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Open Continuum

D3.3 Community Building and Communication Strategy Report V2

Work package	WP 3
Task	Task 3.2
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Deliverable lead	MARTEL
Version	1
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Abstract	This deliverable reports the activities during the second reporting period (T3.1, T3.2, T3.3 and T3.4).
Keywords	IoT, Edge, Cloud, EUCloudEdgeIoT.eu, Computing Continuum

Document Revision History

Version	Date	Description of change	List of contributor(s)
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V0.2	14/08/2024	Version ready for internal review	Catarina Pereira (Martel)
V0.3	27/08/2024	Review	Rosaria Rossini (ECl)
V0.4	02/09/2024	Review	Paolo Azzoni (INS)

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Dissemination Level		
PU	Public, fully open, e.g. web	**X**
SEN	Sensitive, limited under the conditions of the Grant Agreement	
Classified R-UE/ EU-R	EU RESTRICTED under the Commission Decision No2015/ 444	
Classified C-UE/ EU-C	EU CONFIDENTIAL under the Commission Decision No2015/ 444	
Classified S-UE/ EU-S	EU SECRET under the Commission Decision No2015/ 444	

**** R: Document, report (excluding the periodic and final reports)***

DEM: Demonstrator, pilot, prototype, plan designs

DEC: Websites, patents filing, press & media actions, videos, etc.

DATA: Data sets, microdata, etc

DMP: Data management plan

ETHICS: Deliverables related to ethics issues.

SECURITY: Deliverables related to security issues

OTHER: Software, technical diagram, algorithms, models, etc.

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EXECUTIVE SUMMARY

The Community Building and Community Strategy Report (Deliverable D3.3) provides a comprehensive overview of the activities and strategies implemented by the Open Continuum project during its second and final reporting period. The primary objective of this deliverable is to document the efforts made in building a vibrant and sustainable community within the European Cloud, Edge, and IoT (CEI) continuum, supporting the overarching goals of the EUCloudEdgeIoT initiative.

Purpose and Objectives

- The deliverable outlines the community-building and communication activities undertaken to support the development of an open and interoperable ecosystem across the CEI continuum. The key objectives include engaging a wide range of stakeholders, promoting collaboration, and enhancing the visibility and impact of the initiative through effective communication strategies.

Key Activities and Performance

- The report details various activities including the creation and dissemination of branding and communication materials, organisation of webinars, workshops, and events, and active participation in relevant industry forums. The project successfully engaged 54 projects and seven initiatives through its Communication Task Force (TF6), conducted monthly meetings, and supported other task forces in event planning and dissemination efforts.

Impact and Outreach

- The project's communication efforts resulted in significant outreach, with the EUCEI website attracting over 2,300 unique visitors and social media channels exceeding key performance indicators. The series of RIAs Showcase Webinars and other events attracted hundreds of participants, showcasing the project's success in fostering collaboration and knowledge exchange across the CEI ecosystem.

Future Directions

- Based on the outcomes of these activities, the report offers recommendations for future initiatives, such as Nexus Forum.

This deliverable serves as a final account of the Open Continuum project's efforts in community building, providing a strategic foundation for future endeavours within the EUCloudEdgeIoT initiative.

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ABBREVIATIONS

EUCEI	EUCloudEdgeIoT
CEI	Cloud, Edge and IoT
IoT	Internet of Things
WP	Work Package
TF	Task Force
CSA	Coordination and Support Action
RIA	Research and Innovation Action

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1 INTRODUCTION

1.1 ABOUT

1.1.1 European Cloud Computing Community

The European Commission, within its Digital Decade[1] policy programme, identified four cardinal points as objectives to reach within the year 2030 with the overarching goal of ensuring European digital sovereignty: (1) digital skills, (2) Secure and Sustainable Digital Infrastructures; (3) Business Digital Transformation; and (4) Digitalization of Public Services. The Digital Compass places an emphasis on systemic, challenging goals for 2030 that are both clear and measurable (such as the deployment of 10,000 climate neutral, highly secure edge nodes in the EU or the adoption of cloud computing by 75% of European businesses).

In Europe, there are numerous ongoing cloud computing initiatives that are all working toward the same objective but using different strategies and involving various industry sectors. As a result, having a hub of information is essential. In order to close this knowledge gap in the cloud, edge, and IoT communities, Open Continuum was created. Assisting computing continuum stakeholders in recognizing and resolving the conceptual, practical, and social issues that are raised by such targets is the aim of Open Continuum.

1.1.2 The European Cloud, Edge and IoT Continuum Joint Initiative with Unlock CEI

The Open Continuum and Unlock-CEI projects created the umbrella initiative known as the European Cloud, Edge and IoT Continuum Initiative (EUCloudEdgeIoT.eu or EUCEI) to coordinate and support the European Cloud, Edge and IoT continuum.
The objective of EUCloudEdgeIoT.eu is to understand the supply and demand value chains in Europe in order to fully realise the potential of these transformative technologies. In line with expectations, Open Continuum is promoting an open ecosystem for strategic autonomy and interoperability in Europe along the entire computing continuum on the supply side. On the demand side, Unlock-CEI is assisting in accelerating the deployment of the Cloud-Edge-IoT (CEI) computing continuum. The EUCEI initiative will restore European competitiveness by collaborating to build a seamless, secure, sovereign, and long-lasting internet infrastructure.

For the next generation of Cloud-Edge-IoT, EUCEI is bringing an inclusive vision that supports concrete recommendations and solutions for academics, business, and policymakers. The initiative aims to lead its stakeholders toward defining an integrated, open ecosystem based on open source, open standards, and the seamless and efficient blending of cloud, IoT, and edge through effective partnerships.

[1] European Commission. Europe's Digital Decade: digital targets for 2030. Available at https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en

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FIGURE 1: EUCLOUDEDGEIOT COORDINATION AND SUPPORT ACTIONS

1.1.3 Dissemination and Communication Objectives, TF6 and Cooperation with Unlock-CEI CSA

The Open Continuum dissemination and communication activities are overarching throughout the whole duration of the project. They aim to ensure the development of an open ecosystem for European strategic autonomy and interoperability across the Cloud, Edge, and IoT domains, with a specific focus on the supply side of the computing continuum.

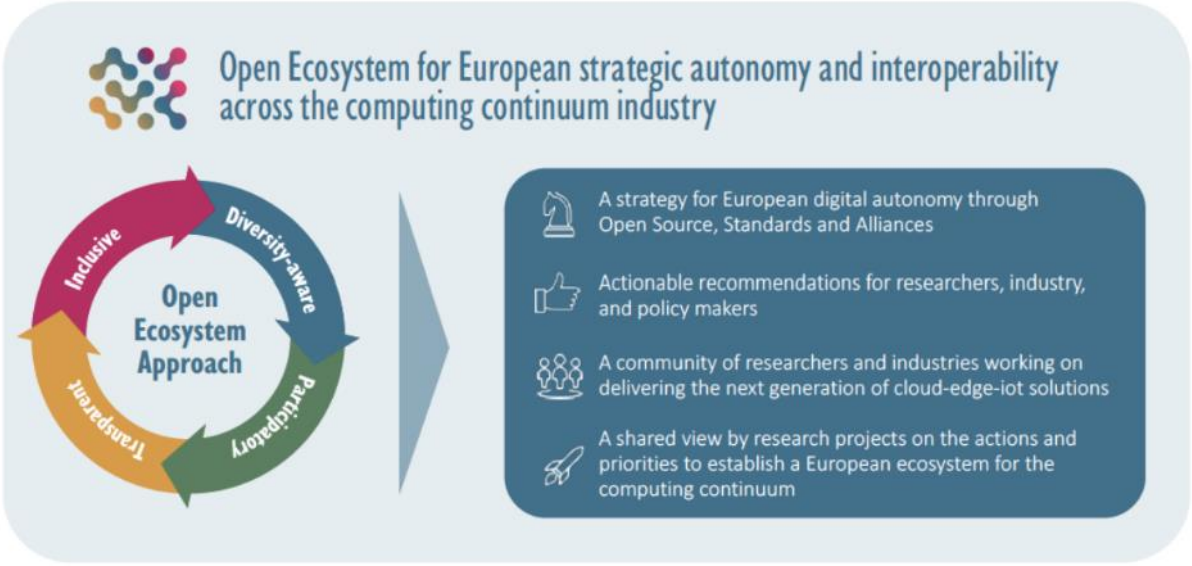

FIGURE 2: OPEN CONTINUUM'S APPROACH

Through the European Cloud Edge & IoT Continuum initiative, Open Continuum's main mission is to ensure the development of a vibrant and disruptive supply-side community as an open, inclusive, sustainable, and dynamic ecosystem that will lead to an increased and durable impact

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within Horizon Europe. Through targeted activities coordinated across all Work Packages and led by WP3, Open Continuum will reach and engage different target groups, including industry, researchers (both corporate and academic), SMEs, innovators, and users' communities in Europe and possibly beyond.

This breaks down into the following objectives:

- Create a vibrant and disruptive framework engaging large target groups in Europe and beyond.
- Run extensive dissemination and communication to help amplify the project and community efforts through a rich set of tools and actions for awareness creation and engagement of top-notch players.
- Organise events to promote the computing continuum community efforts overall and embrace related initiatives by coordinating and fostering know-how exchange and networking.
- Engage key computing continuum experts to advise the project and contribute to events.
- Strengthen awareness and collaboration between research and industry on key Cloud-Edge-IoT community topics such as interoperability, trustworthiness, architectures for data spaces, and cognitive continuum computing.

Open Continuum collaborates with the Unlock CEI CSA towards these goals through the "Communications" Task Force. Each project tries to have equal efforts on all EUCEI channels and whenever possible communicates as one (EUCloudEdgeIoT.eu). Throughout this document, the responsibilities of each project will be described whenever possible.

More details on the dissemination and communication strategy for EUCEI can be read on D3.1" Community Building and Communication Strategy and Plan".

1.2 STRUCTURE OF DELIVERABLE

This deliverable aims to summarise the Open Continuum project's dissemination and communication activities up to the project's conclusion. In light of the findings, it provides a comprehensive overview of the strategies employed and their effectiveness. The deliverable is structured as follows:

- **Section 1 - Introduction:** Provides an overview of the EUCloudEdgeIoT initiative and how Open Continuum collaborates with Unlock CEI to achieve its goals, primarily in Task Force 6 "Communication."
- **Section 2 - Activities and Performance:** Describes the dissemination and communication activities undertaken during the second and final period of the project, as well as the outcomes achieved.
- **Section 3 - Key Performance Indicators (KPIs):** Presents the project's key performance indicators in terms of communication, dissemination, and liaison with EU initiatives, evaluating the effectiveness of the activities and strategies employed.

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- **Section 4 - Conclusions and Recommendations:** Summarises the main conclusions drawn from the project's activities and provides recommendations for future projects that will continue the work of Open Continuum in terms of communication and community building.

This deliverable provides a complete account of results up to the project's conclusion, ensuring a detailed and final overview of the Open Continuum WP3 activities.

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2 ACTIVITIES AND PERFORMANCE

2.1 BRANDING AND COMMUNICATION KIT

Below are some updates of the communication kit, mainly in terms of views.

Project Video

Publication date: July 19, 2023
Views: 202

The purpose of this video is to introduce the EUCEI initiative to the general public and explain why it is important in this day and age, as well as to provide context for the rise of the Computing Continuum through the convergence of Cloud, Edge, and IoT. The video contains excerpts from interviews conducted by Open Continuum with Dr. Max Lemke, Albert Seubers, and Giovanni Rimassa (Open Continuum coordination team), and Golboo Pourabdollahian and Brendan Rowan (Unlock CEI).

Apart from conducting the interviews, Open Continuum also created the video, working from a script written by Unlock CEI. The video is available online here.

No updates were done on the video.

Project Brochure

Publication date: May 16, 2023 (v1)
Views: 452
Downloads: 251

The goal of this brochure is to present the EUCEI initiative, as well as its landscape and activities, while also introducing the need for a Cloud, Edge, and IoT continuum. The piece describes the various calls and projects that it supports, as well as the various initiatives that it collaborates with. It also discusses the underlying use cases, the task forces, and the CSAs involved. Finally, it describes the work being done toward a common taxonomy. Open Continuum was primarily responsible for the content and design, while Unlock CEI assisted with the review and final details. The brochure is available for download here.

No updates were done on the brochure.

Research Community Booklet

Publication date: May 16, 2023 (v1); Jul 4, 2024 (v2, v3, v4); April 29, 2024 (v5)
Views: 903
Downloads: 454

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This booklet aims to list all of the calls and projects supported by the EUCEI initiative. Each project's main information (such as project duration, abstract, communication channels, and primary contact point), key exploitable results, and use cases are described.
Open Continuum created a template document and contacted all of the RIAs to collect this information. Open Continuum designed the final document. Open Continuum also ensures that this material is updated whenever a project joins the community or exits (in the latter case, the project is still listed, but its logo is greyed out). Unlock CEI supported in the reviewing process. This material is available for download here.

This booklet has been continuously updated with the new projects that join the EUCEI Community.

FIGURE 3: EUCEI COMMUNICATION KIT

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2.2 COMMUNITY BUILDING

2.2.1 Communication Task Force (TF6)

The TF has reached 54 projects and seven initiatives in total.
The general principle is that TF6 supports all RIAs funded under:

- Cloud Computing: towards a smart cloud computing continuum (ICT-40-2020)
- Software Technologies (ICT-50-2020)
- Next Generation Internet of Things (ICT-56-2020)
- Future European platforms for the Edge: Meta Operating Systems (HORIZON-CL4-2021-DATA-01-05)
- Cognitive Cloud: AI-enabled computing continuum from Cloud to Edge (HORIZON-CL4-2022-DATA-01-02)
- Programming tools for decentralised intelligence and swarms (HORIZON-CL4-2022-DATA-01-03)
- Open source for cloud-based services (HORIZON-CL4-2022-DIGITAL-EMERGING-01-26)

During this period, the RIAS funded under the following call have also been included:

- Cognitive Computing Continuum: Intelligence and automation for more efficient data processing (AI, data and robotics partnership) (HORIZON-CL4-2023-DATA-01-04)

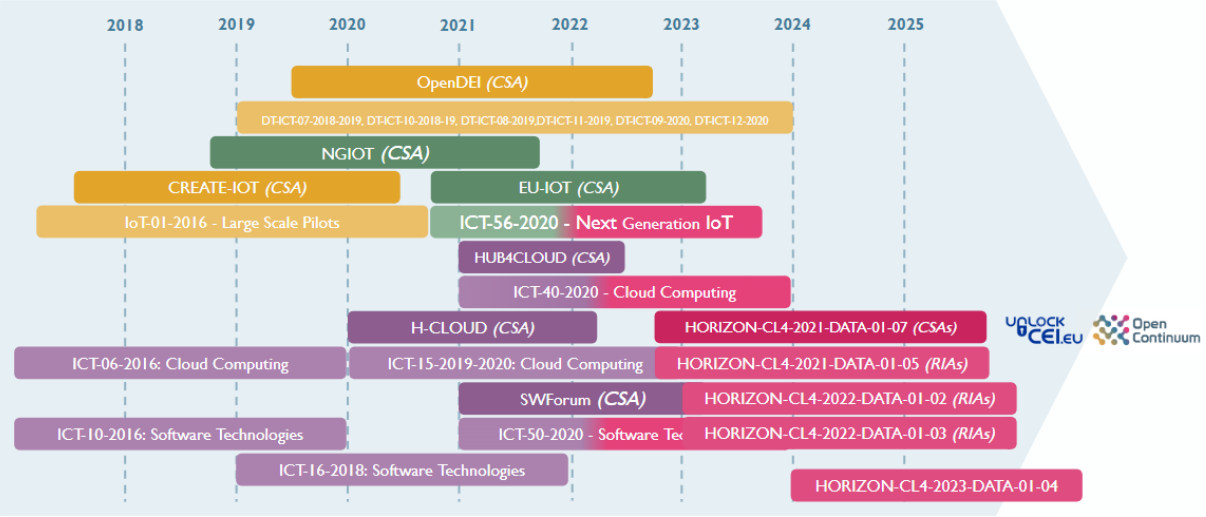

FIGURE 4: EUCEI ECOSYSTEM

If RIAs outside of these calls wanted to join, they contacted TF6, and the leaders evaluated their added value and whether we could make efforts to grow the community. TEADAL, TRUSTEE, SPADE, TRANSACT, CROSSCON and now during this period also EMERALDS and MOBISPACES are EUCEI TF6 projects that were not originally intended to be part of the community.

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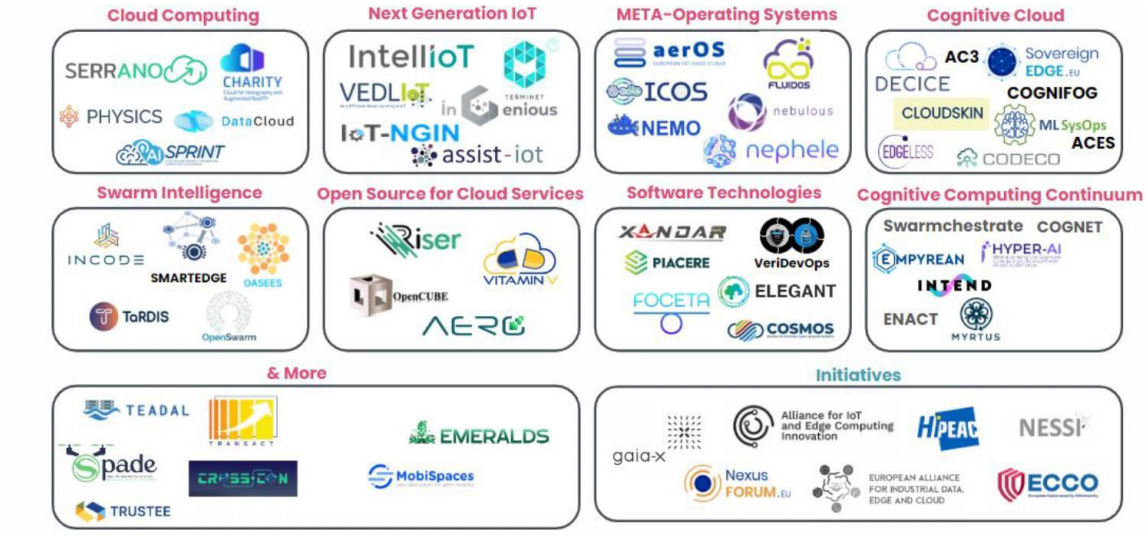

FIGURE 5: EUCEI COMMUNITY OF PROJECTS

Members who joined TF6 were added to the TF6 mailing list, the community mailing list, and the joint repository. In addition, Open Continuum sent them a template to send the information for the website and the RIAs booklet.

Monthly Meetings

This task force has been holding monthly meetings with its members. These are one-hour meetings held on the second Wednesday of each month. The agenda and slides that guide the meeting were created collaboratively by Open Continuum and Unlock CEI Communication and Dissemination leaders for these meetings. Furthermore, Open Continuum developed a template for leaving notes during the meeting, both from EUCEI and from the projects, as well as to include action items for future meetings and register attendance at the meeting. The slides and minutes are available to participants via the joint repository.

Supporting the other Task Forces

TF6 also supported the other task forces and acts as the entry point to the EUCEI Community thus far, as emails to join the various task forces are received at the general email and forwarded to the corresponding TF leaders for follow-up. TF6 adds their contact information to the mailing list and the contacts spreadsheet if they are accepted into the required TF. During this period, TF6 has opened new emails for each TF that are currently available on the website, allowing each TF to manage their own members. TF6 was in charge of including the contacts on the mailing list and the contacts spreadsheet after the TF leader sends them.

Furthermore, Open Continuum has assisted TF1, TF2, and TF3 with event planning, promotion, and further dissemination of outputs.

2.2.2 Joint Repository

Inside this folder, members can access other subfolders with information, including:

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- A folder called "Sign-up for Task Forces" with a spreadsheet inside initially created by Unlock CEI and improved by Open Continuum where projects could apply for the different TFs available in EUCloudEdgeIoT.
- RIAs' Interviews folder is where Open Continuum includes all the edited interviews that were filmed during the Concertation and Consultation event (more about this in a further section).
- The "Events" folder gathers information regarding events EUCEI might attend together with the projects, as well as a calendar spreadsheet developed by Open Continuum for projects to add their events information for dissemination.
- A folder called "EUCEI Brandpack" reunites all the communication materials from EUCloudEdgeIoT, including the tagline that projects can use on their website, templates, logos, and so on.
- "Communication Channels" includes a spreadsheet developed by Open Continuum where participants can include their channels information so it is accessible to all and that all can follow all projects.

2.3 LIAISON WITH EU INITIATIVES

Open Continuum made sure to liaison with several European initiatives in its activities and dissemination. Particularly in events, as it can be seen in sections 3.4 and 3.5, Open Continuum has engaged a lot with initiatives such as:

- MetaOS Projects
- H-CLOUD
- HUB4CLOUD
- SWForum
- OPEN DEI
- EU-IoT
- NGIOT
- 5G PPP
- GAIA-X
- IDSA
- 6G-IA
- AIOTI
- KDT-JU & Chips JU
- Data Spaces Business Alliance
- European Alliance for Processors and Semiconductor Technologies
- TransContinuum Initiative
- EUROHPC
- See also the following figure.

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FIGURE 6: EUCEI LIAISONS WITH EUROPEAN INITIATIVES

More about this activity is detailed in deliverables 1.1 "Towards a strategy for European digital autonomy through Open Source, Standards and Alliances" and 1.2. "A strategy for European digital autonomy through Open Source, Standards and Alliances".

2.4 EXPERT TASK FORCE SET-UP AND ENGAGEMENT

To set-up the task force INSIDE has made contacts to several types of players (large industry, SME/start-up, academic institutes and RTO's, and running projects) with identified technology relations to the edge to cloud continuum. To address the industry domain, we tried to take advantage of our very wide community and network: we contacted more than 3000 industries (both large corporations and SMEs) several times, both through the INSIDE mailing lists (with more than 9000 contacts) and during the events we have organised, but responses have been rather weak. RTO's are more positive and see opportunities for upcoming good research proposals. The best response is from running research, as demonstrated during the RIAs Challenge.

Based on these responses INSIDE recruited 5 experts, primarily from the running research projects during the early fall of 2023. In this recruitment proposals for talks, project liaison and other interactions of interest were identified with the experts, providing a good input for the OpenContinuum execution.

2.5 ORGANISATION OF EVENTS

During this period, the Open Continuum organised (and co-organised) 22 events. Additionally, this period was characterised by the organisation of the Open Continuum Final Conference and the RIAs Showcase Webinars.

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The "EUCloudEdgeIoT.eu RIAs Showcase" webinar series was organised by the Open Continuum CSA and aimed to provide a platform for Research and Innovation Actions (RIAs) supported by the EUCloudEdgeIoT.eu initiative to present their cutting-edge results and advancements in the Cloud-Edge-IoT Computing Continuum.

The series offered insights into the transformative projects contributing to European competitiveness in core internet infrastructures. This was a collaborative webinar series, where EUCEI Task Forces, CSAs and other RIAs, actively participated in organising and presenting these insightful sessions. A dedicated webpage was created to promote these webinars and can be accessed here.

In total, during the project lifetime, the following type of events (as per the DoA) were organised:

- 15 webinars with 993 attendees, that gives an average of 66 attendees per webinar (KPI: 25-30 participants per webinar)
- 4 out of 4 expert consultation workshops with more than 200 attendees (KPI: more than 50 attendees per workshop) - details in D1.1 and D1.2
- 4 out of 4 training events with computing continuum experts on open-source standardisation had 95 attendees, giving an average of 24 attendees per training session (KPI: more than 25 attendees per training session)
- 1 concertation and consultation meeting (that replaced the first edition of the Open Continuum Summit) with 135 attendees.
- The OpenContinuum Final Event in Brussels, with 75 participants.

Each event organised during this period is described in chronological order (from oldest to most recent) below.

2.5.1 Horizon Europe Calls 2024 Information & Brokerage Session: Digital Platforms for the Cloud-Edge-IoT, Innovation through Open Source and Software

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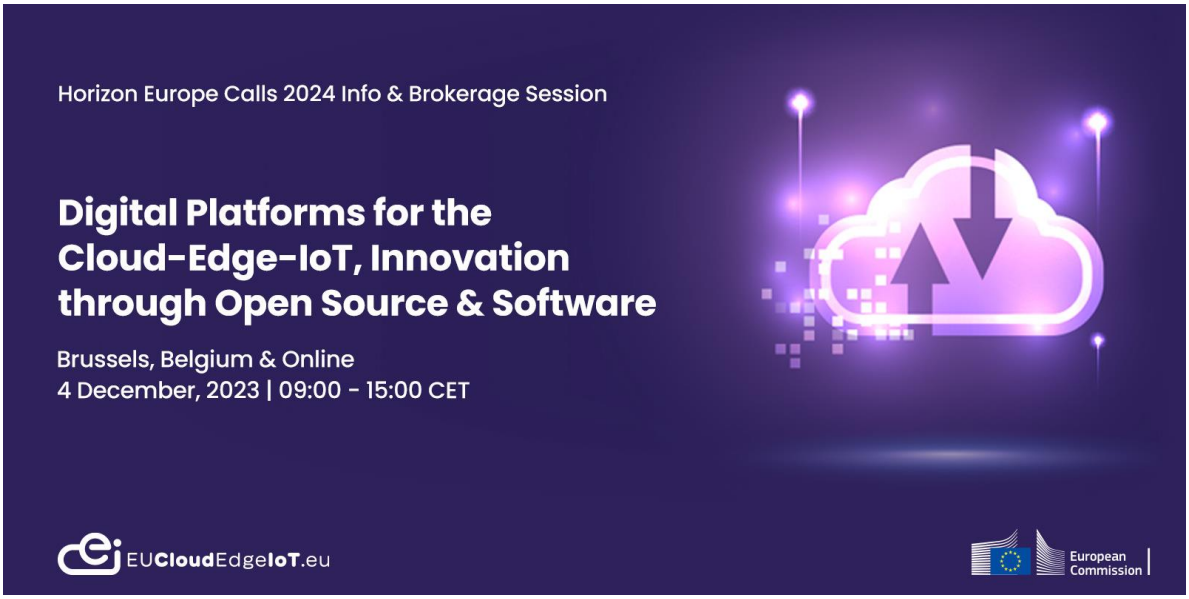

Type of event: Meeting and Webinar

Date: December 4, 2023

Location: Online & Brussels, Belgium

Partner(s) organising: MARTEL
External co-organiser(s): Unlock-CEI

The event was held in hybrid mode (online and in-person in Brussels at SPARKS).
During this event, there was the opportunity to learn about the Horizon Europe 2024 Calls on World Leading Data and Computing Technologies and Digital and Emerging Technologies for Competitiveness and fit for the Green Deal.
The Information and Brokerage Event introduced topics of the five Horizon Europe calls:

- HORIZON-CL4-2024-DATA-01-03 Piloting emerging Smart IoT Platforms and decentralized intelligence (IA)
- HORIZON-CL4-2024-DATA-01-05 Platform Building, standardisation and Up-scaling of the 'Cloud-Edge-IoT' Solutions (CSA
- HORIZON-CL4-2024-DIGITAL-EMERGING-01-21: Open Source for Cloud/Edge to support European Digital Autonomy (RIA)
- HORIZON-CL4-2024-DIGITAL-EMERGING-01-22: Fundamentals of Software Engineering (RIA)
- HORIZON-CL4-2024-DIGITAL-EMERGING-01-23: Public recognition scheme for Open Source (CSA)

The event offered opportunities for participants to obtain information concerning the open Horizon Europe Calls, to identify potential project partners through their pitches, as well as to forge winning partnerships with academics, researchers, industrial stakeholders, and SMEs.
Event participants had the opportunity to network through 1:1 meetings via the B2match platform which was used for scheduling the meetings until the deadline of the calls in March

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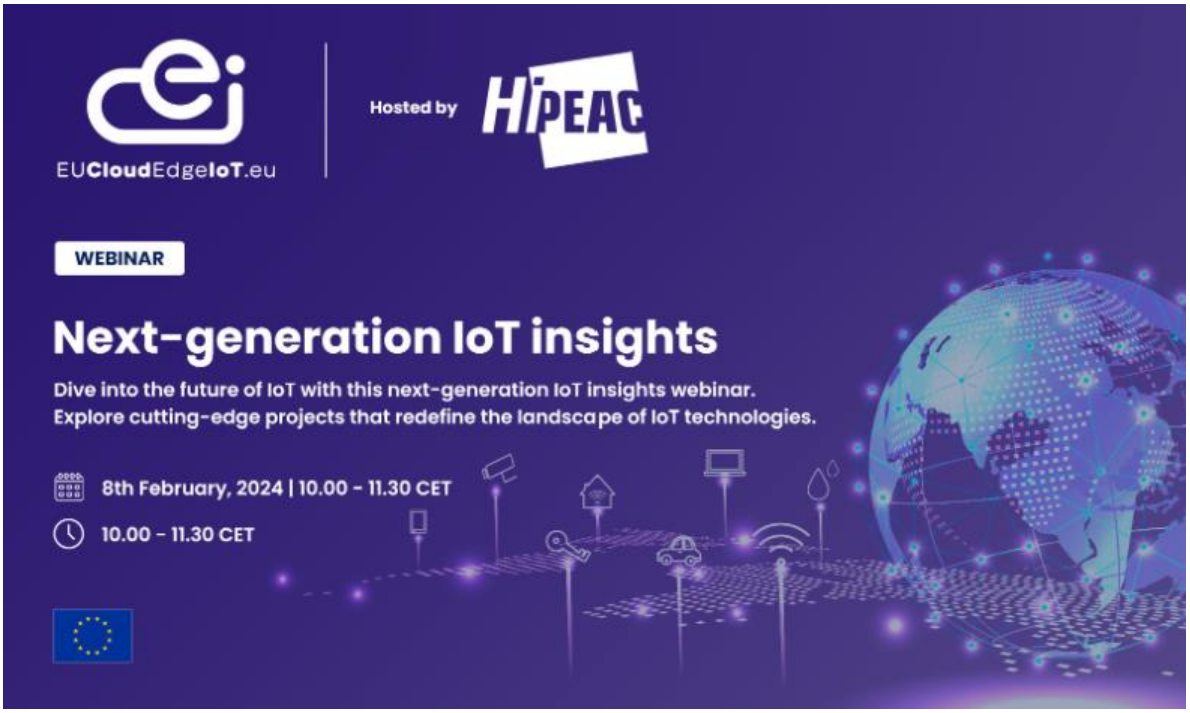
2024. Martel managed the online matters, including the networking, brokerage and registrations using b2match, website page, pitch submission page and social media promotion. Unlock CEI managed the onsite and logistic matters.
Results: 452 registrations (87 for onsite participation & 365 for remote participations); 608 attendants (60 onsite, 172 on b2match & 376 YouTube views); 37 pitches; 85 marketplace opportunities on b2match; 104 booked meeting; 112 organisation profiles
Outputs: Post event report with slides and recording available here.

2.5.2 RIAs Showcase Webinar #1 | Next Generation IoT Insights



Type of event: Webinar
Date: February 8, 2024
Location: Online
Partner(s) organising: MARTEL **External co-organiser(s):** HIPEAC
In a compelling exploration of the Next-Generation IoT landscape, the first settlement of the "EUCloudEdgeIoT.eu RIA Showcase" webinars, an initiative of the EUCEI's Open Continuum CSA, took place on February 8 and counted with more than 50 attendees. The event, hosted

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by HiPEAC, served as a collaborative platform to showcase groundbreaking advancements in Next-Generation IoT.

Key Insights from the Webinar:

The webinar addressed critical challenges in the cloud-edge-IoT marketplace. One highlight was the introduction of a common taxonomy, glossary, and ontology by EUCloudEdgeIoT, aiming to overcome industry-wide hurdles and foster a unified understanding.

Real-world deployment experiences were unveiled, shedding light on regulatory disparities and data management challenges. Open calls involving real companies were identified as a key approach to addressing these issues.

The demand for AI at the edge in resource-constrained environments was discussed, with projects actively tackling this challenge head-on. The emphasis on prioritising people and the planet in technology development echoed throughout the presentations, ensuring the integration of human presence in the loop and the delivery of robust, safe, and secure systems.

Impactful Projects Showcased:

The showcased RIAs (Research and Innovation Actions) presented a spectrum of impactful outcomes as informed earlier by HiPEAC.

ASSIST-IoT Project: Unveiled a smart orchestrator

iNGENIOUS IoT: Introduced a commercial traffic-management system for ports.

IntellIoT: Showcased a cutting-edge computing and communications structure.

TERMINET: Presented federated learning datasets.

VEDLIoT: Displayed the Very Efficient Deep Learning in IoT's heterogeneous hardware platform.

Results: more than 50 participants

Outputs: Post event report with slides and recording available here.

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2.5.3 Intellectual Property and Licences in the Context of European Projects

Type of event: Webinar

Date: February 8, 2024

Location: Online

Partner(s) organising: ECLIPSE

Open source has transformed the software development landscape, enabling collaboration and innovation on a global scale. Navigating intellectual property (IP) and licenses within the open source context presents unique challenges.

The "Intellectual Property and Licences in the Context of European Projects" webinar was organised by EUCEI's TF2 leader (Eclipse Foundation) and it explored the relationship between IP and licenses in open source, addressing key questions such as what intellectual property is, how it applies to open source, and the impact of different licensing models.

The webinar started with a brief overview on Open Source origins, principles and freedoms. Dr. Bayton discussed best practices for managing intellectual property assets within open source projects, including attribution, copyright protection, and conflict resolution.

The talk then highlighted the legal implications of using open source software and emphasised the importance of understanding and complying with license obligations. The discussion focused on the grant of rights and requirements: permissive, weak copyleft, strong copyleft.

It also discussed the best practices for managing intellectual property assets within open source projects, including attribution, copyright protection, and conflict resolution. Additionally, the role of licenses in fostering innovation and community engagement was emphasised.

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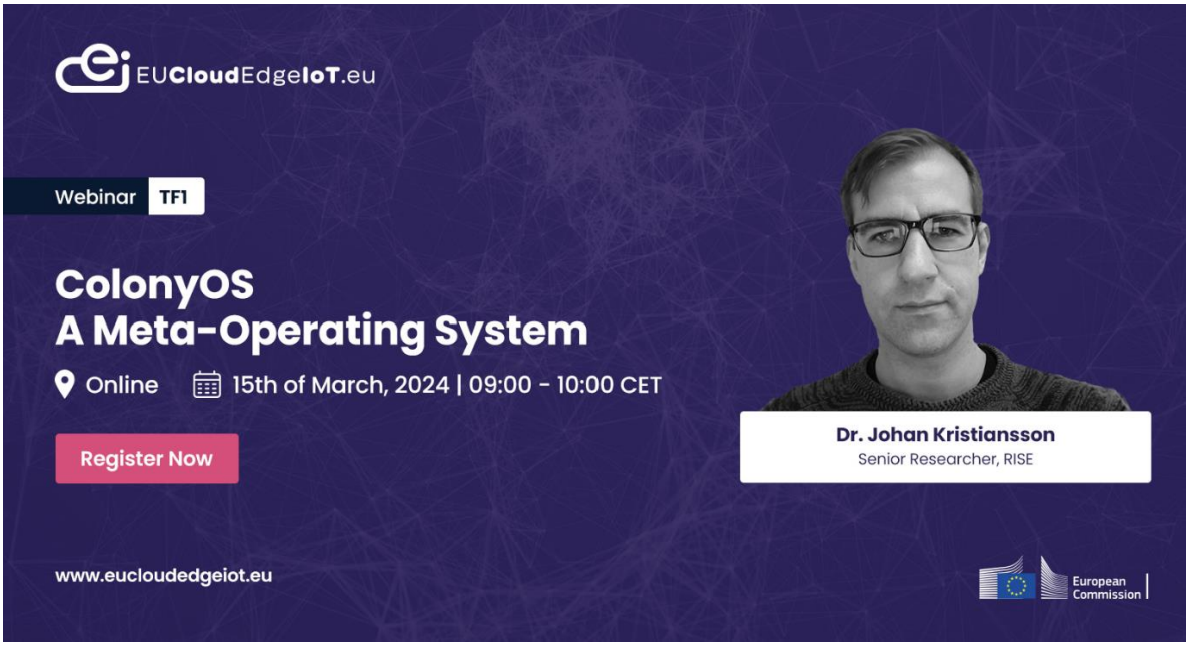
Results: 62 participants
Outputs: Post event report with slides and recording available here.

2.5.4 Decentralised Edge-to-Cloud Computing with ColonyOS



Type of event: Webinar
Date: March 15, 2024
Location: Online
Partner(s) organising: INSIDE
INSIDE organiser a webinar where Dr. Johan Kristiansson, a senior researcher from RISE, presented the MetaOs ColonyOs project, which aims to create a unified control layer for seamless edge-to-cloud computing. EUCEI now makes available the key highlights from the webinar, as well as its recording. Some key points discussed during the webinar: ColonyOs provides a decentralised network operating system to manage applications across multiple platforms like edge devices, cloud, and HPC systems in a coherent way. This addresses challenges of complexity and security when applications are distributed. The project is inspired by the idea of a “trillion node networks” where everything is

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interconnected without central control. ColonyOs focuses on integrating existing platforms while providing security, resilience, and universal access.

It uses a broker and functional programming approach to coordinate application execution across different environments and synchronise data. A crypto protocol based on Ethereum and Bitcoin provides security without a blockchain.

A decentralised computing model executes functions on "colonies" of executors running on different platforms. Fault tolerance is enabled through consensus algorithms and process monitoring to reassign failed tasks.

Example uses cases discussed decentralised finance platforms, seismic data processing leveraging cloud scalability, and analysing satellite images across HPC and cloud.

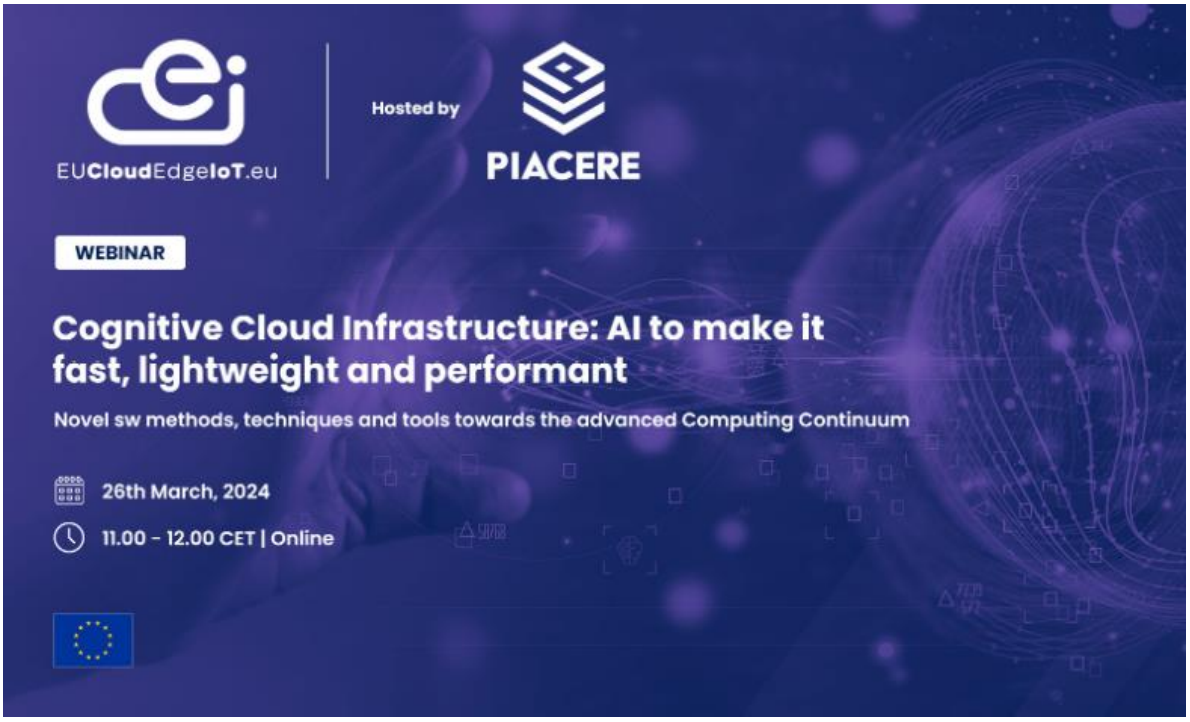
The ColonyOs tool aims to simplify HPC usage and allow seamless execution on local systems, clouds, and supercomputers.

During the webinar, Chris Johnson also took the time to live demonstrate the tool.

Results: 26 participants

Outputs: Post event report with slides and recording available here.

2.5.5 RIAs Showcase Webinar #2 | Exploring the Frontier: Highlights from the Cognitive Cloud Infrastructure Webinar



Type of event: Webinar

Funded by Horizon Europe Framework Programme of the European Union

Date: March 26, 2024
Location: Online
Partner(s) organising: MARTEL **External co-organiser(s):** PIACERE project
On the 26th of March, the "Cognitive Cloud Infrastructure" webinar took place as part of the "EUCloudEdgeIoT.eu RIA Showcase" webinars, organised by the EUCEI initiative. The session, led by Albert Seubers, the Open Continuum Coordinator, and Juncal Alonso, the PIACERE RIA Coordinator, successfully gathered over 50 attendees. This collaborative event was hosted by EUCEI in partnership with PIACERE RIA from the ICT-50 call. The convergence of artificial intelligence (AI) and cloud infrastructure has ushered in a new era of computing capabilities. In this session, we delved into the novel methods, techniques, and tools that contribute to an advanced European Computing Continuum presented in one of the sessions of the EUCEI RIAs showcase. This paradigm shift including the growing complexity of the computing environments has increased the adoption of AI techniques and agile methodologies to guide the configuration, management and operation of the infrastructural layer. In this dynamic landscape, the synergy between AI and DevOps to maximise the potential of the computing continuum continues to evolve. As we explore the intersection of cognitive capabilities and cloud services, we unlock new possibilities for innovation, agility, and performance. Here are some key aspects to consider: • Operationalization by default: Methodologies and approaches that ease the configuration and management of the computing infrastructures (i.e. DevOps) are crucial to the complete expansion of cloud computing in different industrial and research domains. In this sense the adaptation of traditional agile methodologies and tools need to be advanced to address existing challenges such as market fragmentation, lack of domain specific tools CPSs, Cloud Continuum, operationalization of AI projects, security concerns. • Efficiency and Scalability: AI algorithms can optimise resource allocation, enhance workload distribution, and dynamically scale cloud services based on demand. AI-driven decisions lead to efficient resource utilisation, enhancing existing technology dependent auto-scaling and down-scaling mechanisms, supporting the dynamic nature of the Cloud Continuum paradigm. • Predictive Maintenance and self-healing: AI models can be leveraged to detect and predict hardware failures, network bottlenecks, or performance degradation. By proactively addressing issues, downtime is minimised, and service reliability is improved. • Security and Threat Detection: AI-powered security solutions monitor network traffic, detect anomalies, and identify potential threats. From intrusion detection to anomaly-based behaviour analysis, AI enhances cloud security. • Intelligent resource orchestration: The complex Cloud-Edge-IoT computing continuum needs AI based technologies to adapt continuously and autonomously to the continuum and to address domain specific needs such as Holography and

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Augmented reality.

Key takeaways from the Webinar:

The webinar addressed critical challenges in the cloud-edge-IoT marketplace with special focus on 1) the application of comprehensive DevOps paradigm on domains that are not currently supported by existing tools, such as Cyber Physical Systems, Artificial Intelligence or IaC based software projects 2) the incorporation of AI techniques to enhance the management and orchestration of computing resources towards the realisation of the Cognitive Cloud concept in Europe.

ICT-40 and ICT-50 projects developed impactful outcomes that have been tested in relevant industrial domains and these experiences were showcased in the webinar.

The future research challenges were discussed by the projects' representatives, based on the experience they gained through the execution of the projects, revolving around the following areas of further research:

- Application of Cloud Computing advances in concrete technology domains addressing their specific needs and requirements.
- Complete and efficient integration of AI algorithms in the inner working systems of the devices orchestration.
- Fully automated scalability and transparent access to the devices by the developers.
- More standardization efforts need to be pushed on the Edge side especially.
- Research on the green aspect of the Continuum, with more efficient Data Centers and computing techniques on the edge.
- Addressing the challenges of using upcoming Large Language Models in the systems.
- Security features seamlessly available in the computing continuum.

The showcased RIAs (Research and Innovation Actions) presented a spectrum of impactful outcomes as informed earlier by HiPEAC:

- PIACERE: Presented their main outcomes by applying DevSecOps approach to IaC based software projects
- COSMOS: Introduced two OS standards for testing Unmanned Aerial Vehicles and self-Driving cars.
- AI SPRINT: Displayed its two main outcomes, the AI-SPRINT studio and the AI-SPRINT Runtime framework, targeting AI application developers and Operators.
- SERRANO: Introduced the SERRANO platform building a continuum from edge, cloud and HPC resources
- CHARITY: Presented the CHARITY orchestration approach and related tools for XR development to deployment.

Results: 52 participants

Outputs: Post event report with slides and recording available here.

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2.5.6 RIAs Showcase Webinar #3 | Exploring the Frontier: Highlights from the Cognitive Cloud Infrastructure Webinar

Type of event: Webinar

Date: April 3, 2024

Location: Online

Partner(s) organising: MARTEL
External co-organiser(s): FluidOS and aerOS projects

In a compelling exploration of the state-of-the-art projects that are redefining the boundaries of edge-to-cloud computing through virtualized, secure, and efficient orchestration mechanisms, the second settlement of the "EUCloudEdgeIoT.eu RIA Showcase" webinars, an initiative of the EUCEI's Open Continuum CSA, took place on April 3rd 2024 and counted around 40 attendees. The event, titled "Meta Operating Systems: Innovating the CEI landscape", was hosted by the MetaOS projects aerOS and FlUIDOS, served as a pivotal gathering for experts in the field of edge-to-cloud computing, presenting an invaluable forum to discuss the advancements and innovations driving the future of the computing continuum.

In its initiation, the webinar highlighted the individual and collaborative efforts within the MetaOS cluster, aiming for a synergistic approach to tackle the challenges and opportunities within the computing continuum. The focus on addressing gaps in computing devices within the continuum and the quest for a common language and standards that would facilitate more coherent development across the sector, was emphasised. Also, the remarkable efforts put on working together towards a common reference architecture for the so-called

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"computing continuum" were highlighted. Represented by its leading technical or project coordinator, each of the projects ICOS, FLUIDOS, NEPHELE, NEMO, aerOS and NebulOuS provided insights into their specific contributions to Meta OS, showcasing their commitment to innovation and the application of their technologies in real-world scenarios. The webinar underscored the importance of AI across all projects, highlighting its ubiquitous application from internal orchestration workloads to enabling vertical services across various sectors such as agriculture, transportation, and health. Also, the connection to relevant trends in the field, such as cloud-native technologies applied closer to the data sources dominated the debate. Likewise, a significant portion of the discussion was dedicated to sharing insights into the future roadmap, anticipating developments in the near future, and how these advancements are expected to influence the CEI landscape. The session concluded with a call for continued collaboration and innovation among the participants and the broader community, reflecting on the progress made and the journey ahead in redefining the boundaries of edge-to-cloud computing.
Results: 62 participants.
Outputs: Post event report with slides and recording available here.

2.5.7 RIAs Showcase Webinar #4 | Future-proof solutions for cognition-enabled cloud computing (Part 1)

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Type of event: Webinar

Date: April 18, 2024

Location: Online

Partner(s) organising: MARTEL
External co-organiser(s): ACES Project

In the context of the "EUCloudEdgeIoT.eu RIA Showcase" organised by the Open Continuum CSA, to present cutting-edge results and advancements in the Cloud-Edge-IoT Computing Continuum, the ACES-EDGE Research and Innovation Action funded under the Horizon Europe Framework programme has co-organised a webinar to share and discuss solutions for cognition-enabled cloud-edge solutions.

On the 18th April, 2024 the webinar Future-proof solutions for cognition-enabled cloud computing took place, introduced by Albert Seubers, the Open Continuum Coordinator, and chaired by Fred Buining, the technical coordinator of the ACES-EDGE project. Eight coordinators and scientists of projects belonging to the cognitive cloud and the cognitive computing project clusters actively participated in the presentations and the discussions, together with about 77 attendees.

After the introductory speech of Albert Seubers, Fred Buining opened the first session, which had the objective to present and share types of AI appropriate for cognitive cloud and their use cases (Session 1). The floor was given to the presentations of the seven projects: CODECO by Rute Sofia; EDGELESS by Claudio Cicconetti; ENACT by Alexandros Nizamis;

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INTEND by Hui Song; CoGNET by Georgios Spanos; COGNIT by Marco Mancini; and CLOUDSKIN by Marc Sanchez Artigas.

Each project presentation laid out the technical characteristics and the approaches of their research and innovation actions, pointing out not only the specific technological choices made or the solutions under exploration, but specifically elaborated on the use of Artificial Intelligence within their solutions and to develop the possible answers to the identified challenges.

The second session introduced by Fred Buining focused on the specific management and training and deployment of AI within cloud-edge (Session 2): the question to the speakers was to discuss the ways in which the use of AI in the continuum is running appropriately and in a trustworthy and reliable manner, considering which data makes the operation and training of AI technologies reliable. Approaches presented by the speakers include the optimization of the use of AI in relation to the practical applications in use cases and the test by means of methodologies to assess process-result relationships. Thus, the behaviour of AI systems and the trustworthiness of the training data is tested by a concrete, empirical use-case oriented approach. Another strategy is to use federated approaches to test the behaviour of AI systems supporting specific operational functions.

Some projects consider explainability as a factor of trustworthiness, looking at traceability and forcing the AI to make explicit the knowledge, which is used to make certain decisions, enabling the human stakeholders to propose certain queries. One project creates challenge questions and places them into knowledge graphs, forming some kind of logical triangulations of knowledge to test final decisions made, in particular by LLMs.

The approach would be to specifically focus on the trustworthiness of AI training and model management and on the reliability of solutions, possibly splitting up the AI models and using sub-models as already validated components.

The speaker's group also discussed additional pathways for the implementation and deployment of AI systems in the light of the fast, daily developments of AI technologies, such as exploring the use of LLMs and the testing of the compliance of the models in the continuum used with the specifications of the AI act, also using LLMs as test benchmarks to improve explainability of decisions.

Another method, which is currently experimented to improve the trustworthiness of AI models, is using swarm intelligence, increasing the variability of testing, building on decentralisation of systems.

The following third session (Session 3), introduced by Fred Buining, targeted future research avenues for systems in the cloud-edge continuum within funding programmes.
The points made include:

- a deeper assessment of the availability of scarce datasets for decentralised systems,

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maybe through a common experimental cluster testing environment and possibly creating dataspaces publicly available.
- edge-specific calls, dedicated to specific elements of the EDGE cloud computing as a means to reach digital sovereignty. developing "European" LLMs has been raised, and support should be provided to develop them locally and to take advantage of the European supercomputer infrastructure.
- research into ethics of AI.
- produce and share datasets and produce synthetic, game-changing datasets to run Edge systems.
- promote the development of European Cloud-Edge infrastructures dedicated to specific application areas such as smart cities, targeting the common good, possibly supported by the EIB.
- calls in which the edge cloud computing is applied to one vertical industry segment to boost digital sovereignty of that industry vertical (instead of spreading a project over 3-4 use cases from multiple industry sectors).

In the fourth session (Session 4), Francesco Mureddu presented two projects about Edge systems and the perspective on value of data technologies based on two projects: TEMA on natural disaster management and GLACIATION, on privacy and personal data ownership and privacy-preserving platform and systems and frameworks to enhance privacy awareness and management in Edge environments.

Conclusions:

There are immense values in the diversity of the technologies developed in the Cloud-Edge continuum. The Edge-Cloud is the first hop from the device onto the web. Developing a cloud that runs at the first hop and that is powerful enough to process big data and AI locally, will be an enabler for digital sovereignty and could be developed by European Entities and allows the enforcement of European values on applications, data sharing and AI.

AI requires datasets for training and there is an enormous potential in public sector information. Furthermore, another challenge is to develop models to monetise these datasets.

Values emerging:

- a clear trend towards technologically complex and ambitious projects, however the concrete application of such complexity is a bit risky, even if the high challenges have potential.
- lots of touchpoints between the projects and different angles to tackle different types of problems and to find multifaceted solutions.
- data is fluent, and the actual processes, the values and the benefits almost in all cases occur at the Edge.
- the interest in the potential in LLMs.
- the development of common tools and solutions, pursuing common targets with different approaches.
- All these developments would benefit from the development and availability of large-scale testbeds and large-scale infrastructures.

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Results: 77 attendees
Outputs: Post event report with slides and recording available here.

2.5.8 RIAs Showcase Webinar #5 | RIAs Showcase Webinar #4 | Future-proof solutions for cognition-enabled cloud computing (Part 1)

Type of event: Webinar
Date: May 17, 2024
Location: Online
Partner(s) organising: MARTEL and ECLIPSE
The "EUCloudEdgeIoT.eu RIA Showcase" webinar series aimed to provide a platform for Research and Innovation Actions (RIAs) supported by the EUCloudEdgeIoT.eu initiative to present their cutting-edge results and advancements in the Cloud-Edge-IoT Computing Continuum. In this context, on the 17th of May, 2024 the webinar Future-proof solutions for cognition-enabled cloud computing (Part 1) took place, introduced by Rosaria Rossini, Task Force 2 Coordinator and Eclipse Foundation representative, who also chaired the webinar. Four coordinators and scientists of projects belonging to the cognitive cloud and the cognitive computing project clusters actively participated in the presentations and the discussions, together with about 30 attendees.

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In particular, four projects funded under the call DIGITAL-EMERGING-01-26 presented their vision and results:

- AERO
- OpenCUBE
- RISER
- Vitamin-V

All the four projects presented and discussed the power of open-source solutions with our Open Source for Cloud Services Showcase. This webinar introduces projects optimizing open-source software ecosystems, developing validated European Cloud computing blueprints, and creating the first all-European RISC-V cloud server infrastructure. Explore how these initiatives contribute to enhancing Europe's open strategic autonomy in cloud services.

The outcome of this webinar can be summarise in the following points:

- Explore the power of open-source solutions in cloud services.
- Understand the impact of projects on European Cloud computing blueprints and RISC-V cloud server infrastructure.
- Identify opportunities for collaboration and networking in the open-source cloud ecosystem.

Results: 30 participants

Outputs: Recording available here.

2.5.9 RIAs Showcase Webinar #6 | Tackling the ever-increasing complexities of developing efficient heterogeneous swarm systems

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Type of event: Webinar

Date: May 28, 2024

Location: Online

Partner(s) organising: MARTEL
External co-organiser(s): TARDIS and INCODE projects

In the context of the "EUCloudEdgeIoT.eu RIA Showcase" organised by the Open Continuum CSA, to present cutting-edge results and advancements in the Cloud-Edge-IoT Computing Continuum, the Horizon Europe Framework-funded projects TaRDIS and Programming Platform for Intelligent Collaborative Deployments over Heterogeneous Edge-IoT Environments (formerly INCODE) co-organised a webinar to compare standpoints, achievements and recommendations among the swarm computing-focused projects operating under the EUCloudEdgeIoT umbrella.

The context:

As Europe creates a pathway for the understanding and development of the Cloud, Edge and IoT Continuum and supporting research and innovation initiatives to develop applications across the continuum, the paradigm also incorporates development of swarm and decentralized applications. In edge computing scenarios where there is a need for decentralized decision-making and coordination among edge devices, swarm computing principles can be applied; such a decentralized and self-organizing concept and architecture fit particularly well hyper-distributed, sovereignty-enabling, heterogeneous data management challenges, such as the ones found in European Data Spaces. Additionally, edge devices can

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act as agents in a swarm, collectively making decisions and adapting to changing conditions without relying on a central controller. This session, brought together the 5 Horizon Europe projects answering to the swarm computing call and addressing the ever-increasing complexities of developing correct and performant heterogeneous swarm systems.

The projects on the virtual stage:

The project Programming Platform for Intelligent Collaborative Deployments over Heterogeneous Edge-IoT Environments (formerly INCODE) enables an open and trusted cloud-native programming platform poised to tame the emerging dynamism of distributed and heterogeneous private edge infrastructures (seen as a combination of intelligent edge node and diverse types of smart IoT devices with processing capabilities over programmable data plane resources). Representing the project in this discussion is John Avramidis (Unisystems).

The TaRDIS project, represented by Carla Ferreira (Nova School of Science and Technology, Portugal), addresses the ever-increasing complexities of developing correct and performant heterogeneous swarms by providing a novel programming model, integrated development and analysis environment, and corresponding runtime support. TaRDIS proposes a language-independent event-driven programming model that allows developers to specify the behaviour of different components in their distributed system as a collection of autonomous collaborative nodes.

The OASEES project will deliver a European, fully open-source, decentralized, and secure Swarm programmability framework for edge devices and leveraging various AI/ML accelerators (FPGAs, SNNs, Quantum) while supporting a privacy-preserving Object ID federation process. Akis Kourtis (National Centre for Scientific Research “Demokritos”, Greece) presented on behalf of OASEES.

The ambition of OpenSwarm project is to enable novel, future energy-aware swarms of collaborative smart nodes with wide range benefits for the environment, industries, and society. Presenting OpenSwarm was Thomas Watteyne from INRIA, France.

The SMARTEDGE project, which was represented at the webinar by Danh Le-Phuoc (TU Berlin), aims to enable decentralised edge intelligence for smart IoT applications, ensuring reliability, security, privacy, and scalability. This is achieved through the innovative SmartEdge tool-chain for autonomous intelligent swarms, featuring real-time semantic integration, discoverability, and composability.

Discussion summary:

After the introductory speech of Albert Seubers (EUCloudEdgeIoT.eu, Martel Innovate BV), who also moderated the discussion, the presenters discussed the latest advancements in the development of swarm computing systems.

The major topics addressed how new innovations are seeking to improve the efficiency and scalability through new types of algorithms, communication protocols and integration techniques. Building heterogeneous swarm systems will increase the performance and adaptability so that a greater resilience can be achieved.

When it comes to key challenges in that regard, the panellists stressed the need to ensure interoperability by enforcing robust standards and protocols for a seamless communication

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and coordination between systems. Scalable solutions would enable this so that latency can be reduced and resource allocation can be optimised. Enhanced collaborations and prioritising research and development in AI, machine learning and edge computing is therefore key. The presentations also showcased a number of real-world use cases in sectors such as agriculture for crop monitoring, environmental monitoring for pollution levels, and disaster response in search and rescue operations. The webinar provided an excellent opportunity to explore the current state and future directions of swarm computing. It highlighted the need for interoperability, scalability, and efficient resource management while showcasing practical applications and the critical role of collaboration in driving innovation. The discussions emphasised the potential of swarm computing to address complex real-world problems through coordinated, intelligent systems. Key insights: The webinar explored the current state and future of swarm computing developments along with its challenges. It highlighted the need for interoperability, scalability, and efficient resource management while showcasing practical applications and the critical role of collaboration in driving innovation. The webinar attracted an audience of over 100 stakeholders, connecting from 17 countries
Results: 104 participants
Outputs: Post event report with slides and recording available here.

2.5.10 Workshop – A glimpse of Europe Innovation

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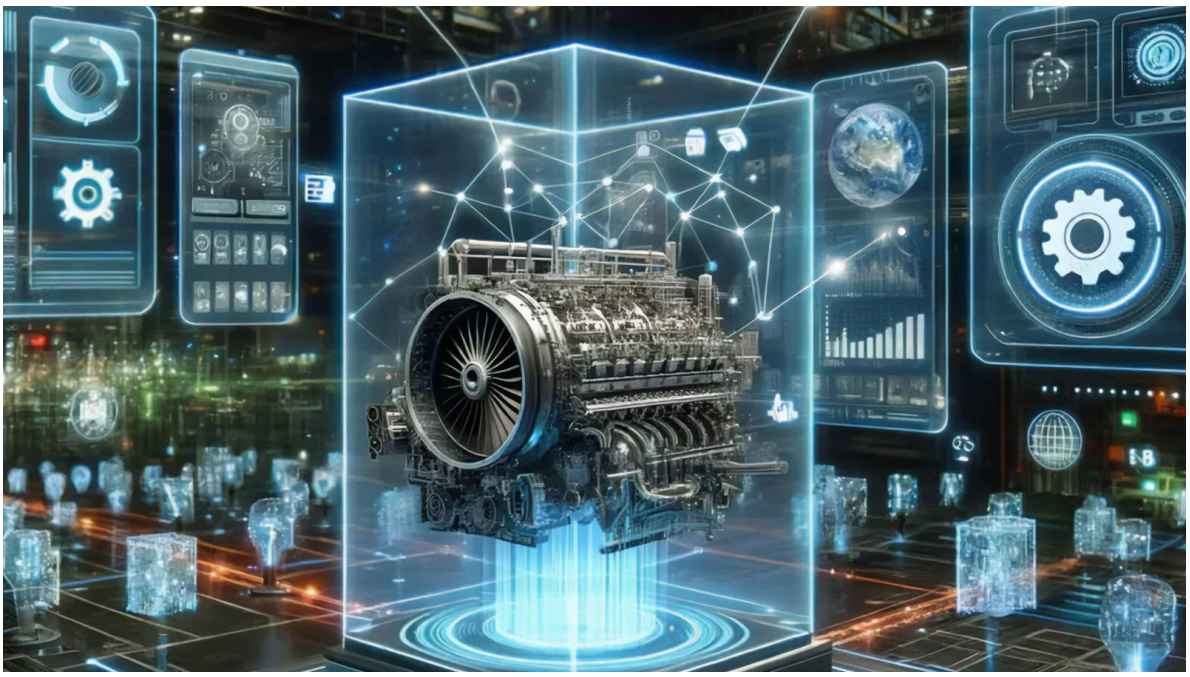

Type of event: Expert Consultation Workshop

Date: May 28, 2024

Location: Helsinki, Finland

Partner(s) organising: TRIALOG, EVIDEN, MARTEL
Host: SESKO
Co-organizers: AIOTI, OpenContinuum
Sponsors: Aeros, AURORAL, Begonia, Enershare, Fluidos, Int:net, Instar, Omega-X, Spade

The "Workshop – A Glimpse of Europe Innovation" offers a unique opportunity to gain a comprehensive view of ongoing standardization efforts in the realms of the Internet of Things (IoT) and digital twins.

The purpose of the workshop was to provide an overview of European innovation combining

- A presentation of Finnish projects
- A presentation of European innovation projects and how they can contribute to standardization.

The workshop covered 6 topics

- Standardisation and Europe innovation context.
- Enablers and use cases for the computing continuum
- Enablers and use cases for energy data spaces
- Use cases in Europe and in Finland
- Cooperation
- Conclusion

Results: 40 participants

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Outputs: Leveraging workshops during standardisation plenaries

Comprehensive overview of ongoing technology innovation initiatives and their impact on the industry.

Conclusions from Helsinki technical workshop at May 2024 JTC 1/SC 41 Plenary - access here.

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2.5.11 TRANSACT Impact Webinar

Type of event: Webinar

Date: June 4, 2024

Location: Online

Partner(s) organising: ECLIPSE
External co-organiser(s): TRANSACT Project

Reference architecture and methodology for transforming safety-critical cyber-physical systems from localised standalone systems into safe and secure distributed solutions.

The TRANSACT project has developed a universally applicable distributed architecture concept and framework that brings together cyber-physical systems (CPS) end devices with edge computing servers and cloud computing facilities, hosting multiple mixed-criticality applications. Additionally, the project proposes a transition methodology for transforming standalone safety-critical CPS into distributed safety-critical CPS solutions. The architecture concept and the transition methodology ensure safety and security taking into account network reliability, latency and user access.

SPEAKERS

- Javier Coronel Parada - Instituto Tecnologico de Informatica (ITI)
- Teun Hendriks - Netherlands Organisation for Applied Scientific Research (TNO-ESI)
- Krzysztof Oborzyński - Philips Healthcare

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• Astrid Rakow - German Aerospace Center (DLR)
Results: 30 Participants
Outputs: Recording available here.

2.5.12 RIAs Showcase Webinar #7 | Future-proof solutions for cognition-enabled cloud computing (Part 2)

Type of event: Webinar
Date: June 6, 2024
Location: Online
Partner(s) organising: MARTEL **External co-organiser(s):** ACES
This webinar is a part 2 of the first "Future-proof solutions for cognition-enabled cloud computing" as there were too many projects for one webinar. Conclusions and insights are the same as in the first part. Projects speaking: • ACES: Fred Buining • DECIDE: Sabri Pllana

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• EMPYREAN: Panagiotis Kokkinos • Hyper -AI: Iakovos Michailidis • MLSysOps: Christos Antonopoulos • MYRTUS: Francesca Palumbo • TEMA and GLACIATION: Alessandro Pacciaroni
Results: 33 participants
Outputs: Recording available here.

2.6 OPEN CONTINUUM FINAL EVENT

On 18 June 2024, Open Continuum organised its final conference, marking the culmination of the collaborative efforts in the cloud-edge-IoT domain. This significant event took in Brussels. The event gathered 75 participants.

- **Event Overview**

The Open Continuum Final Conference focused on the value of the EUCloudEdgeIoT.eu (EUCEI) community research for the industry, highlighting the latest advancements and results of the Open Continuum CSA and the more than 50 research and innovation actions that it has supported. Attendees had the opportunity to participate in engaging panel discussions, hear about the transition to the Nexus Forum CSA, and learn about the current status of the Unlock CEI CSA use cases. The conference also featured an awards ceremony recognising the most promising projects within our community.

Albert Seubers (Coordinator at EUCEI's OpenContinuum) opened the conference, emphasising the participation of 30 projects focused on swarm computing, cognitive cloud, cognitive computing, next-generation IoT, metaOS, and Open Source. These projects are critical in building a digitally autonomous Europe, showcasing the collaborative spirit driving these initiatives.

Luis Busquets Pérez (Programme Officer, European Commission) highlighted the European Commission's commitment to ICT, emphasising the value of elastic and scalable edge computing. He outlined the EC's investment strategy across networking, digital services, and Horizon Europe, aiming to ensure Europe's digital sovereignty by promoting innovation and integration across the computing continuum. In his presentation he highlighted the Digital Decade objectives by 2030 and the 4 pillars of the European Data Strategy.

In the following sections, we will summarise the main objectives, achievements, and insights from the EUCEI initiative, highlighting how it has driven digital innovation and integration across Europe.

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- **Objectives and Achievements**

The EUCloudEdgeIoT (EUCEI) initiative has been instrumental in advancing a resilient and interoperable computing ecosystem within Europe. Through its multifaceted objectives, the initiative aims to promote an open ecosystem, map the supply-side landscape, and engage the demand side in early development stages to bridge the gap between supply and demand. These efforts have significantly driven digital innovation and integration across Europe, helping to position the region as a leader in the global computing continuum landscape.

- **Promoting an Open Ecosystem**

A primary objective of EUCEI is to establish a European industrial ecosystem grounded in open source and open standards. This approach ensures interoperability, scalability, and security across the computing continuum. Collaborating with key initiatives such as the Alliance for Internet of Things Innovation (AIOTI), the European Cyber Security Organisation (ECS), and Gaia-X, EUCEI has created a collaborative environment that enhances the overall impact of the initiative.

1. Interoperability and Standards: By promoting open standards, EUCEI ensures that different systems and technologies can work together seamlessly. This is crucial for creating a unified computing continuum where resources and data can be shared and utilised effectively.
2. Scalability and Security: The emphasis on open source not only fosters innovation but also ensures that solutions are scalable and secure. This is particularly important in the context of the computing continuum, where the need for robust, scalable, and secure solutions is paramount.
3. Collaborative Projects: Initiatives like AIOTI, ECS, and Gaia-X provide platforms for collaboration and standardisation. These collaborations have led to the development of common frameworks and guidelines, which are essential for the cohesive growth of the computing ecosystem.

- **Mapping the Supply-Side Landscape**

A comprehensive analysis of the European computing continuum landscape has revealed several key insights, which are crucial for understanding the roles and contributions of various actors in this ecosystem. This mapping exercise has facilitated the creation of a robust supply-side community that engages both industrial and research actors cohesively.

1. Identifying Key Players: The landscape includes major corporations, SMEs, research institutions, and public sector bodies. Each of these actors plays a vital role, from developing new technologies to implementing standards and driving market adoption.
2. Trends and Innovations: The analysis highlighted trends such as the increasing focus on interoperability, the adoption of open-source solutions, and the emphasis on scalability and efficiency. These trends are shaping the future of the computing continuum in Europe.
3. Community Building: By identifying and engaging key players, EUCEI has created a cohesive community that works towards common goals. This community is essential for driving innovation and ensuring the successful implementation of new technologies.

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4. Standardisation: The launch of a standard in ISO/IEC JTC 1/SC 41 (Architecture considerations on IoT, edge, and cloud) as a result of joint OpenContinuum-AIOTI collaboration can pave the way for a serie of standards on the continuum.

- **Engaging the Demand-Side**

Engaging the demand side is essential for understanding market dynamics and exploring business opportunities. EUCEI has conducted systematic assessments to gain insights into the current state of the European CEI demand landscape.

1. Market Insights: Through these assessments, EUCEI has developed a deep understanding of market needs and dynamics. This includes identifying key sectors and applications where CEI technologies can have the most significant impact.
2. CEI Readiness Framework: The insights gained from the demand-side assessments have informed the development of a CEI Readiness Framework. This framework prepares the market for the adoption of CEI technologies by identifying potential barriers and facilitators.
3. Business Opportunities: Engaging the demand side has also highlighted new business opportunities, helping to align technological developments with market needs. This alignment is crucial for driving the adoption and commercialization of CEI technologies.

- **Bridging Supply and Demand**

Creating a productive interface between supply and demand is crucial for the successful adoption of new technologies. EUCEI has made significant strides in this area by building the CEI Industry Constituency, which aggregates demand needs and identifies key demand-pull drivers.

1. CEI Industry Constituency: This constituency brings together various stakeholders, including industry leaders, policymakers, and researchers, to discuss and align on the needs and priorities of the CEI market.
2. Demand-Pull Drivers: By identifying key demand-pull drivers, EUCEI has been able to focus on the most critical areas where CEI technologies can meet market needs. This has helped in prioritising research and development efforts and ensuring that they are aligned with market demands.
3. Effective Communication Channels: Establishing effective communication channels between the supply and demand sides has been a key achievement. These channels facilitate the exchange of information and feedback, helping to refine and improve CEI technologies to better meet market needs.

- **Research Panels and Strategic Insights**

The EUCEI's Open Continuum Final Conference featured research panels on critical areas of cloud, edge, and IoT technologies. Experts from various projects discussed advancements, challenges, and future directions in cognitive cloud, next-generation IoT, meta-operating systems, and open-source standards. These panels highlighted the transformative potential of these technologies in driving digital innovation across Europe. The following sections

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summarise the key discussions and takeaways, providing an overview of the current state and future prospects of the computing continuum landscape.

- **Cognitive Cloud**

The Cognitive Cloud panel, moderated by Giovanni Rimassa, highlighted the transformative potential of cognitive cloud technologies on European industries, focusing on interoperability, AI-enhanced performance, and smart city applications. Experts from projects such as COGNIFOG, AC3, ACES, Sovereign Edge, and MLSysOps shared insights on leveraging AI and ML to manage complex systems and improve efficiency. Key projects emphasised the importance of achieving interoperability at both architecture and application levels, using AI for lifecycle management, and deploying AI/ML in dynamic node monitoring and energy grid management. The discussion also covered practical applications, like MLSysOps' use of ML in smart agriculture and Sovereign Edge's dynamic node deployments in urban settings.
The panellists identified several challenges and future directions, including the need for standardisation, enhanced energy efficiency, and advanced cybersecurity measures. They emphasised the importance of developing standardised approaches to ensure seamless integration across diverse platforms and technologies. Addressing data collection challenges and integrating AI models for better system performance were also highlighted as crucial areas for ongoing research. The Cognitive Cloud panel provided valuable insights into driving innovation and efficiency across various sectors, underscoring the critical role of cognitive cloud technologies in shaping the future of European industries.

FIGURE 7: THE COGNITIVE CLOUD PANEL AT THE OPEN CONTINUUM FINAL EVENT

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- **Next-Generation IoT & Swarm**

The Next Generation IoT & Swarm panel, moderated by Albert Seubers, delved into advancements in IoT architectures and swarm intelligence, featuring insights from leaders of projects like OASEES, TERMINET, OpenSwarm, Assist-IoT, INCODE, VEDLIoT, and TardIS. Panellists discussed the development of decentralised systems, emphasising the importance of data-driven, energy-aware AI and smart programs. They highlighted innovative use cases across sectors such as smart agriculture, medical applications, supply chain, and energy management. Security was a significant focus, with discussions on enhancing security through modular architectures, trusted execution environments, and virtualization techniques to address the dynamic nature of IoT environments.

The panel also explored the challenges of developing autonomous systems and their potential applications in various industries. Security measures, including sandboxing and the zero-trust model, were discussed as critical for ensuring robust IoT deployments. The dynamic and evolving nature of application requirements was acknowledged, with emphasis on the need for continuous updates and adaptability. The conversation underscored the necessity of collaboration between different IoT projects to achieve interoperability and scalability, thereby driving the next generation of IoT and swarm technologies forward in Europe.

FIGURE 8: THE NEXT GENERATION IOT & SWARM PANEL AT THE OPEN CONTINUUM FINAL EVENT

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- **MetaOS**

The MetaOS panel, moderated by Golboo Pourabdollahian, brought together experts from projects such as aerOS, Nephele, NebulOUS, FluidOS, ICOS, and NEMO. The discussion focused on the development of meta operating systems designed to interconnect various modules and applications across the computing continuum. Panellists highlighted the significant challenges in achieving interoperability and emphasised the need for a unified definition of the computing continuum. They discussed strategies for integrating diverse technologies and ensuring that different systems can work together seamlessly, thereby facilitating widespread adoption of these advanced technologies.

A key topic of the panel was the importance of creating a transparent and standardised approach to managing the computing continuum. Projects like FluidOS and aerOS shared their efforts in developing reference architectures and protocols to enhance interoperability. The panellists also addressed the issue of exploiting project results post-completion, suggesting the development of specific software stacks for commercial applications. The discussion underscored the importance of aligning with common standards and leveraging widely adopted technologies to ensure the success and scalability of meta operating systems in the European digital landscape.

FIGURE 9: THE METAOS PANEL AT THE OPEN CONTINUUM FINAL EVENT

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- **Open Source & Standards**

The Open Source & Standards panel, led by Antonio Kung, started with the announcement of the successful organisation of a workshop during the ISO/IEC JTC 1/SC 41 (IoT and digital twins) plenary in Helsinki and the approval for a standard project on the continuum.

The panel featured insights from representatives of Vitamin-V, Riser, FluidOS, aerOS, and FOCETA. The discussion centred on the pivotal role of open source and standards in fostering innovation within the computing continuum. Panellists emphasised that open source projects, aligned with international standards, are crucial for ensuring interoperability, scalability, and security across diverse systems. They highlighted the contributions of their respective projects to the open source community, including software for RISC-V architecture, transparent cloud services, and Kubernetes-based solutions.

The panel also addressed the challenges of maintaining and integrating open source projects into standardised frameworks. They discussed the importance of planning, investment, and continuous maintenance in successful open source endeavours. The panellists shared their experiences with standardisation efforts, noting that standards not only create a robust development environment but also facilitate widespread adoption and trust in the technologies. The discussion underscored the need for a continuum of standards, from high-level protocols to detailed implementation guidelines, to support the seamless operation of the computing continuum.

FIGURE 10: THE OPEN SOURCE & STANDARDS PANEL AT THE OPEN CONTINUUM FINAL EVENT

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- **Cognitive Computing**

The Cognitive Computing panel, moderated by Monique Calisti, brought together experts from EMPYREAN, INTEND, and ENACT to discuss the integration and application of AI within the computing continuum. The panel explored how various AI technologies, including machine learning (ML), federated learning (FL), and swarm computing, are being utilised to optimise and manage complex systems. Panellists highlighted the use of AI for smart city applications, decentralised computing, and enhancing human-machine interactions. They emphasised the importance of AI in building trust, ensuring data integrity, and optimising deployments within the continuum.

Discussions also covered the role of AI in creating a fluid and dynamic continuum, where the level of knowledge and capability can vary from local to near-global scales. The panellists noted that the computing continuum must support a decentralised intelligence model, where no single agent has complete knowledge of the entire system. This approach is essential for managing the complexity and scale of modern computing environments. The conversation underscored the need for robust AI models to navigate the challenges of interoperability and seamless integration across diverse technologies and applications within the computing continuum.

FIGURE 11: THE COGNITIVE COMPUTING PANEL AT THE OPEN CONTINUUM FINAL EVENT

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- **Industry Panel discussion**

The industry panel explored the current state and challenges of the computing continuum across various sectors, including energy, automotive, healthcare, manufacturing, and telecommunications. Panellists emphasised the need for rapid adaptation to evolving technologies, particularly in AI and machine learning, while addressing the sustainability challenges posed by increased energy consumption. The slow deployment of 5G in Europe, due to financial and regulatory hurdles, was identified as a significant barrier to achieving full connectivity. The discussion also highlighted the importance of virtualization for flexibility and cost efficiency, especially in telecommunications, and the critical role of the continuum in supporting modern automotive applications.

In the energy sector, the panel emphasised the transformative potential of digital solutions and decentralisation, calling for a European management platform to optimise energy production and distribution. Cybersecurity emerged as a crucial concern, with the increasing complexity of edge computing and automotive systems requiring robust security measures to protect the integrity of the continuum. The discussion concluded with a focus on Europe's need for strategic autonomy in critical technologies, acknowledging current dependencies but expressing optimism that initiatives like the European Chips Act could bolster resilience and independence in the computing continuum.

- **Handover & Awards**

The handover from Open Continuum to Nexus Forum marked a significant transition for the EUCEI initiative. Speakers including Sachiko Muto, Thomas Ohlson Timoudas, Chiara Zincone, and Giovanni Rimassa discussed the future direction of the initiative. The Nexus Forum aims to build on the achievements of Open Continuum, continuing to foster collaboration and innovation within the computing continuum. The focus will be on engaging a broader range of stakeholders, including investors and member state representatives, to drive forward the goals of digital sovereignty and innovation in Europe.

The conference featured an exhibition area where projects showcased their achievements through roll-up banners and networking opportunities. This provided a platform for peer engagement and collaboration. The awards ceremony celebrated outstanding projects within the EUCEI community, recognizing their contributions to advancing cloud, edge, and IoT technologies.

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FIGURE 12:HANDOVER FROM OPEN CONTINUUM TO NEXUS FORUM

- **Conclusion**

The EUCEI's Open Continuum initiative has significantly advanced the integration and innovation within the cloud-edge-IoT landscape. By promoting open standards, fostering collaboration, and driving strategic investments, the initiative has laid a strong foundation for Europe's digital sovereignty. The insights and outcomes from the conference highlight the transformative potential of these technologies and provide a roadmap for future research and development efforts.

2.7 PARTICIPATION AT EVENTS

During the first year of the project, the Open Continuum consortium was very active in promoting the project, the initiative and the task forces at relevant conferences. Below are described the events that the partners participated in either with a speaking slot, a booth, through networking, etc.

Each participation is described in chronological order (from oldest to most recent) below.

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2.7.1 European Big Data Value Forum in Valencia

Type of participation: Dissemination at IDC booth and participation at TarDIS panel session
Date: 25-26 October, 2023
Location: Valencia, Spain
Partner(s) attending: Martel Innovate
Description: This event gathers experts, stakeholders, and enthusiasts from Europe to delve into the latest advancements, challenges, and opportunities in big data.

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Open Continuum and Unlock CEI consortia in front of the EUCEI roll-up on top and participation at TARDIS session below.

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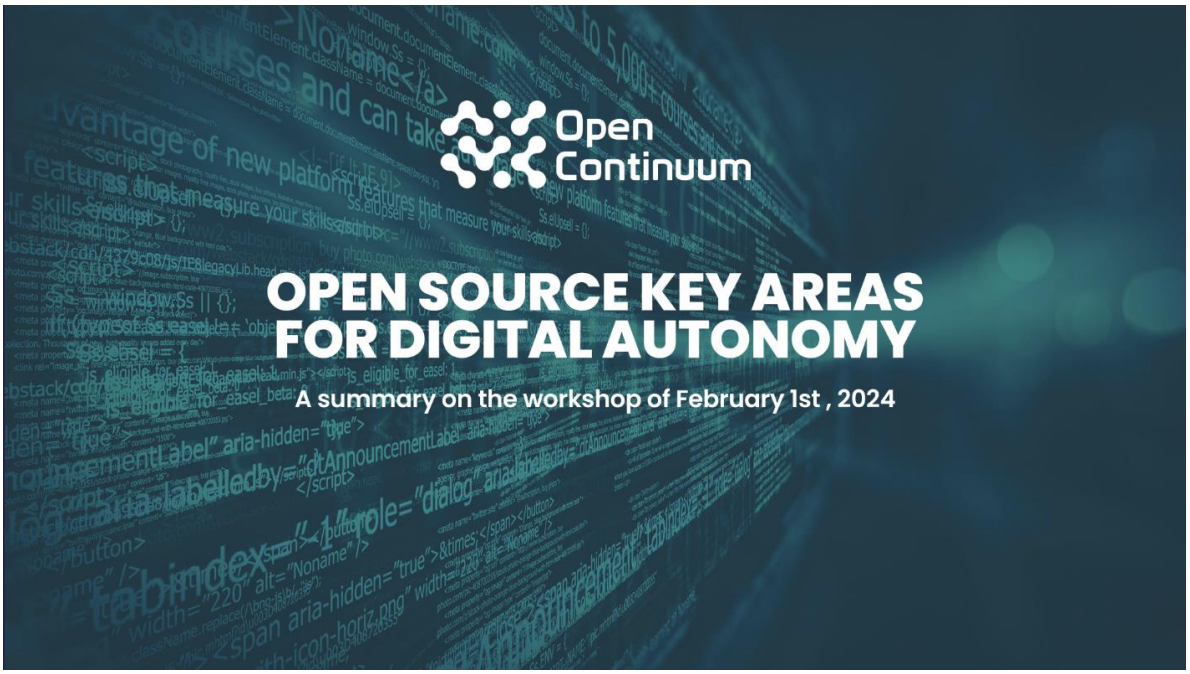
2.7.2 Workshop on Open Source key areas for Digital Autonomy



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Type of participation: providing presentations on EUCEI, Open Source, Reference Architecture and introduction presentations to research clusters like SWARM and MetaOS.
Date: February 1, 2024
Location: Brussels, Belgium
Partner(s) attending: Albert Seubers (MARTEL), Rosaria Rosini, Gael Blondelle (ECLIPSE), Lara Lopez Muñiz(ATOS),
Description: Three Directorate-Generals from the European Commission (Connect, DIGIT and GROW) joined forces to organise a workshop in Brussels to discuss Open Source in four key areas for Digital Autonomy. This workshop is a follow up on a study and workshops from 2022. The focus of this workshop was on the most relevant topics within open source.
Summary of the "Open Source Key Areas for Digital Autonomy" Workshop: https://eucloudedgeiot.eu/summary-of-the-open-source-key-areas-for-digital-autonomy-workshop

2.7.3 ECS Brokerage Event 2024

Type of participation: Unveiling EUCEI 2024 RIAs Challenge Winners
Date: February 20-21, 2024

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Location: Brussels, Belgium
Partner(s) attending: INSIDE
Description: In the wake of the EUCEI 2024 RIAs Challenge the spotlight continues to shine on exceptional projects that redefine the landscape of the computing continuum. INSIDE association as EUCEI Strategic Liaisons Task Force (TF1) leader, recently celebrated the winners during the ECS Brokerage Event 2024, where they received customised awards. photo1 For an in-depth exploration of each project's nuances, innovation, and potential impact, dive into the details here. Congratulations once again to NEPHELE, MYRTUS EU, FLUIDOS and ICOS for their remarkable achievements. Learn more about our other RIAs projects achievements by joining our EUCEI RIAS Showcase Webinars.
Post-event article: https://eucloudedgeiot.eu/metaos-workshop-strategies-future-computing-continuum/

2.7.4 Meta OS Workshop: Ideas and Strategies for the Future of the Computing Continuum

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Type of participation: Presentations by Task Force Leaders

Date: April 10, 2024

Location: Brussels, Belgium

Partner(s) attending: Open Continuum Task Force Leaders

Description: The Meta Operating Systems (MetaOS) workshop, hosted at the Centre de Conférences Albert Borschette and organised by Jan Komarek and Rolf Riemenschneider from the European Commission, brought together research project representatives, experts and stakeholders to discuss the results of the ongoing synergistic efforts in the EUCloudEdgeIoT initiative (EUCEI) and delineate future directions of the computing continuum as well as priority actions for the actors involved.

The event was structured around two main sessions. The morning session was focussed on presenting the work and discussing future improvements of the six task forces set-up under the EUCEI umbrella initiative with the participation of over 50 research projects and initiatives and the coordination of the CSAs OpenContinuum, UNLOCK-CEI and, more recently, NexusForum.

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The afternoon session delved into transversal topics such as IoT platform integration, standardisation, and cybersecurity.
Post-event article: https://eucloudedgeiot.eu/metaos-workshop-strategies-future-computing-continuum/

2.8 CHANNELS

This section provides information about the activities and performance of the communication channels established for the EUCloudEdgeIoT initiative.

2.8.1 Website

In the reporting period (since the last report - August 2023), the EUCloudEdgeIoT website has reached more than 2,3k unique visitors, as can be seen on the image below.

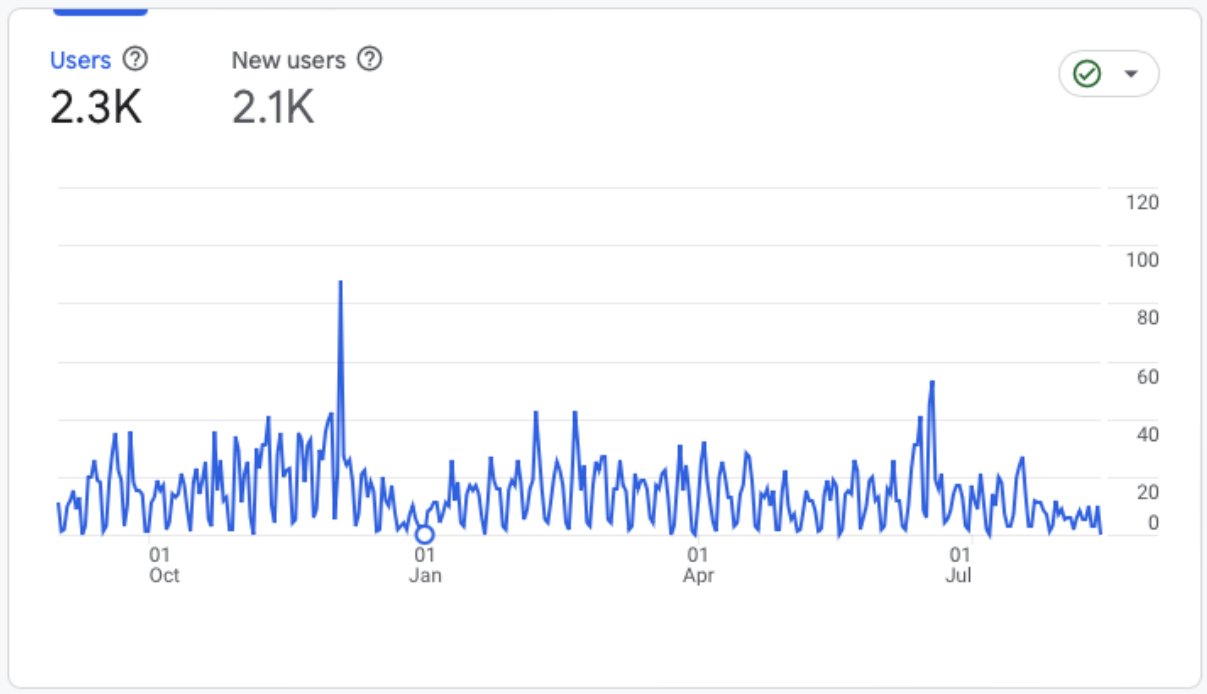

FIGURE 13: EUCEI WEBSITE USERS

Additionally, users have accessed the EUCEI website at least 18.4k times during this period for an average engagement time of at least 3.15 minutes, which shows that the content on the website is interesting for the visitors. In total, the website pages have been visited from 87 countries (figures below), demonstrating the wide reach of the initiative.

FIGURE 5 :EUCEI WEBSITE VISITORS' CHANNELS

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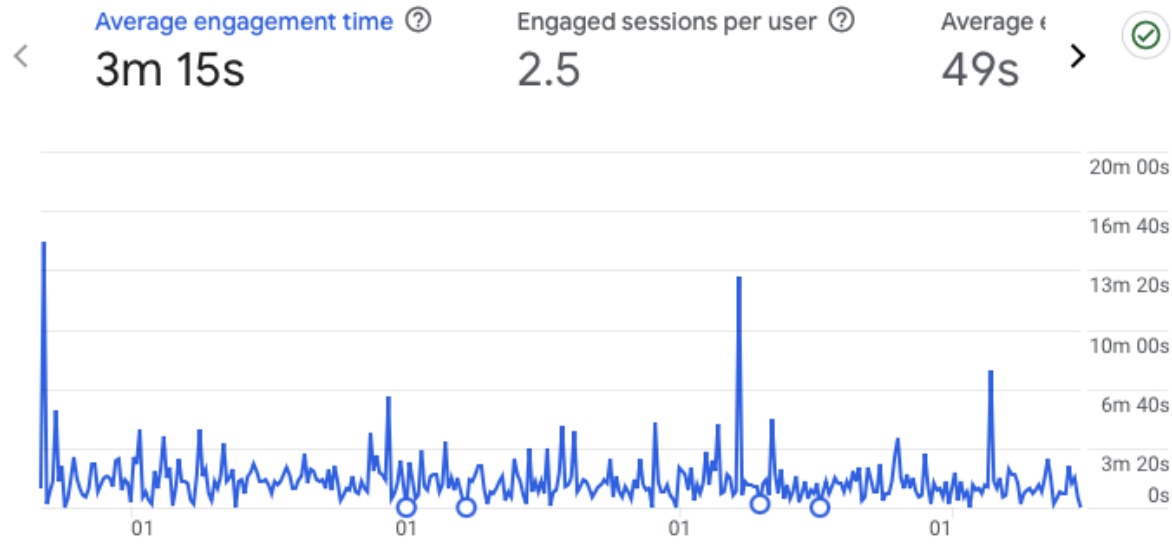

FIGURE 14: EUCEI WEBSITE AVERAGE ENGAGEMENT TIME

	Page title and screen class	↓ Views	Users
		18,478 100% of total	2,314 100% of total
1	Home - EUCloudEdgeIOT	3,200	765
2	Horizon Europe Calls 2024 Information & Brokerage Session: Digital Platforms for the Cloud-Edge-IoT, Innovation through Open Source and Software - EUCloudEdgeIOT	1,366	473
3	Research and Innovation Projects - EUCloudEdgeIOT	862	332
4	Projects Open Calls - EUCloudEdgeIOT	692	257
5	About EUCloudEdgeIoT.eu - EUCloudEdgeIOT	499	291
6	News - EUCloudEdgeIOT	471	110
7	Horizon Europe Open Calls - EUCloudEdgeIOT	357	202
8	Giving Energy an Edge: Showcasing the Edge to Cloud Continuum in Energy - EUCloudEdgeIOT	352	129
9	Architecture - TF3 - EUCloudEdgeIOT	337	139
10	RIAs Showcase - EUCloudEdgeIOT	297	71

FIGURE 15: EUCEI WEBSITE PAGE VIEWS

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		2,314 100% of total	2,118 100% of total	5,767 100% of total	62.45% Avg 0%	2.49 Avg 0%	3m 15s Avg 0%
1	Spain	299	263	725	57.77%	2.42	3m 23s
2	Italy	282	235	1,048	60.72%	3.72	4m 20s
3	Greece	260	230	833	63.35%	3.20	4m 11s
4	Germany	183	155	329	61.5%	1.80	2m 41s
5	Belgium	151	113	279	67.23%	1.85	2m 17s
6	France	104	84	483	68.9%	4.64	6m 28s
7	Netherlands	100	86	211	66.35%	2.11	2m 38s
8	United Kingdom	100	94	128	66.32%	1.28	1m 58s
9	Poland	61	50	118	52.91%	1.93	2m 43s
10	Portugal	56	50	114	58.46%	2.04	3m 30s

FIGURE 16: TOP COUNTRIES FROM WEBSITE VISITORS

2.8.2 Social Media

Each channel's performance is detailed below. It should be noted that these are only organic results (no paid campaigns have been conducted across all channels).

X (formerly Twitter): https://x.com/EU_CloudEdgeIoT
659 followers; 727 posts

EUCloudEdgeIoT's social media channels have been performing admirably. The KPI for Twitter followers (500) has been met and exceeded.

LinkedIn: https://www.linkedin.com/company/eucloudedgeiot/
1019 followers; 401 posts

Similarly, LinkedIn is performing extremely well, and the established KPI (100 followers) has been greatly exceeded.

YouTube
49 videos; 90 Subscribers; 4k views

The YouTube channel, according to deliverable 3.1, is primarily used as a video repository rather than a social media channel. However, Open Continuum has posted 12 videos on their site, with a total of 314 views. More information about these videos can be found in the following section.

2.8.3 Videos

The EUCEI initiative used the Concertation and Consultation meeting to film more than 50 interviews with the RIAs in attendance. Open Continuum is in charge of editing the videos, which were released on a weekly basis. In total, 21 videos have been released. They can be found on YouTube in a playlist called "Our Research and Innovation Community Members." These videos have a total of 1,189 views.

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During the meeting, Open Continuum also filmed an interview with Dr. Max Lemke (Head of Unit Internet of Things, European Commission). Following an initial script developed by Unlock CEI, Open Continuum created a video to present the project using interviews filmed during EBDVF2022 with Open Continuum and Unlock CEI representatives. The video is available on the YouTube channel as the page's introduction video since the last period, and here's the current number of views:

- EUCloudEdgeIoT.eu: Building the computing continuum for business and research | ***202 views***

Open Continuum also recorded some video footage during the two-day meeting and edited it into a highlights video. The video is available on the YouTube channel as the page's introduction video since the last period, and here's the current number of views:

- Concertation and Consultation on Computing Continuum:From Cloud to Edge to IoT | 10-11 May 2023 | ***67 views***

Furthermore, whenever possible, Open Continuum has made recordings from the project's events available. Aside from the 3 recordings made available in the last period, 4 more videos were made available in the second period. Here's the current number of views:

- The Hitchhiker's Guide to Eclipse IoT - Webinar Recording | ***125 views***
- "Open Unification of Edge Compute" - Webinar Recording | ***37 views***
- Horizon Europe Info Day & Pitch Session - Recording ***17 views***
- ***ColonyOS, a Meta Operating System. Webinar by Dr. Johan Kristiansson, RISE | 47 views***

As part of the organisation of the EUCEI RIAs Showcase Webinars, Open Continuum also uploaded all the recordings that were made available on the playlist "RIAs Showcase Webinars", that counts 6 recordings and a total of 414 views.

These videos were then shared on Twitter and LinkedIn to broaden their reach and received positive feedback from viewers.

2.8.4 News Digest

The newsletter's content is compiled with the help of TF6 members, using information gathered during TF6 meetings and forms designed to collect news and events.

As it can be seen below, the number of newsletter subscribers is now 193. Despite the increase in subscribers over the months, the news digest click-to-open rates (CTOR) have been very good (around 30%).

TABLE 1: EUCEI NEWS DIGEST STATISTICS

EUCloudEdgeIoT.eu - News digest 08	26 July 2023	**Title:** A Paradigm-Shift for the IoT-Edge-Cloud Continuum | 2025-2027 research directions available!

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Recipients 193 | Opened 49.74% | Clicked 13.99% | CTOR 28.13%		
EUCloudEdgeIoT.eu - News digest 09	19 September 2023	**Title:** Navigating the Future of Software Engineering: Insights for the Cloud-Edge-IoT Continuum & more news!
Recipients 268 | Opened 35.45% | Clicked 7.09% | CTOR 20%		
EUCloudEdgeIoT.eu - News digest 10	30 October 2023	**Title:** Initial Common Taxonomy in the Continuum available & Registrations open for next Horizon Europe Calls' Info Session
Recipients 331 | Opened 42.9% | Clicked 9.67% | CTOR 22.54%		
EUCloudEdgeIoT.eu - News digest 11	7 December 2023	**Title:** Discover the outcomes of our latest events & apply for the available funding opportunities in Cloud-Edge-IoT
Recipients 343 | Opened 40.52% | Clicked 8.75% | CTOR 21.58%		
EUCloudEdgeIoT.eu - News digest 12	23 January 2024	**Title:** Discover the outcomes of our latest events & apply for the available funding opportunities in Cloud-Edge-IoT

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Recipients 346 Opened 41.04% Clicked 8.96% CTOR 21.83%		
EUCloudEdgeIoT.eu - News digest 13	2 February 2024	**Title:** SWARM: How are projects implementing it? & Check latest funding opportunities in Computing Continuum
Recipients 358 Opened 46.09% Clicked 7.82% CTOR 16.97%		
EUCloudEdgeIoT.eu - News digest 14	28 March 2024	**Title:** Update on the AI Act & latest opportunities in Computing Continuum
Recipients 361 Opened 42.94% Clicked 11.08% CTOR 25.81%		
EUCloudEdgeIoT.eu - News digest 15	30 April 2024	**Title:** Update on the MetaOS Strategy & latest opportunities in Computing Continuum
Recipients 357 Opened 39.5% Clicked 6.16% CTOR 15.6%		
EUCloudEdgeIoT.eu - News digest 16	31 May 2024	**Title:** What is the value of the EUCloudEdgeIoT research community in the European industry sector? Find out on June 18!
Recipients 649 Opened 25.58% Clicked 5.08% CTOR 19.88%		
EUCloudEdgeIoT.eu - News digest 17	28 June 2024	**Title:** Managing IoT

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		Interoperability and Convergence with Edge and Cloud Computing Technologies & what's new from EUCEI

Recipients	Opened	Clicked	CTOR
738	19.92%	4.61%	23.13%

Newsletter Subscribers	
Total active subscribers	710
New (Last year)	517
Unsubscribed (Last year)	24

2.8.5 Mailing Lists

Below we list the number of members included in each mailing list:

- **Community:** 62 members (Total 280)
- **Coordinators:** 7 members (Total 62)
- **TF1:** 12 members (Total 38)
  TF2: 2 members (Total 41)
- **TF3:** 82 members (Total 131)
- **TF4:** 4 members (Total 40)
- **TF5:** 0 members (Total 33)
- **TF6:** 26 members (Total 137)

2.8.6 Joint Repository

No updates were done to the joint repository during this period.

2.8.7 Press Releases

No press releases were sent during this period.

2.8.8 Zenodo

As off the release of this deliverable, the EUCloudEdgeIoT Zenodo channel counts with a total of 50 uploads, where the great majority has been included by Open Continuum and Unlock CEI, although other projects are encouraged to post there as well (after a monitoring done by either

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of the two responsible CSAs). We highlight the results so far of the following uploads (as they are the ones that mainly concern Open Continuum):

- Functional View of the Continuum Reference Architecture: Minimum set of expected functionalities | Posted on June 14, 2024 - 122 views, 96 downloads.
- The research community booklet | Latest version posted on April 29, 2024 - 928 views and 460 downloads.
- EUCEI Open Calls Brochure | Posted on October 4, 2023 - 102 views, 50 downloads.
- The European vision and research directions in the Cloud-Edge-IoT domain for 2025-2027 (Distillation of the Concertation Meeting in Brussels on May 11, 2023) | Posted on July 19, 2023 - 291 views, 223 downloads
- The European vision and research directions in the Cloud-Edge-IoT domain for 2025-2027 (Executive Summary) | Posted on July 17, 2023 - 420 views, 268 downloads
- Driving Innovation in the Cloud-Edge-IoT Continuum (A summary of the Concertation Meeting in Brussels on May 10, 2023) | Posted on July 17, 2023 - 151 views, 108 downloads
- Project brochure | Posted on May 16, 2023 - 470 views, 256 downloads

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3 KPIS AND UPDATES TO THE STRATEGY

In the table below, the expected KPIs to be achieved by the end of the project (Column "Target") are compared to the results achieved thus far in the first year of the project (Column "Results Y1"). Furthermore, the final column elaborates on the reasoning behind the achieved result and describes strategy updates to be implemented in the second and final year of Open Continuum.

TABLE 2: KPIS AND UPDATES TO THE STRATEGY

Measure	Indicators	Source and methodology	Target	Results Y1	Results Y2
Flyers	N. of flyers	Distribution via participation to and organisation of dedicated events. Electronic distribution via website	> 4	2	2
Posters /roll-ups	N. of posters/ roll-ups (by project end)		> 4	4	6
Open Continuum Portal	Unique visitors to the website (yearly avg)	Newsletters, Deliverables, webinars, News, Publications, Videos, etc.	> 5000	1.8k	2.3 k
Social Networks	Twitter followers	Keeping Open Continuum profiles on such networks active via regular posting and monitoring	>500	417	659
	LinkedIn followers (new followers/ year)	Keeping Open Continuum profiles on such networks active via regular posting and monitoring	> 200	467	1,019
e-Newsletter (published quarterly)	N. of subscribers (by end of the project)	Recording of subscribers to the electronic newsletter	> 500 subscribers, 8 newsletters	193 subscribers 8 newsletters	
Videos	Videos published on the YouTube channel and number of views	Introduction, informative and educational videos to support awareness creation and stakeholders' engagement	8 videos, 80 views per video	11 videos, 310 views total	49 videos, 4k views

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Open Continuum Summit (one major event per year)	Average number of participants per edition	Attendance proof, presented material, photos, animation of social media channels, events' reports	> 200	127	delivered
Participation in events and presentations	External events attended to present the project, support the community and increase outreach	Attendance proof, presented material, photos, animation of social media channels, events' reports	> 15 events by the end of the project	11	15
Webinars	Average number of participants	Attendance proof, video-streaming, presented material, animation of social media channels	> 6 webinars ~ 25-30 attendees	W1: 27 atts W2: 240 atts W3: 86 atts W4: 32 atts W5: 73 atts ——————— 458 total atts	W6: 50 W7: 62 W8: 26 W9: 52 W10: 62 W11: 77 W12: 30 W13: 104 W14: 30 W15: 42 ——————— 535 total atts
Expert consultation workshops	Number of workshops engaging experts in WP1 activities	Presentations, informative and promotional material, reports	4 with > 30 attendees	1	4
Training events with computing continuum experts on open-source standardisation workshops	Number of trainings	Attendance proof, video-streaming, presented material, animation of social media channels	4 trainings > 25 attendees	T1: 48 att. T2: 10 att. T3: 47 att. T4: 51 att. ——————— 39 atts (average)	delivered

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4 CONCLUSIONS

This Community Building and Community Strategy Report (Deliverable D3.3) marks the culmination of the Open Continuum project's efforts in establishing a robust and engaged community within the European Cloud, Edge, and IoT continuum. Over the course of the project, significant strides were made in community building, communication, and dissemination, contributing to the overarching objectives of the EUCloudEdgeIoT initiative.

Key achievements include the successful engagement of over 54 projects and seven initiatives, the organisation of numerous events and webinars, and the widespread dissemination of information through various channels, including the EUCEI website, social media platforms, and newsletters. These activities not only amplified the visibility of the project but also fostered collaboration and knowledge exchange among stakeholders across Europe and beyond.

As the Open Continuum project concludes, the continuity of these efforts is ensured through the NexusForum.EU initiative. NexusForum.EU will build upon the established communication and dissemination framework of the EUCEI initiative, ensuring a cohesive and consistent approach across all activities. This will be achieved through a unified branding strategy, collaborative management of communication channels, and an integrated social media strategy that maintains the momentum generated by the Open Continuum project.

Additionally, NexusForum.EU will continue to leverage the EUCEI website as the central hub for information, while also taking on responsibilities for its maintenance and updates. The initiative's participation in Task Force 6 (Communication) ensures that all communication activities are aligned and effectively managed, further supporting the broader goals of the EUCEI initiative.

Through these efforts, NexusForum.EU aims to not only sustain but also expand the impact of the EUCloudEdgeIoT initiative, driving forward the vision of a cohesive, interoperable, and innovative cloud-edge-IoT ecosystem in Europe. The continued focus on strategic communication and community engagement will be critical in achieving the long-term objectives of digital sovereignty and technological leadership in the computing continuum.

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