How Space data can benefit sustainable tourism

With emphasis on water

Borja Pickering – Business Applications Officer
NEREUS – Online webinar
17/10/2024

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Downstream Space technologies, users & markets

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Space Assets...

- Earth Observation
- Satellite Navigation
- Satellite Communication
- Spaceflight Technologies
- Space Weather

... coupled with...

- Big Data analytics
- VR/AR
- Artificial Intelligence
- Mega-constellations
- Crowdsourcing
- IoT
- Cybersecurity
- Blockchain
- 5G (https://artes.esa.int/esa-5g6g-hub)

... to serve Users & Market

- Maritime
- Agriculture
- Environment
- Healthcare
- Financial
- Transport
- Education
- Media
- Energy
- Aviation

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How Space can contributes to the tourism industry

Areas of relevance

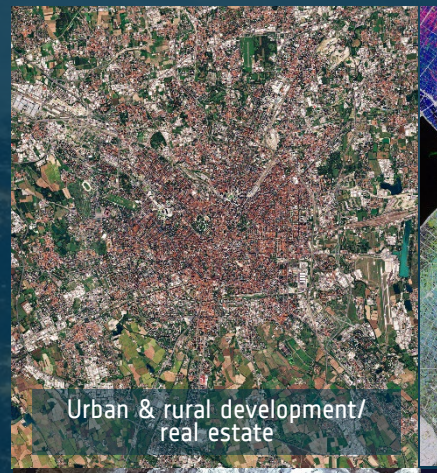
1. Use of digital and connectivity solutions to help the sector embrace new business models required in post-COVID 19
   - Unmanned transport (automation & robots)
   - Rural tourism
   - Everywhere connectivity to travellers
   - Active engagement with rural communities
2. Seamless travel
3. Safe travel
4. Guide investments and measuring impact
5. Drive sustainable tourism development

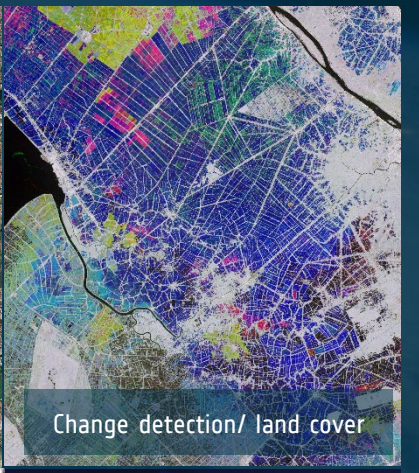
Examples: value of space

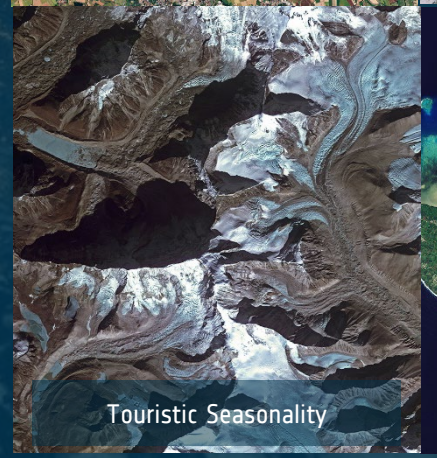
SatCom is essential to ensure communications whenever the terrestrial communications are absent or not reliable and to support digital solutions

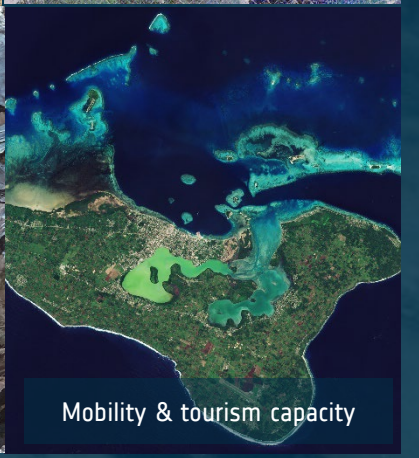
GNSS can be used track and trace tourists and provide information to search and rescue teams. Enable visitor flow-monitoring and location-based services to geo-localise points of interest in the tourist maps.

SatEO for monitoring and planning of infrastructure (e.g. buildings, roads, parking lots, airports). Monitoring of big events for logistics planning and monitoring (e.g. sports, festivals, big trade fairs. Identification of open air "safe" and "unsafe" areas (e.g. parks, squares, big markets, touristic spaces with crowds).


Urban & rural development/ real estate


Change detection/ land cover


Touristic Seasonality


Mobility & tourism capacity

Is ESA Business Applications Space Solutions (BASS) the right place for my business idea?

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ESA SPACE SOLUTIONS → Link website

The largest space innovation network in the world

Transforming business on EARTH - €250m in more than 1200 businesses

Supporting European start-ups and SMEs to develop businesses (or expanding existing ones) using space technology and data (19 out of 22 member states).

Offering funding, business and technical support to help to generate successful business and create jobs.

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What Does ESA Space Solutions Offer?

Our aim is to work together to make your idea commercially viable, with:

- Zero-Equity Funding (€50K-€2M+)
- Tailored Project Management Support
- Access to our Network and Partners
- Use of ESA Brand for Credibility

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Activity implementation

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Funding schemes BASS

Entry point	Type of activity	Total cost/price of activity & funding
Direct Negotiation	Feasibility studies	Max 500k Eur, 50-80% funded by ESA (can be 100% for research contributions)
	Demonstration projects	No max amount *, 50-80% funded by ESA (depending of wishes of the delegation)
Invitation To Tender - ITT (Open competition)	Feasibility studies	Max 200k Eur, 50-100% funded by ESA
	Kick-Starts	60k price for ESA, 75-80% funded by ESA

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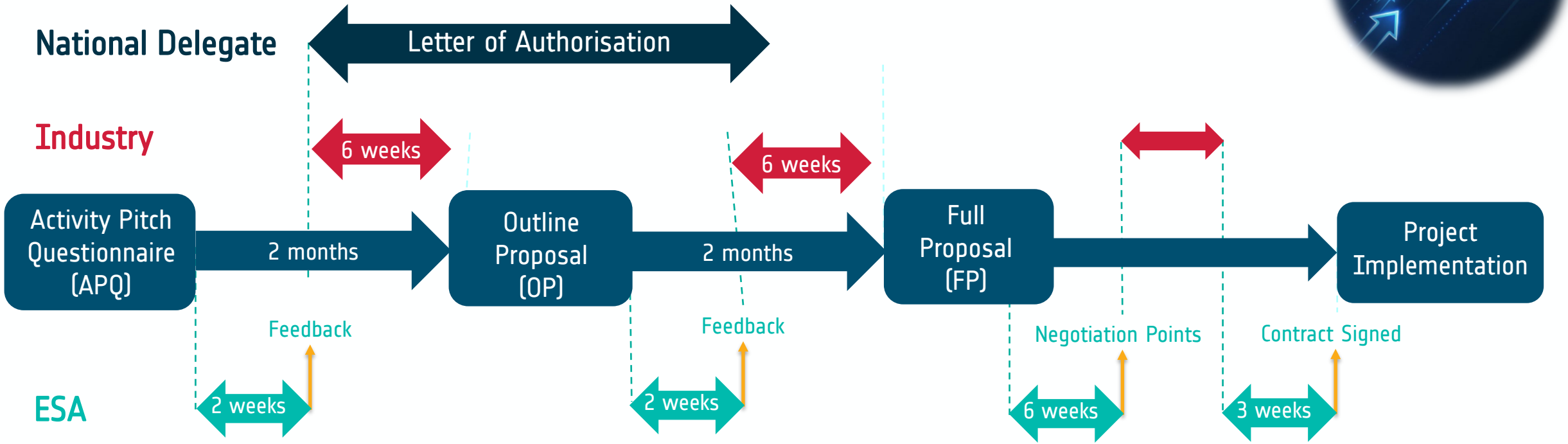
Roadmap for Direct Negotiation activities

Always open. Businesses from any size and sector can apply throughout the year



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You can apply through the direct negotiation scheme

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Opening Date 25 April 2022
Closing Date 31 December 2023

SPACE FOR TOURISM

Feasibility Study & Demonstration Project

SUBMIT YOUR INNOVATION

Downloads

- ESA Space for Tourism webinar 26.01.2022 - updated v2
- APQ_SpaceforTourism_ProjectName
- Scope - Space for Tourism.pdf

https://business.esa.int/funding/intended-tender/space-for-tourism

Plastic-less society (2020) – Feasibility Studies

Monitoring and modelling plastic pollution in the ocean
Monitoring and improving the logistics of plastic collection
Tracking and tracing goods along a supply chain to reduce the likelihood of products or waste products ending up in water bodies

Identifying illegal activities, such as waste dumping into oceans.

Improving waste management techniques
Supporting the selection of new recycling infrastructure and improving recycling techniques.

Performing ex ante analysis of recycling missions impact.

Developing tele-education programmes tailored to developing economies: educate the local communities on marine litter and plastic impact to the environment.

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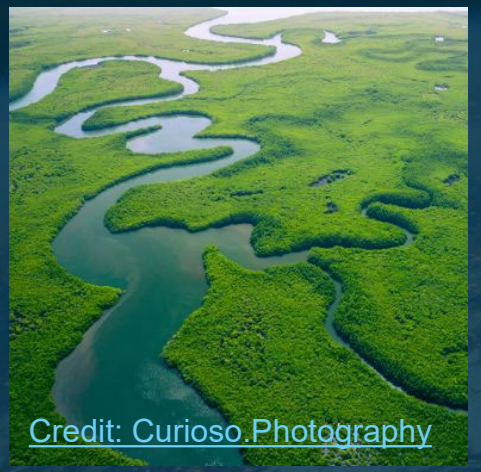
Digitising water resilience – acting on water stress in basins (2022-23) – Feasibility Studies



Credit: Curioso.Photography

Digitising water basins to improve the monitoring of – and acting on – water resilience.

Improving water sustainability in businesses by tackling issues in the value chain.

This call aims to:

- catalyse the ability to digitally identify current sources of water stress (availability, quality, accessibility), and digitally monitor the progress of water basin health towards water resilience.
- enable companies to digitally monitor the impact of their commitments and investments into net positive impact on water access, availability, and quality, relative to their footprints, within all water-stressed basins where they operate.
- provide transparency and accountability on the actions companies are taking, together with water basin stakeholders, to reduce water stress and build resilience, in order to achieve sustainable development goal 6: universal access to safely managed water and sanitation; improved water quality; and more efficient water use.

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ESA BASS Examples

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EASY

- EASY's objective is to carry out an analysis of the technical feasibility and commercial viability of "one-stop-shop" services to the high value leisure yachting market mainly but not limited to the Mediterranean Sea.
- e-Tourism services (availability and booking, hotel booking, maps and guides, sea tourism, etc.),
- on-line assistance services (alarm management related to boat malfunctions, intrusion, fire, bilge water, tracking during distress situations, etc.)
- and navigation support services (route planning, port access, maneuvering, sea conditions, meteorology, bathymetry, route control, nautical cartography, warning about perils and dangerous areas, tracking and tracing, etc.).

Satellite Navigation

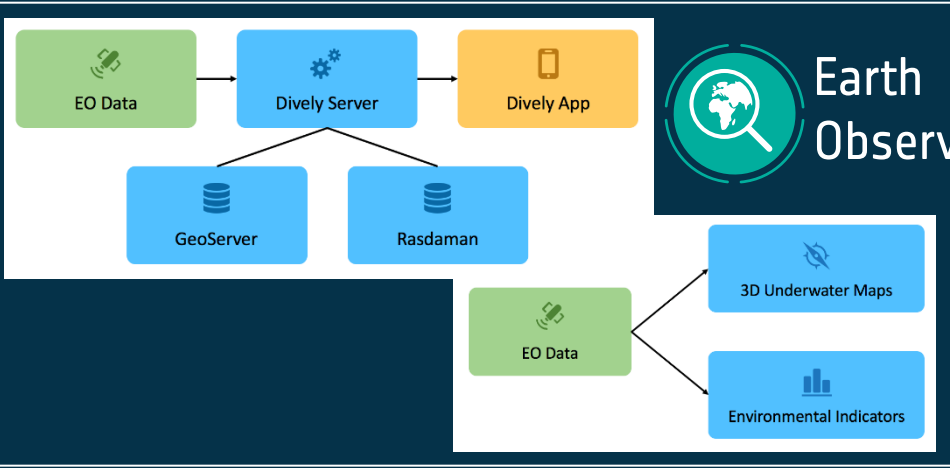
Satellite Communication

Sat Navigation:
Narrowband: Inmarsat, Iridium or GPRS
Broadband: mini-VSAT, UMTS/HSPA, Wi-Max

DIVELY

Although Dively is aimed at all underwater sports fans, e.g. free divers, snorkelers, it was designed with a special focus on scuba diving, both professional and recreational.

- Assess environmental conditions before starting a dive for increasing their safety and plan and discuss their dive itinerary
- Report the environmental conditions of the dive in their logbook to help future planning



Earth Observation

Sustainable Tourism Indicators

Murmuration has developed a unique Tourism Sustainable Development Indicator (TSDI) on national, regional and local scales. This index quantifies the sustainability of tourism all over the globe. Providing KPIs to monitor Air Quality, Green Area health, Progress of Urbanization and pressure on Water resources.

The index combines earth observation (Sentinel) data with spatial and statistical (non-spatial) data to provide a global common ground into assessing the sustainability of a geographical region and its correlation to the development of the tourism activities.

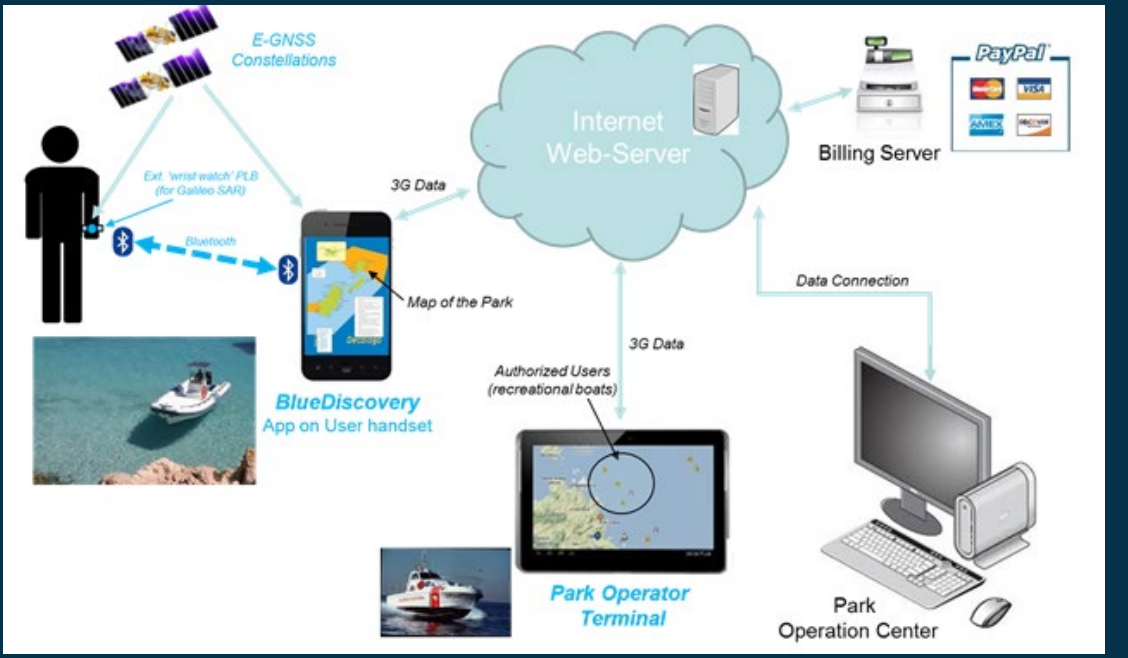
Earth Observation

Blue discovery

Developed by Blue Thread the PoC system deployed an efficient and low-cost Access Control and Visitor Information System to Marine Protected Areas (MPAs).

The system provides the following services to the visitor:

- Tourist Information and automatic guides to profiled itineraries
- Light procedures in obtaining permits and authorizations
- Location Based Services (free or with payment: guides, local events, environment/safety related info, areas allowed for diving/fishing/anchoring, booking/payment of moorings and dockings, garbage collection and water/fuel provision at sea for leisure boats and many more)
- find-your-mates service, to easily locate and communicate with friends and relatives during outdoor activities (Social community)
- Commercial Services (advertising and promotion of local products and activities).
- Emergency Call (eCall), to provide to the outdoor tourist an important and easy-to-use Safe of Life tool during her/his visit



SatNav:
- EGNOS (EGNSS)
- Galileo System: i) Galileo Open Service (OS); ii) Service And Rescue (SAR)

Satellite Navigation

Eyes on Plastic

EOMAP developed A multi-sensor solution to detect and track plastic litter in water bodies at a global scale.

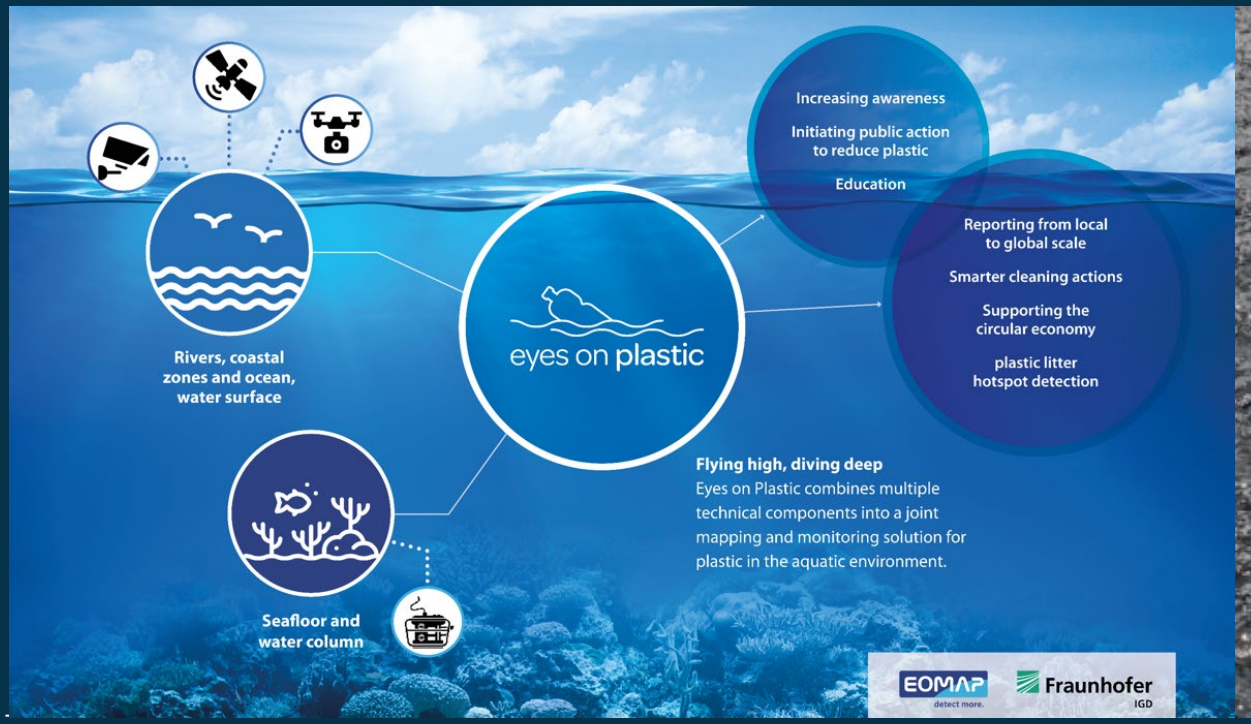
Pilot users are Lactec (one of the largest research, technology and innovation centres in Brazil), ENEL, and The Sea Cleaners.

SatCom transfers data from mounted cameras
EO monitors coastal zones and open ocean sourface water, as well as large plastic accumulation
SatPNT for UAV and UUV navigation

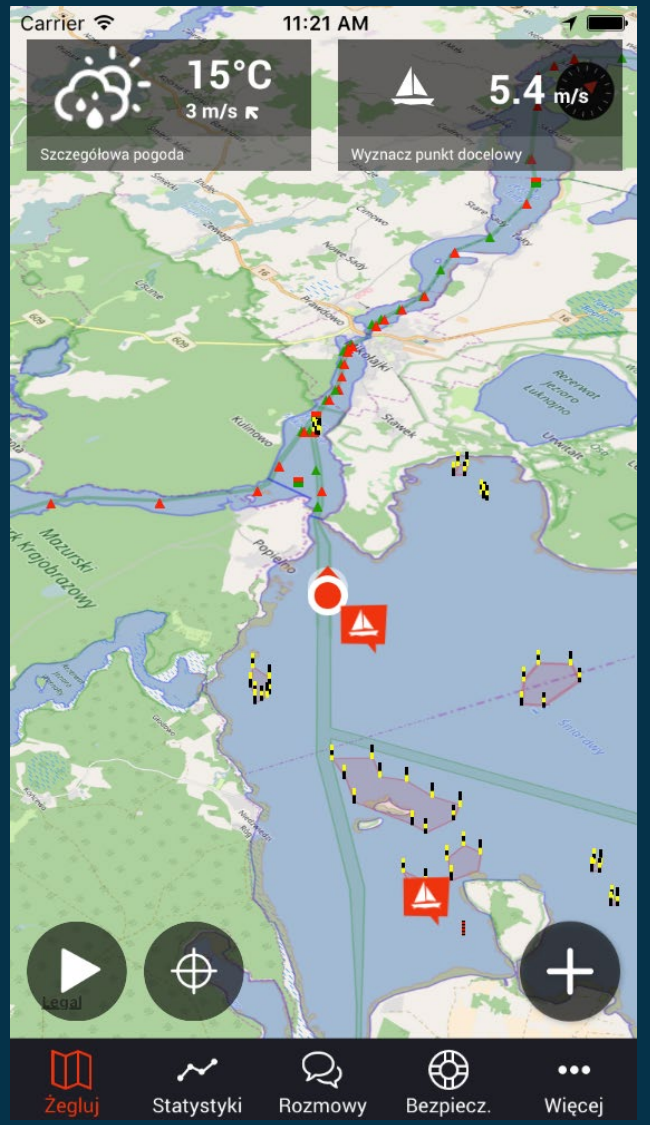
Satellite Navigation

Satellite Communication

Earth Observation



INTVAR



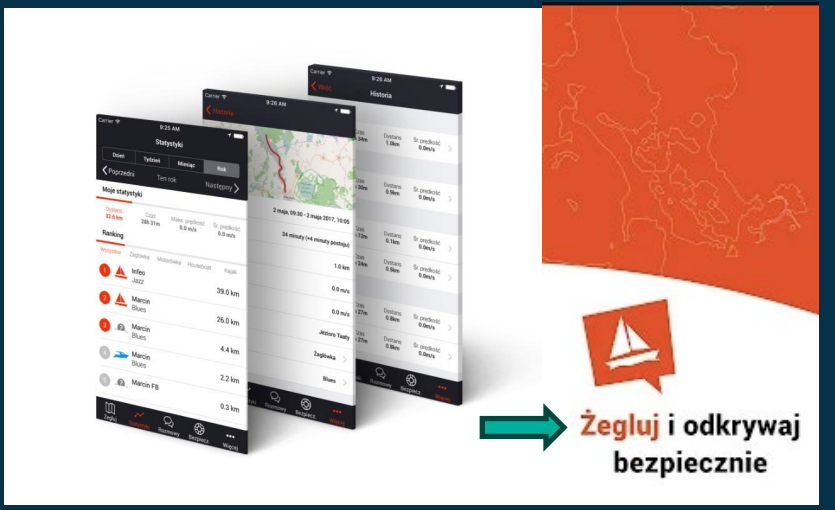
Infeo developed A Mobile App for immersive nautical tourism, safe inland waterways navigation, active water sports and for better communication and integration of users.

The proposed IntVAR mobile application will support whole water tourism, especially sailors, fishers, kayakers, divers, water rescue services. The integration of GNSS and VR/AR technologies combined with satellite imagery offers new technical opportunities to improve travel safety and to help avoid dangerous navigation obstacles.

EO data: Copernicus (Sentinel 1 & 2
SatNav: GNSS (Galileo/EGNOS)

Earth Observation

Satellite Navigation



I-sea

The proposed “mAPP’ing” activity is a framework for the prototyping of a couple of new-generation Earth Observation products to monitor Sargassum blooms affecting the Caribbean / Gulf of Mexico area which are responsible of massive landings over the beaches and thus having serious impact on biodiversity, population health, beach attractivity and at the end, **tourism**.

2 Levels of Service are available:

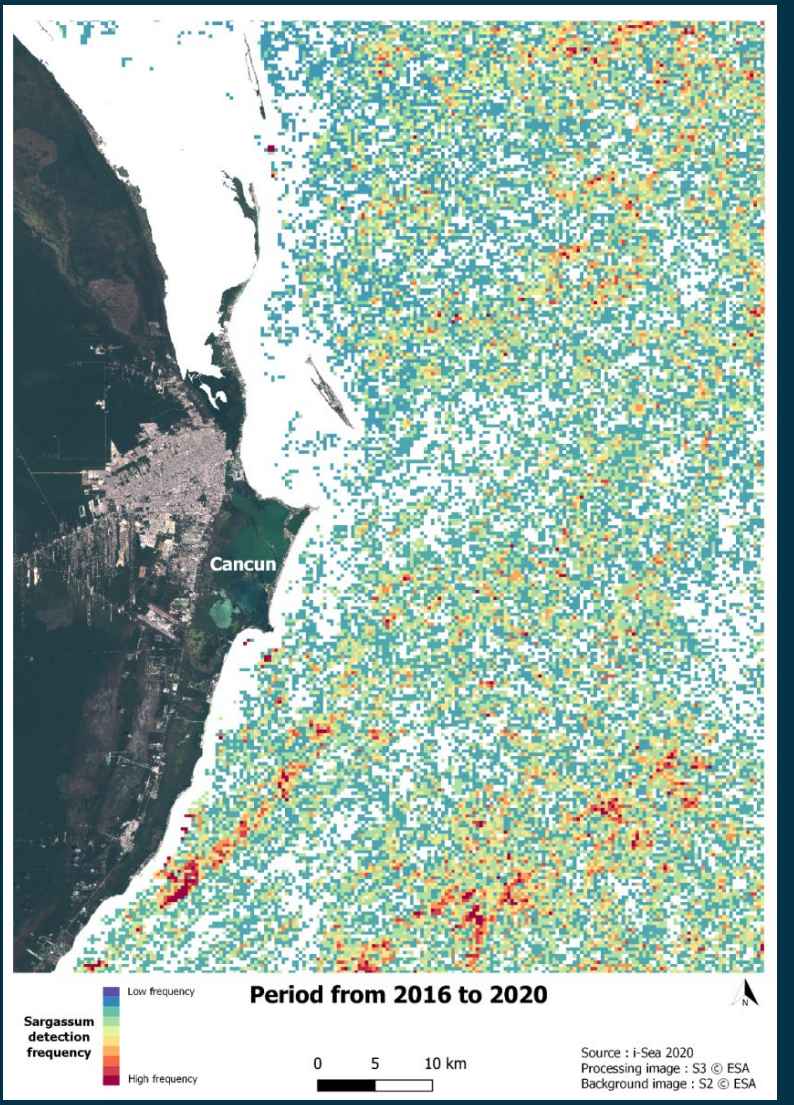
Basic service: Diagnosis of position vulnerability to sargassum beachings and definition of adequate insurance premiums

Crisis Extended Service to be activated for imminent incoming threats: Monitoring mode + alert reporting

End customer: Insurance sector

Earth Observation

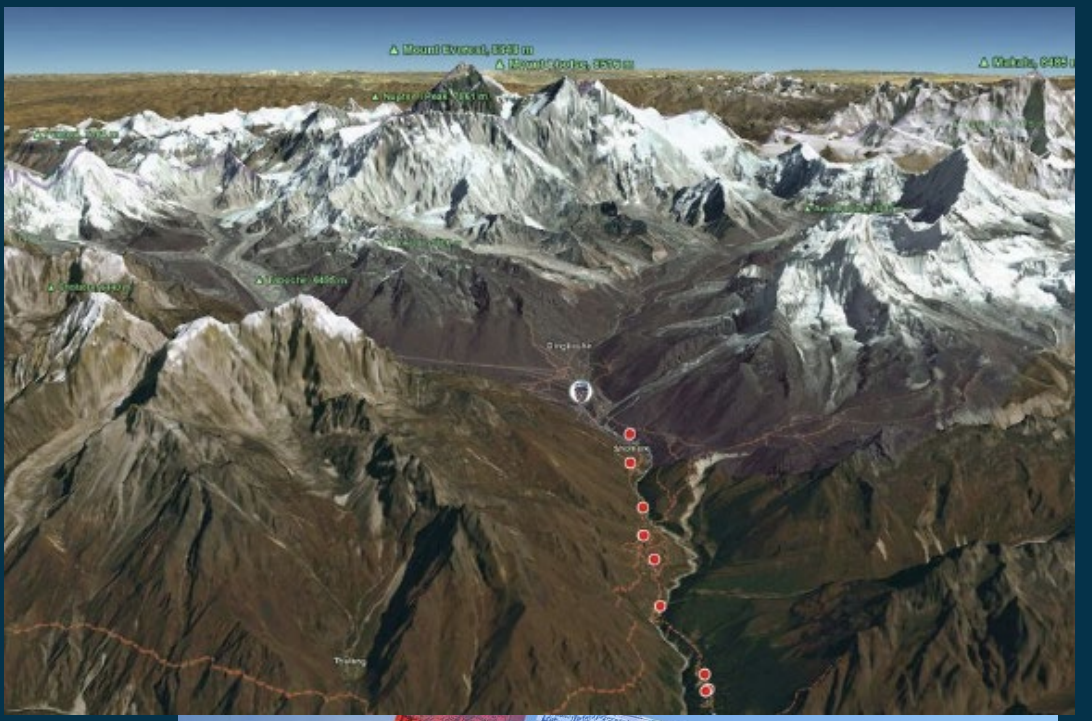
EO data:
Copernicus Sentinel-2/3 datasets (MSI 10 m, OLCI 300 m)



Maps4SafeTravel

3D RealityMaps, Remote Sensing Solutions GmbH and NAXA PVT Ltd aim is to provide a more sustainable and safer tourism in remote mountain regions of Nepal due the lack of information and a safe connection to the outside world.

- APP providing 3D maps and tourist-relevant information for the plan and adventure stages.
- AI-based service for monitoring natural hazards (risks of mountain torrents in gullies caused by the accumulation of water from melting glaciers).
- Alert through APP to local population and tourist to danger spots at an early stage



Satellite Navigation

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With emphasis in water

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