

BrightnESS²

Bringing Together a Neutron Ecosystem for Sustainable Science with ESS

H2020-INFRADEV-3-2018-1

Grant Agreement Number: 823867

brightness²

Deliverable Report

D4.3 Cross-border Activities



1. Project Deliverable Information Sheet

BrightnESS ² Project	Project Ref. No. 823867	
	Project Title: BrightnESS ² – Bringing Together a Neutron Ecosystem for Sustainable Science with ESS	
	Project Website: https://brightness.esss.se	
	Deliverable No.: D4.3 Cross-border Activities	
	Deliverable Type: Report	
	Dissemination Level:	Contractual Delivery Date: 30.06.2021
		Actual Delivery Date: 22.06.2021
	EC Project Officer: Simona Misi	

2. Document Control Sheet

Document	Title: D4.3 Cross-border activities	
	Version: V1	
	Available at: TBD	
	Files: 20210622_D4.3 Report on Cross-Border Activities	
Authorship	Written by	Sarah Adnan Salman (ESS) Jimmy Binderup Andersen (ESS)
	Contributors	Mirko Menninga
	Reviewed by	(BrightnESS ² Project Coordinator, ESS)
	Approved	BrightnESS ² Steering Board

3. List of Abbreviations and Acronyms

ESS	European Spallation Source ERIC
EU	European Union
GDPR	General Data Protection Regulation
H2020	Horizon 2020
ILO	Industry Liaison Officer
ISIS	ISIS Neutron and Muon Source
IKC	In-Kind Contributions
WP	Work Package

4. List of Figures

Figure 1: Aerial view ESS Campus March 2021.....	6
Figure 2: The Öresund Bridge connecting Sweden to Europe.....	7
Figure 3: First Virtual meeting of the Industry Advisory Board of ESS, 14 December 2020.....	8
Figure 4: Distribution of the BrightnESS Regional Hubs which supervise the timely and qualitative delivery of IKC in their region	10
Figure 5: Industry Technology	11
Figure 6: Assessing the ESS Cross-border activities	13
Figure 7: Key Findings from ESS suppliers, Industry Partners & ILOs	15
Figure 8 The innovation ecosystem surrounding ESS:	19
Figure 9: ESS Cross-Border Collaboration Model.....	20

Table of Content

1. Project Deliverable Information Sheet.....	1
2. Document Control Sheet	1
3. List of Abbreviations and Acronyms.....	2
4. List of Figures	2
5. Executive Summary	4
6. Introduction	6
6.1. Background	7
7. Context	7
7.1. Cross-border activities.....	8
7.1.1. The Cross-border activities & Innovation	10
7.1.2. Cross-border activities with Industry	11



8.	Member Countries	11
8.1.	Current Status	12
8.2.	Future Perspective	12
9.	The Approach to assess the ESS Cross border activities.....	12
9.1.	Dedicated online survey	13
	The survey outlines	13
9.2.	Virtual Interviews with Industry.....	13
9.3.	The Interview Outline.....	14
10.	Results and Findings.....	14
10.1.	Key Findings from the Survey	14
10.2.	Key Findings from ESS suppliers, Industry Partners & ILOs	15
10.2.1.	Innovation Collaboration.....	15
10.2.2.	Innovation Potential.....	16
10.2.3.	Added Value.....	16
10.2.4.	Benefits & Challenges.....	17
10.2.5.	Innovation Ecosystem around ESS	17
11.	Future Activities	18
11.1.	Innovation Ecosystem.....	18
12.	Conclusion.....	19
13.	Appendix 1: Consent Request & Privacy Notice.....	22
14.	Appendix 2 The Interview Questions	25
15.	Appendix 3: The Survey Questionnaire	26
16.	Appendix 4: Example of answers to questionnaire.....	27
17.	Appendix 5: List of Companies Interviewed	30



5. Executive Summary

The European Spallation Source (ESS) ERIC is a multi-disciplinary research facility based on the world's most powerful neutron source built with state-of-the-art technology. The ESS vision is to enable scientific breakthroughs in research related to materials, energy, health and the environment, and to address some of the most important societal challenges of our time. ESS's core value of scientific excellence will enable the co-creation of value and impact through world-leading neutron science services. Successful innovation and scientific excellence rely on the power of strategic, open, and dynamic collaborations. The cross-border activities at ESS will enable the organisation to achieve these ambitious goals.

Work Package 4 of the BrightnESS² Project, titled "Innovation & Industry", is identifying collaboration areas and partners across borders to engage and to:

- Co-create common strategic goals and values
- Match capability resources
- Speed up the scientific impact of results
- Secure the tech transfer
- Provide dynamic and coherent progress on the innovation roadmap.

This report is *Deliverable 4.3: Cross-border activities*, of the BrightnESS² project. It will analyse the status of current activities and identify what future activities are foreseen at ESS. The main purpose of the cross-border activities mapping is to provide transparency and awareness of the activities across borders focusing on impact, value, and long-term sustainability. The clear view and understanding will enable ESS to utilise these activities as guideline and fuel for cross-border innovation activities.

ESS was born out of a concept of cross-border activities, resulting in a two-nation hosting, 13-member countries set up, and all the way to a truly international approach to funding and construction. The scale of the in-kind solution is unprecedented, and the complexity of the installations is right at the front-end of technical possibilities. This creates a unique innovation outset that can be sustained and developed as further return on investment for the ESS member countries.

Very early in the process, it was determined that the cross-border activities are diverse, from a simple "buyer-supplier" relationship through "Joint Projects" to "Strategic Partnerships". The interesting finding was that all were benefitting from the cross-border activities at an operational, tactical, and strategic level. Also, the impact and value needed to be revised, as these were thought to be primarily commercial, but in fact have demonstrated a positive influence on culture, innovation, diversity, ambition, etc.

The different stakeholders were addressed by different means: e.g. the Industry Liaison Officers Network by a questionnaire, and Industry Partners by a virtual interview. This division was made on the basis that the ILO's already know ESS well and have a fairly synchronised knowledge level. A questionnaire to them would enable them to dig a bit deeper and to allow each ILO to prioritise areas of interest and to apply the effort accordingly.

For the industry partners and the Big Science organisations, the goal was to conduct the interviews, so they were best fitting the relationship, subject, role, area and interest, in their collaboration with ESS. This proved to be a good strategy because of the spread of interests in the cross-border collaboration activities.

The outcome fulfils the expectation of diversity, creating a challenge when summarising, but it also shows the abstract impact and value, that is so important for innovation. It also ties in with other findings and conclusions in the BrightnESS² project, for example the social economic impact report being conducted under WP5 "*International outreach, community engagement and dissemination for*



impact” and the scientific considerations under WP2 “A strategy to deliver neutrons for Europe and beyond”.

The results are encouraging and ESS has created an asset that can be applied in many directions. The main challenge will be to sustain the collaborations and activities, as the needs and requirements will evolve as ESS progresses toward its Operations Phase and First Science. There is already an established ESS cross-border culture that is very strong and committed. By investing and maintaining it, ESS can benefit from its partners’ competence, skills, knowledge and engagement in return.

The future perspective is also touched upon in this report. The proposed ESS Ecosystem could form the basis for sustainability, where the community is still accessible to ESS, but the community becomes a part of an external system that is self-run and creates possibilities of cross-border activities, adapting as the needs and requirements of ESS evolve.

ESS relies on good and constructive collaboration to mature and prepare the organization to facilitate and strengthen the relationships with many different stakeholders. ESS neutron science and innovation is fueled by cross-border activities, now and in the future.



6. Introduction

The aim of this report is to raise awareness of the ESS cross-border activities and to consider opportunities for new partner involvement across borders

This report presents the results of analyses of the cross-border activities related to ESS particularly, and to Big Science projects in general. It provides a status overview of activities that are conducted at ESS and by different in-kind partners in the 13-member countries.



Figure 1: Aerial view ESS Campus March 2021

ESS will enable world-class neutron-based research and strengthen Europe's and the member countries' position within this scientific field. ESS is an integral member of the scientific society in Europe and engages with both academic and industrial communities to help build, service and operate the facility. As a large and advanced science facility, ESS values open and strategic collaborations and networking for integrated synergies. In pursuit of the strategic objectives, which are primarily about excellence in science, ESS has been and will continue to actively explore potential cross-border activities directly with member countries, but also indirectly with other countries and regions. ESS's open innovation model is set to constantly generate scientific and technological impact solutions, by bridging borders with key neutron facilities and leveraging the capacity for co-creation across industries.

Through collaboration, ESS competes to deliver the transformation of high-tech inventions and basic scientific findings to the member states, to the societies, and to the world. These activities cannot take place alone and cutting-edge research, scientific excellence, and technological breakthroughs call for cross-border activities based on transparency, openness, and inclusion. ESS is undertaking activities aiming to prompt countries to explore business and innovation opportunities relative to ESS and to create impact and value to research partners within the scientific communities. The Organization is dependent on exploring and elevating the utilization of existing research infrastructures and creating impact for long-term sustainability. During the operational phase, it will be beneficial to continue to expand and maintain dynamic and productive collaborations across borders. As ESS becomes increasingly established, external players will naturally reach out to ESS to join forces in science, technology, and innovation.

ESS is dedicating substantial efforts to participate in a range of collaborations that continuously promote and enable the leveraging of scientific and technological opportunities.



On the journey to provide a brighter neutron beam than existing facilities today the industry has been a key partner. To succeed, ESS relies on the expertise of its industrial partners from across Europe, and from other select areas of the globe. The new generation of neutron sources is based on particle accelerators and spallation technology, and the ESS accelerator will be the world's most powerful proton-based linear accelerator. This requires that a large fraction of the industrial procurements be dedicated to pioneering and advancing technology. International research infrastructures increasingly require partners to provide advanced engineering, state-of-the-art technology, new products, or radically improved existing products. In return, the industry partners will be able to further develop advanced technologies, goods, and services that can be applied to other markets and within new technological areas. By this “push-pull” effect in the circular economy, the societal impact will be multiplied: pulled in to ESS to enable world-leading science, and pushed back out again after validation and proof as knowhow, products and services.

6.1. Background

ESS is a partnership of 13-member countries, committed to the goal of building and operating the world-leading facility for research using neutrons. The research infrastructure is under construction in Lund, Sweden, while the ESS Data Management and Software Centre (DMSC) is located in Copenhagen, Denmark. It is one of the largest science and technology infrastructure projects being built in Europe today. Most elements of ESS are new to the world and present new challenges in construction, technology, and implementation. ESS is a Greenfield project offering significant collaboration opportunities in construction, service provision, operation, and use. ESS is involved in several collaborative EU-funded projects aiming to prepare, support, and enable research, innovation, and scientific excellence to the Member Countries, but also to all other associated institutions, universities, and industries on certain access terms.



Figure 2: The Öresund Bridge connecting Sweden to Europe

7. Context

Cross-border activities are key for ESS in order to build and operate the world's most powerful neutron source. The Organization relies on collaboration across borders to sustain its long-term mission and to overcome the barriers of national borders in order to enable the inflow of expert knowledge and technology and, in return, to generate outflow of knowledge and technology to society.



The scientific results are expected to provide unique new information on, for example, the properties and behaviour of matter at the atomic and molecular levels. For its scientific success, ESS must be able to satisfy the scientific needs of its future users and provide evidence that working across borders leads to opportunities for academic and industrial return, as well as innovation and technology transfer, including educational opportunities for the related communities.

7.1. Cross-border activities

European nations are building a neutron source of unparalleled power and scientific performance both together and across their borders. Cross-border activities are and have been of paramount importance to the strategic objectives of ESS by ensuring that national borders do not form barriers that constrain the development and research output. The building of ESS is truly complex and requires state-of-the-art technology and advanced engineering, which provides many opportunities for industry to impact on anything from construction and services to fundamental R&D, but also to society-changing breakthroughs. ESS continuously engages with Member Countries directly but also seeks partners outside Europe, both to contribute to the project and to open channels for further impact and value generation.

ESS is supported by several Partner Countries and is part of several community-driven networks that help build a high impacting facility within science, innovation and technology. The many networks related to ESS range from universities and research institutes to innovation ecosystems and industry, in Europe as well as globally. One of the key objectives of BrightnESS² is to strengthen the cross-border activities between members of the supply chain and stakeholders. The goal is to gain the trust of future scientific and industrial users by means of expanding the ESS community and network and to raise awareness for ESS as the role model for managing large-scale In-kind Contributions to Research Infrastructures.

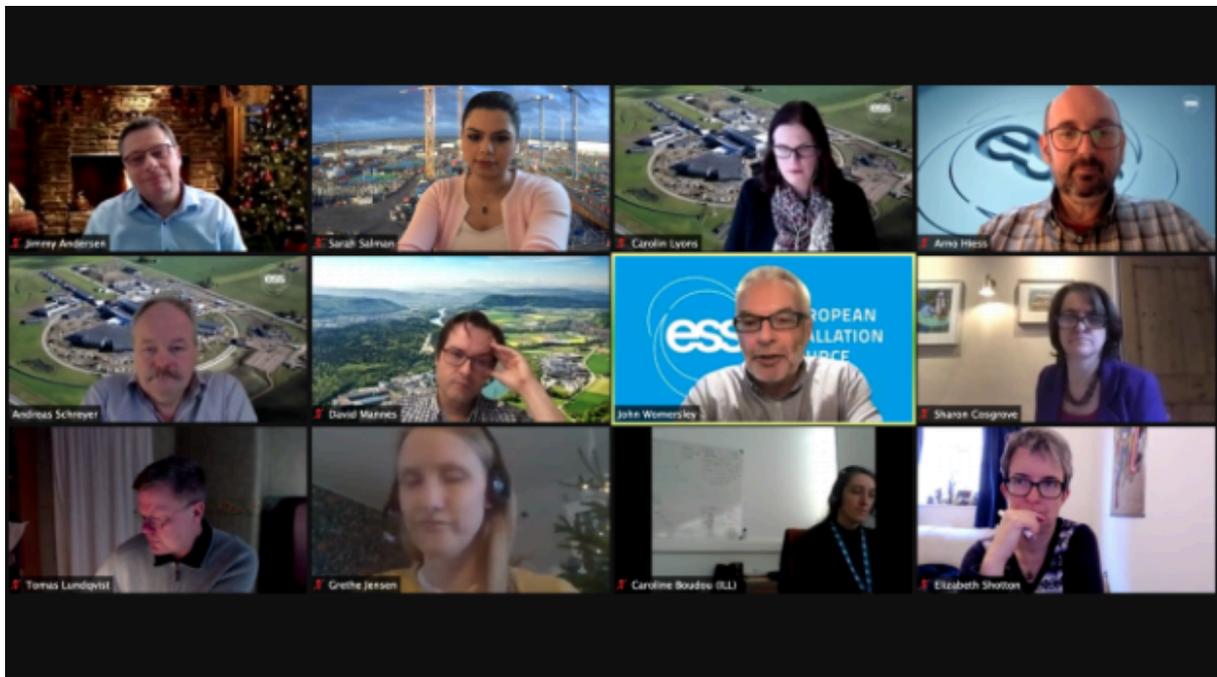


Figure 3: First Virtual meeting of the Industry Advisory Board of ESS, 14 December 2020

ESS maintains a network of Industrial Liaison Officers (ILOs) located in ESS's Partner Countries. The network was established back in 2013 and is an integral part of the ESS relationship with the member states' industry. The network has been instrumental and key to the establishment of ESS and its



construction, by conducting cross-border activities. The ESS Industry Liaison Officer Network continues to promote business opportunities at ESS to national institutes and companies. The ILO Network integrates companies' knowledge and effort into the construction, and later on to the operational phase. Each Member and Observer Country of ESS has one representative in the ILO Network. The direct engagement with industry enables companies to maximize the benefit from procurement and cross-border collaboration opportunities at ESS and R&D partnerships. The ILO Network also plays an important role as a mediator and innovator in the innovation ecosystem at ESS.

The ILO Network's primary mission is to provide an information channel between industries in their respective countries and the ESS facility. Through strong connections and a large network, the ILO Members offer their support to ESS, as well as companies in their Member States in seeking, and utilizing opportunities in tenders. An important ILO element is to continuously work towards gaining the best quality supplies to ESS, to promote ESS in the respective countries, to support the national returns on the initial investment, but also open new collaboration opportunities across Europe. The ILOs are well-positioned to identify partners that can contribute to the development of new knowledge, and have the capacity to lead commercialisation of these technologies across borders and into broader markets.

"Mega science projects such as ESS are only possible by sharing expertise and working together to solve complex technical problems in order to explore the science of the future. Cross border activities and In-kind national contributions to such project are irreplaceable in realizing facilities such as ESS."



Dimitri Argyriou, In Kind Management Directorate at ESS

The IKC Partners contribute to more than forty European research centres' collaborations, expertise and knowledge from over 100 universities and facilities worldwide. ESS's large network enables collaboration for national labs, universities, institutes and other large-scale science facilities to exchange knowledge, personnel, and experience in order to coordinate the design, production and delivery of ESS's accelerator, target station, instruments, research labs, software, controls and other systems. This will boost the collaboration across borders by creating new job opportunities and build and maintain the relationship with partners in the high-tech industry, research infrastructures and other existing neutron facilities. The In-Kind partners may help create business and competence in each Member Country and foster collaboration required for large international projects.

Many of the partner research institutes, universities, and laboratories are individually responsible for leading one or several of the IK work packages, each containing multiple work units, with leadership distributed among all participants. ESS's partners are actively engaged in scientific and technical research and development, manufacturing, delivery and installation in the project to build ESS.

The In-Kind Field Coordinators, funded by BrightnESS² work with providing a useful bridge between ESS and the Partner organisations, by transnational collaborating, minimizing and mitigating the risks and adding real practical benefits to the ESS IK Framework Management. The Field Coordinator needs to be well embedded in one of the Partner Institutes. Network of regional Hubs is another useful mechanism established to enhance the international cooperation across borders between ESS and the IK Partners. The 7 Hubs are supported by local Field coordinators, to engage in various opportunities and to address challenges in the In-Kind contribution system. The Regional Hubs, along with the Field Coordinators, strengthens the position of ESS as a truly international facility and ensures the long-term sustainability of BrightnESS² enlargement activities by providing a structured network for maintaining existing partnerships and identifying new with potential partners



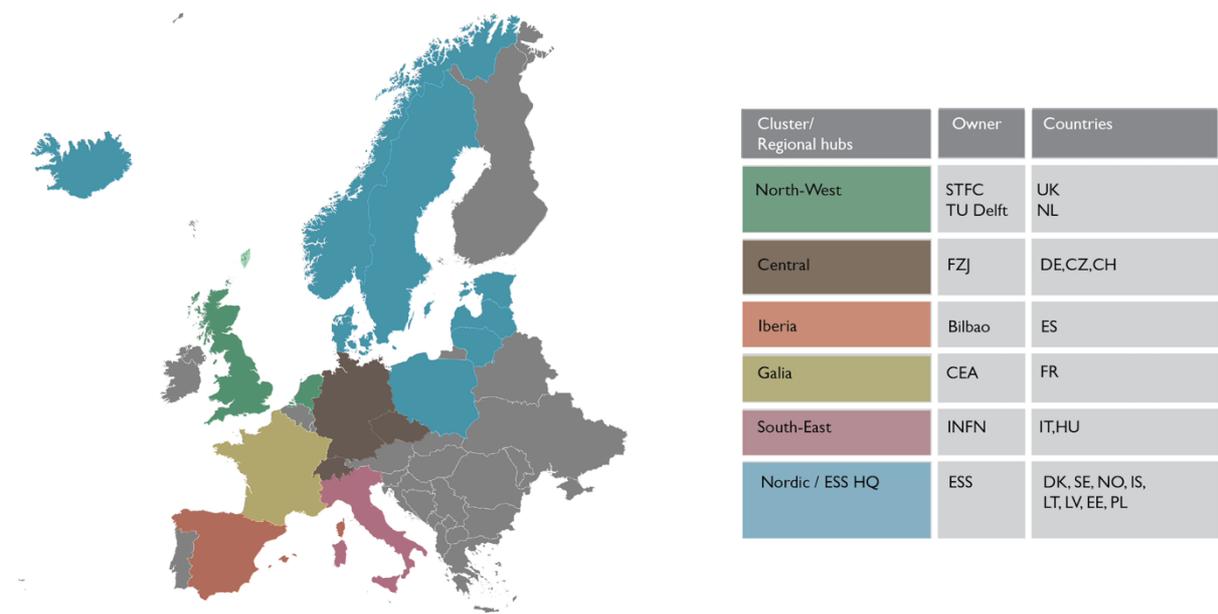


Figure 4: Distribution of the BrightnESS Regional Hubs which supervise the timely and qualitative delivery of IKC in their region

7.1.1. The Cross-border activities & Innovation

One of the strategic goals of BrightnESS² is to maximise the impact of the ESS-generated knowledge on society in terms of sustainability, technological solutions, economic growth, employment, and improved quality of life. The staff diversity at ESS enables large innovation potential in the Organisation, which is captured in the many necessary innovation solutions at ESS. The Member Countries and other countries around the world will be able to benefit from this innovation potential of ESS and utilise the opportunities emerging in the innovative ecosystem at and around the Organization. The cross-border activities will promote and transfer the innovation activities and create an innovation footprint that will impact society and contribute to solving some of the world's greatest challenges. Networking across borders is a key element to boost innovation at ESS. Innovation can have an added value from different cultures and funding opportunities in different countries. The innovation potential is more extensive when industry/research facilities conduct business in different countries, instead of in the same country. Diversity and cultural openness boost innovation and enable cooperation, technology transfer and knowledge sharing. ESS participates in a large number of collaboration projects funded by Horizon 2020, but also internationally, nationally and regionally aiming to support research, innovation, and excellent science in Europe, and drive economic growth and competitiveness. This has enabled ESS to be part of various innovation workshops, networking events and innovation days across the world.

The In-Kind network has a primary role in contributing to key constructing deliverables across the borders. Around 30% of the 1 843 M€ ESS construction budget will be realised through In-Kind Contributions (IKCs) from European Partners. The majority of the required contributions have a high level of innovation, which is fundamental to build a functioning and operating ESS. The advanced products and services supplied to ESS have often required collaborations with ESS in some form. These industries, facilities and experts come primarily from Europe, but also from the rest of the world.

ILOs can provide invaluable help to companies as they navigate through these complex processes. Promoting innovation is one of the objectives of the ESS procurement model. ILOs have a key role to help the industry’s across borders to connect with ESS in a way that maximise the opportunities for innovators and suppliers to present their solutions.

7.1.2. Cross-border activities with Industry

The industry is enabled to make use of the ESS facility and the available scientific and technological knowledge to evolve and commercialise innovation. The intensive ramp-up towards First Science at ESS has created a need to continuously increase the cross-border activities with the industry across domains within and beyond the Organization. ESS must continue to build in-house capacity and effectively implement its long-term vision for innovation and engagement with the industry. The cross-border activities also focus on maintaining and strengthening current relationships with stakeholders. Numerals of industry-related activities have been performed in different countries. Some of them consist of joint activities between several BrightnESS² work packages and partners, while others have been co-sponsored activities with ESS partners outside the BrightnESS² context. The cross-border activities will foster synergy in diverse science-based research platforms and generate network externalities that increase the value for ESS. Various activities across borders have been implemented in order to inform potential suppliers about business opportunities at ESS and those available with the ILOs and In-Kind partners as well. The Organization will continue to set up activities to gain a deeper industry insight but also to use the findings to develop tailored outreach and engagement strategies. Maturing and strengthen the collaboration with the industry will be more than worth the investors' substantial investment.

ESS, ILOs and the IKC partners together present the industry with business opportunities relative to their technical work packages. Businesses from all countries are eligible to participate in ESS procurement processes. The different possibilities of going into business with ESS are Direct Procurement, Sub-Suppliers to In-Kind Partners and Sup-Supplier to Skanska. Several events are organised each year to report on ESS procurement processes, In-Kind Contribution development and other collaboration projects to national institutes and companies.



Figure 5: Industry Technology

8. Member Countries

During the BrightnESS² project, the ESS has been raising awareness and organising networking activities to create opportunities for new partner involvement, funding and collaboration.

Amongst the published tenders less than 50kEUR during 2019, a majority of them were submitted by firms in the member countries. The commitment of the member countries is to fund over one-third of ESS as In-Kind. The ESS IKC model creates the opportunity to enrich knowledge and skills and to create a business in each member country. The membership enables the member countries to benefit from



membership already in the construction phase. The benefits are in excess of the direct relationship between ESS and its member countries

8.1. Current Status

ESS has been driven by the neutron-scattering community with strong involvement from all the leading neutron-science facilities around the member countries in Europe. The strengths of member countries collaboration and contributions are invaluable for building and operating the world's most powerful neutron source. Suppliers from member countries have been a strong asset in the construction of ESS. The member countries participation in the construction of ESS has established several new European collaboration activities that serve both to finance and strengthen the research and innovation done across borders. Industry suppliers across Europe have registered in the ESS Procurement System. The direct procurement, or In-Kind Contribution from member countries has generated various ESS projects including academia, research and user facilities, government, corporates and entrepreneurs. These activities have been vital for the design and construction of the 15 instruments at ESS, but also other technical innovations for both the construction phase and the operational phase. The scientific and technical teams across Europe have designed technical innovations and the instrument to be world-leading. The high brightness and unique time structure, in combination with unmatched instrument flexibility, will make possible many investigations that are out of range today. New scientific capabilities will open for engineering, materials science, chemistry and life science that are expected to have global impacts on science, society and industry. This creates an ideal environment to strengthen the significant and long-term technological transfer, knowledge transfer and innovation across Europe and around the world.

8.2. Future Perspective

By mapping the status, it enables the member countries to take advantage of the identified opportunities. The member countries open new opportunities for the Organisation, from In-Kind Contribution, from the ILO or from direct procurement to ESS. The opportunities that arise from member countries, can drive, and strengthen the innovation cross-border activities. The member countries seize the opportunities created by ESS and will continuously mature and strengthen the relationship to foster cross-border collaboration within research and innovation. Industry suppliers across Europe, will be able to increase the profitability from ESS contracts, and enable collaboration projects to enter new markets and increase the innovation level. The ESS collaboration with the various stakeholders has built the foundations for long-term involvement in the project and continuing relevance beyond ESS. The high value procurement contracts and ESS framework agreements will continue to advance the industry in member countries by the development of new products, services and technologies, and provide opportunities to strengthen the knowledge base, quality, processes and capabilities of businesses capitalizing on the return on investment in ESS across

9. The Approach to assess the ESS Cross border activities

The ambition of this report is to take the temperature of the cross-border activities because it is understood that ESS's cross-border stakeholders should be asked to formulate a realistic awareness. The following concept was applied for the analysis:



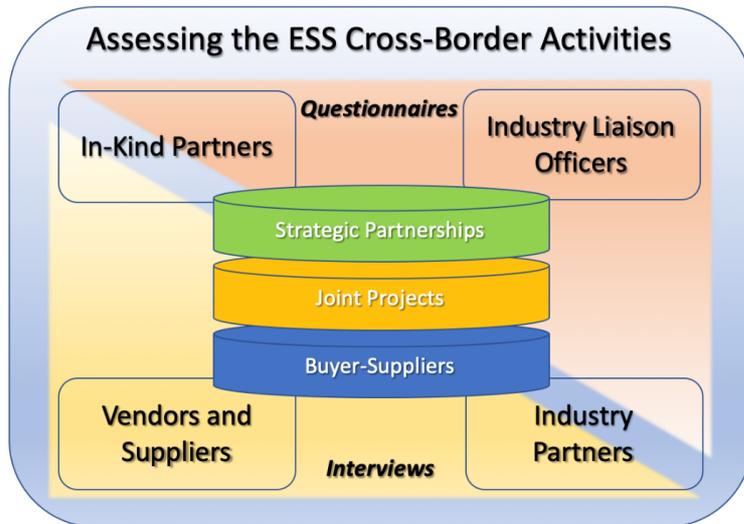


Figure 6: Assessing the ESS Cross-border activities

9.1. Dedicated online survey

Based on the framework of BrightnESS², Work Package 4, a survey was developed and shared with the ILO Network. The goal of the survey was to collect feedback on the ILO's perception of cross-border activities. The focus areas were selected as main subjects for both ESS in general and for the ILO Network in particular to explore and strengthen mechanisms of cooperation between Industry, ILOs, and Research Infrastructures, and cross-border activities. In total, ESS received 9 ILO responses from the survey, and additional verbal feedback during the 2 interviews conducted.

The survey outlines

Based on an initial analysis of ESS from an innovation perspective on cross-border collaboration, the focus areas were selected as main subjects for both ESS in general and for the ILO Network in particular: Innovation Cross-border activities with ESS, Promoting Innovation across borders, Potential of an international innovation consortium.

These definitions were used in creating an online questionnaire with defined objectives to:

- Scope the level and experience of Innovation Cross-border activities
- Collect a list of companies working Cross-border
- Discuss the potential of ESS Cross-border activities
- Determine the views and interest of the ILO Network, with a focus on ESS innovation Cross-border activities

Each individual was requested to consent to Governing General Data Protection Regulation (GDPR), which all did unanimously. Please see appendix 1.

9.2. Virtual Interviews with Industry

Advanced research infrastructures are important platforms for cross-border research and innovation collaborations. To take advantage of these opportunities, a world-class knowledge and innovation environment must emerge around ESS. This creates important conditions for attracting international excellence and offering opportunities for foreign companies to invest. To get a better understanding of the existing innovation cross-border activities, and how to support future collaborations with industry, interview questions were developed as a guide during the interviews. In total, 8 interviews were conducted. Two additional interviews were conducted with ILOs.

See annex for list of companies.

9.3. The Interview Outline

Based on the innovation cross-border activities topic, three focus areas were selected to investigate further.

- Industry Innovation activities across borders

Many of the ESS innovation activities are cutting-edge solutions that can potentially create value in companies, public institutions and society across borders. For ESS to create footprint and identity as a complex state-of-the-art RI, there is a great potential in promoting innovation directly in member countries, but also indirectly with industry internationally. Establishing collaboration and relationships with world-leading science within selected areas will attract industry and create societal value. In return, results shall help ESS secure the best and least risky path to going forward.

- Benefits/challenges with supporting Cross-border activities

ESS Cross-border activities play an instrumental role in establishing and strengthening trustful relations with industry and potential future users. To ensure excellence research towards “First Science 2023”, it is crucial to identify benefits and challenges with conducting business across borders. This will increase the potential of innovation collaborations and transfer of skills, knowledge and technology.

- Innovation Potential with an international ecosystem

The innovation ecosystem around ESS could be a platform for bridging and engaging the key stakeholders in the scientific impact innovation ecosystem. The ecosystem network will enhance the innovation potential to engage with leading actors within neutrons to establish strategic collaborations across borders to push the innovation limitations and solve grand societal challenges. Accordingly, it's important to identify the potential attractiveness of an Innovation ecosystem.

10. Results and Findings

10.1. Key Findings from the Survey

The survey was forwarded to 11 ILO's and 9 found time to reply. All answers have been collected and included in Appendix 2. The following summary has been collected for the different questions listed in the previous section.

Currently, ESS is in a transition towards the initial operational phase where the main focus is on completing the plant. It is central that ESS maintains a strong focus on ensuring that the facility can achieve its full potential and scientific success. ESS will require continuous development work and expansion with both more instruments and upgrading of accelerator and target station for many years to come. In order to strengthen the facility strategic development and competence base, it is an important contribution that universities, research funders and the business community create opportunities that attract national and international competence to the facilities for method, technology and instrument development. Cross-border activities and continued close dialogue between various stakeholders will be very important for ESS to provide maximum value and impact for research and innovation.

Based on experience with the ILO's, the innovation activities cross-borders occurs often when it comes to the company's suppliers, sub-supplier's or innovation technology development. There is a need for more detailed data and statistics for all tenders from ESS, both pre-tendering and statistical post-



tender. Timely, visible and shared information is critical for enhancing Cross-border activities. Innovation can have an added value from different cultures and funding opportunities in different countries. Innovation potential at ESS will increase as the world-leading-science project requirements meet the industry efficiencies.

The ILO's requested to have access to relevant and updated information about all activities and potential collaborations. Openness and transparency in the tender process are important for the ILOs members in order to develop cost-effective long-term relationships with suppliers and find new opportunities ad-hoc. To increase the ESS international attractiveness, it was also suggested to have a market survey prior to tenders start, arrange workshops or webinars, have international dissemination events, invest more in R&D advanced procurements.

10.2. Key Findings from ESS suppliers, Industry Partners & ILOs

The interviews conducted with suppliers and industry partners of ESS have provided useful insights for understanding the Cross-border activities. The scheme below summarises the key focus areas of the assessment and the input from the interviews:

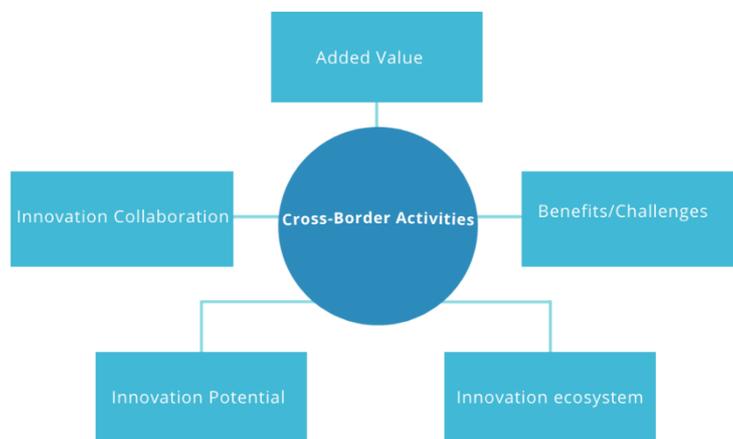


Figure 7: Key Findings from ESS suppliers, Industry Partners & ILOs

10.2.1. Innovation Collaboration

Cross-border activities are described as an essential way of working and important to continuously support. Many industry sectors are dynamic and fast-changing. The companies agree that the long-term sustainability of their companies relies on collaborations transnationally to increase their competitive advantage in the global market. The participating companies, all conduct some level of cross-border activities focusing on innovation and R&D projects. In some cases, companies had a well-established process to collaborate with either internal employees, external stakeholders, or partners internationally



“In many cases, it’s an advantage to work with external partners globally, because they can be ahead for other applications and collaboration with them can help bring in new technology opportunities and knowledge”

Mats Qvarford, Tetra Pak



“Viewed from a European perspective, we have to become better at working across borders and with different stakeholders focusing on innovation and technology development around research facilities, some of the solutions developed to build ESS are state-of-art technology” **Anna Hall, Big Science Sweden.**

The supplied products and services were relatively innovative and required collaborative design and development with ESS. Participants underlined the need to continuously collaborate with suppliers, partners, research facilities and academia globally to provide new and advanced products or services to ESS.

10.2.2. Innovation Potential

As a state-of-the-art research facility and a pan-European organization, ESS is expected to play an active role in raising awareness of the societal positive impact of neutron sources. There are different innovation possibilities for suppliers to provide products and services to ESS. The overall supplier base of ESS is rather diverse and international. Companies and other stakeholders have created a profile to express interest in collaborating with ESS in many different countries. ESS will play an important role in the development of “First Science 2023” and innovation. The industry potential of cross-border innovation collaboration emerges during the construction phase, and not only during the operational phase. According to some of the participant, by being a supplier to ESS, the companies has pushed the technical boundaries and increase the level of innovation. The highly complex environment at ESS drives innovation potential and research in technology development in other industries as well. *“The industry faces similar challenges. ESS can be seen as a try-out test, then we should be able to solve the industrial challenges (Big Science Sweden)”*. To foster and support innovation potential at ESS, the Organisation needs staff that continuously will work with innovation, and to mature and establish new relationships with Industry to find synergies in the local and international ecosystem and networks.

10.2.3. Added Value

ESS is a large-scale facility that allows the industry to expand and advance in-house technology development. Some of participating companies highlighted the added value of supplying to ESS.

“By working cross-border and conducting business with ESS, and winning the big contract, our company got access to new market opportunities and capabilities” - **Álvaro Zarza,**

Asturfeito



The highly customized requirements from ESS enables companies to find new ways of investments and technology development by collaborating transnationally. *“The interesting thing about research*



facilities is that the TRL level is low but excellent science can still be created. ESS can be seen as a large factory, there is a push to increase the level of innovation, even to a higher TRL level. The research conducted by the companies cannot stop evolving their product until its working in a highly complex environment. The research in technology development is constantly being forced to go from low level to high level of TRL (Big Science Sweden)". The cross-border activities generate added value for companies engaging with Big Science installations.

10.2.4. Benefits & Challenges

Cross-border activities could be viewed both as drivers and barriers. The companies highlighted the big potentials of cross-border activities, and that it results in added value such as shared knowledge and technology development, even though there might be some difficulties in achieving cooperation. For some of these companies, cross-border activities are seen as a necessity for day-to-day work, internally but also externally with various stakeholders.



"There is a value to conduct business cross-border, there is an opportunity to broaden the horizon. During the idea generation, diversity and different core competence generate better ideas. Collaboration completes and fills the gaps with different knowledge and core competence, where many new ideas can take form and materialize"

The companies underline that most of the challenges with conducting business across borders depend on the product, service, or project. One participant state that "The difficulties with working cross-borders can be that there are many stakeholders, which might lead to longer decision-making or cultural barriers". Some of the participants stated, that another difficulty can be finding equal ground for agreements and understanding. A current barrier today is the pandemic, a majority of the companies agree that some opportunities can develop more naturally face-to-face.

"The benefits working cross-borders are greater than difficulties"

Stefan Fasth, ATEA



10.2.5. Innovation Ecosystem around ESS

In order to take full advantage of the innovation ecosystem surrounding ESS, the Organisation needs to establish long-term relations with the international stakeholders and collaborate with them in an open, dynamic and transparent manner. *"It's important to strategically plan and investigate how ESS can be part of these active ecosystems around the facility. This in order to enhance excellence and contribute to solving the grand challenges the society faces today (Big Science Sweden)".* It should also seek beyond the local network to ensure that all member states can benefit from it. *"ESS needs to work closely together within European programs, and with innovation platforms, like the strategic innovation program (SIP) at Vinnova. It is vital to be integrated with innovations programs/platforms in host nations of ESS (Big Science Sweden)".*



Generally speaking, the presence of one or several large industrial companies in the region where a research facility is based is of crucial importance for the development of a healthy innovation ecosystem. Companies placed on innovation campuses positively contribute to innovation. Industry can also stimulate innovation by establishing research centres in the vicinity of research facilities and by developing a strong licensing relationship with research facilities. As an international partnership, ESS collaborates with industry and companies from several countries in Europe and beyond. The participating companies all agreed that they have a strong interest in being a part of the future innovation ecosystem platform surrounding ESS.

“Cross-border activities is key for successful and long-term sustainability for an innovation platform that focuses on neutrons and X-ray RI in Europe. Venture capital is important to reach out to also SMEs and smaller companies. There is a greater potential for innovation in the platform with the right governance. There is generally a large knowledge gap for neutrons, then for X-rays for industries across borders (Tetra Pak)”.



“It’s important to build an open atmosphere around ESS and engage different stakeholders to think in the ways across regions and borders, the Innovation ecosystem surrounding ESS could be the solution for that”

Tomas Wild, Siemens

ESS should engage in outreach activities aiming to increase the awareness of the benefits stemming from the industrial use of neutron sources in Member Countries, but also globally. The goal of the outreach campaign for the innovation platform should be to explain the added value of neutrons in comparison with other research techniques and to demonstrate the benefits of industrial research at large-scale research facilities as part of a broader network platform, such as the suggested for the future innovation ecosystem platform.

11. Future Activities

Cross-border activities is an essential component of research and is vital for advancing science. Innovation coming from ESS is one of the strategic goals and expected currencies of payback to the Member Countries. Enabling innovation collaboration across borders is often complex and diffuse. These innovation barriers have limited market solutions. By analysing the inputs from survey and interviews, and the cross-border activities at networks and platforms locally near large RI’s, such as Horizon Europe, we could identify that the natural output would be to establish an innovation ecosystem.

11.1. Innovation Ecosystem

The innovation ecosystem will be a neutral meeting place where the ground for cross-fertilization and collaboration is conducted transnationally in the best feasible way to overcome the innovation barriers by matching capabilities and transferring skills, knowledge, and technologies. To fully be able to benefit from the research and innovation collaboration directly with member countries, but also internationally, it’s important that the network remains open and easily accessible. The establishment of an innovation ecosystem will have attractive elements that could change the way the internal and external stakeholders want to commit and engage. The ambition is to be able to fully deliver on the



innovation potential of the facility, to contribute to new knowledge production, and support EU competitiveness, ESS has to continue to build in-house capacity and effectively implement its long-term vision for innovation and engagement with industry. The international ESS innovation ecosystem will strengthen and mature the relationship with the industry, academia, and research facilities. Inspired by a successful innovation ecosystem, in places like Silicon Valley and Greater Boston, the MIT the five-stakeholder model will be the foundation for the ESS innovation ecosystem. The five layers of the scientific impact model, include corporates, governments, entrepreneurs, academia and risk capital/venture captures.



Figure 8 The innovation ecosystem surrounding ESS:

The core of the innovation ecosystem will be Neutron and X-Ray research infrastructures in Europe, projects, existing innovation ecosystem and Venture capital funds. The ESS innovation ecosystem will contribute to boosting capacity building in member countries, offer new opportunities to various stakeholders for accessing successful research and innovation projects and establish networks, and support the matchmaking potential between the research community and industry to enhance the innovation potential of neutron use for industrial R&D.

12. Conclusion

ESS and the BrightnESS² project have been instrumental in establishing and strengthening trustful relations with the Member States, Industrial Partners, and other important stakeholders across borders. ESS is an integral member of the scientific society in Europe, but also internationally. ESS's open innovation model is set to constantly generate scientific and technological impact solutions, by bridging borders with key neutron facilities and leveraging the capacity for co-creation across the industries.



The Cross-border activities at ESS can be illustrated as a turning wheel visiting four main areas on the rotation: Performance-Strategy-Culture-Arrangements.

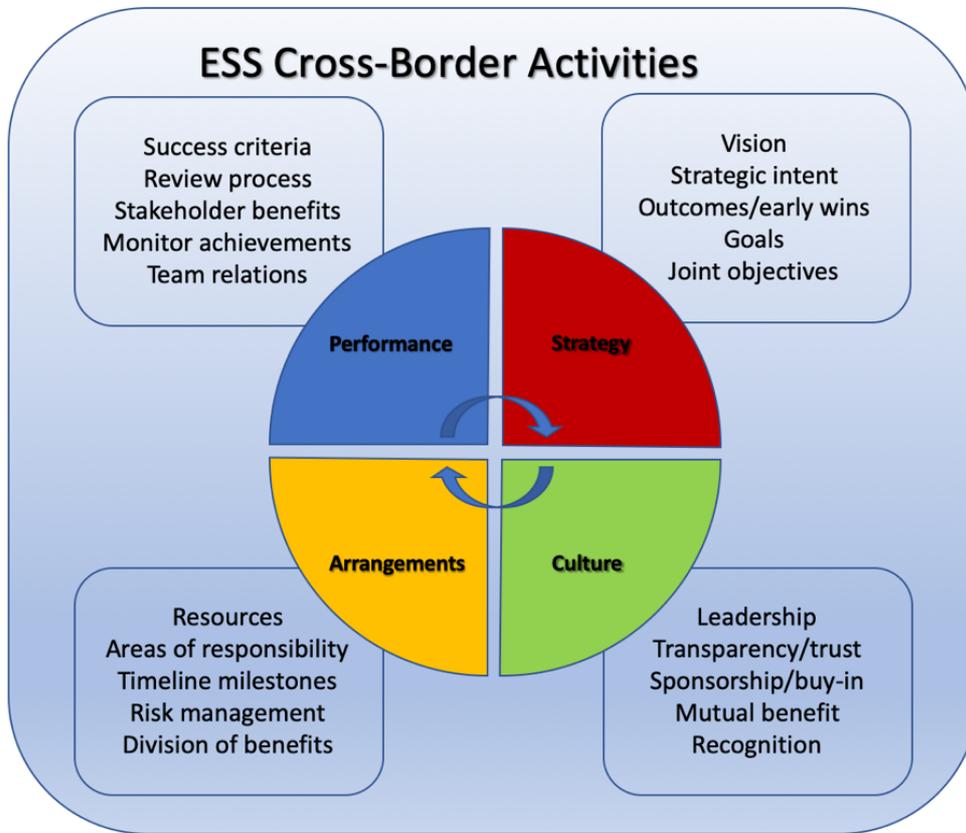


Figure 9: ESS Cross-Border Collaboration Model

A prerequisite for this collaboration is communication and information exchange, which is maintained and supported across ESS to enable cross-border interactions.

In preparation for this deliverable, it has become very clear that a project like ESS cannot be developed without Cross-border activities. The collaboration activities have come in all shapes and forms and has been found in the deep end technology developments all the way to procurement and installation of IT equipment. The diversity is significant and can range from collaboration with a local partner for accessible service and support, all the way to shared IP of some ground-breaking new inventions.

Each and every cross-border activity that has been analysed has brought positive value and impact within the four areas of the described wheel. On top of the relationships have developed over time, generally following the rotation in timely iterations.

The mentioned variables within each category provide some headlines for the mutual subjects tying the cross-border relationships together. The balance between the collaborating parties is delicate and the “What’s in It for Me” (WIIFM) needs to be matching, at least over time.

Only if the balance is achieved and maintained, the challenge of establishing a sustainable relationship can be overcome. It is in the interest of ESS to invest in maintaining these cross-border activities so life cycle support and supplier security are supported. This can be done through investing in the mentioned innovative ecosystem, where challenges can be attacked directly or indirectly, as the collaboration DNA best enables it.

Looking forward, the established ILO Network is important to establish long-term relationships with suppliers and find new opportunities within member countries and other countries around the world.

In return, ESS shall continuously update the information to the ILOs about all activities and potential collaborations activities across borders. As ESS is moving towards the operational phase, it is becoming more important to explore additional ILOs activities relative to the innovation ecosystem of ESS. In other words, ESS shall keep turning the collaboration activities wheel to achieve the benefits.

The innovation at ESS has been done both internally, and in collaboration with external stakeholders within Host Countries, Member Countries and Industrial Partners. Looking at the region surrounding ESS, many players already work with ESS in different ways. As ESS becomes more and more established, external players will naturally reach out to ESS to join forces in science, technology, and innovation. The long-term sustainability action for dynamic and open cross-border activities is the innovation ecosystem around ESS. The innovation ecosystem of ESS is by no means limited to the region of Sweden, Denmark and Germany. The innovation platform will need structured guidance, governance and support to attract potential partners in each stakeholder group to build and operate the world's most powerful proton accelerator.

As a closing remark, it is recommended that ESS continue to focus on cross-border collaboration activities as it is an important prerequisite for innovation. The resulting diversity is rocket fuel for creating value and impact through open and collaborative innovation efforts. By that, the return on investment is significant and sustainable



13. Appendix 1: Consent Request & Privacy Notice

CONSENT FORM FOR COMPANY INTERVIEWS

Title of Project: Deliverable 4.3 Cross-border Collaboration
Name of Researcher: Jimmy Andersen, Sarah Salman

	<i>Please tick box</i>	
	YES	NO
• I consent to being interviewed by the researcher	<input type="checkbox"/>	<input type="checkbox"/>
• I agree to allowing the interview to be photographed / filmed / audio-recorded	<input type="checkbox"/>	<input type="checkbox"/>
• I agree to making myself available for a further interview should it be required	<input type="checkbox"/>	<input type="checkbox"/>
• I understand that I will be given a transcript of data concerning me for my approval before being included in the write up of the research	<input type="checkbox"/>	<input type="checkbox"/>
• I understand that I have given my approval for my name and/ or the name of my workplace to be used in the final report of the project, and in further publications	<input type="checkbox"/>	<input type="checkbox"/>
• I understand that any information I provide is confidential, and that no information that I disclose will lead to the identification of any individual in the reports on the project, either by the researcher or by any other party	<input type="checkbox"/>	<input type="checkbox"/>
• I have read the information sheet, had the opportunity to ask questions and I understand the principles, procedures and possible risks involved.	<input type="checkbox"/>	<input type="checkbox"/>
• I consent to the processing of my personal information and data for the purposes of this research study. I understand that such information will be treated as strictly confidential and handled in accordance with the General Data protection Regulation (Regulation EU 2016/679).	<input type="checkbox"/>	<input type="checkbox"/>
• I understand that my participation is voluntary, that I can choose not to participate in part or all of the project, and that I can withdraw at any stage of the project without being penalised or disadvantaged in any way	<input type="checkbox"/>	<input type="checkbox"/>
• I agree to take part in the BrightnESS² research project	<input type="checkbox"/>	<input type="checkbox"/>

<p>Name:</p> <p>Signature</p> <p>Date:</p>

ESS PRIVACY NOTICE

Introduction

The European Spallation Source ERIC (ESS) takes the privacy rights of individuals very seriously. ESS complies with personal data laws (GDPR) by keeping your personal data up-to-date, protecting your information from loss, misuse, unauthorised access and disclosure by ensuring appropriate technical measures are in place.

1. What personal data will you process?

ESS will process the following personal data from you:

- a) Full name
- b) Contact information (e.g., phone number, e-mail)

2. How will you use my information?

We will use your personal data to support our industry and innovation activities. We reserve the right to use your personal data in order to fulfil legal, contractual, or similar obligations placed upon ESS.

3. Will my personal data be sent to countries outside the EEA?

ESS will not send your personal information outside the European Economic Area (EEA). We will only use your personal data within ESS for our own purposes. We may contact you to discuss or clarify as necessary. Our treatment of your personal data will at all times be in accordance with the GDPR.

4. How long is my personal data stored?

Your personal data will be stored in the ESS IT system for a maximum of three (3) years.

5. What if I do not register?

We can only process your personal data when you consent. Therefore, there is no consequence for failing to not registering other than we will not use your data.

6. What rights do I have?

Unless subject to an exception, you have:

- (a) The right to withdraw consent at any time for any reason;
- (b) The right to request a copy of your personal data held by ESS;
- (c) The right to request ESS transmit your personal data to another data controller/entity;



- (d) The right to request ESS correct any personal data if it is found to be inaccurate or out-of-date;
- (e) The right to request your personal data be erased when it is no longer necessary for ESS to retain such data;
- (f) The right to request a restriction on further processing when there is a dispute over the accuracy of personal data stored;
- (g) The right to lodge a complaint with the Swedish Data Protection Authority (Sw: Datainspektionen).

7. Who can I contact?

You may submit questions or exercise your rights by e-mail to privacy@esss.se data controller representative Jimmy Binderup Andersen (jimmy.andersen@esss.se).

8. Who else can I contact?

If you believe there has been a violation of your personal data protection rights, you may e-mail privacy@esss.se and data controller representative Jimmy Binderup Andersen (jimmy.andersen@esss.se) to discuss a solution.

to discuss a solution.

At any time, you have the right to communicate directly with the Swedish Data Protection Authority (Sw: *Datainspektionen*) at:

Datainspektionen
Box 8114
104 20 Stockholm
Telefon: 08-657 61 00
E-post: datainspektionen@datainspektionen.se
Fax: 08-652 86 52

I consent to ESS' use of my personal data provided in this form.

Signature



BrightnESS² is funded by the European Union Framework Programme for Research and Innovation Horizon 2020.

2 (2)

brightness.esss.se
@brightnesseu



14. Appendix 2 The Interview Questions

Cross-border Collaboration- Interview Questions

Company Name:

Industry:

Interviewee(s):

Date:

1. The ESS cross-border collaboration report is a BrightnESS² project deliverable, where the aim is to better understand the interaction between innovation, technology transfer, as well as other industrial activities in the innovation landscape surrounding ESS.
 - a. Does your company play a role in innovative cross-border collaboration and technology or knowledge transfer?
 - b. If yes, can you mention examples? How? What?
 - c. If no, what role could you play and how could you benefit? What role would you like to have?
2. Does your company support and activate innovation in cross-border collaboration?
 - a. If yes, in which way? What value and impact has it created?
 - b. If no, how could you support? Are you willing to invest? What should be the value for you to defend the effort?
3. Can you explain the relationship between innovation/technology and technological capabilities development in your company?
 - a. What is your experience?
 - b. Can it be improved? How?
4. To what extent do your company already have international cooperation in the field of innovation, research and development?
 - a) How often and in which areas do you engage with industrial partners for cross-border collaboration?
 - b) What is the usual level of cross-border collaboration and what is your experience?
 - c) How can your company's technology and workflow techniques be used in cross-border collaboration? How can ESS help and support?
5. The BrightnESS² project aims to intensify the cooperation of EU countries and global stakeholders.
 - a. What is your understanding and experience of this innovation potential given your interactions with the cross-border engagements?



15. Appendix 3: The Survey Questionnaire

Deliverable 4.3 Survey

1. How often do you engage with industrial partners from your Member State that are involved in ESS procurement?
 - a. Slider / 3 choice response

2. Of all the tenders companies in your Member State have won, how many of them involve a third party provider / sub-supplier / collaborator in another country.
(One choice and a free text box are both selectable)
 - a. 3-5 choices. Starts from 1-3 and ends with 5+
 - b. Free text to clarify the response

3. What is the usual level of cross-border collaboration
(all 4 are selectable)
 - a. Sub-suppliers often come from other countries
 - b. Company is registered in a number of other countries and collaborates with its branches
 - c. Outsourcing parts of the work to lower cost countries
 - d. Other: (text box)

4. Could you please name a few companies in your Member State that have worked across borders upon winning a tender?
 - a. Text Box

5. Would you be willing to engage in a more detailed interview about cross-border collaboration? Your responses will guide ESS in delivering D 4.3.
 - a. Text Box

6. A large part of the cross-border initiatives is the vast innovation potential that becomes available through collaboration between different companies and Research Infrastructures.

What is your understanding and experience of this innovation potential given your interactions with the cross-border engagements.
 - a. Text Box

7. Do you have any candidates for exploring a mutual innovation strategy framework for cross-border activities?
 - a. Text Box

8. Do you have any ideas on how to promote the ESS innovation ecosystem, to collect data and improve accessibility to support cross-border innovation potential?
 - a. Text Box

9. How can ESS do more to help ILOs and companies to increase cross-border activities?
 - a. Text Box



16. Appendix 4: Example of answers to questionnaire

Q1 Engage with industrial partners from Member State

Very Often	1
Often	5
Occasionally	3

Q2 Companies in Member stated won tenders while conducting Cross-border collaboration

4 to 5 companies	1
1 to 3 companies	2
Other	6

Q2.1 Other

- ILOs do not receive information from ESS about their country's sub-contractors who are involved in another country 'contract or from their winning supplier. ILOs receive little information about contracts won from ESS
- Generally, there is not so much cross border collaborations. This could indeed increase. Currently working with this round ITER. However, when it comes to sub-suppliers and technology this is spread through-out Europe and other places
- Logistics collaborators and certain services
- This metric isn't easily available in Estonia. Probably 1-3 fits best
- Norway has won very few contracts at ESS and there is none detailed information about sub-suppliers. Normally any contract will involve sub-suppliers from other countries.
- Almost all Danish companies use foreign suppliers, the overall import rate for Danish products are more than 50%.

Q3 Level of Cross-border Collaboration

Sub-suppliers often come from other countries	4
Company is registered in a number of other countries and collaborates with its branches	5
No detail information	3

Q4 **Companies in Member State working Cross-Border**

- Skanska
- JEMA
- Nortemecanica
- Asturfeito
- ENSA
- LINDE KRYOTECHNIK
- NUVIA

Q6 **Innovation Potential Cross-border**

- There is limited sight of cross-border engagement/partnerships. Focus is on companies winning tenders (or being a sub-contractor) and increasing work return
- In the case of Spanish companies that usually work on precision mechanics, the degree of collaboration is logistics and certain services.
- There are not enough cross-border interactions to generalize this answer.
- It is quite difficult to set up cross-border cooperation's.
- Positive: best practice exchanges, benchmarking, cultural openness.
- Negative: language & cultural barrier, impact on sustainable development (transportation, travelling)
- Companies which are involved in the early phases of design might have some effects in this. Build-to-print orders are less likely to increase innovation
- There is a business support network for this called Enterprise Europe Network, which regularly organizes various business-to-business events helping to foster international cooperation, engaging research bodies with companies etc.

Q7 **Candidates for exploring innovation strategy for Cross-border activities**

- Among the companies supplying ESS, there is no candidate.
- The innovation strategy from ESS must be based on concrete examples of innovation, not the other way around. EG: don't look for "innovative companies" as such but start with concrete challenges like microTCA and AI/Machine learning for control systems.
- On a general level, there are surely companies in Estonia who could be candidates for mutual innovation strategy development, but on a more concrete level it highly depends



Q8 **Promote ESS innovation Ecosystem and support Cross-border activities**

- Having a Market Survey process prior to tendering (with a clear technical specification) would help industry engagement, improve knowledge and could identify company needs for capabilities and thus partners.
- Having a webinar or the means for companies to pitch to others about what they can offer and what they are looking for could help foster partnerships (within country or cross-border).
- We have different ideas that we are exploring together with CERN.
- 20-minute high-level video meetings between potential company leadership and ESS employees in charge of the concrete innovation would help find the mutual interests.
- Cross border innovation to be made on high tech suppliers' complex systems mostly close to the ESS instruments: beam quality, detectors, instrument mechanisms, data processing, algorithms, computer science.
- ESS is already enabling the exchange between international partners, this could be systematically increased
- Very difficult to imagine promoting ESS innovation iEcosystem when ESS is not yet fully operational and is still under construction. This could work after start of operation.

Q9 **ESS preparedness to increase Cross-border activities**

- Provide information on data and statistics for all tenders. Provide specific country info to an individual ILO on Tier 1 winners and Tier 2 sub-contractors. Help with networking for upcoming tenders where cross border partnerships could be mutually beneficial. e.g. 337 Framework on Technical Consultants and Services. Need to allow time before the tender starts (e.g. a Market Survey) or allow a longer tender duration, and provide detailed information on the specification. For example, host a webinar, provide info on the specification, with opportunities for company pitches and for networking/B2B (online) meetings
- Help arrange workshops around different hands-on cases
- With international dissemination events and specific technical conferences in ESS1
- Summary web-page with technologies that need innovation or which offer innovation to the industry could be beneficial



17. Appendix 5: List of Companies Interviewed

COMPANY	COUNTRIES	ORIGINAL COUNTRY	INDUSTRY SECTORS	ROLE	COLLABORATION WITH ESS	WEB ADDRESS
Pfeiffer Vacuum Scandinavia AB	Sweden	Germany	Research & development, Solar, Medical, Electrical	Market Manager R&D	Supplier	https://www.pfeiffer-vacuum.com/en/
Nuvia Nordic AB	Sweden, 12+ countries	Czech Republic	Nuclear, Healthcare, Protection	Key Account Manager	Supplier	https://www.nuvia.com/sv/
LAPP MILTRONIC AB	43 Offices across the globe	Sweden	Electrical installation, eMobility, Renewable energy, Industrial communication, Infrastructure, Food and beverages, Robot manufacturing and integration, Cabinet construction, Train	Reginal Sales Manager	Supplier	https://se.lappgroup.com/
Atea AB	Norway, Denmark, Finland, Lithuania, Latvia and Estonia	Sweden	IT, Data and Communication	Head of Innovation Management	Supplier	https://www.atea.com/
Skanska AB	US, Norway, Finland, Estonia, Poland, Czech Republic, Slovakia, UK, Hungary, Romania and Denmark	Sweden	Project Development, Construction	Head of Research and Development	Supplier	https://www.skanska.com/
Asturfeito SAU	Sweden, 20+ Countries	Spain	Big Science, Oil & Gas Offshore, Renewable Energies, Nuclear, Industrial, Steel Mills Rings & Rolls, Aerospace & Defence	Business Development Manager	Supplier	https://www.asturfeito.com/home
Siemens AB	Sweden and 200 more countries	Germany	Aerospace, Automotive, Chemicals, Datacentre, Fiber Industry, Food & Beverage industry, Pharmaceutical industry, Machine manufacturing, Mining, Water & Sewer	Regional Manager	Supplier	https://new.siemens.com/global/en/company/about.html
Tetra Pak	163+ countries	Sweden	Food Industry	Strategic Partnership Manager	Partner	https://www.tetrapak.com/
E.ON.	15+ countries	Germany	Energy Industry	Head of Sales	Supplier/Partner	https://www.eon.com/en.html
Big Science Sweden	Sweden	Sweden	Industrial Liaison Office	Director	ESS ILO	https://www.bigsciencesweden.se/big-science-sweden/about-us/
Science and Technology Facilities Council	30+ countries	United Kingdom	Science and Technology Facilities Council	UK SKA Industrial Liaison Officer, UK ESS Industrial Liaison Officer at STFC	ESS ILO	https://stfc.ukri.org