



**CASSINI #EUSpace**  
Hackathons & Mentoring

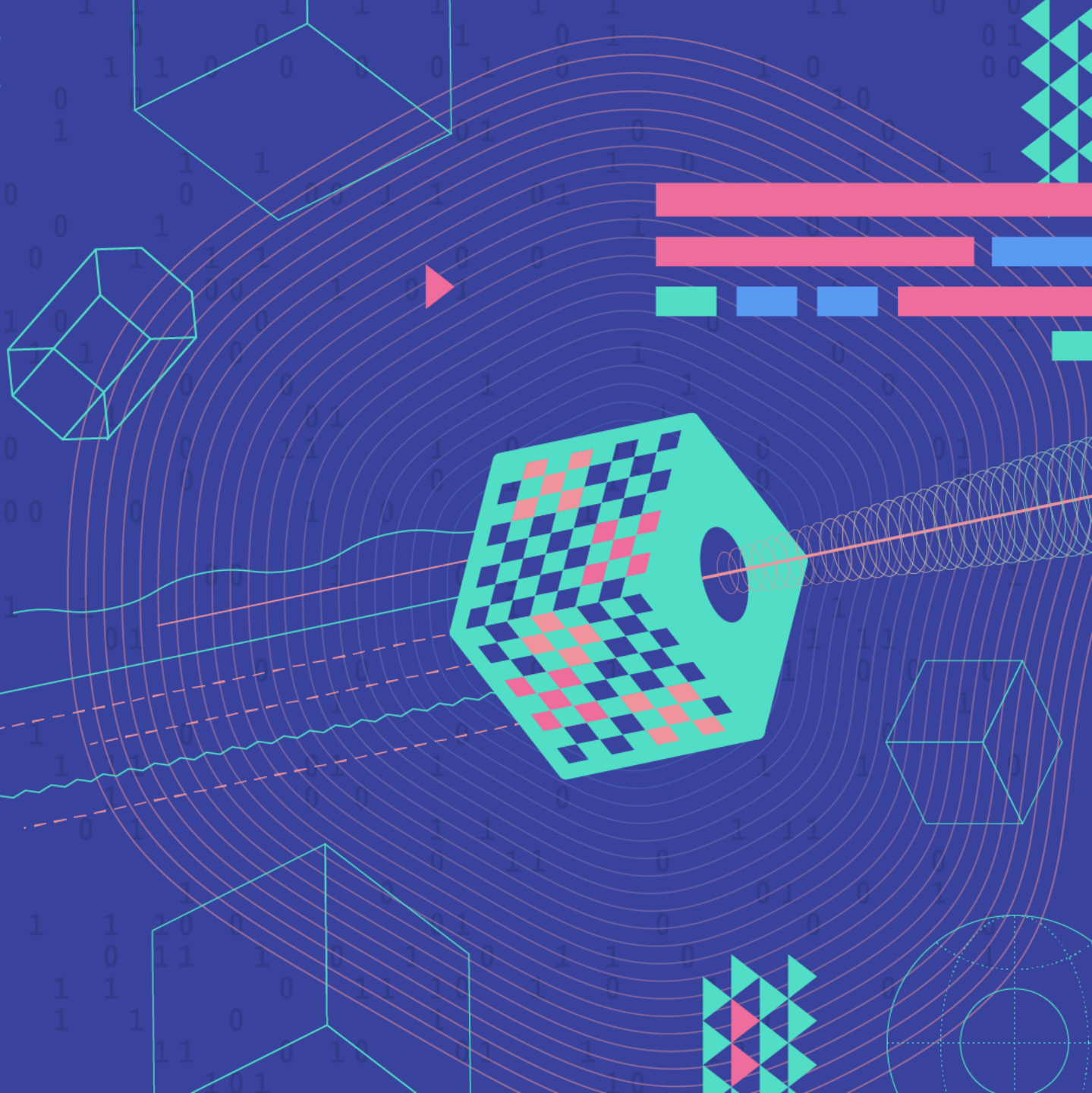
# Participant Playbook

**8<sup>th</sup> CASSINI HACKATHON**  
EU SPACE FOR SECURITY  
AND DEFENCE  
22-24 NOVEMBER 2024

Implemented by

**VERHAERT** | MASTERS IN INNOVATION

**NOVASPACE**





# The **participant playbook** is intended to guide you through the **most important information** about the **8<sup>th</sup> CASSINI Hackathon & Mentoring**.

Inside you will find information about the **tools, platforms, and communication channels** you need to make the most out of the weekend.

We are eager to see how you use EU space technologies to support the **European defence & security activities!**



# What you will find in this playbook



## 1. Core information

- Overview of the 8<sup>th</sup> CASSINI Hackathon
- The theme and challenges
- Connecting with the EU Space programme
- EU Space programme
- Tools & resources
- Accessing help & support

## 2. The Hackathon

- The Hackathon events
- The 10 local organisers
- Accessing the data
- The hackathon agenda & rules
- Overview of the hackathon platforms
- The Demo Day & Awards Ceremony

## 3. Mentoring programme

- Introduction to the programme
- How it will work
- Meet some of our seasoned mentors



# The 8<sup>th</sup> CASSINI Hackathon & Mentoring | 22 - 24 November

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

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

In the 8<sup>th</sup> CASSINI Hackathon, participants are challenged to create solutions that use European space technologies to **strengthen Europe's defence and security capabilities!**

We call on self-starters to help secure and strengthen Europe and its neighbourhoods. Show off your originality by developing viable solutions that will enhance the EU's defence and security competencies.

The hackathon is open to anyone interested in entrepreneurship, the defence industry and EU Space technologies. Take on the challenge of your choice using one or a combination of the following tools:

1. Geospatial information from **Copernicus Earth** observation data and its services
2. Satellite positioning and navigation services from **Galileo & EGNOS**, or future services (**IRIS2**).
3. Emerging digital technologies (e.g. machine learning, augmented/virtual reality or blockchain)

Applying is easy!




# EU Space for Defence & Security



**#1**

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Enhancing  
Defence &  
Security with  
Geospatial  
Intelligence



**#2**

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Unmanned  
Drone  
Applications for  
Defence &  
Security  
Operations



**#3**

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Orbital Security:  
Navigating the  
Collision Frontier

# Challenge #1: Enhancing Defence & Security with Geospatial Intelligence

**Geospatial Intelligence (GEOINT)** now goes beyond imagery to ensure **data veracity and cybersecurity in Earth Observation (EO)**. It supports telecom, surveillance, transport, public health, and real estate sectors.

This challenge asks participants to use data from Copernicus, Galileo, and IRIS2 to develop solutions for planners, responders, and decision-makers. Focus areas:

- **GEOINT for Defence and Security:** Improve disaster relief, predict threats, and enhance defence, border control, and anti-piracy.
- **New GEOINT Services:** Discover new Copernicus services for security, defence, and emergency management.
- **Cybersecurity in EO:** Identify vulnerabilities in EO systems and improve cyber resilience.
- **EO Data Authentication:** Use blockchain to validate EO data with Copernicus and historical patterns.



# Challenge #2: Unmanned Drone Applications for Defence & Security Operations

Drones hold great potential for **defence, security, and civil protection**, benefiting European society and creating jobs. The European drone sector is projected to generate **over €10 billion annually** in services within 20 years. Situational awareness and incident tracking are crucial for defence, surveillance, and rescue services.

This challenge invites participants to use **European space data from Copernicus, Galileo, and IRIS2** to develop impactful solutions in:

- **Information gathering:** Systems for real-time data during defence, security, and civil operations.
- **Responder safety:** Improve safety in defence, wildfires, and natural disasters.
- **Drone cybersecurity:** Mitigate security risks in drone tracking, communication, and positioning.
- **Data integrity:** Ensure the accuracy of drone-collected data.
- **Misuse prevention:** Detect and respond to drone misuse, enhancing public safety.



## Challenge #3: Orbital security – Navigating the collision frontier

Can you devise a **collision avoidance strategy** that leverages Conjunction Data Messages (CDMs) and other advanced techniques to safeguard satellite operations against debris and potential threats? This challenge invites you to develop innovative approaches that enhance Space Situational Awareness (SSA) and ensure **secure, uninterrupted satellite missions**.

Participants will have access to CDM data and a realistic scenario, prompting them to:

- **Assess and mitigate collision risks using CDM** and other analytical tools. Software tools and CDM data will be provided.
- **Propose viable business models** that commercialise these innovative solutions.





# Connecting you with the EU Space programme

The EU Space programme consists of several flagship programmes including Europe's Earth observation, satellite navigation, secure communications and space situational awareness programmes. The hackathon challenges participants to use data and signals from Copernicus, Galileo & EGNOS or future services using IRIS2.



Copernicus is the European Union's Earth observation programme, looking at our planet and its environment to benefit all European citizens. It offers information services that draw from satellite Earth Observation and in-situ (non-space) data.

[More information](#)



Galileo is Europe's Global Navigation Satellite System (GNSS), providing improved positioning and timing information with significant positive implications for many European services and users.

[More information](#)



The European Geostationary Navigation Overlay Service (EGNOS) is Europe's regional satellite-based augmentation system (SBAS) that is used to improve the performance of global navigation satellite systems (GNSSs).

[More information](#)

# Connecting you with the EU Space programme

The EU Space programme consists of several flagship programmes including Europe's Earth observation, satellite navigation, secure communications and space situational awareness programmes. The hackathon challenges participants to use data and signals from Copernicus, Galileo & EGNOS or future services using IRIS2.

## GOVSATCOM

The European Union Governmental Satellite Communications (GOVSATCOM) programme provides secure and cost-efficient communications capabilities to security and safety critical missions.

[More information](#)



The Space Situational Awareness initiative will provide Europe and its citizens with complete and accurate information on objects orbiting Earth, on the space environment and on threats coming from space.

[More information](#)



The IRIS2 Satellite Constellation will offer enhanced communication capacities to governmental users and businesses, while ensuring high-speed internet broadband to cope with connectivity dead zones.

[More information](#)

# Spotlight on Copernicus data & information

Never worked with **Copernicus Earth observation data & information**?  
No problem!

We have put together some **important resources** to get you started:

- What is the Copernicus programme? [\[Link\]](#)
- Overview of the programme [\[Link\]](#)
- Introducing the Copernicus Sentinel missions [\[Link\]](#)
- The Copernicus services [\[Link\]](#)



# Spotlight on Galileo & EGNOS

Just getting started using **satellite positioning technologies**?

We have collected some **important resources** for you to get started:

- What is Galileo? [\[Link\]](#)
- EGNOS and Galileo: Programme Reference Documents [\[Link\]](#)
- GNSS raw measurements white paper [\[Link\]](#)
- Glossary for GPS test [\[Link\]](#)
- GNSS market report [\[Link\]](#)
- Galileo-enabled devices [\[Link\]](#)



# All the tools you need to succeed!

As participants you have access to invaluable tools, training, and support to help you with your hacking. We provide everything you need, so you can give everything you got!



## Jupyter notebook

We wanted to minimise the time needed to process data. That's why we created a dedicated data notebook for each hackathon. The data notebooks contains several resources focused on the hackathon theme. Learn about the Copernicus Data Space Ecosystem, the platform used for the last editions of the hackathons.

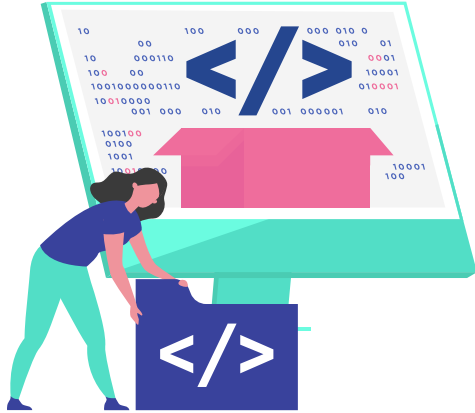
[Go to Copernicus](#)

## Cloud infrastructure

Access virtual storage and computational resources for the duration of the hackathon. The Copernicus Data Space Ecosystem supports this hackathon edition and will enable you to discover, manipulate and download Copernicus data and information. You will also have all the processing power and storage you need to hack your way to success.



# Some of our other tools...



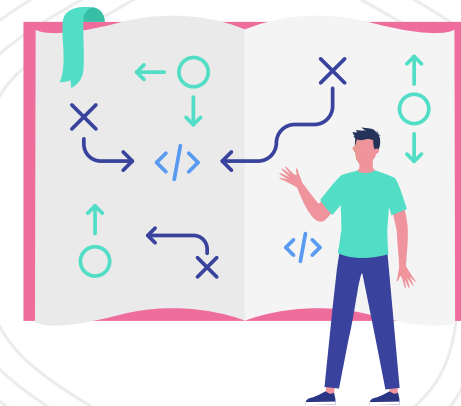
## Code repository

Still missing crucial data? We've got you! You will have access to our code repository for space-data sources. Hackers are invited to share their code with the CASSINI Hackathon community as open source on Github.



## Playbook

New to hackathons? No problem. We've prepared two playbooks that will allow you to make the most of your first hackathon experience. Access helpful tips on how to face challenges, where to go if you need support, and what tools you'll be required to use throughout the event in the Participant Playbook. The Business Design Playbook guides you to discover, build and tap into business opportunities with your ideas.



# Looking for additional resources?

Here is a collection of **publicly available** trainings:

▶ **The Copernicus MOOC addresses 3 key topics:**

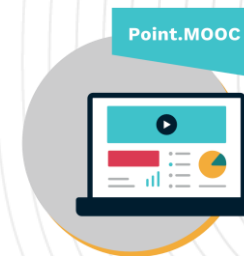
- **Chapter 1** - Understanding Copernicus data and services– what they are, and how they can be accessed and used
- **Chapter 2** - Learning from success stories – understanding how existing Copernicus-enabled services and applications have been developed and deployed
- **Chapter 3** - Doing it yourself – acquiring the key skills and knowledge to develop and deploy Copernicus-enabled products and services and to navigate the Copernicus ecosystem.



[Copernicus MOOC](#)

▶ **Attend Point.MOOC's 14 on-demand training sessions that will steer the technical and business development of your Galileo-enabled IoT product.**

In the first part of our Point.MOOC, you'll **learn all about the basics of creating an IoT business** by journeying through the customer problem, product concept design, business model creation and launching your product. Not sure where to start with Galileo integration? The second part of Point.MOOC examines **positioning in our connected world, and dives deep into Global Navigation Satellite Systems** and the European system, Galileo.



[Point.MOOC](#)

# Looking for additional resources?

Here is a collection of **publicly available** trainings:

▶ **Access 18 webinars about entrepreneurship in the space industry by Astropreneurs Training.**

From the potential for space data and funding sources, through to pitching and business plans, a wealth of knowledge and expertise awaits.

Astropreneurs is a **three-month acceleration programme** that includes **business and technical mentorship**, support to fund your business idea and access to our “SPACE Economy *Astropreneurs* network”.



[Astropreneurs](#)

▶ **The EUSPA Space Academy offers entrepreneurs a free and customisable online development programme. What’s in it for you?**

- Tailor your learning path spanning **business and technical** Copernicus & Galileo know-how
- Access **Q&A and workshop sessions with seasoned trainers** ready to guide you in the space entrepreneurship world
- **Book online mentoring sessions with +25 experts** from diverse backgrounds open to help you start or scale up your business.



[EUSPA Space Academy](#)



# Meet the core team behind the hackathons & mentoring

Got questions? One of us will get back to you with the answer.



Dany Robberecht



Vittorio Bava



Eleni Anastasopoulou



Thomas Tanghe



Alessandro Battista

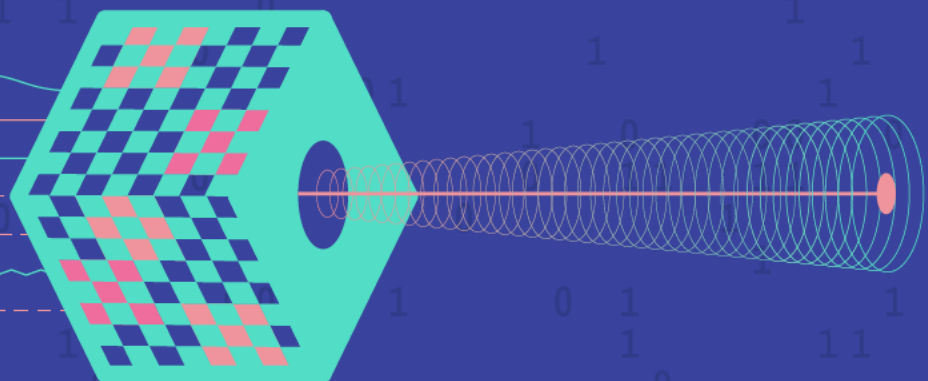


Annabel Egert

Reach us at: [hello@hackathons.cassini.eu](mailto:hello@hackathons.cassini.eu)

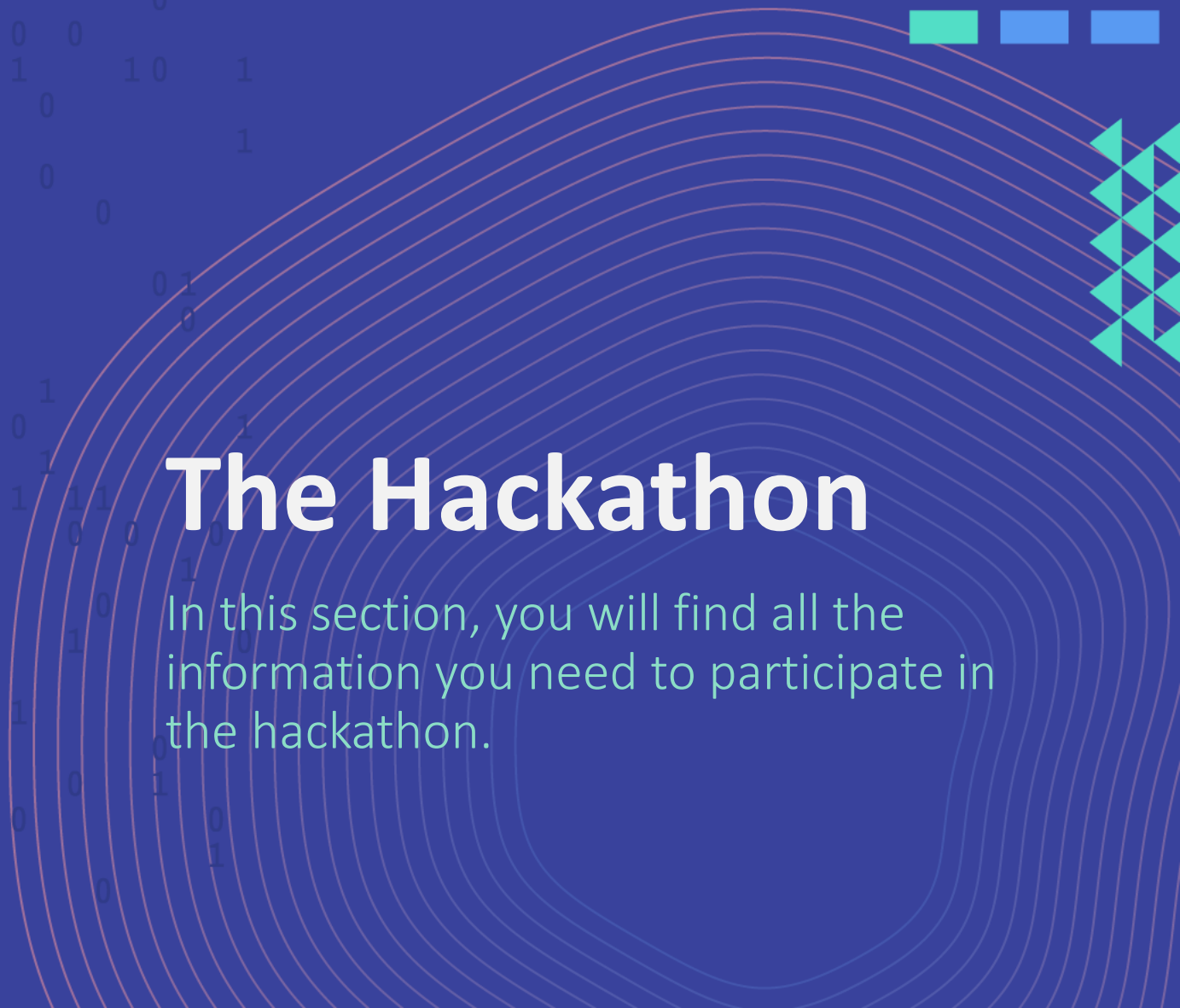
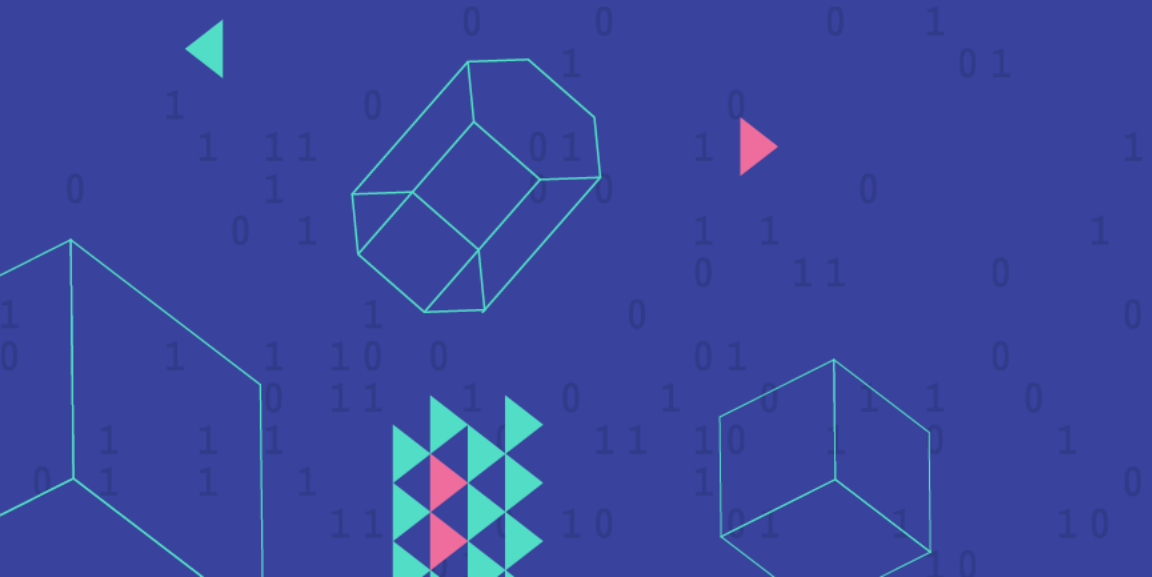


**CASSINI #EUSpace**  
Hackathons & Mentoring



# The Hackathon

In this section, you will find all the information you need to participate in the hackathon.



# The CASSINI Hackathon event

Hackathon activities are split across **three main events**:



1. **Big ideas campaign**

04<sup>th</sup> – 08<sup>th</sup> November September



2. **THE HACKATHON**

22<sup>nd</sup> – 24<sup>th</sup> November



3. **Demo day + Awards**

27<sup>th</sup> November

# The 8<sup>th</sup> CASSINI Hackathon takes place in 10 different locations

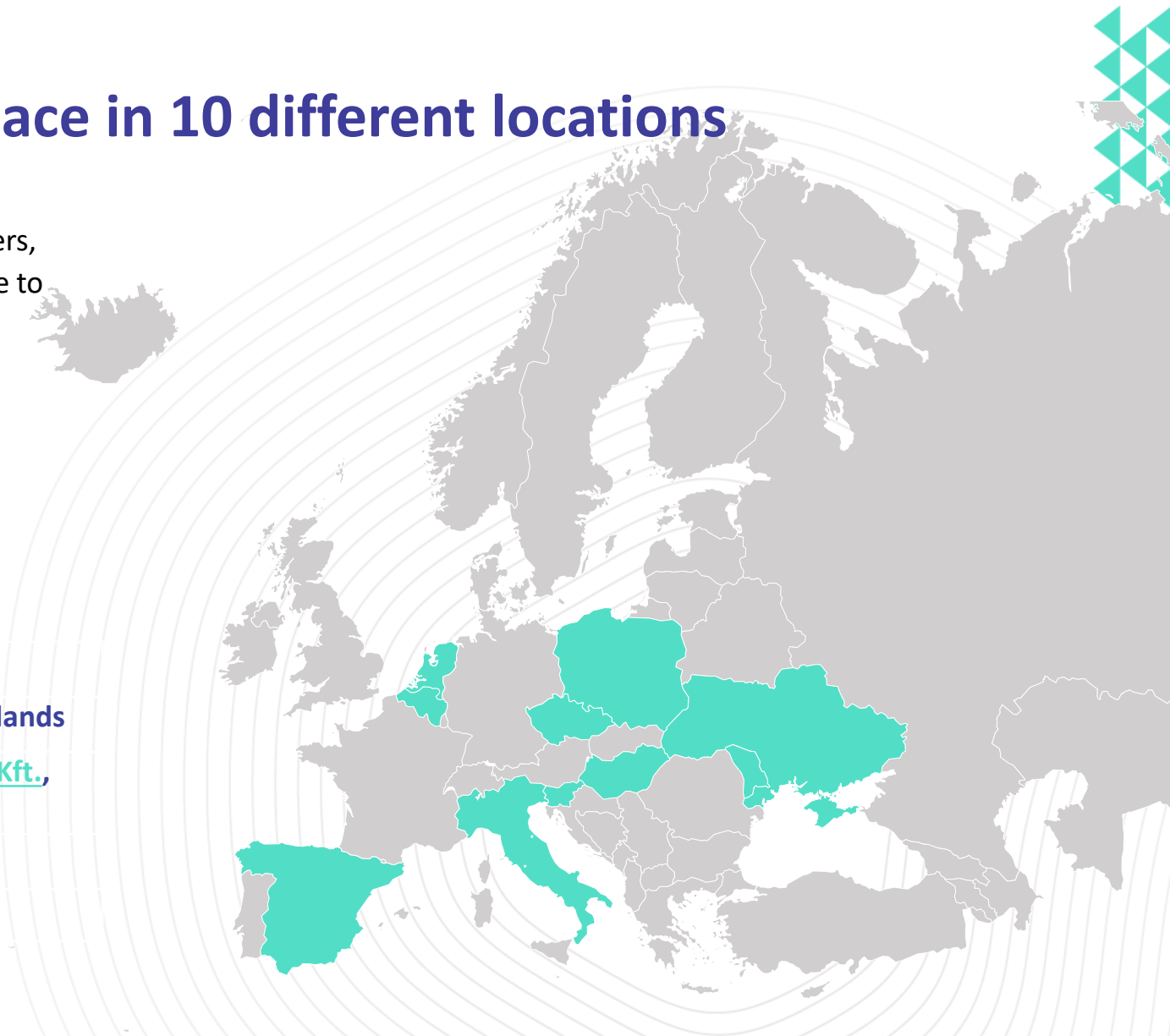
▶ All students residing in Europe, entrepreneurs, engineers, designers, researchers, policy makers, professionals, and others are welcome to participate. **No previous experience is required!**

On-site at one of the hackathon locations or remotely

No previous space experience is required!

Check out our 10 locations:

- [Prazsky Inovacni Institut, Czechia](#)
- [Fondazione E. Amaldi, Italy](#)
- [Inteligența Artificială in Acțiune ONG, Moldova](#)
- [Tovarna Podjemov, Slovenia](#)
- [Sopra Steria Benelux, Belgium](#)
- [Blue Dot Solutions, Poland](#)
- [Stichting Dotspace, Netherlands](#)
- [Design Terminal Nonprofit Kft., Hungary](#)
- [NGO Metalab, Ukraine](#)
- [Arribes Enlightenment, Spain](#)



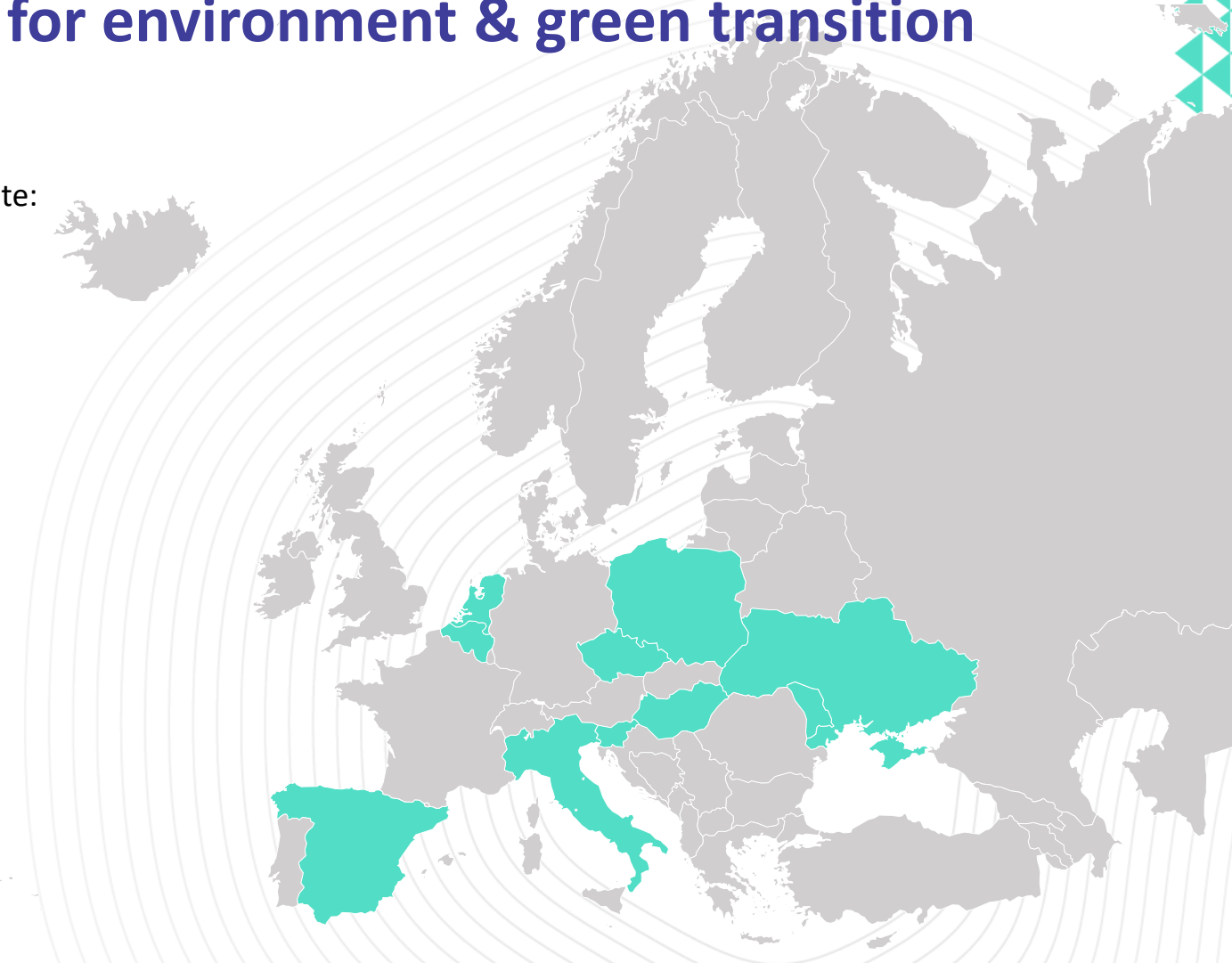
# Open for everyone with a passion for environment & green transition

▶ All European students, entrepreneurs, engineers, designers, researchers, policy makers, and others are welcome to participate:

On-site at one of the hackathon locations or remotely

No previous space experience is required!

- ▶  Online resources
- ▶  Relevant datasets
- ▶  Hybrid experience
- ▶  Interesting speakers
- ▶  Access to experts
- ▶  Cool prizes



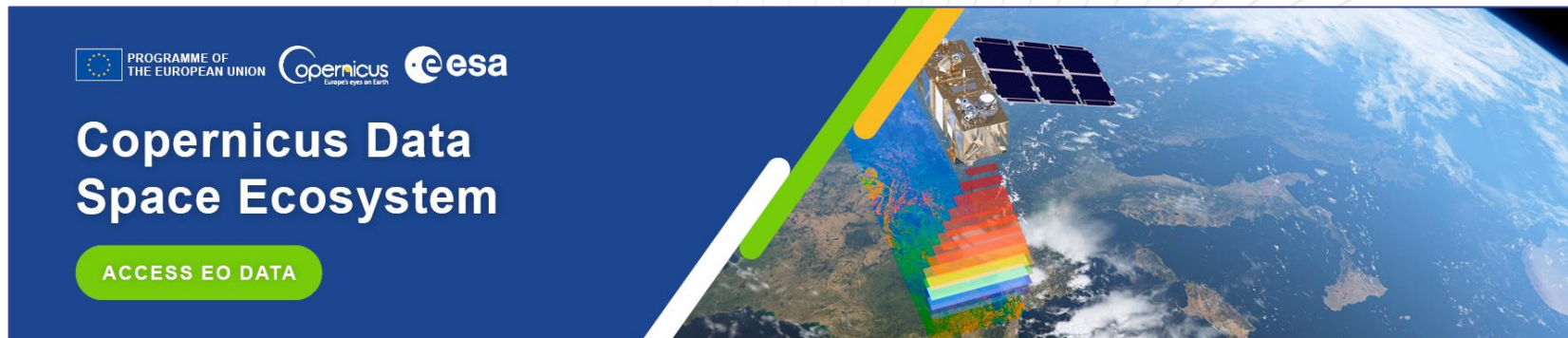
# Get to know the hackathon rules

- No development may start before the actual date and time of the Hackathon Weekend. Please do not begin hacking **before Friday 22<sup>nd</sup> November 2024 at 18:00 CET.**
- To ensure a level field for all contestants, all code must be created by the team, during the Hackathon Weekend.
- You are permitted to use publicly available or openly licensed APIs, SDKs, frameworks and other software libraries for your project.
- Any software development tools and/or programming language can be used.
- Teams that violate these rules will be automatically disqualified.

For full information about participating the CASSINI Hackathons, read the [Terms & Conditions](#)

# The Copernicus Data Space Ecosystem

- We are working with the **Copernicus Data Space Ecosystem** to give you free access to cloud processing infrastructure and data storage for the duration of the event.
- The package includes:
  - **Processing tools:** Access APIs, versatile tools and web-based environments
  - **Data access:** Data & information at your fingertips
  - **Training & support:** Training sessions and technical support during the Hackathon Weekend



# The Copernicus Data Space Ecosystem

- You can find **tailored on-demand training videos** on the Copernicus Data Space Ecosystem by visiting our [Tools page](#). These includes trainings on:
  - Introduction to Copernicus, the Data Space Ecosystem, and browser
  - How to use the Copernicus Data Space Ecosystem APIs
  - Introduction to Galileo & EGNOS
- Alternatively, you can also visit [dataspace.copernicus.eu](https://dataspace.copernicus.eu) for further features, tutorials and highlights demonstrating the use of the Ecosystem, including:
  - Exploring the Copernicus Data Space Ecosystem
  - Sentinel data
  - Copernicus Browser
  - openEO

## Other useful links:

- [Documentation Site](#)
- [Custom Scripts Repository](#)
- [Jupyter Lab](#)
- [Request Builder](#)
- [Sentinel Hub API Documentations](#)
- [openEO Algorithm Plaza](#)
- [Service Desk](#)
- [Copernicus Browser](#)
- [Github Notebook Samples Repository](#)
- [openEO web editor](#)



# Getting started with Copernicus Earth Observation satellite data

- EUSPA has created a **simple guide on how to access Copernicus data** for people who hear about it for the first time.
- This file is not exhaustive and is meant to be used as a simple guide on how to access various Copernicus data. It is a good **starting point** if you want to learn more about Copernicus!

[Download the Guide](#)



A thumbnail image of a document titled 'Getting started with Copernicus Earth Observation satellite data'. The document features the EUSPA and Copernicus logos at the top left, a satellite image of Europe at the top right, and a list of steps for accessing data. The text includes: 'There is a lot of Earth Observation data available. But how to make use of it?', 'Follow an example of a team on a hackathon, that has no knowledge about Copernicus, but wants to create an app using Earth observation data.', 'The team decided they will build a mockup for an app that recommends cycling destinations around Europe with good air quality. To do so they will follow these steps.', 'Obtain Earth Observation data in six steps:', '1. Find out what data on air quality is available. I review the list of Copernicus services and select the appropriate among Land, Atmosphere, Marine and others.', 'Copernicus services create useful and free information on top of Sentinel satellite and other data. CLMS - Land Monitoring Service provides land cover: vegetation, hydrology, urban settlements etc. CAMS - Atmosphere Monitoring Service provides atmosphere composition, air quality data and forecasts https://atmosphere.copernicus.eu/data. CMS - Marine Service - marine safety and resources, coastal resources. C3S - Climate Change Service provides info on past, present and future climate, seasonal forecasts. CEMS - Emergency Service information for emergency response and disaster risk management. Floods, fires, droughts. Partly public. CSS - Security Service - surveillance to support border, maritime security and external action. Not public. Full list of Copernicus services: Copernicus services catalogue', '2. Select Copernicus Atmosphere monitoring service (CAMS) and click on data in top right corner https://atmosphere.copernicus.eu/data', and '3. Under Daily analyses and forecast click on European air quality'. The thumbnail also shows small screenshots of the CAMS website interface.

# Big Ideas Campaign

The Big Ideas Campaign is a series of evening events between **04 – 08 November** filled with exciting and invaluable sessions intended to get you warmed up for the Hackathon Weekend!

**Join the campaign and take advantage of the benefits!**

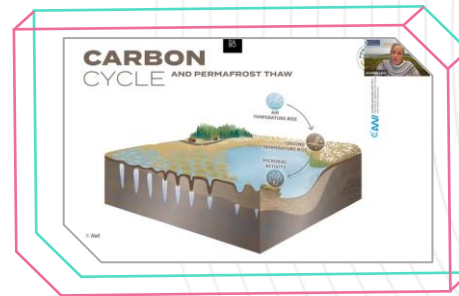
## Training

Learn about EU space technology, Copernicus, Galileo & EGNOS. We'll make sure you are equipped with the knowledge and tools to succeed during the hackathon.



## Inspiration

Get inspired by our success stories, past winners and training sessions we prepared so you can change the way we do finances!



## Networking

Take advantage of the Pan-European network and engage the community!



# Get to know the hackathon rules

## General rules

- No development may start before the actual date and time of the Hackathon Weekend. Please do not begin hacking before **Friday 22 November 2024 at 18:00 CET**.
- To ensure a level field for all contestants, all code must be created by the team, during the Hackathon Weekend.
- You are permitted to use publicly available or openly licensed APIs, SDKs, frameworks and other software libraries for your project.
- Any software development tools and/or programming language can be used.
- Teams that violate these rules will be automatically disqualified.

## Hacker eligibility criteria

- Apply as an individual
- 18 years or older
- Reside in European Union or a non-EU country associated with Horizon Europe

## Team criteria

- Minimum 3 & maximum 8 team members
- At least 1 with a technical profile and 1 with a business profile
- Have an idea to work on

**For full information** about participating in the CASSINI Hackathons, read the [Terms & Conditions](#)

# Participating in the virtual hackathon

Click the **register button** on our website [cassini.eu/hackathons/](https://cassini.eu/hackathons/) and engage with us across these platforms:

## Hackathon platform

Want to register as a participant? Great! Head to the hackathon platform, register, and join/form a team.

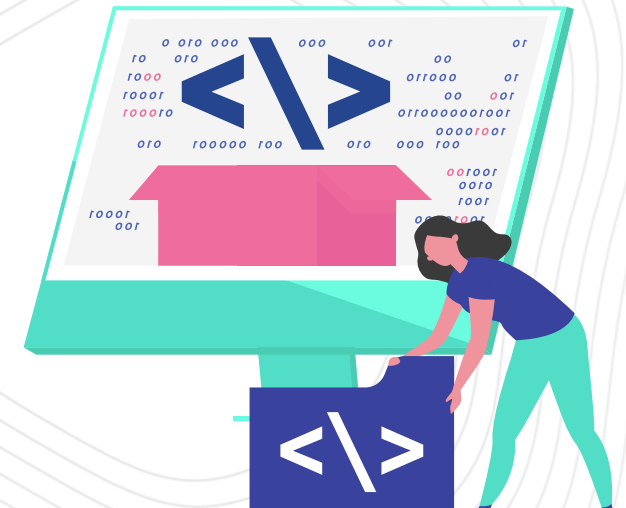
[To hackathon platform](#)

TAIKAI

## Community platform

Keep up to date with the latest hackathon information, find team-mates and ask questions on our community platform.

[To community platform](#)



# Form or join a team on the **hackathon platform**

Sign into your TAIKAI account [here](#) and follow the steps to **create or join a team** and submit your hackathon project.

## 1. **Create or join a team**

**Already know who your team members are?**

Create a team and share a link.

**Looking to join a team?** Head to [Discord](#) to meet fellow participants. Check out the #find-your-team channel

## 2. **Select a challenge**

**Choose from one of the three challenges:**

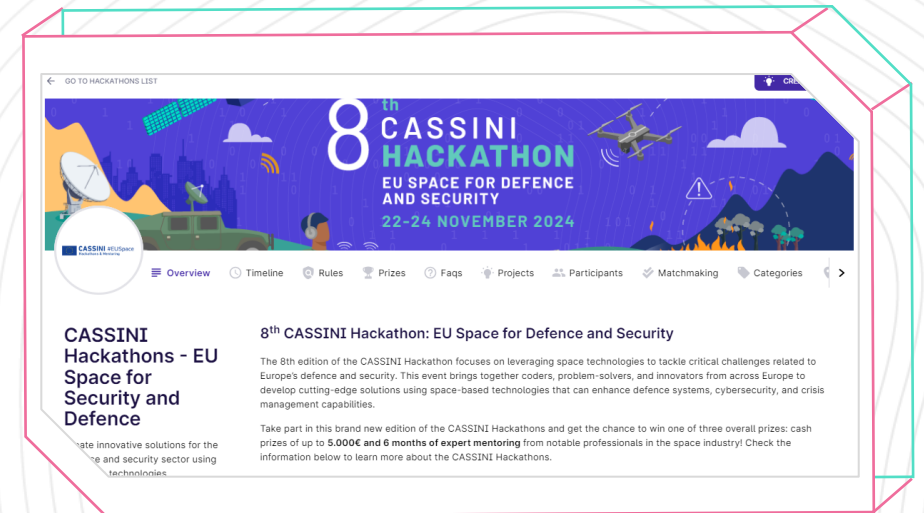
- Enhancing Defence & Security with Geospatial Intelligence
- Unmanned Drone Applications for Defence & Security Ops
- Orbital security – Navigating the collision frontier

## 3. **Submit your project**

**Make sure to submit before the deadline:**

14:30 CET, Sunday 24<sup>th</sup> November 2024

# TAIKAI



# TAKAI's participants journey – Forming a team

If you are a **team leader and already have a project in mind**, but don't yet have a full team, follow these steps to create your **dream team**:

## 1. Go to the matchmaking tab

- Visit [TAIKAI](#)
- Go on to the ['participants' tab](#)
- Take the first steps to create a dream team!

## 2. Scout for participants

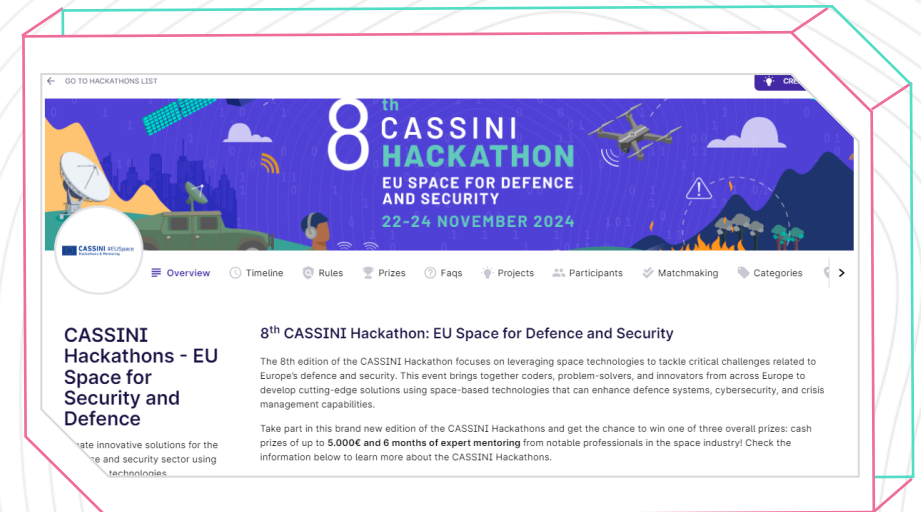
**Find your ideal team member:**

- Search for participants from your hackathon location
- Check 'Looking for a team' tag
- Filter by skillset

## 3. Contact future team members

**Message the person, introduce yourself and your project.**

# TAIKAI



# TAKAI's participants journey – **Joining a team**

If you are an **innovator looking for a team**, follow these steps to find your dream team:

## 1. **Go to the matchmaking tab**

- Visit [TAIKAI](#)
- Go on to the ['matchmaking' tab](#)
- Take the first steps to create a dream team!

## 2. **Scout for projects**

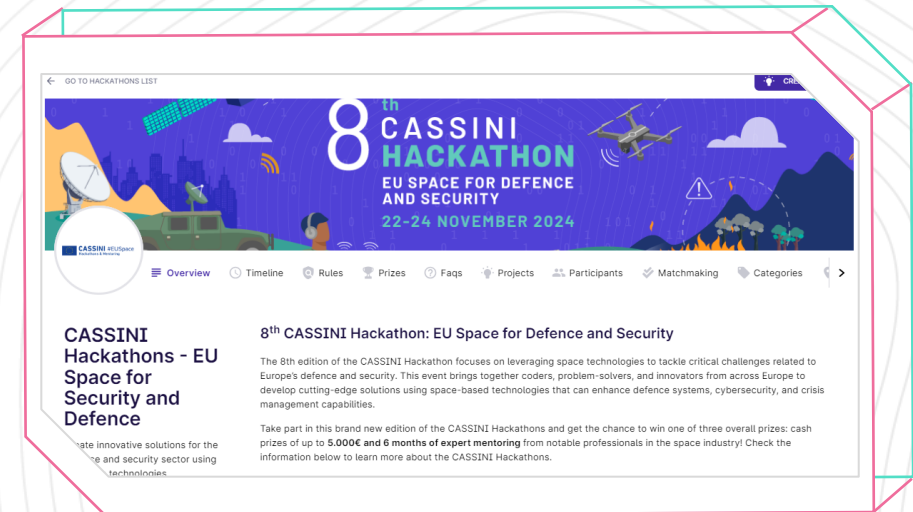
**Find your ideal project:**

- Search for projects from your hackathon location
- Check the skills needed for the project
- Choose your ideal team

## 3. **Contact project owner**

**Message the person and introduce yourself.**

# TAIKAI



# TAKAI's participants journey – Changing location

Interested in trying out a **new location**?  
You can do so by editing your registration on TAKAI!

## 1. Go to our platform page

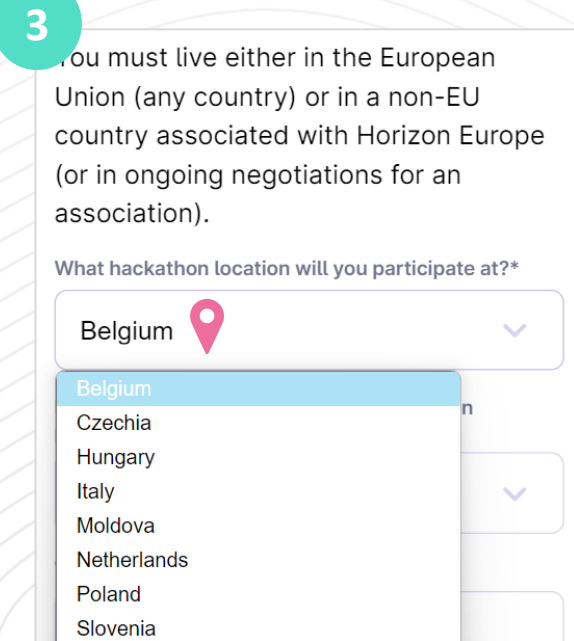
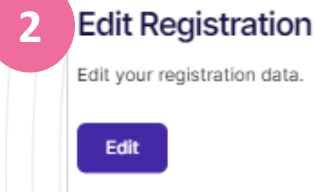
- Visit [TAIKAI](#)
- Log in to your TAKAI account
- visit the Hackathon's [platform page](#)
- Click on '[Preferences](#)'

## 2. Edit your registration

- Click the 'Edit' button on 'Edit Registration'

## 3. Choose a new location

Select the **hackathon** you wish to participate in from the local organiser list and save your preferences.



### Note:

- The whole team has to be enlisted for the **same hackathon location** to which you want to attend.
- The project has to have the **same tag** as the hackathon location where you participate. You can change the tag of the project as well in [TAIKAI](#).

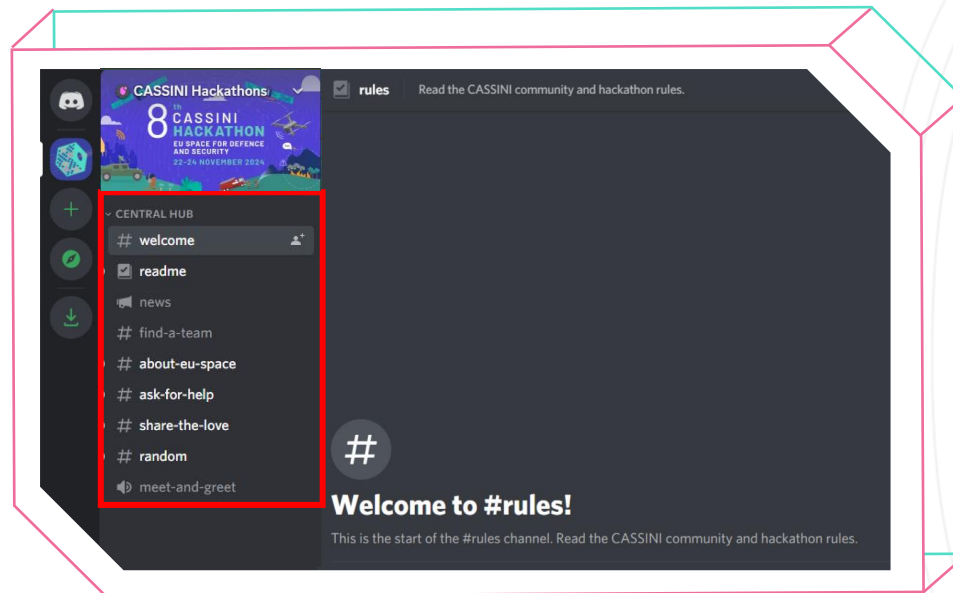


# Engage with the hackathon community on discord

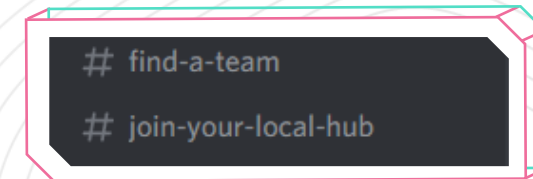
Interact with your **local organisers and fellow participants** on [Discord](#).

This is where the **main hackathon communication** will take place throughout the weekend. You can use the different channels to ask questions, have a chat, and hear the latest information about your local hackathon.

## Central Hub



## Local Hackathon



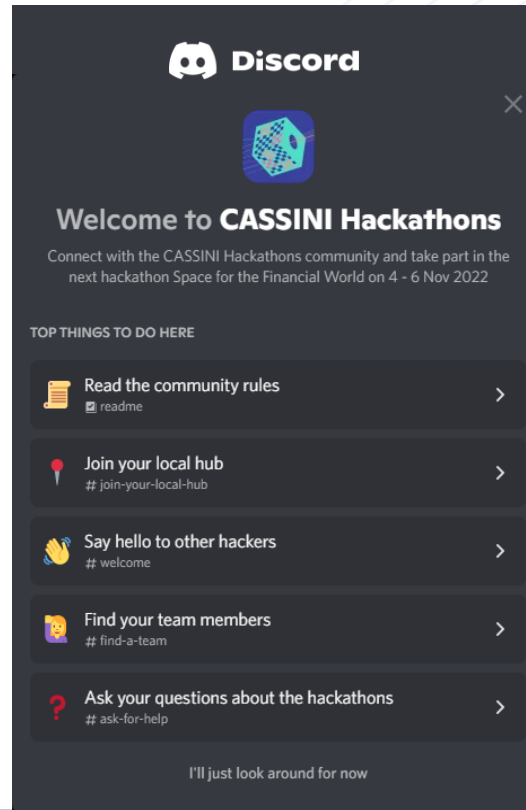
**DISCORD**

# Check out the top 5 to do on [Discord](#)!

Familiarise yourself with the platform **prior to the start of the hackathon** and make the most out of your **communication tool**.



- 1 Read the community rules  
#readme
- 2 Join your local hub  
#join-your-local-hub
- 3 Say hello to other hackers  
#welcome
- 4 Find your team members  
#find-a-team
- 5 Ask your questions about the hackathons  
#ask-for-help



# Demo Day & Award Ceremony

Nov 27  
Wednesday

18:00 (CEST)

During the Demo Day & Award Ceremony the **10 winners of the local hackathons** will pitch their projects.

A jury of experts will evaluate the projects and select the three overall winning teams who will win **100 hours of expert mentoring** each.



## Join the demo day to...

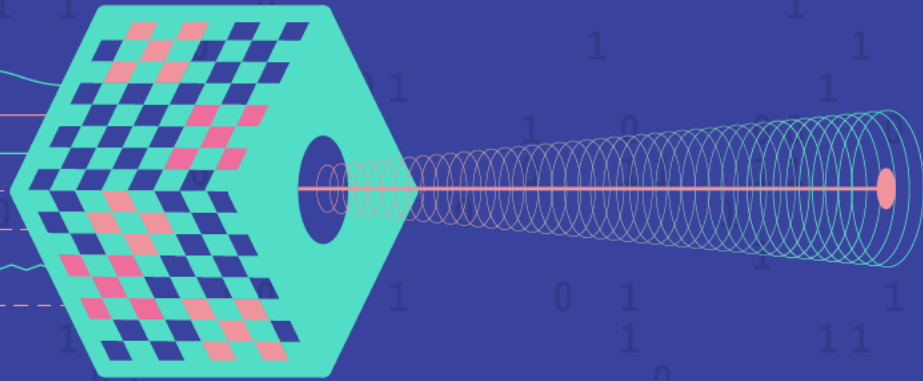
▶ Meet the top teams from the 10 local hackathons

▶ Watch 10 innovative project pitches

▶ Discover the 3 overall winners of the hackathon

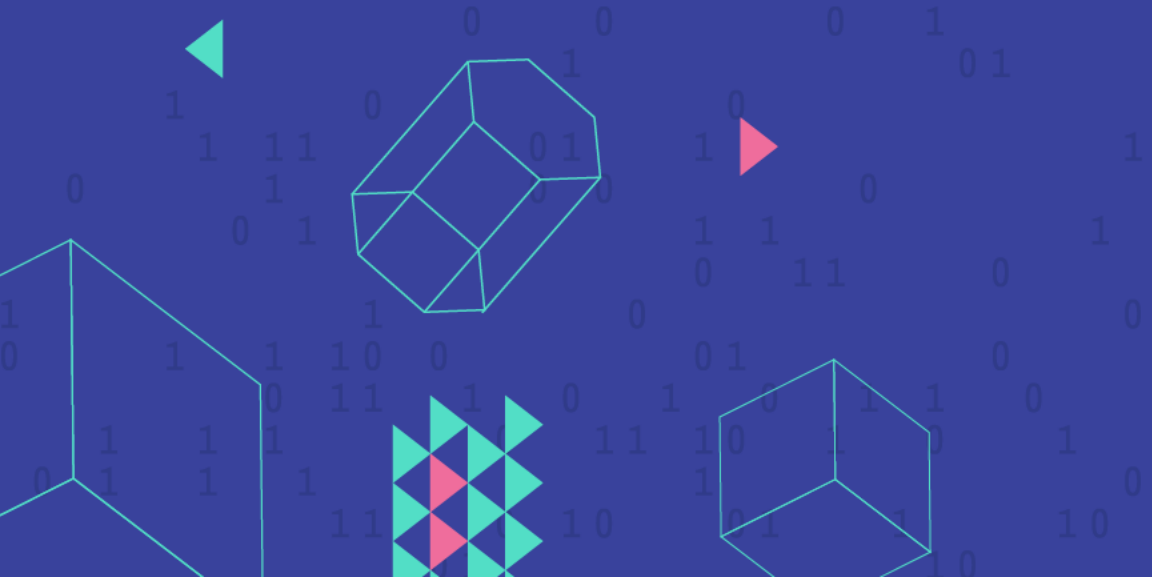


**CASSINI #EUSpace**  
Hackathons & Mentoring



# Mentoring Programme

In this section, you will learn about the mentoring programme available to the top 3 teams selected in the hackathon.



# Each winner has access to our mentoring programme

Three winning teams can benefit from **100 hours of mentoring each** spread across the six months following the event.

## How does it work?



Each team will have a lead mentor who will guide them through the mentoring programme.



The lead mentor will connect the teams with different expert mentors who are available in 5-hour blocks.



Teams will monitor their progress over the six months on their path to creating a sustainable and commercially viable solution!



# Meet some of our mentors

Each of the three overall winners will work with our expert mentors. Their backgrounds range from product development, Earth observation and GNSS through to business development, marketing, design and more. Here are a small selection:



**Carlos Bello  
Marcos**  
INNOVA4EU



**Dimitris Matsakis**  
P.L.A.N.



**Dr. Johanna Braun**  
Innovation, Venture &  
Sustainability



**Dennis Kibirev**  
Mesh Ai, FrontierFunder



**Floriano Bonfigli**  
AC75



**Pablo Garrido**  
EIT Urban Mobility



**Alexandre Mencik**  
Space Platform



**Pedro Branco**  
Virtual Angle B.V.



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Hackathons & Mentoring

# THANK YOU!

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