



5th Fed4FIRE Competitive Call for SME Experimenters

Call information:

- Project full name: **Fed4FIRE: Federation for FIRE**
- Project grant agreement number: **318389**
- Call identifier: **Fed4FIRE-SME-5**
- Call title: **5th Fed4FIRE Competitive Call
Innovative Experiments by SMEs**

Submission deadline: 09 March 2016, at 17:00 Brussels local time

Feasibility check deadline 02 March 2016, at 17:00 Brussels local time

Financial information:

- Maximum requested funding per experiment € 15 000
- An extra € 5 000 per experiment will be allocated to the Fed4FIRE consortium partner acting as patron
- Total available funding for this Call : € 60 000
- An extra € 20 000 for this call will be allocated to the Fed4FIRE consortium partners acting as patron

The proposer:

- Proposals will only be accepted from a single party eligible for participation in the EC FP7-projects
- Can only be selected for funding for one proposal (even if the proposer submitted multiple proposals that are ranked high enough to be selected for funding)
- Parties having been selected in previous Fed4FIRE Open Calls are not eligible to participate again

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

1. Introduction to Fed4FIRE

Fed4FIRE is an Integrating Project under the European Union's Seventh Framework Programme (FP7) addressing the work programme topic Future Internet Research and Experimentation. The project started in October 2012 and runs for 48 months, until the end of September 2016. Fed4FIRE started from the observation that a large number of FIRE-related experimentation facilities exist in Europe and will establish a common federation framework by developing, adapting or adopting tools that support experiment lifecycle management, monitoring and trustworthiness to seamlessly integrate all these facilities into a single federation.

A federation of experimentation facilities will significantly accelerate Future Internet research. Fed4FIRE delivers open and easily accessible facilities to the FIRE experimentation communities, which focus on fixed and wireless infrastructures, services and applications, and combinations thereof. The project develops a demand-driven common federation framework, based on an open architecture and specification. The federation framework will be widely adopted by facilities and promoted internationally. It provides simple, efficient, and cost effective experiment lifecycle management including discovery of experimentation resources, reservation, experiment execution and control tools, measurement and monitoring facilities. Tools and services supporting dynamic federated identities and access control will increase the trustworthiness of the federation and its facilities. A FIRE portal will offer brokering, user access management and measurements. Professional technical staff offers first-line and second-line support to make the federation simple to use. The project uses open calls to support innovative experiments from academia and industry and to adapt additional experimentation facilities for compliance with Fed4FIRE specifications.

An overview of the available FIRE facilities offered through Fed4FIRE is depicted in Figure 1. More details about each of them 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 <http://www.fed4fire.eu/testbeds.html>

² <http://www.fed4fire.eu/open-calls/tutorial-and-1st-open-call-information-day.html>

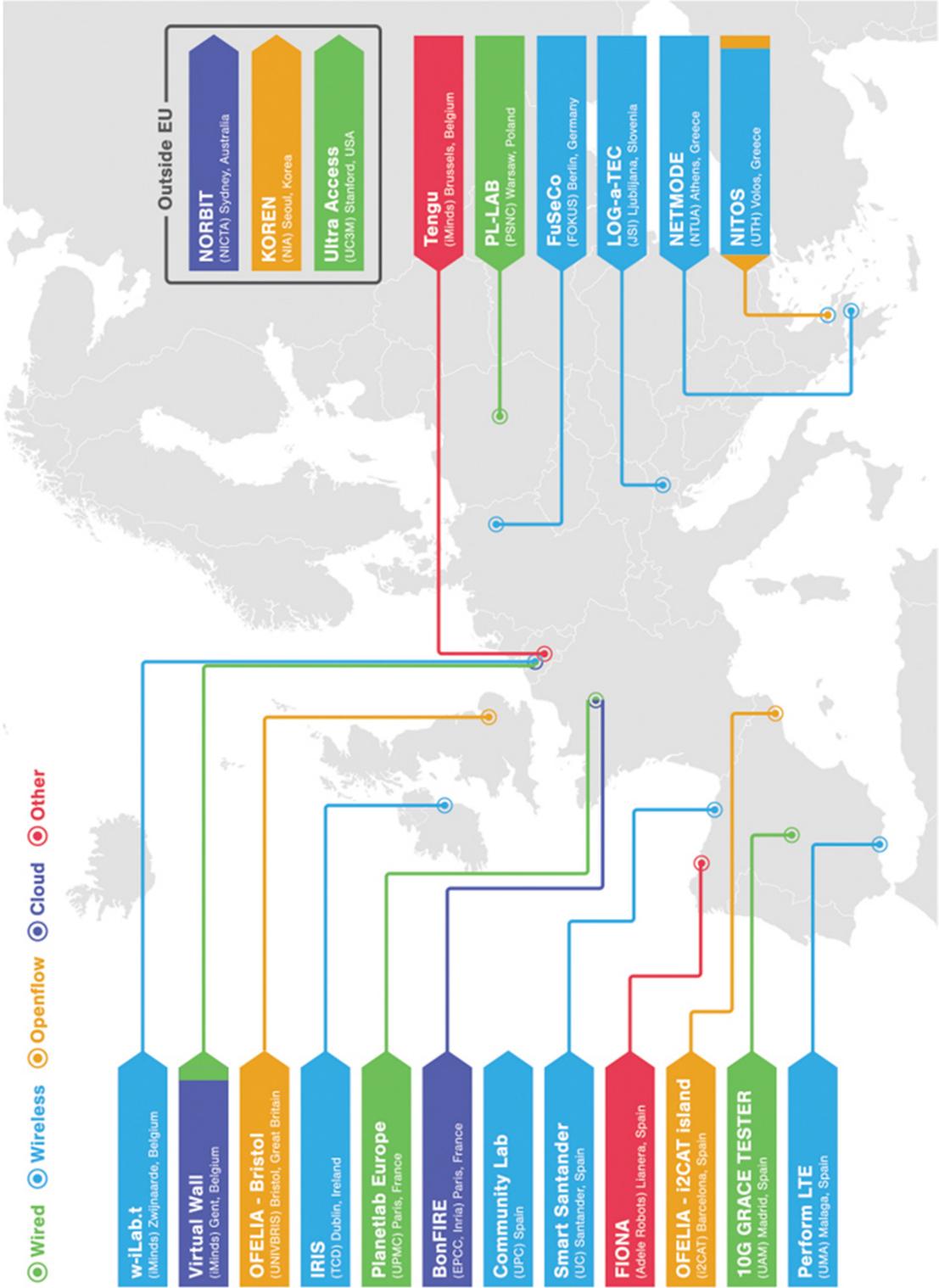


Figure 1: Overview of testbeds currently included in Fed4FIRE

2. Objectives of the call

The major objective of this Open SME Call is to make the federated infrastructure easier and more directly available for execution of innovative experiments by experimenters at SMEs. These experiments should be of a short duration (maximum 4 months). 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 come from SMEs that are not part of the project consortium.

In view of the targeted timeline and duration of the experiment, it should be clear that this SME Call envisages experimenters by which existing products or services are tested, implemented or optimized on the Fed4FIRE testbeds rather than proposing or developing new ideas from scratch.

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.

For this call, we are looking in particular, but not limited to, for (advanced) network-level experiments exploiting the unique features and capabilities of the whole Fed4FIRE's federation of testbeds, rather than mostly application-level or single testbed experimentation. This call targets the submission of proposals including, but not limited to proposals dealing with the technological evolution in the areas of (but not limited to), e.g., Internet of Things, 5G, and Cloud. Particularly promising would be users from currently hot research areas such as Industry 4.0, IoT, Analysis of Big Data, etc., and/or representative of market segments like automotive industry, medicine etc.

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

- Possibility to perform experiments that break the boundaries of different FIRE testbeds or domains (wireless, 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.

Benefits for participation in this SME Call lie in:

- the simplified application process compared to the one from the standard open calls together with a dedicated review process by external judges
- an extra benefit which is offered in this specific SME-targeting call is the dedicated support from specific Fed4FIRE members. Each SME, preparing a proposal should seek a supporting Fed4FIRE consortium partner (the "Patron") that will be in charge of dedicated (advanced) support of the experiment.

Per proposal a budget can be made available up to a maximum of 15keuro for the experimenter (covering the cost of getting acquainted with the testbed and reporting feedback about the federation framework). Next to this an extra 5keuro can be assigned to a Fed4FIRE consortium partner acting as the “patron” in charge of dedicated (advanced) support of the experiment.

3. Inclusion into the consortium

Once an SME is selected to perform the proposed experiment, it will be contracted by the project coordinator (iMinds) as subcontractor.

This implies that the administrative load for the applicant will be minimal as only an invoice needs to be submitted to iMinds at the end of the experiment with a description of tasks performed and results achieved as well as an evaluation on the use of the federated testbeds and its tools. This final report will be required before payment will be carried out. Details on the payment scheme are given in section 6

Each proposing SME should seek contact with the Fed4FIRE consortium (through contact@fed4fire.eu) and identify a Fed4FIRE partner acting as “Patron”. The role of this patron is described in section 5 and will be focusing on the obligatory feasibility check to be carried out and providing support during the execution of the experiment. This patron will also be consulted for evaluation before payment by iMinds of the invoices.

As the experimenter will be linked to the project as subcontractor, there will no possibility to attend formal meetings of the consortium but specific meetings regarding the experiment can be set up with Fed4FIRE partners.

4. Proposal template

The use of a specific proposal format as described in this section is mandatory. The template is limited in size and is focusing on “what SMEs want to do” and “what the expected result is”.

- Section A Summary (300 word summary)**
The information in this section may be used in public documents and reports by the Fed4FIRE consortium.
- Section B Detailed Description and Expected Results (target length 3 to 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 (target length 1 page)**
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)**
This section contains the feedback from the Fed4FIRE partner acting as patron on this experiment. Each proposing party must contact the Fed4FIRE consortium regarding its submission to identify a possible Patron. This Patron will in most cases be the Fed4FIRE partner responsible for the Testbed the proposing SME will use during its experiment. The proposing party must submit its draft proposal to this Patron by 02 March 2016 The feedback by the Patron is copied into this section of the proposal.
- Section E Background and qualifications (target length 1-2 pages)**
This section describes the proposing SME 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 Requested funding (1 page)**
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 (see section 0).
- Section H 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.

5. 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")

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

- Deeper study of the problem of the SME: 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 SMEs 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 by 02 March 2016. The feedback by the Patron is copied into section D of the proposal.

6. Payment scheme

As the experimenter will be linked to the Fed4FIRE consortium as subcontractor to iMinds, specific arrangements exist with respect to financial costs and payment schemes:

- 1) As a subcontractor, 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,..) and indirect costs. The costs of a subcontractor have to comply with the rules and the principles mentioned in Article II.14 to II.17 of ECGA³, in the same way as the beneficiaries, and must be recorded in the accounts of the subcontractor. 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 Article II.22 and Article II.23 of ECGA³,
- 2) The maximum requested funding for each experiment in this Call is set at 15k euro.
- 3) The maximum requested funding for the Fed4FIRE partner acting as the patron for this experiment is limited to 5k euro per experiment. Costs in this case are related to the provision of dedicated (advanced) support.
- 4) As a subcontractor, the experimenter will need to submit a report at the end of the experiment (for this call this will be August 2016). This report (details of content of the report see below), must include an overview of the costs incurred and will be accompanied by an invoice to the project coordinator, in this case iMinds.
- 5) The report and the declared costs will be evaluated by the Fed4FIRE consortium including the partner acting as patron.
- 6) Based on this evaluation, a payment of up to 75% of the requested funding will be carried out by the project coordinator.
- 7) The remaining 25% will be paid following a formal approval of the report and the work at a technical project review by the EC.

7. Access to Foreground information from the project

As indicated by the EC Guidelines, a subcontractor is paid in full for its contribution made to a project by the beneficiary with whom it has a subcontract. As a consequence subcontractors do not have any IPR rights on the foreground of the project.

³ http://ec.europa.eu/research/participants/data/ref/fp7/93289/fp7-ga-annex2_en.pdf

8. Reporting

As the experimenter will be linked to the Fed4FIRE consortium as subcontractor to iMinds, 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 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. 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. Each SME whose proposal is accepted for funding will need to attend this formal review meeting with the EC. This meeting is currently scheduled fall 2016 / early 2017

9. Criteria for evaluation and ranking of experiments

Proposals can only be submitted by:

- Parties eligible for participation in the EC Framework Programme 7 (FP7)⁴
- SMEs according to the definition used by the EC⁵
- Single parties (no consortia are allowed)
- Multiple proposals may be submitted by the same party, however in case multiple proposals are submitted reference should be made to each submitted proposal and clear indication should be given on the complementarity of the proposals.
- Parties having been selected in previous Fed4FIRE Open Calls are not eligible to participate again
- Proposals submitted by parties who did not complete the on-line survey are not eligible.

Evaluation and ranking will be carried out by an external jury, which is only judging this category of SME proposals. The intention is to keep the same jury over the different calls if possible. Selection will mainly be based upon:

Proposals for experiments have to demonstrate:

- 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 relevance (Section B of the Proposal Template)
This score should reflect the industrial relevance including the expected and projected impact on the SME through product development.
- Criteria III. Clarity and methodology (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. An appropriate scale and complexity of experiment in respect to its implementation and execution in the scope of Fed4FIRE and defined time frame (Section B of the Proposal Template)
Use of only a single testbed is acceptable, but multi-testbed experiments are preferred. No distinction is made between achieving this by running the same experiment in sequence on multiple testbeds (e.g. to evaluate different

⁴ http://cordis.europa.eu/fp7/participate_en.html

⁵ http://ec.europa.eu/enterprise/policies/sme/files/sme_definition/sme_user_guide_en.pdf

wireless environments), or by running a single experiment that relies on resources from different testbed 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 planned facility and tools utilization and potential feedback to the project on their usage (Section C of the Proposal Template). (Advanced) network-level experiments will get a higher score.

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 will use, the better. Ideally, an experiment will select and provision its resources through an SFA client such as the portal, jFed, omni or sfi; it will control its experiment using a FRCP client (currently OMF and NEPI are available); and it will collect the results using OML. 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 F 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.

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

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

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.

10. Timing of the experiments

The duration of the evaluation of the proposals and approval by the EU will be kept within 1 month.

In case of this specific Call, the target date for acknowledgement of selection is set at 13 April 2016.

11. Submission

**Submission deadline of draft proposal to
Fed4FIRE acting as Patron**

for feasibility check: 02 March 2016, at 17:00 Brussels local time

Submission deadline: 09 March 2016, at 17:00 Brussels local time

The proposal must be:

- Submitted on-line through: www.fed4fire.eu
- Submitted in English

Feasibility check

A technical feasibility check is required before submission. This feasibility check will be carried out by the Fed4FIRE members responsible for the facility/facilities involved. As a result of this, an additional concise section is added to the proposal (0 of the Proposal Template) and is provided in collaboration with the Fed4FIRE project consortium members. This section also identifies the patron of the experiment, who is the lead contact person within the project who will be responsible for the follow up of this experiment. (see paragraph 5 of this document).

12. Summary of call information

The particular task envisaged by this competitive SME call pertains to the execution of innovative experiments by SMEs that demonstrate technological expertise, novelty and quality in the area of Future Internet (e.g. in domains such as wired and wireless IP networks, cloud computing, software defined networks and innovative Internet services)

Call information:

- Project full name: Fed4FIRE: Federation for FIRE
- Project grant agreement number: 318389
- Call identifier: Fed4FIRE-SME-5
- Call title: Innovative Experiments by SMEs

The proposal must be:

- Targeting innovative and industrial relevant experiments
- Have a maximum duration of 4 months (including reporting period)
- Submitted on-line through: www.fed4fire.eu
- Submitted in English

The proposer:

- must be eligible for participation as SME in the EC FP7
- will be linked to the Fed4FIRE consortium as subcontractor.
- must not have been selected for funding already in previous Fed4FIRE Open Calls

Financial information:

- Max. funding request per experiment of € 15 000 (+€ 5 000 for Fed4FIRE partner acting as “patron”)
- Total available funding for this call: € 60 000 (+€ 20 000 for Fed4FIRE partners acting as “Patron”)

Submission deadline of draft proposal to Fed4FIRE acting as Patron

for feasibility check: **02 March 2016, at 17:00 Brussels local time**

Submission deadline: **09 March 2016, at 17:00 Brussels local time**

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

- Call announcement
- General Information and Requirements
- Description of technical work and tasks expected
- Guide for applicants
- Frequently asked questions

Contact:

- contact@fed4fire.eu

Annex A: Proposal Template

Green highlighted areas to be filled



Innovative Experiments by SMEs

Full title of the existing project you wish to join:	Fed4FIRE: Federation for FIRE
Acronym of the existing project:	Fed4FIRE
Grant agreement number of existing project:	318389
Type of instrument (Integrated project/Network of excellence):	Integrated project

Full title of your project
Acronym of your proposal (optional)

Date of preparation of your proposal: **xx/yy/2016**
Version number (optional):
Your organisation name: **Your organisation name**
Your organisation address: **Your organisation address**
Name of the coordinating person: **Name of the coordinating person**
Coordinator telephone number: **Coordinator telephone number**
Coordinator email: **Coordinator email**
(this will be the email address to which the Acknowledgement of Receipt will be sent)

Provide here the title of your proposal

Section A Project Summary

(Maximum 300 words – summary of your proposed work)

Remark: The information in this section may be used in public documents and reports by the Fed4FIRE consortium.

Section B Detailed Description and Expected Results (target length 3 to 6 pages)

This section describes 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. Suggested sections include:

B.1 Concept and objectives

Describe in detail the objectives of your proposed experiment. These objectives should be those achievable within your proposed action, not through subsequent development. Preferably they should be stated in a measurable and verifiable form.

B.2 Business impact

Describe how this experiment may impact your business and product development by indicating the way how this experiment fits in your activities.

Having close contacts with possible end-users during this experimental phase might be used to illustrate the business impact of your experiment.

B.3 Description of State-of-the-Art

Describe in detail how this experiment compares to the State-of-the-Art in the field covered by the experiment. Are there similar experiments, products, services,.. on the market? Is this experiment incremental to existing work?

B.4 Methodology and associated work plan

Provide a workplan which eventually can be broken down into work packages⁶ (WPs). Provide clear goals and verifiable results and also a clear timing.

⁶ A work package is a major sub-division of the proposed work with a verifiable end-point - normally a deliverable or a milestone in the overall action.

Section C Requested Fed4FIRE tools, testbeds and facilities (target length 1 page)

Please check the Fed4FIRE testbed or multiple testbeds which will be required for your experiment

Please use www.fedfire.eu to get details on the specific testbeds or contact@fed4fire.eu.

Wired testbeds		
	Virtual Wall (iMinds)	
	PlanetLab Europe (UPMC)	
	Ultra Access (UC3M, Stanford)	
	10G Trace tester	
	PL-LAB (PSNC)	

Wireless testbeds		
	Norbit (NICTA)	
	w-iLab.t (iMinds)	
	NITOS (UTH)	
	Netmode (NTUA)	
	SmartSantander (UC)	
	FuSeCo (FOKUS)	
	PerformLTE (UMA)	
	IRIS (TCD)	
	LOG-a-TEC (JSI)	
	C-Lab (UPC)	

OpenFlow testbeds		
	UBristol OFELIA island	
	i2CAT OFELIA island	
	Koren testbed (NIA)	
	NITOS testbed	

Cloud computing testbed		
	EPCC and Inria cloud sites, members of the BonFIRE multi-cloud testbed for services experimentation	
	iMinds Virtual Wall testbed for emulated networks in BonFIRE	
	Norbit Exogeni testbed (Nicta)	

Other		
	FIONA (Adele robots): creating virtual interaction robots	
	Tengu (iMinds): big data analysis framework	

Please provide here more information on why specific testbeds will be required for your experiment (max. ½ page)

Provide here the title of your proposal

Section D Compliance check (max. 1 page)

This section contains the feedback from the Fed4FIRE partner acting as patron on this experiment regarding the obligatory compliance check.

Each proposing party must contact the Fed4FIRE consortium regarding its submission to identify a possible Patron. This Patron will in most cases be the Fed4FIRE partner responsible for the Testbed the proposing SME will use during its experiment. The proposing party must submit its draft proposal to this Patron by 02 March 2016 The feedback by the Patron is copied into this section of the proposal.

It is advised you get as soon as possible in contact with the Fed4FIRE in charge of the testbeds you intend to use and discuss with him/her your proposal.

Section E Background and qualifications (target length 1-2 pages)

This section describes the proposing SME 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 Requested funding (1 page)

This section provides an overview of the budgeted costs and the requested funding. A split is made in personnel costs and other costs (travel, consumables,...).

Besides the table below, extra information can be provided to support the requested funding and which may help to judge the cost to the Fed4FIRE project.

Please show your figures in euros (not thousands of euros)

	Total PM	Cost
1. Personnel costs		
2. Other costs		
3. Total costs (Sum of row 1 and 2)		

In row 1, insert your personnel costs for the work involved.

In row 2, insert any other costs, for example equipment or travel costs.

In row 3, calculate the sum of your personnel and other costs.

The maximum funding which is allowed in this call is set at 15 000 euro per experiment.

Section H Survey & Use of proposal information

Proposals are treated in a confidential way, meaning that only successful proposals may be disclosed to the Fed4FIRE consortium. Open calls previously organized by other FIRE projects were very successful and have revealed that many submitted non-granted proposals also contain very interesting and valuable information that could be used for setting up collaborations or to extract ideas for further improving the federated test infrastructures. Therefore the project would like to have the opportunity to collect more detailed information and further use this information, also if the proposal is not selected for funding. In any case, the Fed4FIRE consortium will treat all information of this proposal confidentially. Three types of information usage are envisaged:

- Information which is part of the Sections A, C, D and F will be used within the Fed4FIRE project as input for tasks related to architectural optimizations, sustainability studies, etc. The same information can also be used in an anonymous way to create statistics and reports about this first open call. All proposals submitted to this competitive open call are obliged to allow this form of information access and usage.
- Other information belonging to this proposal might also be accessed by the Fed4FIRE consortium if allowed by the corresponding consortium. Any use of such information will be discussed and agreed upon with the proposers. Proposals have the freedom to select if they wish to support this kind of information usage.
- As part of the submission of your proposal, and in support of the Fed4FIRE-project itself, a survey needs to be completed (Section I). This survey consists of a list of specific requirements which you expect your experiment has for our federated testbeds. Please be informed that the survey has been set up in general terms and some of the questions may not apply to your experiment. This survey and its responses are intended for internal use within the Fed4FIRE-project and for the collection of information in view of the Fed4FIRE deliverables and reports. The survey and its responses will NOT be forwarded to the reviewing panel and will therefore have NO impact on the evaluation process. This survey is an integral part of your proposal and proposals submitted without completing the on-line survey will not be eligible.
The survey consists of a template available in Section I that needs to be completed.

The proposers are therefore asked to include the following statements below in their proposal and tick the corresponding boxes.

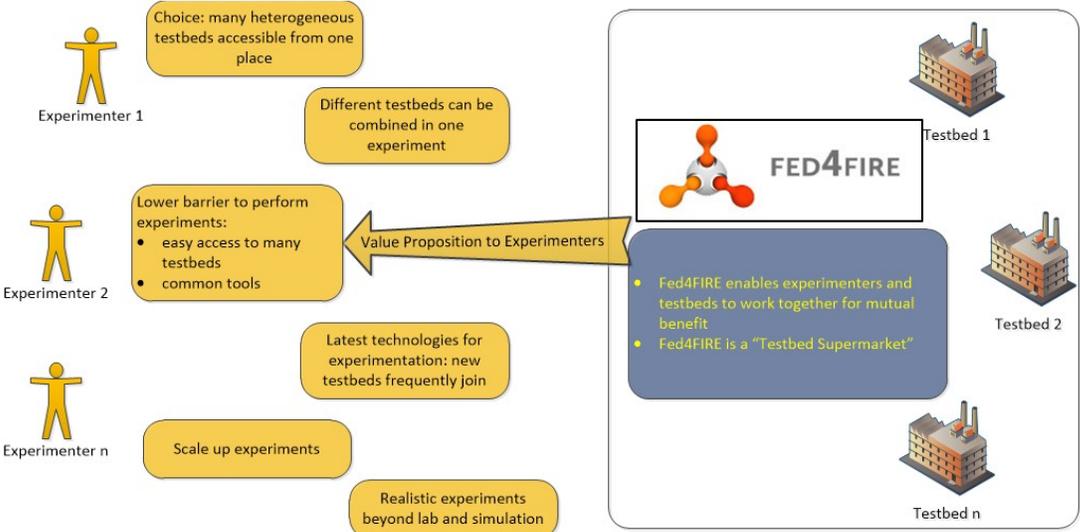
I allow that the material provided in Sections A, C, D and F of this proposal may be accessed by the Fed4FIRE consortium, also if the proposal is not selected for funding. In any case, the Fed4FIRE consortium will treat all this information confidentially. It will be used within the Fed4FIRE project as input for tasks related to architectural optimizations, sustainability studies, etc. The same information can also be used in an anonymous way to create statistics and reports about this first open call.	YES <input type="checkbox"/>	
Furthermore, I allow that the other parts of this proposal may be accessed by the Fed4FIRE consortium, also if the proposal is not selected for funding. In any case, the Fed4FIRE consortium will treat all information of this proposal confidentially. Any use of this information will be discussed and agreed upon with the proposers.	YES <input type="checkbox"/>	NO <input type="checkbox"/>

Section I Questions to experimenters

Part A – Sustainability

Fed4FIRE wants to become a sustainable federation. We are identifying the key factors for our success and we hope for your collaboration in helping us prioritise our next moves so that we can serve you better. The questionnaire included in this section is therefore designed in such a way that it can help us understand which aspects are more valuable to you.

The next picture shows some ideas of how we may bring a valuable service to you. Please take a moment to go through it before completing the following survey.



In the survey table below, we would like to assess which aspects of the federation are perceived as most valuable by our experimenters. The Value column should be filled in as follows:

X = no opinion or not applicable to your experiment/ environment

1=not valuable 2=nice side-effect 3=important value 4=Very important value

<i>Thanks to Fed4FIRE, I ...</i>	Value (X or 1..4)	Comments
... have access to a large and ideal set of different technologies (sensors, computing, network, etc.), provided by a large amount of testbeds. This way I can experiment with edge technology in all current research trends.		
... have access to resources that otherwise would not be affordable.		
... have access to testbeds that are geographically distributed.		
... the user experience is that I only have to deal with a single service provider (i.e. single point of contact and service) instead of dealing with each testbed on my own. This relates to many aspects of experimentation such as authentication, learning about available resources, reserving those resources, controlling them during the experiment, getting the results out of your experiment, hiring training services, getting support, etc.		
... can experiment using a small set of common well-documented experimenter tools. This brings me several benefits: simplicity (since those tools can hide many of the testbeds' complexities), a single federated interface, a uniform input/output from different systems, and allows me to use a single user account while experimenting with resources over all these different testbeds. All these benefits result in a lower entry barrier, allowing me to experiment quickly, without investing much effort in learning how to work with a plethora of different tools for the different testbeds.		
... can reduce the effort required to experiment and hence to take my product to the market (since the federation provides me easy access to the resources at the different testbeds, and user-friendly experimenter tools as described above).		

<i>Thanks to Fed4FIRE, I ...</i>	Value (X or 1..4)	Comments
... have access to a wider experimenters community. This leads to a greater impact of results, shared dissemination and the possibility to share experience and knowledge with other experimenters.		
... acquire new competences to, e.g., optimize my solutions. This way I can increase my own technical scope and competitiveness.		
... have a trustworthy environment for my experiments: my data is protected and the privacy of me and my experiment is guaranteed.		
... can experiment in a controlled environment where experiments are repeatable. This allows the thorough execution of performance assessments and allows easy comparison of results.		
... feel that I pick what I need beyond my initial ideas because of the greater choice in facilities and resources, which leads to greater inspiration (supermarket effect).		
... can experiment in a unique environment for experimentation that goes beyond the lab environment and enables real world implementation.		
... have the support I need to successfully complete my experiment: the federation provides a federation-wide First Level Support Service (hotline), and I can get in touch with the experts of every testbed using the same mechanism.		
... have service level guarantees concerning the facilities used in my experiment (availability during my experiment, incident solving time,...)		

The above table concerns characteristics of the federation that we already identified as potentially being of value to our experimenters. In those cases it is sufficient to gather feedback about how valuable they are in reality for our experimenters. However, regarding some other aspects there is more indistinctness within the project. Therefore the second part of this sustainability section of this experimenter survey adopts the format of open questions. **Hence we would like to ask you to answer the following questions.**

1. Why do you want to join the open call? Is this mainly to receive funding for doing your research about a specific topic that is on your roadmap today? Is this because you want to get some experience with Fed4FIRE resources to be able to use them again in the future for other topics? Do you have other reasons?

<Please type your answer here>

2. Would you propose an experiment without the funded open call? In other words, would you also be interested in experimenting on Fed4FIRE in an unfunded open access scheme? Why (not)?

<Please type your answer here>

3. The federation provides several measures to lower the barrier for an experimenter as much as possible: you can experiment with all the offered resources using the same small set of common tools, detailed documentation is provided, you only need a single user account to experiment on all testbeds, there is a First Level Support service, etc. **Which of these things should the federation at least offer to allow experimentation without funding?** Are there any other items that the federation should provide to make it feasible to experiment on our facilities without receiving any funding for doing so?

<Please type your answer here>

4. Currently we support the experimenters with a First Level Support service (hotline) operated by the same people that operate the NOC of the Géant network. Next to that we provide an active community forum where experimenters can easily get in contact with experts of all the Fed4FIRE testbeds for advanced online support. **Are there any other kinds of support that you would expect from the federation, which is not available today?** For instance should the federation provide some kind of consultancy service that can guide you through every step of the process of transforming your idea into an actual successful experiment? Would you be willing to pay for that consultancy service (e.g. instead of paying for the usage of the resources). Can you think of any other additional support that we could offer?

<Please type your answer here>

Part B – Requirements

The goal of this part of the survey is to get a feeling of the requirements that your experiment imposes on the Fed4FIRE federation of testbeds. For the listed requirements we are mainly trying to prioritize requirements that are already on our radar, based on what our potential experimenters really need. Next to those requirements, we are very keen to receive any new requirement that you can think of that also needs to be fulfilled when supporting your experiment. For this we have created the possibility to add as many new requirements as you see fit.

The questions of this part of the survey are presented in different tables, clustered around the different steps that an experimenter has to go through when running an actual experiment. In every of those tables, the Priority column should be filled in as follows:

X = no opinion or not applicable to your experiment/ environment
1=not required 2=nice to have 3=important 4=must have

I.1 Requirements related to resource discovery

The requirements listed in this table are all related to the very first thing that an experimenter does: learning about the different testbeds, and about which specific resources that they can offer.

	When discovering the different resources that Fed4FIRE can offer me for my experiment, I require ...	Priority (X or 1-4):	Comments and further details
1-1	That I can browse some kind of resource catalogue to look for appropriate resources on a high level. Such a catalogue is limited to information such as: testbed X is a testbed for WiFi experiments in an office environment, testbed Y is a testbed for testing cloud applications, etc.		
1-2	That Fed4FIRE provides a detailed view on what node capabilities are available on every testbed of the federation (e.g. mentioning information for every resource of a testbed regarding CPU speed, RAM, supported 802.11 technology, optical networking interfaces, etc).		
1-3	That the above view on node capabilities is the same across the different testbeds of the federation. This means that when describing the characteristics of resources, all testbeds should adopt the same units (e.g. represent RAM always in MB, and not sometimes in MB and sometimes in GB) and use the same parameter names for aspects that mean the same (e.g. always talk about “RAM”, and not “RAM” on some testbeds, “working memory” on some		

	others and just “memory” on a third group of testbeds).		
1-4	That next to browsing through information about what is available, that I can actively search for the existence of resources with certain characteristics by defining a specific query (e.g. something that is similar to an SQL query, e.g. select resources from all testbeds where RAM >= 8 GB)		
1-5	That I know the location of the site where resources are located. Per site, this location information can be exactly the same for all resources.		
1-6	That for nodes that have static network connections to other nodes in the same testbed, that it should be possible to identify the corresponding physical topology. In the wired domain this means that you can know how the nodes are connected to each other. For wireless resources this means that you know which resources are in transmission range of each other.		
1-7	That I have accurate location information about the actual resources that I will use (1 m accuracy), typically important for wireless nodes.		
1-8	For virtual resources, that I know their physical host and the actual location.		
1-9	That I can assess which testbeds/resources are more reliable than others (both in terms of provided hardware, software, and wireless interference, possibly based on historical health information about the resources and their environment)		
1-10	<i>If you have any additional requirements regarding resource discovery, please insert them here. Create as many new rows in this table as needed.</i>		
1-11			
1-12			
1-13			

I.2 Requirements related to resource selection and reservation

Once an experimenter has learned which resources are available at every testbed, he/she can then design its experiment appropriately. When setting up the corresponding experiment, the first thing that needs to be done is selecting resources to be included in the experiment, and reserving them for the experiment for a certain moment in time.

	When selecting and reserving resources that I want to include in my Fed4FIRE experiment, I require ...	Priority (X or 1-4):	Comments and further details
2-1	That when browsing through the resource descriptions, that I can manually select every node that should be added to my experiment. Think of an experience similar to online shopping and putting resources in your shopping cart.		
2-2	That I can select suitable resources for inclusion in my experiment by defining a specific query (e.g. something that is similar to an SQL query, e.g. select all resources from Virtual Wall where nr_ethernet_cards >= 6)		
2-3	That I can temporarily install my own equipment at a Fed4FIRE testbed for testing, and select it to be included in my experiment.		
2-4	That the mechanism for registering my own equipment at a testbed is standardized, allowing me to register that equipment at different testbeds in exactly the same manner.		
2-5	That I can reserve resources. It is OK for me that they are shared with others (soft reservation, e.g. requesting a virtual machine that will be deployed on a physical server that is used by other experiments also), as long as I know that I will also have guaranteed access to them.		
2-6	That I can reserve resources. They have to be exclusively assigned to me (hard reservation, e.g. reserving a virtual machine that will be deployed on a physical machine that is dedicated to your experiment only)		
2-7	That next to adding resources to my experiment right now (instant reservation), that I can also define a reservation for any moment in the future (future reservation, e.g. tomorrow from 9AM-5PM).		
2-8	That situations are avoided where a have to wait days or weeks before being able to use the testbed because of long reservations of others.		

2-9	That I can reserve nodes exclusively for myself for a longer period (days or weeks)		
2-10	That a reservation is approved or rejected quickly (within a few minutes).		
2-11	That I can easily reserve resources across multiple testbeds using the same common tools. These should also be as user-friendly as possible, abstracting the complexity of the underlying infrastructures for me as much as possible. This way I can focus on the experiment design itself instead of learning how to work with numerous testbed-specific tools.		
2-12	That when reserving resources across multiple testbeds, that there is guidance in finding the first appropriate time when all the resources that I want across the testbeds would all be available.		
2-13	That I can use a single Fed4FIRE account to select and reserve resources at all different testbeds of the federation. So even when using one common tool for reservation at the different testbeds, I don't want to remember a different username/password combination for every testbeds, and I also don't want to register again at every testbed that I want to use. Of course, registering for that one Fed4FIRE account should also be straightforward.		
2-14	That if testbeds decide to assign me a certain reservation quota (e.g. based on my profile such as student, post-doc, professor, paying customer, etc), that I can request a temporary increase of my quota if really need it (e.g. before a paper deadline)		
2-15	That the testbeds and/or the federation guarantee a certain Service Level to me regarding the execution of my experiment (availability of resources, reliability of resources (uptime/downtime), responsiveness of support services, privacy guarantees, etc).		
2-16	That I can dynamically scale my resources up and down according that what my experiment needs during its execution. For instance if a server deployed on a VM gets overloaded, I should be able to assign more resource (RAM, CPU cores, etc.) to that running VM, and/or should be able to add a second VM to my running experiment on which I deploy a second instance of that server.		

2-17	That if I reserved a number of resources at a testbed, that I can divide them over different independent experiments that I am doing at the same time. It should be possible to easily address/group the resources from one experiment.		
2-18	<i>If you have any additional requirements regarding resource selection and reservation, please insert them here. Create as many new rows in this table as needed.</i>		
2-19			
2-20			
2-21			
2-22			

I.3 Requirements related to using the resources (deployment and basic usage)

Once an experimenter has added the resources to the experiment, the next step is the deployment of those resources for that experiment, and basic usage of the resources. This section tries to capture the corresponding requirements.

	When using the resources that I included in my Fed4FIRE experiment, I require ...	Priority (X or 1-4):	Comments and further details
3-1	That I can SSH to my nodes.		
3-2	That I have root access to my nodes. This allows me to perform any action on the nodes that I want (install new applications, device drivers, load additional kernel modules, etc).		
3-3	That I can use a single public/private SSH key pair to access my resources on all the different testbeds		
3-4	That I can choose to have Windows installed on my nodes		
3-5	That I can choose to have a specific Linux distribution on my nodes (e.g. latest Ubuntu LTS release)		
3-6	That I can choose to use a custom Linux kernel on my nodes (e.g. with my own performance upgrade patches to the kernel)		
3-7	That my nodes can download and install software from the Internet (e.g. using a package manager)		
3-8	That I can take a binary image of the hard drive of my nodes, and that I can store these for later re-use (so flashing the image back later on)		
3-9	That I can define what a node should automatically do at startup (bootstrap scripts)		
3-10	That during the deployment of my resources over different facilities, that my initial data sets can be automatically loaded to all these resources.		
3-11	That I can allow other people of my work team that are involved in the experiment to use the resources that I have reserved and deployed. I should be able to specify which resources should be shared, and which not.		

3-12	<p>That I can easily use my resources across multiple testbeds using the same common tools. These should be as user-friendly as possible, abstracting the complexity of the underlying infrastructures for me as much as possible. This way I can focus on the experiment itself instead of learning how to work with numerous testbed-specific tools.</p>		<p>Any input regarding which aspects of an experiment the tool should take care of for you are very welcome here (configuring a network node with a specific profile, etc).</p>
3-13	<p><i>If you have any additional requirements regarding resource usage, please insert them here. Create as many new rows in this table as needed.</i></p>		
3-14			
3-15			
3-16			

I.4 Requirements related to orchestrated control of the experiment

In the previous step resources were deployed, and the experiment can manually log in on them and control what they should do. However, when aiming to perform more advanced scenarios, where many resources are included and all of them should be triggered to perform certain task at the appropriate time, more orchestrated experiment control is needed. The corresponding requirements are captured in this section.

	When controlling the execution of my experiment in an orchestrated manner, I require ...	Priority (X or 1-4):	Comments and further details
4-1	That I can define the behaviour over time of a distributed experiment in a single script, which can be started automatically at any desired moment, and will be automatically translated to the corresponding triggers at the nodes at the appropriate time. So e.g. describing in a single script that the 5 client nodes in an experiment should gradually increase their load on the server that they are testing in the experiment. This will be done automatically, without the experimenter login in to these 5 nodes and gradually increasing this load manually.		
4-2	That I can define the behaviour of a distributed experiment in a single script, based on events (e.g. value above threshold). This can be started automatically at any desired moment, and will be automatically translated to the corresponding triggers at the nodes at the appropriate moment. So e.g. describing in a single script that a server should scale up to a VM with more CPU power and RAM when the load of the clients on the server becomes higher than a certain threshold.		
4-3	That the description of the above orchestration is described in a human-readable way. This description should also be uniform across the different testbeds.		
4-4	That the above description of the orchestrated control of the experiment can also include other aspects that will be performed automatically. This includes selection, reservation and deployment of resources; monitoring of the resources and collection of measurement data during the experiment.		
4-5	<i>If you have any additional requirements regarding orchestrated experiment control, please insert them here. Create as many new rows in this table as needed.</i>		
4-6			
4-7			
4-8			

I.5 Requirements related to the results of the experiment (monitoring and measuring data)

The motivation for every experiment is to learn something. For this it is needed that the appropriate monitoring data and experiment measurements are captured. This section grasps the corresponding requirements.

	When capturing the results of my experiment (monitoring and measuring data), I require ...	Priority (X or 1-4):	Comments and further details
5-1	That the internal clocks of resources across multiple testbeds are synchronized very accurately		
5-2	That Fed4FIRE makes it easy for me to retrieve and store data that I measured during the runtime of the experiment. This means that it should be easy to store my measurement somewhere in a way that the data is clearly related to the experiment ID, but without needing to establish connections to certain databases manually from within my code, and without needing to know the specific experiment ID that belongs to my current experiment.		
5-3	That by default some common characteristics of my resources are stored automatically for later analyses during experiment runtime (CPU load, free RAM, Tx errors, etc).		
5-4	That for the above monitoring, that I can select and configure how this data should be collected (always at a specified interval, only after a certain event or alarm, define some specific filters, etc).		
5-5	That I can request the monitoring solutions to provide me specific additional on-demand measurements of node characteristics to ease experiment development and debugging		
5-6	That information about external wireless interference during the execution of my experiment is automatically provided for me.		
5-7	That the overall health status of the different testbeds (testbed up or down, has free resources left, etc.) is continuously monitored by the federation, and that in case of issues I am informed of this.		
5-8	That the overall health status of the different testbeds (testbed up or down, has free resources left, etc.) is continuously monitored by the federation, and that in case of issues the corresponding testbeds try to solve them asap.		

5-9	That other aspects related to the successful execution of my experiment are continuously monitored, and that I am automatically informed in case of any errors. Examples are: when a selected resource could not be instantiated, when there is a problem with the interconnectivity between the used testbeds, when a used testbed goes down during the experiment, when there is a sudden peak of wireless interference, etc. This might be important when analysing anomalies in the experiment results.		
5-10	That when an error requiring manual intervention is reported to me as part of the previous step, that I am guided through the process for recovery.		
5-11	That the overhead of any monitoring and measurement tool is minimal. These tools should have a negligible impact on the results of my experiment.		
5-12	That I can store and access my experiment monitoring data and other measurements on a data service on the federation, which is accessible during the experiment (temporarily data storage by the federation)		
5-13	That I can store and access my experiment monitoring data and other measurements on a data service on the federation, which is also accessible after the experiment (archiving of historical data by the federation)		
5-14	That access to my stored data is properly secured. Experiments must be kept confidential if required, the privacy of experiments, data sets and results should be guaranteed.		
5-15	That I can store experiment configurations in order to repeat experiments and compare results of different runs		
5-16	That I can share my stored data with specific others (individuals and/or groups), or even make them publically available		
5-17	That I am made aware if my storage capacity is running out.		
5-18	<i>If you have any additional requirements regarding monitoring and measuring data, please insert them here. Create as many new rows in this table as needed.</i>		
5-19			
5-20			
5-21			

1.6 Requirements related to the interconnectivity of the different testbeds

Fed4FIRE facilities are intended to allow experimentation with Future Internet techniques. And because Fed4FIRE is a federation of testbeds that enables experiments that included resources from different testbeds, the interconnectivity between the different testbeds is very important. This section enumerates the corresponding requirements.

	When focusing on the connectivity of the resources that will be included in my Fed4FIRE experiment, I require ...	Priority (X or 1-4):	Comments and further details
6-1	That resources at different testbeds are interconnected on layer 3 (IP)		
6-2	That resources at different testbeds are interconnected on layer 2, or that such a layer 2 connection can be automatically created for me (in a way that all the underlying technical details are abstracted for me)		
6-3	That I can know the type of interconnections that are available between the testbeds (layer 2 and/or layer 3, NAT or VPN included, dedicated direct link, connected through Géant with or without bandwidth reservation, connected over the public Internet, ...)		
6-4	That I can configure a specific bandwidth on the interconnections between the different testbeds used in my experiment. As long as the links behave as configured, I don't really care what the testbed has to do behind the curtains to implement this (reserve guaranteed bandwidth in case of limited capacity on the interconnecting link, or limit the bandwidth in case of a high capacity on that same link).		
6-5	That my resources are directly reachable, without any network address translation (NAT) or virtual private network (VPN) in between. So actually I require that all resources have a public IPv4 or IPv6 address.		
6-6	That if an issue arises with the interconnection between my used testbeds, that I am automatically informed about this.		
6-7	<i>If you have any additional requirements regarding monitoring and measuring data, please insert them here. Create as many new rows in this table as needed.</i>		
6-8			
6-9			
6-10			

Annex B: Report Template (to be submitted at the end of the experiment)



Fed4FIRE Experiment Report

Full title of your project
Acronym of your proposal (optional)

Date of preparation of your proposal:

xx/yy/2015

Version number (*optional*):

Your organisation name:

Your organisation name

Your organisation address:

Your organisation address

Name of the coordinating person:

Name of the coordinating person

Coordinator telephone number:

Coordinator telephone number

Coordinator email:

Coordinator email

(this will be the email address to which the Acknowledgement of Receipt will be sent)

Section A Project Summary

This section provides an executive summary of the experiment objectives, implementation and main results. Remark: The information in this section will be used in public documents and reports by the Fed4FIRE consortium. The length of this section is restricted to 1 page.

Section 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.

B.1 Concept, Objectives, Set-up and Background

There is no page limit for this section as you are invited to describe the concept, objectives and setup in as much detail as you wish to do. Please also include graphs and figures were needed.

B.1.1 Concept & objectives

Describe in detail the concept and objectives of your experiment.

B.1.2 Set-up of the experiment

Describe in detail the set-up of your experiment. What was the technical design of the experiment? Please include a general overview figure to explain the set-up.

B.1.3 Background / Motivation

Situate this experiment in your business or research activity. Why did you want to execute this experiment? How did this experiment fit within the strategy of your company / institution?

B.2 Technical Results & Lessons learned

Describe in detail the technical results of your experiment and the lessons learned.

There is no page limit for this section as you are invited to describe the concept, objectives and setup in as much detail as you wish to do. Please also include graphs and figures were needed.

B.3 Business impact

Describe in detail how this experiment may impact your business and product development.

B.3.1 Value perceived

*What is the value you have perceived from this experiment (return on investment)?
E.g. gained knowledge; acquired new competences; practical implementation solutions such as scalability, reliability, interoperability; new ideas for experiments/products; etc.*

What was the direct or indirect value for your company / institution? What is the time frame this value could be incorporated within your current product(s) range or technical solution? Could you apply your results also to other scenarios, products, industries?

If no federation of testbed infrastructure would be available, how would this have affected your product / solution? What would have been the value of your product / solution if the experiment was not executed within Fed4FIRE? What problems could have occurred?

Are there any follow-up activities planned by your company/institution? New projects or funding thanks to this experiment? Do you intend to use Fed4FIRE facilities again in the future?

B.3.2 Funding

Was the allocated budget related to the experiment to be conducted high enough (to execute the experiment, in relation to the value perceived, etc.)?

Did you receive other funding for executing this experiment besides the money from the Fed4FIRE open call (e.g. internal, national, ...)?

Would you (have) execute(d) the experiment without receiving any external funding?

Would you even consider to pay for running such an experiment? If so, what do you see as most valuable component(s) to pay for (resources, support, ...)?

Section C 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.

C.1 Resources & tools used

C.1.1 Resources

Describe the testbeds you have been using and specify the resources used.

<i>Infrastructures</i>	<i>Used?</i>	<i>Specify the type and amount of the resources used</i>
Wired testbeds		
• Virtual Wall (iMinds)		
• PlanetLab Europe (UPMC)		
• Ultra Access (UC3M, Stanford)		
Wireless testbeds		
• Norbit (NICTA)		
• w-iLab.t (iMinds)		
• NITOS (UTH)		
• Netmode (NTUA)		
• SmartSantander (UC)		
• FuSeCo (FOKUS)		
• PerformLTE (UMA)		
OpenFlow testbeds		
• UBristol OFELIA island		
• i2CAT OFELIA island		
• Koren testbed (NIA)		
• NITOS testbed		
Cloud computing testbed		
• EPCC and Inria cloud sites (members of the BonFIRE multi-cloud testbed for services experimentation)		
• iMinds Virtual Wall testbed for emulated networks in BonFIRE		
Community testbeds		
• C-Lab (UPC)		

Did you make use of all requested testbed infrastructure resources, as specified in your open call proposal? If not, please explain.

What was the ratio between time reserved vs time actually used for each resource? Why does it differ that much (e.g. for interference reasons, other)?

C.1.2 Tools

Describe in detail the tools you have been using, resources used, how many nodes, ...

<i>Tools</i>	<i>Used?</i>	<i>Please indicate your experience with the tools. What were the positive aspects? What didn't work?</i>
Fed4FIRE portal		
JFed		
Omni		
SFI		
BonFIRE portal		
BonFIRE API		
Ofelia portal		
OMF		
NEPI		
JFed timeline		
OML		
<i>Please list below other tools used</i>		

C.2 Feedback based on design/set-up/running your experiment on Fed4FIRE

Describe in detail your experiences concerning the procedure and administration, set-up, Fed4FIRE portfolio, documentation and support, experimentation environment, and experimentation execution and results. This feedback will help us for future improvement.

C.2.1 Procedure / Administration

How do you rate the level of work for administration / feedback / writing documents / attending conference calls or meetings compared to the timeframe of the experiment?

C.2.2 Setup of the experiment

How much effort was required to set up and run the experiment for the first time? Did you need to install additional components before you were able to execute the experiment (e.g. install hardware / software components)?

How do you rate the experience as user that you only had to deal with a single service provider (i.e. single point of contact and service) instead of dealing with each testbed itself?

C.2.3 Fed4FIRE portfolio

Was the current portfolio of testbeds provided by the federation, with access to a large set of different technologies (sensors, computing, network, etc.) provided by a large amount of testbeds, sufficient to run your experiment?

Was the technical offering in line with the expectations? What were the positive and negative aspects? Which requirements could not be fulfilled?

Could you easily access the requested testbed infrastructures?

Could you make use of all requested resources at the different testbeds as was proposed in the description of the experiment? If not, how many times did this fail? What were the main reasons it failed (e.g. timing constraints, technical failures, etc.)?

Did you use a lot the combination of resources over different testbeds? Did it all work out nicely? Were they interoperable?

C.2.4 Documentation and support

Was the documentation provided helpful for setting up and running the experiment? Was it complete? What was missing? What could be updated/extended?

Did you make use of the first level support dashboard?

Did you contact the individual testbeds for dedicated technical questions?

C.2.5 Experiment environment

Was the environment trustworthy enough for your experiments (in terms of data protection, privacy guarantees of yourself and your experiment)?

Did you have enough control of the environment to repeat the experiment in an easy manner?

Did you experience that the Fed4FIRE environment is unique for experimentation and goes beyond the lab environment and enables real world implementation?

Did you share your experiment and/or results with a wider community of experimenters (e.g. for greater impact of results, shared dissemination, possibility to share experience and knowledge with other experimenters)? If not, would you consider this in the future?

C.2.6 Experiment execution and results

Did you have enough time to conduct the experiment?

Were the results below / in line with / exceeding your initial goals and expectations?

What were the hurdles / bottlenecks? What could not be executed? Was this due to technical limits? Would the federation or the individual testbeds be able to help you solving this problem in the future?

C.2.7 Other feedback

If you have other feedback or comments not discussed before related to the design, set-up and execution of your experiment, please note them below.

C.3 Why Fed4FIRE was useful to you

Describe why you chose Fed4FIRE for your experiment, which components were perceived as most valuable for the federation, and your opinion what your would liked to have had, what should be changed or was missing.

C.3.1 Execution of the experiment

Why did you choose Fed4FIRE for your experiment? Was it the availability of budget, easy procedure, possibility to combine different (geographically spread) facilities, access to resources that otherwise would not be affordable, availability of tools, etc.? Please specify in detail.

Could you have conducted the experiment at a commercially available testbed infrastructure?

C.3.2 Added value of Fed4FIRE

Which components did you see as highly valuable for the federation (e.g. combining infrastructures, diversity of available resources, tools offered, support and documentation, easy setup of experiments, etc.)? Please rank them in order of importance.

Which of these tools and components should the federation at least offer to allow experimentation without funding?

C.3.3 What is missing from your perspective?

What would you have liked to have had within Fed4FIRE (tools, APIs, scripts, ...)? Which tools and procedures should be adapted? What functionality did you really miss?

Which (types of) testbed infrastructures (and resources) would have been very valuable for you as experimenter within the Fed4FIRE consortium?

Is there any other kind of support that you would expect from the federation, which is not available today e.g. some kind of consultancy service that can guide you through every step of the process of transforming your idea into an actual successful experiment and eventually helping you to understand the obtained results?

C.3.4 Other feedback

If you have further feedback or comments not discussed before how Fed4FIRE was useful to you, please note them below.

C.3.5 Quote

We would also like to have a quote we could use for further dissemination activities. Please complete the following sentence.

Thanks to the experiment I conducted within Fed4FIRE ...