



Baltic SEA inteGrated unmanned aerial vehicLE multifunctional monitoring system for resurveying of shipping routes (SEAGLE)

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PA Safe Steering Committee meeting
Copenhagen, Denmark, 7-8.12.2016



SEAGLE partnership

4 partners:

- Institute of Aeronautics, Riga Technical University, Latvia (AERTI RTU)
- Faculty of Maritime Technologies and Natural Sciences, Klaipeda University, Lithuania
- Marine Systems Institute, Tallinn University of Technology, Estonia
- Latvian Hydrographic Service, Maritime Administration of Latvia

Project duration: 10 months



SEAGLE Main project idea ^{1/2}

The project SEAGLE propose integration of multifunctional solution of navigation fairways resurveying providing

- **high quality satellite and Remotely Piloted Aerial System (RPAS) data use in maritime surveillance,**
- **remote sensing through the development of an innovative integrated monitoring system using data from RPAS and Unmanned Maritime System (UMS)**
- **in the same time advising intelligent solutions for system command and control and advanced real-time and predictive data analytics technologies for end users.**

SEAGLE Main project idea ^{2/2}

Information gathered by RPAS will be used for the navigation chart data update instead of time consuming resurvey by special vessels and conventionally used satellite systems which are not always owned by National Hydrographic Service, effected by high costs and weather conditions.

RPAS being interconnected with UMS both will be used for command and control system as any of them can act as pseudo satellite for other thus providing undisturbed control of both components of proposed system.

Main task of UMS is resurvey of navigation fairways by means of payload carried within its structure. Data collected in the resurvey process from both components is transferred to the **main command and control station** where it can be integrated with other common system

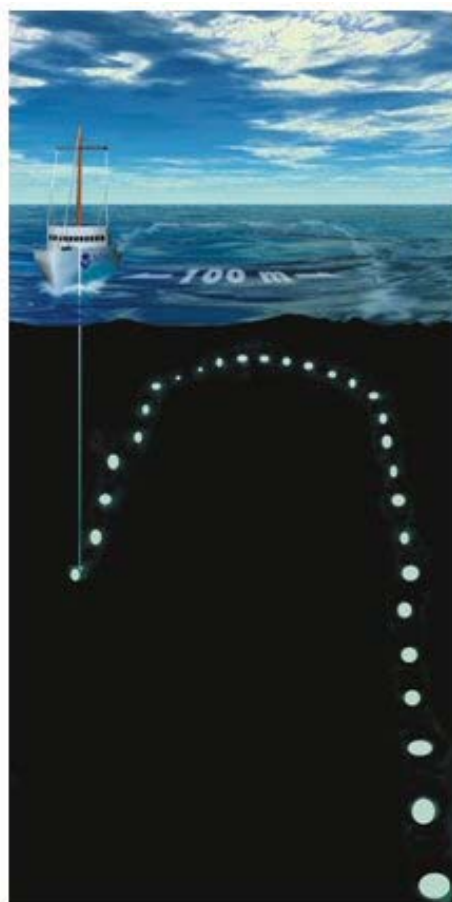


SEAGLE seed project activities

- Kick-off meeting held in Riga on April 15, 2016.
- Consortium Agreement developed.
- Partners responsibilities specified.
- 2nd meeting held in Klaipeda, Lithuania in October 2016.
 - ✓ All partners presented their Output 1 State-of-play tasks.
 - ✓ Preliminary analysis of funding sources.
- Final meeting to be held in Tallinn, Estonia in January, 2016. Plan for the main stage project to be discussed. Additional partners for the main project to be involved.

Output 1. State-of-play in the field addressed by the project including an overview of complementary projects - completed

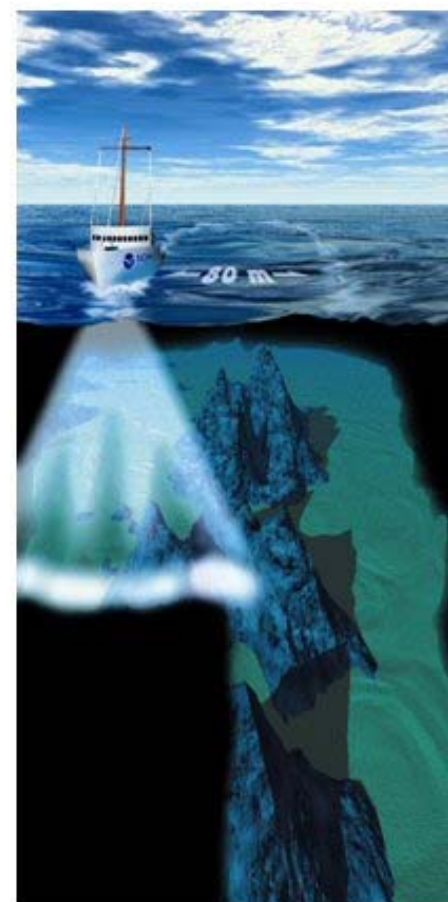
- Task 1.1. Analysis of Baltic Sea need for resurvey
- Task 1.2. Analysis of fairway resurvey methods used in the Baltic Sea waters and projects carried out recently and are being implemented at present.
- Task 1.3. RPAS and UMS structural and navigational requirements analysis for the integration in SEAGLE system.
- Task 1.4. SEAGLE system compatibles analysis with other marine systems - ongoing



**Leadline
Surveys**

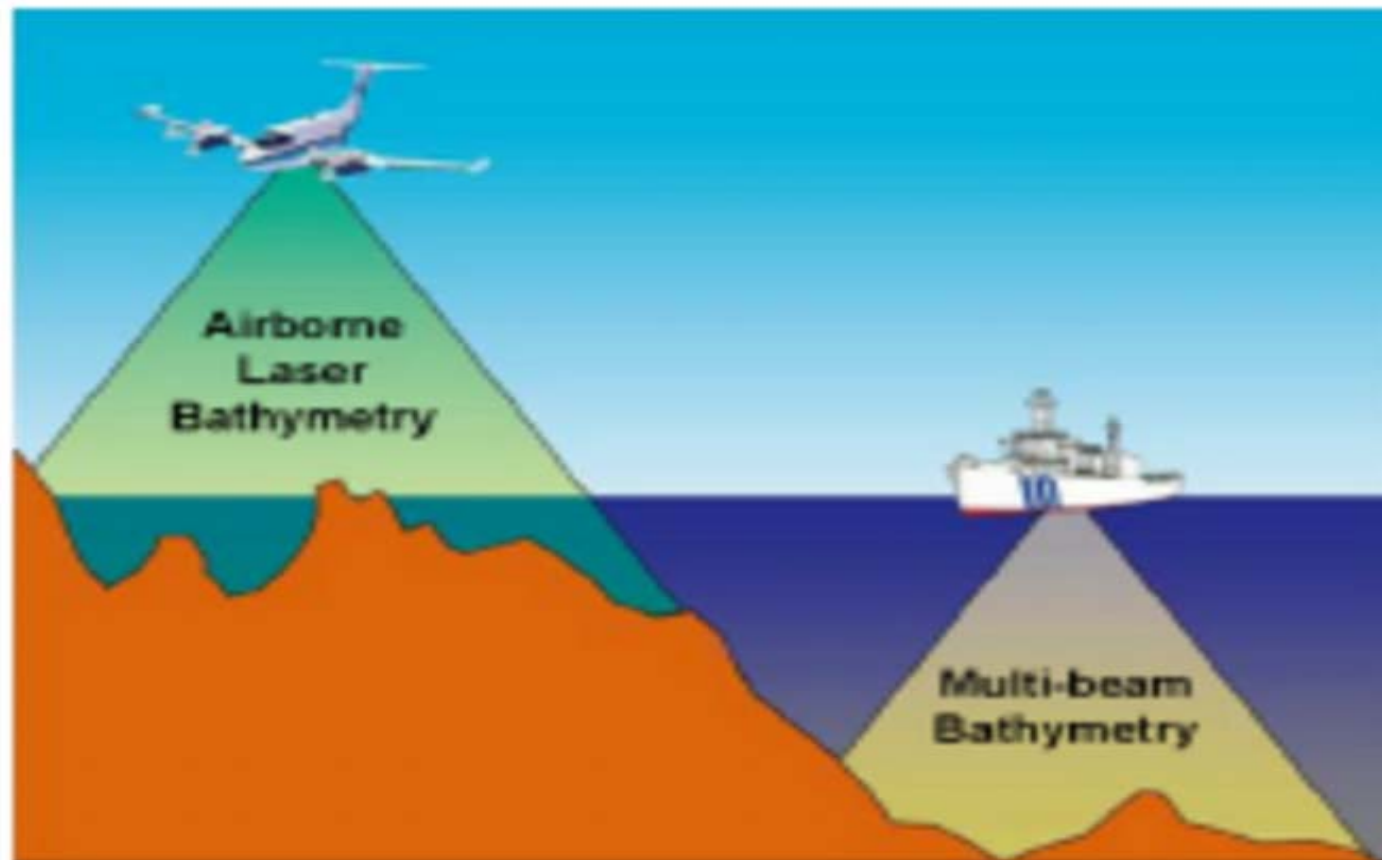


**Single Beam Echo
Sounder Surveys**



**Multibeam Full
Bottom Coverage**

Airborne Lidar bathymetry (ALB)
*ALB is limited to the very shallow water
(about up to 30 m)*



Output 2. Plan for the main stage project containing: Work plan, Composition of the partnership, Budget plan - ongoing

- Task 2.1. Work plan development for the main project.
- Task 2.2. Composing consortium for the main project.
- Task 2.3. Budget plan development for the main project.

Preliminary profiles of additional partners for the main project include the following:

- Baltic countries' Hydrography services, Baltic Sea Cartography services (if other than Hydrography), specialists on satellite operations and satellite data processing, specialists on Baltic Sea ground, specialists in echo-sounding equipment sizable for UMS, additional specialists in UMS design and exploitation, specialists in avionics for RPAS, specialists in virtual demonstrations of developed methodology, specialists in IT technologies for development of command and control software, specialists in applications for end users.

SEAGLE work plan implementation 3/3

The usage of autonomous vehicles increases resurvey speed and minimizes the costs

Realistic nowadays technology scenario:

Usage of autonomous devices in line with the hydrographic survey vessels:

1. Usage of RPAS for mapping of shore line with LIDAR technology
2. Usage of RPAS for monitoring of ice conditions
3. Usage of UMS for speedup of resurvey
4. Common usage of RPAS and UMS for hydrographic survey of waters together with shoreline mapping

Future development scenario:

1. Completely autonomous usage of UMS/RPAS system for hydrographic survey
2. Application of LIDAR/Hyper spectral Imaging technology for reliable shallow water survey

Output 3. Funding possibilities and steps to be taken after the seed money project is finalized - ongoing

Task 3.1. Analysis of **Horizon 2020** programme opportunities.

Task 3.2. Analysis of "**Interreg Baltic Sea region**" programme opportunities.

Task 3.3. Analysis of "**CEF Transport Calls**" programme opportunities.

Task 3.4. Analysis of "**EUREKA Innovation Across Borders**" programme programme opportunities.

Other programmes...



Horizon 2020

Available programme:

- **Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy**

BG-04-2017: Multi-use of the oceans marine space, offshore and near-shore: Enabling technologies

<https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/bg-04-2017.html>

Deadline: February 14, 2017

Provisional budget: 8 Mio EUR

Type: Innovative Action

Single-stage project.



Interreg Baltic Sea Region ^{1/2}

<https://www.interreg-baltic.eu/about-the-programme.html>

Cooperation priority – **Sustainable transport**

Due to the significance of maritime transport for the region the priority also focuses on the improvement of maritime safety and environmental-friendly shipping.

Specific objective 3.3 ‘Maritime safety’

To increase maritime safety and security based on advanced capacity of maritime actors.

Funding: 85% for LV, LT, EE, PL, 75% for others.

3rd call: not to be opened before mid 2017

Interreg Baltic Sea Region ^{2/2}

The programme supports projects that **increase capacity of maritime actors to develop new, promote and/or introduce in practise available solutions for safer sea navigation...**

Examples of actions:

- Implementing advanced technologies for maritime safety and security, e.g. implementing e-Navigation, automatic identification systems
- Piloting solutions for risk prevention and response measures e.g. implementing joint exercises
- Enhancing integrated maritime surveillance



2016 CEF Transport Calls for Proposals ^{1/2}

The 2016 CEF Transport Calls for Proposals, opened on 13 October 2016, make €1.9 billion of funding available for projects of common interest in the transport sector.

These calls are open (deadline for submission of proposals - **7 February 2017**).

Cohesion calls are open exclusively for proposals in EU Member States eligible for funding from the Cohesion Fund, with a total indicative budget of €1.1 billion. General calls are open to all EU Member States, with a total indicative budget of €0.8 billion.

<https://ec.europa.eu/inea/en/connecting-europe-facility/cef-transport/apply-funding/2016-cef-transport-calls-proposals>

2016 CEF Transport Calls for Proposals ^{2/2}

Specificities Cohesion Calls

- Maximum co-financing rates applicable to the Cohesion Fund (up to 85%) for proposals in Cohesion Member States: BG, HR, CZ, CY, EE, EL, HU, LV, LT, MT, PL, PT, RO, SI, SK.
- **The selection of projects under this call shall respect the national allocations under the Cohesion Fund. Latvia & Lithuania has spent already all funding from the cohesion envelope to RailBaltic project.**
- Joint proposals with non-Cohesion Member States to be submitted as separate twinned applications under the General and Cohesion calls

Co-financing rate in General Calls – 50% for all EU countries



EUREKA

EUREKA Network Projects are transnational, market-driven innovative research and development projects. Projects supported by the public administrations and public funding agencies that representing EUREKA in each of its 40+ member countries.

<http://www.eurekanetwork.org/network-projects>

The EUREKA "bottom-up" approach to project creation continues to be a characteristic which differentiates EUREKA from other similar initiatives. This approach allows the project consortia to define the nature of the technologies to be developed and how the project comes together. They agree upon the intellectual property rights and build partnerships, to share expertise and gain access to international markets with the results of their research.



Thank you for your attention!