BIOBORD
PLATFORM

BIOBORD
NETWORK PARTNER GUIDE

3

Innovation Process

Interreg
Baltic Sea Region

EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND

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Biobord platform and its joint operating model for the network has been developed in a user-centered, iterative design process involving open piloting with registered users from around the Baltic Sea Region. This development process has been carried out in the Interreg BSR projects RDI2CluB and ConnectedByBiobord both co-funded by the EU Regional Development Fund.

1. INTRODUCTION

The Innovation Process Guide for Biobord Network Partners is a practical handbook for planning and organizing innovation processes that connect different stakeholders to a co-creation dialogue. Our innovation process knows no borders as we work online and in international teams.

The framework for our innovation process builds on the expertise of Krinova Incubators and Science Park with regards to the innovation process as well as on the expertise of JAMK University of Applied Sciences with regards to organizing collaborative learning and co-creation dialogue online. This expertise was applied in three innovation pilots implemented in ConnectedByBiobord -project.

The pilots connected expert teams and stakeholders from at least three regions and countries to work together on defining and solving innovation challenges in the field of bioeconomy. Due to circumstances in 2020-2021, the implementation was carried out completely online, apart from some regional face-to-face activities involving a limited number of participants at a time.

This guide elaborates on the experiences of these practitioners when applying the innovation process and selected working methods. In the guide, we present the steps of an international innovation process and the co-learning approaches implemented in the three innovation pilots. Finally, we introduce some of our working methods – hackathon, field demonstration and the Joint Agenda Canvas. The working methods are presented with a checklist for organizers compiled based on the pilot experiences.

Throughout the guide, we offer recommendations and lessons for planning innovation processes and applying different working methods as well as for organizing international teamwork in an innovation pilot and for involving stakeholders to co-creation dialogue. The lessons are based on the results of a participant survey and focus group discussions within the pilot teams. The findings have been elaborated in stages with the lead of Foundation for Education and Social Dialogue, Pro Civis, and validated in a transnational co-creation workshop involving all pilot teams.

Although focusing on international context, the content is also applicable to regional context and can benefit regional innovation systems as well. With a limited number of actors in the regional innovation system, especially the rural regions can benefit from inter-regional co-operation in innovation processes to effectively apply their smart specialization strategies striving for sustainable and knowledge-based bioeconomy development. The co-creation dialogue also offers a tool to respond to societal challenges such as transition to green, low-carbon economy and managing demographic changes in rural regions.

2. INNOVATION PROCESS

Let us start the definition of the innovation process by looking at the deliberation of 'what is innovation?' from our first transnational co-creation workshop in ConnectedByBiobord organized for project partners on October 16, 2020. Thereafter, we will further elaborate on our understanding of the co-creation dialogue before exploring the innovation process and the iterative phases of the process. To conclude the chapter, we will offer three key lessons for planners of an innovation process based on our experiences in the ConnectedByBiobord.

What is Innovation?

As per the principles of Human centered design, the need of the customer should always be in the center of innovation. In short, the human centered design looks at three aspects of innovation:

- **Desirability** Does the target group or customer need it and want it?
- **Feasibility** Can you deliver it?
- **Viability** Is it worth to deliver? Is the solution economically, socially, and environmentally sustainable?

These ideas of innovation were reflected in the group discussions at the first transnational co-creation workshop of the ConnectedByBiobord project. This workshop was held online on October 16, 2020 to kick-off the planning of the innovation pilots. The main conclusions of the group discussions are presented here.

Innovation - An idea based on customer needs "Innovation" is not equal into an idea but requires a market and a customer. A customer does not need to be a paying customer but the holder of the interest that drives the innovation. The customer invests time or resources into the innovation. Sometimes the innovation also fills an unknown need, and the market demand only appears after the inventor has pushed the innovation into the market and 'created the need'. To conclude, there is always a need or a problem driving the innovation process. Either it is a need that the customer is very much aware of and likes to get solved or it is something the customer does not know he wanted from the start.

Innovation - An old idea in a new form "Innovation" does not necessarily mean a completely new thing, but rather could derive from something already existing put into a new context or new form – or some existing solution complemented with new functions or a more efficient production process. A product could, for example, have the same function as its competitors, but added value to customer because of its light weight or efficient production. In short, an innovation can be a new way of implementing or offering an old innovation.

What is Co-creation Dialogue?

Co-creation means solving problems in co-operation with people representing diverse backgrounds and different competence profiles. A problem can be a concern or challenge that needs to be clarified or solved. However, it can also be a new phenomenon that we want to understand or explore in greater detail. Co-creation dialogue builds connections and networks between research and business sector to enhance the societal impact of research and to increase business sector's capacity for renewal. Dialogue can further involve policy makers or actors of the civil society, for example, to address societal challenges.

Apart from building connections and bridging the actors of the innovation system, concrete results may be achieved as a result of the co-creation dialogue. In many cases, building the co-creation dialogue can work as the launching step for co-operation and partnerships that create solutions. For example, the problems can be defined more clearly to help responding to them, or new solutions or opportunities may arise which can help to solve the challenge.

Differences are approached with curiosity
– Finding truly new solutions is hard if all participants are like-minded from the start

When building the dialogue, it is important to address and understand the different perspectives of the participants – in other words, the differing priorities and assumptions of, for example, researchers and companies. Co-creation dialogue strives to overcome the initial confusion caused by different perspectives and to explore the differences with curiosity. Introducing new perspectives and building joint understanding of phenomena can result in solutions that would not arise from a dialogue with people representing the same background. Depending on the nature of the explored problems, the dialogue can be further enhanced with bridging of policy makers or civil society, e.g., consumers, to the interaction as well.

Our innovation process builds on co-creation dialogue that connects expertise from different countries and regions as well as connects research with business. The international perspective is expected to help in sharing the information on tested or proven solutions from one country to another. Furthermore, by exploring the differences in operational environments, applied technologies or co-operation models, a deeper understanding of the explored phenomenon can be achieved. In the innovation pilots, we have investigated the national differences in addition to bridging the expertise of researchers and companies.

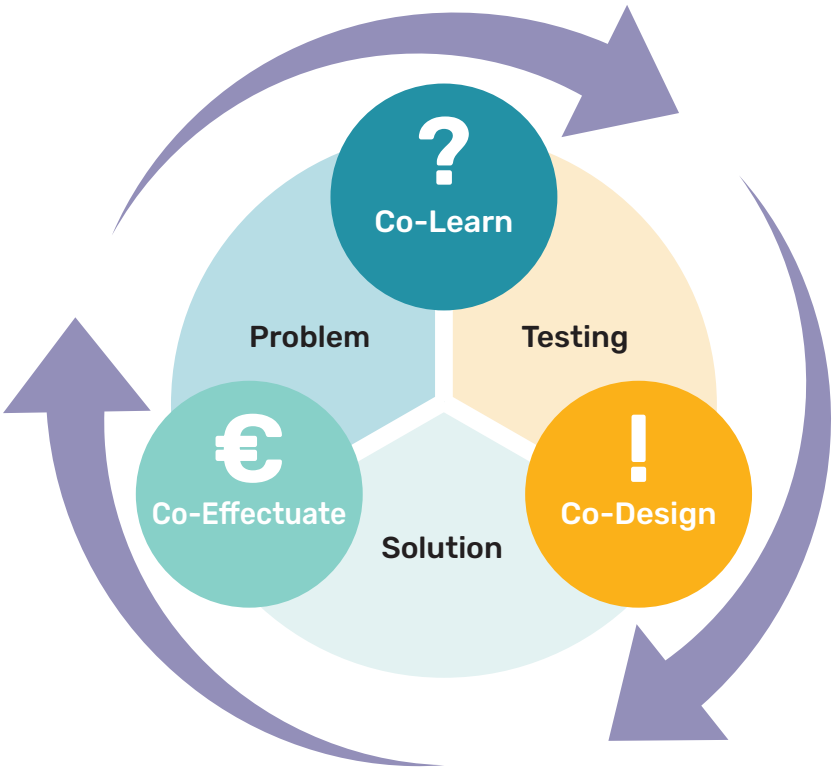
Read more: Our approach to co-creation dialogue has been inspired by 'Co-creation. A guide to enhancing the collaboration between Universities and companies' published by University of Helsinki in 2018.
Available online at https://blogs.helsinki.fi/andaction/files/2018/02/HY_Co_creation_web.pdf.

Iteration of the Innovation Process

Innovation process is always iterative and circular – it does not start or finish. It is also always a process that requires input from others. It is not done in isolation without a chance to learn from others and to get input from them. Hence, the process is outlined as a circle with all phases done in collaborative manner.

Co-learn is the part of the process when we share knowledge with others and collect information from customers and stakeholders in order to define a challenge and explore a need, problem, or job to be done. The most important part of the learning phase is to connect with other people and get to know what the actual need is - what the problem is and how we can solve it.

Picture 1. Innovation process



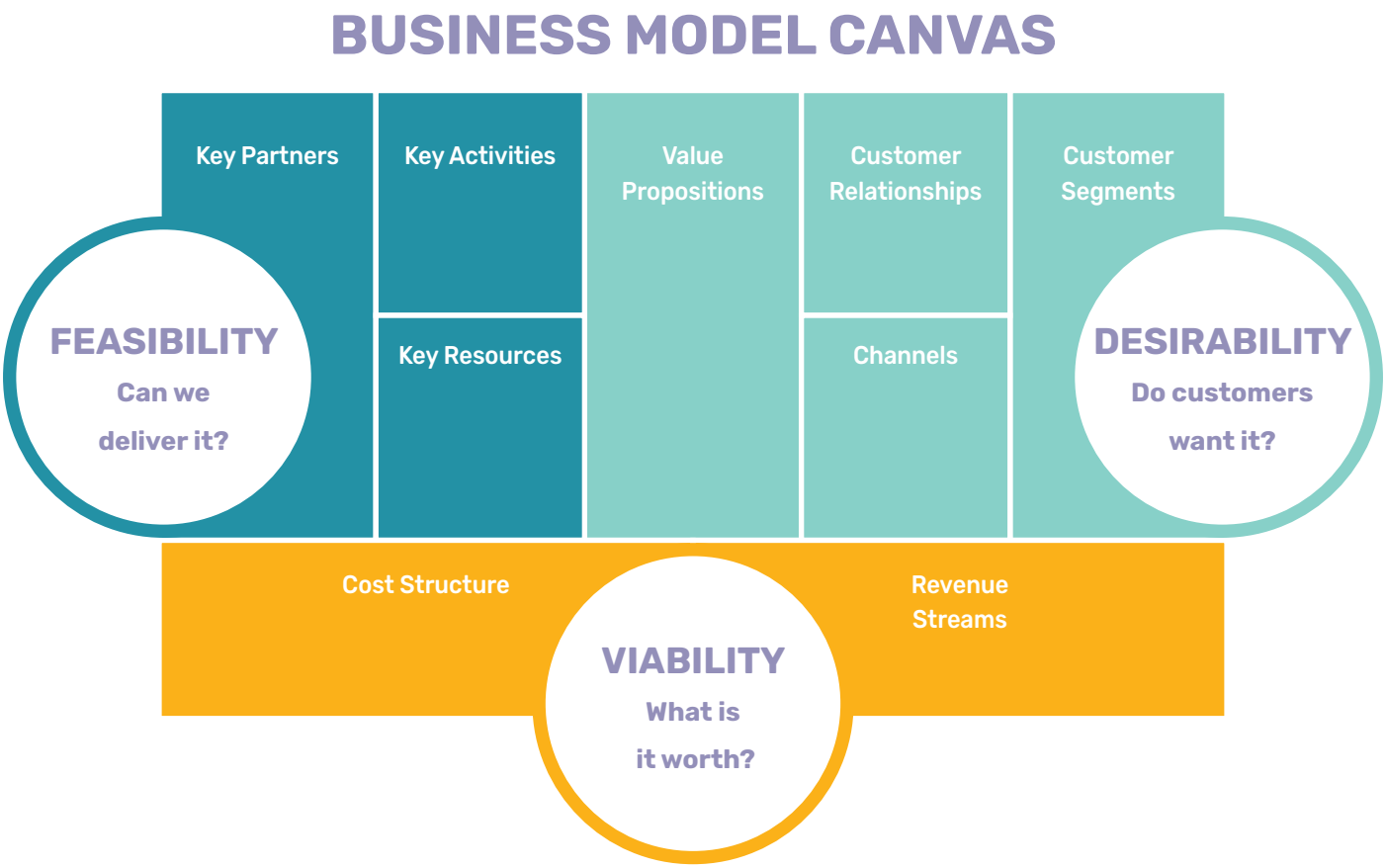
Dialogue is a key for enabling co-learning. Effective co-learning requires a dialogue that is open, equal, and confidential. Diversity should be seen as a source of creativity and an opportunity for learning. As the backgrounds and competences of the participants differ, the combination of the knowhow and perspectives can build to new observations and ideas. However, as the participants come from different backgrounds and have their own perspectives, it is necessary to take the time to build a common ground to achieve mutual understanding. The co-learning activities in Biobord network help our partners to figure out if solutions from one region can be applicable to another region, and to explore the potential of joining expertise across the regions to solve joint challenges.

Once you have learned, it is time to try it out! Co-design is the part of the process when you try, fail, try again, and test your innovation practically. It is important to engage others - stakeholders and end users - to the testing to get their input and to evaluate and validate the outcomes. Testing with prototypes or new technologies can help to build deeper understanding of user needs. Maybe you need to refine something that you thought from the beginning would work but that you figure out needs more research. Sometimes this leads you back to the co-learn phase.

Once you have tried something and it works, it is time to effectuate and make it profitable. Co-effectuate is the part of the process when you try to make your innovation profitable and investigate how you can make a sustainable business of your innovation. Preferably you came out of the co-design phase with a lot of understanding about your innovation. You have tested, failed, tried, and developed. Now that it is time for the market, a business plan is needed to commercialize the product. This is the time when you design your business model.

A business model canvas can be applied for both businesses and for a project. The right side maps the value delivery and the left stands for efficiency – how to scale. The left generates cost and the right revenues. The business model canvas relates to the earlier model of human centered design and can be used to show and evaluate the desirability, feasibility, and viability of the solution. In case you realize that your customers are not ready to pay for your final product - then you need to go back to the co-learn phase and again re-evaluate what customer you should target or how you should redesign your innovation to make it more viable.

Picture 2. Business Model Canvas in the context of Human Centered Design



KEY LESSONS FOR PLANNING AN INNOVATION PROCESS

LESSON 1: ALLOW FLEXIBILITY AND ITERATION IN THE PROCESS

In the innovation process, the learning proceeds from individual assumptions to joint speculations to common knowledge. In a truly innovative process, the picture of the innovation journey becomes clearer along the way. As we do not know what the outcome of co-learning is, we should not plan all the steps of the process in detail from the start. However, it is good to enable testing of arising ideas and practical trials flexibly throughout the process.

Make sure you have defined ready steps for taking arising solutions to the next phase. This is also important in terms of motivating stakeholders to take part in the co-learning and co-design. Especially, when involving business sector, it is important to outline the way forward. Thus, when planning a co-learning process and engaging stakeholders to co-creation dialogue and events, make sure to identify steps, pipelines, or opportunities to continue international co-operation in spin-off teams, to test a developed thesis, or to make a prototype for piloting a solution.

As an example, one of the hacker teams that participated in the hackathon event 'Food Hack by Biobord' invented a breakfast meal product based on alternative proteins. The product was tested during the overnight hacking and its desirability was validated by the judges that announced it to be the winning solution. The international team was able to continue the product design and assessment of feasibility and viability of the product in a follow-up event with the help of four expert coaches handpicked based on the team's needs.

All in all, it is also important to acknowledge that the innovation process is iterative. Not all tests are successful nor are all developed solutions viable. You can always go back to the co-learning if needed – and it is likely that the co-learning continues throughout the process.

LESSON 2: PREPARE FOR A CONFUSION IN THE START

In an innovation project, it is natural to not know in the beginning what the outcome will be. There is an intention to create and deliver value to target groups – however, we do not know what this value may be exactly. In the beginning, the process can often be described as slow and messy, as the discussions are going back and forth. This uncertainty can cause anxiety. It is good to reassure participants that the messiness is to be expected and that it simply means the process is off to the right track. When you experience anxiety, you know you are working on something new and interesting rather than repeating the already known.

If feasible, allow some time for this confusion in the start – planning time is needed after the initial co-learning activities to align the next steps of the process. Having time allows the team to explore the differences with curiosity that is necessary for a creative outcome. You will also need the time to build dialogue and trust within the international organizing team as well as to involve key stakeholders to the process.

LESSON 3: SUPPORT OPEN DIALOGUE - BUILD TRUST AND CELEBRATE DIVERSITY

Complementary expertise and open dialogue provide a basis for creative teamworking. Bring together an organizing team that already forms a basis for co-creation dialogue by connecting experts from business and research as well as policy makers were relevant. The team should also bridge together expertise from different fields relevant to your innovation challenge, such as ICT and forestry.

The diversity of nationalities, backgrounds, and expertise provides a fruitful basis for planning and implementing an innovation process. This diversity needs to be celebrated as a booster of creativity and as a factor that enables learning and solving of complex problems as well as provides a better understanding of stakeholder needs and motivations. However, it is good to note that the diversity of backgrounds and competences can lead to conflicts and misunderstandings if the interaction and dialogue within the team is not suitably supported and managed.

It is worth to emphasize that in the international teamworking, the dialogue needs to be equal and support free expression. The contribution and experiences of each member of the team should be respected. An atmosphere of mutual trust where all participants feel that they can share their thoughts and observations without criticism is central to creativity, and also builds interest and motivation to engage in joint initiatives in the future.

It is important to take the time to build trust in the international team, as well as to get to know one another and each other's competences. The process may be slow at the start while the team members learn to understand and value each other's assumptions and priorities. Still, the team will gain momentum once trust and mutual understanding has been established. It pays to take the time to build social capital in the start.

As we observed in our innovation pilots, the participants of the pilot teams appreciated the opportunity to exchange experiences and to learn about the different perspectives of the representatives of an international team representing various sectors. This co-learning was possible since there was space for open discussion at every stage of the project. Such an exchange of thoughts and observations often took a chaotic form, but thanks to the role of coordinators, it was seen to result in structured conclusions.

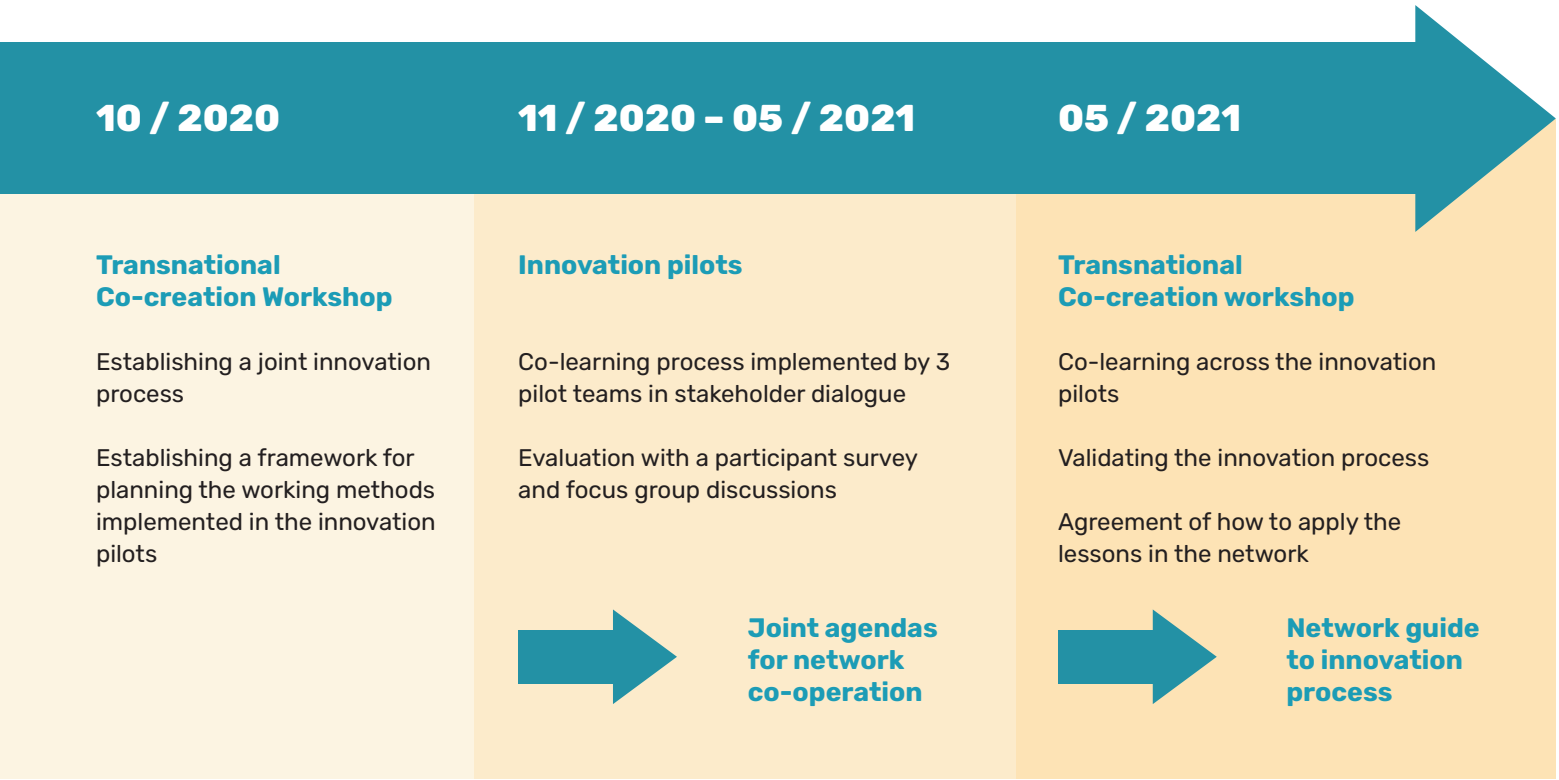
3. PILOTING THE INNOVATION PROCESS

In this chapter, we introduce the innovation pilots implemented in ConnectedByBiobord -project, outline the steps of the co-learning, and introduce the scope of co-creation dialogue in these innovation pilots. In connection to the pilot descriptions, we offer our conclusions on the lessons for international teamworking in an innovation project. In addition, we elaborate our lessons for successful stakeholder involvement in the chapter 'Building Co-creation Dialogue in the Innovation Process'. Furthermore, in the course of the innovation pilots, several working methods for co-learning were tested. In the chapters 4-5, we elaborate our findings on organizing hackathons and field demonstrations as well as offer checklists for organizers.

As an outcome of the co-learning, all pilot teams deliberated a joint agenda for future activities of the network. The steps of the co-learning and co-creation dialogue with stakeholders have offered a possibility to study a selected challenge, wicked problem, or phenomenon of joint interest in the international team. The accumulated knowledge, the tested working methods and theses, as well as the build trust and international stakeholder connections have provided a basis for defining what we problems we wish to focus on solving in the network, and what value we can provide to different target groups via collaboration.

The joint agendas of Biobord network are elaborated on an adapted Business Model Canvas – a Joint Agenda Canvas. The canvas model is intended to outline a value proposal to our target groups based on identified problems and potential solutions we could offer as the Biobord network. Furthermore, the canvas will provide a framework for assessing the feasibility and viability of the proposed agenda. This canvas is introduced in more details in chapter 6.

Picture 3: Piloting the innovation process in ConnectedByBiobord -project



Innovation Pilots

Due to limited timeframe, the focus of the innovation pilots was on co-learning activities. However, we were able to also take some ideas to testing and even as far as assessing the market potential of a co-designed product. Here we briefly outline the thematic interests of the pilot teams as they set out on the co-learning process. The described joint interest areas were the starting point for the co-learning process. The presented icons are used in the following pictures of the guide to indicate the specific pilots.

FOOD INNOVATION PILOT

Problem: Current sources of proteins for human and animal consumption often come with a high carbon footprint. The introduction of new protein sources (incl. insects and plant-based proteins) can significantly decrease the negative climate effect of food production and introduce options for climate-friendly food consumption.

In the food industry, especially small and medium enterprises (SMEs), are increasingly tackling with market demands for sustainability, as well as fierce local and global competition. How to offer the SMEs in Baltic Sea region chances to enhance their innovation capacity via open innovation? In the Food innovation pilot, we tested how an open innovation process can facilitate collaborations, facilitate building of partnerships, and alleviate innovation hurdles of SMEs, such as limited resources and R&D expertise.

Pilot Team:
Leader: Vidzeme Planning Region (Vidzeme, Latvia)
Krinova Incubator and Science Park (Skåne, Sweden)
SEI Tallinn and Pärnu County Development Center (Estonia)
JAMK University of Applied Sciences (Central Finland, Finland)

FOREST INNOVATION PILOT

Problem: The forest management in boreal region is affected by the less predictable conditions for growing and harvest caused by the climate change. The milder winters results in smaller areas and shorter periods with frozen ground, causing problems for harvesting and terrain transportation of timber. Furthermore, intensive silviculture and possible drainage of the peatland may cause emissions of greenhouse gases, especially methane, stored in the peatlands.

With data-based decision-making, the foresters can better respond to both climate change mitigation and adaptation needs. New and emerging technologies that may offer decision support are drone-borne multi-spectral cameras and data gathering by harvesters, which is extensively collected, but applied only in limited scope.

New and emerging technologies offer decision support that improves value chain profitability, while safeguarding the environment and sustainability. New and emerging technologies that may offer decision support are drone-borne multi-spectral cameras and data gathering by harvesters, which is extensively collected, but applied only in limited scope.

Pilot Team:
Leader: Tretorget (Inland, Norway)
INN University of Applied Sciences (Inland, Norway)
Paper Province (Värmland, Sweden)
JAMK University of Applied Sciences (Central Finland, Finland)

TECHNOLOGY INNOVATION PILOT

Problem: Our global demand on resources pits us against wild animals and their resource needs for survival. Additionally, we are faced with a human-induced extinction crisis that requires immediate conservation action for certain species to persist. For successful conservation action, we must monitor wildlife distribution and density to understand their responses to a changing climate.

The currently applied methods for monitoring the wildlife populations are time and cost intensive which limits the opportunities for effective monitoring and data-based decision making in wildlife management and connected business areas, such as forestry and recreational hunting. New technologies such as drone-based remote sensing can help to improve data-based decision making and allow co-operation opportunities for sustainable management of populations.

Pilot Team:
Leader: Institute of Environmental Solutions (Vidzeme, Latvia)
INN University of Applied Sciences (Inland, Norway)
JAMK University of Applied Sciences (Central Finland, Finland)
Pro Civis (Świętokrzyskie Voivodeship, Poland)

In the picture 4, we outline the steps of the co-learning process implemented in the innovation pilots. These steps included thematic analyses, field demonstrations, hackathons, and establishing the joint agendas. The thematic analyses were conducted as collaborative desk studies in the pilot teams. The data collection entailed stakeholder input from all regions and allowed comparison of operating environments as well as applied technology solutions. The field demonstrations offered a chance to learn from the application of new technologies in different operating environments. Hackathons allowed further elaboration of the problems with the stakeholders to define potential solutions. In addition, hackathons were important for understanding the needs of the stakeholders. Finally, the pilot teams elaborated the lessons of the process into joint agendas.

It is important to note that each pilot team applied the process in their own way based on the identified needs of their target groups. Every team did not apply all the steps as shown in the picture with the help of the icons. In addition, the sequence of the steps varied. For instance, two teams started with the thematic analysis while food innovation team compiled an analysis after the co-creation dialogue in hackathon event. All in all, what is essential is that the co-working in the international pilot team is fluent and the process is carried out in continuous dialogue with the stakeholders.

Picture 4: Steps of the Co-learning Process

Thematic analysis desk study

State-of-art analysis on technology options

Comparison of operating environments

Review of the current market, arising trends and opportunities

Analysing needs and problems of stakeholders

Field demonstration with new technologies

Testing application of new technologies in different operating environments

Co-learning on application of new technologies

Application of digital learning materials for co-working and stakeholder engagement

Hackathon event

Bridging co-creation dialogue in hacker teams

International networking opportunities

Inspirational expert speakers

Establishing a joint agenda

Defining the priorities and focus areas for the network co-operation in the coming years

Defining a value proposition for target groups

THROUGHOUT THE CO-LEARNING PROCESS

Co-working in a international team:
Planning meet-ups, coordination meetings, co-writing, co-working in online platforms...

Continuous stakeholder dialogue to validate findings :
Personal contacts, webinars, workshops, interviews, surveys...

KEY LESSONS FOR TEAM WORKING

LESSON 1: TEAM SHOULD COMPRISE OF MEMBERS WITH COMMON INTEREST ON THE TOPIC AND A MOTIVATION TO WORK TOGETHER

The team members should share a common interest on the topic, such as a common 'pain' or problem, or a shared passion, e.g. in application of a new technology. This initial motivation is also a prerequisite for long-term partnerships that continue to work on the arising solution.

Apart from shared interest, the team should comprise of individuals motivated to international co-working and dialogue. The members should see added value in the international co-working. Although the international co-working often entails some additional hurdles in comparison to regional or national co-working with people from the same field, it is important that the team members feel motivated to participate. The experienced added value can come from, e.g., learning opportunities, inspiration, and new ideas.

It is good to note that there is nothing wrong with having also some fun and connecting on a personal level as it can also be a glue that ties the team together and improves the co-working relationship. In online co-working, this aspect of team bonding is far more difficult to achieve but can nevertheless be promoted by enabling informal dialogue and the sharing of experiences.

LESSON 2: PLAN TEAM COMMUNICATION CAREFULLY AND FACILITATE DIALOGUE

Communication in an international team working online is a challenge not only on the linguistic level, but also due to the need to choose the appropriate communication channels. The members of the team can be familiar with different tools and co-working platforms. We often prefer the tools we are most accustomed to and learning new tools can be a hurdle and hinder motivation to take part in the online discussion and co-working. Often, the members of the team are engaged in various projects or activities at the same time and can focus on the innovation process only part time. Hence, they are usually expected to work on multiple platforms as a part of their daily work.

Due to the aforementioned factors, the internal communication tools, communication practices, and working methods of the team should be kept simple and straightforward. If you can, apply the same online meeting room or platform for all team meetings. Make sure all documents are found logically in the same place. Have one channel for dialogue and discussion. Take time in the start to go through the tools with the team and to agree jointly on the communication practices and how to use the tools. Practice the tools and working methods with the team. To avoid confusion, do not allow variation of the agreed communication practices but encourage all members of the team to use the selected channel, and to apply the agreed communication practices.

As a good practice, we recommend having one member of the team take responsibility of ensuring information flow within the team. This member should, for example, coordinate internal meetings, record the outcomes of meetings, organize document filing and sharing, and keep work plans of the team updated. This person can be the team leader, or another member appointed to the task.

To support equal and open dialogue, we would also recommend utilizing third party facilitator in the creative group working sessions of the team. Based on our experiences, a facilitator can help to keep a back-and-forth dialogue moving forward with offering intermediary conclusions and proposing alternative viewpoints. Having a facilitator allows all members of the team to focus on the creative dialogue while the facilitator is keeping the track of the outcomes of the dialogue, and guides the discussion back to the topic when needed. The facilitator can also provide expertise of the innovation process or offer insights from other teams' experiences to help the team.

LESSON 3: CLEAR ROLES AND DIVISION OF TASKS

As it is impossible to plan all the steps of the innovation process in detail at the beginning, the detailed work plans need to be elaborated in stages along the process. As we are learning in each stage, there should be some room to make changes and adjust plans along the way. Based on our experiences, we recommend starting the innovation process with certain milestones, but breaking down the entire process into smaller steps and focusing on achieving results at each stage. It is also good to elaborate the lessons of each stage jointly when the ideas are still fresh in everyone's mind.

This need to continuously define tasks, assign responsibilities and roles, as well as schedule activities, highlights the importance of the role of the coordinator. The team leader needs to guide the process and provide clear steps for the team while ensuring adequate room for dialogue and creativity. In international team working, one can expect to find a great diversity within the team in terms of working culture, especially in the field of innovation. Therefore, it is important to combine clear leadership with simultaneous space for improvisation and creativity of partners. In other words, establish a stage-by-stage approach to planning, and offer space for open dialogue in between the stages.

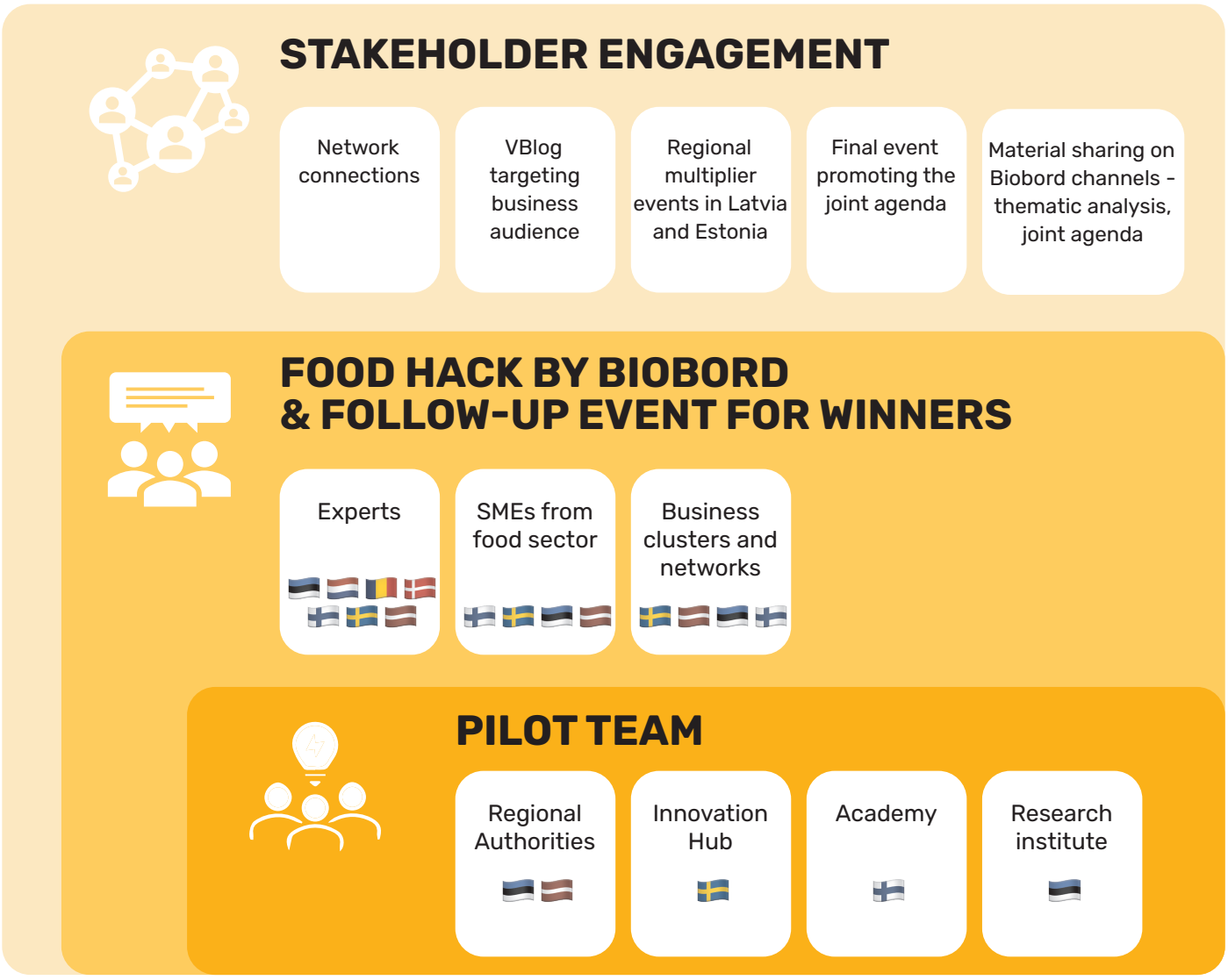
To function effectively, the teams should not be too large – or at least there should be a division to smaller task forces with clear roles to implement specific steps of the process. Based on our experiences, at the time of implementing certain process stages, co-working is more efficient, and decision-making takes less time in a smaller task force. A small task force with clearly assigned roles is needed, for example, for the organization of events, as there is a plethora of minor tasks and details that need to be managed without delays.

Leader should be responsible for the division of tasks between the various actors involved, as well as for the coordination of activities and the monitoring of their implementation based on a detailed work plan defined for the process stage. An important task of the leader is also to update a detail the work plan, so that the tasks for the individual involved parties are assigned in the longest possible time perspective. When establishing the workplans of an international team, it is also good to take a note of the variations of holiday seasons as well as the different national holidays.

Building Co-creation Dialogue in the Innovation Process

The pictures 5-7 illustrate the scope of the stakeholder dialogue and engagement. In the core of the co-creation dialogue is the pilot team that connects experts from at least three different regions as well as, depending on the team, players from research and business – as well as policy and society. A wider co-creation dialogue is enabled in the hackathon and co-creation events, as well as via involvement to the field demonstration in the case of the technology innovation pilot team. Furthermore, tools and approaches for stakeholder engagement are outlined in the outer sphere of the pictures.

Picture 5: Building the Co-creation Dialogue in the Food Innovation Pilot



Organized on March 11-12, 2021, Food Hack by Biobord was a digital 24-hour long innovation competition with international teams of hackers representing a total of 14 SMEs from Latvia, Sweden, Finland, and Estonia. In the Food Hack, the teams tackled challenges of the current food system and defined co-operation opportunities and solutions jointly with the help of expert coachers from the fields of research.

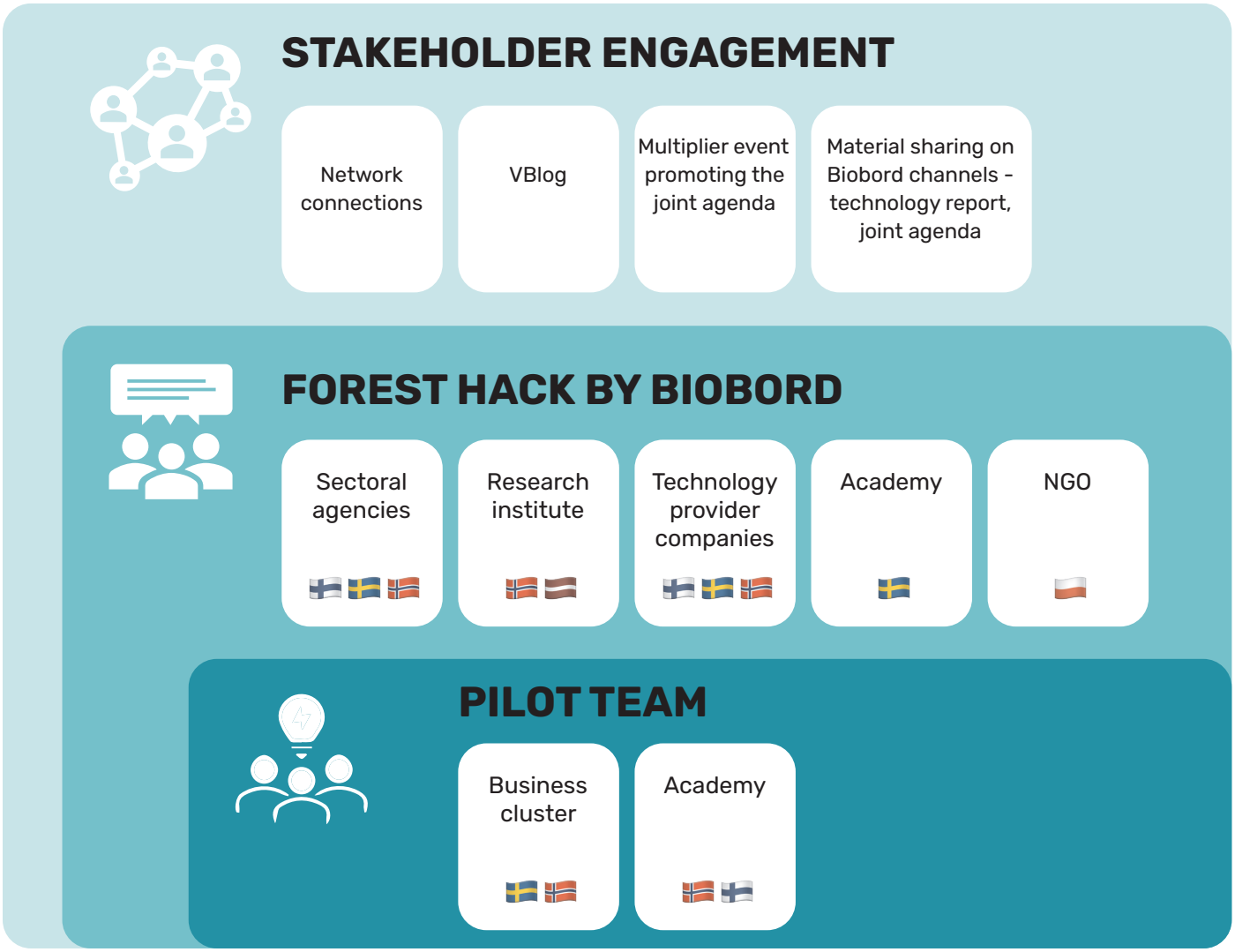
Challenges included:

- **Finding new and different strategies for marketing healthy and nutritious food**
- **Changing the perception of plant-based proteins**
- **Transforming the attitude towards new products including protein from insects and insects as food**
- **Exploration of new protein sources**

The winning team continued their journey to a follow-up event on April 28 where they got mentoring support for developing their idea further from four experts selected based on the needs of the team. The winner companies, Lupinta, MILZU! Aloja-Starkelsen, Felici and Simply NoWaste, received valuable support from an international panel of experts on topics such as the development of innovative and sustainable food products and their flavours, as well as the possibilities of using fermentation technologies to increase the added value of the product. This was an opportunity to work together with experts in the field of alternative proteins and functional ingredients, and to receive answers to various questions related to the development of the product prototype.

The Food Hack by Biobord and the follow-up event were both launched with inspirational presentations from multiple experts, many of which also participated as mentors guiding the hacker teams. Experts of both events represented industry and academy-based researchers as well as private research institutes and consultancies.

Picture 6: Building the Co-creation Dialogue in the Forest Innovation Pilot



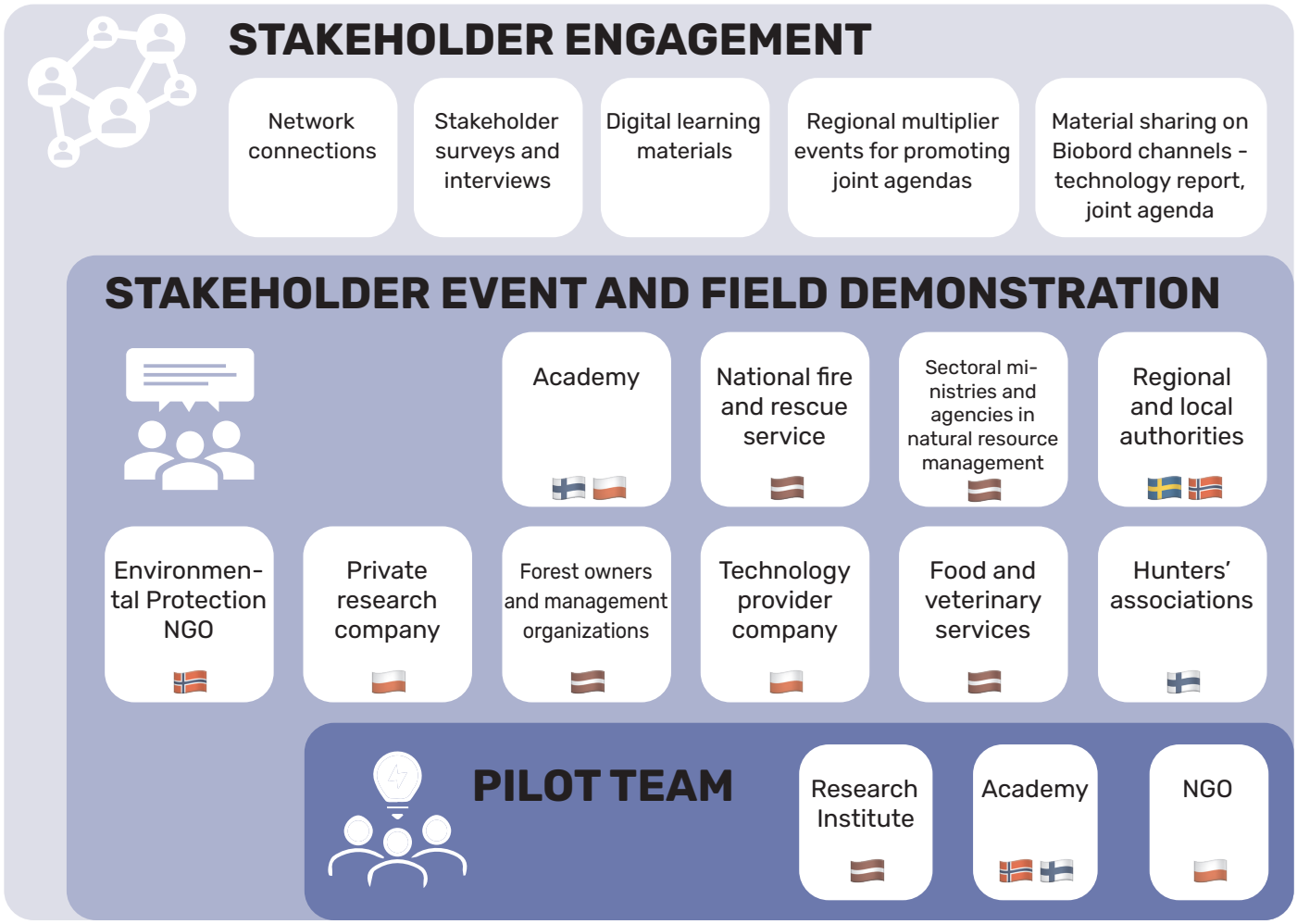
Organized in April 13-14, 2021, Forest Hack by Biobord was a digital innovation and co-creation event, where international teams were solving challenges related to data flow and data use in the forest value chain (from forest to industry). The aim of the event was to establish joint initiatives (such as projects) and find new business potentials from the forest value chain.

Forest Hack by Biobord was supported by a sectoral agency, Finnish Forest Centre, that encouraged hackers for the new data-based solutions and the use of new technologies within in the industry. Co-creation was supported with keynotes from Jussi Lappalainen – Finnish Forest Centre and Sverker Danielsson – Mistra Digital Forest. The keynotes painted the picture of the current digitalization of the industry.

Two challenges were selected for hacking. First challenge was identification of methods for more detailed and accurate data from forests solved by a team consisting of JAMK University of Applied Sciences (FI), TerraNor Kartanalyse (NO), Swedish Forest Agency (SWE), Glommen Mjøsen Skog (NO), PRO Civis (PL) and Luavia Ltd (FI). A digital forestry lab was seen as a potential solution to enhance possibilities to test and develop ways to acquire more detailed and accurate data from forest.

Second challenge was getting accurate data from forests and tracing quality for increased value creation. It was tackled by a team, consisting of FeltGis Ltd. (NO), Fiskarhedens Trävaru Ltd (SWE), Tretorget Ltd (NO), PRO Civis (PL), Taigatech Ltd (SWE), Sør-Hedmark Næringshage (NO), Paper Province (SWE) and Kristiania University College (SWE). Their solution was a joint data platform for accurate data from forest and for better tracing quality for increased value creation.

Picture 7: Building the Co-creation dialogue in the Technology Innovation Pilot



In the technology innovation pilot, no hackathon was organized, but the co-creation dialogue was enabled with involvement of stakeholders to a field demonstration and its planning via a stakeholder survey and interviews as well as by organization of a stakeholder event. An international stakeholder workshop was organized online on May 5, 2021, to validate the results of the field demonstration activities with stakeholders and to gather their feedback. The event was attended by 26 participants and offered a platform for networking.

In all the partner regions, stakeholders were involved in different stages of the technology innovation pilot. Most of them were interviewed to identify pains, needs, and wishes in relation to wildlife monitoring, while some also took part in the field demonstration activities, or the result validation phase during the stakeholders' workshop. In Poland, a dedicated stakeholder workshop was organized to discuss the current challenges and opportunities of wildlife monitoring. All regions organized also regional multiplier events to present the joint agendas to regional stakeholders.

The involvement of the stakeholders had been well-planned already when planning the ConnectedByBiobord -project. The pilot team had managed to get commitment from various key stakeholders representing sectoral agencies or associations that were essential for evaluation of different technologies for wildlife monitoring.
All in all, the topic is of interest to a variety of stakeholder groups including:

- **National and/or regional wildlife management institutions**
- **Land use management organizations (forestry, agriculture)**
- **Nature conservation and protection institutions**
- **Hunters' community (individuals, clubs, associations)**
- **Veterinary services**
- **Owners of free-ranging livestock**
- **Research institutes**
- **Technology developers**
- **Infrastructure developers (e.g., roads, airports, railroads, large electric systems etc.)**
- **Operators of hunting tourism**

KEY LESSONS ON STAKEHOLDER INVOLVEMENT

All in all, our experiences support the recommendations of the iterative innovation process presented in this guide. In other words, the stakeholders should be involved in the entire innovation process, to capture their needs and expectations as fully as possible, and then take them into account at each stage.

LESSON 1: EXISTING NETWORK CONNECTIONS AND CONTACTS ARE ESSENTIAL
There is no way around it. Involving external stakeholder to the innovation process is a challenge. There are no quick fixes, take your time, and plan well from the start. It is essential

to apply the existing network connection and contact of the pilot team. Therefore, it is good to make sure that pilot team is connected to relevant stakeholders. Our experiences further support this conclusion. A vast majority of external stakeholders involved in the innovation pilots were invited to participate via personal contact from pilot team members.

LESSON 2: TAKE TIME TO BUILD RELATIONSHIPS

As highlighted also by lesson 1, building a relationship with any stakeholder takes time. If you do not have an existing relationship with the stakeholder, try to involve them to the process as early as possible. Think about what stakeholders are essential to your process and that bring most value to the co-creation dialogue. It is better to strive for fewer but deeper relationships rather many superficial ones. Take the time to build the relationship and to maintain it. Stakeholder involvement is not a once-off event, but a continuous process that should be established with mutually beneficial strategic intend for a long-term.

LESSON 3: UNDERSTAND THE MOTIVATION OF THE STAKEHOLDERS

Understanding stakeholder motivation is central for engaging them into the innovation process. The motivation may differ for private and public sector or, e.g., for SMEs and large companies. For example, an important motivation for the participation of SMEs representatives in the innovation process is the participation of large companies. Co-operation and relationship with large entities for the representatives of SMEs can be a benefit in itself.

Listen to your stakeholders and try to define that pains and problems they are trying to solve. Define the potential benefits for the stakeholder. Paint a picture of how the co-operation can continue in the future and how the stakeholder can apply the partnerships in the future to solve their problems and pains. However, it is important to maintain realistic expectations of the benefits for joining the innovation process, e.g., attending an event. If the expectations are not met, the stakeholders are likely to not take part in future activities.

Apart from understanding their pains and offering them a solution for them, pay attention also to their concerns and fears. For example, the stakeholder can consider you as a competitor, or they do not wish to join an innovation process that involves their competitors. Try to alleviate concerns with clear approach to intellectual property and with keeping the open co-creation dialogue on a level that is comfortable to the stakeholders.

Design your stakeholder engagement based on the stakeholder needs. It can be difficult to motivate stakeholders for an event focusing on, dissemination of project results, especially if they have not been involved in the project implementation. Therefore, use established forums and events that are relevant to your stakeholders. If you need to organize your own event, plan the event in dialogue with your stakeholders and target groups. For example, when planning stakeholder events, ask what topics they would find interesting and start from there.

4. HACKATHON

What is a Hackathon?

Hackathon is a term deriving from the words “hacking” and marathon”. “Hacking” could be misleading since the word is associated with illegal and destructive activities. In the context of innovation, it simply means being creative. It originates from hacking solutions within IT and programming.

The association of marathon can be considered contradicting as well since programming and problem solving in general takes a lot of time. Instead, hackathons are known to have a limited time frame- creating a strenuous sprint in innovation. The focus that comes out of the strained time makes it feel like a long and intense process with generally less breaks in between.

In the last years, other sectors have started using hackathon as a format and springboard for innovation. Since hacking means being creative and innovative, you can hack almost anything. A market, a diet, an organization, a product. Still, what brings all hackathons together is that they are challenges a driven by a need for change. The challenges are usually tied to a topic. It is important for the organizers as well as for the participants to share the same goal and to target the right competence.

To organize a hackathon is to provide access to information and knowledge, as well as to enable trend spotting, analysis of networks, contact and different perspectives. A hackathon is also a meeting spot for people who usually do not connect with each other to work on common challenges. In the Biobord network, we propose hackathon as a working method for co-learning in international context.

Organizing a Hackathon

There are multiple ways to organize a hackathon. It could be a public event for anyone who is interested in joining or it can be a closed group of people within a company for example. The scope of the challenges defines how diverse the group of participants are. The more diversity, the higher level of radical innovation. Some hackathons also include an element of competition which strengthens the motivation and possibility to bring your innovation further out in the society to really make a difference!

As mentioned, different hackathons are characterized differently depending on their topic, duration, and participants. Nevertheless, there are some elements which many organizers follow when organizing a hackathon event.

- **Welcome -** This is where the organizers present the topic and structure of the event.

- **Lectures –** Many hackathons include lectures in order to prepare the participants with a common ground by providing an overview of the latest information regarding the topic.

- **Pitch -** Either the organizers or participants themselves pitch suggestions on challenges that the teams should work on.

- **Hacking -** Teams work together on the challenges. It is common to have joint breaks, inspirational lectures, and coaching from experts in the field.

- **Presentation of the solutions –** Hacker teams present their work for an audience and/or judges.

- **Final –** This is where one of the teams are announced winners or where conclusions of the event are summarized.

In Picture 8, we provide a checklist for an organizer as an outline of issues to consider when planning a hackathon event. It is worth to note that the preparation phase should typically be quite long to be able to define the aims carefully, to engage with different supportive expertise, and to communicate with participants.

Picture 8: Checklist for Organizing a Hackathon

PREPARATION PHASE (PREFERABLY 6 MONTHS OR MORE)

1. **Defining the aims:**
What is the scope of the challenge(s)?

2. **Defining the ownership of the idea and agreement of IPR:**
Who owns the created solutions? Are all outcomes for common use or are there some restrictions?

3. **Outlining the next steps:**
What can we offer for winners, or how can we support taking the winning idea further? This is central for motivating participants!

4. **Setting up the organizing team:**
What expertise is needed? What roles are necessary – communication manager, facilitators, technical support, host, etc.?

5. **Defining the event concept:**
What type of Hackathon event are we organizing? Is it a competition? Is it public or invitation based? Do we have an audience? How many days? Onsite or online?

6. **Profiling the participants:**
Who are the hackers and what is their motivation to join?

7. **Connecting with supportive expertise:**
Who can we get as speakers, mentors, judges, or promoters of the event?

8. **Defining a marketing and communication plan:**
How do we reach the participants? Who do we want to communicate the results to? What are the communication messages and channels we plan to use? Plan the communication channels used during the event for different groups involved.

9. **Organize active scouting of Hacker teams:**
Active scouting (personnal contacting of promising hacker candidates) is often needed to connect with hackers.

10. **Defining criteria for selecting the winners**

EVENT (1-3 DAYS)

1. **Open programme:**
Lectures for hackers and potential audience for inspiring the teams

2. **Facilitation of the team co-working:**
Do the teams know each other?
Is there a need for trust-building activities?
How to get started in the creative dialogue?

3. **Mentoring of the teams:**
Organizing the time slots and rooms for different teams to meet with mentors

4. **Information channels and communication with involved Hacker teams and other groups (facilitators, technical support, judges, mentors, speakers etc.):**
What (online) tools are we using for file sharing, notetaking, co-writing, tech support etc.?

5. **Pitching the results from Hacker teams:**
Instructions for pitching – what is evaluated? How to sell the solution?

6. **Selecting the winners (judging):**
Do we need evaluation templates, co-working rooms, and facilitation of judging?

7. **Announcing and awarding the winners:**
Is there a prize?
Do the winners make a speech?

POST-EVENT PHASE

1. **De-briefing discussions with organizing team:**
What did we learn on organizing hackathons? What was the feedback from the participants and supportive experts? What happens next? Send out evaluation outcomes to hackers and other participants.

2. **De-briefing discussions with hackers:**
What were the workable outcomes and identified solutions to challenges? What happens next?

3. **Communicating the results in line with the marketing plan**

4. **Support for the winning team to continue co-working**

Guidance for Facilitating Online Co-creation Events

Facilitation of online events can be organized online or face-to-face as well as in real-time or in an asynchronized format. In other words, both the time and the place can be either the same for the participants – or different. In the organization of the online hackathons and co-creation events of ConnectedByBiobord, we applied both real-time and asynchronized facilitation approaches in the facilitation of the events. When talking about face-to-face facilitation of online events, this can involve e.g., multilocation events facilitated on-site in various locations and connected online in real-time. Due to circumstances in 2020-2021, this event concept was not piloted in ConnectedByBiobord, but could be one opportunity to enable international co-creation dialogue.

Facilitation is an important aspect of any innovation process involving co-creation dialogue that connects participants from different backgrounds. Facilitation is a key in enabling the building of trust among team members which is an essential prerequisite for a fruitful dialogue and creative co-working. to engage in a fruitful dialogue. In digital facilitation, there are many practical considerations that need to be taken into account, such as mastering the used digital tools, managing the disruptions related to remote working, as well as dealing with the reduced attention span associated with virtual events. Meanwhile, the basic principles of facilitation grow even more important when entering the digital realm. These principles are summarized in the checklist for organizer below and then elaborated in more details.

CHECKLIST FOR ORGANIZER

1. Plan your digital toolbox. What is needed in addition to the online meeting room? Survey tools, whiteboards, note-taking tools, file sharing, audience engagement, real-time tech support? Think about the whole process – also communication and possible co-working phases before and after the event.

2. Provide clear instructions on how you are planning to use the digital tools and how the participants should communicate with each other in the digital space.

3. Manage the expectations of the participants. Give them a clear picture beforehand on what to expect from the event and what kind of interaction possibilities there will be.

4. Build a safe environment for participation. Let participants know who is watching and listening, how the event is documented, and how the results are used.

5. Guide and support teamworking. Initiate teamworking with icebreakers and engagement activities. Provide a structure for guiding the dialogue and for documenting it. The presence of a facilitator and a well-planned support for the dialogue is more important in the online environment. For example, in our Food Hack by Biobord event, we found that the teams with strong presence of a facilitator benefitted from that support and managed to take their ideas further.

6. Make sure everyone's voice is heard, activate participants, and provide them chances to get involved in the dialogue.

When planning your digital toolbox, try to keep it simple. There is a plethora of digital tools available, so be strategic with your choices and make sure you are perfectly familiar with the use of the tools in advance. The digital tools will help your facilitation tasks, and especially with an event where you have participants in different roles and engaged in team-working, there might be a need to apply severaltools. However, keep in mind that every tool needs to be instructed, which takes time and energy from you and the participants. If you are sure that the participants are advanced in using the typical digital tools associated with video conferencing, you can introduce some novel tool to the mix. Still, try not to overwhelm the participants and see how you can keep it as simple as possible.

Make sure you also keep it simple for yourself as an organizer. Do not make one person juggle too many tools and roles at the same time. Engage a technical support for the participants in order to be fully able to concentrate on the facilitation process yourself.

Look also for ways to get more out of the selected tools. Is it, for example, possible to use one digital platform for many tasks, such as file sharing, note-taking, surveying and participant engagement? Is your event a step in a development process that would benefit from wider engagement and dialogue also before and after the event? Should the digital tools allow for a more continuous interaction? Innovation events are usually hosted to achieve a common goal, e.g., to identify common problems or potential solutions. In this context, the digital facilitation process can serve as a conduit to build connections that can carry on well beyond the single event.

Utilization of a digital platform can extend the interaction period with your participants. The participants can engage with each other or with you beforehand which can help to make most of the joint time in the event. You can share information on agenda, request information from participants, or guide them to get to know each other. After the event, the platform can work as a place to share the materials, to continue discussions or networking, and to get feedback from the participants.

TIP! Example of a digital facilitation platform for events is Howspace - an AI-powered digital facilitation platform.

Biobord network partners are also encouraged to test Biobord On Stage as a platform for pre-engagement and post-dialogue with the participants. By posting the event as a topic on Biobord On Stage, you can share information on agenda, request information from participants (for example with a poll) or guide them to get to know each other (for example to introduce themselves and share their interests under the topic as a reply). After the event, the platform can work as a place to share the materials, to continue discussions or networking, and to get feedback from the participants. As a limiting factor, the interaction is only available for registered Biobord users.
However, the information can be openly red and files accessed by any event participant accessing the open website.

As a core task of the facilitator, the participants, in all different roles, need to be provided with clear instructions and their expectations need to be managed. With online events, the risk of participants coming to the event unprepared is higher. Still, even though they might require more instructions to be able to apply all digital tools correctly. The instructions should be conveyed both orally and in writing. Even if you have sent material for the participants to view beforehand, it is important to go through those instructions in detail at the event and to have technical support available.

When possible, it is preferable to have a discussion with the participants beforehand to manage their expectations as well as to ensure they are coming to the event with sufficient capacity to apply the digital tools. Especially when the person has a key role in the online event, or is expected to engage in creative teamworking, it is recommendable to take the time to have a preparatory meeting one-on-one (or in a very small group) with that participant.
When using asynchronized facilitation, e.g., providing instructions via any digital co-working platform, make sure to be very clear, since you may not be immediately available to clarify any arising questions. It is good to have a test-reader to check that the instructions are clear. A discussion with participants before the event is one good approach to check the instructions as well.

Depending on what the participants are accustomed to, the online co-operation may be intimidating and uncomfortable when you do not know the other people present. The facilitator's role is to build a safe environment. One part of this is to increase transparency of how the event is documented, how the documentation (e.g., recording) is used, and who may be the audiences. Secondly, to launch team working, it is important to start with some icebreaking or engagement activities to build trust and to get to know the other team members. Thirdly, a natural dialogue is more challenging online, so facilitator should help to structure and guide the discussion. Findings should be documented as the dialogue proceeds to avoid going in circles. Structure should be simple and clear. For example, in co-working platforms, arising topics should be identified separately to avoid ideas being mixed up and lost in common threads.

In an open digital event, a wide audience and international participation is easier to involve. However, it is more difficult to engage the participants. People loose their commitment and focus more easily on online events. It is simple to not show-up, to multitask, and to free ride. Facilitator needs to give participants chances to be active to help them keep focused. This can be achieved e.g., with simple online polls, or inviting the participants to share their ideas or questions. Vary your approaches and note also that people may deal with interruptions. It is therefore good to iterate the discussion at times and to document the progress.

TIP! As an organizer, please be aware that even the best activation methods or digital tools will not help you to escape the fact that participants need more breaks in online events and the event should also be shorter than its physical counterpart. Online interaction is simply more demanding, at least for most people.

5. FIELD DEMONSTRATION

Field demonstrations are an effective way for technology and knowledge transfer, in other words to raise stakeholders' awareness about new solutions, possibilities, and technology options. Traditionally, field demonstrations are established by researchers and/or experienced practitioners to validate and demonstrate new technologies in target areas, e.g., in end users' fields under the end users' conditions. This method is widely applied in the agricultural sector. In the Biobord network, we propose field demonstration as a working method for co-learning or co-design in international context.

In our case, field demonstrations were organized in three countries simultaneously to raise stakeholders' awareness and interest about, and to show the benefit of new technologies (drones, GPS collars, camera traps, biosensors) for monitoring of wild animals and free-ranging livestock. Stakeholder engagement was essential for evaluation of the potential to apply these new technologies to complement or replace existing monitoring practices.

Organizing a Field Demonstration

The process of establishing and implementing field demonstrations involves three main phases – preparation, implementation, and evaluation. Picture 9 below highlights the most important tasks to be carried out in each phase.

Picture 9: Organizing a Field Demonstration

PREPARATION PHASE

1 Define the problems
Together with stakeholders, identify important problems and their causes in the area of interest.

2 Define the aims of the demonstration
Discuss within the organizing team and with stakeholders about what should be demonstrated and how.

3 Establish clear roles and responsibilities
Important: the process should have a leader who is supportive and available for the team to respond to any arising needs.

4 Select areas of demonstration
The area should be representative of the target area and large enough to be believable.

5 Elaborate and agree on a protocol
The protocol defines how to conduct the field demonstration of technology, including objective, tasks, required equipment, technical requirements of data acquisition, and processing.

6 Stakeholder involvement
Work with willing stakeholders who contribute to selecting and establishing the demonstration site.

7 Plan the documentation
Plan the process and approach for documentation (e.g., filming, photographing, livestreaming, etc.). Determine the use of the material, target groups, and the needed content.

IMPLEMENTATION PHASE

1 Check conditions
Check the weather few days before the field day, and make sure that the needed technical equipment is available and functions properly.

2 Stakeholder involvement
Allow stakeholders to make observations and comments. If possible, involve them in practical implementation of some tasks to strengthen their commitment to the activity.

3 Collect the data
Data collection is conducted in line with the agreed protocol.

4 Document the data acquisition process
Documentation is done in line with the plans established in the preparation phase.

5 Reflection in the team
Discussion and comparison of the obtained results, experience exchange, and mutual learning within the organizing team to develop knowledge and skills and raise overall capacity.

EVALUATION AND DISSEMINATION PHASE

1 External evaluation
Present the obtained results to the stakeholders and gather their feedback. Important: be open to accept, note, and learn from both positive and negative comments. Accept criticism and use such feedback to improve how the technology is implemented and presented.

2 Internal evaluation
Carry out evaluation of the field demonstration within the organizing team to identify what worked, what did not work and what should be improved.

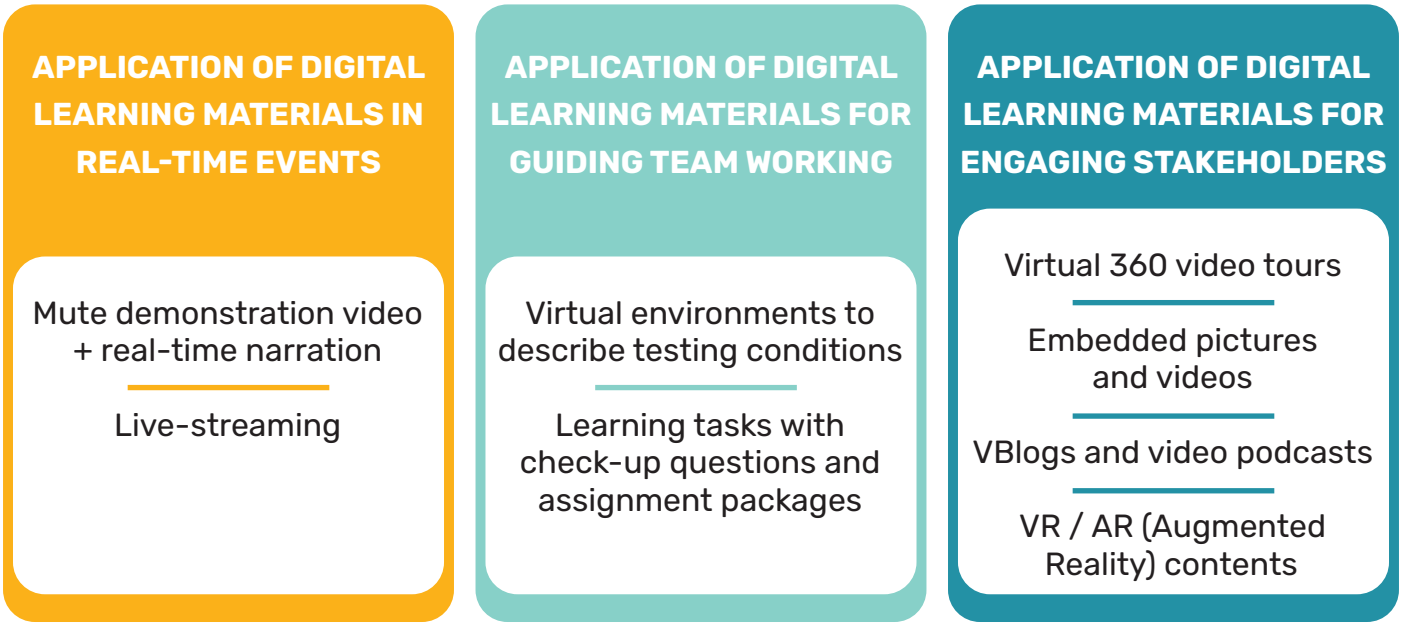
3 Dissemination
Disseminate the gained knowledge and experience to stakeholders in different formats (presentation materials, digital materials, news, multiplier events, etc.) and via different channels (traditional media, social media, digital platforms, collaboration networks, etc.)

4 Plan the next steps
Plan activities for further technology development and joint collaboration.

Guidance for Applying Digital Learning Tools

We live in an increasingly visual world where text content is more and more often supplemented or replaced with visual content. As we compete with the information overload, we need to pay attention to the information design to get our message heard and to engage our audiences. Information design refers to presenting information in a way that fosters an efficient and effective understanding of the information. Adding visual content can help to understand the information – especially when we are talking about complex issues such as climate change or sustainable development. Furthermore, by adding interactive content, we can engage the audience to spend more time contemplating our message as well as sharing their inputs with us. Interactive and attractive digital learning tools can therefore help us in building a co-creation dialogue in different phases of the innovation process.

Digital learning tools can be applied to support international co-learning or co-design in several ways. They can be applied to share information on e.g., technologies, pilots, working methods or innovations. Having a visual format with interactive features can facilitate information sharing and support learning. This can help to engage stakeholders in an online co-creation dialogue as they can more easily get the ideas that others are presenting and thus, the building of a joint understanding necessary for effective dialogue can be facilitated. On the other hand, in the co-design phase, digital learning tools can also be used to establish joint testing protocols that are to be followed by the testers from different regions. In brief, digital learning tools can be used to enable and support teamworking or the engagement of external stakeholders.



Picture 10. Examples of digital learning material and their application

Here we outline the phases of designing digital learning tools, elaborate the key considerations for each phase, and provide checklists for planning, creating, and applying the digital learning tools.
The design process for digital learning tools can be divided to 5 phases:

1. **Ideation and analysis**
2. **Planning and structuring**
3. **Content creation**
4. **Application with target groups**
5. **Evaluation and analysis**

Ideation and analysis phase is a creative phase where we first establish an understanding of the target groups as well as look into how we could best meet their needs and spark their interests. Ideation is used to immerse in and to explore the topic. It can be carried out with various brainstorming techniques to produce ideas in wide spectrum. Keep an open mind in the early stages of ideation and narrow down to the realistic options later.

Apart from building knowledge on the topic, it is important to define the target groups as well as to assess what are their motivations for using the material, what difficulties they may experience related to the topic, and via what channels you can reach these target groups. Understanding the target group will help you to narrow down to the core content.

In the planning and structuring phase, the content is organized into thematic sections, the activities of the target groups are defined, and the content creation is planned. Based on the aims, the target groups can engage in e.g., problem-solving, decision making, training, or research activities. The digital learning materials support these activities, and their content is organized as sections that guide the steps. At this phase, the applied digital tools and workload should be assessed to determine the feasible scope of content creation. A practical workplan for making the digital learning materials should be established in this phase. Also take into consideration whether you need some external resources for creation of some of the materials.

Content creation involves the creation of a storyboard for the video content as well as the production of the video content and related material. The storyboard defines a script for the filming or video production. A detailed storyboard helps you to avoid problems in the filming stage. In the storyboard, the content of the video is outlined section by section including the tests or captions shown and the audio track where relevant. In the editing phase, test your video content with some critical viewers to get feedback and to check the usability.

When applying the digital learning tools, offer proper orientation to the audience, activate them to engage in the intended activity, and provide a chance for social interaction. To develop and improve as a maker of digital learning materials, remember to enable the viewers to give you feedback - and to apply it for reflection, and evaluation.

Tip! When applying Biobord On Stage or Open Biobord Forum as a platform to orientate and activate the audience and to provide a social interaction channel, please consult the Biobord Network Partners' Guide 1 on Forum Facilitation and the Biobord Users Guide 4 on Making and Editing a Posts in the Forum for tips on how to engage your audience.

When assessing the usability of the digital learning tools, it is important to reflect the results based on the goals. Your target group feedback is central for evaluation and analysis as it shows how well you were able to meet your aims for activating your target group, changing their behavior, or increasing their knowledge and awareness. Did the digital learning tools you applied help you to engage the stakeholders or to activate them, did they support training activities, or did they raise awareness on your activities in relevant target groups? Was the added-value worth the effort? Where there some technical issues with contents or technologies used that weaken the ability of audience to fully use and benefit from the materials?

Checklist for Planning, Creating and Applying the Digital Learning Tools

1. Be concise: People have limited attention spans for online video content; a learner can focus on information delivered via online video content approximately 5-6 minutes. Identify the core content and focus on that. You will make a bigger impact than by trying to fit in everything.

2. Organize content to attractive sections: To avoid too extensive materials and to keep the interest of your audience, organize your content thematically to more targeted sections. Publish at the same channel and format to avoid confusion.

3. Manage expectations with proper orientation to guide the learner to reflect on what they already know of the topic and how they can build on it with your content.

4. Activate your audience: Include action messages, utilize interactive features in video production, and provide information on how to get involved.

5. Provide a channel for social interaction and feedback:
The learning experience becomes two-way when social interaction is enabled. Meaning is largely socially constructed, so interaction is key for building a joint understanding of a problem or potential solution.

6. ESTABLISHING A JOINT AGENDA FOR NETWORK CO-OPERATION

Biobord network has established a 'Biobord Network Agenda' as a framework agenda for the network activities. Biobord Network Agenda defines the value proposition for network partners, in other words, what we hope to offer to the network partners. As elaborated in the agenda, one central value for the partners comes from the co-working on joint agendas of the network and the arising project proposals. The joint agendas of the Biobord network define the network's priority co-working areas for the 2021-2027 period. These agendas are promoted by the network and they are supported by project proposals, joint events, and other network activities.

The partners of the Biobord Network are able to:

- Get a head start in joining the project proposals and other co-operation activities emerging from the joint agendas of the Biobord network.
- Unite their expertise to build new joint agendas for sustainable and knowledge-based bioeconomy development.
- Connect their key resources and expertise to the joint agendas promoted by the network in order to get support for international networking and to gain access to international partnerships and funding opportunities.

Canvas Tools

For establishing of a joint agenda, Biobord network utilizes a Joint Agenda Canvas designed as an adapted version of the Business Model Canvas (presented in picture 2). The Joint Agenda Canvas defines the following aspects of a network initiative:

- **Feasibility**: Key partners, Key resources, Key activities
- **Desirability**: Value proposition, Target group segments, Target group relationship, Communication channels
- **Viability**: Work plan, Funding potential

On the basis of a joint agenda, the network partners can elaborate project proposals to be presented for the network partners – or the working group of the joint agenda. The tool for project proposals, Project Proposal Canvas, is similar to the Joint Agenda Canvas but provides a more focused insight to a specific project proposal. It is recommendable to define the project proposal in connection to a specific identified funding call, to determine a leader for the project proposal, and to define the needs for extending the partnership to implement the project proposal.

Where to Start the Making of the Joint Agendas?

The pilot teams all took different approaches for deliberating the joint agendas. As a result, we offer some recommendations for starting the making of the joint agendas. As a general instruction, start with elaboration of the problems you are trying to solve, and leverage all available stakeholder input, and outcomes of the previous co-learning activities. To give structure for your group's discussions, you could apply some of these presented tools.

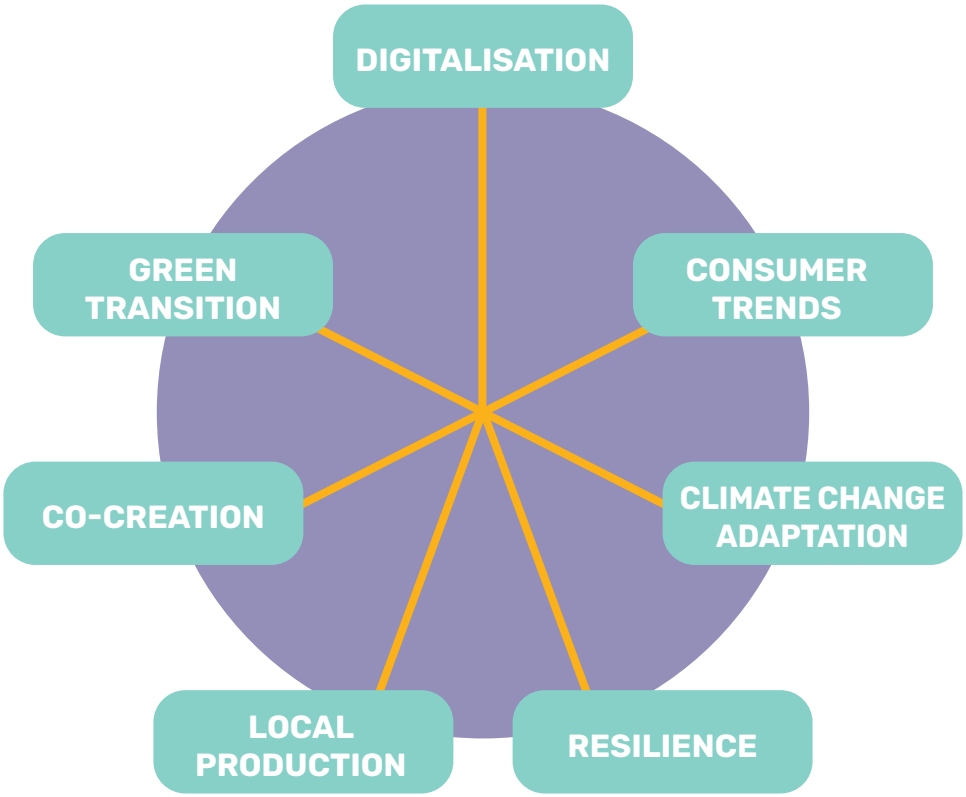
Pains and Gains

The 'Pains and Gains' defines the problems that the target groups have in the status quo and what solutions we propose. From a 'Pains and Gains' table, it is then possible to identify the most relevant solutions that have the most value for the international target groups – or the most pressing problems where the target groups have the greatest motivation to work with us to find solutions. From the 'Pains and Gains' -table, the next step will be defining the value proposition.

Trend analysis

By interconnecting a selection of megatrends, bioeconomy trends, and development priorities, group can start exploring potential solutions or value propositions. As an example, you can create a framework of mutually interesting development priorities and arising target group needs. Once you have agreed on a framework and defined the trends you wish to focus on and respond to, you can start elaborating a value proposition and potential activities in the team. This approach could be used also for planning project proposals.

Picture 11. Example of a trend framework



Wicked Problem

A wicked problem is a social or cultural problem that is difficult to solve because of its complex and interconnected nature. The problem connects various stakeholders with different, and often conflicting, values and priorities. A wicked problem can be a good basis for a joint agenda for these reasons:

- The problem is not solved with any once-off action or solution, but requires a long-term process and extensive partnerships
- Addressing the problem calls for co-creation dialogue and innovation process expertise that can be provided by the network
- Complexity of the issue calls for co-operation across expertise fields, and countries where the network can work as a bridge builder and find different roles for network partners
- Sustainable economic development is an issue that inherently contains elements of conflicting values and priorities

Partner tip!

Based on the reflections of the pilot team that worked on the forest innovation pilot, it could be valuable to apply the wicked problem and the pain and gain analysis in the early stages of the co-learning process to guide the overall innovation process. Introducing these tools to the discussion at an earlier stage would allow for their deliberation to mature over time to get a more precise and thorough understanding by the end of the process. It would also help to guide and focus the innovation process and e.g., help the definition of challenges for a hackathon.

We therefore recommend utilization of these tools in the start of the co-learning with further elaboration after each phase of the co-learning or innovation process to deepen and validate previous insights.

Co-working Principles

The principles for co-working on the joint agendas of the Biobord network were deliberated in the second transnational co-creation workshop of ConnectedByBiobord – project in May 26-27, 2021. As a result of group working sessions and feedback from partners, approaches for establishing new joint agendas, implementing joint agendas, internal and external communication, as well as measuring the progress were deliberated. The roles of Network Secretary, agenda team, and all partners have been defined in relation to the co-working approaches. The agenda team refers to the Biobord network partners that are committed to co-working on a specific joint agenda. The team may have a leader and other specific roles for the members as agreed within the team. Any changes to, or further definition of, the co-working principles will be agreed in the Biobord Board.

Table 1 (next page): Joint agenda co-working principles

	NETWORK SECRETARY	AGENDA TEAM	ALL PARTNERS
1. Establishing new agendas		When at least 3 network partners from 3 different regions have agreed on a joint agenda, the agenda is presented for the Biobord Board and approved as an official joint agenda of the Biobord network.	Partners can freely use the Joint Agenda Canvas to deliberate initiatives with network partners or other stakeholders. All partners can guide the agenda design as members of the Biobord Board.
2. Implementing Joint Agendas	Supporting role in applying the Biobord platform and communication activities.	Agenda team can determine their own approach to coordinating the implementation of the agenda.	Implementation of agendas is based on arising project proposals. Project proposals can be freely presented by any partner at open or closed discussion areas of Biobord platform.
3. Dialogue in the network	Facilitation of the closed discussion area 'Biobord network' as a platform for all partners to share ideas on new agendas and projects to network partners, to plan them further and to build teams to implement.	Agenda team freely establishes its working methods and communication practices.	All partners can freely join the discussion on any joint agenda at the 'Biobord network' discussion area.
4. Measuring the progress	Monitoring Key Performance Indicators (KPIs) that show the results of the Network.	Agenda teams report to the Biobord Board the progress made in relation to their joint agenda in free format as well as any arising project proposals and challenges.	All partners are represented in the Biobord Board that meets bi-annually and helps to steer the implementation of the Joint Agendas.
5. Promoting the Joint Agendas	Joint communication plan is coordinated by the Network Secretary. Joint communication activities focus on promoting official joint agendas of the Biobord network.	Agenda team can select communication activities and target communication channels that are relevant for their agenda.	
5.1 Social media	Network Secretary follows the content published with the 'Biobord' hashtag in Twitter and can share the content from partners published in Facebook or LinkedIn via the Biobord social media channels.		Every partner can use the hashtag 'Biobord' when communicating in their Twitter channels. When publishing relevant content in Facebook or LinkedIn, partners can tag Biobord to their post.
5.2 Communication materials on Joint Agendas	Updated Biobord Brand Book; guidance and support for designing communication materials on the joint agendas	Communication materials are prepared by agenda teams, in line with the Biobord Brand Book.	Communication materials on joint agendas can be used by all partners.
5.3 Promoting results	Network Secretary shares the content from all partners in Biobord News and social media channels (Facebook, Twitter, LinkedIn).	Agenda teams can provide content for communication via Biobord Channels.	All partners can propose news items to Biobord platform.

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international innovation co-operation with us!