5GINFIRE

Newsletter

No-1 2017

About the 5GINFIRE project

Evolving FIRE into a 5G-Oriented Experimental Playground for Vertical Industries

5G network infrastructures and embodied technologies are considered as a key asset of this emerging common environment and instrumental for the digitalization of the traditional industries, so-called vertical industry application sectors. Addressing these key questions, the main 5GINFIRE goal is to build and operate an Open, and Extensible 5G NFV-based Reference (Open5G-NFV) ecosystem of Experimental Facilities that not only integrates existing FIRE facilities with new vertical-specific ones but also lays down the foundations for instantiating fully softwarised architectures of vertical industries and experimenting with them. The initial instantiation of the Open5G-NFV ecosystem will be driven by the automotive vertical deployed across state-of-the-art 5G infrastructures, however, it will also be as generic as possible in order to host other verticals.

In order to offer its testbeds to a wide community of experimenters, the 5GINFIRE project will organize at least two Open Calls for experiments to be implemented and executed on the top of the 5GINFIRE experimental infrastructure. Furthermore, the 5GINFIRE Open Calls will also seek for further relevant testbeds to be integrated within the 5GINFIRE experimental framework and offered to be used by the experimenters.

5GINFIRE is a three years Research and Innovation action / project under the EU programme Horizon 2020 (Grant Agreement no. 732497) started on 1 January 2017. The EC funding is 4,999,970€ and 50% of this amount is dedicated to third parties (experimenters and 5G experimental facilities owners/operators) which will be selected through the planned 5GINFIRE Open Calls.

Website: **www.5ginfire.eu**

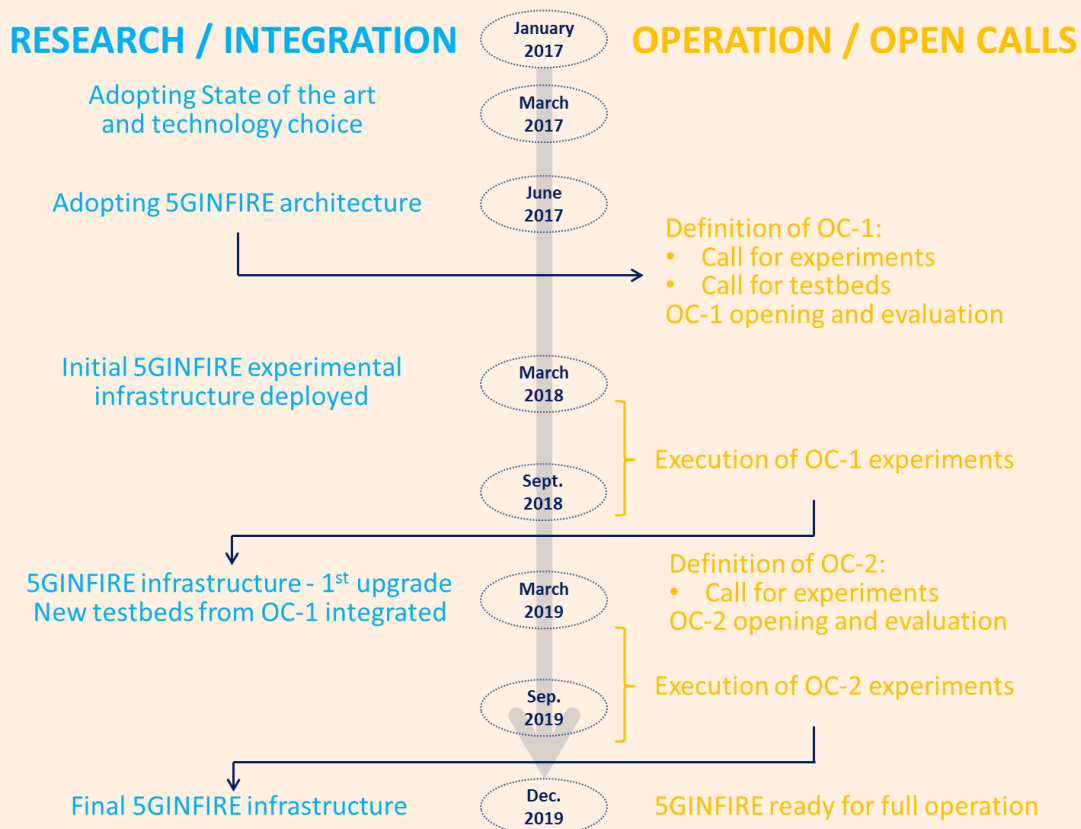Contact: **contact@5GinFIRE.eu**

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1st 5GINFIRE Competitive Open Call

Initial experiments and additional functionalities and infrastructures for experimentation

Submission deadline: 28 February 2018

The main technical objective of 5GinFIRE is to build and operate an open and extensible 5G NFV-based reference (Open5G-NFV) ecosystem of experimental facilities that not only integrates existing FIRE facilities with new vertical-specific ones, but also lays down the foundations for instantiating fully softwarized architectures of vertical industries and experimenting with them. The initial instantiation of the Open5G-NFV ecosystem is driven by the automotive vertical industry deployed across state-of-the-art 5G infrastructures. However, it is as generic as possible in order to host other verticals applications. In alignment with the overall project objectives 5GINFIRE is organizing a competitive open call targeting external organizations, industry including SMEs, research institutions, and academia, interested to perform experiments on the top of the infrastructure provided by 5GinFIRE. In order to further improve the 5GinFIRE ecosystem and add new needed functionalities for experimenters, the open call mechanism is used to involve third parties, which are able to provide the needed additional infrastructures and functionalities.

375,000€ for experiment proposals and additional 375,000€ for proposals on new functionalities and infrastructures are available for this Open Call. More information about this and further open calls can be found on the project website www.5ginfire.eu.

RESEARCH / INTEGRATION

OPERATION / OPEN CALLS

January 2017

Adopting State of the art and technology choice

March 2017

Adopting 5GINFIRE architecture

June 2017

Definition of OC-1:
- Call for experiments
- Call for testbeds

OC-1 opening and evaluation

Initial 5GINFIRE experimental infrastructure deployed

March 2018

Execution of OC-1 experiments

Sept. 2018

5GINFIRE infrastructure - 1st upgrade
New testbeds from OC-1 integrated

March 2019

Definition of OC-2:
- Call for experiments

OC-2 opening and evaluation

Execution of OC-2 experiments

Sep. 2019

Final 5GINFIRE infrastructure

Dec. 2019

5GINFIRE ready for full operation

5GINFIRE Events

Workshop on Federated Testbeds for NFV/SDN/5G: Experiences and Feedbacks

5GINFIRE, in collaboration with SOFTFIRE organized a workshop on Federated Testbeds for NFV/SDN/5G: Experiences and Feedbacks that took place in Berlin on 6 November 2017 as part of the IEEE Conference on Network Function Virtualization and Software Defined Networks.

Anastasius Gavras from Eurescom GmbH and 5GINFIRE project chaired one session and moderated the panel that discussed the added value of testbeds and their future business proposition.

The workshop participants debated around recent experiences from using and operating testbeds for networking and application experimentation. In particular the panel focused on the value adds of current testbed initiatives and the potential future role thereof. The opinions that prevailed were two-fold:

1. Testbeds should be treated as a common good and costs should be shared, e.g. publicly funded.
2. Testbeds could evolve into being the target operation environment for the service and applications, in particular considering the advances in virtualization and following the DevOps model as well as continuous integration / continuous delivery.

The 1st workshop on Technological Gaps and Opportunities for Realizing Open Source based end-to-end Network Architecture

The workshop on 15-16 October 2017 in Snowbird, Salt Lake City, United States, co-located with MOBICOM'17 and co-organized by 5GINFIRE, the Northeastern University, Boston, the US PAWR initiative and NSF. The workshop was organized to address three main goals.

1. Establish the baseline of open-source project work in wireless software-hardware, cloud computing, Software Defined Networking (SDN), Network Function Virtualization (NFV) and Infrastructure for enabling Experimentation.
2. Conduct a gap analysis for the aforementioned work across parameters such as: availability of code, community engagement, and reliance on adopted standards, features, tools and accessibility.
3. Coalesce around a feasibility discussion for proposing an end-to-end, open-source reference model that ties together the three technical areas to support near-term standardization efforts as well accommodating blue-sky research on large-scale research platforms.

The main conclusions and recommendations of the workshop are (full report will be published soon):

1. Use of common languages across different platforms.
2. Simplify the learning curve for Radio Hardware, FPGA and SDR.
3. Simple and light interfaces within and among network components devices, almost plug-&-play.
4. Focus on API, not on protocols, communications or data structures.

A second workshop is being planned in Europe in the June 2018 timeframe.

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Special session on Emerging trends for 5G experimental environments

5GINFIRE, in collaboration with projects ORCA and SOFTFIRE organized a special session on Emerging trends for 5G experimental environments that took place in Oulu, Finland on 13 June 2017 as part of the European Conference on Networks and Communications, EUCNC 2017.

The trend for 5G future networks is clearly dominated by softwarization at all levels, starting from Software Defined Radio (SDR) including Dynamic Spectrum Sharing (DSS), Software Defined Networking (SDN), Network Function Virtualization (NFV) up to a software defined holistic environment for technical and business innovation integrating networking, computing and storage resources into one programmable and unified infrastructure. The deployment of experimentation infrastructures to support this trend has started a while ago and has reached a level of maturity that allows offering such infrastructures to experimenters in order that novel components, systems and solutions are experimentally validated against demanding and sometimes extreme requirements. New paradigms such as SDN and NFV are used in order to create a reliable, secure, interoperable and programmable experimental network infrastructure. Such environments are used to assess the maturity and industrial viability of these technologies by evaluating system properties in terms of efficiency, functional responsiveness (expressed in terms of measurable KPIs) and the ability to create new applications on the platform. On the radio access network segment new wireless innovations are emerging, responding to extreme requirements, e.g. for ultra-low latency, ultra-high throughput and ultra-high reliability) as well as diverse communication needs. In order to meet at the same time diverging QoS requirements over wireless networks, control mechanisms are being introduced that allow the configuration and deployment of optimised radio slices that can be mapped to virtual network slices configured by SDN, as such realizing a joint SDR-SDN paradigm. Business innovation is introduced over such transforming communication technologies leading to solution for verticals that are rapidly forming open ecosystems built on top of open common infrastructures and resources. This requires a high degree of technological convergence among vertical industries empowering them with enhanced technical capacity to trigger the development of new, innovative products, applications and services. In order to guarantee architectural and technological convergence the experimentation environment must be in alignment with on-going standardization and open source activities inherently forming a forerunner experimental playground for emerging "mainstream" 5G networks.

Three projects offering experimental infrastructures in this area presented the opportunities for experimentation, and presented a technological assessment in order to move towards industrialization. During the workshop the projects solicited governance and technical requirements for facilitating the test, experimentation and consolidation of emerging solutions for 5G networks.