CELTIC-NEXT
∑eureka Cluster

Project Information

DAWN6G

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Partners:

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Instituto de Telecomunicações, Portugal

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Data integration of netWorks and applications for eNhanced management towards 6G

DAWN6G is a strategic enabler for the future of 6G, delivering intelligent, automated network management through real-time data integration. Its modular ecosystem supports high-impact use cases—like private networks, digital twins, 6G IoT control, and remote mobility—ensuring scalable, interoperable solutions tailored to industry needs. By aligning advanced assurance and fulfilment technologies with vertical demands, DAWN6G positions Europe at the forefront of global 6G innovation.

Main focus

Next-generation mobile networks will require advanced management capabilities that are scalable, largely automated, and reliable in order to exploit future use cases fully. In addition, these solutions should enable the integration of data from the underlying networks and applications to enrich such advanced management capabilities. In this project, we will focus on developing a new framework for enhanced management of next-generation mobile networks towards 6G and the over-the-top services and contents. This solution embraces new Assurance technologies as responsible for running operations -along with monitoring, fault management, measuring impact analysis and correcting to ensure best performance, including quality management- and integrates the information from the underlying 5G+/6G networks, the platforms and the applications.

As a result of this project, we will develop the DAWN6G Ecosystem, which comprises different technologies for 6G Assurance & Fulfilment of beyond 5G networks, as well as Enablers for 6G network management and for 6G Use Cases. This holistic approach ensures that service quality and operational efficiency are maintained across increasingly complex and dynamic network infrastructures.

Approach

To support the anticipated complexity and performance requirements of future 5G-Advanced and 6G use cases, next-generation mobile networks will require management architectures that are natively scalable, highly autonomous, and resilient. These architectures must enable the systematic collection, integration, and correlation of multi-domain data to facilitate intelligent, closed-loop network management and orchestration.

Undoubtedly, the arrival of 6G will cause the creation of an avalanche of data coming from the operators and third parties, a kind of information which will be essential for network and service management purposes.

In this context, the objectives of DAWN6G are aimed at addressing fundamental management capabilities relevant to future networking infrastructures, applications and usage. Many of the technological

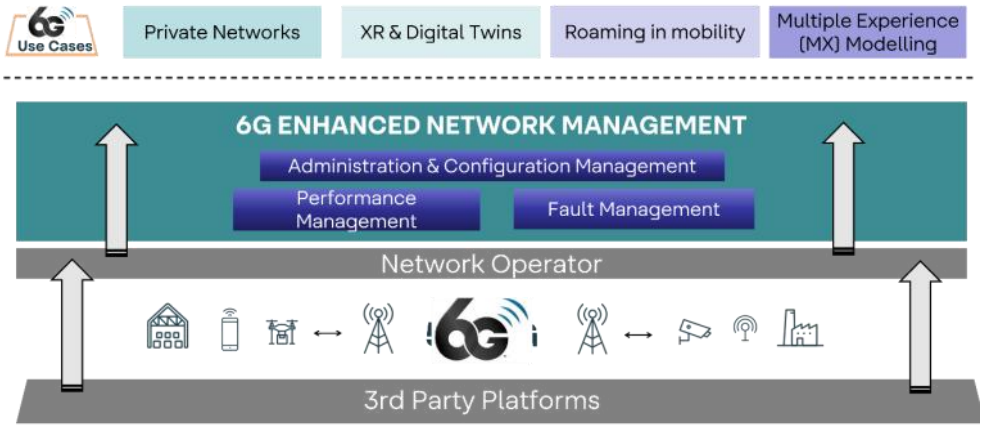

Figure 1—High level architecture of DAWN6G

challenges regarding 6G and deployment are still unsolved. Also, the standardization process is ongoing and, therefore, DAWN6G is very timely.

In this project, we will focus on developing a new framework for enhanced management of next generation mobile networks towards 6G and the over-the-top services and contents, which integrates the information from the underlying 5G+/6G networks, the platforms and the applications, and embraces new Assurance and Fulfilment technologies (performance, fault, quality assurance monitoring, and users and devices administration).

In addition, DAWN6G will include specific scenarios and use cases for managing private networks including digital twins, behavioural control of 6G IoT, remote management in mobility and roaming in non-public networks, among others, which will be tested on the simulators and testbeds available in this project. Besides, in DAWN6G we will develop 6G-based enablers for improved 6G Network Capabilities for the exposure of data, Artificial Intelligence (AI) methods and Machine Learning (ML) algorithms, as well as enablers for the aforementioned 6G Use Cases.

Main results

The DAWN6G project brings together leading partners to deliver cutting-edge innovations in next-generation connectivity. Each partner contributes their expertise to develop advanced functionalities within a unified ecosystem designed to transform technology into real-world business solutions. At the heart of DAWN6G is a modular architecture that enables seamless integration and interoperability. Our commercial modules will be built to work together, offering a flexible and scalable solution tailored to the needs of diverse markets and customers. During the final phase of the project, we will showcase a fully integrated prototype—demonstrating how each module collaborates to deliver powerful, end-to-end capabilities. The architecture enables interoperability among modules, allowing customization to meet the specific requirements of individual operators. With our expert guidance, the clients can select the modules that best fit your goals, ensuring a customized solution that drives value and innovation.

Impact

DAWN6G introduces a next-generation framework for 6G network management, integrating sophisticated techniques for Service Assurance and Fulfilment. These innovations are designed to address complex operational scenarios and targeted use cases, enabling dynamic, intelligent orchestration across heterogeneous network environments. The project places strong emphasis on the industrial and economic ecosystems that will emerge around these technologies, positioning Europe to lead in the global race for 6G innovation and deployment.

A core pillar of DAWN6G is its alignment with vertical industries, which stand to gain the most from the use cases enabled by the developed technologies. From private networks to intelligent mobility, the framework ensures that sector-specific requirements are met through modular, interoperable solutions that scale with demand.

Public Authorities

This project has been co-funded in Spain by the Centro para el Desarrollo Tecnológico Industrial E.P.E. (CDTI), in Portugal by Portugal 2030 and in Türkiye by Tübitak.

About CELTIC-NEXT

CELTIC-NEXT is the EUREKA Cluster for next-generation communications enabling the digital society. CELTIC-NEXT stimulates and orchestrates international collaborative projects in the Information and Communications Technology (ICT) domain.

The CELTIC-NEXT programme includes a wide scope of ICT topics based on new high-performance communications networks supporting data-rich applications and advanced services, both in the ICT sector and across all vertical sectors.

CELTIC-NEXT is an industry-driven initiative, involving all the major ICT industry players as well as many SMEs, service providers, and research institutions. The CELTIC-NEXT activities are open to all organisations that share the CELTIC-NEXT vision of an inclusive digital society and are willing to collaborate to their own benefit, aligned with their national priorities, to advance the development and uptake of advanced ICT solutions.

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