

Open Source
MANO

OSM & 5G Verticals
The 5GinFIRE test platform

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University of Patras



Projects and initiatives leveraging OSM

Accelerate the development, standardization, testing and / or deployment of 5G services for different verticals

- **Keynote: Test Platforms - importance of 5G tests platform to support NS deployments**
 - Juan Rodriguez Martinez (Telefonica)
- **5G Verticals Session 1 - 5G V&V (validation and verification) activities as developed by 5GTango and 5ginFIRE projects**
 - Benoit Orihuela (EGM)
- **5G Verticals Session 2 - MEDIA & Virtual Reality**
 - Piotr Zuraniewski (TNO)
- **5G Verticals Session 3 – Automotive**
 - Miguel Luis (ITAv)
- **5G Verticals Session 4 - Security**
 - Stefan Covaci (Agentscape)
- **Discussion Panel - 5G Vertical Services Test and Automation with OSM Panel session**
 - Moderated by Mona Hrapkowicz, OSM MARCOM Chair, Intel



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The 5GinFIRE test platform

5GinFIRE project has received funding from the European Horizon 2020 Programme for research, technological development and demonstration under grant agreement n° 732497

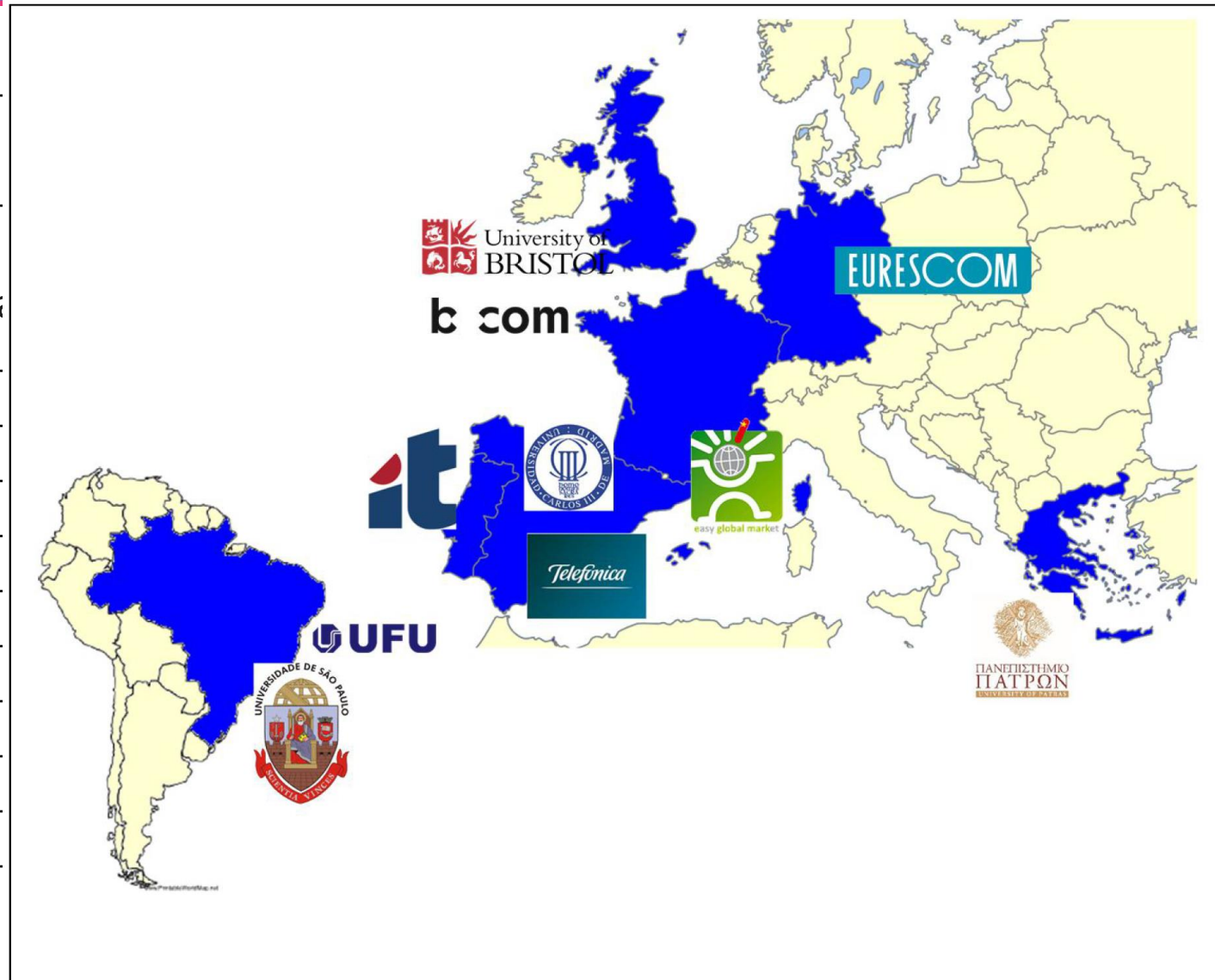
To design and operate flexible 5G-NVF-based experimental facilities for exploring softwarized architectures of vertical industries and related applications and services

5GinFIRE Consortium

Participant No.	Participant organisation name	Part. short name	Country
1(*) (Coordinator)	Eurescom – European Institute for Research and Strategic Studies in Telecommunications - GmbH	EURESCOM	Germany
2	B-COM	B-COM	France
3	Easy Global Market SAS	EGM	France
4	Instituto de Telecomunicacoes	ITAv	Portugal
5	Telefonica Investigacion y Desarrollo SA	TID	Spain
6	Universidad Carlos III de Madrid	UC3M	Spain
7	University of Bristol	UNIVBRIS	UK
8	University of Patras	UoP	Greece
9	Universidade Federal de Uberlandia	UFU	Brazil
10	Universidade de Sao Paulo	USP	Brazil

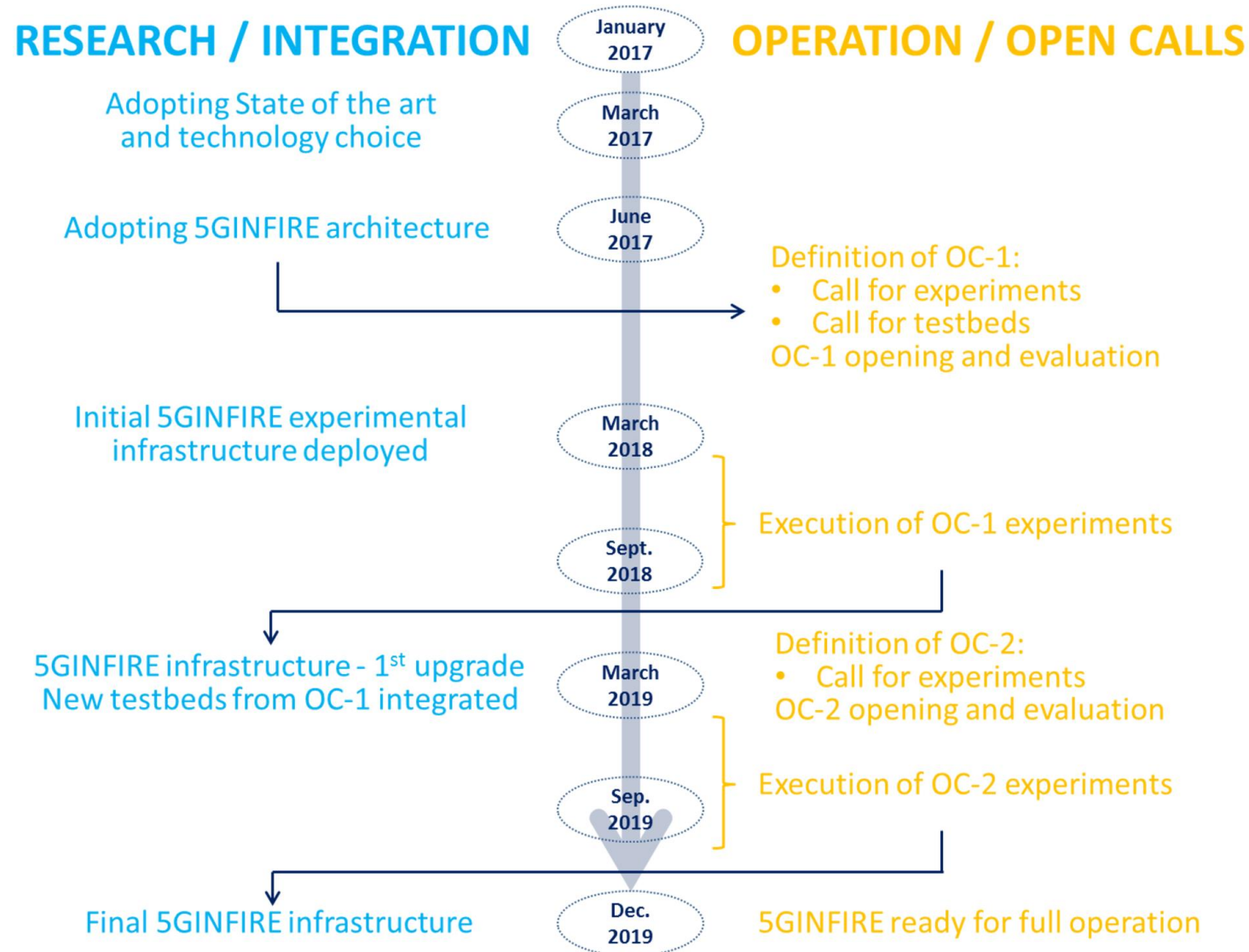
5GinFIRE Consortium

Participa No.
1(*) (Coordinat
2
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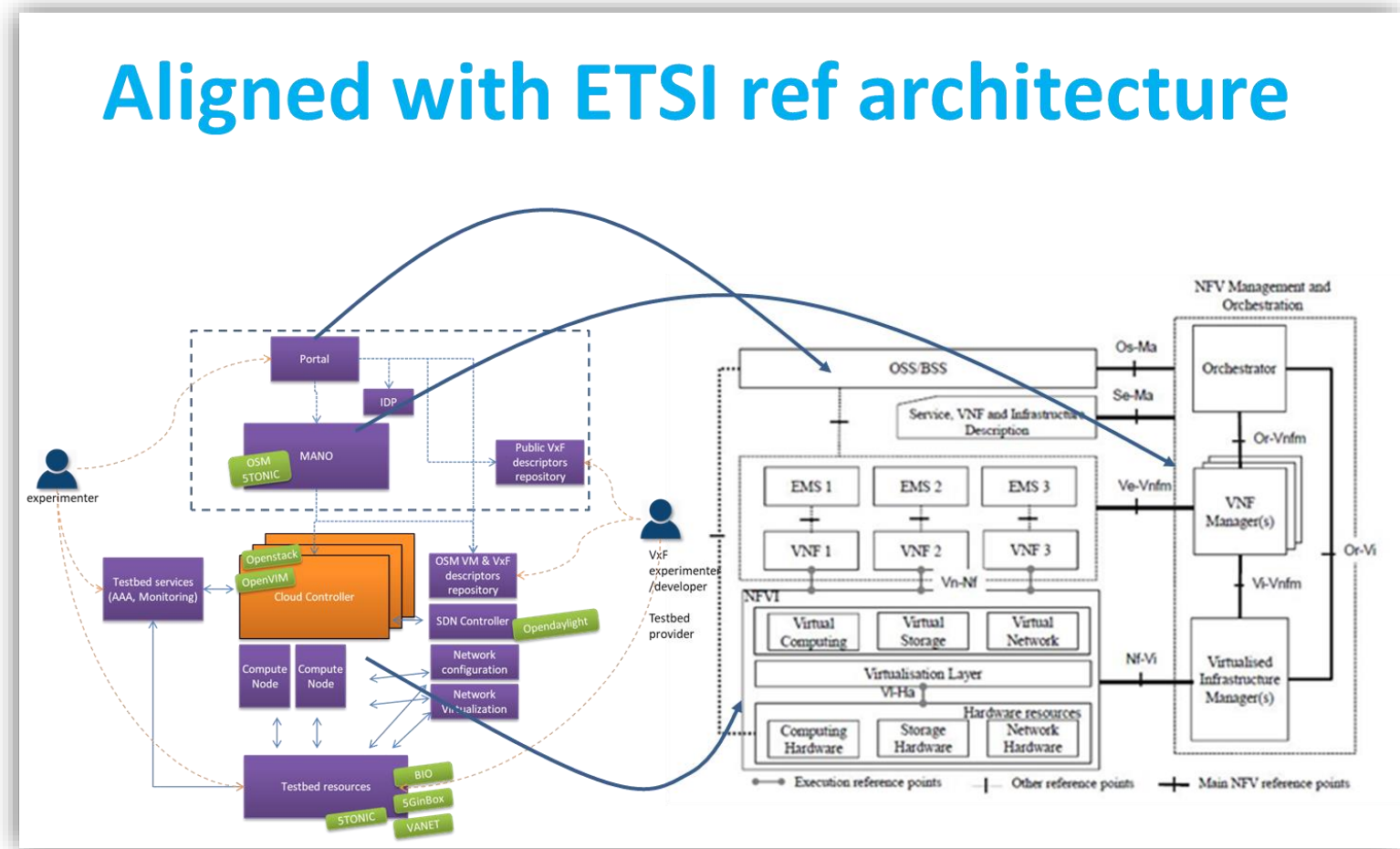
country
Germany
France
Spain
Italy
Spain
Spain
Greece
Brazil
Brazil

5GinFIRE Workplan & Open Calls



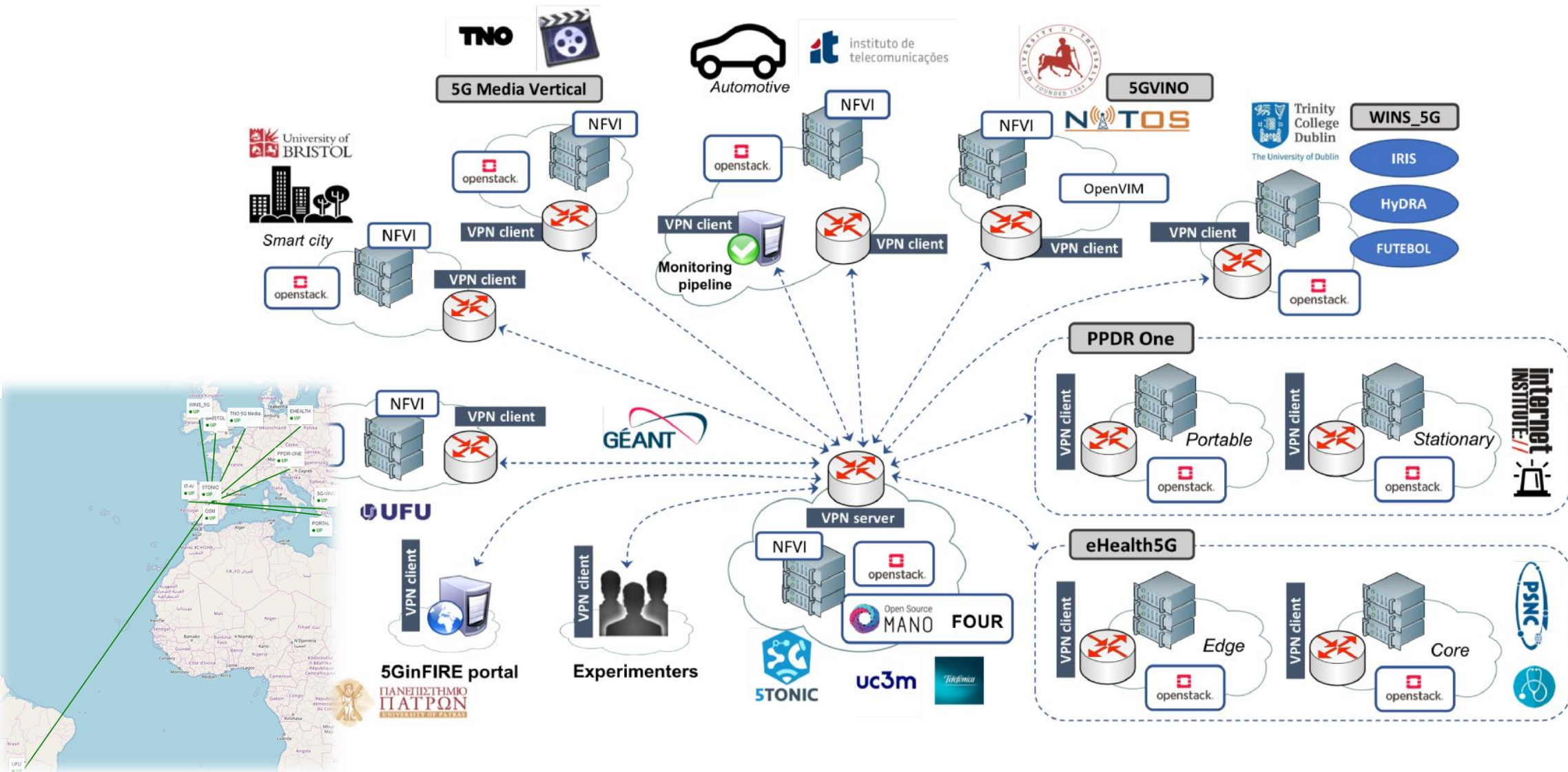
5GinFIRE Reference Model Architecture

- Based on existing Open Source projects
 - e.g. Openstack, Opendaylight
- Based on ETSI reference architecture of MANO functionality
 - Open Source MANO
- Introducing and integrating infrastructures from verticals
- Experiment description: VNFs and Network Service Descriptors

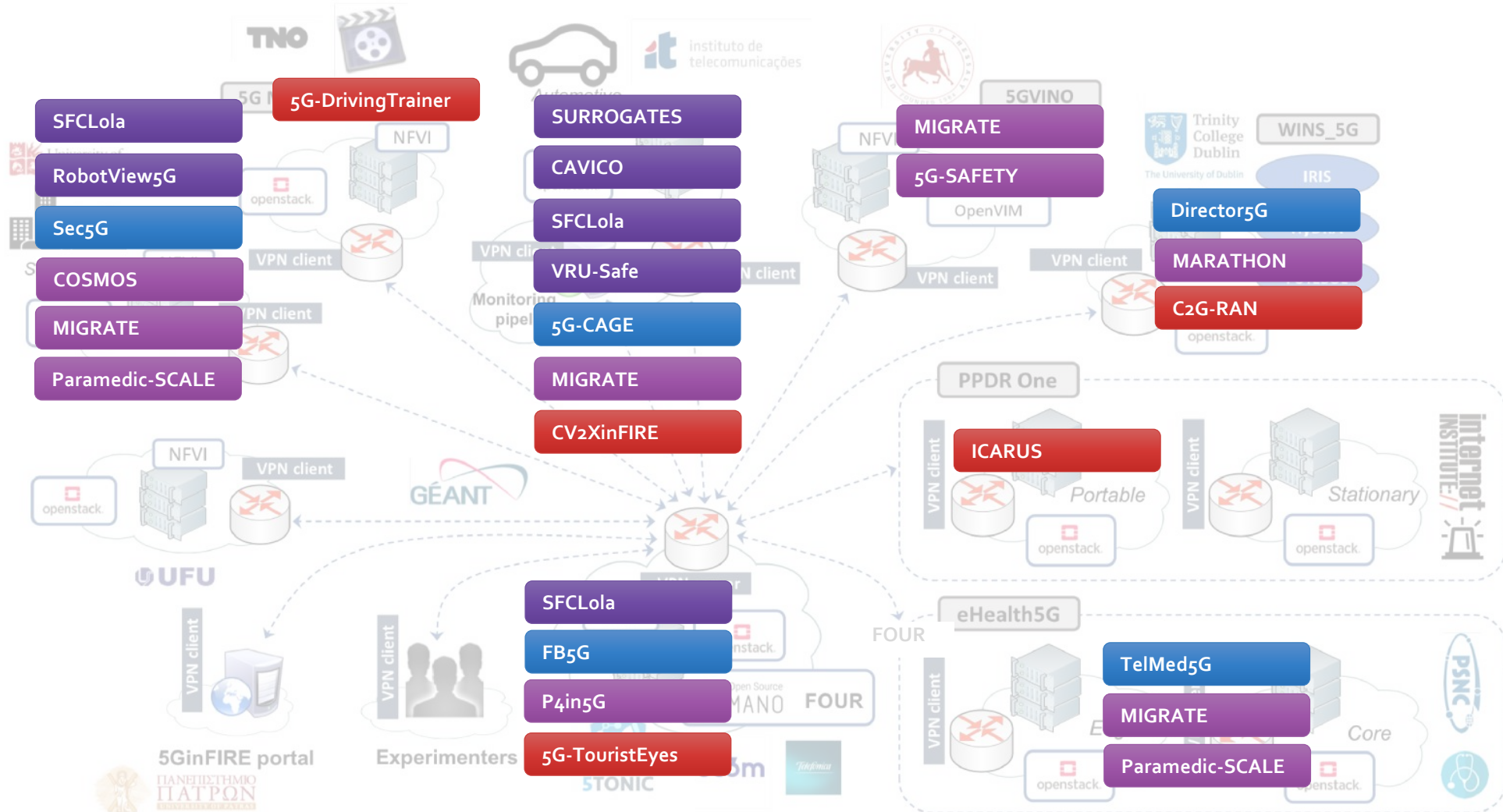


One OSM to rule them all

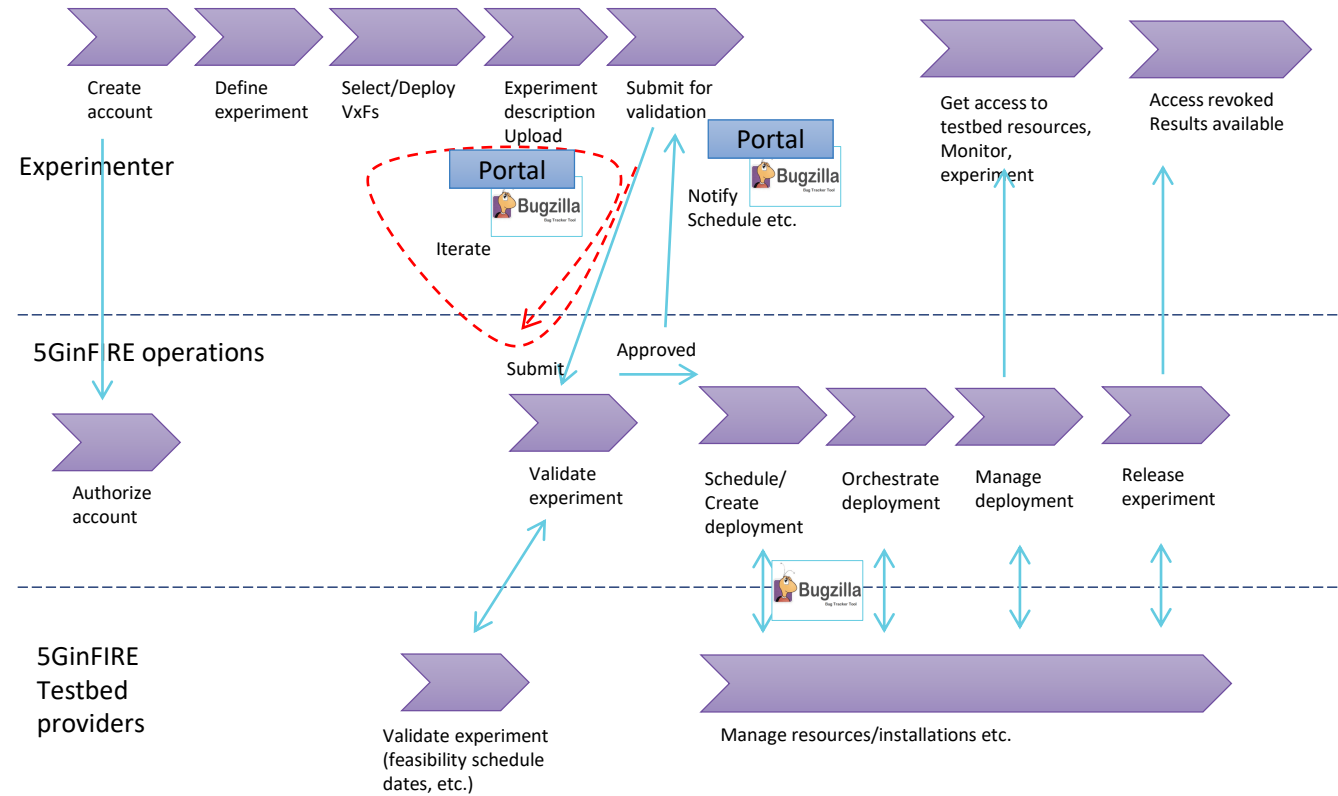
A Multi-VIM setup of testbeds



Experiments from various verticals



Experimentation Process



Entry point: The 5GinFIRE portal

Supporting Processes and Maintaining Artifacts

Supporting Processes

- VxF Lifecycle
- NSD/Experiment Lifecycle
- Deployment Requests
- Multitenancy

Managing artifacts

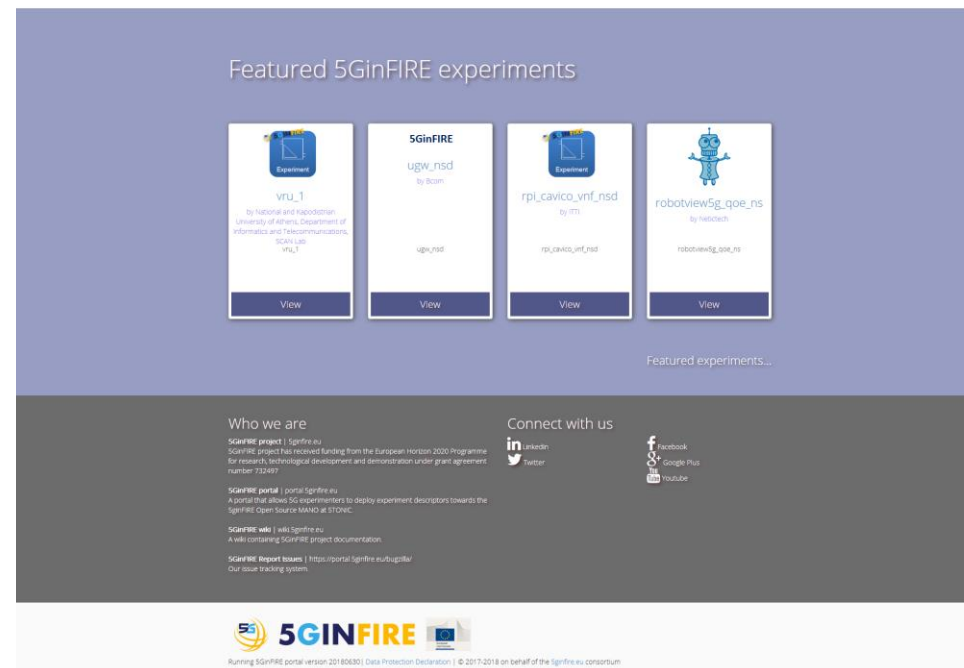
- Users
- VNFs/NSDs and VNF Images
- MANO endpoint
- Deployment requests

<https://portal.5ginfire.eu/>

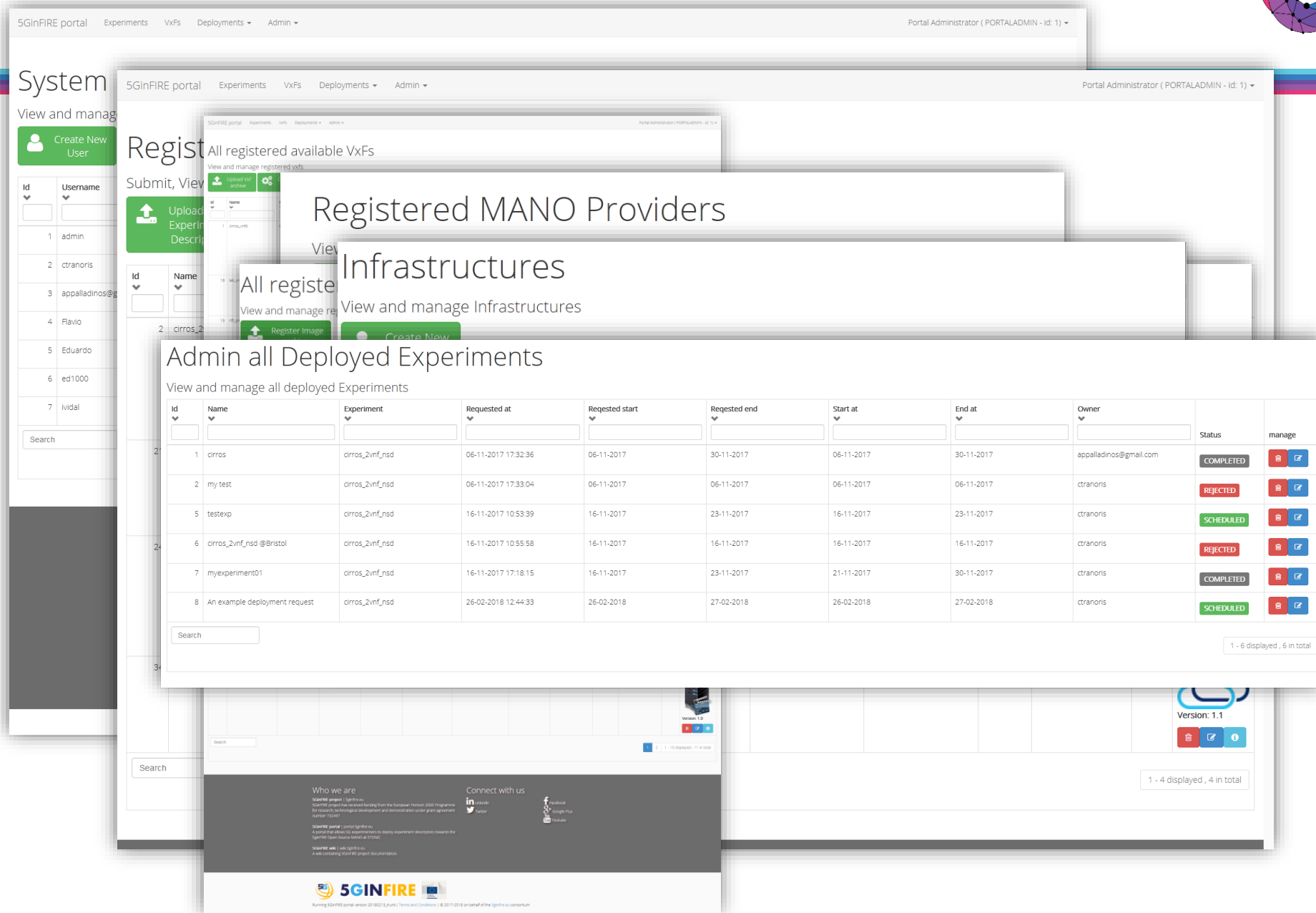


Deploy 5GinFIRE experiments!

Access, create and share experiments over the 5GinFIRE infrastructure.















Managing artifacts



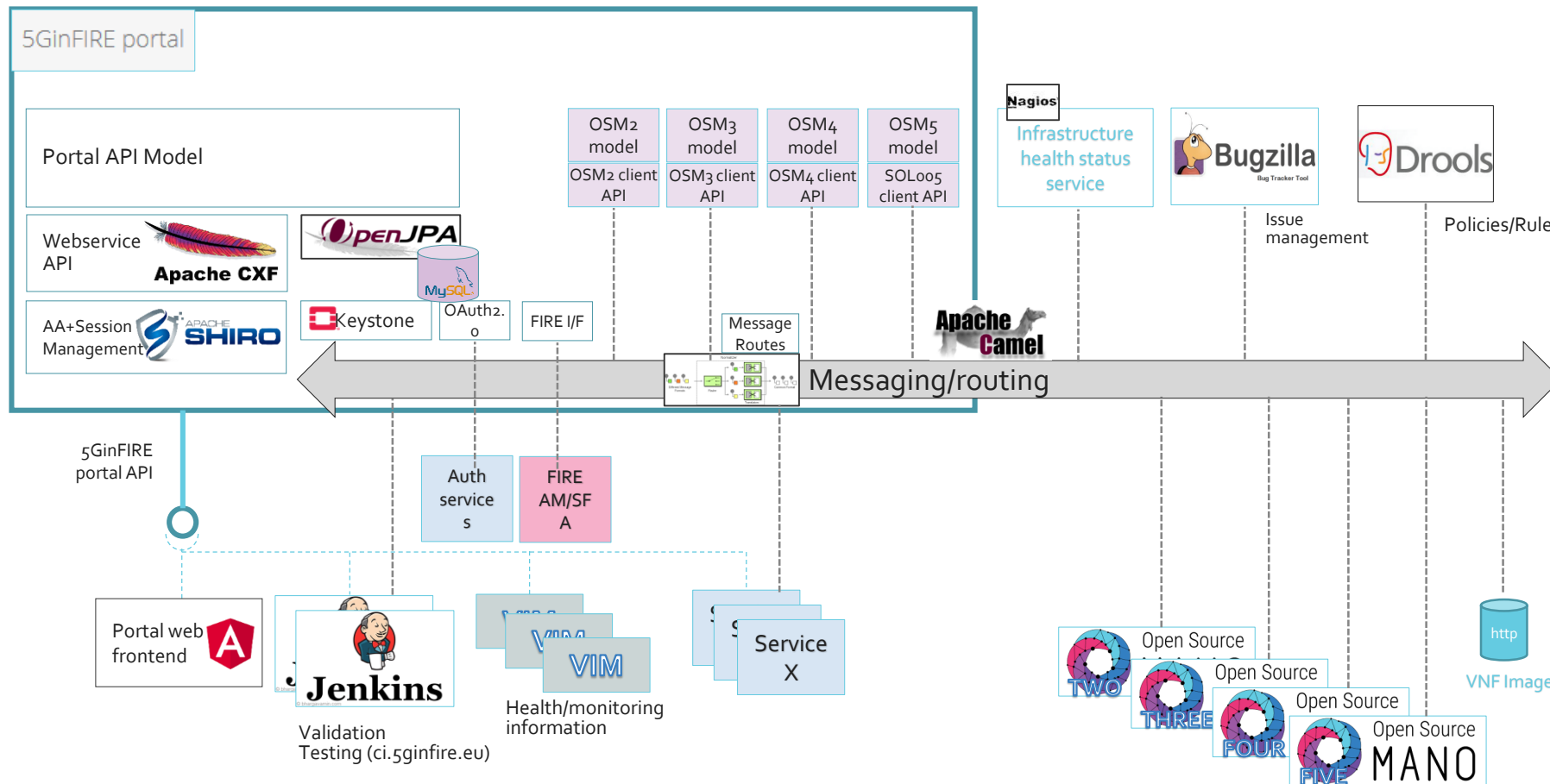
The screenshot displays the 5GinFIRE portal interface, which is used for managing artifacts. The interface includes a navigation menu with options like Experiments, VxFs, Deployments, and Admin. The main content area is divided into several sections:

- System**: A sidebar with a "Create New User" button and a list of users.
- Registered MANO Providers**: A section for managing registered providers, with a "View and manage registered vxf's" header.
- Registered Infrastructures**: A section for managing registered infrastructures, with a "View and manage registered infrastructures" header.
- Admin all Deployed Experiments**: A section for managing deployed experiments, featuring a table with columns for Id, Name, Experiment, Requested at, Requested start, Requested end, Start at, End at, Owner, Status, and manage.

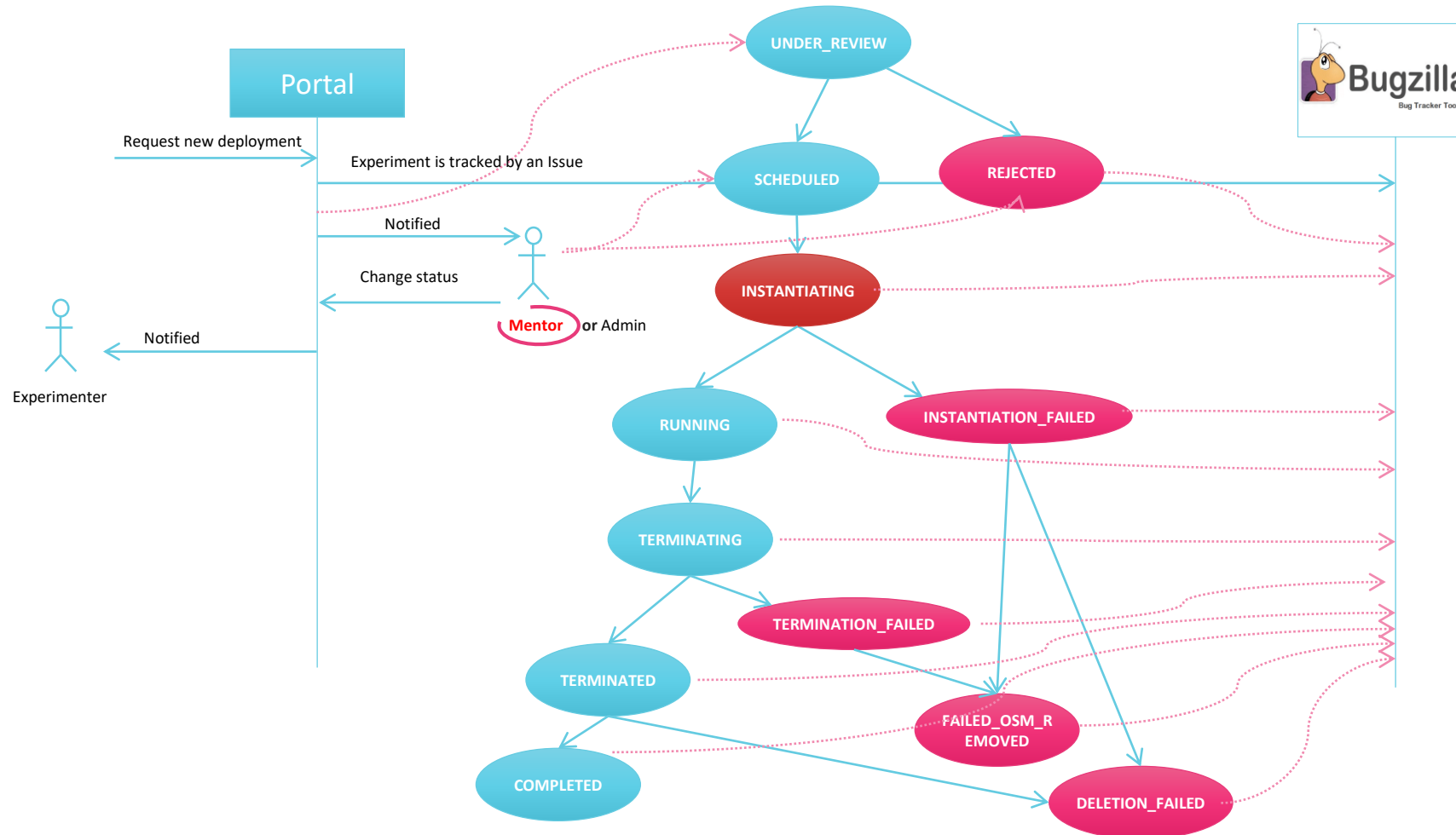
Id	Name	Experiment	Requested at	Requested start	Requested end	Start at	End at	Owner	Status	manage
1	admin									
2	ctranoris									
3	appalladinos@gmail.com									
4	Flavio									
5	Eduardo									
6	ed1000									
7	ividal									
1	cirros	cirros_2vnf_nsd	06-11-2017 17:32:36	06-11-2017	30-11-2017	06-11-2017	30-11-2017	appalladinos@gmail.com	COMPLETED	 
2	my test	cirros_2vnf_nsd	06-11-2017 17:33:04	06-11-2017	06-11-2017	06-11-2017	06-11-2017	ctranoris	REJECTED	 
5	testexp	cirros_2vnf_nsd	16-11-2017 10:53:39	16-11-2017	23-11-2017	16-11-2017	23-11-2017	ctranoris	SCHEDULED	 
6	cirros_2vnf_nsd@Bristol	cirros_2vnf_nsd	16-11-2017 10:55:58	16-11-2017	16-11-2017	16-11-2017	16-11-2017	ctranoris	REJECTED	 
7	myexperiment01	cirros_2vnf_nsd	16-11-2017 17:18:15	16-11-2017	23-11-2017	21-11-2017	30-11-2017	ctranoris	COMPLETED	 
8	An example deployment request	cirros_2vnf_nsd	26-02-2018 12:44:33	26-02-2018	27-02-2018	26-02-2018	27-02-2018	ctranoris	SCHEDULED	 

The footer of the portal includes the 5GinFIRE logo, contact information, and social media links. It also displays the version number (1.1) and the number of items displayed (1 - 4 displayed, 4 in total).

Portal operations support - Evolution



NS Deployment Lifecycle



5GinFIRE Health check service (HCS)

Component types

- SERVICE : a generic service, e.g. PORTAL,OSM
- PROCESS: an automated process that is successful or not. E.g. PING_PING_INSTANTIATION_TEST executed by Jenkins every night
- VIM: a facility ,e.g. BRISTOL
- CONNECTIVITY: a connection between components. eg PORTAL-OSM, OSM-ITAV, OSM-BRISTOL, etc

- **Validation Service**

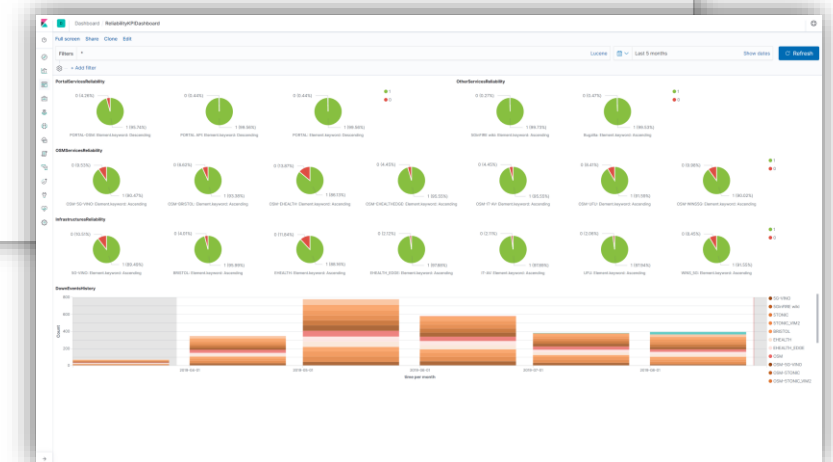
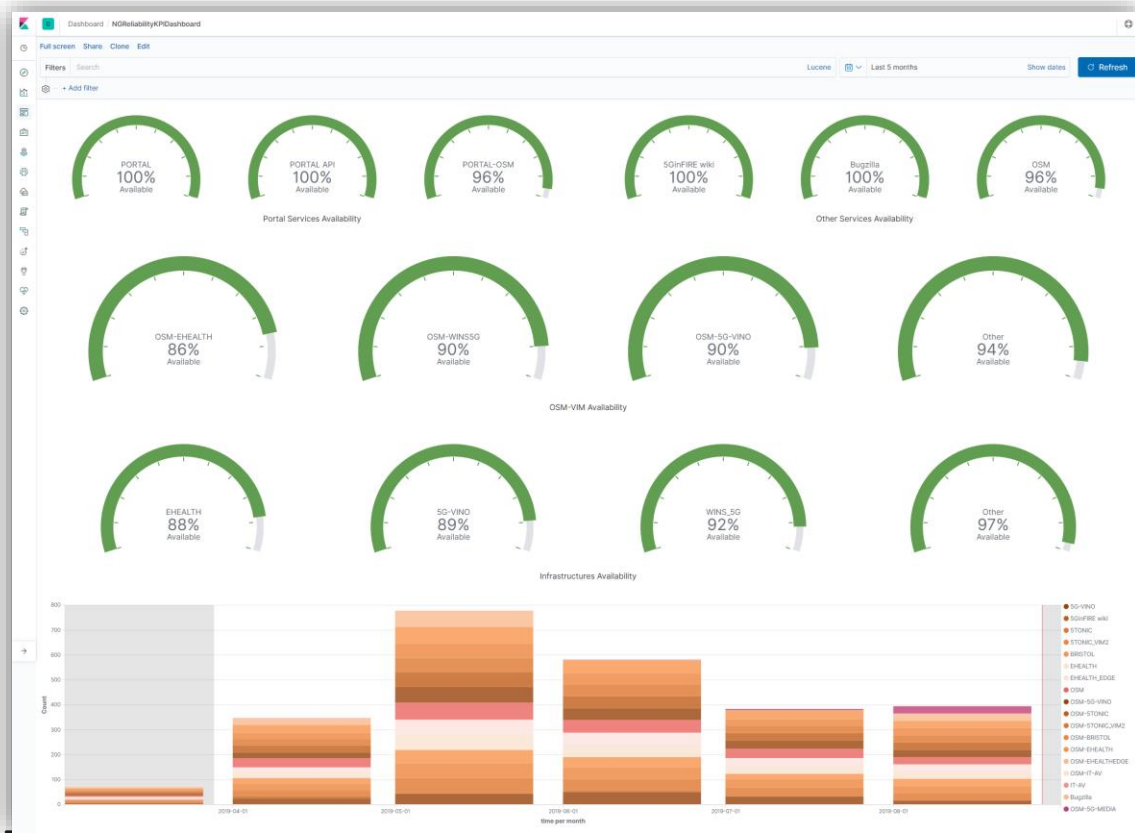
Modes

- ACTIVE mode
 - the HCS polls the **Component**
- PASSIVE mode
 - The component reports that is alive through a GET request to the HCS.



5GinFIRE VIM Resources Monitoring/Availability

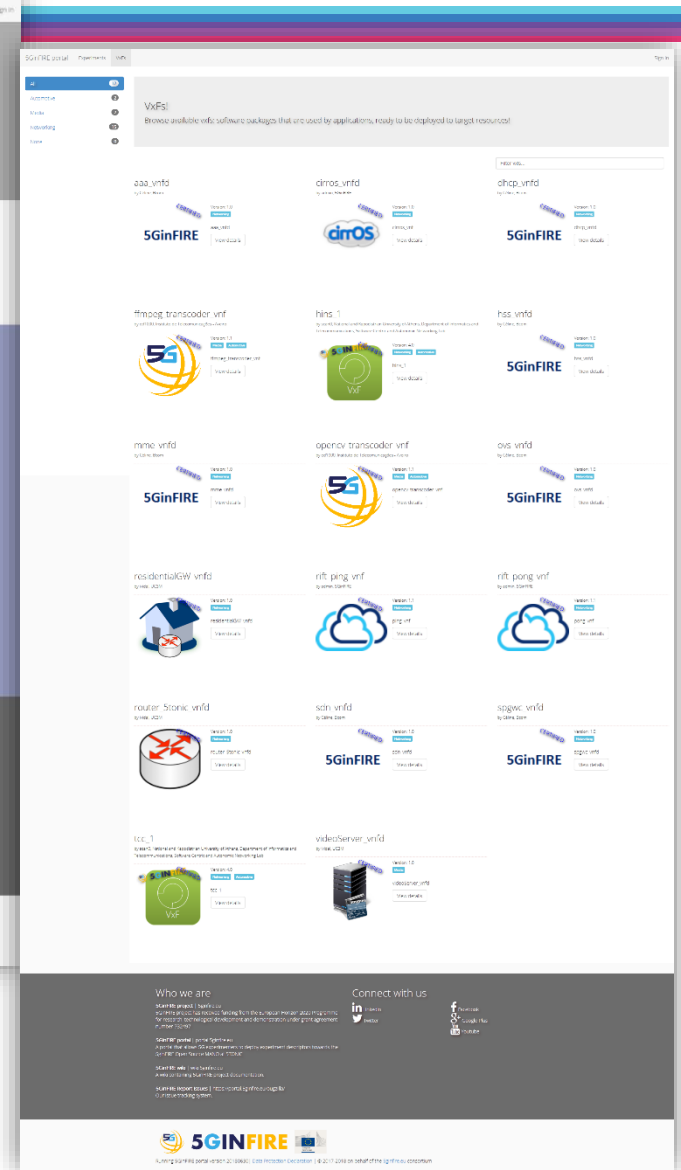
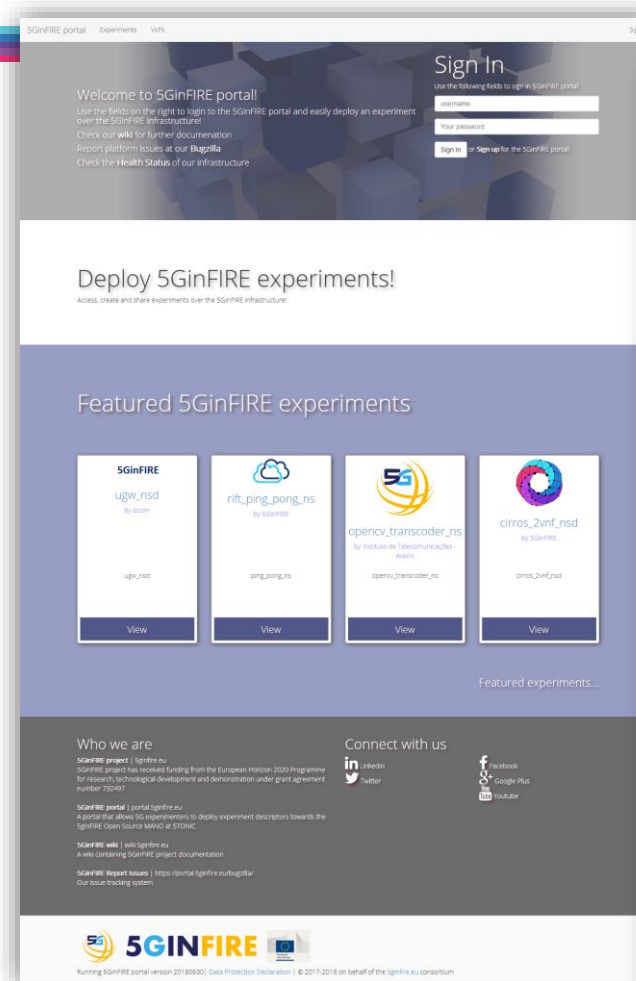
- a simple service that collects various resource information from VIM components of the 5GinFIRE infrastructure.
- retrieval and usage of historical data
- VIM components POST a monitoring message towards the 5GinFIRE Health check Service



5GinFIRE Status and results



- 9 Testbeds
 - Automotive, Smart City, eHealth, PPDR, Media, SDR, Cloud
- 22 Experiment proposals from Verticals
- **100+** Users
- VxF catalog:
 - **150+** ONBOARDED VxFs
 - OSM TWO, FOUR, FIVE
 - **50+** are public to be reused
- NSD catalog: **90+** ONBOARDED NSDs
 - **30+** are public to be reused
- **500+** Deployment requests (orchestrations) performed



5GinFIRE Open Source

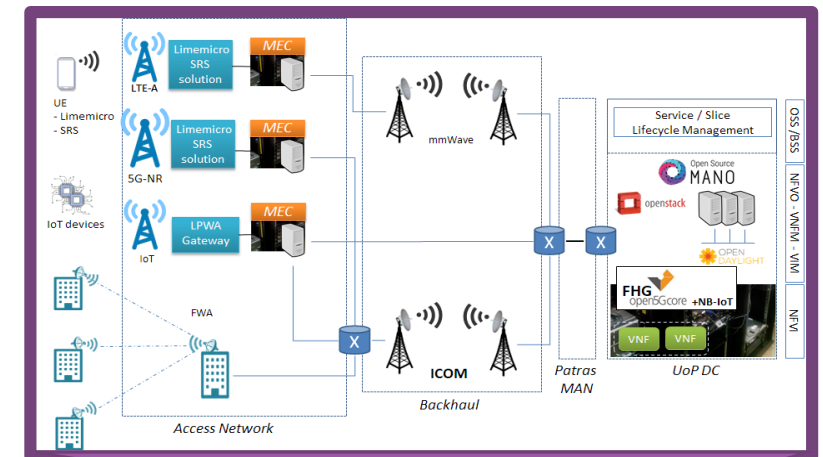


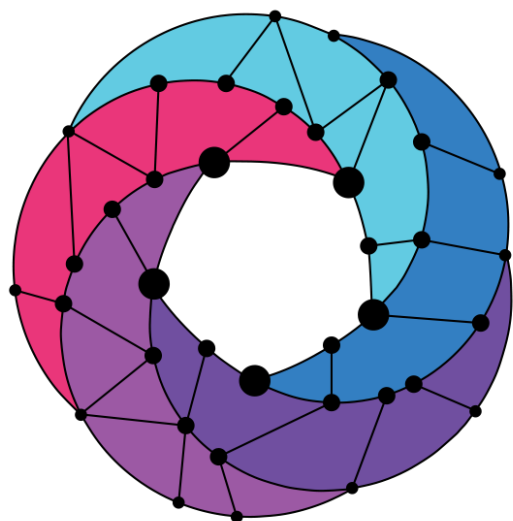
- 5GinFIRE organization
 - <https://github.com/5GinFIRE/>
- Portal API
 - <https://github.com/5GinFIRE/eu.5ginfire.portal.api>
 - <https://github.com/5GinFIRE/eu.5ginfire.nbi.osm4java>
 - <https://github.com/5GinFIRE/nfv-requirements-extractor>
- Portal Web Front End
 - <https://github.com/5GinFIRE/eu.5ginfire.portal.web>
 - <https://github.com/5GinFIRE/eu.5ginfire.portal.web/wiki> (development)
- Healthcheck monitoring
 - <https://github.com/5GinFIRE/eu.5ginfire.healthcheck>
 - <https://github.com/5GinFIRE/eu.5ginfire.healthcheck.web>
- Support Wiki and Documentation
 - <https://github.com/5GinFIRE/wiki>

All components are open source with Apache 2.0 License and GPL-3.0

Related 5G EU Projects & Patras Role

- **5GinFIRE – NFV based experimentation**
 - <https://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
- **Two new projects to host verticals in 5G-VINNI**
 - **5G-SOLUTIONS**
 - 3 years project, started in June 2019
 - <https://www.5gsolutionsproject.eu/>
 - **5G-VICTORY**
 - 3 years project, started in June 2019
 - <https://www.5g-victori-project.eu/project.html>





Open Source MANO

Thank you!
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