

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

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

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Newsletter Issue 2 | December 2023

We are excited to announce the second newsletter issue of the AC3 HEU Project! The scope of our newsletter is to keep you updated with the latest 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.

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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.

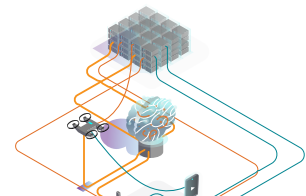
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Objectives

- 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

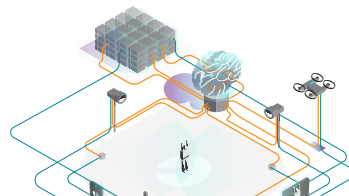
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Use-Cases Objectives



Use-case 1: IoT and Data

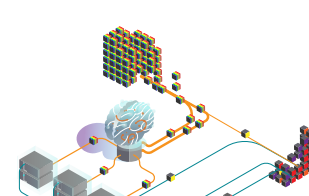
1. To provide an overview of an IoT-based framework that incorporates edge AI provided by CECC infrastructure.
2. To highlight the purpose of the framework, which is to enhance performance and reliability of infrastructures through automation, smart sensing, and monitoring.
3. To emphasize the integration 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 CECC (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 CECCM 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.

[Learn more](#)



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.

Latest News & Events

1st plenary meeting at EUR premises in Sophia Antipolis

21 June 2023



During the meeting, various critical topics concerning the project were discussed. The plenary provided a good opportunity for most of the project's partners representatives to meet and also network on topics of common interest. The meeting ended with a group picture after reaching common grounds and understanding on the discussed work packages and their related tasks.

[Learn more](#)

2nd plenary meeting in Barcelona

5-6 October 2023

The second plenary meeting was organised by the project coordinator IQU at the Vinci Marítimo hotel in Barcelona, and it was very interesting with many fruitful discussions. Glad to see active participation from the consortium members involved in this key project on the cloud edge continuum. Looking forward to the next milestones.



[Learn more](#)

AC3 was represented by ARS at NEXUS FORUM 2023 in Brussels

5-6 October 2023



AC3 was presented by David Vallejo (Head of the PMO, Arsys) in the HIGH-IMPACT HORIZON EUROPE PROJECTS session. During this session, AC3 and other projects, explained how they are addressing technological challenges such as workload orchestration across the cloud-edge continuum, the use of AI for cloud operations, the development of middleware solutions for cloud interoperability/portability, the adoption of emerging container and virtualization technologies, or the management of heterogeneous infrastructure resources across public cloud or telco/5G edge service providers.

[Learn more](#)

Congress on "The role of universities in the Sustainable Development Goals: teaching innovation and significant experiences" in Madrid

23-25 October 2023

Dr. Cristina Catalán-Torrecilla presented the work 'Technology Infrastructure for energy aware: supporting the use of green energy' at the congress. In this talk, she presented the AC3 project to the university community paying special attention to the green-oriented objective of the AC3 project. AC3 aims to have a direct impact on society by reducing the energy consumption of the CECC infrastructure. Initiatives like the one shown here will put Europe in the forefront of scientific research in Green CECC.



To watch the presentation (in Spanish) press here:



[Learn more](#)

AC3 was presented during the "UCM group of Extragalactic Astrophysics and Astronomical Instrumentation (GUAIX) meeting

27 October 2023



Dr. Cristina Catalán-Torrecilla presents the work 'The AC3 project' during the "UCM group of Extragalactic Astrophysics and Astronomical Instrumentation (GUAIX) meeting" that took place at the Physical Faculty (Complutense University). In this talk, an overview of the AC3 EU-project was shown with a special focus on the astronomical software applications that are being implemented in the context of this project. This would demonstrate the CECCM's capabilities to deploy and run astronomical software to process data cubes. The ultimate goal is to enable the whole astronomy community to accelerate the analysis of the novel data gathered from newer IFS instruments.

[Learn more](#)

IQU at SMART CITY EXPO 2023 in Barcelona

9 November 2023

The project coordinator (IQU) participated in the Smart City Expo 2023, which took place from the 7th to the 9th of November 2023. This immersive participation involved networking with industry experts, attending insightful sessions, and exploring innovative solutions showcased during the event.



[Learn more](#)

ISI at Patras Innovation Quest (IQ) 2023

25 November 2023



On November 25, 2023 a session was also organized on "Cutting edge technologies, innovative applications and perspectives". The session was opened by the Institute director Professor Chrysostomos Stylios speaking on "the role of the Industrial Systems Institute in the regional innovation system", followed by Dr Athanasios Kalogeras speech on "Digital Twins in manufacturing and other application areas", Dr Ilias Politis speech on "Advanced Cybersecurity techniques based on Artificial Intelligence" and Dr Kyriakos Stefanidis speech on "Management of cybersecurity incidents in enterprise infrastructures".

[Learn more](#)

Consortium



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