



D4.1 Community of Practice and sustainability plan – Final report

Status: UNDER EC REVIEW

Dissemination Level: Public



Disclaimer: Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them. SPECTRUM is funded by the European Union – Grant Agreement Number 101131550 – www.spectrumproject.eu

Abstract**Key Words**

Community of Practice, Survey, High Energy Physics, Radio Astronomy, e-Infrastructures, EuroHPC, Quantum Computing, Cloud Computing, Knowledge Hub, Sustainability

The present document describes the work executed in WP4, as a continuation of WP3, and in particular by the SPECTRUM Community of Practice (CoP). This includes: (1) the organisation and animation of the CoP during the second phase of the project, (2) the implementation of the public consultation through interviews, webinars, surveys, priority-review meetings and the Barcelona Experts Meeting, (3) the contribution of CoP feedback to the Technical Blueprint and the SRIDA, and (4) the sustainability plan proposed for the CoP beyond the lifetime of the SPECTRUM project.

Document Description			
D4.1 Community of Practice and sustainability plan – Final report			
Work Package Number 4			
Document Type	Report		
Document status	Under EC Review	Version	1.0
Dissemination Level	Public		
Copyright status	 This material by Contributing Parties of the SPECTRUM Consortium is licensed under a Creative Commons Attribution 4.0 International License.		
AI declaration	The authors acknowledge the use of GenAI chatbots: (1) Non substantial use: Parts of this deliverable were drafted and edited with the support of generative AI tools. The authors carefully reviewed and edited the proposed changes as needed and took full responsibility for the content of the publication, including the critical analysis and conclusions they developed.		
Lead Partner	CNRS		
Document link	https://documents.egi.eu/document/4070		
Digital Object Identifier	https://zenodo.org/records/21066646		
Author(s)	- Chiara Ferrari (CNRS/OCA) - Valentin Jay Blanchard (NEOVIA)		
Contributing Authors	The SPECTRUMCoP Members		
Reviewers	- Concezio Bozzi (INFN) - John Swinbank (ASTRON)		
Moderated by	Patricia Ruiz (EGI Foundation)		
Approved by	AMB		

Revision History			
Version	Date	Description	Contributors
VO.1	11/02/2026	First draft	Valentin Jay Blanchard (NI)
VO.2	19/05/2026	First draft version ready for feedback	Chiara Ferrari (CNRS) Valentin Jay Blanchard (NEOVIA)
vO.3	24/06/2026	Internal Review	Concezio Bozzi (INFN) John Swinbank (ASTRON)
vO.4	29/06/2026	Version incorporating the suggestions of the Internal Reviewers	Chiara Ferrari (CNRS) Valentin Jay Blanchard (NEOVIA)
vO.5	30/06/2026	AMB Approval	
V1.0	30/06/2026	Final	

Terminology / Acronyms	
Terminology / Acronym	Definition
AI	Artificial Intelligence
AMB	Activity Management Board
CoP	Community of Practice
CM	Communications Manager
DB	Database
DoA	Description of Action
DocDB	EGI Document Database
DOI	Digital Object Identifier
EAB	External Advisory Board
EM	Exploitation Manager
GA	General Assembly
GDPR	General Data Protection Regulation
HEP	High Energy Physics
HTC	High-Throughput Computing
HPC	High Performance Computing
KER	Key Exploitable Result
KPI	Key Performance Indicator
MS	Milestone
PD	Project Director
PM	Project Manager
PMO	Project Management Office
PO	Project Objective
QRM	Quality and Risk Manager
RA	Radio Astronomy
RI	Research Infrastructure
SRIDA	Strategic Research, Innovation and Deployment Agenda
SSO	Single Sign On
WG	Working Group
WP	Work Package
WPL	Work Package Leader

Table of Contents

List of Figures	7
List of Tables	7
Executive summary	8
1. Introduction	9
1.1. Context and role of WP4 in SPECTRUM	9
1.2. Objectives of D4.1	9
2. From WP3 to WP4: Evolution of the Community of Practice	10
2.1. Summary of D3.1 achievements	10
2.2. The transition to WP4	12
3. Organisation and activities of the CoP during WP4	13
3.1. Governance and Working Groups	13
3.2. Plenary meetings during WP4	14
3.3. Knowledge Hub and collaboration tools	15
3.4. Engagement strategy	16
3.4.1. Methods tested	16
3.4.2. Survey on CoP needs	17
3.4.3. Lessons learned	19
4. Public Consultation	19
4.1. Consultation strategy and methodology	20
4.2. Coordination between the CoP and other SPECTRUM WPs	20
4.3. Individual interviews	21
4.4. Webinar and consultation survey	23
4.5. Experts Meeting in Barcelona	24
4.6. Review of priorities	25
4.7. Contribution of the consultation to the Technical Blueprint and the SRIDA	26
5. Impact of the Community of Practice	27
5.1. Alignment across communities, challenges and European coordination	27
5.2. Key Performance Indicators	28
6. Sustainability plan of the CoP	30
6.1. Key issues and reminder of engagement challenges faced	30
6.2. Coordination with other initiatives	31
6.3. Scenarios considered	31
6.4. Governance model	32
6.5. Funding options	33
6.6. Agreed action plan	34
7. Conclusion	34
Annexes	36
A.1 WP4 SPECTRUMCoP Consultation: Protocol and Methodology for Individual Interviews	36
A.2 WP4 SPECTRUMCoP Individual Interviews: Final List of Questions	40
A.3 SPECTRUM Public Consultation: SRIDA and Technical Blueprint Survey	45
A.4 SPECTRUMCoP Charter during the project	57
A.5 SPECTRUMCoP Charter after the end of the project	59
A.6 List of institutions that contributed to SPECTRUM	62
A.7 List of SPECTRUMCoP Plenary Meetings	67

List of Figures

Figure 3.1: CoP needs survey: Question 1	17
Figure 3.2: CoP needs survey: Question 2	18
Figure 3.3: CoP needs survey: Question 3	18
Figure 3.4: CoP needs survey: Question 4	19

List of Tables

Table 4.1: List of stakeholders interviewed	22
Table A.6.1: List of institutions that contributed to SPECTRUM	62
Table A.7.1: CoP Plenary Meetings: Phase 1 (WP3)	67
Table A.7.2: CoP Plenary Meetings: Phase 2 (WP4) (1, meetings every 15 days)	67
Table A.7.3: CoP Plenary Meetings: Phase 2 (WP4) (2, meetings every month)	68

Executive summary

This deliverable presents the final report of WP4, Community of Practice 2nd Consultation and long-term sustainability, covering the second phase of the SPECTRUM Community of Practice from April 2025 to June 2026. Building on WP3 and WP5, WP4 acted as the main interface between the CoP, the wider expert community, and the work packages responsible for the project's final outputs: the Technical Blueprint and the Strategic Research, Innovation and Deployment Agenda (SRIDA).

During this phase, the CoP continued to provide a structured space for dialogue between High Energy Physics, Radio Astronomy, e-infrastructure providers, Research Infrastructures and external experts. WP4 supported this dialogue through plenary meetings, the Knowledge Hub, engagement activities, and a second structured consultation process combining individual interviews, a public webinar and survey, the review of SRIDA priorities, and the Barcelona Experts Meeting.

These activities enabled WP4 to collect and channel community feedback into the final consolidation of the Technical Blueprint and the SRIDA. They helped clarify key technical, organisational and strategic challenges, validate the relevance and usability of the draft outputs, and strengthen the implementation-oriented dimension of the SRIDA priorities.

The deliverable also assesses the impact of the CoP in aligning scientific communities and infrastructure providers around shared challenges in computing, data management, software, access, interoperability, sustainability, skills and governance. It further highlights the relevance of several SPECTRUM findings beyond HEP and RA, for other data-intensive communities.

Finally, D4.1 presents a sustainability plan for the CoP after the end of SPECTRUM. The proposed approach is light, informal and purpose-driven, based on an updated Charter, limited in-kind support, coordination with existing initiatives, and a practical action plan. In view of upcoming European Research Infrastructure calls and future coordination needs across Physical Sciences, Engineering and digital Research Infrastructures, the CoP could evolve into a useful forum for dialogue, alignment and preparation of future joint initiatives.

1. Introduction

Project context. The Horizon Europe SPECTRUM project has been established to help address the increasing computing and data-management challenges of data-intensive scientific communities, focusing primarily on High Energy Physics (HEP) and Radio Astronomy (RA). These communities are preparing for a new generation of instruments and experiments that will produce unprecedented data volumes and require scalable, interoperable and sustainable computing solutions across HTC, HPC, Cloud, storage, networking, AI and emerging technologies. In this context, SPECTRUM aims to contribute to the definition of a European compute and data continuum through two major outputs: the Technical Blueprint and the Strategic Research, Innovation and Deployment Agenda (SRIDA).

Importance of the CoP. A central element of the SPECTRUM methodology has been the Community of Practice, complemented by a wider group of experts identified within the project's communities of interest. Together, they provided the main channel for gathering, testing and consolidating input from scientific communities, research infrastructures and e-infrastructure providers. Through this process, SPECTRUM combined community consultation, expert analysis and strategic alignment to identify common challenges, assess possible solutions, and support the development of shared long-term directions for data-intensive science.

1.1. Context and role of WP4 in SPECTRUM

Building on WP3 and WP5. WP4, "Community of Practice 2nd Consultation and long-term sustainability", is built on the outcomes of WP3 and WP5¹. WP3 had established the initial CoP and organised the first phase of consultation, while WP5 had analysed use cases, services, technologies, access policies, gaps and requirements relevant to future federated compute and data infrastructures. WP4 took these results forward by implementing an iterative workflow aimed at consolidating and extending the understanding of the science-driven challenges identified during the first part of the project.

WP4 as a consolidation layer. The role of WP4 was therefore to act as the community-facing consolidation layer between the analytical work of WP3 and WP5 and the strategic outputs developed in WP6 and WP7. WP4 activities were co-designed with WP6 and WP7 to ensure that the Technical Blueprint and the SRIDA remained aligned with community needs and strategic priorities. This included refining the consultation process, engaging with the HEP and RA communities, involving major European e-infrastructures, and extending the dialogue to other data-intensive domains, in particular Earth observation, where similar challenges are emerging.

Animation and sustainability of the CoP. During the reporting period, WP4 supported the animation of the CoP through periodic plenary meetings, the management and curation of the Knowledge Hub via the Confluence platform². It also contributed to strengthening the engagement of CoP members by testing dedicated communication actions, launching a survey on members' needs, adapting the format and frequency of plenary meetings, and using more targeted outreach for consultation activities. In parallel, WP4 explored possible routes for the long-term sustainability of the community beyond the lifetime of the project.

1.2. Objectives of D4.1

Introduction. D4.1 provides the final report on WP4 activities and outcomes. After introducing the scope and rationale of the deliverable, Section 2 describes the transition from WP3 to WP4 and explains how the Community of Practice evolved during the second part of the project, building on the initial CoP structure, the first consultation phase and the analytical outcomes produced in WP5.

¹ See [SPECTRUM D3.1 Community of Practice – Interim report](#), [SPECTRUM D5.1 Representative use cases: analysis and alignment](#), [SPECTRUM D5.2 Interoperable access policies: analysis and recommendations](#) and [D5.3 Landscape of RIs: technologies, services, gaps](#)

² <https://confluence.egi.eu/display/SPECTRUMCoP/SPECTRUM+Community+of+Practice+Home>

CoP during WP4 and Public Consultation. Section 3 presents the organisation and activities of the CoP during WP4, including the management of the CoP platforms, the animation of community exchanges, the organisation of plenary meetings, and the interaction with relevant experts. Section 4 documents the public consultation process, showing how input from scientific communities, e-infrastructures and external data-intensive domains helped refine the understanding of high-priority technical, organisational and strategic challenges.

Impact of the CoP. Section 5 assesses the impact of the Community of Practice on the broader SPECTRUM work, in particular its contribution to the preparation of the Technical Blueprint and the SRIDA. It explains how consultation results were made available, discussed with partners and CoP members, and used to support the alignment of recommendations with science-driven needs.

The CoP after the project. Finally, Section 6 presents the sustainability plan for the CoP. It reports on the measures undertaken to increase engagement, identifies lessons learned and remaining challenges, and outlines possible actions to maintain the CoP as a long-term forum for dialogue, coordination and strategic alignment among data-intensive science communities, Research Infrastructures and e-infrastructure providers, even if in an evolved form and under a quite substantially revised organisational model.

2. From WP3 to WP4: Evolution of the Community of Practice

Definition of Community of Practice. Before examining in more detail the specific characteristics of the SPECTRUM Community of Practice, it is useful to recall the general concept of a CoP. According to the original definition proposed by Etienne Wenger in the 1990s, and later referenced in the Communities of Practice Playbook published by the European Commission in 2021³, a CoP is defined as “groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly”. While this general definition emphasises collective learning, the SPECTRUMCoP was used in a more project-oriented and pragmatic sense, primarily as a structured forum and pool of expertise to support consultation, validation and co-design activities. This Playbook also shows that the concept of CoPs is actively supported and promoted by European institutions.

Functions of the CoP. For a project such as SPECTRUM, which aims to bring together different communities to identify common challenges related to data-intensive science infrastructures, the CoP concept is particularly relevant. It enables the project to operate through three main functions.

- 1) First, it provides a mechanism for **consultation** with external stakeholders and broader communities, especially to better understand their needs and the challenges they face.
- 2) Second, it supports the **validation** of the project’s initial results by sharing them with the CoP and collecting feedback.
- 3) Third, it enables the **co-design** of specific parts of the project’s two main deliverables. This is usually organised by domain to ensure that the most relevant experts from the CoP are involved.

Through this threefold approach, the Community of Practice becomes a central interface between the SPECTRUM project partners and the wider external communities. In this role, the SPECTRUMCoP acts as a bridge, aiming to reach a broad range of stakeholders by leveraging the networks of the consortium members.

2.1. Summary of D3.1 achievements

Introduction. This section summarises the main characteristics of the SPECTRUM Community of Practice during the first phase of the project (WP3). In order to avoid duplication with Deliverable D3.1, only a concise overview of its key elements is presented here, focusing on aspects that are useful for understanding the rest of this document. The full deliverable is available on Zenodo⁴. This summary remains important, as it

³ European Commission, The communities of practice playbook – A playbook to collectively run and develop communities of practice, Publications Office, 2021, <https://data.europa.eu/doi/10.2760/443810>

⁴ SPECTRUM D3.1 Community of Practice – Interim report. <https://zenodo.org/records/15100586>

highlights the link between the structures established during the first half of the project, the challenges encountered, and the solutions that were later explored.

Transition from WP3 to WP4. During the first phase of the project, SPECTRUMCoP was led by Tommaso Boccali from INFN. In the second phase, the leadership was taken over by Chiara Ferrari from CNRS and OCA. This transition was planned from the beginning of the project and reflects a balanced representation of the two main scientific communities involved: HEP and RA. The handover was facilitated through regular online and in-person meetings, ensuring continuity. In addition, Valentin Jay Blanchard from Neovia Innovation was responsible for tasks 3.1 and 4.1, which focused on the overall coordination of the Community of Practice. Close collaboration between Neovia, INFN, and CNRS throughout the project ensured a smooth transition and helped address operational challenges effectively.

Organisation of the CoP during WP3. Although the project officially started in February 2024, the first meeting with the leaders of the six identified working groups took place in mid-May. During this initial phase, the structure and governance of the Community of Practice were defined, taking into account feedback from the SPECTRUM External Advisory Board. Thematic working groups were established, and leaders were appointed for each working group. The initial objective was to limit the number of Working Groups to between five and ten in order to ensure operational efficiency. This approach led to the creation of groups covering the main components of the compute-data continuum, such as data management, computing environments, workflows, and scientific use cases. Although the creation of temporary or ad hoc Working Groups was considered, this option was not implemented during the project. Instead, it was decided that any additional topics of interest should be addressed within the plenary meetings, which provided a more flexible and transversal space for discussion. A formal charter was also developed by a dedicated Expert Group composed of representatives from each consortium partner. Efforts were also made to widely disseminate registration links for the CoP across the European HEP and RA communities, including through direct contact when necessary. In terms of activities, the first fifteen months of SPECTRUMCoP can be divided into two phases. The first phase focused on organising meetings within each working group, with the aim of collecting initial feedback, identifying key questions, and defining early priorities for the project. The second phase shifted towards regular meetings involving all CoP members. These plenary meetings were used to present the project's progress and structure, as well as to showcase external initiatives that could be relevant to participants and help strengthen mutual understanding between the HEP and RA communities.

Collaboration with other initiatives. The beginning of WP3 provided an opportunity to establish collaborations with initiatives similar to SPECTRUM. One key example is JENA CI (Joint ECFA NuPECC APPEC Activities⁵ Computing Initiative⁶), led by the three main European committees in collider, nuclear, and astroparticle physics. In collaboration with SPECTRUMCoP, the JENA CI co-designed the first survey launched by the project. In addition, the JENA CI working group chairs actively contributed to the SPECTRUMCoP working groups. Further connections were established with Worldwide LHC Computing Grid (WLCG)⁷ for the HEP community, as well as with H2020 project ESCAPE⁸ and the Square Kilometre Array Regional Centre Network (SRCNet)⁹ for the RA community. These collaborations helped align efforts and ensure consistency with existing European initiatives.

The Knowledge Hub. According to the description of Task T3.1 in the Description of Action for the project, the Knowledge Hub is defined as “a best practice repository with relevant existing documentation”. In practice, it was implemented as a Confluence platform that is publicly accessible, including to CoP members, where most of the resources related to the Community of Practice are stored. Some content, including meeting attendee lists, meeting links, or links to certain working documents, is restricted in order to comply with GDPR requirements. The Knowledge Hub was regularly updated throughout the project, particularly to share materials presented during plenary meetings. However, its peak activity occurred during the early working group meetings, when CoP members contributed relevant documentation for the project. Most of these resources are stored in the “Document Repository” section, which includes more than 60 documents. Available statistics indicate a relatively low level of usage. This can be explained by several factors, including the fact that most interactions within the CoP took place via email and during plenary

⁵ <https://nupecc.org/jenaa/>

⁶ <https://nupecc.org/jenaa/index.php?display=computing>

⁷ <https://home.cern/science/computing/grid>

⁸ <https://projectescape.eu/>

⁹ <https://www.skao.int/en/science-users/119/ska-regional-centres>

meetings rather than through the platform itself. Nevertheless, the Knowledge Hub remains a valuable project output, as it provides a structured and curated reference point for future consultation by the SPECTRUM community and related initiatives.

Tools used. Throughout the project, several reflections were conducted on the most appropriate tools to maximise engagement within the Community of Practice. Tools commonly used by the HEP and RA communities were reviewed, and a deliberate choice was made to prioritise simple and widely accessible solutions. As a result, platforms specifically designed for communities of practice, such as Circle or Discourse, were not adopted (see [Section 3.3](#)). Instead, the project relied on tools that supported a more direct outreach approach, particularly mailing lists. Although Slack is widely used in the RA community, it was not considered suitable for a community already facing strong time constraints. Despite being proprietary solutions, Zoom and Google Drive were selected due to their widespread adoption and ease of use. For surveys, the project used EU Survey¹⁰, a tool developed by the European Commission (DG DIGIT). This choice was preferred over alternatives such as LimeSurvey, in order to prioritise tools provided by European institutions and available free of charge.

The WP3 survey. A significant part of Deliverable D3.1 is dedicated to the presentation and analysis of the survey conducted during WP3. The survey may take between 15 minutes and 1 hour to complete, because it was designed to adapt to the expertise of respondents, covering areas such as Authentication and Authorization, Workload Management, Data Management, Computing Environment, Software, Software Development and Software Management and Training and careers. Approximately 80 responses were collected. These results played an important role in informing the project's intermediate outputs, particularly those related to WP5: D5.1: Representative use cases: analysis and alignment¹¹; D5.2: Interoperable access policies: analysis and recommendations¹²; D5.3: Landscape of RIs: technologies, services, gaps¹³. A detailed presentation of the survey results is available in D3.1 (pages 23 to 72), while the analysis of the Knowledge Hub content and survey findings is presented in pages 73 to 83.

Conclusion. It is important to emphasise that Deliverable D3.1 does not represent a final outcome of the SPECTRUM project, but rather an intermediate result intended to guide subsequent work on the SRIDA and the Technical Blueprint. The document summarises its key findings as follows: "A very concise list of the findings and coherent positions from the documents and the survey includes suggestions on how to address an evident career problem in domain-specific computing tasks, the need to evolve our software stacks towards more efficient and performing computing architectures, the need to embrace AI as a base tool for our software, and policy aspects like the need to adhere to FAIR principles and participate into inter and extra domains collaborations."

2.2. The transition to WP4

Project status at the start of WP4. For organisational and operational reasons, the SPECTRUM project, which runs over 30 months, is divided into two main phases at the midpoint of the project. The transition between WP3 and WP4, both responsible for the coordination and animation of the Community of Practice, took place in April 2025. At that stage, WP3 activities were mainly focused on finalising Deliverable D3.1. Nevertheless, plenary meetings continued in order to maintain engagement with CoP members. These meetings were largely dedicated to general project updates. In particular, the three deliverables from WP5 were presented by their respective authors, ensuring that the CoP remained informed of the project's progress.

Preparation of the transition from WP3 to WP4. Although the formal transition occurred in April 2025, several preparatory meetings were organised in advance to anticipate the challenges associated with WP4. A first preparatory meeting took place in February 2025, focusing on a potential restructuring of the working groups. Additional discussions addressed the possible evolution of the Knowledge Hub platform and the planning of Milestone 7, which concerned the individual interviews to be conducted as part of the preparation for the Public Consultation phase. It was quickly agreed that a dedicated full-day meeting

¹⁰ <https://ec.europa.eu/eusurvey/home/welcome>

¹¹ D5.1 Representative use cases: analysis and alignment. <https://zenodo.org/records/15310223>

¹² D5.2 Interoperable access policies: analysis and recommendations. <https://zenodo.org/records/15647608>

¹³ D5.3 Landscape of RIs: technologies, services, gaps. <https://zenodo.org/records/15647755>

should be organised to ensure a smooth transition between the two work packages. This meeting would bring together all internal project members involved in the Community of Practice, preferably in person.

Implementation of the transition – informal meeting at Observatoire de la Côte d'Azur (OCA) in Nice.

The meeting held on 7 April 2025 allowed the WP3 and WP4 to finalise key topics previously discussed in February. Additional points were addressed, including the planning of future plenary meetings, the organisation of potential in-person events for the CoP, and the preparation of the individual interviews scheduled for the following summer. This preparation included the identification of a first list of relevant participants, the development of an initial set of questions, and the definition of the methodological approach for conducting the interviews. The final part of the meeting was dedicated to an initial discussion on the long-term sustainability of the Community of Practice after the end of the project.

Conclusion of Section 2. This section has outlined the approach taken to ensure continuity between WP3 and WP4. Several measures were implemented to support a smooth transition, including preparatory meetings, a dedicated in-person workshop, and a coordinated team responsible for maintaining consistency between the two work packages.

3. Organisation and activities of the CoP during WP4

Internal organisation of the CoP (tasks 4.1 and 4.2). According to the Description of Action, the structure of WP4 follows a similar approach to that established during WP3. WP4 is organised around two main tasks. The first task, *Community of Practice management*, is led by Neovia Innovation. It acts as the main interface between CoP members and the internal project team. This role is particularly important not only for day-to-day coordination but also in preparing the long-term sustainability of the CoP after the end of the project. The second task, *Community of Practice technical leadership for WGs*, is led by CNRS, which is also responsible for WP4. This task focuses on the technical analysis of the data collected through CoP activities, especially during the Public Consultation phase. In this context, CNRS relies on Neovia Innovation for the operational management and coordination of the CoP, with regular internal coordination meetings ensuring alignment.

3.1. Governance and Working Groups

Organisation within the CoP. Within the Community of Practice, the internal structure described above translates into a clear distribution of roles. Neovia Innovation acted as the direct interface with CoP members, while relying on the technical expertise of CNRS and other project partners to define key activities, such as the agenda of plenary meetings and the selection of relevant speakers for the HEP and RA communities. Thanks to its involvement in numerous national and European projects in HPC, Neovia Innovation also brought a strong network that supports the identification of relevant topics for the CoP. Neovia Innovation was responsible for managing the Knowledge Hub, handling registrations and onboarding of new members, organising and facilitating meetings, and maintaining communication with the community. This communication was carried out through regular newsletters sent to CoP members through mailing lists as well as more targeted and direct interactions. Given the size of the SPECTRUMCoP, with around sixty members, this mixed approach was necessary. General communications ensured overall awareness, while direct contacts, particularly with the most active members, enabled more effective engagement. This approach was especially important during the organisation of the Experts Meeting in Barcelona in February 2026 (see [Section 4.6](#)). CNRS, as WP leader, was responsible for the formal management of the work package, including milestones, deliverables, and reporting to the consortium. In addition, through its strong network within the scientific community, it played a key role in mobilising relevant experts depending on the needs of the project.

CoP Charter, FAQ, and Code of Conduct. During WP4, the Community of Practice continued to operate broadly in line with the methodology established during WP3. The CoP structure defined at the beginning of the project was considered sufficiently robust and flexible during the WP4 kick-off meeting in April 2025. This structure is primarily based on a charter (see [Annex A.4](#)) developed with the Expert Group that had been established at the start of the project. The charter provides a clear overview of the purpose of the

CoP, its objectives, and its operating principles. It includes a general context, a definition of purpose and goals, expected outputs, clarification of membership status, description of key roles within the CoP, and an overview of communication channels. In addition, the Knowledge Hub hosts a FAQ section, which provides guidance for external people on how to join the CoP and for CoP members on how to contribute to it. Other supporting documents are also available, including a Code of Conduct and information related to the Privacy Policy, ensuring a clear and transparent framework for all members.

Explored options for changes to the WGs. Several reasons led to maintaining the initial structure during WP4, as described below. In summary, it proved effective in covering all key topics while remaining clear for CoP members, and it ensured continuity with the work carried out during WP3, facilitating consistency and reuse of previous contributions. However, during WP4, several possible changes to the Working Groups were discussed, but none were ultimately adopted. One option was to reduce the number of Working Groups by merging certain topics into broader categories, such as “computing and infrastructures” or “software tools and use cases”. The aim was to simplify the structure, with the idea that three to four groups could provide a more efficient balance. However, this option was not retained due to the operational complexity it would introduce, particularly regarding the reassignment of members and the disruption of existing group dynamics. Another option was to remove the Working Group dedicated to scientific use cases (WG5), whose role could be considered less relevant after the completion of WP5. While this option was coherent from a thematic perspective, it was decided to maintain the group in practice in order to preserve the engagement of its members within the Community of Practice, especially during plenary meetings. The creation of a new Working Group dedicated to sustainability and energy efficiency was also considered, given the increasing importance of these topics, particularly at the European level. However, it was concluded that these issues should be addressed across all Working Groups rather than through a dedicated group, in line with the project’s transversal approach to sustainability. Similarly, training was identified as a recurring and important topic for the communities. Once again, the decision was made to treat this subject as a cross-cutting theme, integrating it into all discussions rather than assigning it to a specific group. Finally, a proposal was discussed to strengthen the role of Working Groups in the animation of the CoP, for example by having each group organise plenary meetings on a rotating basis. This approach aimed to encourage interaction between groups and avoid siloed discussions. However, it was not adopted, in favour of a more transversal approach based on common themes, as preferred by CoP members in the survey conducted in summer 2025 (see [Section 3.4.2](#)).

Why the Working Groups were maintained despite limited use in WP4. Although the Working Groups were relatively little used as active structures during WP4, it was decided to maintain them for several structural reasons. First, given the cross-cutting nature of many of the topics addressed, plenary meetings gradually became the main space for exchange and interaction within the Community of Practice, rather than discussions being confined to individual Working Groups. As a result, the Working Groups played a less operational role in day-to-day activities. Their main period of activity was at the beginning of the project, during the phase dedicated to collecting data and identifying community needs. However, their thematic structure continued to provide important value, particularly during the Public Consultation and the review of priorities process (see [Section 4.5](#)). These activities relied in part on the themes defined by the Working Groups, which helped to organise discussions and analyse contributions more effectively. In addition, maintaining the Working Groups supported a flexible organisational approach. Even if they were not heavily used during WP4, they provided a structure that could be reactivated if needed, for example to address more focused thematic discussions. This allowed the project to retain a clear organisational framework without introducing unnecessary complexity. Finally, keeping the existing structure reflected a choice in favour of simplicity and continuity. A major reorganisation would have required significant effort for uncertain benefits, while the existing structure remained clear, coherent, and aligned with the objectives of the project.

3.2. Plenary meetings during WP4

Plenary meetings during WP3. Plenary meetings were introduced during WP3 in response to several challenges identified in the animation of the Community of Practice. Their main objective was to avoid siloed interactions between Working Groups by creating a transversal space for discussion open to all CoP members. They also aimed to maintain long-term engagement and to encourage the emergence of new ideas beyond contributions strictly linked to project deliverables. This development took place in a context where the activity of the Working Groups was gradually decreasing. WG Chairs were organising fewer

meetings, especially after the main expected outputs (such as documents, feedback, and thematic contributions) had been collected, and following the publication of the WP3 survey. The idea of introducing plenary meetings emerged following this survey, conducted during summer 2024, and was further discussed with WG Chairs in September 2024. The first plenary meeting was held on 26 September 2024, just before a consortium meeting, with around twenty participants. This initial session focused mainly on providing an overview of the CoP and presenting the next steps of the project.

Organisation of plenary meetings. In total, twenty plenary meetings (see Annex A.7 for the full list, including the topics covered and the invited speakers) were organised over the course of the project, with an average participation of between fifteen and twenty participants. These meetings were initially held every two weeks, on Wednesdays at 15:00 CE(S)T. This time slot was selected following a consultation of CoP members, using a scheduling poll, in order to ensure regularity and clear identification of the meetings within the community. The topics addressed during these meetings were mainly of two types. On the one hand, regular updates on the progress of the project were presented, ensuring a shared understanding of ongoing activities. On the other hand, presentations of projects and initiatives from the HEP and RA communities were organised. These contributions enriched the discussions and strengthened the community dimension of the CoP.

Changes in the format of plenary meetings. Plenary meetings continued during WP4, with several gradual adjustments. A first sign of decreasing participation was observed, with attendance declining over time. This led to the organisation of a dedicated survey among CoP members (see [Section 3.4](#)) in order to better understand their expectations and adapt the format of interactions. From September 2025 onwards, the frequency of the meetings was reduced from a biweekly to a monthly schedule. This change reflected both a reduced need for frequent meetings at this stage of the project and a willingness to align the level of effort with the actual level of engagement. In addition, plenary meetings were temporarily suspended during the Public Consultation phase (see [Section 4](#)). During this period, interaction with the community relied mainly on other formats, including a webinar organised in December 2025 and a survey aimed at collecting feedback on the first versions of the SRIDA and the Technical Blueprint. Finally, plenary meetings were progressively discontinued in April 2026, in line with the final phase of the project.

Challenges encountered during plenary meetings. One of the main challenges was participation. It was observed that the most regular attendees were mainly internal project partners, which can be explained by their higher level of involvement in SPECTRUM activities. However, this situation does not necessarily represent a limitation with regard to the objectives of the Community of Practice. According to its charter, the CoP aims primarily to structure exchanges between the HEP and RA communities on topics related to data-intensive computing. This naturally leads to stronger engagement from the most active stakeholders in these domains. A gradual decline in participation towards the end of the project was also observed, which can be considered expected in the context of a 30-month project. This trend highlights the importance of continuously adapting engagement formats and diversifying interaction methods in order to maintain community interest over time.

3.3. Knowledge Hub and collaboration tools

Creation and use of the Knowledge Hub. The SPECTRUM Knowledge Hub was established during WP3 as the main structured repository for the Community of Practice. Its purpose was to collect, organise and preserve documents, presentations, meeting material and practical information relevant to CoP members and to the work of the project.

Choice of Confluence. Confluence¹⁴ was considered an appropriate tool for this function because the Knowledge Hub was primarily intended as a stable repository rather than as a real-time discussion platform. It provided a clear structure for organising content, managing access rights, and maintaining a curated record of CoP material. The project coordinator therefore created a dedicated Confluence space as part of its own hosted platform. This arrangement also helps ensure the long-term availability of the Knowledge Hub without requiring specific post-project maintenance costs from the CoP. During WP4, the possibility of moving to a different platform was considered. However, this would have required migrating existing content, onboarding CoP members to a new tool, and ensuring active moderation at a late stage of the

¹⁴ <https://www.atlassian.com/software/confluence>

project. Given the limited time remaining and the uncertain added value of such a transition, Confluence was maintained as the Knowledge Hub platform.

Discussion and communication tools. In parallel with the Knowledge Hub, WP4 reviewed the tools used to support communication and discussion within the CoP. The main objective was to identify channels that could encourage interaction while remaining proportionate to the limited availability of CoP members. Email remained the main communication channel throughout WP4, supported by mailing lists hosted by EGI. This approach was simple, familiar to all members, and well suited to announcements, reminders, newsletters and calls for feedback. It also allowed WP4 to combine broad communication with more targeted outreach when needed, in particular for consultation activities. Other discussion tools were considered, including Circle¹⁵, Discourse¹⁶ and Slack¹⁷. Circle and Discourse could have offered a more integrated environment for asynchronous discussion and community interaction, while Slack was already familiar to parts of the scientific community. However, the experience of the project showed that the main limitation was not only the choice of tool, but also the time available to members and the need for clear, concrete reasons to engage. Introducing a new platform would therefore have required additional effort, active moderation and a change in user habits, with no guarantee of sustained use.

Other collaborative tools. In addition to Confluence, several other tools were regularly used by the CoP, with strong continuity from WP3 practices. Zoom was used for plenary meetings. Its recording function and the “Zoom AI Companion” were used to generate automated meeting transcripts. Although Zoom is a proprietary and non-European tool, the content of plenary meetings was not confidential, as it mainly consists of presentations. Video recordings were shared only via email and were not made available on the Knowledge Hub, in order to comply with GDPR requirements. These recording and transcription features were also used during the Public Consultation phase, particularly for individual interviews and reviews of priorities (see [Section 4](#)). Mailing lists were hosted by EGI using the Mailman service. The CoP meeting calendar was managed through Google Calendar. Finally, the surveys conducted on CoP needs and during the Public Consultation were hosted on the European Commission’s EU Survey platform, in continuity with the approach used in WP3.

3.4. Engagement strategy

3.4.1. Methods tested

Engaging communities. Engaging members of the Community of Practice proved to be a significant challenge throughout the project. Both the HEP and RA communities are highly demanding environments, where researchers are often already overcommitted. As a result, it was difficult to mobilise them on a voluntary basis for additional activities. The primary objective of the CoP was to contribute to the development of the SRIDA and the Technical Blueprint. However, this objective was not always aligned with the expectations of researchers, who are unlikely to invest time without a clear and direct benefit. To address this issue, one key communication approach was to emphasise the potential impact of their contributions. Members were informed that their input could directly influence the SRIDA and the Technical Blueprint, which are intended to be used by European Commission decision-makers. This framing aimed to highlight that their involvement could shape future European research and infrastructure policies.

Newsletter on Wednesdays. To maintain a regular level of engagement, a decision was made to communicate on a weekly basis. Wednesday was selected as the main communication day, reflecting the usual scheduling of CoP plenary meetings on that weekday. The newsletters included updates on upcoming CoP activities, announcements of future events, and calls for contributions. The intention was to create a consistent communication rhythm and keep members informed of project developments. However, the results were mixed. For instance, in February 2026, we organised an in-person meeting open to members of the CoP to collect their feedback on the first version of the project’s final deliverables (see [Section 4.5](#)). On this occasion, several reminders were sent to encourage CoP members to register. Financial support for travel and accommodation was also offered, yet the response rate remained low. As a consequence, WP4 had to rely on additional engagement methods.

¹⁵ <https://circle.so/>

¹⁶ <https://www.discourse.org/>

¹⁷ <https://slack.com/>

Direct communication prioritised. One of the most effective approaches was the use of direct communication. This included sending individual emails, either through automated mailing campaigns or by targeting specific members identified as more active within the CoP. These individuals were generally more likely to respond positively to participation requests. Support from consortium members also played an important role. Many of them had direct connections with CoP members or with relevant experts who could contribute to specific activities. Leveraging these networks helped to reach the right individuals more efficiently. By combining targeted outreach with consortium support, it was possible to mobilise participants more effectively. For example, during the preparation of the Experts Meeting in February 2026, twelve experts from different communities were successfully recruited and attended the event held in Barcelona, providing valuable input. Given the relatively limited size of the CoP, with around sixty members, a mixed approach proved to be the most appropriate. General communications ensured overall awareness, while direct and personalised contacts enabled more concrete engagement and participation.

3.4.2. Survey on CoP needs

Rationale for launching the survey. The decision to launch a survey was closely linked to the reflections on potentially changing the Knowledge Hub platform (see [Section 3.3](#)). The objective was to better understand whether low engagement within the Community of Practice was primarily due to the limitations of the platform, or whether it resulted from broader structural factors. The survey was designed by WP4, in collaboration with the other work packages of the SPECTRUM project. It was launched at the end of July 2025, despite the risk of limited participation due to the summer holiday period.

Results. The survey was distributed by email at the end of July, with a follow-up reminder sent in mid-August. It consisted of five questions and received 24 responses, corresponding to an approximate participation rate of 40%.

Question 1. The first question addressed the main expected outcomes from the Community of Practice. The responses indicated that knowledge sharing and the creation of cross-disciplinary collaborations were the most valued outcomes. One notable additional response highlighted the expectation of influencing infrastructure and policy decisions, stating the need for “enforceable requirements on future HPC design and policies” and even changes to current HPC policies. Based on these inputs, WP4 identified a need to improve collaborative spaces, particularly during meetings, in order to better support interaction among members.

1) What are your main expected outcomes from the Community of Practice?

		Answers	Ratio
Share knowledge, experiences and best practices with peers		19	79.17 %
Stay updated on SPECTRUM project activities, outcomes and deliverables		7	29.17 %
Build new collaborations across disciplines		11	45.83 %
Participate in the co-creation of documents or recommendations to the European Commission and wider community		9	37.5 %
Access to expert knowledge		4	16.67 %
Other (please specify)		1	4.17 %
No Answer		1	4.17 %

Figure 3.1: CoP needs survey: Question 1

Question 2. The second question focused on the main obstacles limiting participation. As expected, lack of time emerged as the most significant barrier. In addition, several respondents expressed uncertainty about how to effectively contribute to the CoP. Another response pointed to the lack of practical interaction with existing HPC systems. In response, WP4 proposed to strengthen guidance through regular communications, including clear and simple actions that members could take to contribute.

2) In your opinion, what are the main obstacles limiting your participation today?

		Answers	Ratio
Lack of time to engage regularly		19	79.17 %
Current messaging platform (mailing lists) has limited functionality		0	0 %
Navigating on the knowledge base platform (Confluence) is not intuitive		2	8.33 %
Difficulties finding relevant and up-to-date information in Confluence		2	8.33 %
Search features in Confluence are not user-friendly		4	16.67 %
Not clear what I can contribute, or how I can benefit		10	41.67 %
Not easy to participate with asynchronous conversations		0	0 %
Lack of clear information about what is happening in the Community of Practice		6	25 %
Difficulty identifying relevant topics or groups		2	8.33 %
Lack of interactive activities or events		1	4.17 %
Other (please specify)		1	4.17 %
No Answer		2	8.33 %

Figure 3.2: CoP needs survey: Question 2

Question 3. The third question assessed the level of interest in different communication formats. Regular newsletters and informal meetings were identified as the most preferred formats. In contrast, platforms with email integration and “ask me anything” sessions were considered less attractive. Respondents also suggested several topics for thematic workshops or webinars, including big data management and processing on distributed platforms, best practices in GPU programming, data management, and technologies such as Kubernetes. For informal meetings, participants expressed a preference for in-person formats, such as workshops, informal discussions, or “open coffee” sessions. There was also interest in involving policy makers or administrators from HPC infrastructures to better align needs and expectations. Based on these results, WP4 recommended maintaining regular communication through weekly or biweekly emails, alongside continuing monthly plenary meetings in a more informal and interactive format.

3) How would you rate your interest in the following communication formats?

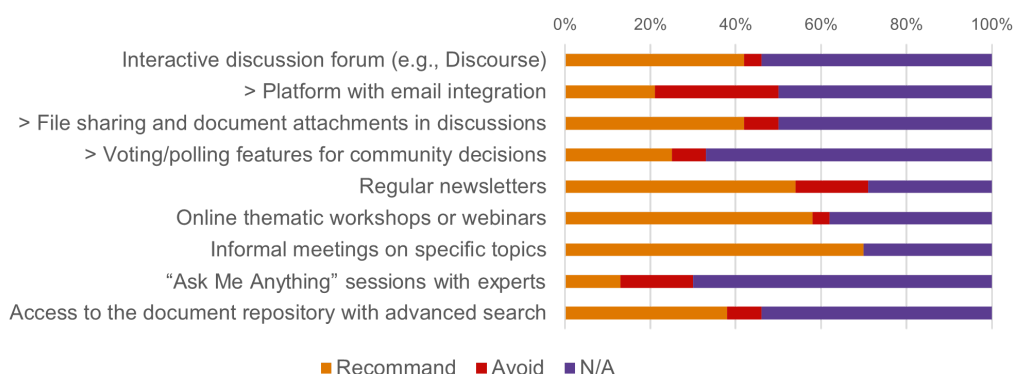


Figure 3.3: CoP needs survey: Question 3

Question 4. The fourth question explored the topics that should receive greater attention within the community. The most frequently mentioned areas were computing resource access and allocation, as well as sustainability and energy efficiency. These themes were already aligned with ongoing discussions in the project, including related initiatives such as Kyanopi¹⁸ and sustainability efforts within national programmes.

¹⁸ <https://kyanopi.com/en/>

4) What specific topics or areas would you like to see more focus on in the community?

		Answers	Ratio
Data management and FAIR principles		9	37.5 %
Workflow management and automation		10	41.67 %
Computing resource access and allocation		19	79.17 %
Software development best practices		11	45.83 %
AI/ML applications in research		10	41.67 %
Quantum computing applications		2	8.33 %
Sustainability and energy efficiency		14	58.33 %
Career development in research computing		6	25 %
Cross-disciplinary collaboration methods		8	33.33 %
Training and educational resources		4	16.67 %
Other (please specify)		0	0 %
No Answer		1	4.17 %

Figure 3.4: CoP needs survey: Question 4

Question 5. The final question invited suggestions to improve the community. Respondents emphasised the importance of focusing on topics and formats that are directly relevant to CoP members. They also suggested increasing outreach efforts in order to attract additional participants and broaden the community.

Survey outcomes. Based on the survey results, WP4 formulated several key recommendations. Plenary meetings should be organised in a more informal and interactive manner, with a focus on priority topics such as computing resource access and allocation, and sustainability and energy efficiency. Regular communication should be maintained through weekly or biweekly emails, including clear and simple proposals for collaborative actions. Finally, additional outreach efforts should be undertaken to expand the Community of Practice and increase overall engagement.

3.4.3. Lessons learned

Analysis of the survey responses. The analysis of the survey results presented in Section 3.4.2 was shared internally during the consortium meeting held in October 2025, as well as with members of the Community of Practice. Several of the recommendations derived from the survey confirmed observations that had already been made during the project. In particular, the need for regular and clear communication had been previously identified and was reinforced by the survey findings.

Towards the sustainability of the CoP. Beyond short-term engagement, the survey provided valuable insights for the longer-term sustainability of the Community of Practice. It helped to identify the topics of greatest interest to members, which in turn informed the selection of speakers and the design of presentations for subsequent plenary meetings (see [Section 3.2](#)). More broadly, the survey confirmed the continued need for a structured space for discussion between the HEP and RA communities on topics related to data-intensive computing. This need extends beyond the duration of the project itself. In this context, an informal approach is considered the most appropriate for the future of the CoP. This would rely on regular interactions, organised either online or in person, rather than on a formal platform-based structure (see [Section 5](#)). Finally, the survey also provided practical guidance on how to mobilise CoP members more effectively during key phases of the project, in particular during the Public Consultation.

4. Public Consultation

The WP4 public consultation brought together the main community-facing activities carried out in the second phase of SPECTRUM. It combined targeted interviews, a public webinar and survey, the review of SRIDA priorities, and the Barcelona Experts Meeting. Together, these activities provided structured opportunities for the CoP and wider expert community to comment on the emerging Technical Blueprint and SRIDA, helping WP4 channel community feedback into the final consolidation of the project outputs.

4.1. Consultation strategy and methodology

Purpose of the second consultation. The WP4 consultation was designed as the second structured consultation phase of the SPECTRUM Community of Practice, following the extensive survey work carried out in WP3. The initial objective of the WP4 consultation was to deepen, validate and extend the understanding of the science-driven challenges identified during the first part of the project, in particular through the outcomes of WP3 and WP5. In a second step, the consultation supported the consolidation of the main SPECTRUM outputs – the Technical Blueprint and the SRIDA – by gathering targeted feedback from the scientific community, including the SPECTRUMCoP and a wider expert group. This process also supported the SRIDA priority work, which was carried out through the CoP Working Groups and organised thirteen strategic priorities within four pillars: Policy, Trust and Governance; Architecture and Interoperability; Software and Science Enablers; and Human Capital and Responsibility. These priorities translated the technical gaps, community requirements and strategic challenges identified by SPECTRUM into a structured framework of recommendations and implementation pathways for the European compute and data continuum.

Continuity with the CoP structure. As mentioned in Section 2.2, the consultation strategy was largely drafted during the WP4 kick-off meeting, held in April 2025 in Nice. The WP4 consultation methodology combined continuity with adaptation. Continuity was ensured by maintaining the CoP thematic Working Groups as one of the primary frameworks for structuring the dialogue with the community and for supporting the SRIDA priority work.

Adaptation was introduced by shifting the consultation approach first towards a more targeted and structured interview process (see [Section 4.3](#)), designed to produce timely and actionable input for WP6 and WP7, and then towards a broader validation phase based on public webinars, an online consultation questionnaire (see [Section 4.4](#)), and the Experts Meeting held in Barcelona in February 2026 (see [Section 4.5](#)). This second phase allowed the preliminary versions of the Technical Blueprint and the SRIDA to be presented to the SPECTRUMCoP and to the wider expert community, and provided an opportunity to collect feedback on their structure, priorities and main recommendations. The overall consultation process conducted by WP4 was therefore not conceived as a stand-alone data collection exercise, but as an iterative mechanism to feed, test and refine the ongoing development of the Technical Blueprint and the SRIDA, including the priority framework developed through the CoP Working Groups.

Methodological balance. Overall, the WP4 consultation methodology combined continuity, targeted expert engagement and structured documentation. It preserved the CoP framework established in WP3, while adapting the consultation format to the practical constraints of busy expert communities. This approach allowed WP4 to collect high-value input within a limited timeframe and to support the final phase of SPECTRUM with material directly relevant to the project's strategic outputs.

4.2. Coordination between the CoP and other SPECTRUM WPs

WP4 as an interface. WP4 acted as the main operational interface between the Community of Practice and the SPECTRUM work packages responsible for the project's final strategic outputs. Its role was to ensure that community input, expert feedback and consultation results were made available in a form that could effectively support the development of the Technical Blueprint and the SRIDA.

Alignment with WP6 and WP7. Coordination with WP6 and WP7 was integrated into the consultation design from the outset. The interview protocol described in Section 4.3 was not developed by WP4 in isolation, but was discussed with WP6 and WP7 so that the questions would address topics relevant to both the Technical Blueprint and the SRIDA. This ensured that the consultation generated usable input for the technical and strategic dimensions of SPECTRUM, including the identification and refinement of the SRIDA strategic priorities developed through the CoP Working Groups. Through its interaction with the CoP Working Groups, WP4 contributed to structuring, consolidating and organising the SRIDA priority framework (see [Section 4.6](#)).

As described in Section 4.4, this alignment continued during the second phase of the consultation, when the preliminary versions of the Technical Blueprint and the SRIDA were opened to broader community feedback. WP4 worked with WP6 and WP7 to support the organisation of the public webinar in December 2025, which presented the first results of these two deliverables and the associated consultation process, essentially finalised with the Experts Meeting held in February 2026.

Timing of information flow. The timing of the consultation was adjusted to align with the needs of WP6 and WP7. During the WP4 kick-off meeting in April 2025, partners agreed to anticipate the preparation of the interview protocol so that the first consultation results could be shared by the end of the summer. According to the initial SPECTRUM work plan, the WP4 interview protocol and questions were expected to be agreed and published by M18, corresponding to June 2025. In practice, WP4 brought forward the preparation of a first draft to the end of May 2025, in order to provide timely input to WP6 and WP7. This was important because both work packages needed community feedback while the Technical Blueprint and the SRIDA were still under development, rather than after their main conclusions had already been consolidated.

Shared access to consultation material. Dedicated pages were created and regularly updated within the workspace reserved for SPECTRUM members, providing a central place to monitor both the results of consultations and interviews and the outcomes of meetings held to finalise input to the SRIDA priorities. This page played an important role in the coordination process. By centralising all collected information, it allowed WP6 and WP7 partners to access the material progressively, as it became available. The validation of minutes by interviewees increased the reliability of the information and made it easier for other WPs to use the consultation results in their own work.

4.3. Individual interviews

Targeted interview-based approach. The core of the first part of WP4 consultation was based on individual interviews with selected key stakeholders. This format was chosen because it allowed WP4 to collect detailed, contextualised input from senior experts, while remaining realistic in terms of the time available to highly engaged scientific and infrastructure communities. The interview-based approach also made it possible to go beyond generic feedback and explore specific technical, organisational and strategic issues in greater depth. Rather than reopening the whole consultation process from the beginning, WP4 focused on consolidating the existing results and testing them with selected stakeholders able to provide both strategic and technical insight.

Design of the interview protocol. The interviews were structured around a common protocol linked to the thematic areas of the Community of Practice. The questionnaire was designed to capture high-priority cross-cutting challenges in the SPECTRUM domain, including issues related to federated computing and data infrastructures, interoperability, access policies, sustainability, skills, governance and long-term strategic alignment. The use of a common protocol ensured comparability across interviews, while leaving room for additional questions and open discussion when relevant.

Stepwise preparation and validation. The preparation of the consultation followed a stepwise process. During the WP4 kick-off meeting, partners discussed the interviewee target list, the interview agenda and logistics, the procedure for drafting and validating the questionnaire, and an initial set of questions.

Finalisation of questions and interviewees. By mid-June 2025, the initial list of interview questions and potential interviewees had been consolidated through successive exchanges within WP4, with WP6 and WP7 partners, and with the SPECTRUM External Advisory Board. A dedicated working document was prepared to support the process (see Annex A.1), including the interview questions, background documents to be shared in advance, the SPECTRUM contact person responsible for initiating each invitation, and a draft invitation email. The final list of questions was agreed by mid-July 2025 (see Annex A.2), after which the WP4 lead started contacting the selected interviewees.

Table 4.1: List of stakeholders interviewed

	Interviewees	Stakeholder organisation	Area of expertise	Interview date	SPECTRUM lead contact
1	Fabio Affinito	CINECA	e-Infrastructure services	29/07/2025	T. Boccali
2	Louise Chisholm, Robert Beswick	UK-SRC	RA	29/07/2025	C. Ferrari
3	Michiel Van Haarlem	LOFAR ERIC	RA	30/07/2025	C. Ferrari
4	Jesus Salgado	SKAO	RA	31/07/2025	C. Ferrari
5	Simone Campana	CERN	HEP	20/08/2025	T. Boccali
6	Graeme Andrew Stewart, Nicole Skidmore, Eduardo Rodrigues	JENA/HSE	HEP	27/08/2025	T. Boccali
7	Florian Berberich	FZJ	e-Infrastructure services	24/09/2025	L. Cifuentes
8	Kimmo Koski	CSC	e-Infrastructure services	26/09/2025	M. Girone
9	Andrea Possenti	INAF	RA	17/10/2025	C. Ferrari
10	Thomas Geenen	Destination Earth	Earth observation	03/11/2025	S. Andreozzi

Stakeholder coverage. The consultation engaged representatives from the main SPECTRUM stakeholder groups: High Energy Physics, Radio Astronomy, major European e-infrastructures, and one external data-intensive community, Earth observation. This selection reflected the need to both deepen the analysis within the core SPECTRUM communities and test the relevance of the identified challenges in a neighbouring domain facing comparable issues in terms of data volume, distributed processing, infrastructure interoperability and long-term service sustainability. As shown in [Table 4.1](#), ten interviews were conducted by WP4, with support from WP6 and WP7 colleagues, between late July 2025 and beginning of November 2025, with the majority of the interviews conducted by the end of August. The full set of pre-defined questions was asked to all interviewees; in most cases, additional questions and discussions emerged through rich exchanges.

Documentation and validation workflow. Interview minutes were drafted by the task 4.1 lead and then validated by the task 4.2 lead and by the interviewees. This validation step ensured that the collected material was accurate, traceable and suitable for reuse within the project.

Main outcomes. The main outcomes of the interviews have been firstly summarised in the presentation of WP4 at the All-Hands Spectrum meeting held in Nice in October 2025, and they have then been analysed and presented in details in the Annex “C2.3 Feedback & Alignment from CoP Interviews” of the SRIDA¹⁹. In highly condensed form, the annex points to recurring concerns around insufficient and, in some cases, unsuitable compute resources; rapidly growing data volumes; storage and transfer bottlenecks; fragmented infrastructures; weak interoperability; metadata gaps; skills shortages; unstable technical career paths; and the limits of short-term project-based funding. It also stresses the need for a federated but non-monolithic European compute and data continuum, stronger data-centric architecture, sustainable operational funding, better software portability, broader AI/ML integration, and reinforced training and career structures.

¹⁹ <https://zenodo.org/records/20182879>

4.4. Webinar and consultation survey

Purpose of the webinar and survey. Following the individual interviews conducted between July and November 2025, WP4 launched a broader public consultation phase aimed at collecting feedback on the preliminary versions of the two main SPECTRUM outputs: the Technical Blueprint, D6.1, and the SRIDA, D7.1. This phase was designed to move from targeted expert interviews to a wider validation process, allowing the SPECTRUMCoP and the broader expert community to comment on the structure, clarity, completeness, priorities and usability of the two documents. A dedicated SPECTRUMCoP consultation page²⁰ presented this phase as an opportunity to contribute to a shared vision for the future of data-intensive science in Europe, with direct access to the draft documents and to the consultation survey.

Public webinar. The consultation was introduced through a public webinar held on 12 December 2025²¹. The webinar presented the first versions of the Technical Blueprint and the SRIDA, explaining their respective roles and how they jointly contribute to the definition of a European compute and data continuum for data-intensive science. The webinar also introduced the consultation process itself, inviting participants to review the draft documents and provide feedback through an online survey. The webinar material was subsequently reused as supporting material for the survey, ensuring that respondents could access a common presentation of the rationale, structure and expected outcomes of the two documents.

Consultation platform and timeline. The consultation survey was implemented using, once again, the European Commission's EU Survey platform. The two draft documents, D6.1 and D7.1, were made available on Zenodo, while the public consultation page on the SPECTRUM website provided access to the documents, the survey form and the webinar slides. The survey was open from December 2025 to 10 February 2026, after an initial deadline of 31 January 2026 had been extended. It was also announced that late submissions would remain welcome, with the consortium aiming to integrate additional feedback before the finalisation of the documents, or otherwise to document relevant comments in D4.1.

Survey design. The questionnaire was structured to collect both quantitative and qualitative feedback. It contained 42 questions organised into six sections: welcome and privacy, respondent profile, Technical Blueprint, SRIDA, quality and feedback. The Technical Blueprint section asked respondents to assess the relevance of eight capability areas and the urgency of sixteen gaps, while also collecting free-text comments on missing features, missing capabilities and implementation barriers. The SRIDA section asked respondents to assess the main strategic drivers, the thirteen priorities organised in four pillars, the investment areas and possible funding models. The final section focused on document quality, completeness, alignment between the Technical Blueprint and the SRIDA, and potential adoption of the documents for strategic planning. The whole Survey is provided in Annex A.3.

Consultation reach and responses. The public consultation generated significant visibility, even if the number of completed survey responses remained limited. This can notably be explained by the fact that responding to the survey required participants to read at least one of the two documents – the SRIDA or the Technical Blueprint – beforehand, which was not the case for the WP3 survey. The consultation page recorded 502 page views, the webinar page 491 unique views, the webinar recording had 95 views, and the draft documents were downloaded 1110 times from Zenodo. Of these, 37 users clicked through to the survey and 27 completed responses were available for the analysis presented at the Barcelona SPECTRUM All Hands and Experts Meetings of February 2026 (see [Section 4.5](#)).

Respondent profile. The respondent profile suggests that the feedback was mainly provided by experienced and technically engaged members of the community. Most respondents had more than ten years of experience, and many had multiple roles, combining scientific, technical, infrastructure or coordination responsibilities. Sixteen respondents reviewed only the Technical Blueprint, one reviewed only the SRIDA, and ten reviewed both documents. The geographical distribution showed a strong representation from France, followed by Italy, the Netherlands, Germany and several other European countries. This distribution was useful but also introduced a possible bias, since the number of responses appeared partly correlated with the country and research domain of the WP4/Task 4.2 leadership. The survey results should therefore be interpreted as expert feedback from a targeted consultation process, complemented by

²⁰ <https://www.spectrumproject.eu/spectrum-consultation>

²¹ <https://www.youtube.com/watch?v=RXhBuD8AmSg>

interviews, CoP discussions and the Barcelona Experts Meeting, rather than as a broad quantitative representation of the entire community.

Main feedback on the Technical Blueprint. Feedback on the Technical Blueprint highlighted several areas requiring clarification or strengthening. Respondents pointed to the need for greater realism on performance and portability, noting that portable software does not automatically imply efficient execution across architectures. Several comments also stressed the importance of long-term software sustainability, infrastructure resilience, lifecycle management, preservation, security, data movement at scale, orchestration, identity management and heterogeneous computing. Additional concerns related to the practical feasibility of federation, especially for AI workloads, where data locality, accelerator coupling, service accounts, non-interactive workflows and site-specific constraints remain significant barriers.

Main feedback on the SRIDA. Feedback on the SRIDA confirmed the relevance of several strategic priorities, in particular heterogeneous computing integration, AI/ML infrastructure, and skills, careers and training. Respondents also stressed the need not to reduce future scientific computing strategies to AI alone, highlighting the continued importance of core physics and multiphysics modelling. Free-text comments pointed to the need for stronger attention to human and social dimensions, including training needs, brain drain, career structures and the role of political decision-makers. Stable long-term funding for scientific software development and infrastructure operation also emerged as a recurring concern.

Suggestions for improvement and adoption. The survey also provided useful indications on how to improve the final documents and increase their adoption. Respondents asked for more concrete examples, clearer and less generic guidance, and more explicit decision criteria, including cases where federation may not be the appropriate solution. Several comments also recommended clarifying the target audience of the SRIDA and the Technical Blueprint, better distinguishing between findings grounded in HEP and Radio Astronomy and broader recommendations for data-intensive science, and strengthening links with national initiatives, scientific clusters and existing European frameworks such as EOSC and EuroHPC.

Use of the consultation results. The results of the webinar and survey were analysed by WP4 and presented at the SPECTRUM All Hands Meeting in Barcelona in February 2026. This analysis supported the final refinement of the Technical Blueprint and the SRIDA by providing structured feedback from the CoP and the wider expert community. In this sense, the webinar and consultation survey formed a key bridge between the drafting of SPECTRUM's main outputs and their validation by the communities they are intended to serve.

4.5. Experts Meeting in Barcelona

Purpose and positioning. The Experts Meeting in Barcelona²² represented the final step of the WP4 consultation process. Held on 18–19 February 2026, it followed the individual interviews, the public webinar and the online consultation survey, and was designed to discuss the preliminary versions of the Technical Blueprint and the SRIDA with a group of external experts, including members of the SPECTRUM Community of Practice, who were either specifically invited or joined the process following an open expression of interest. The meeting took place after a closed SPECTRUM All-Hands Meeting and brought together more than ten experts external to the SPECTRUM projects for an in-depth discussion of the project's final results before their publication.

Preparation and participation. The meeting was promoted as an opportunity for external experts to join the SPECTRUM community discussion in Barcelona. External participants could request travel support through the event registration process, which helped facilitate participation from outside the core consortium. The meeting was therefore not only an internal project review, but also a targeted engagement action aimed at widening the feedback base and strengthening the link between SPECTRUM, the CoP and relevant external stakeholders.

Structure of the discussion and main themes addressed. During the meeting, SPECTRUM WP4, WP6 and WP7 members presented the main findings from the public consultation, the current state of the draft Technical Blueprint and SRIDA, and the proposed implementation pathways and funding opportunities. These presentations were followed by open discussions aimed at identifying remaining gaps, clarifying

²² <https://indico.egi.eu/event/6921/>

priorities and assessing the relevance of the proposed recommendations. The format was therefore deliberately interactive, with the objective of moving beyond written survey feedback and collecting more qualitative, expert-level input.

The discussions focused on six main themes identified in the Experts Meeting report: the scope and transferability of SPECTRUM results beyond High Energy Physics and Radio Astronomy; the mismatch between project-based funding and multi-decade operational needs; the need to rebalance expectations between scientific communities and infrastructure providers; resource allocation mechanisms compatible with EuroHPC policies; the level of ambition and realism required for AI-related recommendations; and the socioeconomic impact of the proposed compute and data continuum.

Contribution to the Technical Blueprint and SRIDA. The Experts Meeting provided a final opportunity to test the Technical Blueprint and the SRIDA against external expertise before their publication. For the Technical Blueprint, the discussion helped assess whether the proposed architectural approach was sufficiently realistic, actionable and aligned with operational constraints. For the SRIDA, the meeting supported the refinement of strategic priorities, implementation pathways and funding considerations. In both cases, the objective was to ensure that the final documents were not only internally coherent, but also credible and useful for the communities, infrastructure providers and policy stakeholders they are intended to address. The outcomes of the Barcelona meeting were documented in a dedicated public report published on Zenodo²³.

4.6. Review of priorities

Purpose of the priority review. In order to support WP7 in consolidating the thirteen strategic priorities presented in the SRIDA and to ensure that they were not only internally coherent, but also grounded in the expertise of the SPECTRUM Community of Practice and of selected external experts, WP4 organised a dedicated review process for the SRIDA priorities. The review focused in particular on the detailed priority sheets included in Annex A of the SRIDA, with special attention to the sections describing implementation pathways, stakeholder roles, resource needs and critical dependencies. This was important because the SRIDA priorities were intended not only to describe strategic challenges, but also to provide actionable guidance for the future European compute and data continuum.

Link with the SRIDA priority framework. The review process built on the structure of the SRIDA, which organised thirteen strategic priorities within four pillars:

1. Policy, Trust and Governance
2. Architecture and Interoperability
3. Software and Science Enablers
4. Human Capital and Responsibility

In the SRIDA methodology, these priorities were derived from the analysis of SPECTRUM deliverables, the Technical Blueprint, community consultation and external validation. Annex C of the SRIDA also mapped the priorities to the CoP Working Groups, showing how each WG contributed to the development of specific priorities. For example, WG1 contributed to data management aspects, WG2 to resource allocation and workflows, WG3 to heterogeneous computing and AI/ML, WG4 to software portability and preservation, WG5 to community collaboration, skills and training, and WG6 to governance, identity, facilities and sustainability.

Standardised priority template. To ensure consistency across the thirteen priorities, WP7 developed a common priority description template, subsequently used for the detailed priority sheets in Annex A of the SRIDA. The template required each priority to address a common set of dimensions: strategic rationale and evidence base, current state, community evidence, technical foundation, European alignment, target outcomes, success indicators, European impact, implementation phases, stakeholder roles, resource needs and critical dependencies. The WP4 review process was organised around this template, with the objective

²³ <https://zenodo.org/records/19231191>

of helping priority leaders complete and refine the sections that required additional community input, especially those related to implementation and stakeholder coordination.

Organisation led by WP4. WP4 coordinated the practical organisation of the priority review. Each priority leader was contacted at the beginning of January 2026 and asked to identify their availability and a small group of relevant reviewers, typically three to four people, including CoP members and external experts. WP4 then supported the scheduling of the meetings, contacted the proposed participants, managed meeting polls where needed, published the meeting dates on the dedicated SPECTRUMCoP Confluence page, and circulated regular updates to CoP members. A reminder was sent before each meeting, asking participants to reread the relevant priority sheet in Annex A of the SRIDA.

Priority review meetings. The review was implemented through a series of dedicated meetings, each focused on one priority or on a closely related set of priorities. The process covered the thirteen SRIDA priorities. Some meetings were held before the Barcelona Experts Meeting, while others took place afterwards, allowing the review to incorporate feedback from several sources: the initial SRIDA drafting work, the CoP Working Groups, the public consultation, the Barcelona discussions and the expertise of the invited reviewers. A schedule was made available on Confluence to track the process priority by priority, with columns recording the priority leader, invited participants, meeting details, minutes, next steps and content-completeness status.

Meeting format and working method. The meetings were designed as focused working sessions of approximately one hour. Each priority leader was invited to briefly summarise the priority, after which the discussion concentrated on the parts of the priority sheet that required further clarification or completion. The meetings were not intended as generic brainstorming sessions, but as working meetings aimed at improving the text of the SRIDA priorities. Direct modifications were made in a shared document, and the meetings were recorded, with summaries generated to support follow-up work. This allowed WP4 and WP7 to capture comments efficiently and to transform expert feedback into concrete improvements to the priority sheets.

Integration of consultation evidence. The priority review also provided a mechanism to integrate the results of the broader WP4 consultation into the SRIDA. Feedback from the public consultation, the CoP discussions and the Experts Meeting in Barcelona was progressively connected to the relevant priorities. This helped ensure that the final SRIDA priority sheets reflected not only the original analysis carried out by WP7, but also the comments, concerns and recommendations gathered through WP4. In practical terms, this meant that issues raised by the community – such as long-term funding, software sustainability, heterogeneous computing, data management, AI/ML, environmental impact, skills and career structures – could be checked against the appropriate priority sheets and, where relevant, incorporated into their implementation pathways or critical dependencies.

Role of WP4 in the SRIDA process. The added value of WP4 in the review of priorities was therefore organisational, methodological and substantive. Organisationally, WP4 structured the review campaign, contacted priority leaders and reviewers, scheduled meetings and maintained the Confluence tracking page. Methodologically, it ensured that the review followed a consistent process across priorities and that comments were documented and channelled back to the SRIDA drafting team. Substantively, WP4 helped connect the SRIDA priority framework with the experience of the CoP, ensuring that the priorities were tested against community knowledge and operational realities rather than remaining a purely internal drafting exercise.

4.7. Contribution of the consultation to the Technical Blueprint and the SRIDA

Consultation input for the Technical Blueprint and SRIDA. The material collected through the WP4 interviews provided important input to both the Technical Blueprint and the SRIDA. For WP6, in charge of the Technical Blueprint, the consultation helped clarify technical expectations, operational constraints and cross-cutting requirements related to the future compute and data continuum. For WP7, in charge of the SRIDA, it provided complementary insight into strategic priorities, long-term community needs, governance considerations, sustainability conditions and possible action paths for data-intensive science communities and e-infrastructure providers. The consultation also helped inform the SRIDA priority work developed

through the CoP Working Groups, supporting the organisation of the thirteen strategic priorities around the four SRIDA pillars.

Support for community validation. WP4 contributed to the broader validation of the draft Technical Blueprint and SRIDA through close collaboration with WP6 and WP7 in the organisation of CoP and public webinars presenting the first results of SPECTRUM's two main outputs. These activities helped establish a feedback loop between the drafting teams and the wider community, allowing preliminary findings, recommendations and the emerging SRIDA priority framework to be discussed, refined and tested against community expectations and operational realities.

Presentation of WP4 results to WP6 and WP7. The contribution of WP4 to the Technical Blueprint and the SRIDA was further strengthened through project-level meetings. At the SPECTRUM All Hands Meeting held in Nice in October 2025, WP4 presented an overview of the interview results. Subsequently, at the Experts Meeting organised in Barcelona in February 2026, WP4 presented the structure and main highlights of the public consultation launched to discuss the preliminary versions of the Technical Blueprint and the SRIDA with the SPECTRUMCoP and the wider expert community. These exchanges enabled the consortium to discuss the consultation findings collectively, assess their relevance for the project's strategic outputs, review the clarity and completeness of the SRIDA priorities, and align the next steps for the final phase of SPECTRUM.

Operational added value. The added value of WP4 lay not only in collecting feedback, but also in transforming that feedback into structured, validated and timely input for the rest of the project. By connecting the Community of Practice with WP6 and WP7, WP4 helped ensure that the Technical Blueprint and the SRIDA were first informed by, and then tested against, community experience, operational realities and strategic expectations, rather than being developed solely as internal project outputs. In particular, WP4 supported the consolidation of the SRIDA priority framework by ensuring that the priorities reflected both the technical gaps identified by SPECTRUM and the strategic concerns expressed by the consulted communities.

5. Impact of the Community of Practice

This section assesses the impact of the SPECTRUM Community of Practice during WP4. It focuses on how the CoP contributed to aligning scientific communities, Research Infrastructures and e-infrastructure providers around shared technical and strategic challenges, and on how its activities supported the preparation of the Technical Blueprint and the SRIDA. It also summarises the relevant Key Performance Indicators used to assess the reach and effectiveness of the CoP.

5.1. Alignment across communities, challenges and European coordination

Reaching other communities. In the SPECTRUM Description of Action, the two main target communities are identified as HEP and RA. However, the document also states several times that some project activities should involve additional scientific communities. In particular, these external communities were expected to help confirm and validate the challenges identified by the HEP and RA communities. Reaching these additional data-intensive communities was therefore an important objective of WP4. As stated in the Description of Action, "the consultation will be extended to other external data-intensive communities (e.g. climate and environment, earth observation, biological and medical sciences)". This broader perspective was already visible in the analysis of use cases carried out in WP5. Deliverable D5.1 includes six use cases related to HEP and five related to RA, but also additional use cases from other domains. These include one use case in chemistry (*LIGATE Molecular Dynamics*), one in meteorological science (*MISTRAL*), and one in neuroscience. As part of the objective of collecting feedback beyond the HEP and RA communities, several activities were organised during the Public Consultation phase (see [Section 4](#)), including a series of individual interviews. One of these interviews involved Technology Partnership Lead for Destination Earth under ECMWF (European Centre for Medium-Range Weather Forecasts). Destination Earth aims to build and deploy a digital twin infrastructure across several EuroHPC sites. During the interview, several challenges were identified, including the difficulty of reaching consensus when each scientific community follows its own priorities and operational constraints. Overall, the observations shared during this interview were consistent with feedback collected from representatives of the RA, HEP, and e-infrastructure communities.

Reminder of the broad scope of the two communities. During the Public Consultation, the project also organised an Experts Meeting in Barcelona to collect feedback on the first versions of the Technical Blueprint and the SRIDA. Most invited participants came from the HEP, RA, and e-infrastructure communities. However, some participants also represented more specialised or less visible domains. For example, one invited expert was working in the field of Lattice QCD, a subdomain of the HEP community that had previously received limited attention within the project. The feedback provided, particularly regarding how the Lattice QCD community is organised and coordinated, proved valuable for the project. This example illustrates that the two main communities targeted by SPECTRUM are themselves broad and diverse, and that the project sought to engage with as many of their different components as possible throughout its duration.

WP4 survey: results from outside RA and HEP. Another important activity of the Public Consultation was the survey launched after the webinar organised in December 2025. During January and February 2026, the project made extensive communication efforts in order to collect as much feedback as possible on the first versions of the SRIDA and the Technical Blueprint. Among the approximately 25 responses received, several contributions came from people outside the HEP and RA communities. These included:

- a contribution from WeNMR²⁴, which supports collaboration between structural biology and life sciences communities;
- feedback from the life sciences and biomedical domain provided by University of Debrecen in Hungary;
- a contribution related to computational social science from Simula Research Laboratory in Norway;
- and feedback from the photon science community provided by DESY.

These contributions confirmed that many of the challenges identified by SPECTRUM are shared across a broader range of data-intensive scientific domains.

Links with other initiatives regarding CoP sustainability. The Community of Practice established during the project demonstrated the importance of maintaining spaces where members of the RA and HEP communities can exchange ideas and experiences. During the discussions on the long-term sustainability of the CoP organised at the Experts Meeting (see [Section 6](#)), the project and invited experts identified several initiatives that pursue similar objectives by connecting data-intensive scientific communities that traditionally interact too little. Examples mentioned included the EuroHPC User Forum Coordination Group (UFCG), HiPEAC, ETP4HPC, PRACE, the InPEx initiative, and EGI. The SPECTRUM project has direct or indirect links with all of these initiatives. This creates opportunities to continue and strengthen exchanges between the RA, HEP, and other complementary scientific communities beyond the end of the project. Additional details are available in the online document *Review of discussions*²⁵ from the Experts Meeting.

5.2. Key Performance Indicators

KPIs related to the Community of Practice. Several Key Performance Indicators (KPIs) defined within the SPECTRUM project were directly related to the activities of the Community of Practice. These include:

- KPI1: Number of established Working Groups, which remained stable at six throughout the project (see [Section 3.1](#) for further details);
- KPI2: Number of participants in the Community of Practice, which stabilised at around 65 members by the end of WP3;
- and KPI7: “Number of entities that contributed inputs to the Technical Blueprint and SRIDA”, which is discussed in more detail below, since it provides a quantitative measure of WP4’s contribution to its core objective: collecting, organising and channelling community feedback into the two main final deliverables of the SPECTRUM project.

Additional non-official KPIs for the CoP. During the project, WP3 and WP4 also monitored additional indicators considered relevant for evaluating the activities and impact of the Community of Practice. For example, around 60 documents were identified and referenced in the document repository available through the Knowledge Hub, which was populated at the beginning of the project (see [Section 3.3](#)). In addition, 20 plenary meetings were organised during the project, with an average participation of between 15 and 20 attendees per meeting (see [Section 3.2](#)). Regarding the Public Consultation activities, 10

²⁴ <https://www.egi.eu/case-study/wenmr>

²⁵ <https://zenodo.org/records/19231191>

individual interviews were conducted during summer 2025 (see [Section 4.3](#)), and 41 unique participants took part in the 13 meetings organised around the priorities identified for the SRIDA.

Presentation of KPI7. KPI7 is defined as the “Number of entities that contributed inputs to the Technical Blueprint and SRIDA”. The term “entity” can be interpreted in different ways, which makes it important to establish a clear and consistent definition in this context. For the purpose of this KPI, a contribution was considered to occur when a person external to the project contributed to one of the project deliverables, either by providing comments on a document or by participating in one of the dedicated project meetings. The entity retained for reporting purposes was the organisation with which the participant identified themselves. It is important to clarify that such contributions do not represent the official position or endorsement of the entire organisation, but only the participation of the individual concerned. Consequently, the list of entities presented below should not be understood as organisations formally contributing to the Technical Blueprint and SRIDA, but rather as organisations for which at least one member contributed input to these activities.

Methodology: definition of an entity. For KPI7, the following definition of “entity” is used: An entity refers to any identifiable organisation, infrastructure, project or initiative for which at least one member has provided a concrete and verifiable contribution to the SPECTRUM Technical Blueprint and/or SRIDA. Each entity is counted only once, regardless of the number of individual contributors. If an individual contributes on behalf of multiple entities, each of these entities is counted separately.

The counting methodology for each source is defined as follows:

- **EAB:** Only the organisation(s) listed on the “Members” page of the dedicated External Advisory Board (EAB) Confluence space are counted.
- **WP3 Survey:** (see [Section 2.1](#)) Only the response to question 3.10 (“Provide a short name for your initiative / use case / centre (for our indexing)”) is counted, even if the respondent completed the survey using an email address from another organisation. If the respondent did not answer the question, the organisation indicated in the respondent’s email address is counted.
- **Individual Interviews:** (see [Section 4.3](#)) Only the organisation(s) listed on the “Individual Interviews” page of the internal Confluence are counted.
- **Experts Meeting:** (see [Section 4.6](#)) Only the organisation(s) listed in the “Acknowledgements” section of the document “*SPECTRUM Experts Meeting: Summary of Discussions*”²⁶ are counted.
- **Priorities Discussions:** (see [Section 4.5](#)) Only the organisation(s) listed on the “Review of priorities” page of the internal Confluence are counted.
- **WP4 Survey:** (see [Section 4.4](#)) Only the response to question 3.9 (“If you are replying on behalf of an organisation, please, write the name of the organisation and the country.”) is counted, even if the respondent completed the survey using an email address from another organisation. If the respondent did not answer the question, the organisation indicated in the respondent’s email address is counted.

Methodology: entity categories. Entities are classified into the following categories:

- **Univ.:** Universities
- **e-I/CC:** e-Infrastructures and computing centres
- **RO:** Research organisations
- **Non-pr.:** Non-profit entities
- **SME:** Small and medium-sized enterprises
- **Exp.:** Scientific collaborations and experiments
- **Project:** EU, national, and collaborative projects
- **SW:** Software, tools and frameworks

List of institutions that contributed to SPECTRUM. The list of organisations for which one or more members participated in at least one of the SPECTRUM activities described above is presented in alphabetical order in Annex A.6.

²⁶ SPECTRUM Experts Meeting: Summary of Discussions. <https://zenodo.org/records/19112881>

6. Sustainability plan of the CoP

The sustainability of the SPECTRUM Community of Practice was considered from the beginning of the project as an explicit objective. The SPECTRUM proposal described the CoP as a structured community, organised through Working Groups, intended to stimulate cross-disciplinary collaboration, knowledge sharing and relationship building across research groups, experiment representatives, Research Infrastructures and e-infrastructure providers. It also identified the CoP as the main channel to source knowledge from the communities and validate project outcomes through consultation, interviews and workshops, with a community charter to support longer-term operations beyond the lifetime of the project.

During the project, the CoP became an operational tool for SPECTRUM. It supported the Knowledge Hub and document repository, contributed to the first survey carried out during WP3, participated in plenary meetings, supported the public consultation, contributed to individual interviews, reviewed the SRIDA priorities, and provided input to the Technical Blueprint and the SRIDA. By the time of the Barcelona discussions, the CoP had generated a substantial body of work, including 64 documents in the repository, 19 plenary meetings, more than 80 replies to the first survey, 10 individual interviews, a second consultation survey, and dedicated meetings on the 13 SRIDA priorities.

The issue addressed in this section is therefore not whether the CoP has been useful during SPECTRUM, but under which conditions it can remain useful after the end of the project. This question has become more concrete in view of the upcoming European Research Infrastructure calls²⁷, notably HORIZON-INFRA-2026-DEV-01-02, focused on strategic coordination, synergies and simplified access pathways by large thematic clusters of pan-European research infrastructures, and HORIZON-INFRA-2027-SERV-01-01, which will support large-scale pilots for more integrated access schemes across domains. The 2027 SERV topic explicitly includes an area combining Physical Sciences and Engineering with Data, Computing and Digital Research Infrastructures, making the SPECTRUMCoP particularly relevant as a possible forum for dialogue across the scientific and digital infrastructure communities.

6.1. Key issues and reminder of engagement challenges faced

From project support to community value. The main challenge for the sustainability of the CoP is that, during the project, it primarily served SPECTRUM's implementation needs. It helped collect evidence, validate assumptions, review project outputs and provide feedback to the consortium. This was valuable, but it also created a structural limitation: if the CoP remains only a resource for project deliverables, its motivation and usefulness for members will decline once the project ends.

Lessons from the CoP Needs Survey. This issue was clearly reflected in the CoP Needs Survey (see [Section 3.4.2](#)) and in the Barcelona Experts Meeting (see [Section 4.5](#)). The survey, conducted in summer 2025, aimed to identify the expectations of CoP members and possible ways to increase participation. It was sent to 60 recipients and received 24 answers. The most valued expected outcomes were knowledge sharing and the creation of cross-disciplinary collaborations, while the main obstacle to participation was lack of time. Respondents also indicated that members were not always clear about how they could contribute to the CoP, suggesting the need for more concrete and simple engagement mechanisms.

Preferred engagement formats. The same survey showed that regular newsletters and informal meetings were preferred communication formats, while more demanding or platform-heavy options were less attractive. The most requested topics included computing resource access and allocation, sustainability and energy efficiency, workflow management and automation, software development best practices, AI/ML applications, and data management. This indicates that the CoP has a genuine potential role, but only if it focuses on issues of practical relevance to its members and avoids creating unnecessary organisational overhead.

Need for focused interaction. A further difficulty concerns the balance between synchronous and asynchronous engagement. The CoP plenary meetings were useful, but attendance varied and tended to

²⁷ https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2026-2027/wp-3-research-infrastructures_horizon-2026-2027_en.pdf

decrease when the agenda was not immediately linked to a concrete outcome or topic of strong common interest. This suggests that any future kind of CoP should avoid maintaining meetings for their own sake. Instead, meetings should be fewer, more focused, and directly connected to concrete opportunities, such as European calls, roadmap processes, joint position papers, or technical topics requiring cross-community discussion.

Balancing openness and focus. A further issue is how to broaden the scope of the CoP without diluting its focus or reducing its relevance and attractiveness for already busy community members. The Barcelona discussion stressed that the added value of SPECTRUMCoP lies in its clear focus on the needs of High Energy Physics and Radio Astronomy within the wider compute and data continuum. At the same time, the next phase of European RI coordination will require interaction with a broader perimeter, including the full Physical Sciences and Engineering domain and the Data, Computing and Digital Research Infrastructures domain. The challenge is therefore to open the CoP enough to be useful for future cross-domain discussions, without diluting its identity or becoming an unfocused general forum.

6.2. Coordination with other initiatives

Need for external anchoring. The sustainability of the CoP cannot rely on SPECTRUM alone. Experience from previous European projects shows that Communities of Practice created within funded projects often fade after the end of the grant, unless they are linked to a clear purpose and to existing institutional or community structures. For this reason, the continuation of SPECTRUMCoP should be based on structured links with other European and national initiatives, rather than on the creation of an isolated new body.

Relevant initiatives to engage. Several relevant initiatives were identified during WP4 discussions and at the Barcelona Experts Meeting. In High Energy Physics, potential links include [JENA](#), [NuPECC](#), the [WLCG](#), and domain-specific communities such as the Lattice QCD network. In Radio Astronomy, [RadioNet](#), [SRCNet](#) and astronomy- and astro-particle related roadmap initiatives, such as [AstroNET](#) and [APPEC](#), represent natural points of connection. On the e-infrastructure side, relevant actors include [EGI](#), [PRACE](#), [EuroHPC](#) user structures, [ETP4HPC](#) and emerging community platforms. This list is not intended to be exhaustive, but rather to identify an initial set of networks and initiatives with which further discussions should be pursued. The forthcoming SPE project, expected to start in 2026, was also identified as particularly relevant, given its focus on post-exascale HPC, AI and quantum computing, as well as its planned Community of Practice at the intersection of HPC, AI and QCS.

Opportunity of upcoming EU calls. The upcoming Horizon Europe Research Infrastructure calls make this coordination more urgent. In this context, the future CoP could provide a useful pre-coordination space for the communities connected to SPECTRUM. Its role would not be to replace existing governance structures or proposal coordination groups, but to facilitate early discussion across communities that will need to interact in the preparation of these or any future initiatives. This could include sharing information on upcoming calls, identifying common needs across HEP, RA and neighbouring communities, clarifying the interface with e-infrastructures, and supporting alignment between scientific requirements and digital infrastructure capabilities.

Towards a connected European forum. The CoP should therefore evolve from a project consultation mechanism into a light European discussion forum connected to existing initiatives. Its function would be to provide continuity between SPECTRUM outputs and future European coordination efforts, especially where questions of computing, data, access, software, sustainability and skills cut across established domain boundaries.

6.3. Scenarios considered

Several scenarios were considered for the future of the CoP.

Option 1: Ending the CoP. The first scenario was to let the CoP end with the SPECTRUM project. This would waste the network, tools and trust developed during the project, and it would leave the communities without a dedicated forum to follow up the recommendations of the Technical Blueprint and SRIDA. This scenario is therefore not recommended.

Option 2: Creating a formal entity. The second scenario was to transform the CoP into a formal legal entity, such as an association. This would provide a clear structure, but it was considered disproportionate to the expected level of activity. It would require administrative work, governance procedures, financial management and dedicated resources that are unlikely to be available in the short term. For the purposes currently envisaged, this option appears too heavy and risks consuming more effort than the value it would generate.

Option 3: Merging with an existing initiative. The third scenario was to merge the CoP into an existing initiative. This could provide continuity and reduce overhead, especially if hosted by a structure such as PRACE, EGI, RadioNet, JENA, SPE or another relevant initiative. However, full integration into one existing structure could also narrow the scope of the CoP or make it less balanced between HEP, RA and e-infrastructure perspectives. It could also reduce the visibility of the specific SPECTRUM legacy.

Option 4: Maintaining a light informal forum. The fourth scenario was to maintain the CoP as an informal initiative, supported mainly by in-kind contributions, with a light governance model and clear links to existing initiatives. This was identified as the most realistic option. It would preserve the SPECTRUM legacy, avoid unnecessary administrative burden, and allow the CoP to remain flexible. It would also make it possible to adapt the level of activity to concrete opportunities, such as European calls, roadmap consultations or joint workshops.

Preferred scenario. The preferred scenario is therefore a light, informal and purpose-driven continuation of the CoP. Under this scenario, the CoP would not become a new institution, nor would it compete with existing structures. It would act as a connective forum between SPECTRUM communities, e-infrastructures and related initiatives, with a particular focus on the implementation and follow-up of the Technical Blueprint and SRIDA recommendations.

6.4. Governance model

A draft governance approach. The governance model described below should be understood as a first draft, not as a final or already agreed structure. It reflects the initial ideas developed within WP4 to ensure continuity of the SPECTRUMCoP after the end of the project, while keeping the model sufficiently light to avoid discouraging participation. However, these proposals will need to be further challenged, refined and possibly adapted depending on the level of coordination that can be established with other relevant initiatives (see [Section 6.2](#)).

Updated CoP Charter. A first element of this draft governance model is the preparation of an updated CoP Charter for the period following the end of SPECTRUM. The updated Charter should preserve the original context of the CoP, while redefining its purpose beyond the project lifetime. At this stage, the proposed purpose is to maintain a connected community of scientists, primarily but not exclusively from High Energy Physics and Radio Astronomy, together with infrastructure managers and e-infrastructure actors, in order to build a shared understanding of future needs, challenges and possible solutions.

Possible future goals. The possible future goals of the CoP could include following and supporting the recommendations of the SPECTRUM Technical Blueprint and SRIDA; supporting the preparation of potential initiatives responding to future European calls; contributing to existing roadmap processes; maintaining a discussion space between HEP, RA and e-infrastructure actors; acting as a laboratory for new ideas and partnerships; and assessing synergies with related communities, including broader astronomy, space, cosmology, Lattice QCD, computational neuroscience and other data-intensive communities. These objectives should, however, be tested against the priorities and expectations of the initiatives with which coordination will be pursued.

Core roles and responsibilities. In its current draft form, the governance model could be based on a small number of core roles. First, two Community Leaders, one from HEP and one from RA, could oversee the direction of the CoP and ensure balance between the two founding communities. Second, a light Community Secretariat could provide basic administrative support, including meeting organisation, mailing list management, document sharing and agenda preparation. Third, CoP members would contribute on a voluntary basis, according to their expertise and interest. This model remains intentionally minimal and may need to evolve if the CoP becomes more closely associated with existing initiatives or future European projects.

Flexible topical structure. The Working Group structure used during SPECTRUM should not be maintained in its current form. It was useful during the project because it supported the preparation of the deliverables, but it is too heavy for a post-project informal forum. A more flexible approach is preferable, with temporary topical groups created only when needed, for example around a European call, a roadmap contribution, or a specific technical issue. The final decision on this point should depend on whether the CoP remains an informal forum or becomes more formally connected to other initiatives.

Meeting rhythm and agenda. As an initial working hypothesis, the CoP could hold a regular plenary meeting approximately every four months. These meetings could be organised alternately by the HEP and RA communities and could focus on practical agenda items: upcoming calls, relevant initiatives and roadmaps, possible joint actions, topics proposed by members, and follow-up of SPECTRUM recommendations. Additional topical meetings or workshops could be organised when there is a concrete need. This frequency should remain adjustable, depending on the level of engagement and on the calendar of relevant European calls and roadmap processes.

Openness and participation rules. Finally, the draft governance model should include a simple code of conduct and basic rules for openness, transparency and participation. The objective would be to keep the CoP inclusive and low-barrier, while ensuring that discussions remain useful, respectful and focused. These principles should be validated with CoP members and with the external initiatives that may contribute to or host future CoP activities.

6.5. Funding options

No dedicated funding secured. At this stage, no dedicated funding source has been secured for the continuation of the CoP after the end of SPECTRUM. The funding model should therefore remain deliberately pragmatic and should be adapted once the future governance model has been further discussed with CoP members and with the external initiatives identified as potential partners or hosts.

Short-term in-kind support. In the short term, the most realistic option is to maintain the CoP through limited in-kind contributions from interested organisations. This would cover basic coordination activities, such as organising occasional plenary meetings, maintaining the mailing list, circulating relevant information, and preserving access to the Knowledge Hub and document repository. This model is viable only if the future CoP remains light, focused and low-maintenance. It would not support a heavy Working Group structure, frequent meetings, or extensive content curation.

Preserving existing tools. The platform issue should also be handled in a cost-conscious way. During WP4 discussions, the possibility of maintaining the CoP Confluence space through EGI for some years after the end of the project was identified as a practical option. This would avoid the immediate cost and effort of migrating content, while preserving the Knowledge Hub and document repository as useful references for future work. Moving to a new platform should only be considered if there is a clear need, an identified host, and sufficient time and resources to support the transition. The CoP and SPECTRUM mailing lists will also remain an active channel.

Embedding the CoP in future initiatives. In the medium term, the most promising route is not to fund the CoP as a stand-alone structure, but to embed its coordination functions within future European or community-led initiatives. This could include future proposals linked to Research Infrastructure coordination, integrated access, post-exascale computing, AI, quantum computing, or cross-domain data-intensive science. Other initiatives may also provide possible routes for continuity. Depending on the outcome of the coordination discussions, the CoP could be associated with or supported by existing or emerging structures. The post-Barcelona notes explicitly identify the need to test these links and to discuss possible forms of involvement with the relevant initiatives before fixing the future model of the CoP.

Progressive funding approach. The preferred funding approach is therefore progressive: short-term continuity through in-kind support and existing tools; medium-term integration into future projects, calls or initiatives; and only later, if justified, consideration of a more formal or structured funding arrangement. A more consistent and dedicated funding model should only be reconsidered if the CoP demonstrates sustained value, attracts stable participation, and becomes clearly positioned within a broader European coordination framework.

6.6. Agreed action plan

The action plan described below should be understood as an initial roadmap rather than a final agreement. It is intended to preserve the SPECTRUMCoP legacy, avoid a discontinuity after the end of the project, and create the conditions for a more informed decision on the future of the CoP once discussions with other initiatives have progressed.

- WP4 active members engage in updating CoP Charter for the period beginning after the end of SPECTRUM. This Charter should reflect the draft governance model described in Section 6.4, while making clear that the proposed structure remains open to adjustment. It should define the possible post-project purpose of the CoP, its expected scope, the proposed roles, the basic communication channels, and the type of activities that could be maintained after June 2026. The post-Barcelona working document (Annex 5) already proposes this Charter update as the first concrete step.
- Following the end of SPECTRUM, the updated Charter should be reviewed by the members of the former SPECTRUM consortium who were most directly involved in the CoP and in the preparation of the project's final outputs. This should include representatives of the former AMB, the CoP Working Group leaders, and partners involved in WP4, WP6 and WP7. The objective of this step is to assess whether the proposed post-project governance model is realistic, whether the expected level of in-kind support remains credible after the end of the funded project, and whether the future purpose of the CoP is sufficiently clear to justify its continuation in an evolved form.
- The revised Charter should be circulated to CoP members for comments. This step is essential because the future CoP cannot be sustained only by the consortium's intention to keep it alive. It must correspond to an actual need from the community. Feedback should therefore be sought on the proposed objectives, meeting frequency, communication tools, openness of membership, and possible topics for future work.
- As part of the post-project transition, former WP4 contributors, together with the SPECTRUM partners most involved in the CoP, should initiate discussions with selected external initiatives before any governance model is finalised. These discussions should help determine whether the CoP should remain an informal SPECTRUM legacy forum, become associated with one or more existing initiatives, or be embedded in future European projects. The aim should be practical: to identify possible forms of collaboration, such as mutual invitations, shared meetings, roadmap input, support to future proposals, or light endorsement of the updated Charter.
- The CoP should organise at least one transition meeting before or shortly after the end of SPECTRUM. This meeting should not simply close the project. It should test the future format of the CoP by focusing on a concrete agenda, for example the follow-up of the Technical Blueprint and SRIDA, upcoming European calls, links with Physical Sciences and Engineering communities, and possible contributions to future Research Infrastructure coordination or access proposals.
- The CoP should maintain a light communication rhythm during the transition period. A short email update every one or two months would be more realistic than frequent meetings or a heavy platform-based interaction model. The update could highlight relevant calls, roadmap processes, workshops, funding opportunities and possible topics for future CoP discussion. Plenary meetings could be organised approximately every four months, but this frequency should remain flexible and depend on actual needs.
- The Knowledge Hub and document repository will be preserved, at least in read-only or lightly maintained form. They are useful project outputs and may support future roadmap work, proposal preparation and community discussions. Any decision to migrate to another platform should be postponed until a clear future host or coordination structure has been identified.
- A review point should be scheduled by the WP4 persons in charge of reviewing the CoP Charter six to twelve months after the end of SPECTRUM. At that point, the community should assess whether the CoP has remained useful, whether participation is sufficient, whether coordination with other initiatives has materialised, and whether the governance and funding model should be adjusted. If the CoP provides clear added value, it can continue. If not, it should either be absorbed into a more suitable initiative or closed in an orderly way rather than maintained artificially.

7. Conclusion

D4.1 has shown that the SPECTRUM Community of Practice played an important role in the second half of the project. Initially created during WP3 as a structured mechanism for engaging the HEP and RA

communities, the CoP evolved during WP4 into a consultation and validation framework supporting the development of the Technical Blueprint and the SRIDA. Through its meetings, surveys, interviews, priority reviews and expert discussions, the CoP enabled SPECTRUM to connect project analysis with community experience, operational constraints and strategic expectations.

The activities carried out in WP4 confirmed the value of maintaining a structured dialogue between scientific communities, Research Infrastructures and e-infrastructure providers. Many of the challenges addressed by SPECTRUM – including access to computing resources, data movement and storage, software sustainability, heterogeneous computing, AI/ML integration, environmental sustainability, skills and long-term funding – cannot be solved by individual communities in isolation. They require coordination across domains and between scientific users, infrastructure operators, technology providers, funders and policy actors.

At the same time, the work carried out in WP4 also highlighted the limits of community engagement within a time-limited project. CoP members are generally highly committed experts with limited availability, and their participation depends on the perceived usefulness of the activity. The experience of SPECTRUM shows that engagement is strongest when the CoP addresses concrete topics, provides clear opportunities to contribute, and connects discussions to visible outcomes such as deliverables, roadmaps, funding calls or future collaborations.

For this reason, the sustainability of the CoP should not be understood as the continuation of the same project structure after SPECTRUM. Rather, it should be seen as an opportunity to preserve and adapt the network, knowledge and trust developed during the project. The proposed way forward is therefore a light and flexible model, based on an updated Charter, limited but clear governance, periodic meetings, continued communication, preservation of the Knowledge Hub, and structured links with relevant European and community initiatives.

The future role of the CoP will depend on the level of coordination that can be established with these initiatives and on the concrete needs emerging from upcoming European discussions. In particular, future Research Infrastructure calls and broader efforts to coordinate the Physical Sciences, Engineering and Digital Research Infrastructure domains may create a timely opportunity for the CoP to act as a pre-coordination and exchange forum. In this role, the CoP could help carry forward the SPECTRUM legacy by supporting continued dialogue, identifying common priorities, and facilitating the preparation of future cross-community initiatives.

Overall, WP4 has demonstrated that the Community of Practice was not only a consultation instrument for SPECTRUM, but also a potential foundation for longer-term collaboration. Its continuation should remain pragmatic and conditional on community interest, but the experience gained during the project provides a strong basis for maintaining a focused European forum at the interface of data-intensive science communities and digital infrastructures.

Annexes

A.1 WP4 SPECTRUMCoP Consultation: Protocol and Methodology for Individual Interviews

SPECTRUMCoP Consultation

[Questions for interview protocol](#)

[List of documents to be provided before the interview](#)

[List of potential people to be contacted](#)

[Email to initiate contact](#)

Questions for interview protocol

 To contribute to the final deliverables of the SPECTRUM project — namely the Technical Blueprint of a European compute and data continuum, and the SRIDA (Strategic Research, Innovation and Deployment Agenda) — we will organise a consultation. This will take the form of "an interview protocol articulated around the thematic WGs and questions intended to provide insights on high-priority cross-cutting challenges supporting a growing CoP". The list of people interviewed is currently being compiled.

- **General:**
 - What are the top major problems or challenges you think your organisation/scientific community will face in the compute/data-intensive science area in the next 5–10 years?
 -
 - Are there any major gaps with the SPECTRUM findings that we shared in preparation for this interview?
 - Which emerging technologies do you see as most transformative for your field in the next 5–10 years?
 - E.g.: quantum computing
 - ... provide a list of examples
- **Data e-Infrastructure integration:**
 - Currently, data e-Infrastructures are quite fragmented, with a significant number of independent domain-specific efforts created, deployed, and operated. In light of the explosion of scientific data volumes and the need for efficiency in storing/preserving such data – what is your position on consolidating to a single “European data continuum” holding scientific data for all domains?
 - If you support it, what are the characteristics or capabilities that this European data continuum should support?
- **Collaboration:**
 - What is your level of understanding of other communities' challenges? (e.g. computing centers need to know what the problems of RA communities are)
 - Do you think that bringing together scientific fields, close or far apart, is an appropriate strategy for creating joint complex computing and/or data infrastructures? If yes, under

what conditions could this work effectively? Do you have any concrete examples (positive or negative) of initiatives of this type? (see 7.1.6. in D3.1)

- **For scientific communities:**
 - Do you see any value in continued collaboration between the HEP and RA domains?
 - **If yes:** in what area(s) and how can we effectively sustain such a collaboration? What are the perceived showstoppers/drawbacks? What could be the end point (for instance: acting as a single "fundamental physics" community towards external stakeholders such as the European Commission?)
 - **If no,** why?
 - Do you know what kind of information you need to extract/provide to the center and the available avenues of communication?
- **For computing centers:**
 - What do you need to know from the user community to work more collaboratively in your area? Do you have enough information from the HEP/RA communities – are the requirements from the science communities clear enough to effectively build/evolve/manage your facilities?
 - By what means/how can we work together? How can we improve collaboration or information exchanges between users and computing centers?
- **Training – For scientific communities:** What type of training would make your use of HPC/data centers more efficient, allowing you/your community to fully exploit the compute/data continuum?
- **Access (incl. access policies):**
 - **For end users:**
 - Do you find the traditional batch model prevalent in HPC limits your productivity?
 - Have you encountered situations where real-time interaction with compute jobs would have saved time/resources or helped to improve results?
 - Do you foresee future projects requiring real-time data analysis, interactive "live" simulations, or streaming of data?
 - Which workflow systems are you using, and do you see a need for adoption of OpenStack/Kubernetes by compute e-Infrastructures?
 - Would it be beneficial to be able to use any resource in an e-Infrastructure without requesting specific access quotas for each resource?
 - **Alternatives:**
 - Would it be beneficial to grant EU-wide access to computing centers through a single application process? Avoiding having to apply for each center individually.
 - Would it be beneficial to have resources across European e-Infrastructures that are not tied to a specific call? (e.g., allocating resources per EU-funded project – with request for resources at any time)
 - **For computing centres:**
 - Can you elaborate on the existing support (or plans to support) for orchestration systems like virtual machine (e.g., OpenStack) and container (e.g., k8s) as part of your HPC resources?
 - What is your position regarding support for interactive access for end-users to your compute nodes (such as backends for Jupyter notebooks or for steering of computational jobs)?
 - **Careers:** Do you think that there is a need to better "reward" computing experts in the SPECTRUM scientific domains, or that there is a risk that in the future we will not be able to design and operate

the large computing systems needed for upcoming initiatives? (see 7.1.2. and 7.2.5. in D3.1) What concrete steps could be taken to enhance these career paths?

- **Investment priorities for the next 7–10 years:**
 - If you had 100M Euro to invest in Research & Innovation activities for compute/data-intensive science services for your field, what would be your top 3 priorities?
 - If you had 500M Euro to invest in advancing compute/data-intensive science infrastructures for your field, what would be your top 3 priorities?
 - Who should bear primary responsibility for different types of computing infrastructure investments? (e.g., EC/EU-level funding, National governments, international collaborations, Research institutions, ...)
 - Core infrastructures (e.g., major data centers) and operational costs
 - Cross-border connectivity and high-level service provision
 - Software development and maintenance
 - Training and skills development
- **Best practices:** Can you share your best practices and actions regarding:
 - Joint work between different scientific communities, or scientific communities and computing centers, or both?
 - Energy efficiency/environmental sustainability, in particular in the data and computing domain?
 - Porting/adapting/rewriting compute applications for accelerators and heterogeneous compute environments
 - The use of AI methods replacing conventional simulation/data analysis

List of documents to be provided before the interview

- SPECTRUM Project. (2025). **D3.1 Community of Practice – Interim Report**.
<https://doi.org/10.5281/zenodo.15100587>
 - Key sections:
 - 7. Findings (pp. 73–84).
 - 8. Conclusions (p. 84)
- SPECTRUM Project. (2025). **D5.1 Representative use cases: analysis and alignment**.
<https://zenodo.org/records/15310224>
 - Key sections:
 - 4. Cross-cutting requirements (pp. 29–34)
 - 5. Reflections on other communities (p. 35)
 - 6. Conclusions (pp. 35–36)
- SPECTRUM Project. (2025). **D5.2 Interoperable access policies: analysis and recommendations**
<https://zenodo.org/records/15647609>
 - Key sections:
 - 4. Access Policy Summary, Requirements and Gaps (pp. 21–26)
 - 5. Access Policy Recommendations (pp. 27–29)
- SPECTRUM Project. (2025). **D5.3 Landscape of RIs: technologies, services, gaps**
<https://zenodo.org/records/15647756>
 - Key sections:
 - 4. Analysis Summary and Compendium of Use Case Requirements (pp. 23–28)
 - 5. Requirements for Future e-Infrastructures (pp. 28–32)

A.2 WP4 SPECTRUMCoP Individual Interviews: Final List of Questions



SPECTRUMCoP Consultation

Questions for the interview

To contribute to the final deliverables of the SPECTRUM project — namely the Technical Blueprint of a European compute and data continuum, and the SRIDA (Strategic Research, Innovation and Deployment Agenda) — we will organise a consultation. This will take the form of "an interview protocol articulated around the thematic WGs and questions intended to provide insights on high-priority cross-cutting challenges supporting a growing CoP".

1. General

- What are the top major problems or challenges you think your organisation/scientific community will face in the compute/data-intensive science area in the next 5–10 years?
- Are there any major gaps with the SPECTRUM findings that we shared in preparation for this interview?
- Which emerging technologies do you see as most transformative for your field in the next 5–10 years?
 - E.g.: quantum computing
 - ... provide a list of examples

2. Data e-Infrastructure integration

- Currently, data e-Infrastructures are quite fragmented, with a significant number of independent domain-specific efforts created, deployed, and operated. In light of the explosion of scientific data volumes and the need for efficiency in storing/preserving such data – what is your position on consolidating to a single “European data continuum” holding scientific data for all domains?
- If you support it, what are the characteristics or capabilities that this European data continuum should support?

3. Collaboration

- What is your level of understanding of other communities' challenges? (e.g. computing centers need to know what the problems of RA communities are)
- Do you think that bringing together scientific fields, close or far apart, is an appropriate strategy for creating joint complex computing and/or data infrastructures? If yes, under what conditions could this work effectively? Do you have any concrete examples (positive or negative) of initiatives of this type? (see 7.1.6. in D3.1)

For scientific communities:

- Do you see any value in continued collaboration between the HEP and RA domains?
 - **If yes:** in what area(s) and how can we effectively sustain such a collaboration? What are the perceived showstoppers/drawbacks? What could be the end point (for instance: acting as a single "fundamental physics" community towards external stakeholders such as the European Commission?)
 - **If no,** why?
- Do you know what kind of information you need to extract/provide to the center and the available avenues of communication?

For computing centers:

- What do you need to know from the user community to work more collaboratively in your area? Do you have enough information from the HEP/RA communities – are the requirements from the science communities clear enough to effectively build/evolve/manage your facilities?
- By what means/how can we work together? How can we improve collaboration or information exchanges between users and computing centers?

4. Training – For scientific communities

- What type of training would make your use of HPC/data centers more efficient, allowing you/your community to fully exploit the compute/data continuum?

5. Access (incl. access policies)

For end users:

- Do you find the traditional batch model prevalent in HPC limits your productivity?
- Have you encountered situations where real-time interaction with compute jobs would have saved time/resources or helped to improve results?
- Do you foresee future projects requiring real-time data analysis, interactive "live" simulations, or streaming of data?
- Which workflow systems are you using, and do you see a need for adoption of OpenStack/Kubernetes by compute e-Infrastructures?
- Would it be beneficial to grant EU-wide access to computing centres through a single application process? Avoiding having to apply for each centre individually.

For computing centres:

- Can you elaborate on the existing support (or plans to support) for orchestration systems like virtual machine (e.g., OpenStack) and container (e.g., k8s) as part of your HPC resources?
- What is your position regarding support for interactive access for end-users to your compute nodes (such as backends for Jupyter notebooks or for steering of computational jobs)?

6. Careers

- Do you think that there is a need to better "reward" computing experts in the SPECTRUM scientific domains, or that there is a risk that in the future we will not be able to design and operate the large computing systems needed for upcoming initiatives? (see 7.1.2. and 7.2.5. in D3.1)
What concrete steps could be taken to enhance these career paths?

7. Investment priorities for the next 7–10 years

- If you had 100M Euro to invest in Research & Innovation activities for compute/data-intensive science services for your field, what would be your top 3 priorities?
- If you had 500M Euro to invest in advancing compute/data-intensive science infrastructures for your field, what would be your top 3 priorities?
- Who should bear primary responsibility for different types of computing infrastructure investments? (e.g., EC/EU-level funding,



National governments, international collaborations, Research institutions, ...)

- Core infrastructures (e.g., major data centers) and operational costs
- Cross-border connectivity and high-level service provision
- Software development and maintenance
- Training and skills development

8. Best practices:

- Can you share your best practices and actions regarding:
 - Joint work between different scientific communities, or scientific communities and computing centers, or both?
 - Energy efficiency/environmental sustainability, in particular in the data and computing domain?
 - Porting/adapting/rewriting compute applications for accelerators and heterogeneous compute environments
 - The use of AI methods replacing conventional simulation/data analysis

List of SPECTRUM documents

SPECTRUM Project. (2025). **D3.1 Community of Practice – Interim Report**. <https://doi.org/10.5281/zenodo.15100587>

- Key sections:
 - 7. Findings (pp. 73–84).
 - 8. Conclusions (p. 84)

SPECTRUM Project. (2025). **D5.1 Representative use cases: analysis and alignment**. <https://zenodo.org/records/15310224>

- Key sections:
 - 4. Cross-cutting requirements (pp. 29–34)
 - 5. Reflections on other communities (p. 35)
 - 6. Conclusions (pp. 35–36)

SPECTRUM Project. (2025). **D5.2 Interoperable access policies: analysis and recommendations** <https://zenodo.org/records/15647609>

- Key sections:
 - 4. Access Policy Summary, Requirements and Gaps (pp. 21–26)
 - 5. Access Policy Recommendations (pp. 27–29)

SPECTRUM Project. (2025). **D5.3 Landscape of RIs: technologies, services, gaps** <https://zenodo.org/records/15647756>

- Key sections:
 - 4. Analysis Summary and Compendium of Use Case Requirements (pp. 23–28)
 - 5. Requirements for Future e-Infrastructures (pp. 28–32)

A.3 SPECTRUM Public Consultation: SRIDA and Technical Blueprint Survey



SPECTRUM Public Consultation

Fields marked with * are mandatory.

1 Welcome to the SPECTRUM Public Consultation survey!

Welcome to the SPECTRUM public consultation.

The SPECTRUM project (Computing Strategy for Data-intensive Science Infrastructures in Europe) invites your feedback on two draft deliverables:

- **D6.1 Technical Blueprint for Compute and Data Continuum** - Defines the architectural vision and technical capabilities for European research infrastructure
- **D7.1 Strategic Research, Innovation and Deployment Agenda (SRIDA)** - Presents strategic priorities, investment areas, and implementation roadmap

Your input will help refine these documents before final submission (April 2026 for D6.1 and June 2026 for D7.1).

The formal consultation period closed on 10 February 2026. However, **the survey remains open for additional contributions.**

The consortium will make every effort to integrate late responses into the deliverables before the documents are finalised at the end of April 2026.

Feedback received after this date, or contributions that cannot be incorporated into the final documents, will be recorded and referenced in the Community of Practice report (D4.1).

We encourage you to share your input. Every response strengthens the final deliverables.

Estimated completion time: 15 minutes

Document access: <https://doi.org/10.5281/zenodo.17901518>

Privacy: This survey complies with GDPR. Personal data will be processed solely for consultation purposes.

Contact: info@spectrumproject.eu

2 Privacy Consent

Before proceeding, please confirm that you have read and understand how your data will be processed.

Data Processing Information:

- An email address is required to verify responses and ensure submission quality.
- If you consent, your email may also be used to follow up on your feedback or invite you to related consultation activities.
- Your information helps us identify you as an individual or as representative of an organisation.
- Results will be presented only in aggregated or anonymised form
- Your personal details will not be published or shared externally
- Data will be used for improving SPECTRUM deliverables.
- Personal data will be retained until project completion (June 2026) and then deleted.
- Fully anonymised data may be deposited in an open repository for reuse by other researchers in line with open science principles in Horizon Europe projects.
- You may request access to, correction, or deletion of your data by contacting **Info@spectrumproject.eu**

Data Controller: EGI Foundation, Science Park 140, 1098 XG Amsterdam, Netherlands

Data Protection Officer: dpo@egi.eu

Survey Platform: This survey is hosted on EU Survey, the European Commission's official survey platform.

☐ I have read and accept the data processing information above

3 Respondent Profile

* 3.1 Which stakeholder group best describes your affiliation?

- ☐ Scientific community / Research Infrastructure (e.g., HEP, RA, other data-intensive science)
- ☐ Computing & Data Service Provider / e-Infrastructure (e.g., HPC centre, EGI, EOSC, cloud)
- ☐ Policy Maker / Funding Body
- ☐ Individual researcher
- ☐ University / Research Institution
- ☐ Industry / SME
- ☐ Other

3.2 Please specify:

*** 3.3 Which scientific domain(s) do you support or work with?**

- ☐ High Energy Physics
- ☐ Radio Astronomy
- ☐ Other astronomy/astrophysics
- ☐ Life sciences / biomedical
- ☐ Earth observation / climate
- ☐ Materials science
- ☐ Other data-intensive science
- ☐ I support multiple/all domains (infrastructure or policy role)

3.4 Other data-intensive science - Please specify:*** 3.5 Country/region of primary affiliation**

- ☐ Austria
- ☐ Belgium
- ☐ Bulgaria
- ☐ Croatia
- ☐ Cyprus
- ☐ Czech Republic
- ☐ Denmark
- ☐ Estonia
- ☐ Finland
- ☐ France
- ☐ Germany
- ☐ Greece
- ☐ Hungary
- ☐ Ireland
- ☐ Italy
- ☐ Latvia
- ☐ Lithuania
- ☐ Luxembourg
- ☐ Malta
- ☐ Netherlands
- ☐ Poland
- ☐ Portugal
- ☐ Romania
- ☐ Slovakia
- ☐ Slovenia
- ☐ Spain
- ☐ Sweden

- ☐ Switzerland
- ☐ United Kingdom
- ☐ Norway
- ☐ Other European country
- ☐ Non-European country
- ☐ International organisation (e.g., CERN)

*** 3.6 Years of experience in research computing/data infrastructure**

- ☐ Less than 2 years
- ☐ 2-5 years
- ☐ 5-10 years
- ☐ More than 10 years

*** 3.7 Which document(s) have you reviewed?**

- ☐ D7.1 SRIDA
- ☐ D6.1 Technical Blueprint

*** 3.8 What is your full name?**

3.9 If you are replying on behalf of an organisation, please, write the name of the organisation and the country.

*** 3.10 Please provide your email address:**

*** 3.11 Would you like to provide contact details for any of the following?**

Select all that apply. Your email will only be used for the purposes you select.

- ☐ Clarification questions about my responses
- ☐ Updates on consultation results
- ☐ None - I prefer not to be contacted

4 Technical Blueprint (D6.1)

4.1 Technical Blueprint (D6.1) - Capabilities

The Technical Blueprint defines 8 capability areas for the European Compute and Data Continuum.

Reference: D6.1 Appendix A

4.1.1 Rate the relevance of each capability to your work

1 = Not relevant

5 = Critical

Capability Area	1	2	3	4	5	N /A
A.1 Compute Resources (HPC, cloud, edge, quantum integration)	☐	☐	☐	☐	☐	☐
A.2 Data Resources (federated storage, data transfer, cataloguing, lifecycle)	☐	☐	☐	☐	☐	☐
A.3 Software Distribution & Execution (CVMFS, containers, runtime environments)	☐	☐	☐	☐	☐	☐
A.4 Orchestration & Workflows (workflow management, task scheduling, provenance)	☐	☐	☐	☐	☐	☐
A.5 AI/ML & HPC Applications (ML platforms, distributed training, digital twins)	☐	☐	☐	☐	☐	☐
A.6 Resource Federation (unified access, accounting, interoperability standards)	☐	☐	☐	☐	☐	☐
A.7 Monitoring & Observability (infrastructure monitoring, energy tracking, analytics)	☐	☐	☐	☐	☐	☐
A.8 Security & Trust (federated IAM, policy enforcement, data protection)	☐	☐	☐	☐	☐	☐

4.1.2 For your most critical capabilities, what specific features are missing or inadequately addressed?

4.1.3 Are there capabilities NOT covered by the Blueprint that you consider essential?

4.2 Technical Blueprint (D6.1) - Gaps, Requirements and Barriers

The Blueprint identifies 16 consolidated gaps/requirements (Table 1 in D6.1).

4.2.1 Rate the urgency of addressing these gaps

1 = Not relevant

5 = Critical

Gaps	1	2	3	4	5
Gap 1: Long-term resource provisioning (3-5 year allocations)	☐	☐	☐	☐	☐
Gap 2: Sustainable funding models for infrastructure operations	☐	☐	☐	☐	☐
Gap 3: Harmonised e-infrastructure governance	☐	☐	☐	☐	☐
Gap 4: Standardised interfaces across HPC/HTC/cloud	☐	☐	☐	☐	☐
Gap 5: Network connectivity from compute nodes	☐	☐	☐	☐	☐
Gap 6: Co-design between communities and providers	☐	☐	☐	☐	☐
Gap 7: FAIR storage for observation/experiment data	☐	☐	☐	☐	☐
Gap 8: Automated data movement and staging	☐	☐	☐	☐	☐
Gap 9: Portability across accelerated platforms (GPU vendors)	☐	☐	☐	☐	☐
Gap 10: Common workflow systems across infrastructures	☐	☐	☐	☐	☐
Gap 11: Common software stacks for compute applications	☐	☐	☐	☐	☐
Gap 12: Federated authentication across all resources	☐	☐	☐	☐	☐
Gap 13: Data protection for sensitive data (GDPR)	☐	☐	☐	☐	☐
Gap 14: Environmental sustainability (energy, lifecycle)	☐	☐	☐	☐	☐
Gap 15: Software and data preservation	☐	☐	☐	☐	☐
Gap 16: Skills and career development	☐	☐	☐	☐	☐

4.2.2 What additional gaps should the Blueprint address?

4.2.3 What are the main barriers to implementing the proposed technical blueprint?

Maximum 3 selection(s)

- ☐ Technical complexity
- ☐ Funding constraints
- ☐ Policy/governance barriers
- ☐ Skills/workforce gaps
- ☐ Organisational resistance

- ☐ Lack of interoperability standards
- ☐ Network capacity limitations
- ☐ Other

4.2.4 Please specify:

5 SRIDA (D7.1)

5.1 SRIDA (D7.1) - Six Drivers

The SRIDA identifies six drivers shaping the environment of European data-intensive science (Section 3.2 of D7.1).

5.1.1 How relevant is each driver to your domain?

1 = Not accurate

5 = Very accurate

Transformations	1	2	3	4	5
Scale: Petabyte to exabyte transition, architectural evolution across compute, storage, and networking	☐	☐	☐	☐	☐
AI/ML: ML becoming foundational for scientific discovery, maturity gap from proof-of-concept to production	☐	☐	☐	☐	☐
Sustainability: Energy availability and environmental impact as primary constraints on infrastructure growth	☐	☐	☐	☐	☐
Trust: Security evolution, authentication requirements, and data governance frameworks	☐	☐	☐	☐	☐
Preservation: Multi-decade instrument timelines, software and data usability across hardware generations, FAIR principles for workflows and AI models	☐	☐	☐	☐	☐
Workforce: Skills requirements shifting, career structures misaligned, competition with industry for talent	☐	☐	☐	☐	☐

5.1.2 What additional drivers affect your domain that are not included above?[Free Text]

5.2 SRIDA (D7.1) - Strategic Priorities

The SRIDA organises 13 priorities within four pillars (Section 4 of D7.1).

5.2.1 Pillar 1: Policy, Trust & Governance - Rate Importance

1 = Low

5 = Critical

Priority	1	2	3	4	5
P01: Cross-Infrastructure Governance (coordination mechanisms, liaison positions, RI representation)	☐	☐	☐	☐	☐
P02: Federated Resource Allocation (multi-year allocations, unified accounting)	☐	☐	☐	☐	☐
P03: Federated Identity and Trust (AARC Blueprint, dynamic authorisation)	☐	☐	☐	☐	☐

5.2.2 Pillar 2: Architecture & Interoperability - Rate importance

1 = Low

5 = Critical

Priority	1	2	3	4	5
P04: Heterogeneous Computing Integration (containers, CVMFS/EESSI, standardised APIs)	☐	☐	☐	☐	☐
P05: Data Management and Transport (FAIR standards, automated staging, exabyte-scale)	☐	☐	☐	☐	☐
P06: Orchestration and Workflows (cross-facility execution, resilience, provenance)	☐	☐	☐	☐	☐

5.2.3 Pillar 3: Software & Science Enablers - Rate importance

1 = Low

5 = Critical

Priority	1	2	3	4	5
P07: AI/ML (training infrastructure, distributed inference, ML-based fast simulation, FAIR model registries)	☐	☐	☐	☐	☐
P08: Software Portability (Kokkos, SYCL, Apptainer containers, architecture-agnostic code)	☐	☐	☐	☐	☐
P09: Open Science and Reproducibility (provenance tracking, FAIR practices)	☐	☐	☐	☐	☐

P10: Software Preservation and Sustainability (FAIR4RS, domain repositories, long-term maintenance)

☐ ☐ ☐ ☐ ☐

5.2.4 Pillar 4: Human Capital & Responsibility - Rate Importance

1 = Low

5 = Critical

Priority	1	2	3	4	5
P11: Community Collaboration and Co-Design (CoP engagement, structured feedback loops)	☐	☐	☐	☐	☐
P12: Environmental Sustainability (lifecycle assessment, energy-aware scheduling, reporting)	☐	☐	☐	☐	☐
P13: Skills, Careers & Training (RSE career paths, AI/ML skills, training programmes, retention)	☐	☐	☐	☐	☐

5.3 SRIDA - Roadmap and Investment

5.3.1 Which SRIDA priorities should be addressed first, and why? [Free Text]

Please identify 2-3 priorities from the 13 listed in Section 6 that you consider most urgent to address, and briefly explain your reasoning.

5.3.2 Which IT-focused investments areas are most critical for your domain?

Rate the importance of each investment area for achieving the SRIDA vision.

1 = Low

5 = Critical

Investment	1	2	3	4	5
Computing infrastructure (HPC, HTC, cloud capacity)	☐	☐	☐	☐	☐
Data infrastructure (storage, transfer networks, catalogues)	☐	☐	☐	☐	☐
Software development and maintenance	☐	☐	☐	☐	☐
Federated access and authentication (AAI)	☐	☐	☐	☐	☐
Training and skills development	☐	☐	☐	☐	☐
Coordination and governance mechanisms	☐	☐	☐	☐	☐

5.3.3 Which funding models are most appropriate for each investment area?

Select all funding models that you consider appropriate for each area. Note: Long-term programme funding refers to sustained multi-annual funding (e.g., ESFRI infrastructure operations, EuroHPC sustained capacity) as distinct from time-limited project grants.

Funding Model	EC /National grants	In-kind contributions	Co-funded (EC + national)	Membership fees	Long-term programme funding
Computing infrastructure	☐	☐	☐	☐	☐
Data infrastructure	☐	☐	☐	☐	☐
Software development	☐	☐	☐	☐	☐
Federated access (AAI)	☐	☐	☐	☐	☐
Training and skills	☐	☐	☐	☐	☐
Coordination mechanisms	☐	☐	☐	☐	☐

5.3.4 What milestones or decision points are missing from the roadmap?

5.3.5 The SRIDA notes that coordination costs, sustained software development, and long-term data preservation are often underestimated. Do you agree?

- ☐ Strongly agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly disagree

6 Quality & Feedback

6.1 Document Quality

6.1.1 Rate the quality of D6.1: Technical Blueprint

- ☐ Very unclear - difficult to understand
- ☐ Somewhat unclear - requires significant effort
- ☐ Adequate - understandable with some effort
- ☐ Clear - easy to follow
- ☐ Very clear - well structured and accessible

6.1.2 Rate the completeness of D6.1: Technical Blueprint

- ☐ Major gaps - critical topics missing
- ☐ Notable gaps - important topics inadequately covered
- ☐ Adequate - covers main topics with some gaps
- ☐ Comprehensive - covers topics well with minor gaps
- ☐ Very comprehensive - thorough coverage

6.1.3 Rate the quality of D7.1: SRIDA

- ☐ Very unclear - difficult to understand
- ☐ Somewhat unclear - requires significant effort
- ☐ Adequate - understandable with some effort
- ☐ Clear - easy to follow
- ☐ Very clear - well structured and accessible

6.1.4 Rate the completeness of D7.1: SRIDA

- ☐ Major gaps - critical topics missing
- ☐ Notable gaps - important topics inadequately covered
- ☐ Adequate - covers main topics with some gaps
- ☐ Comprehensive - covers topics well with minor gaps
- ☐ Very comprehensive - thorough coverage

6.1.5 How well does the Technical Blueprint support the SRIDA priorities?

- ☐ Excellent alignment - capabilities clearly map to priorities
- ☐ Good alignment with minor gaps
- ☐ Moderate alignment with notable gaps
- ☐ Poor alignment - significant disconnects
- ☐ Cannot assess

6.1.6 Where do you see misalignment between D6.1 capabilities and D7.1 priorities?

6.2 Document Adoption

6.2.1 Would you use the final version of these documents for strategic planning in your organisation?

- ☐ Yes, directly
- ☐ Yes, with adaptation
- ☐ Possibly, needs more actionable detail
- ☐ No

6.2.2 What would make the final version of these documents more useful for adoption in your context?

6.3 Open Feedback

6.3.1 What is the single most important improvement for D6.1 (Technical Blueprint)?

6.3.2 What is the single most important improvement for D7.1 (SRIDA)?

6.3.3 Any additional comments?

A.4 SPECTRUMCoP Charter during the project

Context

The High Energy Physics and Radio Astronomy communities are gearing up for groundbreaking instruments, necessitating digital infrastructures many times larger than the existing facilities. More than ever, in order to fully exploit new experiments and instruments, the scientific community needs access to world-class facilities like HPC centers, Clouds and eventually Quantum Computers, and will operate on a largely distributed and diverse global infrastructure.

Purpose

The SPECTRUM Community of Practice (CoP) aims to create a connected community of scientists and infrastructure managers having a mutual understanding of future needs, associated challenges and their possible solutions.

Goals

The goal of the CoP is to serve as a discussion forum across the HEP and RA domains to identify common directions for the design and operations of future systems, agreed processing models and solutions, and to provide feedback on investment to funding agencies and policy makers.

In particular:

- **Select and Define Use Cases:** Identify at least 10 representative HEP and RA science use cases, outlining current and future requirements for computing, storage/processing, and services.
- **Collect Inventory Resources:** Review existing services and resources relevant to the RI communities.
- **Assess Policies:** Examine existing and planned access policies and federation methods used by European e-Infrastructure service providers.
- **Operate Community Survey:** Develop and execute a survey to gather broader community insights.

Outputs

The CoP will produce inputs to the SPECTRUM project, which will be incorporated in the final SPECTRUM deliverables:

- the Landscape Analysis, Access Policies
- the Blueprint Architecture and the SRIDA

Membership

- Participation in Working Groups (WGs) is open to interested experts acting in their own capacity and is on a volunteer basis; we will actively seek participation from stakeholders in the field.
- WGs will work towards consensus in their decision-making processes.

Key Roles

- **Community Leader:** Oversees CoP direction and alignment with project needs.

- **Community Expert Group:** Maintains the charter, coordinates WGs, and ensures work aligns with project requirements.
- **Community Secretariat:** Provides administrative support.
- **Working Group Chairs:** Lead specific WGs.
- **Working Group Members:** Actively contribute to WG goals.

Communication channels

- Mailing List: Standard communications (based on Mailman)
- Messaging Platform: Quick feedback, discussions (based on Slack)
- Video Conference System: Meetings, collaboration (based on Slack)
- Survey Tool: Community data collection (based on LimeWire)
- Content Collaboration Tool: Knowledge sharing (papers, roadmaps, etc) (based on Confluence)
- Regular Meetings: Predetermined schedule as agreed by each Working Group

A.5 SPECTRUMCoP Charter after the end of the project

Proposed changes are written in red below.

Context:

Current	Proposed
The High Energy Physics and Radio Astronomy communities are gearing up for groundbreaking instruments, necessitating digital infrastructures many times larger than the existing facilities. More than ever, in order to fully exploit new experiments and instruments, the scientific community needs access to world-class facilities like HPC centers, Clouds and eventually Quantum Computers, and will operate on a largely distributed and diverse global infrastructure.	<i>No change</i>

Purpose:

Current	Proposed
The SPECTRUMCoP aims to create a connected community of scientists and infrastructure managers having a mutual understanding of future needs, associated challenges and their possible solutions.	The SPECTRUMCoP aims to create a connected community of scientists, primarily but not exclusively from the High Energy Physics and Radio Astronomy communities , and infrastructure managers, having a mutual understanding of future needs, associated challenges and their possible solutions.

Goals:

Current	Proposed
The goal of the CoP is to serve as a discussion forum across the HEP and RA domains to identify common directions for the design and operations of future systems, agreed processing models and solutions, and to provide feedback on investment to funding agencies and policy makers. In particular: Select and Define Use Cases: Identify at least 10 representative HEP and RA science use cases, outlining current and future requirements for computing, storage/processing, and services.	The goal of the CoP is to serve as a discussion forum mainly between the HEP and RA domains, as well as the e-infrastructures community, to identify common directions for the design and operations of future systems, agreed processing models and solutions, and to provide feedback on investment to funding agencies and policy makers. In particular: Follow and support the recommendations identified in the SPECTRUM Project's Technical Blueprint and the SRIDA Support the preparation of potential initiatives responding to future (European)

• Collect Inventory Resources: Review existing services and resources relevant to the RI communities. • Assess Policies: Examine existing and planned access policies and federation methods used by European e-Infrastructure service providers. • Operate Community Survey: Develop and execute a survey to gather broader community insights.	calls for proposals involving HEP and RA communities • Contribute to existing roadmap development initiatives to promote joint feedback for the common needs of the HEP and RA communities • Have a dedicated discussion space for sharing knowledge between the HEP and RA communities • Act as a laboratory for developing new ideas and partnerships between HEP and RA communities • Assess potential synergies with related and extended communities (e.g. astrophysics, computational neuroscience (EBRAINS), Lattice QCD, cosmology, space, astronomy) in order to identify common challenges and opportunities for collaboration.
--	---

Outputs:

Current	Proposed
The CoP will produce inputs to the SPECTRUM project, which will be incorporated in the final SPECTRUM deliverables: • the Landscape Analysis, Access Policies • the Blueprint Architecture and the SRIDA	The CoP will organise a one-hour plenary meeting every 4 months, organised alternately by the HEP and RA communities (via organisations y and z), where the agenda will be mainly dedicated to information sharing and may be structured as follows: • Calls for proposals that may be of interest to SPECTRUMCoP • Existing initiatives and roadmaps where it may be of interest for SPECTRUMCoP to collaborate • Topics that may be the subject of a future presentation to the CoP • Any other business

Membership:

Current	Proposed
Participation in Working Groups (WGs) is open to interested experts acting in their own capacity and is on a volunteer basis; we will actively seek participation from stakeholders in the field.	Choice 1: Participation in CoP meetings is open to all SPECTRUMCoP members and to anyone who requests it via a dedicated form on the website x.

WGs will work towards consensus in their decision-making processes	Choice 2: Participation in CoP meetings is open to all members of organisations that have signed a Letter of Intent/Memorandum of Understanding.
---	--

Key Roles:

Current	Proposed
- Community Leader: Oversees CoP direction and alignment with project needs. - Community Expert Group: Maintains the charter, coordinates WGs, and ensures work aligns with project requirements. - Community Secretariat: Provides administrative support. - Working Group Chairs: Lead specific WGs. - Working Group Members: Actively contribute to WG goals	- Community Leaders (one from HEP, one from RA): Oversee CoP direction and alignment with CoP needs. - Community Secretariat: Provides administrative support. - CoP Members: Actively contribute to CoP goals

Communication channels:

Current	Proposed
- Mailing List: Standard communications (based on Mailman) - Messaging Platform: Quick feedback, discussions (based on Slack) - Video Conference System: Meetings, collaboration (based on Slack) - Survey Tool: Community data collection (based on LimeWire) - Content Collaboration Tool: Knowledge sharing (papers, roadmaps, etc) (based on Confluence) - Regular Meetings: Predetermined schedule as agreed by each Working Group	- Mailing List: Standard communications (based on Mailman) - Video Conference System: Meetings, collaboration (based on Zoom) - Regular Meetings: Predetermined schedule as agreed by the CoP - Content Collaboration Tool: Knowledge sharing (papers, roadmaps, etc) (based on Google Drive, Proton Drive or another internal solution)

A.6 List of institutions that contributed to SPECTRUM

Table A.6.1: List of institutions that contributed to SPECTRUM

	Entity	Ctry	Type	EAB	WP3 survey	Ind. Int.	Experts m.	Priorities	WP4 survey
1	AARC TREE project ("Authentication and Authorisation for Research Collaboration" Technical Revision to Enhance Effectiveness)	EU	Project					X	
2	AccGPT project ("A Chatbot for CERN Internal Knowledge", CERN)	INT	Project		X				
3	ALICE (CERN)	INT	Exp.		X				
4	AMS-02 (Alpha Magnetic Spectrometer Experiment)	INT	Exp.		X				
5	ASTRON (Netherlands Institute for Radio Astronomy)	NL	RO				X	X	
6	ATLAS (CERN)	INT	Exp.		X				
7	BSC (Barcelona Supercomputing Center)	ES	e-I/CC					X	
8	Centro Nacional de Aceleradores (University of Seville)	ES	RO		X				
9	CERN	INT	RO		X		X	X	
10	CINECA	IT	e-I/CC		X	X			
11	CMS (CERN)	INT	Exp.		X				
12	Côte d'Azur Observatory	FR	RO					X	
13	CSC – IT Center for Science	FI	e-I/CC			X			
14	CSCS (Swiss National Supercomputing Centre)	CH	e-I/CC	X					
15	CYGNO project	IT	Project		X				
16	Delft University of Technology	NL	Univ.						X
17	Destination Earth	EU	Non-pr.			X			
18	DESY (Deutsches Elektronen-Synchrotron)	DE	RO						X
19	DIRAC project	INT	SW		X				
20	DZA (Deutsche Zentrum für Astrophysik)	DE	RO				X		X
21	E4	IT	SME				X		
22	EGI	NL	Non-pr.					X	
23	Einstein Telescope	INT	Exp.		X				

24	EISCAT (European Incoherent Scatter AB)	SE	Non-pr.						X
25	espSRC (Spanish SKA Regional Centre)	ES	RO		X				
26	ETP4HPC	EU	Non-pr.	X			X		
27	EXORADIO project (H2020)	EU	Project		X				
28	FAIR (Facility for Antiproton and Ion Research, GSI)	DE	RO		X				
29	MESRE (French Ministry of Higher Education and Research and Space)	FR	Non-pr.						X
30	GANIL (Grand Accélérateur National d'Ions Lourds)	FR	RO		X				
31	GDRS EcolInfo (CNRS)	FR	RO					X	X
32	Geant4 (CERN)	INT	SW		X				
33	George Washington University	US	Univ.		X				
34	GridPP (Distributed Computing for Data-Intensive Research)	UK	e-I/CC		X				
35	HADES (GSI)	DE	Exp.		X				
36	HiPEAC	EU	Non-pr.				X		
37	HSF (HEP Software Foundation)	INT	Non-pr.			X		X	
38	HERA (Hydrogen Epoch of Reionization Array)	ZA	Exp.		X				
39	IDAF (Interdisciplinary Data and Analysis Facility, DESY)	DE	RO		X				
40	IETR (Institut d'Electronique et des Technologies du numérique)	FR	RO						X
41	IFCA (Instituto de Fisica de Cantabria, CSIC)	ES	RO						X
42	IN2P3 (French National Institute of Nuclear and Particle Physics, CNRS)	FR	RO				X	X	X
43	IN2P3 Computing Center (CNRS)	FR	e-I/CC		X				
44	INAF (National Institute for Astrophysics)	IT	RO			X			X
45	INFN	IT	RO		X			X	X
46	INFN-CNAF	IT	e-I/CC		X				
47	Inria (National Institute for Research in Digital Science and Technology)	FR	RO				X		X
48	Instituto de Física Corpuscular (CSIC)	ES	RO		X				

49	<u>IPHC</u> (Hubert Curien Pluridisciplinary Institute)	FR	RO						X
50	<u>IRFU</u> (Institute of research into the fundamental laws of the Universe)	FR	RO						X
51	<u>IRISA</u> (Research Institute of Computer Science and Random Systems)	FR	RO						X
52	<u>IT4Innovations</u>	CZ	e-I/CC					X	
53	<u>JENAA</u> (Joint ECFA-NuPECC-APPEC)	INT	Non-pr.			X		X	
54	<u>JIVE-ERIC</u> (Joint Institute for VLBI ERIC)	EU	Non-pr.		X				
55	<u>JSC</u> (Jülich Supercomputing Centre)	DE	e-I/CC			X		X	X
56	<u>JSI</u> (Jožef Stefan Institute)	SI	RO					X	
57	<u>KaliVeda</u> (IN2P3, CNRS)	FR	SW		X				
58	<u>KIT</u> (Karlsruhe Institute of Technology)	DE	RO		X			X	
59	<u>KM3NeT</u> (Cubic Kilometre Neutrino Telescope)	INT	RO		X				
60	<u>LAPP Laboratory</u> (CNRS)	FR	RO	X				X	X
61	<u>LCG-France</u> (CERN)	INT	e-I/CC		X				
62	<u>LDMX</u> (The Light Dark Matter eXperiment)	INT	Exp.		X				
63	<u>Leiden Observatory</u>	NL	RO						X
64	<u>LHCb</u> (CERN)	INT	Exp.		X				
65	<u>Linnaeus University</u>	SE	Univ.		X				
66	<u>LMAP</u> (Laboratory of Mathematics and its Applications of Pau)	FR	RO					X	X
67	<u>LOFAR ERIC</u> (Low-Frequency Array ERIC)	EU	Exp.		X	X		X	
68	<u>Lund University</u>	SE	Univ.		X				X
69	<u>MeerKAT</u> (Karoo Array Telescope)	INT	Exp.		X				
70	<u>KIPT</u> (National Science Center Kharkiv Institute of Physics and Technology)	UA	RO		X				
71	<u>NenuFAR data center</u>	FR	e-I/CC		X				
72	<u>Neovia Innovation</u>	FR	SME					X	
73	<u>Netherlands eScience Center</u>	NL	RO					X	

74	Nikhef	NL	RO					X	
75	nptool (IN2P3, CNRS)	FR	SW		X				
76	OpenMOLE	INT	SW		X				
77	Paris Nanterre University	FR	Univ.						X
78	Paris Observatory	FR	RO					X	
79	PARTONS (PARtonic Tomography Of Nucleon Software)	INT	SW		X				
80	PIC (Port d'Informació Científica)	ES	e-I/CC				X		
81	Pierre Auger Observatory	INT	RO		X				
82	PML4HEP (Precision Machine Learning for HEP, IINFN)	IT	Project		X				
83	PRACE (Partnership for Advanced Computing in Europe)	EU	e-I/CC						X
84	PYTHIA (Lund University)	SE	SW		X				
85	QCDLAT project	IT	Project		X				
86	R3B (FAIR)	INT	Non-pr.		X				
87	SCALAC (Advanced Computing System for Latin America and the Caribbean)	INT	e-I/CC						X
88	SDU (University of Southern Denmark)	DK	Univ.				X	X	
89	Sherpa (Simulation of High-Energy Reactions of PArticles)	INT	SW		X				
90	Simula Research Laboratory	NO	RO						X
91	SKAO	INT	RO		X	X		X	
92	SRC-Italy (Italian SKA Regional Centre)	IT	RO		X				
93	SURF	NL	e-I/CC		X		X	X	
94	TEONGRAV (INFN)	IT	Project		X				
95	TRAPUM (Transient and Pulsar with MeerKAT)	INT	Project		X				
96	TU Wien	AT	Univ.		X				
97	UKSRC (UK SKA Regional Centre)	UK	RO			X			
98	United Kingdom Atomic Energy Authority	UK	Non-pr.		X				
99	Université Grenoble Alpes	FR	Univ.					X	
100	University of Basel	CH	Univ.	X					
101	University of Debrecen	HU	Univ.						X

102	University of Freiburg	DE	Univ.		X				
103	University of Geneva	CH	Univ.					X	
104	University of Giessen	DE	Univ.		X				
105	University of Graz	AT	Univ.		X				
106	University of Liverpool	UK	Univ.		X				
107	University of Manchester	UK	Univ.	X					
108	University of Picardy Jules Verne	FR	Univ.					X	
109	University of Udine	IT	Univ.						X
110	VERITAS (Very Energetic Radiation Imaging Telescope Array System)	INT	RO		X				
111	Virgo Collaboration	INT	Non-pr.		X				
112	WeNMR (Worldwide e-Infrastructure for NMR and Structural Biology)	INT	e-I/CC						X
113	WLCG (Worldwide LHC Computing Grid)	INT	e-I/CC		X	X			
114	WSCLAB (Wigner Scientific Computing Laboratory)	HU	e-I/CC		X				

A.7 List of SPECTRUMCoP Plenary Meetings

Table A.7.1: CoP Plenary Meetings: Phase 1 (WP3)

Date	Agenda	Speakers
2024-09-26	- The CoP: status and what next - Preview of the survey and how to access it - The draft report	Tommaso Boccali (INFN)
2024-11-13	- CoP status - Timeline for now to March 2025 - Presentation of the first version of the survey report - What now: The Knowledge Hub - The CoP in the second part of SPECTRUM	Tommaso Boccali (INFN)
2024-11-27	Radio astronomy software stack	Jeff Wagg (CNRS, OCA)
2025-01-08	- Status of SPECTRUMCoP's first periodic report (D3.1) - CMS Software Stacks – Present and Future	Tommaso Boccali (INFN)
2025-01-22	- Quick review of SPECTRUM AHM from last week - Survey analysis on the SW side	Tommaso Boccali (INFN), Graeme A Stewart (CERN, JENA)
2025-02-19	- Status of the first period report (D3.1), in particular "Findings" section and next steps - AOB	Tommaso Boccali (INFN)
2025-03-05	- Feedback on the interim report of the CoP - Presentation of the new organisation from April 2025	Tommaso Boccali (INFN), Jeff Wagg (CNRS, OCA)
2025-03-19	<i>This meeting was held asynchronously</i> - Status of D3.1 (Interim report of SPECTRUMCoP) - Calendar for March and April 2025 - Provisional calendar until the end of 2025 - Ideas for Phase 2 (WP4) - Conclusion	N/A

Table A.7.2: CoP Plenary Meetings: Phase 2 (WP4) (1, meetings every 15 days)

Date	Agenda	Speakers
2025-04-09	- Presentation of phase 2 (WP4) - First draft of questions for the interviews	Chiara Ferrari (CNRS, OCA), Jeff Wagg (CNRS, OCA) and Valentin Jay Blanchard (NEOVIA)
2025-05-07	- Discussion of the InPEX event in Japan - Finalisation of the Interview Protocol	Chiara Ferrari (CNRS, OCA), Jeff Wagg (CNRS, OCA) and Corentin Lefèvre (NEOVIA)
2025-05-21	- Presentation of D5.1 "Representative use cases: analysis and alignment" - Topic suggestions for future plenary meeting - Questions for future interviews	Chiara Ferrari (CNRS, OCA), Jeff Wagg (CNRS, OCA) and Valentin Jay Blanchard (NEOVIA)
2025-06-18	- Main Findings from EGI 2025 Interactive Session & ISC 2025 BoF - AOB	Jeff Wagg (CNRS, OCA) and Valentin Jay Blanchard (NEOVIA)
2025-07-02	- Presentation of D5.2 "Interoperable access policies: analysis and recommendations" - Presentation of D5.3 "Landscape of RIs: technologies, services, gaps"	Hans-Christian Hoppe (FZJ), Jeff Wagg (CNRS, OCA) and Valentin Jay Blanchard (NEOVIA)

Table A.7.3: CoP Plenary Meetings: Phase 2 (WP4) (2, meetings every month)

Date	Agenda	Speakers
2025-09-24	- Presentation of the survey on the needs of CoP members - Presentation of WorkCarb, a carbon impact assessment and associated scenarios methodology, based on LCA and tailored to HPC centres	Valentin Jay Blanchard (NEOVIA), Philippe Bricard, Benjamin Depardon, Marc Morere and Corentin Lefevre (Workcarb)
2025-10-22	Presentation of the Horizon Europe project ODISSEE	Damien Gratadour (Paris Observatory)
2025-11-26	Presentation of the Sustainability and Energy Efficiency component of the French project NumPEX	Didier Mallarino (CNRS)
2025-12-24	Webinar: A shared vision for future data-intensive science in Europe	The SPECTRUM Team
From 2026-01-01 to 2026-02-28	Public Consultation and Review of Priorities (See Section 4)	N/A
2026-03-25	Possible funding opportunities for implementing the SRIDA.	Francisco Colomer (MICIU)
2026-04-15	EXTRACT project presentation	Baptiste Cecconi (Paris Observatory)