



# Galileo & Bonaire



Economic Opportunities  
for the Dutch Caribbean

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and Saba to the EU, UN and Latin America.

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**Galileo & Bonaire**

Economic Opportunities for  
the Dutch Caribbean

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## SUMMARY

The construction of the Galileo Sensor Station (GSS) on Bonaire, funded by the the Dutch Ministry of Infrastructure and Water Management and European Union, presents a unique opportunity for the islands of the Dutch Kingdom and beyond to develop a space economy and associated industries. The station, which will form part of the Galileo satellite navigation system, has the potential to catalyze economic growth, education, science and innovation in the region. These advisories outline the economic opportunities that could arise around the construction of the station, with a focus on startups, education, disaster response, and space-related industries.

We focused in this research on the main question; how can organizations, both on Bonaire and in other Caribbean areas of the Kingdom (with a focus on Bonaire, St. Eustatius, and Saba), gain maximum benefit from the implementation of the Galileo station on Bonaire? Taking into account to stimulate sustainable economic development on the islands.

### Key insights

#### 1. Fostering Innovation: Startups and Scale-ups

The installation of a Galileo Sensor Station on Bonaire can serve as a foundation

for developing a space-tech ecosystem. There are significant opportunities for entrepreneurs to establish startups and scale-ups that leverage satellite data for various applications.

For example:

- **Navigation and Tracking Services:** Companies could emerge specializing in satellite-based navigation solutions for local industries such as shipping, fishing, and logistics. These startups could tap into satellite data to offer innovative geolocation services.
- **Environmental Monitoring:** The Galileo station could enable businesses to monitor climate change, marine environments, and biodiversity, providing data-driven insights to governments and NGOs for conservation efforts.
- **Disaster Management Solutions:** Startups could develop early warning systems for hurricanes, floods, and other natural disasters using real-time satellite information. This can reduce economic losses and improve public safety in vulnerable regions.

#### 2. Educational and Research Opportunities

The establishment of the Galileo Sensor Station can also be leveraged to develop educational and research programs, creating a skilled workforce in space-related fields. This could include:

- **Space Science and Engineering Programs:** Local/regional schools and institutions could establish specialized courses in space science, engineering, and satellite technology. This would equip the local population with skills to contribute to the operation and development of the station.

- **Research Collaborations:** Partnerships between the ground station, European space agencies, and academic institutions can foster joint research projects. This could attract international researchers, generating additional revenue for the local economy and establishing Bonaire as a hub for space research in the Caribbean.
- **Youth Training for Space-Related Careers:** One of the most significant opportunities lies in preparing the local youth for careers in the rapidly growing space industry. This will require targeted investments in education and vocational training to ensure that young people across the Dutch Caribbean islands have access to space-related training and career opportunities. Suggested initiatives include:
  - o Schools across Bonaire, Saba St. Eustatius, Curaçao, Aruba and Sint Maarten could introduce enhanced science, technology, engineering, and mathematics curricula focused on space technology, satellite communications, and aerospace engineering. Early exposure to these subjects will prepare students for higher education and career opportunities in the space sector. Collaborations with TU Delft's Da Vinci program for schools are already well on their way.
  - o Internships and Apprenticeships: Collaboration with European space agencies and private companies could offer internships, apprenticeships, and exchange programs for local youth, giving them hands-on experience in ground station operations, satellite maintenance, and space exploration.
  - o Scholarship Programs: Governments, in collaboration with the European Union, could establish scholarship programs for talented students to pursue space-related degrees at international universities, ensuring they return to contribute to the local economy.

By investing in youth training programs, the Dutch Caribbean islands can cultivate a highly skilled, homegrown workforce capable of

contributing to the long-term development of the space industry and beyond.

#### 3. Disaster Response and Safety Enhancements

Galileo will play a critical role in improving disaster response capabilities, which can bring significant social and economic benefits to the region:

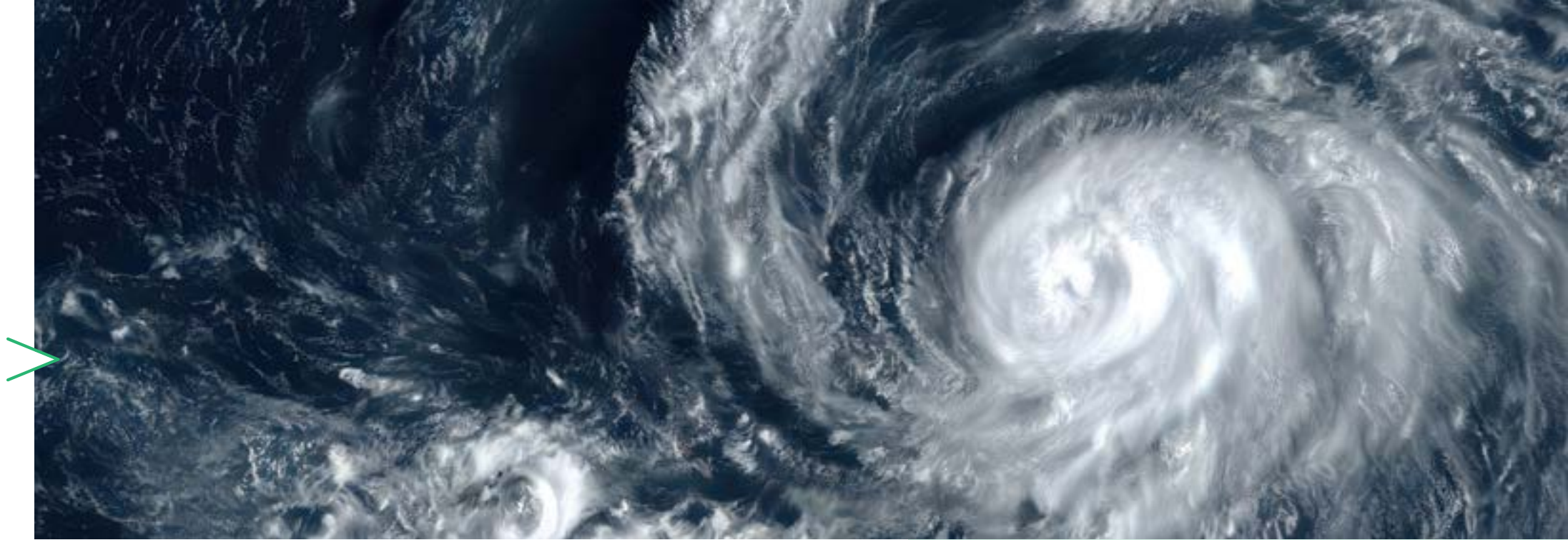
- **Hurricane and Flood Monitoring:** Enhanced satellite coverage will allow for more accurate and timely predictions of extreme weather events. This can improve disaster preparedness and potentially reduce the economic damage caused by hurricanes, floods, and other natural disasters.
- **Search and Rescue Operations:** The ground station could significantly improve maritime safety by providing accurate geolocation services for rescuing people lost at sea. This will reduce response times and save lives, while also bolstering the tourism and shipping industries, both of which are crucial to the region's economy.

A first example of disaster response possibilities of Galileo in combination with Copernicus was shown during the oil leak of a ship near the coast of Tobago in August 2024. Making use of Galileo and Copernicus data, Aruba and Bonaire were able to monitor the oil and take the right precautionary measures.

#### 4. Developing a Space and Tech Campus

Adjacent to the Galileo Ground Station, the development of a campus could provide a fertile environment for innovation, education, and industry collaboration. This campus could include:

- **A Visitor's Center:** to create awareness of what is possible in and with Space but also to attract businesspeople and tourists. The Visitors Center could be part of the awareness campaign, which will be one of the advices for the short term (see 4.3.) In the last couple of months, the first steps have been taken by different organizations



- to build a Visitors' Centre near the Galileo Sensor Station.
- Incubators and Accelerators: By establishing a business incubator and a (yearly) accelerator, the campus could support the growth of space-tech startups, providing them with the infrastructure, mentorship, and funding they need to scale their operations.
- Training and Certification Programs: The campus could house training facilities to certify local and international engineers and technicians in satellite communication, cybersecurity, and ground station operations. This would not only provide skilled labor for the station's operation and maintenance but also create jobs for the local population.
- Technology Conferences and Events: Hosting international space-tech conferences and seminars on the campus could attract global attention, positioning Bonaire as a center for space-related innovation and discussion. This would boost tourism and raise the island's profile on the global stage.
- Opening a European Union / EUSPA Office on Bonaire:

Another strategic opportunity would be the establishment of a European Union office on Bonaire, specifically dedicated to space, technology, and regional development. This office could:

- o Coordinate Regional Initiatives: A permanent European Union presence on Bonaire could facilitate closer collaboration with other Dutch Caribbean islands and in the region like with Panama and Chile, promoting regional cooperation in space technology, economic development, and disaster management.
- o Attract International Investment: The presence of an EU office would elevate the profile of Bonaire and the Dutch Caribbean islands, making them more attractive to international investors and space industry stakeholders. This would create new business opportunities not only on Bonaire, but also on Saba, St. Eustatius, Aruba, Curaçao, and the other islands in the Dutch Kingdom.
- o Foster Public-Private Partnerships: The office could serve as a hub for public-private partnerships, connecting local businesses and governments with European companies and institutions involved in space exploration and technology.

#### 5. Economic Growth and Job Creation

Beyond the direct jobs created for the construction, maintenance, and security of the station, there are indirect opportunities for economic growth:

- Supply Chain Development: The construction and operation of the Galileo Ground Station will require goods and services that could be sourced locally, from construction materials to IT services and hospitality.
- Tourism Boost: The presence of the station and the potential Visitors Centre / space-tech campus could attract both business travelers and tourists with an interest in science and technology. Space-related tourism could become a niche sector on Bonaire, adding diversity to the island's existing eco-tourism offerings. See also the remarks about the Visitors' Center.

#### 6. Long-Term Vision: Establishing Bonaire as a Space-Tech Hub

By strategically positioning itself as a regional leader in space technology, Bonaire could leverage its geopolitical position and the Galileo Sensor Station to attract global investment. As space exploration becomes increasingly commercialized, Bonaire could play a role in future satellite communications, data analytics, and space-related logistics. Also, the station could upgrade the services with more (technical) possibilities. This long-term vision would create a sustainable economy, reducing dependence on traditional industries and ensuring the region's economic stability for future generations.

### Conclusion

The construction of the Galileo Sensor Station on Bonaire offers an unprecedented opportunity for the islands within the Dutch Kingdom to diversify their economies and become leaders in the burgeoning space-tech industry. By nurturing startups, creating educational programs, improving disaster response capabilities, and developing a vibrant space campus including a Visitors' Center, Bonaire could unlock significant economic potential. With the right investment and strategic planning, this project could create a lasting legacy of innovation, sustainability, and resilience in the region.

This transformation will require collaboration between local and international governments, the private sector, and international partners, but the potential rewards are immense. By capitalizing on these opportunities, Bonaire could become a regional hub for space technology and a catalyst for economic growth in the Caribbean.





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## CHAPTER 1: INTRODUCTION

### 1.1 Background

Bonaire will have a Galileo station on the island which will be open in 2025. Galileo is the civil global satellite navigation system of the European Union in cooperation with the European Space Agency. All necessary preparations are currently being made and the station is expected to be operational this year. This new station brings numerous possibilities, both for Bonaire and for the broader region. For example, it offers opportunities in the field of technological development on the island, where local knowledge and skills can be used. In addition, Bonaire can benefit from the internationalization opportunities it offers the global network of Galileo stations and the European Union.

Moreover, Galileo, together with the European Union, opens the door to a wide range of companies engaged in space activities, including many startups. This also creates opportunities for Bonaire and the region. However, more thorough research is needed to better understand these opportunities and the potential challenges associated with them.

### Galileo & Bonaire

The Bonaire GSS is an unmanned facility comprising three satellite dishes, each with a diameter of 2.5 meters, and a building housing computers, receivers, storage, and office space. Construction began in mid-2022, with the station expected to become operational in 2025. The Galileo Sensor Station on Bonaire is a critical component of the European Union's Galileo Global Navigation Satellite System (GNSS). Its primary functions and capabilities include:

*Signal Monitoring and Quality Assurance:* The Bonaire GSS is equipped with multiple antennas that continuously monitor the quality and accuracy of signals transmitted by Galileo satellites. These antennas track satellite orbits in real-time, ensuring the integrity of navigation data.

*Data Transmission to Control Centers:* Measurements and data collected by the Bonaire GSS are securely transmitted to the Galileo Control Centres located in Oberpfaffenhofen, Germany, and Fucino, Italy. At these centers, any detected errors in satellite timing or orbital parameters are analyzed and corrected. Corrective information is then sent back to the satellites via uplink stations, ensuring users receive precise navigation data.

*Enhancing System Accuracy and Reliability:* Strategically positioned in the Southern Caribbean, the Bonaire GSS enhances the overall accuracy, reliability, and availability of Galileo's satellite navigation signals. Its location contributes to a more robust and precise GNSS service, benefiting users worldwide.

In summary, the Bonaire Galileo Sensor Station



plays a vital role in monitoring and maintaining the performance of the Galileo satellite constellation, ensuring users have access to accurate and reliable navigation services. Also, the possible expansion of the Galileo Sensor Station to include an Uplink Station (ULS) and a Telemetry, Tracking, and Command Facility (TCCF) presents several extra opportunities for Bonaire and the surrounding region.

### 1.2 Purpose of the research

The main goal of this research is to analyze how organizations on Bonaire and other Caribbean parts of the Kingdom of the Netherlands can benefit maximally from the Galileo station. This includes sustainable economic development, and exploitation of European resources, and collaborations with startups. The research answers specific sub-questions surrounding access to and use of European funds, economic opportunities through the station installation, and possible regional and international partnerships.

### 1.3 Research question

How can organizations, both on Bonaire and in other Caribbean areas of the Kingdom (with a focus on Bonaire, St. Eustatius and Saba), gain maximum benefit from the implementation

of the Galileo station on Bonaire? Taking into account to stimulate sustainable economic development on the islands.

### 1.4 Sub-questions

1. Possible European resources around Galileo and the space program.
2. Economic opportunities for Bonaire and the region.
3. Collaboration with European startups.
4. Other collaborations – Regional and international players



## 1.5 Design and methodology: Brief explanation of the research methods

		Desk research	Data analysis	Stakeholder analysis	Interviews	Focus sessions
<b>1 European resources surrounding Galileo and the space program.</b>						
1A	What opportunities and resources are offered by the European Union regarding Galileo and the space program?	○	○	○		
1B	How can Bonaire and the other Caribbean islands of the Kingdom make use of this?	○		○	○	
1C	What does it take to access that?	○		○	○	
1D	How can local companies and institutions benefit from the opportunities offered by the Galileo network?			○	○	

		Desk research	Data analysis	Stakeholder analysis	Interviews	Focus sessions
<b>2 Economic opportunities for Bonaire and the region.</b>						
2A	What economic opportunities will be created by the installation of the Galileo station on Bonaire, both for Bonaire and in the region?	○	○	○		
2B	How can local and regional businesses benefit from the opportunities offered by the Galileo system?			○	○	
2C	What are the challenges for developing an economic sector around the developments of Galileo and what needs to be done to remove these challenges?			○	○	○
2D	What are the low-hanging fruits in terms of initial developments on Bonaire and the other islands around Galileo?			○	○	○
2E	What steps should be taken to develop and strengthen local/regional knowledge and skills in space-related technologies?			○	○	

		Desk research	Data analysis	Stakeholder analysis	Interviews	Focus sessions
<b>3 Collaboration with European startups.</b>						
3A	How can cooperation with European startups and other companies engaged in space-related activities be promoted and supported?				○	○
3B	How can we involve local/regional startups and companies in this?				○	○
3C	Which local/regional startups and companies are already moving in this direction?		○	○	○	○
<b>4 Other collaborations.</b>						
4A	How can Bonaire collaborate with other regional and international players to reap the full benefits of the Galileo system?				○	

## CHAPTER 2:

# RESEARCH DESIGN & METHODOLOGY

## 2.1 Research Methods

### 2.1.1 Desk Research

Desk research in the context of this research involves collecting and analyzing existing information and documents to provide a solid foundation for the investigation. This method uses existing studies, reports, statistics, and other relevant material to gather insights without needing primary data collection. The goal is to gain an in-depth understanding of the subject by utilizing existing work and literature. Document analysis can help identify trends, patterns, and relationships that are relevant to the research issue. Desk research is cost-efficient and time-efficient, as it builds on the knowledge and data that is already available.

### 2.1.2 Stakeholder analysis

A stakeholder analysis identifies all relevant parties that have influence or through the realization of Galileo Sensor Stations. This method specifically helps to gain an overview of the interests and positions of various stakeholders. The analysis involves collecting information about the stakeholders, their expectations, relationships, and the possible impact on the project. The result of a stakeholder analysis is: a strategic insight that helps make decisions about these relationships during the research.

### 2.1.3 Data analysis

Data analysis is a systematic research method involving larger sets of data being evaluated and interpreted to identify patterns, relationships, or trends. In this research, the data analysis is quite limited. However, we did want to get an idea of the size of—for example, the number of European startups engaged in space-related activities—and translate this into opportunities for Bonaire and the region. The ultimate objective is to convert data into knowledge, which enables people to make informed and evidence-based decisions.

### 2.1.4 Interviews

At Innovate Today, we specialize in conducting semi-structured research, utilizing interviews to gather in-depth information. This approach provides the flexibility to explore key topics while allowing space for spontaneous insights to emerge. These interviews are scheduled in advance, where a series of open and closed questions are prepared, but the interviewer has the freedom to ask questions based on the answers. The interviews mainly involve people selected from stakeholders who, based on their role, have an overview of broader perspectives and developments related to the arrival of a Galileo Sensor Station. The information collected from the interviews can be used to identify patterns and develop or test hypotheses.

### 2.1.5 Focus/Theme meetings

Meetings in this study are mainly aimed at experts by experience, such as local entrepreneurs on Bonaire, or European startups engaged in space-related activities. This means that meetings are also a way to validate data collected from other research methods with practice. These conversations are semi-structured, giving participants the freedom to share ideas and share experiences. Focus group discussions encourage sharing diverse perspectives and can lead to new insights and collective solutions.

## 2.2 Data Collection

The desk research was collected and used in interviews. The online interviews were recorded to get transcripts from the interviews. The offline sessions have been written down in a summary.

## 2.3 Target Group

The stakeholders interviewed or involved in the themed sessions included entrepreneurs of all sizes, as well as representatives from the utility company, the hospital, the airport, and all chambers of commerce in the Dutch Caribbean region.

## 2.4. Analysis Plan

As expected, there was not a large set of data available to analyze. The data from the desk research were used in the interviews and theme sessions to see if expectations were correct or known by the audience. The theme meetings gave the best insights to get an answer on the main question of the research. There was a lot of assistance provided by the European Union and the Space sector in the Netherlands to get insights and analyze the collected data.





**CHAPTER 3:**  
**RESULTS:**  
**PRESENTATION OF**  
**THE FINDINGS**

**3.1 Research question:**

**The central question**

How can organizations, both on Bonaire and in other Caribbean areas of the Kingdom (with a focus on Bonaire, St. Eustatius, and Saba), gain maximum benefit from the implementation of the Galileo station on Bonaire? Taking into account to stimulate sustainable economic development on the islands.

**3.2 Sub-questions:**

**Supporting research questions**

**3.2.1 Possible European resources around Galileo and the space program Copernicus**

**3.2.1.1 What opportunities and resources are offered by the European Union regarding Galileo and the space program?**

The European Union offers several programs to support entrepreneurs, businesses, and member countries through its space-related initiatives, particularly the Galileo and Copernicus programs, which focus on satellite navigation and Earth observation. Also, there are specific programs for climate change and biodiversity. These topics are interesting to link to regional development. Horizon Europe provides funding for research and innovation projects related to Global

Navigation Satellite System (GNSS) applications, including those utilizing Galileo technology. It promotes innovation in areas such as autonomous driving, aviation, and maritime applications.

Next to that, the EU regularly hosts competitions like the Galileo Masters to encourage startups, entrepreneurs, and developers to create solutions using Galileo. Winners often receive funding, business incubation, and access to mentorship. Bonaire could potentially organize a similar competition to attract innovative businesses and visitors to the island.

In collaboration with the European Space Agency (ESA), Business Incubation Centers (BICs) support startups working with satellite navigation technologies, including Galileo. The BICs provide technical expertise, funding, and business support to early-stage companies. During this research, we visited the Space Business Innovation Centre (SBIC) in Noordwijk. One of the options offered to startups is a soft landing program, which attracts space business startups to the Netherlands. This could be an interesting strategy for Bonaire as well.

Galileo for Startups is designed to accelerate the growth of early-stage businesses that leverage Galileo's GNSS data. The program provides funding, networking opportunities, and tailored support to help these startups thrive.

**Copernicus Program**

Copernicus is the EU's Earth observation program, providing free, open access to satellite data that can be used for various applications, including environmental monitoring, agriculture, and disaster response. There are several initiatives to stimulate the use of Copernicus.

Copernicus Accelerator supports startups and SMEs that develop applications based on Copernicus data. Participants receive mentorship, training, and support in scaling their solutions. Similar to Galileo Masters, Copernicus Masters invites innovators to submit applications using Copernicus data. Winners receive prizes, business support, and access to European and international markets.

Funded by the European Commission, the Copernicus Incubation Program provides funding for European startups that leverage Copernicus data, helping them develop and commercialize their products and services.

Copernicus Climate Change Service (C3S) and Emergency Management Service (CEMS) offer data specifically for climate and disaster response applications. Through Horizon Europe and other EU funding mechanisms, companies can develop tools that use C3S and CEMS data.

For more information about Emergency Management see: [Emergency Management](#)

For more info about Climate Change: [Climate Change](#)

**EU Investment Funds and Networks**

European Innovation Council (EIC) and European Investment Bank (EIB) provide funding and support for innovative projects using Galileo and Copernicus. The EIC funds high-risk, high-impact innovations, while the EIB provides loans and investments to support space-related businesses.

More information about EIB: [click here!](#)

More information about EIC: [click here!](#)

**EUSPA (European Union Agency for the Space Program)**

EUSPA manages various funding and support programs for businesses and innovators leveraging the EU's space assets. The agency is tasked with implementing and promoting the use of Galileo, Copernicus, and other EU space programs.

EUSPA collaborates with Horizon Europe to fund research and innovation projects that use data from Galileo, Copernicus, and EGNOS (European Geostationary Navigation Overlay Service). These projects are designed to stimulate the development of new applications and services.

For more information consult our page [EUSPA](#)

EUSPA regularly issues calls for proposals to fund specific research and development projects.

Companies can apply for funding to develop tools and applications that leverage the EU's space data, particularly in sectors like transport, logistics, agriculture, and energy.

EUSPA Market Development Grants help businesses develop market-ready solutions that use space data, promoting the integration of Galileo and Copernicus data into different industries.

For more information about EUSPA: [EUSPA Opportunities](#)

### CASSINI (Competitive Space Start-ups for Innovation Initiative)

The CASSINI program is a dedicated EU initiative to support space-related startups and SMEs, with a focus on stimulating innovation and commercial growth in the European space sector. CASSINI is part of a broader strategy to help companies use data from Galileo, Copernicus, and other EU space assets.

CASSINI Space Entrepreneurship Initiative includes a variety of support mechanisms, such as a Business Accelerator offering tailored mentorship, business development support, and market access to startups using space data. Hackathons are held across Europe, where participants can develop innovative solutions using space data. Winning teams receive mentorship and support to advance their projects. Competitions are organized to encourage entrepreneurs to solve specific problems using Copernicus and Galileo data, with funding, networking, and business support as prizes. CASSINI also provides financial support, including seed funding, to early-stage startups and later-stage scale-ups in the space industry. It aims to attract private investments and bridge funding gaps.

For more information consult this page: [cassini-initiative](#)

Through these programs, the EU aims to foster innovation, provide funding, and promote growth for entrepreneurs and businesses leveraging Galileo and Copernicus data across Europe.

#### 3.2.1.2 How can Bonaire and the other Caribbean islands of the Kingdom make use of this?

##### What does it take to access that?

To answer this question we interviewed people from the European Union and also an expert on the legislation of European Law. The Caribbean parts of the Kingdom are categorized as Overseas Countries and Territories (OCTs), not fully integrated into the EU's internal market. Despite this, there are funding mechanisms available under specific EU regulations (often

part of Section 4 of the EU treaties). For example, programs related to innovation, connectivity, and regional development might be accessible if applied for correctly.

To gain access, it is essential to identify which funds or programs apply to OCTs. The application process must comply with EU administrative requirements, which can be complex and require precise reporting. Mismanagement can lead to repayment obligations, making it critical to establish robust administrative and financial management systems before applying.

The installation of the Galileo station does not automatically make access to EU funds easier. However, it will strengthen relationships with the EU, create opportunities for new projects, and position the region more favorably for future funding. Effective administration and strategic planning would remain crucial to leveraging these potential benefits.

The Special Envoy could take a role in organizing Hackathons or competitions such as the Galileo Masters. A lobbying effort has been initiated to secure access to European programs. Given the installation of Galileo on Bonaire, it is anticipated that requests from Bonaire will be difficult to decline, making it relatively easy for the island to gain access. However, for other islands in the region, the process may be more challenging (see the next paragraph for further details).

#### 3.2.1.3 How can local companies and institutions benefit from the opportunities offered by the Galileo network?

Local businesses and institutions on Bonaire and the other Caribbean islands can benefit from Galileo's capabilities, such as improved navigation, precision agriculture, disaster management, and smart infrastructure development. Engaging in these opportunities requires proactive exploration of funding options and fostering partnerships with EU bodies or entities familiar with these programs.

To navigate this landscape effectively, consulting existing studies—such as the research conducted by Lisa Posthuma at The Hague University on accessing EU funds for Aruba—can provide

valuable insights. This research highlights that although these territories are outside the internal market's scope, they can access similar funds as Bonaire if the programs are explored and applications managed correctly. The focus should begin with identifying what is available and feasible for local implementation. On the website of the Cabinet of the Special Envoy [www.cabinetspecialenvoy.com](http://www.cabinetspecialenvoy.com) you can also find an overview of all EU funds accessible for the islands.

### 3.2.2 Economic opportunities for Bonaire and the region

#### 3.2.2.1 What economic opportunities will be created by the installation of the Galileo station on Bonaire, both for Bonaire and the region?

##### Bonaire Job & Educational Opportunities and Attracting Investors

The installation of the Galileo station on Bonaire will generate several economic opportunities. It will require skilled workers for construction, operation, and maintenance, creating employment opportunities in fields such as engineering, IT, and technical services. The Galileo station could also serve as a foundation for establishing a high-tech innovation hub on Bonaire, attracting businesses and researchers with a focus on satellite technology and data applications.

Next to that, the station has the potential to draw students, researchers, and scientific tourists, boosting Bonaire's profile as a destination for education and research.

Key industries, including agriculture, fishing, and logistics, can leverage precise satellite navigation and data services to enhance operational efficiency and productivity.

The Galileo station may also attract international companies and investors interested in space-related technologies or using Bonaire as a base for regional projects.

##### Integration of Galileo and Drones

During the research it became clear that Galileo

also offers opportunities with the use of drones. Underwater drones could monitor coral reefs and marine environments. These efforts could be incorporated into educational programs for vocational students, focusing on marine biology and sea-level management. Both aerial and underwater drones could utilize satellite data to address environmental issues, urban development, and other societal challenges.

##### Strengthening Connectivity through Submarine Cables

Connecting Galileo to Bonaire via submarine cables would enable local data processing, reducing costs and fostering economic growth. This infrastructure could support a data center and campus with educational facilities and opportunities for vocational (MBO) students in IT and data management.

##### Tackling Local Challenges with Technology

Stakeholders saw a lot of opportunities with Galileo in local challenges, such as:

- Sargassum Seaweed Management. Galileo technology could help manage the twice-yearly influx of sargassum seaweed, enabling its controlled sinking to preserve the marine ecosystem.
- Healthcare Innovation. Drones guided by Galileo could transport medical samples like blood, ensuring timely delivery even in adverse weather or geographic conditions.
- Climate Change

##### Enhancing Local Engagement and Connectivity

- Local initiatives can foster awareness and enthusiasm for Galileo.
- Cultural and Educational Events
- Activities like the "Bonaire Regatta Challenge" could integrate Galileo's capabilities, allowing students to analyze data and manage programs, combining education with cultural traditions.
- Improved Accessibility
- A bus service could improve access to new facilities, ensuring that students and residents do not solely rely on private or rental vehicles.

### Independent Management

To ensure effective operations, stakeholders emphasized the importance of managing the campus and associated initiatives through an independent organization, separate from the local government.

### Regional Opportunities

Galileo station also offers significant benefits to neighboring islands and the wider region: Collaboration among islands such as Saba, St. Eustatius, Curaçao, Sint Maarten, and Aruba can utilize Galileo's data for environmental monitoring, disaster management, and transportation projects. Joint ventures could promote technology sharing and infrastructure development.

### Latin American Partnerships

The station could foster partnerships across the Caribbean and Latin America, benefiting sectors like shipping, aviation, and tourism. Countries such as Panama and Chile have expressed interest in exploring collaborations with Bonaire because they are already working with Copernicus.

### Regional Training and Workforce Development

A hub for training programs near the station could benefit professionals across the region, fostering a skilled workforce in space-related technologies.

#### 3.2.2.2 How can local and regional businesses benefit from the opportunities offered by the Galileo system?

Local and regional businesses have numerous opportunities to leverage Galileo's capabilities to enhance operations and drive innovation.

- **Tourism Industry**  
Tourism businesses can develop advanced services, such as personalized navigation apps for tourists or marine navigation tools for divers and sailors, improving the visitor experience.

- **Logistics Sector**  
Logistics companies can optimize routes, reduce fuel consumption, and improve delivery times using Galileo's high-precision data. Starting with small-scale projects can help local businesses and residents explore Galileo's potential effectively.
- **Agriculture and Fisheries**
  - o Precision Agriculture: Galileo can support farmers in monitoring soil conditions and planning irrigation systems more efficiently.
  - o Fisheries: The technology enables better tracking and mapping of fish populations, enhancing sustainability and productivity.
- **Energy Sector**  
Companies involved in solar or wind energy can use Galileo's time synchronization services to improve energy production and distribution efficiency.
- **Construction and Emergency Services**  
Businesses in construction, urban planning, and emergency services can leverage Galileo's disaster monitoring capabilities to enhance preparedness and mitigate risks.
- **Startup Ecosystem**  
Galileo's data can inspire the creation of startups focused on navigation tools, environmental monitoring, or IoT applications. Local entrepreneurs can also offer data analysis services for urban planning, resource management, or conservation initiatives.
- **Education and Workforce Development**  
Businesses can collaborate with educational institutions to establish training programs that upskill employees in satellite data utilization, boosting competitiveness and fostering innovation.

### Strategic Vision and Investment

A triple-helix collaboration model involving government, education, and business is envisioned to define and address societal challenges through Galileo's applications. To

support this vision:

- An investment of €5 million over five years has been proposed to develop and implement the strategy.
- The Dutch Ministry of Education, Culture, and Science (OCW) could allocate €1 million annually to enable vocational students to engage in design sprints and innovative projects focused on solutions for Bonaire and the broader region.

This comprehensive approach aims to position Bonaire as a hub for innovation and economic growth, leveraging Galileo's capabilities to address local and regional challenges.

#### 3.2.2.3 What are the challenges for developing an economic sector around the developments of Galileo and what needs to be done to remove these challenges?

### Challenges

#### Lack of Public Awareness and Trust

There is a lack of public awareness and trust. Limited understanding among local residents and government officials about Galileo's benefits hampers public support and engagement. There are also concerns about potential radiation or fears related to geopolitical tensions in Europe that contribute to skepticism and misinformation.

#### Education and Skills Gap

The local workforce lacks the knowledge needed to capitalize on Galileo-related opportunities. Also, educational institutions currently do not offer programs focused on satellite technology, data management, or other relevant fields.

#### Infrastructure and Coordination Issues

Developing a data center, (high-)tech park, and regional partnerships requires significant investment and coordination. Also existing infrastructure is not yet equipped to support the demands of a tech-driven sector. And the local government may struggle to manage complex EU projects, including securing funding and ensuring oversight.

### Community Skepticism

Some residents perceive Galileo as a foreign initiative disconnected from local needs, leading to a lack of community buy-in.

### Proposed Solutions

To address these challenges, a multi-faceted approach is required:

#### Public Awareness and Engagement

Launch a marketing and communication campaign to educate the public about Galileo's civilian applications and its potential to drive innovation, safety, and economic growth. Highlight tangible successes, such as using Galileo data in local projects like the "Bonaire Regatta Challenge," to build trust and enthusiasm.

#### Education and Workforce Development

Integrate Galileo-related topics into curricula at vocational (MBO), higher education (HBO), and even primary school levels to foster early interest in technology, navigation, and data science. Partner with European universities and organizations to provide training programs, workshops, and scholarships for Bonairean students.

#### Infrastructure and Strategic Partnerships

Collaborate with neighboring islands, such as Curaçao, and regional partners like Panama and Chile, to develop shared data centers and technology hubs, leveraging their experience in space-related projects. Use EU funding to establish a phased high-tech park and innovation zone, starting with basic facilities and scaling up as local expertise grows.

#### Government Capacity Building

Provide specialized training for government officials to effectively manage EU projects and ensure compliance with funding requirements. Establish a dedicated task force or agency to oversee Galileo-related initiatives concerning sustainable economic development and education and maintain direct communication with the EU. Continue leveraging the leadership of the Special Envoy to coordinate efforts and drive progress.

**Incremental Implementation**

Start small with pilot projects, such as using Galileo for enhanced GPS navigation in tourism, transport, and local industries. Ensure that the Galileo station is completed without delays or safety concerns, boosting confidence among stakeholders.

This strategy emphasizes the need for a coordinated effort between local, regional, and international stakeholders to address challenges while maximizing the potential of the Galileo station for Bonaire and its neighbors.

**3.2.2.4 What are the low-hanging fruits in terms of initial developments on Bonaire and the other islands around Galileo?**

Bonaire has several accessible opportunities to capitalize on Galileo’s capabilities, setting the stage for innovative applications across various sectors.

**Tourism Enhancement**

Develop Galileo-powered apps offering highly accurate maps, hiking trail guides, and marine navigation tools tailored for tourists.

**Disaster Preparedness & Climate Change**

Use Galileo data to enhance disaster & climate change readiness, including real-time weather updates and efficient emergency response coordination. For instance, Galileo could have facilitated the rapid location of the crocodile in Sorobon waters in 2024.

**Smart Infrastructure**

Introduce Galileo-based systems for traffic management and public transport optimization to improve mobility and reduce congestion. Employ Galileo data to monitor and optimize renewable energy grids, enhancing energy efficiency and sustainability.

**Community Engagement and Education**

Organize workshops and school events to teach children and families about Galileo, fostering grassroots understanding and support.

**Regional Collaboration**

Partner with neighboring islands to explore

joint applications of Galileo in agriculture, fisheries, and environmental monitoring. Shared initiatives can reduce costs and amplify regional benefits.

**Strategic Approach**

To unlock these opportunities and establish Bonaire as a leader in Caribbean innovation, the following actions are essential:

- Focus on building public awareness, developing the workforce, and improving infrastructure.
- Start with manageable projects, such as short educational trainings, workshops and conferences making use of / focussing on tourism apps or disaster management tools, to demonstrate Galileo’s tangible benefit.

A dedicated lead organization or individual is crucial to driving these efforts forward, ensuring sustained progress and alignment among stakeholders. By focusing on these foundational steps, Bonaire can harness Galileo’s potential to deliver economic, social, and environmental benefits while fostering regional leadership in technology and innovation.

**3.2.2.5. What steps should be taken to develop and strengthen local/regional knowledge and skills in space-related technologies?**

A structured and collaborative approach is essential to develop and strengthen expertise in space technologies across the Caribbean region.

**Curriculum Development:**

Introduce educational modules on satellite systems, data analysis, and related fields at vocational (MBO) and primary school levels. Focus on practical applications such as disaster management, agriculture, and navigation to ensure relevance.

**Partnerships with Universities:**

Collaborate with European universities specializing in Galileo and Copernicus programs to establish exchange programs, joint degrees, and tailored online courses for Caribbean students. Engage with partners like Panama and

Chile, who already have EU collaborations in space-related fields.

**Funding and Mentorship:**

Provide scholarships and funding for students and young professionals to study abroad in space-related disciplines. Establish partnerships with EU agencies and private companies to create internships and mentorship opportunities.

**Skill Development**

**Training Facilities:**

Set up dedicated facilities on Bonaire to train technicians and engineers in satellite operations, data management, and related fields. These could be part of a larger data/tech center.

**Digital Training Solutions:**

Use online platforms and digital tools to provide accessible training for participants across the Caribbean, particularly on smaller islands where physical infrastructure is limited.

**Regional Collaboration**

**Pooling Resources:**

Encourage collaboration among Caribbean islands to share resources, knowledge, and expertise in space technology through joint workshops, conferences, and research initiatives.

**International Partnerships:**

Work with organizations like the European Space Agency (ESA) and the Galileo program to gain access to expertise, funding, and mentorship.

**Public Awareness and Engagement**

Raise public awareness about the benefits of space technologies, focusing on their applications in disaster management, navigation, and environmental monitoring. Organize competitions, hackathons, and hands-on workshops to spark student interest in space

technology. Provide schools with low-cost satellite kits to encourage experimentation with space concepts.

**Strengthening Capacity**

Equip government officials with the skills to secure funding from EU programs and comply with administrative requirements. Create a local or regional space development office to manage initiatives, collaborate with international partners, and oversee education and infrastructure projects. The Special Envoy of Bonaire, Saba, and St. Eustatius could for example take the lead in these efforts.

**Leveraging Early Opportunities**

Start with immediate applications of existing technologies, such as navigation tools for tourism, disaster preparedness, and environmental monitoring, to build capacity and demonstrate tangible benefits to the community. Collaborate with sectors like telecommunications, renewable energy, and logistics to incorporate space technologies into their operations, creating demand for skilled professionals.

**Conclusion**

Developing expertise in space-related technologies in the Caribbean requires long-term investment in education, infrastructure, and regional collaboration. By aligning training and initiatives with local needs, fostering innovation, and engaging with international partners, the region can establish itself as a leader in leveraging space technologies for sustainable development.

### 3.2.3 Collaboration with European startups

#### 3.2.3.1 How can cooperation with European startups and other companies engaged in space-related activities be promoted and supported?

To establish effective and sustainable collaboration between Bonaire and European startups or companies in the space technology sector, a well-structured and strategic approach is crucial. The following measures outline a pathway to accelerate such partnerships and initiatives:

##### 1. Establish an Innovation Hub

Create a dedicated innovation hub or campus on Bonaire focusing on space technologies and related fields. Provide co-working spaces, laboratories, and testing facilities specifically designed for satellite technology, data analytics, and other space-related applications. And, Organize events such as hackathons, workshops, and networking sessions to connect (European) startups with local businesses, government entities, and educational institutions.

##### 2. Leverage EU Programs and Incentives

Tap into existing EU programs that foster innovation and cross-border collaboration (see section 3.2.1) and create incentives. Introduce policies to attract space-related startups, such as tax breaks or reduced fees for companies establishing operations on Bonaire. Assist startups in accessing EU funding to support their contributions to Bonaire's economic and technological growth. Streamline regulatory processes, including fast-tracking permits for space-related projects.

##### 3. Strengthen Education and Skills Development

Partner with European universities to develop exchange programs, training opportunities, and online courses tailored to space technology. Offer MBO-level training in fields such as satellite operations, drone applications, and data analytics. Introduce

space-related subjects at the primary school level to inspire early interest in STEM fields.

##### 4. Build Supporting Infrastructure

Enhance broadband and satellite communication capabilities on Bonaire. Establish a local data center to process Galileo and other satellite data, reducing reliance on external facilities. Ensure that the island's infrastructure can support the operational needs of space-related projects.

##### 5. Foster Strategic Partnerships

- Triple-Helix Collaboration: Use a government-industry-academia framework to promote innovation and shared resources.
- Joint Ventures: Encourage European startups to collaborate with local businesses, sharing expertise while creating mutually beneficial opportunities.
- EU Funding Access: Facilitate access to EU funding through partnerships, reducing barriers to entry for startups.

##### 6. Promote Bonaire as a Space Innovation Hub

Emphasize the Galileo station as a distinctive feature that positions Bonaire as a leader in space-related innovation in the Caribbean. Participate in international space-related events to attract investments and partnerships. Actively market Bonaire as an attractive destination for innovative space technology ventures.

#### 3.2.3.2 How can we involve local/regional startups and companies in this?

To leverage the Galileo station and associated space-related activities, it is essential to actively involve local and regional startups and companies. The following strategies outline practical and impactful ways to achieve this.

##### 1. Awareness and Engagement Initiatives

- Workshops and Seminars: Continue organizing events to educate local businesses and startups about Galileo's capabilities and opportunities in areas like

navigation, geospatial analysis, and data services.

- Open Days: Host events at the Galileo station to showcase its potential and inspire collaboration with local entrepreneurs.
- Media Outreach: Promote success stories through regional and international media, leveraging platforms like LinkedIn to reach a broad audience or Koninkrijksrelaties for a regional audience.

##### 2. Access to Resources

- Satellite Data Access: Provide free or subsidized access to Galileo's satellite data for startups to develop innovative solutions in fields such as agriculture, tourism, logistics, and marine conservation.
- Technical Infrastructure: Establish shared facilities with advanced tools for satellite data processing and hardware testing.

##### 3. Startup Support Programs

- Incubator: Develop incubation programs offering mentorship, funding, and specialized training for startups focused on satellite and space technologies.
- Regional Accelerator: Partner with European programs, like CASSINI, to create a regional accelerator, combining local talent with European expertise and funding opportunities.
- Seed Funding: Allocate government or EU funds to support startups developing Galileo-based solutions.

##### 4. Networking and Collaboration

- Matchmaking Events: Facilitate networking events that connect local startups with European counterparts for knowledge exchange and joint ventures (e.g., Galileo Masters or Copernicus Masters).
- Co-Development Projects: Promote collaborative initiatives where local startups provide regional insights and European partners contribute technical expertise.

##### 5. Innovation-Driven Activities

- Hackathons: Host challenges addressing local issues such as marine conservation, sustainable tourism, or disaster

management using Galileo's capabilities.

- Pilot Programs: Engage local businesses in real-world pilot projects, such as navigation tools for the Bonaire Regatta or sargassum monitoring solutions.

##### 6. Sector-Specific Applications

- Tourism: Partner with local businesses to integrate satellite navigation into tourism offerings, such as guided tours or maritime navigation for visitors.
- Marine Conservation: Encourage startups to use Galileo data for projects like coral reef monitoring, sargassum tracking, or managing marine protected areas.
- Environmental and Utility Management: Work with local industries, such as utilities or logistics, to apply satellite-enabled innovations.

##### 7. Capacity Building and Training

- Skills Development: Offer training programs to help startups integrate satellite data and space technologies into their operations.
- Exchange Programs: Facilitate internships and study exchanges between regional entrepreneurs and European companies in the space sector.

##### 8. Ecosystem Building

- Startup Networks: Create a local network to encourage collaboration, knowledge sharing, and connections with international stakeholders.
- Showcase Local Success: Highlight startups effectively using Galileo or other space-related technologies to inspire further innovation.

##### 9. Grants and Incentives

Offer financial incentives for regional businesses partnering with European startups or researchers. Streamline regulatory requirements, such as fast-tracking permits for space-related projects.

### 3.2.3.3 Which local/regional startups and companies are already moving in this direction?

At present, no local or regional startups on Bonaire are directly focused on space technology or satellite navigation. However, several initiatives and sectors on the island have the potential to align with the opportunities presented by the new Galileo Sensor Station.

For instance, Blackshore, a Netherlands-based company led by Hans van 't Woud, has expressed interest in expanding its activities on Bonaire. Similarly, the startup Turtle Islands Space, founded by Brian Traecy, demonstrated interest in collaborating with the island during a thematic session held in the Netherlands in October 2024.

These expressions of interest highlight the potential for building partnerships and fostering innovation by leveraging the Galileo Sensor Station's capabilities.

### 3.2.4 Other collaborations – Regional and international players

#### 3.2.4.1. How can Bonaire collaborate with other regional and international players to reap the full benefits of the Galileo system?

To maximize the benefits of the Galileo system, Bonaire can establish structured partnerships with regional and international stakeholders, focusing on several key areas:

#### Caribbean Collaboration

- Work with neighboring islands and organizations like the Caribbean Community (CARICOM) to implement joint projects utilizing Galileo's capabilities. Applications can include disaster management, maritime navigation, and environmental monitoring.
- Develop agreements to share Galileo-derived data, promoting mutual benefits in areas such as climate resilience and sustainable development.

- Collaborate with regional universities and technical institutions to train a skilled workforce in Galileo-related technologies, ensuring sustained support for future initiatives.

#### EU Collaboration

- Actively engage in European Union (EU) and European Space Agency (ESA) programs that encourage international collaboration in satellite navigation and space technology. Examples include Horizon Europe projects leveraging Galileo data for innovative solutions.
- Facilitate partnerships with European startups and companies specializing in space and satellite technologies by hosting joint events, innovation challenges, and pilot projects.
- Partner with European universities and research institutions for knowledge exchange through student internships, joint research efforts, and faculty collaborations focused on satellite applications.

#### Latin American Collaboration

- Establish partnerships with countries in Latin America, such as Chile and Panama, which are already involved in the EU's Galileo and Copernicus programs. These nations have expressed interest in creating a collaborative triangle with Bonaire, presenting opportunities for knowledge-sharing and joint initiatives.

#### Public-Private Partnerships (PPPs)

- Attract investments from global tech companies and NGOs by promoting Bonaire as a strategic hub for satellite navigation and space technology in the Caribbean.
- Encourage local businesses to collaborate with international entities to develop tailored solutions in areas like navigation, logistics, and marine conservation.
- Engage influential advocates from organizations such as Google, the World

Bank, and the United Nations, especially those with Caribbean roots, to champion initiatives in the region.

#### Leveraging International Networks

- Represent Bonaire at international space and technology events to highlight its strategic position within the Galileo network and attract collaborators.
- Establish Memorandums of Understanding (MoUs) with countries and organizations seeking to leverage Galileo for global challenges such as climate change and sustainable development, particularly with Panama and Chile.
- By fostering a comprehensive ecosystem of regional and international partnerships, Bonaire can enhance the impact of the Galileo system, driving innovation and sustainable development across the Caribbean region.

### 3.3 Quantitative and qualitative data

This research into the potential of the Galileo station on Bonaire and its regional and international implications drew on a combination of quantitative and qualitative data sources:

#### Quantitative Data

- **Economic Projections:** The study incorporated projections of economic growth and investment opportunities associated with satellite technology integration, informed by analogous examples in other regions.
- **Regional Challenges:** Data was gathered on pressing regional issues, including sargassum influx, coral reef degradation, and disaster management needs, highlighting areas where Galileo applications could provide solutions.

- **Workforce Statistics:** Employment and skill levels among local populations were analyzed to assess the potential for fulfilling technical roles related to Galileo projects.

#### Qualitative Data

- **Stakeholder Interviews:** Over 12 individual interviews were conducted with a range of stakeholders, including representatives from the European Union, local entrepreneurs, and leaders from key sectors on Bonaire, such as healthcare, aviation, and utilities. These interviews explored perspectives on Galileo's integration, local challenges, and innovation opportunities.

#### Focus Sessions:

- **Three focus sessions were organized to gather diverse viewpoints:**
  1. A session on Bonaire with 20 participants.
  2. A session in the Netherlands at the Noordwijk space center with 15 participants.
  3. An online session involving 35 Caribbean stakeholders, offering regional insights into priorities and potential partnerships.

This mixed-methods approach provided a comprehensive understanding of the Galileo station's potential impact, combining data-driven insights with stakeholder perspectives to inform strategic recommendations.

### 3.4 Analysis of the results

The research combined data to understand the socio-economic impact of integrating Galileo into local and regional systems and to assess collaboration opportunities with regional and international entities.

This mixed-methods approach provides a comprehensive understanding of how Bonaire can maximize the benefits of its Galileo station for technological advancement, economic growth, and regional leadership. The combination of interviews, focus sessions, and online engagements yielded valuable insights

into stakeholder expectations and concerns. These were paired with quantitative data on operational metrics and economic forecasts to inform actionable recommendations.

### For example:

- **Hospital Use Case:** An interview with hospital representatives revealed interest in using drone-based blood transport, while focus sessions explored integrating Galileo's precise navigation capabilities into such systems.
- **Utility Company Applications:** Quantitative data on utility infrastructure needs were complemented by qualitative feedback on challenges like disaster preparedness, which Galileo can address.

The analysis of the collected data was conducted using a multi-layered approach, integrating quantitative and qualitative methods to ensure a thorough understanding of the potential impact of the Galileo system on Bonaire and the broader Caribbean region.





## CHAPTER 4: CONCLUSION AND ADVICE

### 4.1 Answer to the research question

The installation of the Galileo station on Bonaire presents indeed significant opportunities for economic growth, innovation, and sustainable development on both Bonaire and the wider Caribbean region. By leveraging EU funding mechanisms and programs such as Horizon Europe, Copernicus, and Galileo Masters, Bonaire can establish itself as a hub for space-related technologies and applications. However, several challenges, including limited public awareness, insufficient infrastructure, and a lack of skilled personnel, must be addressed to unlock its full potential.

### 4.2 Advice: Concrete advice based on the conclusions

To maximize the benefits of the Galileo station and drive sustainable development, the following steps are advised:

- 1. Triple Helix organization setup**  
The first step should be setting up a triple helix organization to propel the sustainable economic and educational possibilities around Galileo.

- 2. Strategic Use of EU Programs and Funding**  
Actively pursue funding opportunities through programs like Horizon Europe, EUSPA, and CASSINI to support local startups and initiatives in satellite navigation and Earth observation. Create a dedicated task force to manage EU funding applications and ensure compliance with administrative requirements.
- 3. Education and Capacity Building**  
Integrate space-related technologies and data utilization into school curricula at all levels, starting with primary education, like the Da Vinci program. Establish partnerships with European / Latin American universities and organizations to offer training programs, scholarships, and internships focused on satellite technology and space-related fields. Develop local training facilities and offer online courses to upskill the workforce in space technology and data management.
- 4. Infrastructure Development**  
Build a high-tech innovation hub on Bonaire to attract businesses, researchers, and investors in the satellite technology sector. Invest in essential infrastructure, such as a data center and tech park, to support the growth of space-related industries.

- 5. Public Awareness and Community Engagement**

Launch public education campaigns to build trust and awareness of the benefits of Galileo and space technology. Organize local workshops, hackathons, and competitions to engage youth and entrepreneurs in developing innovative applications using Galileo and Copernicus data.

- 6. Regional and International Collaboration**

Foster partnerships with nearby islands like Curaçao and Aruba for shared projects and resources in environmental monitoring, disaster management, and infrastructure development. Collaborate with international partners such as Panama, Chile, and European startups to exchange knowledge and build capacity.

- 7. Support for Local Businesses and Startups**

Encourage local companies to explore Galileo-powered solutions for tourism, logistics, agriculture, and disaster management. Provide mentorship, networking opportunities, and funding to local startups to stimulate innovation in space-related technologies.

- 8. Focus on Immediate Opportunities ("Low-Hanging Fruits")**

Develop Galileo-based apps for tourism and public services, such as real-time navigation and disaster response systems. Introduce pilot projects in renewable energy grid monitoring, precision agriculture, and fisheries using Galileo data.

### 4.3 Short term: Directly applicable advice (1-3 Years)

This roadmap outlines the key steps necessary to implement the economic and educational opportunities arising from the construction of the Galileo Ground Station on Bonaire. The plan is divided into short-term actions (within the next 1-3 years) and long-term actions (3-10 years) to ensure a sustainable and gradual approach to economic growth and innovation.

#### 4.3.1. Establish a Triple helix committee

The first step should be setting up a triple helix organization to propel the sustainable economic and educational possibilities around Galileo.

**Timeline: Within 6-18 months**

### 4.3.2 Establish a Centre for Innovation, Education & Visitor

Develop a clear vision and mission for the center, focusing on technology, education, and sustainability. Identify priority areas like satellite applications, environmental monitoring, and tech-driven tourism. Identify an accessible location, near the Galileo station.

Start with a modular setup using existing facilities to reduce costs and ensure scalability. Host workshops, seminars, and hackathons on Galileo and its applications. Develop visitor attractions, such as interactive exhibits and guided tours of the Galileo station. Organize events to showcase local startups and student projects. Use media campaigns to raise awareness of the center's purpose and activities.

**Timeline: Within 12-18 months.**

### 4.3.3 Partner with Educational Institutions

Develop partnerships with local schools and European space institutions to create space-related educational programs and vocational training. Start with primary schools introducing Galileo, for example by introducing the Da Vinci program. Introduce programs with a focus on space technology, satellite communications, and aerospace engineering in local schools and universities.

**Timeline: Start within 12 months, with pilot.**

Programs launched within 18 months. Note: The Davinci program will start on Bonaire in February 2025 for both primary and secondary schools.

### 4.3.4 Launch a Public Awareness Campaign

Create a public awareness and outreach campaign to inform the local population about the opportunities arising from the Galileo

Ground Station, including space-related careers and educational programs. Engage local communities and youth, promoting interest in space technology and education.

**Timeline: Initiate campaign within 6 months.**

### 4.3.5 Identify Funding and Investment Opportunities

Secure funding from the European Union, local governments, and private investors to finance the space-tech campus, educational programs, and startups. Like stipulated in 3.2.1 of this report, there are a lot of opportunities. Ensure financial sustainability for infrastructure development and innovation initiatives.

**Timeline: Within 12 months, secure initial funding for key projects.**

### 4.3.6 Design a Youth Internship Program

Collaborate with European space agencies and private companies to develop internship and apprenticeship programs focused on satellite technology, cybersecurity, and aerospace engineering. Provide hands-on experience for local youth, preparing them for space-related careers.

**Timeline: Launch within 12-18 months.**

### 4.3.7 Initiate Startup Incubation and Accelerator Programs

Establish an incubator and/or accelerator program to support space-tech startups in fields like satellite data analytics, environmental monitoring, and disaster response. Encourage innovation and entrepreneurship, positioning Bonaire as a hub for space-related startups.

**Timeline: Start incubator programs within 18 months, with a focus on local and regional startups.**

### 4.3.8 Establish International Conferences and Events

Continue the organization of annual international space-tech conferences and innovation summits on Bonaire, inviting global experts, companies, and governments to showcase advancements in satellite technology and space exploration. Raise Bonaire's profile as a global participant in the space industry while stimulating the local economy through business tourism.

**Timeline: Hosting conferences every year, with the next one in 2025, with plans to grow into a major regional event by year 7 (long term).**

### 4.3.9 Plan an EU Office on Bonaire

Start negotiations with the European Union to establish a regional EU office, among others, dedicated to space and technological development on Bonaire. Increase EU engagement in the region, facilitating investment and collaboration across the Dutch Caribbean.

During the research it became clear that the government council of Bonaire is already talking about opening a regional EU office on Bonaire.

**Timeline: Initiate discussions within the first 12 months, with a goal of opening the office within 2-3 years.**

## 4.4 Long term: Structural and strategic adjustments (3-10 Years)

The Long-Term Action Plan (3-10 Years) focuses on the structural and strategic actions for the region.

### 4.4.1 Renovate Existing Building for Space-Tech Campus

Instead of constructing a new facility, renovate the existing building located adjacent to the Galileo Ground Station. This building can be repurposed into a state-of-the-art space-tech campus, housing educational facilities, research centers, and business incubators but also a visitors center and a space museum to attract tourists.

Utilize existing infrastructure to create a hub for education, innovation, and industry collaboration in the space-tech sector, reducing construction costs and speeding up the timeline for campus development.

**Timeline: Start renovations within 2 years, with the goal of having the campus operational within 4-5 years.**

### 4.4.2. Expand Space-Related Educational Offerings

Grow space-related programs in schools across the Dutch Caribbean islands, offering degrees and certifications in space science, engineering, and satellite technology.

Develop a pipeline of skilled workers and researchers who can contribute to the space-tech industry and the broader economy.

**Timeline: Expand programs by year 4, with full integration across educational institutions by year 6.**

### 4.4.3 Attract Global Space Industry Partners

Actively attract international space companies and research institutions to invest in Bonaire and the Dutch Caribbean, leveraging the Galileo Ground Station as a key asset. Position Bonaire as a strategic hub for satellite communications, data analysis, and space innovation, drawing in foreign investment and expertise.

**Timeline: Start outreach efforts by year 3, with targeted partnerships established by year 5-6.**

#### 4.4.4 Strengthen Disaster Response Capabilities

Utilize satellite data from the Galileo system to enhance disaster response mechanisms across the Dutch Caribbean, improving early warning systems for hurricanes, floods, and maritime search and rescue. Improve regional safety and resilience, while supporting startups focused on disaster management technology.

**Timeline: Fully implement new disaster response systems by year 4-5.**

#### 4.4.5 Measure and Expand Economic Impact

Continuously assess the economic impact of the Galileo Ground Station and related initiatives, adjusting strategies to ensure sustained growth and job creation across the Dutch Caribbean islands. Ensure long-term economic benefits, including the creation of space-related jobs, improved education, and increased foreign investment.

**Timeline: Begin evaluations by year 4, with regular updates and expansion plans every 2-3 years.**

#### 4.4.6 Establish a Regional Space Agency or Collaboration Network

Work towards establishing a regional space agency or collaboration network between the Dutch Caribbean islands to coordinate space-related research, technology development, and disaster response. Promote regional cooperation, share resources, and elevate the Dutch Caribbean's role in the global space economy.

**Timeline: Aim for full establishment of this network or agency by year 7-10.**

### 4.5 Impact: What will be the expected impact of the advice on the island Bonaire and the surrounding region?

The successful implementation of this plan will have a transformative impact on Bonaire and the surrounding Dutch Caribbean islands. The following are key areas where the region will experience significant positive change:

#### 4.5.1 Economic Diversification and Growth

The development of the Galileo Ground Station and the associated space-tech ecosystem will diversify Bonaire's economy, reducing its dependence on traditional sectors like tourism and fishing. New industries in satellite technology, space science, and disaster management will create high-tech jobs and attract international investment, boosting local income and economic resilience.

#### 4.5.2 Job Creation and Skills Development

The focus on educational programs, youth training, and vocational internships will equip the local population with advanced skills in space technology, engineering, and data science. This will lead to the creation of high-quality, well-paying jobs for the local workforce, not only on Bonaire but also across other Dutch Caribbean islands. Opportunities for local talent will expand, reducing the need for young people to leave the islands in search of career prospects.

#### 4.5.3. Enhanced Disaster Preparedness and Response

The use of Galileo satellite data for environmental monitoring and disaster management will improve the region's ability to predict and respond to natural disasters such as hurricanes, floods, and sea-level rise.

This will protect lives, minimize damage to infrastructure, and reduce the economic impact of such events. Improved search-and-rescue operations will also enhance maritime safety, benefiting tourism and the fishing industry.

#### 4.5.4. Educational Opportunities and Youth Engagement

The introduction of space-related programs in schools and universities will inspire and engage young people, fostering a new generation of scientists, engineers, and entrepreneurs. This will increase access to higher education and create a pathway for local youth to participate in the global space economy. Scholarships, internships, and collaborations with European space agencies will further enhance these opportunities.

#### 4.5.5. International Recognition and Investment

By establishing Bonaire as a regional hub for space technology, the island will gain international recognition, attracting further investment from global space agencies, research institutions, and tech companies. The renovation of the existing building into a space-tech campus will symbolize the island's commitment to innovation, making Bonaire an attractive location for conferences, research collaborations, and business ventures.

#### 4.5.6. Regional Collaboration and Development

The establishment of a European Union office on Bonaire and the creation of a regional collaboration network will strengthen ties between the Dutch Caribbean islands. This will encourage shared resources, knowledge transfer, and cooperation on space-related initiatives, creating economic opportunities for neighboring islands like Aruba, Sint Maarten, Saba, St. Eustatius and Curaçao. Also, collaboration wider than the islands will be important like strengthening ties between Latin America, such as particularly Panama and Chile.

#### 4.5.7. Long-term Sustainability

By integrating space technology and innovation into its economy, Bonaire will create a sustainable, future-oriented economic model. This will not only improve the island's economic resilience but also contribute to global efforts in space exploration, environmental conservation, and disaster prevention.

#### 4.5.8. Conclusion

The implementation of this plan will position Bonaire and the surrounding Dutch Caribbean islands as key players in the global space economy. The resulting economic growth, job creation, enhanced education, and international partnerships will ensure long-term prosperity for the region.





## CHAPTER 5:

# IMPLEMENTATION PLAN



### 5.1 Step-by-step plan: How can the advice be implemented in concrete terms? Which steps need to be taken and in what order? The advice will contain “work packages.”

This step-by-step plan incorporates the conclusions, short-term advice, and roadmap to maximize the benefits of the Galileo Ground Station on Bonaire. It is divided into work packages (WP's) addressing critical areas for action.

#### WP1: Establish a Centre for Innovation, Education and Visitors

Develop a hub for innovation, education, and public engagement to foster awareness and application of Galileo-related technologies.

##### Steps:

- 1. Vision and Planning (Months 1-3)**
  - Setting up a triple helix organization.
  - Define the mission and objectives with this organization of the centre for Innovation, Education & Visitors.
  - Collaborate with local stakeholders, schools, and international partners

to identify focus areas like satellite applications and sustainability. And, use the outcome of the focus session on Bonaire on September 19th, 2024

- 2. Infrastructure and Location (Months 3-6)**
  - Choose an accessible site close to the Galileo station. To start with, choose for example the building of the Water en Energie Bedrijf next to the Galileo station.
  - Begin with modular, cost-effective setups using existing building(s).
- 3. Program Development (Months 6-12)**
  - Host initial workshops and hackathons on Galileo applications.
  - Create interactive exhibits showcasing Galileo technology.
  - Launch a visitor program with guided tours of the Galileo station.
- 4. Community Engagement (Ongoing)**
  - Organize local events to feature student projects and startup innovations.
  - Promote the center through media campaigns.

**Timeline: Initial development within 12-18 months.**

#### WP2: Partner with Educational Institutions

Integrate space-related education into local curricula and develop training programs to upskill the workforce.

##### Steps:

- 1. Establish Local Partnerships (Months 1-6)**
  - Collaborate with local schools and colleges, starting with the Da Vinci program.
  - Develop pilot courses in space technology and data utilization.
- 2. Launch Pilot Programs (Months 6-12)**
  - Introduce vocational training in satellite technology and Earth observation.
  - Provide scholarships for students to attend European universities specializing in space technology.
- 3. Expand to Regional Collaboration (Months 12-18)**
  - Partner with European and Caribbean educational institutions for joint programs and internships.

**Timeline: Begin partnerships within six months, with pilot programs launched by 18 months.**

#### WP 3: Public Awareness Campaign

Increase public understanding and interest in Galileo-related opportunities.

##### Steps:

- 1. Media Campaign (Months 1-6)**
  - Launch campaigns across radio, social media, and local news platforms.
  - Highlight the benefits of space technology for tourism, disaster response, and education.
- 2. Community Outreach (Months 6-12)**
  - Organize events and school talks through the Special Envoy's office.
  - Provide easy-to-understand resources on Galileo's benefits.
- 3. Monitor Engagement (Ongoing)**
  - Use surveys and feedback forms to assess campaign impact and refine messaging.

**Timeline: Initiate within six months.**

## WP4: Secure Funding and Investment

Ensure financial sustainability for the proposed projects.

### Steps:

1. **Task Force Creation (Months 1-3)**
  - Form a team to manage EU funding applications and liaise with investors.
2. **Explore EU Programs (Months 3-6)**
  - Apply for funding under Horizon Europe, Copernicus, and CASSINI initiatives.
3. **Leverage Private Investment (Months 6-12)**
  - Attract private-sector interest by showcasing the region’s innovation potential.

**Timeline: Secure initial funding within 12 months.**

By implementing these structured work packages, Bonaire can take decisive steps toward capitalizing on the Galileo Ground Station, fostering economic development, and positioning itself as a regional leader in space technology innovation.

## 5.2 Responsibilities: Who is responsible for which actions?

To ensure the successful implementation of the proposed initiatives, clear responsibility allocation is critical. We therefore suggest setting up an independent triple helix organization to lead the workpackages as described above.

## 5.3. Risk analysis: What are the potential risks during implementation and how can these be mitigated?

The implementation of the Galileo-related initiatives on Bonaire presents numerous opportunities but also carries several risks. Below is a detailed analysis of these risks and corresponding mitigation strategies.

### 1. Funding Risks

- **Risk:** Delays in securing EU or private funding could hinder infrastructure and program development.
- **Mitigation:**
  - Create a dedicated task force to manage funding applications efficiently.
  - Develop phased project plans that allow for partial implementation using existing resources.
  - Seek diverse funding sources, including public-private partnerships.

### 2. Skilled Workforce Shortage

- **Risk:** A lack of trained personnel in space-related technologies could slow progress.
- **Mitigation:**
  - Partner with European universities and technical institutions to provide training programs and internships.
  - Implement scholarships and incentivize local talent to pursue education in relevant fields.
  - Focus on quick-start educational initiatives like online courses and short-term vocational training.

### 3. Infrastructure Limitations

- **Risk:** Existing infrastructure may be inadequate to support a high-tech innovation hub or data center.
- **Mitigation:**
  - Start with modular facilities that can scale up as resources and needs grow.
  - Prioritize key infrastructure improvements, such as broadband connectivity and energy reliability, in early project phases.

### 4. Public and Stakeholder Resistance

- **Risk:** Low awareness and potential skepticism among locals may reduce public support and engagement.
- **Mitigation:**
  - Launch a robust public awareness campaign highlighting the benefits of the Galileo station.
  - Engage community leaders and stakeholders in the planning process to build trust and buy-in.
  - Organize open events, such as hackathons and exhibitions, to demonstrate tangible benefits to the community.

### 5. Administrative and Regulatory Challenges

- **Risk:** Bureaucratic delays or misalignment with EU administrative requirements could impede progress.
- **Mitigation:**
  - Assign experienced project managers familiar with EU protocols to handle compliance.
  - Maintain regular communication with EU bodies to ensure alignment with their expectations and guidelines.

### 6. Competition from Other Regions

- **Risk:** Other Caribbean or international locations might attract the same opportunities and resources.
- **Mitigation:**
  - Promote Bonaire’s unique strengths, such as its proximity to the Galileo station and existing partnerships.
  - Collaborate with neighboring islands to create a regional consortium rather than a competitive environment.

### 7. Technological Challenges

- **Risk:** Implementing advanced satellite-based technologies may face technical or logistical difficulties.
- **Mitigation:**
  - Collaborate with the European Space Agency (ESA) and technical experts to minimize errors.
  - Pilot test projects on a small scale before full implementation.

### 8. Environmental Concerns

- **Risk:** Infrastructure projects might negatively impact the island’s environment and biodiversity.
- **Mitigation:**
  - Conduct thorough environmental impact assessments before initiating construction.
  - Prioritize eco-friendly technologies and sustainable building practices.



## CHAPTER 6: APPENDICES

6.1. Reference list: Sources used

6.2 Additional data: Focus  
Sessions - Online, Bonaire, and the  
Netherlands

6.3 Online interviews with  
several persons







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