Marek Grzybowsk Baltic Sea and Space Cluster from the Triple Helix Cluster write to holistic concept eBlueEconomy
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Marek Grzybowsk write to " Blue Economy ", Baltic Sea and Space Cluster from the Triple Helix Custer to holistic concept

The Baltic Sea and Space Cluster is the only such cluster in the world. The Cluster was established on July 27, 2009. We started the incubation process of the cluster in 2000. After several years of incubation, the cluster began to operate in the *Triple Helix* formula. Then after a few years it evolved into a *Qudralupe Helix.* cluster. This is the result of participation in numerous international projects.

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

***The Baltic Sea* and Space Cluster (previously: Polish Maritime Cluster) is an active member of the United Nations Global Compact and operates on the European Cluster Collaboration Platform. It is a key maritime cluster in Central and Eastern Europe, an important cluster in the Baltic Sea Region and the European Union, a recognizable cluster on the global maritime economy market, as evidenced by partner cooperation with clusters operating in the United States, Asia and South Africa.**

In the Baltic Sea Region, clusters developed most intensively in the Scandinavian countries. In many cases, cluster initiatives have allowed a radical change in the region's production offer. For example: In Gothenburg, the development of cooperative relationships has contributed to the development of the automotive and telematics industries. A strong Medicon Valley operates in Denmark and Sweden. Located at the gateway to Denmark and Sweden it has a strong ecosystem and deep talent pool underpinned by world-class life science universities and research infrastructure. The strong Norwegian oil & gas offshore cluster has weakened due to low oil and gas prices. The Norwegian fish farm cluster is still a world market leader. The strong Danish Maritime Cluster has the support of A.P. Moller – Maersk, a leader on the maritime container transport market.

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.

***BSSC* operates in the form of an association under the Law on Associations; in addition, it operates on the basis of the Association's Statute, according to which the Cluster's duties include in particular:**

1. **supporting innovation and development in the field of research, entrepreneurship, administration and local government related to the Baltic Sea Region together with land-water facilities along the Wisła River, economic and social ties of Pomerania and Poland with the other countries of the Baltic Sea Region and acting as a coordinating institution by:**
2. **creating a cooperation network of enterprises, local government, universities and business environment institutions,**
3. **increasing the innovation and integration capacity of maritime enterprises and the Wisła Catchment area, supporting the construction and development of innovation and competitive Cluster, creating conditions for effective commercialization of research results of universities and R&D units,**
4. **consulting for enterprises, developing innovative technologies, supporting economic initiatives and preventing unemployment,**
5. **development of professional qualifications and skills of those working for the needs of the regional economy,**
6. **participation in European and global organizations, in particular in the organization of European clusters,**
7. **participation in the implementation of the priorities and activities of the European Union Strategy for the Baltic Sea Region in the area of the cluster's operation,**
8. **developing the economic and logistic potential of the VI Pan-European Transport Corridor by cooperating with interested local government and economic associations, including first of all the Association of Cities of the Amber Highway based in Gdynia,**
9. **participation in the International Economic Forum organized by the city of Gdynia,**
10. **co-creating Polish maritime policy,**
11. **conducting information, education and lobbying activities in order to create the Pomeranian Voivodeship as attractive for investors,**
12. **ensuring the flow of information between Cluster members.**

At the General Meeting of the Polish Maritime Cluster on June 28, 2018, a decision was made to expand the operations and create a Baltic Maritime and Space Cluster. Support for the cluster was declared by the Space Sciences Commission of the Polish Academy of Sciences, Student Maritime and Space Cluster of the University of Business and Administration. Committees and chairman of THINK TANK were appointed. The following Committees operate within the Cluster: – for maritime affairs; – for space affairs; – for law; – for education; – for smart specializations; – for inland shipping.

The decision to expand and create the Baltic Maritime and Space Cluster proved to be proper. Support for the cluster of Space Science Committee of the Polish Academy of Sciences was efficient. The Student Maritime and Space Cluster of the University of Business and Administration

was also active. In a short time on the international forum Baltic Sea & Space Cluster Has become a recognizable brand.

***BSSC Projects*. The cluster participates or is also a partner in international projects conducive to the development of innovative regions and knowledge transfer and implementation of innovations in the maritime industries:**

1. ***GALATEA* [HORIZON 2020] – Grow and accelerate your smart projects in new value chains of the European Blue Economy**
2. **TENTacle – Capitalising on TEN-T core network corridors for prosperity, growth and cohesion**
3. **ECOPRODIGI – Eco-efficiency to maritime industry processes in the Baltic Sea Region through digitalisation**
4. **ELMAR – Supporting South Baltic SMEs to enter the international supply chains & sales markets for boats & ships with electric propulsions**
5. **SMART BLUE REGIONS – seeks to enhance blue growth opportunities based on increased capacity of Baltic Sea Regions to implement Research and Innovation Strategies for Smart Specialisation (RIS3).**
6. **E-LASS – European network for lightweight applications at sea**
7. **InterMarE – Strengthening the international activity of blue sector SMEs in the South Baltic Sea area**
8. **UMBRELLA – helps boosting cross-border cooperation capacities of Local Actors in the South Baltic Sea**

***GALATEA* is currently one of the most important projects in which the cluster participates. It is an INNOSUP project, that is a cascade funding mechanism operated by clusters impacting a large number of SMEs. Indeed, 75% of the total budget of the project has to be redistributed to projects led by SMEs. It is a first simplified experience for SMEs to access EU funding.**

GALATEA overall objective is the development of new cross-sectoral and cross-border industrial value chains, supporting in particular innovative SMEs and facilitated by clusters, to foster the development of Blue Growth key industries in Europe to be competitive at the global level. This development will be based on the construction of new industrial value chains and the reconfiguration of existing ones driven by the integration of technologies and know-how from aerospace and ICT communities to the following Blue Growth domains: ports, ships, shipyards and maritime surveillance. The project is led by Pôle Mer Mediterranée.

ECOPRODIGI is another important project in which the cluster participates. Ecoprodigi project increases eco-efficiency in the Baltic Sea region 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 (more info: https://ecoprodigi.eu/).

TENTacle project. BSSC Think Tank supported the city of Gdynia in the implementation of the TENTacle project. It was the new flagship project of the EU Strategy for the Baltic Sea Region. One of the Gdynia main aims of participating in the project was to analyze the needs related to the

transport node's development in the city. The TENTacle project was to help to define what type of infrastructure and services are necessary for the better and faster development of Gdynia and the entire Baltic Sea Region, and what actions to take to maximize the advantage of the seaside location of the city.

– *The project helped to acquire a great knowledge that will allow to disseminate all activities related to transforming Gdynia into the TEN-T core network node by 2030* – explains Ryszard Toczek, TENTacle project manager in Gdynia. – *It was an introduction to the preparation and implementation of 23 investments implemented as part of the Baltic-Adriatic corridor's construction in Gdynia* (more: http://tentacle.eu/).

The ELMAR 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 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 (more: http://electric-water-mobility.eu/).

Scientific conferences. The cluster is also a partner of many international and national conferences where issues related to the implementation of innovative solutions in maritime economy are raised. The TRANSOPOT conference, the annual European Union Strategy Forum for the Baltic Sea Region and others have been included in the permanent calendar.

Scientific conferences with the participation of practitioners and startups are extremely successful initiatives of the Baltic Maritime and Space Cluster. They were implemented with the support of the Space Sciences Committee of the Polish Academy of Sciences and the Institute of Oceanology of the Polish Academy of Sciences. Conferences were also organized by universities from Pomerania: the College of Administration and Business, the Naval Academy, Gdańsk University of Technology and the University of Gdańsk.

The following conferences were held in the years 2018-2020:

- **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- Artifical 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)**

Successful strategic activities include B2B meetings organized by the Baltic Sea and Space Cluster. So far, fruitful meetings have taken place in many ports, shipyard, design offices and manufacturing plants related to maritime and space industries. In Poland, as an expert, PKM 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.

- **MARITIME SCHOOL GDYNIA – 18 MARCH 2019 (SYMULATOR) – AUTONOMOS SHIP**
- **NAUTA SHIPYAD – 24 APRIL 2019 (GDYNIA) – SMART SHIPYARDS**
- **ASE – 30 APRIL (GDAŃSK) – SAFETY SOLUTIONS IN INDUSTRY and PORT DESIGN**
- **HYDROMEGA – 8 MAY (MISZEWO) – SMART HYDRAULIC EQUIPMENT FOR SHIPS**
- **CTM - 22 MAY (OKSYWIE) – SMART DEFENCE SYSTEMS AND SHIP COMBAT SYSTEMS**
- **CADOR CONSULTING – 31 MAY (GDYNIA, AKWARIUM) – SMART DESIGN SYSTEMS**
- **IMPEL CYBER – 17 JUNE (GDYNIA) – CYBERBSEQURITY**
- **GDYNIA PORT – 9 JULY (GDYNIA – ISP 1) – SMART SOLUTIONS IN SEA PORTS**
- **GDAŃSK PORT – 25 NOVEMBER (GDAŃSK – ISP 1) –PORT AND ACADEMIA COOPERATION**
- **BALTIC CONTAINER TERMINAL - 31 JANUARY 2020 - 40 YEARS in the POLISH MARKET**
- **DCT GDAŃSK - 3 MARCH 2020 – 2M TEU – THE BIGEST BALTIC CONTAINER TERMINAL**
- **PSSE, PPNT, BPNT – 15 JULY 2020 – KNOWLEDGE TRANSFER in GALATEA PROJECT**
- **CRIST/ SEVENET - 22 JULY 2020 – SMART SHIPYARD CONCEPT**
- **BALTIC INDUSTRY/ MARITIME SCHOOL – 28 AUG 2020 – OFFSHORE SMART SOLUTTIONS**
- **SEADATA/ MARINE TECHNOLOGY PORT GDYNIA – 09 SEPT. 2020 - SMART PORT**
- **PORT GDAŃSK - 11 SEPT. 2020 - - SMART PORT**
- **PORT ELBLĄG - 24 SEPT. 2020 - - SMART PORT**
- NEW COMPETENCE CENTRE - 02 OCT. 2020 – AI nad VR IN EDUCATION
- SEVENET S.A. - 09 OCT. 2020 – IT in SHIPBUILDING AND PORTS
- R3Think - 09 OCT. 2020 – INNOVATIONS SOLUTIONS IN RECYCLING
- CRIST, NAUTA, HYDROMEGA, CADOR - 22 OCT. 2020 – SMART SHIP, SMART SHIPYARD
- POMERANIAN PLATFORM FOR OFFSHOR WIND – 06 NOV. 2020 – OFFSHOR WIND INDUSTRY DEVELOPMENT
- SZCZECIN ŚWINOUJŚCIE PORTS AUTHORITY – 06 NOV. 2020 – innovations in the SZCZECIN ŚWINOUJŚCIE PORTS
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The positive attitude of companies presidents, board members and employees to cooperation for the benefit of Maritime Poland and space technologies gives measurable marketing effects and contributes to the synergy effect resulting from cooperation between business, administration and science. The members of the Baltic Maritime and Space Cluster in 2018 and 2019 strengthened their position on the international market, integrated their activities on the national and international forum by participating in international fairs and conferences, supporting the transfer of knowledge between business and science. One of the most important achievements of our cluster members is active participation in the creation of intelligent maritime specializations in Pomerania. An undoubted success is the development of the Pomeranian smart maritime specialization, in which the Cluster actively participates in supporting the transfer of knowledge through participation in national and international projects.

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