



Fed4FIRE+ Open Call – Innovative testbeds

Call information:

- Project full name: **Fed4FIRE+: Federation for FIRE plus**
- Project grant agreement number: **732638**
- Call identifier: **F4Fp-testbeds**
- Call title: **Fed4FIRE+ Competitive Call - Innovative testbeds**

Obligatory draft proposal “Feasibility-check”

submission deadline 16 February 2022, at 17:00 Brussels local time

Full and final proposal submission deadline 15 March 2022, at 17:00 Brussels local time

Call Objectives:

The major objective of this Call is to enlarge Fed4FIRE+'s federated infrastructure with new testbeds bringing new functionality and/or hardware to the Fed4FIRE+ experimenter community.

As a second objective, it will bring as output to the federation information on how easy or difficult it is to join the federation.

This call has no specific focus or theme, but we would like to call for testbeds which bring something extra to the federation. E.g. a testbed with 10 bare metal servers will not bring much new (compared to e.g. the existing Virtual Wall, Grid5000 or Exogeni testbeds), but on the other hand if those servers are fully interconnected with 100Gb/s network, that is something which is not available yet.

Hence an essential part of the proposal is the feasibility check. For this feasibility check it is obligatory to send a draft of the proposal with at least a 1-page technical description of the testbed as well as the motivation to join the Fed4FIRE+ federation by the deadline indicated. This feasibility check by the consortium will provide you with formal feedback on the similarities and differences of your testbed vs the existing testbeds in the federation (<https://www.fed4fire.eu/testbeds/>). The draft proposal needs to be submitted by email to contact@fed4fire.eu by 16 February 2022 at 17:00 Brussels local time

The funding is foreseen purely to join the federation, not for extending an existing testbed. It is possible to join the federation under different modii: ‘light federation’ or ‘advanced federation’.

By submitting a proposal, the proposer also agrees to keep the proposed testbed operational and federated at least until 31/12/2023.

Funding for Testbed owners:

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

Federation Type	Max Funding Per Testbed	Max number of testbeds funded in this call	Max duration of federation effort
Light	€ 15 000	10	1 month
Advanced	€ 50 000	3	2 months

Eligibility:

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

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 66 months, until the end of June 2022.

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 in webinars 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](#)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](#)².

¹ <https://www.fed4fire.eu/testbeds/>

² <http://doc.fed4fire.eu/>

3 Objectives of the call

The major objective of this Call is to enlarge Fed4FIRE+'s federated infrastructure with new testbeds bringing new functionality and/or hardware to the Fed4FIRE experimenter community. As a second objective, it will bring as output to the federation information on how easy or difficult it is to join the federation.

This call has no specific focus or theme, but we would like to call for testbeds which bring something extra to the federation. E.g. a testbed with 10 bare metal servers will not bring much new (compared to e.g. the existing Virtual Wall, Grid5000 or Exogeni testbeds), but on the other hand if those servers are fully interconnected with 100Gb/s network, that is something which is not available yet).

Hence also the feasibility check before the submission where you can get formal feedback on the similarities and differences of your testbed vs the existing testbeds in the federation (<https://www.fed4fire.eu/testbeds/>). This feasibility check is obligatory.

The funding is foreseen purely to join the federation (<https://doc.fed4fire.eu/#testbed-owner-documentation>), not for extending an existing testbed. It is possible to join the federation under different modii: 'light federation' or 'advanced federation'.

- Light federation: access to the testbed's resources is realized by exposing a Web-based API, with authentication e.g. through OAuth (offered by the Fed4FIRE+ federation). This option does not allow full control over the individual testbed resources, but ensures unified access to experimenters. We support the OpenID Connect layer on top of the OAuth protocol (<https://openid.net/connect/>) and this gives an idea of the metadata to be supported for the integration: <https://portal.fed4fire.eu/.well-known/openid-configuration>.
- Advanced federation: this is typically used for testbed resources that are accessible through ssh (including e.g. a testbed gateway that is accessible through ssh). The testbed is fully integrated in the federation so that experimenters can interact with their experiment during all stages of the experiment's life cycle (resource selection, instantiation, control, monitoring, etc.). This option requires the implementation of the Federation AM API (Aggregate Manager Application Programming Interface) on top of your testbed. You can find some possible ways to support the AM API at https://doc.fed4fire.eu/testbed_owner/amsoft.html. The GCF option is probably the best candidate if your testbed does not yet support the AM API.

By submitting a proposal, the proposer also agrees to keep the proposed testbed operational and federated at least until 31/12/2023.

Benefits for a testbed owner to propose federation of his testbed to the Fed4FIRE+ federation of testbeds:

- Make your testbed part of a larger community bringing in new experimenters and opportunities
- Making shared use of shared resources, such as the Fed4FIRE+ portal (<https://portal.fed4fire.eu>) and user tools as jFed (<https://jfed.ilabt.imec.be>)
- Making it possible for experimenters to combine easily multiple testbeds in one or more experiments, including your testbed
- Your testbed will be mentioned at the Fed4FIRE+ website and also in events/tutorials organised by Fed4FIRE+ in the sustainability period

- The Fed4FIRE+ APIs are compatible with similar testbed federations in other parts of the world, and are recently standardised by ITU and Etsi, so your testbed will also profit from those.

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 be from parties or organisations that are not already part of the Fed4FIRE+ project consortium.
- Proposers can submit multiple proposals, but **only one proposal per proposer can 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.
- **Testbed requirements of the testbed** that will be proposed for federation:
 - The testbed must exist for at least 1 year
 - The testbed has already public documentation available
 - The testbed has at least 50 users
 - The testbed has at least 100.000 euro of hardware that will be made available
 - The testbed is fully usable remotely by the experimenters
- Proposers who have submitted proposals in previous calls of the Fed4FIRE+ - project are allowed to re-submit.

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 a draft can be requested from the project coordinator (imec) by sending an e-mail to peter.vandaele@imec.be

The selected parties will NOT become a formal partner of the Fed4FIRE+ consortium and will therefore be subject to technical and financial reporting as outlined in this document.

6 Participation in meetings and submission of reports

6.1 Submission of reports

The proposer will need, if its proposal is selected for funding to submit the following information and reports at the latest:

- 15/05/2022 for “light federated” testbeds
- 15/06/2022 for “advanced federated” testbeds
- A report after the full federation of the testbed (deadlines above) and a final report on the use of the testbed by 31/12/2023
- A document containing the necessary descriptions to be added at <https://www.fed4fire.eu/testbeds/> (have a look at the existing testbeds) and with the information to be added at <https://portal.fed4fire.eu/explore/directory/>. This information needs to be submitted at the latest:
 - 15/05/2022 for “light federated” testbeds
 - 15/06/2022 for “advanced federated” testbeds
- A tutorial for use of the testbed with the Fed4FIRE+ portal and tools (this can be a video or a detailed documentation page)
- Documentation for use of the testbed with the Fed4FIRE+ portal and tools (can be added to the existing public documentation website of the testbed)

6.2 Attendance at meetings

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

6.2.1 Review Meeting (June 2022): online

- To be attended by all finished testbed federations in this Open Call
- Objective:
 - Present the testbed and a tutorial how the testbed can be used
 - a formal review by the EC at this meeting. This formal review is required for obtaining full payment.

6.2.2 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 federation can be set up with Fed4FIRE+ partners.

7 Targeted timing:

Feasibility check deadline: 16 February 2022, at 17:00 Brussels local time

(This feasibility check compares the proposed testbed to be added to the federation with the existing testbeds in the federation, bringing up similarities and differences. Submit at least section B.3 of the proposal. You will receive section C maximum 2 working days after this.)

Submission deadline: 15 March 2022, at 17:00 Brussels local time

Notification of acceptance: 30 March 2022

Completion of administrative requirements: 15 April 2022

Start of the testbed integration 15 April 2022

End of testbed integration: 15 May 2022 (light federation)
15 June 2022 (advanced federation)

Testbeds remain federated and available till: at least 31 December 2023

8 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 words 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 2-4 pages). This section describes the details on the testbed and the planned federation. This section should also include all information with respect to the State-of-the-Art to show the innovative character of the testbed and the expected impact on potential experimenters.
- Section C Feasibility check (max. 1 page, standard form to be provided by Fed4FIRE+)
This section contains the formal statement of Fed4FIRE+ regarding the difference and similarities with existing testbeds in the federation. To be able to complete this form, Fed4FIRE+ needs to be informed about the proposal itself. Therefore, a “feasibility-check” deadline is set, by which Fed4FIRE+ needs to have received the draft proposal to be able to complete this form (section B.3 and B.4 of the document).
- Section D Background and qualifications (target length 1-2 pages)
This section describes the proposing organisation 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 federation.
- Section E Future plans (target length 1 page)
This section contains information regarding expected possible future extensions of your testbed or other testbeds you want to federate, projects where you want to use the federated testbeds in the future, the added value you see of the federation in the future, etc.
- Section F 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.

9 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:

9.1 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.

9.2 Budget

- The maximum requested funding for each testbed federation in this Call is set at:
 - € 15 000 for Light federation
 - € 50 000 for Advanced federation
- The budget covers the costs for:
 - getting acquainted with the federation
 - executing the testbed federation
 - providing the needed documentation and tutorials
 - submitting the required documents
 - attending the required meetings

9.3 Submission of invoices

- The proposer will need, if its proposal 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. The report is to be submitted at the latest on:
 - 15/05/2022 for “light federated” testbeds
 - 15/06/2022 for “advanced federated” testbeds
- 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.

10 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.

The Results achieved by the Testbed owner doing the federation will be owned by the Testbed owner.

11 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 federation and will include:

- Part A. Summary
- Part B. Detailed description
This section describes the details on the federation and provides information as you have been collecting this from your point of view.
- Part C. Necessary documentation for the federation:
the necessary descriptions to be added at <https://www.fed4fire.eu/testbeds/> (have a look at the existing testbeds) and with the information to be added at <https://portal.fed4fire.eu/explore/directory/> , to prepare a tutorial for use of the testbed with the Fed4FIRE+ portal and tools (this can be a video or a detailed documentation page), to prepare the documentation for use of the testbed with the Fed4FIRE+ portal and tools (can be added to the existing public documentation website of the testbed)
- Part D. Feedback to Fed4FIRE+ and future plans
This section contains valuable information for the Fed4FIRE+ consortium and describes your experiences by federating your testbed. It also contains information with respect to future plans for the testbed.

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.

12 Criteria for evaluation and ranking of experiments

Proposals can only be submitted by eligible parties (cfr. Section 4):

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

- Criteria I. The degree of innovation and added value for Fed4FIRE+ of the testbed to be federated (Section B of the Proposal Template). In order to demonstrate these criteria, the proposer may opt to indicate the State of the Art in the appropriate field (specifically to the testbeds in the Fed4FIRE+ federation but also outside of Fed4FIRE+).
- Criteria II. A degree of future industrial and/or scientific relevance (Section B of the Proposal Template)
This score should reflect the industrial and/or scientific relevance including the expected and projected impact on the potential experimenters.
- Criteria III. The current testbed should be scientifically and/or technically sound. (Section B of the Proposal Template). The maturity of the testbed resources and documentation, current size of testbed, and current number of users should be high.
- Criteria IV. The testbed owner should also indicate his/her future plans (Section E of the proposal).
- Criteria V. The proposer should exhibit technological expertise and quality. This information must be included in Section D of the Proposal Template.
- Criteria VI. The effort to be done needs to be in line with the budget asked. E.g. if OAuth is already supported and light federation is targeted, probably less budget is needed than the maximum amount.

Amongst all above listed criteria, Criteria I, II and III 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 = 2
- Criteria IV 0 to 5 points (threshold 3 points) weight = 1
- Criteria V 0 to 5 points (threshold 3 points) weight = 1
- Criteria VI 0 to 5 points (threshold 3 points) weight = 1
- **Total score: 0 to 45 points (threshold 27 points)**