BIGINN: a new beginning for business and Big Science innovation

COS-CLUSTER PROJECT N° 101037928 – BIGINN
Deliverable D2.3 Analysis and prioritization of SME-support services

Public

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Document History

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Introduction

Executive summary

This deliverable reports on WP2 – Task 2.3 Analysis and prioritization of SME-support services and presents the results found in a cluster service survey performed within the BIGINN partnership and via interviews with non-partner clusters.
The objective of the cluster service survey is to assess the "value" of a specific service (as seen from the cluster members side) and the "effort" to implement them (as seen from the BIGINN partners side) and uses this information to prioritize the cluster services, serving also as a key tool for future implementations of new services. The main findings of the survey and subsequent analysis are:

- Cluster services aimed at **direct contact/networking** and **matchmaking** are generally prioritized highest by cluster members.
- The survey results conform well with interviews with non-partner clusters within the Big Science segment, which indicates that the **findings of this Work Package have a general application to cluster management and services in other sectors**.
- The prioritized list of cluster services obtained via this work package can be used directly by clusters within the Big Science segment to **strengthen the portfolio of services offered** to their members.
- **Benchmarking the most valuable cluster services** to the existing cluster services in the BIGINN partners shows a good overlap and **indicates where efforts to improve or introduce new services is most beneficial**.

It is the aim that clusters within the Big Science segment will use the results of this survey to help identify which cluster services they should prioritize and implement.

Introduction and objectives

BIGINN marks a new beginning for business and Big Science Innovation. The project has the overarching objective of exploiting the potential for innovation and international collaboration from the Big Science market by tapping into the huge investments in state-of-the-art technologies in this field. The consortium partners from Denmark, Spain and Lithuania have joined forces for the ClusterXchange programme to address the specific challenges of the sector, namely:

- Strengthen and professionalise the cluster management skills in the new area of Big Science clusters.
- Employ cluster mobility schemes to implement cross-fertilization of innovation opportunities at the different clusters.
- Improve SME global competitiveness by establishing international relations and collaborations.

This deliverable focuses on the cluster services offered to support SMEs by clusters related to the Big Science market. The deliverable will be used as a general guideline for clusters acting in the Big Science market but will also be used as a specific gauge to strengthen the portfolio of services of the BIGINN partners.

Legal notice

Table 1: BIGINN partners

Participant Organization Name	Short Name	Country
TEKNOLOGISK INSTITUT	DTI	Denmark
ASOCIACIÓN ESPAÑOLA DE LA INDUSTRIA DE LA CIENCIA	INEUSTAR	Spain
VIESOJI ISTAIGA FIZIKOS INSTITUTO MOKSLO IR TECHNOLOGIJU PARKAS	LITEK	Lithuania

Survey and analysis of cluster services

This section describes the survey made to gauge the needs for cluster services and the effort to implement them in clusters acting within the Big Science segment.

The first part of this section describes the idea and content of the survey as well as some prerequisites for the survey, the second part presents the results of the survey, and the last parts presents the input received from non-partner clusters through interviews.

The survey methodology employed evaluates the expressed needs for cluster services held up against the efforts required to implement them.

Introduction to the cluster service survey

The cluster service survey has been performed to gain knowledge on which cluster services are needed by the cluster members (value) and get a measure on the resources needed to implement the cluster services by the clusters (effort). The resulting value vs effort chart will be used to prioritize the cluster services.

The set of cluster services used in the survey was developed based on the cluster services listed in the Gold Cluster assessment document[1] as presented by the European Secretariat of Cluster Excellence Analysis (ESCA) and previous cluster service surveys performed by the BigScience.dk and LITEK clusters.

Based on the above input, a set of generalized cluster services targeted at the Big Science segment was developed. The cluster services were generalized to make them comparable across different clusters and countries. Table 2 lists the questions asked in the cluster service survey to the cluster members.

Table 2: Questions asked in the cluster service survey.

Id	Which of the following Services branding would you find useful from your cluster?
Marketing and Branding	
A.1	Pitch of company to external stakeholders (BSO[2]s, Prime contractors etc.)
A.2	Political cluster/network lobbying to improve framework conditions
A.3	Promotional communication via websites, LinkedIn, newsletter, company catalogue etc.
A.4	Strong presence / frequent visits to Big Science facilities to create closer relations
Business Opportunities	
B.1	General market research / studies of Big Science market

[1] https://www.cluster-analysis.org/gold-label-new/processes-of-application-assessment-and-award/Introduction%20to%20GOLD%20assessment.pdf

[2] Big Science Organizations

B.2	Organization of joint booth for companies and representation at exhibitions and trade fairs
B.3	Organization of business trips to/from Big Science facilities / clusters
B.4	Information on tenders and opportunities in the Big Science market via website, newsletter etc
B.5	Direct matchmaking between companies and specific tenders and opportunities
B.6	Strategic sparring on opportunities in the Big Science market
B.7	Consultancy services in relation to tendering
Network Building	
C.1	Organisation of internal and external networking events
C.2	Initiation of working groups and sub-networks within network
C.2	Individual matchmaking between network members
C.4	Matchmaking with international business partners.
Innovation and Business Development	
D.1	Guidance and training regarding gaps and opportunities in the Big Science market
D.2	Information and help regarding funding programs
D.3	Consultancy services for innovation and business development
Opportunities for Students	
E.1	Promoting internships for students at Big Science facilities
E.2	Initiation of industrial PhD programs linked to the Big Science market

The list of questions regarding the cluster services were shared with the cluster members of the BIGNN partner clusters to get an assessment of the value of the service to their members. It was afterwards sent to the BIGINN partners cluster management teams to assess the effort to implement the same services.

The cluster services were also discussed with non-partner clusters in the Big Science segment (Dutch ILO-net, Big Science Sweden, and Big Science Poland) and with Danish gold clusters outside the BigScience segment, to get a broader view on the value of the cluster services. The survey was also sent to the members of INDUCIENCIA, the Spanish Science Industry Technological Platform.

It should be noted that the list of cluster services has been made to cover as large a set of services as possible to gain the most general picture and allow for input of new ideas. However, it should be kept in mind – when afterwards implementing the services – that some of the identified cluster services are targeted at helping one specific company. This is, in most cases, not possible without a payment from the specific company, as most clusters in the Big Science segment are publicly funded and hence can only carry out work for the general interest of all members.

This aspect has not been considered when assessing the value or effort for the cluster services, as it may vary between clusters, but must be considered when implementing new cluster services.

Results of cluster service survey

The cluster service survey was sent out to the BIGINN partner members in Denmark, Lithuania and Spain and a total of 42 answers was received on the value of the cluster services. Additionally, the 3 BIGINN partners have each assessed their effort to implement (or continue) the cluster services listed in the survey.

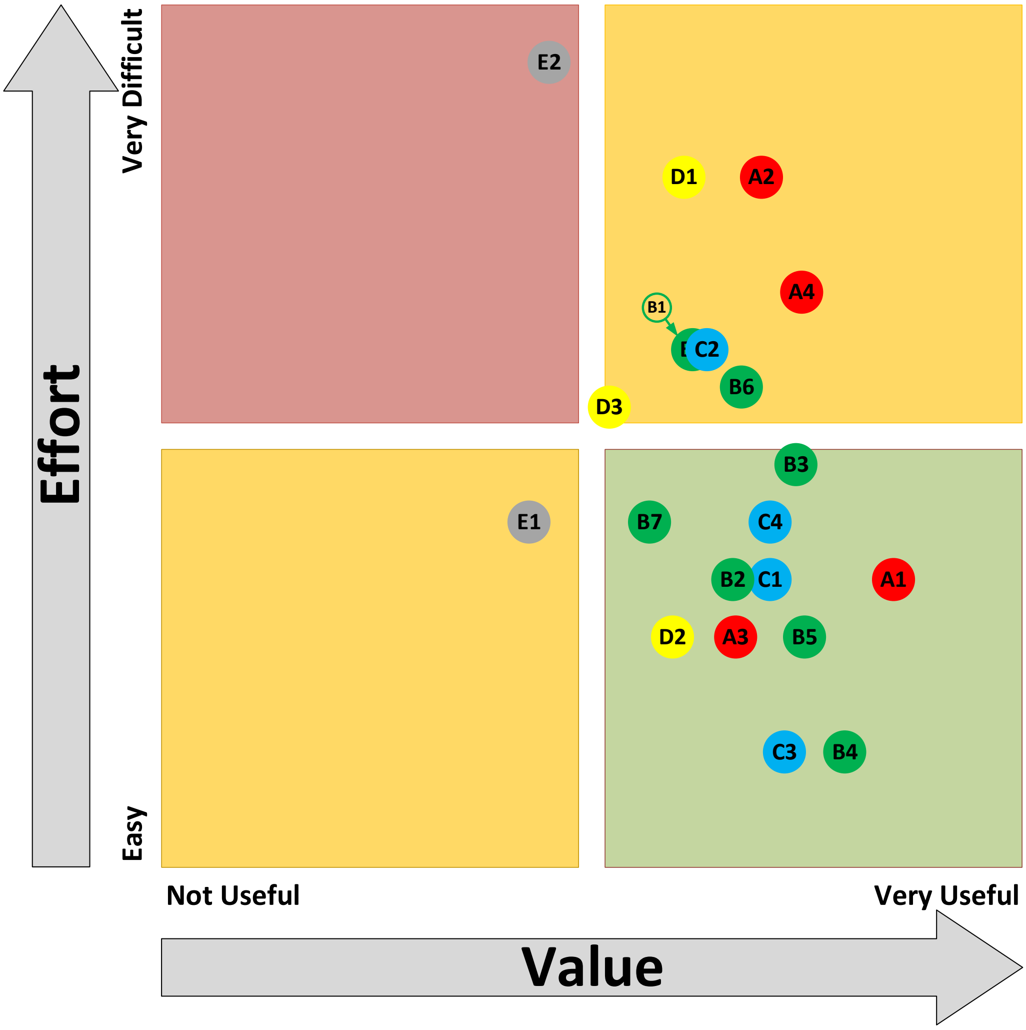
The responses ("not useful" to "very useful" and "easy" to "very difficult") have been transformed into the numbers 1 to 4 and the average value for all answers regarding value and effort have been calculated[3].
Using the template developed by Cluster Excellence Denmark[4] the resulting numbers have been used to make the value vs. effort analysis which is presented in Figure 1. The value vs. effort plot shows most cluster services presented to the cluster members are more useful than not and that the effort estimated is from moderate to difficult.

To facilitate the Spanish cluster members in answering the cluster service survey a Spanish version was made which provided the possibility to compare the Spanish results (22 answers) to the Danish and Lithuanian (16 and 4 answers, respectively).

Comparing the answers from the Spanish and Danish/Lithuanian companies most assessments are comparable except for the two questions regarding "Opportunities for Students" where the Spanish members find that internships and PhD programs more useful than the Danish and Lithuanian members. See also Figure 2 for a graphical comparison of the cluster service values derived from the Danish/Lithuanian and Spanish responses.

The difference regarding "Opportunities for Students" could be explained with the fact that most of Spanish Big Science companies consider it hard or even very hard to access to qualified young professionals specifically regarding to Big Science sector.

[3] The answer "irrelevant" has been given the same value as "not useful"
[4] https://clusterexcellencedenmark.dk/



Marketing and Branding:
A1: Pitch of company to external stakeholders (BSOs, Prime contractors etc.)
A2: Political cluster/network lobbying to improve framework conditions
A3: Promotional communication via websites, linkedin, newsletter, company catalogue etc.
A4: Strong presence / frequent visits to Big Science facilities to create closer relations

Buisiness Opportunities:
B1: General market research / studies of Big Science market
B2: Organization of joint booth for companies and representation at exhibitions and trade fairs
B3: Organization of business trips to/from Big Science facilities / clusters
B4: Information on tenders and opportunities in the Big Science market via website, newsletter etc
B5: Direct matchmaking between companies and specific tenders and opportunities
B6: Strategic sparring on opportunities in the Big Science marketConsultancy services in relation to tendering

Network Building:
C1: Organisation of internal and external networking events
C2: Initiation of working groups and sub-networks within network
C3: Individual matchmaking between network members
C4: Matchmaking with international business partners.

Innovation and Business Development:
D1: Guidance and training regarding gaps and opportunities in the Big Science market
D2: Information and help regarding funding programs
D3: Consultancy services for innovation and business development

Opportunities for Students:
E1: Promoting internships for students at Big Science facilities
E2: Initiation of industrial PhD programs linked to the Big Science market

Figure 1: Value vs. Effort analysis for cluster services

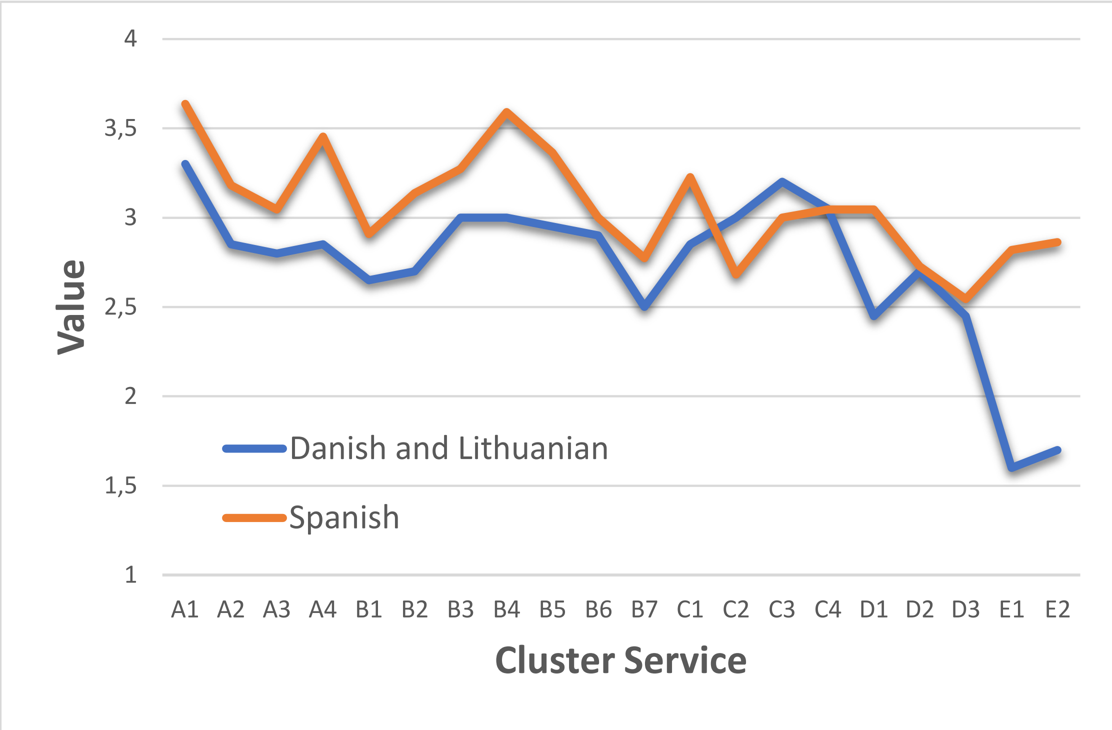


Figure 2 Comparison of cluster service evaluation between Danish/Lithuanian and Spanish members

Interviews with non-partner clusters within the Big Science segment

To get a broader view on what clusters within the Big Science segment think about cluster services a set of live in-depth, interviews were carried out with some of the leading non-partner Big Science clusters in Europe; the Dutch ILO-net[5], Big Science Sweden[6], and the Polish Big Science Hub[7]. The interviews were structured in accordance with the survey questions, and performed with: the Industry coordinator and CERN ILO from Dutch ILO-net, the business developer and CERN and FAIR ILO from Big Science Sweden and the coordinator and CERN ILO from the polish Big Science Hub. These Big Science clusters were asked to evaluate the perceived value of the cluster services to their members based on their knowledge about the Big Science ecosystems in their respective countries.

The response from the three non-partner Big Science clusters on the overall evaluation of the cluster services are rather aligned with the answers received from the BIGINN partner members. In Figure 3, the responses from the 3 non-partners regarding the value of the services is compared with the value obtained from the cluster service survey amongst the BIGINN partner members. The comparison shows that the cluster services are evaluated quite similar, which indicates that the results found in this analysis is valid on a larger scale and can be applied more widely than solely to the BIGINN consortium.

[5] https://www.bigscience.nl/en/ilo-net
[6] https://www.bigsciencesweden.se/
[7] http://big-science.pl/en/

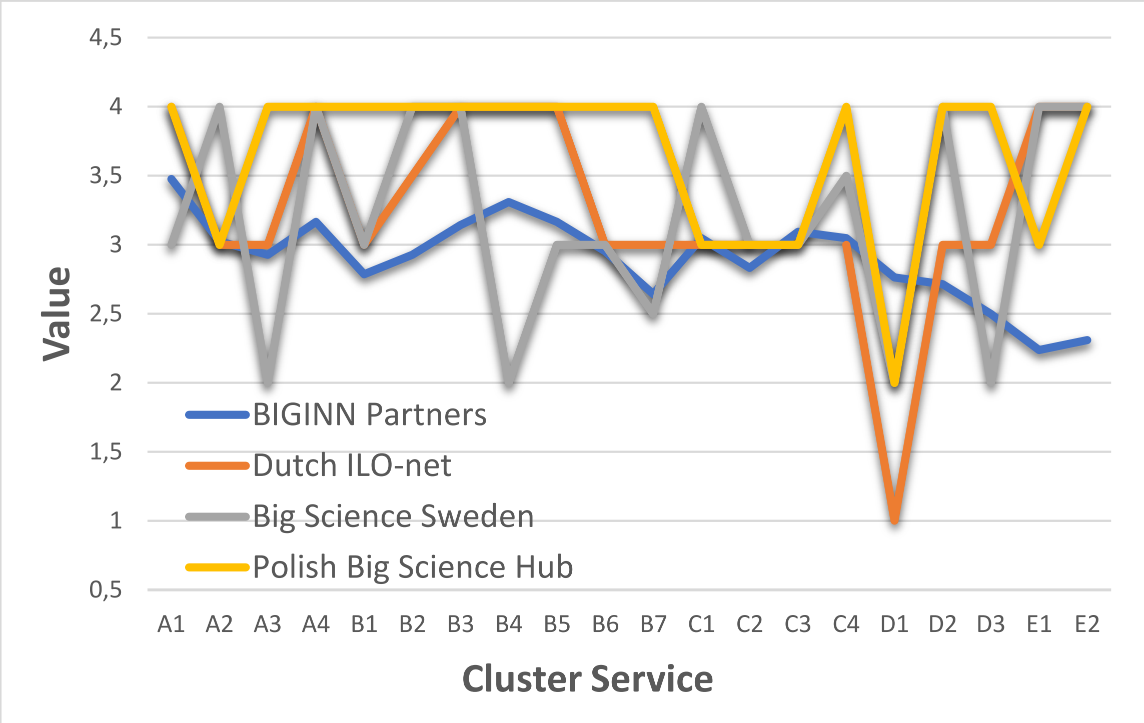


Figure 3 Comparison of cluster service evaluation between BIGINN partners and non-partner Big Science clusters

Regarding the questions on “Opportunities for students” all the non-partner clusters find them more useful than the average of the BIGINN partnership members. This could be understood as all persons from non-partner clusters interviewed are located at universities.

Interview with non-partner clusters outside the Big Science segment

As part of an effort to gain general knowledge about cluster management two live in-depth interviews were carried out with the Danish gold clusters CenSec[8] and CLEAN[9].

The methodology employed for these two interviews involved a much broader focus than the strict questionnaire approach. The objective was to gain insight into professional cluster management thinking in general but also to learn about possible other types of services provided by the two clusters.

From the interviews it was found that the most important services for the members provided by the gold clusters were newsletters, arrangement of events and network building, which were also found to be the most important services for their members, as well as information to their members about the political developments and funding. It was also mentioned that more dedicated matchmaking services were not part of their services but would be very beneficial to their members.

The outcome of the interviews with the gold clusters aligns well with the results of the cluster service survey and again indicates that the results found in the survey can be applied more generally.

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[8] Danish cluster for Defence, Space and Security https://censec.dk/
[9] Danish environmental cluster https://cleancluster.dk/en/

Prioritization of cluster services

This section presents the prioritized list of cluster services, both based on the direct value assigned to the service by the members but also weighted with effort estimated to implement the cluster service by the BIGINN partners.

Prioritized list of cluster services

The first prioritized list of cluster services shown in Table 3 is based purely on the value assigned to the cluster service by the members of the BIGINN partner clusters. This presentation of the prioritization of the cluster services is interesting, as it shows the service most valued by the cluster members. Please note that the value score of 2, 3 and 4 corresponds to "Somewhat Useful", "Useful" and "Very Useful", respectively.

From the list of cluster services prioritized by value only, the main conclusion is that the services aimed at direct contact/networking and matchmaking between stakeholders (cluster members, BSO personnel, other companies, and the cluster secretariats) and direct information on specific tenders and opportunities in the Big Science market are the most useful services. Whereas services aimed at more general introductions to the market and long-term investments are assessed as having a lesser value.
This does not come as large surprise as most of the cluster members asked in the survey are companies that will have to either make profit or position themselves in the market within a shorter period and therefore values the long-term initiatives and investments less.

Table 3 Cluster services prioritized by Value only

Id	Cluster services prioritized by Value only	Value
A1	Pitch of company to external stakeholders (BSOs, Prime contractors etc.)	3.48
B4	Information on tenders and opportunities in the Big Science market via website, newsletter etc	3.31
A4	Strong presence / frequent visits to Big Science facilities to create closer relations	3.17
B5	Direct matchmaking between companies and specific tenders and opportunities	3.17
B3	Organization of business trips to/from Big Science facilities / clusters	3.14
C3	Individual matchmaking between network members	3.10
C1	Organisation of internal and external networking events	3.05
C4	Matchmaking with international business partners	3.05
A2	Political cluster/network lobbying to improve framework conditions	3.02
B6	Strategic sparring on opportunities in the Big Science market	2.95

A3	Promotional communication via websites, LinkedIn, newsletter, company catalogue etc.	2.93
B2	Organization of joint booth for companies and representation at exhibitions and trade fairs	2.93
C2	Initiation of working groups and sub-networks within network	2.83
B1	General market research / studies of Big Science market	2.79
D1	Guidance and training regarding gaps and opportunities in the Big Science market	2.76
D2	Information and help regarding funding programs	2.71
B7	Consultancy services in relation to tendering	2.64
D3	Consultancy services for innovation and business development	2.50
E2	Initiation of industrial PhD programs linked to the Big Science market	2.31
E1	Promoting internships for students at Big Science facilities	2.24

Looking at the cluster services prioritized by value over effort in Table 4 it is generally the same services that has a high priority as compared to Table 3 but the detailed order has changed a bit due to different estimated efforts to implement the service. The effort needed to provide the service is estimated by the BIGINN cluster management.

Please note that a score of 1 corresponds to a service where the value is "equal[10]" to the effort to implement it, whereas a score of 2 corresponds to a value "twice as high" as the effort to implement it.

Table 4 Cluster services prioritized by Value over Effort

Id	Cluster services prioritized by Value over Effort	Score
B4	Information on tenders and opportunities in the Big Science market via website, newsletter etc	2.36
C3	Individual matchmaking between network members	2.21
B5	Direct matchmaking between companies and specific tenders and opportunities	1.76
A1	Pitch of company to external stakeholders (BSOs, Prime contractors etc.)	1.74

[10] Note that the value and effort are not directly comparable but mainly gives an impression of "more or less" value or effort.

A3	Promotional communication via websites, LinkedIn, newsletter, company catalogue etc.	1.63
C1	Organisation of internal and external networking events	1.52
D2	Information and help regarding funding programs	1.51
B2	Organization of joint booth for companies and representation at exhibitions and trade fairs	1.46
C4	Matchmaking with international business partners	1.39
B3	Organization of business trips to/from Big Science facilities / clusters	1.31
B7	Consultancy services in relation to tendering	1.20
B6	Strategic sparring on opportunities in the Big Science market	1.11
A4	Strong presence / frequent visits to Big Science facilities to create closer relations	1.06
E2	Promoting internships for students at Big Science facilities	1.02
C2	Initiation of working groups and sub-networks within network	1.01
B1	General market research / studies of Big Science market	0.99
D3	Consultancy services for innovation and business development	0.96
A2	Political cluster/network lobbying to improve framework conditions	0.89
D1	Guidance and training regarding gaps and opportunities in the Big Science market	0.81
E2	Initiation of industrial PhD programs linked to the Big Science market	0.61

It will be most beneficial for a cluster that wants to improve its services provided, to firstly look at the list prioritized by value only, as this gives the most direct insight into what cluster members are finding most valuable.
After identifying the set of services that would be most beneficial for the cluster members, the list of services prioritized by value over effort can be used for resource prioritization, to assist the cluster management in deciding which services shall be implemented first and whether some may be down-prioritized due to too large an effort to implement.
It should off cause be mentioned that these results are not absolute and that both value of a specific service and the effort to implement it will vary depending on the specific cluster, the composition of the cluster, its maturity and possibly also culture and tradition in specific regions.

Benchmarking against existing services

This section shows the benchmarking of the prioritized cluster services against the BIGINN partners existing services to help identify which services could be improved or introduced.
The benchmarking has been made for the most valuable[11] cluster services as identified by value only (Table 3) by the BIGINN partner members. The cluster services have been compared to the existing services in the 3 BIGINN partner and is presented in Table 5.
The benchmarking in Table 5 have been color coded to indicate whether the cluster service is already well implemented (green), implemented but could be improved (yellow) or not implemented (red).
From the table it is evident that the BIGINN partners have a fair implementation of the most "valuable" cluster services, as prioritized by its members. It also indicates where efforts could be made and will be used to focus training in the BIGINN partner cluster managements which is part of the further work to strengthen and professionalize the management of the BIGINN partner clusters.

[11] Cluster services with "value" above 3, that is from "useful" to "very useful"

Table 5 Benchmarking of existing cluster services to most valuable cluster services

Id	Prioritized services	BigScience.dk services	LITEK services	INEUSTAR and INDUCIENCIA services
A1	Pitch of company to external stakeholders (BSOs, Prime contractors etc.)	Service is provided today as companies are made known to BSOs. Could be extended towards prime contractors.	In general, the service is provided every time LITEK is participating at business missions, exhibitions, and other networking events/meetings. Until now, companies were informed about opportunities to collaborate with BSOs but not vice-versa.	Not very often
B4	Information on tenders and opportunities in the Big Science market via website, newsletter etc	Information distributed bi-weekly via newsletter.	The service is performed but irregularly	Every month through newsletter and targeted emails
A4	Strong presence / frequent visits to Big Science facilities to create closer relations	BigScience.dk is trying to be present as much as possible at BSOs but could be more visible. More visibility at ESS would valuable.	Not implemented but if there seem to be a need for this, and it will be implemented.	2-3 per year
B5	Direct matchmaking between companies and specific tenders and opportunities	Done as part of sending bi-weekly newsletter on tenders. All tenders are evaluated and matched with cluster members if they exist.	If the correct tender appears, it will be shown to a member	Done to our associated companies and to some outsiders to strengthen Spanish ecosystem
B3	Organization of business trips to/from Big Science facilities / clusters	Has been done regularly earlier but has been on hold due to Covid-19. Will be continued when facilities are all opening up again for visits.	Not implemented but if there seem to be a need for this, and it will be implemented.	Done at least 1 per year, at the same time as our yearly meeting (general assembly)
C3	Individual matchmaking between network members	Not implemented but there seem to be a need for this, and it will be implemented.	It's being done	Done in Inducïencia but not in Ineustar,
C1	Organisation of internal and external networking events	This is being done via internal networking meetings and participation in larger business fairs etc.	The service is performed. Internal networking – regularly, external - irregularly	Always related to bigger events
C4	Matchmaking with international business partners	This has not yet been implemented and will be looked at after the implementation of C3.	The service is performed irregularly	Done
A2	Political cluster/network lobbying to improve framework conditions	This is done via participation in ILO meetings at the BSOs and via close relations to the Danish ministries and other relevant organizations	This is done via participation at working group for clustering activities in Lithuania at Ministry of Economy and Innovation	Done at local, regional, and national level

Conclusion

After developing and performing the cluster service survey among the BIGINN partners and comparing it with interviews with non-partner clusters, both inside and outside the Big Science segment, the following conclusions where reached:

- Cluster services aimed at **direct contact/networking** and **matchmaking** are generally prioritized highest by cluster members.
- The survey results conform well with interviews with non-partner clusters within the Big Science segment, which indicates that the findings of this Work Package have **a general application to cluster management and services in other sectors.**
- The prioritized list of cluster services obtained via this work package can be used directly by clusters within the Big Science segment to **strengthen the portfolio of services** offered to their members.
- **Benchmarking the most valuable cluster services** to the existing cluster services in the BIGINN partners shows a good overlap and **indicates where efforts to improve or introduce new services is most beneficial**.

This allows the BIGINN partners to focus their effort to strengthen and professionalize the cluster management and helps clusters within the Big Science segment to prioritize which cluster services they should consider.