



Playbook for Hackers

Galileo Hackathons



WHAT IS THIS GUIDE?

The playbook is intended to guide you through the **most important information** about the Galileo Hackathons.

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 Galileo to **tackle challenges in Southeast Asia!**

Why participate?

The Galileo Hackathon holds many exciting opportunities for you:



Win a prize!

Cash prizes
of 2k, 1k, 500 EUR
for the top-3 teams
of each Hackathon



Discover Galileo

Develop your
understanding of
Galileo



Become an innovator

Boost your education
and become
an entrepreneur



Prove your skills

Certificate of
achievements
for each Hacker

THE GALILEO HACKATHON

Hackathon activities are split across three main events:



1. Opening Ceremony

12th Nov



2. THE HACKATHON

12th – 14th Nov

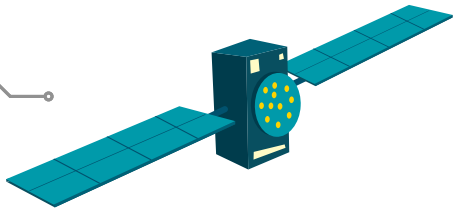
Submission Deadline:
14 November 14:00 CEST



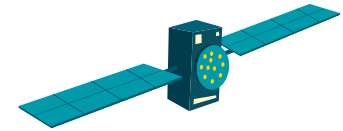
3. Awards Ceremony

14th Nov

The Galileo Hackathons



Leverage EU Space data from **Galileo**, the European Global Navigation Satellite System, for applications in Southeast Asia. As a Hacker you have the power to choose **1** Hackathon out of many Galileo Hackathons...



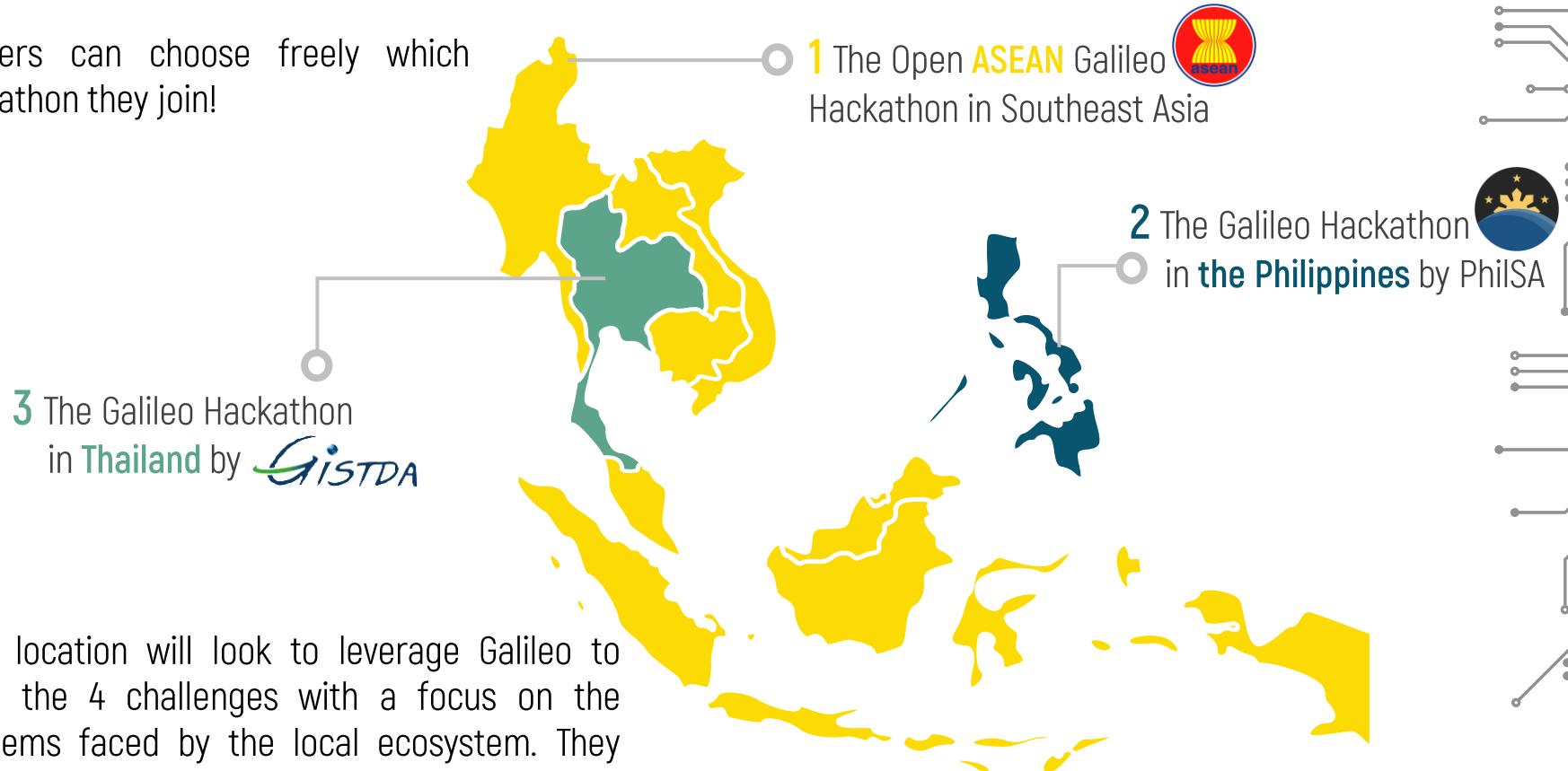
...and tackle **1** of **4** challenges:



The Galileo Hackathons across Southeast Asia

The Galileo Hackathons take place simultaneously across Southeast Asia

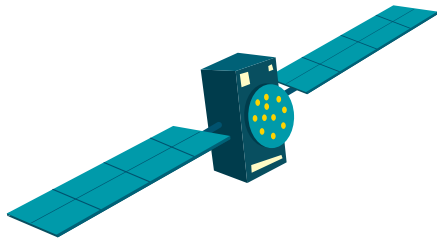
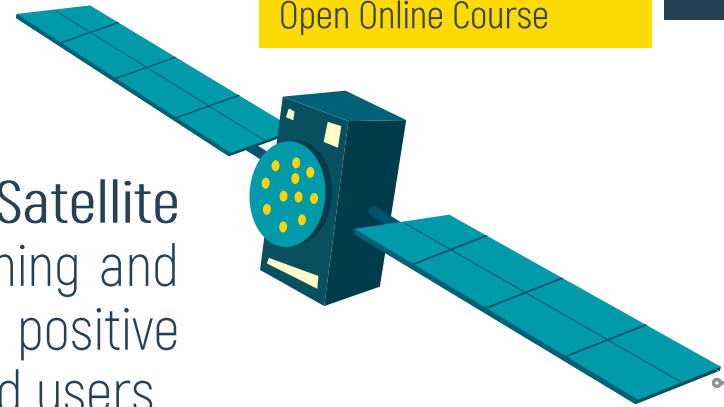
Hackers can choose freely which Hackathon they join!



Each location will look to leverage Galileo to solve the 4 challenges with a focus on the problems faced by the local ecosystem. They each have their own expert mentors and prizes!

GALILEO & EU SPACE

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.



Besides offering **open access to precise positioning and timing data**, Galileo has a wide portfolio of **value added services**:

Emergency Warning Service

- Leverages Galileo's messaging function
- Transmits alerts to smartphones within affected areas without relying on ground infrastructure

Open Service Navigation Message Authentication

- Ensures the authenticity of GNSS information
- Enables higher levels of service robustness
- Complemented through the **Commercial Authentication Service** that allows access to the encrypted E6-C codes

Search and Rescue Service

- Reduces the time taken to locate emergency beacons
- Includes the **Return link service** that notifies users that their distress signal has been received

High Accuracy Service

- Reduces positioning errors to below 2 decimetres
- Based on the free transmission of Precise Point Positioning

CHALLENGE #1 Emergency Applications

Southeast Asia by virtue of its geographic circumstances is highly prone to natural disasters, such as earthquakes, volcanic eruptions, tropical cyclones and floods, making it one of the most disaster-prone countries in the world. In the last decade, we have seen more than 500 natural disasters in the region.

The Galileo Hackathons are looking for innovative solutions specifically targeted at emergency applications. Participants are tasked to develop ideas/ concepts or design products, devices or services that use Galileo positioning data that aid in domains such as:

- Early Warning Services
- Disaster Risk Reduction and Management
- Search and Rescue Operations

Example:



SIG-Riskos (Risk-GIS) is a distributed, mobile, participative GIS consisting of a central database and a municipal GIS installed on mobile computers. It allows civil defence workers to make their own maps, monitor risk areas and report disasters to central coordinators of mitigation measures. It can be adapted to any satellite navigation system. By educating civil defence workers, it can also enable them to guide the population in disaster situations and update the GIS.



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



SPACE4SDGS

15 LIFE ON LAND



CHALLENGE #2 Environmental Challenges

Southeast Asia is one of the **most vulnerable regions to climate change**. The archipelagic regional bloc will see increasing average temperatures, lethal heat waves, extreme precipitation events, severe hurricanes, drought, and changes in water supply. At the same time, Southeast Asia is one of the most **dynamic regions for strong economic growth and development**. Finding the balance between sustainability and economic progress can be challenging.

The Galileo Hackathons are **looking for innovative solutions** within all domains of sustainability and answers to environmental challenges. Participants are tasked to **develop ideas/ concepts or design products, devices or services that use Galileo** positioning data to make a positive impact on the environment. We will tackle areas like:

- Sustainable consumption solutions
- Environmental protection
- Clever waste management

Example: ENEEO

Pokemon Biodiv is a mobile application for participatory science that helps citizens discover their environment in a fun way. Using location-based phone features, the game enables users to look for an animal or plant close by. They then are invited to share their observations with friends and scientists. The data gathered through the app will be used in participatory science projects and contribute greatly to environmental understanding. It will also raise awareness concerning nature and biodiversity.



13 CLIMATE ACTION



15 LIFE ON LAND



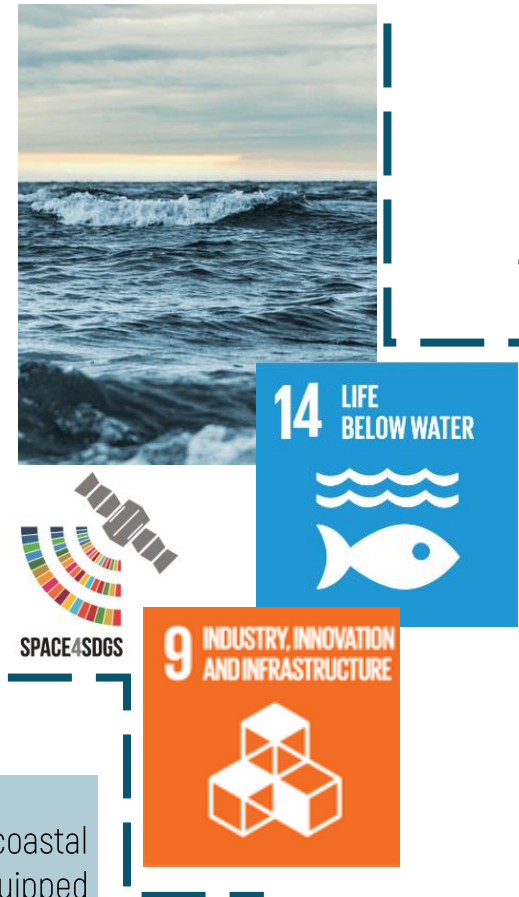
SPACE4SDGS

CHALLENGE #3 Maritime Applications

Maritime Southeast Asia encompasses more than 25,000 islands and an estimated 77% of the region's total population of 2.62 billion lives in the coastal areas. However, coastline changes, rising sea levels, biodiversity loss and other challenges are threatening the sustainability of maritime Southeast Asia.

The Galileo Hackathons are **looking for innovative solutions** specifically targeted at maritime applications. Participants are tasked to **develop ideas/ concepts or design products, devices or services that use Galileo** positioning data that will tackle challenges like:

- Fishing efficiency and monitoring
- Vessel navigation
- Harbour management



Example:

ELEMENTS

COMMUNITY

Elements Works, a start-up that uses state of the art technologies for sustainable coastal development, has created an innovative smart buoy called netH2O. The buoys are equipped with temperature sensors, inertial motion units and GNSS. With the sensors they can obtain data about waves and currents, and provide monitoring and communications for sectors such as offshore fish farms, marinas, or even beach goers interested in finding the best surfing day.

CHALLENGE #4 Tourism and Cultural Heritage

Tourism plays an undeniably important role as a **driving force of economic development in Southeast Asia**. The sector reached a contribution of 12% to its total GDP (\$380 Million in 2019). The region's **rich and diverse cultural heritage** constitutes a major attraction point for global visitors.

The Galileo Hackathons are **looking for innovative solutions** targeted at the tourism sector and the protection of Southeast Asia's cultural heritage. Participants are tasked to **develop ideas/ concepts or design products, devices or services that use Galileo** positioning data that aid in domains such as:

- Sustainable Tourism
- Integration of rural areas
- Protection of cultural heritage

Example:

Cultural gems is a free open source web app, conceived by the European Commission's Joint Research Centre, to map cultural and creative places in European cities. The main purpose is to capture diversity in culture and creativity among European cities. Cultural gems includes data on selected cultural venues from OpenStreetMap, and information provided by European cities, universities, and other public and private organisations. Citizens are encouraged to add more.



Galileo Hackathons in the past

- In March 2019, over 100 hackers joined our Galileo Hackathon in Bangalore, India



Who can participate?

Everyone can register to participate to the Galileo Hackathons. There are only a few basic eligibility criteria

Open to everyone: all disciplines, all backgrounds, no age limit, as inclusive as possible!

Only **individual, natural** persons that are residents of an ASEAN Member State can participate in the hackathon

Hackers must be of **legal adult age** (18 years or older) at the moment of registration

The Galileo Hackathons will be in English. Therefore, **proficiency in English** is recommended

By registering to the Galileo Hackathons you agree to the Terms & Conditions

How to participate

STEP 1 Choose your Hackathon



Choose the Hackathon in your home country or the Open ASEAN Hackathon

STEP 2 Apply as a Hacker from 4 Oct



Registration is open to everyone, it is easy and simple!

STEP 3 Form a Team



Teams should have 5 Members

STEP 4 Hack away on 12-14 Nov



Don't worry and have fun!

There are some rules of conduct

- Use your real name. Everyone should set their real name (first and last name) as a nickname on all platforms. That makes it a whole lot easier for crew members to know which hackathon location you signed up for or which team you are on.
- Be nice to each other on platforms and in the hackathon in general. We are dedicated to providing a harassment-free experience for everyone, regardless of race, creed, colour, ethnicity, nationality, religion, sex, sexual orientation, gender expression, age, physical appearance, body size, disability, or marital status. We do not tolerate harassment on our platforms in any form.
- Use your time and energy to hack solutions to the Galileo Hackathon, not to make the world a worse place. Activities promoting or related to alcohol, tobacco, religion, politics, intolerance, violence, firearms, pornography, obscenity, gambling, or illegal drugs are explicitly excluded from the hackathon. Just don't. Sexual language and imagery are not appropriate on our platforms.
- Everyone is welcome. We welcome all hackers regardless of race, creed, colour, ethnicity, nationality, religion, sex, sexual orientation, gender expression, age, physical appearance, body size, disability, or marital status

Good to know

The Galileo Hackathons will take place virtually. Participation requires a stable internet connection and a laptop. Please let your local organisers know, if you have issues finding a stable internet connection.

What is a project?

A project is an idea that your team comes up with. Projects will be submitted by answering some questions and filling out a PowerPoint template. It is that simple!

The 9-step framework for project submissions

Oneliner (1 slide) – describe your solution in one sentence

Solution and use case (2 slides) – present your solution, which problem it addresses and why it is unique

Use of GNSS (1 slide) – where and how does your solution use GNSS signals?

Specific use of Galileo (1 slide) – which Galileo differentiators are used for your solution?

Market potential (2 slides) – explain the market potential of your solution, which customer base it may tap into and how it could generate revenue

Innovation factor (1 slide) – what is new and innovative about your solution? Where does it add value to the existing market offers in Southeast Asia?

Technical back-end (2 slides) – how do you plan to develop the technical back-end of your solution? How will you ensure that the GNSS-related requirements (e.g. accuracy) for your solution are achieved? Which technologies will you use? Have you developed any initial demo or technical solution?

Proof of concept (2 slides) – Demonstrate the technical and commercial feasibility of your solution

Team (1 slide) – present your team members, their expertise and why your team composition is optimal to ensure the credibility and potential implementation of your solution

Tools

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

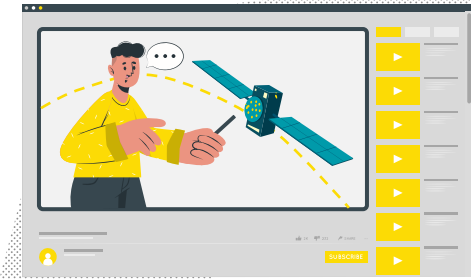


Mentors

Every location will have a different set of experts that are excited to support you with solving discussions, finding a general direction to pursue, inform you about data use cases and structures, provide expertise on specific questions, and evaluate your idea.

Template

To help you in finding a structure for your final project submission, we have created a power point template that covers all the basic requirements. Bonus: you don't have to waste any time on the formatting, just on being creative with your solution!



On-demand videos

We have curated a list of videos with examples of applications from Galileo and other EU Space technologies in Southeast Asia and across Europe as well. Get inspired and become one of the many talented space innovators.

Platforms for Hackers

Register on our website: <https://gnss.asia/hackathon/>

Then engage with us across the following platforms:

<https://taikai.network/en/gnssasia/challenges/galileohackathons/overview>

Hackathon Platform

- Register to the Hackathon
- Form your team or join a team
- Access tools & resource repository



<https://discord.com/invite/wc8DcsqGAP>

Community Platform

- Work together on your project with your team
- Consult Mentors when you need help
- Receive notifications for Hackathon Updates



Resources

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

- [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](#)



Attend 14 on-demand training sessions that will steer the technical and business development of your Galileo-enabled IoT product.

In the first part of 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-iot.thinkific.com

○ The GNSS.asia Team

Got questions? Drop us an e-mail at hello@gnss.asia

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

Julia Lohse

Juliane Dahm



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**GOOD
LUCK!**

If you have any questions, please refer to our [FAQs](#)

