



BIOBORD
PLATFORM

BIOBORD OPERATING MODEL

Guidelines for Biobord Network and Platform 3.0

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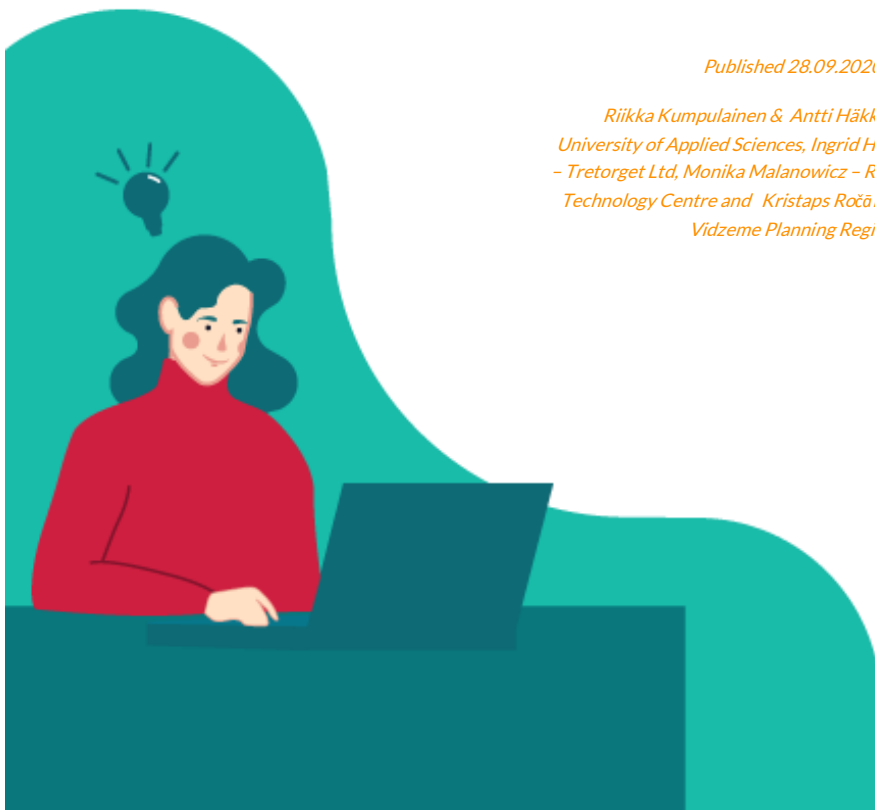


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1. Introduction

Biobord is an open virtual innovation hub for bioeconomy developers. The hub offers a platform and space for a community of individuals to pursue innovative activity and entrepreneurship in the bioeconomy. Biobord is **developed in a partnership of four regions around the Baltic Sea:** Central Finland, Inland (Norway), Świętokrzyskie Voivodeship (Poland) and Vidzeme (Latvia). The development and piloting are **supported by the Interreg BSR project** 'Rural RDI Milieus in transition towards smart bioeconomy clusters and innovation ecosystems' (**RDI2CluB**) co-financed by the European Regional Development Fund.

First, this document provides an overview of the network connected to the Biobord platform (RDI2CluB partners, ConnectedByBiobord partners and Biobord Network). The **Biobord network forms an international bioeconomy innovation ecosystem** that can support the developers in the **commercialisation of new bioeconomy products or services** as well as improving the **competitiveness, viability and sustainability of bioeconomy business**. We strive to boost sustainable and profitable bioeconomy business with the introduction of value-added products and services, the application of new technologies as well as the development of cooperation models, value chains and circular management of material and energy flows.

The Biobord Operating Model also gives an **overview of the functionalities and service paths of the digital hub – the Biobord Platform**. Moreover, the operating model **contains a collection of practical manuals and guides** for Biobord network members and users of the Biobord platform. The Biobord platform has been **developed with an iterative, user-centred, service design process**. This document, **Biobord Operating Model version 3.0**, represents an upgrade to the platform, its service paths and management following the feedback collection and analysis from its two piloting rounds (2019 and 2020). The first piloting round focused on the **technical improvements** of the platform, while the second looked at the **user experience**.

This upgrade formed the Biobord platform's **final version in the RDI2CluB project**. In line with the upgrades, the Operating Model is enhanced with instructions related to new platform functionalities, good practices identified in piloting, as well as the updates to the platform policies resulting from a Network Agreement on the long-term management of the platform.

The Biobord Network was established in RDI2CluB project and the main purpose is to maintain the Biobord platform, Operating Model and Joint Action Plan – all created in the project. The Biobord Network will be described in more detail in the next version of the Operating Model. The **RDI2CluB project's extension stage project ConnectedByBiobord will continue the development work of the Biobord platform, the Operating Model and Joint Action Plan – under the surveillance of the Biobord Network**. The ConnectedByBiobord project has nine partners across the Baltic Sea region and the aim of the project is to further develop outputs created in the main project. More details about this are available later in this document.

Even though the RDI2CluB project has come to its end, the **story of the Biobord platform is far from over!**

2. Biobord Network

This section describes the different partnerships behind the network of bioeconomy experts that can be found from Biobord platform. Previous operating models have described the RDI2CluB partnership, but due to the approval of the extension stage project ConnectedByBiobord, the network will now be expanded to include new partners. Also, a new official Biobord Network is established in the RDI2CluB project to secure the future of Biobord platform, Operating Model and Joint Action Plan. Development of these elements will continue in the ConnectedByBiobord project (October 2020 – June 2021).

Figure 1 describes the partnership between RDI2CluB project, the extension project ConnectedByBiobord and the newly established Biobord Network. The partnership description of RDI2CluB project can be found in this version of the Operating Model (3.0). The partnership description of the ConnectedByBiobord project, including the new partner regions from Sweden, as well as a more in-depth description of RDI2CluB partner from Estonia, will be added to the Operating Model 4.0 version in spring 2021. Also, the Biobord network will be described in more detail in the next version of the Operating Model (4.0).

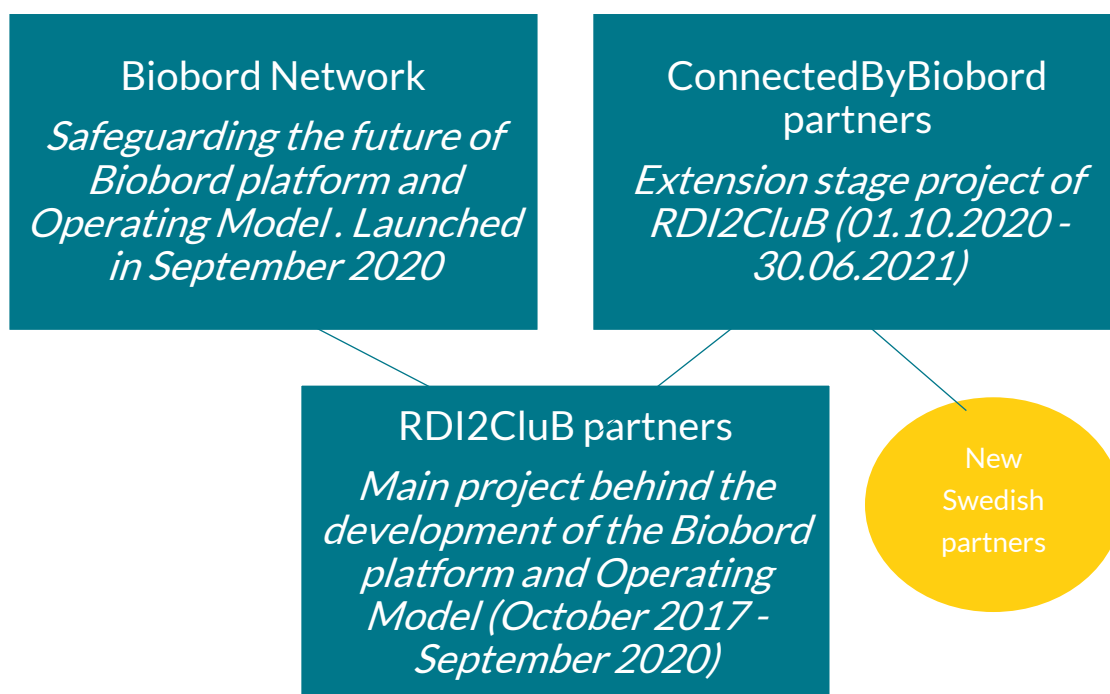


Figure 1: Layout of partnership behind Biobord platform and Operating Model

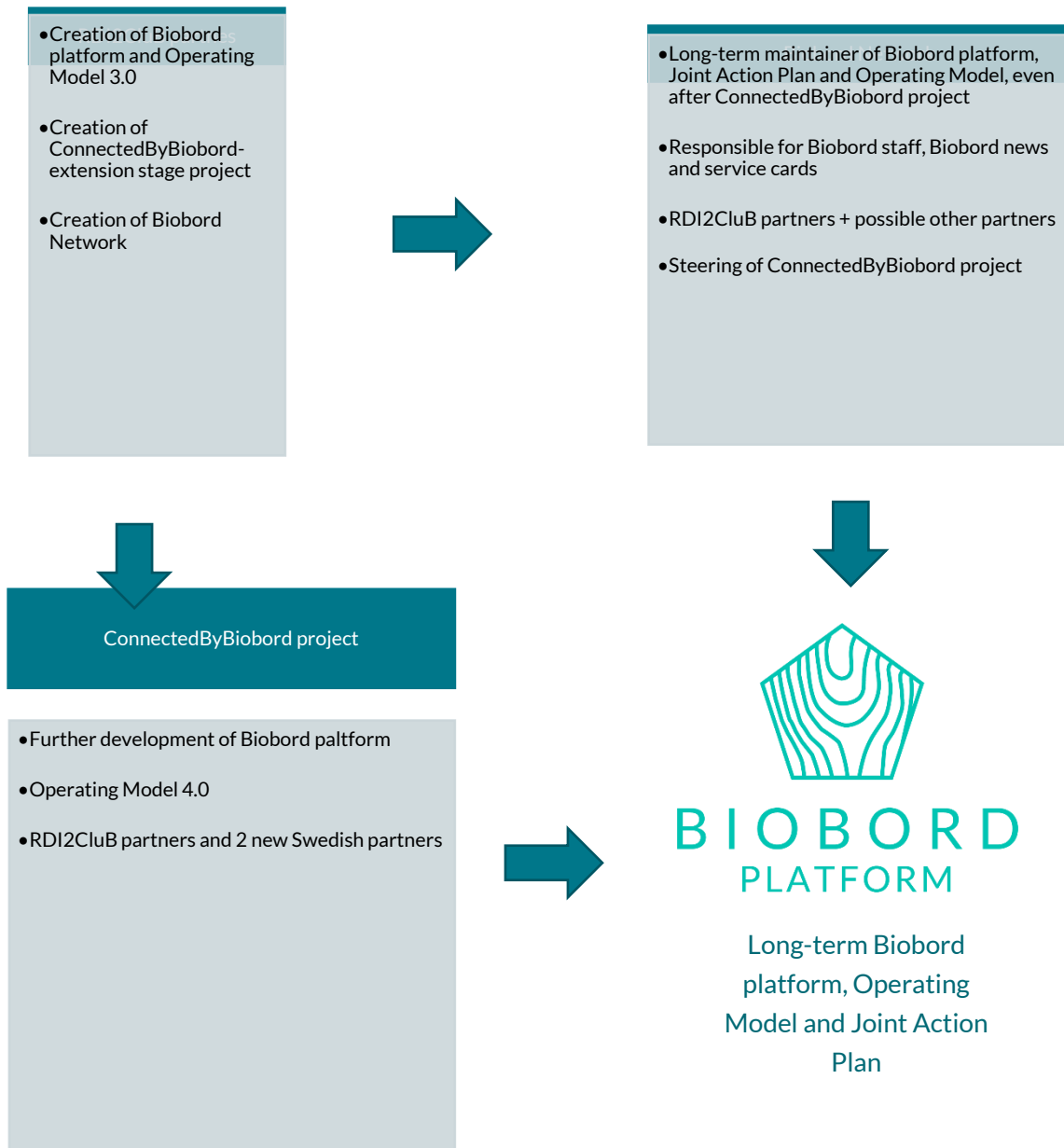


Figure 2: Roles and rights within Biobord partnership

Figure 2 presents the roles and rights between different partnerships under Biobord platform. The **RDI2CluB project was the creator of the Biobord platform, the Operating Model (until this version 3.0) and the Joint Action Plan**. However, the project will end in September 2020. **The extension stage project**

ConnectedByBiobord will continue the development work after that (October 2020). **For the long-term management of the elements, the RDI2CluB project established an official Biobord Network.** The network members are old RDI2CluB project partners. The network is open to all interested parties. Starting from October 2020, the Biobord Network will oversee the Biobord platform, the Operating Model and the Joint Action Plan. The **ConnectedByBiobord project reports to the Biobord Network.**

2.1. Biobord's mission – connecting bioeconomy developers

By 2030, the world will need 50% more food, 45% more energy and 30% more water (Ministry of Employment and the Economy of Finland, 2014). The **solution is a bioeconomy** that is based on the sustainable use of renewable resources as well as circular economy models. A bioeconomy utilises clean technologies that enable the efficient use of natural resources and nutrients, while ensuring biodiversity and supporting climate change mitigation.

Our mission is **to bring together bioeconomy developers to a joint table to solve global and local challenges with bioeconomy innovations.** Biobord connects bioeconomy innovation networks **around the Baltic Sea region** to share ideas, find partners and work together to create business opportunities in a bioeconomy. Together we build knowledge and raise awareness on sustainable and viable bioeconomy business potential in the Baltic Sea region.

Biobord is a place for you if you are interested in viable and sustainable **biobased business** and **networking** with bioeconomy developers around the Baltic Sea region. Find **people with shared interests, team up** and **get support** from our network of bioeconomy experts **to build your business or launch your innovation** to the markets.

Our growing network has been initiated by the following regions around Baltic Sea that specialise in the bioeconomy:

- Central Finland (RDI2CluB & ConnectedByBiobord)
- Inland County in Norway (RDI2CluB & ConnectedByBiobord)
- Świętokrzyskie Voivodeship in Poland (RDI2CluB & ConnectedByBiobord)
- Vidzeme in Latvia (RDI2CluB & ConnectedByBiobord)
- Estonia, further details to be added in Operating Model 4.0 (RDI2CluB & ConnectedByBiobord)
- Paper Province (Värmland) in Sweden, to be added in Operating Model 4.0 (ConnectedByBiobord)
- Krinova (Skåne) in Sweden, to be added in Operating Model 4.0 (ConnectedByBiobord)

Find descriptions of the hubs and the organisations within them in our Biobord network map:
<https://biobord.eu/map/>

More information on the new ConnectedByBiobord partners and the Biobord Network will be published in the next version of the Operating Model (4.0) during spring 2021.

2.2. RDI2CluB partner region descriptions

RDI2CluB partners **include 11 organisations around the Baltic Sea region:**

- JAMK University of Applied Sciences: higher education and research institution
- Regional Council of Central Finland: regional public authority
- Inland Norway University of Applied Sciences: higher education and research institution
- Inland County Council: regional public authority
- Tretorget Ltd: sectoral agency
- Regional Science and Technology Centre: business support organisation
- Świętokrzyskie Voivodeship: regional public authority
- Foundation for Education and Social Dialogue PRO CIVIS: NGO
- Institute for Environmental Solutions: research institute
- Vidzeme Planning Region: regional public authority
- Stockholm Environment Institute Tallinn Centre: higher education and research institution

Former RDI2CluB partner SSYP Kehitys Ltd from Finland will not be included in the partnership after RDI2CluB project since the organisation is no longer in business.

The following map (Figure 3) presents the partner regions of the RDI2CluB project and the extension stage project ConnectedByBiobord. Two Swedish partners have been added to the RDI2CluB partnership for the extension stage project. New Swedish partners are marked on the map in yellow.



FIGURE 3: Partnership of RDI2CluB project (blue) and new Swedish partners for ConnectedByBiobord project.

2.2.1. Bioeconomy Campus in the Region of Central Finland

Table 1. Basic Information on Bioeconomy Campus, Central Finland

Our hub	Bioeconomy Campus, Central Finland
Member organisations	JAMK University of Applied Sciences (Institute of Bioeconomy) and Vocational Institute of Northern Central Finland (POKE)
Hub type	Campus
Innovation Driver	Applied research
Cooperation model	Co-location and RDI project network
Annual RDI volume (EUR) of members	JAMK (Institute of Bioeconomy; Saarijärvi) EUR 1.5 million POKE (Natural Sciences, Agriculture and Forestry; Saarijärvi) EUR 0.2 million
Staff	JAMK: 52 in Bioeconomy Campus POKE: 46 in Bioeconomy Campus
Established in	2014 as Bioeconomy Campus (150-year history as a campus for agricultural and natural resource management education)

Special know-how and expertise of the Hub

The Bioeconomy Campus is developed as a **concrete meeting place for industry** entrepreneurs, investors, researchers, developers and students with **demonstration and pilot environments** to illustrate the structures and functions of a future bioeconomy society, as well as testing and prototyping services for the development of new biobased products and services. The campus **offers education at both higher and vocational levels** in selected areas in the fields of **natural sciences, agriculture and forestry**.

The Institute of Bioeconomy is an active specialist, trainer and developer in the fields of **rural entrepreneurship, agriculture, forestry, bioenergy and clean water**. Our special competencies include the operating and efficiency of **bio heating boilers**, the usability and properties of **solid fuels**, the development of **bovine husbandry**, and the measurement and limitation of **nutrient emissions in a rural environment**. Our degree programmes include **a Bachelor of Natural Resources** (Agrologist) degree and a **Master's Degree Programme in Bioeconomy Development**. The institute supports **lifelong learning** needs of working life via many other continuing education initiatives and services.

Regional smart specialisation strategy in bioeconomy

Central Finland Vision 2040: Knowledge of agriculture and forestry, sustainable and diverse use of renewable raw materials and the technologies enabling this are the strengths of the region. The local,



sustainable production of energy increases the local economy. Clear water and water technologies create new business. Local, clean food also has big markets internationally.

The development of a bioeconomy is based on the smart utilisation of natural resources. The sector has a leading role in export. Regional strongholds for bioeconomy development include forest resources and sustainable forestry; traditional, strong forest industry and knowledge, as well as high-level research and development (Regional Council of Central Finland, 2014).



FIGURE 4, Central Finland Bioeconomy Hotspot Map
(illustration by Diana Pitkänen, 201)

1. Wood fibre research centre of VTT Technical Research Centre of Finland (Jyväskylä)
2. Kangas living lab for resource wisdom (Jyväskylä)
3. Kasvu Open Carnival – growth track mentoring and competition for SMEs (Jyväskylä)
4. University of Jyväskylä with laboratories and a Nanoscience Center (NSC) (Jyväskylä)
5. Recirculating aquaculture research site (Laukaa)
6. Konnevesi Research Station of the Department of Biological and Environmental Science at the University of Jyväskylä (Konnevesi)
7. Bioproduct mill and industrial ecosystem (Äänekoski)
8. Bioeconomy Campus (Saarijärvi)
9. Wood construction hub (Karstula)
10. Inventors week (Viitasaari)

2.2.2. INN Centre of Bioeconomy, Inland Region, Norway

Table 2. Basic information on the INN Center of Bioeconomy, Norway

Our hub	INN Center of Bioeconomy
Member organisations	INN - Inland Norway University for Applied Sciences (ALB - Faculty of Applied Ecology, Agricultural Sciences and Biotechnology); Statsbygg (state property manager)
Hub type	Centre of expertise
Innovation driver	Applied research
Cooperation model	Co-location and network
Annual RDI volume (€) of members	EUR 1.57 million
Staff	50
Established in	2017

Special know-how and expertise of the hub

Inland Norway University of Applied Sciences, Faculty of Applied Ecology, Agricultural Sciences and Biotechnology **is focusing on sustainable management and development in wildlife, fish, forestry, plants and livestock – including products and services originated in nature and biological material.** The faculty offers R&D within our disciplines and education at bachelor-, masters- and PhD-level.

In the NCE Heidner Biocluster, the Department of Biotech co-locates and collaborates with business development agencies and leading national companies in livestock, plant breeding, aquaculture. The **cluster's core activities are related to supplying essential input factors to the food production value chain,** such as genetic material, feed and fertilisers, as well as utilising and adding value to the residual materials.

The Department of Forestry and Wildlife Management is part of the Norwegian Wood Cluster (NWC). NWC is **an expanded collaboration in the value chain of forest, industry and construction that will be developed into an internationally leading business cluster for industrial, sustainable wood construction.**

The Department of Agricultural Sciences is co-located with providers of various services in public administration, politics, consulting and finance aimed at farmers at the Blæstad Agricultural Center.

Regional smart specialisation strategy in bioeconomy

The Inland Region – a leading powerhouse for a sustainable bioeconomy in Norway.

Strategies:

- Develop and reinforce strong expert bioeconomy environments in all parts of the Inland Region.



- Initiate research, development and innovation projects/programmes (multidisciplinary/intersectoral/ international).
- Secure relevant and attractive expertise.
- Facilitate the effective establishment of bio-based industry and commerce.
- Work to attract investors and entrepreneurs.
- Work to increase market opportunities for bio-based products.
- Contribute to increased sustainable production in agriculture, forestry and inland fish of high quality and, wherever possible, based on inland resources.
- Work towards the sustainable and knowledge-based management of the region's bioresources. Develop the region further within residual resources and the exploitation of return streams.
- Encourage more cluster projects and strengthen the interaction between stakeholders within innovation.
- Cooperation, simplification and coordination of the funding agencies for results-oriented funding allocation.
- Develop arenas for information, dialogue and cooperation further, including from an international perspective.
- Raise the level of awareness in society and business of the need to shift to a circular economy based on biological resources and expertise.



1. Heidner Biocluster for innovations in sustainable food production, Hamar
2. Biotechnology research centre of INN
3. The Norwegian Forest Seed Station, Hamar University, Hamar
4. Glommen Skog SA (forest owners association)
5. Tretorget, Elverum
6. Living Lab for Zero Emission Building, Evenstad Campus of INN University
7. ALB Bioeconomy Centre, Evenstad Campus of INN University
8. INN School of Business and Social Sciences (HINN Rena)
9. Mjøsen Skog SA (forest owners association)
10. Røros Food

Figure 5. Inland region's Bioeconomy Hotspot Map
(illustration by Diana Pitkänen, 2019).

2.2.3. Bioeconomy Knowledge and Development Centre, Świętokrzyskie region, Poland

Table 3: Basic information on the Bioeconomy Knowledge and Development Centre in Świętokrzyskie Voivodeship, Poland

Our hub	Bioeconomy Knowledge & Development Centre
Member organisations	R&D (Regional Science and Technology Centre) Business (Reslab Ltd) Regional self-government authority (Marshal Office of the Świętokrzyskie Voivodeship) Media (Telewizja Polska S.A., Kielce branch) Science (PhD Anna Rabajczyk)
Hub type	Centre of Expertise
Innovation driver	Policy
Cooperation model	Network
Annual RDI volume (EUR) of members	N/A
Staff	1 – administration
Established in	The letter of intent signed in 2019. The Centre's daily operations will be governed by the reviewed Statute and Organisational By-laws of the Regional Science and Technology Centre, expected to enter into force in 2019.

Special know-how and expertise of the Hub

The Bioeconomy Knowledge and Development Centre, operating within the Regional Science and Technology Centre, is expected to become the animator of bioeconomy and bio business development activities. The centre will be a place where business entities (SMEs) from production, services and consulting sectors can exchange their experience, know-how or establish direct cooperation between themselves and the following branches: R&D, local government, science, education and media.

The main goals of the centre are:

- Assistance in SMEs projects' management planning and implementation
- Networking – finding and maintaining contacts within triple helix
- Introducing the bioeconomy as part of a new RIS.

Regional smart specialisation strategy in bioeconomy

The bioeconomy is already part of four out of seven smart specialisation of the Świętokrzyskie Voivodeship (resource-efficient construction industry, modern agriculture and food processing, sustainable energy development, health, and health promoting tourism). However, as the region has started working on the 'Development Strategy of the Świętokrzyskie Voivodeship 2030+' in 2019, it is planned to put more stress on unlocking the full potential of the region through the sustainable development of the regional bioeconomy.



1. Regional Municipal Waste Installation 'Promnik' for RDF production, Promnik
2. Green Energy Block in Połaniec Power Station
3. Defro, Production and R&D on 5th generation furnaces for gasification of pellets, Strawczyn
4. Sawmill Olczyk, Krasocin
5. Seed-Arboretum Farm, Sukowo Papiernia
6. Kielce Trade Fairs, Kielce
7. Arabian horse breeding, Michałów
8. Regional Centre for Science and Technology, Chęciny
9. Solar Power Plant Tuczępy 1 and 2, Dobrów

Figure 6: Świętokrzyskie Voivodeship Bioeconomy Hotspot Map (illustration by Diana Pitkänen, 2019)

2.2.4. Latvian food and bioeconomy cluster in Vidzeme Region, Latvia

Table 4: Basic information on Latvian food and bioeconomy cluster in Vidzeme Region, Latvia

Our hub	Latvian food and bioeconomy cluster
Member organisations	<p>Public sector organisation:</p> <ul style="list-style-type: none"> • Vidzeme Planning Region (regional development institution/ public) <p>Companies:</p> <ul style="list-style-type: none"> • Ltd Aloja-Starkelsen • Ltd Valmiermuižas alus • Ltd Felici • Ltd Konso • Ltd Very Berry • Ltd Dimdiņi • Ltd Skrīveru Saldumi • Ltd Rāmkalni Nordeco • Ltd EKOTRI <p>R&D organisations:</p> <ul style="list-style-type: none"> • Institute for Environmental solutions • Institute of Agricultural Resources and Economics • Institute of Horticulture • Vidzeme University of Applied Sciences • Latvia University of Life Sciences and Technologies
Hub type	Cluster
Innovation driver	Businesses, with the support of R&D members and Vidzeme Planning Region
Cooperation	Membership
Annual RDI volume (EUR) of members	N/A
Staff	1 part-time managing director of the cluster
Established in	Cluster established as a network in 2010, current legal status formalised and cluster as a membership organisation established in 2015

Special know-how and expertise of the hub

THE LATVIAN FOOD BIOECONOMY CLUSTER (LFBC) is a **triple-helix cluster organisation**, one of the most developed and internationally active bioeconomy clusters in the Baltic countries. The vision of the cluster is to become a key food bioeconomy innovation hub in Latvia.

The objectives of the cluster are:

- To promote the sustainable production, processing and consumption of healthy, high-quality and safe food.
- To develop knowledge-based food bioeconomy innovations.
- To promote scientific and industrial cooperation both locally and internationally.
- The cluster fosters cooperation between its members and external partners, to promote knowledge and technology transfer, develop new products, technologies and innovative solutions, to promote modernisation, competitiveness, growth of export capacity and innovation capacity of the cluster members.

The main priority areas of the cluster are:

- Product and technology development
- Networking and knowledge transfer
- Development of the regional food bioeconomy innovation ecosystem
- Internationalisation
- Sustainable food production

The cluster **strives to promote more sustainable use of resources and environmentally friendly food production**, progress towards EU-level climate neutrality goals and UN sustainable development goals, and also increase the awareness and knowledge in society about the potential of sustainable innovation in the food production and consumption value chain, which is grounded in the principles of circular bioeconomy, sustainable use of biological resources and conservation of biodiversity.

The cluster is developing the **internationalisation of the cluster and its members** – to promote international cooperation with clusters and related institutions operating in the field of bioeconomy and food production and processing industries, as well as food and bioeconomy innovation initiatives, cooperation networks, platforms and consortia, science parks, business incubators and innovation centres in Europe and globally.

Since 2011 the cluster has been involved as a partner, associated partner or beneficiary in several international and interregional projects and is actively collaborating with other cluster organisations, networks, R&D organisations and science parks in Europe. LFBC is a proven collaboration partner which has a member network of partners with various competencies and business profiles.

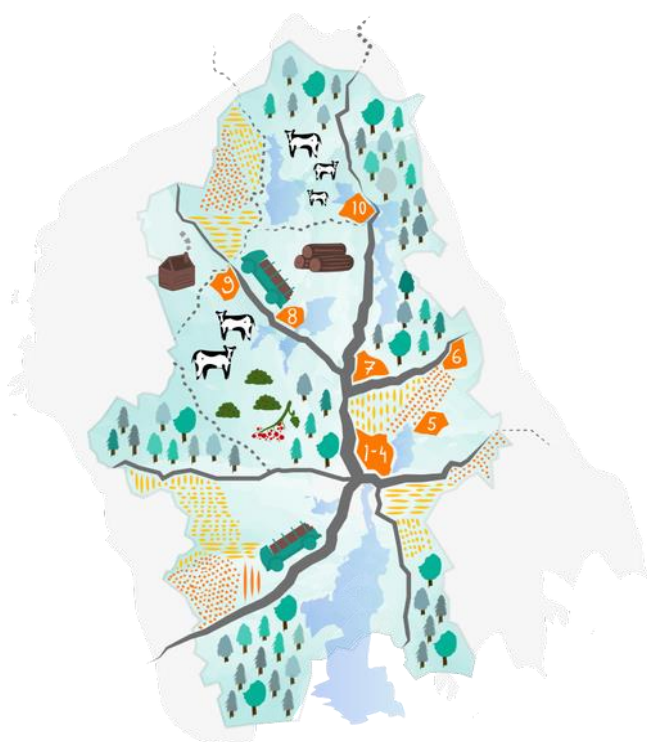
Currently the cluster has 15 members. Members of the cluster are innovative food industry companies, universities and R&D institutions working in the field of bioeconomy and Vidzeme Planning Region. Cluster member companies have strong know-how in craft & artisanal, organic, natural, high added value and healthy food and beverages production and technologies fields. SMEs and R&D members of the cluster have developed substantial knowledge in the fields of plant-based products (vegetables, fruits and

berries, medicinal and aromatic plants, plant-based proteins and bioactive compounds, plants and crop selection, plant genetics) and are increasing the use and valorisation of valuable production side streams.

LFBC is open to developing joint projects with partners from other countries in such areas as the bioeconomy, food innovation, food processing side streams valorisation, functional foods, sustainable food packaging and design, sustainable food logistics, gourmet tourism, digitalisation and modernisation of the agri-food sector. New members are invited.

Regional smart specialisation strategy in bioeconomy

The development and strategic internationalisation of the LFBC as a bioeconomy hub is defined among priority action areas in the Long-Term Development Strategy 2030 and the Development Programme 2015-2020 of the Vidzeme planning region. The regional smart specialisation areas defined in the regional strategy are high added value wood-based products, healthy food and beverages production, and biomass usage for energy and chemical conversion. These areas correspond to the nationally defined RIS3 smart specialisation area – knowledge-intensive bioeconomy and the Latvia national bioeconomy strategy 2030 (LIBRA), coordinated by the Ministry of Agriculture.



1. Institute of Agricultural Resources and Economics
2. Institute for Environmental Solutions
3. Vidzeme Planning Region
4. Riga Technical University, Cēsis branch
5. Vidzemes University of Applied Sciences
6. Stora Enso Wood Products GmbH
7. Latvian wood construction cluster
8. Investment and Development Agency of Latvia (LIAA) Business Incubator
9. Food Bioeconomy Cluster
10. ZAAO Ltd. (waste management services, education centre)

Figure 7: Świętokrzyskie Voivodeship Bioeconomy Hotspot Map (illustration by Diana Pitkänen, 2019)

2.3. Network analysis of the RDI2CluB project network

To analyse the RDI2CluB network potential, the regional hubs have carried out a mapping of their connected bioeconomy innovation ecosystem. The bioeconomy innovation ecosystem (BIE) diagram depicts the network built around a bioeconomy innovation hub extending to regional, national and international levels. As per innovation ecosystem theory, the system involves innovation services related to access to support, talent, capital, expertise and networks. The mapping method has been described in more detail in the connected document 'Guide 1: Innovation Hub Design Guide for New Members'.



FIGURE 8: Bioeconomy Innovation Ecosystem

Each of the hubs connected in the RDI2CluB network also carried out the bioeconomy innovation ecosystem mapping exercise on their existing partnership and cooperation networks. The results indicate that the total ecosystem comprises 484 organisations connected via the four hubs. The resulting network has quite a balanced structure of different innovation ecosystem services with the highest share of 'Support' actors (27%) and the lowest share of 'Capital' services (15%).

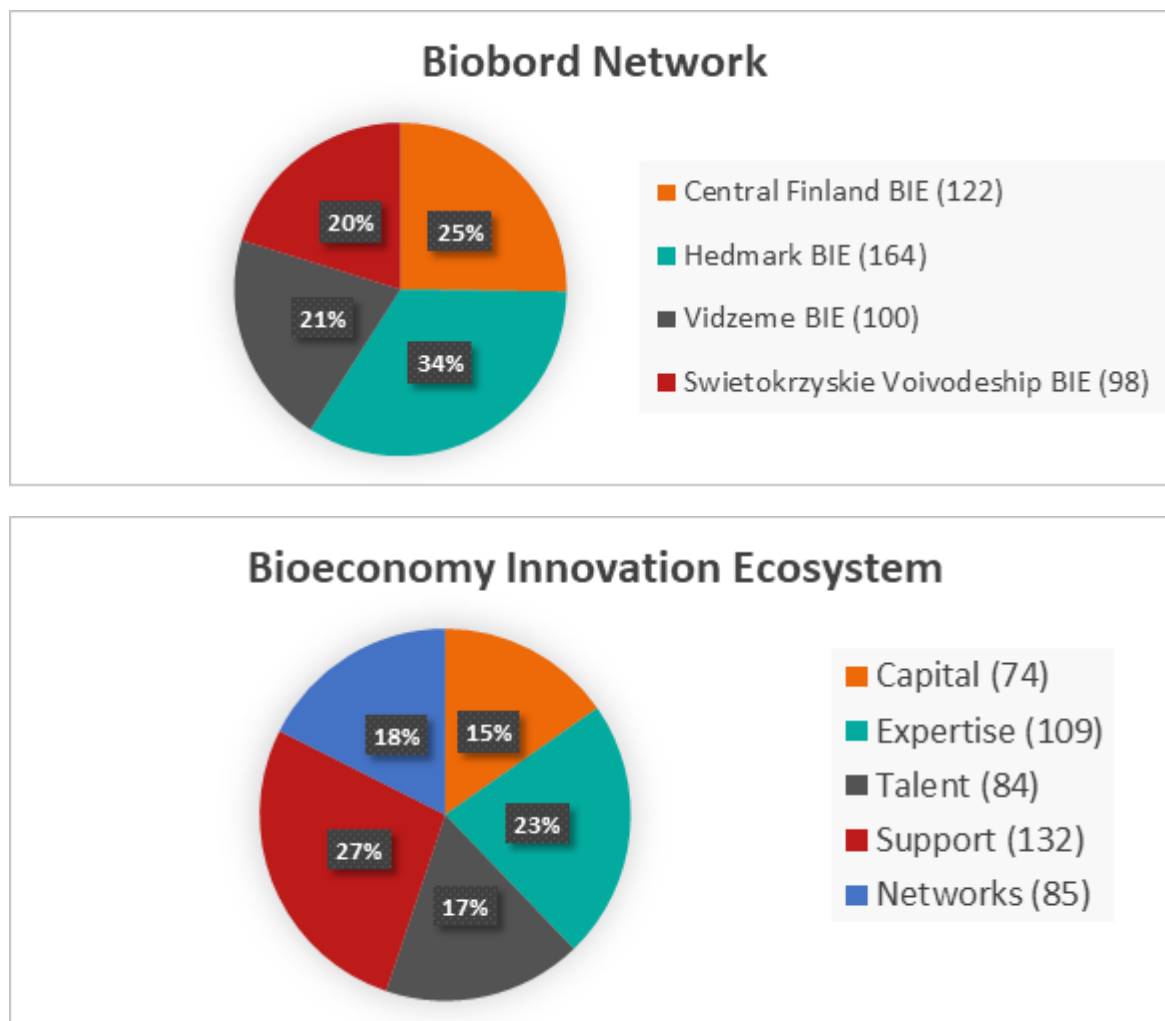


FIGURE 9: Bioeconomy Innovation Ecosystem of the Biobord Network (Mapping RIS data collected in 2018, RDI2CluB).

As the methodology was newly created, there were some **regional variations in the compilation of the statistics**. Therefore, the regional comparisons are not fully reliable. However, they **give an indicative picture of the main connections of the hubs and their own emphasis of partners**. This allows us to make some **tentative conclusions on the RIS network profiles** of the regional hubs as well. Nevertheless, it should be noted that the number of connections does not give a full picture of the quality of the cooperation, but an indication of the cooperation potential and the focus of network building.

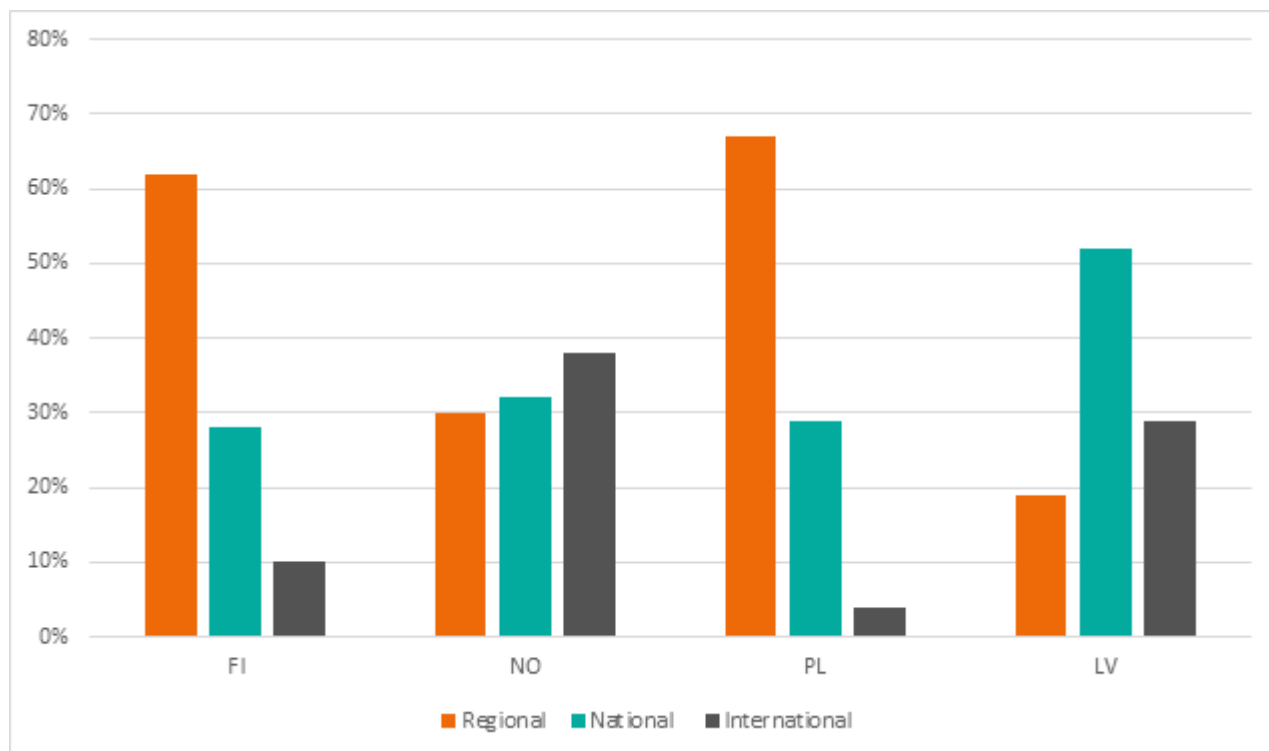


FIGURE 10: Geographic scope of the networks of the hubs with percentage of network partners on regional, national and international spheres (Mapping RIS data collected in 2018, RDI2CluB).

In Figure 9, a comparison of the **regional hubs' bioeconomy innovation ecosystem connections is presented**. The percentages show the share of the hub's connections that represents certain innovation service profile and international connection. The data on the connections of the regional hubs **paints a picture of the focus areas and development level of regional bioeconomy innovation ecosystems** and may reveal some gaps in the regional networks.

Looking at the regional hubs and their connected network, **INN Centre of Bioeconomy**, Inland County, Norway, has a high share of international partners in their network (38%). They also have the strongest connection to capital and expertise. **Bioeconomy Campus, Central Finland** is well connected regionally (62%) and has the strongest connection to talent and networks. **Bioeconomy Knowledge and Development Centre in Świętokrzyskie Voivodeship** has the highest share of support connection (48% of their network) and a strong regional focus (67%) indicating both their role as a promoter of bioeconomy as a smart specialisation strategy for the region, and the hub's early stage of development. As a nationally established cluster, **the Latvian Food Bioeconomy Cluster** has a strong national focus in their network along with a strong international connectivity. Connections to expertise (26%) and support (35%) comprise the most significant shares of the network actors of Latvian Food Bioeconomy Cluster.

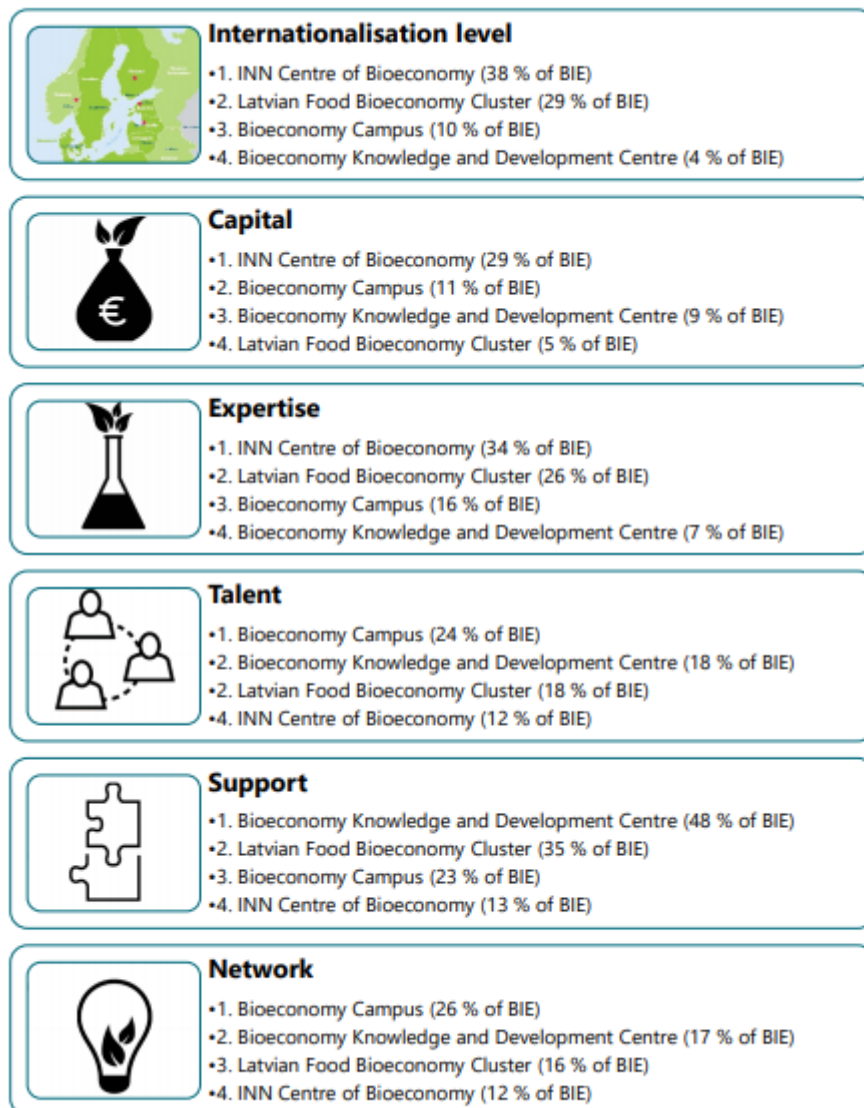


FIGURE 11: Comparison of Regional Hub-centred Bioeconomy Innovation Ecosystems

2.4. Biobord network model

The information presented here will **describe the new Biobord Network and its functions**. Network will be **active starting from October 2020**. Biobord Network was **established to sustain network model, Biobord platform, Operating Model and Joint Action Plan**. A more detailed list of partnership and goals of the network will be published in the next version of this Operating Model (4.0).

2.4.1. Strategic guidance and steering

Biobord Network members are all members of the management board – **Biobord Board** – which guides the strategic development and joint action plans for the Biobord Network, network-building, and Biobord Operating Model upgrades and adjustments, as well as Biobord platform upgrades and adjustments. The Biobord Board is formed on the basis of a network agreement with RDI2CluB partners who will engage in the long-term coordination of Biobord Network and platform activities. In the future, the Biobord Network will be available to all interested parties.

As mentioned, the Biobord Network was established in the RDI2CluB project and **most of the RDI2CluB partners will continue to develop the Biobord platform, Operating Model and Joint Action Plan in the extension stage project ConnectedByBiobord. In ConnectedByBiobord, Biobord Board acts as the management structure under the Biobord Network. All decisions related to the Biobord platform, Operating Model and Joint Action Plan are decided by the Biobord Board. Also, Biobord staff and the maintenance of news and service cards are the responsibilities of the Biobord Board.** The lead partner and admin of Biobord, JAMK University of Applied Sciences, also acts under the surveillance of the Biobord Network.

The ConnectedByBiobord project has its own additional management systems. As mentioned, the Biobord Board manages activities related to the Biobord platform, the operating model for updating of Joint Action Plan. In addition, the ConnectedByBiobord project has a management team for issues related to project management and implementation. Transnational working groups monitor operational activities in the project.

2.4.2. Biobord staff

Biobord staff members from from the Biobord Network. Each region should be represented on the Biobord staff. Staff members will be selected annually in the Biobord Network meetings. At all times, there are at least two facilitators per network region. **The aim and purpose of the staff is to introduce the Biobord usage to new users and to help new users navigate the platform and make use of the service paths relevant for them.** It is important that staff members **set an example of active use of Biobord** by discussing, reacting to topics, networking, and connecting relevant people from their own region. Staff members can divide the tasks with their regional team, but all regions are expected to take part in all roles. Biobord staff **introductions can be found on the Biobord Forum, under the Open Biobord category.** Biobord staff can also be tagged into forum discussions by using **@biobord_staff** tag.

Biobord staff commitments

- Welcoming all new users to the Biobord platform and guiding them in the use of the forum. The aim is to engage new users in a discussion on getting to know what expectations the users have and give recommendations on the possible use as well as share tutorials with users
- Making and actively sharing tutorial topics on 'Biobord User Support' in English and regional languages
- Marketing Biobord in regional networks
- Introducing themselves on the 'Open Biobord Forum' and activating others in their hub to utilise the matchmaking service of the 'Open Biobord Forum' and 'Biobord On Stage'
- Reacting to the topics posted in the 'Open Biobord Forum' and connecting the people with matchmaking calls with relevant network members from their region within a quick response time.
- Setting an example for new users on forum conduct, building trust and interactions.

Forum facilitators' best practice

- Welcome new users – users who feel welcome and included are more likely to be active on the forum
- Have an active behaviour – reply and comment within a couple of working days
- Start new topics and discussions (approx. 2-4 topics/month)
- Respond to others' topics. If not by a written reply, at least like the post and let them know you have read their text
- Get the users activated: open new discussions and comment on other users' posts.
- Ask questions or ask for comments and feedback to generate more answers and replies.
- General discussions on bioeconomy are open to everyone
- Start discussions with open-ended topics to make people share their opinions, experiences, stories, pictures, etc.
- Use/share videos and links to get the attention of the users. Remember to write a summary of the video or link provided to tell the readers what it is about
- Update your personal profile – be visible and show who you are
- Monitoring discussions and use of the group
- Keep the category description updated
- Avoid sending e-mails: write the messages in posts/topics on Biobord instead

3. Biobord Platform

3.1. Innovation hub concept

In the Biobord Network, **our approach is to connect different fields of know-how with the traditional bioeconomy business and entrepreneurs via development of an innovation hub.** Innovation hubs are social communities, workspaces or research centres that provide subject-matter expertise on technology trends, knowledge and strategic innovation management, and industry-specific insights. These hubs enable active knowledge transfer between researchers and business experts, as well as industry, government, and representatives of academia (Toivonen, T. & Friedereci, N. 2015; Gryszkiewicz, L. & Friedereci, N. 2014).



FIGURE 12: Innovation Hub (illustration by Diana Pitkänen, 2018).

Innovation hubs deliberately stimulate collaborative innovation activities in a variety of ways. Co-location and co-working principles are some of the basic methods they apply. Innovation hubs also share online spaces and collaboration technologies. Hubs regularly apply methods considered part of the open innovation paradigm, such as crowdsourcing, co-creation, design thinking, service design, user innovation or their variations (Toivonen, T. & Friedereci, N. 2015; Gryszkiewicz, L. & Friedereci, N. 2014). The innovation hub is a meeting place that brings together the necessary talent for generating ideas and for developing the ideas further. In the innovation hub, bioeconomy start-ups can build their business plans with the help of the hub's services and expertise. Along the innovation path, the entrepreneurs get tools

and support for product development and commercialisation. The testbeds, laboratories and pilots provide an opportunity to test and validate the products. New business ideas spark from creative encounters between people with diverse know-how (Toivonen, T. & Friedereci, N. 2015; Gryszkiewicz, L. & Friedereci, N. 2014.)

Developing an innovation hub in a rural context is challenging due to the limited number of actors, lack of diverse expertise and distances. In Biobord, we build an innovation hub **via capitalisation of regional and inter-regional networks as well as digitalisation.** Digitalisation can connect local hubs together to provide a larger pool of expertise, talent and resources for bioeconomy innovation around the Baltic Sea. The digital platform, **Biobord, offers a virtual transaction and meeting space.** The connection of the hubs together is not enough, but the **hubs must also build their regional networks** for capitalising on the urban-rural connections and the bioeconomy innovation ecosystem surrounding them.

3.1.1. Interaction examples of Biobord

On Biobord, **a triple helix base can be found**, where some users represent academia, some the regional government, and some the interests of the business sector. The user profiles of Biobord involve the actors of the triple helix and allow their interplay and cooperation. The triple helix model of innovation **refers to various interactions between academia, industry and governments to foster economic and social development.** Triple helix interactions are often the base for institutions like technology transfer offices and science parks (Grundel & Dahlström, 2016).

One example of triple helix interaction on Biobord is the Joint Action Plan that was created in the RDI2CluB. The Joint Action Plan is a transnational co-development plan of the EU's S3 bioeconomy strategy at the Baltic Sea region level. Multiple actors from academia, R&D and the business sector took part in the planning and creation of the Joint Action Plan. Development work related to the Joint Action Plan was conducted on the Biobord platform. The Joint Action Plan can be found here: <http://rdi2club.eu/>

A quadruple helix system is **a widening of the triple helix system by including a fourth helix, civil society, in the innovation system.** While the traditional triple helix system has a top-down perspective, **the quadruple helix system is more of a bottom-up system with a participatory approach. Civil society is invited to engage in a dialogue on the regional development strategies.** Civil society **can be a resource for SMEs adapting to market demands** without the risks involved in product development, by user-oriented or user-driven open innovation, in other words making the consumers part of the innovation process. The consumers join the open innovation process for development of new products and design of better services (Grundel & Dahlström, 2016). In Biobord, the user profile 'supporter' is **focused on the potential to connect civil society actors to the operations of the innovation hub.**

A quintuple helix **approach functions as a way towards the socioecological transformations of society into a bioeconomy.** Developing a sustainable approach to a bioeconomy requires information and understanding of the state of the natural environment, the availability and renewal of natural resources as

well as the interactions affecting the ecosystems and their services. **In quintuple helix, the innovation process is depicted as a connection of knowledge and know-how from policy, business, academy, society and the natural environment.** A broader perspective is taken in response to environmental or societal challenges to head towards sustainable economic, social and environmental development (Grundel & Dahlström, 2016).

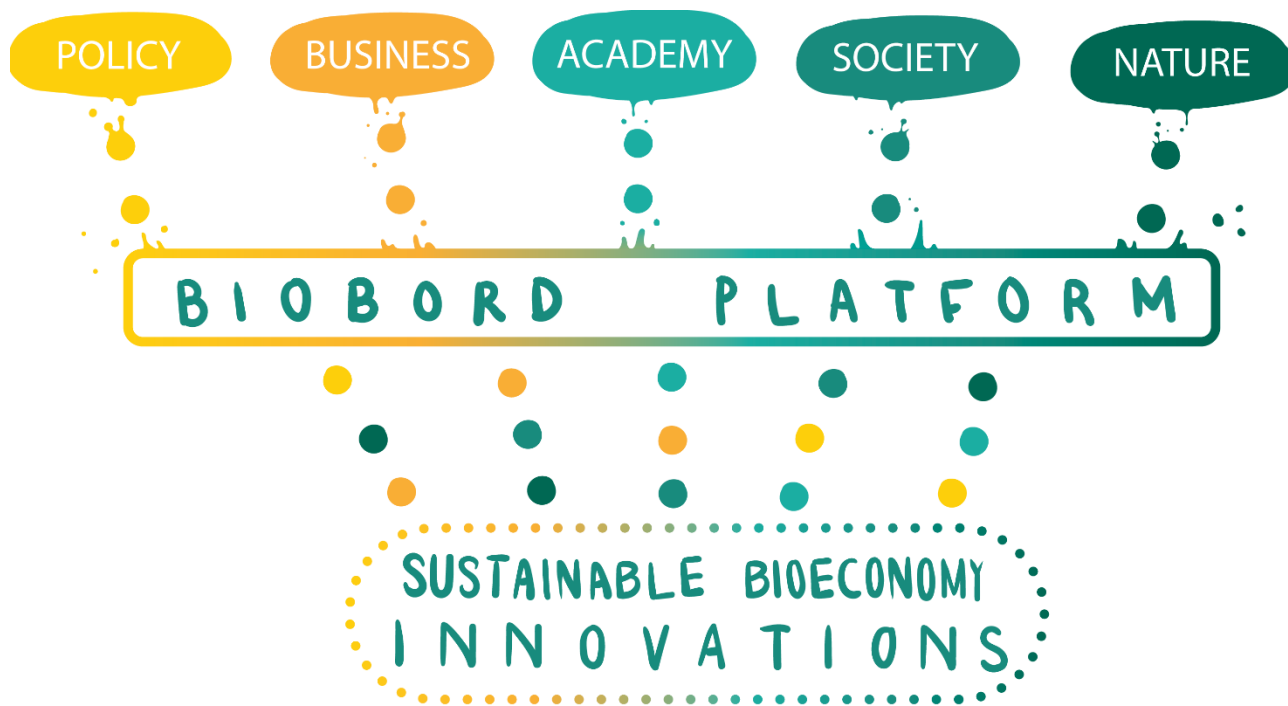


FIGURE 13: Quintuple helix on Biobord (Dina Pitkänen 2020)

3.2. Platform elements

Biobord platform consists of the following elements:

- Keycloak User Account Management System
- Wagtail Content Management System
- Landing page (about page, map and service cards)
- Forum
- Document Management System
- Helpdesk ticketing system

3.2.1. Keycloak user account management system

Biobord platform users can manage their user account settings through Keycloak, which is an identity and access management service. Each registered user can use Keycloak to do the following:

- Edit account-related information
- Change their password
- Enable two-factor authentication
- Monitor and manage all active sessions
- Read the list of all available roles and access permissions for different parts of the web platform

For guidance on the use of Keycloak, [detailed instructions are available under 'Biobord Manual 1: Keycloak User Account Management System'](#).

3.2.2. Wagtail content management system

Each member organisation [of the Biobord Network \(and RDI2CluB partners, as well as ConnectedByBiobord partners\)](#) has been given rights to the Wagtail Content Management System (CMS). In the CMS, partners can upload data and images to the landing page and catalogues of news and services. The system [enables the network members to add news and services as well as manage the data on their regional hub and connected organisations](#). For guidance on the use of Wagtail, [detailed instructions are available under 'Biobord Manual 2: Wagtail Content Management System'](#).

3.2.3. Landing page

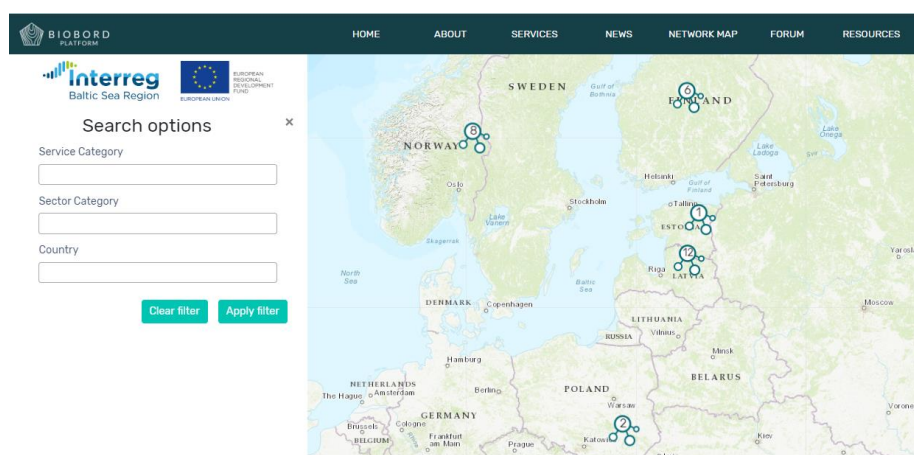
The landing page is the access point to the Biobord platform and its features. It is a [web page with timely information, guidance to the platform and an introduction to the Biobord network of bioeconomy innovation hubs](#). It also serves the purpose of [marketing the network and sharing the main results of the Biobord Network](#). The landing page [includes an 'About' page, a 'Network Map' and catalogues of 'News' and 'Services'](#).

The About page has been added to Biobord.eu [to offer further knowledge about the RDI2CluB project](#) behind the platform. The About page, along with an interactive roadmap, presents the creation process of the platform, joint [problems behind the project and details of its actions](#). It presents RDI2CluB's Regional Bioeconomy profiles, Joint Action Plan and Impact Report.

Placed on a separate subpage under the landing page, [the Network Map is a map element with category-based search features on bioeconomy innovation services](#). The member hubs of the Biobord network can [share information on their innovation services and infrastructures](#) via the map-based search engine. The

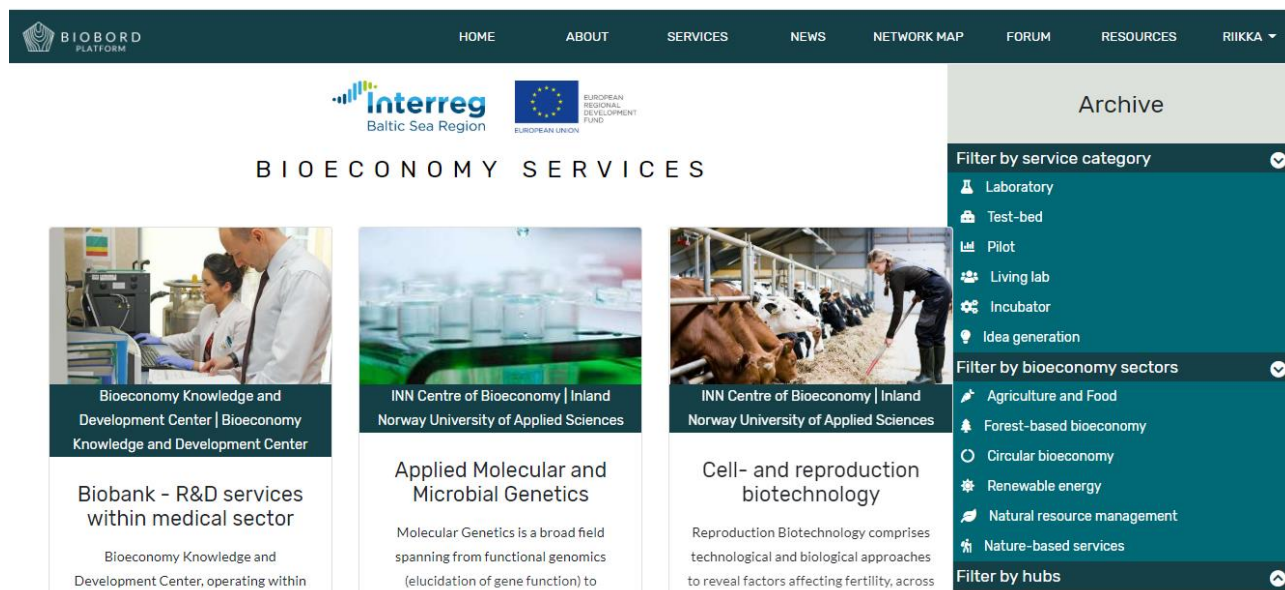
map shows the innovation hubs connected to the network, as well as each organisation. It displays their innovation services and infrastructures as information cards. The information cards on the services and infrastructures have been **tagged with pre-agreed categories** to facilitate the search. The unified card design enables a simple visualisation of the innovation services connected to each regional hub. Cards are also available as a catalogue on a separate page with the same search features.

The information is mainly static and updated when relevant by the responsible editors from the regional hubs. **The service information can be updated in the Wagtail Content Management System.**



PICTURE 1: Network map

Also, within the landing page, the user **can find Catalogues of News and Services as separate subpages** where the news items and service cards are archived. The news items and service cards can be searched for and sorted with different **category tags**. In the news catalogue, **the relevant news items can be searched for with filters on dates, hubs and bioeconomy sectors. In the service catalogue, the filter includes bioeconomy sectors, service types and hubs.** As mentioned, the same search filters for services are also applicable on the Network Map.



PICTURE 2: Biobord Service Card section and its filters



PICTURE 3: Biobord News section and its filters

3.2.4. Forum

The Forum is a networking, information sharing, matchmaking and co-working area. The forum is divided into different categories for different activities and user groups. The category can have open and closed

content depending on the user group's needs. The registered users can join the discussions and create content on the topics open to them. **Discussions are possible under shared topics, private messaging and chat.**

The Forum is developed using **Discourse open access service**. **Registration is organised with Keycloak** to enable one registration to all systems connected with Biobord platform. **To create or comment on a topic and join the discussion, you must be registered with the platform.** For guidance on the use of the Forum, **detailed instructions are available under the 'Biobord Manual 3: Forum'.**

Users of the forum have different levels of rights for viewing, replying and posting topics. The rights can be altered with category-specific settings. Table 5 defines the various user types, roles and rights in the Forum.

Table 5. User types, roles and rights in the Forum

User Type	Role and Rights
Staff: Administrator	<p>Staff members are official representatives of this community. Staff members involve administrators and moderators.</p> <p>Administrators can:</p> <ul style="list-style-type: none"> • Create closed groups • Create categories and subcategories and tailor their settings
Staff: Moderator	Moderators can edit all posts and/or preapprove the posts of the users.
Registered user	Can start topics in open categories and post replies to topics.
Closed Groups	Members of closed group are registered users that can see selected closed categories. Depending on the category settings, they can also start topics and reply to posts.
Non-registered users	Can read open content but cannot post replies or start topics.
Facilitator	Registered user appointed to plan, lead and initiate the discussion and activities of an open or closed category.

The members of the Biobord Network and ConnectedByBiobord partners have the right to introduce new forum categories based on the needs of their networks, projects or other target groups.

Forum categories explained

- **Biobord User Support:** Help, support, guides and tutorials for all Biobord users. A place to seek help.
- **Open Biobord:** place for open bioeconomy-themed discussion. For example, for matchmaking, teambuilding, knowledge sharing, presentations, joint ventures...
- **Biobord On Stage:** place to announce On Stage events (webinars) and find presentation recordings and materials. All Biobord users can host their own On Stage-event, for example present a new bioeconomy business idea. Biobord offers a platform (Zoom), expert audience and does marketing for you.
- **Project groups:** open or closed discussion groups for project members.
- **Regional groups:** Biobord Network members have regional discussion groups to develop the regional bioeconomy. Regional groups are open groups and most of them work in the local language. Group descriptions will tell you what the working language is.

3.2.5. Document management system

A document management system (DMS) is **a system used to track, manage, and store documents and digital resources**. In Biobord, DMS is a resource library that connects to the Forum categories, **providing a resource cabinet for Forum categories to store, share and manage the documents related to the activities of the forum category**. Apart from the matching category and cabinet structure, the DMS also features tags with same names as forum categories for marking documents.

All registered users have rights to view and share documents in the cabinets where they have user rights. Therefore, open cabinets are open to all users while if a **group is closed, only the members of the closed groups can see and create content**.

Resources that can be shared and stored include documents, presentations, and pictures. The facilitators of the forum groups, and the Biobord Staff, will coordinate the agreement of the **open access principles**, language restrictions and other conducts for the category and related cabinet in DMS. **The group can agree on a specific 'Creative Commons' license** for stipulating the rights to share, use and build upon the shared documents and resources. The facilitator should also advise on the naming of the documents and/or tagging, if relevant.

3.2.6. Help desk ticketing system

Biobord Forum is integrated with a Helpdesk ticketing system for the users and facilitators **to use when needing assistance from the Biobord administrators, or when wanting to report a problem**. The administrators from JAMK University of Applied Sciences are committed to responding to the problem in the earliest convenience.

There are **three types of tickets available in the Helpdesk**:

- Report a problem
- Request a new category
- Request a change in category

The 'report a problem' ticket is available for all registered users to get assistance from the administrators. The tickets for creating a new category or requesting a change in a category are only for Biobord Network Members. They enable the facilitators to define their categories, adjust tags and cabinets as well as create closed or open groups in the forum.

The detailed description of the information requested in the category tickets is available in the connected document, **Guide 2: Service Path Guide for Biobord Members**.

3.3. Overview of Biobord service path

Biobord has five distinctive **service paths that were piloted in 2019–2020** to gain more insights into the **good practices on implementation of each service path and to develop the Biobord platform**. Detailed instructions for building the service paths are presented in **Guide 2: Service Path Guide for Biobord Members**. Here we present an overview of the service paths as well as the user profiles.

3.3.1. User profiles

User profiles are defined **to better address and understand the motivation and needs of the user groups**. The user profiles are divided into three groups: **1) Bridge builder; 2) Developer and 3) Supporter**.

Bioeconomy bridge builder

Bridge builders **use the Biobord.eu platform as a tool in their work**. They use the platform to find new connections and to connect actors. Business bridge builders **can manage and grow their network with the help of the platform**. The regional authorities **can lead smart specialisation processes** of a network of RIS actors with the help of the platform. They can also utilise the platform to **manage the project life cycles** from planning to impact generation.

Table 6: Bioeconomy Profile: Bridge Builder

User profile	BIOECONOMY BRIDGE BUILDER (COACH) – HUB MANAGER, CONNECTOR AND FACILITATOR.
Personality, skills and aptitudes	<ul style="list-style-type: none"> • Actively participating in networking events regionally • Extrovert with a wide network and connections in the region • Active social media content creator



	<ul style="list-style-type: none"> • Competencies in management, business development and innovation support
Roles	<ul style="list-style-type: none"> • Facilitator of cooperation between actors from academia, business and government • Provider of platforms and meeting places for dialogue and information exchange on bioeconomy development. • Network builder and connection manager that guides people to right contacts and sources of capital, talent, support and expertise. • Planner, coordinator or manager of regional or business development projects
Professional profile	<ul style="list-style-type: none"> • Regional development agents • Business development agents • Innovation brokers • Technology and Knowledge Transfer officers • Cluster organisations • Business advocacy organisations
Motivation	<ul style="list-style-type: none"> • Looking to solve challenges and break barriers in the development of regional bioeconomy business. • Looking to strengthen smart specialisation processes including triple helix cooperation • Looking to support innovative bioeconomy SMEs, start-ups and pilots in the region to commercialise their ideas into products, services and improved processes. • Looking for strategic partnerships and networks outside the region. • Looking for new opportunities, partners and market leads for their partners

Bioeconomy developer

Bioeconomy developers **have an idea for a new biobased product or service, an aspiration to start or build a bioeconomy business venture or a challenge** in making the business more viable or sustainable. On the Biobord.eu platform, the developer **can find innovation support for service or product development or the commercialisation of an idea**. They **can also get connected with talent and expertise** to build a team or get support for business development. Developers **can find solutions** for their challenges via participation in the capacity building and peer learning groups of the forum or with connections to the right experts.

Table 7: Bioeconomy Profile: Bioeconomy Developer



User profile	BIOECONOMY DEVELOPER (PLAYER) – ACTORS WITH IDEAS, RESOURCES, NEEDS, CHALLENGES AND SOLUTIONS.
Personality, skills and aptitudes	<ul style="list-style-type: none"> • Goal-oriented, looking for solutions and development potential • Lacks networks, but willing to team up with people who share the same aspirations • High levels of know-how and skills in a specific field of bioeconomy • Technology, business or research-focused
Roles	<ul style="list-style-type: none"> • Developer of new inventions and business ideas • Bioeconomy forerunner with innovative products and services • Highly specialised expert in bioeconomy fields • Entrepreneur with a challenge in making the business more viable or sustainable
Professional profile	<ul style="list-style-type: none"> • Entrepreneurs and experts from innovative bioeconomy SMEs • Entrepreneurs in biomass production (farmers, foresters) • Students with entrepreneurial aspirations • Start-ups • Researchers (applied research)
Motivation	<ul style="list-style-type: none"> • Looking for new business models to ensure viability or renew operations of the traditional (family) business • Looking for competencies, development partners and information to test, pilot and commercialise a new product or service • Interest in building an own business • Interest in developing sustainability of business operations • Interest in accessing new markets or customer segments

Bioeconomy supporter

Bioeconomy supporters **have a value-driven interest in the development of bioeconomy in the regional or even global context**. The supporter **follows discussion** and leads on sustainable and local bioeconomy products and services to support his or her **sustainable lifestyle and personal aspirations**. A supporter is an **active advocate for bioeconomy development**, shares information on innovations and local entrepreneurs in social media, makes environmentally conscious decisions as a consumer, or even invests in start-ups or crowdfunding calls.

Table 8. Bioeconomy Profile: Bioeconomy Supporter.

User profile	BIOECONOMY SUPPORTER (FAN) – END USERS OF INNOVATIVE PRODUCTS AND SERVICES
Personality, skills and aptitudes	<ul style="list-style-type: none"> • High levels of education and competencies in fields such as information technology, design, brand management and marketing • Active in civil society, NGOs and social media • Value-driven interest in bioeconomy and sustainability
Roles	<ul style="list-style-type: none"> • Consumer and customer with interest in value-added bio products and services • Opinion leader, messenger, early adopter and initiator • Provider of market signals and information on added value to consumers • Followers and multiplier of message • Private funding with investments and crowdfunding
Professional profile	<ul style="list-style-type: none"> • KIBS (Knowledge Intensive Business Services) expert • Media • NGO advocate • Local politicians • Business angel, private investor
Motivation	<ul style="list-style-type: none"> • Passionate about sustainable development, climate change mitigation and biodiversity • Aspiration for sustainable living and lifestyles • Looking to influence local, regional, national and global development • Looking to support promising and innovative start-ups

3.3.2. Project Lifecycle services

Project Lifecycle is a service path targeted for bridge builders as the coordinators of the projects operating on the Biobord platform. However, the project target groups, beneficiaries and implementers can include a variety of user profiles. **With the help of the forum and DMS, the bridge builders can attain tools and a platform for planning, management and scaling of a project involving multiple actors and organisations in a regional, national or international context.** The project can be a product or service development project, research pilot, case study, demonstration, RDI project or other activity of agreed period and action plan, for example.

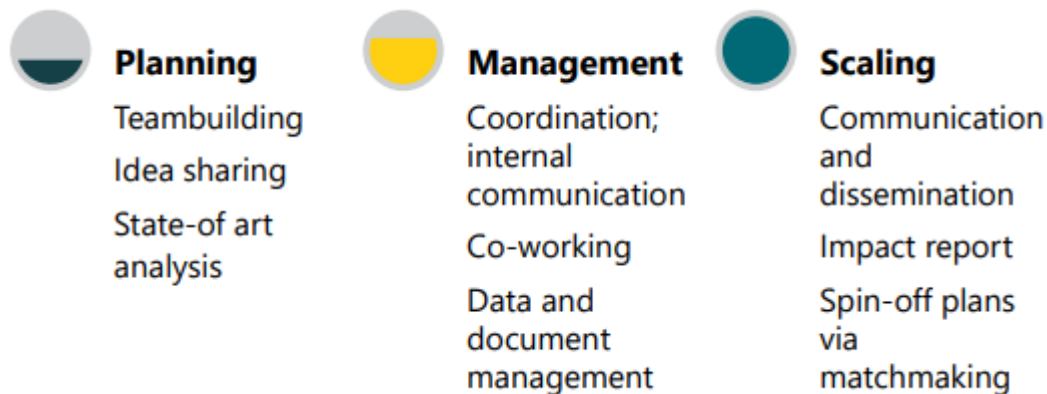


Figure 14. Biobord service path for project life cycle management.

3.3.3. Network building

Network building is a service path targeted at bridge builders. With the help of the Forum, DMS and the Network map, **Biobord offers tools for managing and connecting multiple target groups and networks.** It also enables finding new connections and opening dialogue with the networks. **The forum can be utilised as a platform for regional dialogue boosting triple helix cooperation,** especially in the rural regions where distances between actors hinder regular meetings face-to-face.

Ideally, a bridge builder could **connect all the groups, projects and teams they coordinate to the same platform and get a one-glance view of the new development and actions at the dashboard.** This would make it easy to connect people and information between the groups. Direct messaging to different groups, group-based chat discussions and tagging of groups to the forum topic enable effective and targeted communication to various teams and reference groups.



FIGURE 15. Biobord service path for network building.

3.3.4. Capacity building

The capacity building service path is targeted at bridge builders with an ultimate target group of developers and/or supporters. The capacity building service path utilises the forum and DMS for education, expert consultation, information and best practice sharing as well as peer learning via application of digital learning solutions.

The forum enables the creation of a peer learning group with common challenges or aspirations for change and development. The group can interact freely, learning from and supporting each other by implementing the lessons learned. The experts' input can be injected into the learning process in the form of interactive materials, including video consultation, virtual tours, podcasts and webinars.

As the speed of change becomes ever faster, the true measure of ability to learn will be the ability to network and cooperate. In the forum, we can **connect different peer learning groups and open learning services to enable wider team building, partner finding and access to expertise and innovation support.** We can enable and support the development of regional and international learning platforms where people come together to solve joint challenges, learn from each other's best practices, and find partners to develop their business. The international connections as well as the higher connectivity between SMEs in the region enables joint challenges to become joint learning activities and finally new business opportunities.

3.3.5. Matchmaking

The matchmaking service path is **most relevant to developers**, although the bridge builders also play an important role as connectors of developers to the service. In the forum, the '**Open Biobord Forum**' and '**Biobord On Stage**' facilitated by the Biobord Staff are **offering a matchmaking service for finding new opportunities, expertise and partners**.

Activities of the Open Biobord Forum

The Open Biobord Forum is a networking, matchmaking and teambuilding area for bioeconomy **developers to find new opportunities, expertise and partners**. It is a **place for all open bioeconomy-themed discussion**, including starting new ventures or forwarding joint actions. It is also a place to:

- find help for your business idea
- locate partners for a research pilot
- find and share timely announcements on funding opportunities
- identify opportunities to get involved in projects, pilots, networks and ventures
- search for new contacts
- uncover expertise, partners or talented professionals for a project or business venture
- look for help to solve business challenges with fresh ideas, new technologies and innovations
- share your expertise and introduce yourself

It's good practice to post a topic on Open Biobord Forum where you describe what you are looking for and use relevant tags to improve searchability. The growing network of bioeconomy developers may just entail the right solution for you – or we may jointly establish a group to solve it. If you don't have any luck right away, don't worry. **Our Biobord Staff will be in contact with you and help you in your quest.** Discussion in this category is **only in English**.

Activities of Biobord On Stage

Biobord On Stage **provides you with information about the online events of Biobord Network**. The events are announced in this discussion area. After the event, the **materials are shared and discussion on outcomes may continue under the event topic**. On Stage events can be anything bioeconomy-related, from introducing new initiatives or business ideas to sharing best practice.

The stage is open for all Biobord users looking for information on and contacts to the Baltic Sea markets, support, or that second opinion from experts in the field. Whether you are looking for international partners or thinking about starting an export venture, **we will assemble an expert panel to hear your case and give you feedback and guidance on the way forward.** ‘On Stage’ events are 45–60-minute online events with a 15–20-minute presentation from the company, followed by feedback and discussion with the invited panellists. Currently, **our pool of experts is focusing on Finland, Norway, Sweden, Poland, Latvia and Estonia.** Send us a private message via Biobord to describe your case and **we will help you to set up an ‘On stage’ event for you within 30 days.** We will also jointly agree whether the event should be **open or limited access.**

3.3.6. Connection to innovation support

The service path of innovation support is **most relevant to developers looking for support to develop their ideas into commercial products or services.** The services **can be searched from the ‘Network Map’ or the service catalogue.** More information is available via contacting the relevant contact people. Types of innovation services and the available service cards are depicted in Figure 16.

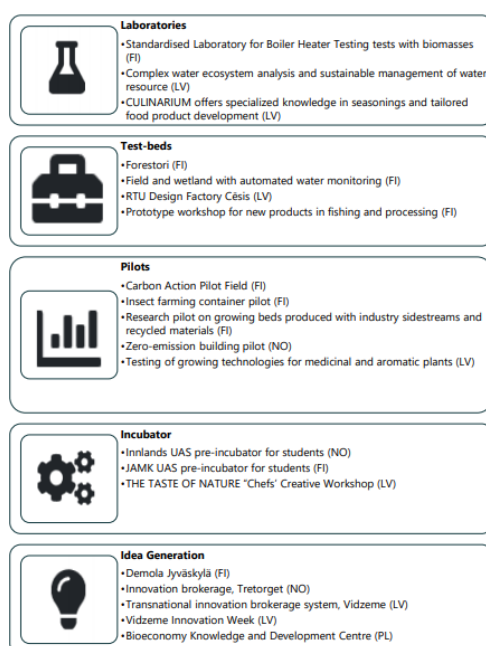


FIGURE 16: Examples of Innovation Services connected to the Biobord Network

3.4. Organisation of data protection

This chapter contains information on data protection used on the Biobord platform.

3.4.1. Data flow at Biobord platform

Biobord is a web platform hosted on Amazon Web Services (AWS) in Stockholm, Sweden. The platform has the following publicly viewable pages as presented in Figure 17: Landing page, About subpage, Services subpage, News subpage and Discussion forum. The first four services can be viewed without user registration and authentication. The discussion forum has both public and non-public categories and only public categories can be viewed without user authentication. All non-public services require registered users to enter credentials (username and password) to access them.

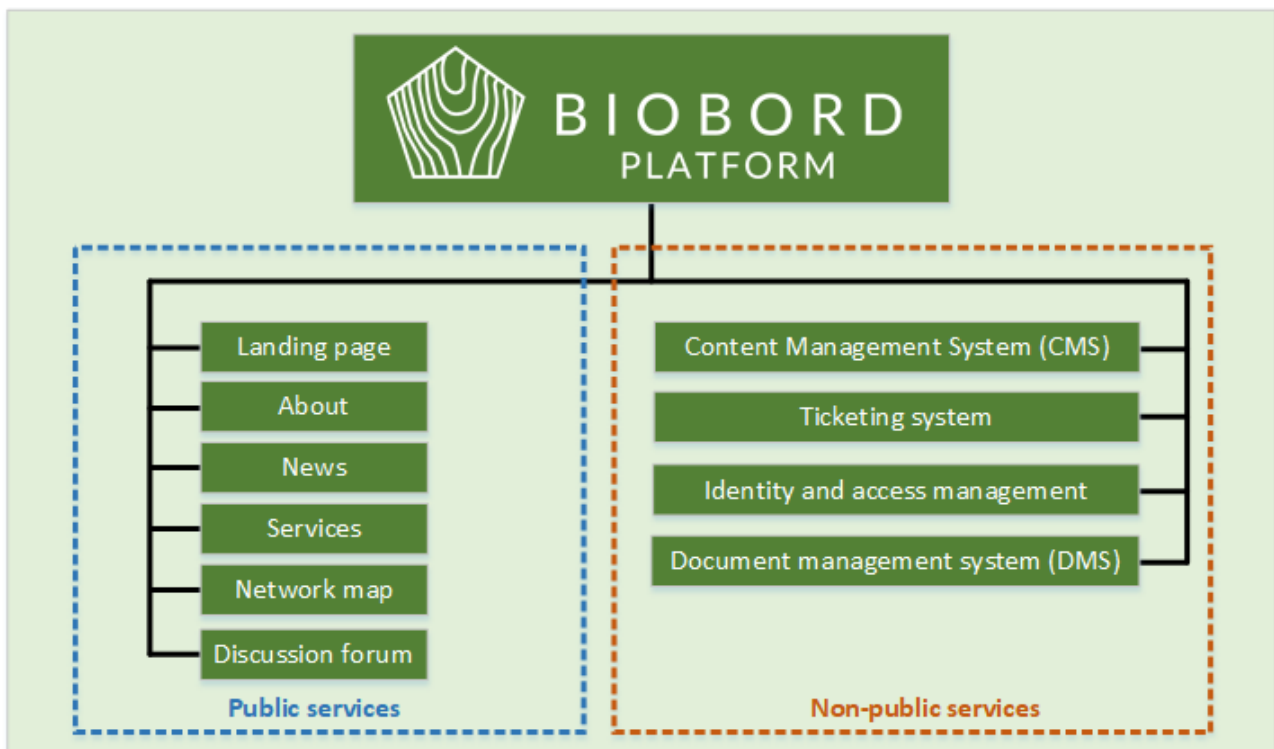


Figure 17: Biobord platform structure

Registered user information is handled by Keycloak, the identity and access management service. The user is required to log in to any of the services once and after a successful login, the user session is established. An active user session enables the user to view any service that requires authentication on Biobord. The user can change their user account settings at any time by logging in to the identity and access management service.

Non-public services have two access conditions that must be met for the user to use the service:

- The user must have a registered user account
- The user must belong to a user group which has access rights to the service

All non-public services act as a client service for the identity and access management service. Each time the user wants to log in to the platform, a login form is presented by the identity and access management system. As part of the login process, the identity and access management system checks user credentials and informs the client service about successful or unsuccessful login events

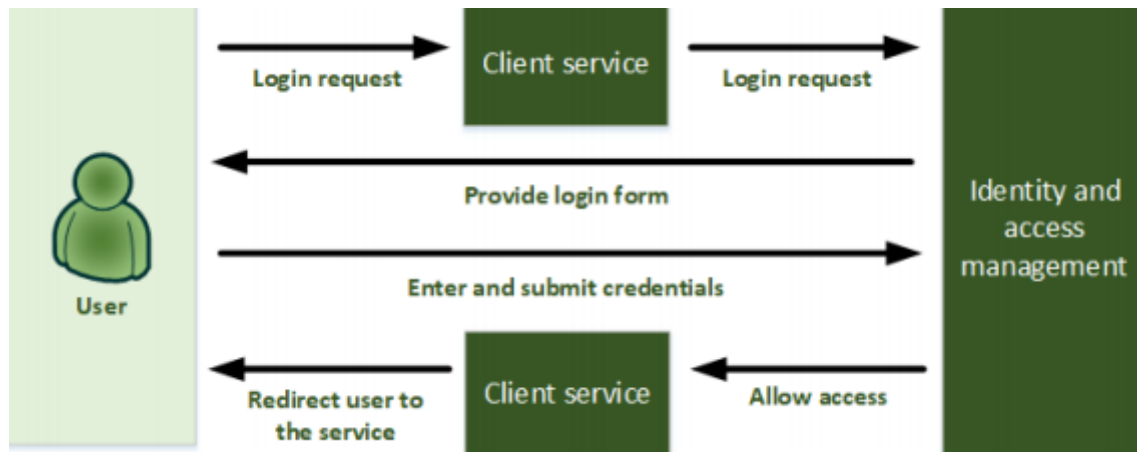


Figure 18: User data flow in authentication process

3.4.2. Data protection organisation

At JAMK University of Applied Sciences, we have been allocated the responsibility for data protection management in relation to national Finnish and EU legislation, the wide scope of the work on data protection and the fact that it involves every person in our organisation. The aim of our data protection organisation is to take on work on data protection as part of the operative activities of our organisation and to report on matters such as new projects related to personal data processing. The responsibilities, obligations and rights related to personal data are defined according to roles. The data controller and the data processor are distinguished from one another and determined according to the circumstances. The data subject is the person whose personal data is under discussion; in this case the registered Biobord user. For all personal data files, a description of file or privacy policy must be produced. This document contains information on the controller but also on the person in charge of matters related to the data file or the controller's representative, who oversees the services related to the rights of data subjects. The fact that the controller appoints a data protection officer does not affect the controller's responsibility for the data file. The data protection conduct on the Biobord platform has been assigned in line with the overall data protection principles of JAMK University of Applied Sciences. However, this document is

limited to viewing the data protection protocol and system with regards to Biobord platform administrated by JAMK University of Applied Sciences.

3.4.3. Designations and duties of the data protection officer

The EU General Data Protection Regulation obligates certain controllers to appoint a data protection officer. A data protection officer must be designated in any case where:

- The processing is carried out by a public authority or body
- The core activities of the controller or the processor consist of processing operations which, by virtue of their nature, require regular and systematic monitoring of data subjects on a large scale; or
- The core activities of the controller or the processor consist of processing on a large scale of special categories of data, or of personal data relating to criminal convictions and offences

With regard to the Biobord Platform, the data protection officer **at JAMK University of Applied Sciences assigned to the task for the duration of the ConnectedByBiobord project is Riikka Kumpulainen**. The data protection officer has an independent position in the organisation. **The data protection officer reports directly to the Biobord Board** and the respective directors of the JAMK Institute of Bioeconomy. The data protection officers are involved on a daily basis in the operative management and user guidance of the Biobord platform.

Data protection has been designed with the help of expert consultations on data protection law and practice with regard to application for Biobord Platform. The design has also been **supported by the data protection organisation of JAMK University of Applied Sciences** with regard to specific questions concerning the application of data protection processes. **The data protection officers are administrators of the Biobord Platform with access to the personal data and processing operations.**

The data protection officer is obligated to maintain secrecy. He or she may not be dismissed or penalised for performing the tasks of the data protection officer, and he or she may fulfil other tasks and duties in addition to those of the data protection officer, as long as any such tasks and duties do not result in a conflict of interests.

The data protection officer has the following tasks:

- The implementation and application of the General Data Protection Regulation in the organisation
- Participation in the management of data protection risks
- Provision of information and advice to the organisation in all matters related to data protection
- Supervision of the production, availability and maintenance of documentation
- Monitoring the implementation of the notification obligation

- Support and monitoring of the performance of the data protection impact assessment
- Cooperation with the supervisory authority
- Development of a data protection awareness programme and personnel training
- Support of the realisation of the rights of data subjects
- The appropriate observation of risks involved in processing operations
- Planning and implementing operation control
- Reporting to organisation management on the state of data protection and the related needs for development
- Participation in other tasks supporting data protection appointed by organisation management

To maximise support to the controller, the data protection officer should be able to perform the above-mentioned tasks and the related planning, monitoring and reporting duties as independently as possible. **Being aware of the current state of the organisation's data protection is a crucial part of the controller's accountability.** The data protection officer produces an **annual report that includes all matters related to data protection and personal data processing.** This '**Data Balance Sheet**' gives an overall picture of the current state of the personal data processing and data protection at the organisation. It helps the management to monitor and assess the organisation's current state and allocate resources to its development.

With regards to the Biobord platform, the Data Protection Organisation comprises the following persons:

- Data Protection Officer and contact person for register-related matters: Riikka Kumpulainen from JAMK University of Applied Sciences
- Biobord Board as the monitoring and advisory group

In addition to the regular and specified tasks, the organisation may oversee operational data protection tasks, such as responding to requests from data subjects, producing data protection impact assessments and requirement specifications in product development and acquisitions. Contracts are attached with a separate annex on data security in which responsibilities have been divided on a case-by-case basis, for example between different suppliers and partners.

3.4.4. The role of the Biobord Board

The Biobord Board acts as the project steering committee of ConnectedByBiobord project. The **Biobord Board consists of nine partners acting as a monitoring and advisory group for the data protection in Biobord platform during the project lifetime, i.e. until the end of June 2020.** The Biobord Board meets twice during the project lifetime of ConnectedByBiobord. JAMK University of Applied Sciences chairs the meetings while the secretarial duty alternates between other partners.

The following issues concerning data protection are brought to the agenda of the Data Security Group:

- Review of the Customer Register Privacy Statement
- Review of the Data Balance Sheet (incl. risk register)
- Review of notification of anomalies (and responses)
- Review of the annual work plan for data protection monitoring

3.4.5. Annual work plan

The data protection organisation JAMK University of Applied Sciences reports to the Biobord Network annually on the current situation of data protection for Biobord.

The Data Protection Organisation is in charge of operative data protection tasks, such as responding to requests from data subjects, producing data protection impact assessments, requirement specifications in product development and acquisitions, definitions of contract obligations, and tasks related to the monitoring of personal data processing.

In addition to the regular and specified tasks, the organisation may oversee operative data protection tasks, such as responding to requests from data subjects, producing data protection impact assessments and requirement specifications in product development and acquisitions. Contracts are attached with a separate annex on data security in which responsibilities have been divided on a case-by-case basis, for example between different suppliers and partners.

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5. Terminology and Abbreviations

BIE	= Bioeconomy Innovation Ecosystem
BSR	= Baltic Sea region
EUSBSR	= EU strategy for Baltic Sea region
IPR	= Intellectual Property Rights
PA Bioeconomy	= Policy Area Bioeconomy (One of 13 EU Strategy for the Baltic Sea region's policy areas included in the Action Plan)
RDI2CluB	= 'Rural RDI milieus in transition towards smart bioeconomy clusters and innovation ecosystems - project developing Biobord.
RIS	= Regional Innovation Strategy or Regional Innovation System
RIS3	= Regional Innovation Strategies for Smart Specialisation
S3	= Smart Specialisation Strategy
SME	= Small and Medium-sized Enterprise

6. Connected Policies, Guides and Manuals

6.1 Biobord Platform Management Documents

Management document 1: Terms of Service

Management document 2: Privacy Policy

Management document 3: Data Balance Sheet

Management document 4: Quality Assessment Checklist for Service Cards

6.2 Guides for Members and Users of Biobord Platform

Guide 1: Innovation Hub Design Guide for New Members

Guide 2: Service Path Guide for Biobord Members

Guide 3: Communication Guide for Biobord Members

Guide 4: Platform Guide for Registered Users

6.3 Manuals on Biobord Platform Features

Biobord Manual 1: Keycloak User Account Management System

Biobord Manual 2: Wagtail Content Management System

Biobord Manual 3: Forum

Biobord Manual 4: Document Management System