DECISION OF THE GOVERNING BOARD OF THE SMART NETWORKS AND SERVICES JOINT UNDERTAKING No 03/2025

Adopting the updated SNS JU Phasing-out Plan

THE GOVERNING BOARD,

Having regard to Council Regulation (EU) No 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe and repealing Regulations (EC) No 219/2007, (EU) No 557/2014, (EU) No 558/2014, (EU) No 559/2014, (EU) No 560/2014, (EU) No 561/2014 and (EU) No 642/2014, and in particular Article 17(2) point (a1) and 19(4) point (v);

Having regard to European Parliament and Council Regulation (EU) 2021/695 of 28 April 2021 establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination, and repealing Regulations (EU) No 1290/2013 and (EU) No 1291/2013, and in particular Article 10(2)(c) and Annex III on the European partnerships;

Having regard to the SNS JU Governing Board Rules of Procedure, and in particular Article 10;

WHEREAS

(1) The joint undertakings are set up as Union bodies for a period ending on 31 December 2031 and financed under the EU multiannual financial framework 2021-2027.

(2) According to Article 10 of the Parliament and Council Regulation (EU) 2021/695, the European partnerships should have a clear life-cycle approach, be limited in time and include conditions for phasing-out the Programme funding;

(3) According to Article 17(2) point (a1) of the Council Regulation (EU) No 2021/2085, the Governing Board should adopt by the end of 2023 a plan for the phasing-out of the joint undertaking from Horizon Europe funding upon recommendation of the Executive Director;

(4) In order to ensure a lean and pragmatic approach, the Executive Director should submit to the Governing Board a plan focused on the administrative and operational adaptations needed for a 'winding-up procedure', and the necessary steps, including procedural and process aspects, to complete the other elements of the phasing-out plan.

(5) A first Phasing-out plan was adopted by the Governing Board of SNS JU, under the recommendation of the Executive Director (GB decision 22-2023 of 22 December 2023).

(6) In this decision, the Governing Board agreed that complementary elements of the phasing-out plan should be further discussed and updated in the course of 2024, and that a revised plan should be submitted to them for adoption by the end of 2024.

HAS ADOPTED THE FOLLOWING DECISION:

Article 1

The Governing Board of SNS JU hereby approves the updated phasing-out plan enclosed in Annex to this Decision.

Article 2

This decision shall enter into force on the date of its adoption.

Done at Brussels, on 17 April 2025.

For the Governing Board

Colin WILLCOCK

The Interim Chair

Annex:
- Updated SNS JU Phasing-out Plan

Smart Networks and Services Joint Undertaking

Phasing-out Plan

6G SNS

Edition 2025

Edition date: **2025- FINAL**

Edition: **03**

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Executive Summary

The Smart Network and Services Joint Undertaking (SNS JU) is one of the European Public-Private Partnerships on Research and Innovation (R&I) created under Horizon Europe.

These partnerships play an important role in achieving strategic objectives such as creating a human-centric digital world that reflects our European values and accelerating the transitions towards sustainable development goals and a green and digital Europe. This can be achieved more effectively in partnership, through a strategic vision that is shared and committed to by partners. It is the only partnership that systematically addresses the network and service platforms, a domain that has been recognised as strategic by the EC from an industrial and sovereignty perspective[1].

The present document constitutes an updated version of the Phasing-out Plan of the SNS JU adopted by Governing Board Decision No 22/2023[2] as required by Article 19(4)(v) of the Single Basic Act (SBA) (Council Regulation (EU) No 2021/2085[3]). Article 17.2. paragraph a1 of the aforementioned Council Regulation indicates that the Governing Board of the SNS JU shall adopt, by the end of 2023, a plan for the phasing-out of the Joint Undertaking from Horizon Europe funding, upon recommendation of the Executive Director.

The SNS JU achieved financial autonomy in October 2023 and is progressing towards IT autonomy, planned to be achieved during the first half of 2025. This document lays out a plan for the potential continuation of activities currently performed by the SNS JU beyond its current time frame. Several options have been identified, and work will continue to develop these options further. Alternatively, SNS JU has also developed a plan to wind down all activities at the end of 2031, ensuring a full completion to all projects in our portfolio.

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[1] https://digital-strategy.ec.europa.eu/en/library/eu-toolbox-5g-security
https://digital-strategy.ec.europa.eu/en/library/second-report-member-states-progress-implementing-eu-toolbox-5g-cybersecurity
[2] 22-2023-sns-gb-decision-adoption-sns-phasing-out-plan-annex.pdf
[3] Council Regulation (EU) 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe and repealing Regulations (EC) No 219/2007, (EU) No 557/2014, (EU) No 558/2014, (EU) No 559/2014, (EU) No 560/2014, (EU) No 561/2014 and (EU) No 642/2014, OJ L 427, 30.11.2021, p. 17–119.

1   Introduction

1.1   Origin of the SNS JU

The 5G Infrastructure Public Private Partnership (5G PPP) was officially launched in 2013 as part of the European Commission's Horizon 2020 program, the EU's framework for R&I. It aimed to bring together key players from the telecommunications industry, SMEs, research institutions, and academia to collaborate on various projects and share resources, expertise, and knowledge to advance 5G technology in Europe. It delivered technology building blocks for global 5G standards and did bring solutions to the market in large-scale trials focussed on strategic verticals.

In the context of Commission priorities for 2019-2024 'A Europe fit for the digital age', 'An economy that works for people' and the policy objectives set out in the context of its communication on 'Shaping Europe's digital future', Europe expressed the need to continue developing critical digital infrastructures based on 5G networks and to build its technological capacities towards 6G with an expected time horizon of 2030.

The Smart Networks and Services Joint Undertaking (SNS JU) significantly steps up 5G PPP efforts and ambitions through a new Public-Private Partnership established by Council Regulation 2021/2085, notably by taking a more systematic approach to the various components of the connectivity value chain, i.e. not limited to network technologies only. The founding members are the European Union, represented by the European Commission, and the private sector, represented by the 6G Smart Networks and Services Industry Association (6G-IA).

- SNS JU has two main missions: Fostering Europe's technology sovereignty in 6G by implementing the related R&I programme leading to the standardisation process that is planned over the 2025-2028 window for the early 6G version. It encourages preparation for early market adoption of 6G technologies by the end of the decade (2030). Mobilising a broad set of stakeholders is key to address strategic areas of the networks and services value chain. This ranges from edge- and cloud-based service provisioning to market opportunities in new components and devices beyond smartphones.
- Boosting 5G deployment in Europe in view of developing digital lead markets and enabling the digital and green transition of the economy and society. For this objective, the SNS JU coordinates strategic guidance for the relevant programmes under the Connecting Europe Facility (CEF), and in particular 5G Corridors. It also contributes to the coordination of national programmes, including under the Recovery and Resilience Facility (RRF) and other European programmes and facilities such as Digital Europe Programme (DEP) and InvestEU.

The Smart Networks and Services Joint Undertaking also supports technological sovereignty for Europe, in line with the 5G Cybersecurity Toolbox, the Cybersecurity Strategy and the industrial strategy.

The SNS JU has had independent legal personality from the Commission since 30 November 2021. However, its Parent DG, DG CNECT was responsible for the establishment and initial operations of the SNS JU until the latter became financially autonomous on 24 October 2023.

1.2 Policy context of the SNS JU

A cutting-edge digital network infrastructure is the basis for a successful digital economy and society. The future competitiveness of all sectors of the economy in Europe depend on advanced, secure, highly reliable and resilient digital network infrastructure, including computing infrastructure, and services. Today, network platforms are identified as critical infrastructures, considering the raising number of critical processes and use cases that are served by these platforms[4]. This is intensified by an accelerating trend of connectivity infrastructure converging with cloud and edge computing capabilities; the traditional boundaries between these actors are increasingly blurred, which could bring opportunities but also risks for Europe, notably in the form of industrial dependencies and bottlenecks. Therefore, the Union, together with the EU industry, needs to continue driving innovation in this field, leveraging its current strength in the network equipment supply market to provide secure connectivity to European citizens and business.

Secure and resilient digital infrastructures are a main pillar of the Commission White Paper on Digital Infrastructure Needs[5] and one of the four cardinal points of the EU's Digital Decade Policy Programme[6]. The Programme is the guiding policy framework to achieve the European Union's competitiveness, strategic leadership and technological sovereignty. Given the essential role of connectivity in European citizens' daily lives and for European businesses, this includes both 5G roll-out and R&I towards future smart networks and services (6G), which will be key backbones of the twin digital and green transitions. This domain and its underlying enabling technologies have also been fully recognised as critical for European sovereignty and economy by the Draghi report[7].

6G corresponds to the next generation transformative systems and addresses new demanding and innovative use cases, notably in the vertical domains. It requires to scale up technologies like the Telco Edge Cloud, which includes a complex ecosystem of cloud, edge and software, and networks that will equip European society with secure and resilient digital connectivity capable to adapt to the virtually unlimited number of different requirements originating from different use cases. These future networks and services will incorporate values into technology developments on sustainability, flexibility and programmability, accessibility and coverage,

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[4] The EU toolbox for 5G security | Shaping Europe's digital future
Second report on Member States' progress in implementing the EU Toolbox on 5G Cybersecurity | Shaping Europe's digital future
[5] White Paper on "How to Master Europe's Infrastructure Needs" COM(2024) 81 Final
[6] Decision (EU) 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade Policy Programme 2030
EUR-Lex - 32022D2481 - EN - EUR-Lex (europa.eu)
[7] Draghi report annex, sections 3.1 to 3.3
The Draghi report on EU competitiveness

affordability, privacy, security and resilience while supporting emerging technologies like augmented and virtual reality, Artificial Intelligence (AI), and the Internet of Things (IoT).

The geopolitical and technological dimensions have become inseparable in the realm of 6G. Today, 2 out of the top 5 system suppliers of 5G technologies are from Europe, but global competition is increasing, with competing nations having significantly raised governmental support and made public their intention, and the level of scale required to compete is enormous. Therefore, this necessitates that Europe leverages its full combined potential to collaborate with a wide-ranging set of stakeholders, from the vertical sectors to SMEs, across the value chain and to strategically align Member States' (MSs) initiatives in the field.

Europe's sovereignty requires ensuring a leading position in this race by supporting cutting edge world-class R&I on pre-commercial 6G architectures and systems. The SNS JU represents the platform where, by strong collaboration between the private and public sectors, Europe can influence the definition of a future global 6G standard aligned with European values and foster the development of a competitive ecosystem with maximised sovereignty, including for take up of technologies.

The SNS JU was created to support leadership for the conception, design, development and pre-deployment of con smart networks and services on top of this new ecosystem. More specifically, SNS JU addresses multiple European policies and priorities linked to the digital and green transition of the economy and society, such as:

- Technological sovereignty, leadership, and competitiveness, with focus on 6G and its multiple technological components, including novel radio access network solutions and end-to-end architectures, cybersecurity, network resilience, AI, quantum technologies, cloud-based service provision, integration of satellites into 6G, optical technologies, 6G candidate microelectronics technologies, telco cloud solutions and novel short-range communication and IoT systems. The current geopolitical context further exacerbates the need to minimize reliance on non-European technology providers, especially for core network components and essential digital infrastructure to safeguard European networks against supply chain vulnerabilities and cybersecurity threats tied to foreign dependencies.
- Availability of advanced, secure and resilient digital infrastructure. The Covid crisis as clearly demonstrated the critical needs for resilient, secure and trustworthy European infrastructures and technologies, which are also indispensable to ensure the respect of core European rules and values. A strong single market, fair competition and a functioning rules-based trade are critical assets for the EU's economic success and resilience. Advanced digital networks create business opportunities, including new and successful use cases, and contribute to the digital transformation of Europe. Digitalisation of the industry (Digitising European Industry - DEI package[8]) addressing sectors like transport, automotive, energy, healthcare and public administration. According to the Digital Decade objectives before the end of the decade, businesses

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will need dedicated Gigabit connections and data infrastructures for cloud computing and data processing.

- Green and Digital Transitions fostering new technologies for sustainability and deployment of greener networks, with ambitious eco-standards, reduced energy consumption, and, thus with a lower environmental footprint

The SNS JU covers both the deployment aspects of 5G, and the longer-term R&I activities related to 6G smart networks and services. The strong presence of leading R&I actors in Europe is directly linked to the availability of lead markets in Europe. To consolidate European excellence in the networking domain, to advance 5G and make Europe "6G ready" as well as a global supplier of future 6G technologies, and to federate European positions to influence global standards.

In summary, the European economic sectors of electronic communication networks, services and equipment are currently at a crossroads. The SNS JU will support the technological transformation of these sectors as a foundational building block for the EU's technological sovereignty, competitiveness and strategic leadership, on digital infrastructures for facilitating the digital transformation and competitiveness of key industrial sectors in Europe.

1.3 Priorities of the private member of the SNS JU (6G-IA)

The 6G-IA, along with the supporting associations, has acknowledged the afore-mentioned challenges and drivers for the development of 6G networks and smart services for all vertical sectors (e.g., transportation – including naval, aviation, railway, automotive, industry 4.0, e-health, media and entertainment, public safety, smart cities, agriculture, education). This is why, in conjunction with the European Commission, it has developed the proposal for the SNS JU[9]. This proposal is closely linked with the vision of the European private side for the evolution of networks and services.

Moreover, 6G-IA has developed a position paper with a comprehensive set of key strategic reflections and recommendations for 6G smart networks and services[10] and provided a series of white papers[11], most notably the European Vision for the 6G network ecosystem that illustrates the views of the 6G-IA members and key priorities, trends and results from SNS JU projects like the Hexa-X-II flagship project. 6G-IA has been also quite active in international collaborations. For example, together with ATIS, 6G-IA produced the "EU-US beyond 5G/6G Roadmap". This roadmap was accepted by the previous administrations at ministerial level in the context of the EU-US Trade and Technology Council (TTC). Currently, 6G-IA is further working in similar activities with other countries such as Japan and India.

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[9] Smart Networks and Services proposal, 30.06.2020 available at:
https://ec.europa.eu/info/sites/info/files/research_and_innovation/funding/documents/ec_rtd_he-partnership_smart-networks-services.pdf
[10] 6G-IA, Key Strategies for 6G Smart Networks and Services, position paper, available at:
https://6g-ia.eu/plans-papers/
[11] https://6g-ia.eu/plans-papers/

In summary, the key priorities for the private side since the launch of SNS have been:

- The successful ramping up of the 6G Industry association that moved from about 50 members to close to 400 members, reflecting the SBA commitment to create critical mass of players and directionality of the initiative.
- The successful launch of a key project, Hexa-X-II, aimed at developing a comprehensive view of 6G technologies and use cases, backed all European key players in the field, and paving the way towards consensus, standards, and international positioning.
- The successful positioning of new issues, notably sustainability as part of the 6G design drivers as a key differentiator of Europe compared to other regions.
- The successful identification and R&I on key 6G technological building blocks.
- The successful contribution of the private side to the SNS costs, notably with IKOP and IKAA.
- The successful coordination of project results, SNS is conceived as a unified programme, which has led to the implementation of working groups where a consistent programmatic view can emerge on key topics such as security, open networks, standards.
- The successful initiation of contributions towards standards (including spectrum aspects) with collaborative 6G-IA position papers channelled towards key SDO's (3GPP, ITU).
- The successful initiation of international cooperation, with Memorandum of Understanding (MoU) signed with key 6G nations in view of minimising divergences prior to the standardisation/deployment phases.
- The ongoing determination of KPI's, both for 6G and for SNS, as important metrics of success.

These priorities and efforts on the private side reflect the commitments taken at the level of the SBA and expectations raised at the level of the Impact Assessment of the initiative.

Finally, it is worth noting that the members of the 6G-IA are contributing to SNS JU activities, as established by the SBA, through 6G-IA membership fees, as follows: a) financially to the SNS JU Office, b) in-kind contributions of additional activities and c) in-kind contributions of operational costs. 6G-IA has committed that all these contributions will amount to at least € 900 million by the end of the SNS JU. So far, the collected data show a performance better than originally planned to support this successful commitment.

1.4 SNS JU's objectives and contribution to EU policy objectives

The SNS JU targets reinforced European technological leadership in the development and deployment of next generation network technologies, connected devices and services, while accelerating the digital and green transitions of the European economy and society. It aims at positioning Europe as a lead market and positively impact citizens' quality of life, by

supporting key Sustainable Development Goals (SDGs), boosting the European data economy, and contributing to European technological sovereignty in relevant critical supply chains in line with the 5G Cybersecurity Toolbox, the Cybersecurity Strategy and the industrial strategy, including the European space strategy.

The main objective of the SNS JU is to enable European actors to develop and validate the set of technologies that will define 6G networks and services, ensuring their alignment with EU policies, values and societal needs. The novel technologies researched in the SNS programme cover multiple domains of the future 6G system such as network and computing architectures, software technologies, cybersecurity, radio, optical and non-terrestrial networks, devices and components and emerging technologies, which may have deep impact in the future, but without a clear industrial path at the research stage, yet. EU funded research for future network technologies and services can have a significant impact on the competitiveness of not only Europe's connectivity sector but also other key European industries such as rail, automotive, Industry 4.0/manufacturing, security, smart cities, smart health and security.

Additionally, the SNS JU seeks to create synergies with other EC programmes as reported in the SNS JU Strategic Research and Innovation Agenda (SRIA), including the Chips JU, The European High-Performance Computing JU (EuroHPC JU), the European Space Agency (ESA), AI, Data and Robotics Partnership, Photonics Partnership and the Connected, Cooperative and Automated Mobility Partnership (CCAM). Additionally, the SNS JU has established a collaboration with EU-Rail JU and as foreseen in the SBA, the SNS JU has the responsibility to contribute to CEF2, and coordinate the development of the Strategic Deployment Agenda (SDA).

Finally, the SNS JU acts as a facilitator for the exchange of information for related activities with MSs and vertical industries on future services (e.g. automotive, transport, media, health).

The table in Annex 2 provides examples of the JU's high level objectives and the EU policies they contribute to.

2 Short and Long-term Targets of the SNS JU

2.1 Objectives of the SBA and of the SRIA

An institutionalized partnership like the SNS JU addresses a strategic, fast-moving field, characterised by global competition, which requires a clear vision and strong commitment towards a long-term undertaking.

The development of 6G technology will require significant technological breakthroughs to enable its ambitious goals. Our activity is based on launching waves of projects grounded on well-developed multi-annual Work Programmes (WP). As agility is key for long term impact, the SNS JU develops both short and long-term activities in different phases, according to the levels of technology maturity and impact. The specific contents of these phases will be updated based on the continuous monitoring of global challenges and opportunities. These include business and societal aspects, regulatory and ethical issues, cybersecurity and trustworthiness and sustainability.
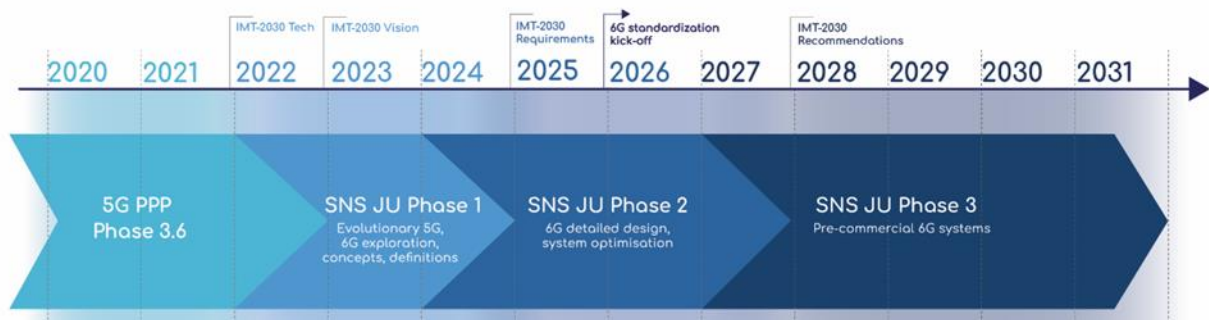
The specific objectives of the SNS JU are defined in Article 159(2) of the SBA and aim at:

- facilitating the development of technologies able to meet advanced communication requirements.
- supporting European excellence in SNS technologies in their evolution towards 6G.
- accelerating the development and widespread deployment of 5G by 2025 and the evolution towards 6G infrastructures in Europe (expected) by 2030.
- accelerating the development of energy-efficient network technologies with the aim of significantly reducing the energy and resource consumption of the whole digital infrastructure by 2030 and decreasing the energy consumption of key verticals industries.
- fostering a sustainable and diverse supply and value chain.
- strengthening the positioning of the Union's industry in the global smart network and services value chain by creating a critical mass of public and private actors.
- supporting alignment with ethical and security requirements, in line with the 5G Cybersecurity toolbox.

The SRIA[12] is the agreed roadmap between the public and the private side in the SNS JU. Based on the input from NetworldEurope European Technology Platform ETP, (former Networld2020 ETP), representing more than 1000 entities, the SNS JU SRIA includes contributions from the 6G-IA, the Alliance for Internet of Things Innovation (AIoTI) and the Networked European Software and Services Initiative (NESSI).

The SRIA[13] is updated on a biannual basis. Its objectives address the full industry digitalization and support of vertical industries; societal and political aspects, business aspects – Europe's share on the global market, and B5G Systems design and support of emerging applications.

- Firstly, the objectives aim to provide and validate via trials and pilots the enablers and solutions for full digitization of the European vertical industries to improve the business operation.
- Secondly, these aim to foster the development and adoption of technologies and solutions that will help to address societal challenges.
- Thirdly, these plan to reinforce European leadership in the smart networks domain, to seize opportunities to stimulate EU ICT capabilities in domains where the EU industry is less prominent and mobilize cross-disciplinary private sector forces to build solutions that will improve the operation of European vertical industries.
- Fourthly, these plan to research, develop and validate the next generation of smart networks and support emerging services, while enabling networks to efficiently support any service to be provisioned under all relevant environments.

For the first phase of the SNS JU the technological topics to be investigated have been grouped into 4 main streams. More specifically:

- **Stream A**: Targets the development of smart communication components, systems, and networks following the further evolution of 5G systems. It follows an evolutionary path towards the development of 6G networks, relying on the development of an intermediate technology point.
- **Stream B**: Develops the core 6G technologies to support European tech leadership and know how, including the development of academic skills; Covers research for revolutionary technology advancements, in preparation for 6G and revolutionary advancements of IoT, devices and software. This Stream targets low to medium Technology Readiness Level (TRL) technologies that are expected to deliver innovative solutions towards real life networks in a long-term time-period.
- **Stream C**: Integrates technologies in a system context enabling potential users to validate technology performance and to anticipate for downstream operational deployments of 6G infrastructures. Focuses on SNS Enablers and Proof of Concepts

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[12] Networld2020 SRIA 2020 Final Version 2.2 .pdf (5g-ppp.eu)
122021_sns_gb_decision_sria_including_annexdocx_89dnouztkolqi0m6dij7feh9da_82079_compressed-1.pdf (europa.eu)
[13] sns-ju-sria-2021-2027-second-edition-2023.pdf (europa.eu)

(PoCs) used to develop experimental infrastructure(s), ideally aiming to be used during later phases of the SNS.

- **Stream D**: Involves users beyond SNS core technologies like vertical industries and foster deployment in non-ICT native sectors, thus pushing for wider digitisation of the economy. Targets large-scale SNS Trials and Pilots with Verticals, including the required infrastructure. The aim is to explore and demonstrate technologies and advanced applications and services in the vertical domains.

These three Streams, with the exception of Stream A (which stopped from Phase 2) are expected to be active for the whole duration of the SNS JU and their topics are expected to be updated on a biennial basis.

2.2 Translation of the SNS JU's objectives into operational activities

The SNS JU translates its objectives from the SRIA and SBA into annual (or multiannual) Work Programmes, including a comprehensive and detailed Research & Innovation Work Programme, which in turn serves as the basis for Calls for proposals.

The SNS JU has launched 3 Calls and manages a portfolio of 79 projects from these calls. There are more than 500 EU entities involved, reflecting the SBA's commitment to create critical mass of players and directionality of the initiative. There is consistently a high representation of SMEs in the SNS projects, receiving approximately 24% of funding.

Several strategic priorities are addressed by flagship or lighthouse projects. The development of a European 6G vision was largely supported by the Hexa-X-II flagship project that has become an international reference point for EU 6G technological work with a comprehensive view of 6G technologies and use cases, backed by all key European players in the field, and paving the way towards consensus, standards, and international positioning. The SNS JU programme as whole including the flagship and other projects already contributed considerably to the global IMT 2030 vision delivered under the auspices of ITU in 2023.

The development of a systematic approach towards sustainability in networks, and networks for sustainability, as part of the 6G design drivers is a key differentiator of Europe compared to other regions with a dedicated Sustainability Lighthouse project as well as the development of not only KPIs but also Key Value Indicators as metrics for societal goals like sustainability.

International cooperation is addressed by dedicated 'mirror' projects funded both in Europe and by like-minded partners such as Japan or the Republic of Korea.

The SNS JU is conceived as a programme rather than a loose collection of projects. This has led to the implementation of several working groups amongst the projects where a consistent programmatic view can emerge on key topics.

The SRIA is regularly updated as required by the SBA. There is close collaboration and strong alignment between the Members' priorities and the Programme Office in the context of the development of the Work Programme as well as other programmatic activities including working groups and workshops. MSs are also closely associated through the States Representatives Group (SRG), ensuring monitoring of national activities and that national priorities align with European objectives.

Extensive dissemination efforts are made by participation in key international and regional conferences, workshops as well as comprehensive communications activities are rolled out to implement the SNS JU's Communication Policy.

In addition, collaboration activities and synergies with other EU initiatives, partnerships, and vertical stakeholders are promoted to maximise the efficiency of public investments in Europe and to create positive multiplier effects. By fostering these collaborations, the SNS JU ensures that its R&I efforts contribute to a robust and globally competitive European telecommunications ecosystem.

These cross-cutting initiatives also materialise the SNS JU's commitment to address more than networking technologies as well as to address a complete value chain, as a stepped-up ambition beyond the previous 5G PPP focus.

2.2.1 Strategic synergies: microelectronics and telecommunications

As a long-term target, the SNS JU identifies microelectronics as a priority area. While microelectronics in the EU represents only a fraction of the telecommunication equipment market, it is a critical enabler for the sector. Recognizing its importance, microelectronics has been placed at the forefront of EU political and strategic agendas. Strengthening the existing collaboration with Chips JU is key to reinforcing the European ecosystem.

There are multiple directionalities of action in the current Multiannual Financial Framework (MFF), though with different time to market horizons, such as the Chips JU Focus Topic on sub-THz communication, the SNS JU microelectronic-based solutions for 6G networks, and activities financed under the Important Project of Common European Interest (IPCEI) in microelectronics and communication technologies. Seven projects funded by SNS JU bring together the telecommunications and microelectronics communities, and this is further enhanced through the Microelectronics Lighthouse[14] of the SNS WP2024. These initiatives provide test and experimental platforms where solutions from both SNS JU and Chips JU can be validated for 6G network performance and applicability, with an objective to reach industrialisation stage through transfer towards the Chips JU Pilot lines.

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[14] X-TREEM 6G project

2.2.2 Enhancing European transport connectivity (Railways)

A critical example of long-term synergies is the integration between smart networks and rail networks, aimed at shaping the future European transport ecosystem. Seamless and robust connectivity across transport systems will improve mobility for passengers, making it more predictable, affordable, and sustainable. The synergy call between the SNS JU and Europe's Rail JU in WP2024 represents an essential first step in improving European transport networks. This initiative focuses on the development, validation, and testing of the Future Rail Mobile Communications System (FRMCS). In 2025, the SNS JU will further explore expanding synergies with Europe's Rail JU.

2.2.3 Connected and Autonomous Mobility (CAM) as a key vertical

As part of its long-term strategic targets, the SNS JU has also identified CAM as a priority sector. To advance connectivity in the mobility ecosystem, a MoU was signed between the 5G Automotive Association (5GAA) and the 6G-IA. This collaboration strengthens the use of future connectivity technologies in key verticals, such as CAM, facilitating safer and more efficient transportation solutions.

2.2.4 Non-Terrestrial Networks

NTN (non-terrestrial networks) are considered as an integral part of 6G. In that context, SNS is actively contributing to space developments with validation of NTN 6G use cases and contribution to standards, in complement to/synergy with the European space programmes.

Our main targets include the integration of satellite and terrestrial networks and technologies and the experimentation with new TN-NTN applications and services.

In this domain there are ongoing discussions between the SNS JU and the ESA on potential coordinated activities.

2.2.5 Artificial Intelligence: a cross-cutting priority

AI is rapidly transforming telecommunications, and the SNS JU recognizes its critical role in the evolution of smart networks. More than 50 SNS JU-funded projects are currently researching AI-driven solutions to optimize network performance, enhance security, and enable autonomous decision-making in next-generation communications. These AI-driven innovations are essential for the realization of 6G networks, which will require intelligent automation to manage increasingly complex digital environments.

Among the SNS JU's international collaboration activities, a notable initiative are the joint calls with the USA, Japan and South Korea focusing on AI. These cooperations seek to advance AI-driven networking solutions, ensuring that European and International researchers work together to develop standards and best practices for the integration of AI in telecommunications.

The opening of the HPC initiatives towards the realisation of AI factories open opportunities for HPC – SNS collaboration which are currently under discussion.

2.2.6 Strengthening international collaborations

International collaborations are fundamental to SNS JU's strategic mission. Partnerships with leading global players help to promote European research priorities in the international context, fostering cross-border innovation, standardization, and creation of global ecosystems with economies of scale.

A key international initiative has been the EU-US TTC, a forum to coordinate approaches to critical trade and technology issues while deepening transatlantic cooperation. In April 2024, the EU-US TTC agreed on a joint "6G Vision", which focuses on technology challenges and research collaboration including on microelectronics; AI and cloud solutions for 6G; security and resilience; affordability and inclusiveness, sustainability and energy efficiency; openness and interoperability; efficient radio spectrum usage; and the standardisation process. As part of this effort, the 6G-IA and the Next G Alliance (USA) have signed an MoU to exchange knowledge and align WPs in the field of 6G communication systems and networks.

Similarly, the SNS JU has launched coordinated calls with the Republic of South Korea and Japan to promote technological cooperation in digital transformation and economic growth. These partnerships underscore SNS JU's commitment to fostering a human-centric digital transformation based on shared values and collaborative research. The Hexa-X-II flagship project includes an advisory board with key companies of from Japan, Republic of South Korea and USA.

Non project activities such as conferences, standardisation meetings, webinars are extensively used to stimulate international exchanges and generate common views.

2.2.7 Looking ahead: expanding strategic synergies

As the SNS JU moves forward, expanding synergies across European and global initiatives remains a priority. Strengthening collaboration with other Joint Undertakings, research programs, and industry associations will ensure that Europe maintains a leading role in the development of future connectivity technologies. By further leveraging complementary technologies to connectivity (e.g ,AI, microelectronics), and cross-sector partnerships, the SNS JU continues to be a pivotal driver of European digital transformation.

In the coming years, SNS JU will focus on:

- Deepening collaboration with Chips JU to enhance Europe's semiconductor capabilities.
- Expanding research initiatives in AI-driven networking and automation.
- Strengthening global partnerships for mutual technological advancements.
- Supporting the integration of space-based and terrestrial networks to enable ubiquitous connectivity.
- Continuing cross cutting activities in core tech domains such as optical, security, cloud and service platforms for EU monetisation of services.
- Facilitating cross-domain valorisation of technologies resulting from the SNS JU funded projects.

Through these efforts, SNS JU will continue to serve as a catalyst for innovation, competitiveness, and sovereignty in Europe's telecom landscape, driving progress toward a smarter, more connected society by 2030.

3 Strategic alignments of the SNS JU

The SNS JU is at the forefront of advancing Europe's leadership in next-generation network technologies, connected devices, and digital services. Its strategic objective aligns with the European Commission's broader vision for 2030, as outlined in key policy frameworks such as the European Green Deal[15], CEF Digital[16], Europe's Digital Decade[17], the EU Toolbox for 5G security, critical technology areas for the EU's Economic Security and most recently, the Competitiveness Compass[18]. This new initiative underscores Europe's commitment to securing its technological sovereignty and reinforcing its competitiveness in critical digital infrastructure.

3.1 Strategic importance of the SNS JU in the European policy landscape

The SNS JU plays an indispensable role in the European Union's strategy for enhancing telecommunications, a foundational pillar of Europe's digital transformation and security. As an entity supporting R&I in 5G and 6G, the SNS JU is vital in aligning European telecom developments with policy priorities. The Competitiveness Compass, launched by the European Commission, in line with the Draghi report, identifies digital leadership as a fundamental driver of economic growth and resilience, emphasizing the need for investments in high-performance networks and next-generation connectivity. In this context, the SNS JU serves as a crucial instrument for realizing these ambitions by supporting cutting-edge research in close collaboration with industry, fostering a strong European industrial base, and ensuring the deployment of secure and advanced network infrastructure.

A key aspect of the SNS JU's strategic outlook is its contribution to Europe's technological sovereignty. The EU's emphasis on reducing dependencies on non-European suppliers in critical infrastructure places the SNS JU at the centre of efforts to establish resilient and independent supply chains in telecommunications. This established synergies with other initiatives, such as the European Chips Act, which seeks to strengthen the continent's capabilities in semiconductor technologies, an essential component of future telecom networks.

Security and resilience have become key EU and national priorities. The SNS JU funded projects work towards a 6G technology that is secure by design whilst the SNS JU WP implements applicable security restrictions.

3.2 Federating European stakeholders from diverse sectors to build ecosystems

A significant focus of the SNS JU's evolution is its impact on the broader ecosystem. In partnership with the 6G-IA, the SNS JU has cultivated a vibrant R&I community. The core of

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[15] The European Green Deal - European Commission
[16] Connecting Europe Facility - CEF Digital | Shaping Europe's digital future
[17] Europe's digital decade: 2030 targets | European Commission
[18] 10017eb1-4722-4333-add2-e0ed18105a34_en

this ecosystem is the European R&I community on networks which has a top-class track record of digital excellence. SNS has strategically reinforced this ecosystem in multiple related domains (e.g., chips, software, AI) which is critical for transitioning European research outputs into viable market solutions, reinforcing the bloc's industrial competitiveness. Given the increasing convergence of telecommunications and IT ecosystems, as well as the integration of terrestrial and non-terrestrial networks, the SNS JU must maintain its strategic foresight to address these complexities. SNS plays a critical role for technology demonstration, as it supports pilot and test infrastructures that are capable of validation technologies and services in a system context and for Europe wide stakeholders, including multiple SME's. This pilot and experiment work under SNS is not possible at national level and represent a true added value at EU level.

Concretely, there are **approximately 250 use cases, trials and pilots running with vertical sectors' involvement** in SNS JU's Call 1 and Call 2 projects. The SNS JU's **Verticals Cartography**[19] is a publicly available monitoring tool that tracks advancements related to verticals in our programme and provides consumers and industry end-users with practical examples of 6G integration into daily life and business.

Our **programme structure is designed to facilitate the involvement of vertical industries**, the **Stream C aim at developing EU-wide experimentation platforms** that can incorporate promising technical 6G enablers for their further validation. Key aspects for the projects are the reusability and ability to evolve of the experimental platforms over the lifetime of the SNS programme. Stream C Experimental Infrastructure technologies are expected to serve as the basis for the subsequent phase Stream D Vertical Pilot projects.

The aim of **Stream D is to explore and demonstrate 5G/6G technologies, advanced applications and services in vertical sectors** such as energy, construction, automotive, manufacturing, eHealth, culture, and media. Additionally, these large-scale trials aim to become the catalyst for the creation of viable business ecosystems.

SNS JU has strategically attempted to reinforce this ecosystem by actively seeking collaboration with related domains such as chips, software, AI, and cloud-edge computing; an essential step in translating cutting-edge research into market-ready solutions tailored to the specific needs of different verticals. The target of the SNS JU was to contribute to a coherent Horizon Europe Programme and consolidate in a programmatic manner the fragmented R&I activities that are present in various funding instruments. The level of success of this effort has specific boundaries that have to be addressed in the context of the next MFF.

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[19] [Vertical Engagement Tracker | 6G SNS Tracker](#)

3.3 Future evolution of the SNS JU and Phasing-out Strategy

The SNS JU's operational roadmap includes a carefully designed phasing-out strategy, ensuring its objectives remain relevant and adaptable to evolving policy, technology and geopolitical landscapes. This strategy will be continuously refined through updates to the SNS JU's SRIA, ensuring that research investments align with emerging technological trends and societal and market needs.

However, considering feedback from currently ongoing SNS JU funded projects, key technology and market trends both in the connectivity and adjacent domains, as well as the geopolitical context can be identified that

- require continued/intensified R&I activities;
- are missing from the current scope of the SNS JU but are critical for delivering on key EU policy priorities;
- require experimentation and ecosystem building on the basis of pre-commercially deployed infrastructure in order to improve European industrial competitiveness;
- would significantly benefit from stronger, structured coordination and broader collaboration.

The **European R&D 6G vision** - as elaborated in the **SNS JU SRIA** - foresees new network capabilities going beyond connectivity as we know it today. 6G is envisaged as the **first native-AI network** technology, with **sensing and improved positioning** capabilities, novel features (e.g., deterministic networking, advanced optical communications), **enhanced telco cloud support** and **integrated terrestrial and non-terrestrial advanced communication services**. Moreover, it targets further **softwarization** and **virtualization** solutions that are expected to disrupt the 10 years' cycle of cellular generations evolution allowing for **shorter upgrade cycles at reduced cost**. Additionally, it will support **orchestrated and secure service provision** through **open APIs** that will make use of AI services offered by the underlying network.

These solutions will rely on the breakthroughs in related technological areas. More specifically, 6G will operate in tight integration with a **cloud continuum** covering hyperscalers, core, edge and far edge computing. **AI** will be used not only to handle an improved network performance in a complex environment of various technologies, but also offer AI as a service to novel applications. **Quantum technologies** will provide advanced security and improved networking solutions. Advances in **microelectronics** are also expected to play a critical role for new RF and network components, chipsets for cloud specific solutions and new 6G devices for various vertical industries (e.g., autonomous vehicles, smart industry, media, health, public safety).

All the above technological areas, including advanced connectivity, AI, cloud, quantum and microelectronics are clearly identified in the Draghi report as strategically important for Europe.

It is worth noting, that work on the **further evolution of the network and computing technologies is a continuous process** that is not expected to end with the first release of 6G standards in 2030. Technological breakthroughs and use of new spectrum bands always call for new solutions. Moreover, the breakthroughs in related technologies need to be adapted for smart networks and services.

The **integration of satellite - and other non-terrestrial networks - with terrestrial networks will be a technology breakthrough that could open new service domains with a global reach**. Developing these new use cases and experimenting on entirely new network infrastructures (including in orbit) will require bringing together traditionally separate ecosystems to develop novel business models. Satellite and terrestrial network operators would work together in view of expanding into new territories of not only rural connectivity but also maritime, aviation, defence, mission critical services etc. The **initial ongoing research** funded by SNS JU **will need to intensify in the future** to ensure ubiquitous, resilient networks and services meeting the requirements of key sectors mentioned above.

6G is envisaged to be the **first native-AI network**, the different aspects of which are being researched by approximately 50 SNS JU funded projects. AI is a tool to make 6G better and research in several areas such as using AI for security, network optimisation, energy efficiency/sustainability will continue to evolve. At the same **time, 6G networks will have to be designed to natively support AI driven applications and use cases**. This requires, however **considerable exploration of what the connectivity requirements of the 'AI continent' will be** and what the business models of 'networks for AI' could look like.

It is important to recognize that in the current geopolitical context, the use of digital technologies and secure connectivity for **defence and military** purposes has become a priority. The 'Joint White Paper for European Defence Readiness 2030' recognised the potential of some technologies for defence superiority as an important lever that needs to be urgently strengthened at European level. New technologies are fundamentally changing the nature of warfare in several domains. AI, cloud and quantum computing, advanced and secure connectivity, autonomous systems and alternative energy sources have indeed the capacity to disrupt and transform traditional approaches to warfare. This might require that **future research** related to the new 6G technology and some of the already identified use cases such as collaborative robots for example **need to include features tailored to defence needs**. In this context potential synergies with the European Defence Agency (EDA) have been identified below (in Section 4) implying a potential scope for the SNS JU **funding dual use research topics related to communications systems and connectivity.**

The aforementioned capabilities enable new use cases, which in turn could be developed into revenue generating business cases. The **development of business cases is a crucial and largely missing step from the 5G and 6G R&I programmes. It is as a key lesson from 5G development, where networks and services monetization is still missing.** It requires **experimentation in open pan-European platforms** where state of the art solutions will be widely available to European stakeholders to develop, test and validate their solutions at a pre-

commercial level. This is critical especially where verticals need to understand how the new technology can help them improve their operation and create revenues for them. In addition, the model caters for societal use cases by considering from the onset public policy infrastructures like disaster and relief (PPDR) and notably future evolution of the EUCCS (EU Critical Communication Systems) promoted by President Von der Leyen.

In parallel, more mature solutions need to be validated in real-life environments. Thus, the new network technology needs to be evaluated via **pre-deployment**, **such as large-scale pilots**, which enable the creation of new ecosystems and services, facilitating in turn early deployment. In the context of the current state of the European connectivity sector's financial health and limited 5G investments in Europe, **it is unlikely that early pilot deployments of 6G (or indeed 3C) networks will emerge without public funding**.
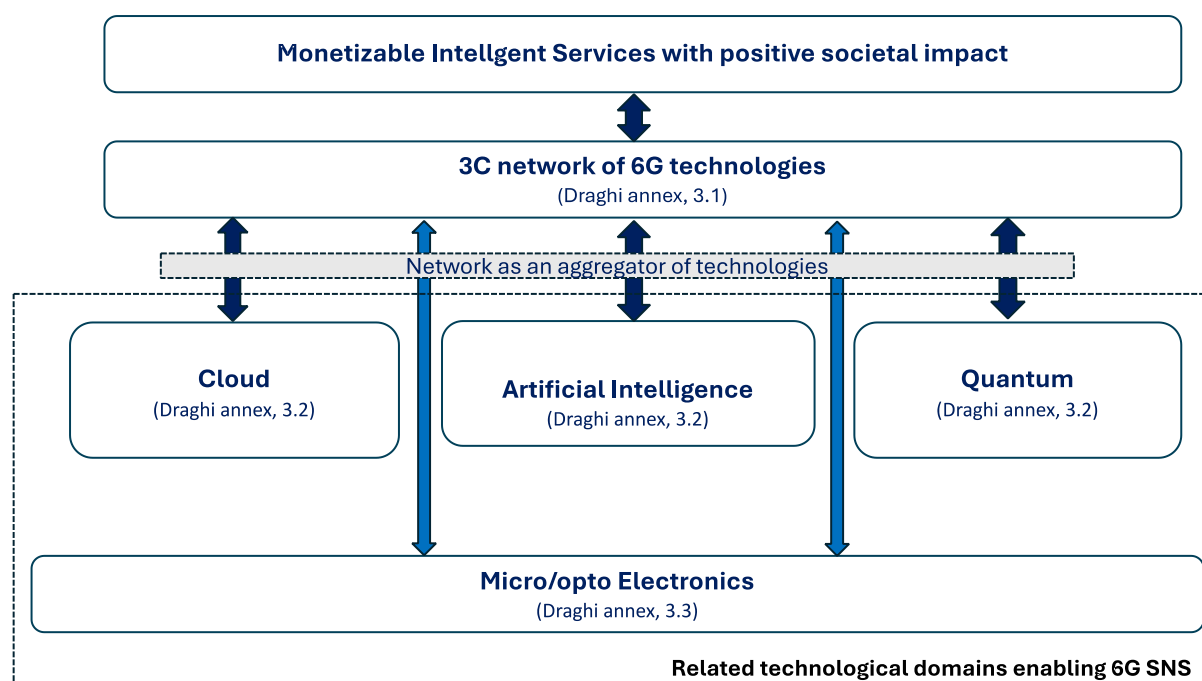
The above figure[20] above illustrates this vision where breakthroughs in the related technological areas (i.e., Cloud, AI, Quantum and micro/opto electronics) will be tuned for smart networks and services and will be aggregated under a 3C network operating on 6G technologies. All this hardware and software critical infrastructure will provide secure and reliable services with high potential for monetization and positive impact on the society and the environment.

There are also some key areas where strong, structured coordination would serve Europe's strategic interests:

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[20] 6G-IA Vision for FP10

- The reflection of European values and priorities in global standardisation would require significant coordination efforts, which are currently not addressed.
- To align the different European instruments in the domain of telco cloud and 3C networks.
- To ensure synergies and coherence where there are similar or complementary topics under different funding instruments.

Some key areas for the potential evolution of the SNS JU's R&I agenda as well as potential pre-deployment activities are further explored under Section 4, whilst various options available for funding R&I in the domain of future networks and services are listed under Section 5.1.

3.4 Strengthening Europe's leadership in global telecommunications

The SNS JU has emerged as a globally recognized entity in telecommunications research, significantly enhancing Europe's position in the international digital ecosystem. By fostering collaborations across the public and private sectors, the SNS JU enables Europe to lead in the standardization and commercialization of next-generation connectivity technologies. This is particularly relevant in the context of 6G, where early coordination at the European level is crucial to prevent fragmentation and duplication of efforts, as witnessed in the rollout of 5G.

Key advantages of the SNS JU compared to national or regional initiatives include:

- A long-term EU strategy for R&I in telecommunications, as outlined in the SRIA.
- A coordinated approach to standardization efforts, ensuring European leadership in international telecoms rules e.g. ITU managed spectrum related processes.
- Higher levels of research investment and outreach activities, expanding the 6G-IA constituency.
- A well-integrated ecosystem of universities, research centres, and industry actors including SMEs across EU MSs.
- Efficient coordination to prevent parallel funding efforts at the EU level, optimizing resources across multiple programs such as CEF Digital.
- Large-scale pilot programs and high-TRL research projects that facilitate commercialization and deployment of emerging technologies.
- Strengthened collaboration with other Joint Undertakings (JUs), exemplified by the recent joint call between SNS JU and EU-RAIL JU.

3.5 AI and telecommunications: a critical synergy

The SNS JU's role in telecommunications extends beyond network deployment and directly intersects with Europe's ambitions in AI and cloud infrastructure. With the European Commission's launch of the InvestAI[21] initiative, which aims to mobilize €200 billion in AI-

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[21] https://digital-strategy.ec.europa.eu/en/news/eu-launches-investai-initiative-mobilise-eu200-billion-investment-artificial-intelligence

related investments, there is a clear recognition of the need for robust, secure and high-performance digital infrastructure to support advanced AI applications at scale

This ambition is further supported by the forthcoming *Cloud and AI Development Act*, which seeks to establish a harmonised European approach to the development and deployment of sovereign cloud and AI capabilities. In this context, the SNS JU is uniquely positioned to bridge next-generation connectivity with distributed AI and cloud-edge computing, ensuring that the underlying networks can meet the low-latency, high-throughput, and trustworthiness requirements of future AI workloads.

The European Commission's 2025 Work Program reinforces these priorities, placing strong emphasis on technological sovereignty, digital resilience, and the industrial uptake of advanced technologies. As such, SNS JU will continue to play a key enabling role, working across domains, to ensure that Europe's 6G and smart network infrastructures are fit for purpose and aligned with the continent's broader digital and industrial policy objectives. Future AI systems, including those powering autonomous driving and real-time industrial automation, will require ultra-reliable, low-latency communication networks, an area where SNS JU-funded projects can make a decisive impact.

SNS JU's research portfolio already includes numerous projects integrating AI with network technologies, as generic AI models may not be enough to support the network requirements. These initiatives explore how AI can optimize network efficiency, enhance security, and enable predictive maintenance in complex digital environments. In addition, SNS is playing an important role in R&I on AI/ML activities that are specific to the networking domain, as generic AI models are not going to be enough to support the network requirements.

By leveraging AI-driven automation in smart networks, Europe can enhance its position in the global AI race, a priority outlined by President Ursula von der Leyen.

3.6 Ensuring strategic coordination with other EU initiatives

The SNS JU has been created as both the public and the private sides identified the strategic role of this domain for Europe. The SNS JU has established a centralised coordination mechanism, ensuring that research efforts at EU and national level are complementary and aligned key policy priorities. As explained above, several synergy activities took place with other Horizon Europe funded initiatives such as Chips JU, Photonics, CCAM, Europe's Rail JU. Additionally, the SNS JU has reached to important EU initiatives such as the European Cloud Alliance in the context of the SNS JU Policy Working Group on 3C Networks. Synergy opportunities are explored with e 6G National Plans and initiatives implemented by several MSs in the context of the SRG and supporting CSA projects.

The SNS JU has successfully mobilised the European stakeholders and expanded its topic from devices to microelectronics for connectivity, AI for connectivity, telco cloud and service provision. Moreover, the SNS JU has actively sought structured collaboration with other partnerships as with the existing budget the SNS JU alone cannot cover all topics in the needed

depth. One such example is the SNS JU's topics on microelectronics for connectivity that would require a link to focus topics by the Chips JU. However, this is still work in progress. Thus, one key lesson learned is that when there are similar or complementary topics in various funding instruments there is **need for strong, structured coordination and collaboration.**

This structured approach could enable additional synergies between the SNS JU and the other European initiatives explored further below under Section 4.

From an operational perspective, the SNS JU has also embraced efficiency measures through **Back Office Arrangements (BOAs)** with other Joint Undertakings. By leveraging shared services in accounting, HR, and ICT, the SNS JU optimizes resources and enhances administrative agility. Future iterations of the JU could take on an even more prominent role in leading one such shared services.

4 Financial Sustainability

4.1 Potential alternative funding sources

To identify potential alternative funding sources and evaluate their applicability one needs to consider the specific ecosystem and reflect on what is working well and what can be further strengthened. The purpose of this section is to map – on the basis of currently available information – possible alternative financial sources for the activities of the SNS JU.

Several options for the future evolution of the SNS JU activities beyond the current MFF have been identified. These options could allow for maintenance and expansion of the public-private partnership and/or ensure long-term continuity to its strategic objectives. At this stage, only some general aspects can be described, and further work will continue going forward.

The following sections identify several possible alternative funding sources. Below we map the most relevant currently existing (i) national and regional programmes of EU MSs (ii) national programmes of non-EU countries (iii) EU funding sources. Some options for additional or alternative private funding are also explored. The key mechanisms to diversify revenue streams would require more detailed analysis depending on the agreed future direction of the SNS JU. Some key options, however, are described below.

There are Joint Undertakings with different public and private revenue models. For example, some Joint Undertakings receive financial contributions also from national governments or from several industrial associations as their Private Members. Other Joint Undertakings receive private financial contributions both from industrial associations and/or key companies of their sector as their direct members. In some cases, academia is directly represented as member of the JU and or even SMEs are direct members. However, there are specific reasons for these choices and each ecosystem has different characteristics and needs.

Thirdly, the potential for increasing financial contributions from members other than the European Union is also explored below.

Finally, in accordance with the applicable procedures for winding up, surplus assets, whether financial, technological, or infrastructural, could be reinvested in a successor structure or redirected to support long-term R&I goals within the digital and connectivity domain. Alternatively, in case of winding down, as outlined below, the assets would be part of the legacy management by the European Commission.

Further work will be required to explore these options in detail, engage relevant stakeholders, and define governance models that ensure transparency, accountability, and alignment with EU policy objectives. The main driver for these options will be the future decision by the EU on the next MFF. Such a decision can be expected in 2027 after a general agreement on the next MFF. To assist such a decision, the SNS JU will i) evaluate the progress and success of the SNS JU based on the set of Programme KPIs and the Monitoring Framework as captured in

the SRIA and ii) take stock of EU´s technological sovereignty, leadership and competitiveness in the field of digital networks and services and assess the need for future related activities.

The SNS JU is exploring several potential approaches for adapting or evolving a potential follow-up partnership.

4.1.1 EU national and regional funding

For the time being the EU funding together with the private member's funding, in particular contribution to administrative costs, remain key for the implementation of the mandate of the SNS JU and for its financial sustainability.

On the other hand, the achievement of the objectives of the SNS JUs, notably to support European technological sovereignty in future smart networks and services and to strengthen the uptake of digital solutions in European markets, should contribute to the consolidation of the financial situation of the private sector in the long term, unlocking, as a potential consequence, additional funding for industry driven R&I.

However, the huge R&I investment level of the sector (see Draghi report) will continue to justify a risk sharing approach through public private partnerships. Public investments in research activities in the domain of smart networks and services, notably 6G have skyrocketed in other regions.

According to recent research conducted by the European Parliamentary Research Service[22], the global race to 6G is accelerating, as the 5G and 6G-enabled activity are estimated to generate €3 trillion in growth by 2030 worldwide:

- USA creates strategic alliances with other countries. For example, Japan and the US agreed to jointly invest €4.2 billion for the development of 6G technology. These alliances complement previous national investments such as the USA CHIPS and Science Act of 2023 that authorized in the vicinity of $3 billion in new funding for the National Institute of Standards and Technology (NIST) to support new R&D for critical and emerging technologies, including 6G.
- In addition to the above-mentioned investments with the USA, Japan committed to invest as of 2023 approximately €450 million for 6G research. This investment will offer support for a few years[23].
- China considers telecommunications as essential to its geopolitical and strategic medium- and long-term objectives. Its 14th Five-Year Plan (2021-2025) aims to strengthen their 6G research. Multiple investments are mirroring the country's approach to 5G, such as, leveraging subsidies, tax breaks, and state aid forms.
- South Korea plans investments of around €440 million in R&D projects in the area of 6G.

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[22] The path to 6G
[23] Japan to earmark $450m for next-gen 6G research fund | Communications Today

- India with its 6G Vision plans €1.1 billion to be invested over the next 10 years in R&D projects.

The Regulation establishing the Joint Undertakings under Horizon Europe calls for close collaboration and synergies with other relevant initiatives at Union, national, and regional levels. It explicitly enables different types of cooperation, including alternative, cumulative, or combined funding mechanisms, as well as the transfer of resources across programmes. This provides   the grounds for the SNS JU to explore the potential diversification of its   revenue sources and possible scale-up of its scope and impact.

One concrete pathway could be the transformation of the SNS JU into a **tripartite partnership**, involving not only the European Commission and the 6G-IA, but also direct participation from MSs. This model would allow national governments to contribute financially and strategically, aligning their national priorities with European goals and enabling more coordinated actions – explored below – on areas such as research programmes, testbeds, pilot projects, and industrial uptake. Special care needs to be taken for such an approach to ensure that the various priorities from the different MSs align with EU level policies and priorities.

Another potential approach could be the targeted funding of specific initiatives by **flexible core groups of EU** MSs and that choose to co-invest in strategic areas of common interest, such as AI-native networks, quantum-safe communication, or secure TN-NTN integration. These coalitions could pool resources, while maintaining coherence with the broader SNS JU framework and integrated in the SNS JU's Work Programme. In such a scenario, it would be of paramount importance for the SNS JU to have a concrete and well-defined coordinating role to ensure coherence.

Some examples of national initiatives that could provide potential sources of alternative funding in the future are mapped below. The summary table of national funding programmes is provided in Annex 3.

- **Germany**: High-Tech Strategy Focuses on supporting research and development in digital technologies, including IT infrastructure, cybersecurity, AI, and Industry 4.0.
- **France**: La French Tech Supports digital innovation and startups, particularly those involved in IT, digital connectivity, and tech infrastructure.
- **Italy**: Digital Innovation Hubs (DIHs) Regional hubs that assist SMEs in adopting digital technologies by offering technical expertise and support in areas like IT, AI, and cybersecurity.
- **Spain:** Science, Technology, and Innovation Strategy (ECTI) Aims to foster scientific research, technological development, and innovation to boost Spain's competitiveness and address key societal challenges.
- **Poland**: Polish Digital Development Agency (PFR) Provides financial support for digitalization projects, including IT innovation, smart city initiatives, and digital infrastructure.

Further to national funding programmes certain European regions also have their own funding schemes to promote innovation:

- **Bavaria (DE):** BayFIF: Supports innovative research and technology development, promoting industrial research and advancements in telecommunications, digital infrastructure, IT solutions, AI, Industry 4.0, and IoT.
- **Baden-Württemberg (DE)**: Innovation and Technology Fund Funds research projects focused on technological innovations in telecommunications, IT, and automated systems, with an emphasis on 5G network innovations, IoT, AI, and digital communication systems.
- **Île-de-France (FR):** Innovative Projects and Technology Support Focused on 5G, AI research, and digital transformation.
- **Auvergne-Rhône-Alpes (FR):** Support for Digital Transformation and Technological Innovation Prioritizes 5G, IoT, big data, and telecommunications technologies.
- **Catalonia (ES):** RIS3CAT Strategy Focuses on smart specialization to enhance innovation in key sectors such as telecommunications, ICT, and sustainable technologies.
- **Basque Country (ES):** R&D Programme SPRINT Supports innovation and R&D activities, concentrating on telecommunications, 5G, smart systems, and AI applications in industrial contexts.

Inter-Regional Collaboration

European regions play a crucial role in distributing regional funds for innovation. A notable initiative is the 'Four Motors for Europe'[24] a network where the regions of Auvergne-Rhône-Alpes (FR), Baden-Württemberg (De), Catalonia (ES), and Lombardy (IT) collaborate in R&I, among other areas.

The SNS JU could explore strategic collaboration with this network to leverage regional strengths, for example by launching and coordinating **a "Regional 6G Innovation Lab" programme** in connectivity and digital infrastructure to foster bottom-up innovation that complements EU-level priorities. This network of labs could serve as testbeds for 6G-enabled applications in smart manufacturing, mobility, and health, showcasing regional strengths while contributing to EU-wide knowledge sharing.

Engaging with such high-capacity regional actors would also help align the deployment of smart networks with local industrial needs and facilitate faster adoption of 6G use cases across key verticals.

However, the different nature and objectives of these local initiatives, time to market, innovation focus would make it extremely difficult to coordinate towards a common global EU level objective, considering that local investments are mainly focused on local expertise

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[24] 4 Motors - 4 Motors

ecosystems that are not necessarily shared by other regions. An EU level framing initiative would still be needed to bring these local contributions towards a framing EU level objective, in a top-down model.

4.1.2 Funding sources from non-EU countries and HE associated countries

One potential avenue for securing additional R&I funding for 6G initiatives involves increasing **contributions from the European Free Trade Association (EFTA) members and associated countries.**

Some of these countries, which already participate in the SNS JU's SRG, maintain substantial national R&I budgets and could play a more active role in Europe's 6G agenda. Strengthening cooperation with these nations could provide mutual benefits, including broadening the scientific and industrial base of the SNS JU and enhancing the capacity of the EFTA and Associated States to contribute to the continent's digital infrastructure goals.

To explore this option, it would be necessary to engage in a structured dialogue with the targeted countries. This would involve assessing the legal and financial frameworks applicable to such contributions and determining the governance structures for funding. Contributions could potentially be managed through the European Commission or directly handled under a tripartite governance arrangement, which would require careful planning and agreement on the terms of engagement.

International Collaboration and Co-Funding Models: Opportunities and Challenges

Several international partners of the EU are already engaged in various **digital partnerships under the European Commission,** contributing expertise and shaping strategic agendas. However, these partnerships have not yet translated into direct funding flows into the SNS JU, despite significant financial resources being allocated to complementary initiatives in semiconductors, 5G observatories, and other areas of digital infrastructure.

Expanding the benefits of these digital partnerships could involve redirecting part of these existing funds towards the SNS JU projects that align with international 6G objectives. This approach could facilitate joint standardization efforts, support strategic alignment in testbeds, and enhance global cooperation in 6G R&I. While the potential for co-funding is significant, this option would require careful navigation of complex legal and policy frameworks, as well as managing industrial sensitivities around Intellectual Property Rights (IPR). The challenge of aligning diverse funding sources and ensuring compliance with EU policies would need to be carefully addressed.

Exploring Alternatives for 6G Research Funding: Risks and Strategic Implications

Finally, in the absence of substantial EU funding, alternative avenues for 6G research funding could be explored. However, these alternatives carry inherent risks, particularly concerning technology sovereignty. If European technology providers and research centres seek funding outside the EU, they may inadvertently expose critical technologies to foreign influence. This could lead to scenarios where European research centres are funded by non-European entities,

potentially impacting Europe's technological autonomy. Furthermore, without sufficient funding, there is a risk of talent flight, as highly skilled researchers may be drawn to more well-funded opportunities in other regions.

While these alternatives may offer short-term financial relief, they **could undermine Europe's long-term strategic interests in 6G development, European industrial competitiveness and technological sovereignty**. To mitigate these risks, careful consideration would need to be given to the potential impacts on Europe's digital infrastructure goals, and any external funding arrangements would have to be evaluated against the risk of losing control over critical technologies.

However, and similarly to previous sections, in a scenario of non-EU funding being deployed in Europe a framing initiative in a top-down model at EU level would be required, to make sure that EU level policies are supported and complied with. In addition, the industrial sensitivity on a number of critical technologies makes the beyond Europe technological partnerships limited to domains where no visibility of critical IPR may be exposed. This would restrict the TRL level of such co-funding mechanisms.

4.1.3 Alternative EU funding sources: direct and indirect mechanisms

The Union provides a wide array of funding mechanisms as alternatives or complements to Horizon Europe. The SNS JU has identified several direct and indirect funding schemes that could offer collaborative opportunities, particularly in areas where its mandate could be expanded in the future.

One such opportunity lies in the **Digital Europe Programme (DEP)**, which is designed to support the deployment and scale-up of digital technologies. Should the SNS JU's role evolve to include **higher TRL activities**, closer to market deployment and uptake, DEP could serve as a natural funding complement. This would allow the JU to support not only early-stage research but also the translation of innovation into real-world infrastructure, products, and services—especially in areas like testing facilities, standardisation, and cross-border deployment of advanced networks.

However, in the context of the upcoming negotiations on the **next MFF**, it is important to clarify that current programmes such as Horizon Europe and Digital Europe may undergo significant changes. These programmes may be **restructured, merged, or replaced**, and funding modalities could shift. Therefore, strategic foresight and engagement will be necessary to ensure that the future design of EU funding instruments remains compatible with the long-term objectives of the SNS JU and its future expansion. The SNS JU has a dedicated role towards accelerating 5G deployment across Europe, in view of developing digital lead markets and facilitating the digital and green transitions of both the economy and society. To achieve this goal, SNS JU provides strategic guidance to crucial programs under the CEF, with a particular focus on 5G Corridors. The R&I outcomes produced by SNS JU are invaluable assets to the **CEF program**, as they drive advancements in digital infrastructure, including high-speed broadband networks and other essential digital services such as 5G/6G terrestrial

and non-terrestrial networks throughout the EU. Given this context, the SNS JU may consider exploring funding mechanisms within CEF, which is a significant EU funding initiative aimed at developing high-performing, sustainable, and seamlessly interconnected trans-European digital networks. Enhancing collaboration with CEF can optimize resource allocation and strengthen the impact of SNS JU's initiatives, thus contributing to a more integrated and advanced digital landscape across Europe. By leveraging these funding opportunities, SNS JU can more effectively support the establishment of cutting-edge digital infrastructure, further cementing Europe's position as a leader in the global digital economy. This approach can however only be applicable to high TRL initiatives of pre-deployment nature and may not be adequate for the high-risk and long-term advanced tech R&I required to consolidate EU know how.

Sustainability is a key objective and value of the SNS WP. Already many SNS JU projects are actively working on '6G for sustainability' and 'sustainability for 6G', covering topics related to environmental, societal and economic topics. To further advance this focus, the 2024 call has launched a Sustainability Lighthouse project. This project highlights the programme's commitment to environmentally friendly innovation. On these grounds, the SNS JU could also explore means of funding via the European Innovation Fund which funds opportunities for projects that contribute to greenhouse gas reduction. The funding programme focuses on highly innovative technologies and big flagship projects with European value added that can bring significant emission reductions. A scenario where the European Innovation Fund would serve as the main EU funding source for this area, could risk achieving the SNS programmatic objectives of sovereignty and economic leadership.

With the purpose of creating a broad stakeholder base for ensuring the partnership's objectives and to increase participation of European SMEs, the SNS JU could explore the possibility to target the Single Market Programme, which brings together 6 predecessor programmes, notably the grants and contracts part of COSME, the EU programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises.

Finally, the SNS JU could also engage with **indirect funding mechanisms**, which involve a shared financial responsibility between the European Commission and national/regional authorities within EU MSs . These programmes require engagement with the SRG to explore possibilities. Relevant indirect funding programmes could be, on the one hand, the European Regional Development Fund (ERDF). Currently the programme provides funding to policy objectives related to core activities of SNS JU such as a smarter Europe (innovation and smart economic transformation); a greener, low-carbon Europe and a more connected Europe (mobility and regional ICT connectivity). On the other hand, SNS JU could explore synergies with the Cohesion Fund which provides support to the MSs gross national income (GNI) per capita below 90% EU-27 average to strengthen the economic, social and territorial cohesion of the EU. The investments focus on the field of environment and trans-European networks in the area if transport infrastructure (TEN-T) and the 37% of the overall financial allocation of the Cohesion Fund is expected to contribute to climate objectives. However, it is not realistic to consider such mechanisms as replacement mechanisms of the SNS JU, as they could not

directly address advanced R&I and experimental platforms at EU level (rather at regional level).

Furthermore, **synergies between the SNS JU and the EDA research programmes could be explored**. EDA has long been active in defence capability development and R&D in the space domain with a specific focus on space-based information and communication services. The European Commission adopted in 2021 a Plan on synergies between civil, defence and space industries[25]. This Plan aims to (1) enhancing complementarity between relevant EU programmes and instruments to increase efficiency of investments and effectiveness of results, (2) promoting that EU funding for research and development, including on defence and space, has economic and technological dividends for EU citizens, and (3) facilitating the use of civil industry research achievements and civil-driven innovation in European defence cooperation projects. The Action Plan mentions "satellite-based secure communication and connectivity" amongst the critical technologies that are relevant across the defence, space and related civil industries and contribute to Europe's technological sovereignty. Against this background, the SNS JU could engage with EDA to explore synergies between the SNS JU research programmes and the European Defence Fund (EDF), the EU instrument piloted by EDA with a budget of nearly €7.3 billion for 2021-2027 to support Research and Development in defence. In the current geopolitical context, EDA's research programme will likely be extended beyond 2027 and SNS JU is well placed to take advantage of possible synergies for funding dual use research topics related to mobile communications systems and connectivity. However, if this mechanism is used, issues such as programme openness, objectives and common European goals for future EU level network infrastructures, would need to be discussed and aligned.

A key alternative is to consider an **extension of the current SNS JU's scope** structured in three pillars, namely:

- **R&D activities** targeting a Network Computing platform as European technology aggregator with underpinning technologies like radio, architecture, spectrum, Softwarization and virtualization, service provision, NTN, security & resilience, and sustainability (Draghi report annex 3.1). This target will also consider a top down and well-structured inclusion of key technology enablers that are essential for the critical connectivity and services infrastructures (i.e., Cloud, AI and Quantum - Draghi report annex 3.2). Finally, well planned activities for micro/opto electronic activities on selected domains e.g., network RF, devices should also be included (Draghi report annex 3.3)
- Open **experimental infrastructures** that will be supported at pan-European level and operated for several years to allow European stakeholders to deploy and test their solutions (e.g., AI algorithms, network services, applications). This would create an innovation framework to help European stakeholders to work with state-of-the-art solutions.

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[25] COM(2021) 70 final

- **Pre-deployment**: facilitation of pre-deployment activities not only on the automotive corridors but for various promising vertical sectors (e.g., smart industry, public safety, media, gaming, agriculture).

The pillars can contribute for alternative revenues as follows:

- **R&D activities** on an extended set of technologies (always related to the critical infrastructures of connectivity and services/applications) is expected to further increase the engagement of additional European stakeholders, thus increasing the IKOP and IKAA values.
- **Experimental infrastructures:** The supporting organisations should co-fund the deployment of these infrastructures and the stakeholders that will use them will invest in money and time to design, develop and test their solutions targeting the creation of products.
- **Pre-deployment**: a structured plan of pre-deployment activities in various sectors would increase and speed up the engagement and commitment through investment from the European private side to fully digitalise various critical sectors.

Summarizing the above, there are several advantages in having synergies from R&I to pre-deployment from the start & at the Programme level. Such a way forward would include the entire life cycle through a well-defined set of technologies, use cases, and timelines, akin to initiatives in other regions, such as the IMT 2030 PG in China. It would also facilitate the execution of cross-cutting activities (e.g., Chips JU, Photonics, HPC, Quantum). Moreover, it would respond to the suggestions from the PKH, Draghi, and Heitor reports.

In conclusion, a number of funding environments at EU, national, regional level may be identified. However, having a top-down nature, the SNS JU is uniquely placed to define a common European strategy, that may eventually be complemented by specific national or regional initiatives. Building a coherent EU level initiative out of a collection of uncoordinated local initiatives would raise significant challenges, both strategic and operational. This is a key added value of SNS JU, for which it took 4 years to establish a coherent European funding and strategic framework. This may be worth noting that the replacement cycles of network technologies are long (8 to 10 years), which justifies environment stability to ensure the needed long-term commitment of stakeholders.
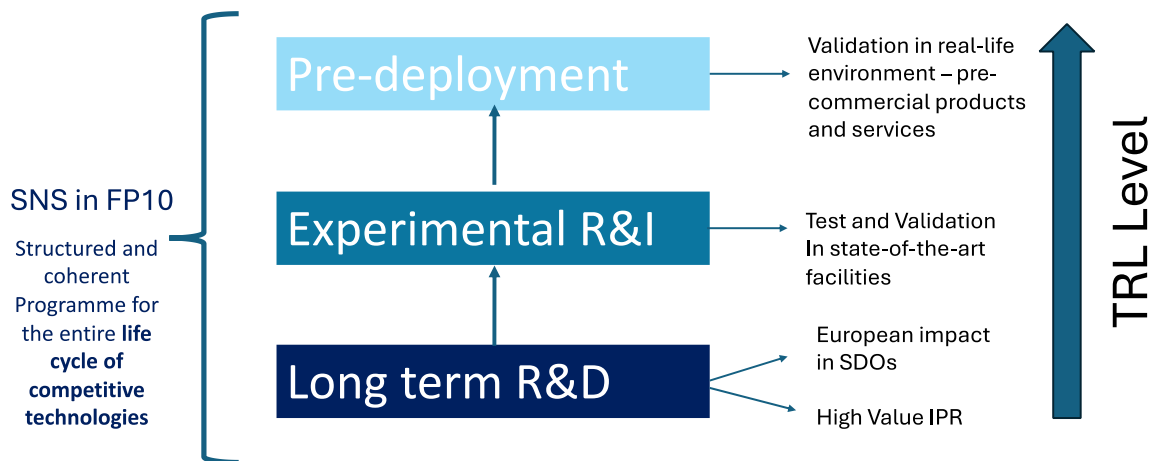
Figure: 6G-IA 3- pillars vision for the SNS JU in FP10

4.2 Revenue streams

The SNS JU is financed by the Public and Private members of the JU. As described above, the SNS JU could explore funding activities in cooperation with other EU funds (Structural Funds, Innovation Fund) and synergies with national programmes in view of supporting the developments and deployment of 6G solutions. These could be alternative revenue streams but would remain within the scope of EU/public funding.

Given that the SNS JU was created in 2021 and started its operating financially autonomously only from 24 October 2023, plans on the financial sustainability will be further developed with the private member going forward.

6G-IA (formerly known as 5G-IA), is always working to extent its membership basis including not only large industry but also SMEs and Academia, RTOs and other Associations. For the SNS JU, the mobilization and engagement of European stakeholders was so far such that the resource commitment (e.g., IKAA, IKOP) are performing better than originally planned. It is worth noting that 6G-IA also has a strong basis of observer members which represent various vertical industries. The further possible increase of the membership basis, based on an increase of the scope of a future partnership, would also allow an increase on the commitment from the private side through IKAA, IKOP and also financial contribution to the administrative cost of the SNS JU. The option of increased revenues from the current private member in case the scope of the SNS JU was extended to address the 3 pillars of extended R&I, experimental infrastructures and pre-deployment as described in the previous section would increase the set of alternative revenues for each of the various pillars.

It could also be explored whether other industry associations – from the connectivity sector or vertical industries – or key companies, research organisations might be interested in financially contributing as members. These potential entities would need to be identified in case this was the chosen way forward.

As listed above, there are several national programmes, which could be pooled into the SNS JU's pan-European programme either as a tripartite partnership or through targeted coalitions.

Increased or additional revenue sources from EFTA and positively assessed associated countries could also be explored.

The SNS JU is a R&I initiative financed by the members of the JU. As described above, SNS JU may explore funding activities in cooperation with other EU funds (structural funds, Innovation Fund) and synergies with national programmes in view of supporting the developments and deployment of 6G solutions, though with their inherent limitations. These could be relevant revenue streams but would remain within the scope of EU/public funding.

It is important to note, however that the applicable notion to the EU funding of SNS JU today is that of an "investment", not of a revenue. The public-private investment characterises the high risk and high R&I intensive strategic industrial domain that justifies public investments. This notion is not expected to change in the future, taking into account that the magnitude and complexity of the technologies to consider significantly increases the magnitude of the needed R&I investments.

In relation to R&D activities it is important for European stakeholders to be present from the beginning and ensure the reflection of European solutions increasing the value of their IPR. To increase the European footprint in **global standardisation considerable coordination efforts are required**.

5 Administrative and operational adaptations

5.1 Legal status (legal form, private entity, public/private association...)

The future of the SNS JU hinges on the unknown priorities set for the next MFF and the allocation of resources to implement the SRIA. The Draghi report puts special emphasis on connectivity platforms as a key infrastructure for security, sovereignty, economic growth and digitisation. It notably states: *"The telecommunication equipment and software sector are also key for the EU's cyber-resilience, security of strategic infrastructures, and protection of citizens' and business data".* Considering the long-term maturation and developments of technologies in this domain, it would seem reasonable that the domain will remain a strategic one for the EU under the next MFF and that the role of connectivity in the Single Market—providing social, market benefits, and ensuring technological sovereignty and global competitiveness—will be critical. A decision on these matters is expected in 2027 following an agreement on the next MFF.

The identified options for the future of the SNS JU include the following. The practical implications of the identified options will require further exploration and analysis.

1. Extension of the SNS JU with a Renewed Institutionalized Partnership (Article 187 of the TFEU):

    a. This extension could be structured as a renewed EU Public-Private institutionalized partnership, closely following the successful model of the current SNS JU. This option would maintain the current public-private partnership model with a renewed ambition and wider objectives involving EU institutions, Participating States, and the private sector. It would continue to align R&I efforts with EU goals like technological sovereignty, competitiveness and digital transformation, with a focus on leveraging the results of past projects whilst enlarging the technological basis for sovereignty, notably through the announced coordinating role for cloud computing activities as announced in the EC White Paper on the future of infrastructures. Ideally, such an enlarged partnership would include deployment related funds (e.g. CEF, DEP) under the same legal basis such that the complete life cycle treatment as addressed in the PKH or Heitor report can be correctly addressed. A thorough impact assessment would ensure the continued effectiveness of this partnership. National contributions could also support the collaboration, especially to fund R&I activities alongside EU investments, fostering synergies between public and private stakeholders.

    b. This extension could also be structured as an EU tripartite Public-Public-Private institutionalised Partnership, incorporating contributions from national funding provided by Participating States to support R&I activities. In this model, national governments would collaborate with the EU and private sector stakeholders to fund and implement key research initiatives. This approach would strengthen the alignment and synergies between national and EU-level

priorities, ensuring that regional and national innovations are integrated into the broader European strategy. The governance processes of a tripartite structure may be more complex to manage.

These two options would allow the continuation of the institutionalized partnership in the form of a Joint Undertaking (Article 187 TFEU), ensuring the highest level of continuity in addressing EU-wide R&I targets. Inclusion of deployment related funds would also be relevant in that context.

2. Expanding the scope of action of the renewed Institutionalised Partnership (Article 187 of the TFEU) under the next MFF by entrusting the SNS JU with facilitating the pre-deployment of network solutions and coordinating EU-wide deployment:

   a. Expanding the SNS JU's role to include the facilitation of pre-deployment activities (such as large-scale pilots) and coordination of EU-wide deployment, which would significantly broaden its remit and impact. This expanded scope could be structured as a public-private institutionalized partnership, similar to the current SNS JU framework, which has already demonstrated success in fostering collaboration between the EU, Participating States, and the private sector. This approach would not only strengthen the involvement of industry and a broad set of relevant stakeholders but also improve the alignment between EU-level priorities and national-level as well as sectoral needs, leading to a more efficient and coordinated deployment of network solutions across Europe.

   b. The expanded option could include active national contributions, especially from Participating States, during the pre-deployment phase. This approach would align the interests of the EU, MSs, and the private sector, enabling efficient deployment of technologies while supporting EU objectives like technological sovereignty, sustainability, and competitiveness.

3. Transforming the SNS JU into an Executive Agency of the European Commission

This option would involve transitioning the SNS JU into an EU research and deployment agency, marking the end of the current public-private partnership. Under this new arrangement, the SNS JU would become a research and deployment agency, directly responsible for managing and implementing R&I initiatives, as well as coordinating the deployment of network solutions across the European Union. While such option would ensure some continuity, the legal and institutional consequences of this shift would require further analysis. The current structured, long-term collaboration with the private sector, in particular with regard to the development of the WP would diminish. It may also entail WPs being subject to comitology and may risk continuity of R&I programmatic approach.

4. Shifting the SNS JU to a Public-Public partnership (Article 185 of the TFEU)

Article 185 initiatives are long term public-public partnerships established on a voluntary basis by EU MSs that are also eligible for a substantial financial contribution from the EU Research Framework Programme. They are established through the EU ordinary legislative procedure and require a Dedicated Implementation Structure. This option would involve significant EU

funding through the Research Framework Programme but would be centred on national collaboration rather than private sector involvement. The initiative would require the creation of a dedicated implementation structure to manage and oversee its activities, emphasizing a long-term focus on research and the integration of national research programs into the broader EU strategy. This option would likely focus on aligning and integrating national research programmes, though the impact at the EU level might be less transformative - due to lower level of involvement and commitment from industry as well as lack of long-term investment certainty- compared to models that involve both public and private sectors, like Article 187.

5. No more institutionalized partnership to succeed the SNS JU under the next MFF, but other R&I activities

In the absence of a future institutionalized partnership for the SNS JU, telecommunications R&I in Europe could take several different directions, each with varying implications for governance, funding, and the scale of activities at the EU level. These alternatives would depend on the broader strategic decisions made within the next MFF framework and its role in supporting R&I across European sectors.

One option would be to continue supporting telecommunications R&I through thematic WPs within the next MFF. In this scenario, the EU would allocate funding to telecommunications-related R&I activities as part of broader, overarching EU priorities. However, without a dedicated institutional structure like the SNS JU, this approach could result in fragmented efforts, as projects might lack the centralized coordination that currently ensures synergies between MSs and industry stakeholders as well as collaboration between EU funded projects. While funding would still be available, it might not be as strategically focused, leading to less cohesive progress on critical EU-wide challenges such as 5G, 6G, sustainability, security and future digital services to meet the needs of European industrial sectors.

Another possibility is that telecommunications R&I could be pursued independently by the private sector, research institutions, and national governments, without EU coordination or funding. This would shift the responsibility to industry-driven priorities and local efforts, fostering innovation from a market perspective. However, this approach might cause a lack of coordination at the EU level, reducing the ability to address common challenges across borders. It could also lead to disjointed investments that do not align with long-term EU objectives, hindering efforts to ensure technological sovereignty and competitive digital infrastructure across the continent. In the absence of European funding, European players might seek funding from non-European public or private sources.

In any case, the absence of or a weakened framework for SNS related R&I in the next period would have the following consequences:

- It would signal the lack of European interest in the domain to the international community, whilst so far, all key programmes in the world consider SNS as the European platform for discussion of EU developments. That is notably the case of Japan, Republic of Korea, USA, Taiwan, UK;

- This would open the door to our competitors to develop their own advanced R&I initiatives w/o caring of EU developments, hence pushing further their presence in global infrastructures;
- The benefits of a top-down strategic approach would be lost. With it all the possibilities to federate EU consensus towards standards, spectrum, and deployment ecosystem creation;
- The long-term commitment of a critical mass of EU actors would be lost;
- The cross industry-academic links stimulated at scale by SNS would decrease and be detrimental to the ERA in the domain;
- Altogether, the strategic and sovereignty dimension of the domain supported by the Draghi report would not be reflected at the level of important investments of Europe.

5.2 Staffing

In a scenario of winding up the SNS JU and closure in 2031, the JU would still need to keep a level of staffing until 31/12/2031 to ensure that the functions for which it has a legal obligation, are adequately performed.

The staff of the SNS JU after 2027, in case it would not be renewed or extended, would need to be progressively reduced, in the first place by not replacing departing staff (retirement, end of contract, transfer to other agencies). The estimated amount of budget for salaries below is calculated on this basis. The corresponding headcount per year is the basis for the calculation of other administrative costs that are proportionate to staff.

The budgetary planning will have to be analysed to have adequate resources in place to successfully finalise the closure of the SNS JU Programme Office. This specifically refers to the administrative budget devoted to staff costs (Title 1) and support activities such as communication, project monitoring, IT and others (Title 2).

The legislative financial statement attached to the Commission proposal for the Council Regulation establishing the Joint Undertakings under Horizon Europe already foresees this gradual reduction of staff from its peak of 17 staff members for the period from 2024-2027 towards the planned end of the Joint Undertaking on 31 December 2031, with 7 staff foreseen for the year 2031.

ESTIMATED IMPACT ON THE JU'S HUMAN RESOURCES AND BUDGET IN ACCORDANCE WITH THE LEGAL FINANCIAL STATEMENT[26]

- **Original estimation: evolution of staffing numbers (FTEs)**

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[26] Supra footnote 5

Note: Between 2021 and November 2024, SNS JU was not fully staffed and operated with the support of DG CONNECT for a number of activities. This created a surplus of € 3.527.325 in the administrative budget that was transferred to the Operational budget in 2024.

STAFF STATUTE	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total 2028-2031
Temporary Agents (TA)	0	4	5	7	7	7	7	3	3	3	3	12
Contract Agents (CA)	0	3	6	10	10	10	10	10	5	4	4	23
TOTAL	**0**	**7**	**11**	**17**	**17**	**17**	**17**	**13**	**8**	**7**	**7**	**35**

- **Original estimation: evolution of staffing numbers (FTEs) during the winding down period**

STAFF STATUTE	2028	2029	2030	2031	TOTAL 2028-2031
Temporary Agents (TA)	3	3	3	3	12
Contract Agents (CA)	10	5	4	4	23
TOTAL	**13**	**8**	**7**	**7**	**35**

			2021-2027	Est. 2028	Est. 2029	Est. 2030	Est. 2031	Total 2021-2031	Single Basic Act	Difference
		Estimated budget based on the initial financial programming (Commitment appropriations)								
01 02 02 43.01	Admininstrative	EU + EFTA	10.707.779	1.719.300	1.487.439	1.350.511	1.227.575	16.492.604	18.519.000	-2.026.396
		IA	4.062.207	602.060	313.681	289.659	295.452	5.563.059	5.563.059	0
01 02 02 43.02	Operational	Transferred from Administrative	3.527.325	0	0	0	0	3.527.325	881.481.000	2.026.396
		EU + EFTA + UK	878.860.071	600.000	250.000	170.000	100.000	879.980.071		
								900.000.000	900.000.000	0

- **Updated estimation: current realistic scenario (FTEs)**

Due to its limited size, many key roles in the JU (e.g., HR, IT, Internal Control, Communication) are undertaken by officers performing also other tasks (e.g., Legal, Project management, Administrative and Financial tasks). These positions should therefore be maintained.

In case of phasing out of the SNS JU without a renewal of a new Programme building on its achievements, the likelihood of an early departure of SNS JU staff is considered high (e.g., inter-agency mobility, recruitment from other EU executive agencies with more permanent/long term career opportunities). This scenario will impact the closure of the programme, with the difficult challenge to recruit qualified staff to support the phase out of the programme. Should that be confirmed, an annual assessment of available human resources is

needed from 2026 onwards to estimate the needs and possibly adjust the current estimation and phasing-out plan activities.

The current state of play concerning the implementation of the operational budget, and the grants differs from the forecast contained in the Legal Financial Statement and is summarised in the table below providing the current realistic forecast in terms of Calls' implementation and projects to be managed by the SNS JU programme office up to 2031.

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Post 2031
Call 1			35	35	35	2						
Call 2				28	28	28	2					
Call 3					16	16	16	1				
Call 4						16	16	16	16			
Call 5							16	16	16	16		
Call 6								16	16	16		
Active Projects	**0**	**0**	**35**	**63**	**79**	**62**	**50**	**49**	**48**	**32**	**0**[27]	**0**

The table above shows that in 2028 and 2029 there will still be 3 active calls with around 50 ongoing projects. In addition, it must be considered that the launching of Call 4 in 2025 is postponed to a date to be determined due to the decision to be taken by the European Commission in relation to the application of the security provisions concerning Article 22.5 (and Article 22.6) of Horizon Europe Regulation. This will have an impact on all the further Calls creating an additional unforeseen workload in the period 2028-2031.

The updated staff requirement to manage the realistic calls' pipeline and projects as of 2028 is presented in the table below:

STAFF STATUTE	2028	2029	2030	2031	Total 2028-2031
Temporary Agents (TA)	7	7	5	2	21
Contract Agents (CA)	10	10	7	2	29
TOTAL	**17**	**17**	**12**	**4**	**50**

The budgetary implications for a level of staffing of 50 for the period 2028-2031 are presented in the table below:

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[27] 2031 will include project closure activities such as final project monitoring and final reporting and payment tasks

Estimated budget based on an updated financial programming at 2025 (Commitment appropriations)									
			2021-2027	Est. 2028	Est. 2029	Est. 2030	Est. 2031	TOTAL	SBA	DIFFERENCE
01 02 02 43.01	Admininstrative	EU + EFTA	10.707.779	2.475.260	2.734.511	1.978.353	623.097	18.519.000	18.519.000	0
		IA	4.062.207	602.060	313.681	289.659	295.452	5.563.059	5.563.059	0
01 02 02 43.02	Operational	Transferred from Administrative	3.527.325	0	0	0	0	3.527.325	881.481.000	0
		EU + EFTA + UK	876.833.675	600.000	250.000	170.000	100.000	877.953.675		
								900.000.000	900.000.000	0

In this scenario with a total of 50 staff members between 2028 and 2031, SNS JU would keep the original ceiling established in the SBA of a maximum of € 900.000.000, including a maximum of € 18.519.000 on the administrative budget funded by EU. However, in 2027 SNS JU will need to partially revert the transfer made in 2024 from operational budget to administrative budget, of 2027 in order to meet the ceiling in the SBA as presented in the table. After 2031 there will be no budget for administrative costs and therefore staff will be wind down to 0.

5.3 Accounting and cashflow

The accounting functions would have to be assured as long as the JU exists as a legal entity either under the current scheme of the Back Office Arrangement (BOA) on accounting or via the European Commission. The final accounts of the JU – due by June 2032 together with the 2031 Annual Activity Report will have to be prepared in the context of the legacy management.

The needs of cashflow should follow the operational needs and are expected to follow the payment scheme as per the Legislative Financial Statement of the legislative proposal.

These years are planned to be executed with (EU budget) payment appropriations from the implementation and closure of existing administrative and operational expenditures of procurement contracts and grant agreements.

Regarding the Horizon Europe funds for projects, last commitments would be done in 2027, and the corresponding payment appropriations would be transferred each year from 2028 to 2030.

However, some new administrative commitments and contracts between 2028 and 2031 will be necessary for the functioning of the JU. The SNS JU Programme Office should be in position to conclude such commitments by making use of the JU unused commitment appropriations, and the Private Member's contributions to the JU's administrative expenditure. These commitments include the staff expenditure (e.g., salary, social contributions), as well as the JU running costs (e.g., renting contract, audits).

SNS JU will have to fulfil its financial and reporting obligations, in accordance with the JU's Financial Rules. The Programme Office will therefore continue to prepare the JU's annual accounts, monitoring the financial contributions from partners and the assets of the organisation

until 31/12/2031. The final accounts of SNS JU due by June 2032 together with the 2031 Annual Activity Report will have to be prepared in the context of the legacy management.

Post 2031, in case of phasing-out of the current JU without a renewal of a new Programme all the remaining obligations will be transferred to the relevant European Commission Services.

5.4 Procurement, logistics, and IT

The current Service level agreements in place include:

Agreements in place	Description
Service Level Agreement – DG BUDG	ABAC and Treasury services
Service Level Agreement – DG HR	HR services: Use of HR tools and related services, learning and development, medical services, and health & wellbeing and security services
Service Level Agreement – PMO	Services related calculation of salaries, health and accident insurance (JSIS), pensions, leaving and unemployment allowances, determination of rights upon employment, expert and mission reimbursements (MIPS)
Service Level Agreement – DIGIT	Access to DIGIT ICT framework contracts
Service Level Agreement – EPSO / EUSA	Services on personnel selection and development
Service Level Agreement – SG	Repository, Recording and Document Management System for official documents, including HERMES, ARES and NONCOM (HAN)
Service Level Agreement – EU-RAIL JU	Back Office Arrangement with the other JUs Accounting services
Service Level Agreement – CBE JU	Back Office Arrangement with the other JUs on HR matters
Service Level Agreement – CAJU	Back Office Arrangement with the other JUs on Procurement
Service Level Agreement – CHJU	Back Office Arrangement with the other JUs on ICT
Service Level Agreement – EU-RAIL JU	Back Office Arrangement with the other JUs on Data Protection Officer externalisation
Service Level Agreement – CERT-EU	Organisation and operation of a computer emergency response team for the Union's institutions, bodies and agencies (CERT-EU)
Service Leval Agreement with OIB	Logistics services
New Usufruct Contract with the White Atrium	Contract to cover the building locations from January 2025 until 31/12/2031

New SLAs may be concluded in the next few years. However, in view of the phasing-out and regarding logistics, a limited number of contracts linked to the building would have to be terminated. By the date of 31/12/2031 a move will have to be budgeted and organised in order

to vacate the premises. For what concerns the IT infrastructure, the framework contract with the IT service providers shall be maintained until that date.

The data concerning the SNS communications repositories and the social media channels will be transferred to the Commission according to the modalities, which will be established by the Commission at the end of the programme. This will be further detailed the latest 6 months before the foreseen date of the transfer.

Except for what relates to the appointment of the liquidator(s), the duration of any contractual commitment placed from 31 December 2027 should be limited to 31 December 2031 and an early unilateral termination clause without compensation of the contractor shall be added to all contractual commitments signed by SNS JU or on its behalf from 31 December 2027.

The Programme Office will monitor from 2027 onwards the duration of contracts, framework contracts and SLAs taking into account the date of the winding up of the JU. Progressively over the years, the JU should conclude a lower number of contracts and none of them shall go beyond 31/12/2031. A strong effort will have to be made in 2030 in this regard. Some payments could still be due beyond 2031, and this should be dealt with in the context of the Legacy management. The administrative phase-out of any commitment and associated contractual obligation, as well as fixed assets or physical items will be withdrawn from inventory by 2031.

5.5 Follow up of grant agreement obligations after the end of projects

An inventory of legal commitments in the form of procurement contracts and grant agreements will be established between 2028 until 2031, establishing the list of obligations such as record keeping, archiving, result delivery, data protection elements and document management retention period that are expected for each legal commitment. It will be of utmost importance to ensure that the archiving and maintenance of all the documentation related to the SNS JU Programme is kept operative for its use.

With the current planning of the SNS JU Programme, the last call under SNS JU will be implemented before the end of 2027; and the projects should be completed before the end of 2030[28]. It is unlikely that, in a winding-up and closure scenario, any extension of projects to 2030 could be granted.

Audits would then take place in 2031, although additional audit activity could extend beyond 2031 under the responsibility of the liquidator.

As per section 5.2 it is estimated that approximately 32 grants would still be active by the time the SNS JU is supposed to be wound up in 2030. After the end of the grant, at least 6 months need to be assumed as the time required for receiving the reporting and finalising the

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[28] Final payments may take place in 2031

assessment (approving deliverables and reports and financial operations) and paying the outstanding balance at the end of the project.

Annex 1 - SNS JU Phasing-out Action Plan 2024-2031

The tasks indicated below should be specified in the corresponding SNS JU Annual work plans and should be followed in the corresponding Annual Activity Reports.

Tasks	Lead	2025	2026	2027	2028	2029	2030	2031	Beyond 2031
EC proposal for a new R&I FP	EC		X						
Legacy decision (Successor JU to SNS JU in the next R&I FP or other decisions)	EC			X					
Update of the SNS JU phasing-out/Preparation of the next phase (if any)	SNS JU	X	X	X	X	X	X	X	X
Workload analysis	SNS JU	X	X	X	X	X			
HR planning/adjustment	SNS JU	X	X	X	X	X			
Budget planning/adjustment	SNS JU	X	X	X	X	X			
Annual accounts	SNS JU	X	X	X	X	X	X	X	
Logistics and IT	SNS JU	X	X	X	X	X	X	X	
Monitoring of contractual obligations	SNS JU	X	X	X	X	X	X	X	
Monitoring of JU contributions	SNS JU	X	X	X	X	X	X	X	
KPIs monitoring	SNS JU	X	X	X	X	X	X	X	
Transfer to legacy management entity (if any)	EC							X	X
SNS JU AAR and Accounts 2031	EC							X	X
SNS JU legacy management	EC								X

Annex 2 - The SNS JU objectives and the related EU policies

SNS JU Objective	Related EU policy
Expand stakeholders base,	European Research Area Reinforcement of industrial ecosystem of EU including in related domains (software, cloud.)
Development of a European 6G vision and roadmap	Support to EU economy and values
Development of 6G core and enabling technologies	Technological sovereignty, including in related domains like Chips, clouds, AI (Draghi report)
Contribution to 6G standards	Standardisation Policy
Development of Sustainable 6G and 6G for sustainability (for use cases)	Green deal, security and sovereignty policies
Integration of NTN into 6G	Space Policy
Early involvement of verticals and development of key use cases (XR/VR, industry, health.)	Digitalisation policy, EU economy strengthening (the Trillion economy opportunity)
Synergies with MS programmes (Where applicable)	European momentum towards coordinated deployment and critical mass deployment effect.

Annex 3 - Table of national funds

Member State	6G Programme	Budget (Euro, millions)
Finland	6G Flagship	250
	6G Bridge	130
Germany	6G Platform Germany	700
France	France 2030 /PEPR 6G	part of 735
Netherlands	Future Network Services (FNS)	203
Italy	RESTART	118
Spain	UNICO 6G R&D (España Digital 2026)	206
Sweden	Advanced Digitalisation	210
UK	Wireless Infrastructure Strategy	100 (£)