

H2020-JTI-EuroHPC-2019-2

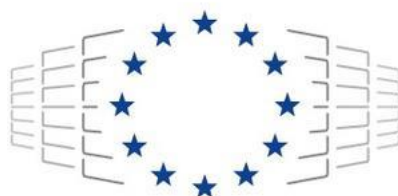


Coordination and Support for National Competence Centres on a European Level

Project Number: 951740

D2.3

Final Report on Workshops, Networking and the Competence Map



EuroHPC
Joint Undertaking

This project has received funding from the European High-Performance Computing Joint Undertaking (JU) under grant agreement No 951740. The JU receives support from the European Union's Horizon 2020 research and innovation programme and Germany, Italy, Spain, France, Belgium

Deliverable D2.3 V1.4 is currently under review by the European funding agency and is therefore subject to change.

Work package:	2	Competence Mapping and Networking
Author(s):	Luisa Monti	CINECA
Approved by	Competence Centre Management	13.12.2022
Reviewer 1	Jisika Yono	USTUTT
Reviewer 2	Lorenzo Zanon	USTUTT
Dissemination Level	Public	

Date	Author	Comments	Version	Status
22 November 2022	Luisa Monti	Initial draft	V1.0	Draft
23 and 24 November 2022	Lorenzo Zanon, Jisika Yono	Reviews to initial draft	V1.0	Draft
30 November 2022	Luisa Monti	Draft version 1.1	V1.1	Draft
2 December 2022	Lorenzo Zanon	Revised draft version 1.1	V1.1	Draft
2 December 2022	Luisa Monti	Draft version 1.2	V1.2	Draft
5 December 2022	Luisa Monti	Final version	V 1.3	Final
13 December 2022	Luisa Monti	Final refinements	V 1.4	Final

List of abbreviations

<i>BDVA</i>	<i>Big Data Value Association</i>
<i>C4</i>	<i>CASTIEL's Competence Centre Coordination Committee</i>
<i>CAB</i>	<i>Competence Centre Advisory Board</i>
<i>CC</i>	<i>Competence Champion</i>
<i>CTF</i>	<i>Competence Task Force</i>
<i>EC</i>	<i>European Commission</i>
<i>ETP4HPC</i>	<i>European Technology Platform for High Performance Computing</i>
<i>EuH4D</i>	<i>European Federation of Data Driven Innovation Hubs</i>
<i>FPGA</i>	<i>Field Programmable Gate Arrays</i>
<i>GPU</i>	<i>Graphics Processing Unit</i>
<i>HPDA</i>	<i>High Performance Data Analytics</i>
<i>JU</i>	<i>Joint Undertaking</i>
<i>Mx</i>	<i>Project month number</i>
<i>PMT</i>	<i>Project Management Team</i>
<i>Qx</i>	<i>Project quarter number</i>
<i>SME</i>	<i>Small and Medium Enterprise</i>
<i>TPR</i>	<i>Technical Progress Reports</i>
<i>WP</i>	<i>Work Package</i>
<i>Yx</i>	<i>Year project number</i>

Executive Summary

The present deliverable provides a synthesis of the activities conducted by CASTIEL Work Package 2 (WP2) during the period M13-M28, in terms of the Competence Map, Workshops, and Networking.

In terms of structure, the Competence Map was modified to adopt a lesser level of detail. This new structure was adopted both online, to show the competences available across the EuroCC network of National Competence Centres in the EuroCC ACCESS, and to collect the competence improvements at each NCC at the beginning of the project, at M12 and at M24. Such improvements were put together in the Competence Observatory, attached to the present document. Structured feedback on the structure and search tools of the Competence Map was collected by both the NCCs and a sample of final users.

At the same time, Inspirational Guidelines on Competences were created with the contribution of the NCCs, to be used by the NCCs. The NCCs were asked to provide success stories, enriched with the key competences that were used to get to a final success, together with some recommendations in terms of dos and don'ts. The main outcomes of the Inspirational Guidelines on Competences are annexed to the present document.

Six workshops were organised and executed during the reporting period. A high attendance was always recorded from both the NCCs and the final users. Structured feedback of attendees was collected for one workshop.

In addition to meetings with the Competence Champions (3 meetings during the reporting period plus the dedicated session in the EuroCC & CASTIEL Conference (held in Montenegro 7 to 9 September 2022) and the ones with the Competence Task Force Members (3 meetings during the reporting period), 2 of the above cited workshops were a good opportunity for networking between NCCs and some external stakeholders, with BDVA [1], EuH4D [2] and ETP4HPC [3]. Following these networking activities, CASTIEL Work Package 2 (WP2) decided to enter the EuHubs4Data Strategic Group, to contribute synergistically to the strategy of EuH4D and CASTIEL during the CASTIEL 2 edition.

Table of Contents

1	Introduction	9
2	Main Deliverable Content	9
2.1	Task 2.1: Initialization of the Competence Map	9
2.2	Task 2.2: Competence Map maintenance	9
2.2.1	The Competence map structure	9
2.2.2	The feedback from the NCCs and from the final users on the Competence Map structure	11
2.2.3	How to spread competences across the EuroCC network: The Inspirational Guidelines on Competences	13
2.2.4	Competence Map contents updates	14
2.2.5	The improvements on competences and the competence observatory	15
2.3	Task 2.3: Needs Prioritisation, Event Planning and Execution	16
2.3.1	Prodromic activities common to Task 2.3 and Task 2.4	16
2.3.2	Participation to workshops in synthesis	17
2.4	Task 2.4: General Networking Support	19
3	Major Achievements	21
4	Concluding Remarks	21
5	References and Applicable Documents	22
6	Annex 1 - The Competence Map structure at M13	23
7	Annex 2 - Composition of the Competence Task Force	25
8	Annex 3 - The Competence Map on EuroCC ACCESS	26
9	Annex 4 – The survey for the collection of competences at M1, M12, M24	31
10	Annex 5 - The Personas of the Competence Map and their Customer Journeys	42
11	Annex 6 - Main outcomes of the Inspirational Guidelines on Competences	43
11.1.1	Dos and Don'ts	43
11.1.2	Crucial competences	45
12	Annex 7 - Observatory on Competences	46
12.1	How to read the data	46
12.2	WP02 – Germany	46
12.3	WP03 – Bulgaria	47
12.4	WP04 – Austria	48
12.5	WP05 – Croatia	49
12.6	WP06 – Cyprus	50
12.7	WP07 – Czech Republic	51
12.8	WP08 – Denmark	52
12.9	WP09 – Estonia	53
12.10	WP10 – Finland	54
12.11	WP11 – Greece	55
12.12	WP12 – Hungary	56
12.13	WP13 – Ireland	57
12.14	WP14 – Italy	58
12.15	WP15 – Lithuania	59
12.16	WP16 – Latvia	60
12.17	WP17 – Norway	61
12.18	WP18 – Poland	62
12.19	WP20 – Romania	63
12.20	WP22 – Spain	64
12.21	WP23 – Sweden	65



12.22	WP24 – Switzerland	66
12.23	WP25 – Turkey	67
12.24	WP26 – UK.....	68
12.25	WP27 – France.....	69
12.26	WP28 – Luxembourg.....	70
12.27	WP29 – The Netherlands	71
12.28	WP30 – Belgium.....	72
12.29	WP31 – Slovakia.....	73
12.30	WP32 – North Macedonia	74
12.31	WP33 – Iceland.....	75
12.32	WP34 – Montenegro	76
13	Annex 8 - Agenda of the Networking Events of the Second Year of the Project.....	77
14	Annex 9 - The Workshops organized by CASTIEL WP2	79
14.1.1	“Artificial Intelligence on HPC” – January 2022.....	79
14.1.2	“The ecosystems of HPC and Big Data/AI: what can they learn from each other” – March 2022	80
14.1.3	“From Edge computing to HPC: EuroCC and CASTIEL meet ETP4HPC” – April 2022	82
14.1.4	“Programming on accelerators: GPU programming” – May 2022	83
14.1.5	“FPGA programming” – September 2022	84
14.1.6	“Human Engagement on HPC” - November 2022.....	86
15	Annex 10 - Outcomes of the Survey on the Attendees to the Workshop “FPGA programming”	88

List of Figures

Figure 1: The introductory section	26
Figure 2: The explanation of the competence categories and the level of experience of the user	26
Figure 3: The explanation of the competence category: awareness creation	27
Figure 4: The explanation of the competence category: available training courses	27
Figure 5: The explanation of the competence category: expert technical consultancy	28
Figure 6: The explanation of the competence category: business and project consultancy	28
Figure 7: The explanation of the competence category: products and services	29
Figure 8: The Competence Map, Search filters (example)	29
Figure 9: The Competence Map, contact of an NCC (example)	30
Figure 10: The 5 steps of the customer’s relationship cycle	44
Figure 11: Synthesis of the suggestions received in terms of Dos and DONTs	44
Figure 12: The benefits of competences widely recognised by the respondent NCCs	45
Figure 13: Attendance to the workshop “Artificial intelligence on HPC”- Detail on NCCs...	79
Figure 14: Attendance to the workshop “Artificial intelligence on HPC”- Detail on non-NCCs.	80
Figure 15: Attendance to the workshop “The ecosystems of HPC and Big Data/AI”- Detail on NCCs.	81
Figure 16: Attendance to the workshop “The ecosystems of HPC and Big Data/AI”- Detail on non-NCCs.	81
Figure 17: EuroCC Attendance to the workshop “From Edge Computing to HPC” by NCC.	82
Figure 18: Attendance to the workshop “From Edge Computing to HPC” by external users, by Country	83
Figure 19: EuroCC Attendance to the workshop “GPU programming” by NCC	84
Figure 20: Attendance to the workshop “GPU programming” of external users, by Country.	84
Figure 21: EuroCC attendance to the workshop “FPGA programming” by NCC	85
Figure 22: External attendance to the workshop “FPGA programming” by country.	86
Figure 23: EuroCC attendance to the workshop “Human Engagement on HPC” by NCC	87
Figure 24: External attendance to the workshop “Human Engagement on HPC” by country.	87
Figure 25: Satisfaction rate of respondents on different workshop dimensions	88
Figure 26: Workshop content rate expressed by respondents	88
Figure 27: Likelihood to recommend the workshop	89
Figure 28: Rate of support received and overall satisfaction rate	89
Figure 29: Likelihood to attend a follow-up event	90

List of Tables

Table 1: The Competence Map layout with the intermediate level proposed by CASTIEL WP2	10
Table 2: The final structure of the Competence Map.....	11
Table 3: Feedback from the NCCs on the final version of the Competence Map	12
Table 4: the list of NCCs contributing to the Inspirational Guidelines on Competences	14
Table 5: Improvement in competences (new competences) per end-user typology	15
Table 6: Improvement in competences (new competences) per competence category	15
Table 7: The final calendar of workshops organised and executed in Y2	17
Table 8: Level of participation of the NCCs to the events organized and executed by WP2 in Y2	18
Table 9: Overall figures of the workshops organized in Y2	18
Table 10: The Competence Map structure at M13	24
Table 11: Composition of the CTF until 5th April 2022.....	25
Table 12: Composition of the CTF from 6th April 2022 until the end of the project (31st December, 2022).	25
Table 13: Attendance to the workshop “Artificial intelligence on HPC”.....	79
Table 14: Attendance to the workshop “The ecosystems of HPC and Big Data/AI”.	80
Table 15: Attendance to the workshop “From Edge Computing to HPC”	82
Table 16: Attendance to the workshop “GPU programming”.	83
Table 17: Attendance to the workshop “FPGA programming”.	85
Table 18: Attendance to the workshop” Human Engagement on HPC”.....	86
Table 19: Best and worst aspects of the event	90
Table 20: Suggestions for improvement	91

1 Introduction

The present document illustrates the activities and results achieved by CASTIEL WP2 in the project period M13-M28.

Section 2 reports the main contents, referring to the Annexes for further details when applicable. Section 2.2 deals with all activities and achievements related to the Competence Map maintenance; section 2.3 focusses on the program of workshops planned and executed; finally, section 2.4 addresses the action taken in terms of general networking support to the EuroCC network.

Section 3 provides a synthesis of the main achievements of the work done. Whilst Section 4 brings together the concluding remarks, the Annexes provide in-depth content complementary to the previous Sections.

2 Main Deliverable Content

2.1 Task 2.1: Initialization of the Competence Map

The task was concluded in M3. Results achieved are described in Deliverable 2.1 - The initial version of the Competence Map [4].

2.2 Task 2.2: Competence Map maintenance

As already stated in deliverable D2.2 “Report on Workshops, Networking, Competence Map” [5] at the end of the first year of project, the Competence Map is meant to target different users in different modalities:

- The Competence Map in the EuroCC ACCESS [6] is meant to target end-users (companies, including Small and Medium Enterprises (SMEs) and public administration users).
- The more detailed materials made available in the project directory¹ (starting from pitch-like presentation on companies, networking workshops, training events and training catalogue) target NCCs who are searching for competences within the EuroCC network.
- The improvements on competences target the institutional users, including the European Commission and the EuroHPC JU [7], as well as CASTIEL itself to get the state of play in terms of competence widespread across the network.

2.2.1 The Competence map structure

The Competence Map structure revalidation process based on the Reviewers’ feedback and conducted in December 2021 with the Competence Champions (CCs) allowed to bring refinements to the Competence Map structure. Some competences were shifted from a subcategory to another one, or to a different category. Overall, the Competence Map structure was confirmed.

The Competence Map layout at the beginning of the second year of the project (M13) is presented in Annex 1.

¹ The project directory was made available by HLRS, as a shared directory with users’ configurable permissions. The CASTIEL WP2 shared a folder with the CCs, where all the materials produced by the CCs, the CTF and the CASTIEL WP2 were shared, including meeting minutes, recordings, power point presentations, guidelines, etc.

After the first-year review, the topic of the Competence Map structure was addressed again with the Competence Task Force² (CTF) in a meeting on the 31st of January 2022. The CTF confirmed that there was no need to apply further changes to the Competence map, neither in terms of scope nor in terms of granularity of the competences mapped.

After the Interim Review (29th and 30th March 2022), CASTIEL WP2 picked up the Reviewers' recommendation to introduce an intermediate level of aggregation on competences to be available in the EuroCC ACCESS. The topic was discussed with the CTF in the meeting held on 29th April 2022. The proposal that came out of that meeting was then shared with the whole community of CCs in a meeting that took place on 4th May 2022. Based on the outcomes of the meeting, the CASTIEL WP2 laid down a proposal on the intermediate level of aggregation and submitted it to the CTF on 5th August 2022.

The intermediate level proposed to the CTF is shown in Table 1.

Competence Category	Competence Sub-category
Awareness Creation	Awareness & Networking Events
Awareness Creation	Dissemination of Results and Communication of Opportunities
Expert Technical Consultancy	Technological Scouting and assessment
Expert Technical Consultancy	Technology Transfer
Expert Technical Consultancy	User Support
Mastering the European HPC Ecosystem	Matchmaking
Mastering the European HPC Ecosystem	Call Application and Fundraising Support
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)
Business & Project Consultancy	Project Design
Business & Project Consultancy	Project Management
Products and Services	HPC Service Offering
Products and Services	Software Development & Optimization
Products and Services	HPDA Service Offering
Products and Services	AI Service Offering
Products and Services	Cloud Service Offering
Products and Services	Quantum Service Offering

Table 1: The Competence Map layout with the intermediate level proposed by CASTIEL WP2

The comments and suggestions of the CTF Members were collected through a survey. The suggestions coming from the CTF were then submitted to the whole community of the CCs during the all-hands meeting during the EuroCC & CASTIEL Conference (held in Montenegro 7 to 9 September 2022), together with the illustration of the intermediate level of aggregation proposed to the CTF.

The feedback of the CCs was then retrieved through a second survey launched during the Montenegro event and kept open until 18th September 2022. This way CASTIEL WP2 focused on the changes and improvements agreed by the majority of the NCCs. The final structure of the Competence Map was shared with the CCs on 22nd September 2022.

The final structure of the Competence Map is reported in Table 2.

² The Competence Task Force is a group of Competence Champion (CCs) who volunteered to support the CASTIEL WP2 directly in the Competence Mapping activities. The members of the CTF changed during Project Y2. The composition of the CTF in Y1 and Y2 is reported in Annex 2.

Competence Category	Competence Sub-category
Awareness Creation	Dissemination of Results & Networking Events
Awareness Creation	Informative Events & communication of opportunities
Expert Technical Consultancy	Technological Scouting and assessment
Expert Technical Consultancy	Technology Transfer
Business & Project Consultancy	Call Application and Fundraising Support
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)
Business & Project Consultancy	Finding Partners & Projects - Matchmaking
Business & Project Consultancy	Project Design
Business & Project Consultancy	Project Management
Products and Services	Cloud Service Offering
Products and Services	High Performance Computing Service Offering
Products and Services	High Performance Data Analytics Service Offering
Products and Services	Workflows Development & Optimization
Products and Services	Software Development & Optimization
Products and Services	Quantum Service Offering
Products and Services	User Support

Table 2: The final structure of the Competence Map

The implementation of the Competence Map in EuroCC ACCESS has been performed by CASTIEL WP5. The final format is reported in Annex 3. CASTIEL WP2 provided CASTIEL WP5 with the contents of the sections and the expected Competence Map filtering.

CASTIEL WP5 also worked to provide an exportable solution of the Competence Map for those NCCs who would like to implement it at national level. The final solution to this will be provided in CASTIEL 2.

2.2.2 The feedback from the NCCs and from the final users on the Competence Map structure

2.2.2.1 The feedback from NCCs

The meeting held on 4th May 2022 with the CCs has been an opportunity to collect feedback (not structured yet), from the NCCs concerning the actions planned by CASTIEL WP2 from then until the end of the project. This included actions to address the comments received in the interim review (April 2022). A recording of the meeting was made available for the CCs who could not attend.

The survey on the intermediate level of competences, which was launched during the EuroCC Event in Montenegro (on 7th September 2022) and that remained open until 18th September was an opportunity to collect structured feedback from the NCCs on the Competence Map layout. The survey text is provided in Annex 4.

CASTIEL WP2 highlighted that each NCC had to provide one single feedback, sharing the questions internally to the NCC, so that the feedback provided through the survey could represent the whole NCC.

While most questions were aimed at getting feedback on the changes to the Competence Map proposed by the CTF Members, the last question of the survey was meant to collect additional and free inputs from the NCCs. All such inputs contributed to determine the final structure of the Competence Map, as reported in Section 2.2.1. In the current Section we therefore focus on

the inputs received that go beyond the feedback on the CTF’s proposals. Seven NCCs out of 33 provided additional inputs, the list of inputs is provided in Table 3.

All inputs received were constructive comments, aimed at improving the overall result and value provided to final users when consulting the Competence Map.

Feedback received by the NCCs through the survey on the intermediate level of aggregation of competences
“Workflows development and optimization” should go under consultancy
Can you provide us with the list of how old subcategories of competences fall under the intermediate level of aggregation of competences, especially for the consulting groups?
The subcategories should be clearly stated and elaborated on what it means by what it stands for so that everyone understands the same inference.
Please double check if it should be “Product and Services” or “Products and Services”. Do we have only just one Product?
We shouldn’t use acronyms in user-facing materials. We should use “Proof of concept” instead of “PoC”.
Feasibility & impact assessment (Proof of Concept)
“Mastering the Euro HPC system” is also relevant for non-industrial users

Table 3: Feedback from the NCCs on the final version of the Competence Map

Based on this structured feedback from the NCCs, the final structure of the Competence Map was confirmed and used as basis for the subsequent actions (i.e.: collection of the improvements on competences and changes to the Competence Map in the EuroCC Access portal).

2.2.2.2 The feedback from the final users

To ensure that the competence contents, including the Competence Map, and the customer journeys provided in the EuroCC ACCESS would prove useful for the final users, CASTIEL WP2 developed two personas³, one targeting SMEs and the other one targeting corporates. The objective of this exercise was to imagine the customer journey of two types of users, the representative of an SME and the representative of a corporate, to ensure that they both can easily find what they are looking for. The two personas and the related customer journeys are provided in Annex 5.

In addition to this, a user review has been conducted to test the EuroCC ACCESS portal. Within this scope, the Competence Map was subject to extensive testing by final users. The specific factors tested were the reachability of the map, the filters, and the navigation within the map. The results for the filters and navigation within the map were excellent, the reachability was not optimal and fixed according to the testing. For more details, please see D5.5 – Final report on Communication and Dissemination [8].

³ Personas are fictional profiles that represent groups of similar people in a target audience. They can help figuring out how to reach people on a more personal level, while delivering the right messages, offers, and products at the right time.

2.2.3 How to spread competences across the EuroCC network: The Inspirational Guidelines on Competences

During the meeting with the CTF on 31st January 2022, WP2 presented some figures about the coverage of competences across the EuroCC network of NCCs. The aim was to discuss whether there could be further actions that CASTIEL could undertake to enhance the spreading of competences across the network, eventually the less widespread ones.

The meeting was an opportunity to get to the following conclusions around this topic:

- CASTIEL shall not undertake additional actions for encouraging the spread of competences: Mentoring and twinning actions, and workshops (including hands-on sessions) are adequate for the objective.
- CASTIEL shall not work on the boost of specific competences, as the competence mix is part of the strategy of the NCCs, and the competence development plan of the NCCs may not be aligned for that specific step. Better to have workshops and events recorded and archived, available to all NCCs when it is time to develop a specific competence area. The materials can be used both to directly learn and to identify NCCs and experts to contact for more in-depth expertise.

In the exchanges with the CTF Members that followed the meeting, the idea of creating Inspirational Guidelines on Competences took shape. On this, CASTIEL WP2 and the CTF met again on 11th March 2022 and decided to proceed with a preliminary test on a couple of success stories: WP2 took two success stories randomly from the Success Story Database⁴ [9] and made the exercise of extracting potential key competences, based on those competences that were particularly highlighted in the success stories' description. After the positive outcome of the test, the production of the Inspirational Guidelines on Competences kicked off. The illustration of the project to the CCs was made at the meeting held on 4th May 2022. CASTIEL WP2 and the CTF described to the CCs the idea behind the activity, the structure of and how to contribute to the Inspirational Guidelines.

Here is a brief description of the Inspirational Guidelines on Competences, in terms of objectives, methodology and structure and the contribution asked to the NCCs:

- **The idea behind:** The process of competence improving depends strictly on the level of maturity and on the competence development plan of each NCC. Thus, guidelines on competences cannot be binding, neither in timing nor in width and depth of competences. The competence guidelines shall thus inspire NCCs on what competences to develop to reach specific performance outcomes as set by each NCC.
- **The structure:** Extrapolate key competences, plus dos and don'ts, from success stories. This exercise gives suggestions to the NCCs in terms of what competences need to be in place if an NCC would like to develop a similar success story. It also allows the NCCs to be aware of what measure to implement to take to ensure the success of a proof-of-concept program with final users. The experience-based approach gives concreteness to the guidelines (i.e.: this competence proved to be essential in this case).
- **How to contribute:** Each NCC was called to select one or more success story and extrapolate those competences that were key to achieve the results. The NCCs could leverage the success stories already contributed to the Success Story Database and extend the contents by integrating the key competences and recommendations in terms

⁴ The Success Story database was promoted by CASTIEL and contributed by the NCCs. It collects successful experiments that have been conducted within one of the EuroCC projects and one or more partners from industry, society, and/or science. The summary section focuses on the business benefits resulting from the experiment.

of dos and don'ts. A template was produced by WP2, together with instructions for the filling in.

The collection of the filled-in templates was launched on 29th June 2022 and ended on 30th September 2022. The contents were then processed by CASTIEL WP2 and the first release of the Inspirational Guidelines on Competences was announced on 24th October 2022.

Eighteen filled-in templates were received from 14 NCCs, the latter being reported in Table 4. Bulgaria, Greece, Turkey, and North Macedonia contributed with two success stories each. The main guidelines that derived for this activity is reported in the Annex 6. The Inspirational Guidelines on Competences are available as a separate document in the Project directory⁵.

Work Package number	Country
2	Germany
3	Bulgaria
5	Croatia
7	Czech Rep
10	Finland
11	Greece
14	Italy
16	Latvia
17	Norway
18	Poland
25	Turkey
28	Luxembourg
31	Slovakia
32	North Macedonia

Table 4: the list of NCCs contributing to the Inspirational Guidelines on Competences

2.2.4 Competence Map contents updates

The Competence Map was meant to be updated online, through a backend tool on the EuroCC ACCESS Portal. During the implementation phase by CASTIEL WP5, to minimise the updating burden on the NCCs, a dedicated section was created in the Quarterly Technical Progress Report (TPR) of quarter 5 (Q5) and Q6 produced by the NCCs and sent to the Project Management Team (PMT). CASTIEL then extracted the content and updated the Competence Map on EuroCC ACCESS.

On 4th May 2022 a meeting was performed with the CCs. The tool for the Competence Map update cited above was shown to the CCs, with the support of CASTIEL WP5. From that moment on, the NCCs were autonomous not only in consulting but also in updating the Competence Map with improvements on competences. This allowed all stakeholders to consult a continuously updated Competence Map.

Though the tool was available to the NCCs for competence updates, there was no mean to download the competences to start tracking the competence improvements, due to a block in the maintenance activities in the EuroCC ACCESS portal.

⁵ The project directory was made available by HLRS, as a shared directory with users' configurable permissions. The CASTIEL WP2 shared a folder with the CCs, where all the materials produced by the CCs, the CTF and CASTIEL WP2 were shared, including meeting minutes, recordings, power point presentations, guidelines, etc.

For this reason, CASTIEL WP2 opted to collect the improvements on competences directly from the CCs through a survey. The survey followed the final structure of the Competence Map shown in Table 2. The NCCs were asked to provide competence of the NCCs at M1, M12 and M24, leveraging the competences and the data already collected internally at different times throughout the project. The survey was launched on 26th September 2022 and was open until 31st October.

A baseline was provided to ensure that the same criteria were adopted by the NCCs in self-assessing the availability of a given competence in the NCC. The baseline was provided at the beginning of the survey (please refer to Annex 4), together with the recommendation to consult internally within the NCC prior to provide the answer. This recommendation was made to ensure that the survey was filled in considering the competences of the NCC, not only the ones owned by the CCs.

2.2.5 The improvements on competences and the competence observatory

31 NCCs answered the survey on the competence improvements out of 33, the missing NCCs being Slovenia and Portugal.

Overall, there was a significant increase in competences from M1 to M24.

Focusing on end-user typologies, the greatest increase was recorded on the competences devoted to digitally ready users (please refer to Table 5).

	Digitalization needed users	Digitally ready users	HPC ready users	HPC users	HPC champions
M1	143	210	255	266	246
M12	171	286	348	349	319
M24	203	327	387	399	360
Increase	42%	56%	52%	50%	46%

Table 5: Improvement in competences (new competences) per end-user typology

Focusing on competence categories, the greatest increase was recorded in the category of Business and Project consultancy (please refer to Table 6), which is reasonable considering that many NCCs started to approach corporates and SMEs with the EuroCC project.

	Awareness Creation	Business & Project Consultancy	Expert Technical Consultancy	Products and Services
M1	56	117	52	164
M12	61	140	57	182
M24	62	146	58	186
Increase	11%	25%	12%	13%

Table 6: Improvement in competences (new competences) per competence category

The detail of the improvement in competences of each NCC is reported in Annex 7, the Competence Observatory. The Competence Observatory has been made available since 7th November 2022 to the CCs and the WP Leaders of EuroCC for their reference and use. The Competence Observatory is meant to be updated during EuroCC2 and CASTIEL 2.

2.3 Task 2.3: Needs Prioritisation, Event Planning and Execution

2.3.1 Prodromic activities common to Task 2.3 and Task 2.4

The main objective of Task 2.3 was to identify and then prioritise necessary workshops in different locations (workshops have been organised online due to the pandemic).

On the other hand, the main goal of Task 2.4 was to promote clustering of the NCCs around specific topic of interest, as well as mentoring, training and twinning activities in line with other WPs.

In order to reach both goals, the first step was to understand the networking needs of the NCCs. For this reason, the collection of the needs for the two tasks was performed jointly.

Four specific networking needs were expressed by the NCCs through the Competence Centre Advisory Board (CAB), and conveyed to CASTIEL in the CAB-C4 meetings (C4: CASTIEL's Competence Centre Coordination Committee) during the project Q3:

1. Learning session on High Performance Data Analytics (HPDA)
2. Learning session on Edge computing
3. Learning sessions on tools developed by the Swiss NCC
4. Durable materials (videos, tutorials, etc.) supporting final users in the application to PRACE calls

The workshops were organized and executed during the project Y1 on each of the above areas, as outlined in the Deliverable D2.2. After the workshop on HPDA (point 1 above), a follow-up action was defined, which was to organize another meeting involving experts of BDVA and EUHubs4D. After the workshop on Edge Computing (point 2 above), based on the inputs received from the attending NCCs, it was agreed to organise a second workshop in cooperation with the Irish and the Danish NCCs, involving ETP4HPC. This two

In addition to these two workshops, a pitch-like presentation series was held in June / July 2021⁶. The series provided an impulse for an agenda of four further workshops. The detailed agenda is reported in Annex 8 to the present document and was created based on the wills expressed by the NCCs in terms of:

- availability to share know-how and experience on a given matter.
- interest to know more on a given matter.
- interest to share knowledge and experiences with other NCCs.

The detailed agenda included 4 workshops. Of those, 2 were organized and executed, while one was split into two workshops (“Programming on accelerators”). One was not executed: when launching the call for speakers, we realized that there was not that much interest, nor on the side of speakers nor on the side of potential attendees (“Collaboration among NCCs and other stakeholders: use cases and boosting practices”).

As a result, based on all the inputs described above, it was possible to organize and execute 6 workshops during the reporting period, as described in the Annex 9: 2 out of 6 coming from the follow-up actions of workshops executed during Y1, the remaining 4 coming from the detailed agenda of workshops based on the NCCs' requests.

⁶ The pitch-like presentations were organized by CASTIEL WP2 to accelerate the circulation of competences across the EuroCC network, while at the same time mapping the competences at each NCC and the preferences in terms of workshops and networking events. The presentations took place between end of May and beginning of July 2021. The presentations illustrated, as well as the recordings of the sessions were made available to all NCCs for consultation.

Table 7 illustrates the final calendar organised and executed by WP2 in Y2, including both necessary workshops and workshops on other networking needs. They are listed and described hereinafter all together for the ease of reading, though conceived within two separate tasks,

Date	Workshop	Notes	Reference Task
21/01/2022	AI on HPC		Task 2.3
15/03/2022	The ecosystems of HPC and Big Data/AI: what can they learn from each other	Organised in collaboration with BDVA and EUH4D	Task 2.4
26/04/2022	From Edge computing to HPC: EuroCC and CASTIEL meet ETP4HPC	Organised with ETP4HPC	Task 2.4
23/05/2022	Programming on accelerators	Focused on Graphics Processing Unit (GPU) programming	Task 2.3
12/09/2022	Field Programmable Gate Arrays (FPGA) programming	Organised in collaboration with BSC	Task 2.3
18/11/2022	Human engagement in HPC		Task 2.3

Table 7: The final calendar of workshops organised and executed in Y2

All workshops were launched through the EuroCC ACCESS and the EuroCC newsletter. The workshops were open to external end-users and were recorded to allow later consultation. Both the presentations and the recordings were made available in the EuroCC ACCESS, in the Resource Area [10].

2.3.2 Participation to workshops in synthesis

In April 2022, WP2 contacted the NCCs that did not take part in any of the events and networking offers organized by CASTIEL WP2 during the first year of project. The contact was made to understand the reasons for the lack of participation, and eventually intervene to address the feedback received. The main reason was lack of time, followed by the change in the contact person as Champions (not communicated to the PMT nor to WP2) and low interest in the workshop topics.

During Y2, the NCC level of participation to the initiatives of WP2 was good, both in terms of NCC representatives as attendees and speakers, and in terms of external attendees (end-users).

Below in Table 8 is a participation overview in synthesis of the six events organized and executed in Y2.

Participating as speakers	WP 2 – Germany WP 8 – Denmark WP 13 – Ireland WP14 – Italy WP 22 – Spain WP 25 – Turkey
---------------------------	--

	WP 28 – Luxembourg WP 34 – Montenegro
Participating as attendees to at least one workshop	WP2 – Germany WP3 – Bulgaria WP4 – Austria WP5 – Croatia WP7 – Czech Republic WP8 – Denmark WP9 – Estonia WP10 – Finland WP11 – Greece WP12 – Hungary WP13 – Ireland WP14 – Italy WP15 – Lithuania WP16 – Latvia WP17 – Norway WP18 – Poland WP20 – Romania WP21 – Slovenia WP22 – Spain WP23 – Sweden WP24 – Switzerland WP25 – Turkey WP27 – France WP28 – Luxembourg WP29 – The Netherlands WP30 – Belgium WP31 – Slovakia WP32 – North Macedonia WP34 – Montenegro

Table 8: Level of participation of the NCCs to the events organized and executed by WP2 in Y2

With respect to the participation of final users, CASTIEL WP2 initiatives received great attention (overall 63% of the attendees were final users), both by industrial and non-industrial users.

Inviting the network of contacts of the Italian NCC, EuroCC Italy, to the CASTIEL WP2 workshops, significantly increased the level of external attendance. This was summed up in the best practice: Inviting the national end-users' contact lists to the CASTIEL events, when applicable based on the topic. The best practice was shared at the C4 and at the CAB-C4, suggesting to all NCCs to put it into practice to increase awareness and dissemination.

The following table shows a synthesis of the figures over all six workshops.

TOTAL PARTICIPANTS	678
BELONGING TO AN NCC	251
NOT NCC	427
NOT NCC, NOT ACADEMIC	60

Table 9: Overall figures of the workshops organized in Y2

The event with the greatest number of industrial users was” The ecosystems of HPC and Big Data/AI: what can they learn from each other”, in which representatives of BDVA took part. This confirms that big data and AI is a good entry point for HPC in the industrial domains.

On the event on FPGA programming that took place in September 2022 a satisfaction survey was delivered to the attendees. The feedback received is reported in Annex 10. In brief, the feedback was overall positive (63% of respondents were extremely satisfied or very satisfied). In particular the satisfied and extremely satisfied respondents were those who had already some basic knowledge on FPGA programming and were then able to follow the different sessions of the event.

The event was too advanced for some attendees (3 over 17 respondents), showing the need to organize more training courses on FPGA programming in coordination with WP3, starting from scratch and including hands-on sessions and practical examples.

In terms of future networking events, highly specialised technical contents should be better addressed by learning programmes and training courses, because it is difficult to cover such topics accommodating different levels of expertise of the audience. This consideration is an input in conceiving the networking agenda for the CASTIEL 2 project. In addition to this, the level of expertise required to be able to follow the event is something that should be disclaimed in the save-the-date and in the invitation, so that attendees can take a more informed decision on whether the event is suitable to their personal level of knowledge.

Unfortunately, due to the COVID situation, it was not possible to organize bigger on-site conferences during the reporting period, with the exception of the EuroCC & CASTIEL Conference (held in Montenegro 7 to 9 September 2022). This conference was the occasion to organize a final workshop on the activities, workplan and timeline of CASTIEL WP2 together with the CCs and other interested EuroCC members.

2.4 Task 2.4: General Networking Support

During Q3 of the project, some actions were taken to ensure that the CCs could follow the activities of the WP2, based on existing contents:

- a. Guide for Competence Champions on the contents of the project directory folder⁷: a document guiding the user through the contents of the folder, grouping contents on similar topics, and briefly explaining the contents.
- b. Weekly consultation hour: this time window was created to allow face to face meeting with CCs. Each consultation hour is split in 20 minutes time slots. Any NCC could book one or more slots for asking questions, getting clarifications, filling gaps on what happened in the previous weeks, providing feedbacks, raising issues that could not be raised in plenary sessions, etc.
- c. Launch of the slack channel for quick questions relevant to the wide CC community.

The initiatives under point a. and b. have been useful during the first year of project. Seven meetings were booked and executed during the consultation hours, the last meeting took place on 28th June 2021. From the beginning of Y2 on, the relationship became more efficient without the need of tools like the ones adopted during the Y1. The CCs contacted directly the WP2 staff or the WP2 leader via e-mail, sometimes passing through EuroCC CAB members or the PMT – but in any case, finding easy paths to reach WP2 representatives and receive appropriate

⁷ The project directory was made available by HLRS, as a shared directory with users’ configurable permissions. The CASTIEL WP2 shared a folder with the CCs, where all the materials produced by the CCs, the CTF and the CASTIEL WP2 were shared, including meeting minutes, recordings, power point presentations, guidelines, etc.

answers. This direct contact resulted on three occasions in online meetings, when there was the need to recap the state of play of the activities of the WP2 and the next steps for new colleagues taking on the role of CC.

The Slack Channel under point c. was launched and used for announcements. Announcements were also included in the weekly newsletter managed by the PMT when applicable (announcement of events, announcement of deadlines for the provision of inputs, etc.). The project directory was used to share all materials concerning CASTIEL WP2' activities, both for internal use only and public dissemination. The EuroCC ACCESS Portal was used to share public materials with all stakeholders (dates of workshops, workshop materials and recordings). Email communication was used throughout the whole project, e.g. to provide background information to newly appointed CCs, to remind the deadlines and the requests for contributions.

With respect to external networking, apart from the organization of the two workshops reported in Table 7, an in-depth meeting session, reserved to EuroCC, CASTIEL and BDVA followed the workshop “The ecosystems of HPC and Big Data/AI: what can they learn from each other” on 15th March 2022. WP2 organised this meeting to explore potential collaborations with BDVA and EuH4D. Based on the discussions from said meeting and based on one-to-one conversations that followed, WP2 proposed to the PMT to enter the EuH4D Strategic Group to enhance the collaboration in EuroCC2 and CASTIEL2.

The EUH4D Strategic Group is a tool to support engagement of Strategic Stakeholders. It has 3 main objectives:

1. To bring closer the strategic actors that are shaping the future of European Data Spaces
2. To act together in supporting EUH4D to align with the Data communities and main players in Europe
3. To provide regular updates on the EUH4D goal towards the Federation of data-driven digital innovation hubs

Being part of the Strategic Group allows CASTIEL to:

- Gain visibility and knowledge by being part of a cohesive and engaged group of actors that are shaping the future of the European Data Space
- Obtain recognition as a strategic stakeholder of the federation of European data-driven innovation hubs
- Be on a priority channel for receiving information on project achievements, strategic plans and being invited to events and activities organised by the EUH4D project.
- Be able to better convey PoCs to the cascade calls of EuH4D, both in terms of leveraging the application process and in terms of mastering the profile of welcome PoC ideas.
- At a high level, create stronger connections between the HPC and the big data and AI research and technology transfer landscape in Europe.

The first meeting of the EuH4D Strategic Group will take place in 2023, when CASTIEL2 will have started.

3 Major Achievements

The main achievements in Y2 are:

- Definition of a final structure of the Competence Map.
- Competence Map Observatory, with competence improvements of the NCCs from M1 to M12 and to M24.
- Inspirational Guidelines on Competences.
- Six workshops organized and executed.
- Participating in EUH4D Strategic Group.

4 Concluding Remarks

The Competence Map topic has been a sensitive one for the NCCs, especially until the first-year review of the project. WP2 had to deal with two contrasting issues of the NCCs: On the one hand, the wish to show the present competences at best, and on the other hand the will to hide the missing ones, which have created a lot of criticism around the idea to track and monitor the improvements on competences at the NCC level. Notwithstanding, a compromise was finally reached. The compromise consisted in avoiding the possibility to compare the competence levels among NCCs through the information published on the EuroCC ACCESS. With this accepted compromise, it was possible to continue the collection of competences in the Competence Observatory and to show the most updated Competence Map on EuroCC ACCESS. This will be carried out also during EuroCC2.

The workshops organized have proven to be valuable for both internal (NCCs) and final users. The NCCs asked for follow-up workshops on highly interesting topics, as well as to split a single workshop into two sessions to deal with the contents in more detail. The feedback collected from the final users was also positive.

The external networking results are valuable and will allow CASTIEL to cooperate with other initiatives at the European level to ensure coordination and synergic approach also outside the network of NCCs.

The work performed has thus not only been valuable to the EuroCC and to the CASTIEL projects but will also be a good starting point for CASTIEL2 and EuroCC2.

5 References and Applicable Documents

- [1] BDVA, www.bdva.eu
- [2] EUH4Data, <https://euhubs4data.eu>
- [3] ETP4HPC, www.etp4hpc.eu
- [4] CASTIEL Deliverable D 2.1: The initial version of the Competence Map, https://www.eurocc-access.eu/wp-content/uploads/2022/02/CASTIEL_WP2_D2.1_Initial_Competence_Map.pdf
- [5] CASTIEL Deliverable D2.2, [Reporting - EuroCC ACCESS \(eurocc-access.eu\)](https://www.eurocc-access.eu)
- [6] EuroCC ACCESS, www.eurocc-access.eu
- [7] EuroHPC JU, [Homepage \(europa.eu\)](http://europa.eu)
- [8] [CASTIEL Deliverable D5.5 – Final report on Communication and Dissemination Reporting - EuroCC ACCESS \(eurocc-access.eu\)](https://www.eurocc-access.eu)
- [9] Success Story Database, www.eurocc-access.eu/success-stories/
- [10] Resource Area of the EuroCC ACCESS, www.eurocc-access.eu/services/resources/

6 Annex 1 - The Competence Map structure at M13

Category	Subcategories
Awareness Creation	Communication Skills
Awareness Creation	Dissemination
Awareness Creation	Engagement
Awareness Creation	Networking
Awareness Creation	Tailored Approach
Business & Project Consultancy	Business consultancy
Business & Project Consultancy	Economic and Financial Impact Assessment of Technologies in Business
Business & Project Consultancy	Ecosystem Management
Business & Project Consultancy	High Performance Computing and Optimisation
Business & Project Consultancy	Operations Management
Business & Project Consultancy	Project Management
Business & Project Consultancy	Technological Readiness Assessment
Expert Technical Consultancy	Big Data / HPDA
Expert Technical Consultancy	Big Data / HPDA Workflow
Expert Technical Consultancy	Cloud Computing
Expert Technical Consultancy	Facilitation of Access
Expert Technical Consultancy	High Performance Computing and Optimisation
Expert Technical Consultancy	HPC User Support
Expert Technical Consultancy	HPC, HPDA and AI Software and Algorithms Technical Consultancy
Expert Technical Consultancy	HPC, HPDA and AI Use Cases and Applications
Expert Technical Consultancy	HPDA / AI Workflow Optimisation
Expert Technical Consultancy	Infrastructure Design & Management
Expert Technical Consultancy	Integration of HPDA with HPC Workflows
Expert Technical Consultancy	Security Design & Management
Expert Technical Consultancy	Technical Assessment
Expert Technical Consultancy	Technology Transfer
Mastering the Euro HPC system	Call application Support
Mastering the Euro HPC system	Dissemination
Mastering the Euro HPC system	Fund Raising
Mastering the Euro HPC system	Partnerships and Collaborations
Mastering the Euro HPC system	Project Opportunities Consultancy
Mastering the Euro HPC system	Project Participation
Products and Services	Big Data PaaS
Products and Services	Cloud
Products and Services	Cloud and HPC IaaS
Products and Services	HPC 4 AI Solutions
Products and Services	HPC DevOps
Products and Services	HPC IaaS
Products and Services	HPC Software Tools and Solutions Optimisation
Products and Services	HPDA and AI Algorithm Workflow and Software Design

Products and Services	HPDA and AI Algorithm Workflows, Frameworks and Solutions
Products and Services	HPDA and AI Software Tools and Solutions
Products and Services	HPDA Workflow and Framework
Products and Services	SaaS
Products and Services	Software & Service Development & Engineering
Products and Services	Software Coding Support
Products and Services	Software Optimisation Services
Technology Assessment and PoC	Cloud Architecture Assessment
Technology Assessment and PoC	Pilots
Technology Assessment and PoC	PoC Design
Technology Assessment and PoC	PoC Design + PoC Implementation
Technology Assessment and PoC	Technology Assessment
Technology Assessment and PoC	Technology Transfer Accelerators

Table 10: The Competence Map structure at M13

7 Annex 2 - Composition of the Competence Task Force

Hereinafter are the NCCs of provenance of the members of the CTF.

NCC
Austria
Czech Republic
Denmark
Italy
Lithuania
Poland
Sweden
Switzerland

Table 11: Composition of the CTF until 5th April 2022

NCC
Austria
Czech Republic
Denmark
Ireland
Latvia
Lithuania
Norway
Poland
Switzerland

Table 12: Composition of the CTF from 6th April 2022 until the end of the project (31st December, 2022).

8 Annex 3 - The Competence Map on EuroCC ACCESS

Hereinafter are the sections of the page of the EuroCC ACCESS dedicated to competences.

Words in gold in the text are links to the specific section dedicated to that topic (i.e.: training, success stories, etc.)



OUR COMPETENCES

The EuroCC National Competence Centers (NCCs) represent the single point of contact at national level for technology transfer in High Performance Computing (HPC), High Performance Data Analysis (HPDA), and Artificial Intelligence (AI). What is High Performance Computing in easy words? What is the added value in the real economy applications? How to assess whether it is the case to apply these technologies to a business problem or better not? What is the level of expertise required to use these technologies? Have you got experience in applying High Performance Computing in my industrial sector?

We at EuroCC could support you with:

The competence map here below is a good starting point: you can navigate to search the competences you are looking for on the one way, or have a first overview of what the National Competence Center in your Country can offer to support your Entity.

Figure 1: The introductory section

THE CATEGORIES		YOUR EXPERIENCE LEVEL
AWARENESS CREATION	+	The kind and level of competences necessary to support end-users vary depending on the end-user level of expertise in High performance Computing and related technologies.
AVAILABLE TRAINING COURSES	+	
EXPERT TECHNICAL CONSULTANCY	+	To help you find what you are looking for, we've assessed each competence with regard to the users level of experience. Choose the category that represents your level of expertise (the level of expertise of your entity) at best (or leave the field empty, when in doubt).
BUSINESS AND PROJECT CONSULTANCY	+	
PRODUCTS AND SERVICES	+	High Performance Computing Champions: Experts in High Performance Computing technologies High Performance Computing Users: Users of High Performance Computing technologies (beginners to intermediate) High Performance Computing Ready: Users who are potential High Performance Computing users but never used HPC before Digitally Ready: Users who already digitalized some of their processes but are not aware of benefits using High Performance Computing or associated technologies Digitalization Needed: Stakeholders in need of digitalization

Figure 2: The explanation of the competence categories and the level of experience of the user

AWARENESS CREATION

Here we can help you in terms of:

- **Learning pills** and **events** around what is High Performance Computing, High Performance Data Analysis and Artificial Intelligence all about, and why your organization should care.
- Workshops on **successful applications of High Performance Computing and related technologies** and on the quantitative benefits generated by their employment.
- **Bootcamps** and **hackathons** on specific technological applications in High Performance Data Analysis and Artificial Intelligence involving and engaging your staff or project team.

Want to know more? Please visit our [Events](#) and [Resources](#) areas! You may also get in touch directly with your local National Competence Centre (find the contacts in the competence map below) and check the local events and resources!

Figure 3: The explanation of the competence category: awareness creation

AVAILABLE TRAINING COURSES

We offer tailored solutions for different **training needs**, for example in terms of:

- **Competence autonomy** of your organization.
- Digital and cultural **transformation** of your organization.
- All-you-need **learning opportunities** on High Performance Computing, including programming languages, code optimization and porting, optimization of hardware use, hardware (and cloud) choice, etc.
- **Deep dives** in High Performance Data Analysis applied to High Performance Computing environments, including orchestrators, cryptography and security issues, among other.
- **Artificial Intelligence** in High Performance Computing, with the research frontier on privacy preserving analytics, and much more.

Want to know more? Visit our page dedicated to [training](#)!

Figure 4: The explanation of the competence category: available training courses

EXPERT TECHNICAL CONSULTANCY

Whether you're a High Performance Computing beginner or pro, we offer various services in terms of technological assessment and technology transfer, for instance we can support you with:

- Consultancy on the **opportunity to adopt HPC, HPDA and AI** solutions to approach a problem.
- Support on the **design** of the technical infrastructure to host the project.
- Consultancy on the **security** measures necessary for **privacy** preserving as well as IP protection requirements.
- Expert consultancy on the **selection of hardware, software, software tools and algorithms** for resource demanding

The Consultancy services are provided locally and go from assessment to specific use cases. You can also check our collection of [success stories](#).

Want to know more? Get in touch directly with your local National Competence Center – find the contacts in the competence map below! You may also write us an e-mail via our contact form in the footer!

Figure 5: The explanation of the competence category: expert technical consultancy

BUSINESS AND PROJECT CONSULTANCY

If you need assistance on a **how to apply High Performance Computing** in business contexts, we offer help in terms of:

- Support in finding partners in projects or finding calls to experiment a given idea; support to apply to calls and to master the funding opportunities.
- Feasibility study and analysis of the business impacts of technologies, to support your entity to decide if and how to embrace HPC High Performance Computing and related technologies in your projects.
- Skills and expertise to transform your business needs into technical requirements.
- Management of all relevant aspects and areas that impact a project on a supercomputing environment.

Our experience and expertise span throughout **different sectorial and application domains**.

We have years of experience with High Performance Computing in different companies and projects! You may check our [success story database](#) to find interesting in depths.

Want to know more? Get in touch directly with your local National Competence Center (find the contacts in the competence map above) or write us an e-mail via our contact form in the footer!

Figure 6: The explanation of the competence category: business and project consultancy

PRODUCTS AND SERVICES

An expert guide for your organization who navigates you through the possibilities available in terms of:

- Different hardware (i.e.: use of **accelerators** like GPUs and FPGAs) and **software facilities** (commercial software, pros and cons of the different programming languages, etc.).
- Use of **computing** resources, of **storage** resources and ready to use tools (from software solutions to **workflows**, from data preparation tools to **orchestrators**).
- Use of data analysis solutions and machine learning algorithms.

Our services include utilities for data migration and storage, allocation of computing hours, available helper tools and much more!

Want to go deeper? Get in touch directly with your local National Competence Center (find the contacts in the competence map above) or check our [video library](#) to get inspired!

Figure 7: The explanation of the competence category: products and services

Changes will be visible when competences are selected

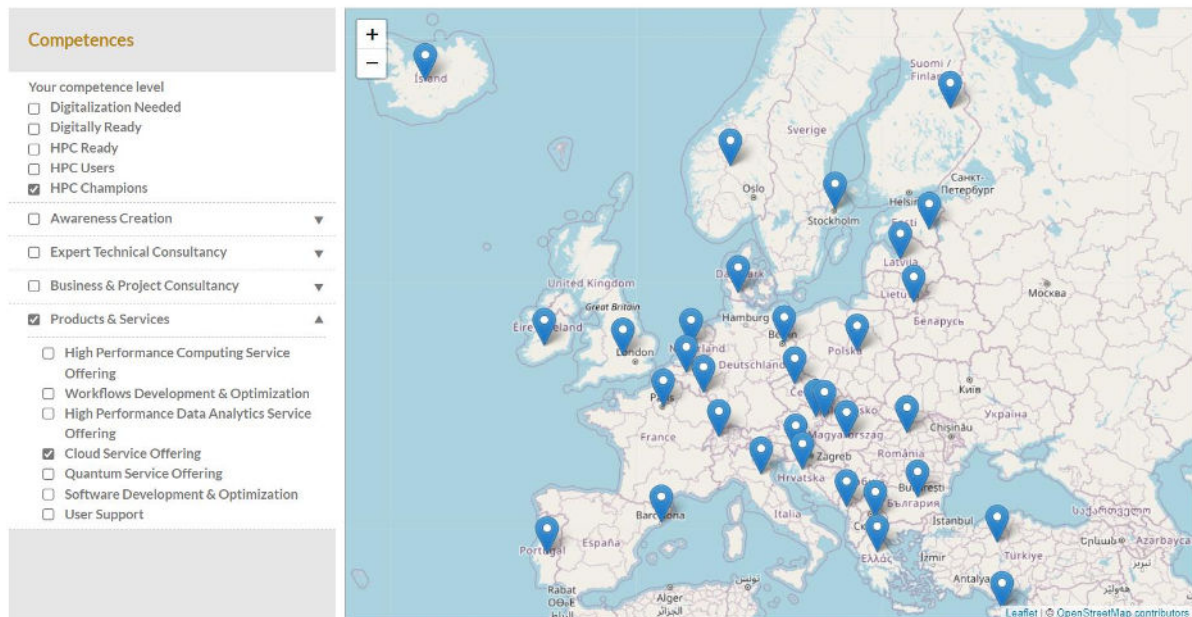


Figure 8: The Competence Map, Search filters (example)



Figure 9: The Competence Map, contact of an NCC (example)

9 Annex 4 – The survey for the collection of competences at M1, M12, M24

30/11/22, 12:16

EuroCC - NCC Competences at M1, M12 and M24

EuroCC - NCC Competences at M1, M12 and M24

This survey is to collect the competences of your NCC at the beginning of the EuroCC project, at M12 and at M24.

>>>>> PLEASE PROVIDE ONE SINGLE FILLED SURVEY PER NCC! <<<<<<

To decide if to tick a given competence sub-category for a given end-user level (HPC Champions, HPC Users, HPC Ready, Digitally Ready, Digitalization needed), please ask yourself the following question:

Is my NCC able to put this competence into practice (or was my NCC able at the time of observation)? Has my NCC carried out a project or a PoC using this competence successfully? Even if not, would be (was) my NCC ready to carry out a project using this competence?

This applies to all categories of the competence map with the exception of the Products and Services category. Products and Services are already "applied" competences: in order to make a product or a service available, one or more competences have been employed. In this respect, in order to tick a Products and Services sub-category for a given typology of end-user, you have only to ask yourself if the product or service belongs to the given sub-category and if the level of expertise required to use it is in line with the end-user level of experience.

For a description of the competence sub-categories, please refer to the Final Competence Map here: <https://bscw.hlrs.de/sec/bscw.cgi/d752496/Final%20Competence%20Map%20after%20survey%20September%202022.xlsx>

Some examples of the detailed competences in each sub-category are in the same excel document, in the sheet "Conversion..".

In case of doubts or troubles, please contact us at: castiel-workpackage2@lists.projects.hlrs.de
Enjoy the survey! :)

The CASTIEL WP2 team

*Campo obbligatorio

<https://docs.google.com/forms/d/1SDKVvp3RBMgdQxAN5gKddNCxvgEq2Jw3P2jEpXJTU/edit>

1/11

1. Please indicate your NCC *

Contrassegna solo un ovale.

- WP2 - Germany
- WP3 - Bulgaria
- WP4 - Austria
- WP5 - Croatia
- WP6 - Cyprus
- WP7 - Czech Republic
- WP8 - Denmark
- WP9 - Estonia
- WP10 - Finland
- WP11 - Greece
- WP12 - Hungary
- WP13 - Ireland
- WP14 - Italy
- WP15 - Lithuania
- WP16 - Latvia
- WP17 - Norway
- WP18 - Poland
- WP19 - Portugal
- WP20 - Romania
- WP21 - Slovenia
- WP22 - Spain
- WP23 - Sweden
- WP24 - Switzerland
- WP25 - Turkey
- WP26 - UK
- WP27 - France
- WP28 - Luxembourg
- WP29 - The Netherlands
- WP30 - Belgium
- WP31 - Slovakia
- WP32 - North Macedonia
- WP33 - Iceland

30/11/22, 12:16

EuroCC - NCC Competences at M1, M12 and M24

WP34 - Montenegro

COMPETENCES
at M1 -
beginning of the
project

In this section you shall indicate the competences that you NCC had at the beginning of the project (beginning of September 2020), provided the instructions in the first section above.

2. CATEGORY 1: AWARENESS CREATION

Seleziona tutte le voci applicabili.

	Digitalization needed users	Digitally ready users	HPC ready users	HPC users	HPC champions
Dissemination of Results & Networking Events	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Informative Events & communication of opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. CATEGORY 2: EXPERT TECHNICAL CONSULTANCY

Seleziona tutte le voci applicabili.

	Digitalization needed users	Digitally ready users	HPC ready users	HPC users	HPC champions
Technological Scouting and assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Technology Transfer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



4. CATEGORY 3: BUSINESS & PROJECT CONSULTANCY

Seleziona tutte le voci applicabili.

	Digitalization needed users	Digitally ready users	HPC ready users	HPC users	HPC champions
Feasibility & impact assessment (Proof of Concept)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Finding Partners & Projects - Matchmaking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Call Application and Fundraising Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Project Design	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Project Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. CATEGORY 4: PRODUCTS AND SERVICES

Seleziona tutte le voci applicabili.

	Digitalization needed users	Digitally ready users	HPC ready users	HPC users	HPC champions
High Performance Computing Service Offering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Workflows Development & Optimization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High Performance Data Analytics Service Offering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cloud Service Offering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantum Service Offering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Software Development & Optimization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
User Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMPETENCES at M12 - half way of the project

In this section you shall indicate the competences that you NCC had after the first year of the EuroCC Project (August 2021), provided the instructions in the first section above.

6. CATEGORY 1: AWARENESS CREATION

Seleziona tutte le voci applicabili.

	Digitalization needed users	Digitally ready users	HPC ready users	HPC users	HPC champions
Dissemination of Results & Networking Events	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Informative Events & communication of opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. CATEGORY 2: EXPERT TECHNICAL CONSULTANCY

Seleziona tutte le voci applicabili.

	Digitalization needed users	Digitally ready users	HPC ready users	HPC users	HPC champions
Technological Scouting and assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Technology Transfer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. CATEGORY 3: BUSINESS & PROJECT CONSULTANCY

Seleziona tutte le voci applicabili.

	Digitalization needed users	Digitally ready users	HPC ready users	HPC users	HPC champions
Feasibility & impact assessment (Proof of Concept)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Finding Partners & Projects - Matchmaking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Call Application and Fundraising Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Project Design	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Project Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



9. CATEGORY 4: PRODUCTS AND SERVICES

Seleziona tutte le voci applicabili.

	Digitalization needed users	Digitally ready users	HPC ready users	HPC users	HPC champions
High Performance Computing Service Offering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Workflows Development & Optimization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High Performance Data Analytics Service Offering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cloud Service Offering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantum Service Offering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Software Development & Optimization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
User Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMPETENCES at
 M24 - end of the
 project //(before
 extension)

In this section you shall indicate the competences that
 you NCC had after two year of the EuroCC Project
 (August 2022), provided

the instructions in the first section above.

10. CATEGORY 1: AWARENESS CREATION

Seleziona tutte le voci applicabili.

	Digitalization needed users	Digitally ready users	HPC ready users	HPC users	HPC champions
Dissemination of Results & Networking Events	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Informative Events & communication of opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. CATEGORY 2: EXPERT TECHNICAL CONSULTANCY

Seleziona tutte le voci applicabili.

	Digitalization needed users	Digitally ready users	HPC ready users	HPC users	HPC champions
Technological Scouting and assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Technology Transfer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. CATEGORY 3: BUSINESS & PROJECT CONSULTANCY

Seleziona tutte le voci applicabili.

	Digitalization needed users	Digitally ready users	HPC ready users	HPC users	HPC champions
Feasibility & impact assessment (Proof of Concept)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Finding Partners & Projects - Matchmaking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Call Application and Fundraising Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Project Design	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Project Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. CATEGORY 4: PRODUCTS AND SERVICES

Seleziona tutte le voci applicabili.

	Digitalization needed users	Digitally ready users	HPC ready users	HPC users	HPC champions
High Performance Computing Service Offering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Workflows Development & Optimization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High Performance Data Analytics Service Offering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cloud Service Offering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantum Service Offering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Software Development & Optimization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
User Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Questi contenuti non sono creati né avallati da Google.

Google Moduli

10 Annex 5 - The Personas of the Competence Map and their Customer Journeys

Before getting to the personas and the related customer journeys, it is important to provide some background, common to the final user and to the objectives of the Competence Map in the EuroCC ACCESS.

CASTIEL, after recommendations from the NCCs, wanted to avoid that the Competence Map was used to compare the level of competences among NCCs. This is the reason why the searching tools have been conceived to search competences and not to select NCCs and compare them.

Second, the Competence Map shall bring the final user to the target NCC, not to EuroCC. The user shall first acknowledge that the searched competences are available at some NCCs in the network, recognise among such NCCs the NCC of the own Country and then have easy access to the national website of the NCC and to related social pages.

The personas identified and their searches in the Competence Map:

A] **Corporate-like** Jenny is the CIO of Company X and wants to know where to retrieve competences on a specific area, for a couple of projects using HPDA tools.

She goes to the map and sees that there are different user levels.

She makes a quick self-assessment on the end-user typologies, then she goes to the map and selects the applicable user level. She selects the category and sub-category of competences she's looking for.

She finds that 5 NCCs are providing such area of competences, she notes down the contacts to reach them.

B] **SME-like** Franco is the owner of the Company Y and wants to know what competences are available in the EuroCC network because he attended an event and realized that HPC could be of some benefit for the new Internet of Things Department.

He goes to the Competence Map and look through the categories and subcategories, finds that there are training courses offered, videos and materials available.

He spreads this to the organisation and tell the Internet of Things Department director to study the stuff and provide him with an analysis.

Plus, he finds that there is an NCC in his Country and gets down the contacts to organise an introductory meeting.

11 Annex 6 - Main outcomes of the Inspirational Guidelines on Competences

Each story teaches a lot when read on its entirety, so the best way to profit from the Inspirational Guidelines on Competences is to go through them all and learn from the competences highlighted by the NCCs. This applies to hard skills, technically related.

However, some horizontal teaching and best practice can be derived as summarised in the next paragraphs.

11.1.1 Dos and Don'ts

This section of the Guidelines aimed at highlighting the recommendations in terms of good practices to adopt / to avoid when approaching a project, to make the project successful. Of course, not all such recommendations may be applicable to each single project – but most of them are.

The experience – based recommendations retrieved from the contributions of the NCCs can be grouped in 5 categories, each corresponding to a step of the relationship with the end-user, as shown in Figure 10 and described here below.

Targeting: this is the step when, based on previous experiences (including previous projects in the loop-like concept) and in the long-term development plan of the NCC, the NCC targets the end-users' segments (and eventually single contacts) that the NCC would like to reach.

Engaging: this is the step in which the contacts are created, through networking, communication, and dissemination activities, including 1-2-1 meetings.

Design: this the delicate step during which, once the interest has been raised, a concrete project or proof-of-concept idea is conceived and agreed among the interested parties. It may take some time and iterations to find the best approaches to follow and the right team for the subsequent implementation. Finding eventual funds, thus calls to apply, as well as involving partners bringing essential competences and solutions is also a component of this step.

Implement: this is the project / proof-of-concept implementation. It goes from the idea to the realisation and KPI measurement.

Retain/Follow-up. This is the step in which the results of the proof-of-concept or project are maximized to be usable for further application and end-users. In this step, the relationship with the final user must be kept to develop further project initiatives / elaborate on other ideas that came out during the previous steps.

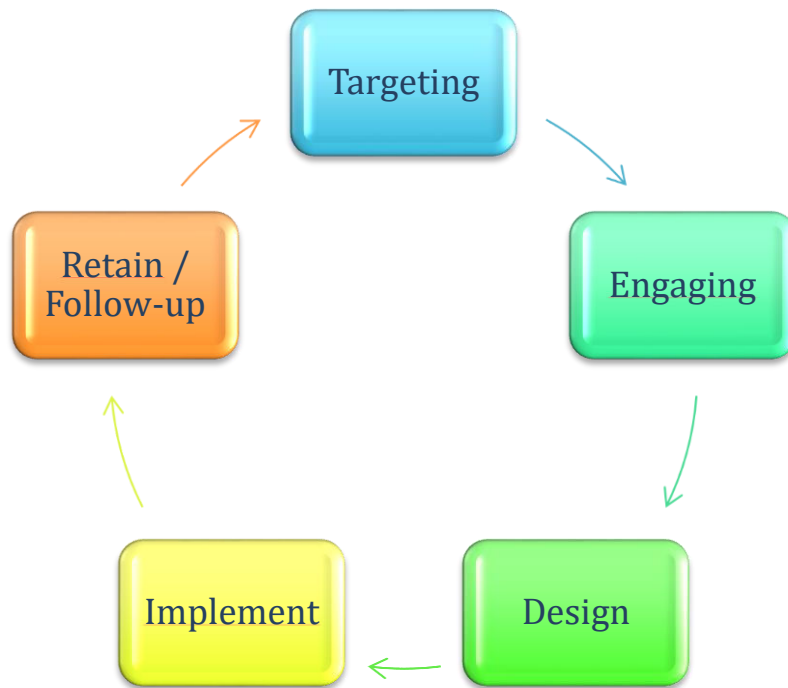


Figure 10: The 5 steps of the customer's relationship cycle

A synthesis of the DOs and DONTs provided by the respondents, with some additional suggestions from the CASTIEL WP2' team, are summarised in Figure 11. The suggestions are clustered based on the pertaining step of the customer relationship cycle of Figure 10. Some DOs and DONTs can be considered transversally throughout the different steps of the customer relationship, thus these suggestions have been represented as crossing all steps.

Targeting	Standardise the process Encourage collaboration Be persistent Fulfill company needs Approach customers professionally (pre-sale, sale and post-sale) Use soft skills to make the project team successful	<ul style="list-style-type: none"> • Leverage on the existing relationship (previous job, previous projects). Each contact is precious! • Leverage on contacts retrieved from events, workshops, training courses • Be aware that end-users with previous experience in funding / EU projects / with IT background are easier to communicate with • Plan your marketing campaign carefully (when, target(s), objectives, how, etc.)
Engaging		<ul style="list-style-type: none"> • Evaluate feasibility of the SME idea with experts before engaging • Start asap with NDAs and legal agreements to be ready when needed • Best ideas may need time: don't give up at first attempt and encourage multidisciplinary brainstorming • Clearly and jointly define realistic goals, scope of and roles + timing • Encourage the SME / company to apply for funds when possible
Design		<ul style="list-style-type: none"> • In assessing possible alternative HW & SW solutions, be clear and objective on pros and cons, risks, costs and time impacts of the various options • Assess the costs, efforts and time elapse realistically. Allocate time for support & training (pls. see "Implement") • Start with one well-defined, focused problem, then expand / scale up • Avoid too many requests for reporting
Implement		<ul style="list-style-type: none"> • Regular meetings / sync with the customer and within the internal teams. Establish easy communication channels • Don't leave the users alone at the beginning, this can be frustrating and lead to abandon • Train the customers and the domain experts to be autonomous when the project ends • Do scalability tests (simulation time vs number of cores used) when applicable, they prove the potential of HPC based solutions, also for customer retention • Avoid distracting actively engaged users. On the other side, provide assistance to users who do not progress.
Retain / follow-up		<ul style="list-style-type: none"> • Generalize solutions and create how-to guides that can benefit other users • Involve experts who can work on extensions / additional functionalities / further applications in the same as well as in other domains • Propose the case study (when and as far as disclosable) to companies in the same sector / domain. They may not need the same, but they surely get a stronger understanding of the HPC potentialities

Figure 11: Synthesis of the suggestions received in terms of Dos and DONTs

11.1.2 Crucial competences

Each success story has its own crucial competences, however some elements may be generalized based on the contributions received, as shown in Figure 12.

Such elements can give points of attention to be considered regardless the specific competence development plan / project that the NCC would like to develop.

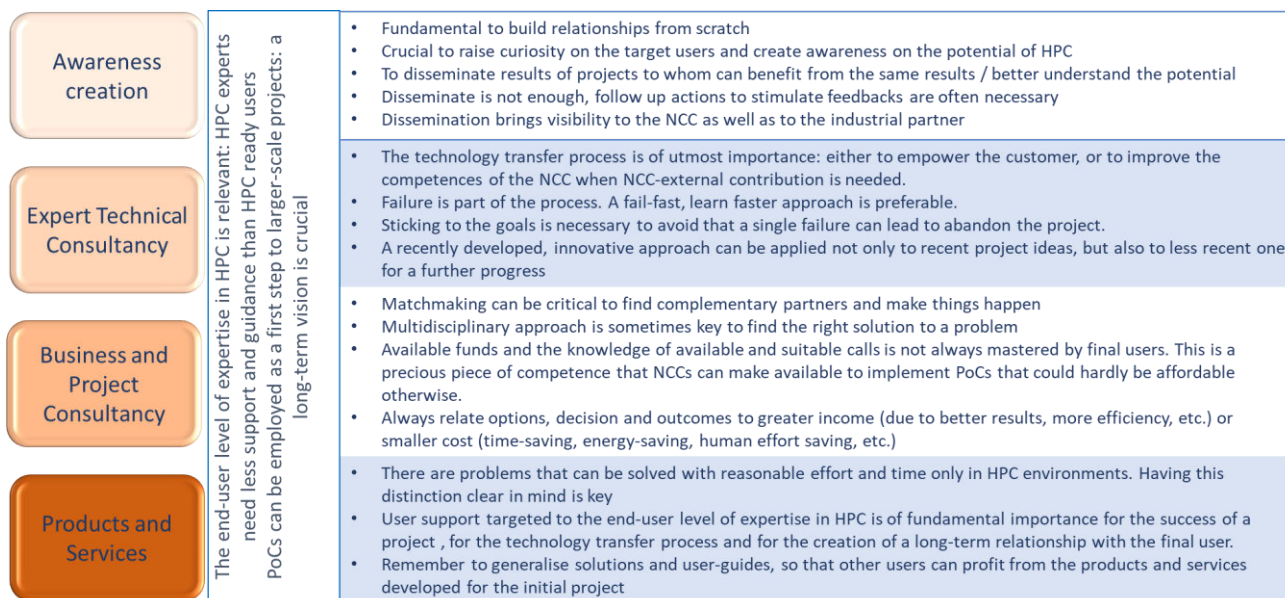


Figure 12: The benefits of competences widely recognised by the respondent NCCs

One point that clearly emerged is that the competences needed may vary also based on the level of maturity of the end-user with respect to HOC and related technologies. The importance of consultancy and technology transfer capabilities, as well as the typology and intensity of user support can be significantly different when dealing with HOC ready users or HPC experts.

On the other side, this is an important element to consider when sizing the efforts necessary for the project. In case of less mature end-users, effort dedicated to training and knowledge transfer, as well as to user support shall be sized attentively.

Another important aspect that emerged is the importance of an open and multidisciplinary approach, especially in the Engagement and Design steps. Some NCCs called not to limit the experts participating in brainstorming sessions, and sometimes solutions come when putting together applications experienced in completely different domains.

These are a couple of examples of the recommendations set forth in Figure 3. Please go through the others for further precious suggestions.

12 Annex 7 - Observatory on Competences

12.1 How to read the data

The Observatory has been structured to highlight the improvements on competences achieved by the NCCs during the EuroCC project lifetime.

For this reason, the Competence Map of each NCC highlights the month (M01, M12 or M24) in which the competence has been reported for the first time. From that moment on, the competence remains part of the assets of the NCC.

Colours have been used to support the visualization of the competence improvement, following the legend here below.

	Competence not developed yet
	Competence already achieved at the beginning of the project (M01)
	Competence achieved during the first year of project (M12)
	Competence achieved during the second year of project (M24)

The Observatory on competences has been implemented by CASTIEL WP2 thank to the contribution provided by the NCC of EuroCC. The Observatory is meant to be updated along the CASTIEL 2 project as well.

12.2 WP02 – Germany

Competence Category	Competence Sub-category	Digitalization needed users	Digitally ready users	HP C ready users	HP C users	HP C champions
Awareness Creation	Dissemination of Results & Networking Events	M24	M12	M01	M01	M01
Awareness Creation	Informative Events & communication of opportunities	M01	M01	M01	M01	M01
Business & Project Consultancy	Call Application and Fundraising Support		M24	M01	M01	M01
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)		M01	M01	M01	M01
Business & Project Consultancy	Finding Partners & Projects - Matchmaking		M24	M01	M01	M01
Business & Project Consultancy	Project Design			M01	M01	M01
Business & Project Consultancy	Project Management			M01	M01	M01
Expert Technical Consultancy	Technological Scouting and assessment	M01	M01	M01	M01	M01
Expert Technical Consultancy	Technology Transfer		M01	M01	M01	M01
Products and Services	Cloud Service Offering		M12	M01	M01	M01
Products and Services	High Performance Computing Service Offering		M12	M01	M01	M01
Products and Services	High Performance Data Analytics Service Offering		M12	M01	M01	M01
Products and Services	Quantum Service Offering				M24	M24
Products and Services	Software Development & Optimization			M01	M01	M01

Products and Services	User Support	M12	M01	M01	M01
Products and Services	Workflows Development & Optimization		M01	M01	M01

12.3 WP03 – Bulgaria

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events	M01	M01	M01	M01	M01
Awareness Creation	Informative Events & communication of opportunities	M01	M01	M01	M01	M01
Business & Project Consultancy	Call Application and Fundraising Support	M24	M12	M12	M01	M01
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)		M24	M12	M01	M01
Business & Project Consultancy	Finding Partners & Projects - Matchmaking		M24	M12	M01	M01
Business & Project Consultancy	Project Design		M12	M12	M01	M01
Business & Project Consultancy	Project Management		M12	M01	M01	M01
Expert Technical Consultancy	Technological Scouting and assessment		M12	M01	M01	M01
Expert Technical Consultancy	Technology Transfer		M24	M01	M01	M01
Products and Services	Cloud Service Offering		M01	M01	M01	M01
Products and Services	High Performance Computing Service Offering		M12	M01	M01	M01
Products and Services	High Performance Data Analytics Service Offering		M12	M01	M01	M01
Products and Services	Quantum Service Offering					
Products and Services	Software Development & Optimization	M24	M01	M01	M01	M01
Products and Services	User Support	M24	M12	M01	M01	M01
Products and Services	Workflows Development & Optimization		M12	M12	M01	M01

12.4 WP04 – Austria

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events	M12	M12	M12	M12	M12
Awareness Creation	Informative Events & communication of opportunities	M12	M12	M12	M12	M12
Business & Project Consultancy	Call Application and Fundraising Support			M12	M12	M12
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)		M24	M24	M12	M12
Business & Project Consultancy	Finding Partners & Projects - Matchmaking			M24	M12	M12
Business & Project Consultancy	Project Design					
Business & Project Consultancy	Project Management					
Expert Technical Consultancy	Technological Scouting and assessment		M24	M01	M01	M01
Expert Technical Consultancy	Technology Transfer			M01	M01	M01
Products and Services	Cloud Service Offering					
Products and Services	High Performance Computing Service Offering			M12	M01	M01
Products and Services	High Performance Data Analytics Service Offering			M12	M12	M12
Products and Services	Quantum Service Offering					
Products and Services	Software Development & Optimization			M24	M01	M01
Products and Services	User Support			M12	M01	M01
Products and Services	Workflows Development & Optimization			M12	M01	M01

12.5 WP05 – Croatia

Competence Category	Competence Sub-category	Digit alizat ion need ed users	Digit ally read y users	HPC read y users	HPC users	HPC cha mpio ns
Awareness Creation	Dissemination of Results & Networking Events				M24	M01
Awareness Creation	Informative Events & communication of opportunities	M01	M01		M24	M24
Business & Project Consultancy	Call Application and Fundraising Support				M01	M12
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)					M01
Business & Project Consultancy	Finding Partners & Projects - Matchmaking				M12	M24
Business & Project Consultancy	Project Design					M12
Business & Project Consultancy	Project Management				M24	M01
Expert Technical Consultancy	Technological Scouting and assessment					
Expert Technical Consultancy	Technology Transfer				M24	M24
Products and Services	Cloud Service Offering				M24	M24
Products and Services	High Performance Computing Service Offering		M12	M12	M12	M12
Products and Services	High Performance Data Analytics Service Offering					M12
Products and Services	Quantum Service Offering					
Products and Services	Software Development & Optimization				M12	M12
Products and Services	User Support			M24	M12	M12
Products and Services	Workflows Development & Optimization					

12.6 WP06 – Cyprus

Competence Category	Competence Sub-category	Digit alizat ion need ed users	Digit ally read y users	HPC read y users	HPC users	HPC cha mpio ns
Awareness Creation	Dissemination of Results & Networking Events					M01
Awareness Creation	Informative Events & communication of opportunities					M01
Business & Project Consultancy	Call Application and Fundraising Support					M12
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)					M12
Business & Project Consultancy	Finding Partners & Projects - Matchmaking					M12
Business & Project Consultancy	Project Design					M12
Business & Project Consultancy	Project Management					M12
Expert Technical Consultancy	Technological Scouting and assessment					M01
Expert Technical Consultancy	Technology Transfer					M01
Products and Services	Cloud Service Offering	M01				
Products and Services	High Performance Computing Service Offering					M01
Products and Services	High Performance Data Analytics Service Offering					M01
Products and Services	Quantum Service Offering	M01				
Products and Services	Software Development & Optimization					M01
Products and Services	User Support					M01
Products and Services	Workflows Development & Optimization					M01

12.7 WP07 – Czech Republic

Competence Category	Competence Sub-category	Digit alizat ion need ed users	Digit ally read y users	HPC read y users	HPC users	HPC cha mpio ns
Awareness Creation	Dissemination of Results & Networking Events	M01	M01	M01	M01	M01
Awareness Creation	Informative Events & communication of opportunities	M01	M01	M01	M01	M01
Business & Project Consultancy	Call Application and Fundraising Support	M01	M01	M01	M01	M01
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)	M01	M01	M01	M01	M01
Business & Project Consultancy	Finding Partners & Projects - Matchmaking	M01	M01	M01	M01	M01
Business & Project Consultancy	Project Design	M01	M01	M01	M01	M01
Business & Project Consultancy	Project Management	M01	M01	M01	M01	M01
Expert Technical Consultancy	Technological Scouting and assessment	M12	M12	M12	M12	M12
Expert Technical Consultancy	Technology Transfer	M12	M12	M12	M12	M12
Products and Services	Cloud Service Offering	M12	M12	M12	M12	M12
Products and Services	High Performance Computing Service Offering	M01	M01	M01	M01	M01
Products and Services	High Performance Data Analytics Service Offering	M01	M01	M01	M01	M01
Products and Services	Quantum Service Offering					
Products and Services	Software Development & Optimization	M01	M01	M01	M01	M01
Products and Services	User Support	M01	M01	M01	M01	M01
Products and Services	Workflows Development & Optimization	M01	M01	M01	M01	M01

12.8 WP08 – Denmark

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events	M01	M01	M01	M01	M01
Awareness Creation	Informative Events & communication of opportunities	M01	M01	M01	M01	M01
Business & Project Consultancy	Call Application and Fundraising Support			M12	M12	M12
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)		M01	M01	M01	M01
Business & Project Consultancy	Finding Partners & Projects - Matchmaking		M01	M01	M01	M01
Business & Project Consultancy	Project Design					
Business & Project Consultancy	Project Management					
Expert Technical Consultancy	Technological Scouting and assessment		M01	M01	M01	M01
Expert Technical Consultancy	Technology Transfer		M01	M01	M01	M01
Products and Services	Cloud Service Offering		M12	M12	M01	M01
Products and Services	High Performance Computing Service Offering		M12	M12	M01	M01
Products and Services	High Performance Data Analytics Service Offering		M12	M12	M01	M01
Products and Services	Quantum Service Offering				M24	M12
Products and Services	Software Development & Optimization		M12	M12	M01	M01
Products and Services	User Support		M12	M12	M01	M01
Products and Services	Workflows Development & Optimization			M12	M01	M01

12.9 WP09 – Estonia

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events			M12	M01	M01
Awareness Creation	Informative Events & communication of opportunities	M24	M12	M01	M01	M01
Business & Project Consultancy	Call Application and Fundraising Support				M12	M12
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)			M24	M01	M01
Business & Project Consultancy	Finding Partners & Projects - Matchmaking			M24	M01	M01
Business & Project Consultancy	Project Design			M24	M01	M01
Business & Project Consultancy	Project Management				M12	M12
Expert Technical Consultancy	Technological Scouting and assessment			M01	M01	M01
Expert Technical Consultancy	Technology Transfer			M24	M01	M01
Products and Services	Cloud Service Offering			M01	M01	M01
Products and Services	High Performance Computing Service Offering			M01	M01	M01
Products and Services	High Performance Data Analytics Service Offering				M12	M12
Products and Services	Quantum Service Offering					
Products and Services	Software Development & Optimization					
Products and Services	User Support			M01	M01	M01
Products and Services	Workflows Development & Optimization				M01	M01

12.10 WP10 – Finland

Competence Category	Competence Sub-category	Digit alizat ion need ed users	Digit ally read y users	HP C read y user s	HPC users	HPC cham pions	
Awareness Creation	Dissemination of Results & Networking Events		M01	M12	M24		
Awareness Creation	Informative Events & communication of opportunities		M01	M12	M24		
Business & Project Consultancy	Call Application and Fundraising Support		M01	M01	M01	M12	
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)		M01	M01	M01	M24	
Business & Project Consultancy	Finding Partners & Projects - Matchmaking		M01	M01	M01		
Business & Project Consultancy	Project Design		M01	M01	M01	M01	
Business & Project Consultancy	Project Management		M01	M01	M01	M01	
Expert Technical Consultancy	Technological Scouting and assessment		M01	M01	M01	M24	
Expert Technical Consultancy	Technology Transfer		M01	M01	M01	M24	
Products and Services	Cloud Service Offering		M01	M01	M01	M01	
Products and Services	High Performance Computing Service Offering		M01	M01	M01	M01	
Products and Services	High Performance Data Analytics Service Offering		M01	M01	M01	M01	
Products and Services	Quantum Service Offering				M01	M12	
Products and Services	Software Development & Optimization		M01	M01	M01	M01	
Products and Services	User Support		M01	M01	M01	M01	
Products and Services	Workflows Development & Optimization		M01	M01	M24		

12.11 WP11 – Greece

Competence Category	Competence Sub-category	Digit alizer need ed users	Digit ally read y users	HPC read y users	HPC users	HPC cha mpio ns
Awareness Creation	Dissemination of Results & Networking Events	M01	M01	M01	M24	M24
Awareness Creation	Informative Events & communication of opportunities	M01	M01	M24	M24	M24
Business & Project Consultancy	Call Application and Fundraising Support	M24	M24	M12	M12	M12
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)			M12	M12	M12
Business & Project Consultancy	Finding Partners & Projects - Matchmaking	M24	M24	M12	M12	M12
Business & Project Consultancy	Project Design			M24	M24	M24
Business & Project Consultancy	Project Management			M24	M24	M24
Expert Technical Consultancy	Technological Scouting and assessment	M01	M01	M01	M24	M24
Expert Technical Consultancy	Technology Transfer		M01	M01	M12	M12
Products and Services	Cloud Service Offering			M01	M01	M01
Products and Services	High Performance Computing Service Offering		M01	M01	M01	M01
Products and Services	High Performance Data Analytics Service Offering					
Products and Services	Quantum Service Offering					
Products and Services	Software Development & Optimization					
Products and Services	User Support			M01	M01	M01
Products and Services	Workflows Development & Optimization			M24	M24	M24

12.12 WP12 – Hungary

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events			M01	M01	M01
Awareness Creation	Informative Events & communication of opportunities		M12	M12	M12	M12
Business & Project Consultancy	Call Application and Fundraising Support			M12	M24	M24
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)					
Business & Project Consultancy	Finding Partners & Projects - Matchmaking			M12	M12	M12
Business & Project Consultancy	Project Design			M12		M12
Business & Project Consultancy	Project Management			M24		M24
Expert Technical Consultancy	Technological Scouting and assessment			M12	M12	M12
Expert Technical Consultancy	Technology Transfer			M24	M12	M12
Products and Services	Cloud Service Offering					
Products and Services	High Performance Computing Service Offering			M12	M12	
Products and Services	High Performance Data Analytics Service Offering					
Products and Services	Quantum Service Offering					
Products and Services	Software Development & Optimization					
Products and Services	User Support			M12	M12	
Products and Services	Workflows Development & Optimization					

12.13 WP13 – Ireland

Competence Category	Competence Sub-category	Digitization need ed users	Digit ally read y users	HPC read y users	HPC users	HPC cha mpio ns
Awareness Creation	Dissemination of Results & Networking Events		M01	M01	M01	M12
Awareness Creation	Informative Events & communication of opportunities	M12	M01	M01	M01	
Business & Project Consultancy	Call Application and Fundraising Support		M01	M01	M01	M24
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)		M01	M01	M01	M12
Business & Project Consultancy	Finding Partners & Projects - Matchmaking		M01	M01	M01	M12
Business & Project Consultancy	Project Design		M01	M01	M01	M12
Business & Project Consultancy	Project Management		M01	M01	M01	M24
Expert Technical Consultancy	Technological Scouting and assessment		M01	M01	M12	
Expert Technical Consultancy	Technology Transfer		M12	M12		
Products and Services	Cloud Service Offering					
Products and Services	High Performance Computing Service Offering		M01	M01	M01	M12
Products and Services	High Performance Data Analytics Service Offering		M12	M12	M12	
Products and Services	Quantum Service Offering		M24	M24	M01	
Products and Services	Software Development & Optimization		M01	M01	M01	
Products and Services	User Support		M01	M01	M01	M12
Products and Services	Workflows Development & Optimization		M01	M01	M01	M24

12.14 WP14 – Italy

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events	M24	M01	M01	M01	M24
Awareness Creation	Informative Events & communication of opportunities	M24	M01	M01	M01	M12
Business & Project Consultancy	Call Application and Fundraising Support	M12	M12	M01	M01	
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)		M24	M01	M01	
Business & Project Consultancy	Finding Partners & Projects - Matchmaking	M01	M01	M01	M01	
Business & Project Consultancy	Project Design	M12	M12	M12	M12	M12
Business & Project Consultancy	Project Management				M24	M24
Expert Technical Consultancy	Technological Scouting and assessment	M24	M01	M01	M01	M01
Expert Technical Consultancy	Technology Transfer		M01	M01	M01	M12
Products and Services	Cloud Service Offering		M12	M01	M01	
Products and Services	High Performance Computing Service Offering		M24	M01	M01	M01
Products and Services	High Performance Data Analytics Service Offering			M12	M12	M12
Products and Services	Quantum Service Offering	M12	M12	M12	M01	M01
Products and Services	Software Development & Optimization				M01	M01
Products and Services	User Support	M01	M01	M01	M01	M01
Products and Services	Workflows Development & Optimization	M12	M12	M12	M12	M01

12.15 WP15 – Lithuania

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events	M24		M24	M12	M01
Awareness Creation	Informative Events & communication of opportunities	M12		M24	M12	M01
Business & Project Consultancy	Call Application and Fundraising Support			M12	M12	M01
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)			M24	M12	M01
Business & Project Consultancy	Finding Partners & Projects - Matchmaking			M24	M12	M01
Business & Project Consultancy	Project Design			M24	M12	M01
Business & Project Consultancy	Project Management			M24	M12	M01
Expert Technical Consultancy	Technological Scouting and assessment	M24		M24	M12	M01
Expert Technical Consultancy	Technology Transfer	M24		M24	M12	M01
Products and Services	Cloud Service Offering	M12	M12	M12	M12	M01
Products and Services	High Performance Computing Service Offering	M12			M12	M01
Products and Services	High Performance Data Analytics Service Offering				M12	M01
Products and Services	Quantum Service Offering	M12	M12	M12	M12	M01
Products and Services	Software Development & Optimization				M12	M01
Products and Services	User Support	M24	M24	M24	M12	M01
Products and Services	Workflows Development & Optimization				M12	M12

12.16 WP16 – Latvia

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events	M01	M01	M01	M12	M24
Awareness Creation	Informative Events & communication of opportunities	M01	M01	M01	M12	M12
Business & Project Consultancy	Call Application and Fundraising Support	M01	M01	M01	M01	M12
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)	M12	M12	M12	M12	M24
Business & Project Consultancy	Finding Partners & Projects - Matchmaking	M01	M01	M01	M01	M12
Business & Project Consultancy	Project Design	M12	M12	M12	M12	M24
Business & Project Consultancy	Project Management	M24	M24	M24	M24	M24
Expert Technical Consultancy	Technological Scouting and assessment	M01	M01	M01	M01	M01
Expert Technical Consultancy	Technology Transfer	M01	M12	M12	M12	M12
Products and Services	Cloud Service Offering	M01	M01			
Products and Services	High Performance Computing Service Offering	M01	M12	M12	M12	M12
Products and Services	High Performance Data Analytics Service Offering	M12	M12			
Products and Services	Quantum Service Offering	M01	M24			
Products and Services	Software Development & Optimization	M01	M01	M01	M24	M24
Products and Services	User Support	M01	M01	M01	M01	M12
Products and Services	Workflows Development & Optimization	M12	M01	M01	M01	

12.17 WP17 – Norway

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events	M12	M12	M12	M12	
Awareness Creation	Informative Events & communication of opportunities	M24	M24	M24		
Business & Project Consultancy	Call Application and Fundraising Support		M01	M01	M24	
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)	M12	M01	M01		
Business & Project Consultancy	Finding Partners & Projects - Matchmaking		M01	M01	M24	
Business & Project Consultancy	Project Design		M01	M01		
Business & Project Consultancy	Project Management		M01	M01	M12	M12
Expert Technical Consultancy	Technological Scouting and assessment	M01	M01	M12		
Expert Technical Consultancy	Technology Transfer	M12	M12	M12		
Products and Services	Cloud Service Offering					
Products and Services	High Performance Computing Service Offering		M12	M01	M01	M01
Products and Services	High Performance Data Analytics Service Offering		M24	M12	M12	M12
Products and Services	Quantum Service Offering					
Products and Services	Software Development & Optimization		M24	M01	M01	
Products and Services	User Support		M12	M12	M01	M01
Products and Services	Workflows Development & Optimization			M01	M01	M24

12.18 WP18 – Poland

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events	M12	M01	M01	M01	M01
Awareness Creation	Informative Events & communication of opportunities	M12	M01	M01	M01	M01
Business & Project Consultancy	Call Application and Fundraising Support		M01	M01	M01	M01
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)		M01	M01	M01	M01
Business & Project Consultancy	Finding Partners & Projects - Matchmaking		M01	M01	M01	M01
Business & Project Consultancy	Project Design		M01	M01	M01	M01
Business & Project Consultancy	Project Management		M01	M01	M01	M01
Expert Technical Consultancy	Technological Scouting and assessment		M01	M01	M01	M01
Expert Technical Consultancy	Technology Transfer		M01	M01	M01	M01
Products and Services	Cloud Service Offering		M01	M01	M01	M01
Products and Services	High Performance Computing Service Offering		M01	M01	M01	M01
Products and Services	High Performance Data Analytics Service Offering		M01	M01	M12	M12
Products and Services	Quantum Service Offering		M01	M01	M01	M01
Products and Services	Software Development & Optimization		M01	M01	M01	M01
Products and Services	User Support		M01	M01	M01	M01
Products and Services	Workflows Development & Optimization		M01	M01	M01	M12

12.19 WP20 – Romania

Competence Category	Competence Sub-category	Digit alizat ion need ed users	Digit ally read y users	HPC read y users	HPC users	HPC cha mpio ns
Awareness Creation	Dissemination of Results & Networking Events	M12	M12	M12	M12	
Awareness Creation	Informative Events & communication of opportunities	M12	M12	M12	M12	
Business & Project Consultancy	Call Application and Fundraising Support		M12	M12	M12	
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)		M12	M12		
Business & Project Consultancy	Finding Partners & Projects - Matchmaking		M24	M24	M24	
Business & Project Consultancy	Project Design					
Business & Project Consultancy	Project Management	M12	M12	M12	M12	
Expert Technical Consultancy	Technological Scouting and assessment					
Expert Technical Consultancy	Technology Transfer					
Products and Services	Cloud Service Offering	M12	M12	M12	M12	
Products and Services	High Performance Computing Service Offering					
Products and Services	High Performance Data Analytics Service Offering					
Products and Services	Quantum Service Offering		M12	M24		
Products and Services	Software Development & Optimization					
Products and Services	User Support	M12	M12	M12	M12	
Products and Services	Workflows Development & Optimization	M01	M01	M24	M24	

12.20 WP22 – Spain

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events	M01	M01	M01	M01	M01
Awareness Creation	Informative Events & communication of opportunities	M12	M01	M01	M01	M01
Business & Project Consultancy	Call Application and Fundraising Support	M24	M01	M01	M01	M01
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)	M01	M01	M01	M01	M01
Business & Project Consultancy	Finding Partners & Projects - Matchmaking	M01	M01	M01	M01	M01
Business & Project Consultancy	Project Design	M01	M01	M01	M01	M01
Business & Project Consultancy	Project Management	M01	M01	M01	M01	M01
Expert Technical Consultancy	Technological Scouting and assessment	M01	M01	M01	M01	M01
Expert Technical Consultancy	Technology Transfer	M01	M01	M01	M01	M01
Products and Services	Cloud Service Offering	M01	M01	M01	M01	M01
Products and Services	High Performance Computing Service Offering	M12	M01	M01	M01	M01
Products and Services	High Performance Data Analytics Service Offering	M12	M12	M12	M12	M12
Products and Services	Quantum Service Offering	M01				
Products and Services	Software Development & Optimization	M01	M01	M01	M01	M01
Products and Services	User Support	M12	M12	M12	M12	M12
Products and Services	Workflows Development & Optimization		M12	M12	M12	M01

12.21 WP23 – Sweden

Competence Category	Competence Sub-category	Digitalization needed users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events		M24	M12	M12	M01
Awareness Creation	Informative Events & communication of opportunities		M24	M12	M12	M01
Business & Project Consultancy	Call Application and Fundraising Support		M24	M12	M12	M12
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)		M24	M12	M12	M01
Business & Project Consultancy	Finding Partners & Projects - Matchmaking		M24	M12	M12	M01
Business & Project Consultancy	Project Design		M24	M12	M12	M01
Business & Project Consultancy	Project Management		M24	M12	M12	M01
Expert Technical Consultancy	Technological Scouting and assessment		M24	M12	M12	M01
Expert Technical Consultancy	Technology Transfer		M24	M12	M12	M12
Products and Services	Cloud Service Offering					
Products and Services	High Performance Computing Service Offering		M24	M12	M12	M01
Products and Services	High Performance Data Analytics Service Offering		M24	M12	M12	M12
Products and Services	Quantum Service Offering				M24	M24
Products and Services	Software Development & Optimization		M24	M12	M12	M01
Products and Services	User Support		M24	M12	M12	M01
Products and Services	Workflows Development & Optimization		M24	M01	M01	M12

12.22 WP24 – Switzerland

Competence Category	Competence Sub-category	Digit alizat ion need ed users	Digit ally read y users	HPC read y users	HPC users	HPC cha mpio ns
Awareness Creation	Dissemination of Results & Networking Events	M01	M01	M01	M12	M12
Awareness Creation	Informative Events & communication of opportunities	M12	M12	M12	M12	M24
Business & Project Consultancy	Call Application and Fundraising Support					M01
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)			M01	M01	M01
Business & Project Consultancy	Finding Partners & Projects - Matchmaking			M01	M01	M12
Business & Project Consultancy	Project Design			M01	M01	
Business & Project Consultancy	Project Management			M01	M01	M01
Expert Technical Consultancy	Technological Scouting and assessment			M01	M01	M01
Expert Technical Consultancy	Technology Transfer			M01	M01	M12
Products and Services	Cloud Service Offering		M12	M01	M01	
Products and Services	High Performance Computing Service Offering			M01	M01	M01
Products and Services	High Performance Data Analytics Service Offering			M12	M12	M12
Products and Services	Quantum Service Offering					
Products and Services	Software Development & Optimization			M01	M01	M01
Products and Services	User Support			M01	M01	M01
Products and Services	Workflows Development & Optimization			M01	M01	M01

12.23 WP25 – Turkey

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events	M01	M01	M01	M01	M01
Awareness Creation	Informative Events & communication of opportunities	M12	M12	M01	M01	M01
Business & Project Consultancy	Call Application and Fundraising Support		M01	M01	M01	M01
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)		M01	M01	M01	M01
Business & Project Consultancy	Finding Partners & Projects - Matchmaking		M01	M01	M01	M01
Business & Project Consultancy	Project Design		M01	M01	M01	M01
Business & Project Consultancy	Project Management		M01	M01	M01	M01
Expert Technical Consultancy	Technological Scouting and assessment		M01	M01	M01	M01
Expert Technical Consultancy	Technology Transfer		M12	M12	M12	M12
Products and Services	Cloud Service Offering					
Products and Services	High Performance Computing Service Offering		M01	M01	M01	M01
Products and Services	High Performance Data Analytics Service Offering		M12	M12	M12	M12
Products and Services	Quantum Service Offering					
Products and Services	Software Development & Optimization		M01	M01	M01	M01
Products and Services	User Support		M01	M01	M01	M01
Products and Services	Workflows Development & Optimization		M12	M12	M12	M01

12.24 WP26 – UK

Competence Category	Competence Sub-category	Digit alizat ion need ed users	Digit ally read y users	HPC read y users	HPC users	HPC cha mpio ns
Awareness Creation	Dissemination of Results & Networking Events					M12
Awareness Creation	Informative Events & communication of opportunities				M01	M12
Business & Project Consultancy	Call Application and Fundraising Support				M12	M01
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)					M01
Business & Project Consultancy	Finding Partners & Projects - Matchmaking					M01
Business & Project Consultancy	Project Design					M12
Business & Project Consultancy	Project Management					M01
Expert Technical Consultancy	Technological Scouting and assessment					M01
Expert Technical Consultancy	Technology Transfer					M12
Products and Services	Cloud Service Offering	M12				
Products and Services	High Performance Computing Service Offering					M12
Products and Services	High Performance Data Analytics Service Offering				M12	M24
Products and Services	Quantum Service Offering	M12	M12	M24		
Products and Services	Software Development & Optimization					M01
Products and Services	User Support					M12
Products and Services	Workflows Development & Optimization				M01	M24

12.25 WP27 – France

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events	M01	M01	M01	M01	M01
Awareness Creation	Informative Events & communication of opportunities	M12	M12	M12	M12	M12
Business & Project Consultancy	Call Application and Fundraising Support				M01	M01
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)	M01	M01	M01	M01	M01
Business & Project Consultancy	Finding Partners & Projects - Matchmaking	M01	M01	M01	M01	M01
Business & Project Consultancy	Project Design	M01	M01	M01	M01	M01
Business & Project Consultancy	Project Management	M01	M01	M01	M01	M01
Expert Technical Consultancy	Technological Scouting and assessment	M01	M01	M01	M01	M01
Expert Technical Consultancy	Technology Transfer	M01	M01	M01	M01	M01
Products and Services	Cloud Service Offering	M01	M01	M01	M01	M01
Products and Services	High Performance Computing Service Offering	M01	M01	M01	M01	M01
Products and Services	High Performance Data Analytics Service Offering	M12	M12	M12	M12	M12
Products and Services	Quantum Service Offering				M01	M01
Products and Services	Software Development & Optimization	M01	M01	M01	M01	M01
Products and Services	User Support	M01	M01	M01	M01	M01
Products and Services	Workflows Development & Optimization	M12	M12	M01	M01	M01

12.26 WP28 – Luxembourg

Competence Category	Competence Sub-category	Digit alizat ion need ed users	Digit ally read y users	HPC read y users	HPC users	HPC cha mpio ns
Awareness Creation	Dissemination of Results & Networking Events	M24	M12	M01	M01	M01
Awareness Creation	Informative Events & communication of opportunities	M24	M12	M01	M01	M12
Business & Project Consultancy	Call Application and Fundraising Support	M24	M12	M01	M01	M12
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)	M24	M12	M01	M01	M12
Business & Project Consultancy	Finding Partners & Projects - Matchmaking	M24	M12	M01	M01	M12
Business & Project Consultancy	Project Design	M24	M12	M01	M01	M12
Business & Project Consultancy	Project Management	M24	M12	M01	M01	M12
Expert Technical Consultancy	Technological Scouting and assessment	M24	M12	M01	M01	M12
Expert Technical Consultancy	Technology Transfer	M24	M12	M12	M12	M12
Products and Services	Cloud Service Offering	M24	M24	M01	M01	M01
Products and Services	High Performance Computing Service Offering	M24	M12	M01	M01	M01
Products and Services	High Performance Data Analytics Service Offering	M24	M12	M12	M12	M12
Products and Services	Quantum Service Offering					
Products and Services	Software Development & Optimization	M24	M24	M12	M01	M01
Products and Services	User Support	M24	M12	M01	M01	M01
Products and Services	Workflows Development & Optimization	M24	M01	M01	M01	M01

12.27 WP29 – The Netherlands

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events	M01	M01	M01	M01	M01
Awareness Creation	Informative Events & communication of opportunities	M01	M01	M12	M12	M12
Business & Project Consultancy	Call Application and Fundraising Support	M01	M01	M24	M24	M24
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)	M01	M01	M01	M01	M01
Business & Project Consultancy	Finding Partners & Projects - Matchmaking	M01	M01	M12	M12	M12
Business & Project Consultancy	Project Design	M01	M01	M24	M24	M24
Business & Project Consultancy	Project Management	M01	M01	M24	M24	M24
Expert Technical Consultancy	Technological Scouting and assessment	M01	M01	M01	M01	M01
Expert Technical Consultancy	Technology Transfer	M01	M01	M01	M01	M01
Products and Services	Cloud Service Offering	M01	M01	M01	M01	M01
Products and Services	High Performance Computing Service Offering	M01	M01	M01	M01	M01
Products and Services	High Performance Data Analytics Service Offering	M01	M01	M01	M01	M01
Products and Services	Quantum Service Offering	M01	M01	M01	M01	M01
Products and Services	Software Development & Optimization	M01	M01	M01	M01	M01
Products and Services	User Support	M01	M01	M01	M01	M01
Products and Services	Workflows Development & Optimization	M01	M01	M01	M01	M12

12.28 WP30 – Belgium

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events	M01	M01	M01	M01	M12
Awareness Creation	Informative Events & communication of opportunities	M01	M01	M01	M01	M12
Business & Project Consultancy	Call Application and Fundraising Support	M01	M01	M01	M01	M12
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)	M01	M01	M01	M01	M12
Business & Project Consultancy	Finding Partners & Projects - Matchmaking	M12	M12	M12	M12	M12
Business & Project Consultancy	Project Design					
Business & Project Consultancy	Project Management					
Expert Technical Consultancy	Technological Scouting and assessment	M01	M01	M01	M01	M12
Expert Technical Consultancy	Technology Transfer	M01	M01	M01	M01	M12
Products and Services	Cloud Service Offering	M01	M01	M01	M01	M12
Products and Services	High Performance Computing Service Offering	M01	M01	M01	M01	M12
Products and Services	High Performance Data Analytics Service Offering	M12	M12	M12	M12	M12
Products and Services	Quantum Service Offering					
Products and Services	Software Development & Optimization	M01	M01	M01	M01	M12
Products and Services	User Support	M01	M01	M01	M01	M12
Products and Services	Workflows Development & Optimization	M12	M12	M12	M12	M12

12.29 WP31 – Slovakia

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events		M24	M12	M01	
Awareness Creation	Informative Events & communication of opportunities		M24	M12	M01	
Business & Project Consultancy	Call Application and Fundraising Support			M12	M12	M12
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)		M12	M12		
Business & Project Consultancy	Finding Partners & Projects - Matchmaking				M12	
Business & Project Consultancy	Project Design			M12	M24	
Business & Project Consultancy	Project Management					
Expert Technical Consultancy	Technological Scouting and assessment		M24	M12	M12	
Expert Technical Consultancy	Technology Transfer					
Products and Services	Cloud Service Offering					
Products and Services	High Performance Computing Service Offering		M24	M12	M12	M12
Products and Services	High Performance Data Analytics Service Offering				M12	
Products and Services	Quantum Service Offering					
Products and Services	Software Development & Optimization			M01	M01	
Products and Services	User Support		M12	M12	M01	M12
Products and Services	Workflows Development & Optimization		M24	M01	M01	

12.30 WP32 – North Macedonia

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events	M01	M01	M01	M01	M01
Awareness Creation	Informative Events & communication of opportunities	M01	M01	M01	M12	M12
Business & Project Consultancy	Call Application and Fundraising Support	M01	M01	M01	M12	M24
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)	M01	M01	M01	M12	
Business & Project Consultancy	Finding Partners & Projects - Matchmaking	M01	M01	M01		
Business & Project Consultancy	Project Design	M01	M01	M01	M12	
Business & Project Consultancy	Project Management	M01	M01	M01	M12	
Expert Technical Consultancy	Technological Scouting and assessment	M01	M01	M01	M12	
Expert Technical Consultancy	Technology Transfer	M01	M01	M01	M01	
Products and Services	Cloud Service Offering	M01	M01	M01	M12	M12
Products and Services	High Performance Computing Service Offering	M01	M01	M01	M01	
Products and Services	High Performance Data Analytics Service Offering	M01	M01	M12	M12	M12
Products and Services	Quantum Service Offering	M01	M01			
Products and Services	Software Development & Optimization	M01	M01	M01	M12	
Products and Services	User Support	M01	M01	M01	M12	
Products and Services	Workflows Development & Optimization	M01	M12	M12	M12	

12.31 WP33 – Iceland

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events	M12	M01	M12	M24	M24
Awareness Creation	Informative Events & communication of opportunities	M01	M12	M12	M24	M24
Business & Project Consultancy	Call Application and Fundraising Support	M01	M12	M12	M24	M24
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)	M01	M12	M12	M24	
Business & Project Consultancy	Finding Partners & Projects - Matchmaking	M01	M12	M12	M24	
Business & Project Consultancy	Project Design	M01	M12	M24	M24	
Business & Project Consultancy	Project Management	M01	M12	M12	M24	
Expert Technical Consultancy	Technological Scouting and assessment	M01	M12	M12	M24	
Expert Technical Consultancy	Technology Transfer	M01	M12	M24		
Products and Services	Cloud Service Offering	M12	M12	M01		
Products and Services	High Performance Computing Service Offering	M01	M12	M12	M24	
Products and Services	High Performance Data Analytics Service Offering	M01	M12	M12	M24	M24
Products and Services	Quantum Service Offering	M01	M12	M12	M12	M24
Products and Services	Software Development & Optimization	M01	M12	M12	M24	
Products and Services	User Support	M01	M12	M12	M12	M24
Products and Services	Workflows Development & Optimization	M01	M01	M24		

12.32 WP34 – Montenegro

Competence Category	Competence Sub-category	Digitization need users	Digitally ready users	HPC ready users	HPC users	HPC champions
Awareness Creation	Dissemination of Results & Networking Events	M12	M12	M12	M24	
Awareness Creation	Informative Events & communication of opportunities	M01	M01	M12	M24	
Business & Project Consultancy	Call Application and Fundraising Support	M12	M01	M24	M24	
Business & Project Consultancy	Feasibility & impact assessment (Proof of Concept)	M12	M01	M24	M24	
Business & Project Consultancy	Finding Partners & Projects - Matchmaking		M01	M12	M24	
Business & Project Consultancy	Project Design		M24	M12	M12	
Business & Project Consultancy	Project Management		M12	M12	M24	
Expert Technical Consultancy	Technological Scouting and assessment	M01	M01	M12	M24	
Expert Technical Consultancy	Technology Transfer	M12	M12	M12	M24	
Products and Services	Cloud Service Offering		M01	M12	M24	
Products and Services	High Performance Computing Service Offering	M01	M12	M12	M12	
Products and Services	High Performance Data Analytics Service Offering		M01	M12	M24	
Products and Services	Quantum Service Offering					
Products and Services	Software Development & Optimization		M01	M12	M12	
Products and Services	User Support	M12	M01	M12	M12	
Products and Services	Workflows Development & Optimization	M12	M12	M24		

13 Annex 8 - Agenda of the Networking Events of the Second Year of the Project

Workshop 1 on Dec 2021 - “AI on HPC”

Detailed agenda and speakers TBD with the NCCs: Denmark, Sweden, Finland
NCCs to be invited: Denmark, Norway, Turkey, Iceland, Montenegro, Macedonia, Romania, Croatia, Poland, Slovakia, Switzerland, Bulgaria, Sweden, Finland.

- Overview: Using AI algorithms on HPC - 30’
- Existing AI tools for HPC - 30’⁸

Break 15’

- AI workflow manager on HPC (Kubeflow MIFlow, etc) - 30’⁹
- using parallelisation techniques to improve AI algorithms accuracy and reduce time-to-solution - 30’¹⁰

Workshop 2 on Jan 2022 – “Collaboration among NCCs and other stakeholders: use cases and boosting practices”

Detailed agenda and speakers TBD with the NCCs: Sweden, Italy, Denmark, Estonia, Bulgaria, Slovakia, Belgium, Greece, Spain, Hungary, Montenegro, Turkey, UK
NCCs to be invited: Sweden, Italy, Denmark, Estonia, Bulgaria, Slovakia, Belgium, Greece, Spain, Hungary, Montenegro, Turkey, UK, Austria, Romania, Poland, Latvia, Switzerland

- Use case 1: Sweden experience in setting up an NCC as a legal entity - 20’¹¹
- Use case 2: Launching PoC calls (i.e.: in Italy NCC) - 20’¹²
- Use case 3: Setting up a central AI focused (GPU intensive) computing resource within EuroCC (Denmark and other partner NCCs) – 20’¹³

Break – 15’

- Cooperation on PoCs among NCCs to face the lack of resources: example of the present needs and how to address them (roundtable including Denmark, Bulgaria and Slovakia) – 30’¹⁴
- Boosting the collaboration with other NCCs (projects and funding opportunities, accessing other HPC infrastructures) - 30’¹⁵

⁸ **Sharing:** Denmark. **Networking:** Norway, Turkey, Iceland, Montenegro, Macedonia, Romania, Croatia, Poland, Slovakia. **Learn:** Switzerland, Bulgaria.

⁹ **Sharing:** Sweden. **Networking:** Denmark, Finland. **Learn:** Romania, Bulgaria, Montenegro.

¹⁰ “AI and HPDA expertise”. **Sharing:** Denmark, Finland. **Networking:** Poland, UK, Sweden. **Learn:** Bulgaria, Montenegro

¹¹ **Sharing:** Sweden. **Networking:** Austria, Montenegro, Latvia, Hungary. **Learn:** Denmark, Romania.

¹² **Sharing:** Italy. **Networking:** Denmark.

¹³ **Sharing:** Denmark. **Networking:** Turkey, Estonia, Austria. **Learn:** Romania

¹⁴ **Networking:** Denmark, Bulgaria, Slovakia. **Learn:** Romania.

¹⁵ **Networking:** Belgium, Greece, Spain, Hungary, Denmark, Estonia, UK, Sweden, Montenegro. **Learn:** Romania.

- Boosting the collaboration with academia (roundtable)– 30'¹⁶
-

Workshop 3 on Feb 2022 – “Programming on accelerators”

Detailed agenda and speakers TBD with the NCCs: Denmark, Luxembourg, Switzerland, Sweden

NCCs to be invited: UK, Hungary, Bulgaria, Slovakia

- GPU programming - 90'¹⁷
 - Introduction to GPU programming
 - Best practices to port a code on a GPU
 - GPU code optimization

Break 15'

- FPGA programming - 90'
 - Overview on FPGA technologies
 - Introduction to FPGA programming
 - Best practices to port a code on a FPGA
-

Workshop 4 on Mar 2022 - “Human engagement on HPC”

Detailed agenda and speakers TBD with the NCCs: Croatia, Montenegro.

NCCs to be invited: Croatia, Montenegro; Denmark, Estonia, Bulgaria, UK, Lithuania & Turkey.

- How to boost people engagement on HPC and the participation to HPC related initiatives
- How to engage younger students, including high schools, on HPC¹⁸

Break 15'

- How to face gender equality issues within the HPC community
- How to improve the awareness on social inclusion, esp. on gender equality, of end-users when hiring HPC experts

¹⁶ **Sharing:** Denmark, Belgium, Turkey, UK. **Networking:** Sweden, Poland, Romania, Switzerland, Montenegro

¹⁷ **“GPU and FPGA programming”.** **Sharing:** Denmark, Switzerland, Luxemburg, Sweden. **Networking:** UK, Hungary. **Learn:** Bulgaria, Slovakia.

¹⁸ **Sharing:** Croatia, Montenegro. **Networking:** Denmark, Estonia, Bulgaria, UK. **Learn:** Lithuania, Turkey.

14 Annex 9 - The Workshops organized by CASTIEL WP2

14.1.1 “Artificial Intelligence on HPC” – January 2022

The first workshop, “Artificial Intelligence on HPC” took place on 21st January 2022 and was successful, with a great participation, especially of external attendees. Details on the level of attendance are provided here below.

TOTAL PARTICIPANTS	139
BELONGING TO AN NCC	61
NOT NCC	78
NOT NCC, NOT ACADEMIC SPEAKERS	7
	NCC Germany, NCC Denmark, NCC Sweden, NCC Finland

Table 13: Attendance to the workshop “Artificial intelligence on HPC”.

The following graph represents the distribution of the 61 participants belonging to an NCC:

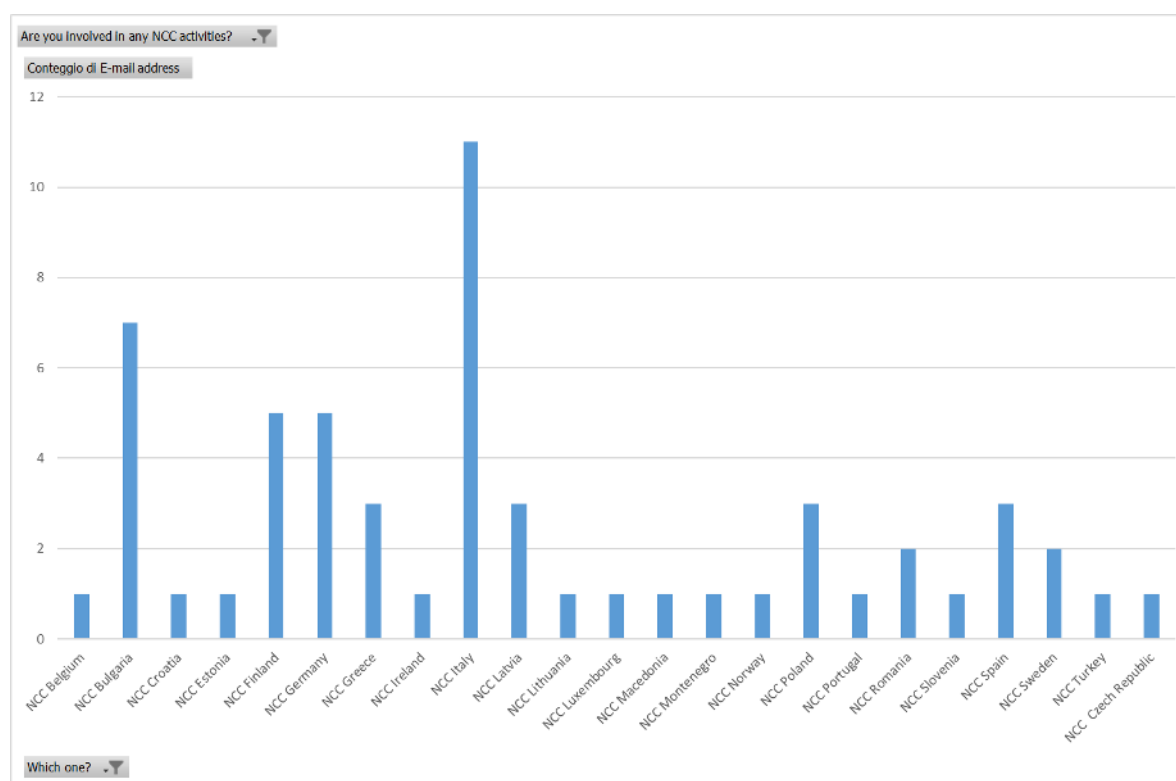


Figure 13: Attendance to the workshop “Artificial intelligence on HPC” - Detail on NCCs

The following graph represents the geographic distribution of the attendees not belonging to an NCC.

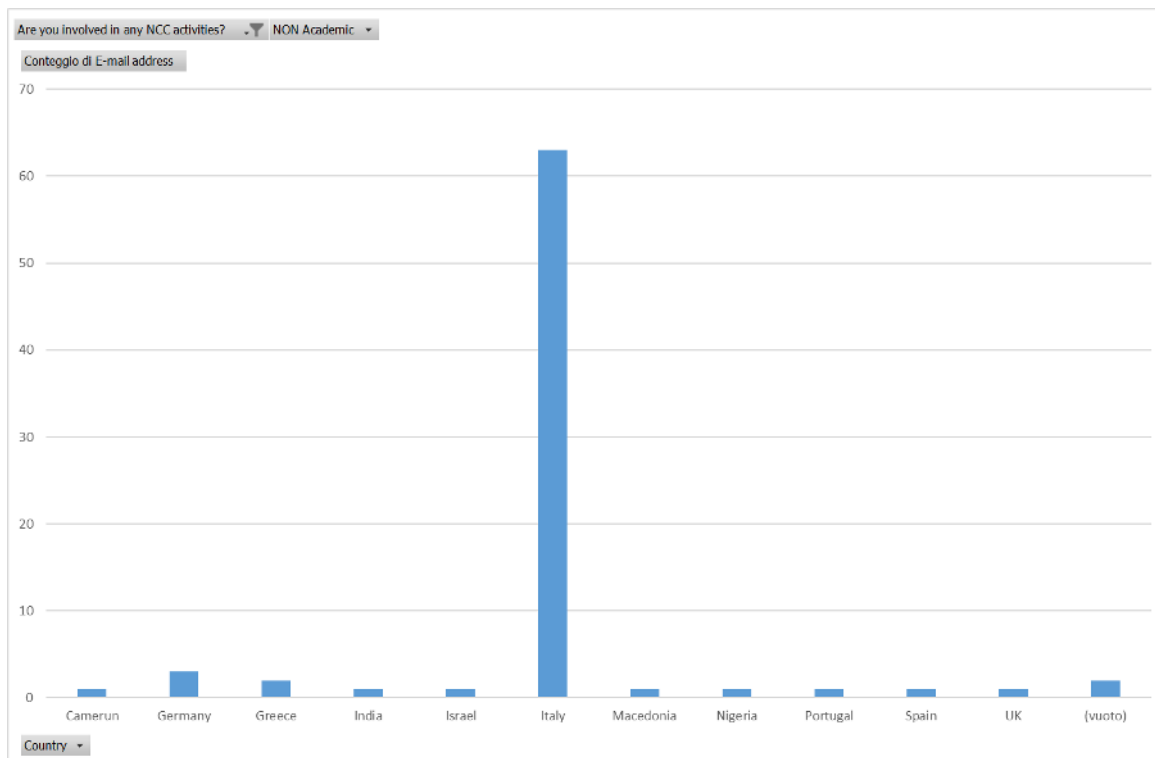


Figure 14: Attendance to the workshop “Artificial intelligence on HPC”- Detail on non-NCCs.

This was the first workshop in which the Italian NCC, EuroCC Italy invited the network of contacts of the NCC to the CASTIEL WP2 events. As the attendance response was a success, the Italian NCC invited the network also in the following workshops.

14.1.2 “The ecosystems of HPC and Big Data/AI: what can they learn from each other” – March 2022

Two meetings took place with BDVA and EUHubs4Data, on 19th January and on 15th February 2022, respectively. The meetings allowed to define a workshop and a meeting at the CASTIEL level (please refer to Section 3). The workshop took place on 15th March 2022. Table 14 reports the figures of the attendance to the workshop.

TOTAL PARTICIPANTS	167
BELONGING TO AN NCC	64
NOT NCC	103
NOT NCC, NOT ACADEMIC	30
SPEAKERS	NCC Germany, BDVA, EUH4D

Table 14: Attendance to the workshop “The ecosystems of HPC and Big Data/AI”.

The following graph represents the distribution of the participants belonging to an NCC:

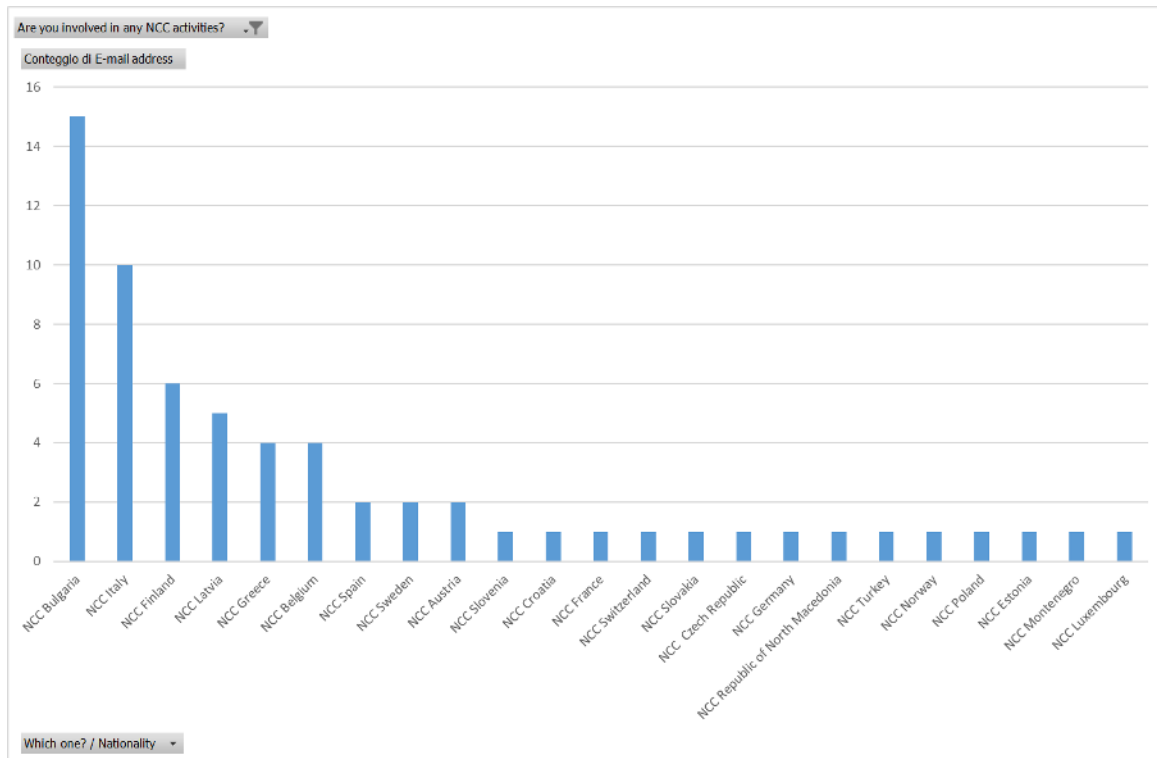


Figure 15: Attendance to the workshop “The ecosystems of HPC and Big Data/AI”- Detail on NCCs.

The following graph represents the geographic distribution of the attendees not belonging to an NCC.

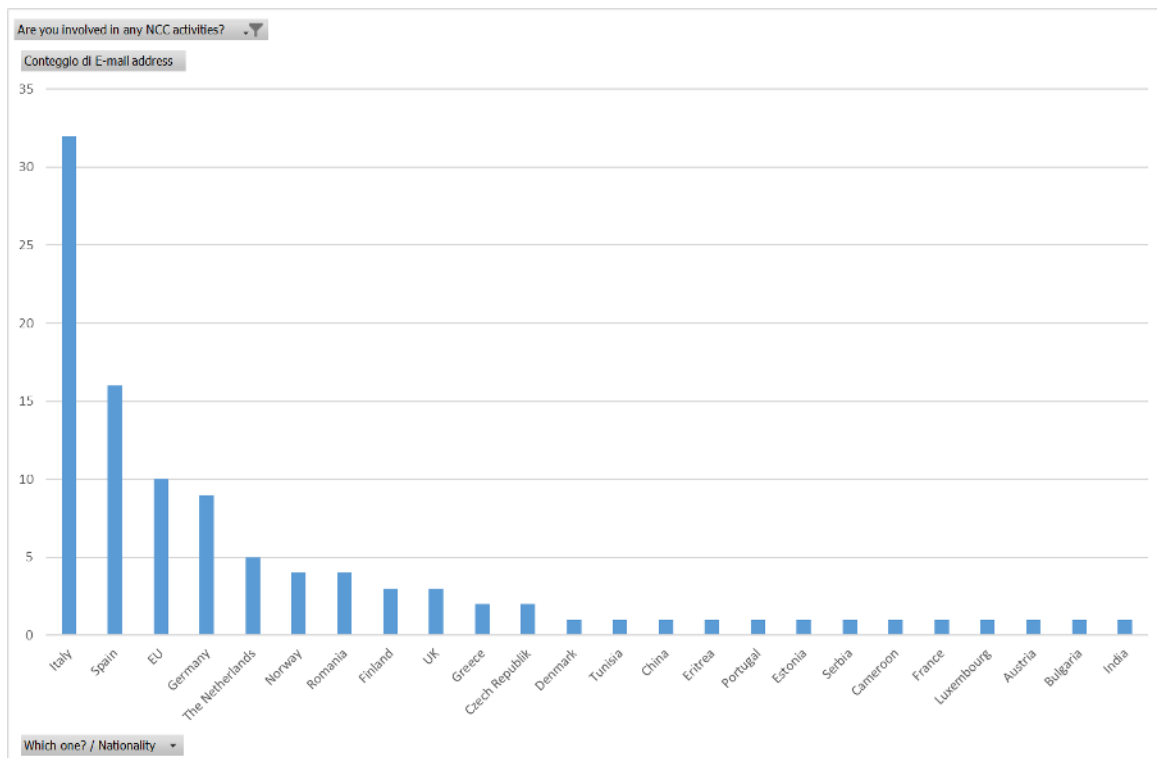


Figure 16: Attendance to the workshop “The ecosystems of HPC and Big Data/AI”- Detail on non-NCCs.

14.1.3 “From Edge computing to HPC: EuroCC and CASTIEL meet ETP4HPC” – April 2022

A meeting with ETP4HPC was finally organised on 22nd February 2022 as a follow up action on the learning session on edge computing organized in 2021. The meeting resulted in the definition of a first event on the HPC to edge continuum. See Table 15 for attendance figures.

TOTAL PARTICIPANTS	54
BELONGING TO AN NCC	40
NOT NCC	14
NOT NCC, NOT ACADEMIC	3
SPEAKERS	CASTIEL WP2, ETP4HPC, NCC Ireland, NCC Denmark

Table 15: Attendance to the workshop “From Edge Computing to HPC”

The following graph represents the distribution of the participants belonging to an NCC:

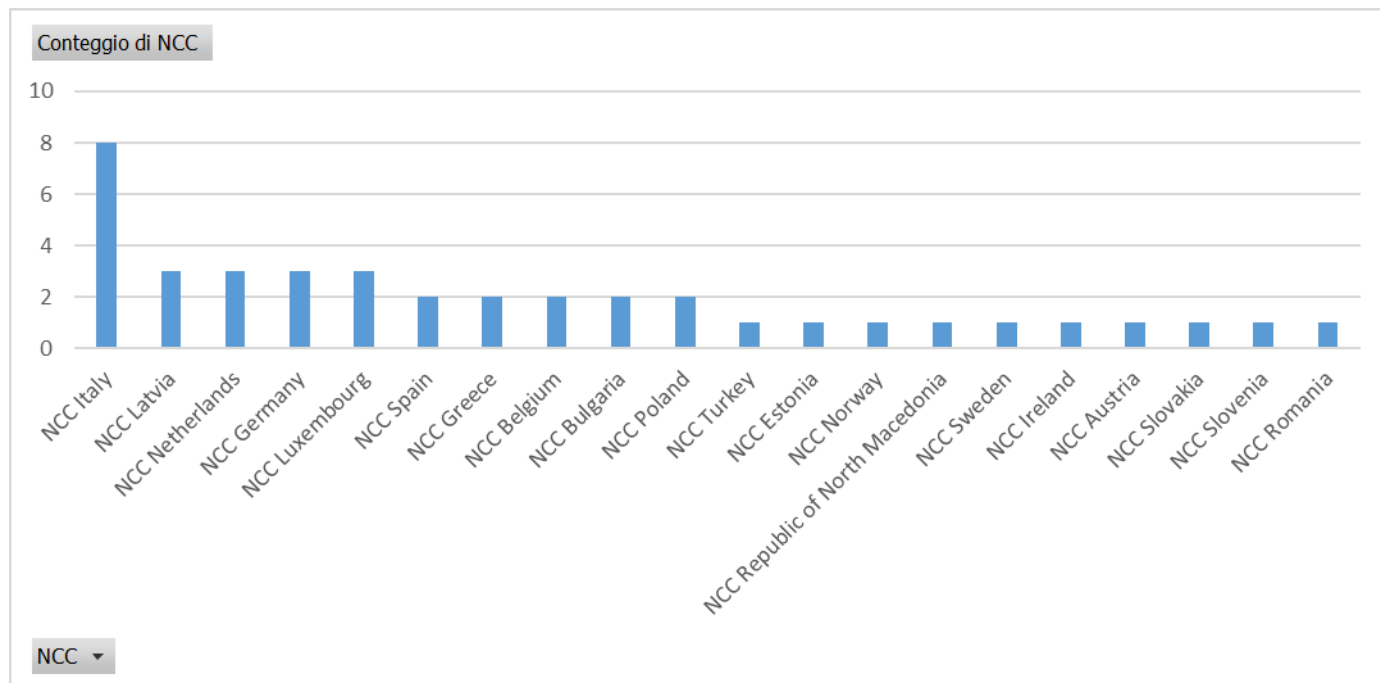


Figure 17: EuroCC Attendance to the workshop “From Edge Computing to HPC” by NCC.

The following graph represents the geographic distribution of the attendees not belonging to an NCC.

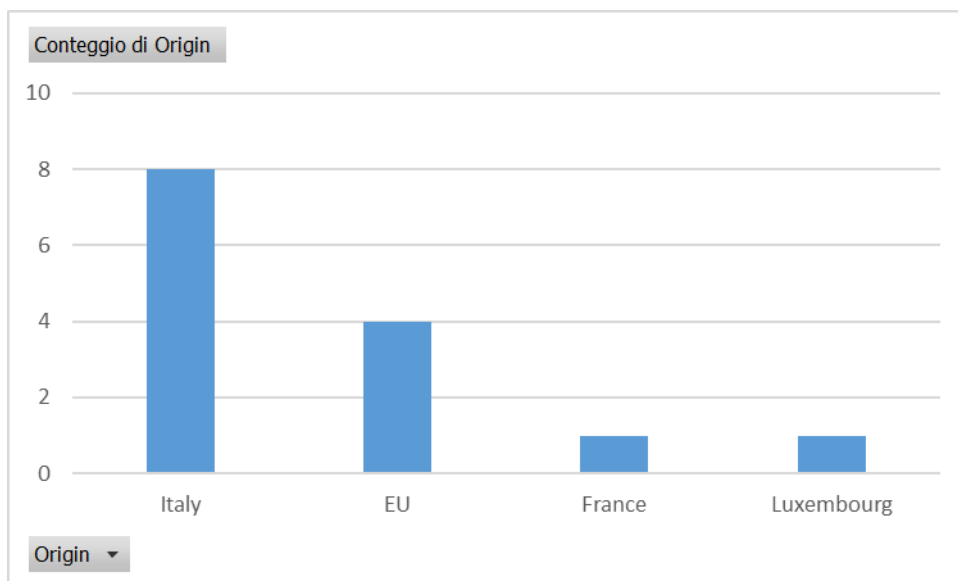


Figure 18: Attendance to the workshop “From Edge Computing to HPC” by external users, by Country

14.1.4 “Programming on accelerators: GPU programming” – May 2022

The event took place on 23rd May 2022. The initial idea was to organize a workshop on programming on accelerators. Provided that CASTIEL WP2 encouraged the speaker to include hands-on and demonstrative sessions, the event was split into two parts: one to deal with GPU programming, the other to address FPGA programming (executed in September, see the following event hereinafter in Table 17), both including hands-on sessions.

Table 16 reports the figures of the attendance to the workshop “GPU programming”.

TOTAL PARTICIPANTS	118
BELONGING TO AN NCC	27
NOT NCC	91
NOT NCC, NOT ACADEMIC	8
SPEAKERS	NCC Turkey, NCC Italy, NCC Luxembourg

Table 16: Attendance to the workshop “GPU programming”.

The following graph represents the distribution of the participants belonging to an NCC:

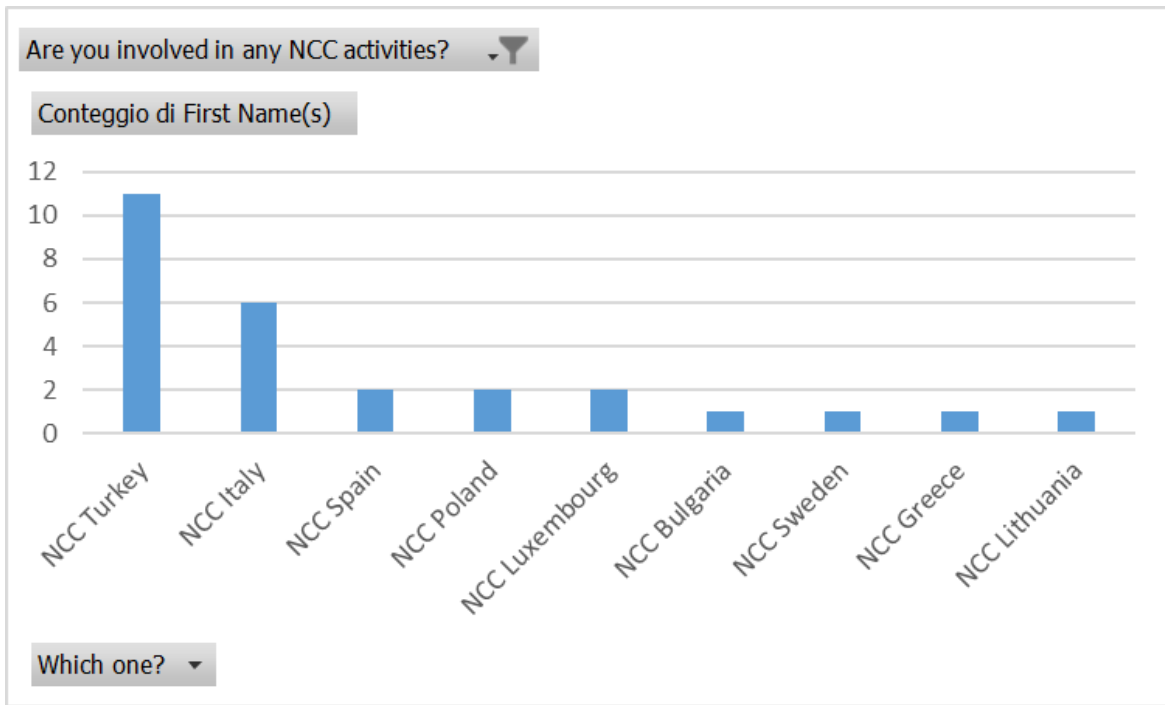


Figure 19: EuroCC Attendance to the workshop “GPU programming” by NCC.

The following graph represents the geographic distribution of the attendees not belonging to an NCC.

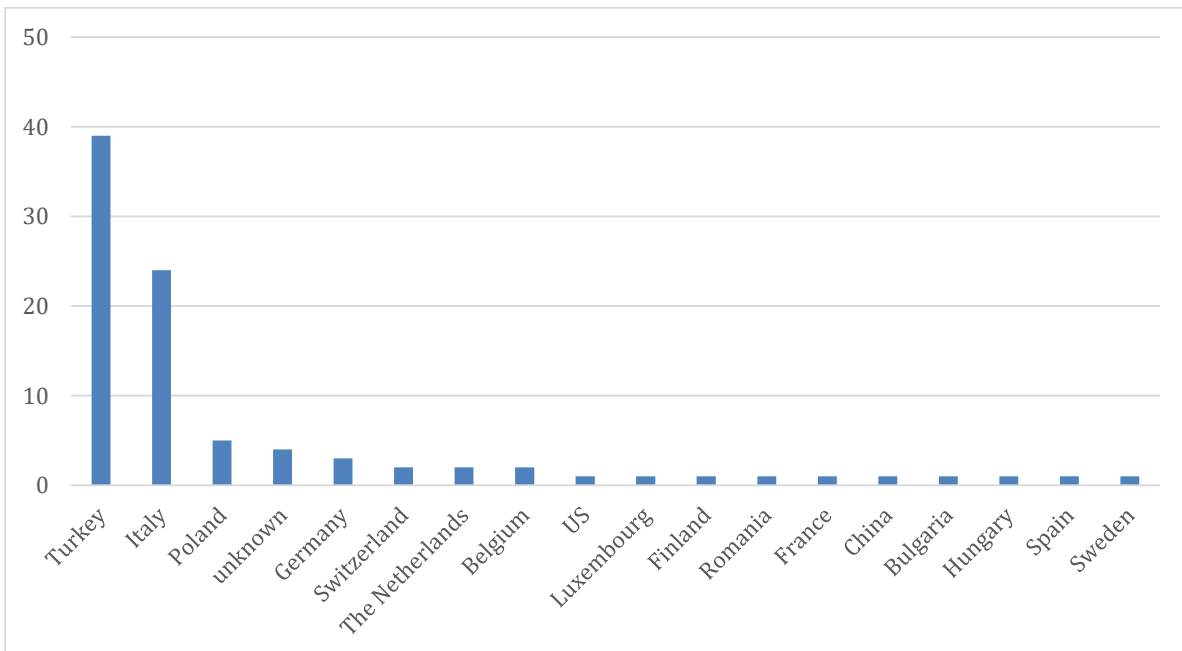


Figure 20: Attendance to the workshop “GPU programming” of external users, by Country.

14.1.5 “FPGA programming” – September 2022

The workshop “FPGA programming” was organised on 12 September 2022 in collaboration with BSC (see Table 17 for attendance figures).

TOTAL PARTICIPANTS	143
BELONGING TO AN NCC	20
NOT NCC	123
NOT NCC, NOT ACADEMIC	12
SPEAKERS	CASTIEL WP2, NCC Spain

Table 17: Attendance to the workshop “FPGA programming”.

The following graph represents the distribution of the participants belonging to an NCC.

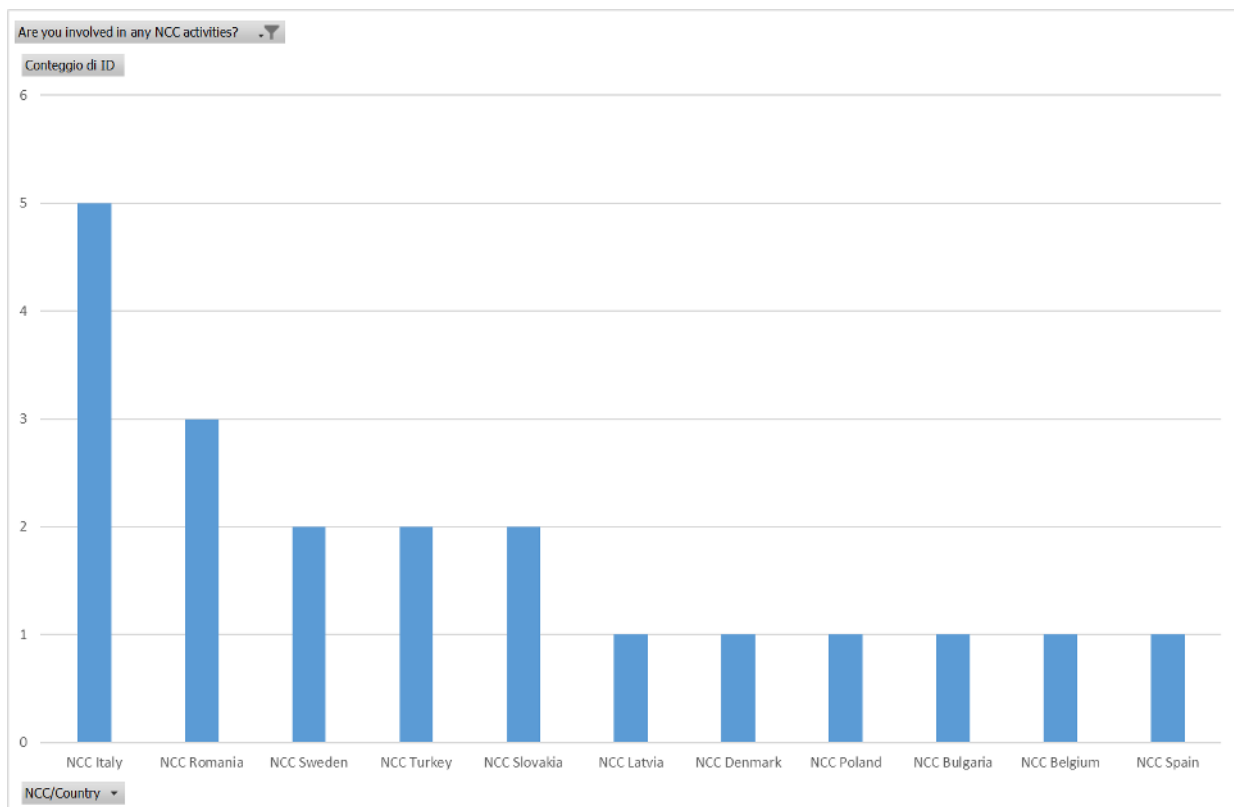


Figure 21: EuroCC attendance to the workshop “FPGA programming” by NCC.

The following graph represents the geographic distribution of the attendees not belonging to an NCC.

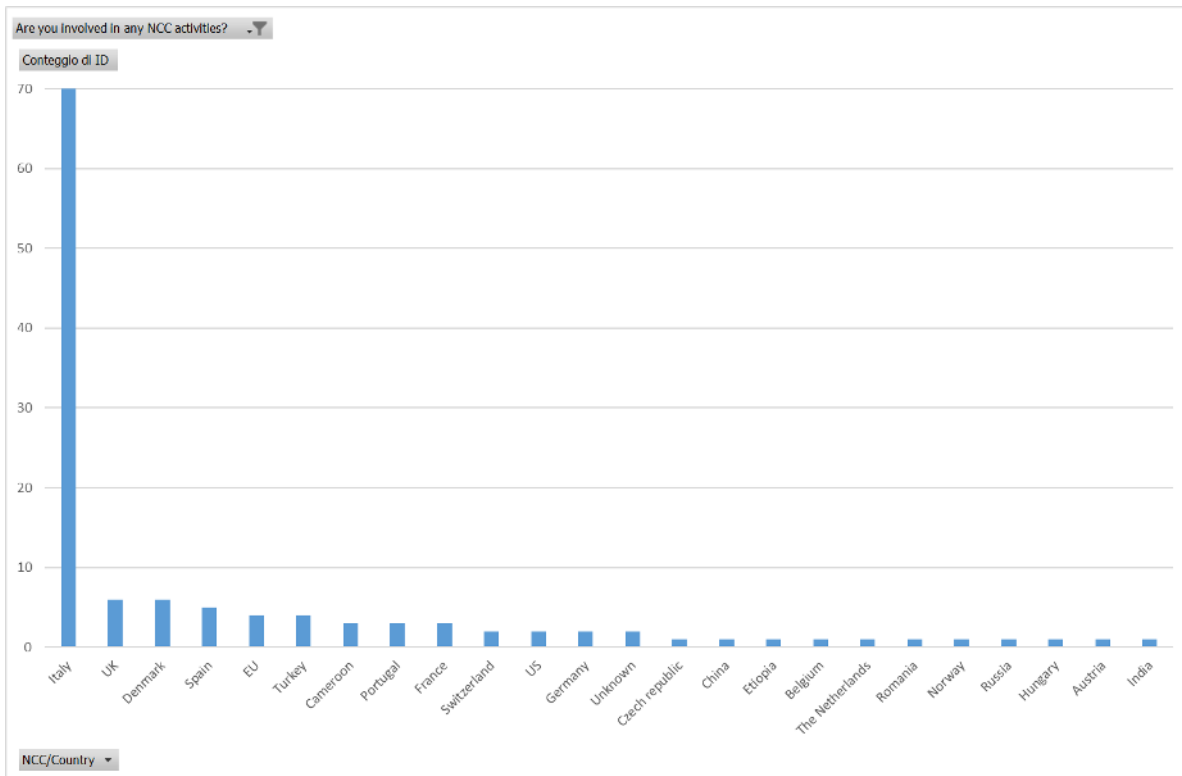


Figure 22: External attendance to the workshop “FPGA programming” by country.

14.1.6 “Human Engagement on HPC” - November 2022

The workshop “Human Engagement on HPC” was organised on 18 November 2022 in collaboration with NCC Germany, NCC Italy and NCC Montenegro. The attendance is displayed in the table below. Table 18 reports the figures of the attendance to the workshop.

TOTAL PARTICIPANTS	57
BELONGING TO AN NCC	39
NOT NCC	18
NOT NCC, NOT ACADEMIC	0
SPEAKERS	NCC Germany, NCC Montenegro, NCC Italy

Table 18: Attendance to the workshop” Human Engagement on HPC”.

The following graph represents the distribution of the participants belonging to an NCC.

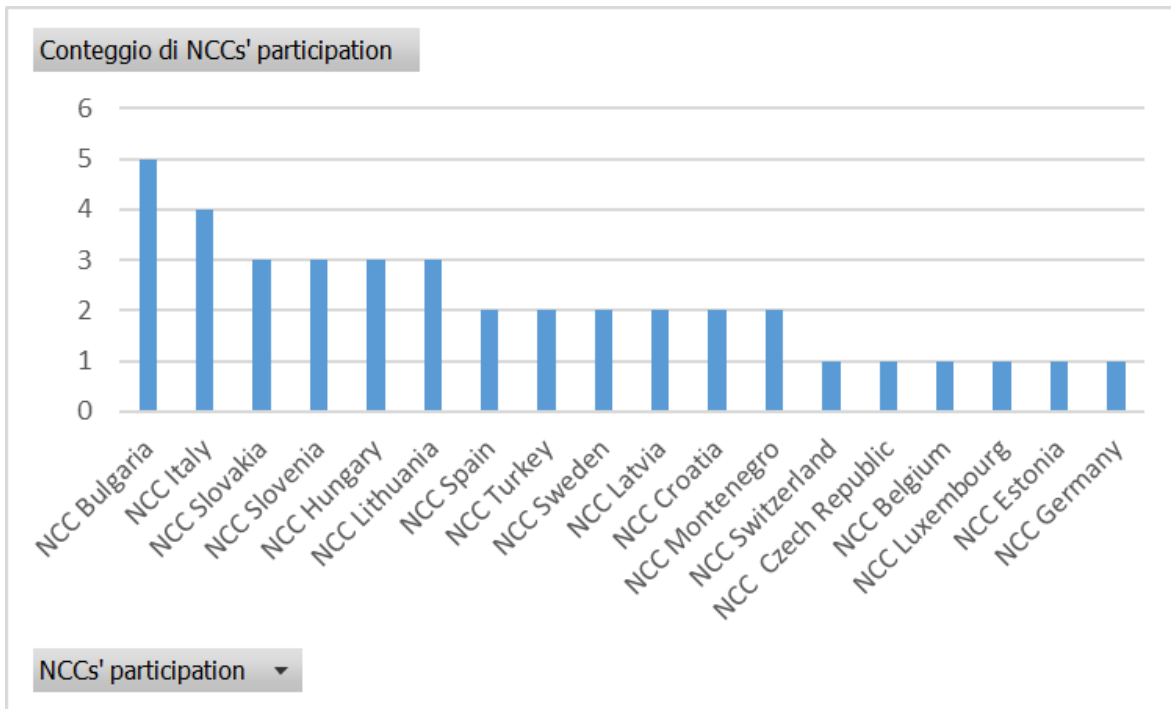


Figure 23: EuroCC attendance to the workshop “Human Engagement on HPC” by NCC

The following graph represents the geographic distribution of the attendees not belonging to an NCC.

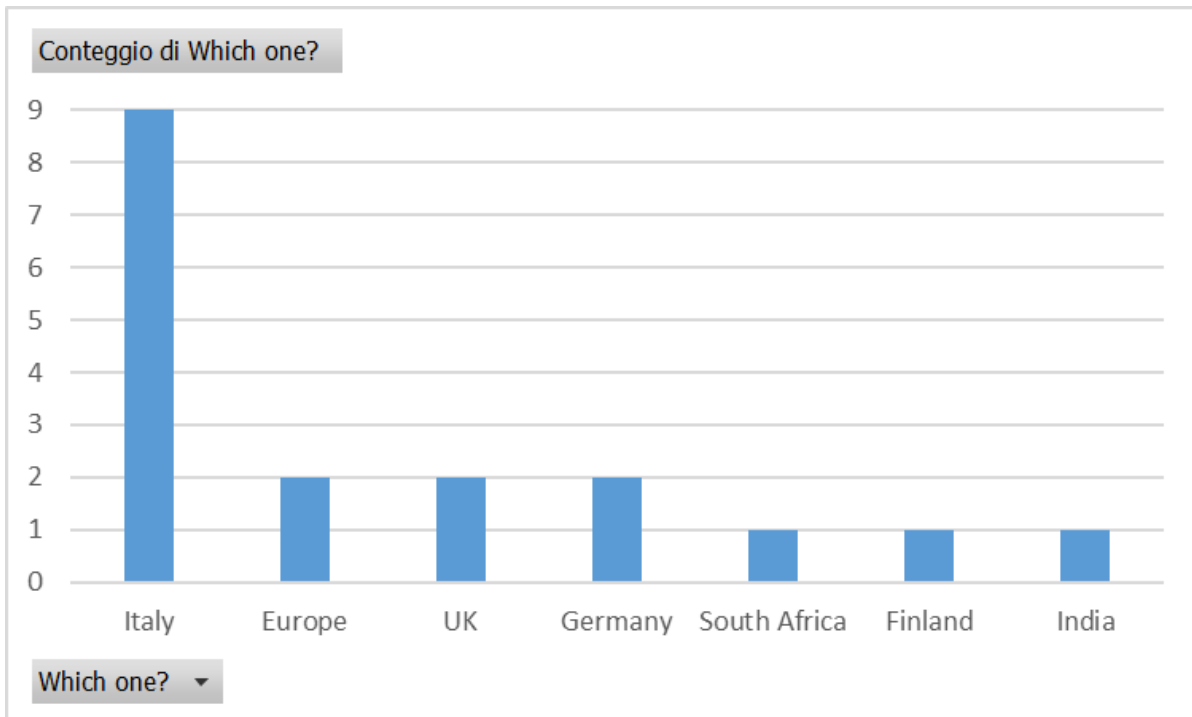


Figure 24: External attendance to the workshop “Human Engagement on HPC” by country.

15 Annex 10 - Outcomes of the Survey on the Attendees to the Workshop “FPGA programming”

Organizer: CASTIEL WP2, with the support of BSC

Date: 12 September 2022

Number of respondents: 17

Questions and answers received:

1. Please rate your satisfaction level with the following aspects of our event.

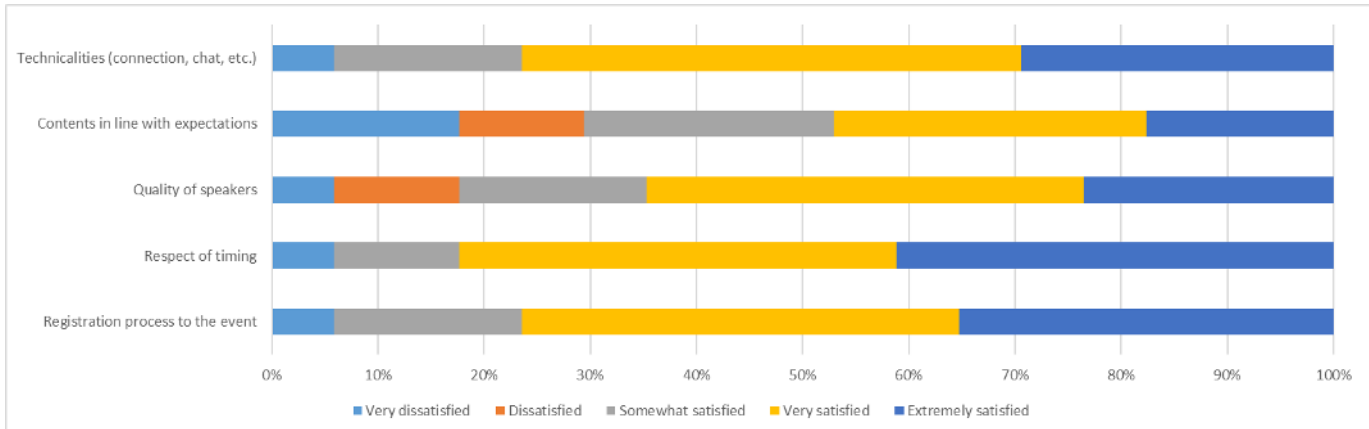


Figure 25: Satisfaction rate of respondents on different workshop dimensions

2. Please rate the content of the workshop:

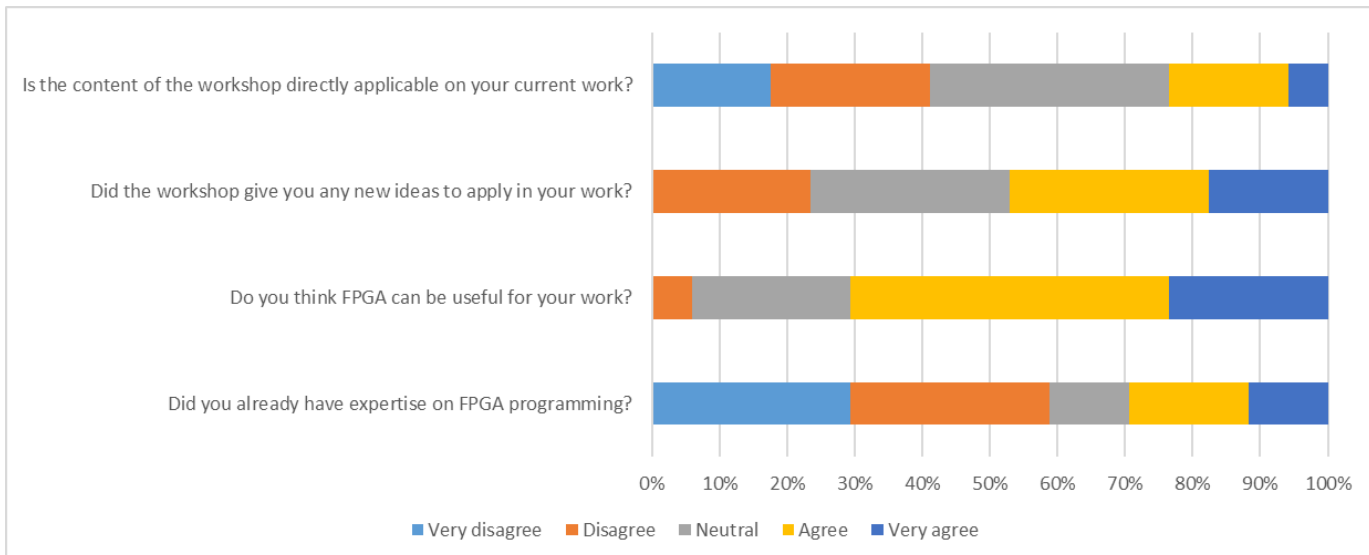


Figure 26: Workshop content rate expressed by respondents

3. How likely are you to recommend this event to a friend or colleague?

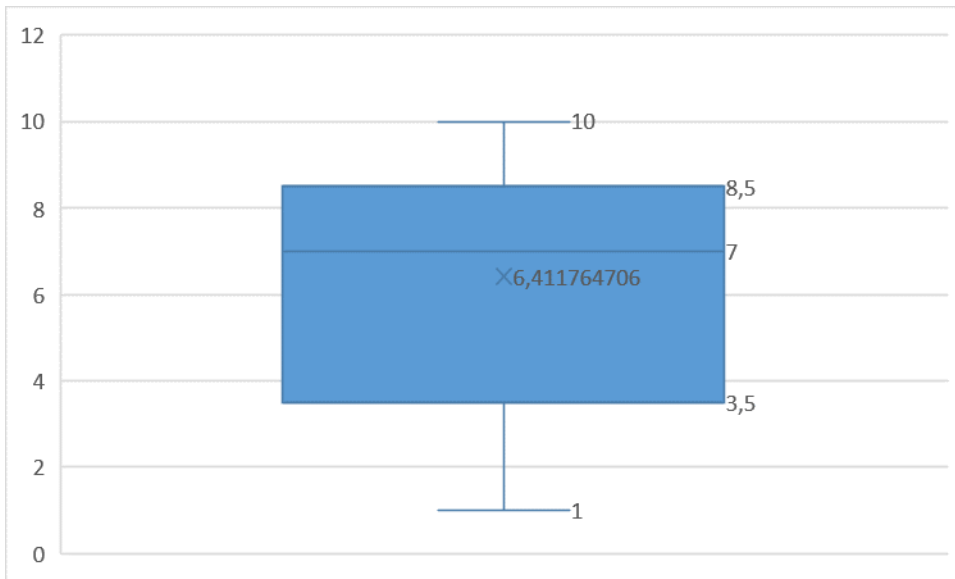


Figure 27: Likelihood to recommend the workshop

4. If you asked for support, what is your feedback on the help received?
5. Overall, how satisfied were you with the event?

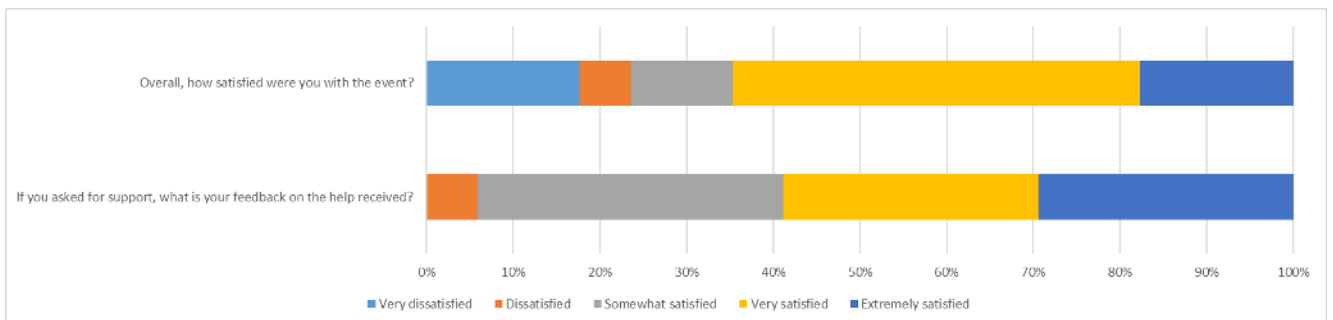


Figure 28: Rate of support received and overall satisfaction rate

6. Would you like to attend in-depth events on FPGA programming?

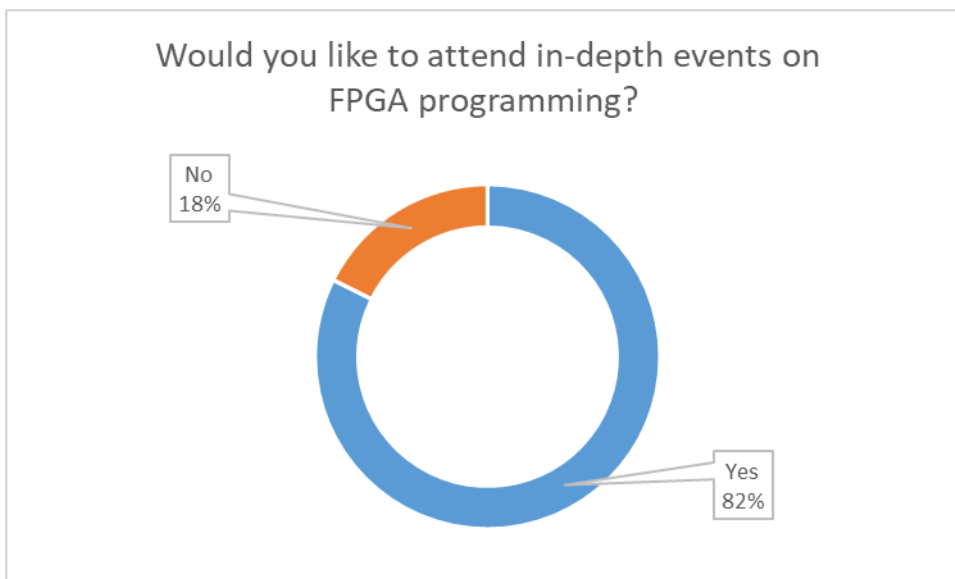


Figure 29: Likelihood to attend a follow-up event

7. What did you like least about the event?
8. What did you like most about the event?

In the table, the answers in the same row correspond to the same respondent.

What did you like least about the event?	What did you like most about the event?
The quality and content of the talks	A starting point for new events
I didn't like that every concept was on the air, no code examples, no possibility to test code. The way that the instructors gave the lectures made me feel that I will never be able to use such a difficult programming style and the application to hardware	that at least there was an event on FPGA. However, based on the concepts thought I would have to learn it in another place
No programming examples	High technical content
unbalanced technical level. The first session was o.k., dealing with hardware details, but the next session jumped straight to assuming the attendee is an expert FPGA programmer. My personal impression was that the speaker was showing off how amazing they are with FPGAs, without any attempt for feedback with the audience. I really can't say I learned / understand anything about how to program FPGAs in this course. I confess I skipped the third session, because I has already extremely discontent with the second one.	the 1st session, to some extent
The contents of the first part were great, the two latter talks were way to advanced.	The intro talks and opportunity to ask (stupid) questions
-	The possibility to follow the course off-line on EuroCC-access
-	Got a diverse take on the usefulness and the problems with FPGA's.
Nothing	The 1st speaker was very interesting
FPGA HW technicalities	Ompss@FPGA

Table 19: Best and worst aspects of the event

9. What topics would you like to see covered in future workshops?

What topics would you like to see covered in future workshops?
A very basic serial of tutorials on scientific computing using FPGA
FPGA on simple examples and possibility to test them on hardware
HDL programming
step-by-step introduction to FPGA programming for beginners with examples / exercises
More time to do it
heterogeneous computing
Ompss@FPGA features
Advanced programming mixing HLS and HDL

10. Do you have any suggestions for us to improve future events?

Do you have any suggestions for us to improve future events?

A series of articulated tutorials starting from the very basic and building up as they progress

Yes. Please, try to describe and stick with the technical level of the course. If I'd be an expert in FPGAs and want to see the state-of-the-art of FPGA applications, I'd probably go to a dedicated conference. But as someone, who wants to learn something, I expect totally different content. Regarding the question 3, I didn't need support, but the answer was mandatory.

Table 20: Suggestions for improvement