DYNAMO

atlanTTic research center for Telecommunication Technologies

GOALS

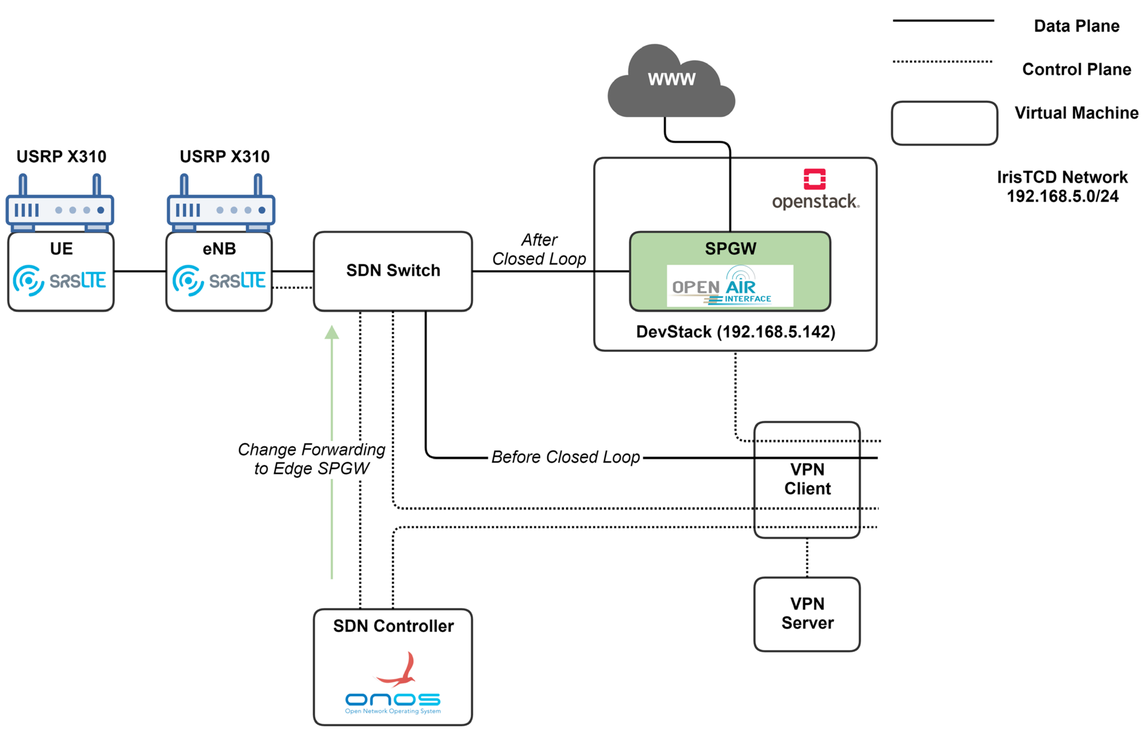
Dynamic MEC Orchestration of Cellular Networks is a Fed4FIRE+ experiment that studies the performance of NFV MANO orchestration of a cellular network on top of core and edge cloud infrastructures located at the IRIS testbed (Ireland) and the University of Vigo (Spain).

DYNAMO showcases network slicing together with its elasticity through Closed Loop (CL) automation.

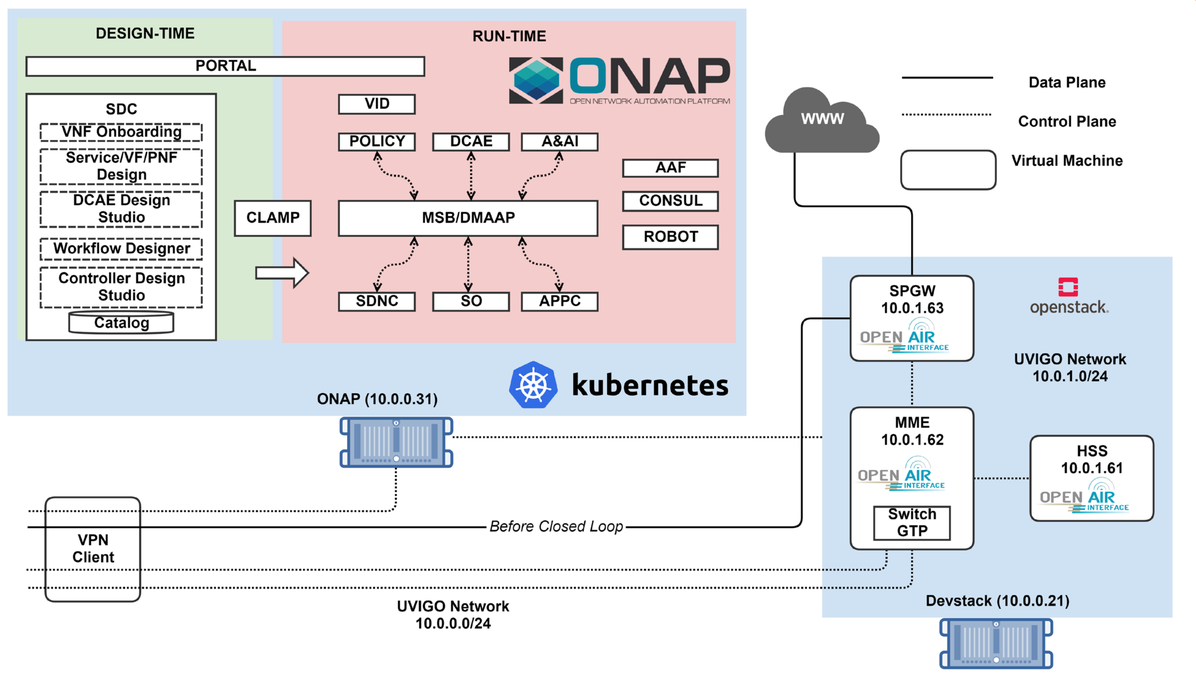
CHALLENGES

1) Provide E2E conectivity to a network slice:
   - Radio Access Network at IRIS: UE, eNB and Edge Cloud (as the MEC platform)
   - Core Network at UVIGO: Core Cloud with virtualized and dissagregated EPC
2) Implement a Dynamic MEC architecture
3) Orchestrate core and edge clouds with ONAP
4) Satisfy SLA for a network slice through CL automation

DEMO SETUP @ IRIS, Ireland

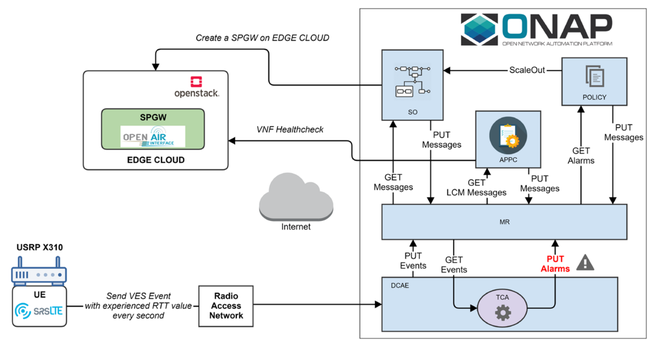


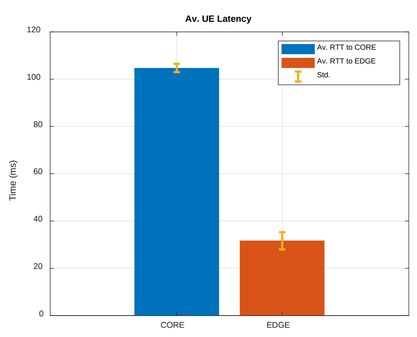
DEMO SETUP @ UVIGO, Spain

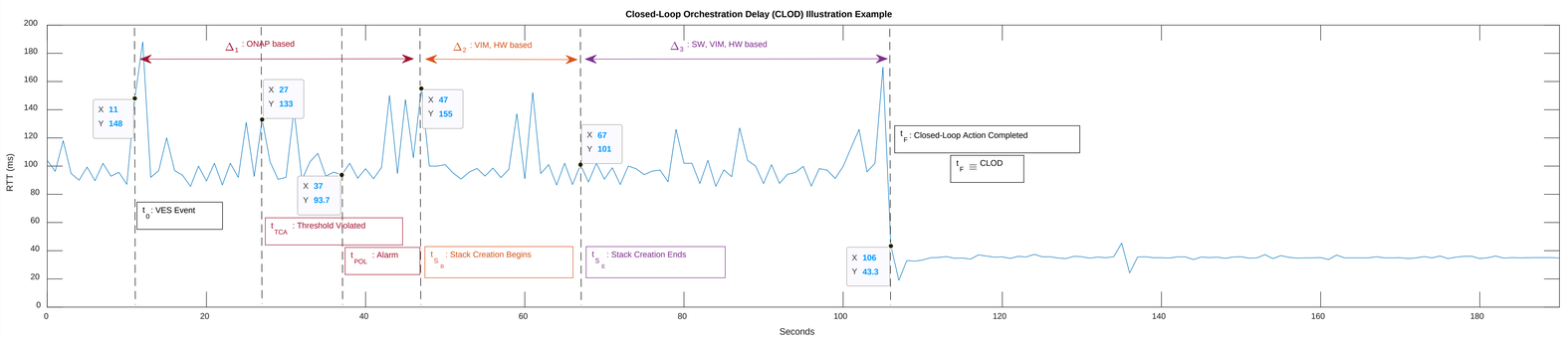


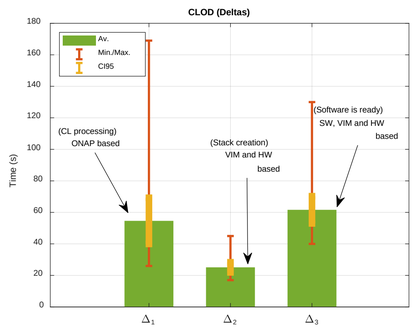
RESULTS

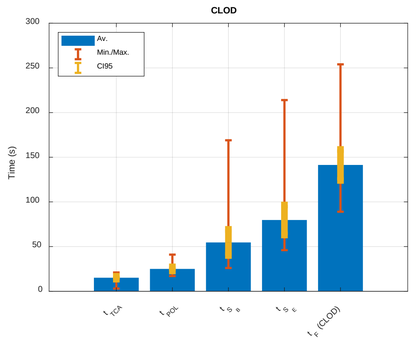
- Network Slicing shall be elastic to support specific SLAs
- Performance improvement of the UE latency thanks to the elasticity of the Network Slice
- Closed-Loop Orchestration delay as a KPI for MANO systems











CONCLUSIONS

- The full stack of technologies (MANO, VIMs, VNF Software) and the policy-driven actions during a CL may be highly tightened to the specific application in mind.
  - Designing ad-hoc routines per setup (MANO, VIMs, Application) VS deeper standardization efforts of the full stack.
- Instantiating of large workloads (e.g., VMs) in runtime is not viable for critical services.
- Current MANO platforms are still not well prepared for real-time responsiveness.

POST MORTEM

- All the planned objectives were reached: we proved that it is possible to orchestrate IRIS testbed resources using an external MANO system (ONAP).
- Creating E2E connectivity experiments using physical radio interfaces is still challenging, requiring local support to guarantee the connectivity.
- Ongoing preparation of a scientific journal to diseminate our results.
- MANO platforms are rapidly evolving, so it is not possible to use always the latest version.