

BSSC - Pentagon Helix HUB of the maritime and space industry and International Projects HUB

MAREK GRZYBOWSKI

The BSS Cluster is working as the Pentagon Helix HUB organization. It integrates the transfer of knowledge between science and business, supports social initiatives, local governments and administration, develops investor relations in the maritime and space industry. The cluster acts as a smart organization. We view maritime and space business in a holistic manner. BSSC integrates technological, legal and economic solutions at the scientific, business and social level.

BSSC Partnership and Memebbers know-how

The partnership of the Space Sciences Committee of the Polish Academy of Sciences with the Baltic Sea and Space Cluster has resulted in international projects. Knowledge transfer between universities and the space and maritime industries has developed at the national and international level. Representatives of such universities like the Naval Academy, the University of Gdansk, the Gdansk University of Technology, and the University of Administration and Business have actively participated in these activities. The contribution of the research workers of the Institute of Oceanology of the Polish Academy of Sciences is very large. They brought a strong potential of knowledge about the use of space in sea research to the activities of the Committee and the Cluster. The participation of business representatives, members of the Baltic Sea and Space Cluster is very important. Among them are: Pomeranian Special Economic Zone, Gdynia and Gdansk Sea Port Authorities, Nauta Shipyard and Crist Shipyard, Hydromega and Cadon Consulting, Marine Technology and Sea Data, Echogram and Sevenet. The representatives of the Port of Hamburg, Hutchison Ports and ICTSI contributed a lot of knowledge during conferences and B2B meetings. A unique activity in the field of education of engineers is the interuniversity studies of the 2nd degree Space and Satellite Technologies, which initiated and successfully develops the Naval Academy, Maritime University and Gdansk University of Technology. Photo: Marek Grzybowski

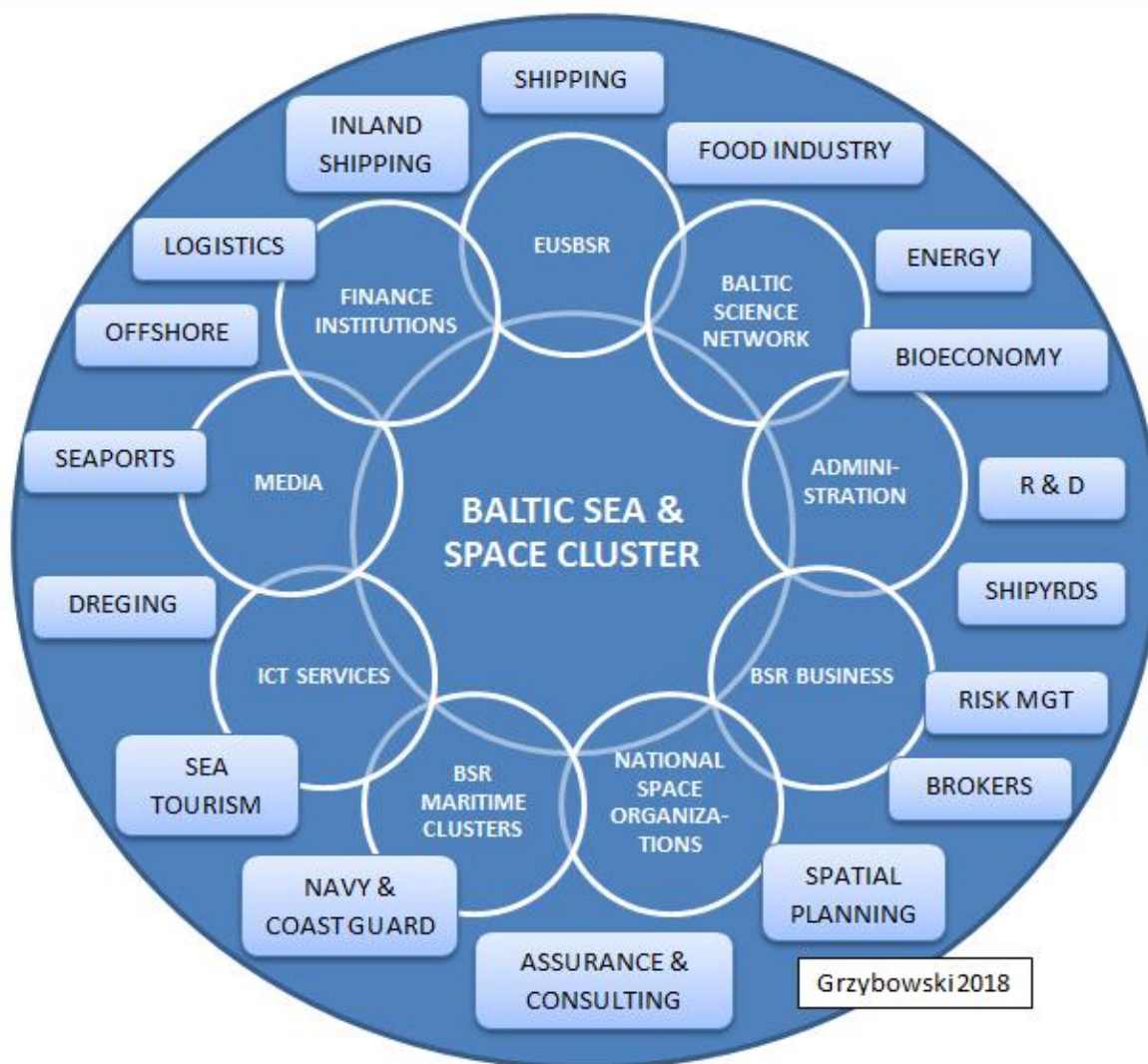


Figure 1. Baltic Sea & Space Cluster HUB [Marek Grzybowski] www.bssc.pl

The Polish Maritime Cluster is strongly based in seaports, shipyards, the Pomeranian Special Economic Zone and innovative companies involved in the production and services of maritime industries. Research and education are an important part of the cluster's activity. In Gdynia, in the area of the former Gdynia Shipyard, the production profile was changed. Instead of simple vessels for container and ro-ro ships and bulk carriers, specialist vessels worth EUR 200 million are being built in Gdynia for the offshore industry, as well as research and special vessels. For example, in 2012, the most modern wind farm construction unit in Europe was built, and in 2014 the first electric ferry in the world was built. Ships were built in Gdynia, Crist shipyard, BSSC member. Finland's first electric ferry (90 m long and 16 m wide) takes 375 people and 90 passenger cars on board.



Figure 2. BSSC Mebers

BSSC Members, Polish universities, design offices, shipyards have experience in zero-emission technologies and make decisions that aim at long-term sustainable development. Poland is actively building innovative zero-emission ships (ZEV), especially ferries and passenger ships. Their recipients are shipowners from the Scandinavian countries and the North Sea region. Moreover, many ZEV and hybrid ships from Poland are awarded at international competitions.

BSSC knowledge

The BSSC Think Tank has a strong position in the Baltic Sea market. The main objective is to identify trends in the global maritime economy and space technologies and their environment, as well as to create strategies and set directions for development in the maritime economy and space technologies in the Baltic Sea Region. The idea of integrating the activities of the Committee and the Cluster was born during the conference "Space and the sea – at the meeting point of the horizon" (<https://www.iopan.pl/KNK2018/>) at the Institute of Oceanology of the Polish Academy of Sciences. The idea of cooperation in science and maritime and space business was born on the initiative of 3 professors: Zdzisław Brodecki, Edmund Wittbrodt and Marek Grzybowski, President of the Board of the Polish Maritime Cluster. The idea was quickly transformed into a new organization: the Baltic Sea and Space Cluster. "With this formula, we broke the traditional approach to the integration of industries and science with practice. Because the world combines the aviation and space industries, while we combine knowledge and business in the maritime and space areas," said Professor Brodecki commenting on the creation of a new type of a cluster. "We undertake an initiative that is unique on a global scale and that perfectly supports the activity of Pomerania," said Professor Wittbrodt at the founding meeting of the Baltic Sea & Space Cluster (<http://polishscience.pl/pl/powstal-baltycki-klaster-morski-i-kosmiczny/>).




**Space Sciences Committee
Polish Academy of Sciences / Gdańsk Branch**
in cooperation with
Baltic Sea & Space Cluster

invites for joint conferences

- 20th September, 2018
Baltic Sea & (Outer) Space.
New perspective for our region.
Sopot, Instytut Oceanologii PAN
- 22nd November, 2018
Seaport + Space Infrastructure.
Synergic Network under common management.
Gdynia, WSAB
- 19th March, 2019
Autonomous ships. Inevitable reality at sea.
Politechnika Gdańska
- 18th May, 2019
Institutional Cooperation at Sea & (Outer) Space.
Essential adjustments needed to boost full potential.
Uniwersytet Gdański, Wydział Prawa i Administracji
- 19th September, 2019
Remote-sensing. Challenges in gather and sharing data.
Sopot, Instytut Oceanologii PAN
- 14th November, 2019
Sea and underwater drones. "Unidentified Sea Objects"
Akademia Marynarki Wojennej, Gdynia





**Space Sciences Committee
Polish Academy of Sciences / Gdańsk Branch**
in cooperation with Baltic Sea & Space Cluster & Polish Space Agency (POLSA)

invite for joint conferences

Conference Agenda for 2020-2021

- 12th March 2020
Smart Port. The merged sea & space network.
Gdynia
- 14th May 2020
Launch of the Polish space rocket. New opportunities.
Ślupsk
- 24th September 2020
Artificial Intelligence. In search for synergy.
Gdańsk
- 19th November 2020
Satellite technologies for maritime safety.
Szczecin
- 11th March 2021
Baltic Sea. Reflection of the stars.
Sopot

Figure 3. BSSC science HUB activity

BSSC THINK TANK is an initiative that was created during the conference Maritime Policy, and developed during conferences organized by the Space Sciences PAN Commission in cooperation with scientific centers and business representatives at the Institute of Oceanology of the Polish Academy of Sciences, University of Business Administration and Naval Academy. Their aim was to analyze the implementation of Poland's maritime policy and the development of space technologies and to determine the methods, actions and tools for optimal use of Poland's maritime and cosmic scientific and industrial potential and the position of our country in the Baltic Sea Region.

BSSC science conferences:

- 09-11-2017 - Space Cluster. Intelligent Specialisation? Risk management, finance and insurance in space projects - University of Business and Administration in Gdynia.
- 08-03-2018 - Space and Sea (Kosmos a morze - na styku horyzontów), Instytut of Oceanology, Polish Academy of Sciences, Sopot
- 20-09-2018 - Baltic Sea & (Outer) Space New perspective for our region, Instytut of Oceanology, Polish Academy of Sciences, Sopot
- 22-11-2018 - Seaport + Space Infrastructure Synergic Network under common management, University of Business and Administration in Gdynia.
- 19-03-2019 - Autonomous ships. Inevitable reality at sea, Gdansk University of Technology.
- 18-05-2019 - Institutional Cooperation at Sea & (Outer) Space Essential adjustments needed to boost full potential, Gdańsk University, Law and Administration Faculty.
- 19-09-2019 - Remote sensing. Challenges in gather and sharing data Conference, Naval Academy Gdynia
- 14-11-2019 - Sea and underwater drones – Unidentified Sea Objects, Naval Academy, Gdynia
- 24-09-2020 - Smart Port. The merged sea & space network, Baltic Sea & Space Cluster, Space Sciences Committee Polish Academy of Sciences /

Gdańsk Branch and Polish Space Agency (POLSA) -Gdynia - University of Business and Administration in Gdynia

- 19-11-2020- Artificial Intelligence. In search for synergy, Technical University of Gdańsk, Baltic Sea & Space Cluster, Space Sciences Committee Polish Academy of Sciences / Gdańsk Branch and Polish Space Agency (POLSA)
- 11-03-2021- Baltic Sea. Reflection of the stars, Institute of Oceanology, Polish Academy of Sciences, Sopot

In Poland, as an expert, BSSC operates in the smart specializations of Pomerania. ISP1 – Offshore and port-logistics technologies; “maritime” specialization, which includes: ship and offshore construction (e.g. placing offshore wind farms), logistics in ports and at their hinterland, use of biological resources of the sea. ISP 2 – Interactive technologies in the information environment, specializing in “ICT”, i.e. information and communication technologies, including: ICT solutions for production and services, ICT tools for managing urban space, management of large data sets, business use of satellite technologies. The BSSC was the initiator of the creation and development of the national smart maritime specialization. Innovative marine technologies in the area of specialized vessels, marine and coastal constructions as well as maritime and inland logistics and transport.



Figure 4. BSSC operates in the smart specializations of Pomerania. ISP1 nad ISP2

BSSC existing solutions and processes for hubs

BSSC actively participated in establishing a network of clusters in the Baltic Sea region. BSSC is an active participant in this network. The cluster is active in international projects of the Baltic Sea region in the area of blue economy. The cluster with its expert knowledge participates in international projects that allow the creation of GALATEA Blue Growth Accelerator and ZEV HUB (<https://zevinnovation.eu/>).

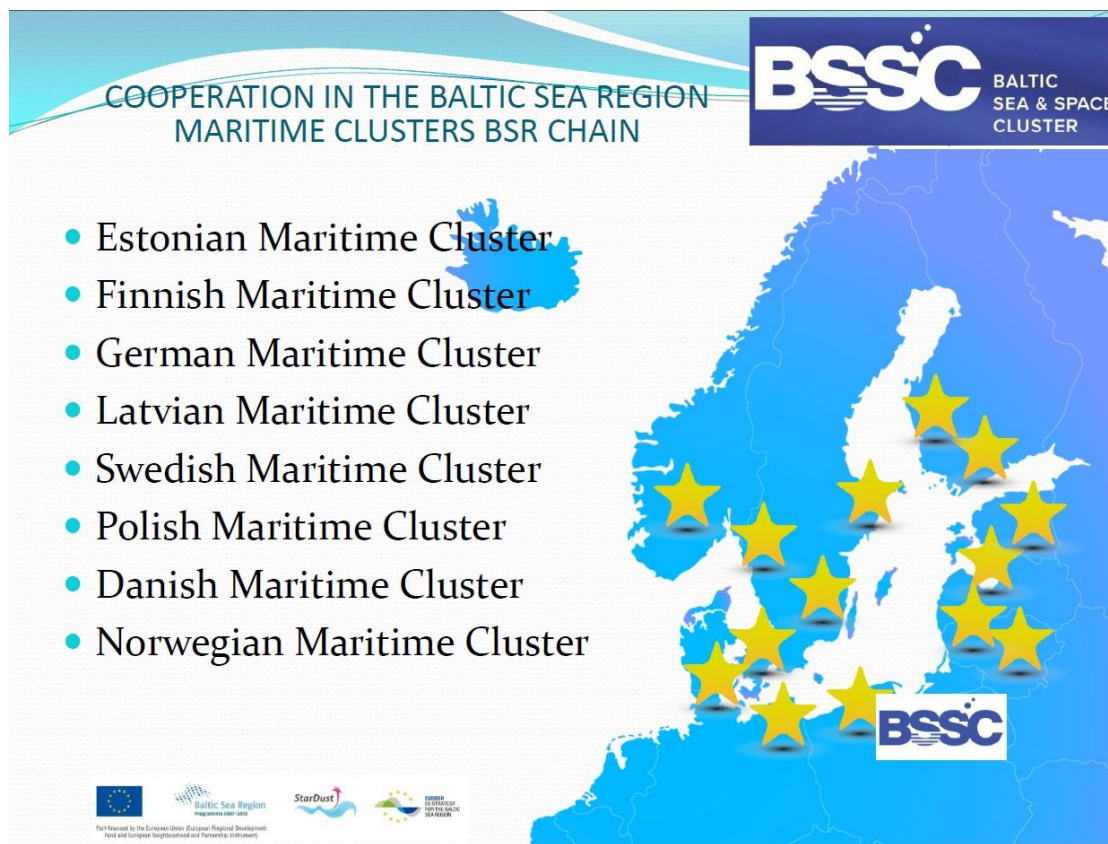


Figure 5. BSSC actively participated in establishing a network of clusters in the BSR

ZEInnovation Project

The ZEInnovation project is funded by Iceland, Liechtenstein and Norway through the EEA and Norway Grants Fund for Regional Cooperation. The project's mission is to bring together professional stakeholders interested in innovative zero-emission technologies and provide lasting and tailor-made solutions that will eventually increase innovation ability across the EEA. The ZEInnovation project aims to establish a sustainable and efficient network for the development of innovative

technologies that will bring together active stakeholders. The ZEVinnovation network's ambition is to contribute to the strengthening of the transnational eco-system through the implementation of pilot programs focusing on the collaborative development and market uptake of zero-emission vessels while connecting the capacities of the EEA countries that have a strong maritime tradition and current pioneering initiatives.



Transnational partners of the ZEVinnovation project are devoted to supporting enterprises across the EEA through networking and helping them achieve their growth ambitions through a diverse range of project activities. More specifically, the project is implemented by multi-sectoral partners from Croatia, Norway and Poland: Center of Technology Transfer LLC (Croatia), Baltic Sea and Space Cluster (Poland), Inovacije i razvoj LLC (Croatia), ÅKP AS (Norway) and Vinco Innovation AS (Norway). Regardless of the differences in size and population, partner's countries face common environmental challenges concerning resource limitations and vulnerability to climate changes. The transnational partnership should open up a

wider market and help members of the ZEVinnovation HUB to enter the international supply chain.

GALATEA Project

GALATEA Project (<https://galateaproject.eu/>) works like as HUB, it connects the markets from the supply and demand sides. The Baltic Sea and Space Cluster was invited to the project by Pôle Mer Méditerranée and Aerospace Valley from France. They appreciated the strong brand of the Cluster on the market of the Baltic Region and Central Europe.



Figure 6. GALATEA Project HUB

The activity of the Cluster members on international markets and in regional projects, participation in the development of innovation, knowledge transfer and commercialization of research, gained special recognition from the partners of the GALATEA project. The GALATEA project will support the development of technological and process innovations in the following areas (https://twitter.com/galatea_project): seaports (Smart & Green Ports), ships (Smart & Green Ships), shipbuilding and ship repairing business (Smart & Green Shipyard) and control and monitoring of sea areas (maritime surveillance). All initiatives aimed at progress in ports, shipyards and seas will therefore be financed. In this area, the Baltic Sea and Space Cluster has undoubted achievements.



Figure 7. GALATEA Project partners and markets

An important feature of the project is the integration of activities of strong partners from 3 sea basins: the Atlantic, the Baltic and the Mediterranean Sea, emphasize the authors of the project. The leader is the strong French Maritime Cluster Pôle Mer Méditerranée – Toulon Var Technologies. Participating in the development of blue innovations are: Aerospace Valley (France); Corallia Clusters Initiative / Research Center Athena (Greece); Asociación Clúster de Movilidad y Logística de Euskadi (Spain); Fundació Eurecat (Spain); Catalan Water Partnership (Spain); Asociația Cluj IT (Romania) and the Baltic Sea and Space Cluster (Poland, Baltic Sea region). The main goal of joint activities is to create innovation and develop new intersectoral and cross-border value chains – this can be seen from the selection of partners. It will finance those SMEs that are innovative, ambitious and collaborative in the maritime, ICT, aviation and space sectors.

SpaceUp Project is a project financed by the EU Framework programme for Research and Innovation (Horizon 2020). Throughout the project lifetime six Space Academies will take place in various locations in Europe, networking new space tech entrepreneurs with potential partners and customised business services will be provided to selected companies, helping them accelerate on the road to success! Throughout the project lifetime 6 Space Academies will take place in various locations in Europe, networking new space tech entrepreneurs with potential partners in Finance,

Business, Space Clusters and Science Parks, plunging Start-ups into a genuinely European Space ecosystem.



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Your pitch at EBAN Cork 2021 Annual Congress

The Space Academy is a two-day event for space-tech entrepreneurs to accelerate their business. The first day will be dedicated to workshops, where participants receive coaching in small groups. The second day of the Space Academy is embedded into EBAN Cork 2021 Annual Congress 16-18 June. The EBAN Congress is one of Europe's largest and most respected international business and investment events. The congress is organized by EBAN and the European Investment Project Forum, and will gather more than 1000 business leaders, early stage investors, VC entrepreneurs, accelerators, corporates and policy makers worldwide.

The Space Academy is a two-day event for space-tech entrepreneurs to accelerate their business. The first day will be dedicated to workshops, where participants receive coaching in small groups. The second day of the Space Academy is embedded into Paris Space Week 8-10 March, which is a fully digital event, with online participation in person or online. The participants can attend the annual meeting gathering space agencies, groups, entrepreneurs, start-ups and investors from various business areas. The second day will be comprised of business meetings, conferences, exhibitions and innovation challenges. Please note that FREE registration to this event is included for the selected companies to the Space Academy.



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Following the application process, 10 start-ups will be granted funding to attend a Space Academy. To participate in the general event (not including one-to-one sessions or tailored coaching sessions) you also apply using the same process. For more information contact info@space-academy.eu or also sign up to our newsletter for further updates.

ECOPRODIGI (<https://ecoprodigie.eu/>). BSSC is associated partner. The project works like a HUB, it connects the markets from the supply and demand sides.

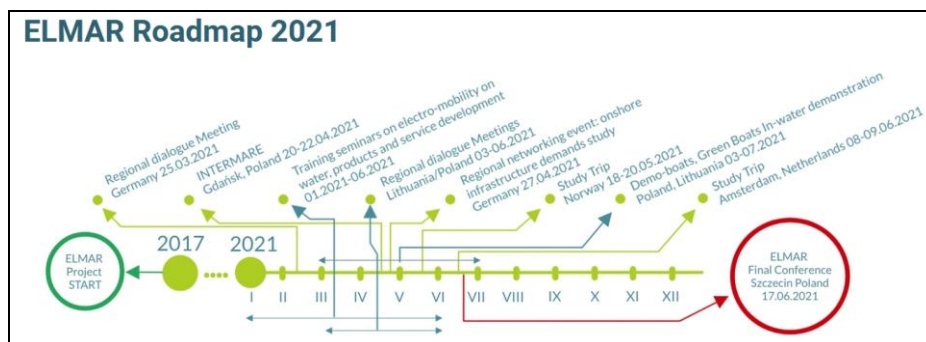


It is an important project in which the BSSC (Polish Maritime Cluster) participates. Ecoprodigie project increases eco-efficiency. ECOPRODIGI is another important project in which the cluster participates. Ecoprodigie project increases eco-efficiency in the Baltic Sea region. Bałtycki Klaster Morski i Kosmiczny, Baltic Sea & Space Cluster, 81-339 Gdynia, Ul. Polska 13A, e-mail: contact@bssc.pl

maritime sector by creating and piloting digital solutions in close cooperation between industry end-users and research organisations. Ultimately, ECOPRODIGI supports Baltic Sea region in becoming a front-runner in maritime industry digitalisation and clean shipping. ECOPRODIGI addresses both the environmental and economic challenges by increasing eco-efficiency at all stages of the vessel lifecycle from design and building to the use, maintenance, stowage as well as conversion processes. In practice, ECOPRODIGI not only provides highly needed information about the key eco-inefficiencies of the industry but also concretely develops and pilots digital solutions to better measure, visualise and optimise the industry processes



The **ELMAR** (<http://electric-water-mobility.eu/>). project aims to support SMEs at emerging the international supply chains as well as accessing foreign sales markets for boats & ships with electric propulsions. Project consortium works like a HUB, it connects the markets from the supply and demand sides. The consortium consists of the partners from Germany, Poland and Lithuania, representing regional development agencies, scientific institutions, branch associations of the yacht technology suppliers, owners of the historical ships as well as electric boat producers





E-LASS. BSSC is a founding member of this business and research initiative (<https://e-lass.eu/>). Founded in 2013, E-LASS is a well-established European network for Lightweight Applications at Sea with approx. 400 members in 30 countries. Twice a year, the E-LASS members and RAMSSES partners meet for a seminar and industry tour to discuss innovative solutions and to enhance the use of lightweight materials within maritime and offshore industry. E-LASS works closely with the MariLight.Net. The German network MariLight was launched in March 2019. With its 60 members the young network brings together representatives of the maritime industry at a national level with the aim of further promoting the use of lightweight materials. Through the cooperation with the E-LASS network, national future developments, results and findings will be brought to the European level.

E-lass cooperate with the business network SARGASSO (<https://e-lass.eu/sargasso-for-e-lass/>). SARGASSO's stakeholders are composed by its users and its receivers. It is an open maritime innovation platform that connects companies and organizations looking for solution providers to technical challenges or services or new partners to project consortia.

Polish Maritime Cluster HUB

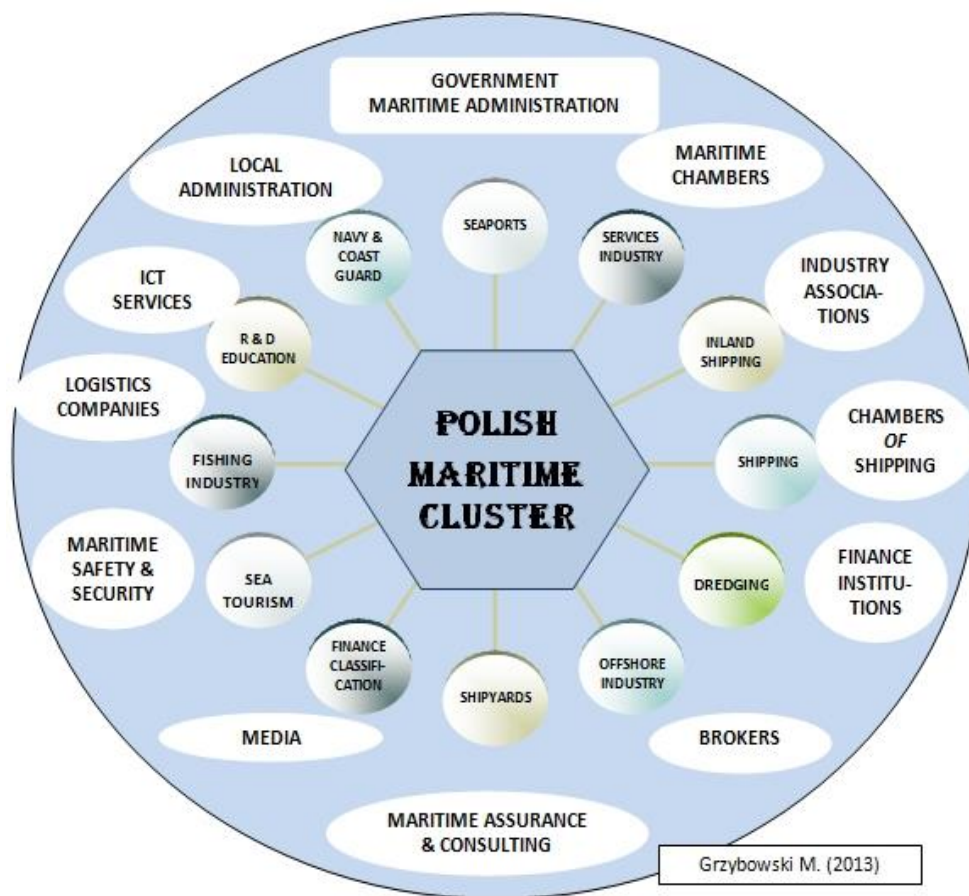


Figure 8. BSSC in Poland organizes cooperation between the companies of the Polish Maritime Cluster

BSSC in Poland organizes cooperation between the companies of the Polish Maritime Cluster (<https://balticcluster.pl/>), universities, business and local governments and communities. BSSC organizes knowledge transfer and business cooperation between markets. BSSC connects the market of buyers with the market of suppliers of products and services operating in the companies of the Polish Maritime Cluster.

BTB MARKETING

B2B 2021 ZEVinnovation GALATEA Project MEETINGS:

- CRIST — 22 SEPT. 2020 - SMART SHIPYARD, SMART SHIP
- SEVENET S.A. — 10 OCTOBER 2020 - SMART SHIPYARD, SMART SHIP
- R3Think . — 29 OCTOBER 2020 - SMART SHIPYARD, SMART SHIP
- POMERANIAN PLATFORM FOR OFFSHORE WIND - 06 NOV 2020 - SMART SHIPYARD

- ANDRZEJ STATECZNY, MARINE TECHNOLOGY - 20 NOV 2020 - SMART SHIPYARD
- CRIST SHIPYARD - 14 DECEMBER 2020 - SMART SHIPYARD
- BALTIC GROUP - 21 DECEMBER 2020 - SMART SHIPYARD
- B2B Session Funding and financing SMEs through R&D programmes and Venture Capital - 19 JANUARY 2021 – ZEV (66 SME)
- GALATEA SMART SHIP - 19 JANUARY 2021 - SMART SHIP (5 SME)
- GALATEA SMART PORT - 19 JANUARY 2021 - SMART PORT (5 SME)
- GALATEA SMART SHIPYARD - 21 JANUARY 2021 - SMART SHIPYARD (5 SME)
- GALATEA Maritime Surveillance - 21 JANUARY 2021 - (5 SME)
- B2B Session Creation and Implementation of IPR in SME and University - 21 JANUARY 2021 – ZEV (61 SME)
- SQADRON - 1 FEBRUARY 2021 - (2 SME) - SMART PORT
- ASE GROUP - 3 FEBRUARY 2021 - (3 SME) - SMART PORT
- RIGP - HYDROGEN CLUSTER - 8 FEBRUARY 2021 - (5 SME) - SMART SHIP
- RIGP - Grupa Bezpieczny Bałtyk - 8 FEBRUARY 2021 - (5 SME) - SMART SHIP
- Port Kołobrzeg, Hydronous - 10 FEBRUARY 2021 - (5 SME) - SMART PORT
- HYDROMEGA, CADOR, Sevenet - 17 FEBRUARY 2021 - SMART SHIP
- PORT ELBLĄG, - 24 FEBRUARY 2021- SMART PORT
- BALTIC PORT of NEW TECHNOLOGIES - 31 MARCH 2021- SHIPYARD HUB

