AC3

Seamlessly handling application life-cycles and underpinning IT and networking resources

On top of a federated infrastructure that includes Cloud, Edge, for edge, and data sources from multiple stakeholders

STAY CONNECTED WITH US!

Newsletter Issue 4 | Jan 2025

We are excited to announce the third newsletter issue of the AC3 HEU Project! The scope of our newsletter is to keep you updated with the lates activities of the project.

Through our newsletter you will be introduced to our project's latest advancements and you can follow up on the latest news and events of the AC3 project.

To always stay up to date and discover more about us, you can visit our website or follow us on Twitter and LinkedIn

AC3 in a Nutshell

The AC3 Concept

The AC3 project builds on the emerging CECC concept aiming to unify and federate cloud and edge resources using common management components to support emerging applications needing low latency, data-intensive and using different data sources. The AC3 project innovates in the following key areas: (1) revisit the application definition and LCM, (2) zero-touch configuration and management of the CECC infrastructure including data, (3) and resource federation. These key areas consider AI/ML, security, energy, semantics and ontology, and trust as the key enablers.

Learn more

Meet our Team

The AC3 consortium comprises 15 partners that have extensive experience and expertise in Cloud and Edge computing, Data management, IoT, Cyber Security, trust management and AI/ML algorithms and tools, which form a complete group uniting the necessary interdisciplinary knowledge, expertise, skills, and resources capable of achieving the demanding project goals. The consortium is multidisciplinary, encompassing 7 major large industrial companies, 4 innovative SMEs, along with complementary skills obtained from 2 research institutes, and 3 universities to help achieve the ambitious goals of the AC3 project.

Learn more

Objectives

- A novel architecture for Cloud Edge Continuum including the far edge
- A new enablers for microservice-based applications deployment in CECC
- New federation model as well as trust and security enablers to accelerate resource sharing in CECC
- Integrate data management as a PaaS in CECCM
- Zero-touch management and configuration of application LCM
- Green-oriented zero-touch configuration and management of the CECC infrastructure
- Towards end-to-end CECC network programmability

Learn more

Use-Cases Objectives
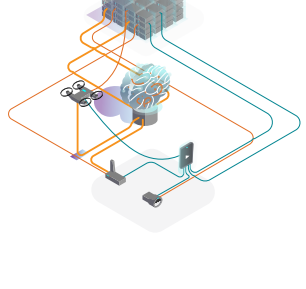
Use-case 1: IoT and Data

1. To provide an overview of an IoT-based framework that incorporates edge AI provided by CECC infrastructure.
2. To highlight the purpose of the framework, which is to enhance performance and reliability of infrastructures through automation, smart sensing, and monitoring.
3. To emphasize the integration of the physical and digital worlds, leading to increased data processing for decision-making and triggering responses to sensed conditions.
4. To showcase the capabilities of the CECCM in deploying and running microservices at the edges of the monitored infrastructure.
5. To underline the benefits of leveraging CECC infrastructure, including lower latency in data processing, improved data security and privacy, and accelerated development and distribution of applications across the cloud-edge continuum.

Use-Case 2: Smart Monitoring System using UAV

1. To harness the current proliferation of video surveillance devices using enabling technologies and techniques such as UAVs (Unmanned Aerial Vehicles), far edge computing, AI (Artificial Intelligence), and ML (Machine Learning).
2. To demonstrate the flexibility offered by CECM (Centralized End-to-End Control and Management) to easily and seamlessly change the behavior of the application.
3. To showcase the ability of the application to adapt its behavior through a simple SOTL (Service-Oriented Technology Layer) based request. This includes variations in object tracking, movement detection, prediction, human activity surveillance, and unusual activity detection.
4. To demonstrate the capabilities of CECM in deploying and running micro-services on the far edge, such as UAVs.
5. To showcase the ability of the system to anticipate drone unavailability and migrate the micro-service from one drone to another or to the infrastructure edge, ensuring uninterrupted monitoring functionality.
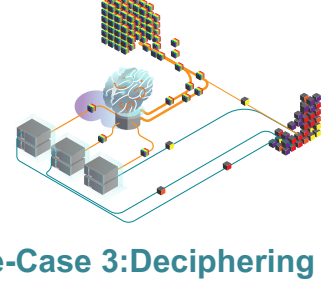
Use-Case 3:Deciphering the universe: processing hundreds of TBs of astronomy data

1. To demonstrate the capabilities of CECCM (Centralized End-to-End Control and Configuration Management) in deploying and running astronomical software.
2. To enable the processing of large volumes of data cubes, potentially reaching hundreds of terabytes, utilizing the CECC infrastructure.
3. To integrate scientific applications within hybrid cloud-native infrastructures, optimizing the computation process through the use of smart AI algorithms.
4. To facilitate the analysis of novel data gathered from newer and additional instruments and data sources, such as the James Webb Space Telescope (JWST).
5. To provide an opportunity for the astronomy community, scientific teams, and research groups to accelerate their analysis of astronomical data, improving the efficiency and speed of their research activities.

Learn more

Latest News & Events

AC3 at DevConf CZ
12-14 June 2024

Ben Capper & Ryan Jenkins from RedHat presented a lightning talk on DevConf_CZ 2024 in Brno about AC3 project.

During the session, they explored how the Roque de los Muchachos observatory partnered with the University of Madrid exploits the AC3 infrastructure to store and process massive amounts of data using advanced techniques. These functions are provided by application microservices which are containerised and strategically placed on a range of environments, from cloud to far edge.

Learn more

AC3 Showcased at the Spanish Astronomical Society Meeting
14-19 July 2024

The publication titled "Distributed Processing of Integral Field Spectroscopy Data within the European AC3 Project", authored by Cristina Catalán-Torrecilla from the Universidad Complutense de Madrid (UCM), was presented as a poster during the XVI Scientific Meeting of the Spanish Astronomical Society (SEA). The event took place in Granada, Spain.

Learn more

AC3 at SMARTECH at Thessaloniki International Fair
7-15 September 2024

AC3 Partner, ISI/ATH was present at the Thessaloniki International Fair in Greece. ISI/ATHENA engaged the audience on the motivation of AC3 – "Seamlessly handling application life-cycles and underpinning IT and networking resources".

ISI/ATH also explained the potential of 6G technology and showcased a demo on VR over a private beyond 5g network, developed during several AC3 and other SNS JU projects, to the vice-minister of Development Ms. Zoe Rapti who visited Athena Research Center stand during the 88th Thessaloniki International Fair TIF-HELEXPO.

Learn more

AC3 at NexusForum2024 Summit
19-20 September 2024

Arsys' Sara Madariaga, along with representatives from other Horizon Europe projects, was invited to participate in the session titled "Pitch Sessions: Horizon Europe Projects," held in collaboration with EUCloudEdgeIoT at the NexusForum2024 Summit in Brussels on September 19-20, 2024. This gathering provided an invaluable platform to showcase the pioneering work and significant achievements of Horizon Europe initiatives.

In her presentation, Sara Madariaga from Arsys highlighted the development of the Cloud Edge Continuum Computing Manager (CECCM), a cutting-edge platform featuring AI/ML capabilities and Explainable AI (XAI). The event fostered meaningful exchanges among participants, encouraging collaboration and knowledge-sharing across the European research and innovation landscape.

AC3 at IEEE CAMAD 2024
21-23 October 2024

IEEE CAMAD 2024 was co-organised by IEEE Communications Society, ICCS - NTUA, and AC3 coordinator Isi Athena, and it was held in Athens.

A total of 122 papers & abstracts and 11 real life demos were presented.

IEEE CAMAD 2024 welcomed 160 delegates from 22 different countries. They had the opportunity to learn the latest advances in Intelligent 6G networks from 18 Smart Networks and Services Joint Undertaking (SNS JU) funded projects.

The workshops were sponsored by CTTC Group of Companies (HTO), Intracom Telecom, ICCS - NTUA, and 6G-BRICKS Project. The ACCC AC3 project along others technically sponsored IEEE CAMAD2024 with the organization of Workshops and Special sessions.

AC3 participated in Session 10: Agile and Cognitive Cloud-edge Continuum management with three presentations:
- "*Security and Trust Management in Cloud Edge Continuum: AC3 project approach*" by Sofiane Messaoudi; Abd Elghani Melani; Ayoub Mokhtari; Adlen Ksentini.
- "*Proof of concept: the potential of Use Case 3 within the AC3 Project to process astronomy data*" by Mario Chamorro-Cazorla; Cristina Catalán-Torrecilha; Ray Carroll; Ben Capper; Ryan Jenkins; Valeria Shapoval.
- "*Data Management over Cloud Edge Continuum in the context of AC3*" by Dimitrios Amaxilatis; Dimitrios Klonidis; Adlen Ksentini; Vrettos Moulos; Souvik Sengupta; Nikolaos Tsironis & AC3 coordinator Prof. Christos Verikoukis.
In Session 17: Agile and Cognitive Cloud-edge Continuum management - 2 with 2 presentations:
- "*Kubernetes Network Programmability in the AC3 EU Horizon Research Project*" by Ben Capper; Ray Carroll; Ryan Jenkins; Valeria Shapoval.
- "*AC3 Overview*" by Vasileios Avgerinos; Kostas Ramantas.
Finally a demo titled "*Real-time Machine Learning-based IoT Data Analysis in the Edge Cloud Continuum using AC3*" was also presented.

Learn more

AC3 4th Plenary meeting held in Athens
24-25 October 2024

Meet in Athens 4
24th and 25th

The 4th Plenary Meeting of the AC3 project took place on October 24–25, 2024, hosted by ISI/Athena Research Center in Athens, Greece. The two-day event gathered consortium members to review key developments, achievements, and next steps in advancing the project's mission.

The first day focused on partner updates and innovations, where members showcased recent technical and operational advancements driving AC3 forward. Discussions covered new methodologies, technological breakthroughs, and collaborative strategies shaping the project's trajectory.

On the second day, the consortium reviewed milestones achieved and set action points for the next phases. The team outlined strategic priorities and ensured alignment on upcoming tasks.

The meeting concluded with a strong sense of commitment and collaboration, reinforcing the collective effort to drive AC3's impact and innovation.

Learn more

Consortium