HEXA-X-II

A holistic flagship towards the 6G network platform and system to inspire digital transformation for the world to act together in meeting needs in society and ecosystems with novel 6G services.

D7.6 Dissemination, communication, and clustering

Co-funded by the European Union

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Abstract

This document, Deliverable D7.6, is the final report on the dissemination, communication, and clustering activities of the Hexa-X-II project. It updates the interim report presented in D7.3, assesses progress against the detailed communication plan outlined in Deliverable D7.2 and evaluates the impact of these activities. Notably, the document captures the extensive work conducted across various communication fronts, including project website engagement, social media outreach, event participation, academic publication, and the development of system proof of concepts. The deliverable provides a transparent account of the achievements and the quantitative progress towards the dissemination and communication of key performance indicators, offering a foundational analysis for ongoing and future activities.

Keywords

6G, clustering, communication, dissemination, EU projects, Hexa-X-II, knowledge sharing, outcomes, social media channels, stakeholders.

Disclaimer

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Executive Summary

This is the final report on the Hexa-X-II project's dissemination, communication, and clustering activities. It updates the interim report presented in D7.3 "Dissemination, communication, and clustering", assesses progress against the detailed communication plan outlined in Deliverable D7.2 "Planning for dissemination, exploitation, standardisation, and clustering" and evaluates the impact of these activities. The deliverable D7.6 describes the extensive work conducted across various communication fronts, such as project website engagement, social media outreach, event participation, academic publication, and the development of system proof of concepts. This document aims to ensure that the project's stakeholders are well-informed about the activities and key achievements during the project, as well as their alignment with the project's overall objectives.

The key achievements in terms of communication, dissemination and outreach can be summarised as follows:

- **Website Development and Engagement**: The Hexa-X-II website has been enhanced to serve as the central hub for information dissemination. It showcases project updates, news, and resource materials. With over 20K visits during the project, nearly all the website targets were achieved and exceeded.
- **Social Media Presence**: Efforts to bolster the project's social media footprint have markedly increased followers and interactions across platforms. Regular updates and strategic content placement have strengthened the project's online visibility. The project's strong social media presence has ensured that all set goals have been surpassed. For scope, Hexa-X-II has over 1.5K followers on LinkedIn, far exceeding the set goal of 100 followers.
- **Newsletter:** Hexa-X-II also published nine newsletters that could be subscribed to via the project website. The newsletter was sent out periodically, with the goal of sending it at least twice per year. It featured news highlights such as the latest deliverables and upcoming events featuring Hexa-X-II. During the project, the newsletter gathered over 300 subscribers.
- **Academic and Industry Conferences:** The project has maintained a strong presence at key academic and industry events, promoting discourse and collaboration opportunities within the 6G research community.
- **Publications and Academic Contributions**: A series of papers and articles have been published in reputed journals and conferences, contributing to the body of knowledge in 6G technology and ensuring the project's visibility in the academic sphere.
- **Stakeholder Engagement**: Ongoing dialogues with stakeholders have intensified, ensuring the project remains aligned with industry needs and regulatory frameworks.
- **Clustering Activities**: Cooperation with related initiatives and projects has been established, fostering a collaborative environment for shared progress in 6G development.
- **Outreach and Educational Activities**: Initiatives aimed at the broader public, including workshops and webinars, have been conducted to educate and stimulate interest in 6G technology.
- **Proof of Concept**: To demonstrate the feasibility of a fully integrated 6G architecture, the Hexa-X-II project implemented a sequence of three progressively advanced system-level Proof-of-Concepts (PoC). These PoCs served as key validation milestones, showcasing the evolution of critical 6G capabilities including intelligent orchestration, energy-aware computing, flexible networking, and trust-enabling mechanisms.

This executive summary highlights the significant strides made by the Hexa-X-II project in its dissemination and communication activities. The communication plan has been adjusted to address emerging challenges and leverage new opportunities, ensuring the project remains at the forefront of the 6G research and development landscape.

Acronyms and abbreviations

Acronym	Full abbreviation
3GPP	3rd Generation Partnership Project
DOI	Digital Object Identifier
DX.Y	Deliverable X.Y, where X is the WP number and Y is the deliverable number
FA	Functionality Allocation
IEEE	Institute of Electrical and Electronics Engineers
ITU	International Telecommunication Union
KPI	Key Performance Indicator
M&O	Management and Orchestration
MoU	Memorandum of Understanding
PoC	Proof of Concept
SDO	Standards Developing Organization
SNS JU	EU Smart Networks and Services Joint Undertaking
SNS-ICE CSA	EU Smart Networks and Services International and European Cooperation Ecosystem Coordination and Support Actions
TRL	Technology readiness level
TSDSI	Telecommunications Standards Development Society, India
WP	Work package

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1. Introduction

In this document, we present the progress and activities in terms of communication, dissemination, outreach, and proof of concept (PoC) up until the last months of the Hexa-X-II project. The project kicked off in January 2023 and in this document, we report the numbers until June 2025, when the project ends.

The Hexa-X-II consortium managed to plan and invest the required efforts and resources to achieve remarkable communication and dissemination performance indicators. In a nutshell, communication and dissemination activities were performed successfully in most of the categories considered, including the following:

- Project website engagement.
- Social media engagement.
- Newsletter engagement.
- Event organisations.
- Appearances in news/media.
- Academic paper publications, both journals and conferences.
- Invited talks at various events.

During the project, communication and dissemination activities were carried out as planned, in most cases exceeding the expected number of contributions. The project communication activities were especially successful in social media engagement, where the results compared to targets were exponential. With dissemination, the project excelled in workshop organisation, including in collaboration with other SNS Stream B projects, and with academic publications such as conference proceedings and journal articles. In these categories, target KPIs were achieved and exceeded. These numbers are listed in the following sections: 2.2 Overall achievements, in section 2.3 Project website, in 2.5 Social media and other sites and in 3.2 Industrial and Scientific Dissemination Goals and Overall Achievements.

Finally, the activities within the system's proof of concept development task were also carried out as planned. To demonstrate the feasibility of a fully integrated 6G architecture, the Hexa-X-II project implemented a sequence of three progressively advanced system-level PoCs. These served as key validation milestones, showcasing the evolution of critical 6G capabilities including intelligent orchestration, energy-aware computing, flexible networking, and trust-enabling mechanisms.

A highlight of the key numbers achieved concerning the communication activities is provided in Figure 1-1. The figure illustrates important communication and dissemination metrics' key performance indicators (KPI). The KPI targets were met and, in many cases, surpassed in terms of almost all considered performance metrics. Hexa-X-II has participated in 75 international events in the two and a half years of the project's lifetime, which is an impressive achievement. This reflects the global interest in the project activities and its research outputs. The project has also established a good process to get news items out promptly, reflected by the number of press releases (5) and published news items on the project website (38). This is in addition to the nine newsletters released during the project duration.

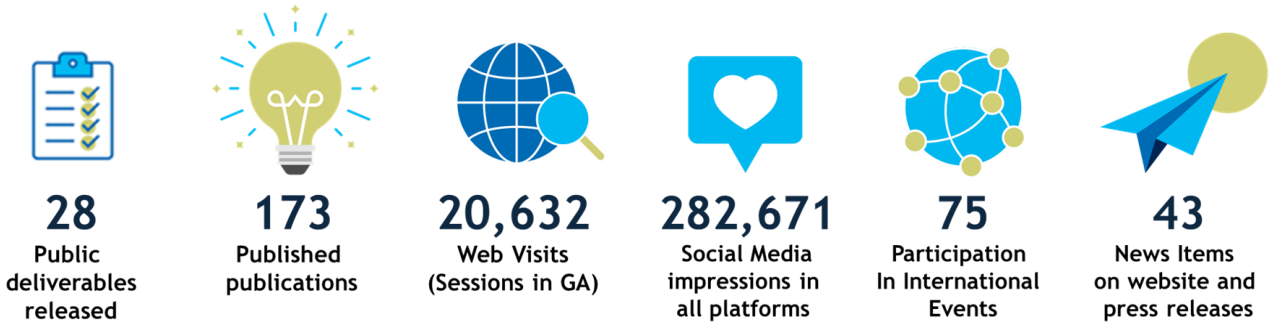

Figure 1-1: Highlight of the KPIs for main communication items.

1.1 Objective of the deliverable

This document, deliverable D7.6, aims to report on the activities and milestones achieved since the start of the project in January 2023 until the finalisation of the project in June 2025, and evaluate the progress concerning

the comprehensive communication plan outlined in D7.2, which included several key measures such as project branding, a project website analytics, social media presence, newsletters, press releases, and white papers [HEX23-D72]. The objective of this deliverable, D7.6, is twofold: first, to provide an overview of the dissemination and communication activities of the Hexa-X-II project, and second, to present, along with this overview, an assessment of the impact achieved concerning the dissemination KPIs. These dissemination and communication activities include published papers, organised events, presentations, social media impact, etc. For each category, the document summarises the number of contributions in mid-June 2025. It discusses the resulting level of achievement, considering the different nature of the various activities considered.

1.2 Structure of the deliverable

The deliverable is structured into six chapters. In Chapter 2, we introduce the dissemination and communication activities of Hexa-X-II. Chapter 3 comprises the communication activities for the public. Here, we present the overall achievements, press releases, the impact of web and social media, news items and newsletters, and initiatives on international cooperation. Chapter 3 also focuses on industrial and scientific dissemination, presenting the overall achievements and participation in industrial and scientific events and workshops, online talks, and publications. Hexa-X-II actively engaged with several Working Groups (WG) within the SNS JU to foster collaboration and innovation. These interactions are crucial for aligning the project's research with broader European goals and leveraging collective expertise. Some of the interactions with other SNS JU WGs are highlighted in Chapter 4. Finally, Chapter 5 presents the status of the three planned System PoCs before concluding the deliverable in Chapter 6.

2. Communication

All partners have committed since the first day to promoting the project to the public through different activities. The Hexa-X-II project has done social media appearances, press releases, project communications, presentations, workshops, etc. This strong initiative has resulted in creating and using social media accounts like X and LinkedIn. The number of views and followers on these platforms has grown rapidly throughout the project, especially during events such as online workshops held in spring 2024. Carefully planned communication efforts through multiple channels were crucial in raising awareness about the Hexa-X-II initiative and its developments. Though the Hexa-X-II's YouTube channel (https://www.youtube.com/@hexa-x-ii) was not actively promoted as a social media channel [HEX223-D71], it grew organically to over 150 subscribers and now hosts more than 75 videos.

In this chapter, we report on all the activities that were categorised under "dissemination (public or restricted)" and "communication to the general public" in the project plan.

2.1 Overview of Hexa-X-II Project's Communication Goals

The communication strategy of the Hexa-X-II project was tailored to engage and inform a diverse audience about the research progress, achievements, and key results of the project. Through various platforms and activities, the project has aimed to provide a clear view of its goals, position the stakeholders for evolution towards 6G, and foster a community amongst stakeholders. The objectives include providing a clear view of project goals and results, increasing awareness of project results among stakeholders, stimulating the exploitation of project achievements, enforcing stakeholder community building, creating liaisons with other projects, communicating high-level results, and impacting future 6G standardisation.

The project's communication efforts were tailored to the needs and interests of the different audience groups. The target audience groups include a wide range of stakeholders and partners who are involved in the project or who have an interest in its research and findings, such as telecom operators and vendors, service providers over telecommunication networks, research and academic community, standards bodies, policymakers, governments and regulatory agencies, 6G-IA and related European/International fora, and the general public. The overall goals of the communication, dissemination and outreach activities include:

- Engaging and informing the project's audience about its research and achievements through versatile channels and platforms,
- covering a wide range of topics and content types to engage a diverse audience,
- increasing visibility and awareness of the project,
- fostering engagement and participation from stakeholders, and
- communicating the project's impact and results to relevant audiences.

Table 2-1 below provides indicative KPIs used to evaluate the project's communication strategy and targets to be achieved by the end of the project. It may be noted that these objectives are set during the project proposal.

Table 2-1: Targeted KPIs per communication activity

KPI	Target	Verification
Newsletters	2 per year	Proof in Dissemination Reports
Newsletter recipients	200	Email delivery
Submissions in Magazines and technical press	2	Number of published articles
Press releases with project acknowledgements	>5	Number of published press releases
Unique website visitors per month	250	Google Analytics

Website page views per month	1000	Google Analytics
Web visits	4500	Google Analytics
Pages / sessions on the website	>3	Google Analytics
Website average session time	>2 min	Google Analytics
Followers in Hexa-X-II X (former Twitter)	>100	X Analytics
Tweets (posts on X)	>50	X Impressions >4000
Followers on Hexa-X-II LinkedIn	>100	LinkedIn analytics
Posts on LinkedIn	>50	LinkedIn analytics

Target audience/stakeholder engagement

Table 2-2 outlines the communication objectives of the Hexa-X-II project along with the target audience groups for each objective and provides an overview of the achievements so far.

Table 2-2: Stakeholder-specific communication objectives of Hexa-X-II and the achievements so far

Communication Objectives	**Audience groups**	**Achievements so far**	**Means of verification**
Provide a clear view of the project goals and results, including an SNS Horizon Europe view	All	Fully achieved	Social Media Metrics, Deliverable Documents
Increase the awareness of the project results among the stakeholders impacted by Hexa-X-II	All	Fully achieved, as reported in this deliverable D7.6	Social Media Metrics, Online Presence
Stimulate the exploitation of the achievements of Hexa-X-II towards 6G evolution of the market	Telecom operators, vendors, service providers, and research community/bodies	Exploitation activities within WP7	-
Enforce stakeholders' community building to share and collect knowledge and increase awareness in the 6G development	All	Social Media Engagement	Social Media Metrics
Create liaisons and relationships with other projects in Europe and abroad (e.g., USA, China, Republic of Korea, Japan), with special focus on 5G PPP and SNS Horizon Europe	Standards bodies, policy makers and different research fora	Fully achieved, as reported in this deliverable D7.6	Deliverable Document

Communicate high-level results, through clear and crisp messages and communications	All	Fully achieved, as reported in this deliverable D7.6	Social Media Metrics, Deliverable Documents
Impact future 6G standardisation evolutions through participants involvement in the SDOs	Standards bodies, policy makers and different research fora	Almost achieved, as reported in deliverable D7.8	Deliverable Document

2.2 Overall Achievements

This section presents an overall picture of the achievements related to the project's communication activities for the targets planned in the initial project plan. A summary of the project's achieved communication activities and dissemination KPIs is presented in Table 2-3 below. It can be observed that the set target for many of the KPIs is met or even exceeded, attesting to the widespread public interest among the various stakeholders generated by the project. A detailed analysis of the dissemination and communication performance concerning different communication media is presented in the subsequent subsections of this section.

Table 2-3: Hexa-X-II communication and dissemination KPIs, targets vs. achievements.

KPI	Target	Verification	Achievement	Percentage achieved
Newsletters	2 per year	Proof in Dissemination Reports	9	450%
Newsletter recipients	200	Email delivery	326	163%
Submissions in Magazines and technical press[1]	2	Number of published articles	>3	150%
Press releases with project acknowledgements	>5	Number of published press releases	5	100%
Unique website visitors per month	250	Google Analytics	267	107%
Website page views per month	1000	Google Analytics	1,198	120%
Web visits (sessions)	4500	Google Analytics	20,632	459%
Page views / sessions in the website	>3	Google Analytics	1,71	57%

[1] This includes technical magazines (like IEEE Communications Magazine) as well as popular technical press (like IEEE Spectrum).

Website average session time	>2 min	Google Analytics	4m 18s	215%
Followers in Hexa-X-II X	>100	X Analytics	201	200%
Tweets (posts on X)	>50	X Analytics	254	508%
X Impressions	>4000	X Analytics	17,481	437%
Followers in Hexa-X-II LinkedIn	>100	LinkedIn analytics	1,507	1 507%
Posts in LinkedIn	>50	LinkedIn analytics	235	470%
LinkedIn Impressions	>4000	LinkedIn analytics	150,471	3762%

Achieved Deliverables

Hexa-X-II deliverables are the most important instrument for disseminating the research results developed in the project, which addresses the project objective 6 – Impact creation (among others). Towards this end, each WP in Hexa-X-II published several deliverables, some of which are publicly available through the project website [HEX2]. This section lists the *public* deliverables that have successfully been delivered to the project funder – European Commission, according to the agreed schedule. These are as follows:

Table 2-2-4: Hexa-X-II public deliverables

SL	Deliverable Nr.	Title	Publication date	Link
1	D7.1	Project website (https://hexa-x-ii.eu/) and online project presence	31 Jan 2023	Link
2	D7.2	Planning for dissemination, exploitation, standardisation, and clustering	30 Apr 2023	Link
3	D1.1	Environmental, social, and economic drivers and goals for 6G	30 Jun 2023	Link
4	D2.1	Draft foundation for 6G system design	30 Jun 2023	Link
5	D3.2	Initial architectural enablers	31 Oct 2023	Link
6	D4.2	Radio design and spectrum access requirements and key enablers for 6G evolution	31 Oct 2023	Link
7	D5.2	Characteristics and classification of 6G device classes	31 Oct 2023	Link
8	D6.2	Foundations on 6G smart network management and orchestration enablers	31 Oct 2023	Link

9	D2.2	Foundation of overall 6G system design and preliminary evaluation results	29 Dec 2023	Link
10	D1.2	6G use cases and requirements	30 Dec 2023	Link
11	D7.3	Dissemination, communication, and clustering	31 Dec 2023	Link
12	D7.5	Impact to industry activities, standardisation and regulation – intermediate release	1 Jan 2024	Link
13	D5.3	Initial design and validation of technologies and architecture of 6G devices and infrastructure	29 Feb 2024	Link
14	D1.3	Environmental and social view on 6G	31 Mar 2024	Link
15	D3.3	Initial analysis of architectural enablers and framework	30 Apr 2024	Link
16	D4.3	Early results of 6G Radio Key Enablers	30 Apr 2024	Link
17	D2.3	Interim overall 6G system design	30 Jun 2024	Link
18	D6.3	Initial Design of 6G Smart Network Management Framework	30 Jun 2024	Link
19	D2.4	End-to-end system evaluation results from the interim overall 6G system design	30 Sep 2024	Link
20	D3.5	Final architectural framework and analysis	28 Feb 2025	Link
21	D4.5	Final design of 6G Radio solutions and Promising Radio Innovations	28 Feb 2025	Link
22	D6.5	Final Design on 6G Smart Network Management Framework	28 Feb 2025	Link
23	D5.5	Final design of enabling technologies for 6G devices and infrastructure	31 Mar 2025	Link
24	D1.4	Final 6G value, requirements and ecosystem	30 Apr 2025	Link
25	D2.5	Final overall 6G system design	30 Apr 2025	Link
26	D2.6	Final end-to-end system evaluation results of the overall 6G system design	30 Jun 2025	Link
27	D7.6	Dissemination, communication, and clustering	30 Jun 2025	Link
28	D7.8	Influence of standardisation and regulation	30 Jun 2025	Link

2.3 Project Website

The project website was established and publicly released immediately after the project launched in January 2023. It is reachable at https://hexa-x-ii.eu/ and has sustained a notable number of visits during the project duration. This section presents the key performance indicators related to the website. Overall, the project is reaching out to a wide range of audiences through its online presence. Table 2-5 provides a summary of Hexa-X-II's web and social media engagement statistics.

Table 2-5: Indicative KPIs to evaluate the project website, target and achievements so far.

KPI	Target	Current status
Unique website visitors per month	250	267
Website page views per month	1000	1,198
Web visits (sessions)	4500	20,632
Pages / sessions at the website	>3	1,71
Website average session time	>2 min	4 min 18 sec
Website news items	30	41

News items on project website

To effectively communicate the latest updates and noteworthy events of the Hexa-X-II project, the team aimed to produce short news updates at an average rate of one news item per month. The goal was to create the most effective possible impact and present this information to engage the project's audience and meet the project's communication goals. The communications team was primarily responsible for creating the news items in close collaboration with the project management team and the editors of the Hexa-X-II deliverables, when those were announced on the project website. News items were published in the news section of the Hexa-X-II website [HEX2].

To effectively communicate the latest updates and noteworthy events of the Hexa-X-II project, the team has produced short news updates monthly. Since January 2023, more than 38 news articles have been published, covering a range of topics from project deliverables and sustainability goals to events and workshops. These news items created a meaningful impact by presenting timely and relevant information designed to engage the project's diverse audience and meet the project communication objectives. The frequency and diversity of the news topics suggested a proactive approach to keeping stakeholders informed and engaged.

The website analytics also indicate that news items and the simultaneous communication about them on Social Media drive traffic to the website, and several news items gathered over 200 views each. Creating meaningful news items that are relevant to our visitors was the key to achieving the goals we set at the beginning of the project.

Web engagement

During the project, the Hexa-X-II website gathered a significant amount of both traffic and engagement, and nearly all the target KPIs were reached. In particular, the project was well received in the online world through close to 1200 page views per month with an average session time of over four minutes per visit (the median value for average session duration for companies is 77.61 seconds).

The Hexa-X-II project initially planned that the Hexa-X-II YouTube channel would not be actively promoted as one of the project's social media channels. However, the channel eventually grew to 159 subscribers, hosting

76 videos all on its own, with an overall watch time exceeding 15 full days (367.8 hours). Interestingly, most viewing of Hexa-X-II videos was done in the USA (10.3%, mostly in San Diego and Santa Clara) and Taiwan (3.5%), followed by the UK(1.5%), Germany (1.2%), and Finland (1.0%).

The channel's main video content is recordings of the project's online workshops and other events. According to analytics, the event pages, where those recordings have been embedded, are among the most popular content on the website. The 6G series workshop by Hexa-X-II in February 2024 was the most popular, gathering over 1,3K views and over 650 individual users.

2.4 News Engagement

Hexa-X-II published its first newsletter in October 2023. The newsletters were also made available online on the project website. At the end of the project, a total of nine newsletters have been distributed to over 300 subscribers. As described in the previous section, the project website is also active in disseminating important project updates through its news section, which boasts over 38 news articles at an impressive average rate of over one news item per month. In addition, different partner organisations in the project have published five press releases highlighting different aspects of this project.

Newsletters

The first Hexa-X-II Newsletter was sent out in October 2023. The initial plan was to release a newsletter in the first half of 2023. However, this was delayed due to administrative delays in finalising the privacy policy, which was needed to collect newsletter subscriptions in line with the General Data Protection Regulations.

Despite the delay, the project has released nine newsletters in total: two in 2023, five in 2024, one in early 2025, and the latest at the end of the project in June 2025. During this time, the number of subscribers has increased to 326, more than 50% over the initial target of 200.

Press releases

Press releases are an effective way to communicate information, and hence Hexa-X-II had the target to produce at least five press releases by the project partners, communicating information about the project. Five press releases have been published during the project lifetime.

Four press releases were published to announce the project selection on 7th October 2022. The first was the Hexa-X press release titled *Hexa-X-II, the second phase of the European 6G flagship initiative*. Nokia's press release highlighted the project announcement by the European Commission and Nokia's role in *leading the next phase of Europe's 6G flagship project* as the project coordinator. Ericsson's press release on the same topic was titled *Hexa-X-II: Ericsson and European partners ramp up collaboration on 6G ecosystem and standardization*. Finally, 6G Flagship and the University of Oulu, the largest academic partner in Hexa-X-II, also released a press release with the title: *Hexa-X-II: Transforming the industry through innovation*.

Lastly, Aalto University from Finland published a press release to announce the development of the first prototype of an Ambient Internet of Things system operating in a mobile phone network. This system enables a very energy- and cost-effective data transfer method for energy-neutral Internet of Things applications. In

Table 2-6, we list these press releases, including the publication date, partner involved, and link to the press release.

Table 2-6: Press releases by Hexa-X-II partners

Date	Category	Partners involved	URL

7 October 2022	Project launch	Hexa-X	https://hexa-x.eu/hexa-x-ii-the-second-phase-of-the-european-6g-flagship-initiative/
7 October 2022	Project launch	Nokia	https://www.nokia.com/about-us/news/releases/2022/10/07/nokia-to-lead-the-next-phase-of-europes-6g-flagship-project/?utm_source=linkedin&utm_medium=social
7 October 2022	Project launch	Ericsson	https://www.ericsson.com/en/news/2022/10/ericssons-major-role-in-ec-hexa-x-ii-6g-initiative
7 October 2022	Project launch	6G Flagship, University of Oulu	https://www.6gflagship.com/news/hexa-x-ii-transforming-the-industry-through-innovation/
18 August 2023	Research news	Aalto University	https://www.aalto.fi/en/news/the-iot-connection-which-utilizes-the-energy-and-infrastructure-of-the-mobile-phone-network-enables

2.5 Social media and other sites

The project initiated its social media presence in January 2023 as a means to reach and interact with a broader audience and actively disseminate content to project stakeholders in social media channels, namely X (https://x.com/Hexa_X_II), LinkedIn (https://www.linkedin.com/company/hexa-x-ii/), and YouTube (https://www.youtube.com/@hexa-x-ii). During the project, the total impressions of Hexa-X-II social media channels gathered across different platforms, including X, LinkedIn, and YouTube is over 280K at an impressive engagement rate of 8,6% per impression on LinkedIn, 8,6% on X and 2.1% on You Tube. Please note that, social media marketing experts agree that a good engagement rate for the education sector is about 2%. Table 2-7 provides a summary of Hexa-X-II's social media engagement statistics. Detailed statistics and trends of social media KPIs are provided in the Appendix at the end of this report.

Table 2-7: Social media engagement KPI status as of June, 2025

SL	**Social media KPI**	**Hexa-X-II**
1	Total social media impressions	282,671
2	Total social media engagements	30,640
3	Post Link Clicks	9,977
4	Engagement Rate per Impression	10.85%
5	Net Audience Growth	1834
6	Followers in Hexa-X-II X (formerly Twitter)	209
7	Website average session time	4 min 18 sec

8	Tweets (Post on X)	230
9	Followers in Hexa-X-II LinkedIn	1,448
10	Posts in LinkedIn	235
11	Videos on YouTube	76
12	YouTube video views	6,359
13	Total YouTube video viewing time	14d 21h 10m

2.6 International Cooperation

Hexa-X-II has remained committed to promoting global collaboration and knowledge exchange to shape the future of 6G. Through active participation in international forums, direct dialogue with key stakeholders, and joint initiatives with 6G clusters worldwide, the project has contributed to building a sustainable, inclusive, and trustworthy 6G ecosystem. These cooperation efforts have been aligned with the project's broader ambition to encourage the exchange of ideas, share research outcomes, and enable cross-regional synergies, supporting a coherent and collaborative global 6G development landscape. All these activities have been coordinated within Task 7.4, which focuses on the clustering plan and the international cooperation strategy, ensuring effective engagement and exchange of results across global initiatives.

In this context, Hexa-X-II has undertaken several targeted actions to advance global cooperation. The following sections present key examples of these activities, illustrating how the project engaged with diverse international stakeholders to support shared progress in 6G research and development.

6G Series Workshop by Hexa-X-II

The Hexa-X-II project has taken a leading role in organising the 6G Series Workshop, launched as a dedicated platform to facilitate international dialogue on the 6G vision, strategies, and challenges. The workshops were coordinated with other ICT-52 and SNS JU projects, ensuring a collective European effort in promoting global engagement and collaboration across the 6G research community.

Two versions of the 6G series workshop were organised, an online version and a physical face-to-face event in conjunction with EuCNC and 6G Summit.

The **online** 6G Series Workshop, held in February 2024 and again in February 2025, brought together representatives from major global 6G initiatives, including Europe, North America, Taiwan, Japan, Korea, India, and China, as highlighted in Table 2-8. These fully virtual events were open to all, providing an inclusive and accessible environment for global exchange. The workshops reflected the European commitment to strengthening international cooperation by enabling structured discussions on research priorities, standardisation needs, and deployment scenarios across different regions.

Table 2-8: Presentation topics from different countries and regions.

Region/Country	Presentation Topics
China	6G Research Process in China; Introduction to IMT-2030 (6G) Promotion Group; 6G Mobile Network; E2E System View and Architecture; Challenges and Trials towards 6G
India	6G Indian Views

Japan	XG Mobile Promotion Forum Overviews; Beyond 5G R&D Status Update
Korea	6G R&D in Korea
North America	6G from Next G Alliance; NGA System Architecture; 6G Drivers and Use Cases
Taiwan	6G Update from Taiwan – Technologies and Researches; 6G Vision and Technology Prospects
Europe	Additional European perspectives by various SNS JU projects

Three editions of the **physical face-to-face** 6G series workshop by Hexa-X-II were organised at EuCNC and 6G Summit 2023, 2024 and 2025, held in Gothenburg, Sweden, Antwerp, Belgium and Poznan, Poland, respectively. The 2023 **6G Series Workshop** title, The 6G series workshop by Hexa-X and Hexa-X-II, was organised together with the predecessor project Hexa-X collocated at EuCNC & 6G Summit 2023, Gothenburg, Sweden, on June 3, 2023. The 2024 edition was a whole-day workshop (https://www.eucnc.eu/2024/www.eucnc.eu/programme/workshops/workshop-3/index.html) with participation from nine other SNS JU projects. The workshop featured keynote presentations from industry leaders like Apple and Orange and provided a platform for Hexa-X-II and other SNS-JU projects to present their progress and insights into 6G system vision, radio evolution, architecture, and values and requirements. The workshop exemplified Hexa-X-II's role in fostering dialogue and collaboration among key stakeholders in the telecommunications field.

The 2025 edition (https://www.eucnc.eu/programme/workshops/workshop-2/) was a half-day workshop. It provided an opportunity to highlight the important flagship role of Hexa-X-II, showcasing the work done with presentations, as well as providing an opportunity to connect and align with the 6G research performed elsewhere. This was accomplished by inviting other SNS-JU working groups and the phase 3 sustainability lighthouse project SUSTAIN-6G. The workshop featured two industry keynotes, one by Qualcomm and another by Telecom Italia, providing a unique insight into advanced wireless innovations for the next decade.

The 6G series workshops by Hexa-X-II covered a broad range of key themes, including the global state of 6G research and development, emerging use cases, sustainability targets, spectrum management strategies, and societal value creation. A significant focus was placed on sharing the perspectives, research priorities and policy approaches from different countries and regions. This open exchange provided valuable insights into how regional initiatives are shaped by local contexts, regulatory frameworks, and societal needs.

In addition to providing visibility on regional 6G strategies, the workshops created a collaborative environment to explore potential synergies and alignment across global roadmaps. Discussions highlighted the importance of aligning 6G development with key sustainability priorities, such as promoting ethical AI integration and digital inclusion under the social pillar, and advancing energy efficiency as part of broader environmental sustainability goals.

The 6G Series Workshop by Hexa-X-II served as a key milestone in promoting mutual understanding, identifying shared goals, and supporting the formation of long-term international partnerships. By facilitating such dialogue, the workshop reinforced the role of global cooperation in advancing a coherent, inclusive, and sustainable 6G development landscape.

Figure 2-1: Hexa-X-II coordinator Mikko Uusitalo chaired session 1 of the Hexa-X-II 6G series workshop at the EuCNC & 6G Summit 2024.

Engagement with Bharat 6G Alliance and Indian 6G Ecosystem

As part of the international cooperation activities, a representative from Hexa-X-II engaged in insightful discussions with key members of India's 6G research ecosystem, including Dr. Dhaval Patel, an Associate Professor at Ahmedabad University, and Dr. Abhishek Kumar, an Assistant Professor at Pandit Deendayal Energy University. These exchanges aimed to gain a deeper understanding of India's 6G research landscape, national priorities, and opportunities for alignment with European initiatives.

The Bharat 6G Alliance, established in July 2023, serves as a cornerstone of India's vision for next-generation wireless networks. This industry-led, government-supported platform brings together expertise from academia, industry, and public institutions, reflecting the guiding principles of affordability, sustainability, and ubiquity as outlined in India's Bharat 6G Mission and the broader Digital India framework. Through these interactions, valuable insights were obtained regarding India's focus on over 100 selected research projects addressing a diverse range of use cases, including V2X communications, pedestrian safety, rural connectivity, telemedicine, and secure cloud systems (iSEC). These projects are structured to enhance self-reliance and technology readiness across strategic sectors. The discussions also highlighted India's active participation in international standardisation efforts through bodies such as Telecommunications Standards Development Society, India (TSDSI), which contributes to global platforms like the International Telecommunication Union (ITU) and 3GPP. In addition, India's collaborative research activities with countries such as Germany, France, Singapore, and Malaysia were recognised as key elements of its global cooperation strategy. Particular emphasis was placed on sectors of high societal impact, including healthcare, agriculture, energy, and smart manufacturing, with digital inclusion and equitable access identified as central objectives in India's 6G roadmap. The Indian experts also pointed out challenges related to political alignment, infrastructure heterogeneity, and the affordability of R&D, and expressed strong confidence in India's innovation-driven and self-reliant approach to overcome these barriers. These engagements provided valuable insights into the Indian 6G ecosystem and helped establish a foundation for future dialogues and cooperation, contributing to the broader goal of advancing inclusive, sustainable, and interoperable 6G technologies at the global level.

Hexa-X-II 6G Workshop at IEEE VTC2024-Fall

As part of its international outreach and cooperation efforts, Hexa-X-II organised a dedicated 6G Workshop at the IEEE VTC2024-Fall conference, held in Washington D.C., USA, in September 2024. The workshop was jointly featured with the Next G Alliance, representing a significant step in strengthening transatlantic collaboration between European and North American 6G research communities.

This collaborative event enabled a meaningful exchange of perspectives on 6G vision, emerging technologies, architectural enablers, and policy frameworks. Key themes included spectrum sharing strategies and social sustainability ambitions, including trustworthiness and inclusion, highlighting shared challenges and opportunities across different regions. The workshop also emphasised the importance of aligning 6G research priorities internationally to support interoperability, shared innovation, and coherence in the development of next-generation networks.

By hosting this workshop in conjunction with a major global conference, Hexa-X-II successfully amplified European perspectives on 6G while reinforcing the value of global partnerships. The joint participation with Next G Alliance showcased a shared commitment to collaboration and knowledge exchange between key players from both sides of the Atlantic. This initiative further contributed to the global alignment of 6G roadmaps, helping to identify strategic areas for future cooperation and mutual progress in 6G research and development.

Hexa-X-II at 5G Techritory, Latvia

Hexa-X-II continued its outreach and dissemination activities through active participation at the 5G Techritory 2024 event, held in Riga, Latvia. The project contributed to the event by sharing its vision and progress on key 6G topics.

As part of its participation, Hexa-X-II presented a specially prepared video titled "Hexa-X-II: Key Contributions to the Future of 6G", highlighting the project's role in shaping the European 6G agenda. The video showcased the project's approach to addressing the three pillars of sustainability: trustworthiness, inclusivity, and guiding the development of next-generation networks.

During Hexa-X-II's participation in the 2023 edition, the 5G Techritory platform enabled meaningful interaction with a wide audience of policymakers, researchers, and industry leaders from across Europe and beyond. Through panels, discussions, and networking sessions, the project emphasised its contributions to defining a human-centric 6G blueprint and explored opportunities for cross-border collaborations.

These international cooperation activities reflect Hexa-X-II's commitment to promoting global dialogue and shared progress toward a sustainable and inclusive 6G future. By engaging with key regions and participating in international fora, the project has further strengthened its position as a collaborative leader within the global 6G landscape.

Engaging SMEs and Startups to Shape the Future of 6G Technology

Hexa-X-II recognised the critical role of Small and Medium-sized Enterprises (SMEs) and startups as key drivers of innovation, agility, and creativity in the evolving landscape of 6G research and development. To actively support and engage these innovators, the project launched the "**Get Involved**" initiative, providing a platform for SMEs and startups to contribute their expertise, explore new collaboration opportunities, and co-develop technological solutions that would help define the future of next-generation networks.

The goal of this initiative was to ensure that the development of 6G technology remained inclusive and collaborative, enabling fresh ideas from smaller players to complement the work of established industrial leaders and academic partners. Through participation in Hexa-X-II, SMEs and startups were offered the opportunity to gain visibility within the European 6G research ecosystem, contribute to use case discussions, and explore synergies that support joint innovation. By joining the "Get Involved" initiative, participants were able to amplify their visibility among a network of over 400 industry stakeholders within the 6G Infrastructure Association (6GIA) community. This platform offered SMEs and startups the chance to showcase their solutions, connect with leading players across the value chain, and explore opportunities for integrating their innovations into the broader 6G framework.

Hexa-X-II invited interested SMEs and startups to express their interest in shaping the 6G vision via the "Get Involved" page on its official website. Participants were encouraged to highlight their areas of expertise, such as AI integration, cybersecurity, edge computing, IoT, XR, network automation, and sustainability-focused solutions—all relevant domains for future 6G services.

As part of this initiative, Hexa-X-II also organised the webinar **"From 5G to 6G: Opportunities for European Startups and SMEs"**, in collaboration with the European Digital SME Alliance and Institute PIIU. This session focused on the transition from 5G to 6G, showcasing potential business opportunities and innovation avenues for SMEs within the next-generation networking landscape. The webinar covered:

- The role of SMEs in the smart networks and services ecosystem.
- Emerging funding schemes and project participation mechanisms.
- Key technology areas where SMEs can contribute meaningfully to 6G development.

The webinar recording remains publicly available as a valuable resource for startups, entrepreneurs, and tech innovators seeking to leverage 6G technology for business growth and competitive advantage (Watch here).

By opening the door to new entrants and disruptive innovators, Hexa-X-II aimed to create a dynamic, diverse, and innovation-friendly environment for 6G research. The project encouraged SMEs and startups across Europe and beyond to engage, share their ideas, and collaborate with the broader Hexa-X-II consortium. This approach not only supported the technological ambitions of 6G but also ensured that its development was aligned with societal needs, sustainability objectives, and business innovation.

The 6G Flagship Open Call, hosted on YouNoodle, generated strong global interest. Ten completed applications were recorded from all 28 submissions. Participants came from seven different countries, highlighting the program's international appeal.

Participant Countries:

- United Kingdom (4 applications)
- Iceland (1 application)
- USA (1 application)
- Rwanda, United Kingdom (1 joint application)
- Egypt (1 application)
- Switzerland (1 application)
- Germany (1 application)

Notably, the United Kingdom led participation with 40% of the completed applications, including one joint project with Rwanda.

The geographical diversity demonstrates the SMEs' interest in 6G research and innovation. As highlighted in Figure *2-2*, European countries dominated submissions, while North America and Africa also had notable representation, indicating the expanding global ecosystem around 6G technologies.

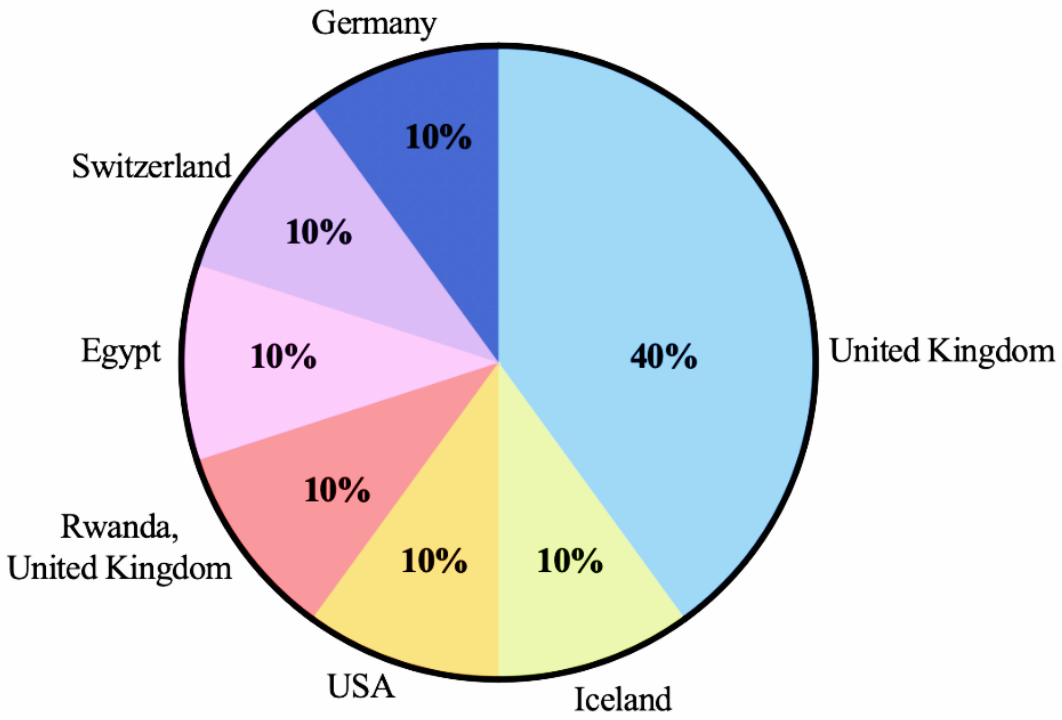

Figure *2-2*: Geographical distribution of SME and startup application to Hexa-X-II Open Call.

3. Industrial and Scientific Dissemination

This section reports the status of industrial and scientific dissemination. This dissemination corresponds to activities such as publications, participation in industrial and scientific exhibitions, events, small-scale demonstrators, industrial and scientific workshops organised by Hexa-X-II, etc.

3.1 Industrial and Scientific Dissemination Goals and Overall Achievements

Dissemination is an essential factor in maximising the impact of the project, providing technical details of the project outcomes. Dissemination goals are about raising awareness in relation to the 6G challenges. The benefits and the value 6G networks can bring to society with respect to environmental, social, and economical sustainability and new business opportunities [HEX225-D14]. They can promote the technical advances that can support environmental, social and economic sustainability, including trustworthiness, resilience, and digital inclusion, as well as network transforming/automation enablers, innovative radio aspects, devices of the future, AI-based network management enablers, etc.

The Horizon Europe requirement for Open Access to scientific publications is fully embraced by Hexa-X-II. All scientific publications are made open access through the Hexa-X-II Zenodo community page (https://zenodo.org/communities/hexa_x_ii_2023/) and through the Open Research Europe publishing platform. Scientific publications are peer-reviewed and require general assembly acceptance prior to publishing. The Zenodo repository is publicly accessible without any credentials and supports versioning. Uploaded publications must have a Digital Object Identifier (DOI) that can be used as a reference to the document in other sites & repositories.

Hexa-X-II disseminated its innovation results in international peer-reviewed scientific journals, magazines, conferences, industrial/stakeholder events and standards-developing organisations (SDO). The industrial and scientific dissemination plans can be grouped into the following main dissemination categories:

- *Publications in peer-reviewed scientific journals and magazines.*
- *Participation at conferences* (including peer-reviewed paper presentations, demos/exhibitions, workshops, webinars and invited talks).
- *Participation in research community networks and stakeholder groups,* including the coordination with 5GPPP, 6G-IA, SNS and other EU projects and presentations at relevant industry fora and events such as NGMN, GSMA, 5G-ACIA, Telco Global API Alliance, FUSECO, Layer123
- *Internal workshops and events, trainings, and whitepapers.*

This initial dissemination plan described in the project's description is reproduced and compared against the current status in Table 3-1 below.

Table 3-1: KPIs of industrial and scientific dissemination activity in Hexa-X-II, target vs. status

KPIs	**Target**	**Means of verification**	**Current status**
# of journal paper submission during the project lifetime (incl. magazine journals)	>200	D7.3, D7.5, D7.6, D7.8	86
# of conference and workshops paper submissions by all Hexa-X-II partners			121 (total – 207)
# of workshops organized and participated in during the project lifetime	10		13 workshops organized, and Participated in 50+ events

# of Joint SNS Stream B workshops organised	2		6 workshops jointly organized with other SNS JU projects
# of demos and industrial exhibitions given during the project lifetime	10		21 demos (11 physical and 10 video only demos): 1 in IEEE ICC 2023, 1 in Brooklyn 6G Summit 2023, 7 in EuCNC | 6G Summit 2024, 1 in Brooklyn 6G Summit 2024, 1 in JC&S symposium in Oulu 2025, 1 in 6G summit Dresden 2025, and 9 in EuCNC | 6G Summit 2025.

3.2 Participation in industrial, business, and scientific events

Here we summarise the participation in industrial and scientific exhibitions and events. Hexa-X-II has created a great impact regarding industrial and scientific exhibitions. In fact, Hexa-X-II members have participated in a total of more than 40 scientific events of various calibre. The following Table 3-2 presents a summary of the events attended by Hexa-X-II project members during the project lifetime.

Table 3-2: Participation in industrial and scientific exhibitions and events, and business conferences.

No.	Title	Type of activity	Target audiences	Date
1	Panellist at 6G Summit Berlin	Conferences	Industry and business partners; Research communities	26.4.2023
2	Panel participation and presentation on 6G and sustainability at 6G Global Summit Bahrain	Conferences	Research communities; Innovators; International organization (UN body, OECD, etc); National authorities; Regional authorities	5.5.2023
3	Joining 6G panel at Critical communications Conference	Conferences	Research communities; Industry and business partners; International organization (UN body, OECD, etc); National authorities; EU Institutions	24.5.2023
4	Talk on 6G at Critical communications conference	Conferences	Industry and business partners; Research communities; Innovators; Investors; International organization (UN body, OECD, etc); EU Institutions; National authorities	25.5.2023
5	Talk on 6G at the Explore 6G event in Tampere	Conferences	Industry and business partners; Research communities; National authorities	25.5.2023
6	Presentation on Hexa-X-II at the EU Taiwan 6G event	Other scientific collaboration	Industry and business partners; Research communities; EU Institutions; Regional authorities	30.5.2023

7	Panel presentation at ICC 2023	Conferences	Research communities; Industry and business partners; Innovators	30.5.2023
8	Organization of workshop "The 6G series workshop by Hexa-X and Hexa-X-II" at EuCNC & 6G Summit	Conferences	Research communities; EU Institutions; Industry and business partners	6.6.2023
9	Invited talk and panel participation on Hexa projects at IEEE WoWMom	Conferences	Research communities; Industry and business partners	13.6.2023
10	Organization of Netsoft 2023 conference in Madrid	Other scientific collaboration	Research communities	19.6.2023
11	Keynote at ACM Mobisys on Hexa projects	Conferences	Research communities; Industry and business partners	21.6.2023
12	VTC Panel on 6G	Conferences	Industry and business partners; International organization (UN body, OECD, etc); Specific user communities	23.6.2023
13	Invited keynote on Hexa-X and Hexa-X-II at German national 6G main event	Conferences	Research communities; Industry and business partners; International organization (UN body, OECD, etc); National authorities; EU Institutions	27.6.2023
14	Presentation on 6G at CxO industry Forum	Education and training events	Industry and business partners; Innovators	31.8.2023
15	Panel talk "Towards Secure and Trustworthy 6G Networks" at 6G Core Technologies Workshop	Conferences	Research communities; Industry and business partners; Innovators	12.9.2023
16	Invited talk at 2nd Annual Australian Beyond 5G Connectivity Summit	Conferences	Industry and business partners; Research communities; National authorities; Innovators	11.10.2023
17	Keynote at International Conference on ICT Convergence 2023 (ICTC 2023)	Conferences	Research communities; Industry and business partners; International organization (UN body, OECD, etc); National authorities; Innovators	11.10.2023

18	Talk on Hexa projects and sustainability at Techritory meeting in Riga	Conferences	Research communities; Industry and business partners; Innovators; Investors; International organization (UN body, OECD, etc); EU Institutions; National authorities; Regional authorities	19.10.2023
19	Co-organized a symposium on "Vision and Facts on 6G and Future Networks in Europe" at IEEE Future Networks World Forum, Nov 13-15th	Conferences	Research communities; Industry and business partners; Innovators; Investors; International organization (UN body, OECD, etc)	13.11.2023
20	Presented Hexa projects at SNS Event in Istanbul	Conferences	Research communities; Industry and business partners; Innovators; International organization (UN body, OECD, etc); National authorities; Regional authorities	23.11.2023
21	Talk on 6G in Global 6G Development Conference	Conferences	Research communities; Industry and business partners; International organization (UN body, OECD, etc); National authorities; Regional authorities	05.12.2023
22	Panel co-organizing and participation at IEEE Globecom 2023	Conferences	Research communities; Industry and business partners; Innovators; Investors; International organization (UN body, OECD, etc); EU Institutions; National authorities; Regional authorities	07.12.2023
23	European Digital SMEs Alliance event	Meetings	Industry and business partners; Innovators	07.12.2023
24	Presentation at Architecture and Standardization Workshop	Workshop	Research communities; Industry and business partners; Innovators; EU Institutions; National authorities; Regional authorities	26.01.2024
25	ETSI AI Conference	Conference	Research communities; Industry and business partners; EU Institutions; SDO	5-7.02.2024
26	Workshop on use cases to impact 3GPP	Webinar	Research communities; Industry and business partners (3GPP)	24.01.2024
27	6G Symposium	Conference	Research communities; Industry and business partners; Innovators; Investors;	9 – 11.04. 2024

28	Multiple presentations and workshops at EuCNC and 6G Summit	Conference	Research communities; Industry and business partners; Innovators; Investors; International organization (UN body, OECD, etc); EU Institutions; National authorities; Regional authorities	3-6.06.2024
29	Talk at NetWorld Europe Workshop	Workshop	Research communities; Industry and business partners; International organization (UN body, OECD, etc); EU Institutions; National authorities; Regional authorities	19.09.2024
30	Multiple presentations at FNS-Hexa-X-II Workshop	Workshop	Research communities; Industry and business partners; National authorities	23.09.2024
31	Presentation at Radio Spectrum Policy Group	Meeting	International organization (UN body, OECD, etc); EU Institutions; National authorities; Regional authorities	27.09.2024
32	Presentation at 6G Forum	Workshop	Research communities; Industry and business partners; Innovators	01.10.2024
33	Presentation at Hexa-X-II 6G Workshop (at VTC-Fall)	Conference	Research communities; Industry and business partners; Innovators; National authorities	07.10.2024
34	Presentation at 6GSNS ISAC Workshop	Workshop	Research communities; Industry and business partners	08.10.2024
35	Demo at Brooklyn 6G Summit	Conference	Research communities; Industry and business partners; Innovators; Investors; International organization (UN body, OECD, etc); National authorities	23 – 25. 10.2024
36	Video presentation at 5G Techritory	Conference	Research communities; Industry and business partners; Innovators; EU Institutions; National authorities; Regional authorities	30 – 31.10. 2024
37	Invited talk at 6G ANA plenary meeting	Meeting	Research communities; Industry and business partners	21.10.2024
38	Presentation at 1st International Workshop on Energy Neutral and Sustainable IoT Devices and Infrastructure	Conference	Research communities; Industry and business partners	21 – 24. 10.2024
39	Multiple presentations at 6G4Society & Hexa-X-II Webinar	Webinar	Research communities; Industry and business partners; EU Institutions; National authorities; Regional authorities	06.11.2024

40	Presentation at 3GPP standards and SNS-JU impact: best practices and success stories	Webinar	Research communities; Industry and business partners; EU Institutions; SDO	27.03.2025
41	Talk at ETSI 6G Monday	Workshop	Research communities; Industry and business partners; Innovators; EU Institutions; SDO	14.04.2025
42	Talk at 6G FORGE	Workshop	Research communities; Industry and business partners; Innovators; EU Institutions; SDO	15.04.2025
43	Multiple presentations at EuCNC and 6G Summit	Conference	Research communities; Industry and business partners; Innovators; Investors; International organization (UN body, OECD, etc); EU Institutions; National authorities; Regional authorities	3 – 6. 06.2025
44	O-RAN 6G workshop, Fukuoka, Japan	Workshop	Research communities; Industry and business partners; Innovators; SDO; National authorities	5.6.2025

In addition to participating in various scientific conferences and workshops, Hexa-X-II partners also communicated and disseminated information about the project and its research findings through various other channels such as giving interviews and presentations; and participating in exhibitions, which are listed in Table 3-3 below.

Table 3-3: List of presentations and dissemination of Hexa-X-II at different events.

No.	Event name	Description	Communication channel	Date
1	ICT-52 online workshop	Presentation of Hexa-X-II at Hexa-X	Event	18.1.2023
2	6G Bridge program launch	Speech with info on Hexa-X-II at launch event of national 6G Bridge program in Finland	Event	6.2.2023
3	Webinar: Networking Channel	Presentation to Networking channel on Hexa-X-II	Event	15.2.2023
4	Mobile World Congress 2023	Highlighted Hexa-X-II at Nokia MWC 2023 booth	Exhibition	27.2.2023
5	Webinar: Networking Channel	Presentation of Hexa-X and Hexa-X-II views on 6G on the Networking Channel:	Video	15.3.2023

		https://networkingchannel.eu/what-is-6g-and-what-are-the-research-challenges-the-vision-of-the-european-6g-flagship-project-hexa-x/		
6	TTC-6G Stakeholder Workshop	Presented Hexa-X and Hexa-X-II at high level TTC meeting between Europe and USA	Event	20.4.2023
7	TTC-6G Stakeholder Workshop	Europe-US meeting organized by EC; Giovanni Romano (TIM) will talk in the session on “Introduction and Scene Setter” with a specific talk on the road towards standardization, from 3GPP to ITU; Hexa-X-II has provided a contribution on the standardization roadmap	Event	20.4.2023
8	Published SNS Journal article on Hexa-X-II	Published SNS Journal article on Hexa-X-II	Media article	2.6.2023
9	EUCNC & 6G Summit 2023	Poster on Hexa-X-II at the Hexa-X-booth in EUCNC & 6G Summit 2023	Exhibition	7.6.2023
10	Special Session at EuCNC & 6G Summit 2023	Presentation of Hexa-X-II work on critical use cases at "Dependable wireless communication systems and deterministic 6G communication" Special Session at EuCNC & 6G Summit 2023	Event	7.6.2023
11	Interview and article	Interview and article in IT magazine Tivi in Finland with visibility for Hexa-X-II	Media article	14.6.2023
12	VTC Spring 2023	VTC Spring 2023 - Panel with TIM on behalf of Hexa-X-II	Event	23.6.2023
13	Newsletter article	Horizon Futures Watch Newsletter article on Hexa-X-II and interview of Mikko	Interview	10.10.2023

14	SNS JU workshop	Slides on Hexa-X-II to SNS JU for their microelectronic workshop	Event	12.10.2023
15	Blogpost: Hexa-X-II launch EAB	Blogpost on Hexa-X-II launch on Ericsson's website	Media article	24.1.2023
16	Media article: Overview of the Hexa-X & Hexa-X-II	Hexa-X Laying the Foundation for 6G and Hexa-X-II Paving the Road to 6G Systemization	Media article	30.1.2024
17	News item on Sony Earthday 2024 website	News item on Sony Europe (Europe) Driving sustainability for 6G at Hexa-X-II published on the Sony Eathday 2024 website	Media article	22.4.2024
18	Presentation at SA1 workshop	Together with several other European projects and national initiatives, Hexa-X-II presented a consolidated view on use cases to the 3GPP SA1 workshop	Other	9.5.2024
19	Wireless world research forum meeting (WWRF52)	Presentations on Hexa-X-II & ecosystem, and radio evolution & innovation	Meeting	10.09.2024
20	6G Social Acceptance Webinar	Participation in the webinar	Webinar	18.11.2024
21	Presentation at ITU-ETSI Symposium on ICT Sustainability!	Hexa-X-II presented how sustainability is a central design principle for 6G	Event	11 – 12. 12.2024
22	Tutorial webinar	Hexa-X-II view on key values and KVI	Webinar	18.12.2024
23	Presentation at the Global 6G Conference	Hexa-X-II presented insights from the project	Standardization - focused event	10 – 12. 04.2025
24	Talk at Wireless Japan x Wireless Technology Park 2025	Hexa-X-II's role in shaping the end-to-end 6G system blueprint	Seminar	28.05.2025

3.3 Organisation and attendance of Hexa-X-II industrial and scientific workshops

Hexa-X-II organized several online and face to face workshops. Most notable among them is the **6G Series Workshop** held in conjunction with leading conferences such as EuCNC | 6G Summit and IEEE VTC-Fall.

This workshop series set the stage for Hexa-X-II to unveil its vision for next-generation connectivity. Each edition of this workshop featured a stellar line-up of industry leaders, academics, and tech enthusiasts, and were attended by 100+ participants.

The first **6G Series Workshop** title The 6G series workshop by Hexa-X and Hexa-X-II, was organised together with the predecessor project Hexa-X collocated at EuCNC & 6G Summit 2023, Gothenburg, Sweden on June 3, 2023. The workshop was a comprehensive forum for discussing the future of 6G systems, featuring presentations from Hexa-X-II's leading figures like Mikko Uusitalo (Nokia) and Patrik Rugeland (Ericsson). Topics ranged from enhanced radio performance and AI/ML integration to innovative network architectures featuring contributions from Sylvaine Kerboeuf (Nokia), Mårten Ericson (Ericsson), and Nandana Rajatheva (U Oulu), among others. Sustainability was another major focus, with, for instance, a Hexa-X-II-led panel chaired by Maurizio Cecchi (PIIU) on the long-term challenges of 6G sustainability. The workshop served as a catalyst for fostering global collaboration in 6G research. Invitations were extended to other ICT-52 and SNS-JU Stream B 6G projects, making the event a platform for collective progress.

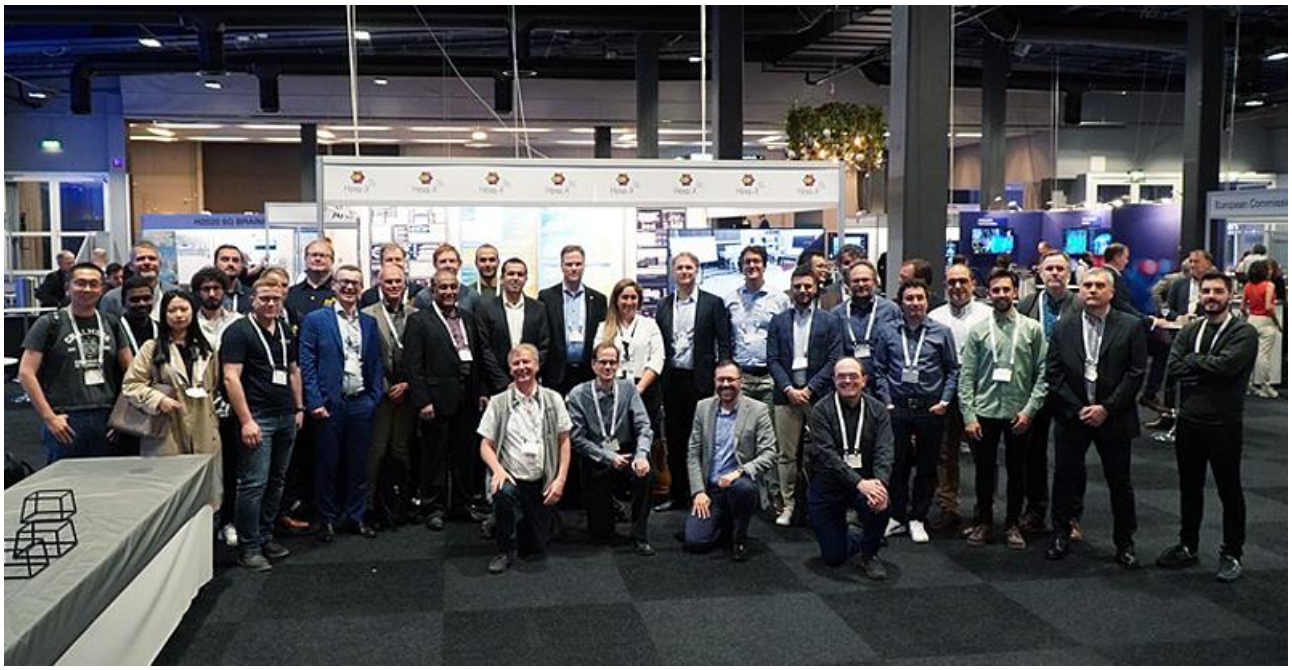

Figure 3-1: Hexa-X and Hexa-X-II representation at the EuCNC & 6G Summit 2023.

Hexa-X-II's Workshop on 6G Architecture and Standardization: on January 26th 2024, Hexa-X-II hosted an engaging online workshop focusing on the future of 6G Architecture and Standardization. The event, attended by a diverse group of industry leaders, researchers, and enthusiasts, served as a melting pot of ideas and innovations shaping the future of wireless communication.

The second edition of the **6G Series Workshop** was organized by Hexa-X-II with participation from other European projects from ICT-52 and SNS JU. It was a global and fully virtual workshop open to all, held on February 13th and 14th 2024. The February 2024 edition was an engaging online gathering that was a melting pot of ideas, where top experts and key players from across the world came together to discuss 6G – from its foundational drivers and use cases to its system architecture and what the future holds. This workshop shows the path towards a future that's more connected, sustainable, and bursting with innovation, unpacking the myriad of challenges and opportunities that 6G promises to bring. All contents from this online workshop is available at https://hexa-x-ii.eu/the-6g-series-workshop-by-hexa-x-ii-feb-2024/.

The EuCNC & 6G Summit 2024, held from June 3-6 in Antwerp, Belgium, was a bustling hub of innovation and collaboration, drawing experts from around the world to discuss and shape the future of telecommunications. The 3rd **6G Series Workshop by Hexa-X-II** was one of the key highlights of EuCNC | 6G Summit 2024. This workshop featured keynote presentations from industry leaders like Apple and Orange and provided a platform for Hexa-X-II and other SNS-JU projects to present their progress and insights into

6G system vision, radio evolution, architecture, and values and requirements. The workshop exemplified Hexa-X-II's role in fostering dialogue and collaboration among key stakeholders in the telecommunications field. In addition, WP4 and WP5 of Hexa-X-II, in collaboration with SNS JU projects 6G-SHINE and CENTRIC organized the first **International Workshop on Holistic 6G Radio Design** at this conference.

A **Hexa-X-II 6G workshop** was organized at VTC-Fall on Monday, 7 October 2024 in Washington DC, USA. Organized in collaboration with the Next G Alliance (NGA), the leading North American 6G initiative aimed at advancing the technology readiness through private sector-led efforts, this workshop provided an overview of the work by the largest European and North American initiatives towards 6G. The workshop also presented academic and industrial visions on how to address the 6G usage scenarios outlined by ITU-R (as defined in ITU-R M.2160).

Hexa-X-II Workshop on Architecture and Standards, an online workshop on 6G standardisation & collaborative research was arranged by Hexa-X-II WP2 and WP7, with participation from invited SNS-JU projects on Thursday 17 October 2024. Hexa-X-II and 6G4Society, two SNS JU projects working to ensure that societal, environmental and economic values are embedded by design into the development of 6G by bringing a sustainability and societal perspective to technological development organized a joint **webinar** on 6 November 2024. The webinar had the twofold objective of: 1) reporting the work done so far by the 6G4Society and the Hexa-X-II SNS JU projects, specifically on how to integrate social acceptance into the development of 6G and how to ensure societal and environmental values are integrated by design; and 2) animating discussions and gathering feedback within the SNS JU community and beyond on the main challenges and priorities to ensure 6G social acceptance.

On 7th November 2024, Hexa-X-II organized the **Non-Terrestrial Network (NTN) workshop** with contributions from leading NTN projects in Europe. The workshop's main objective was to understand how 6G NTN solutions impact the proposed architecture from Hexa-X-II and vice versa. The selected topics in the WS were on NTN and terrestrial network (TN) architecture in general, use cases, mobility issues, sustainability, air interface, NTN/TN integration, etc. The presentations showed a wide range of interesting results, and the consensus was that the projects are aligned on the overall architecture, and this can hopefully be leveraged for introducing 6G NTN in a successful way**.**

On Wednesday, December 18, 2024 Hexa-X-II organized an insightful **online tutorial webinar**, during which Hexa-X-II experts discussed the transformative role of Key Values (KV) and Key Value Indicators (KVI) in shaping the future of 6G. At this interactive session Hexa-X-II experts shared their methodology, practical experiences, and lessons learned in applying a value-based approach to use case design. Through real-world examples and step-by-step guidance, participants gained a deeper understanding of how KV and KVI can drive meaningful innovation and sustainability in 6G development.

The fourth edition of the **6G Series Workshop by Hexa-X-II** was held online on 11 – 12 February, 2025. Hexa-X-II and other European projects from SNS JU presented at this global and fully virtual workshop that was open to all. Last but not least, the fifth and final edition of **6G Series Workshop by Hexa-X-II** was organized in conjunction with EuCNC | 6G Summit 2025 in Poznan, Poland on 3rd June, 2025. This workshop provided an overview of the 6G research from the major European players and connect and align with the 6G research performed elsewhere. It also highlighted the important flagship role of Hexa-X-II, showcasing the work done with presentations and project demonstrations. The second edition of the **International Workshop on Holistic 6G Radio Design** was also collocated with EuCNC | 6G Summit 2025 on the same day. This workshop, jointly organized by Hexa-X-II (WP4 and WP5) and 6G-SHINE discussed different aspects of the blueprint system design of 6G.

Beyond their strong presence in technical sessions, Hexa-X-II achieved significant recognition at the summit by winning the 'Best Booth Award'. The accolade speaks to the project's strong interaction with attendees and its effective demonstration of leading 6G research.

This impressive and long list of workshops and scientific events organized by Hexa-X-II (some in collaboration with other SNS JU projects) highlights the important leadership role played by Hexa-X-II in driving the development of 6G. A summary of the workshops organized by Hexa-X-II is presented in Table 3-4.

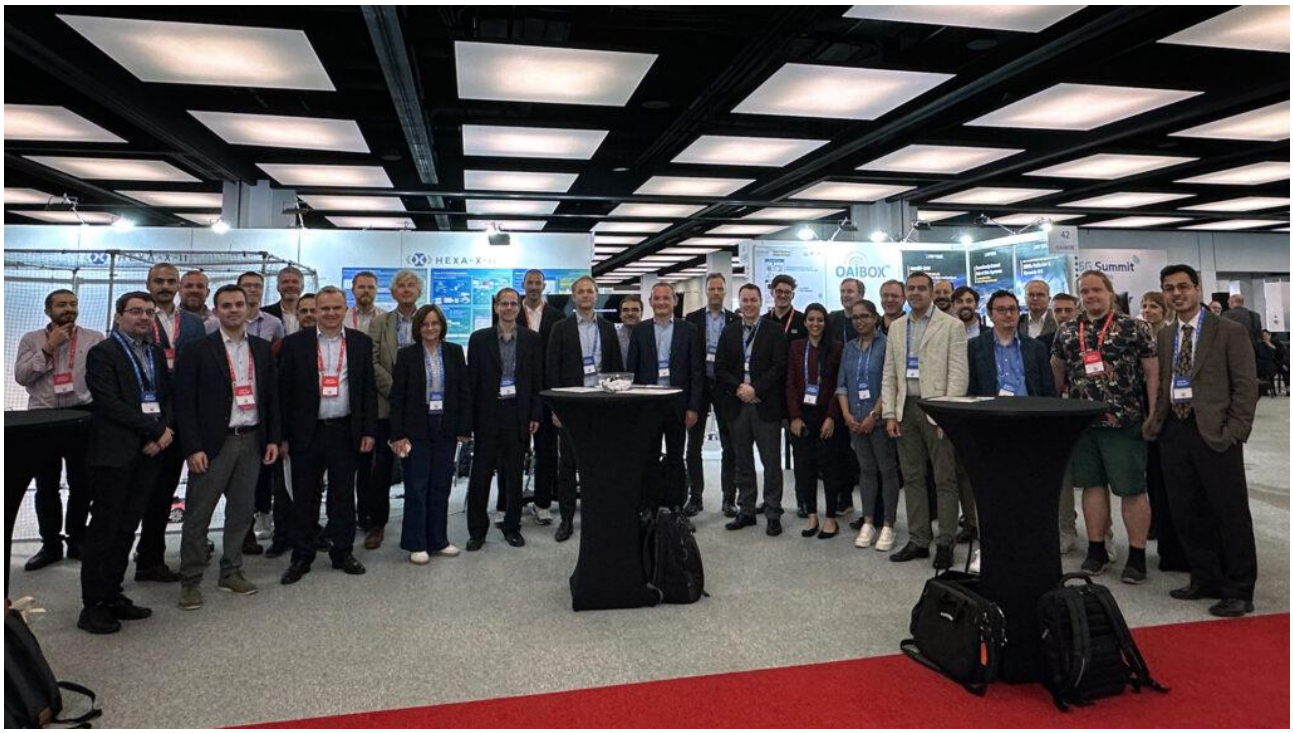

Figure 3-2 Part of the Hexa-X-II delegation at EuCNC | 6G Summit 2025 in front of the award winning Hexa-X-II booth

Table 3-4: List of workshops organized by Hexa-X-II

SL	Event name	Venue	Location	Date
1	The 6G series workshop by Hexa-X and Hexa-X-II	EuCNC | 6G Summit 2023	Gothenburg, Sweden	03.06.2023
2	Hexa-X-II's Workshop on 6G Architecture and Standardization	Global	Online	26.01.2024
3	6G Series Workshop with Participation from other European projects from ICT-52 and SNS JU	Global	Online	13 – 14. 02.2024
4	6G Series Workshop by Hexa-X-II	EuCNC | 6G Summit 2024	Antwerp, Belgium	03.06.2024
5	International Workshop on Holistic 6G Radio Design with 6G-SHINE and CELTIC	EuCNC | 6G Summit 2024	Antwerp, Belgium	03.06.2024
6	Hexa-X-II 6G workshop in collaboration with the Next G Alliance (NGA), USA	VTC-Fall 2024	Washington DC, USA.	07.10.2024

7	Hexa-X-II Workshop on Architecture and Standards with participation from invited SNS-JU projects	Global	Online	17.10.2024
8	Joint webinar by Hexa-X-II and 6G4Society	Global	Online	06.11.2024
9	Non-Terrestrial Network (NTN) workshop with contributions from leading NTN projects in Europe	Global	Online	07.11.2024
10	Online tutorial webinar on 6G KVIs	Global	Online	18.12.2024
11	6G Series Workshop by Hexa-X-II with participation from other SNS JU projects	Global	Online	11 – 12. 02.2024
12	6G Series Workshop by Hexa-X-II	EuCNC | 6G Summit 2025	Poznan, Poland	03.06.2025
13	Second International Workshop on Holistic 6G Radio Design	EuCNC | 6G Summit 2025	Poznan, Poland	03.06.2025

3.4 Scientific Publications

An impressive numbers of scientific publications (conference papers, journals, magazines articles, etc.) has been published, reflecting the excellent scientific contribution of Hexa-X-II. After the initial time invested during the first months of the project, to perform the initial gap analyses, identify the research problems, etc., the growth of scientific achievements started gaining momentum from the second year. In the first year, Hexa-X-II had 64 accepted/submitted scientific contributions, including journal articles, magazine articles, conference papers, and others, whereas this number grew exponentially to over the set target of 200 publications by the project end. An overview of the publication status is shown in Table 3-5. Figure 3-3 presents the grouping of the Hexa-X-II scientific publications by the lead WPs. Considering the time it takes for a submitted conference/journal paper to pass through the review process before being published, the publication number is expected to far surpass the KPI of having more than 200 publications throughout the project lifetime with a large margin. As mentioned earlier, all submitted publications are available through the project's Zenodo repository:
https://zenodo.org/communities/hexa_x_ii_2023/.

Table 3-5: Overview of Hexa-X-II publications

Publication type	**Number of submitted papers**	**Target**	**Achievement**
Conference papers	121	200	213 (106%)
Journal articles	83		
Magazine articles	3		
Others	6		

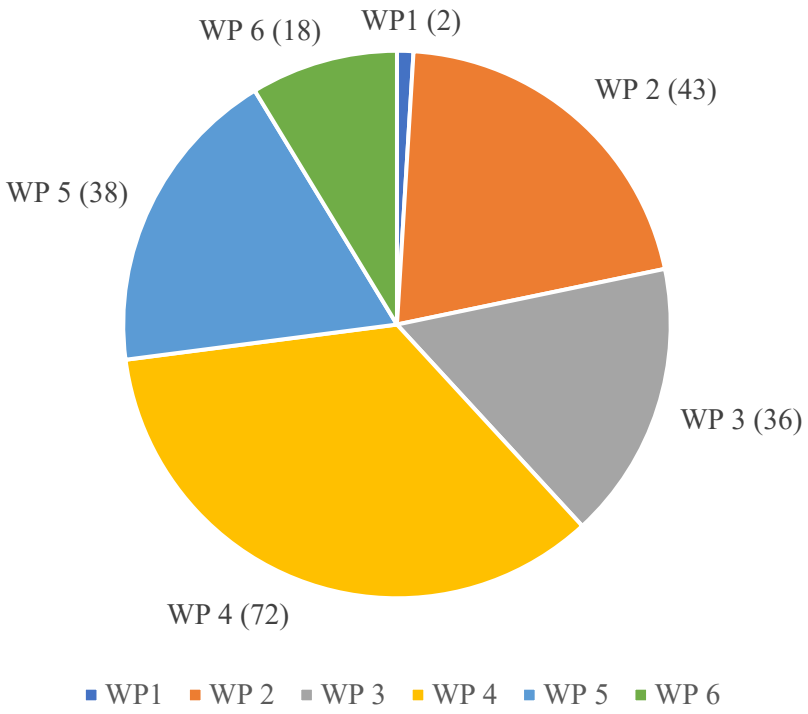

Figure 3-3: distribution of the Hexa-X-II scientific publications according to the lead technical WPs

3.5 Patent activities in Hexa-X-II

Overview

As the next frontier in wireless communication, 6G technology is expected to bring advancements in data speed, latency, and connectivity. With innovations in AI-driven network management, terahertz (THz) frequency spectrum utilization, and novel use cases, companies and research institutions are actively filing patents to secure intellectual property rights. Major stakeholders are leading the race, focusing on novel transmission methods, advanced antenna designs, and energy-efficient architectures.

The growing number of 6G-related patents highlights trends such as cloud Radio Access Network (RAN), microservice-based designs, Internet of Things (IoT), scheduling, compression aspects and many more. Given the complexity of 6G, interoperability will be essential to promote industry-wide adoption. As research accelerates, companies are strategically positioning themselves through patents to influence global 6G standards and gain a strong footprint in the future of telecommunications. The subsection that follows provides an overview of the patents which have been submitted by project partners during the project's lifetime.

Patents

Table 3-6 below summarizes the patents that have been declared in the project so far, by major stakeholders. Currently, a total of 30 patents have been reported.

Table 3-6: List of patents

Nr	Title	Confidential?	Type of IPR	Reference (application number, award number or other identifier)	Embargo end date	Hexa-X-II Partner	Outcome / status of the contribution
1	Handling A Global Machine Learning Model	Yes	Patent	PCT/TR2023/050990	3/20/2025	EBY	Submitted
2	Service Based Radio Resource Control For Cloud Native Ran	Yes	Patent	To be added. Embargo extended.	7/16/2025	NFI	Submitted
3	Early User Equipment Capability Indication	Yes	Patent	To be added. Embargo extended.	10/21/2025	NFI	Submitted
4	Service Routing For User Equipment	Yes	Patent	To be added. Embargo extended.	7/17/2025	NFI	Submitted
5	Apparatus And Method For Use Of Logical Channel Identifier Indices	Yes	Patent	To be added. Embargo extended.	11/2/2025	NFI	Submitted
6	State-Dependent Rrc Configuration Method For 6g	Yes	Patent	To be added. Embargo extended.	10/6/2025	NFI	Submitted
7	Microservice-Based Design For Data Plane Processing In	Yes	Patent	US Patent application serial number 63/406283	6/30/2025	NGE	Approved

	User Plane Function						
8	Network Node, User Equipment And Methods Therein, In A Wireless Communications Network	Yes	Patent	PCT/SE2024/050220	9/12/2025	EAB	Submitted
9	Detection Of Adversarial Attacks Against An Intrusion Detection Module	Yes	Patent	PCT/TR2024/050249	9/26/2025	EBY	Submitted
10	Methods And Apparatuses For Supporting Internet Of Things Device With Intermittent Receiver Activity	Yes	Patent	PCT/SE2024/050373	9/26/2025	LMF	Submitted
11	Radio Network Node, Remote Device, Relay Device And Methods Performed Therein	Yes	Patent	PCT/SE2024/050402	9/26/2025	LMF	Submitted
12	Bistatic Radar Sensing In The Presence Of Synchronization Signals	Yes	Patent	PCT/SE2024/050410	10/27/2025	EAB	Submitted
13	System Information	Yes	Patent	PCT/SE2024/050494	11/26/2025	LMF	Submitted

	(Re)Acquisition						
14	Method For Scheduling Wireless Resources With Energy Efficiency	Yes	Patent	To be added. Embargo extended.	9/12/2025	NGE	Submitted
15	Systems And Methods For Dimensionality Reduction Of Reciprocity-Based Mu-Mimo Using Ue Effective Antennas	Yes	Patent	U.S. Patent Application Serial No. 18/384,053	10/26/2025	SEQ	Submitted
16	Pre-Processing For Csi Compression	Yes	Patent	U.S. Patent Application Serial No. 18/748,613	6/20/2026	SEQ	Submitted
17	Apparatus And Method For Transmission	Yes	Patent		12/28/2025	NFI	Submitted
18	Apparatus And Method For Transmission	Yes	Patent		12/28/2025	NFI	Submitted
19	Exchange Of Information For Wireless Networks	Yes	Patent		1/15/2026	NFI	Submitted
20	Apparatus, Method, And Computer Program	Yes	Patent		12/20/2025	NFI	Submitted
21	Transmitting Device, Receiving Device, User Equipment, Radio Network Node, And Methods	Yes	Patent	PCT/SE2024/050765	2/27/2026	EAB	Submitted

	Performed Therein						
22	Sending A Message To A Network Node	Yes	Patent	PCT/SE2024/051051	6/3/2026	EAB	Submitted
23	User Equipment, Radio Network Node And Methods Performed Therein	Yes	Patent	PCT/SE2024/051085	5/4/2026	EAB	Submitted
24	Determination Whether To Merge Offloaded Distributed Model Layers	Yes	Patent	PCT/SE2024/050773	1/31/2026	EAB	Submitted
25	Evaluating Implementation Of A Proposed Action In A Communication Network	Yes	Patent	PCT/SE2024/051010	5/14/2026	EAB	Submitted
26	Network Controlled Reconfigurable Intelligent Surface (RIS)	Yes	Patent	PCT/SE2025/050187	24/8/2026	LMF	Submitted
27	Handling a Global Machine Learning Model	Yes	Patent	PCT/TR2025/050266	19/8/2026	EBY	Submitted
28	Handling Local Model Updates For a Global Machine Learning Model	Yes	Patent	PCT/TR2025/050189	28/7/2026	EBY	Submitted

29	Construction of new LDPC matrices	Yes	Other	EP2024061163	24/4/2024	ORA	Approved
30	System zur Übertragung von Funkwellen (Radio wave transmission system)	Yes	Patent	Official file number: 25170688.3 Filing date: 15 Apr 2025	22/10/2026	SAT	Submitted

4. Clustering in the European environment

As a flagship project under the European Union's Horizon Europe program, Hexa-X-II constantly managed interactions with the Smart Networks and Services Joint Undertaking (SNS JU), the collaborative initiative between the European Commission and industry stakeholders (through the 6GIA).

Hexa-X-II actively engaged with several Working Groups (WGs) within the SNS JU to foster collaboration and innovation. These interactions are crucial for aligning the project's research with broader European goals and leveraging collective expertise. In particular, here are some highlights on the interactions with the SNS JU Working Groups:

1. **6G Architecture WG**: Hexa-X-II contributed to discussions on architectural concepts and components for 6G networks. Hexa-X-II helped shape a unified European vision for 6G architecture by sharing its research findings and insights. The project inherited the strong relations already established in Hexa-X and leveraged on the presence of colleagues in the consortium directly involved in the 6G Architecture WG, also with leading roles there (from Nokia, UC3M, and others).
2. **Reliable Software Network WG**: In this WG, Hexa-X-II collaborated on topics such as cloud-native design and AI/ML integration. The project shared its advancements in software networking and learned from the experiences of other participants. This exchange of knowledge helped Hexa-X-II refine its approaches and develop more robust solutions.
3. **Test, Measurement, and KPIs Validation WG**: Hexa-X-II participated in developing common methodologies for testing and monitoring 6G networks. By contributing to creating test cases and KPI validation procedures, the project ensured its research aligned with standardised practices. This collaboration also allowed Hexa-X-II to validate its innovations against established benchmarks.

Hexa-X-II also collaborated with the Working Groups of the 6G Infrastructure Association (6GIA). Here are some highlights on the interactions with the 6GIA Working Groups:

1. **Vision WG**: Hexa-X-II shares its technological advancements and collaborates on defining the technical requirements for 6G. Contribution to the sustainability whitepaper and monitoring of discussions on the new release of the 6G ecosystem whitepaper. Contribution to developing appropriate analytic methods for business innovation in the 5G and 6G domains.
2. **Pre-Standardisation WG**: By participating in this WG, Hexa-X-II contributed to the pre-development of 6G standards. The project shared its insights and research findings, helping to shape the standards that will govern future 6G networks, aiming to ensure Hexa-X-II's innovations are compatible with emerging standards.
3. **Monitoring** of the activities in the Open SNS Working Group and the Trials Working Group through the presence of specific partners in these groups
4. **Sustainability Task Force** (now evolved into a new Working Group): strong presence and interaction, especially through the Work Package 1 activities on Use Cases and related sustainability design and performance evaluation
5. **Comms** working group. Continuous interaction with the group, aligning on the dissemination and communications activities and participation in the monthly calls through the WP7
6. **Steering and Technical Board**. Participation of the Project Coordinator and the Technical Manager in the calls and regular face-to-face meetings

The interactions between Hexa-X-II and the Working Groups within the SNS JU and 6GIA have been deemed essential for the project's success. By actively participating in these collaborative efforts, Hexa-X-II leveraged the collective expertise of the European 6G community, contributed to joint solutions, and ensured its research aligned with broader goals. This collaborative approach was crucial for developing a sustainable, inclusive, and trustworthy 6G platform.

In addition to contributing to and participating in the Working Groups, the clustering of Hexa-X-II was also built on the workshops and events organised regularly. As an example, WP2, with the support of WP7, established good interaction with Phase 1 and Phase 2 JU SNS projects on the topic of Architecture in joint

workshops. With these projects, standardisation topics were also discussed in the context of these workshops, helping to align the views. Moreover, many workshops have been organised with other projects as reported in Section 3.3.

5. System PoC Demonstration

5.1 Description of the Planned Proof of Concepts

To demonstrate the feasibility of a fully integrated 6G architecture, the Hexa-X-II project implemented a sequence of three progressively advanced system-level Proof-of-Concepts (System PoCs). These PoCs served as key validation milestones, showcasing the evolution of critical 6G capabilities including intelligent orchestration, energy-aware computing, flexible networking, and trust-enabling mechanisms.

System PoC #A focused on smart network and resource management within a single-domain testbed using autonomous mobile robots (AMRs) and unmanned aerial vehicles (UAVs) in an automated warehouse scenario. Demonstrated features included:

- Intent-based orchestration across application, AI, and service domains.
- Energy-efficient functionality allocation using heuristic workload placement.
- Trust evaluation mechanisms informing real-time compute distribution.
- Dynamic resource allocation based on proximity, energy status, and device capabilities.

System PoC #B extended these capabilities to multi-domain environments, introducing network-of-networks functionality, enhanced sustainability enablers, and a broader range of application services. Key highlights included:

- Flexible topologies for dynamic connectivity and compute exposure.
- Beyond communication services, such as Compute-as-a-Service and AI-as-a-Service.
- Latency-sensitive applications, including live video analytics and distributed object detection.
- Cross-domain orchestration, enabling synchronised service delivery across heterogeneous infrastructure.
- Enhanced trust and privacy controls, strengthening the system's resilience and social sustainability.

System PoC #C focuses on an advanced version of the automated warehouse inventory management scenario and builds on the multi-domain orchestration and automation capabilities demonstrated in System PoC #B by integrating advanced enablers from 6G radio and device technologies, developed under WP4 and WP5.

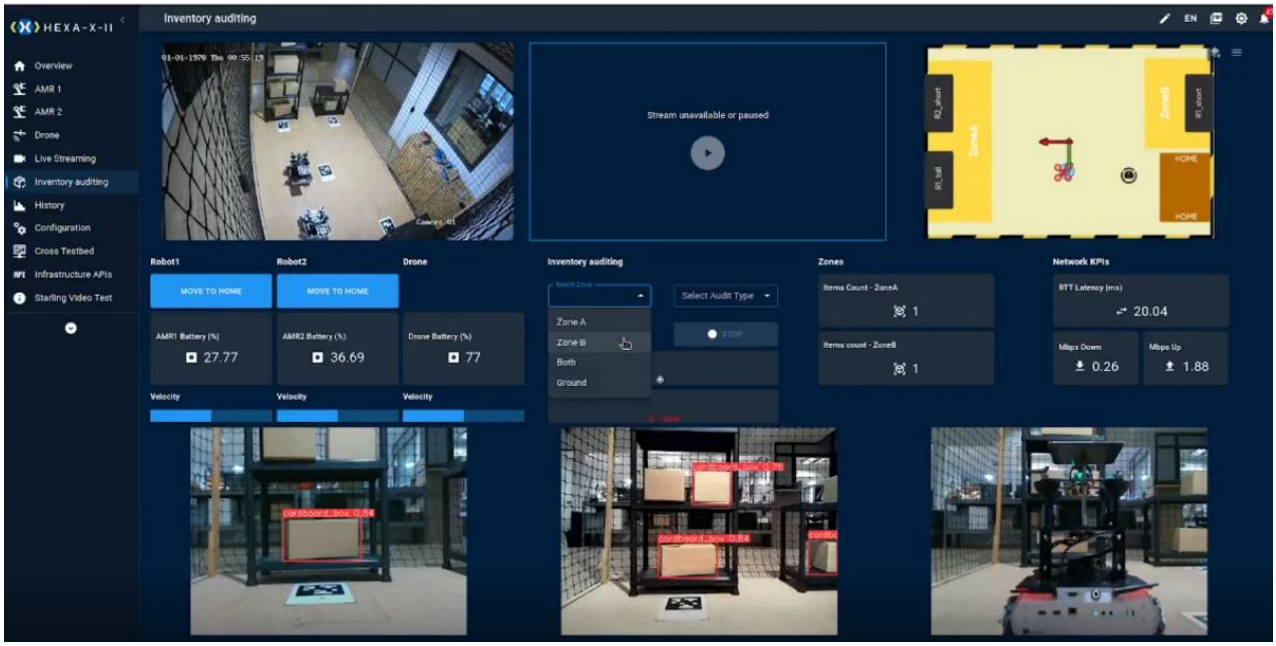

Figure 5-1 Warehouse inventory management application User Interface

These innovations were tested both within the main System PoC and through complementary Component PoCs, focusing on real-time performance and sustainable operations.

Key radio and device enablers featured in Component PoC-C include:

- AI-native air interfaces and ML-based channel state feedback in multi-vendor scenarios
- Advanced sensing algorithms and flexible transceiver design
- Real-time radio propagation measurements for modeling and optimization
- Crowd-detectable, zero-energy proximity sensors and energy-harvesting devices
- End-to-end extended reality (XR) service integration

System PoC #C extends previous capabilities through:

- Exposure of new CAMARA-compliant APIs (e.g., QoD, device status/density, localization) via the Application Enablement Platform (Figure 5-2).
- Integration Fabric for orchestrating services across heterogeneous and distributed domains
- Multi-agent reinforcement learning for multi-cluster orchestration and dynamic resource allocation
- Cognitive closed-loop automation driven by AI-based predictive analytics
- Deployment of energy-harvesting proximity sensors in a warehouse setting for real-time digital twin updates and optimized functionality allocation

Two collaborative robotics scenarios were used to demonstrate these features:

1. Warehouse Inventory Management with Cobots – the main System PoC scenario, evolved from System PoC #A
2. Cobot-powered Video Surveillance – building on Component PoC #B.1 capabilities

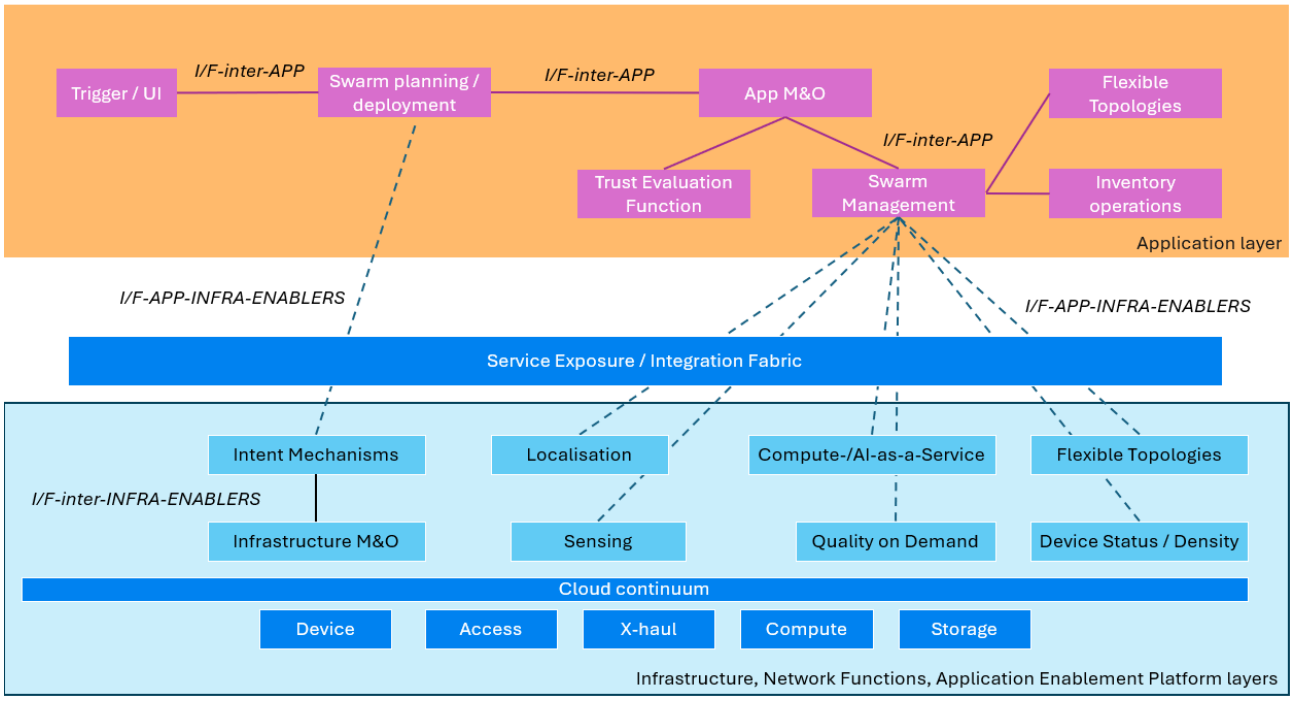

Figure 5-2 Simplified view of the Warehouse inventory management application components, interfaces with E2E system's Application Enablement Platform exposed capabilities.

One of the driving scenarios of the final evolution of the System-PoC comprised a multi-domain, synergetic monitoring and orchestration scenario. This scenario demonstrates dynamic management of services across multiple sites, ensuring efficient resource allocation considering strict service-level requirements.

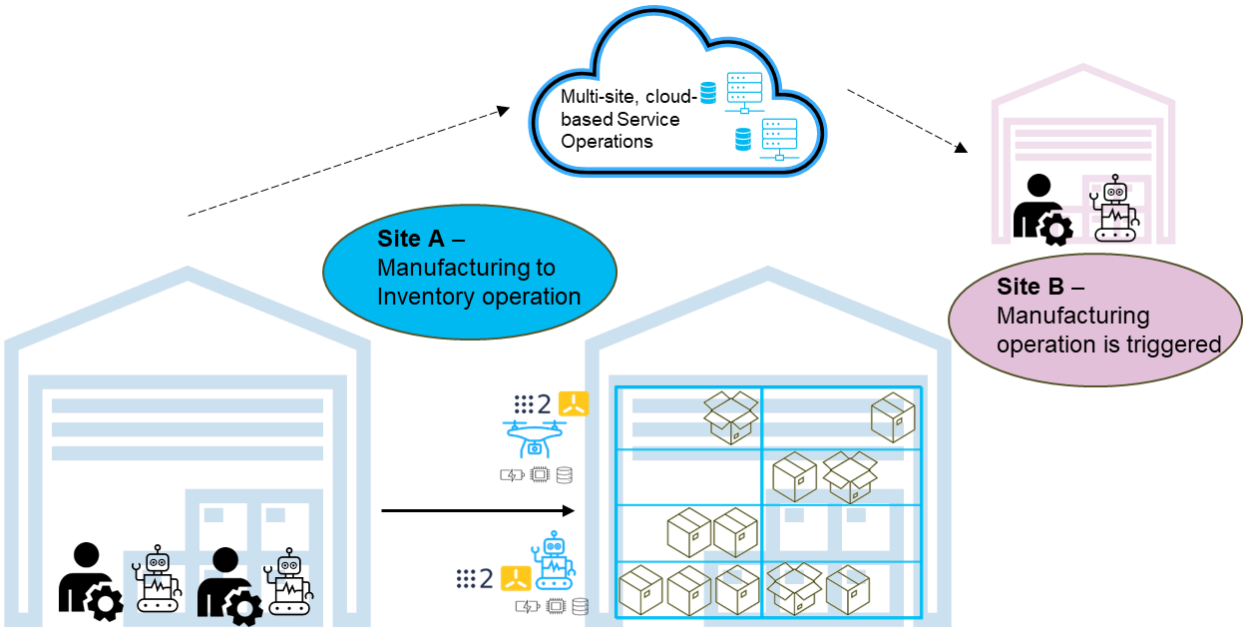

Figure 5-3 Multi-domain synergetic monitoring and orchestration scenario of System-PoC #C

The following timeline shows the evolution of the above-described System PoC iterations:

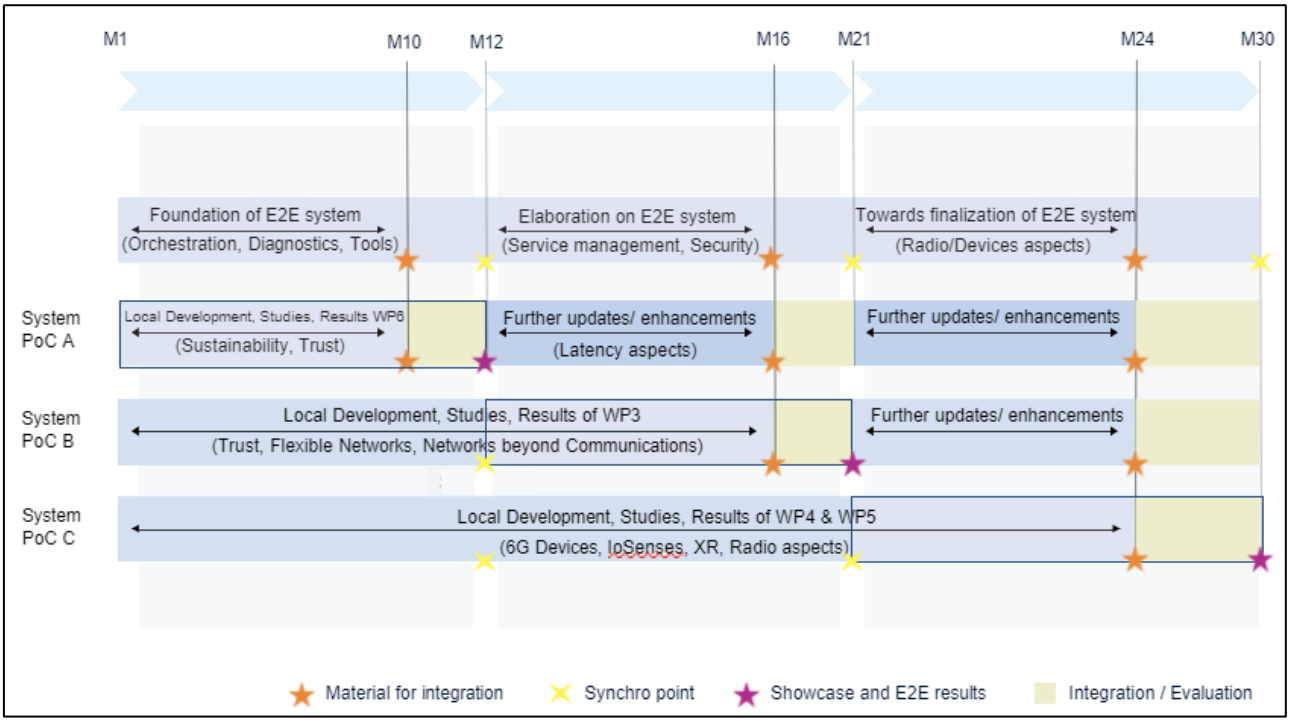

Figure 5-4 Timing of Hexa-X-II System PoCs

Together, these demonstrations bridged conceptual architecture with real-world implementation, validating the adaptability and maturity of the Hexa-X-II 6G vision. The final iteration, System PoC #C, is covered in

Deliverable D2.6 [HEX225-D26] and completes the evaluation phase with integrated testing of all major system enablers in complex multi-stakeholder settings.

During the last phase of the System-PoC development a comprehensive mapping between the E2E system design and the PoC architecture has also taken place (Figure 5-5).

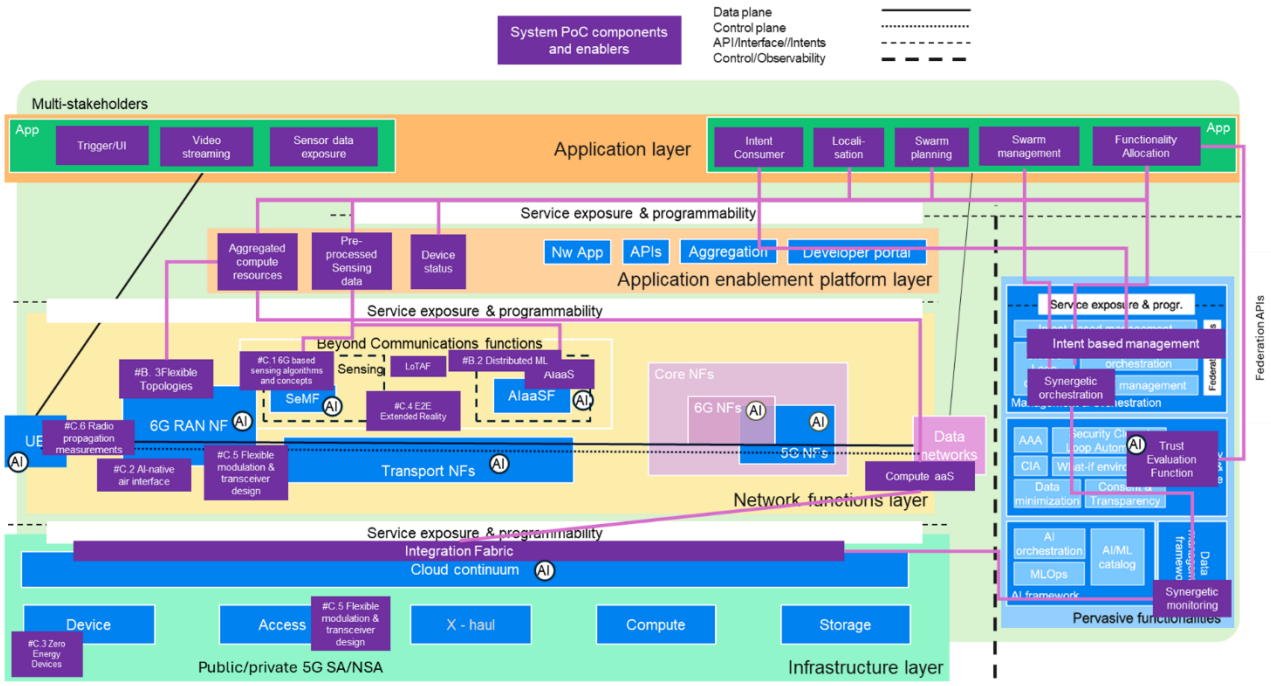

Figure 5-5 System-PoC #C components mapping to 6G system blueprint

Last but not least, numerous validation activities are reported in this deliverable, including System- (Figure 5-6) and Component-PoCs' evaluation (6G-based sensing, AI-native Air Interface, etc., see Figure 5-7).

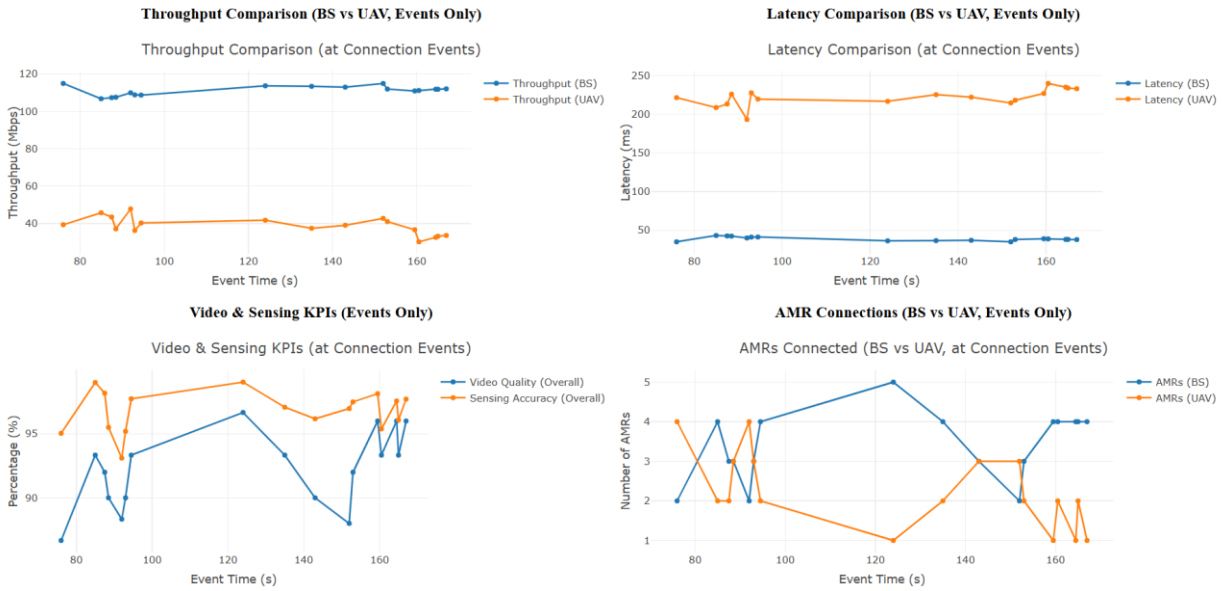

Figure 5-6 Performance Evaluation of Warehouse Inventory Management Architecture with Ground AMRs and Flextop UAVs

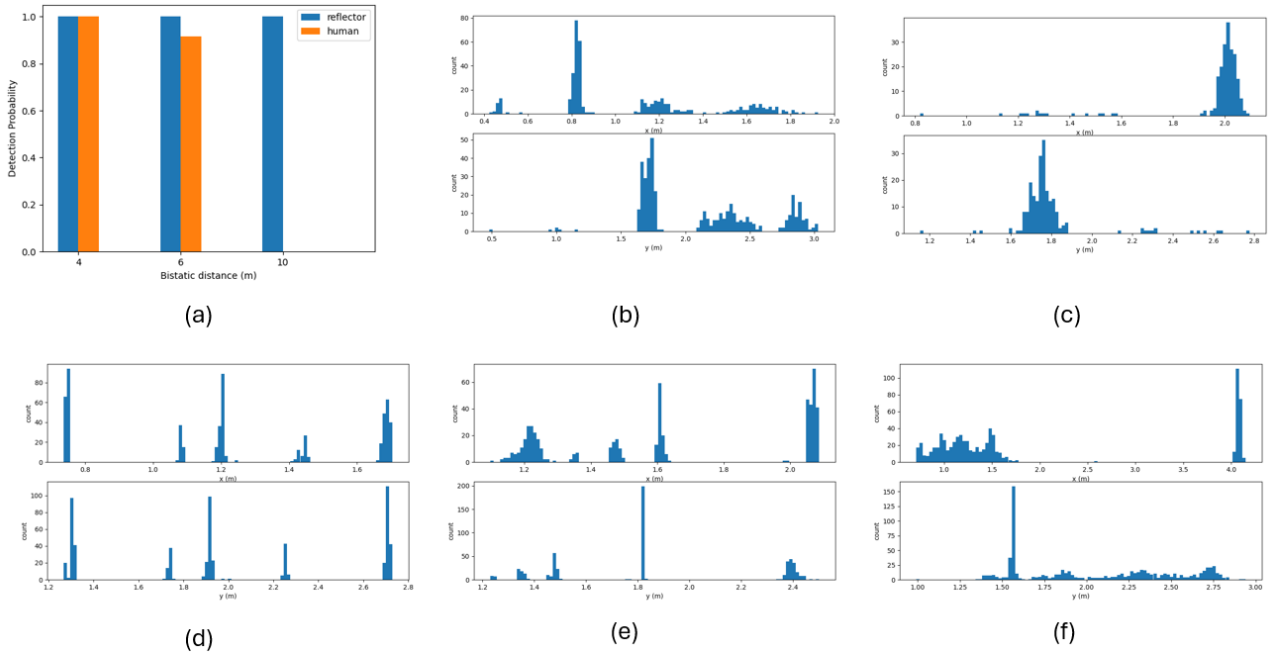

Figure 5-7 6G-based sensing results related to a) Detection percentile for human and reflector in different bi-static distance. Detection histogram based on raw signal detection before post processing for b) a human target at 4 m, c) at 6 m, d) a reflector target at 4 m, e) at 6 m, f) at 10 m bi-static distance.

6. Summary

This document, Deliverable D7.6, serves as the final comprehensive report on the Hexa-X-II project's extensive dissemination, communication, and clustering activities, from its inception in January 2023 to its conclusion in June 2025. It builds upon the interim report (D7.3) and meticulously assesses the project's progress against the detailed communication plan established in Deliverable D7.2. This report provides a transparent account of the project's remarkable achievements, evaluating its impact through quantitative progress across various key performance indicators (KPIs) and key value indicators (KVIs).

The Hexa-X-II consortium, a holistic flagship initiative, has consistently demonstrated a proactive approach to engaging its diverse stakeholders and informing the broader public about its groundbreaking research towards a 6G network platform. The project has successfully inspired digital transformation by fostering collaborative action to meet societal and ecosystem needs with novel 6G services. The commitment and resources invested by the consortium have resulted in significant overachievements across most communication and dissemination categories.

The project's success is evident in several core areas of communication and outreach, demonstrating a profound impact and the efficacy of its integrated approach. The Hexa-X-II website (https://hexa-x-ii.eu/) was successfully established and served as the central hub for information dissemination, effectively showcasing project updates, news, and resource materials. The website garnered over 19,000 visits during the project lifetime, demonstrating strong engagement that frequently exceeded nearly all set targets for website performance. The communications team proactively published over 38 news articles covering a wide range of topics, significantly driving traffic and engagement.

Hexa-X-II cultivated a powerful social media footprint by leveraging X, LinkedIn, and YouTube platforms. The project's social media engagement saw exponential growth compared to initial targets. Notably, Hexa-X-II attracted 1,488 followers on LinkedIn, far surpassing the initial goal of 100. The total social media impressions across all platforms reached 282,672, with an impressive overall engagement rate of 10.85%. This strong online visibility was key in raising awareness about the Hexa-X-II initiative and its developments.

The project successfully implemented a periodic newsletter to keep subscribers informed. Nine newsletters were distributed, significantly exceeding the target of two per year (equivalent to five over the project duration). The newsletter garnered over 300 subscribers, demonstrating over 50% overachievement against the initial target of 200 recipients. Press releases were also utilised. With five press releases during the project lifetime, the project highlighted different aspects of the project.

Hexa-X-II maintained a prominent presence at key academic and industry events, fostering discourse and collaboration within the 6G research community. Project members actively participated in more than 70 industrial and scientific exhibitions, events, workshops, webinars, etc., significantly exceeding the target of 10. The project also led to organising workshops, including five iterations of the '6G Series Workshop' at major conferences like EuCNC & 6G Summit, and six joint SNS Stream B workshops. These events provided critical platforms for international dialogue and collaboration among global 6G initiatives, showcasing European commitment to shaping the future of 6G.

The project delivered an impressive number of scientific contributions. While the initial commitment was for more than 200 academic or other official publications, Hexa-X-II achieved over 210 accepted/submitted scientific contributions by the project's end, encompassing journal articles, magazine articles, and conference papers. This rich body of work significantly contributes to global knowledge of 6G technology. The project reported 30 patent applications during its lifetime, contributing valuable intellectual property to the evolving 6G landscape.

Ongoing dialogues with diverse stakeholders were intensified, ensuring project alignment with industry needs and regulatory frameworks. The "Get Involved" initiative successfully engaged SMEs and startups, providing

a platform for their contributions and fostering an inclusive 6G development environment. This initiative saw 10 completed applications from 7 countries to the Open Call, demonstrating strong global interest.

Hexa-X-II established robust cooperation with related initiatives and projects, cultivating a collaborative environment for shared progress in 6G development. The project actively engaged with various Working Groups within the SNS JU and the 6G Infrastructure Association, ensuring strategic alignment and leveraging collective expertise. This collaborative approach has been crucial for developing a sustainable, inclusive, and trustworthy 6G platform. Initiatives targeting the broader public, including workshops and webinars, were successfully conducted to educate and stimulate interest in 6G technology.

In conclusion, the Hexa-X-II project has made significant strides in its dissemination and communication activities, consistently meeting and exceeding its targets in many places. The strategic adjustments to the communication plan and the collective effort of the project management team and all consortium members have ensured that Hexa-X-II is at the forefront of the 6G research and development landscape, its deliverables continuing to drive impact and a globally aligned 6G era. The extensive work on system PoCs has further validated the feasibility of a fully integrated 6G architecture, showcasing critical 6G capabilities and demonstrating the project's commitment to tangible outcomes.

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A. Appendix

Different Website and Social Media statistics and snapshots of Google Analytics and social media posts on X (formerly Twitter) and LinkedIn are presented in this Appendix.

Figure A-1: Performance Summary across social media channels.

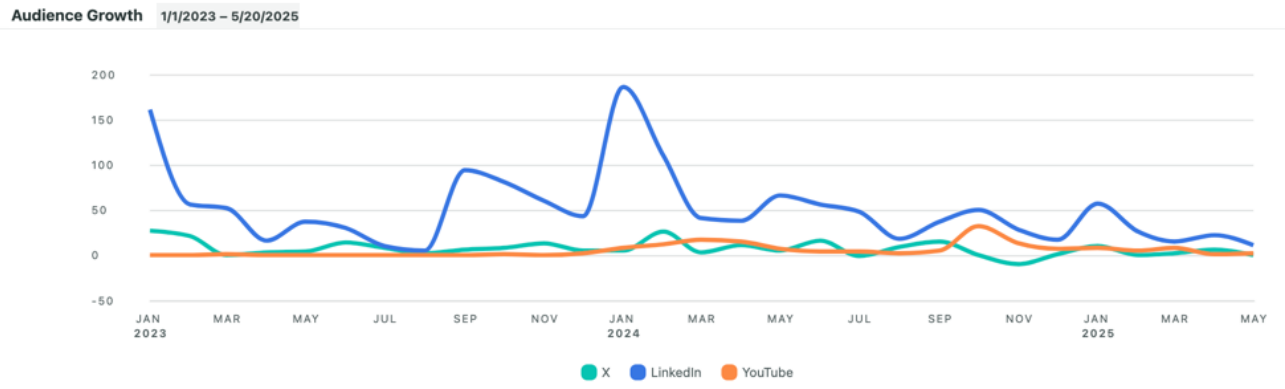
Profiles

Review your aggregate profile and page metrics from the selected time period.

↑ Ascending by Profile

Profile	Audience	Net Audience Growth	Published Posts	Impressions	Engagements	Engagement Rate (per Impression)	Video Views
Reporting Period Jan 1, 2023 – May 20, 2025	**1,813** –	**1,834** ↗ –	**519** ↗ –	**163,304** ↗ –	**13,331** ↗ –	**7.9%** ↗ –	**16,291** –
X @Hexa_X_II	209	209	230	16,489	1,433	8.7%	736
Hexa-X-II	1,448	1,471	210	146,815	11,505	7.8%	9,575
Hexa-X-II Project	156	154	79	N/A	393	N/A	5,980

Figure A-2: Aggregate profile and page metrics across social media channels.



Audience Metrics	Totals
Audience	**1,813**
Net Audience Growth	**1,834**
X Net Follower Growth	209
LinkedIn Net Follower Growth	1,471
YouTube Net Subscriber Growth	154

Figure A-3: Audience growth across social media channels.

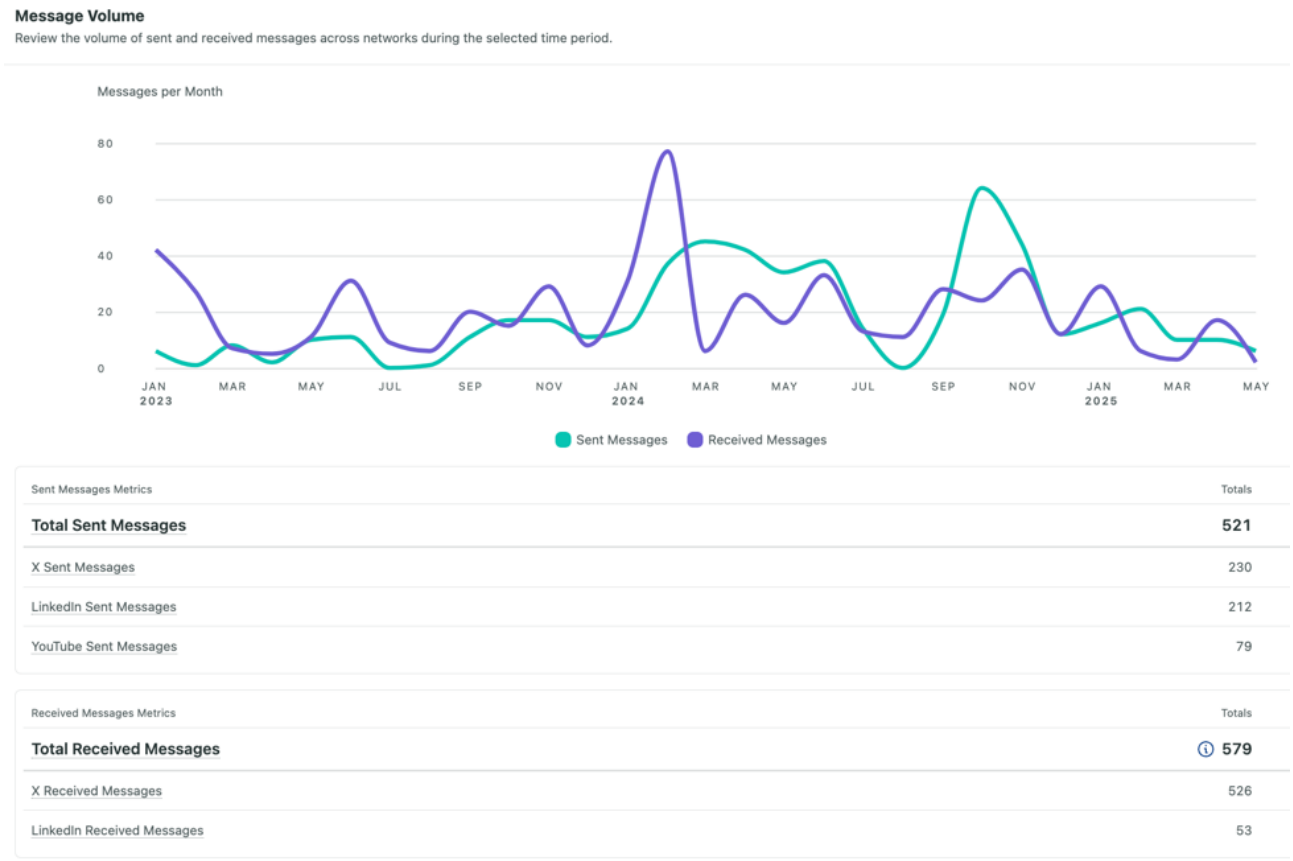


Figure A-4: Number of posts made and comments received.

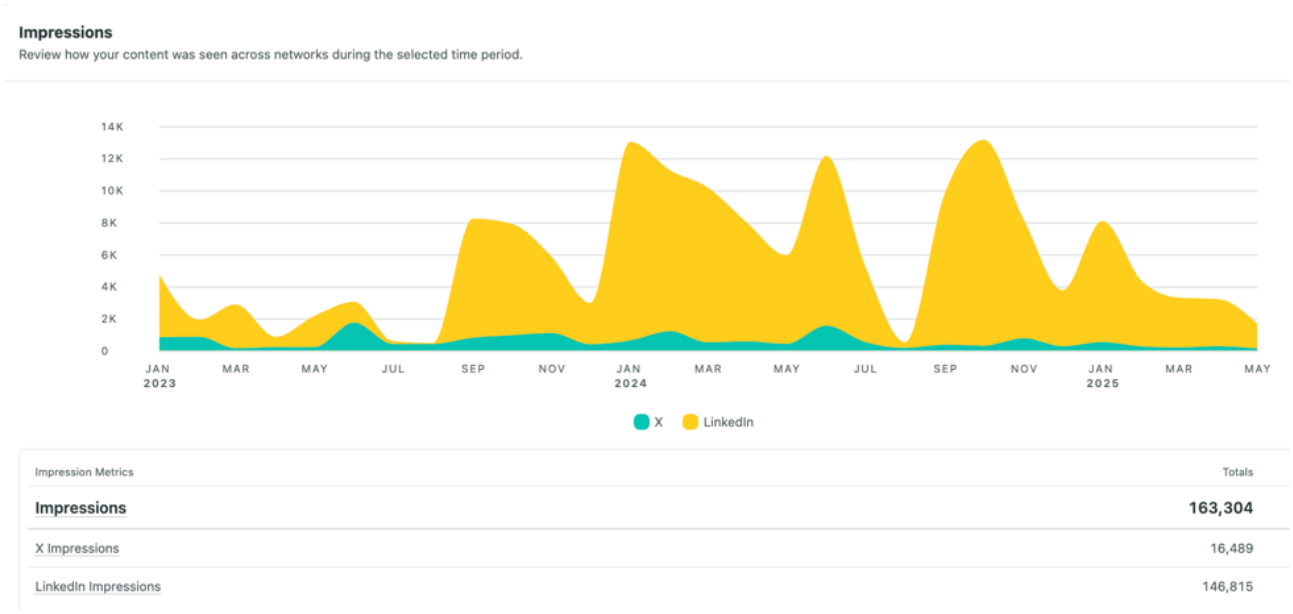
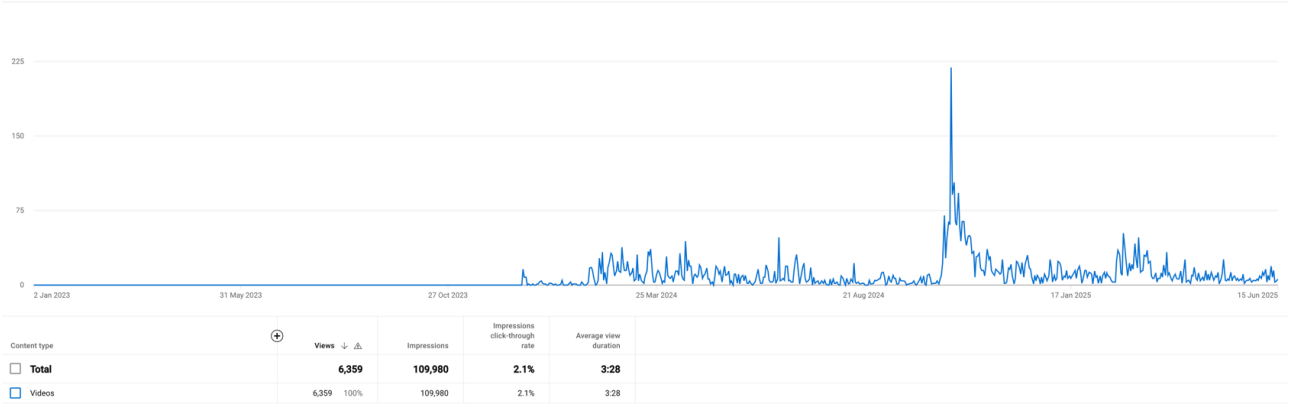
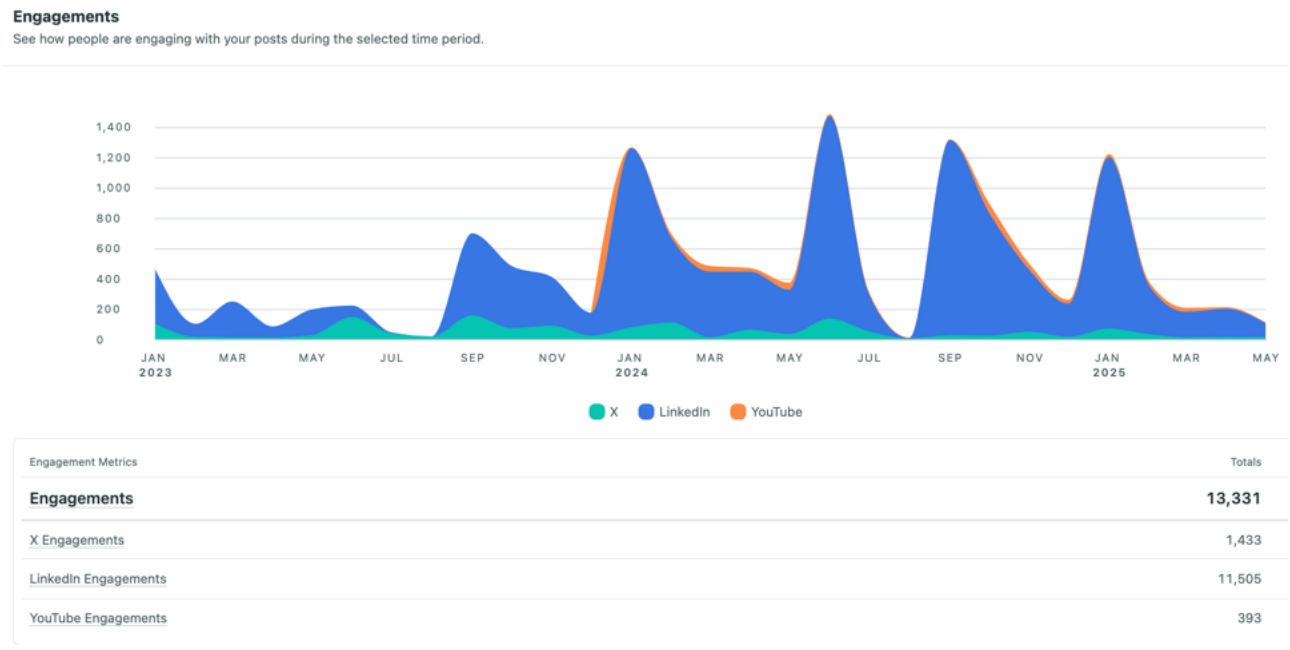


Figure A-5: Impressions across X and LinkedIn channels.



Content type	Views	Impressions	Impressions click-through rate	Average view duration
Total	6,359	109,980	2.1%	3:28
Videos	6,359 100%	109,980	2.1%	3:28

Figure *A*-6: Impressions on the YouTube channel.



Engagement Metrics	Totals
Engagements	**13,331**
X Engagements	1,433
LinkedIn Engagements	11,505
YouTube Engagements	393

Figure *A*-7: Engagement across social media channels.

A.1 Snapshot of Social Media Posts

On X

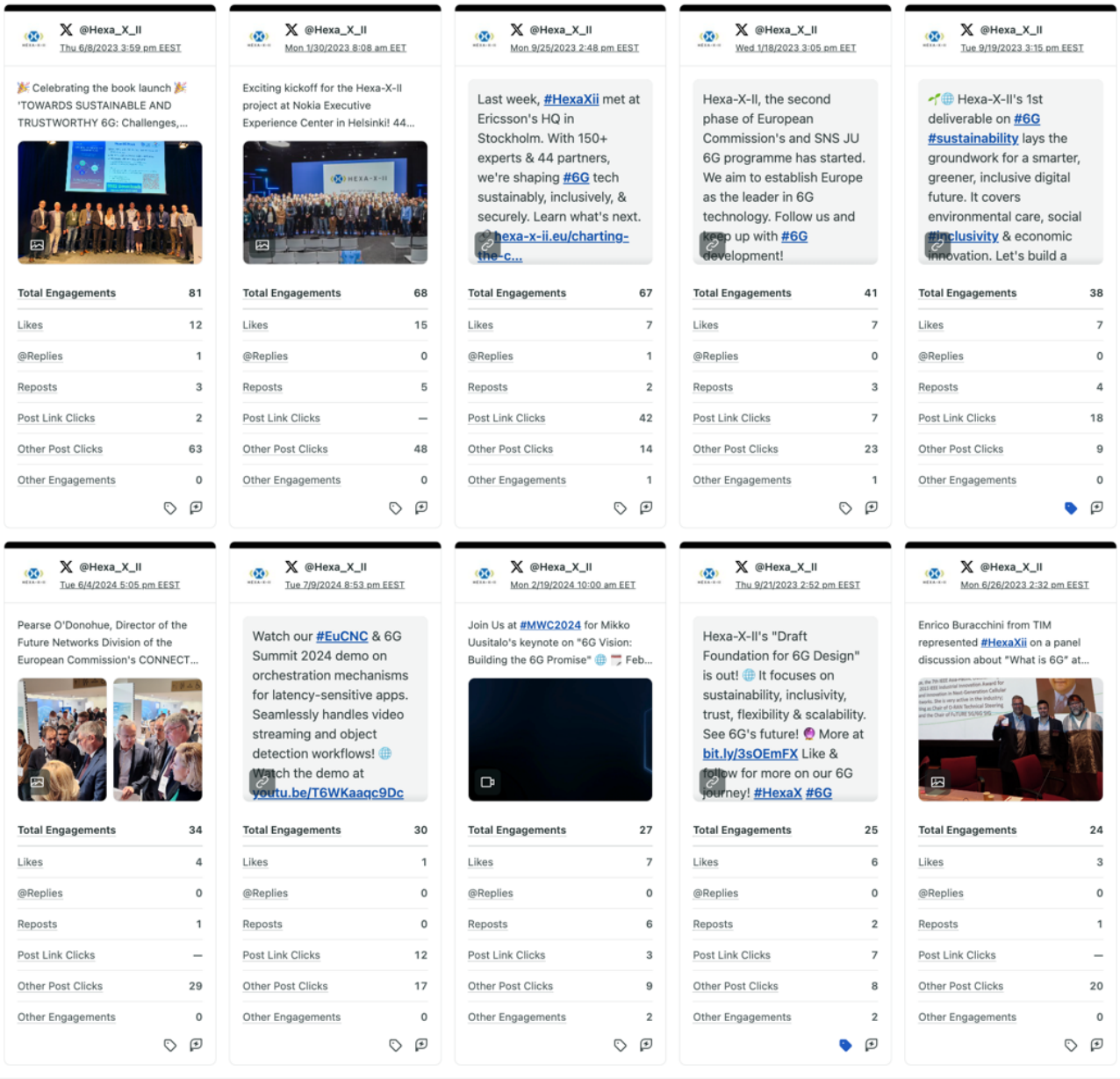


Figure *A*-8: Snapshot of X channel.

On LinkedIn

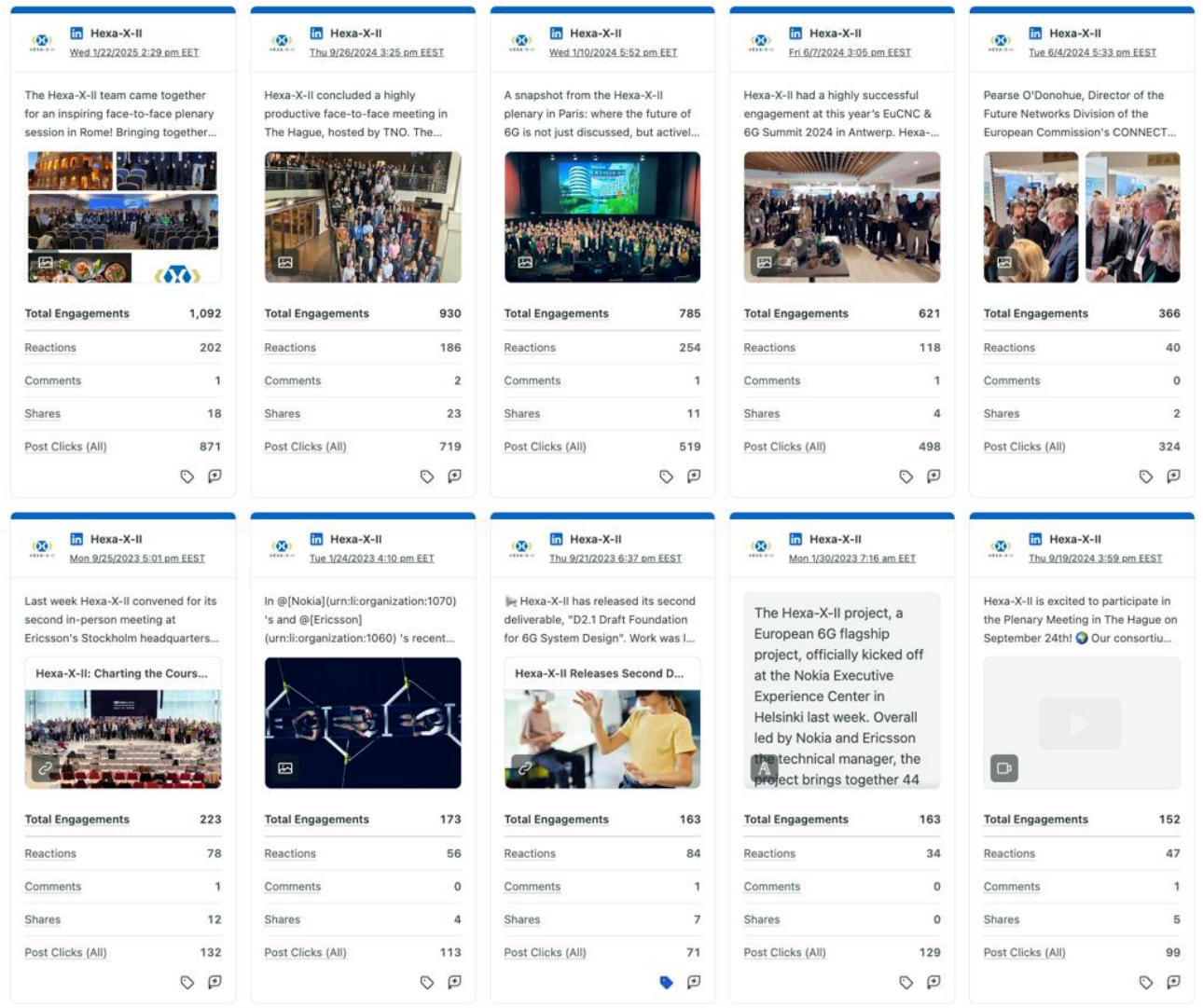
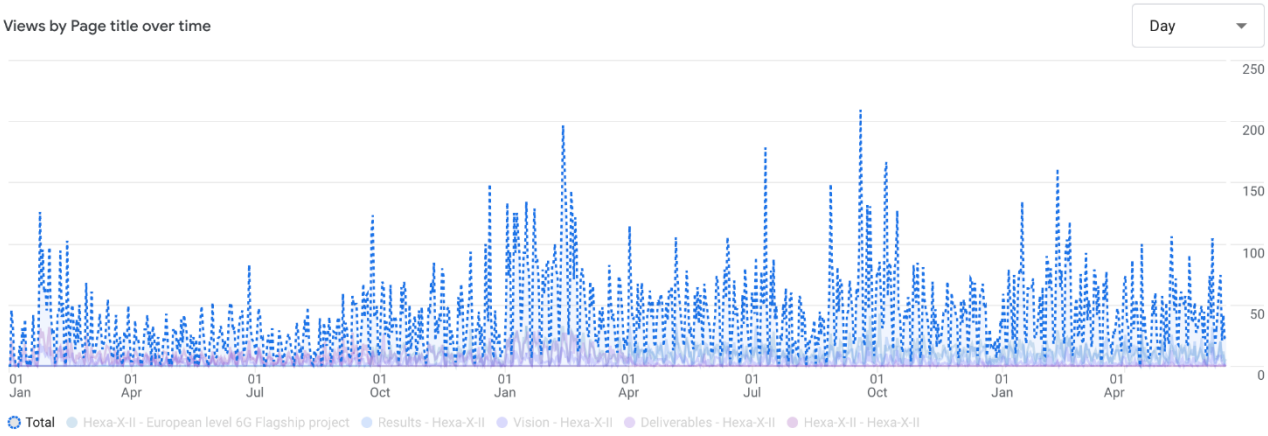


Figure *A*-9: Snapshot of LinkedIn channel.

Evolution of page views over time



Search... Rows per page: 10 Go to: 1 1-10 of 688

	Page title	Total users	Views	Sessions	Average session duration	Views per session
	Total	7,903 100% of total	35,343 100% of total	20,634 100% of total	4m 17s Avg 0%	1.71 Avg 0%
1	Hexa-X-II - European level 6G Flagship project	3,150 (39.86%)	6,626 (18.75%)	6,253 (30.3%)	1m 37s	1.06
2	Results - Hexa-X-II	1,411 (17.85%)	3,984 (11.27%)	4,284 (20.76%)	3m 31s	0.93
3	Vision - Hexa-X-II	1,599 (20.23%)	2,912 (8.24%)	2,444 (11.84%)	2m 03s	1.19
4	Deliverables - Hexa-X-II	1,083 (13.7%)	2,728 (7.72%)	2,951 (14.3%)	3m 17s	0.92
5	Hexa-X-II - Hexa-X-II	908 (11.49%)	1,999 (5.66%)	1,844 (8.94%)	1m 52s	1.08
6	Consortium - Hexa-X-II	1,108 (14.02%)	1,742 (4.93%)	1,694 (8.21%)	2m 15s	1.03
7	News - Hexa-X-II	748 (9.46%)	1,546 (4.37%)	1,384 (6.71%)	1m 16s	1.12
8	The 6G series workshop by Hexa-X-II Feb 2024	671 (8.49%)	1,384 (3.92%)	1,452 (7.04%)	3m 46s	0.95
9	Objectives - Hexa-X-II	834 (10.55%)	1,287 (3.64%)	1,164 (5.64%)	5m 25s	1.11
10	SNS ISAC Workshop - Hexa-X-II	731 (9.25%)	1,207 (3.42%)	1,123 (5.44%)	2m 03s	1.07

Figure *A*-10: Snapshot of the evolution of views by page title over time on the Hexa-X-II website.