

Global themes with a purpose

Connecting with issues that are **important for our future**

What **resonates with the next generation** of hackers?

Connecting the arctic

2nd Hackathon: 5-7 November 2021

The Arctic is a unique and complex geographical, meteorological and biological ecosystem. The second CASSINI Hackathon will focus on the Arctic with the objective to show how European space technologies, including existing and not-yet-existing secure connectivity satellite infrastructures, geospatial information from Copernicus, and/or positioning technologies from Galileo & EGNOS can help us to access, understand and protect the arctic in a number of different ways. From understanding our oceans, through to monitoring land surface changes, and protecting biodiversity, the options are countless.

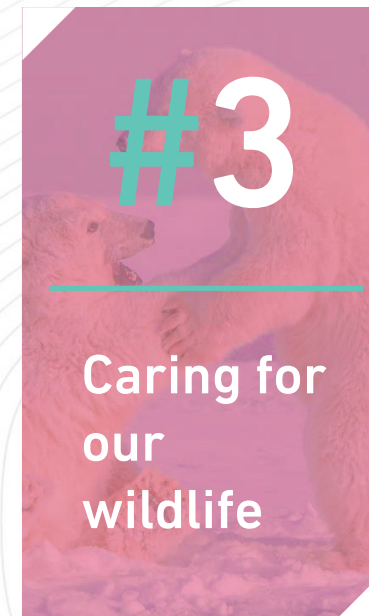
Discover the EU space programmes in focus for the 2nd CASSINI Hackathon:

- **Secure connectivity:** A technology track special to the 2nd CASSINI Hackathon, participants may conceptualise new solutions to meet the future needs for secure connectivity, especially in remote areas of the Earth and places currently underserved with high-speed, low latency internet connection. They may also develop ideas for satellite services and digital applications using both existing and not-yet-existing satellite infrastructures.
- **Earth observation:** Participants may develop ideas/concepts for new products and services that utilise geospatial information from Copernicus Earth observation data and its services to monitor, understand and provide insights into the changing environment on and around our planet.
- **Satellite positioning:** Participants may develop ideas/concepts for new products and services that use satellite positioning data and signals from Galileo & EGNOS to understand movements and locations of receivers.



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Challenging participants to hack for the future

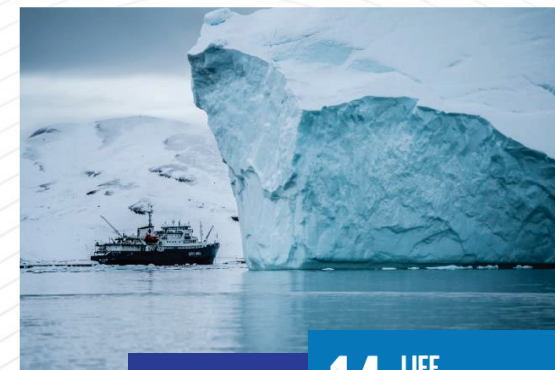


Challenge #1: Safe passage at sea

Container ships, cruise liners and fishing trawlers are just some of the **many seafaring vessels that need to navigate safely in our oceans**. The arctic provides an especially challenging environment with the addition of sea ice and extreme temperatures. As conditions change with rising temperatures, the arctic also offers the possibility of future shipping lanes that require better connectivity and accurate positioning services.

This challenge tasks participants to **develop ideas/concepts or design products, devices, or services that leverage European space data, information and signals** from secure connectivity infrastructures, Copernicus, Galileo and EGNOS to ensure seafaring vessels have safe passage at sea. We encourage participants to dive into the areas of:

- Navigation route optimisation
- Extreme weather and sea ice warnings
- Supporting the development and connectivity of future shipping lanes
- Environmental disaster and emergency management



Encouraging the development of sustainable solutions that support safe passage at sea in the arctic will contribute to the United Nation's Sustainable Development Goal 14 to conserve and sustainably use the oceans, seas and marine resources for sustainable development.



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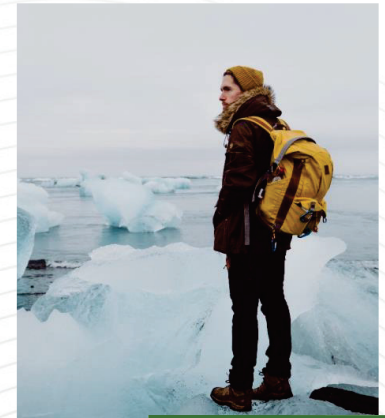
Challenge #2: Life on land

Countries in the Arctic polar region experience seasonally varying snow and ice cover and extreme cold.

These countries, their human societies, and plantlife are especially subject to the effects of climate change such as rising air and water temperatures and a loss of sea ice. Several remote research stations are also located in the region and their inhabitants could benefit from innovative connectivity and communication solutions.

This challenge tasks participants to **develop ideas/concepts or design products, devices, or services that leverage European space data, information and signals** from secure connectivity infrastructures, Copernicus, Galileo and EGNOS that look to improve our understanding of climate change effects in Scandinavia, Alaska, Russia and Canada or to mitigate the impact of these changes. We encourage participants to dive into the areas of:

- Environmental monitoring & climate change mitigation
- Renewable energy exploration
- Environmental protection
- Improving connectivity (higher speeds and lower latency) for research stations in remote areas



Encouraging a better understanding of the impact of rising air and water temperatures in the arctic will contribute to the United Nation's Sustainable Development Goal 13 to take urgent action to combat climate change and its impacts.



Challenge #3: Caring for our wildlife

Wildlife in the Arctic includes many species of fish and marine mammals, birds, and land animals. As human activity and industry look to expand to untapped areas of our planet, the natural habitats of these animals become threatened. Rising temperatures also threaten the livelihoods of animals living on the ice and feeding in surrounding areas.

This challenge tasks participants to **develop ideas/concepts or design products, devices, or services that leverage European space data, information and signals** from secure connectivity infrastructures Copernicus, Galileo and EGNOS that aim to better understand and protect wildlife in the Arctic. We encourage participants to dive into the areas of:

- Protecting marine biodiversity
- Understanding and forecasting migration routes
- Understanding and mitigating the effects of exploration and development on wildlife
- Understanding the effects of climate change on natural habitats



Understanding the impact exploration, development and climate change has on arctic wildlife will contribute to the United Nation's Sustainable Development Goal 12 to ensure sustainable consumption and production patterns and Sustainable Development Goal 13 to take urgent action to combat climate change and its impacts.

