



(Horizon 2020 ICT-17 project)

Implementation of Defence Use Case in the Norway Facility site

Dr. Pål Grønsund, Telenor Research, 5G-VINNI Coordinator

5GPPP/AIOTI Replicability Initiative, Online, 28th Jan 2021

5G-VINNI (5G Verticals INNOvation Infrastructure)

- Build an open large scale 5G End-to-End facility that can
 - demonstrate that key 5G network KPIs can be met
 - be used by vertical industries to test use cases and validate 5G KPIs
- Duration: 1.July 2018 – 1.July 2021
- Consortium: 23 partners (operators, vendors, academics, SMEs)
- External Stakeholder Board (vertical industries)

Jul 18 Jul 19 Jul 20 Jul 21 Dec 21 Dec 22

Build and Refine Infrastructure

Build Test Platform

Test 5G KPIs

Verticals use cases against 5G KPIs (incl. ICT-19s)



Rel 0
Jul 19



Rel 1
Jan 20



Rel 2
Jul 20



Rel 3
Jan 21

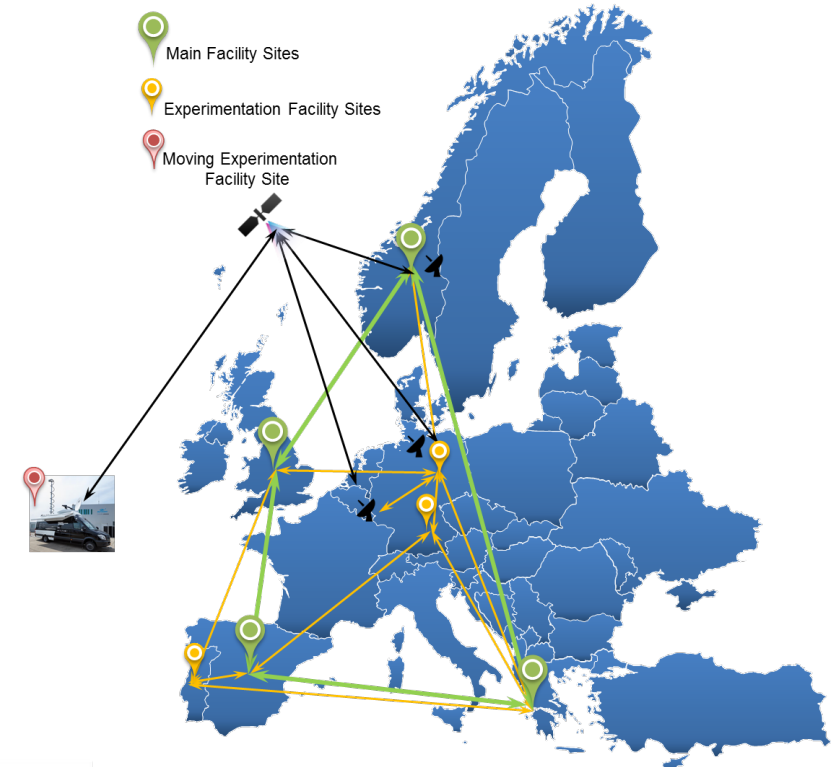


Rel 4
Jul 21



Rel FINAL
Dec 21

Support period for
verticals' experiments



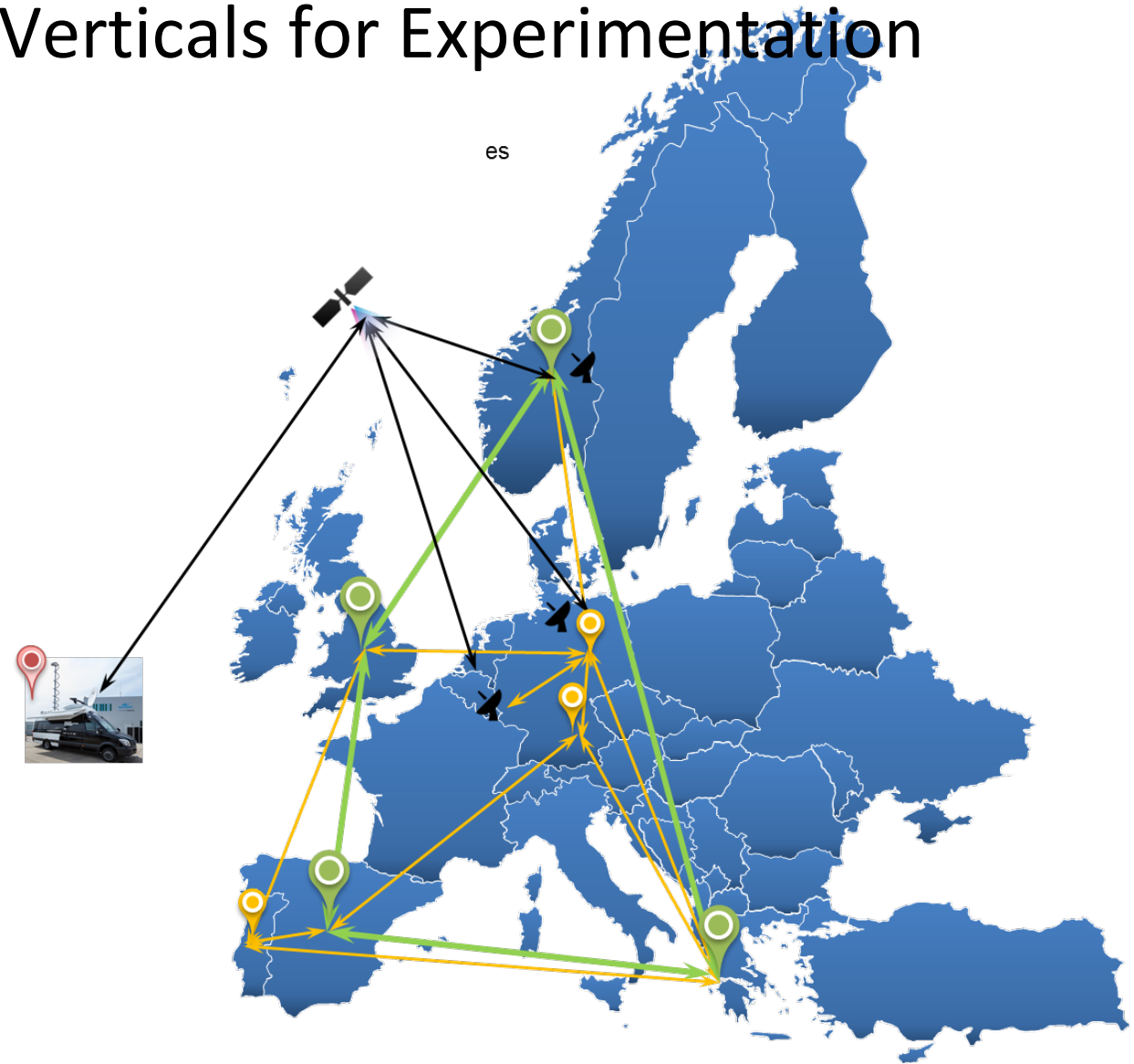
Services offered by 5G-VINNI to Verticals for Experimentation (Main Facility Sites)

Network Slice-as-a-Service (NSaaS)

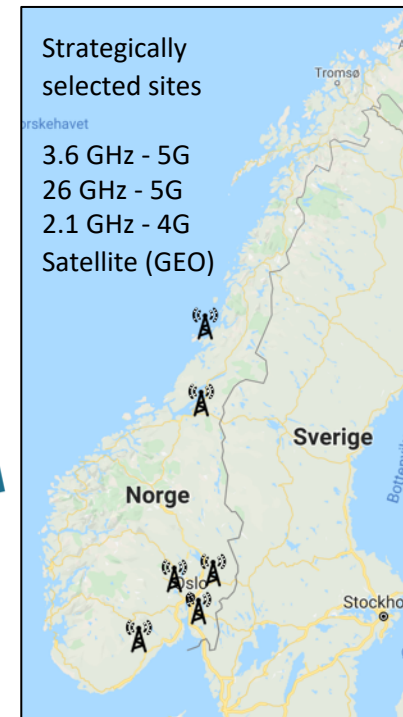
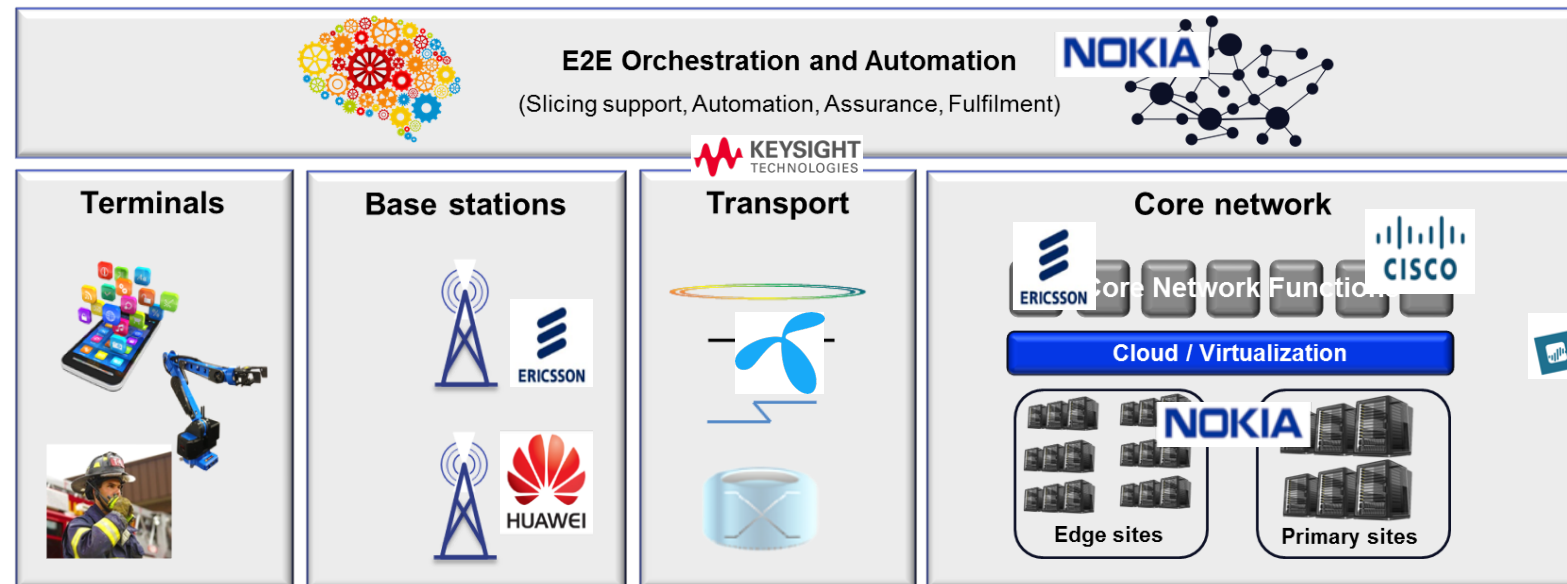
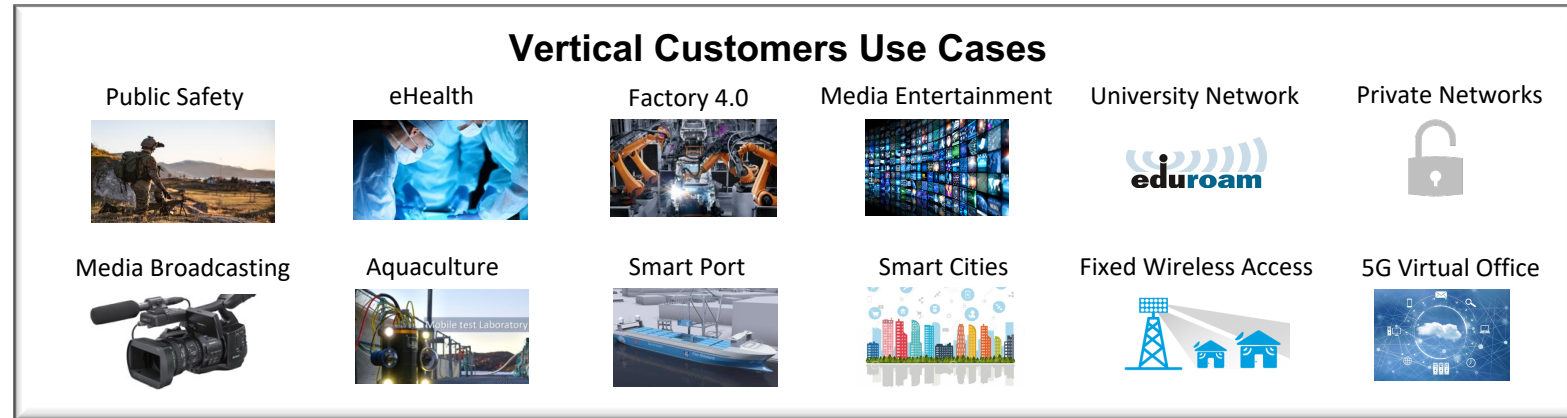
- eMBB network slice as a service
- uRLLC network slice as a service
- mIoT network slice as a service
- Customised network slice

Value Added Services

- Monitoring-as-a-Service
- Testing-as-a-Service
- Security-as-a-Service
- 3rd party VNF hosting
- Distributed data fabric
- Edge and Autonomous Edge
- Flexible backhaul for redundancy (e.g. Satellite)
- Interconnection with other 5G sites



5G-VINNI Norway Facility site and relation to Verticals





NORWEGIAN DEFENCE
MATERIEL AGENCY

Why is 5G interesting for military use?

Open Standards and Interoperability

A new threat picture > Collaboration in the “Total Defence” is needed

5G New Radio

MIMO/Beamforming > Robust and reliable communication

Network Slicing

Dedicated Defence NW slice > Separation from commercial traffic

Edge Computing

Services can run autonomously in the “edge” of the network

*[Ref: Military use of 5G, 3rd Nordic Conference
on ICT: 5G for Industry & Society, 2020]*

Foto: Johan Ludvig Holst/ Forsvaret

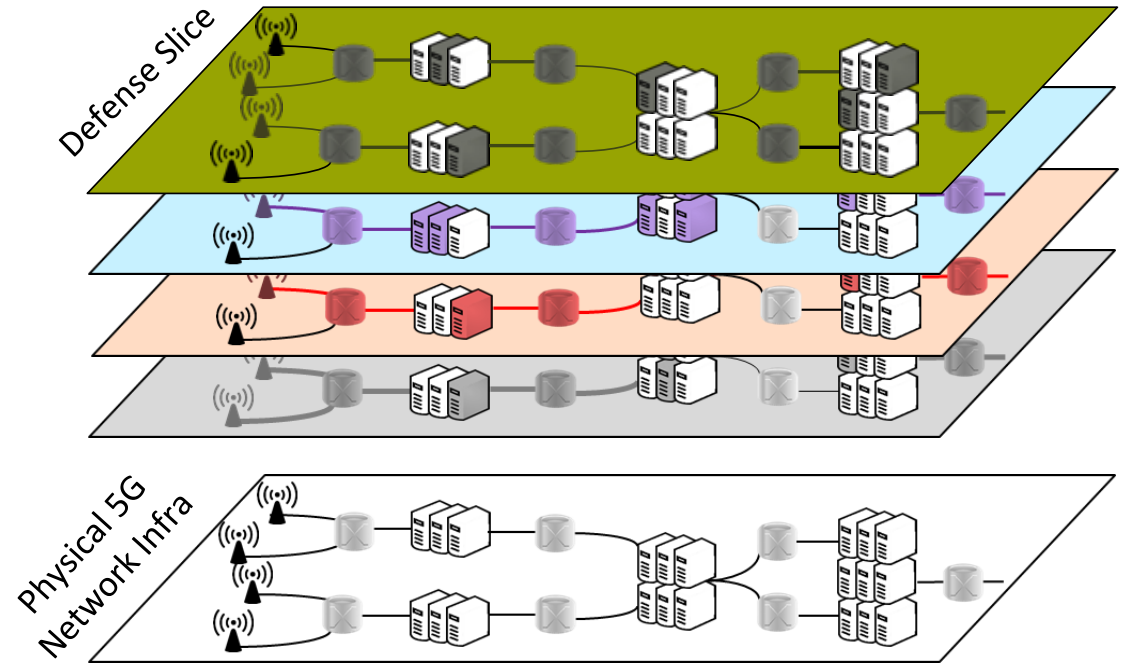
Defense use cases are highly demanding, with requirements also important for other verticals

- Dedicated Defense Slice (a.k.a. private network), full isolation.
- Voice and Push-To-Talk (PTT) with End-to-End encryption.
- Priority when required (e.g. disaster, war)
- Autonomous Mobile Edge
- Satellite backhaul for redundancy on certain sites

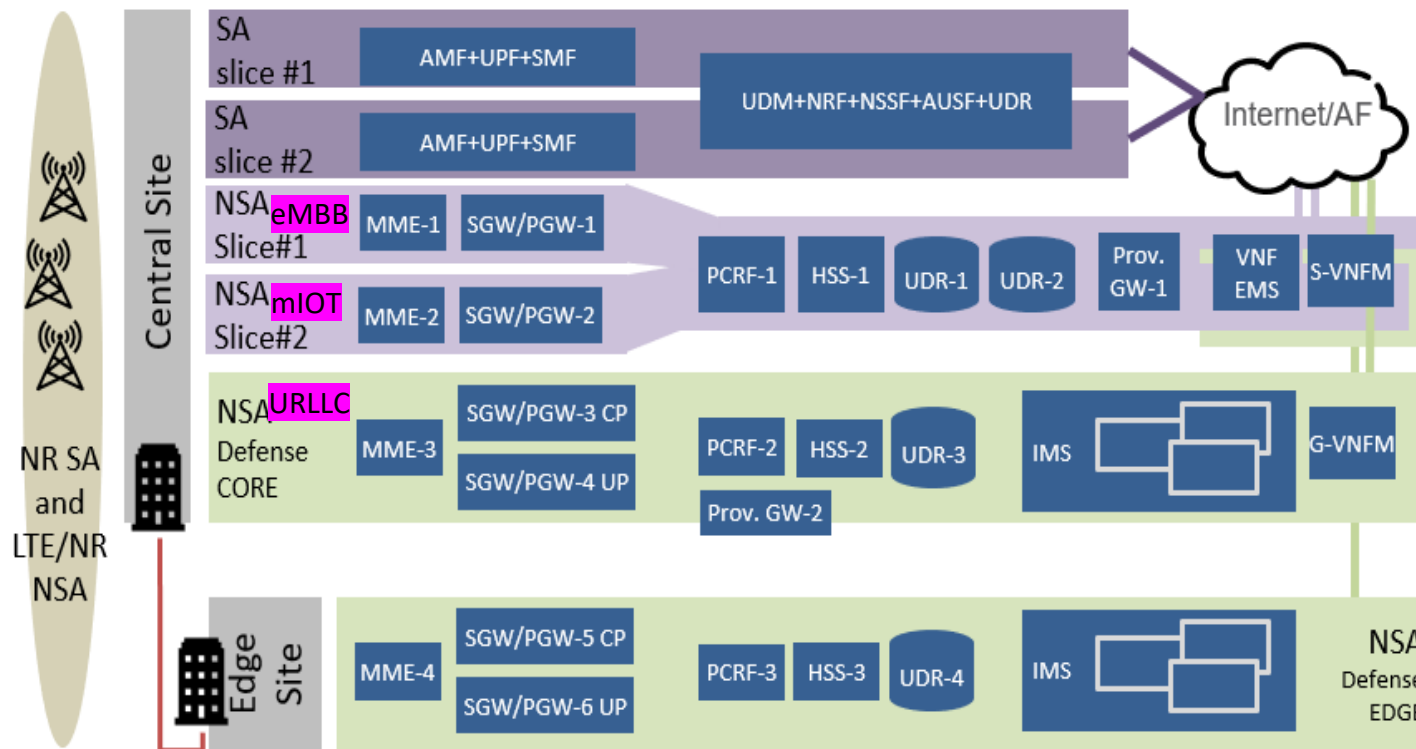


Defense use cases are highly demanding, with requirements also important for other verticals

- Dedicated Defense Slice (a.k.a. private network), full isolation.
- Voice and Push-To-Talk (PTT) with End-to-End encryption.
- Priority when required (e.g. disaster, war)
- Autonomous Mobile Edge
- Satellite backhaul for redundancy on certain sites

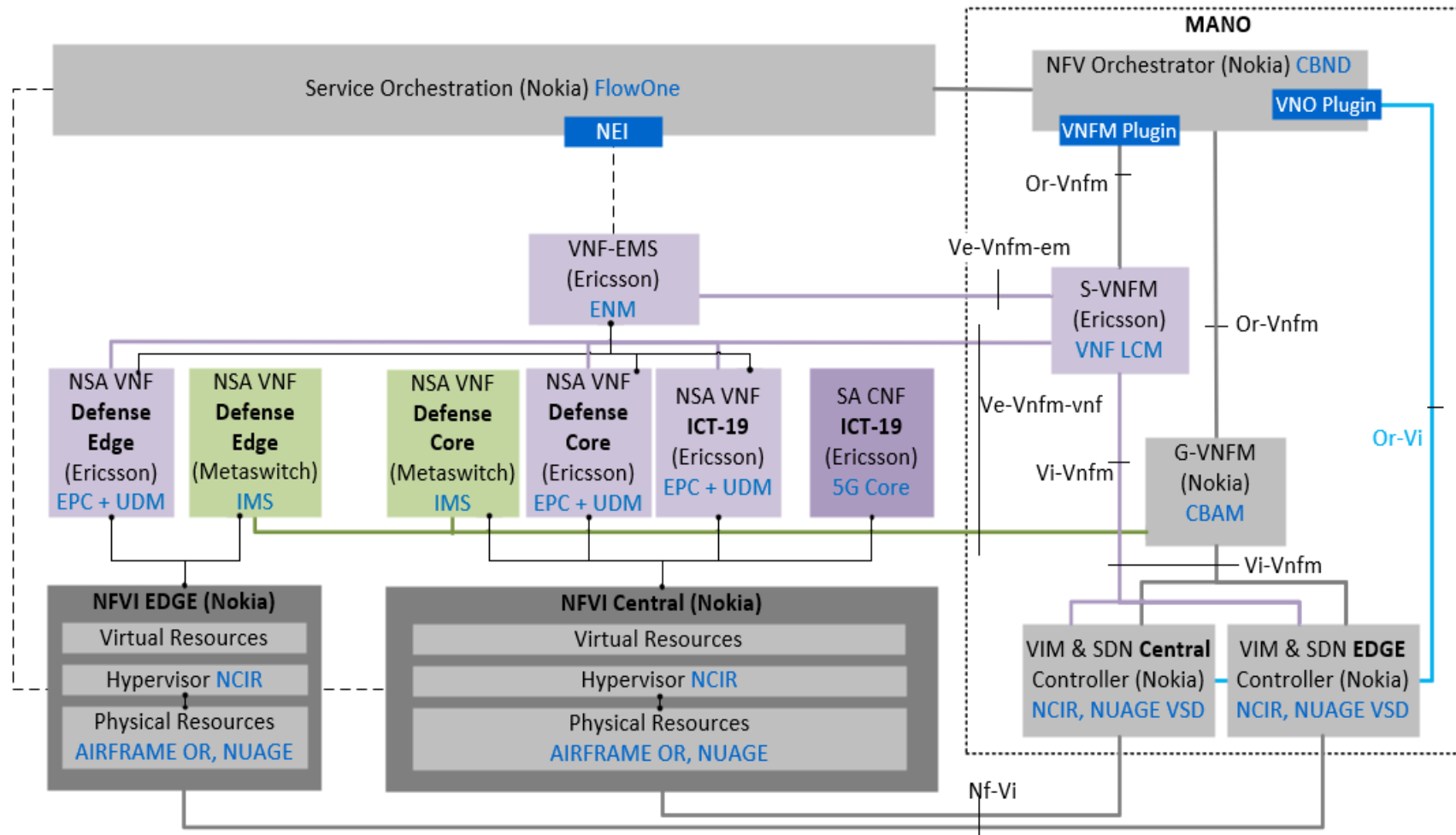


Slices implemented with 5G StandAlone (SA) and Non-StandAlone (SA) and Non-StandAlone (SA)

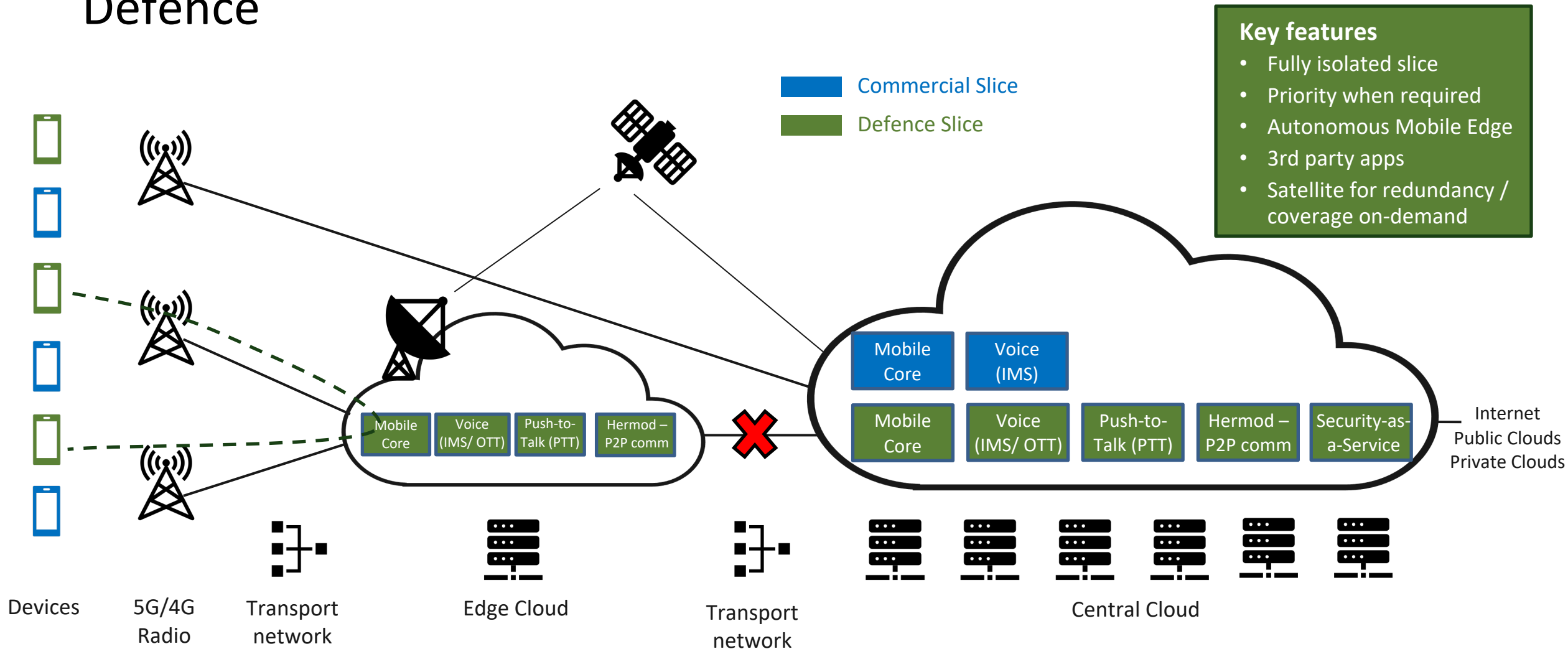


- Defence demo: https://youtu.be/-QGzh_aoWzI and <https://youtu.be/RSuvcx6Xy6o>
- SA 5GC demo: <https://youtu.be/BGUuxt4zURE>
- Orchestration demo: <https://youtu.be/pH2f0KVLTE> and <https://youtu.be/Koe7GA4bbcc>

5G-VINNI Norway Facility site Architectural Framework



Implementation of the Dedicated Slice with the Norwegian Defence



Please contact 5G-VINNI for further information, discussion and interest

- Web page: <http://www.5g-vinni.eu/>
 - Twitter: [@5gVinni](https://twitter.com/5gVinni)
 - E-mail: 5G-VINNI-Contact@5g-ppp.eu
 - [Youtube channel](#)
- norway-facility@5g-vinni.eu
 - uk-facility@5g-vinni.eu
 - spain-facility@5g-vinni.eu
 - greece-facility@5g-vinni.eu
 - portugal-facility@5g-vinni.eu
 - germany-berlin-facility@5g-vinni.eu
 - germany-munich-facility@5g-vinni.eu
 - luxemburg-facility@5g-vinni.eu

