DEVELOPMENT STRATEGY
DANUBE ENGINEERING HUB CLUSTER

2021

CUPRINS

Chapter 1. PRESENTATION OF THE DANUBE ENGINEERING HUB CLUSTER

1.1. Cluster identification elements

Danube Engineering Hub Cluster was set up at the initiative of a group of companies, start-ups, universities and a university entrepreneurship center. The collaboration protocol of the cluster was signed on July 10, 2017, at its headquarters in Ploieşti.

Danube Engineering Hub Cluster promotes innovation, technology transfer, entrepreneurship and collaboration based on mutual trust for the development and increase of the competitiveness of the companies that make it up.

1.2. Organizational structure and cluster members

Founding members of the *Danube Engineering Hub* in 2017:

- ✓ ***Small and Medium Enterprises***
  - HEVECO SRL
  - BLOM INTERNATIONAL OPERATIONS SRL
  - TOPSELL LOOK SRL
  - CRIPO INFOSIS SRL
  - QDEV WEB LABS SRL
  - KREDO IMAGE SRL
  - BAIBIA KIND SRL
  - LEICHMANN WEIFERT INVEST SRL
  - SAMAS 2000 SRL
  - DAC CONSTRUCTION GENERALE SRL
  - BEIA CONSULT INTERNATIONAL SRL
  - TESAGON INTERNATIONAL SRL
- ✓ ***Associations***
  - A.R.I.E.S. (Romanian Association for the Electronics and Software Industry)
  - PRAHOVA CHAMBER OF COMMERCE AND INDUSTRY
- ✓ ***Research, Development and Innovation***
  - USH PRO BUSINESS, entrepreneurial center of Spiru Haret University
  - PETROLEUM-GAS UNIVERSITY OF PLOIEŞTI
- ✓ ***Catalyst entities***
  - CARPE SOLEM SRL

By 2020, the cluster has attracted 5 more SMEs: Beia Consult International SRL, Tesagon International SRL, Bio Food Innovation - BFI SRL, Delta Research SRL, Electricom Solar SRL

Management of the *Danube Engineering Hub*:

- ✓ General Assembly of the members of the Danube Engineering Hub;
- ✓ Cluster Management Entity (CME): Danube Engineering Hub Association.

In February 2019, the **DANUBE ENGINEERING HUB ASSOCIATION** is established, and becomes the cluster management entity of the cluster with same name. The association is organized and operates on the basis of the articles of association and the statute, being constituted as a legal entity under private law, under the conditions of O.G. no. 26/2000, approved with modifications and completions by Law no. 246/2005. The association is established for an unlimited period and has its main headquarters in Ploieşti, Str. Alexandru Vlahuţă no. 24, building A, room 2, Prahova county.

The governing body of the Association is the General Assembly composed of all members of the association or members - legal entities. The administrative and executive-operative management of the Association is ensured by the Board of Directors. The control of the economic-financial activity of the Association is exercised by a censor.

The Board of Directors is composed of 3 (three) members, natural persons or representatives of legal entities of Romanian nationality, elected by secret ballot of the General Assembly of the Association for a period of 4 years.

The first Board of Directors has the following composition:

Costin TRANDAFIR, President, Romanian citizen, domiciled in Ploieşti, str. Ramurei no. 6, ap. 4, Prahova county, identified with CI series PH no. 984415, issued by SPCLEP Ploieşti on 03.03.2011, CNP 1671016293123.

Lianu COSTIN, Vice-President, Romanian citizen, domiciled in Bucureşti, Şoseaua Pandurilor nr. 15, bl. P18, sc. 1, et. 1, ap. 6, sector 5, identified with CI series RT no. 943806, issued by SPCLEP sector 5 on 19.07.2013, CNP 1540710400129.

Valentina-Gabriela TRANDAFIR, Secretary, Romanian citizen, domiciled in Municipiul Ploieşti, str. Ramurei nr. 6, ap. 4, judeţul Prahova, identified with CI series PX no. 233227, issued by SPCLEP Ploieşti on 18.02.2014, CNP 2750222293134.

1.3. Location of the associative structure

- ✓ The registered office of the Association is in Ploieşti, Str. Alexandru Vlahuţă no. 24, building A, room 2, Prahova county.
- ✓ The secretariat of the association / cluster operates in Ploieşti, Str. Alexandru Vlahuţă no. 24, building A, room 2, Prahova county.

1.4. Cluster/Association history

Since the establishment of the *Danube Engineering Hub Cluster* and, subsequently, of the Danube Engineering Hub Association and until now, a series of activities have been undertaken, the priority being those related to:

- ✓ organizing the associative structure;
- ✓ development through activities to attract new members;
- ✓ organizing communication and internationalization events.

In this sense, a series of activities were undertaken specific to the three categories mentioned above, during the working meetings of the cluster members, the organization of thematic events and actions specific to the internationalization process for the period 2016-2020 (https://clusterdeh.ro/events/).

ACTIVITIES from 2016

Nr.crt.	EVENT
1.	**May 30, 2016** **International Seminar** ***Indonesia Business Day – Joint Business Support*** During this event, 13 Indonesian companies came to develop businesses that include agri-food products, services, inclusive tourism, industrial products, export-import, foreign investment, etc. 30 Romanian companies, presented at the event, discovered bilateral cooperation, but also the possibility of export and import.
2.	**September 8, 2016** **International Seminar** ***The untapped potential of the Indonesian market***  USH Pro Business helps companies to implement some business programs and to develop import-export relations, but also investment.

ACTIVITIES from 2017

Nr.crt.	EVENT
1.	**February 27, 2017** **Thematic debate** ***Participation methods at international auctions on the market of the energy in Indonesia*** Event to promote trade relations with Indonesian companies.

2.	**August 21-27, 2017,** Kazakhstan **International Seminar** ***Opportunities based on solutions and green technologies***  Export offers of Romanian companies were presented, and the concept of Danube Energy Hub. Solutions related to innovation were expressed in the energy field, and to internationalization in the field of green energies.
3.	**October 12-16, 2017** **International exhibition** ***Trade Expo Indonesia*** The event aimed to develop business relationships with Indonesian companies. 

ACTIVITIES from 2018-2019

Nr.crt.	EVENT
1.	**October 19, 2018, Ploieşti** **Thematic debate** ***Prahova Cluster Day in a regional context*** Event dedicated to SMEs, members in clusters developed in the South Region - Muntenia. The purpose of the meeting of the Prahova clusters based in Ploieşti aims at increasing the market competitiveness of regional and local companies. 

2. **April 2-3, 2019, Ploieşti**

Official visit of the EURADA delegation, the European Association of Regional Development Agencies, to the headquarters of the Danube Engineering Hub cluster in order to know its activity and involvement in the innovative ecosystem.

3. **June 1, 2019, Ploieşti**

A bot's life. Robotică şi informatică aplicată

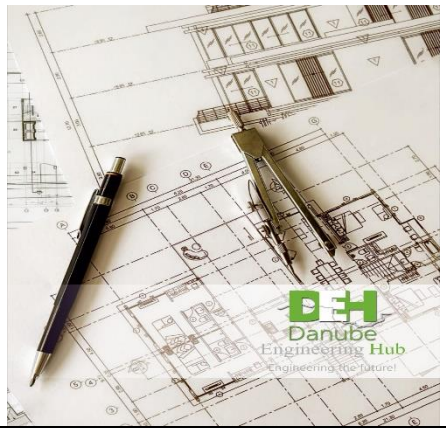
The event was attended by children from 1-4 grades from Ploieşti, together with their parents, benefiting from a knowledge transfer with practical examples regarding robotics and applied informatics.

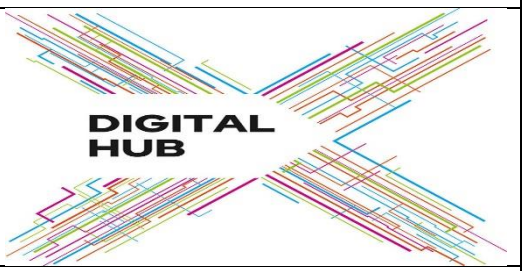
4. **September 19-20, 2019, Cluj**

International Conference of Clusters in Transylvania

DEH cluster participated in the event held under the auspices of the Transylvanian clusters, organized in the consortium of clusters from Northern Transylvania and the Clustero association.

ACTIVITIES from 2020

Nr.crt.	EVENT
1.	**January 17, 2020, Ploieşti**  ***Working meeting of the members of the "Danube Engineering Hub" Cluster*** Cluster representatives reaffirmed their desire to become a catalyst and a generator of business for members, to identify internal and external partners and to create innovative products for both the internal and external markets.
2.	**February 21, 2020, Poieşti** ***Working meeting of the members of the "Danube Engineering Hub" Cluster*** • Participation in the international fair InterGeo 2020, Berlin • Training opportunities organized by the Bavarian Research Alliance • Call for Projects for innovation clusters, Competitiveness Operational Program 2014-2020 
3.	**April 9, 2020** **Digital Workshop** ***Digital transformation in the context of the current crisis. Strategic objectives of the DEH cluster***  • Consultation on the Development Strategy of the Danube Engineering Hub Cluster in the period 2020-2030 and the adoption of new objectives • Evolution of business in the context of the current crisis • Digital transformation - an essential process for business success. Identifying the needs of cluster members • Funding opportunities
4.	**April 24-26, 2020** **Digital Workshop** ***Danube Engineering Hub – active ambassador to***

	the Pan-European Hackathon  Pan-European hackathon to connect civil society, innovators, partners and buyers across Europe to develop innovative coronavirus solutions.
5.	**May 6, 2020** **Digital Workshop Wine cultivation technologies** • Development of technologies/technological sequences for wine cultivation and grape vinification adapted to current climate change • Ensuring the quality and typicality of wines in established wine-growing areas affected by current climate change through innovative technological winemaking solutions 
6.	**June 23, 2020** **Workshop digital *The role of universities in regional development. Advocacy for the university consortium in the South-Muntenia region***  • The objectives of smart specialization at regional level to connect them with the objectives of a regional university consortium • The concept of regional university consortium • Funding opportunities
7.	**August 28, 2020** **Digital Workshop *Digital Hub*** The "Wallachia eHub" digital hub project for the South-Muntenia Region 
8.	**September 21, 2020** **Digital Workshop *Wallachian Heritage*** • Case study on Venetian Heritage, the cultural heritage cluster in the Veneto region - Italy • Defining the concept of Wallachian Heritage and its basic components

9.	**November 24, 2020** **Digital Workshop**  ***Romania's New Competitiveness Strategy. The industrial transition. Challenges and Implications of Digitization in Businesses. Industry 4.0***
10.	**December 11, 2020** **Workshop digital** ***Challenges of digitalisation in the public sector and the private sector. Funding opportunities in the field of digitization*** • ISA measures on interoperability and their implementation at the level of regional public authorities • Regional heritage and digitization • Financing opportunities for the digitization of SMEs 

Chapter 2. REGIONAL AND ECONOMIC CONTEXT

2.1. Presentation of the engineering sector worldwide

Companies operating in the global engineering services industry apply the laws and principles of engineering to design and develop structures, machines, materials, tools, and other processes and systems. The services also include providing consultancy, feasibility studies, design and engineering services during construction or development. Consequently, the performance of the industry is based on investment trends and the general health of the economy to fuel projects where engineering services are needed.

Over the past five years, there has been an increase in industry due to a favorable global economic environment and strong investment in major markets such as the United States, Europe and East Asia. The global engineering services industry will continue to benefit from a booming global economy driven by strong economic growth in Asia. The results of these expanding economies, such as higher urbanization rates, growing population and an expanding middle class, are expected to encourage global private investment for the benefit of engineering companies, which provide technical, design and management services for construction projects. However, a strong expansion of global revenues is likely to be limited by constraints in mature economies, where high government debt and slower economic growth could lead to lower demand for services for industry. However, emerging economies and continued investment are expected to stimulate revenue growth.

The global engineering services market was estimated at about 1024 billion dollars in 2019 and is expected to grow to 1515.66 billion dollars at a CAGR (compound annual growth rate) of 10.3% by 2022. The market for engineering services is expected to benefit from steady economic growth in developed and developing countries. The International Monetary Fund (IMF) predicts that real GDP growth will be 3.7% compared to 2019 and 2020, and 3.6% from 2021 to 2023. This trend will be mainly driven by the regions of Asia and Africa. Asia will account for 66% of the global middle-class population by 2030.

For example, the Indian IT-BPM (Business Process Management) industry grew by 7.7% in 2017, with software and engineering services reaching 25 billion dollars. In the future, the Asia-Pacific region and the Middle East are expected to be the fastest growing markets in the engineering, design, animation and graphic design services industry. Developing countries, such as India and China, have begun to attract foreign investment to improve their infrastructure. This was mainly due to the increase in internet penetration, population growth and economic activity.

The growth of the engineering services market may be hampered by a lack of concerns about the quality control and safety of engineering firms. Defects or malfunctions in construction activities cause high costs. These minor defects may result in a reconstruction that affects the operation of the installation. Increased costs and delays are the result of inefficient internal controls and safety measures, which impede final quality. Difficulties can also be caused by a lack of understanding, problems in the execution process and inconsistency

between different business units. Industry companies incur high maintenance and budgeting costs to develop new and advanced ways to combat security and control issues.

The latest trend in the engineering services market is the growing popularity and adoption of the Internet of Things (IoT) around the globe. The Internet of Things (IoT) is a system of interconnected devices that allows data to be transmitted over a wide range of networks. IoT enables continuous innovation in real-time data analysis, designs and develops products, and helps businesses grow faster. Engineering service providers are increasingly using industrial IoT to improve and optimize their production process with better energy use, resource allocation and asset management. In 2017, India had a market share of 43% on the global IoT market, followed by Western Europe and North America, with 27% and 23%, respectively.

Legislatively, there are regulations targeting engineering service providers regarding construction projects of all sizes and types (CDM / CDM Regulations 2015 entered into force on 6 April 2015). This 2015 CDM Regulation has been replaced by the 2007 Construction (Management and Management) Regulation, which aims to improve the health, safety and general well-being of workers and construction professionals. This regulation specifies the general requirement, establishes the safety rules and the minimum protection facilities required on construction sites.

Dynamics of the product engineering services market

Requirements	**Obstacles**
✓ Increased demand for TTM (Time To Market) acceleration ✓ Need for innovation and continuous iteration ✓ The growing need to reduce the cost of production	✓ Fear of losing control of intellectual property rights ✓ Cultural difference in terms of product philosophy and design
Opportunities	**Challenges**
✓ Opportunities ✓ Intelligent manufacturing ✓ The emergence of IoT	✓ The need for excellent feedback loops and constant management ✓ Appearance of differences in the testing phase

Increased demand for TTM (Time To Market) acceleration

TTM is an essential benchmark that improves the efficiency of the engineering business. TTM is important for organizations where products are deployed quickly. Organizations use the product engineering services market to minimize resources, reduce costs, and deliver the product as scheduled. In addition, companies use processes such as Six Sigma and project risk management to increase efficiency.

2.2. Presentation of the engineering sector at national level

The activity of companies offering consulting services in the Eastern European area has intensified, and Romania has followed this direction. According to the results reported by the main consulting companies in the region, Romania ranks second, after Poland, in terms of the value of consulting services offered by the most important players in the field, in 2019.

For the management consulting services market in Romania, digitalization is, since 2017, one of the main engines of the market. There is a growing demand for the implementation of digital services in order to increase the level of productivity and streamline processes. In terms of demand distribution, most requests came from financial services companies, followed by those in the energy and human resources sectors. They are followed by the production sector, services, companies with a technological profile, media and telecommunications, as well as those in retail. The sectors in which the most important increases were observed in terms of the number of clients for consulting services are production and retail, which had increases of about 10%.

Regarding the type of advice, the most requested areas were:

- ✓ *technological consultancy*, which involves support in the development and improvement of services and tools in the fields of mobile applications, social media, robotics and automation, Internet of Things (IoT), Artificial Intelligence (AI). This field registered an increase of approximately 10% in 2018;
- ✓ *consulting in improving operational processes*, which increased by 5% last year;
- ✓ *consulting in developing or improving the company's strategy*, where there were 5% more applications compared to 2017;
- ✓ *human resources consulting and change management*, which registered 5% more requests in 2018;
- ✓ *financial consulting*, which increased by 2% during 2018.

Estimates related to the evolution of the consulting services market are strictly aimed at performance management at company level and optimizing the performance of organizations, without referring to audit and related services or other business consulting services, such as tax, legal or risk management consulting. Major increases are expected in the area of technology consulting, with the global boom in automation, robotics and everything related to Artificial Intelligence processes. A strong trend, manifested since 2017 and which will continue in the next five years, is the outsourcing in Romania of the operations of large European and American companies through the nearshoring process, which is currently carried out mainly with IT services. Romania is considered a point of attraction for the nearshoring of R&D (research and development) and IT services in Europe.

The *national context* in which the sector develops:

- ✓ the captivity of exporters to a business model dominated by global chains;
- ✓ the presence of international companies on the domestic market;
- ✓ low interest from manufacturers to develop their own brand;
- ✓ lack of integrated marketing plans at company level;

- ✓ poor cooperation between academia and research and the business community in the region;
- ✓ labor shortage in the segment of young employees in the sector;
- ✓ high (operational) production costs;
- ✓ reduced innovation capacity in companies;
- ✓ lack of innovative technologies necessary to optimize the production process;
- ✓ the existence of large differences between the price of imported raw materials and those of the domestic market;
- ✓ tariff and non-tariff barriers restricting access to foreign markets.

From a managerial point of view, the industry has faced and continues to face, with problems related mainly to the following components: human resources management, and financial, forecasting and planning, investment management, production, supply and sales. Despite these problems, recent years have highlighted positive aspects in the sector, with SMEs in the industry focusing more on investment activities in production, export, elaborating strategies for development and launch of new products, expanding the market share of companies that they have store chains.

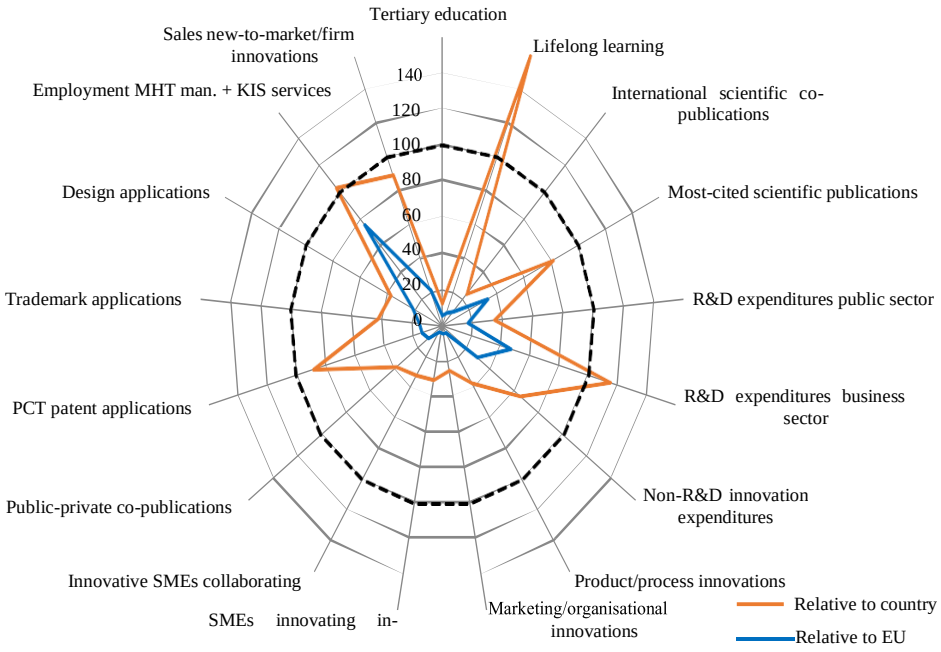
The engineering sector is given special attention in the context of the Romanian strategies of digital transformation, development of the circular economy, sustainable development. The development of the IoT concept and Smart development of localities opens new perspectives for engineering services. Also, new vectors for the development of these services are artificial intelligence, big data and blockchain.

Success will depend very much on the ability of this industry to integrate the activities listed above into innovative smart solutions for locality management, energy sector development, construction, agri-food industry, tourism, logistics or other manufacturing industries with potential. regional growth such as the textile, furniture and electronics industries.

Starting from these realities of the sector, the directions of action to support the operators active in the field of engineering, are:

- ✓ promoting clean (ecological) technologies, as part of modernization and equipment activities;
- ✓ expanding the use of digital technologies in the production process, management;
- ✓ adapting management and marketing to the promotion requirements for the internationalization of companies;
- ✓ granting distinct facilities;
- ✓ carrying out knowledge transfer for the technological development of existing installations, equipment, including industrial property management;
- ✓ development of the sector branding strategy.

In the Regional Innovation Score Board 2019, the South-Muntenia Region is considered a modest innovator, the innovation performances decreasing significantly in 2019 compared to 2011. Also, in 2019, it is found that the export of medium and high technology registered a slight increase, and the tertiary education sector, a weak representation. Due to the fact that the region is predominantly rural, most jobs are in construction and agriculture and less in the services sector. The average per capita income is lower than the national level.



The radar graph shows the relative strengths of the South-Muntenia region compared to Romania (orange line) and the EU (blue line) (eg. employment in high-tech production sectors and KIS - knowledge intensive services), such as and weaknesses (eg. number of innovative SMEs).

2.3. SWOT analysis of the region of the cluster

Overview of the sector, at national level, based on SWOT Analysis:

Strengths	**Weaknesses**
✓ Well-represented tertiary sector with the largest contribution to regional GDP; ✓ Very high share of SMEs - over 99%; ✓ Existence of other types of business support structures, respectively business clusters and incubators; ✓ Dominant position in terms of total research and development expenditures; ✓ Existence of knowledge creation potential in the field of innovation; ✓ Existence of innovation and technology transfer entities; ✓ Location on the route of important pan-European transport corridors; ✓ Skilled and relatively well-trained workforce.	✓ Oscillating evolution of the staff - migration of specialists; ✓ Low interest from manufacturers to develop their own brand; ✓ High (operational) production costs at company level; ✓ Poor awareness of the concept of business cooperation and association; ✓ Low level of cooperation private environment - academic environment; ✓ Low level of entrepreneurship education; ✓ Poor development of the ICT sector in the region; ✓ Poor capitalization of innovation capacity.
Opportunities	**Threats**

✓ Possibilities of intersectoral collaboration; ✓ Possibility to expand the distribution and sales area at regional, national and export level; ✓ Accessing European funds; ✓ National and transnational partnerships; ✓ Modernization of technical and social infrastructure; ✓ Continuous technological progress and transfer of technology and know-how; ✓ Access to the internal market of the European Union; ✓ Emphasis on RDI at national and European level; ✓ Increasing the number of public-private partnership initiatives.	✓ Presence of international companies on the domestic market; ✓ Discouraging fiscal policies for the business environment; ✓ Complex, unstable, inflexible, uncorrelated legislative framework; ✓ Decreasing global investment appetite and targeting investors to emerging markets with high growth potential; ✓ Maintaining a low level of entrepreneurship; ✓ Insufficient support for the development of the SME sector; ✓ Reducing investments in the field of environmental protection.

2.4. Areas of competence and needs and development opportunities identified at the cluster level

In the new economy, competitive societies that have understood the importance and need to use information systems to make decisions and develop development strategies are much more effective at monitoring the information needed to develop well-documented, consistent development strategies based on regional economic and geographic data, or local. Geospatial services thus become an essential factor in the competitiveness of companies applicable in the field of public utilities, industry 4.0, agriculture, and in other fields. Practically, these types of services can be applied to all human activities becoming an important element of digitalization.

The fields covered by this technology are varied and constantly expanding: agriculture, business asset management, big data, natural resource conservation, defense, disaster management, education, financial services industry, food production, health industry, infrastructure, workflow optimization and customized solutions at government level, indication and monitoring of active and inactive mining locations, digital offline and online distribution of products of national mapping agencies, discovery and extraction of petroleum products, property assessment, public safety of communities, smart cities, utilities, etc.

Given the complexity of GIS solutions, companies operating in this field face the integration of solutions in a wide variety of fields and respond to rapidly evolving market needs.

In order to develop space technologies and applications, with increased international visibility, able to develop and attract research, development and innovation activities, as well as business activities, the ***Danube Engineering Hub Cluster*** brings together various entities in the field of space technologies and applications. and provides an effective

framework around topics of common interest to strengthen the competitive advantage of its members.

The cluster aims to harmonize and represent the interests of participating entities in order to increase economic competitiveness and skills creation, sustainable development, internationalization of members, professional development of managers and employees, administration of a common database, participation in national and European networks , increasing the innovation potential of companies in the sectors:

Information and communication technologies, space and security

- ✓ High Performance Computing (Big Data)
- ✓ Geospatial technologies and infrastructures (GIS)
- ✓ IT&C applications in agriculture and tourism
- ✓ Cloud applications
- ✓ Database

Energy, environment and climate change

- ✓ Smart City Solutions
- ✓ Energy efficiency, including construction
- ✓ Smart infrastructure
- ✓ Smart transport

Bioeconomy

- ✓ Biology, Biotechnology, Biomedicine and IT&C with a focus on GIS services (big data processing and imaging)

Smart localities, heritage and cultural identity

- ✓ Information technology and management, computation and imaging
- ✓ Urban mobility plans
- ✓ Waste management plans

The field of machine construction

- ✓ Biofuels
- ✓ Petroleum equipment

To this end, the *Danube Engineering Hub Cluster* will develop specific services for research, development and innovation, internationalization, marketing and branding, education and will provide leadership based on the objectives described in the collaboration protocol.

Through its members, the Danube Engineering Hub Cluster covers the following areas of engineering expertise:

Name of the company	Fields of competence
Heveco SRL & Blom International Operations SRL	✓ **construction engineering** (which includes design, technical assistance, project management, GIS, BIM <pictometry, landscaping) ✓ **mapping engineering**

	✓ **oil & gas engineering, energy** (which includes green energy, smart energy) ✓ **IT engineering** (design and operation, IT networks and software platforms)
QDev Web Labs SRL	✓ **Custom Software Engineering** (Websites, web & mobile applications) ✓ **IT Engineering** (design, administration, service and support of IT and communication systems)
Leichmann Weifert Invest SRL	✓ **Web & Mobile Applications & Platforms** ✓ **Blockchain Development & Platforms** ✓ **Machine Learning & Deep Learning (A.I.)** ✓ **Big Data & Data Science** ✓ **Computer Vision & Mechatronic Systems Integration**
Tesagon International SRL	✓ **Web platforms** ✓ **Mobile applications** ✓ **Custom software** ✓ **M2M and IoT** ✓ **IT Systems Design** ✓ **Software integration** ✓ **Research & Development**

Market characteristics. The sector is impacted by the international context of accelerating digital transformation. The global crisis triggered by the current epidemic presents a great opportunity in this regard, given that it will accelerate the processes of digital transformation in almost all areas of activity. A constraint related to this crisis is the intensification of competition through the emergence of new innovative solutions developed by companies with resources and ability to invest in RDI systems with applicability as quickly as possible.

Chapter 3. CLUSTER DEVELOPMENT STRATEGY

3.1. The consultative process in elaborating the strategy

This document addresses the following expected results of the joint action:

Table 1. Correspondence between objectives and expected results

Objectives	Steps	Estimated results	Expected results
O.1	1-Development of strategic agenda	Strategic agenda, with common objectives	Achieving the strategic agenda and setting common goals
	2-Elaboration of implementation plan associated with the agenda	Implementation plan associated with the agenda with responsibilities for each member of the cluster involved	Defining detailed implementation plan and assume responsibilities associated with each partner
O.2	3-Development of a cluster strategy for expansion in the internal market	Cluster strategy for internal market expansion	Cluster consolidation and long-term viability - increased chances for rapid growth in internal market competitiveness
O.3	4-Development of a cluster strategy for expansion on the foreign market	Cluster strategy for external market expansion	Cluster consolidation and long-term viability - increased chances for rapid growth of competitiveness in the external market

Methodologically, this strategy was developed starting from: *concept, tools, how to involve the members of the cluster in carrying out activities and achieving objectives*. Thus, the strategy went through the following stages:

- Stage 1 - elaboration of the *Strategic Agenda*
- Stage 2 - elaboration of *Strategy for the expansion of the DEH cluster on the internal market (at regional, national level)*
- Stage 3 - elaboration of the *Strategy for internationalization of the DEH cluster*

The stages were completed with the active involvement of the entire management team and all members of the Danube Engineering Hub Cluster.

The consultations of the members of the Danube Engineering Hub Cluster regarding the elaboration of the medium-and-long-term development strategy may be based on the strategic actions resulting from the SWOT analysis of the sector (see chapter 2.3.)

SO strategies

Strategic actions that take into account opportunities and strengths:

- ✓ strategies to increase the number of public-private partnership initiatives;
- ✓ developing opportunities for intersectoral collaboration;
- ✓ strategies to support the participation of SMEs in trade fairs, exhibitions and economic missions;
- ✓ actions to modernize the technical and social infrastructure;
- ✓ actions to support innovation and technology transfer entities;
- ✓ supporting producers in the field of engineering to participate in associative structures (clusters, professional associations, cooperatives) in order to promote at regional / national / international level.
- ✓ actions to mobilize experts and people with advanced knowledge to be employed in companies in the region;
- ✓ using the opportunities offered by universities.

WO strategies

Strategic actions that take into account opportunities and improve or avoid weaknesses:

- ✓ actions to disseminate and support access to funding opportunities at national and European level;
- ✓ strategies for developing and promoting one's own brand;
- ✓ actions to develop the ICT sector in the region;
- ✓ value chain association actions to increase the added value of talents at regional and national level;
- ✓ actions to stop the brain drain;
- ✓ establishment of engineering schools;
- ✓ developing a hub for accelerating digital innovation at the level of Wallachia eHub companies;
- ✓ actions to promote technological innovations in the field;
- ✓ actions to disseminate and support access to funding opportunities for the acquisition of new technologies.

ST strategies

Strategic actions that take into account internal strengths and avoid external threats:

- ✓ actions to stimulate engineering public procurement in Romania;
- ✓ actions to disseminate and support access to funding opportunities on the Horizon Europe program;
- ✓ connection to *"Digital Europe"* initiatives;
- ✓ actions to stimulate the knowledge creation potential in the field of innovation;
- ✓ actions to promote Romanian producers on foreign markets;
- ✓ awareness-raising of relevant legislation at national and EU level;
- ✓ strategies to support the SME sector.

WT strategies

Strategic defensive actions that improve or avoid internal weaknesses and avoid external threats:

- ✓ actions to develop collaboration with other sectors and intelligent cross-sectoral specialization WB;
- ✓ development of a consortium of clusters in order to promote the engineering offer;

- ✓ actions for the development of indigenous technologies;
- ✓ actions to promote Romanian solutions;
- ✓ promoting clean (ecological) technologies, as part of modernization and equipment activities;
- ✓ strategies to stimulate cooperation between the economic and academic environment;
- ✓ promoting training programs in the field of entrepreneurship.

3.2 The vision and objectives of the 2020 - 2030 strategy

The vision and mission of the cluster is to develop as much as possible the value chain on both national and international links in the fields of engineering, digital technologies, to identify as easily as possible the resources needed for the whole process, through RDI and technology transfer activities and knowledge specific to the field. The cluster also aims to become a European digitization center for the South Muntenia region and to provide services to both members and regional beneficiaries. The cluster also plays an important role in cooperating with regional clusters with the main aim of strengthening the Wallachia Hub cluster consortium.

The cluster aims to harmonize and represent the interests of enterprises, research, administration and catalyst entities in order to increase economic competitiveness and job creation, sustainable development in South Muntenia, internationalization of members, professional development of managers and employees, administration a common database, participation in national and European networks, increasing the innovation potential of enterprises in the field of engineering.

The objectives of the Danube Engineering Hub Cluster

a. *General objectives* *of the Danube Engineering Hub Cluster*

- ✓ Development of innovative products and services and their marketing;
- ✓ Creating a Cluster brand;
- ✓ Internationalization of the business environment and support structures, meaning that it will develop a strategy for development and internationalization, marketing and branding;
- ✓ Participation and/or initiation of projects for SMEs, universities, local administration, cluster with funding from public and/or European funds;
- ✓ Collaboration with other clusters from the South-Muntenia development region, from the country and from abroad in order to achieve strategic partnerships;
- ✓ Cross-border and transnational collaboration (European Union Strategy for the Danube Region, etc.);
- ✓ Participation in national and European cluster networks;
- ✓ Development Cluster-level database: members, internal and external business contacts; attracting new members to the cluster;
- ✓ Bilingual website development;
- ✓ Managerial improvement;
- ✓ Attracting new members to the Cluster who have common interests with those of the founding members;

- ✓ Representing the interests of members before local and central public authorities and towards third parties;
- ✓ Development of the Wallachia Hub cluster consortium and the Wallachia eHub digital innovation center.

To meet the proposed objectives, the cluster management entity (EMC) will perform the following **activities**:

- ✓ Identify European and other sources of funding to achieve the proposed objectives;
- ✓ Promoting the Cluster at national and international level;
- ✓ Active participation as a member of the national cluster network - Romanian Cluster Association, http://clustero.eu/asociatia-clusterelor-din-romania/;
- ✓ Supporting the Cluster's affiliation with the European Cluster Collaboration Platform, https://www.clustercollaboration.eu/;
- ✓ Organizing national and international events, conferences, fairs in order to promote and identify business opportunities for Cluster members;
- ✓ Organizing training, qualification and improvement programs for the development of managerial skills;
- ✓ Activities specific to a digital transformation center;
- ✓ Development of advanced forms of collaboration for innovation at European level;
- ✓ Identifying the financing mechanisms for the proper functioning of the Cluster and its members;
- ✓ Carrying out other activities relevant to the fulfillment of the objectives and purpose of the Cluster.

b. Research, development and innovation objectives

- ✓ Development of new products and services and their promotion;
- ✓ Participation and/or initiation of projects for members, with funding from public and/or European funds.

c. Marketing, internationalization and branding objectives

- ✓ Promoting the export offer of member companies through appropriate promotional channels (fairs, missions, trade shows);
- ✓ Organizing contacts and match-making;
- ✓ Creating a Cluster brand;
- ✓ Attracting investment;
- ✓ Participation in national and European networks;
- ✓ Cross-border and transnational collaboration;
- ✓ Collaboration with other clusters in the country and abroad in order to achieve strategic partnerships.

d. Training and education objectives

- ✓ Development of courses and educational modules appropriate to the needs of the Cluster;
- ✓ Managerial improvement.

e. Communication objectives

- ✓ Attracting new members to the Cluster with common interests with those of the founding members;
- ✓ Representing the interests of members before local and central public authorities and towards third parties;

- ✓ Bilingual website development;
- ✓ Networking platform development;
- ✓ Elaboration of communication and branding strategy of the cluster as a measure for consolidation and development of the cluster through bilingual cluster site activities, presentation catalog of cluster members.
- ✓ Elaboration of legislative proposals regarding the production of agricultural and food products based on superior quality schemes, environmental protection, etc.

f. Governance objectives

- ✓ Elaboration of a development and internationalization strategy, marketing and branding;
- ✓ Tools to substantiate the above objectives and how to achieve them;
- ✓ Development of appropriate governance tools (working groups, meetings with cluster members, etc.).

The above objectives will be revalidated and improved with the process of developing the cluster strategy. This strategy will be based on a cyclical process in which all members of the Cluster will be involved, thus establishing itself in a community of practice that will strengthen trust between members.