



ACROSS is a HORIZON-JU-SNS-2022 funded research project that 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.



ACROSS project has received funding from the European Union's Horizon Europe research and innovation programme under Grant Agreement No 101097122, as well as from the Smart Networks and Services Joint Undertaking (SNS JU).



Scan here!

ACROSS - Smarter, Safer, Faster Networks for Europe

ACROSS is a European research and innovation project funded by the EU. Over three years, it brought together leading universities, technology companies, and telecom operators to design the next generation of network intelligence.

Today, almost everything we do depends on digital connections: from video calls and streaming to factory automation and life-saving healthcare. But as networks become more complex, managing them gets harder.

ACROSS set out to prove a new way: an intelligent orchestration platform that can run, secure, and adapt networks without human intervention.

Through four large-scale test cases, ACROSS showed it can:

- Install new devices and services automatically (“zero-touch” setup).
- Predict problems before they happen and fix them on the fly.
- Protect services with built-in trust and security.
- Connect telecom networks with industry and enterprise systems.

The following pages show how this technology can make a real difference in everyday life — from smarter factories to connected healthcare to better streaming services.

Factories that adapt in minutes, not days

Manufacturers need to change production lines faster than ever — to launch new products, respond to customer demand, or fix supply chain issues. Before ACROSS, reconfiguring a factory for a new product was slow, expensive, and risky. Adding new robots or sensors often required manual setup by skilled technicians — a scarce resource. Production lines could be down for days while systems were retuned, leading to wasted energy, lost output, and delays in meeting customer demand. Cybersecurity was also a growing concern as more devices connected to factory networks.

With ACROSS:

- New robots or sensors can be connected instantly, without manual setup.
- Production software can move securely between factory sites.
- Quality and speed are continuously monitored and adjusted automatically.

Value in everyday terms:

Factories waste less time and energy, deliver products faster, and stay competitive — while keeping workers and processes safe.

Factories that adapt in minutes, not days

Scenario

Connected Automated Manufacturing

A consortium of manufacturers, telecoms, and logistics providers collaborate to enable agile, secure, and automated factories using private 5G, edge, and zero-touch orchestration.

Stakeholders

Stakeholder	Role / Motivation
Factory Operator	Wants to scale operations securely across multiple sites, using plug-and-play device onboarding and service orchestration.
IoT Device Vendor	Needs seamless onboarding of machines, sensors, and autonomous robots at customer sites.
Telecom Operator	Delivers private 5G & edge services for ultra-reliable, low-latency connectivity with minimal overhead.
AI/Analytics Provider	Delivers predictive maintenance, supply chain optimization, and QoE tuning services through deployed software agents.
Cybersecurity Partner	Ensures compliance, device attestation, and secure communications across factories and edge domains.
Logistics Partners	Plug into the factory network to track shipments and manage last-mile delivery robots using edge telemetry.

Objectives

Rapid onboarding of new production lines, including secure device and service deployment.

Automation of network and application provisioning across globally distributed smart factories.

High visibility & telemetry to support service-level assurance and incident prevention.

Interoperability across vendor equipment, cloud providers, and on-prem systems.

Scalability: easily replicate digital factory infrastructure in new regions.

Security: adopt zero-trust, programmable policies without complexity.

Saving seconds, saving lives

When an accident happens, every second counts. Paramedics, hospitals, and doctors all need to share patient data and make decisions in real time. But networks can get congested, devices may not connect, and critical information can be delayed.

With ACROSS:

- Ambulances can stream patient data securely to hospitals on the way.
- Hospital systems automatically prioritise emergency traffic over routine use.
- Medical devices and apps connect seamlessly, even across different networks.

Value in everyday terms:

Doctors see what paramedics see, hospitals are ready before the patient arrives, and precious seconds are saved that can make the difference between life and death.

Saving seconds, saving lives

Scenario

Connected Emergency Healthcare

Hospitals, ambulance fleets, and remote care facilities are increasingly connected via private 5G and edge infrastructure. The focus is on low-latency, event-driven orchestration to support life-saving applications like remote diagnosis, connected ambulances, and real-time patient telemetry.

Stakeholders

Stakeholder	Role / Motivation
Emergency Medical Teams	Require high-bandwidth mobile connectivity for patient telemetry and real-time video feeds from ambulances.
Hospitals/Trauma Centres	Need automatic provisioning of bandwidth and services based on the arrival of critical patients or mobile units.
Healthcare IoT Providers	Deliver wearable & implantable devices that send real-time alerts, requiring dynamic network/compute support.
Edge Infrastructure Providers	Manage edge nodes at ambulance depots, allocating compute and network resources based on device signals.
Public Safety Networks	Ensure high-availability 5G connectivity, with event-driven UPF provisioning near mobile emergency sites.
Cybersecurity Teams	Ensure end-to-end data security and compliance (e.g., GDPR, HIPAA) with minimal latency or service disruption.

Objectives

On-demand provisioning of User Plane
Functions near ambulances based on real-time traffic and patient status.

Dynamic network function migration
to respond to mobility and service load (e.g., ambulances entering new coverage zones).

Telemetry-based service adaptation,
automatically scaling resources when multiple patients or devices trigger alerts.

Energy-efficient RAN adjustments, e.g., reducing radio power in quiet hospital wings or increasing it during emergencies.

Autonomous SLA management
for mission-critical patient services with <1s response time.

Seamless, secure data routing
between mobile units, hospitals, and edge compute resources.

No more buffering - even when millions are watching

From sports finals to global concerts, millions of people now watch live events online. But when demand spikes, streaming services can struggle — leading to delays, buffering, or poor quality.

With ACROSS:

- Networks can predict audience surges and prepare capacity in advance.
- Video streams automatically adapt to keep quality high for all users.
- Services stay secure and uninterrupted, even under cyber-attacks.

Value in everyday terms:

Viewers enjoy smooth, high-quality streaming, sponsors protect their brand image, and platforms keep audiences happy.

No more buffering - even when millions are watching

Scenario

Autonomous Smart Streaming

Global streaming platforms (like Netflix, Twitch, or DAZN) rely on distributed infrastructure—edge nodes, cloud clusters, CDNs, and private 5G links—to deliver high-quality, low-latency content across regions. Sudden traffic surges (e.g., viral content or live events), network attacks, or service degradations can threaten uptime and revenue.

Stakeholders

Stakeholder	Role / Motivation
Streaming Platform Operator	Wants guaranteed delivery of HD/4K/8K content at low latency, especially during peak events.
Telecom Network Provider / CDN Partner	Must ensure capacity, performance, and fault-tolerance under volatile, global demand.
Advertisers / Sponsors	Expect SLA-compliant delivery of dynamic content to monetize impressions without disruption.
AI Analytics Teams	Monitor telemetry to predict and avoid congestion and ensure viewer experience continuity.
Cybersecurity Teams	Detect and mitigate potential botnets, DDoS attacks, or suspicious content flow patterns.
Regulators / Content Licensing Agencies	Require performance guarantees, traffic transparency, and SLA enforcement in line with contracts.

Objectives

Predict and prevent performance bottlenecks before they occur (e.g., before a big football final goes live).

Automatically scale or re-route traffic and workloads across edge/cloud/CDN to meet real-time demand.

Assure SLAs for regional advertising, subtitle sync, and interactive features like live polls or camera switches.

Reduce energy use and cost by powering down or right-sizing idle network paths or compute nodes.

Minimize manual intervention, keeping operations lean while maintaining premium-quality user experience.