Automated zero-touch cross-layer provisioning framework for 5G and beyond vertical services

Newsletter #11

December 2025

Pioneering the Future of 5G and Beyond

Discover the world of cloud computing and networking with ACROSS – *Newsletter Edition **#11***

Welcome to the **Eleventh Edition** of our Newsletter, featuring all the latest news from **ACROSS (Automated zero-touch cross-layer provisioning framework for 5G and beyond vertical services).** This Research and Innovation Action, funded by the Horizon Europe framework Programme, designs and implements an end-to-end service deployment and management platform for next generation networks and services, aiming at unprecedented levels of automation, performance, scalability, and energy efficiency.

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Meetings

7th Plenary Meeting

(Online, 7 October 2025)

We are pleased to announce that the **7th Plenary Meeting** of the ACROSS project took place on October 7th, 2025. The meeting was held online, bringing together representatives from all 12 consortium members to discuss the project's progress and integration efforts towards the final release of the ACROSS platform. The project coordinator, **NOVA**, successfully organized and facilitated the entire process, ensuring a productive exchange among partners.
Throughout the meeting, the ACROSS consortium members presented updates on their ongoing tasks, sharing key achievements, challenges encountered, and future plans for the remaining months of implementation.

During the 7th plenary meeting, the consortium had the opportunity to discuss the following:

- *Finalization of the demonstrations videos showcasing the capabilities of ACROSS through all Test Cases*
- *Planning of the final dissemination, exploitation and communication activities*

As the project approaches its conclusion, with just a few months remaining, we would like to express our sincere appreciation to all ACROSS partners for their continuous commitment and valuable contributions that have driven the project's success so far.

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Publications

i) M-SADR: Mobile Self Adaptive Data Rate for Enhanced LoRa End-Device Connectivity on the Move (International Journal of Communication Systems)

ii) Introducing Energy Efficient Routing in UAV-Satellite NTNs for Dynamic 6G Interconnectivity (IEEE Transactions on Communications)

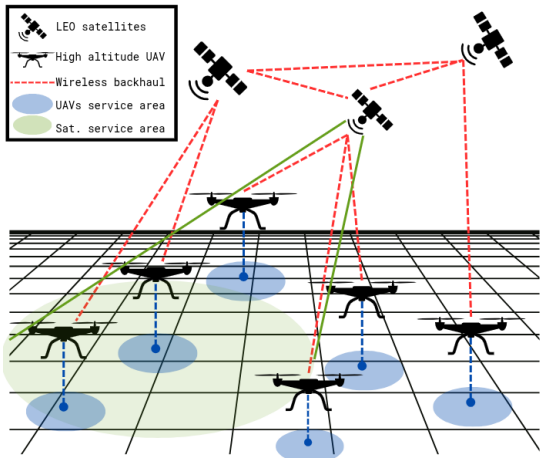
As part of the ACROSS project's dissemination and research activities, project partner **K3Y Ltd** has contributed two recent scientific publications addressing key challenges in IoT connectivity and next-generation 6G networks.

i. The first publication focuses on **mobile LoRa-enabled IoT devices**, proposing *M-SADR (Mobile Self Adaptive Data Rate)*, a lightweight algorithm that enables end devices to autonomously adapt their transmission parameters based on previous communication attempts. By operating entirely at the device level, the approach improves packet delivery performance while reducing energy consumption, addressing one of the most demanding challenges in Low Power Wide Area Networks with mobile nodes. The solution was validated through simulations and a small-scale real-world testbed. The publication (DOI: 10.1002/dac.70222) is available online.

ii. The second publication addresses **energy-efficient routing in UAV–satellite Non-Terrestrial Networks (NTNs)**, a critical component of future 6G interconnectivity. The proposed routing strategies support dynamic integration between aerial and satellite platforms, optimising performance while minimising energy usage—an essential requirement for scalable and sustainable NTN deployments. Access the publication: https://ieeexplore.ieee.org/document/11261401

Together, these publications highlight how ACROSS research outcomes extend across diverse networking domains, from IoT mobility to advanced 6G architectures, reinforcing the project's vision for intelligent, adaptive, and energy-aware network orchestration.

K3Y R&D AND CYBER SECURITY



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Publications

i) End-to-End Security Enforcement on Packet and Optical Transport Providers in Untrustworthy Multi-stakeholder Scenario (IEEE International Conference on Transparent Optical Networks)

ii) AI-enabled Network Automation in TeraFlowSDN Orchestrated Networks (IEEE Photonics Society Summer Topicals Meeting Series)

The ACROSS consortium is pleased to announce that our partner, CTTC, has published two new technical papers in the IEEE conference proceedings. These publications highlight the project's ongoing efforts to enhance security in multi-stakeholder environments and integrate AI-driven automation within the TeraFlowSDN ecosystem.

a) The first paper, titled ***"End-to-End Security Enforcement on Packet and Optical Transport Providers in Untrustworthy Multi-stakeholder Scenario"*** was presented at the IEEE International Conference on Transparent Optical Networks (ICTON), addressing critical challenges in maintaining security across distributed packet and optical transport networks where trust cannot always be guaranteed. **Read the full paper here:** https://ieeexplore.ieee.org/document/11125143

b) In parallel, CTTC also presented ***"AI-enabled Network Automation in TeraFlowSDN Orchestrated Networks"*** at the IEEE Photonics Society Summer Topicals Meeting Series (SUM), exploring the integration of AI to automate network operations, a key pillar of the ACROSS architecture. **Read the full paper here:** https://ieeexplore.ieee.org/document/11121748

We extend our congratulations to the CTTC team for their valuable contributions to the ACROSS research community.

ICTON 2025
25th Anniversary International Conference on Transparent Optical Networks

July 6th to 10th 2025
Barcelona – Catalunya – Spain

cttc
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Events

ETSI ZSM PoC#16 “Automation Platform Across Multi-site and Multi-stakeholder Environments”

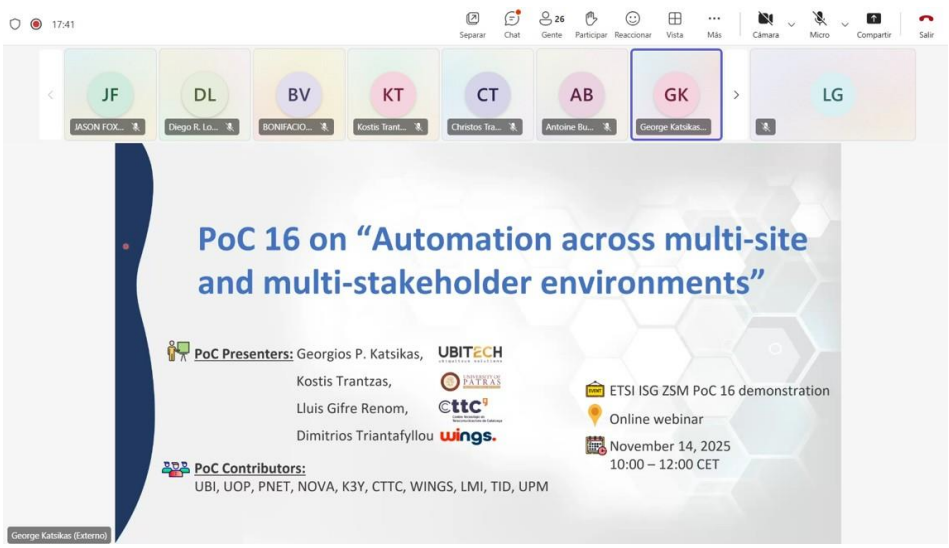
(Online, 14 November 2025)

As part of its dissemination and standardisation activities, the **ACROSS** project successfully presented **ETSI ZSM Proof of Concept #16**, titled *“Automation Platform Across Multi-Site and Multi-Stakeholder Environments”*, during a dedicated online event.

The presentation showcased how ACROSS technologies enable automated service and network orchestration across geographically distributed sites and multiple administrative domains, aligned with the principles of the ETSI Zero-touch Service Management (ZSM) framework. The demonstrated PoC highlighted the ability of the ACROSS platform to support end-to-end automation, dynamic coordination among stakeholders, and intelligent management of complex, multi-domain environments.

The event attracted strong interest from the research and industrial community, reinforcing ACROSS’s contribution to standardisation-driven innovation and its role in advancing practical, real-world implementations of zero-touch network management.

- Read the official press release: https://across-he.eu/successful-online-presentation-of-etsi-zsm-poc16-automation-platform-across-multi-site-and-multi-stakeholder-environments-press-release/
- Explore the technical details in the dedicated blogpost: https://across-he.eu/etsi-zsm-poc-16-automating-service-and-network-orchestration-across-multi-site-environments/



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Events

SDG Ecosystem Day

(Online, 26 November 2025)

The ACROSS project participated in the **SDG Ecosystem Day**, presenting key innovations related to zero-touch automation and security within the context of next-generation, software-driven networks. During the event, ACROSS showcased how its orchestration framework enables secure, automated onboarding and lifecycle management of network devices and services, addressing critical challenges in multi-domain and programmable network environments. The demonstrations highlighted the project's ability to combine zero-touch principles with advanced security mechanisms, supporting scalable and resilient network operations. Two technical demonstrations were presented, focusing on secure P4 device onboarding via resource orchestration APIs and zero-touch end-user service update mechanisms enabled through an open orchestration platform. Together, these use cases illustrated how ACROSS technologies can support flexible, secure, and fully automated service management across heterogeneous infrastructures. The SDG Ecosystem Day provided an important opportunity to engage with the broader research and innovation community, reinforcing ACROSS's role in advancing secure-by-design, automation-driven network architectures.

- Read the event overview: https://across-he.eu/across-presents-zero-touch-and-security-innovations-at-the-joint-sdg-ecosystem-day/
- Technical deep dives:
  - Secure Zero-Touch P4 Device Onboarding via Resource Orchestration APIs (TC1.1b & TC1.2b) https://across-he.eu/secure-zero-touch-p4-device-onboarding-via-resource-orchestration-apis-tc1-1b-tc1-2b/
  - Zero-Touch End-User Service Update Mechanisms via an Open Orchestration Platform (TC1.3c & TC1.4a) https://across-he.eu/tc1-3c-tc1-4a-zero-touch-end-user-service-update-mechanisms-via-an-open-orchestration-platform/

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Events

Joint Webinar "Security & Trust in Multi Domain 6G Networks"

(Online, 2 December 2025)

The **ACROSS** project, together with fellow SNS JU projects **NANCY**, **RIGOUROUS** and **6G-PATH**, successfully organised the joint webinar *"Security & Trust in Multi-Domain 6G Networks"*, bringing together more than 60 participants from across the European research and innovation community.

The webinar showcased recent progress in securing next-generation **multi-domain 6G networks**, covering topics such as software-defined security, zero-trust mechanisms, AI-assisted orchestration, privacy-preserving identity management and blockchain-enabled resource marketplaces. Presentations demonstrated how SNS JU projects are addressing both **security and trust challenges** across complex, heterogeneous network environments.

The event provided a valuable forum for knowledge exchange and collaboration, highlighting the importance of joint actions and cross-project synergies in shaping secure, automated and trustworthy future network infrastructures.

✓ Read the full webinar recap and access the recording on the ACROSS website: https://across-he.eu/successful-joint-webinar-on-security-trust-in-multi-domain-6g-networks/

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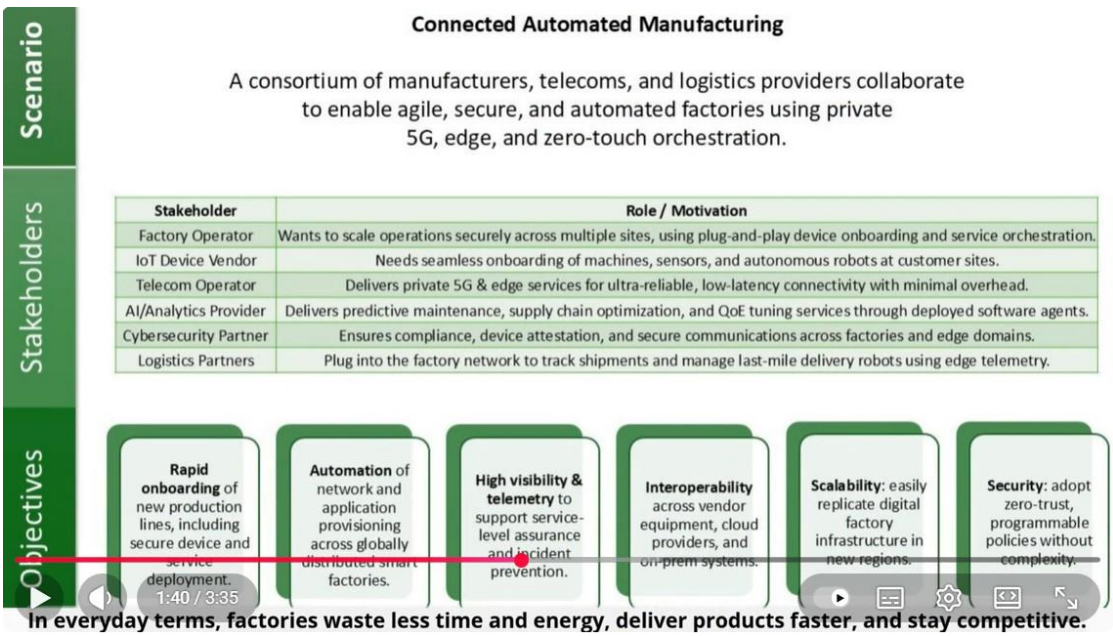
Video Clips

ACROSS Business Value

The ACROSS project showcases how intelligent network orchestration can deliver measurable business value across multiple sectors. ACROSS brings together leading universities, technology providers, and telecom operators to design the next generation of network intelligence.

Through a unified orchestration platform, ACROSS enables zero-touch deployment, real-time problem prediction and resolution, and built-in trust and security across domains. The video highlights real-life impact through large-scale test cases in smart manufacturing, healthcare, and media streaming, where networks adapt automatically, critical services are prioritised, and performance remains resilient even under extreme demand or cyber threats.

Watch the ACROSS Business Value video to see how intelligent orchestration transforms everyday digital services: https://youtu.be/q-lWPpPlLHg?si=IaT_RxBDQ3lUitxA



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Video Clips

ACROSS Outcomes & Key Results

The ACROSS project has successfully delivered a fully validated, open, and secure orchestration platform for next-generation networks. ACROSS set out to enable end-to-end, AI-driven orchestration across technologies, domains, and administrative boundaries.

Over 36 months, ACROSS demonstrated near 100% automation in service ordering and onboarding, reduced security attestation times to under one second, and achieved over 99% accuracy in AI-based traffic prediction and anomaly detection. The platform was validated through four large-scale test case families, covering security-, intelligence-, and stakeholder-driven orchestration.

Beyond technology, ACROSS contributed strongly to European sovereignty through standardisation, open datasets, and patents, while delivering measurable business impact through reduced operational costs and faster time-to-market.

Watch the ACROSS Outcomes & Key Results video to see a summary of ACROSS achievements, demonstrated capabilities, and real-world impact.: https://youtu.be/q-lWPpPlLHg?si=IaT_RxBDQ3lUitxA

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OUR TEAM

NOVA

ERICSSON

Orchestrating a brighter world
NEC

Telefónica

ONE T
EMERGING NETWORKS & APPLICATIONS

cttc
Centre Tecnològic de Telecomunicacions de Catalunya

UNIVERSITY OF PATRAS
ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ

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UBITECH
ubiquitous solutions

K3Y
R&D AND CYBER SECURITY

inlecom commercial pathways

WINGS
ICT SOLUTIONS

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