![CASSINI Hackathons & Mentoring logo]

Participant Playbook

International Development
& Humanitarian Aid

3-5 November 2023

Implemented by

VERHAERT | MASTERS IN INNOVATION   space·tec PARTNERS

The participant playbook is intended to guide you through the most important information about the 6th CASSINI Hackathon & Mentoring.

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

We can't wait to see how you use EU space technologies to support international development & humanitarian activities!
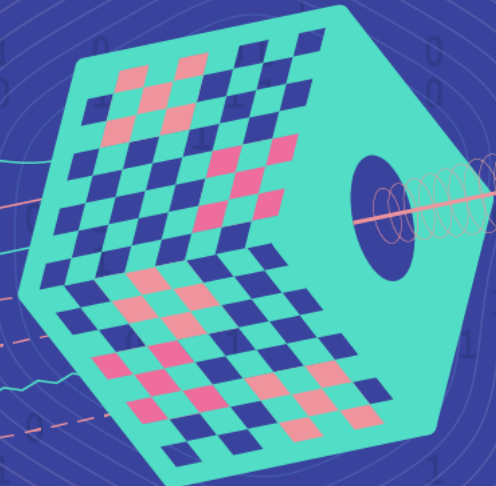
CASSINI
Hackathons & Mentoring

What you will find in this playbook

1. Core information

- Overview of the 6th 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 11 local organisers
- Accessing the data → **Coming soon!**
- The Big Ideas Campaign
- The hackathon agenda & rules
- Overview of the hackathon platforms
- The Demo Day & Awards Ceremony → **Coming soon!**

3. Mentoring programme

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

6th CASSINI HACKATHON

SPACE FOR INTERNATIONAL DEVELOPMENT & HUMANITARIAN AID

The 6th CASSINI Hackathon & Mentoring | 3-5 November

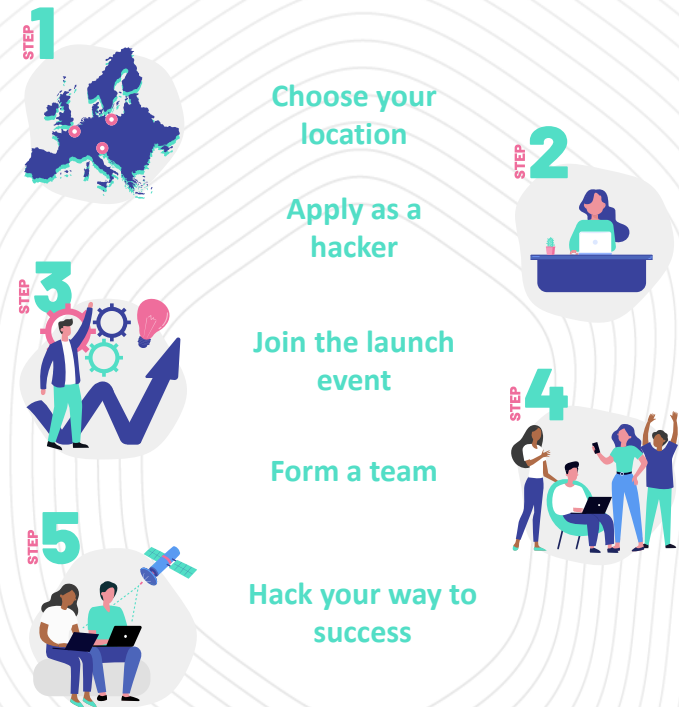## Connecting with issues that are **important for our future**

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

In the 6th CASSINI Hackathon, participants are challenged to create solutions that use European space technologies to support sustainable international development and help people in need.

Despite progress made in recent years, millions of people around the world still lack access to basic life necessities, hindering their ability to lead healthy lives. Better infrastructure, access to clean water and secure food supplies, as well as assistance in times of emergency are important to ensure vulnerable communities have the chance to thrive and grow. A deeper understanding of the effects of climate change will also contribute to a more resilient future.

By utilising Earth observation data from **Copernicus,** satellite positioning and navigation services from **Galileo & EGNOS,** the hackathon aims to bring about real change that improves the design and delivery of humanitarian assistance and international development support around the world.

Applying is easy!

STEP 1
Choose your location

STEP 2
Apply as a hacker

STEP 3
Join the launch event

STEP 4
Form a team

STEP 5
Hack your way to success

Space for International Development & Humanitarian Aid

#1

Supporting sustainable infrastructure development

#2

Strengthening food security & access to clean water

#3

Understanding and forecasting forced migration

CASSINI
Hackathons & Mentoring

Challenge #1: Supporting sustainable infrastructure development

A country's infrastructure is critical to guarantee access to essential services. It drives economic and social growth, creating more job opportunities and better quality of life. Energy, communication and transportation are examples of basic infrastructure that are often taken for granted but that many people worldwide still lack. Space technologies can help us further explore, plan and maintain infrastructure developments, such as solar and wind power generation. Space-based timing and communication technologies can support improved systems coordination and control, and in the case of energy, enable more efficient and reliable transmission and distribution of electricity.

This challenge calls on tomorrow's innovators to **develop products, devices, or services that leverage European space data, information and signals** from Copernicus and Galileo or future services using IRIS[2] to enable sustainable and impactful solutions. We encourage participants to dive into the areas of:

- Spatial planning & site selection for infrastructure development

- Renewable energy production forecasting

- Future-proofing transportation & mobility infrastructure

- Critical infrastructure monitoring and planning for remote communities

- Assess damages to infrastructure caused by natural disasters or conflict

7 AFFORDABLE AND CLEAN ENERGY

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

SUSTAINABLE DEVELOPMENT GOALS

Challenge #2: Strengthening food security & access to clean water

Access to food and water is a basic human right that remains a significant challenge for many populations around the world. Climate change, unsustainable land-use practices, and global supply chain disruptions further aggravate these challenges. Anticipating humanitarian crises and managing often-scarce resources are critical to strengthening overall access to food and water. Space technologies can contribute to improving food security by optimising land use, supporting accurate yield forecasting, and increasing supply chain resilience. They can improve access to clean water by identifying groundwater sites, understanding global water cycles, and monitoring and mitigating the effects of floods and droughts. Overall, space technologies have the power to enable humanitarian actors to better anticipate and prepare for future crises.

This challenge tasks participants to **develop products, devices, or services that leverage European space data, information and signals** from Copernicus and Galileo or future services using IRIS[2] to enable sustainable and impactful solutions. We encourage participants to dive into the areas of:

- Anticipatory action for extreme weather events, including impact-based assessments to the food value chain, water supplies, infrastructure and communities

- Agricultural yield forecasts and optimisation

- Logistics & resource allocation for emergency humanitarian assistance

- Land cover & land use monitoring

- Access and management of groundwater

- Monitor water quality parameters like algal bloom, cyanobacteria, suspended matter

Challenge #3: Understanding and forecasting forced migration

Natural and man-made crises threaten the livelihoods of millions of vulnerable people worldwide every day. Rising sea levels erode shorelines, contributing to coastal flooding and increasing groundwater salinity, while changes in rainfall patterns affect water supplies and the availability of arable land in rural communities. War and conflict cause massive disruption to food and water supplies, personal security and property ownership. As a result, residents in these vulnerable areas are often forced to migrate in search of work or to ensure their safety. Space technologies can help us understand the impact of climate change on coastal and rural regions of less developed countries with insights on population movement and land use/land change. They can also support the design and delivery of humanitarian assistance to people in need.

This challenge tasks participants to **develop products, devices, or services that leverage European space data, information and signals** from Copernicus and Galileo or future services using IRIS[2] to enable sustainable and impactful solutions. We encourage participants to dive into the areas of:

- Digital tools and big data in migratory processes and population movements

- Planning, decision-making and resource allocation due to natural and man-made disasters

- Transportation and logistics to support displaced communities

- Impact of desertification in rural communities

- Monitoring coastal communities and erosion

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

CASSINI
Hackathons & Mentoring

The EU Space programme continued

The CASSINI Hackathons & Mentoring will look to engage participants with secure communications and space situational awareness in future editions.

GOVSATCOM

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

More information

EUSST

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

IRIS²

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?

- Overview of the programme

- Introducing the Copernicus Sentinel missions

- The Copernicus services
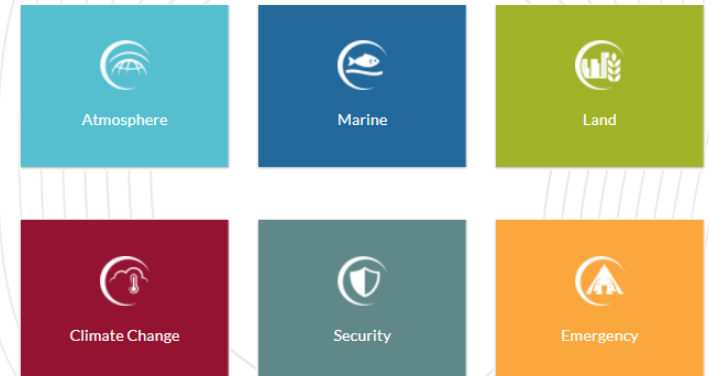
Spotlight on Galileo & EGNOS

Just getting started using satellite positioning technologies? We have collected some important resources for you to get started:

- What is Galileo?

- EGNOS and Galileo: Programme Reference Documents

- GNSS raw measurements white paper

- Database of GNSS raw measurements

- Glossary for GPS test

- GNSS market report

- Galileo-enabled devices

CASSINI
Hackathons & Mentoring

Some of our other tools...
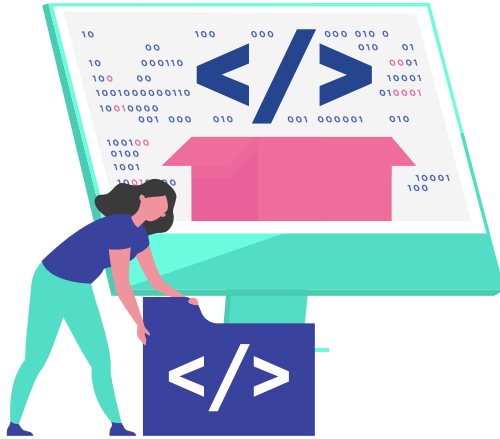
Code repository

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.

github.com

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.

Business Design Playbook

Participant Playbook
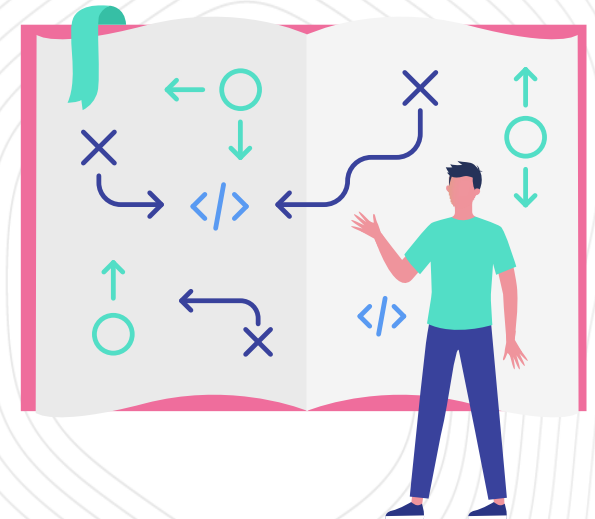
Looking for additional resources?

Here are 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.

▶ 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.

Copernicus MOOC

Point.MOOC

Looking for additional resources?

Here are 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 with 7 topics & 18 modules 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

CASSINI
Hackathons & Mentoring

Meet the core team behind the hackathons & mentoring

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

Dany Robberecht

Florentyna Smith
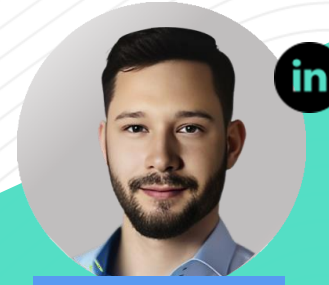
Mate Berke

Thomas Tanghe

Benoit De Vrieze
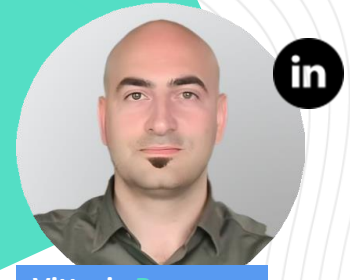
Vittorio Bava

Reach us at: hello@hackathons.cassini.eu

CASSINI
Hackathons & Mentoring
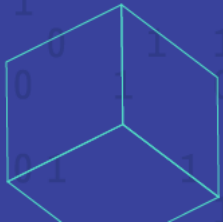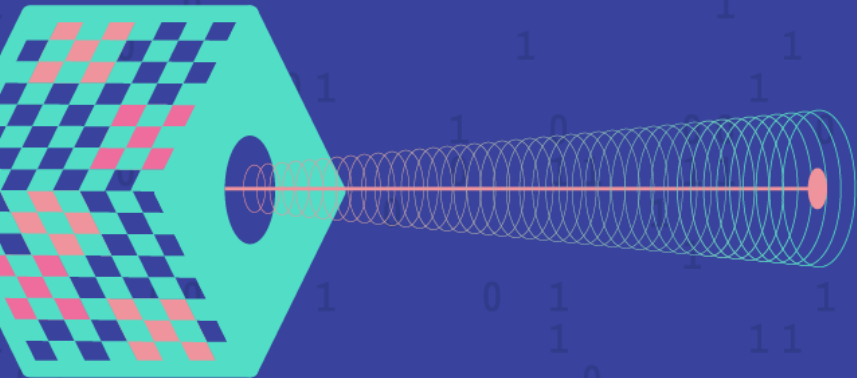
The Hackathon

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**
   9th – 19th October

2. **THE HACKATHON**
   3rd – 5th November

3. **Demo day + Awards**
   9th November

The 6ᵗʰ CASSINI Hackathon takes place simultaneously in 11 different locations around Europe

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 11 locations:

- **Belgium**
- **Croatia**
- **Estonia**
- **Germany**
- **Netherlands**
- **Poland**
- **Portugal**
- **Romania**
- **Slovenia**
- **Spain**

With an additional special organiser joining us from

- **Ukraine**

CASSINI
Hackathons & Mentoring
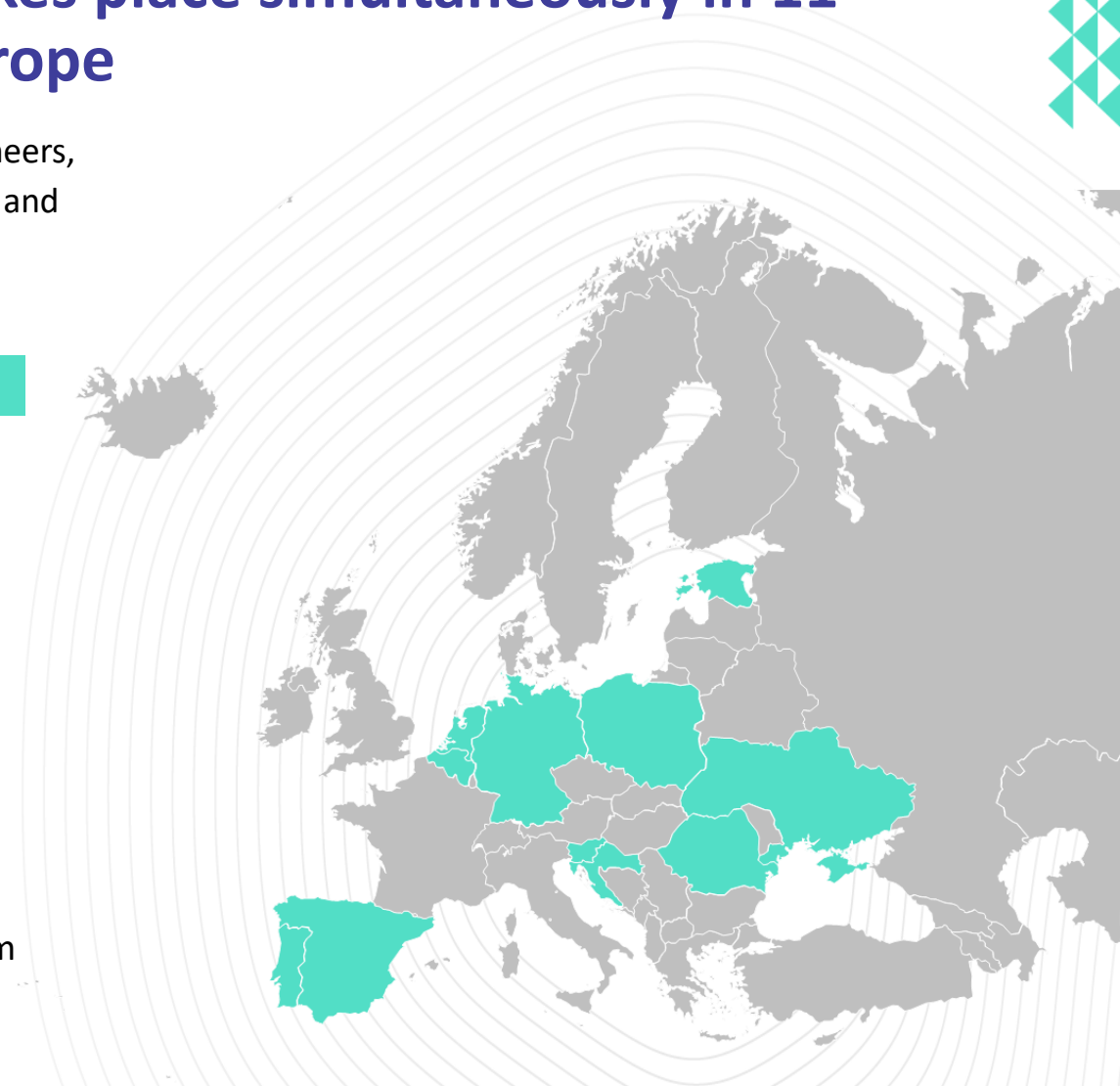
Getting started with Copernicus Earth Observation satellite data

- 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 it 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

Get precise location data with JASON

The CASSINI Hackathons is supported by JASON, a cloud GNSS processing service by Rokubun, providing participants with accurate location/navigation results immediately.

JASON is a GNSS post-processing cloud service to get accurate location at affordable cost. It is a fully automatic Post Process Kinematic (PPK) processing engine such that users are delivered precise location/navigation results in few clicks.

Automatic PPK	Improved accuracy	Events sync	Cloud service
JASON fetches the nearest GNSS base station from more than 7000 stations worldwide.	Up to centrimetic accuracy depending on your setup. Save GCPs in your survey operations!	Accurate geolocation of time-tagged events, synchronized with your images.	No need for software installation. Access JASON from anywhere.

Big Ideas Campaign

The Big Ideas Campaign is a series of evening events between 9 – 19 October 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!
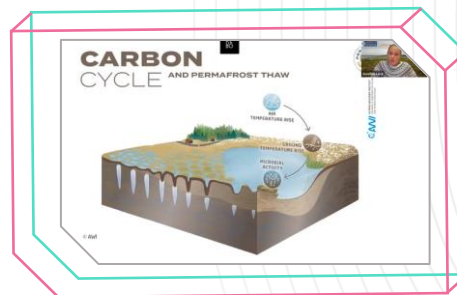
Training

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!

CASSINI
Hackathons & Mentoring

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 3rd November 2023 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 an EU member state, Norway, Iceland or Switzerland

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 the CASSINI Hackathons, read the **Terms & Conditions**

Participating in the virtual hackathon

Click the register button on our website 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.
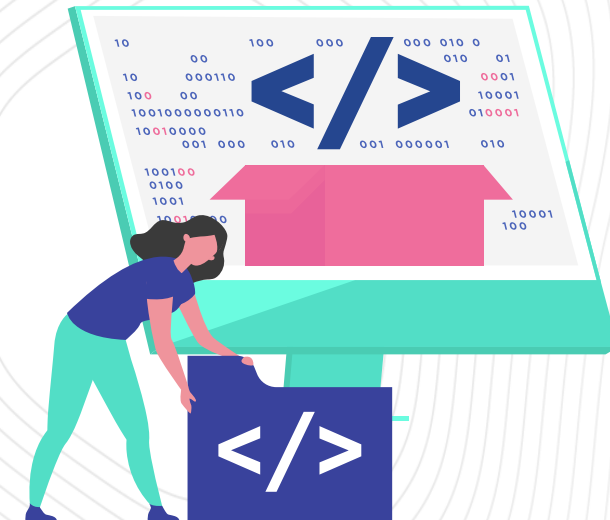
To hackathon platform

Community platform

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

To community platform

CASSINI
Hackathons & Mentoring

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

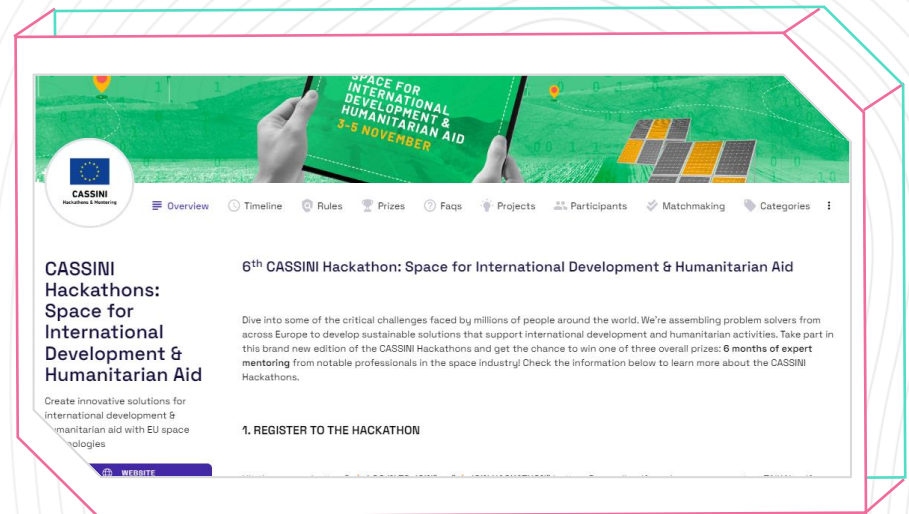**Choose from one of the three challenges:**
- Supporting sustainable infrastructure development
- Strengthening food security & access to clean water
- Understanding and forecasting forced migration

3.

Submit your project

Make sure to submit before the deadline:
14:30 CET, Sunday 5th November 2022

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](#) and take the first steps to create a dream team!
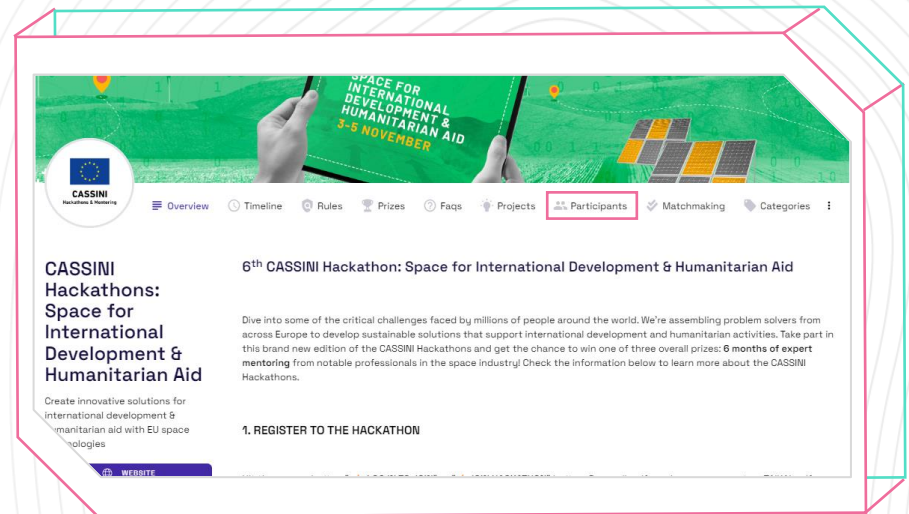
2. Scout for participants

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.

CASSINI
Hackathons & Mentoring

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 and take the first steps to join a dream team!
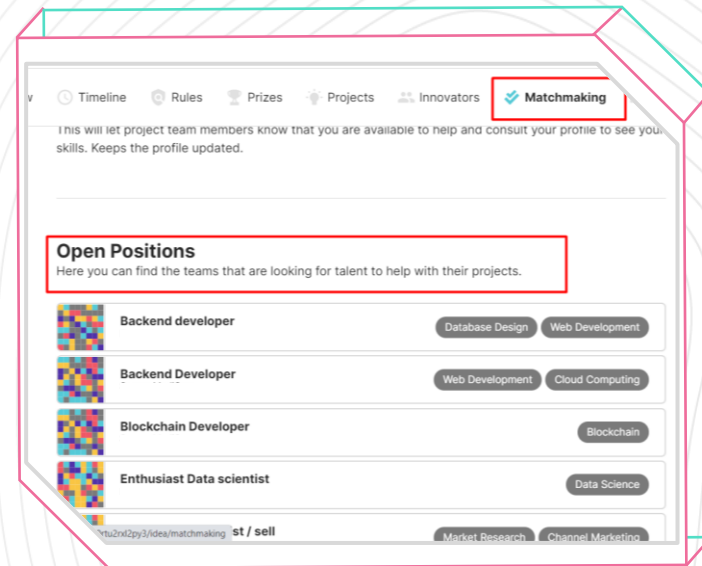
2.

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.

CASSINI
Hackathons & Mentoring

TAKAI's participants journey – Changing location

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

1. **Go to our platform page**

Log in to your TAIKAI account and 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.

1 CASSINI Hackathons: Space for International Development & Humanitarian Aid

Create innovative solutions for international development & humanitarian aid with EU space technologies

CREATE PROJECT
PREFERENCES
WEBSITE

Timeline

2 Edit Registration

Edit your registration data.

EDIT

**3** WHAT HACKATHON LOCATION WILL YOU PARTICIPATE AT?*

Lithuania

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.

CASSINI
Hackathons & Mentoring
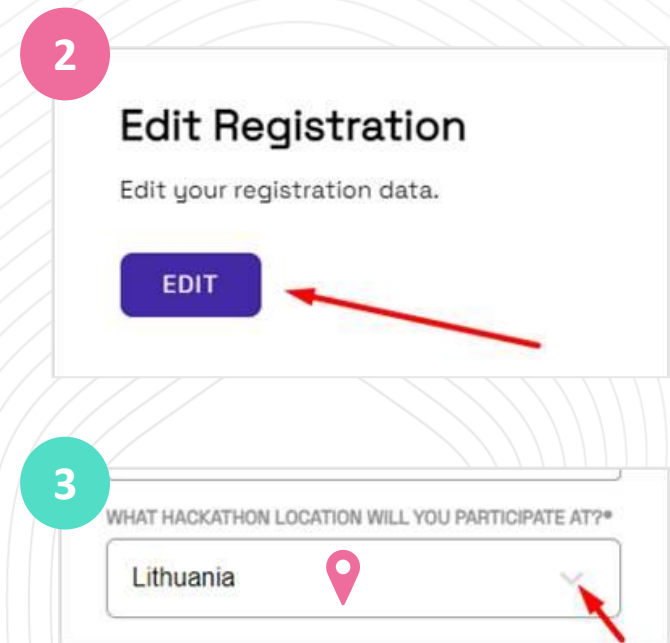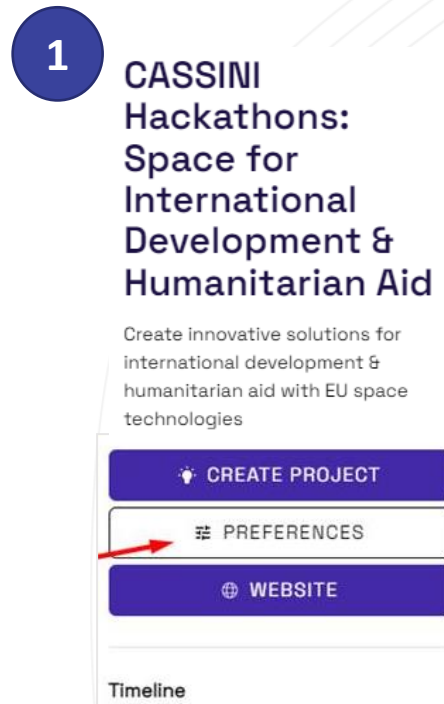
Engage with the hackathon community on discord

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

CASSINI
Hackathons & Mentoring
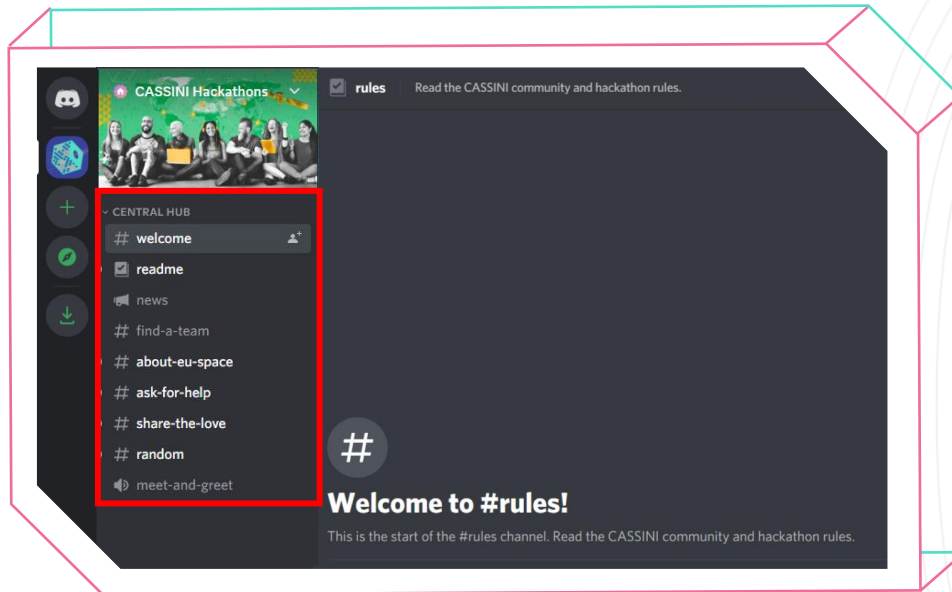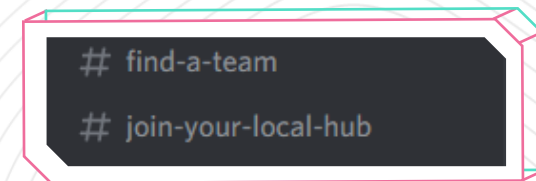
Check out the top 5 to do on Discord!

Familiarise yourself with the platform prior to the start of the hackathon and make the most out of your communication tool!
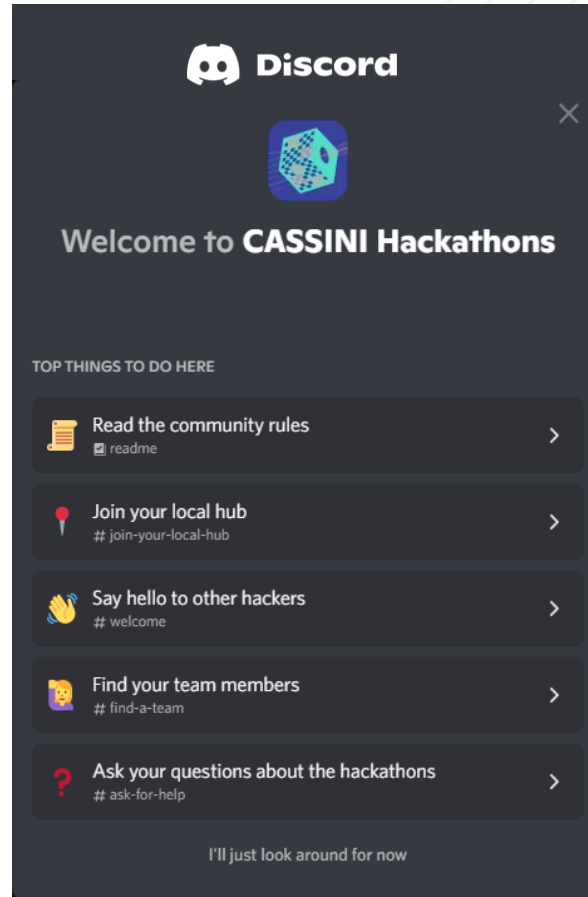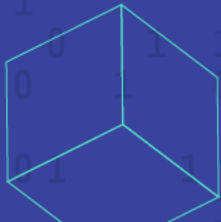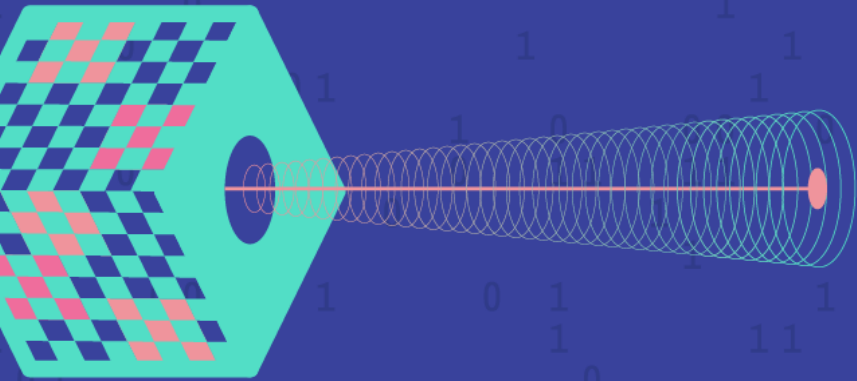
Mentoring Programme

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 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
Owner, Innovation, Venture &
Sustainability Advisory

Dennis Kibirev
Mesh Ai, FrontierFunder

Floriano Bonfigli
AC75

Pablo Garrido
EIT Urban Mobility

Alexandre Mencik
Space Platform

Pedro Branco
Virtual Angle B.V.

CASSINI
Hackathons & Mentoring

CASSINI
Hackathons & Mentoring

Thank you