Smart Networks and Services International and European Cooperation Ecosystem

D2.3 *Evaluation of 6G R&I Collaboration in Europe*

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Table of Contents

List of Figures

List of Tables

Abbreviations List

Abbreviation / Term	Description
3GPP	3rd Generation Partnership Project
5GAA	5G Automotive Association
5G ACIA	5G Alliance for Connected Industries and Automation
5G PPP	5G Public Private Partnership
5G MAG	5G Media Action Group
6G-IA	6G Smart Networks and Services – Industry Association
B5GPC	Beyond %G Promotion Consortium
CSA	Coordination and Support Action
DG CNECT	Directorate-general - Communications Networks, Content and Technology
E2E	End to End
ETSI	European Telecommunications Standards Institute
EU	European Union
ICT	Information and Communications Technology
IMT	International Mobile Telecommunications
IPCEI-CIS	Important Project of Common European Interest on Next Generation Cloud Infrastructure and Services (IPCEI-CIS)
ITU-R	International Telecommunications Union - Radiocommunication Sector
KPI	Key Performance Indicator
NGA	Next Generation Alliance
NI	National Initiative
NTN	Non Terrestrial Network
R&D	Research and Development
R&I	Research and Innovation
RAN	Radio Access Network
SA1	Service and System Aspects, working group 1
SDO	Standards Development Organisations
SNS	Smart Networks and Services
WG	Working Group

Executive Summary

This deliverable provides a comprehensive evaluation of the progress and impact of European collaboration in 6G Research and Innovation (R&I), developed over the course of the SNS-ICE project. This final deliverable of Work Package 2 (WP2) reflects on efforts to strengthen European leadership and cohesion in 6G through enhanced cooperation with standardisation bodies, national initiatives, cloud computing ecosystems, and broader EU stakeholders. Key achievements highlighted in this report include:

- **Standardisation Engagement**: SNS-ICE significantly contributed to consolidating the European perspective on 6G use cases, presented at the 3GPP SA1 workshop in 2024. The project helped form a unified European position and has helped support long-term mechanisms like the Pre-Standardisation Working Group and the Standards Tracker to coordinate input across stakeholders and projects.
- **National Initiatives Collaboration**: One of the major undertakings was identifying and connecting national 6G initiatives across Europe. The project successfully mapped and engaged with large-scale initiatives in multiple EU member states, facilitating structured dialogue, mutual learning, and synergistic opportunities, especially through regular collaboration meetings and dedicated sessions at EUCNC and Techritory events.
- **Cloud Ecosystem Focus**: Recognising cloud infrastructure as a critical enabler for 6G and European digital sovereignty, SNS-ICE conducted workshops, developed a roadmap, and engaged key EU projects and alliances to build a coordinated European cloud strategy. This work fed into the Strategic Policy WG on 3C Networks under the SNS JU.
- **Promotion of SNS JU Vision**: SNS-ICE acted as a liaison for the Smart Networks and Services Joint Undertaking (SNS JU), promoting its vision and collecting feedback from the wider R&I ecosystem. This two-way exchange influenced the shaping of the SNS Work Programme and ensured alignment with emerging technological and policy priorities.
- **Recommendation to Key EU Stakeholders for continued collaboration**: Based on the work performed by SNS ICE and the interactions with the created ecosystem, several suggestions and recommendations are provided towards key EU stakeholders in order to maintain and further strengthen the European R&I momentum on critical digital technologies.
- **Transition to SNS CO-OP**: The deliverable outlines a transition plan where ongoing efforts, such as coordination among national initiatives and promotion of standardisation, will be continued under the SNS CO-OP project, starting January 2025.

In conclusion, SNS-ICE has had a profound effect on shaping and strengthening the European 6G R&I landscape. It bridged fragmented efforts, amplified European voices in global standardisation, and laid a strong foundation for future collaborative activities through its structured engagement strategy and tools.

1 Introduction

SNS ICE Work Package 2 has undertaken the task of providing information on findings and trends that are obtained through interaction with European 6G R&I initiatives and are considered relevant for the SNS community. The first deliverable of this work package, D2.1 [1], reported on European R&I initiatives both at the national and regional level. The second deliverable, D2.2 [2] focused on topics that are most relevant for the SNS R&I community, such as cloud/3C networking, while continuing to expand the identified European R&I initiatives. The deliverable also addressed the efforts taken by SNS ICE to establish dialogues at the EU level, to organize European 6G workshops and events, and to place SNS on the EU roadmap.

This is the third and final deliverable of SNS ICE's Work Package 2 and provides an evaluation of the 6G R&I collaboration in Europe that has been established over the course of this project. The deliverable is laid out as follows: section 2 focuses on SNS ICE activities aimed to increase SNS JU impact on standardization and to educate the SNS community about relevant issues, such as the effort taken to organize the European view on 6G use cases for the 3GPP use cases workshop in May 2024. Other activities such as the strategic working group on standardization as well as SNS-ICE's role within the pre-standardization working group are also discussed.

Within section 3 of this deliverable, a detailed reporting is provided on one of the most exhaustive efforts within work package 2 in SNS ICE – the identification and reporting of national initiatives on 6G within the member states. SNS ICE dedicated considerable effort to identify and report on the 6G R&I national, regional and EU initiatives, and subsequently used this overview to find synergies in this ecosystem. Several efforts were taken to drive collaboration amongst the initiatives and with the SNS JU. These efforts and their impact are discussed in section 3.

One of the other areas where a considerable amount of work has been dedicated was in the understanding of the cloud ecosystem in Europe. Cloud has emerged as one of the most significant focus areas within the European 6G R&I ecosystem and has great impact on the European goals on digital sovereignty. Section 4 outlines the work performed within SNS ICE on cloud-related activities. A part of this work has also been summarized in a paper submitted at the EUCNC 2025, which has since been accepted, and will be presented by SNS ICE at the EUCNC and 6G summit in Poznan, Poland in June 2025.

Section 5 provides an evaluation of the results of the efforts taken in increasing collaboration in the 6G R&I work in Europe. The section further complements this evaluation with recommendations for continued collaboration.

Finally, Section 6 discusses the handover of EU-related activities to the follow-up CSA project, SNS CO-OP, which kicked off in January 2025, with the goal to continue the work performed by SNS ICE in establishing European collaboration and build upon it, while Section 7 provides the conclusions.

2 Collaboration with Standardisation

2.1 Results of European input to 3GPP SA1 use cases workshop

In May 2024, 3GPP organized in the city of Rotterdam the "3GPP Stage-1 Workshop on IMT2030 Use Cases"[5]. Chaired by the SA chair (Puneet Jain) and the SA1 chair (Jose Luis Almodovar Chico), the workshop gathered for the first time operator associations (e.g., GSMA, NGMN), vertical associations (e.g., 5GAA, 5GACIA, 5G MAG, Broadband Forum), and the 6 most important Research Alliances worldwide (B5GPC [6] – Japan, 6G Forum [7]– S. Korea, IMT-2030 (6G) [8] – China, Bharat 6G Alliance [9]– India, NGA [10] – North America and 6GSNS [11] – Europe). The mission of the workshop was to bring 3GPP closer to the ongoing initiatives of various global/regional research organizations and Market Representation Partners related to 6G use cases.

This event was important as it was the first 3GPP event on 6G and SA1 was going to undertake the task to define the requirements and use cases for 6G in Rel-20 by the end of Q2 2024. The event was a success with more than 240 people attending face-to-face and more than 380 participants attending remotely.

3GPP asked the 6 Research Alliances to present their views in 6G and in 6G use cases. For the European context, 3GPP contacted the SNS-JU who assigned the task of the presentation to the project SNS-ICE. As time was limited, SNS-ICE decided to build on the work done on 6G Use Cases by the flagship project Hexa-X-II as the basis for the contribution. All the SNS-JU phase 1 research projects and also the different National Initiatives were asked to review and provide feedback on the 6G use cases provided by Hexa-X-II, but also to suggest the inclusion of new use cases which haven't been considered initially by Hexa-X-II. This process, with a duration of 3 weeks, allowed to strengthen this initial set of use cases, but also complement it with other relevant identified applications. Once all inputs were gathered, they were thoroughly discussed and merged to build the final input for the workshop.

Figure 1: European input to the 3GPP SA1 use cases workshop

The presentation was given by the Dr. Gustav Wilkstrom (member of Hexa-X-II) and can be found at the 3GPP website of the seminar [12]. The organization of the process and meetings, the collection of input, processing

and the production of the final set of use cases presented at the workshop were all led by SNS ICE with critical contributions from Hexa-X-II, 6G-IA and SNS JU personnel.

2.2 Pre-standardisation WG and the Standards Tracker

The 6G-IA Pre-Standardisation Working Group (WG) monitors trends and developments within the SNS-JU projects community, ensuring alignment with key regulatory bodies such as ETSI, 3GPP, and ITU-R. This WG facilitates a unified European strategy for telecommunications standardisation, contributing to the foundation for future 6G adoption. Its work builds on the experience of the 5G PPP initiative, with a continued focus on maintaining European leadership in global standardisation efforts. Overall, the WG provides a platform for discussing and streamlining priorities for standardisation and present progress from R&I projects linking their work with industry trends, implications for the SNS-JU Work Programme, and strategic opportunities in collaboration with major Standards Development Organisations (SDOs).

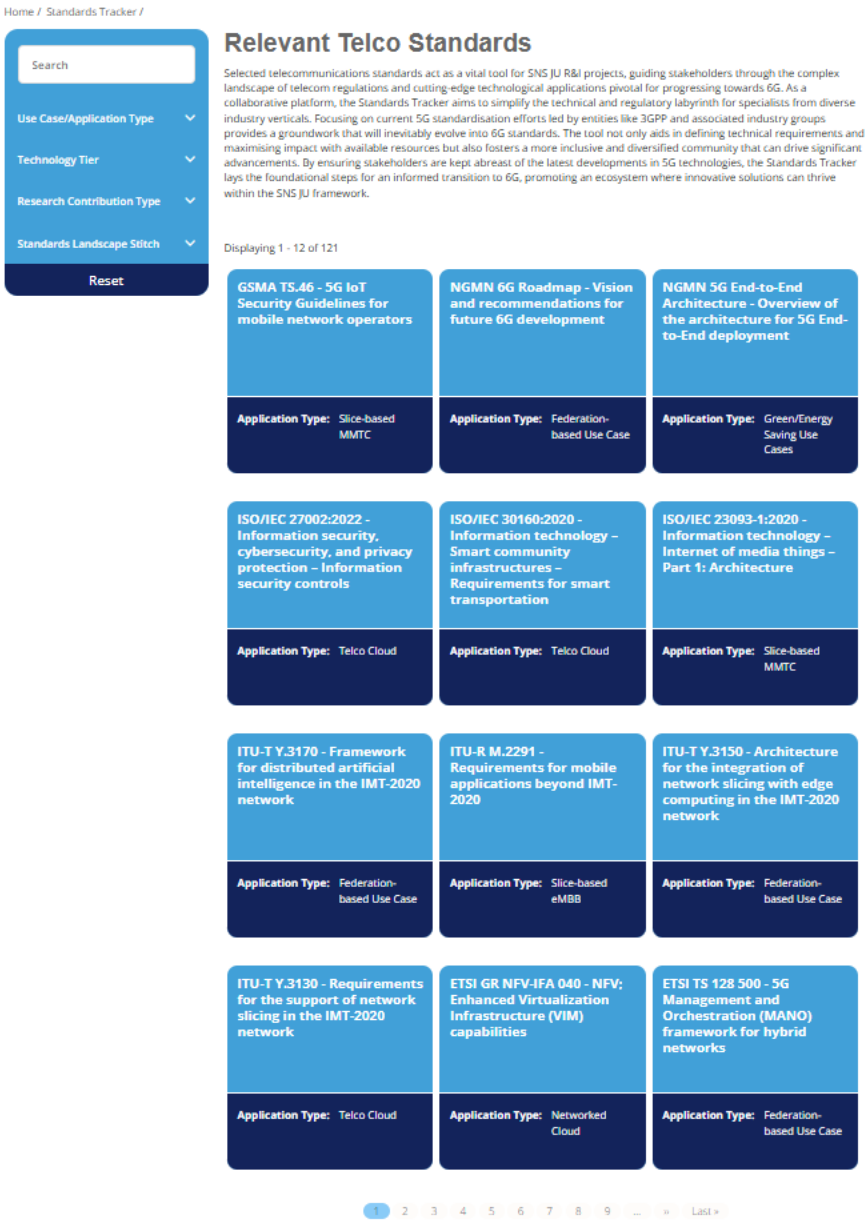

Figure 2: The standards tracker tool

SNS ICE has actively contributed to these efforts through its participation in the WG's activities, supporting discussions and sharing insights that have helped shape the standardisation priorities within the SNS-JU ecosystem. An SNS-ICE partner has held the position of the WG's vice-chairperson for the past couple of years, providing a direct link to the activities of the WG and enabling a feedback loop with the rest of the communities that SNS-ICE has been in contact with. One notable outcome of these efforts is the development of the Standards Tracker (ST), an online tool designed to consolidate and enhance access to information on pre-standardisation processes.

The Standards Tracker serves as a centralised platform for SNS JU R&I projects, enabling them to contribute insights into the evolving standardisation landscape.[1] This tool not only functions as a repository for selected telecommunications standards but also provides a structured approach for researchers to navigate standardisation priorities and developments. By aggregating information on standardisation activities, the platform fosters collaboration across European stakeholders and ensures that SNS JU efforts remain well-coordinated with broader industry and regulatory trends.

A key feature of the Standards Tracker is its role in facilitating needs and gap analyses, allowing researchers and industry players to align their contributions with emerging trends. It includes impact reports with data visualisations on stakeholder engagement, sector-specific developments, and geographical representation of key players. By offering a clear view of how different entities contribute to standardisation, the Standards Tracker supports the creation of a cohesive European roadmap for 6G standardisation. The development of the Standards Tracker builds on earlier initiatives from the 5G PPP era, including pre-standardisation efforts under projects such as Global5G.eu and 6GStart CSA. The tool has been continuously refined to adapt to the evolving needs of the SNS-JU community. Recent improvements have been implemented by expert consultancy services, which have enhanced the platform's structure and expanded its repository of telecommunications standards. Moreover, the content of the Standards tracker has been cross-validated and enriched with the latest input the SNS JU projects have provided directly to the European Commission through the EC's Funding and tender Portal (Sygma). With the help of the SNS JU office, all relevant standards contribution data were extracted from the Sygma portal and introduced into the Standards Tracker, to ensure that the complete picture of the SNS JU's standards impact is visible through the tool.

Through the project members' participation in the Pre-Standardisation WG, SNS ICE has contributed to the broader mission of ensuring that European 6G standardisation efforts remain competitive and globally relevant. The combined efforts of the WG and the Standards Tracker are instrumental in fostering a structured approach to standardisation, ultimately benefiting the European telecommunications industry and its position in the global market.

2.3 SNS JU Policy Working Group on Standardisation

Standardization activities are of critical importance for European stakeholders, particularly within the evolving landscape of Smart Networks and Services. While standardization is a top priority for the Smart Networks and Services Joint Undertaking (SNS JU)—as reflected in both the Research and Innovation (R&I) Work Programme and the key performance indicators (KPIs) of the SNS Initiative—there remains a strong need for enhanced coordination among European actors to amplify the region's influence within Standards Development Organizations (SDOs).

The increasingly competitive global environment in SDOs poses a significant challenge to maintaining and strengthening Europe's strategic position. To address this, it is essential for Europe to adopt a forward-looking, cohesive approach to standardization in domains central to future connectivity and services. A unified European voice will be key to shaping the global agenda on 6G and related technologies.

[1] Browse the tool here https://sns-trackers.sns-ju.eu/standards-tracker.

To advance this objective, a dedicated Working Group (WG) under the SNS JU has been established. This WG includes representatives from the European Commission (EC) alongside key stakeholders such as vendors, network operators, system integrators, and research organizations. The group serves as a collaborative forum to align standardization efforts, foster synergies, and identify strategic priorities that can elevate Europe's standing and impact in SDOs.

As part of this initiative, the outcomes of ongoing SNS JU projects are being systematically analyzed to identify themes and technological areas of common interest that are ripe for coordinated standardization action. The aim is to capitalize on synergies across projects and ensure coherent European contributions to the global standards ecosystem. Key areas currently under examination include:

- Development and harmonization of **Key Performance Indicators (KPIs)**
- Definition and refinement of **Key Value Indicators (KVIs)**
- Standardization topics related to **Artificial Intelligence and Machine Learning (AI/ML)**
- Architectural frameworks and reference models for **6G networks**
- Alignment with and integration of **open-source initiatives** within the European 6G ecosystem

By building a stronger, more coordinated European presence in standardization processes, the SNS JU seeks to ensure that Europe not only contributes to but also helps shape the future of global communication standards.

2.4 Webinar on Standardisation

On 27 March, at 14:00 CET, a webinar was organized by SNS ICE to discuss the impact of 3GPP standards on SNS-JU projects, focusing on best practices and success stories. The session provided an overview of 3GPP standardization, its current activities, and strategies for translating research outcomes into effective standards contributions.

This webinar targeted SNS-projects members and researchers, providing critical material for the projects' engagement with standardization. More than 60 attendees were present during the event, while the webinar recording and all presented material are available via the dedicated event page[2].

Figure 3: SNS ICE Standardization oriented webinar

[2] https://smart-networks.europa.eu/event/3gpp-standards-and-sns-ju-impact-webinar/

Participants gained insights into the role of standardization in European projects, the significance of 3GPP, and methods to enhance the standardization impact of research initiative. Experienced project leaders and standards experts shared their knowledge and experiences on the subject. This allowed the participants learning best practices to increase the standardization impact of research projects. The agenda included a presentation on the European and SNS-JU perspective on standards, followed by an update on 3GPP activities by Jose Luis Almodovar Chico, Chair of 3GPP SA1. Additionally, best practices and success stories were presented by Mikko Uusitalo (Hexa-X-II Flagship project, Nokia), Daniel Lönnblad (SA1 delegate, Ericsson), and Devaki Chandramouli (SA2 delegate, Nokia). The webinar concluded with a round table discussion on best practices and success stories.

3 Collaboration with National Initiatives

Since its beginning in January 2023, the SNS ICE project has worked towards bringing the National Initiatives (NI) on 6G in the member states closer with each other and with the SNS JU. This exercise began with the identification of EU, national, and regional R&I initiatives active, and then moved on to the identification of contact persons within these initiatives. Once identified, contact was established with these initiatives in order to create a comprehensive overview and foster collaborations with them. In the sections below, the broad actions taken within the SNS ICE project to identify and report on such initiatives as well as the workshops organised at major events to identify synergies, are discussed. The section also highlights the continuous actions being taken to keep these collaborations alive, such as regular online meetings with the NI representatives, and a webinar series to showcase the achievements of the NI and discuss topics of common interest. Lastly, the section also outlines the support extended by the SNS ICE project towards the State Representative Group, which is seen as an effective way to bring the member states and their interests closer to the SNS JU.

3.1 Creating an overview of the National Initiatives

To gain a good understanding of the R&I ecosystem within Europe, it is important to recognize not just the EU projects but also the national initiatives being organised within the member states, with funding from their respective governments. In the first deliverable of WP2 of the SNS ICE project (D2.1 [1]), 7 large national initiatives were identified in six European member states, namely, Finland, Spain, Italy, Germany, the Netherlands and France (as depicted in Figure 4).

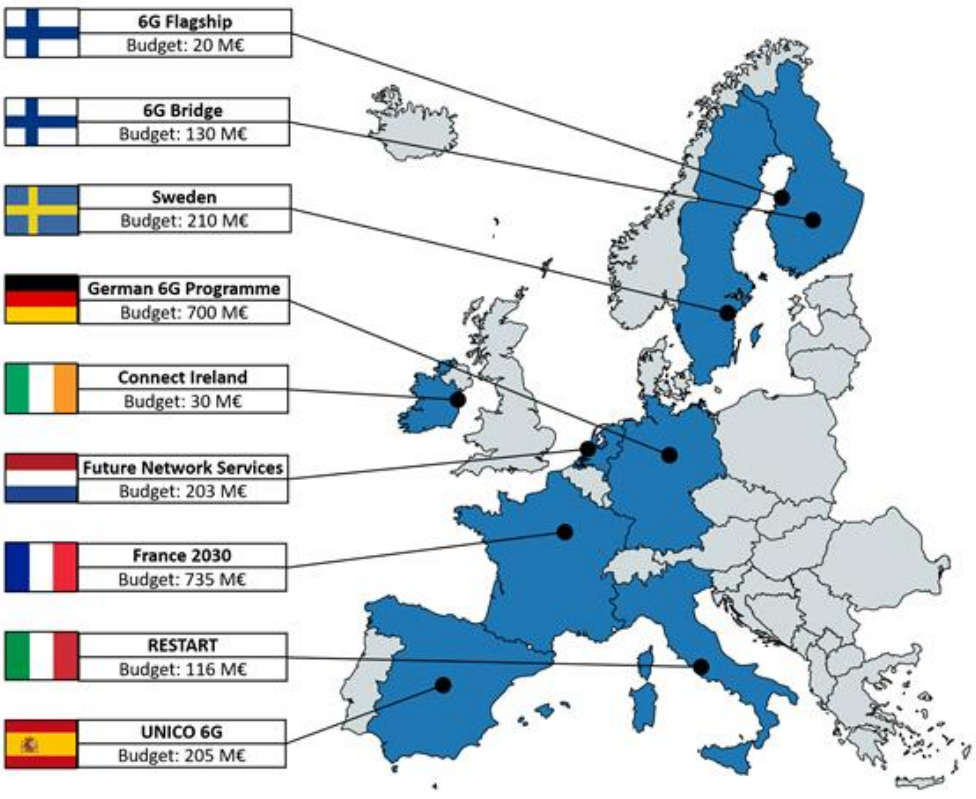

Figure 4: Overview of the selected national initiatives

The basis of selection of these initiatives was that these were considered as large national initiatives, i.e., with a funding greater than 100 million euros. This public deliverable presented insights on several aspects of these initiatives, such as their funding, responsible ministries, organisation of work and structure of the initiative, their view on collaboration, etc. This exhaustive exercise was undertaken through a thorough study of the public information available on these initiatives and then combined with interviews with the contact persons in order to create a complete picture. A standard questionnaire was used for each of the interviews to be able to present the overview such that one could be compared to the other, in order to enhance the understanding of the reader. However, this exercise also revealed that the initiatives in the member states are organised very differently, and a one-to-one comparison is thus not possible.

While this presents challenges, it also generates possibilities. The different organisations of the initiatives means that they have different levels of flexibility within themselves to take on new topics, new partners, and work collaboratively with other countries and with the SNS JU. The deliverable opened the doors for discussions among the initiatives, and between the initiatives and the SNS JU on how a collaborative approach could be realised to generate value for the R&I ecosystem of Europe.

Once the first deliverable was published, a few other initiatives showed interest in their overview being included in the SNS ICE work as well, and their contact persons being included in the national initiative community which was now being formed. In D2.2 [2], two more initiatives were included upon request – Sweden and Ireland. The collection of input for these initiatives followed the same process as for the others.

As mentioned, the structure and organisation of work within the initiatives was vastly different, however, one way in which their work could be compared to each other was to ask the initiatives themselves to give a rating to the amount of focus they place on a specific research topic or work area. A list of work areas was identified, in line with the organisation of work of the SNS JU such as in Steam B, C and D, and then the national initiatives were asked to rate their focus on each work area by a star rating between one and three stars. One star meant that the work was being done, but with little emphasis, while three stars meant that this is a primary focus within the initiative as depicted in Table 1. This easy-to-view table gives a complete picture of what each of the countries are focusing on, and where there is still room to grow through collaboration.

Table 1: An overview of the topics and their relative importance in the national initiatives

Topic	Relative Importance									
	Netherlands	Spain	Italy	France	6G Bridge Finland	6G Flagship Finland	Germany	Sweden Advanced Digitalisation	Sweden Competence Centers	Ireland
5G evolution R&I	-	**	***	***	***	***	**	**	*	*
System network architecture and Control	***	**	***	***	***	***	***	***	***	**
Edge and Ubiquitous computing	**	**	***	***	***	***	***	***	**	***
Radio technology and Signal processing	***	**	***	***	***	***	***	*	***	***
Optical networks	-	**	***	**	-	*	***	-	*	***
Network and Service security	*	**	*	**	***	***	***	**	***	***
Non-terrestrial networks	*	**	***	***	**	*	***	*	*	-
Special purpose networks/sub-networks	*	-	***	***	***	**	***	***	***	**
Opportunities for devices and components	**	-	*	**	*	***	***	*	**	***
Micro-electronics	***	-	*	***	**	***	***	-	***	***
Experimental infrastructure	***	***	***	***	*	***	**	**	**	***
Trials and pilots with verticals	***	-	**	***	***	***	*	***	**	**
Human capital	**	*	*	**	**	-	**	**	***	-
Policy aspects	**	-	*	**	*	***	**	*	**	**

3.2 Sessions at the EUCNC and Techritory 2023-2024

The SNS ICE project successfully organised sessions at the EUCNC 2023 and EUCNC 2024, as well the Techritory 2023 and 2024. These conferences were an opportunity for the R&I community to come together physically at one location, and sessions organised by SNS ICE allowed the exploration of synergies, dissemination of information, and creation of actionable ideas.

3.2.1 Panel session on European collaboration at EUCNC 2023

At the EuCNC & 6G Summit in Gothenburg in 2023, SNS ICE organized a panel session on collaboration with verticals and with European initiatives. Within the session two separate panel discussions were held. The panelists introduced themselves and then presented their views on European collaboration, as visualized in Figure 5 below. The panel was moderated by SNS ICE and was well received by the R&I community.

Figure 5: Panel on European collaboration

3.2.2 Co-creation event at 5G Techritory 2023

With the goal of exploring opportunities for collaboration among the various national initiatives working on 6G in Europe, SNS ICE organised a co-creation event at Techritory 2023 titled 'National Initiatives: discussion on different approaches to European collaboration for 6G research'. The event featured presentations by the SNS JU, the national initiatives, and the SNS ICE project, followed by a brainstorm in groups. The goal was to define actionable recommendations, with a clear *Who, What, When* (who will do what by when). A subset of the proposed actions were selected and worked on.

3.2.3 EU collaboration convened session at EUCNC 2024

In May 2023, 3GPP organised an SA1 6G use cases workshop. The SNS ICE project played a pivotal role not only in the conceptualisation of this workshop, but also in the collection of a consolidated European view that could be presented at this three-day workshop. The workshop saw presentations from research alliances and market representation partners from across the world and was attended by the 3GPP community. However, the input

presented at the workshop was relevant for a wider community than just the 3GPP attendees, and at the EUCNC & 6G summit in 2024, the SNS ICE project brought forth the European view on 6G to the broader European R&I community that was attending the conference.

The event saw a presentation from the SNS ICE project, as well as presentations by a few national initiatives, followed by a panel discussion which further explored the different opinions on the 6G use cases.

3.2.4 Techritory 2024 co-creation event 'Synergies between 6G NI and SNS JU'

At Techritory 2024, SNS ICE organised an event to explore the synergies possible between the national initiatives and the SNS JU. The goal of this event was to create a whiteboard session where the NIs would brainstorm and work together with the SNS JU to come up with actionable ideas to create synergies and increase collaboration. In preparation for this event, the national initiatives were asked to complete a questionnaire based on a list of activities compiled using the SNS work programme as inspiration. The results of this questionnaire were processed by the SNS ICE team before the event to create an overview which gave visibility on the topics that were widely worked on, and topics where synergies were possible.

The first part of the session included presentations, including one from SNS ICE presenting this collected and processed input, while for the second part the room was split into three groups and asked to brainstorm. Several actionable ideas were concluded from this event and have been summarized in D2.2 [2].

3.2.5 Impact of the workshops and main takeaways

While the identification of National Initiatives and the contacts within them is an important exercise, what truly drives innovation forward is creating a community that collaborates, and often. The goal of these workshops was not only to brainstorm on ideas, but also to create a group that identified each other, knew the opinions and challenges of the other, and was willing to collaborate with each other. Bringing people together at these conferences served to increase the cohesion of the group and hence the willingness to collaborate. It also lowered the threshold for idea exchange and made it easy to facilitate collaboration. And doing so was of paramount importance as this is a vital step in creating a consolidated European response to next generation technologies, like 6G.

The workshops conducted generated the following broad recommended actions which could promote collaboration. Some of these identified actions have since been worked on and details on those can be found in the indicated sections of this deliverable.

1. **Exchanging information**: The workshops and panel discussions conducted indicated that there was a desire for improved and frequent exchange of information from all parties – the different NIs as well as the SNS JU. Several efforts were taken in that regard, such as establishing a shared list of contacts which could be accessed by the NIs as well the SNS JU in order to quickly find the right contact point for a certain question. Additionally, mailing lists were also set up which help to disseminate information faster.

2. **Aligning input to standardisation**: While several areas of the world are working simultaneously on 6G, it was identified that there is a need for one consolidated voice from Europe towards 6G, in order to ensure that we present a united front and do not fragment the ecosystem. One monumental step taken in this regard, which was also brainstormed at Techritory 2023, was the collection and alignment of input towards the 3GPP SA1 use cases workshop held in May 2024 (detailed information available in Section 2.1 of this deliverable).

3. **Identifying topics for collaboration**: Once an overview of the NIs was available, the next step towards collaboration was identifying the specific topics that are of interest to the NIs and to the SNS JU and can help in accelerating innovation through collaboration. Through the workshops conducted in 2023 at the EUCNC and at Techritory, it was identified that *6G network architecture, Edge and ubiquitous computing and, radio technology research*, were at the top of the priority list for all entities.

Through workshops conducted in 2024 at EUCNC and Techritory 2024, it was identified that the following topics should be addressed (or continue to be addressed) in upcoming SNS work programmes (e.g. the SNS Work Programme 2026). These topics include:

- Spectrum sharing and integration of multiple frequency bands
- Security related topics
- Short range communication protocols
- Deterministic networking

The following topics that are addressed in most NIs could benefit from more synergy through collaboration among them:

- Cloud continuum and orchestration and management
- Terahertz communications and millimeter wave

Lastly, the national initiatives advised that the following topics should be included in the SNS work programme 2026:

- Security by design
- Intelligent Agents
- Spectrum sharing
- Services layer, such as the over-the-top services layer

3.3 Supporting the State Representative Group (SRG)

The State Representative Group consists of representatives of the member states that bring forth the interests of their countries to a common forum. SNS ICE was also involved in supporting the SRG. This was done in many ways, including the organisation of events at the EUCNC conference two consecutive years, but also through supporting requests for information and contact with other national initiatives. A part of the deliverables D2.1 and D2.2 of SNS ICE [1][2] which included comprehensive overviews of the national initiatives in identified member states were also shared with the SRG before the official deliverables were published, giving them an opportunity to use the information collected to further explore collaboration possibilities amongst themselves.

Lastly, support to the SRG through other ad-hoc requests, made via the SNS secretariat, was also extended over the duration of the project. Such requests include providing updated information on the national initiatives outside of the timelines of the public deliverables and supporting in content on national initiatives for presentations of the SNS JU at events.

3.3.1 SRG session at EUCNC 2023

At the EUCNC and 6G summit in June 2023, SNS ICE organized a brainstorming session with the State Representative Group of the EU Member States as well as representatives from the national initiatives. The first part of the session included presentations from the national initiatives as well as from SNS ICE. The goal here was to give the SRG a glimpse into some of the national initiatives, their structure and their focus areas, and also an opportunity to ask questions. The second part of the session focused on a brainstorm, which was conducted in two different rounds. The brainstorming session was meant to identify goals that could be achieved through European collaboration. At the end of session, main takeaways were documented and shared with the SRG and have also been documented as an Annex in the deliverable 2.1 [1].

3.3.2 SRG meeting at EUCNC 2024

At the EUCNC and 6G Summit in Antwerp in 2024, SNS ICE organised a meeting with the SRG on the theme of standardisation. The goal of this meeting was to share with the SRG the European use cases for 6G identified as a part of the 3GPP SA1 use cases workshop, and to elaborate on the importance of standardisation. The session featured presentations from various presenters around the topic of standardisation, followed by a panel discussion on how standardisation plays a key role in ensuring Europe's success in 5G and upcoming technologies like 6G.

3.4 Collaboration meetings with the National Initiatives

In order to facilitate exchange of information and alignment of priorities, the SNS ICE project worked on identifying and establishing contacts with the different national initiatives and EU programs. The goal was to identify the right contact person for different kinds of questions, such as technical, organisational, etc, and be able to reach out to them without going through multiple people. Once these contacts were established, the next challenge was to ensure that frequent discussions were taking place amongst these initiatives. While conducting workshops at major conferences such as EUCNC and Techritory is considered useful by the national initiatives as well as the SNS JU, such events are not frequent enough. In order to truly facilitate collaboration, there must be a platform for the national initiatives to come together at regular intervals, and such a platform must present a low-barrier, for example, not include expensive travel costs every few weeks.

In consultation with the national initiatives, a recurring meeting series was established, with the first meeting being held in September 2024. An establishment of such meetings is also one of the outcomes of the workshops conducted at EUCNC and Techritory, as there was a clear need recognized for frequent and well-organised interactions. These meetings are held online every 6 weeks for a duration of an hour and a half, facilitated by the SNS ICE project, using an online meeting platform. Prior to the meetings, an agenda is circulated among the national initiatives, allowing them to contribute to the agenda if there are specific topics they wish to discuss or events they would like to make the group aware of. The discussions are facilitated by the SNS ICE team, and minutes of the meeting are circulated among the group afterwards. At the beginning, certain ground rules or terms of reference were established with all participants in order to ensure fair participation. These are as follows:

Goal: The goal of the collaboration meetings is to create synergies between the different national 6G initiatives in Europe

Participants: Representatives of the different national initiatives, facilitated by SNS ICE

Decision Making: Any meeting participant can propose collaboration activities. Participation in collaboration activities is on a voluntary basis. Decisions on collaboration activities are unanimously agreed, between the national initiatives that want to participate.

Minutes of the meeting: Minutes will contain attendees, action points, agreements and news and will be distributed to all national initiatives.

These meetings are invite-only and so far have participation from the countries and contact persons mentioned in Table 2.

Table 2: Attendees of the collaboration meetings with National Initiatives

National Initiative	Contact person attending
Italy	Umberto Spagnolini, Nicola Blefari
France	Oumaima El Bouhmadi, Thomas Orazio
The Netherlands	Paul Wijngaard, Marcel Geurts
Ireland	Patrick Kellly, Martin Johnsson
Sweden	Jessica Svennebring, Frederic Pillot
Spain	Almudena Ruiz Sanchez
Germany	Hans Schotten, Michael Karrenbauer
Finland 6G Flagship	Ari Pottou, Matti Latva-aho
Finland 6G Bridge	Pekka Rantala

So far the meetings have generated the following main actions:

- Inviting new initiatives: It has been unanimously agreed to extend an invitation to the UK national initiative to join these meetings. This contact and invitation is being facilitated by the Irish initiative.
- Creating webinars on topics of common interest: The initiatives expressed an interest to collaboratively organise webinars on topics of common interest. So far two webinars are currently in the planning - a webinar on Resilience being planned by the Finnish 6G Flagship, and a webinar on FR3 spectrum being planned by the Netherlands.
- Webinars showcasing achievements and experimentation platforms: The workshops conducted over the last two years showed that the work within the national initiatives can be enhanced by unlocking the funding available through the SNS JU. Now that the SNS JU calls for 2025 have opened in April, a series of webinars is being organised by SNS ICE which will be continued by SNS CO-OP, which allows each national initiative to present to the SNS community their key achievements and highlight their experimentation platforms. The goal of these webinars is to allow the initiatives to position themselves as suitable partners in the current round of SNS calls and be able to attract partners for proposals.
- Proposing a Convened Session for EUCNC 2025: In discussion with the national initiatives, a Convened Session proposal has been submitted to the EUCNC & 6G summit to be held in June 2025. The goal of this session will once again be to involve the wider European R&I community in creating actions around collaborations and aligning the national initiatives with the SNS JU.
- Coordinating actions for the Mobile World Congress, 2025: As many national initiatives as well the SNS JU were present at the Mobile World Congress in Barcelona this year, the collaboration meetings served as a way for the national initiatives to align on their participation and see where they could find ways to collaborate.

These meetings create value not just for the national initiatives, but also for the SNS JU. The facilitation provided by the SNS ICE project allows for the goals of the SNS JU to be aligned closely with that of the national initiatives, and regular exchanges such as the ones facilitated by these meetings ensure that the work on 6G remains a consolidated effort. In order to ensure continuity in this effort, these meetings will continue to be facilitated by the SNS CO-OP project after the SNS ICE projects ends.

3.5 Podcast on National Initiatives

In January 2025, SNS ICE released a podcast on National Initiatives [3], facilitated and moderated by Toon Norp from the SNS ICE project, and including three panellists – Colin Willcock from the 6G-IA, Paul Wijngaard from the Netherlands, and Frederic Pillot from Sweden. The goal of the webinar was to gather views on how the national initiatives and SNS JU can work collaboratively in creating the next generation of mobile technology, 6G.

The key discussion points and takeaways from this podcast are as follows:

- The panellists spoke about how the national initiatives are organised within their respective countries, and also on how they view the landscape of R&I within Europe. Colin weighed in with the SNS JU and 6G-IA view towards the same and shed light on how the SNS JU distributes their funding.
- While speaking on the need for collaboration and synergy, the panellists explain that we are all striving for and need one global 6G standard, and in order to influence that standard it is important to show up as Europe, because one country or one company cannot make that difference. The best hope of achieving global consensus is if first we show up as Europe.
- In order to achieve that one voice, it is important to align in several key areas, such as standardisation. An example of this was the presentation of a consolidated European view on 6G use cases at the 3GPP SA1 use cases workshop in May 2024. It is also important to understand that major investments are being made in Europe at different levels, which are currently a bit disjointed, and in order to do better we need to engage in frequent and constructive dialogue.
- The panellists mentioned that where we've had success so far in terms of collaboration, is in the efforts being made by SNS ICE to bring together the national initiatives, and to organise input such as the one for standardisation. The collaboration meetings being planned regularly with the NIs have a huge positive impact, and the workshops organized at events like Techritory and EUCNC over the last two years have helped to already identify some areas for collaboration.
- Certain research areas tend to be stronger in some countries than the other, and thus it is important to find which parties can benefit from collaboration and help them achieve it. Additionally, for topics like NTN, individual countries may start the work, but the need for a wider European alignment is felt quickly. The aim with collaboration should be to avoid too much overlap or too many gaps, which can only be achieved if we talk to each other.
- It was mentioned that it is also preferred by the national governments if research is done collaboratively with other countries, but we need to be careful and make sure that we don't break the paradigm that exists, such as the workings of bodies like 3GPP.
- It is important to include industry players and SMEs from early on, because that ensures acceptance and eventual uptake of the technology. Additionally, bringing businesses into the mix early on ensures that they have an IP position and can make money, which helps to ensure strategic autonomy.
- It was also echoed that we don't need a central dictating entity in Brussels telling everyone how to organise 6G, but rather a bottom-up collaboration coming from the countries themselves. This can only be achieved by creating a framework with space for dialogue and consensus.

[3] The role of National Initiatives in 6G Research and Innovation | Podcast Episode on RSS.com

4 Collaboration on Cloud

This section provides information about the SNS ICE activities to put telco cloud on the SNS R&I agenda. SNS ICE identified cloud as a relevant topic in D2.1 [1] and created an overview in D2.2 [2] of the all the ongoing cloud activities in Europe. In this deliverable information about the steps SNS ICE took to bring experts together and consolidate their views in a concise roadmap for the way forward, are provided.

4.1 Identification of the importance of Cloud

The starting point for these activities was the 6G-IA white paper on "Key strategies for 6G Smart Networks and Services" in 2023 [3]. In this document the following recommendations were made in relation to telco cloud:

1. Stimulate innovative European solutions that address the need for network cloudification in all domains (RAN, edge, core),
2. Exploit and enhance open-source solutions to contribute to 6G technological sovereignty,
3. Develop open interfaces to enable cloud interoperability, cloud enabled telco services interoperability
4. Prioritize European solutions that conform to European values, legislation for data security and privacy,
5. Implement EU-based open, interoperable, and multi-provider cloud infrastructures for ICT networks.

The above recommendations are still relevant today. It is widely accepted that hyper-scalers are currently dominating the cloud service provision ecosystem. Although efforts have been made in the past to develop European solutions, these have not succeeded in altering the status quo. This may lead to some negative impact on the European mobile operators that could subsequently affect the vendors and the overall European telco and service provision ecosystem.

Due to the cloudification of the networks and the lack of standardized European alternatives, the operators rely on proprietary cloud solutions provided either provided by hyper-scalers or based on own developments. Being forced to follow such an approach, the operators are in the conflict to either risk a lock-in situation with a hyper-scaler or need to undertake a huge effort to develop and maintain an own solution and a high effort to integrate supplier workloads onto it. Thus, it is important to take cloud sovereignty into account. This includes compute, transport and storage of data that will be under domains that are controlled or conform to EU jurisdiction and legislation. There are currently concerns in Europe about the low footprint on the provision of cloud infrastructures.

As cloudification is further progressing towards the edge and the RAN, if the current situation continues, there is a strong possibility that the European telecommunication market, as we know it today, will cease to exist. On the positive side, the operators still have the "ownership" of the spectrum and a large number of sites that can be used to deploy edge-clouds that will help them offer more competitive solutions (e.g., in terms of lower latencies). If designed properly, this further disaggregation of cloud facilities may alter the existing business models.

4.2 Workshop on cloud

In the Impact Assessment and Facilitation Action (IAFA) event for Research Priorities on Cloud and Service Provision, organized by SNS-OPS in collaboration with SNS ICE, twenty-six experts worked together in a physical meeting to discuss about the current status and possible R&D priorities. In the context of the SNS ICE, their views were consolidated in a detailed report[4]. This report was used during the two consultations of 6G-IA with its 300+ members and eventually this was made fully available. This report contains specific suggestions for R&D priorities for long and mid- term. It also identifies key stakeholders with whom the SNS should build

communication links (e.g., IPCEI-CIS, cluster 4 activities on advanced computing and big data, and the anticipated cluster 4 call on large scale-trials for e2e infrastructures) and identify a potential way forward.

The recommendations of the white paper include:

- Minimize the dependencies from the Hyper-scalers for the European stakeholders,
- Rely on open-source solutions to reach faster the target of European wide accepted solutions,
- Target the standardization of the results so that future solutions will abide by the European rules for security, privacy, sustainability etc.
- Identify synergies among European funding instruments to maximize the impact of their activities and shorten the delivery of well-studied and tested solutions,
- Solutions should Investigate efficient implementations of regulations (EU data act, EU AI act, CRA, etc.).

Moreover, this work analysed the time plan of the various activities as shown in Figure 6.

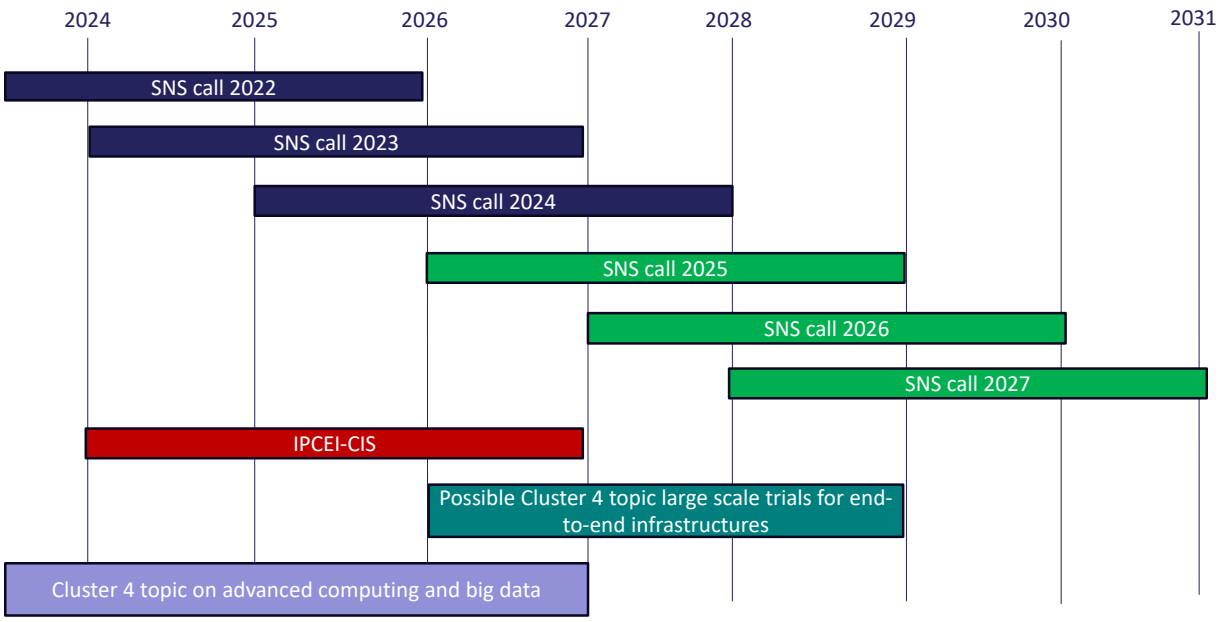

Figure 6: Time plan for the SNS calls, IPCEI-CIS and Cluster 4 on large scale trials for end-to-end infrastructures

In the above figure one can identify that IPCEI-CIS results could be used for further extensions towards 6G 3C networks and services from the SNS calls on 2025 onwards, combined with the SNS results from previous calls (i.e., call 2022 and call 2023). As similar activities are considered for the anticipated cluster 4 call on LST on end-to-end infrastructures some differentiation is needed compared to the 6G activities. This differentiation factor could be that this call could focus on how to support cloud principles and enhance service provision considering existing 5G and 5G advanced networks. This call could also take into consideration early SNS JU results from calls 2022 (e.g., on Stream A) and 2023 to test them in trials. Figure 7 illustrates the above possible interactions. As shown in this figure, the results from all the above instruments could be further used in the possible future IPCEI on infrastructure. It is worth noting that one of the key results from the SNS JU projects is the standardization of the developed solutions in the context of 6G standardization activities.

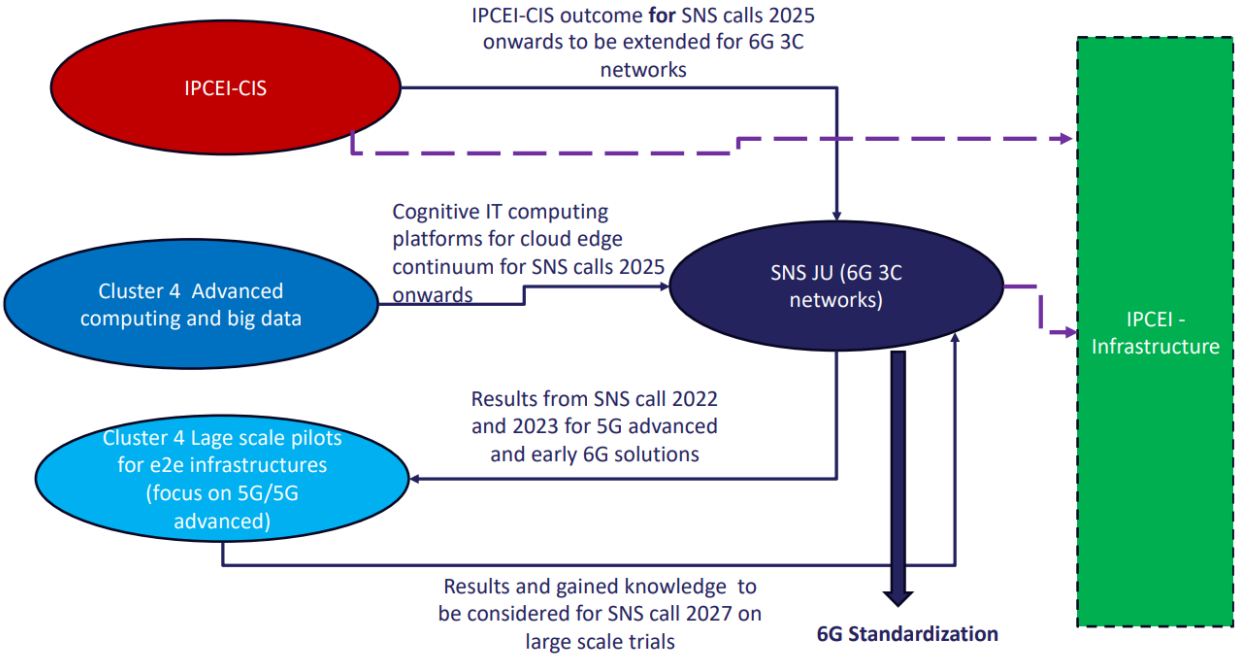

Figure 7: Potential synergies among funding instruments

Further to the abovementioned workshop, SNS ICE organized two telcos with representatives from the IPCEI-CIS (05-07-24 and 29-08-24). During these telcos, an analysis of the current status of the various activities (i.e., SNS projects related to cloud, Cluster 4 projects related to cloud and IPCEI-CIS plan of activities was discussed in detail). Also, the plans of the SNS JU for a dedicated call in Stream C for the R&I WP 2025 was discussed. Based on these discussions, several opportunities were identified and the specific proposals were made for the SNS R&I orientations so as to avoid duplications and maximize synergies. The plans of DG-CNECT to open also a dedicated call for similar activities under Cluster 4 activities was also analysed.

4.3 Overview of cloud activities

SNS ICE created an overview in D2.2 [2] of the ongoing cloud activities in Europe and established further contact with the cloud community, eg: with the European Alliance for Industrial Data, Edge and Cloud. One of the key issues identified is that the topics of cloud and telco cloud activities are fragmented and processed under various initiatives and funding instruments. The following EU programs are performing research on telco cloud solutions.

1. IPCEI-Cloud:
    1. IPCEI-CIS Integration Cluster (WS2): CLOUD-EDGE MANAGEMENT & ORCHESTRATION
    2. IPCEI-CIS Integration Cluster (WS2): TELCO CLOUD-EDGE
2. SNS JU Program:
    1. Stream A: 5GStardust, Across, Verge, 6Green, Season,
    2. Stream B: HexaX-II, 6Gdali, NexaSphere, Desire6G, Confidential6G, Rigorous, iTrust6G, Unity6G, Ambient6G, Horse, Androit6G, SAFE6G, 6GCloud, PROTEUS, 6G-EWOK
    3. Stream C: 6Gsandbox, 6GXR, 6GBricks
    4. Stream D: Trialsnet, 6GPath
3. Cluster4 Program:

1. ICT-40-2020: Cloud Computing: towards a smart cloud computing continuum: AI-Sprint (2021-2023), Charity (2021 – June 2024), SERRANO (2021-2023), DATACLOUD (2021-2023, PHYSICS (2021 – 2023)
2. CL4-2021-DATA-01-05 MetaOS: aerOS (2022- 2025), FluidOS (2022- 2025), ICOS (2022 – 2025), Nebulous (2022-2025), NEMO (2022 – 2025), NEPHELE (2022 – 2025)
3. CL4-2022-DATA-01-02 Cognitive Cloud: CODECO (2022 – 2025), ACES (2023 – 2026), SoveringEdge COGNIT (2023 – 2025), DECICE (2022 – 2025), EDGELESS (2022 – 2025), MLSYSOPS (2023 – 2025), AC3 (2023 -2025), COGNIFOG (2023 -2025), CLOUSKIN (2023 -2025)
4. C4-2024-DATA-01: CEI-Sphere (2024-2027), COP-PILOT (2025-2027), O-CEI (2025-2028)

The challenge is how to create synergies and ensure that the outcome of these various activities could converge in a solution that would potentially be used in the near future in European operational networks. 6G-IA's and SNS JU's approach for the same is discussed next.

4.4 Establishment of a Policy WG on cloud

The outcome of this work has been transferred to the SNS JU Strategic Policy WG for 3C network where further work is currently ongoing to plan for the next steps. This group operates directly under the supervision of the SNS JU office and its activities are confidential. For reasons of completeness we can report that several SNS-ICE members participate and the WG is co-chaired by 6G-IA.

The Working Group (WG) is developing a European strategy for Telco Cloud and Connected, Collaborative, Computing (3C) networks, aiming to integrate communication, collaboration, and computing services. A 3C network is a secure, multi-provider system that supports network functions and services beyond connectivity, such as AI, storage, and security as a service. Key features include programmability, privacy, and service continuity across domains.

The strategy focuses on creating a secure and interconnected cloud continuum that enables flexible application deployment across public, private, hybrid, and edge clouds. The convergence of connectivity and computing infrastructures is seen as essential for future networks, with AI-driven operations playing a crucial role. However, Europe currently lacks a complete 3C ecosystem, relying heavily on proprietary cloud solutions. Achieving cloud sovereignty is vital to ensure EU control over data and infrastructure.

The European Commission's initiatives, including the Digital Networks Act and other related policies, support the goal of fostering a strong European 3C ecosystem. The 6G-IA has also emphasized the need for innovative European solutions. The strategy aims to combine public and private efforts, including open-source initiatives, to establish technological sovereignty in this critical sector.

5 Evaluation and Recommendations

Over the last two years, SNS ICE has made a good start in bringing together a fragmented European research ecosystem. While considerable funding is being allocated in the EU towards 6G development, this is done at different levels through many different funding bodies, making alignment and consolidation a real challenge. Additionally, there is no central body that is responsible for this coordination and no centralised platform for sharing results in available, thus CSAs SNS ICE and SNS OPS have made an honest effort in this regard. This section evaluates the results that were achieved in establishing collaboration among the different 6G R&I initiatives and provides recommendations for continued collaboration.

5.1 Evaluation of results

1. SNS ICE took the first steps in establishing contact with the EU, National and regional initiatives, and followed it up with an in-depth analysis of the large NIs within Europe on 6G as well as the peer EU associations and partnerships. This formed the basis for the collaboration discussions. Thus, this led to the **creation of a community around 6G R&I research** by combining individual parties that were previously operating independently without alignment on a European level.
2. This community was further strengthened and the level of information shared was gradually moved from sharing high-level program structures to discussing specific topics for collaborations. This was achieved through a series of workshops organized at conferences over the two years. In order to make this collaboration even more frequent and granular, a set of regular collaboration meetings with NIs has been established, which has led to many actionable ideas.
3. A monumental result of the SNS ICE project has been the collection and alignment of input from several different projects, countries, and associations to create a consolidated view on **European use cases for 6G.** This effort showed that while the ecosystem is indeed fragmented, alignment is possible and desired.
4. The contact established with EU initiatives and peer associations like CHIPS JU, EuroHPC, Photonics Europe, AI Data and Robotics Association (ADRA), have led to workshops where the SNS JU had the opportunity to contribute to the SRIAs of these initiatives, share the SNS JU priorities, and welcome their views into the SNS JU SRIA. An alignment of such sort has allowed for both parties to plan their work in a way that gives room for alignment of work and thus promotes collaboration.
5. SNS ICE identified cloud as an emerging topic, based on the input received from NIs and other EU stakeholders, together with SNS JU and 6G-IA, and provided a comprehensive overview of the cloud landscape within Europe. It also highlighted that there is a lack of coordination between the different efforts currently active, and the Policy WG on Cloud now makes an effort to bring all voices around one table.
6. Lastly, as the de-facto ambassador of the SNS JU, SNS ICE liaisons attended many events, contributed to conferences through workshops, participated in panels, disseminated through published papers, podcasts, webinars, etc., which all contributed towards bringing the European R&I ecosystem closer to the SNS JU priorities.

5.2 Recommendations for continued collaboration

Based on the contacts, input received, discussions and lessons learned from the frequent interaction with all the above EU stakeholders, SNS ICE makes the following recommendations to continue and further strengthen collaboration among EU stakeholders working on the development of 6G networks.

1. As one of the challenges identified in aligning various R&I activities is the lack of centralised coordination, some consideration could be given to the establishment of such an effort. A forum or a hub coordinated at the EU level that allows various R&I initiatives to bring forth their experimentation facilities, work priorities, and results, would be very instrumental in aligning efforts faster.

2. As observed during the process of collecting input for the standardisation workshop in 3GPP SA1, alignment on standardisation will be one of the key factors in deciding whether Europe has a strong voice in the global 6G standard development or not. In order to protect EU interests on that front and put forth a consolidated European view, organised efforts must be made to strengthen collaboration among the various projects and initiatives on standardisation.
3. The way to unlock maximum development with minimum investment is to find ways to complement the work being done within the NIs with the work being funded by the SNS JU. Care must be taken to avoid too many overlaps or leave too many gaps. In this regard, specific actions should be initiated on creating joint calls for funding, co-fund certain topics at different levels, and find and eliminate redundancies.
4. The creation of test and experimentation facilities and platforms is an investment intensive exercise. Thus, sharing of such facilities could reduce the overall costs being dedicated to their creation at various levels. Efforts could be made in this regard towards creating Pan-European federated test platforms, which could be accessed by many interested parties across Europe.
5. Timely inclusion of industry partners and SMEs in R&I is important to ensure a holistic approach to the development of of new technologies. Efforts must be taken to ensure that there are structural opportunities for their involvement and that the ecosystem does not become dominated by research institutes and universities only.
6. There is a global need for environmental sustainability in digital infrastructures, and within Europe there is a recognized need for digital sovereignty and security. These themes must be promoted in the research funding being dedicated, and checks and balances must be put in place to ensure that the R&I efforts funded align with these.

6 Final SNS ICE webinar and continuing the work in SNS CO-OP

On the 28th of April 2025, SNS ICE organised a final showcase webinar[4] aimed at sharing the work done within the project with the wider European R&I community. Work package 2 also had the opportunity to present the work carried out in identifying initiatives and creating collaborations within EU R&I. The WP also presented on work done on the topic of Cloud within Europe, and the efforts taken in that regard. This event was widely attended by representatives of the European Commission, the SNS JU, national and regional initiatives, and was very well received. This webinar helped highlight the legacy being left behind by SNS ICE in European 6G R&I towards all relevant stakeholders and interested parties. After the presentation WP2 representatives also engaged with the audience during the Q&A session, elaborating and clarifying some of the presented results.

SNS ICE has done monumental work in not only identifying the different players in the European R&I landscape, but has managed to establish contact, create overviews and eventually build a community with all of them involved. Considering the effort that it has taken for us to arrive at this point, it would be a waste to stop this work now.

SNS CO-OP, which is seen as the follow-on project from SNS ICE, will continue this work. Work package 2 of SNS CO-OP will continue to engage with the stakeholders identified in ICE and will seamlessly continue the actions established in ICE, such as the collaboration meetings with the national initiatives, the webinar series with the NIs, etc. It will also continue to engage with the EU partnerships and peer associations.

While continuing the work is great, CO-OP plans to take it one step further. The list of national initiatives that we currently collaborate with will be expanded to include other countries, and efforts will be made to also include the smaller countries with perhaps no established singular national initiative, but many fragmented smaller efforts. Similarly, other relevant EU partnerships and associations will also be brought on board.

[4] https://smart-networks.europa.eu/event/sns-ice-final-event-showcasing-key-achievements/

7 Conclusions

This deliverable provides an overview of the work done by SNS ICE in creating a 6G R&I ecosystem with EU, National, and regional initiatives. It sheds light on the specific actions taken in this regard and discusses their impact. Furthermore, it also offers recommendations for the continuation of collaboration within this ecosystem. Table 3 below summarizes the main actions taken by SNS ICE over its lifetime in creating and contributing to a collaborative R&I landscape in Europe.

Table 3: Actions taken by SNS ICE in European 6G R&I collaboration

Action	Impact
Creation of a contact list with representatives of all National Initiatives and EU partnerships, along with their specific role within the program (such as organizational, technical, etc). This data was collected with consent and can be shared with the wider R&I community.	Identification of contact persons was essential to first and foremost gather information about the R&I effort and its structure, and secondly to know who can be approached for which type of collaboration discussion.
Creation of an overview of the National Initiatives and peer EU associations and partnerships, including an overview of their structure, funding, timing of calls, governance structure, etc.	Since the EU R&I landscape is so differently organized, an effort had to be made to understand the different ways of organization to be able to form a basis for the collaboration discussions.
Organization of workshops at major conferences, like EUCNC and Techritory 2023 and 2024.	These interactions established the first specific collaboration actions which were taken on by SNS ICE, the SNS JU and NIs themselves. This helped to create a first alignment and collaboration creation. It also helped to promote cohesion and create a community amongst the participating representatives.
Support to the SRG and organization of workshops with them.	The SRG is a good link between the SNS JU and the Member States, and these workshops helped to get them on the same page with important topics like NI collaboration and standardization.
Organization and facilitation of frequent collaboration meetings with NIs.	These meetings are the ones generating more defined and specific actions for collaboration, which is desirable in order to be able to find effective joint efforts.
Collection and alignment of European input to create a consolidated view for the 3GPP SA1 use cases workshop.	In a monumental one-time effort, SNS ICE facilitated this input collection and alignment in order to enforce a singular European view towards 3GPP. This effort also underscored the importance of delivering continuous consolidated input to SDOs to be able to impact global standards well.

Participation in events and workshops organized by other initiatives.	As the ambassador of the SNS JU, SNS ICE carries the role of promoting the views of the SNS JU within Europe. Furthermore, these events allowed us to gather information to further strengthen the SNS SRIA and gave us the possibility to impact the SRIAs of the other initiatives for closer alignment and eventual collaboration.
Identification of Cloud as an important topic and creation of an overview of the current European landscape.	Together with the SNS JU, SNS ICE prioritized the work on cloud ecosystems. It created a comprehensive overview which highlighted the different uncoordinated initiatives and brought forth the challenges in alignment.
Participation in Policy WGs on Standardization and 3C networks.	SNS ICE highlighted the importance of standardization alignment within Europe and put emphasis on the importance of a disaggregated cloud infrastructure for Europe. It continues to drive these topics forward through its participation in the WGs.
Dissemination of work done through various published papers, podcasts, webinars, etc.	Two papers have been published which were accepted at the EUCNC conference. A podcast on National initiatives was organized as well as a webinar on standardization.
Showcasing the achievements of the project and this work package through a final showcase webinar.	The final showcase webinar for SNS ICE presented the legacy that this project has created for EU and NI collaborations and was attended by representatives of the EC and the SNS JU and was very well received.

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