



OPEN CALL #1

Guide for Applicants

Launch date: **22 February 2023**

Deadline: **15 June 2023**

1 SCOPE AND TERMS OF THE OPEN CALL

1.1. General objectives

The project 5G-IANA, funded by the European Union's Horizon 2020 research and innovation programme under grant agreement No 101016427, organises an Open Call for the involvement and engagement of "third parties" with the 5G-IANA "Automotive Open Experimental Platform (AOEP)".

The intended audience of this Open Call is any legal entity in the form of a Small and Medium-sized Enterprise (SME / start-up), which is working with the concept of Network Applications (nApps) in the automotive vertical, and which is already developing or is willing to develop a product or service or functionality that leverages 5G capabilities through the 5G-IANA platform. The scope of this Open Call is to help SMEs develop and integrate their innovative idea using the 5G-IANA platform, facilitating in parallel the developed Repository of Virtual Network Functions (VNFs).

- The profile of the SME that may be suitable for experimentation on the 5G-IANA platform can be one of the following (not an exhaustive list).
- Service Creators: all types of service creation entities such as software developers.
- Service Providers: who are responsible for providing a service to end users (for example Intelligent Driving, HD maps, etc.).
- Application and Network Functions Developers: who develop Virtual Network Functions (VNFs), i.e., Application Functions (AFs) and/or Network Functions (NFs) that can be used as building blocks for creating nApps.
- Application and Network Functions Providers: who are responsible for providing AFs and NFs to be on-boarded through the functionalities provided by the 5G-IANA platform.
- Network Application Developers: who are responsible for the development of Network Applications (nApps).
- Network Application Providers: who provide the nApps either to end users or service creators/providers.

Note that, an SME may well hold more than one of these roles.

1.2. Anticipated gains by participating in the Open Call

The participants of the Open Call (which will be selected based on a process and criteria described in Section 4) will reap the following benefits offered by 5G-IANA:

- Gain access to a “canvas” to develop new functions and services in the automotive 5G landscape.
- Test and validate their existing or new services in real-time using 5G connectivity.
- Gain access to real-life 5G resources (vehicles, OBUs, RSUs, EDGE/MEC Server(s)).
- Get continuous mentorship and support from network and automotive experts.
- Explore/Build new business models within the 5G ecosystem.
- Gain visibility towards the EU, the 5G community and the automotive community. Specifically, the offerings to the selected participants by 5G-IANA will be.
- Access to the “AOEP” platform to develop, deploy and test their services;
- A catalogue of available virtual Application and Network Functions (AFs/NFs, approx. 70), and Network Applications (nApps) (approx. 26).
- Tools to prepare and onboard their own AFs, NFs or nApps on the 5G-IANA platform.
- Indicative examples and experience regarding the actual deployment of use cases of the 5G-IANA consortium into the platform, i.e.: automotive-related services in the hazard-notification, infotainment, vehicle movement or even vertical-agnostic domain.
- Remote accessibility to 5G resources (through NOKIA’s site in the City of Ulm, Germany / Telecom Slovenia’s site in Ljubljana).
- Accessibility to On-Board Unit (OBU) / Road-Side Unit (RSU) resources through the AOEP platform and experimentation potential using real vehicles.
- Support to Machine Learning (ML)-oriented services (if needed), through our Distributed Machine Learning framework.
- Technical support material in the form of a technical manual, webinars and other published material.
- Mentorship, training, technical assistance and support.

- Business model mentoring.
- Access to 5G-IANA project's network of professionals, media, and partners.
- Four monetary awards to the best-performing experimenters in the order of 10-15K euros each.

1.3. Eligibility criteria

The call is open to SMEs and start-ups legally established in an eligible country. Legal entities must be established in the Member States of the European Union and associated countries according to the Horizon Europe rules . An SME will be considered as such if accomplishing with the Commission Recommendation 2003/361/EC and the SME user guide. Only one entity per proposal is allowed (no consortia are allowed).

The applicant must be completely independent of project partners, their affiliated entities and/or their controlled companies. Institutions, organizations or other kinds of legal entities funded by or otherwise affiliated with a 5G-IANA partner are not eligible. 5G-IANA retains the right to discard the selected application in case one (or more) of the conditions above are not satisfied.

1.4. Eligible countries

Only applicants legally established and operational in any of the following countries will be eligible:

- The Member States of the European Union, including their outermost regions.
- The Overseas Countries and Territories linked to the Member States .
- H2020 Associated countries: according to the updated list published by the EC .
- The UK applicants are eligible under the conditions set by the EC for H2020 participation at the time of the deadline of the call.



2

PROJECT OVERVIEW

2 PROJECT OVERVIEW

2.1. Basic terminology

Application Function (AF) / Network Function (NF):

- An Application Function is a component that implements the logic of a service, instead, a Network Function is used for communication and networking tasks.

Network Application (nApp):

- A nApp is a composition of atomic components (AFs and NFs) that can communicate with each other and can be instantiated separately with different requirements.

2.2. 5G-IANA concept and approach

5G-IANA aims at providing an open 5G experimentation platform, on top of which third-party experimenters, i.e., SMEs in the Automotive vertical sector will have the opportunity to develop, deploy and test their services. The provided Automotive Open Experimentation Platform (AOEP) is a set of hardware and software resources that provides the computational and communication/transport infrastructure as well as the management and orchestration components, coupled with an enhanced nApp Toolkit tailored to the Automotive sector, for simplifying the design and onboarding of new nApps. 5G-IANA exposes to experimenters secured and standardized Application Programming Interfaces (APIs) for facilitating all the different steps towards the production stage of a new service.

5G-IANA targets different virtualization technologies integrating different Management and Orchestration (MANO) frameworks for enabling the deployment of end-to-end network services across different segments (vehicles, road infrastructure, Multi-access Edge Computing (MEC) nodes and cloud resources). 5G-IANA nApp toolkit is linked with an Automotive Virtual Network Functions (VNFs) Repository including an extensive portfolio of ready-to-use and openly accessible Automotive-related VNFs and nApp templates, that are available for SMEs to use and develop new applications.

Finally, 5G-IANA develops a Distributed Machine Learning (DML) framework, that provides functionalities for simplified management and orchestration of collections of Machine Learning (ML) service components and thus, allows ML-based applications to penetrate the Automotive world, due to its inherent privacy-preserving nature. 5G-IANA will be demonstrated through seven Automotive-related use cases in two 5G Stand Alone (SA) testbeds. Moving beyond technological challenges, and exploiting input from the demonstration activities, 5G-IANA will identify and validate market conditions

for innovative, yet sustainable business models for the AOEP platform, supporting a long-term roadmap towards the pan-European deployment of 5G as a key advanced Automotive services enabler.

2.3. 5G-IANA platform capabilities

The main capabilities and features of the AOEP platform at the disposal of the experimenters of this Open Call are the following:

- The AOEP is an enhanced Automotive-related experimentation infrastructure (including the vehicles) where an AFs/NFs Repository exists, along with the hosting of a number of nApp Starter Kits, i.e., simple examples of different nApps that third parties (i.e., SMEs) can use as a baseline to develop their own nApps or that can be included in Vertical Service chain to consume exposed services.
- It offers functionalities for designing, validating, and benchmarking / experimenting Vertical Services and their components (i.e., nApps and NFs/AFs) and thus, provides functionalities for easing the design and chaining of new Automotive-related services.
- It offers the ability to deploy and orchestrate Vertical Services from the application point of view, and to monitor them at run-time.
- It allows the deployment of services at the edge of the network (on OBUs and RSUs), and by doing so reduces the end-to-end application latency of services, as well as supporting privacy for sensitive application data. Especially, it allows to implement /integrate a “lightweight” orchestration on top of OBUs/RSUs for offering a more flexible and scalable management of Vertical Services and constituent nApps and AFs/NFs.
- It provides the appropriate end user graphical interface, allowing: a) the onboarding of the application components (in form of microservices), b) the editing of the functional application component parameters (e.g., required CPU, Memory, location of image, dependencies on other components etc.), c) the selection or definition of monitoring metrics from the application components, d) the linking of application components to form service nApps combining application-related components (i.e., AFs) and networking related components (i.e., NFs), e) the editing of functional operating parameters (e.g., location, targeted latency and bandwidth limits, linking to access UIs, etc). Overall, it provides a user-friendly and openly accessible environment to experimenters for the experimentation, validation and testing of their applications with ease.
- According to these objectives, the AOEP is designed as a multi-layered platform that extends from the end user (application) layer to the infrastructure layer and

optimally combines context and network infrastructure-aware functionalities for the deployment of advanced services represented as linked chains of virtualised functions (application, network, and communication functions).

2.4. Project testbeds

5G-IANA will utilize 2 different 5G SA test networks.

Nokia operates an LTE/5G test network in Ulm, Germany. The on-air testbed consists of 5 antenna sites with up to 3 radio cells each. Currently, 5G radio access is supported at selected sites on band 38 (2.6GHz/TDD). Nokia also provides processing capabilities close to the antenna sites, i.e., Nokia provides Multiple-Access Edge Computing (MEC) capabilities.

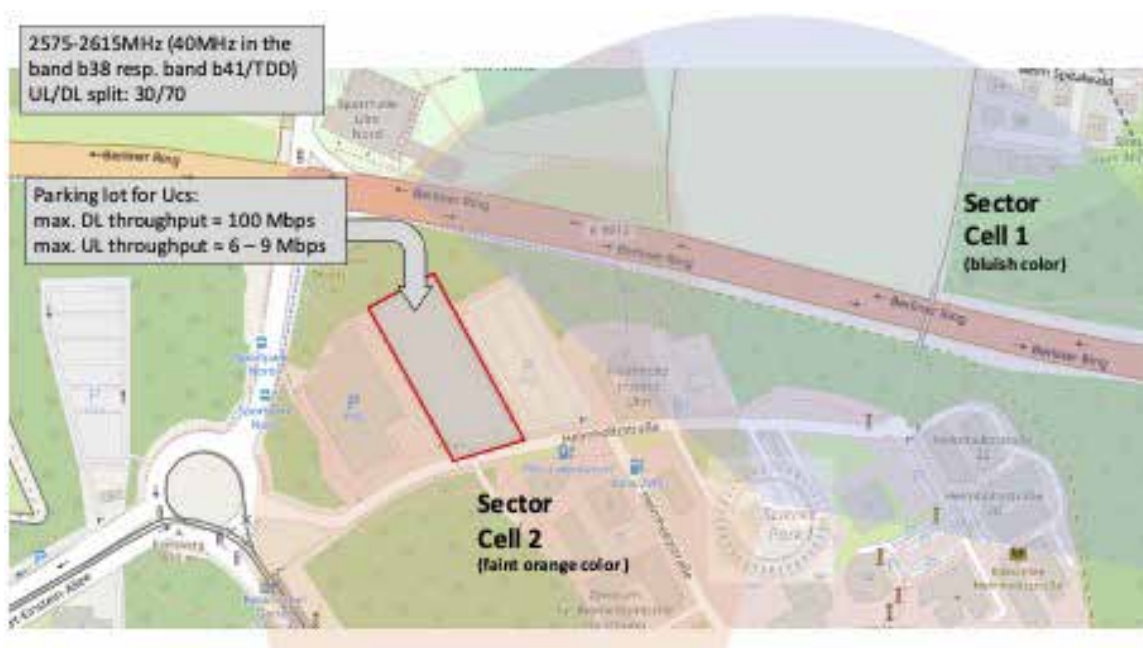


Figure 1: Sector cells at antenna site DRK and the cell capacities at the parking lot for UC testing. (map picture source: OpenStreetMap)

Telekom Slovenije provides a dedicated 5G infrastructure located at its premises in Ljubljana for the 5G-IANA project's demonstrations. The infrastructure consists of a cloud and virtualisation environment, network connectivity, 4G – LTE radio access network (CA, Nb-IoT, VoLTE,) as well as a 5G radio access network and a 5G ready core network based on EPC extensions.

[More details about the testbeds are available on the website.](#)



3

HOW TO APPLY

3 HOW TO APPLY

This section outlines the procedures for the submission of applications to the 5G-IANA Open Call. As a summary (details are available in the following sections):

- The applicants must use original work in their proposal.
- Proposals must provide details on how they will use the 5G-IANA platform.
- Proposals must be written in English and submitted through the 5G-IANA website in order to be eligible (until the deadline of the open call).
- Incomplete proposals will not be evaluated.

3.1. Application form

The Application Form is online, and requires filling in information regarding the following aspects (Sections):

- General information about the applicant: Contact point, organization name and type, short description of business profile, country.
- Ambitions and development plans: Description of service, solution, functionality or product that the applicant would like to deploy on the platform, and details about the proposed experiment on the 5G-IANA platform.
- Previous experience: Prior experience with network applications/virtual functions' development and with 5G.
- Expectations from the platform: Expectations regarding the area covered by a 5G testbed, draft estimate of required resources in terms of hardware and software resources, and anticipated testbed time allocation.
- Expected impact: Anticipated leverage on the 5G-IANA platform and potential impact on the applicant's business portfolio.

The previous categories are broken down into specific questions in the application form, which can be found and submitted [online here](#). All fields are mandatory to be filled in.

3.2. Submission of applications

The online Application Form shall be completed any time after the launch of the Open Call (22 February 2023) until **15 June 2023** (05:00:00 PM CEST).

The form will be deactivated on 09 June 2023 at 05:00:00 PM CEST, and thus all applications received after this time will be automatically discarded. Applicants are strongly recommended to submit their applications with a reasonable advance over the deadline, in order to ensure they are successfully delivered on time, even in case of technical or connectivity problems.

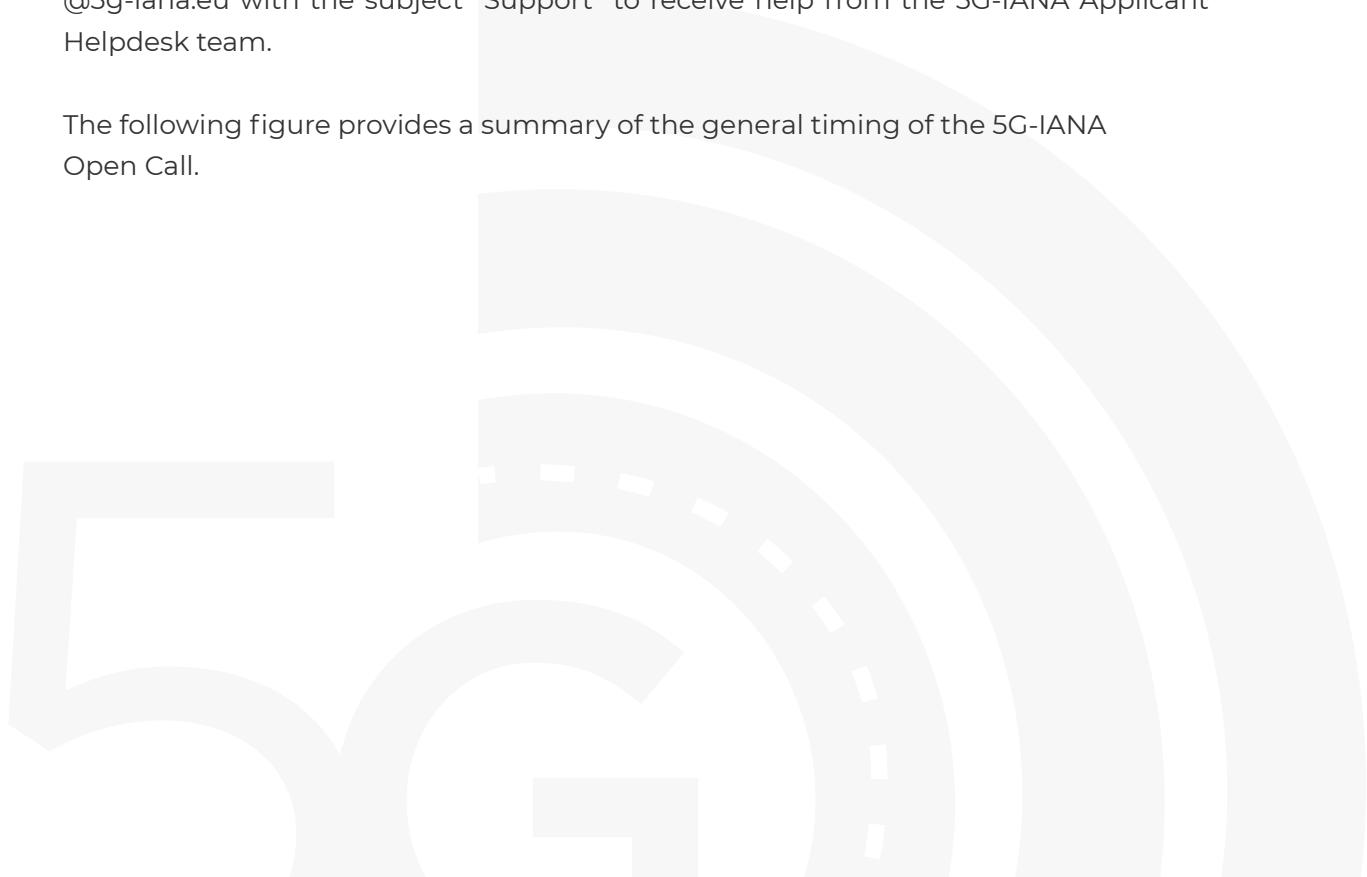
5G-IANA will send a confirmation receipt to the e-mail address applying, notifying that it has been taken into charge by the system; such confirmation does not certify that the application is complete and suitable for evaluation, but simply that the e-mail was received in time.

3.3. Further information for the applicants

Applicants are invited to visit the 5G-IANA Open Call page regularly (<https://5g-iana.eu/open-call/>), in order to get the latest news about the call.

In case of specific queries on the call, applicants may write an e-mail to open-call@5g-iana.eu with the subject “Support” to receive help from the 5G-IANA Applicant Helpdesk team.

The following figure provides a summary of the general timing of the 5G-IANA Open Call.





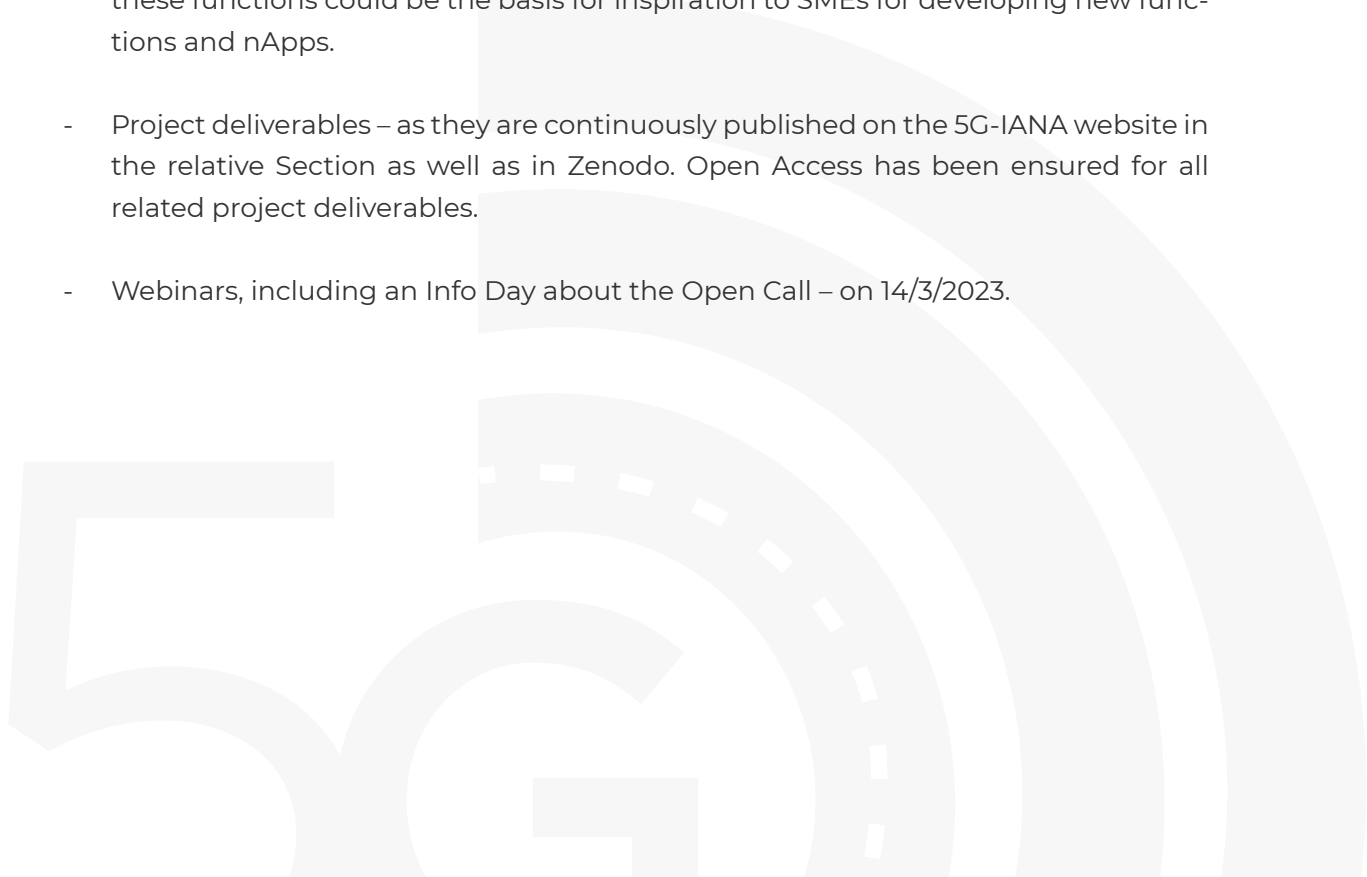
Note that 5G-IANA is going to publish a second Open Call at the beginning of January 2024 (approximately), with the goal to invite SMEs for validation and experimentation starting in the summer of 2024. An updated Guide for Applicants will be provided to support this second phase.

Figure 2: Timeline of the 5G-IANA Open Call

3.4. Other helpful material

The applicants may refer to the 5G-IANA website to get more familiar with the project platform, nApp concept, and testbeds, as well as with the project outcomes so far, and to be informed about upcoming webinars. Downloadable material is/will be at the disposal of the applicants, while the most useful ones would be:

- Technical manual (user guide) – to be released in May 2023. This manual will be a useful tool to help the experimenters better understand how Use Cases (UCs) and nApps can be implemented, onboarded and run on the AOEP platform (as a guide/example to develop their own UCs), what monitoring KPIs are offered, etc. Some examples of the information to be included are: how third parties can access the platform, technical requirements (if any) for their applications, options/capabilities that the AOEP provides, manual for onboarding AFs/NFs, creating nApps and distributed Vertical Services, type of open interfaces offered, manual regarding the available nApp repository, KPI monitoring options, reference to technical support. Moreover, it will include examples of UCs, specifically: a) a description of the 5G-IANA UCs as baseline examples of possible services to be realized), b) examples of customizations applicable to the 5G-IANA UCs, and c) examples of additional UCs/-services that can be realized using the 5G-IANA nApps /AFs/NFs.
- Manual of the Application Functions (AFs), Network Functions (NFs) and Network Applications provided by the platform – to be released in March 2023: Description, Input required, Output provided, Examples of communicating AFs/NFs, so that applicants/experimenters can understand how they could combine their proprietary functions with 5G-IANA's AFs/NFs, in order to create new nApps. Moreover, these functions could be the basis for inspiration to SMEs for developing new functions and nApps.
- Project deliverables – as they are continuously published on the 5G-IANA website in the relative Section as well as in Zenodo. Open Access has been ensured for all related project deliverables.
- Webinars, including an Info Day about the Open Call – on 14/3/2023.





4

AFTER THE APPLICATION: **WHAT TO EXPECT**

4 AFTER THE APPLICATION: WHAT TO EXPECT

4.1. From Application to Experimentation

4.1.1. Eligibility status

After closing the application phase (09 June 2023), all received applications will be first filtered according to their eligibility status, based on criteria described in Section 1; for all non-eligible applications, no further evaluation will take place. Extra information may be requested by the SMEs to validate their legal entity and SME characterization (i.e., to fill in documents related to the “Declaration on information on the SME qualification”, and “Declaration of Honour on exclusion criteria and absence of conflict of interest”).

4.1.2. Feasibility status

Remaining eligible applications will further undergo a feasibility check: This process will ensure that the proposed type of experiment is a) in context with the 5G-IANA project and call scope (i.e., related to the automotive vertical or relative sector that is meaningful and can be supported by the platform), b) the SME has the basic technical expertise to allow getting familiarised with the platform basics and be in the position to complete the experimentation after receiving any required training and support, and c) has developed, is developing, or plans to develop a software function/service/application/product that will leverage the 5G-IANA platform and 5G network.

The number of selected applications is not known in advance – this will be a function of a) testbed availability/capability constraints, b) predefined time window availability for pre-testing and validation phases, c) time for anticipated experimentation declared by each SME, and d) 5G-IANA resources for close mentorship and support of the experimenters.

In case the number of applications passing the feasibility check is higher than the number of experiments that can be accommodated by the 5G-IANA platform in the given timeframe, then the remaining applications will be further evaluated as in the conditions of Section 5.2, related to the “Excellence” criterion only.

This process will indicatively take 10 days from the closure of the submission phase; at the end of this (planned date: approx. 19 June 2023) the selected applicants will be informed via e-mail.

4.2. Logistics

The selected applications from the procedure described in Section 4.1 will start the contracting phase, which will end with the official kick-off of activities (planned date: approx. 1 June 2023).

The successful applicants will be informed by the contracting party (ICCS) and they will be put in contact with the NOKIA testbed. The stakeholders responsible for the NOKIA or Telecom Slovenia testbed, where the Open Call solutions will be deployed, may add specific clauses to the contract. Please understand that access to a 5G testbed and its resources is a delicate process that needs careful planning and must comply with its internal processes and procedures. Granted applicants will be therefore asked to sign the appropriate NDAs with the involved and relevant project partners.

4.3. Pre-testing

The pre-testing phase marks the initiation of the overall experimentation phase. The main goal in this phase is to define in detail the targets of the selected SME contributions and go through a series of functional tests in order to verify the interoperability of the solution to the platform and other linked nApp components. In turn, this will provide the involved SME with an understanding of the 5G-IANA platform environment, and the associated 5G-IANA partner(s) an understanding of the targeted nApp capabilities. This phase is considered a preparation phase for the validation and testing phase that follows. Any potential misalignments or updates are intended to be identified and corrected in this phase or identify functional alternatives.

The duration of the pre-testing phase is two months (June-July 2023) and includes the following activities:

- The extraction of a detailed validation plan for the SME's involvement with clear deployment and testing targets, as well as identification of the required 5G-IANA infrastructure requirements.
- The familiarisation of the SME with the 5G-IANA platform capabilities and additional nApp components that may be linked or reused.
- The examination of the nApp component(s) to fulfil the deployment requirements (e.g., in terms of exposed and required parameters, compatibility with Kubernetes structure, exposed interfaces and interconnection with targeted end user hardware, etc.).
- The functional pre-testing of the proposed nApp, (or nApp component extending an existing nApp).
- Identification of any potential changes or updates that may be required.

4.4. Experimentation (Validation & Testing)

The exact validation methodology to be used by the SMEs will be the same as for the internal use cases of the 5G-IANA project; this is yet to be defined but will be ready well before the deadline of the Open Call (May 2023).

4.5. Mentoring and support

Close mentorship and support will be provided to the selected experimenters so that they get familiarised with the platform (pre-testing phase), but also during the validation & testing phase.

- Technical support includes a ticketing system. Users can send an e-mail to helpdesk@5g-iana.eu, and then this will be handled by the 5G-IANA helpdesk as soon as possible.
- Business model guidance: workshops will be organised to assist SMEs, if needed and requested by them, to develop their business model and thus speed up the process of getting their results from the experimentation closer to the market.

4.6. Reporting

The experimentation cycle ends with the creation of a report describing the activities that have been performed during the validation phase. A questionnaire will be created in order to collect feedback from the experimenters. This is yet to be defined but will be based on the “Fed4FIRE+ Experiment Report” template (in a more simplified version).

4.7. Produced outputs

In case the produced outputs of the experiments lead to scientific publications or if they are presented in presentations or webpages, they should include an acknowledgement to 5G-IANA and the European Commission (respective logos).



5

SELECTION OF
AWARD WINNERS

5

SELECTION OF AWARD WINNERS

5.1. From Experimentation to Award Selection

After closing the experimentation and reporting phase as presented in the previous Section, all successfully conducted experiments (i.e., having successfully collaborated with 5G-IANA partners and delivered the final report) will undergo a technical/business evaluation process, aiming to determine their ranking and select the four of them that will be granted a monetary award.

The evaluation process will indicatively take one month; at the end of this process (planned for December 2023) the final ranking will be notified via e-mail to all applicants and be announced on the project website.

The evaluation of successful experiments will be carried out by the 5G-IANA Mentors forming an Evaluation Committee, [listed here](#): (bios available). These Mentors are members of the Technical Management Team of the 5G-IANA consortium, as well as members of the External Advisory Board of the project. Potentially, additional partners and experts from the 5G-IANA project can be involved as additional contributors to the evaluation process, depending on the nature and amount of the submissions.

The evaluation process will be carried out in respect of principles of fairness and transparency, according to the criteria described in Chapter 5.2.

Please note that the Evaluation Committee could ask for additional information at any time during the evaluation process, to reach a fully informed and fair judgement. The decision by 5G-IANA Evaluation Committee is final and the applicants/experimenters will withhold any legal action against the decision taken.

The following Chapter thoroughly describes the assessment criteria followed in the evaluation process.

5.2. Assessment criteria

The following aspects will be considered and evaluated. Per category, some of the indicative criteria that will be evaluated are presented in bullet form:

Excellence:

In this aspect, some of the indicative criteria that will be evaluated are:

- Degree of innovation and differentiation of the service/product/use case;
- Soundness of the approach building on the 5G-IANA platform;
- Ambition and value of the proposed experiment.

Implementation:

- Successful completion of the experiment, as described in the application;
- Quality and effectiveness of the experimental process;
- Degree of leverage of the 5G-IANA platform, nApps and virtual functions (e.g., the usability of provided AOEP functions);
- Interoperability between the experimenters' own component(s) and the components provided by 5G-IANA;
- Exploitation of 5G capabilities/value that 5G brings to the experiment (scenario);
- Quality of the report.

Impact:

- Business/Market potential and industrial impact for the SME;
- Added value to the 5G-IANA platform and project (increased visibility, high potential etc.);
- Expected outcomes;
- Open data.

Each of the above three criteria will accord scores as per the table below.

Evaluation	Description	Score
Fail	The experiment fails to address the criterion or cannot be assessed due to missing or incomplete information.	0
Poor	The criterion is inadequately addressed, or there are serious inherent weaknesses.	1
Fair	The experiment broadly addresses the criterion, but there are significant weaknesses.	2
Good	The experiment addresses the criterion well, but a number of shortcomings are present.	3
Very Good	The experiment addresses the criterion very well, but a small number of shortcomings are present.	4
Excellent	The experiment successfully addresses all relevant aspects of the criterion. Any shortcomings are minor.	5

5.3. Awards

The procedure for granting the awards will be initiated immediately after the completion of the evaluation process. There will be a total of four awards for both Open Calls 1 and 2, which will be given as follows:

- The experimenter with the highest ranking of the Open Call 1 will receive 15.000 euros (announced in December 2023).
- The three experimenters with the higher ranking of the Open Call 2 will receive 10.000 euros each (announced according to the timeline of Open Call 2, during 2024).
- The experimenters not awarded during the Open Call 1, will be reconsidered during the Open Call 2 evaluation phase (i.e., an overall ranking table will be created for all SMEs participating in either of the Open Calls, except for the SME already awarded).

All legal and formal procedures will be followed in order to pay the awards to the winners.

**For any enquiries regarding the Open Call,
please contact at open-call@5g-iana.eu**

An info day to promote the Open Call will take place on 14 March 2023. It will be recorded and uploaded on the website for future reference. Please visit the website for further information.



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