



4th Fed4FIRE+ Open Call - Experiments “Medium Experiments”

With focus on IoT & 5G

Call information:

- Project full name: **Fed4FIRE⁺: Federation for FIRE**
- Project grant agreement number: **732638**
- Call identifier: **F4Fp-04-M**
- Call title: **4th Fed4FIRE+ Competitive Call - Innovative Experiments
Category “Medium Experiments” with focus on IoT & 5G**

Submission deadline 18 September 2018, at 17:00 Brussels local time

Feasibility check deadline 7 September 2018, at 17:00 Brussels local time

Call Objectives:

The major objective of this Call is to make Fed4FIRE’s federated infrastructure directly available for execution of innovative experiments by experimenters at both industrial (including SMEs) and research organisations. Examples of such experiments may include but are not limited to testing of new protocols or algorithms, performance measurements or scalability testing. These Calls envisage experiments by which existing products or services are tested, implemented or optimized on the Fed4FIRE+ testbeds rather than proposing or developing new ideas from scratch.

This call focusses on proposals of experiments in the area of IoT (Internet of Things) and 5G. More information on the specific objectives can be found further in the call document.

Funding for Experimenters:

Funding is available to support experimenters, as described in the following table.

Experiment Type	Max Experimenter Funding Per Experiment	Testbed Patron Funding per experiment	Max number of experiments funded in this call	Max duration of experiment
Medium	€ 55 000	€ 5000	5	5 months

Eligibility:

- Proposals will only be accepted from a single party eligible for participation in EC H2020-projects.
- Proposers must from parties or organisations that are not already part of the Fed4FIRE+ project consortium.
- Proposers can submit multiple experiment proposals, but only one experiment per proposer will be selected for funding in this Call.
- Proposers who have submitted proposals in previous calls of the Fed4FIRE+ - project are allowed to re-submit.

About feasibility check

All proposers must contact the Fed4FIRE+ consortium and elaborate their intentions in order to verify the feasibility of the proposals to be implemented in the scope of the project and to receive a first feedback on in the proposal planned activities following the steps below:

1. Prepare a draft version of your proposal or a 1-page description and mention Fed4FIRE facilities to be used. If you don't know a testbed please submit a question to contact@fed4fire.eu.
2. Submit this draft proposal as a feasibility check to contact@fed4fire.eu before 7 September 2018 at 17:00 CET (Brussels local time)
3. Please request this feasibility check before submitting or uploading the proposal through the portal.
4. The testbed owner or Patron will respond by completing a formal statement that he/she has been informed about your proposed experiment and that he/she agrees that it can be carried out on the required testbed(s).
5. This formal statement needs to be included in the proposal section D

Detailed information about the open call and its aspects can be retrieved online (www.fed4fire.eu)

Language in which the proposal must be submitted: English

Contact: contact@Fed4FIRE+.eu

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2 Introduction to Fed4FIRE+

Fed4FIRE+ is a Research and Innovation Action under the European Horizon 2020 Programme addressing the work programme topic Future Internet Research and Experimentation. The project started on 01 January 2017 and runs for 60 months, until the end of 2021.

The Fed4FIRE+ project has the objective to run and further improve Fed4FIRE+'s "best-in-town" federation of experimentation facilities for the Future Internet Research and Experimentation initiative. Federating a heterogeneous set of facilities covering technologies ranging from wireless, wired, cloud services and open flow, and making them accessible through common frameworks and tools suddenly opens new possibilities, supporting a broad range of experimenter communities covering a wide variety of Internet infrastructures, services and applications.

Fed4FIRE+ continuously upgrades and improves the facilities and include technical innovations, focused towards increased user satisfaction (user-friendly tools, privacy-oriented data management, testbed SLA and reputation, experiment reproducibility, service-level experiment orchestration, federation ontologies, etc.). It will open this federation to the whole community and beyond, for experimentation by industry and research organisations, through the organization of Open Calls and Open Access mechanisms

The project also offers a flexible, demand-driven framework which allows test facilities to join during the course of its lifetime by defining a set of entry requirements for new facilities to join and to comply with the federation.

Fed4FIRE+ also continues to build on the existing community of experimenters, testbeds and tool developers and bring them together regularly (two times a year) in engineering conferences to have maximal interaction between the different stakeholders involved.

An overview of the available FIRE facilities offered through Fed4FIRE+ can be retrieved at the [facility overview page on the Fed4FIRE+ website](https://www.fed4fire.eu/testbeds/)¹. Additional background information about both the offered facilities, the tools adopted by the federation, and the implementation steps needed from a facility when joining the federation can also be found in [the Fed4FIRE+ training material](http://doc.fed4fire.eu/)².

¹ <https://www.fed4fire.eu/testbeds/>

² <http://doc.fed4fire.eu/>

3 Objectives of the call

The major objective of this Open Call is to make the federated infrastructure directly available for execution of innovative experiments by experimenters at both industrial (including SMEs) and research organisations. These experiments should be of a duration as defined by the type of the call (Extra Small, Small, Medium or Large) and use one or more Fed4FIRE+ testbeds. Examples of such experiments may include but are not limited to testing of new protocols or algorithms, performance measurements, service experiments. It is required that these experimenters will come from parties or organisations that are not part of the Fed4FIRE+ project consortium.

In view of the targeted timeline and duration of the experiment, it should be clear that these Calls envisage experiments by which existing products or services are tested, implemented or optimized on the Fed4FIRE+ testbeds rather than proposing or developing new ideas from scratch. Examples of such experiments may include but are not limited to testing of new protocols or algorithms, performance measurements, service experiments.

The Fed4FIRE+ project is issuing this series of open and competitive calls for experiments with a degree of industrial and/or scientific innovation, relevance for the Fed4FIRE+ federation and an appropriate scale of complexity. Independent evaluations of the submitted proposals will be performed, in order to select experiments which will be executed within the project. It is required that the experiments are performed by a single organization.

This 4th Open Call targets one specific category for experiments:

- “Medium Experiments” with a maximum budget (including the financial support to the Fed4FIRE+ partner(s) acting as a Patron) of € 60 000 and a maximum duration of 5 months.

This 4th Open Call focusses on experiments in the area of IoT (Internet of Things) and 5G. Experiments targeting other areas, applications and/or technologies can also be submitted, however the focus of this call implies that experiments in the area of IoT and 5G will be favoured during evaluation.

- The focus on IoT covers topics such as (non exhaustive list): smart devices, smart buildings, smart cities, smart interfaces, sensors and monitoring devices and (wireless) IoT networks and protocols, IoT architectures, security, power consumption, battery life,..
- The focus on 5G covers topics such as (non exhaustive list): networks, MIMO, Multi-Radio Access technologies, end-to-end performance, contextual awareness, intelligent data mining, (distributed) cloud, software-defined networking and network function virtualization. new applications and requirements

Benefits for an experimenter to propose experiments on the Fed4FIRE+ federation of testbeds:

- Possibility to perform experiments that break the boundaries of different testbeds or domains (wireless, 5G, wired, OpenFlow, cloud computing, smart cities, services, etc.)
- Easily access all the required resources with a single account.
- Focus on your core task of experimentation, instead of on practical aspects such as learning to work with different tools for each testbed, requesting accounts on each testbed separately, etc.
- An extra benefit which is offered in this call is the dedicated support from specific Fed4FIRE members. Each proposer, preparing a proposal is required to seek a supporting Fed4FIRE consortium partner or partners (the “Patron”) that will be in charge of dedicated (advanced) support of the experiment.

4 Eligibility

- Proposals will only be accepted from parties eligible for participation in EC H2020-projects.
- Proposals will only be accepted from single parties (no consortia are allowed).
- Proposers must from parties or organisations that are not already part of the Fed4FIRE+ project consortium.
- Proposers can submit multiple experiment proposals, but only one experiment per proposer will be selected for funding in this Call. In case multiple proposals are submitted by the same party, reference should be made to each submitted proposal and clear indication should be given on the complementarity of the proposals.
- Proposers who have submitted proposals in previous calls of the Fed4FIRE+ - project are allowed to re-submit. Details on how this information needs to be included in the proposal are given below and should be included in a specific section in the proposal (cfr. Proposal template)
 - Parties who have submitted proposals in previous calls which were NOT selected for funding should indicate the exact dates and details of the previous submissions.
 - Parties who have submitted proposals in previous calls which were selected for funding should indicate the difference between the current proposal and the previously submitted proposal.
 - Parties belonging to a legal entity of which other groups have submitted proposals in previous calls also need to indicate the difference between the current proposal and the previously submitted proposals.

5 Inclusion into the consortium

Once a party is selected to perform the proposed experiment, it will be contracted by the project coordinator (imec) as a 3rd Party receiving financial support. This will require the signature of the Agreement of which can be found as download on the Fed4FIRE+ website together with this Call information.

6 Participation in meetings and submission of reports

6.1 Submission of reports

(templates can be found as download on the Fed4FIRE+ website together with this Call information)

The proposer will need, if its experiment is selected for funding:

- To submit a report at the end of the experiment using the template in Annex 2 to this document.
- To prepare a Poster (A1-format) describing the objective and results of the experiment as well as the impact of the experiment on the proposers' business. This poster can be used by the Fed4FIRE+ consortium at public events and will be used at the occasion of the review meetings.
- To prepare a flyer (2 A4-pages) describing the objective and results of the experiment as well as the impact of the experiment on the proposers' business. This flyer can be used by the Fed4FIRE+ consortium at public events.
- To prepare a presentation and demo explaining and illustrating:
 - the objective and results of the experiment
 - the impact of the experiment on the proposers' business.
 - The feedback towards the Fed4FIRE+ consortium on the use of the facilities
- The production of a short video about the experiment is recommended. This video will be used by the Fed4FIRE+ project at public events.

6.2 Attendance at meetings

Attendance at the meetings listed below is required. It is therefore recommended to budget these in the proposal.

- FEC4 (October 8-10, 2018): Brugge, Belgium:
 - To be attended by all selected experimenters
 - Objective: attend tutorials and learn about Fed4FIRE+
- FEC5 & Formal Review Meeting (March 2018): Location TBD
 - To be attended by all finished experiments in this Open Call
 - Objective:
 - presentations by the finished and running experiments will serve as tutorials and demonstrations towards participants and new experiments attending the event.
 - finished experiments will undergo a formal review by the EC at this FEC5. This formal review is required for obtaining full payment of the experimenters.
- Project meetings
 - As the experimenter will be linked to the project as 3rd Party, there will no possibility to attend formal meetings of the consortium but specific (remote) meetings regarding the experiment can be set up with Fed4FIRE+ partners. The engineering conferences should be used to discuss face-to-face.

7 Targeted timing:

- Feasibility Check Deadline: 07 September 2018
(draft proposal to Fed4FIRE+ partner(s) acting as Patron)
- Submission deadline: 18 September 2018
- Targeted acknowledgment of selection: 30 September 2018
- Attending FEC4 Tutorials & Demos: 08-10 October 2018
- Start of the experiment: October 2018
- End of the experiment February 2019
(this includes the time needed for the final reporting)
- Submission of Report: February 2019
- Presentation & Formal Review at FEC5: March 2019

8 Open Research Data

8.1 Motivation & Principles

In order to support open and repeatable scientific experiments, the EC is advocating that experimenters publish their experiment data^{3,4}. This is not mandatory: the EC recognises that there are legitimate reasons why experimenters may want to keep their data confidential. To support this in Fed4FIRE+, experimenters are encouraged (but not mandated) to create a data package containing their experiment results with all data that supports them, and upload it to the Fed4FIRE+ approved repository so that it may be found and reused by other interested parties.

The EC's guiding principle regarding open research data is "*AS OPEN AS POSSIBLE, AS CLOSED AS NECESSARY*". This means the default situation is that all experiment data should be open but if there are genuine reasons why experiment data is not to be opened, experimenters can opt out and their experiment data can be kept confidential. Fed4FIRE+ experimenters can opt out of opening data at any time up to the point of publication after the experiment has completed, even if they have previously declared that they want to open data. Experiment proposers need to state the reasons why they will not open data, and these can include:

- Commercial confidentiality & IPR
- Personal data
- Conflict with the experiment's main objective

In general, most academic experimenters are anticipated to want to open data in order to support their academic work, and most commercial experimenters will want to keep their data confidential, but the final decision is the experimenter's, provided they give valid reasons for opting out of opening data.

8.2 Data Archive

The repository chosen for Fed4FIRE+ is **Zenodo**⁵. The reasons for this choice are given in detail in Fed4FIRE+ D2.1, Initial Guidelines on Data Management, but they are summarised here:

- Zenodo is hosted by CERN, so it is unlikely to disappear any time soon, and has a stated long-term data preservation policy.
- Zenodo exports descriptive metadata to ORD search engines, enabling the data to be easily found.
- Zenodo is an issuer of Digital Object Identifiers (DOIs)⁶, enabling the data to be uniquely identified.
- Zenodo is flexible on licensing of data.
- Zenodo provides automated reporting to the EC for open data stored within it, so evidence of the commitment from Fed4FIRE+ and experimenters to provide open experiment data can be easily verified.

³ https://ec.europa.eu/research/press/2016/pdf/opendata-infographic_072016.pdf

⁴ http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf

⁵ <https://zenodo.org/>

⁶ <https://www.doi.org/>

8.3 Funding Available

Funding to cover the experimenter's costs in preparing the ORD data package is available from the Fed4FIRE+ Federator. This is additional to the support funding for experiments, and will be paid to an experimenter upon confirmation that their experiment data package is complete and uploaded into the Fed4FIRE+ approved data repository, Zenodo.

The funding available is capped to an upper limit of €500.

8.4 Process

The process for ORD in Fed4FIRE+ is shown in Figure 1. The left-hand column shows activities by the experimenter, and the right hand column shows activities by the Federator.

At experiment proposal time, the experimenter decides whether they want to open data. If they want to keep data confidential, they need to provide satisfactory reasons why not in their proposal. Valid reasons will not prejudice against funding for experiment proposals. If experimenters want to open data, they must complete a basic data management plan and include this with the proposal submission. If the proposal (including the basic DMP) is accepted, in addition to providing the experiment funding, the Federator puts aside funding to cover the experimenter's extra costs in preparing the ORD package.

After the experiment is complete, the experimenter has another opportunity to decide whether they want to open their research data. If they wish to keep their data closed, they need to provide reasons in their experiment report. If they wish to open data, they must complete a more detailed DMP, prepare a data package including metadata describing the experiment data and upload the data package to Fed4FIRE+'s approved data repository, Zenodo. Zenodo will issue a Digital Object Identifier, and this must be submitted to the Federator. The Federator will check the existence and completeness of the data package, and if all is well, will authorise a cost claim for the experimenter covering their costs for opening data (up to a limit of €500).

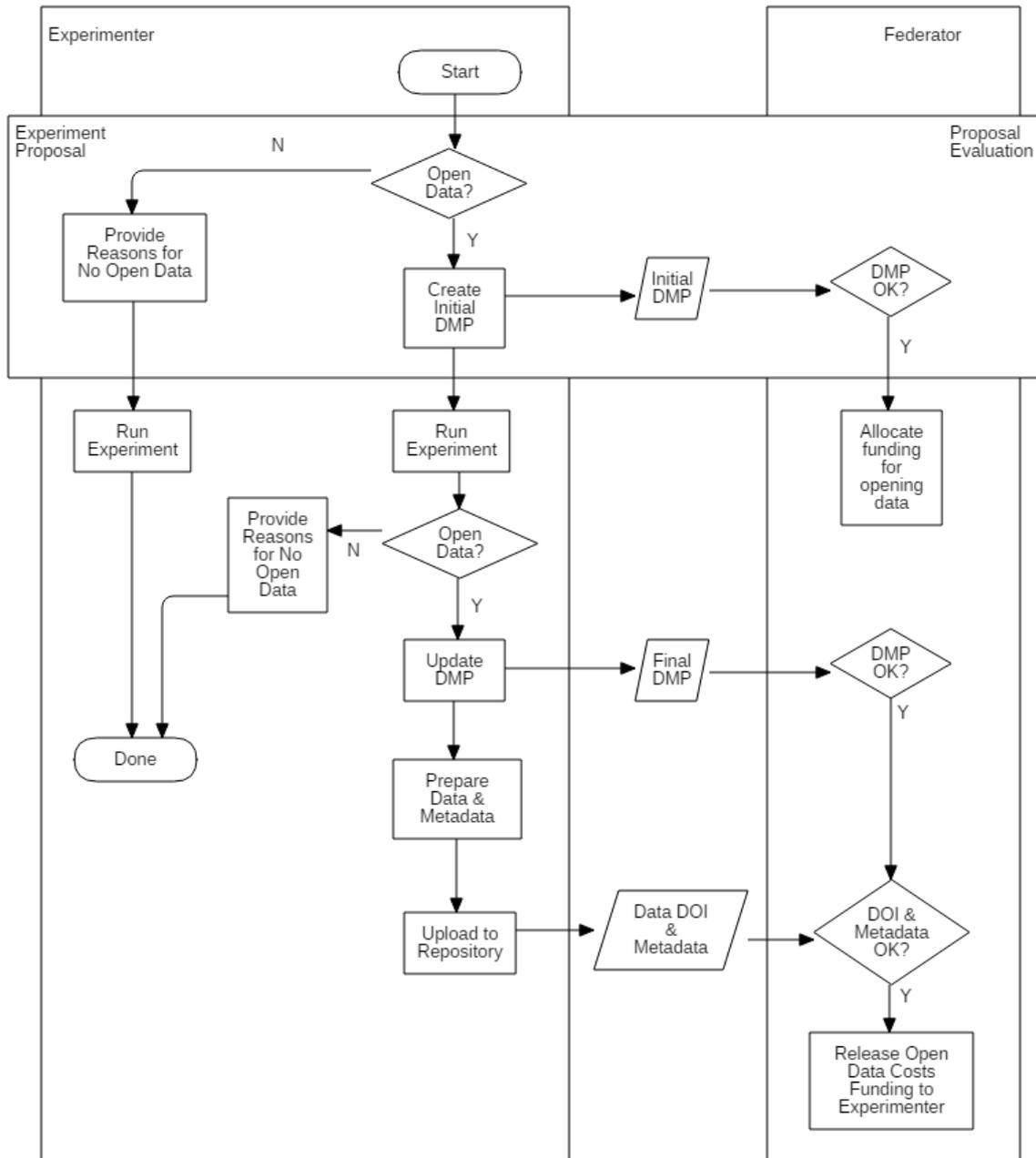


Figure 1: Fed4FIRE+ Open Research Data Process

9 Proposal template

The use of a specific proposal format as described in this section is mandatory. The template (can be found as download on the Fed4FIRE+ website together with this Call information) is limited in size and is focusing on “what experimenters want to do” and “what the expected result is”.

- Section A Information page and Summary (300 word summary)
The information in this section may be used in public documents and reports by the Fed4FIRE+ consortium.
- Section B Description and Expected Results (target length 6 pages)
describing the details on the planned experiment (what do you hope to obtain, how, why is it relevant,...). This section should also include all information with respect to the State-of-the-Art to show the innovative character of the experiment and the expected business impact
- Section C Requested Fed4FIRE+ tools, testbeds and facilities (1 page, standard form)
The information in this section needs to be collected in collaboration with the Fed4FIRE partner acting as patron on this experiment. For this section a specific format needs to be used, which is attached to this document and available for download.
- Section D Compliance check (max. 1 page, standard form to be provided by the Fed4FIRE+ Patron)
This section contains the formal statement of the Fed4FIRE+ partner(s) acting as patron on this experiment that he/she has been informed about your proposed experiment and that he agrees that it can be carried out on the required testbed(s). To be able to complete this form, the Patron needs to be informed about the proposal itself. Therefore, a “**feasibility-check**” deadline is set, by which the Patron needs to have received the draft proposal to be able to complete this form.
- Section E Background and qualifications (target length 1-2 pages)
This section describes the proposing experimenters and includes an overview of the activities, your qualifications, technical expertise and other information to allow the reviewers to judge your ability to carry out the experiment.
- Section F Expected feedback to the Fed4FIRE+ Consortium (target length 1-2 pages)
This section contains valuable information for the Fed4FIRE consortium and should indicate the expected feedback the Fed4FIRE consortium can expect from the use of its federated facilities after carrying out your experiment. This information is essential in view of the sustainability of the facilities and use of tools and procedures. Note that the production of this feedback is one of the key motivations for the existence of the Fed4FIRE open calls.
- Section G Future plans (target length 1 page)
This section contains information regarding expected possible follow-up experiments, new initiatives, new projects which may follow out of the experiment as proposed in this Open Call.
- Section H Requested funding (1 page. standard form).
This section provides an overview of the budgeted costs and the requested funding. A split is made in personnel costs, other direct costs (travel, consumables,..) and indirect costs. This section also includes the split between the budget allocated to the experimenter and the budget allocated to the Patron(s), clearly arguing this split (max. €5 000 in total for the patron(s)). It is thus possible to have e.g. one patron providing specific testbed resources and setup for €3 500 and another patron offering consulting help for €1 500 for the same experiment.

- Section I Participation in previous Open Calls of the Fed4FIRE+ project.
This section provides information on previous participation in Open Calls of the Fed4FIRE+ project:
- Parties who have submitted proposals in previous calls which were NOT selected for funding should indicate the exact dates and details of the previous submissions.
 - Parties who have submitted proposals in previous calls which were selected for funding should indicate the difference between the current proposal and the previously submitted proposal.
 - Parties belonging to a legal entity of which other groups have submitted proposals in previous calls also need to indicate the difference between the current proposal and the previously submitted proposals.
- Section J Data Management
This section begins with the question: “Will you provide a complete, publicly-accessible dataset of your experiment results and supporting data, uploaded in Fed4FIRE+’s chosen repository?”
For the Answer “NO”: The experimenter needs to provide reasons why they will not make their experiment data open as part of the proposal. Guidance on opt out reasons can be found in Section 8.1.
For the Answer “YES”: The experimenter needs to fill in the table provided in the template, and this becomes the initial Data Management Plan, to be submitted with the experiment proposal. Guidance notes are provided in the table.
- Section K Survey.
This survey contains a list of specific requirements which you expect your experiment has for our federated testbeds. This survey will be done through a specific template which will become available on-line. This survey is an integral part of your proposal. Proposing parties who do not complete this survey by the set deadline are not eligible for evaluation.
The survey responses will remain within the Fed4FIRE consortium and will be used for reports and evaluation of the Fed4FIRE tools, testbeds and concept. The results will not be forwarded to the reviewers and will consequently not influence the scoring of your proposal during the evaluation process.

10 Support during experiment and the role of the Patron

Experimenters in this open call category have access to basic and advanced support:

A. Basic support

- Guaranteeing that the facility is up and running (e.g. answering/solving "could it be that server X is down?")
- Providing pointers to documentation on how the facility can be used (e.g. "how to use the virtual wall testbed" => answer: check out our tutorial online at page x")
- Providing pointers to technical questions as far as relevant (e.g. answering "do you know how I could change the WiFi channel" => answer: yes, it is described on following page: y"; irrelevant questions are for example "how to copy a directory under Linux")
- This support will be handled through the support forum detailed at <http://doc.fed4fire.eu/support.html>

B. Dedicated (advanced) support includes all of the following supporting activities by the patron:

- Deeper study of the problem of the experimenter: invest effort to fully understand what their goals are, suggest (alternative) ways to reach their goals. To put it more concretely (again using the example of the Virtual Wall testbed), these experimenters do not need to know the details on the Virtual Wall or how it should be used, they will be told what is relevant to them and can focus on their problem, not on how to solve it.
- Help with setting up the experiments (e.g. "how to use the virtual wall" => answer: the tutorial is there, but let me show you how what is relevant for you, let me sit together with you while going through this example and let us then also make (together) an experiment description that matches what you are trying to do.
- (Joint) solving of practical technical problems (e.g. "do you know how I could change the WiFi channel" => yes, it is described on page y, in your case you could implement this as following: ..., perhaps we should quickly make a script that helps you to do it more easily, ...)
- Custom modifications if needed: e.g. adding third-party hardware and preparing an API for this.
- Technical consultancy during/after the experiments (e.g. "I do get result x but would have expected y, what could be the problem?")

It is essential that you get in contact with the Fed4FIRE+ partner in charge of the testbed(s) you will use for your experiment to discuss your experiment and the specific requirements. Each proposing party must therefore contact the Fed4FIRE+ consortium regarding its submission to identify a possible Patron. The proposing party must submit its draft proposal to this Patron. The feedback by the Patron is provided in section D of the proposal.

The role and support by the Patron will be reflected in the budget (see section G of the proposal). At least one Patron is needed per experiment, but more are possible.

11 Budget & Payment scheme

As the experimenter will be linked to the Fed4FIRE+ consortium as 3rd Party receiving financial support, specific arrangements exist with respect to financial costs and payment schemes:

11.1 Compliance rules

- As a 3rd Party, the proposing party needs to include an overview of the estimated costs in its proposal at the time of submission. Costs consist of personnel costs, direct costs (such as travel, consumables, etc.) and indirect costs. The costs of a 3rd Party have to comply with the rules and the principles mentioned in Section I, Article 6 (Eligible and ineligible costs) of the H2020 AGA — Annotated Model Grant Agreement (see http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/amga/h2020-amga_en.pdf), in the same way as the beneficiaries, and must be recorded in the accounts of the 3rd Party. In other words, the rules relating to eligibility of costs, identification of direct and indirect costs and upper funding limits apply. Equally those concerning controls and audits of Section I, Article 22 of the H2020 AGA.

11.2 Budget

- The maximum requested funding for each experiment in this Call is set at:
 - 60k euro for Medium Experiments
- The budget covers the costs for:
 - the experimenter including the costs for:
 - getting acquainted with the testbed
 - executing the experiment
 - reporting feedback about the federation framework
 - submitting the required documents
 - attending the required meetings (travel)
 - the Fed4FIRE+ partner(s) acting as Patron(s) including the costs for:
 - supporting the proposer during the preparation and execution of the experiment
 - specific adaptation of the testbed to run the experiment
 - providing feedback and quality-check on the submitted reports and materials by the experimenter.
- The budget can be split in a flexible way between the experimenter and the Patron but the split needs to be provided and argued in the proposal (with a max. total of €5 000 for the patron(s)).

11.3 Submission of invoices

- The proposer will need, if its experiment is selected for funding:
- To submit an invoice for 75% of the budget allocated to the 3rd Party which will be paid by imec as coordinator upon an approval of the report by the Fed4FIRE+ consortium.
- To submit an invoice for 25% of the budget allocated to the 3rd Party which will be paid by imec as coordinator upon receiving a positive evaluation report by the EU appointed reviewers following a formal review by the EU representatives.
- Payments to the Fed4FIRE+ partner acting as Patron will be made internally within the consortium.

12 Access to Foreground information from the project

As indicated by the EC Guidelines, a 3rd Party is paid in full for its contribution made to a project by the coordinator. As a consequence 3rd Parties do not have any IPR rights on the foreground of the project.

13 Reporting

As the experimenter will be linked to the Fed4FIRE+ consortium as 3rd Party receiving financial support, no input will be required for any of the regular project reports which the Fed4FIRE+ consortium needs to submit to the EU.

A final report needs to be submitted after conclusion of the experiment. A specific template needs to be used (can be found as download on the Fed4FIRE+ website together with this Call information) and will include:

- Part A. Summary
- Part B. Detailed description
This section describes the details on the experiment and provides information as you have been collecting this from your point of view and from your business. It includes:
 - B.1 Concept, Objectives, Set-up and Background
 - B.2 Technical Results & Lessons learned
 - B.3 Business impact
- Part C. Open Research Data
This section provides feedback on the actions taken by the proposer in the framework of the Open Research Data initiative. If you have opted out of this initiative, please provide the reasons. If you have opted in, please provide the Final Data Management Plan and all necessary information to show that a complete, publicly-accessible dataset of your experiment results and supporting data, has been uploaded in Fed4FIRE+'s chosen repository.
- Part D. Feedback to Fed4FIRE+
This section contains valuable information for the Fed4FIRE consortium and describes your experiences by running your experiment on the available testbeds. Note that the production of this feedback is one of the key motivations for the existence of the Fed4FIRE+ open calls. It includes:
 - C.1 Resources & tools used
 - C.2 Feedback based on design/set-up/running your experiment on Fed4FIRE+
 - C.3 Why Fed4FIRE+ was useful to you

This report will not only serve as an evaluation tool to judge payment of the experimenter, but will mainly serve as input to the Fed4FIRE sustainability plans, evaluation of the user-friendliness of the Fed4FIRE tools and identification of missing gaps in both testbeds and tools.

Part of this report may be used by the Fed4FIRE+ consortium for inclusion in their reporting documents to the EU and in public presentations. Inclusion of confidential information should therefore be indicated and discussed with the Fed4FIRE+ consortium.

This report will also be used for the formal review by the European Commission.

14 Criteria for evaluation and ranking of experiments

Proposals can only be submitted by eligible parties (cfr section 3):

Evaluation and ranking will be carried out by an external review panel. Selection will mainly be based upon:

- Criteria I. A degree of industrial and/or scientific innovation including a motivation for the experiment. (Section B of the Proposal Template)
The score given here should reflect the degree of innovation: if an experiment is pushing the boundaries of its domain, then it should get a higher score here than experiments testing trivial things. In order to demonstrate these criteria, the proposer may opt to indicate the State of the Art in the appropriate field.
- Criteria II. A degree of industrial and/or scientific relevance (Sections B of the Proposal Template)
This score should reflect the industrial relevance including the expected and projected impact on the experimenter through product development or the scientific relevance and the projected impact on the organisation
- Criteria III. Clarity and methodology (**Errore. L'origine riferimento non è stata trovata.**Section B of the Proposal Template)
The experiment should be scientifically and/or technically sound. There should be a clear problem statement, a solid experiment design, a good methodology, etc.
- Criteria IV. Use of Fed4FIRE+ facilities and tools (Sections B & C of the Proposal Template)
The use of the proposed testbeds and tools will be evaluated on the basis of the relevance and the required complexity. Proposals will not be penalized for using only single testbeds or single tools, but use of multiple testbeds is stimulated, as Fed4FIRE+ is a federation of testbeds. No distinction is made between achieving this by running the same experiment in sequence on multiple testbeds (e.g. to evaluate different wireless environments), or by running a single experiment that relies on resources from different testbeds at the same time. If however proposals have made their design artificially more complex than needed just in order to use multiple testbeds, then the score will be lower. Similarly, if proposals have made their designs too trivial while you can easily identify opportunities for involving other testbeds that would have made the experiment stronger, then the score will also be lower. In order to optimise the design of the experiment, the proposer should seek information on the available testbeds.

Criteria V. Relevance for Fed4FIRE+ framework in terms of potential feedback to the project on the planned facility and tools utilization (Section F of the Proposal Template)

The Fed4FIRE consortium is seeking feedback regarding the available tools, procedures and testbeds. Proposals which can indicate that more information and feedback on the use of these tools and procedures will be provided will get a higher score. So the more of the Fed4FIRE tools and APIs that an experiment can provide feedback on, the better. If they need to use additional non-Fed4FIRE tools, that is not a problem as long as they clearly indicate the added value of these additional tools.

Criteria VI. Indication on possible future follow-up experiments and how this can support the sustainability of the federated testbed facilities. (Section G of the Proposal Template).

The proposer may indicate possible follow-up projects and experiments which can contribute to the sustainability of the Fed4FIRE facilities. The quality, the size and the expected feasibility to carry out these future experiments will be reflected by the score in this criterion.

These future plans can be new experiment with Fed4FIRE, a new research project, internal projects, product commercialization.... As the objective of Fed4FIRE+ is to provide an incentive, seed budget or initial assistance in your business or research, any new initiative triggered by this experiment is acceptable to be listed. The future plans do not have to exclusively impact the future of Fed4FIRE!

Criteria VII. The proposer should exhibit technological expertise and quality. This information must be included in Section E of the Proposal Template.

Criteria VIII. Preference is given to proposals originating from new players in the field. Therefore the following restrictions will be implemented:

- parties who have submitted a proposal in previous calls of Fed4FIRE+ and which were selected for funding are allowed to submit a new proposal only when clear distinction can be made with previous submitted proposals.
- Parties who have not submitted or been participating in previous calls of the Fed4FIRE+ project but are belonging to same legal entity as proposers which have submitted proposals in previous calls, are eligible in case they can clearly identify the difference with previous submitted proposals by the other groups.
- This information must be included in Section I of the Proposal Template.

Criteria IX. Preference is given to proposals with in the area of IoT (Internet of Things) and 5G. Therefore, proposals which, based on the description in Section B of the proposal can be situated in these areas, will be given an extra 5 points on their total score.

Amongst all above listed criteria, Criteria I, II and V will be weighted higher:

- Criteria I 0 to 5 points (threshold 3 points) weight = 2
- Criteria II 0 to 5 points (threshold 3 points) weight = 2
- Criteria III 0 to 5 points (threshold 3 points) weight = 1
- Criteria IV 0 to 5 points (threshold 3 points) weight = 1
- Criteria V 0 to 5 points (threshold 3 points) weight = 2
- Criteria VI 0 to 5 points (threshold 3 points) weight = 1
- Criteria VII 0 to 5 points (threshold 3 points) weight = 1
- Criteria VIII 0 to 5 points (threshold 3 points) weight = 1
- Criteria IX 0 or 5 points (no threshold) weight = 1
- **Total score: 0 to 60 points (threshold 40 points)**

The proposed experiment must be executed on the available Fed4FIRE+ testbeds. This competitive call allows for both experiments using multiple testbeds (in parallel and/or in sequence) and experiments using a single testbed. Information about the [current Fed4FIRE+ testbeds is available at the dedicated pages](#)¹. The proposed experiment must use the experimentation tools provided by Fed4FIRE+ in order to provide feedback to the project about their usefulness and maturity in a final report. In justified cases additional external tools may be used.