sea.

Decommissioning activities mostly address two main types of assets: offshore oil & gas platforms and windfarms.

- Oil & gas platforms: removal of underwater structures and topside platforms; these activities have to be handled carefully in order to minimize environmental impact and avoid oil spills.
- Wind farms entails several parts to be removed and disposed, such as turbine towers, foundations, offshore substations, meteorological masts and subsea cables, with associated complex logistic processes.





ESA-funded invitation to tender on Decommissioning

Open competitive tender for a feasibility study to investigate the technical feasibility and economic viability of space based applications for decommissioning of energy assets (wind, oil and gas, etc.), and define a roadmap for services implementation and demonstration.

Invitation to tender already open, will close on 11th September 2020

Funding up to € 200K per activity (100% ESA funded)

Duration 12 months



ESA UNCLASSIFIED

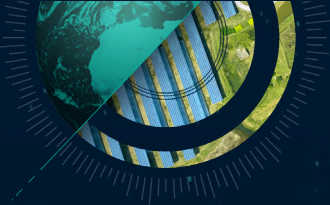
ESA | 6/05/2020 | Slide 10



OBJECTIVES

- Assess **technical** feasibility and **economic** viability of **space** based services in support of **decommissioning of offshore oil&gas plants and wind farms**;
- Get **anchor customers commitment** towards services implementation and **sustainable operation**;
- Identify and assess the **technical and non-technical risks** associated with the implementation, commercialisation and operations of the services;
- Consolidate the business plan for supporting an informed decision for investment in further activities
- Define a **roadmap** for services **implementation** and **demonstration** (potentially through a follow-up ESA co-funded demonstration project).





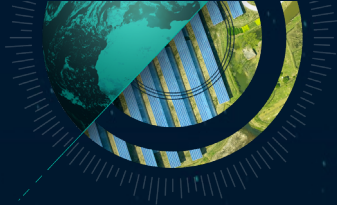
EXAMPLES OF AREAS OF INTEREST (1)

- **Logistics and end-to-end business support services**

E.g:

- Processes optimisation through supply chain management and monitoring of external factors affecting operations efficiency (e.g. weather conditions and sea status), and information on infrastructure status; evaluation of safe and cost-effective options for reuse/recycling;
- Live mapping and re-routing of vessels undertaking multi-asset activities due to weather or contingency response due to unforeseen events; to reduce vessel downtime;
- Live mapping and positioning of critical equipment to reduce contingency and associated cost of waiting;
- Active monitoring of assets and critical components to facilitate life extension;
- Full lifecycle and live tracking of highly toxic and harmful waste from asset to treatment plant.





EXAMPLES OF AREAS OF INTEREST (2)

- **Support to automation of decommissioning activities**

e.g. underwater operations; high precision positioning for assets removal.

- **Safety of workers off-shore and on-shore**

e.g. augmented reality services and data analytics providing early warning of immediate risks to workers.





EXAMPLES OF AREAS OF INTEREST (3)

- **Monitoring of environmental impact**

e.g. residual hydrocarbons, oil spills, chemicals and harmful liquids that may accidentally be released during the decommissioning phase; environmental impact assessment of platform re-use.

- **Use of innovative space-enabled technology to support logistics and ensure safety of operations (onshore and offshore)**

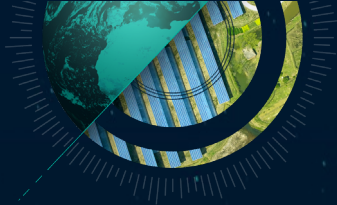
e.g. use of robots & autonomous vessels to improve logistics efficiency; use of other space enabled tech, like HAPs / RPAS for high resolution monitoring.



Marine Energy

Planned ESA's funded invitation to tender





Planned ESA-funded invitation to tender on Marine Energy

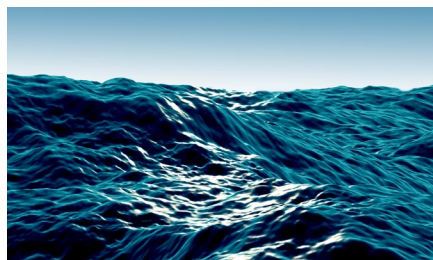
ESA Space Solutions is planning on issuing an open competitive tender for a feasibility study to investigate the technical feasibility and economic viability of space based applications for marine energy solutions, and define a roadmap for services implementation and demonstration.

Invitation to tender planned to be issued in September 2020

Funding up to € 150K per activity (100% ESA funded)

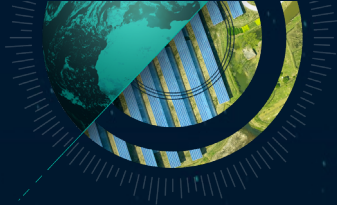
Duration 9 months

business.esa.int/funding/intended-tender/marine-energy



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EXAMPLES OF AREAS OF INTEREST (1)

- **Support of logistics of marine energy installation, operations and maintenance (O&M) activities**

Installation and O&M activities are expensive and dependent upon periods of suitable weather conditions. Integrated monitoring solutions that take into account weather and external factors (e.g. vessels' availability, production status of the components) are required to predict potential delays and estimate their cost impact. UMS, remote monitoring and supporting applications tailored to the specific needs of marine energy O&M missions could be relevant as enabling technology, catering for the needs of improved safety and efficiency of operations.





EXAMPLES OF AREAS OF INTEREST (2)

- **Resource assessment, site selection, revenue forecasting of marine energy plants**

The correct site to deploy the marine energy devices is important to understand associated risks and potentials for specific technologies. An analysis of the conditions at specific sites can inform the business case and the potential return of investment for the investor.

- **Supporting environmental impact assessment of marine energy**

Environmental impact of commissioning, operations and potentially decommissioning of marine energy plants need to be assessed and carefully monitored.



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