

Open Source MANO

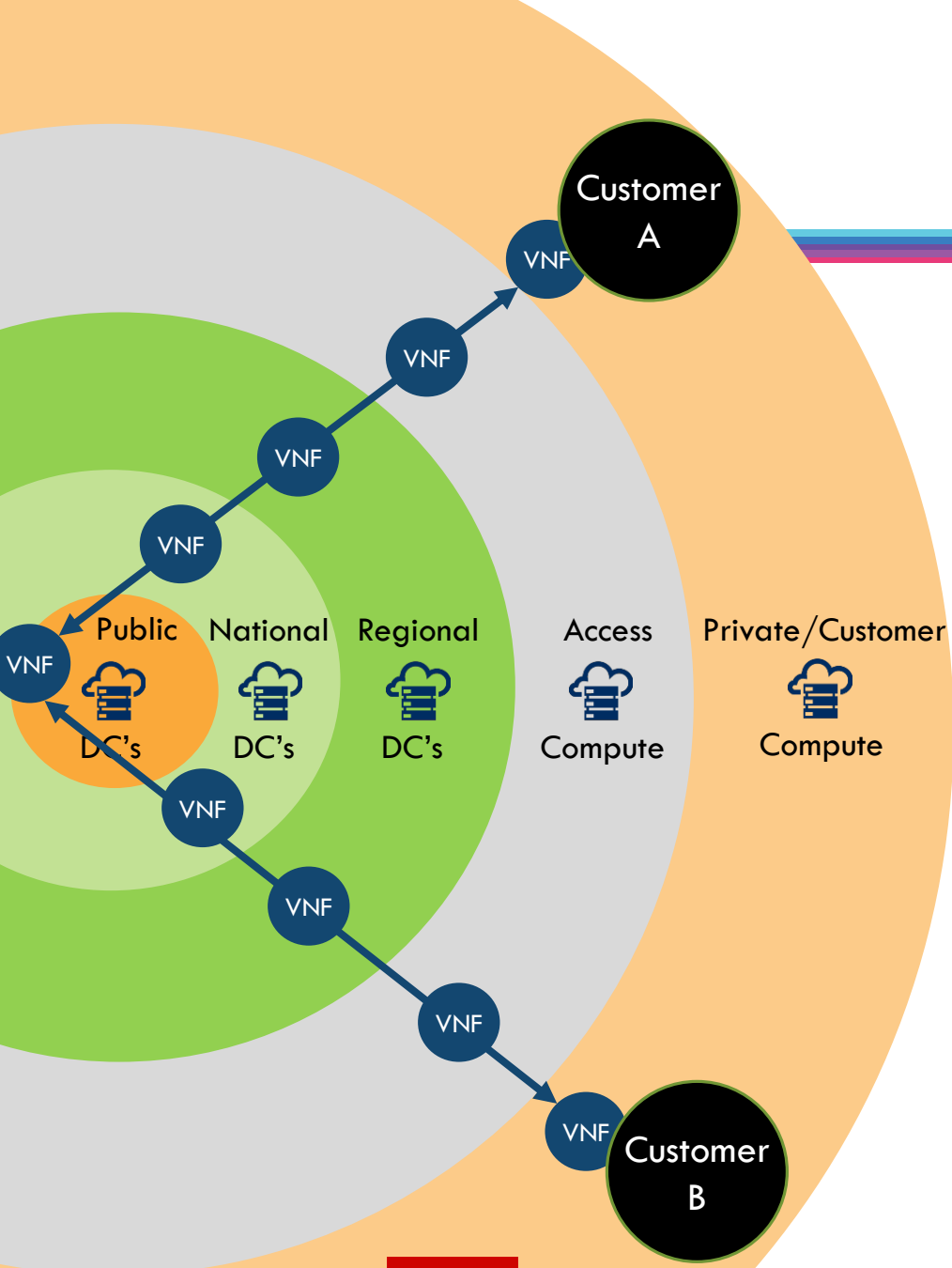
Placement of services in distributed clouds

OSM Official PoC
Mats Eriksson, Arctos Labs

PoC proposal – placement of services in distributed cloud

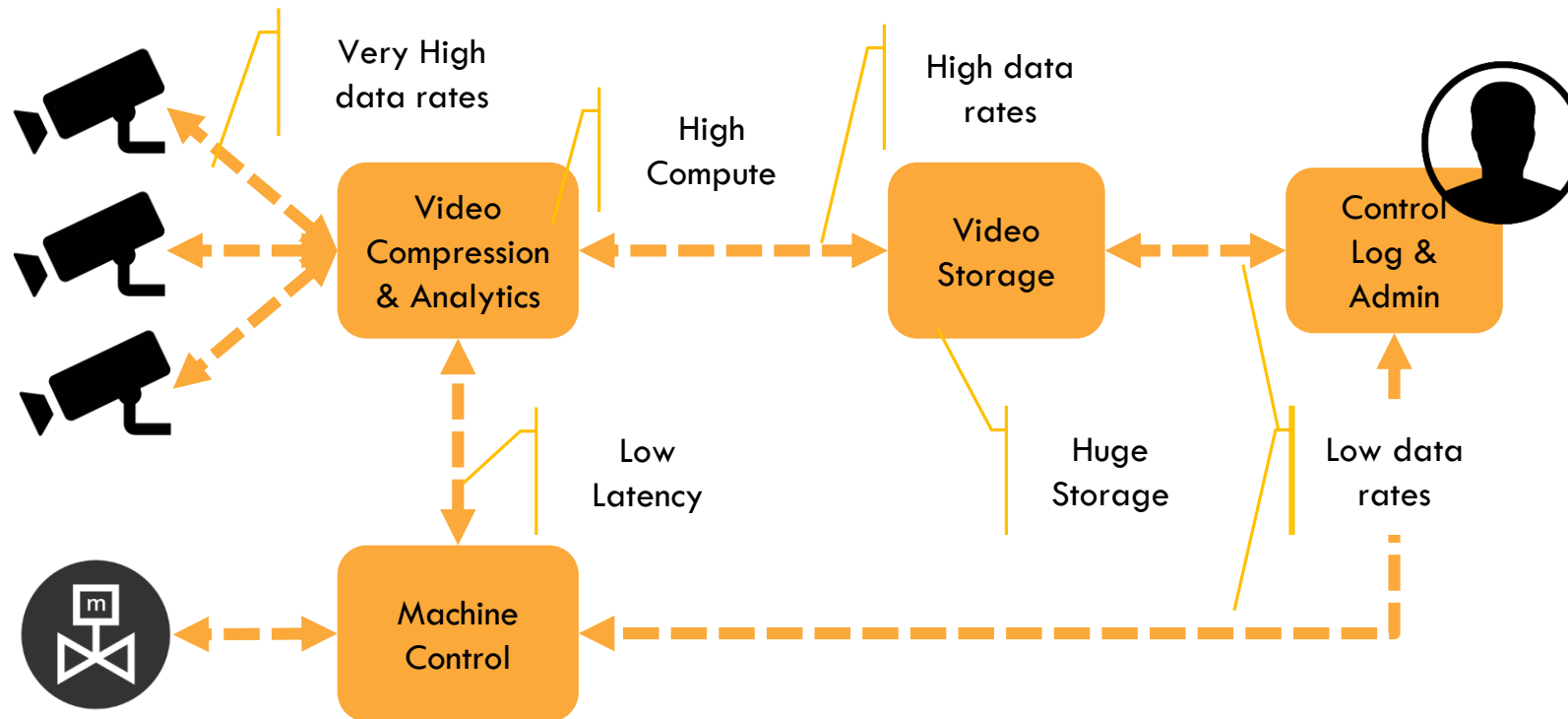
- Introduction
- PoC overview and architecture
- Demo scenarios
- Key takeaways

Introduction



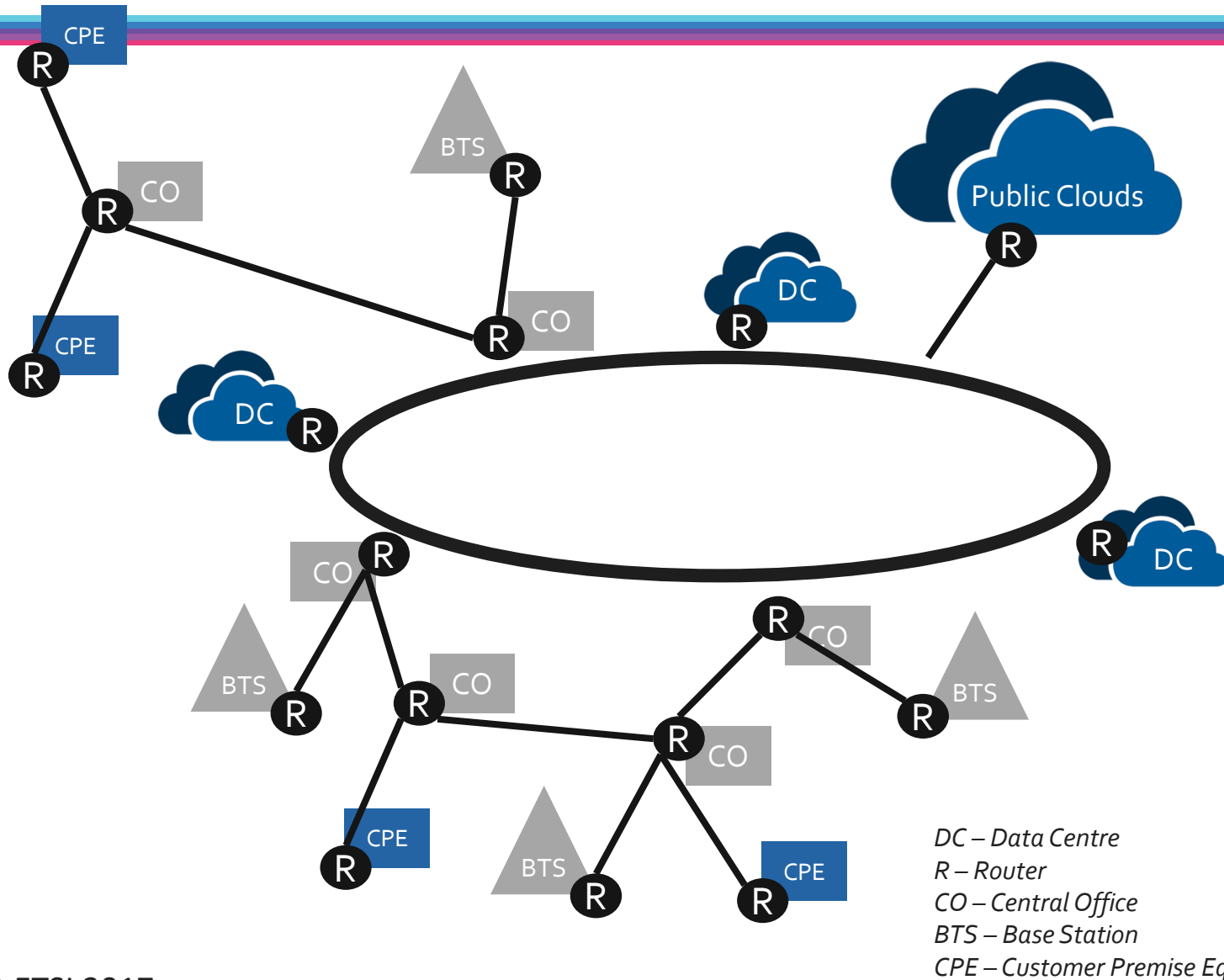
- Joint PoC between Arctos Labs, Netrounds, WindRiver & Telenor
- Address automated optimization of VNF placement using constraint- and cost models
 - Achieve required latency
 - At lowest possible cost

Constraints and how they apply



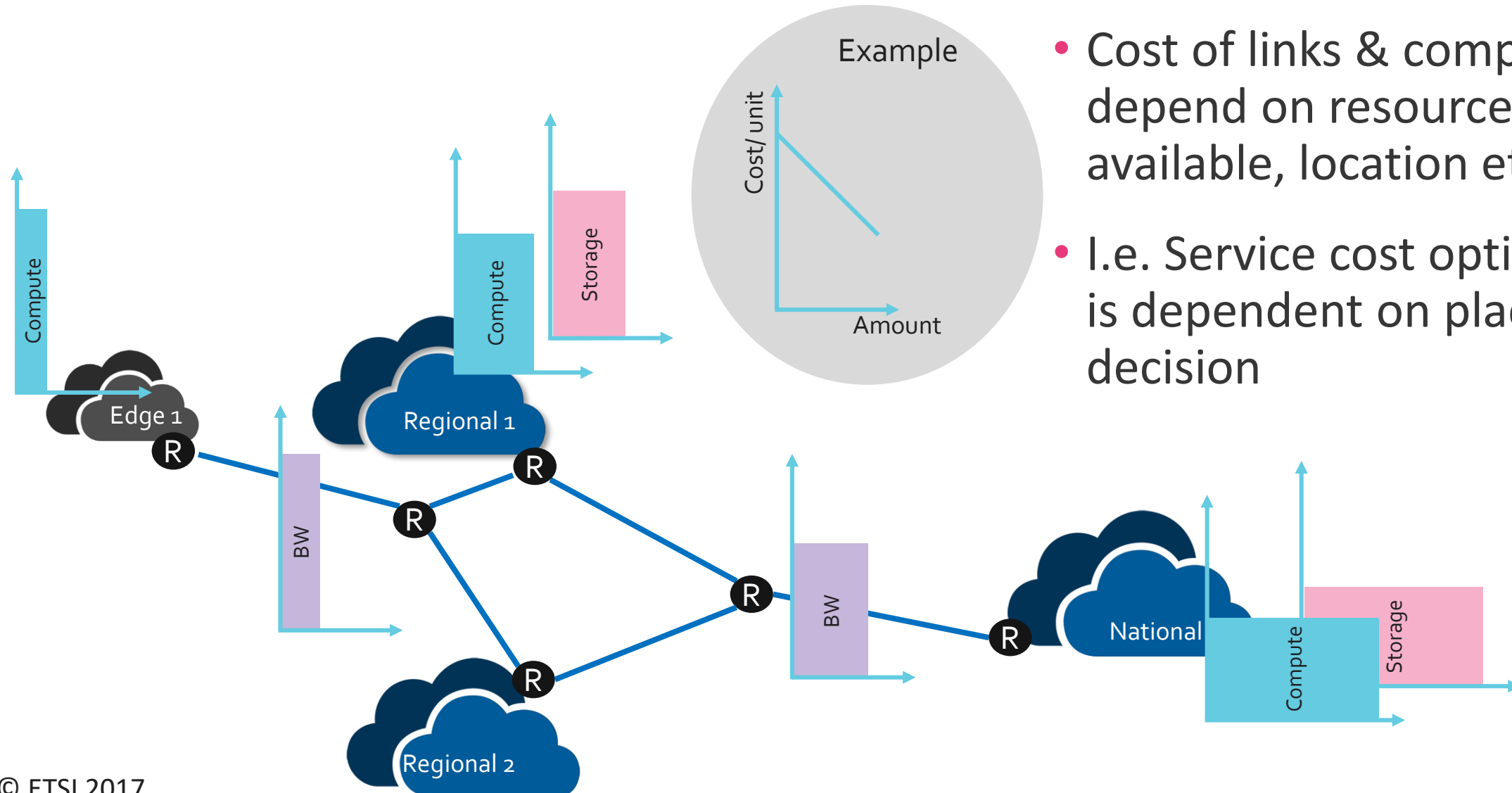
- Multiple SW components with specific requirements
- Multiple links with specific requirements
- Cost drivers are thus different for each component / link
- Optimal place is not the same for all SW parts – the distribution challenge

The underlying network is complex



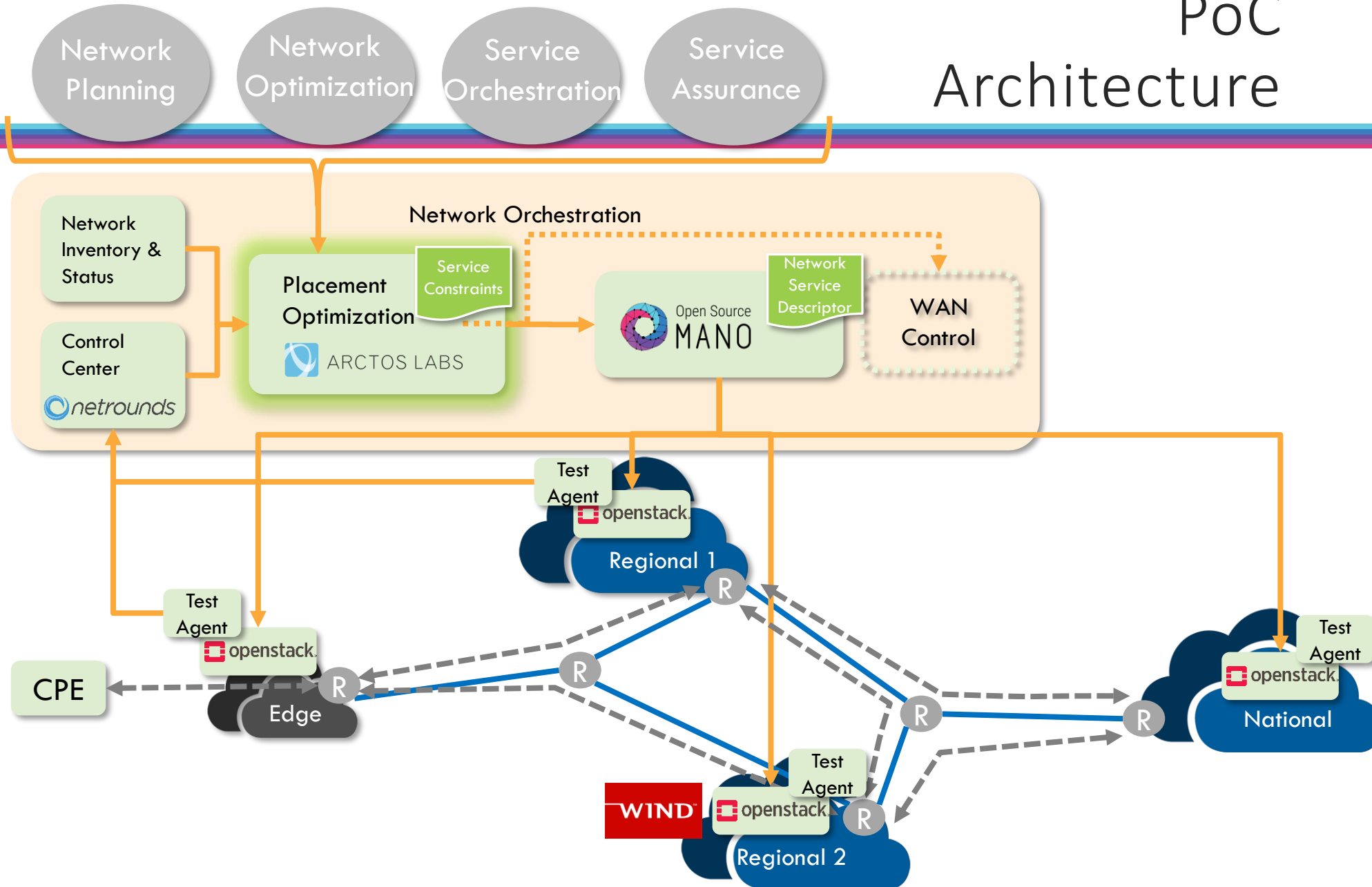
- Individual service requirements and customer locations vary
- 10's of thousands of (potential) PoP's for deployment – multi-domain
- Network evolve – new nodes emerge, topology rebuilt etc
- Network status vary – links go down, nodes go faulty

Costs depend on placement – the case of optimization

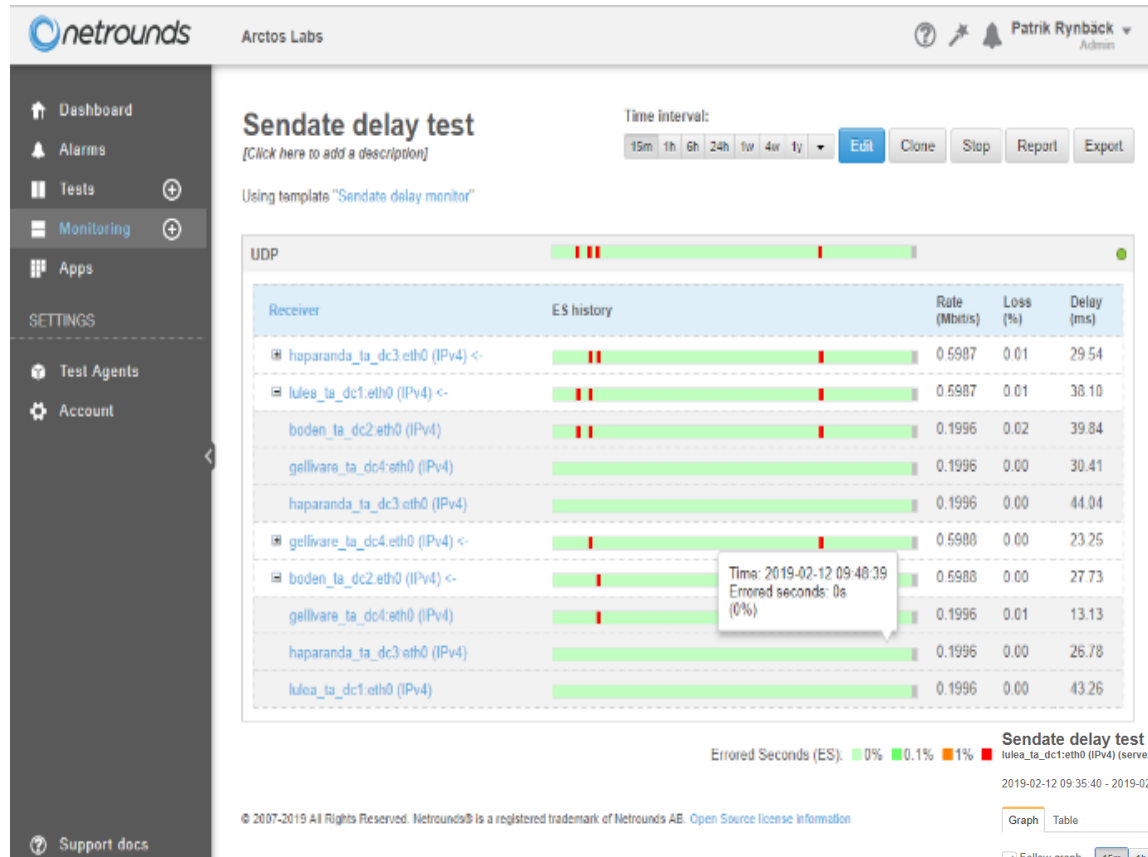


- Cost of links & compute depend on resource amount available, location etc
- I.e. Service cost optimization is dependent on placement decision

PoC Architecture

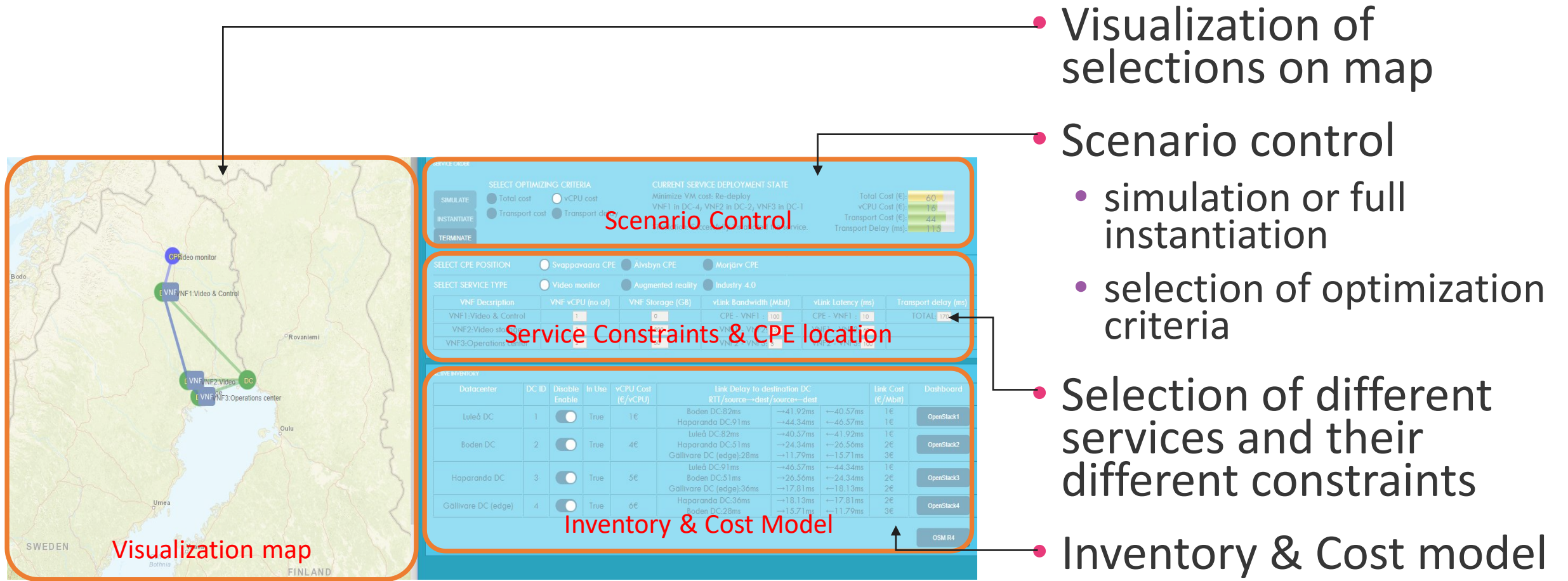


Capture link latency in real-time



- Using Netrounds control center and test agents to capture link properties
 - Latency, jitter, BER etc
- Feed such information into the placement engine as base for decisions

PoC Dashboard



Visualization map

Scenario Control

Service Constraints & CPE location

Inventory & Cost Model

Visualization of selections on map

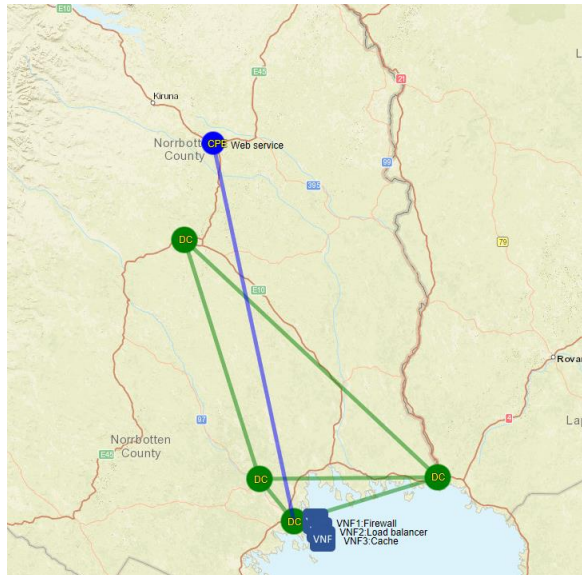
Scenario control

- simulation or full instantiation
- selection of optimization criteria

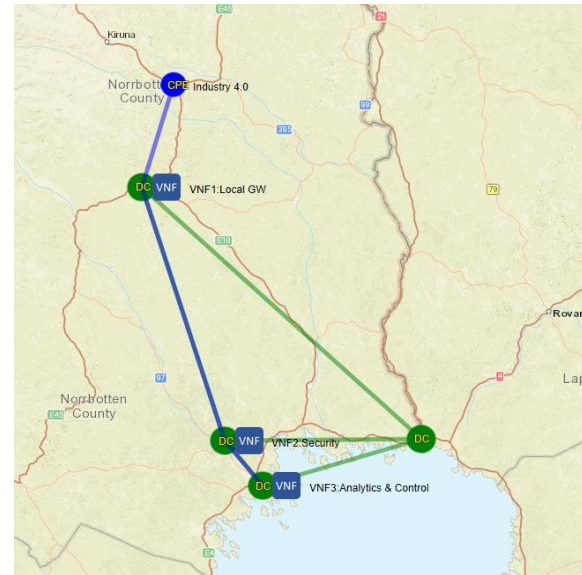
Selection of different services and their different constraints

Inventory & Cost model

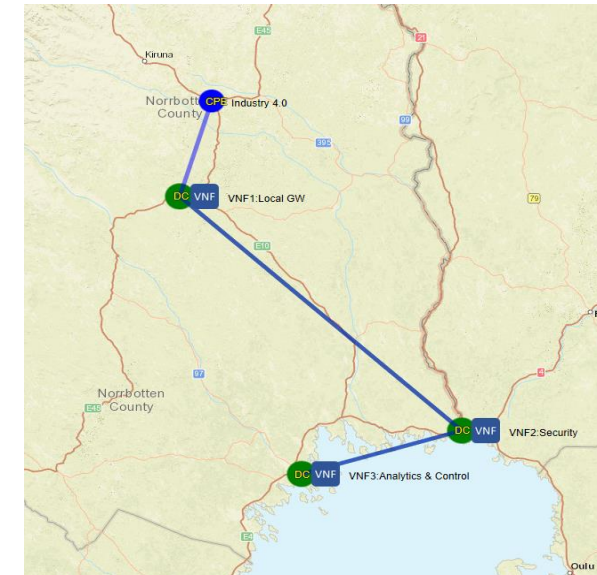
PoC scenarios (examples)



Deployment of latency relaxed service in DC with lowest cost



Deployment of latency-critical service where needed VNF's are moved closer to customer



Re-deployment of latency-critical service in case of DC failure

Key takeaways

- Constraint models to complement NSD's to capture service performance requirements
- Zero-touch placement of VNF workloads based on latency requirements
- Placement decisions using real-time latency measurements
- Placement optimization using cost models to capture link and compute costs
- Placement optimization assurance to continuously re-evaluate in case of DC or link failures



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