

Project information

RELIANCE

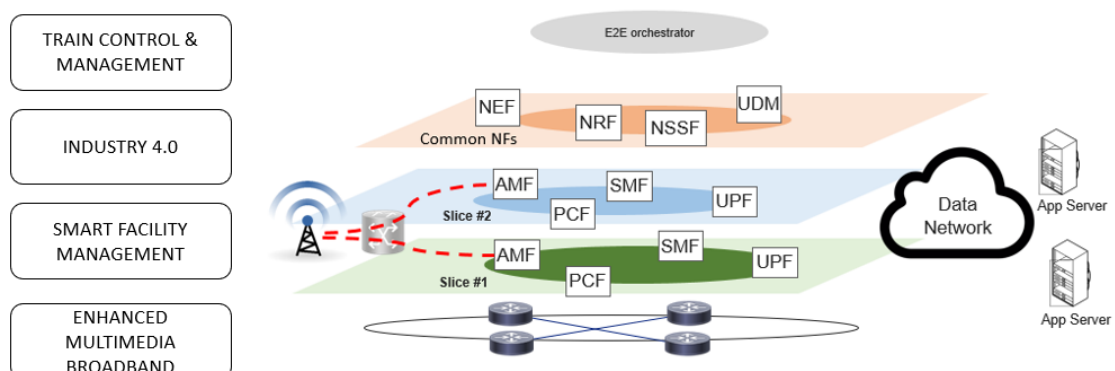
Resilient and Scalable Slicing over Multiple Domains

RELIANCE

The main goal of RELIANCE is to extend the 5G network architecture with new functionalities needed for multi-service and multi-domain management, with the related abstractions, interfaces, and mechanisms to support needed resilience, security, and scalability.

Main focus

RELIANCE aims to conduct research activities on the concept of federated network slicing to compose end-to-end services that span across different technical and administrative domains. A key innovation of the project is the highly scalable and robust slice choreography plane that enables the offering of vertical-tailored slices “as-a-Service”, ensuring the required scalability, security, and resilience features. It facilitates the mapping of service requirements from the verticals with their predicted traffic demands into dedicated networking and cloud resources through automated multiparty negotiation. Scalable slice federation is complemented with protocols for deployment and runtime adaptation of resilience and security mechanisms over heterogeneous infrastructures, so to enable a unified reliability framework.



RELIANCE network slicing over multiple domains

Approach

The architectural work of RELIANCE is driven by the diverse needs and requirements stemming from vertical industries (Industry 4.0, Smart Cities, Enhanced multimedia broadband & Transportation -train control & management-). The RELIANCE framework will be implemented and validated on selected use-cases through proof-of-concepts, aiming at demonstrating the envisioned benefits of the RELIANCE framework.

Main results

RELIANCE is an innovative action which will certainly have strong strategic impact in the industry including verticals beyond the communications industry. The innovation potential of the project spans across multiple complementary areas, involving different stakeholders which would benefit from the different innovations RELIANCE aims to develop. RELIANCE aims to create a dynamic marketplace whereby multiple stakeholders, including infrastructure providers and operators, will provide end-to-end slices for different verticals. The researches on automated service negotiation and contracting mechanisms, provided by RELIANCE, will be the initial step towards trustworthy and reliable federation of compute, storage and connectivity resources from multiple providers.

- **RELIANCE progress on Multiparty Video Communication**

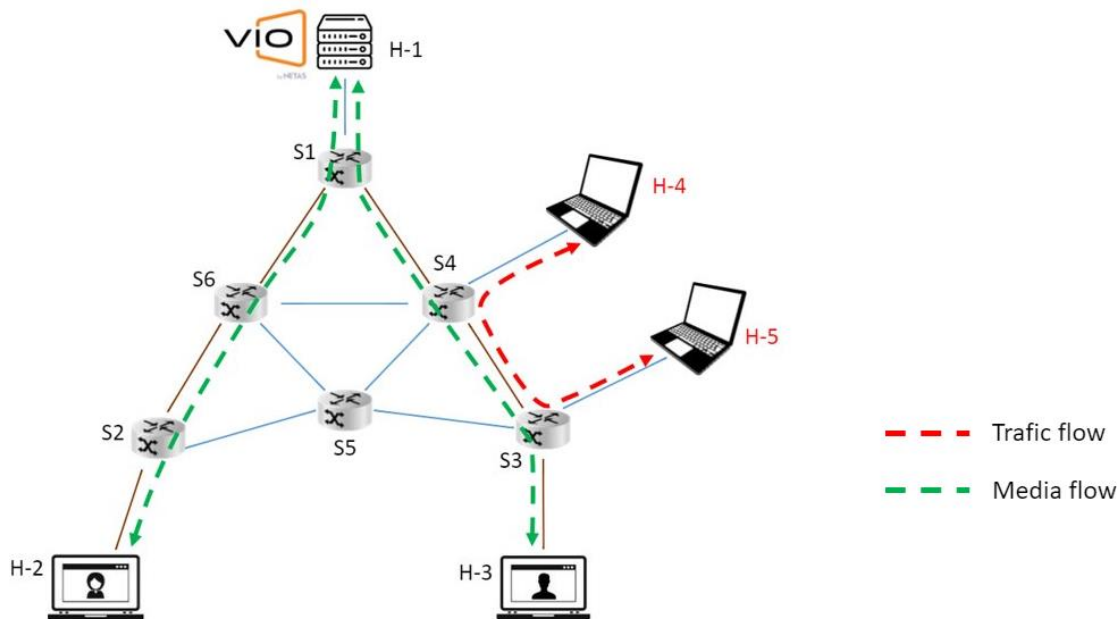
RELIANCE partners conduct beyond the state-of-the-art work on multimedia broadband use case, especially on multiparty video communication. In this manner, project partners target to propose novel methodologies to address sudden video quality fluctuations arise from instant congestions on the network. SDN methodology introduces great opportunities to solve the problem. As shown in the following figure, specific video streams can dynamically be directed to optimum routes whenever there is a congestion between video conference server and client. The proposed solution ensures guaranteed QoS values for video conference users even in case of variation on available bandwidth to increase QoE.

In this scope, partners will focus on certain key performance indicators (KPIs);

- Satisfying service level requirements (such as bandwidth, latency, and coverage) of internal and external services
- Ease of deployment of in-house and third-party multimedia services
 - APIs developed for service configuration
 - APIs developed for charging third-parties based on provided service quality

As initial results, partners have designed high performance and content sensitive algorithm and developed traffic regulation manager to process the values, such as bit rate, resolution and delay in the communication between the spouses connected to the video conference service. Partners have also worked on meet service level requirements (bandwidth and latency) of digital services

and designed the probes that track end-to-end performance data to provide the highest user experience.



Impact

The flexibility and agility offered by RELIANCE in the provisioning and management of slices will encourage vertical industry actors to access this new network slice market place, thus bridging the gap between verticals and telco industries. In addition, the creation of these novel business interactions and models will enable verticals to either deploy new customized services or improve existing ones, thus strengthening their positions in their respective markets. This is also reflected on the telco industry side, whereby operators will have opportunities to engage new customers from the vertical sectors with more appealing service offerings. Moreover, the extremely-flexible and agile RELIANCE approach, based on recursive abstraction and virtualisation of resources, will enable network operators to improve their products portfolio beyond network connectivity services.

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Partners

Bombardier Transportation Sweden AB	SE
Eduro AB	SE
Keyland Sistemas de Gestion S.L.	ES
NETAS Telecommunications A.S.	TR
RISE Research Institutes of Sweden AB	SE
Saint Patrich Technology S. L.	ES
SII Concatel S. L.	ES
Turkcell Teknoloji	TR
ULAK Communications Inc.	TR
Westermo Network Technologies AB	SE

Co-ordinator

Elio Saltalamacchia

SII Concatel S.L.

E-mail: elio.saltalamacchia@concatel.com

Project web site: <https://projectreliance.com/>
www.celticplus.eu/project-reliance