Welcome to 7th OSM Hackfest

University of Patras, Greece
9-13 September 2019

Spyros Denazis
**Electrical & Computer Engineering Department**

About the University & the Area

The University of Patras

- Founded in the city of Patras in 1964
- Currently is the 3rd largest University in Greece
- The University of Patras includes
  - 37 Departments, 161 laboratories and 17 fully equipped clinics.
  - >30.000 Undergraduate students,
  - >4000 Postgraduate students,
  - 715 Faculty members
  - 226 Scientific staff members
  - 454 Administrative staff members
  - >1600 Researchers
- School of Engineering
  - 7 Departments
  - Electrical & Computer Engineering the oldest department
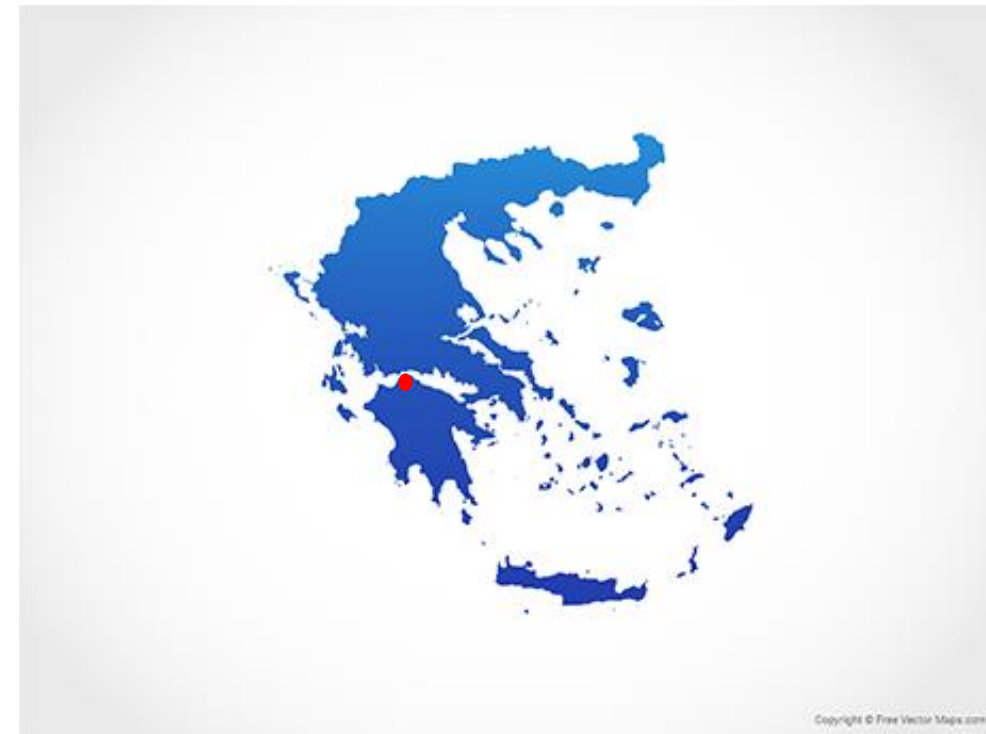
The University Campus

Conference Centre

ECE Department

2.656 acres

Useful Info & Logistics

Public WiFi

- Name: Upatras Guest
- Username: guest
- Password: con91592019

- Also eduroam

Agenda

OSM-MR#7 & Hackfest Patras	MONDAY 9 Sept		TUESDAY 10 Sept		WEDNESDAY 11 Sept		THURSDAY 12 Sept		FRIDAY 13 Sept	
09:00..10:30 (1h30)	LG		TECH	S2 Basic Descriptors	TECH	S6 Day 1/2 Config	S11 Robot Framework		TECH	S10 How to Contribute
										Q&A & Wrap-up
10:30 ..11:00 (0h30)	COFFEE BREAK									
11:00..13:00 (2h00)	EUAG		TECH	S3 Multi VDU	TECH	S6 Day 1/2 Config	TECH	S8 Network Slicing	DEMO 3 - Canonical	
									DEMO 4 - Tata Elxsi	
				S4 Advanced					DEMO 5 - Whitestack	
13:00..14:00 (1h00)	REGISTRATION		LUNCH BREAK							
14:00..16:00 (2h)	Welcome		TECH	S5 Day 0 Config	TECH	OSM & 5G Verticals	TECH	S7 Fault & Perf Mgmt		
	TSC	S0 Intro								
		DEMO 0								
16:00..16:30 (0h30)	COFFEE BREAK									
16:30..18:00 (1h30)	TSC & MDL	S1 OSM Install	DEMO 1 - DPB WIM		TECH	OSM & 5G Verticals	TECH	Overflow and Q&A		
			DEMO 2 - VNF Onboarding							

Rooms + Coffee + Lunch Breaks

●

Sessions	Room	Group
OSM Hackfest	I-10	All
OSM & 5G Verticals	I-10	All
OSM-MR7 (TECH)		OSM All
TSC / TSC&MDL	I-12	OSM TSC/TSC&MDL
LG		OSM LG
EUAG		OSM EUAG

- Coffee breaks take place just outside rooms I-10 & I-12
- Lunch breaks 1st Floor at the Foyer

Transportation (From Patras to the University)

- https://www.upatras.gr/en/node/4395
- By suburban railway
  - The Central Railway Station (OSE) is located in the city center.
  - From the Central Railway Station there is the Suburban Railway (Proastiakos) that runs every one hour
  - The ticket cost is 1.40 Euros/ trip and 1 euro/ trip for students.
  - The suburban train (Proastiakos) runs every 1 hour between 06.30 – 22.30
  - Take the train from Patras (central) and get off at **Kastelokampos**
  - The return route Kastelokampos - Patras is also every 1 hour between 07.00 – 23.00.
  - IMPORTANT! From Kastelokampos Railway Station, a bus takes the passengers to the University and vise versa.
- By taxi
  - There are about one thousand taxis available in the city of Patras. Many taxis work on a 24-hour basis. You can hire a taxi at a taxi stand. Taxis can also be requested by telephone using one of the following numbers 1300, 2610 346700, 2610 450000
  - Costs about €10 from city centre

OSM Hackfest Social Event

Wednesday 11/9
at 20:00
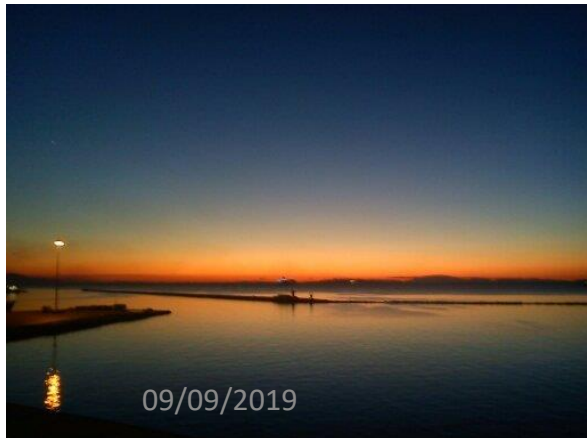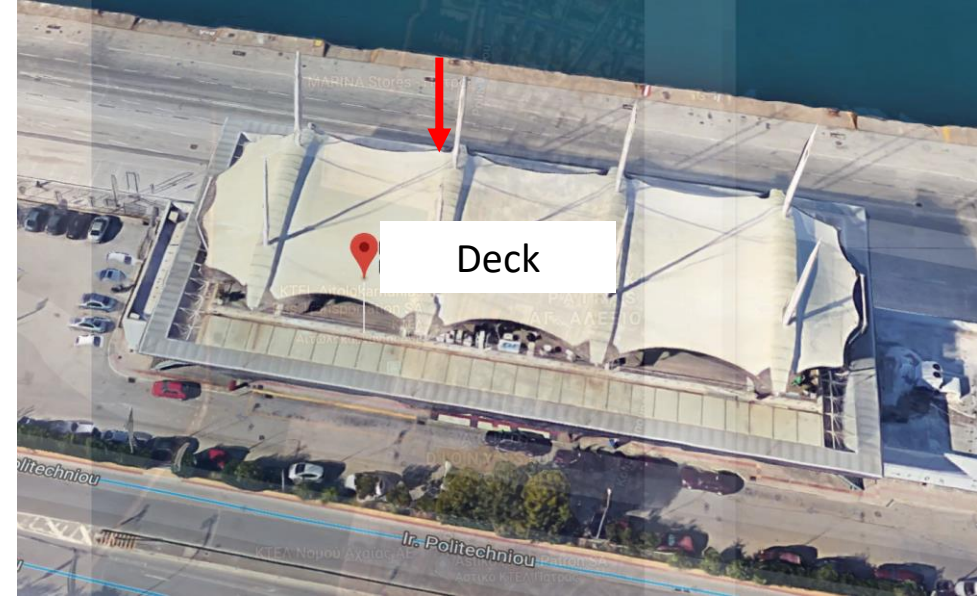
Address
Patras Port
Iroon Politechniou
(Above Duty Free)

Deck

09/09/2019

OSM Hackfest Social Event

Wednesday 11/9
at 20:00

Address
Patras Port
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(Above Duty Free)

Deck

Sponsors

-
-
-
-
-

Contacts

- Spyros Denazis
- (30) 6944658336

Welcome & Enjoy your stay!

Patras OPEN 5G Infrastructure

7th OSM Hackfest – University of Patras
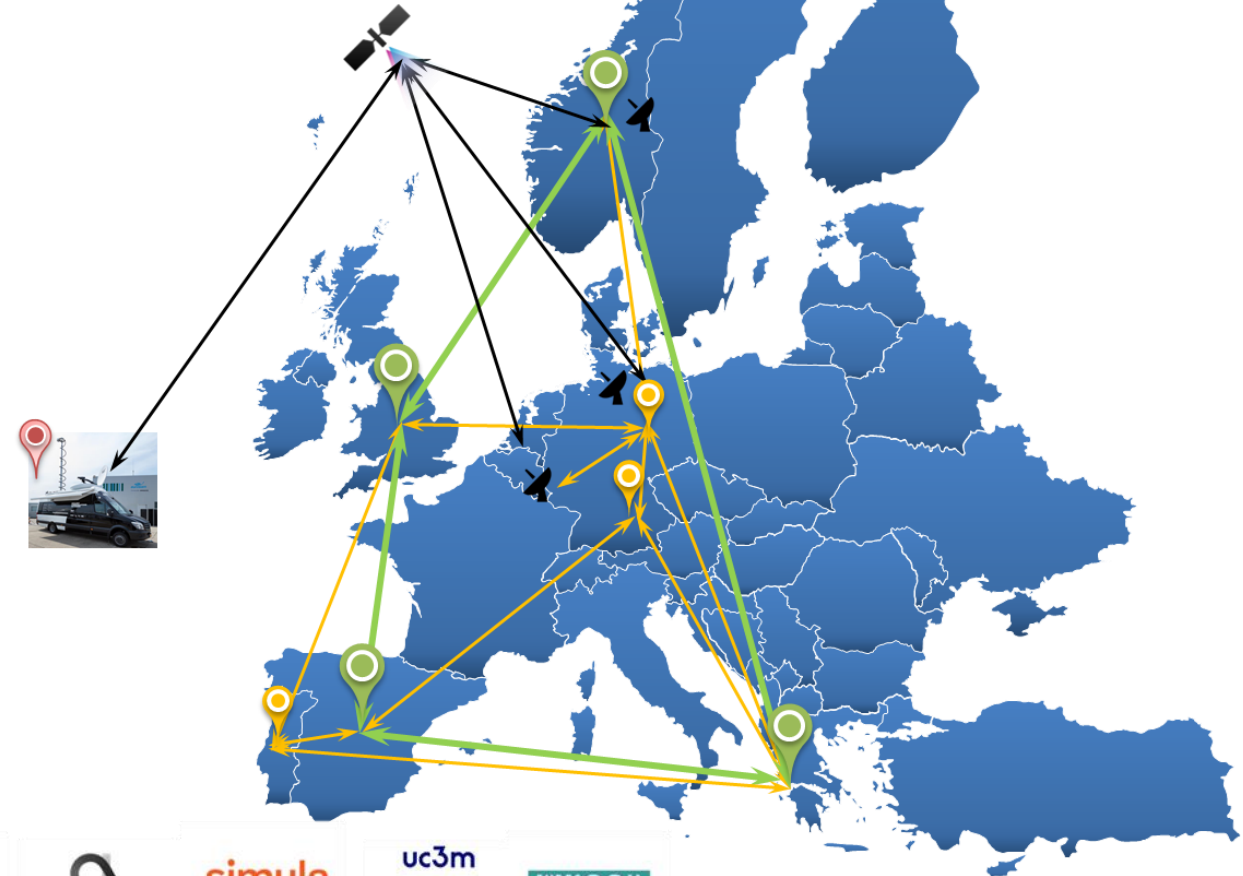
5G-VINNI Facility Sites

Main Facility sites: E2E 5G-VINNI facility that offers services to ICT-18-19-22 projects with well-defined Service Level Agreements.

- Norway (Oslo, Kongsberg)
- UK (Martlesham)
- Spain (Madrid)
- Greece (Patras)

Experimentation Facility sites: provide environments for advanced focused experimentation and testing possibilities on elements and combinations of elements of the E2E model.

- Portugal (Aveiro)
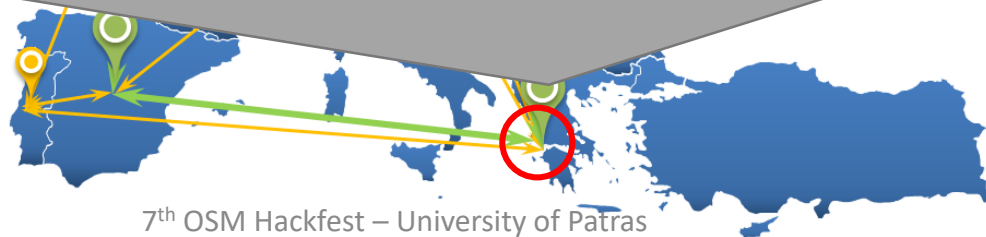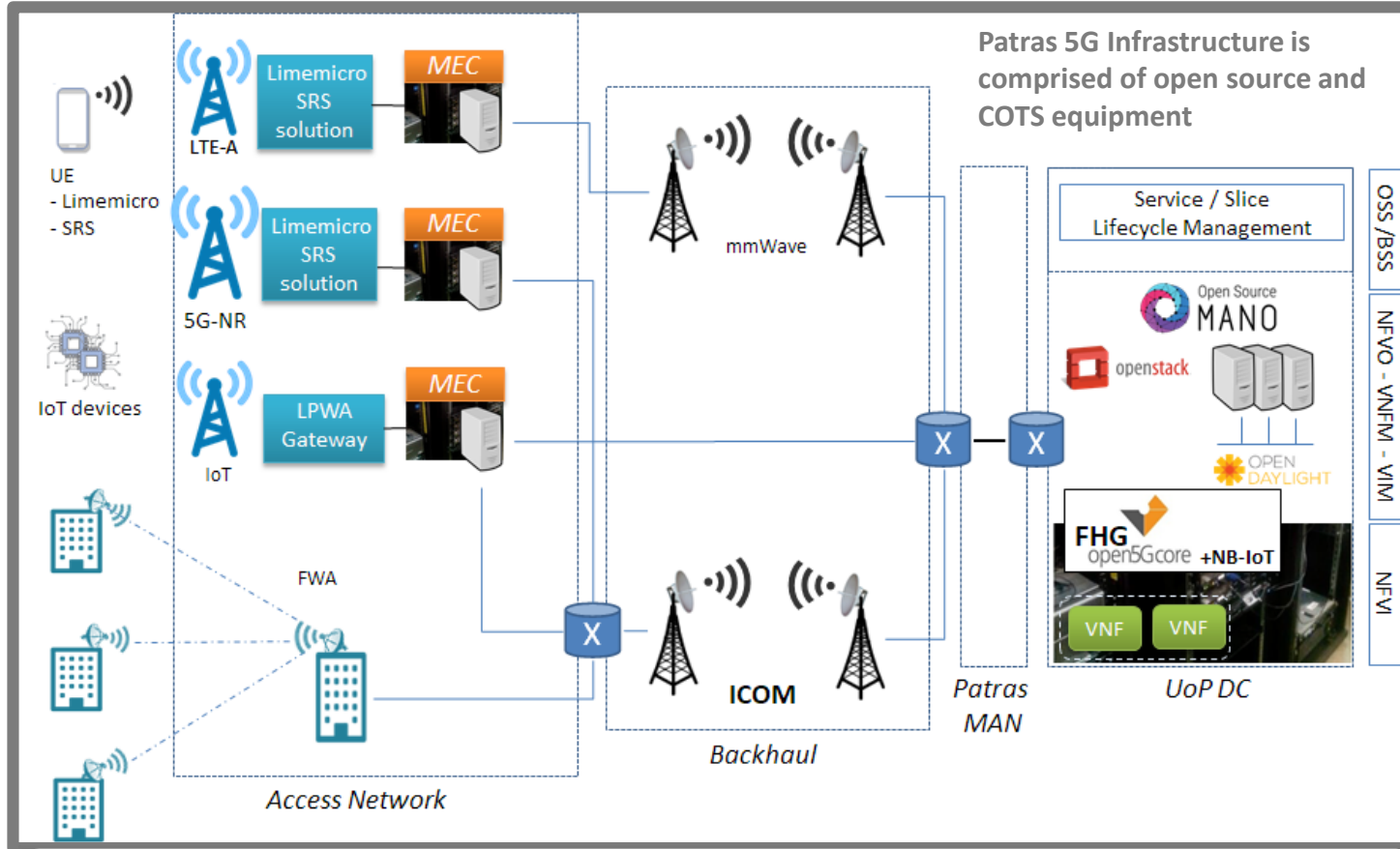- Germany (Berlin)
- Germany (Munich)

Moving Experimentation Facility site: satellite connected vehicle.
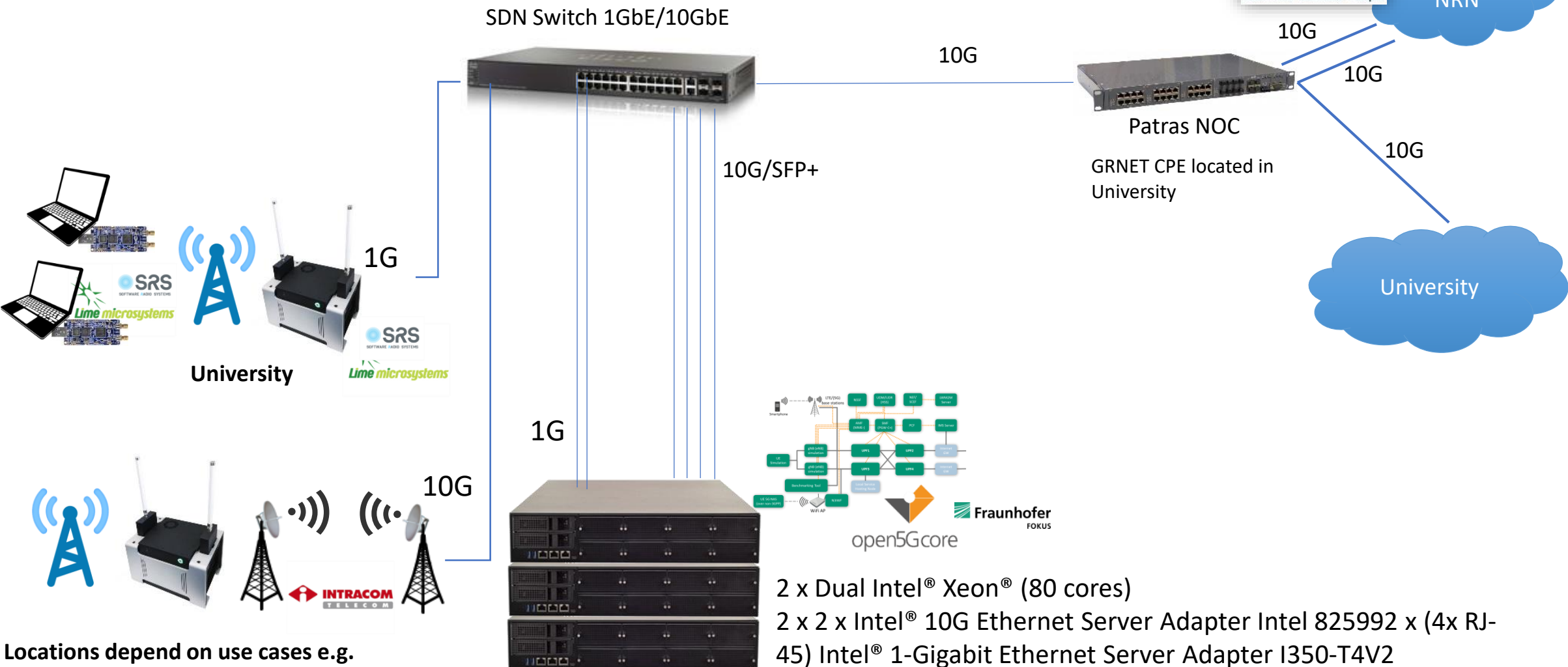
Main Facility Sites

Experimentation Facility Sites

Moving Experimentation Facility Site

5G-VINNI Patras/Greece Main Facility Site

https://www.5g-vinni.eu/greece-main-facility-site/

7th OSM Hackfest – University of Patras

5G-VINNI Patras/Greece Main Facility Site: NFVI

SDN Switch 1GbE/10GbE

10G

GRNET NRN

10G

10G

Patras NOC

GRNET CPE located in University

10G/SFP+

1G

University

1G

10G

University

open5Gcore

Fraunhofer FOKUS

2 x Dual Intel® Xeon® (80 cores)
2 x 2 x Intel® 10G Ethernet Server Adapter Intel 825992 x (4x RJ-45) Intel® 1-Gigabit Ethernet Server Adapter I350-T4V2
512GB RAM
DPDK, SR-IOV, EPA

Locations depend on use cases e.g.
- City center
- Train Stations

5G-VINNI Patras/Greece Main Facility Site: NFVI (RAN)
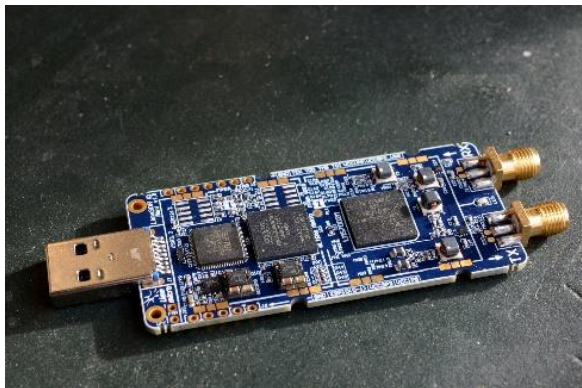
LimeSDR, LimeSDR Mini
UE on Laptops

Outdoors Antenna

LimeNET Mini
For Indoor Base Station test
as "crowdcell"
and as UE

LimeNET Base Station
Deployed outdoor

Currently we are looking at other 5G equipment (gNodeB) to be installed e.g. NOKIA, HUAWEI.

5G-VINNI Patras/Greece Main Facility Site: NFVI (Transport network)

FWA and Backhaul Networks at Patras Facility Site
Location #1: University of Patras, Electrical and Engineering Department Building
Location #2: City of Patras, Prefecture of Patras
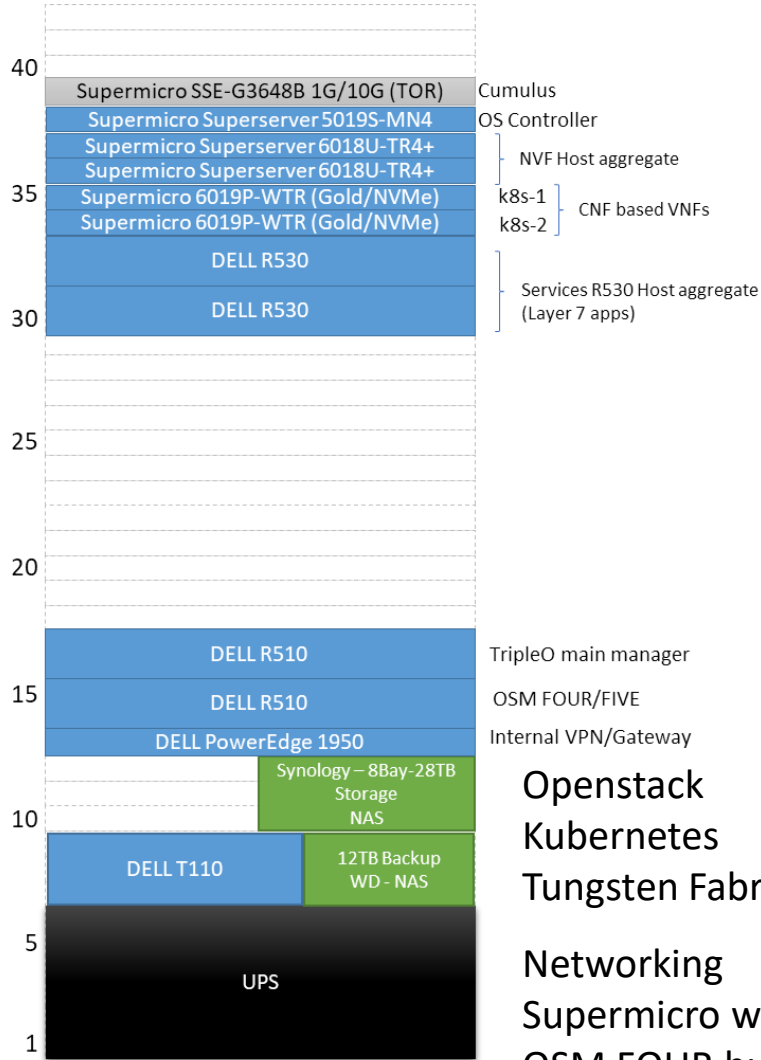Location #3: To be defined
Equipment to be used Ultra-link GX80 from Intracom
http://www.intracom-telecom.com/en/products/wireless_network_systems/4G5G_backhaul_fronthaul/ultralinkGX80.htm

Illustration from Radio Planning for FWA Network at Patras Facility Site (access to a hospital, school, City Directorate-General for Development Planning, and a park to perform some of the use cases)

# 5G-VINNI Patras/Greece Main Facility Site: NFVI (Cloud)

Supermicro SSE-G3648B 1G/10G (TOR)	Cumulus
Supermicro Superserver 5019S-MN4	OS Controller
Supermicro Superserver 6018U-TR4+	NVF Host aggregate
Supermicro Superserver 6018U-TR4+	
Supermicro 6019P-WTR (Gold/NVMe)	k8s-1 — CNF based VNFs
Supermicro 6019P-WTR (Gold/NVMe)	k8s-2
DELL R530	Services R530 Host aggregate (Layer 7 apps) — Rancher / K8s 2nd cluster in VMs
DELL R530	Other services + some future ICT-19 services/apps
DELL R510	TripleO main manager
DELL R510	OSM FOUR/FIVE
DELL PowerEdge 1950	Internal VPN/Gateway
Synology – 8Bay-28TB Storage NAS	
DELL T110 / 12TB Backup WD - NAS	
UPS	

Openstack
Kubernetes
Tungsten Fabric

Networking
Supermicro whitebox with Cumulus Linux
OSM FOUR but will migrate to Open Source MANO version FIVE

This cloud facility can be used to (co)host third parties software and hardware and provide access to the 5G facility for testing and experimentation.
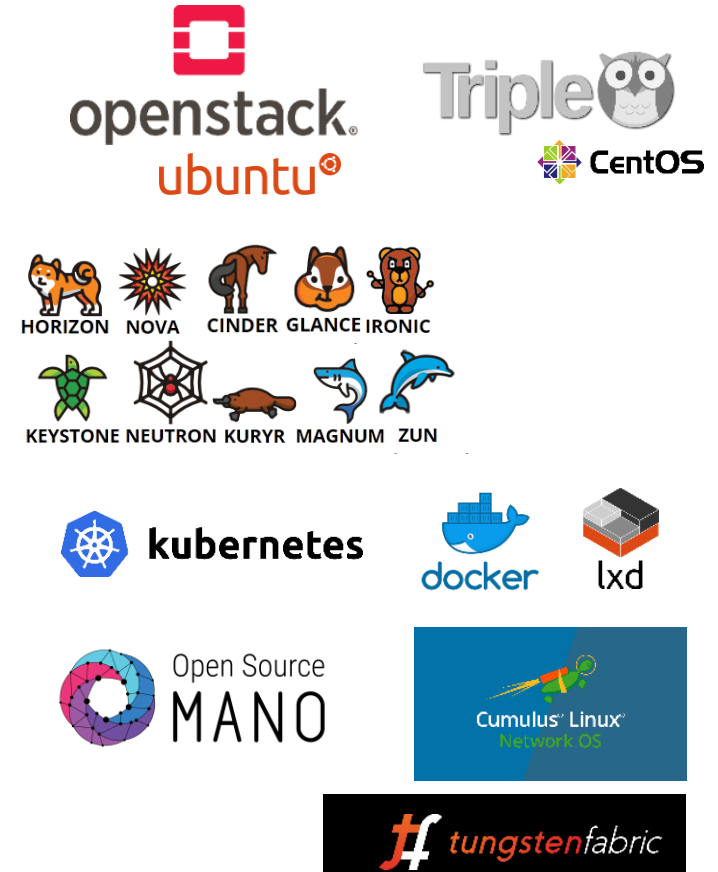
5G-VINNI Patras Facility Site: Field Deployment Overview
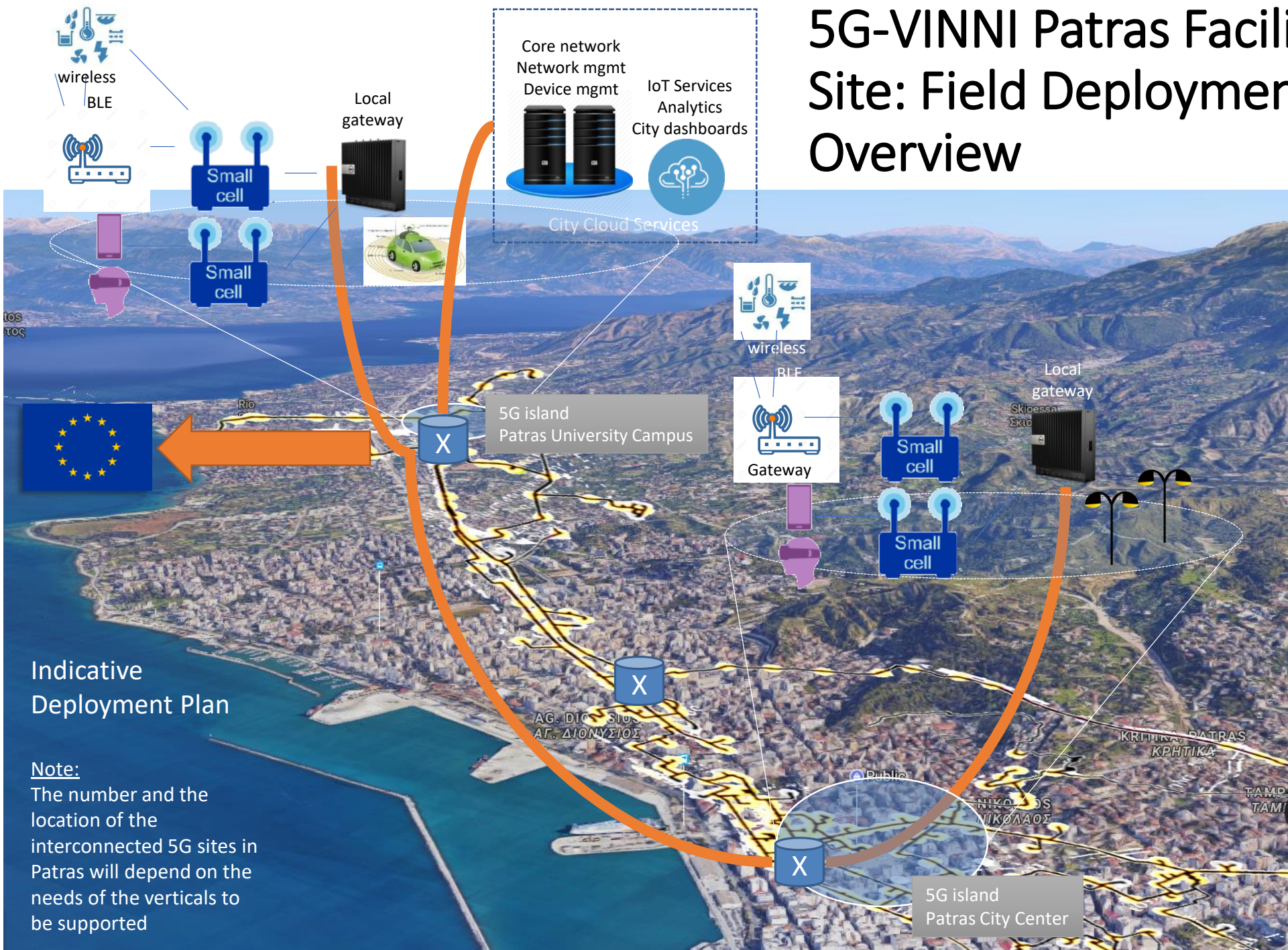
Related EU Projects & Our Role

- **5GinFIRE – NFV based experimentation**
  - https://5ginfire.eu/
  - Our role in the project
    - We have designed and developed the portal for experimentation. This portal will be expanded and used in future 5G project activities (see below)
    - http://wiki.5ginfire.eu/
    - http://wiki.5ginfire.eu/portalarchitecturedesign
    - https://portal.5ginfire.eu/

- **5G-VINNI – Deployment of 5G facilities in Europe**
  - 3 years project, started in June 2018
  - https://www.5g-vinni.eu/
  - Patras 5G facility is one of the main facilities in 5G-VINNI
    - https://www.5g-vinni.eu/facility-site/
    - https://www.5g-vinni.eu/greece-main-facility-site/

- **Two new projects to host verticals in 5G-VINNI**
  - **5G-SOLUTIONS**
    - 3 years project, started in June 2019
    - https://www.5gsolutionsproject.eu/
    - Our role in this project
      - To develop and deploy 5G private networks in industrial environment (in Belgium and Ireland)
      - To host in Patras 5G facility Multimedia & Entertainment vertical use case and support a live event (Carnival)
  - **5G-VICTORY**
    - 3 years project, started in June 2019
    - https://www.5g-victori-project.eu/project.html
    - Our role in the project
      - To provide 5G coverage and support to nearby train stations and onboard the train along the train tracks
      - To provide 5G coverage and host of use cases from Energy Vertical through the National Electricity Distributor in Greece (ADMIE)