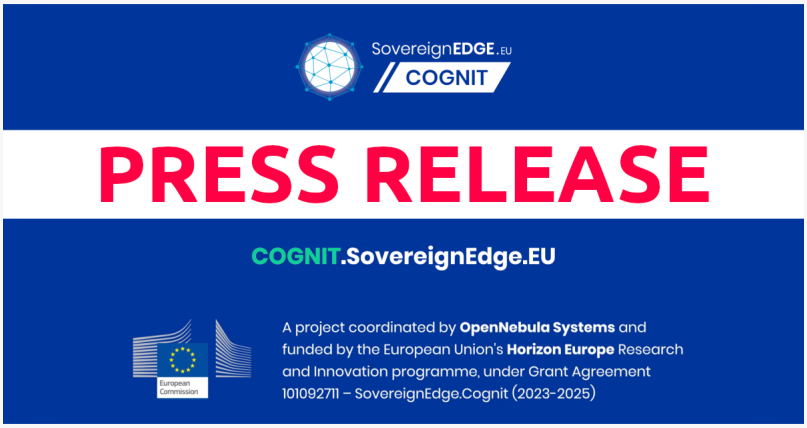
European project COGNIT releases the Architecture of its AI-enabled Serverless Framework for the Cloud-Edge Continuum

The European Commission is supporting a new strategy on the next-generation Cloud-Edge-IoT Continuum with more intelligence and autonomy at the edge.



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MADRID, SPAIN, June 27, 2023 /EINPresswire.com/ -- OpenNebula Systems, the coordinator of the SovereignEdgeEU initiative, announced that the Horizon Europe project COGNIT has released the first version of the Reference Architecture that will drive the open source implementation of its AI-enabled adaptive serverless framework for the Cognitive Cloud-Edge Continuum.

This public report defines the main components of the future COGNIT Function-as-a-Service (FaaS) platform, identifies the main software requirements derived from Use Cases requirements, describes the methodology and specific scenarios that are being employed for the verification of its innovative functionalities, and provides an initial plan for both the instantiation of the COGNIT Architecture and the prioritization of Software Requirements during the upcoming research and innovation cycles of the project. By meeting a number of cross-cutting sovereignty, sustainability, interoperability, and security requirements, the COGNIT platform will contribute to EU digital policies and strategic priorities related to the Cognitive Cloud, including the Digital Decade Programme and the Open Source Software Strategy 2020-2023.

The main objectives of the COGNIT Project, as defined by its Reference Architecture, are:
1) To support a new innovative Serverless paradigm for edge application management, based on code offloading.
2) To enable the secure on-demand deployment of large-scale, highly distributed and self-adaptive serverless environments using existing data processing resources from cloud/edge infrastructure providers, including local data centres, cloud providers, and 5G/telecom operators.
3) To optimise where data is processed according to changes in application demands and

behaviour, and energy efficiency heuristics.

> As proud coordinators of the COGNIT Project, we know that Europe's digital sovereignty can only be truly advanced by combining its impressive R&D&I capabilities with the power of European open source."
>
> *Dr Alberto P. Martí, VP of Open Source Innovation, OpenNebula Systems*

The COGNIT Project will change how IoT and edge applications are processed across the Cloud-Edge Continuum, providing application developers with seamless, secure, and interoperable access to computing and data processing service environment that abstracts the large-scale, geo-distributed infrastructure that forms the Cloud-Edge Continuum. This approach will enable developers to offload tasks with dynamic execution requirements in terms of special hardware devices (e.g. GPUs), infrastructure capabilities and capacities, specific execution environments, communication patterns, cost performance, latency, security, and energy efficiency, setting the foundations for a new and revolutionary "continuum-native paradigm".

Visit COGNIT.SovereignEdge.EU for more details.

SUPPORTING PARTNER QUOTES:

"By fusing AI into the Edge Cloud, COGNIT is developing a European framework that will speed up the deployment of smarter, energy-efficient edge applications. Umeå University is one of the world's leading research institutions in autonomous Cloud resource management, and we are delighted to be working with such an excellent and talented team," said Dr Paul Townend, Associate Professor at Umeå University.

"Thanks to COGNIT's new distributed Function-as-a-Service (FaaS) paradigm, IoT and edge devices will be able to offer compute-intensive edge applications to their users through the smart offloading of tasks to the Cloud-Edge Continuum," said Dr Idoia de la Iglesia, IoT & Digital Platforms Team Leader at Ikerlan.

"Great team, cutting edge open source technologies, and new challenges with COGNIT! We are very excited to have CETIC's cyber-security solutions—including the orchestration engine Vacsine—put into a distributed anomaly detection use case at the edge in collaboration with European technology partners," said Nikolaos Matskanis, Project Manager at CETIC.

"RISE looks forward to participating with edge expertise and coordinating edge clusters across Europe as part of the COGNIT Project. This R&D initiative will take Europe closer to the challenging goal of having 10,000 sustainable and secure edge nodes across Europe by 2030," said Dr Hanifeh Khayyeri, Vice-President of Computer Science at the Research Institutes of Sweden (RISE)

“Moving computing closer to where data happens is going to change our daily lives. To do that in a sustainable way, it is crucial to invest in technologies that enable intelligent offloading from IoT devices to the cloud-edge continuum. We are happy to join forces in the COGNIT Project building up a European sovereign stack for the edge that leverages SLE Micro, NeuVector, K3s, and other Kubernetes-related technologies led by SUSE,” said Dr Thomas Di Giacomo, Chief Technology and Product Officer at SUSE.

“Traffic and mobility sectors have been using proprietary edge solutions during the last three decades. The COGNIT Project will allow ACISA to implement an open cloud-edge continuum framework that can be used by city councils to integrate third-party solutions compatible with our newly developed far-edge platform, M-HUB (where we deploy our Traffic Light Controller), and our cloud Smart City Platform, Saturno,” said Antonio Lalaguna, CTO at ACISA.

“Thanks to the COGNIT Project, we will turn a standard energy meter into a Smart Energy Assistant that manages households’ energy production and consumption, leveraging our open-source operating system, Phoenix-RTOS, ML algorithms for energy prediction and FaaS runtimes for offloading heavy processing tasks to the cloud-edge continuum,” said Kaja Swat, COO at Phoenix Systems.

“We are really proud to be part of the COGNIT Project. In a world with a growing number of smart and interconnected sensors, the use of common resources must be even smarter. The COGNIT open source framework will strengthen the European cloud and edge ecosystem,” said Dr Riccardo Valentini, Founder of Nature 4.0.

“Atende Industries is very proud to be a member of COGNIT Project! Our role is to create unconventional and forward-looking solutions for the European energy sector, combining our besmart.energy platform for smart energy systems with next-generation energy meters using Phoenix-RTOS,” said Dominik Bocheński, Director of the Smart Grid Solutions Department at Atende Industries.

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ABOUT OPENNEBULA SYSTEMS:
OpenNebula Systems develops the open source cloud and edge computing platform OpenNebula, supports its Community, and provides SLA-based support, enterprise tools, consulting, and managed cloud services. OpenNebula Systems has a global presence, with offices in Europe and the US.

Check OpenNebula.io/innovation for more information.

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