

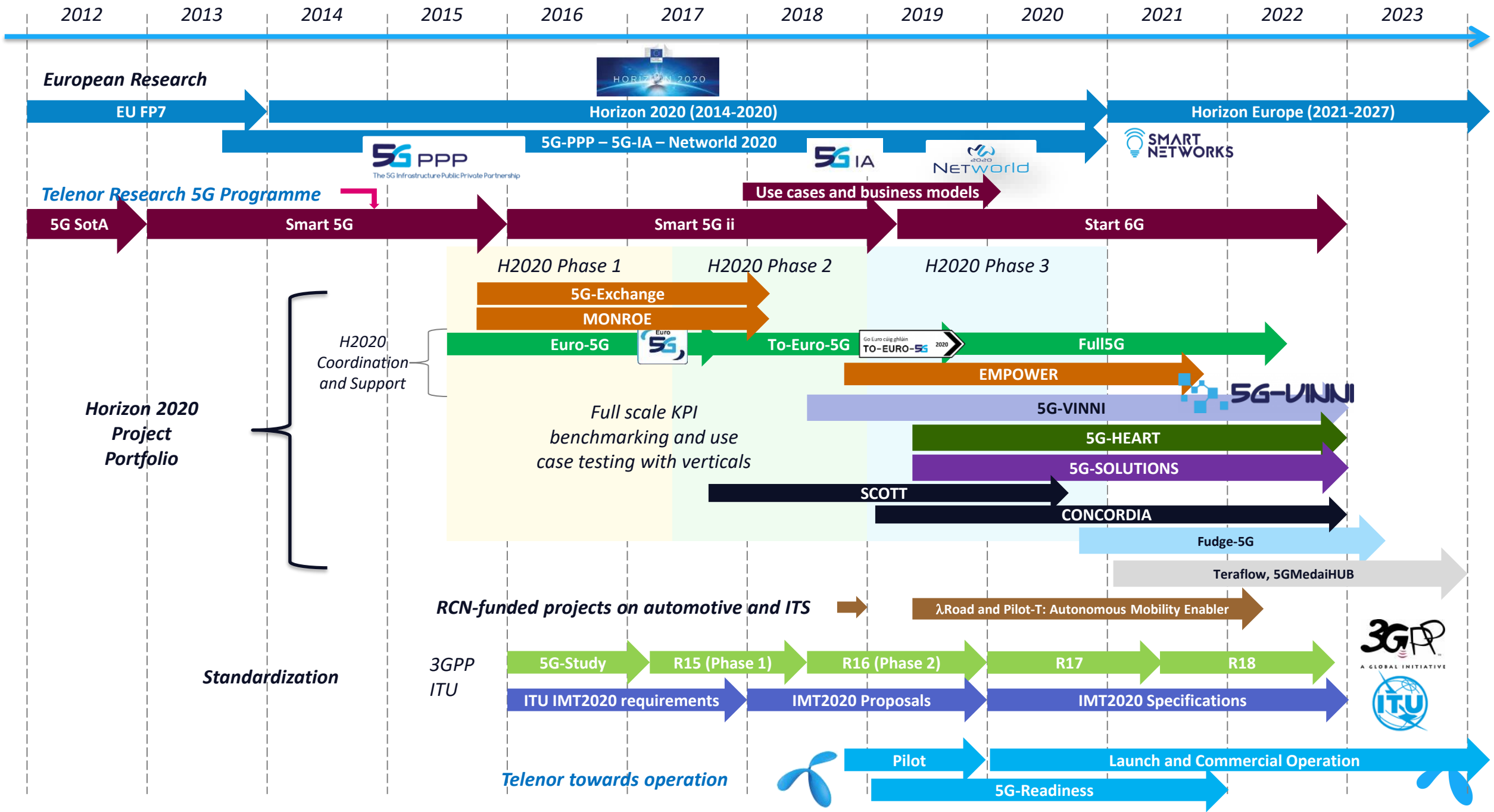


# NGINO

## Relevant Telenor activities

Dr. Patrick Waldemar, Vice President  
**Telenor Research**

18<sup>th</sup> March 2021





## Telenor participation in Work Groups

- Vision and Societal Challenges WG
- Trials WG
- IMT2020 Evaluation WG
- Testing and validation methodology WG



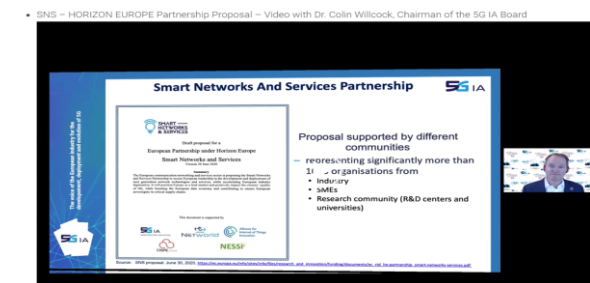
NetWorld2020 is the European Technology Platform for communications networks and services. Gathers players of the communications networks sector: industry leaders, innovative SMEs, and leading academic institutions.

- 5G IA: The voice of the European industry for the development and evolution of 5G
  - 70+ members: bring together a global industry community of telecoms & digital actors, such as operators, manufacturers, research institutes, universities, verticals and SMEs.
  - Board: **NOKIA** (Chair) **SES**<sup>^</sup> (Vice-Chair) **ERICSSON**  **HUAWEI**    **THALES** **interinnov** **NEXTWORKS** ENGINEERING FORWARD 
- Objectives:
  - European leadership for the development and evolution of 5G
  - Facilitating convergence of telecommunications and vertical industry sectors
  - Steer the European 5G PPP research agenda, program implementation and evolution, to maximize the impact, coordination and exploitation of results
  - Promote the availability of radio spectrum, as well as a holistic standardization roadmap

## 5G-IA [Call for membership](#): - Smart Network and Services Association

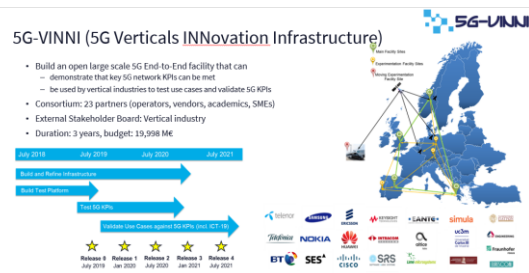
5G-IA is adapting to Horizon Europe and SNS Partnership:

More information SNS [here](#) and SNS in Horizon Europe [here](#).



# Next Generation Technology

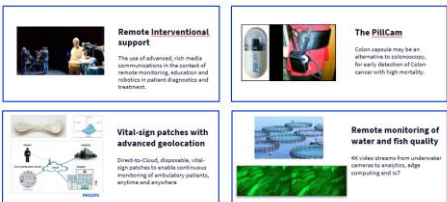
# Industrial 5G



5G-SOLUTIONS will conduct advanced field trials that require advanced 5G capabilities and performance in the vertical domains



### 5G-HEART will conduct field trials for healthcare and aquaculture in Norway



# 5G Innovations



5G-MediaHub

- **Objective:**
  - To build and operate a service execution and NetApps development environment based on an open cloud-based architecture and APIs
  - Develop and integrate a test and validation system with existing 5G testbeds (5G-VNNI)
  - Prototyping and validation of novel 5G media services
- **Project duration:** 36 months (Jan 2021 – Dec 2023)
- **Budget:** 7.5ME (EC funded 6ME) (Telenor 4ME)



## TeraFlow Project

Provide a novel SDN controller and related mechanisms for beyond 5G networks for cloud-scale network flow management to support a Tera of connectivity services

- Project duration: 30 months
- Total: 620 PM (Telenor 31PM)
- Total funding – 5.9MC (Telenor: 0.5MC)



# Start 6G

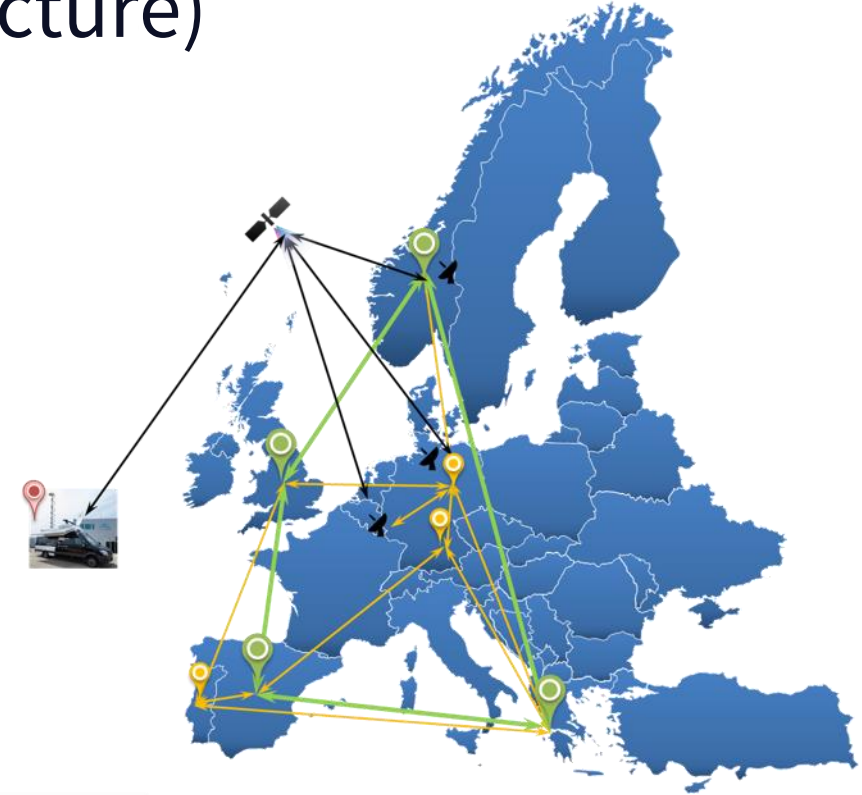
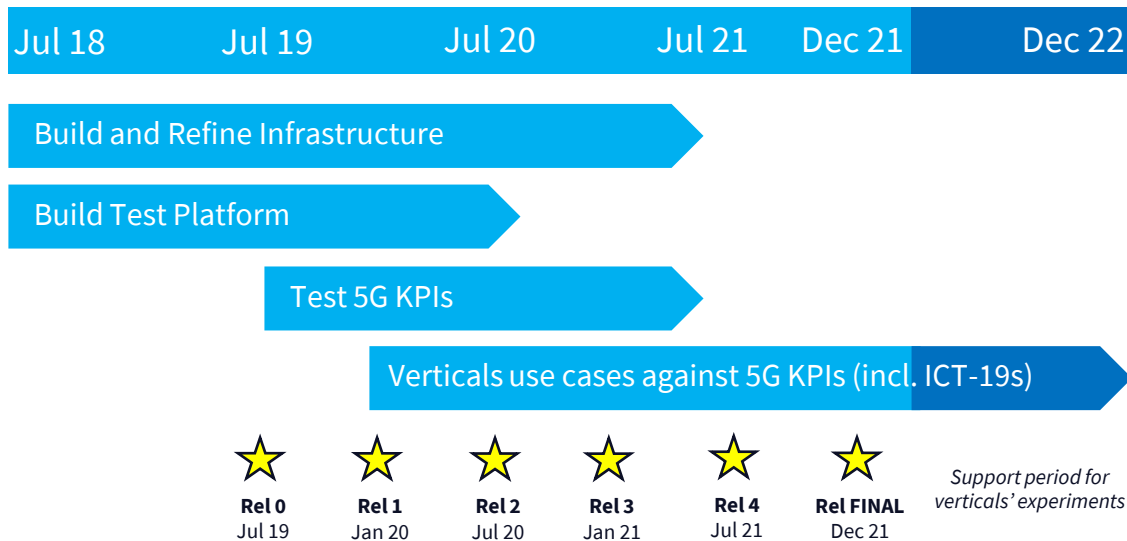


## Vendor Collaborations



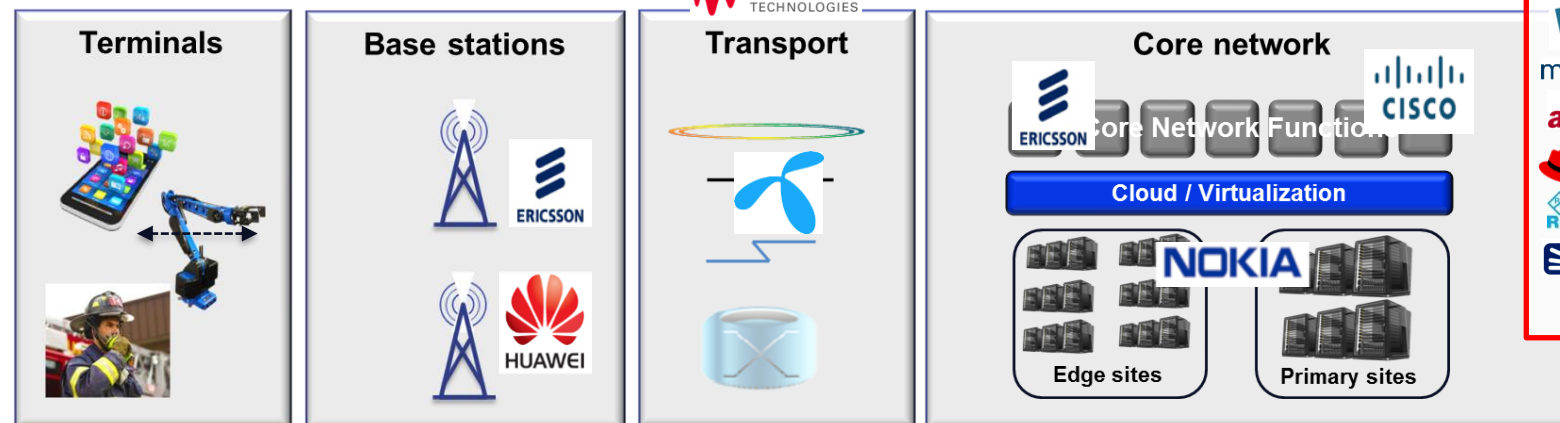
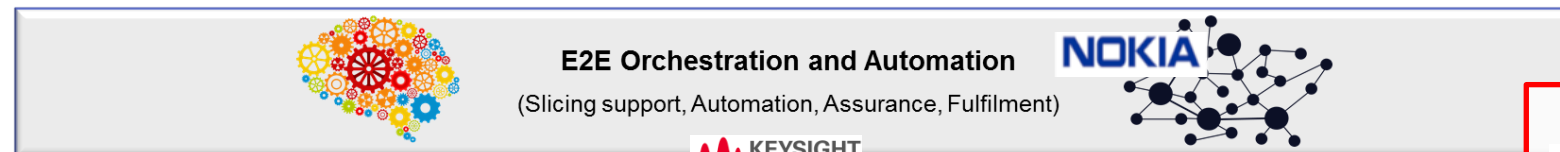
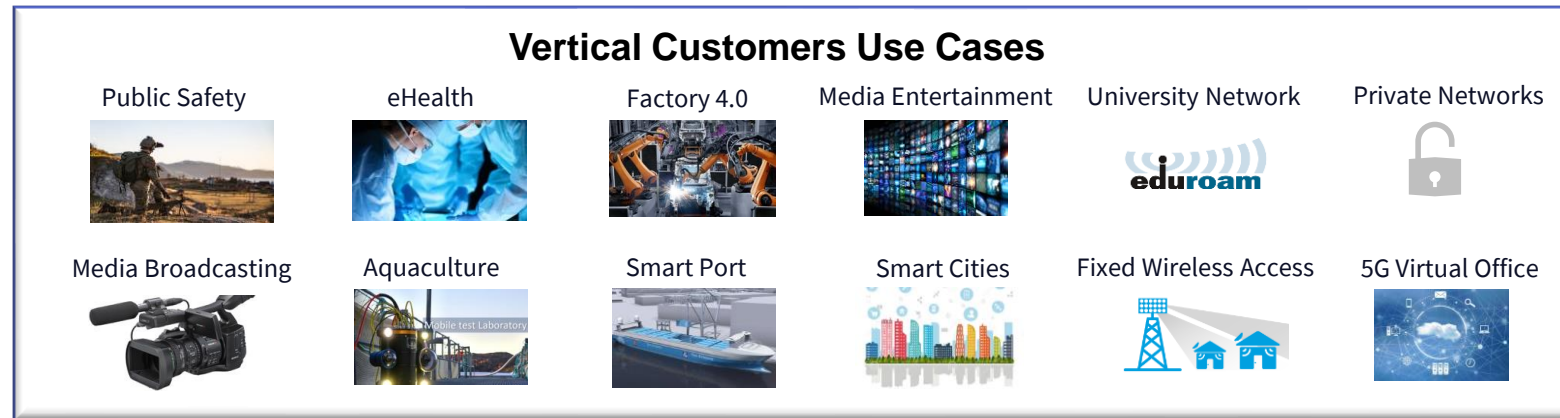
# 5G-VINNI (5G Verticals INNOvation Infrastructure)

- 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
- Consortium: 23 partners (operators, vendors, academics, SMEs)
- External Stakeholder Board: Vertical industry
- Duration: 3 years, budget: 19,998 M€



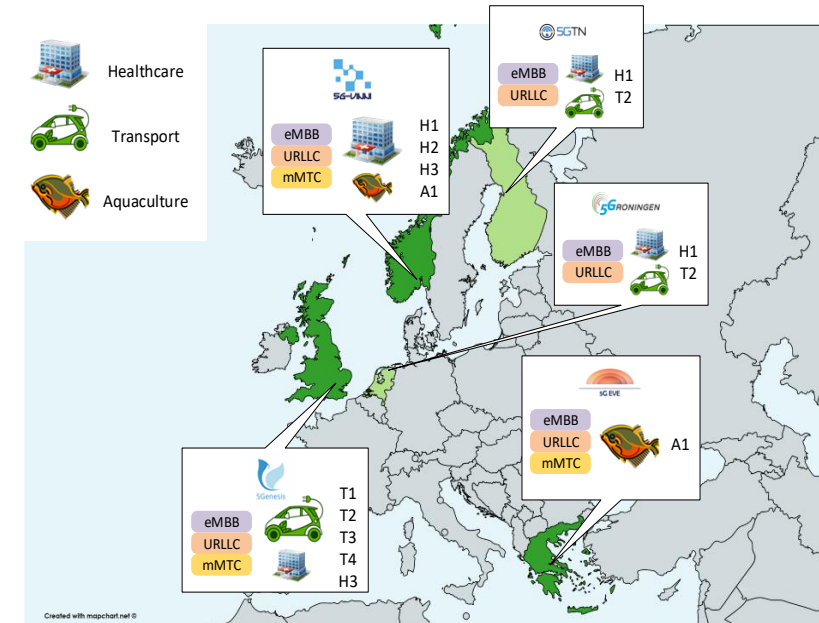
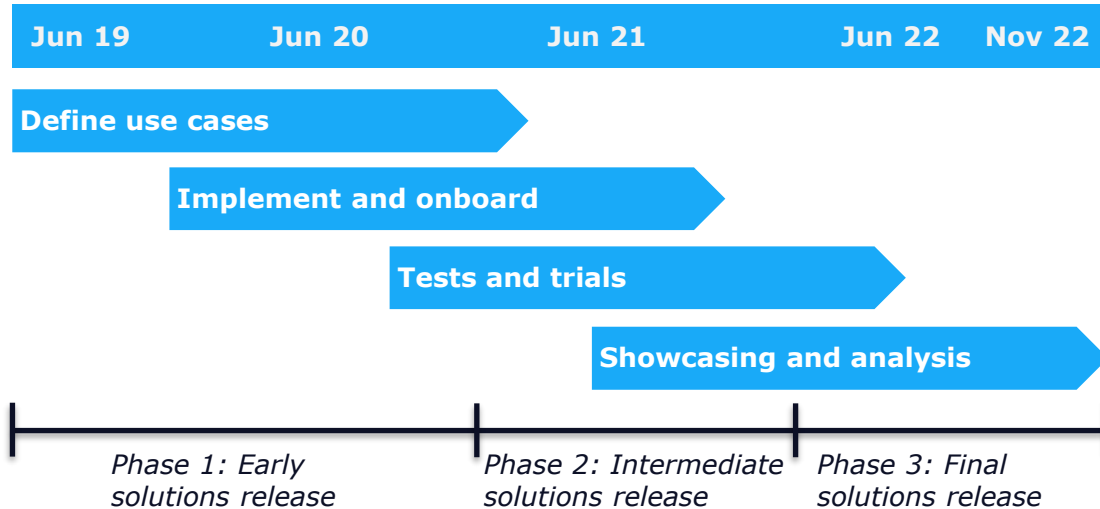


# 5G-VINNI Norway Facility site and use cases with other EC funded projects



# 5G-HEART (5G HEalth AquacultuRe and Transport validation trials)

- Focus on vital vertical use-cases of healthcare, transport and aquaculture
  - To define and implement specific use cases of healthcare, transport and aquaculture industries
  - To describe and validate viable business models for the use cases tested across the multiple industry verticals.
  - To perform field trials and demonstrations of selected use cases involving multiple vertical services on the available 5G E2E platforms
- Duration: June 2019 – Nov 2022 (42 months), budget: 14 M€
- Consortium: 22 partners (verticals, operators, academics, SMEs)



# Fully Disintegrated private networks for 5G verticals



- Project coordination: UPV (Spain)
- Technical coordination: Telenor (Norway)
- Budget: 6.1 M€
- Project duration: 30 months (Sep 2020 – Feb 2023)
- Vertical use cases: 5 use cases to be trialed in the 5G-VINNI infrastructure managed by Telenor Research with vertical stakeholders

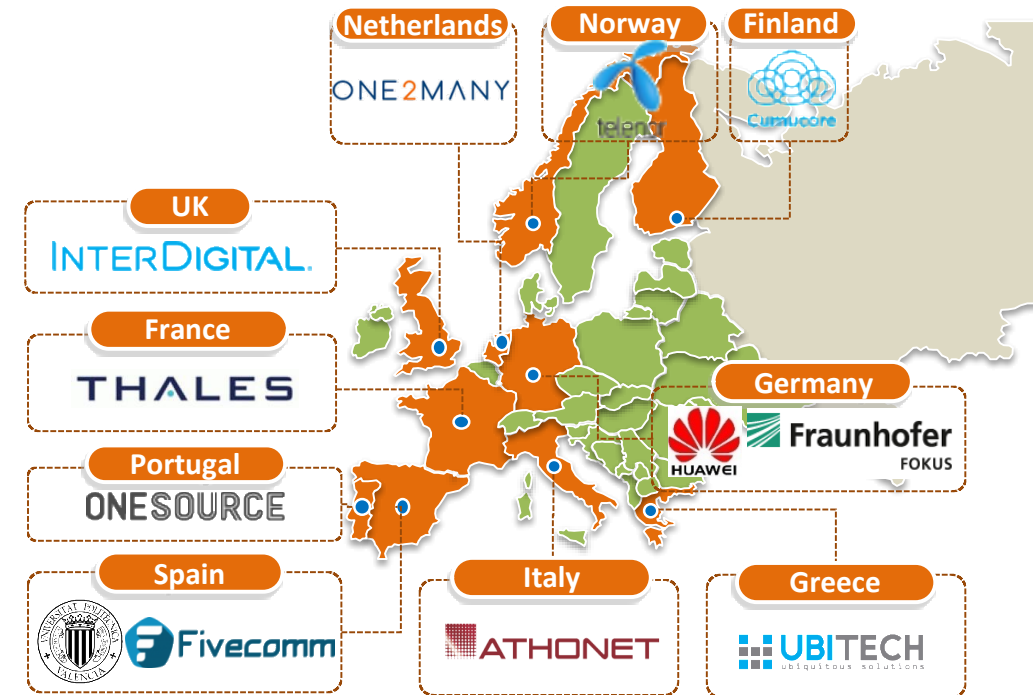
## Verticals Stakeholders



## Solution Providers



## Technical Experts





# TeraFlow Project

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Adoption of  
SDN by  
Telecom  
Operators

Accelerate innovation in Optical and IP networks and ultimately help operators provide better connectivity

5G Integration with L3VPN/L2VPN up to the edge

Multi-vendor  
Multi-domain

Multi-cast/  
Unicast

IP+Optical

MPLS-TP or  
SR or GTP

Automated and Zero Touch Service Management for  
Transport Network Slices

Initialization

Auto-discovery and  
auto-configuration

Auto-provision

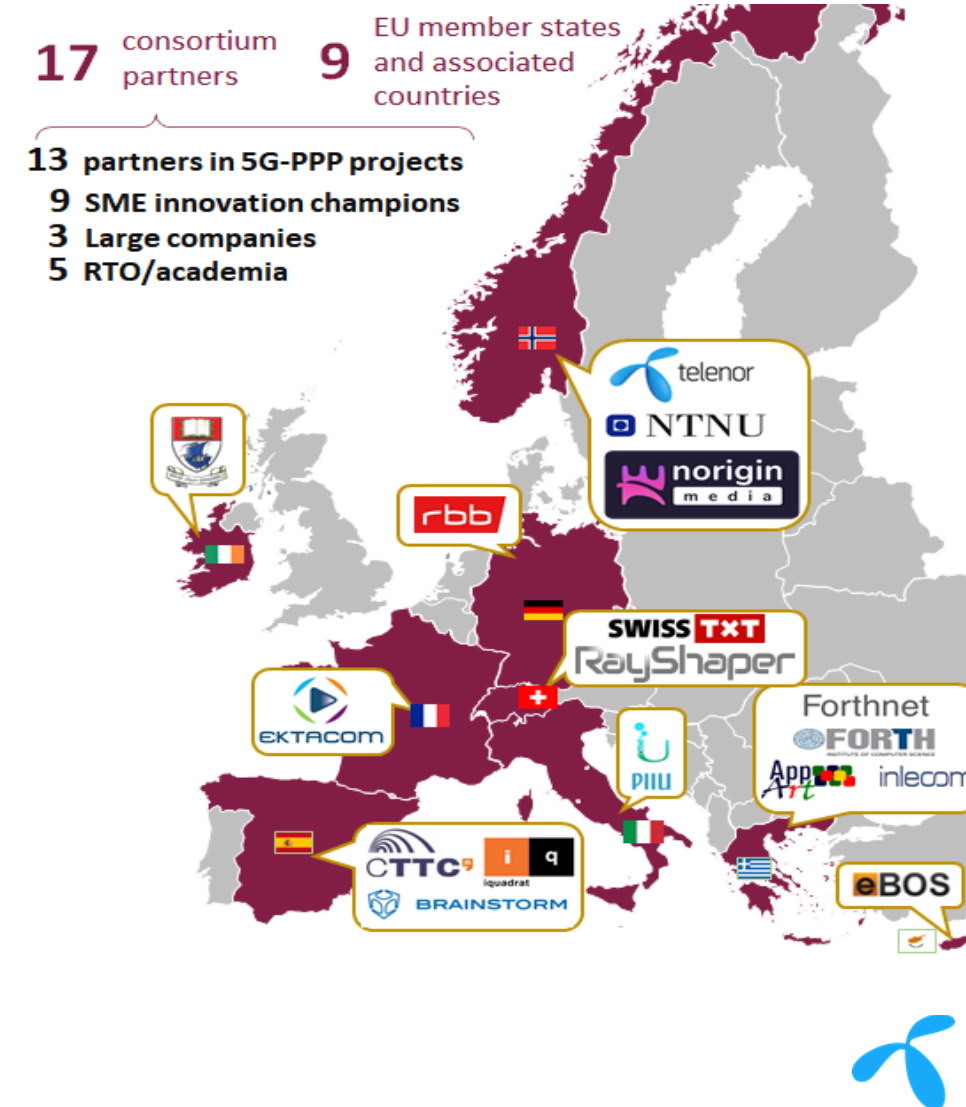
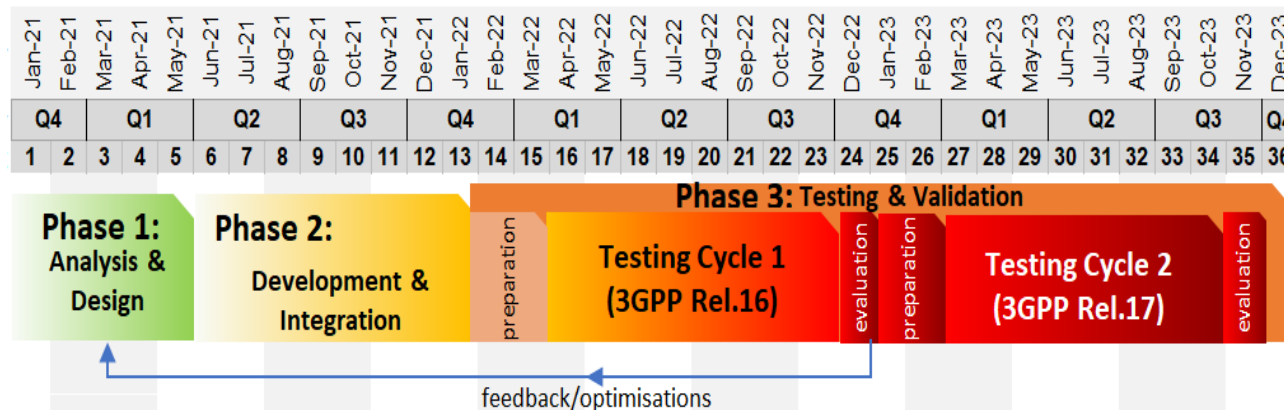
 TeraFlow



# 5G-MediaHub

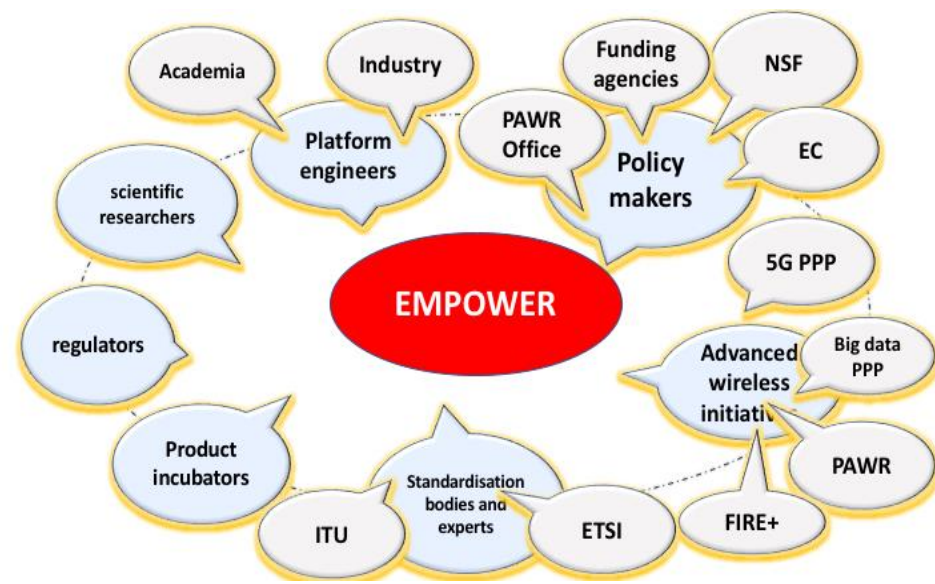


- Objective:
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  - Develop and integrate a test and validation system with existing 5G testbeds (5G-VINNI)
  - Prototyping and validation of novel 5G media services
- Project duration: 36 months (Jan 2021 – Dec 2023)
- Budget: 7.5M€ (EC funded 6M€) (Telenor 0.4M€)



# EMPOWER (EMpowering transatlantic PlatfOrms for advanced WirEless Research)

- The EMPOWER project's aim is to reinforce collaborative work with the US to support advances in Wireless knowledge beyond 5G in order to address the common challenges of further connectivity frontiers.
  - Collaboration strategies
  - Technology roadmap towards 6G
  - Deployment and evaluation methodologies
  - Community bridging
- Duration: Nov 2018 – April 2022 (42 months), budget: ~2 M€
- Consortium: 7 Partners



IMT-2000	IMT-Adv. (2010)	IMT-2020	IMT-2030
Universal / Worldwide	Mobile Broadband / Video	Mobile Internet of Everything	Mobile Intelligence of Everything

