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D5.1: First report on implementation of the Open Calls

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Abstract	This deliverable summarizes activities of the Fed4FIRE+ projects and its Work Package 5 (WP5) related to implementation of the competitive Open Calls during the period January 2017 – June 2018. In order to implement the planned Open Calls, the Fed4FIRE+ project established all necessary processes for their implementation; call definition, promotion, templates, submission, and evaluation. During the period, the Fed4FIRE+ project organized four competitive Open Calls for innovative experiments. The document also summarizers the feedback from both the experimenters as well as the testbed owners on the experiments carried out.
Keywords	Open Calls, Submission and Evaluation process, 3rd parties interaction

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Nature of the deliverable:		**R**
Dissemination Level		
PU	Public, fully open, e.g. web	✓
CL	Classified, information as referred to in Commission Decision 2001/844/EC	
CO	Confidential to FED4FIRE+ project and Commission Services	

** R: Document, report (excluding the periodic and final reports)*

DEM: Demonstrator, pilot, prototype, plan designs

DEC: Websites, patents filing, press & media actions, videos, etc.

OTHER: Software, technical diagram, etc.

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EXECUTIVE SUMMARY

This deliverable summarizes activities of the Fed4FIRE+ projects and its Work Package 5 (WP5) related to implementation of the competitive Open Calls (OCs) during the period January 2017 – June 2018. The overall WP5 goal is to prepare and implement the Open Calls and to establish and follow-up formal agreements and reporting with the successful third parties – accepted after the Open Call evaluations.

Following the 1st Periodic Review, this document has been updated with a summary of the feedback obtained from the experimenters as well as the information from the testbeds on how they have dealt with the experiments and their feedback. The individual reports from the experiments are available but not attached to this document in view of the size of these reports. The individual responses from the testbeds on how they have evaluated the experiment and dealt with the feedback are however attached as annex. Figure 1 provides already a short glimpse of how the testbeds have felt the impact of the Open Call experiments.

	Fed4FIRE+ improved the visibility of my Testbed	Fed4FIRE+ made me improve my Testbed on technical performances	Fed4FIRE+ made me improve my Testbed on "user-friendliness"	Fed4FIRE+ brought new players to my Tested	Fed4FIRE+ learned me how to operate my Testbed in a better way	Fed4FIRE+ provided me access to new tools / software to improve my Testbed	Other (Please Specify)	Responses
All Data	13 (81%)	11 (69%)	6 (38%)	11 (69%)	6 (38%)	9 (56%)	0 (0%)	16

Figure 1: Impact of Fed4FIRE+ on the testbeds

The main purposes of the performed Fed4FIRE+ Open Calls are to enable external experiments using Fed4FIRE+ facilities and gather feedback from experimenters on usage of the Fed4FIRE+ facilities and achieve concrete results from the performed experimentation. The Open Calls are organized for various types of experiments: Extra small, Small, Medium, and Large. One of the organized Open Calls was dedicated to SME experimenters.

In order to implement the planned Open Calls, the Fed4FIRE+ project established all necessary processes for their implementation; call definition, promotion, templates, submission, and evaluation. By applying the Open Call process, the Fed4FIRE+ project organized four competitive Open Calls for innovative experiments:

- 1st OC – 43 proposals received, 12 accepted, success ratio of 28%; for small experiments 33.33%, for large experiments 15%.
- 2nd OC (two-stage process for SMEs) – 11 proposals received, 10 were accepted in Stage 1 and 6 accepted after the second stage (success ratio after Stage 2 is 54%).
- 3rd OC – 34 proposals received, 8 proposals accepted, success ratio of 24%; for medium experiments 21%, for large experiments 30%.
- 4th OC has been launched and the submission process is ongoing.

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Altogether, 88 proposals have been received through the 1st, 2nd, and 3rd Open Calls and 26 of them were accepted. Figure 2 presents number of submitted (left) and accepted (right) proposals from different proposers' categories.

Thus, the corresponding average overall acceptance of the proposals in the three Open Calls rate is 30%, where proposers from Industry and SMEs achieved better results than the proposers from Academia and Research institutions (Figure 3).

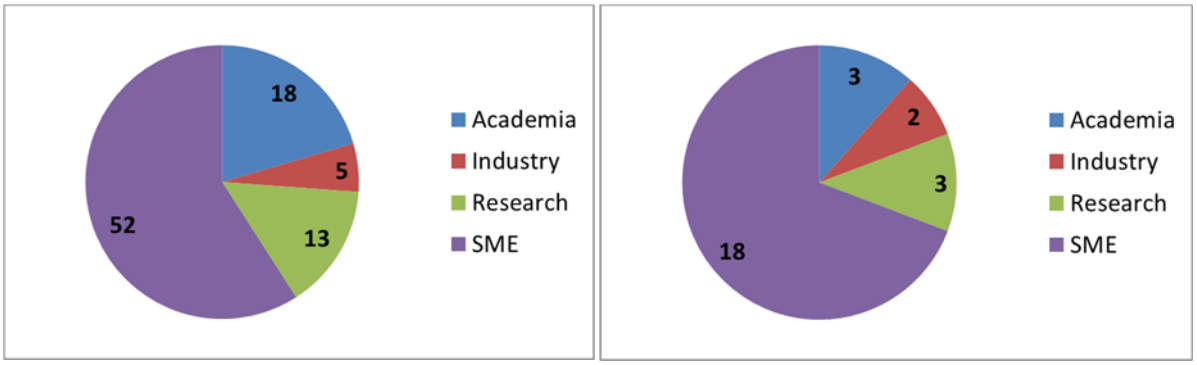

Figure 2: Total number of received (left) / accepted (right) proposals per category

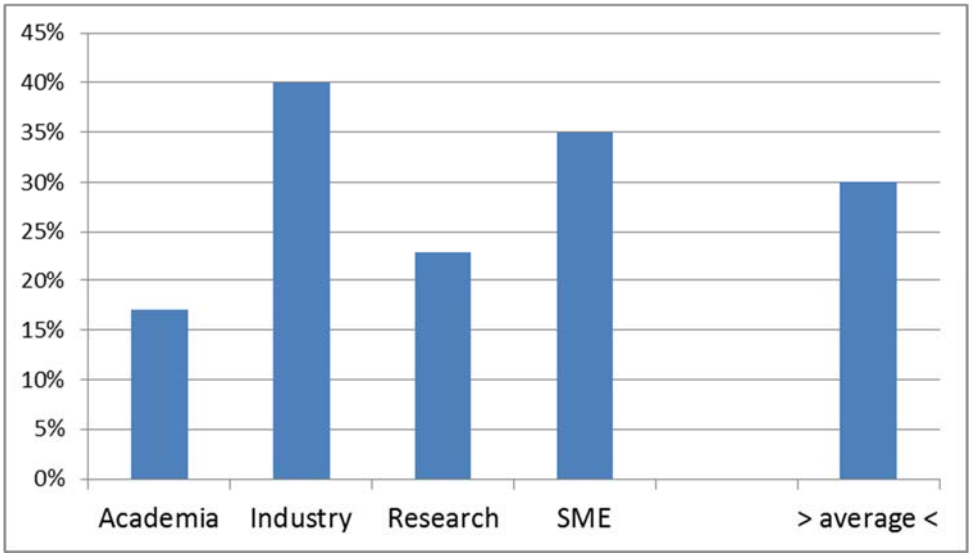

Figure 3: Overall success rates

The geographical spread of the proposals (Figure 4) and of the accepted experimenters (Figure 5) is shown below. From this graph, it is clear that submissions of proposals (and consequently also the accepted experiments) are concentrated in the countries covered by the Fed4FIRE+ project partners, but clearly also new players from new countries are appearing, as was also the case in Fed4FIRE. The current geographical spread of the proposals received is larger than was the case in Fed4FIRE. The fact that larger countries (Germany, France, UK, etc.) are less represented (no participation in Fed4FIRE previously) has been questioned already many times also during the Fed4FIRE-project and is, to our

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opinion related to the fact that in these countries other funding opportunities exist for running experiments on testbeds.

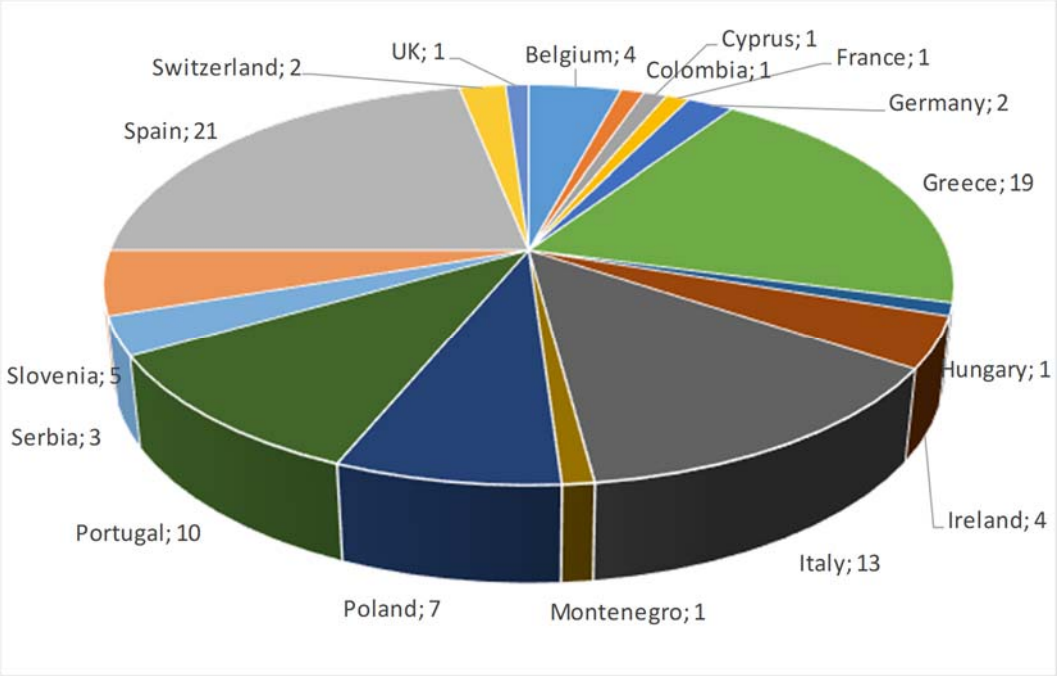

Figure 4: Geographical spreading of proposals submitted to Fed4FIRE+ Open Calls

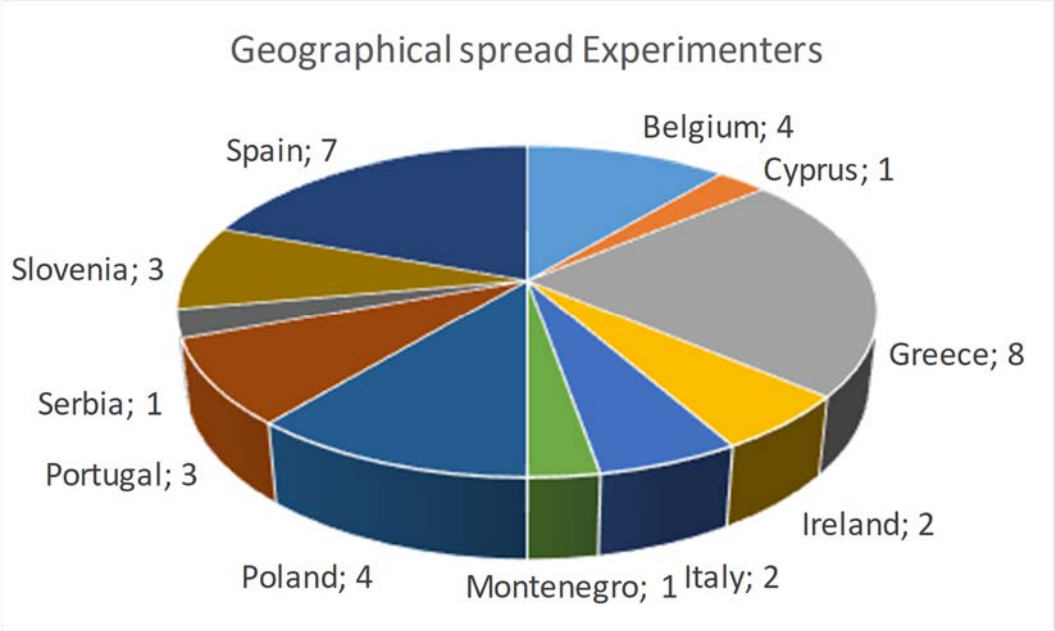

Figure 5: Geographical spreading of the accepted Fed4FIRE+ proposals

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Fed4FIRE+ is a federation of testbeds and from Figure 6 it is clear that after these 3 Open Calls, nearly all testbeds have already been involved in one or more experiments. This is clearly a sign that the Federation as such, also from the point of view of heterogeneity is fulfilling a need.

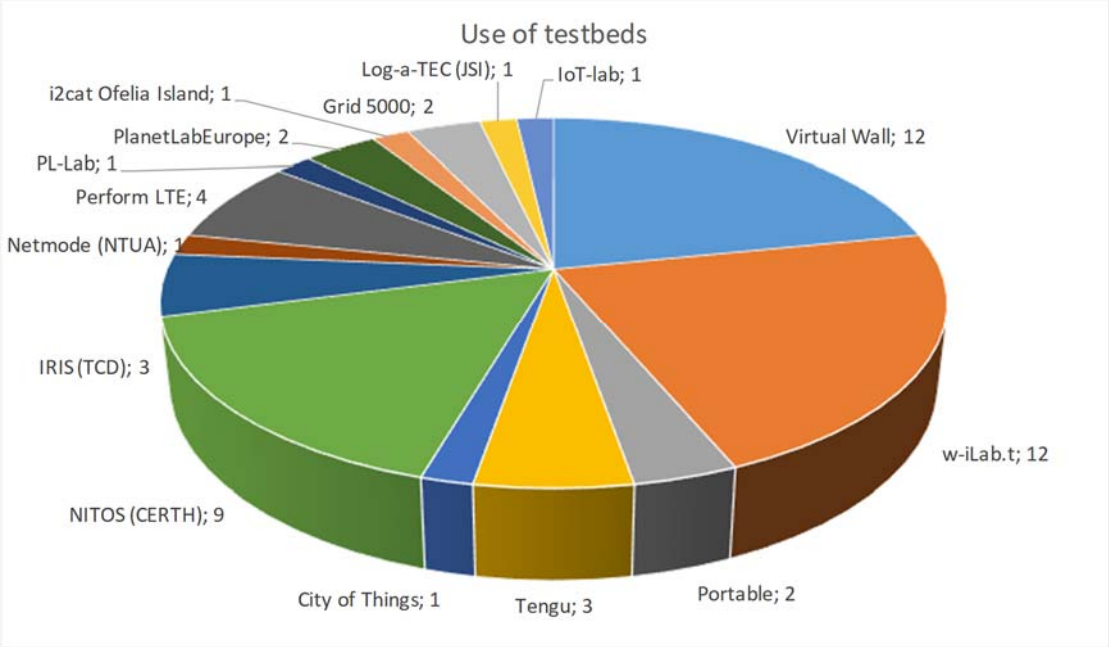

Figure 6: Number of Experiments from Open Calls running or completed on Fed4FIRE+ Testbeds

Within the planning activities on the Open Calls to be organized during next 18 months, the project consortium introduced a Continuous Open Call for SMEs with submission cut-off dates every two weeks, which started in September 2018, the first cut-off dates in November.

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1 INTRODUCTION

This deliverable is made up of 3 major parts:

- Section 1: the process of setting up & running the Open calls
- Section 2: the feedback on how the experimenters felt their participation
- Section 3: the feedback on how the testbeds felt the impact of the experiments

Each of these sections is explained in detail and summarized here.

Section1 of this deliverable summarizes activities of the Fed4FIRE+ projects and its Work Package 5 (WP5) related to implementation of the competitive Open Calls during the period January 2017 – June 2018.

The main purposes of the competitive Fed4FIRE+ Open Calls are:

- To enable external experiments using Fed4FIRE+ facilities.
- To gather feedback from experimenters and concrete results.
- To include new experimental infrastructures in Fed4FIRE+.

Accordingly, the overall WP5 goal is to prepare and implement the Open Calls and to establish and follow-up formal agreements and reporting with the successful third parties – accepted after the Open Call evaluations.

The Open Calls are organized for various types of experiments and for inclusion of new infrastructures. The original scheme as presented in the proposal was tentative and was to be subject to changes during the course of the project following suggestions from the experimenters, the members of the consortium as well as other stakeholders.

This section includes information on both the entire process of implementation of the Open Calls is presented as well as the details about completed and ongoing Open Calls.

In section 2 an overview is provided on how the experimenters have experienced their participation. Each of the experiments is required to provide a report (following a specific template) at the end of the experiment as well as a poster and a presentation which is used as the basis of the formal review. These reports for all experiments are available, but are not included in this document in view of the size, but all available posters providing a short overview of the experiment as well as the impact on the experimenter are included. These posters will also be made available through the website for dissemination in the upcoming weeks.

In section 3, the feedback collected form the testbed owners on the way they have been dealing with the experiments and their comments and experiences is presented. The individual response per testbed and per experiment through an on-line survey are attached as annex.

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2 IMPLEMENTATION OF THE OPEN CALLS

2.1 DEFINITION OF OPEN CALLS

The technical scope of the Open Calls – applying to all Fed4FIRE+ Open Calls – has been defined through collaboration with other Work Packages (WPs) and with the members of the project consortium, in particular WP2 and WP4. This consultation is carried out to identify the most relevant topics for each of the Open Calls. Outcomes of these discussions have been used to define each of the Open Calls in details.

Furthermore, formal requirements and eligibility criteria have been defined for the Open Calls along the following principles:

- Proposals will only be accepted from a single party eligible for participation in EC H2020-projects.
- Proposers must originate from parties or organisations that are not already part of the Fed4FIRE+ project consortium.
- Proposers can submit multiple experiment proposals, but only one experiment per proposer will be selected for funding in per Call.
- Proposers who have submitted proposals in previous calls of the Fed4FIRE+ - project are allowed to re-submit.
- Note, for some calls there are specific requirements on possible resubmissions and participation in different stages of the Open Calls, as is presented in Chapter 3.

For each of the calls, a full definition of the Open Call has been created and published within the corresponding public Open Call information (e.g. project website). Short versions of the Open Calls definitions are also provided in short versions, as is presented in Sec. 3 for all completed and ongoing Fed4FIRE+ Open Calls.

To support the potential proposers and make the proposal phase as efficient as possible, for both proposers and evaluators, proposal templates have been created for each of the calls (structure of the template - example for OC 4 - can be found in Annex 7.1) and published on the Open Call web page within the project website.

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2.2 SUBMISSION PHASE

In order to receive proposals for the Open Calls, Eurescom established and maintained a submission tool (Figure 7), enabling updates of the submitted proposals until a set deadline, collecting all necessary information from the proposers (proposal title and short names, contact persons, organizations, countries, etc.), and allowing a proper documentation on all relevant proposal and submission processes.

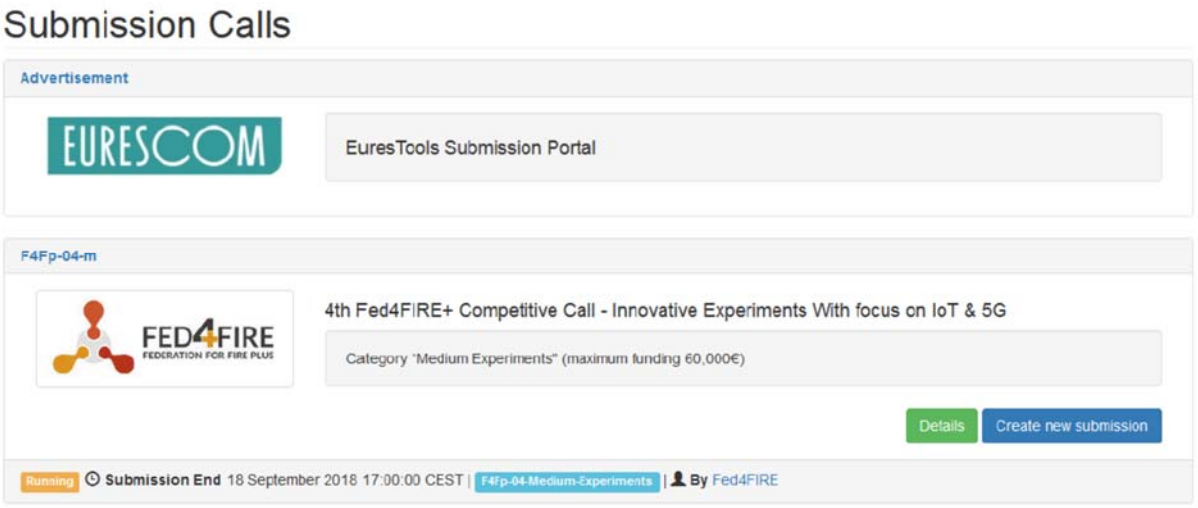

Figure 7 - Fed4FIRE submission portal – now available for the 4th Open Call

Another important activity during the submission phase, starting immediately after an Open Call has been published, is a wide promotion of the Open Calls through various channels. For this purpose, the short definitions of the calls are used to create corresponding promotional messages (e-mail information, web and twitter posts, presentation slides), which are then disseminated in the scope of Fed4FIRE+ WP6 activities (International Collaboration, Outreach & Dissemination).

During the submission phase, it is necessary to ensure permanent support to the proposers and answer questions on the Open Call objectifies, formal requirements, submission issues etc. Furthermore, the proposers have to perform a so-called feasibility check before submitting the proposal to find out if the proposed approach is compatible with the testbeds envisaged, they. This brings them in contact with the Patron and Fed4FIRE+ partners which will support them if the experiment is accepted. Therefore, the support process also involves all Fed4FIRE testbeds, which are able to answer corresponding questions and confirm feasibility of the proposals.

The support for the experimenters is ensured by interaction through the Fed4FIRE+ contact e-mail address (contact@fed4fire.eu) where all relevant project representatives are included as recipients) and by providing and updating FAQ entries on the project website.

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2.3 EVALUATIONS

Definitions of the Open Calls also include clear criteria for evaluation and ranking of the proposals in accordance with the specific objectives of the calls. To ensure that the criteria are properly followed up by the independent experts / evaluators, corresponding evaluation forms are defined (example from the 3rd Open Call can be found in Annex 7.2).

To perform the evaluations of the received proposals by independent evaluators, Fed4FIRE+ uses a group of 50 recognized experts in the area of future internet experimentation. For each of the Open Calls, a number of needed experts is selected for evaluations in accordance with the best possible match of their expertise to the scopes of the received proposals. A rule implemented by the project also ensures that as many different experts as possible are involved in the evaluation process along the Fed4FIRE+ Open Calls, avoiding to relay on the same evaluators all the time. Care is also taken to avoid any possible conflict of interest and the project also avoids to appoint evaluators for experiments originating from the same country.

After an Open Call deadline, the proposals are evaluated remotely by the independent experts, by using the individual evaluation form mentioned above and in accordance with the following criteria

- Industrial and/or scientific innovation & motivation (Threshold 3/5; Weight 2).
- Industrial / scientific relevance (Threshold 3/5; Weight 2).
- Clarity and methodology (Threshold 3/5; Weight 1).
- Scale and complexity of experiment (Threshold 3/5; Weight 1).
- Relevance for Fed4FIRE (Threshold 3/5; Weight 2).
- Possible future follow-up experiments (Threshold 3/5; Weight 1).
- Technological expertise and quality (Threshold 3/5; Weight 1).

Each criterion is scored on a scale from 0 to 5, as follows:

- 0 – The proposal fails to address the criterion under examination or cannot be judged due to missing or incomplete information.
- 1 – Poor. The criterion is addressed in an inadequate manner, or there are serious inherent weaknesses.
- 2 – Fair. While the proposal broadly addresses the criterion, there are significant weaknesses.
- 3 – Good. The proposal addresses the criterion well, although improvements would be necessary.
- 4 – Very good. The proposal addresses the criterion very well, although certain improvements are still possible.

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- 5 – Excellent. The proposal successfully addresses all relevant aspects of the criterion in question.

When scores of different experiment proposals are equal, any further prioritization will be based on other appropriate characteristics and/or specific call requirements,

If the scores for proposals set by experts during the remote evaluations are significantly distinguishing among individual evaluations Per criteria and/or in total), consensus meetings (video calls) are organized for the affected proposals among the involved experts, to build up a common opinion and adapt the scores accordingly. If in some cases the consensus is not possible to achieve, additional independent experts are involved to make final decisions.

At the ends of the evaluation process, the proposals are ranked in accordance with total scores received and specific call objectives (if any), so that selection of successful proposals is done according to this list and available funding for the Open Calls.

Immediately after end of the evaluations, information about the Open Call outcome, including corresponding evaluation forms with scores and comments from the experts, is sent to the proposers.

2.4 INTERACTION WITH EXPERIMENTERS

Once the final selection of proposals is made, the notification of acceptance is accompanied with an invitation to complete and sign an "Experiment Agreement" between the experimenter and the project coordinator (in this case imec). This agreement (of which a copy is attached as Annex in Sec. 7.3) is a standard document which is also available in the overall call information. The document defines responsibilities, access rights and IP-issues and also includes targeted starting and finalisation dates for the experiment as well as the maximum budget. The agreement refers to the proposal as a technical description of the work to be carried out.

The announcement of the acceptance of the proposals is timed in such a way that the accepted experimenters can attend, before the start of their experiment, one of the Fed4RFIRE+ Engineering Conferences (FECs) to get more acquainted with the testbeds, to learn from other users and to discuss practical and administrative issues.

During the course of the experiment, the project coordinator remains available to respond to any issue raised during the running of the experiment in addition to the support provided by the Patron. The project coordinator regularly checks the status of the experiments with both the experimenters as well as the Patrons.

At the end of the experiment, the 3rd party carrying out the experiment is requested to submit:

- A report using a template which allows to describe the technical results, but also collects information on the motivation for the experimenter to submit a proposal for an experiment to Fed4FIRE+ as well as feedback on the use of the testbeds and tools. The report also tries to collect feedback on the impact of the experiment and the Fed4FIRE+ - related work on the business and/or product development of the proposer.

- Based on a first check of the report by the coordinator and the Patron, the experimenter is asked to provide an invoice the project coordinator for 75% of the budget.

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- At the occasion of the Fed4FIRE+_Engineering Conference (FEC) immediately following the end of the experiment, the proposer is requested to present its result and experiment for a formal review as well as to a wide public of peers (consortium partners as well as external participants and other experimenters) during a demo-fair.
- For this presentation, the experimenter is requested to provide a presentation, a poster and a flyer (using templates) to showcase the results and the impact on its business.
- After a successful formal review, the proposer is asked to invoice the project coordinator for the remaining 25% of the budget.
- At the occasion of the FEC, a video-interview is arranged with each of the experimenters to collect feedback and to build a collection of user-stories to be consulted by other interested parties.

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3 IMPLEMENTED AND ONGOING OPEN CALLS

Since the project start in January 2017, four Fed4FIRE+ Open Calls have been organized, which are described below.

3.1 1ST OPEN CALL

3.1.1 Call definition

The 1st Fed4FIRE+ Open Call - Call identifier: F4Fp-01 - was organized immediately at the project start in January 2017. The 1st Open Call targeted Innovative Experiments in categories "Small experiments" & "Large Experiments. Submission deadline was on 15 February 2017.

Total available funding for this call was:

- In category "Small": 300,000€.
- In category "Large": 200,000€.

Maximum requested funding per experiment was set as:

- For category "Small": 30,000€ (duration of max. 6 months).
- For category "Large": 100,000 (duration of max. 1 year).

The amounts mentioned above include the budget for the Fed4FIRE+ partner(s) acting as Patron for the experiment (max. 5,000€ per experiment/patron).

Formal requirements for participation / eligibility:

- Proposals will only be accepted from a single party eligible for participation in the EC H2020-projects.
- Proposers can be industry, SME or research/academic organisations.
- 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).

3.1.2 Call objectives

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

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In view of the targeted timeline and duration of the experiment, it should be clear that these Calls envisage experiments by which existing products or services are tested, implemented or optimized on the Fed4FIRE+ testbeds rather than proposing or developing new ideas from scratch.

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

This 1st Open Call targets 2 specific categories for experiments:

- "Small Experiments" with a maximum budget (including the financial support to the Fed4FIRE+ partner(s) acting as a Patron) of € 30 000 and a maximum duration of 6 months.
- "Large Experiments" with a maximum budget (including the financial support to the Fed4FIRE+ partner(s) acting as a Patron) of € 100 000 and a maximum duration of 12 months.

The proposal template will allow ticking one and only one of these categories. The top ranked proposals in the category "Small Experiments" with a maximum of 10 experiments and the top ranked proposals in the category "Large Experiments" with a maximum of 2 experiments will be selected for funding.

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

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

3.1.3 Call outcome

13 proposals for the large experiments and 30 proposals for the small experiments have been received in the 1st Open Call. After evaluation of the received proposals by independent experts, 10 small and two large experiment proposals have been accepted.

The Table 1 below presents number of submissions received from different types of organizations for both small and large experiments as well as number of proposals accepted per category and type of organizations.

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Table 1 – Outcome of the 1st Open Call

	Submitted		Accepted		Success ratio		
	Small	Large	Small	Large	Small	Large	All
Academia	5	1	1		20.00%	0.00%	16.67%
Industry	3		1		33.33%	n/a	33.33%
Research	4	3	1	1	25.00%	33.33%	28.57%
SME	18	9	7	1	38.89%	11.11%	29.63%
Total	**30**	**13**	**10**	**2**	**33.33%**	**15.38%**	**27.91%**

Numbers of submitted and accepted experiments per country of origin of the proposing organizations are presented in the Table 2 below.

Table 2 - Outcome of the 1st Open Call per country

Country	Submissions	Accepted
Cyprus	1	1
France	1	0
Germany	1	0
Greece	6	1
Hungary	1	0
Ireland	2	0
Italy	6	2
Poland	4	3
Portugal	4	1
Serbia	2	0
Slovenia	1	1
Spain	12	3
Switzerland	2	0

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3.2 2ND OPEN CALL

3.2.1 Call definition

The 2nd Open Call - Call identifier: F4Fp-02 – was organized along a two-stage process under umbrella of Innovative Experiments in category "SME Cascaded Experiments". The submission deadlines were set as

- Stage 1 – 18 September 2017, at 17:00 Brussels local time.
- Stage 2 – 15 December 2017, at 17:00 Brussels local time.

Only successful proposers from the first stage could apply for the second stage.

Total available funding for the 2nd Open Call:

- Stage 1: 187,500€.
- Stage 2: 330,000€.

Maximum requested funding per experiment:

- Stage 1: 12,500€.
- Stage 2: 55,000€.

The above mentioned amounts include the budget for the Fed4FIRE+ partner(s) acting as Patron for the experiment:

- Stage 1: max. 2,500€ per experiment.
- Stage 2: max. 5,000€ per experiment.

Formal requirements for participation / eligibility:

- Proposals will only be accepted from a single party eligible for participation in the EC H2020-projects.
- Proposals will only be accepted from a parties which did NOT submit any proposal in Fed4FIRE+ Open Call 1.
- 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).

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3.2.2 Call objectives

The major objective of this Open Call was to make the federated infrastructure directly available for execution of innovative experiments by experimenters from SMEs with a limited amount of effort in preparing the proposals and increasing the quality of the experiments.

While previous Open Calls worked in a 1-stage scenario, the purpose of this 2nd Fed4FIRE+ Open Call was to work with a staged proposal submission process:

- Stage 1: the SME experimenter submits a 3-page proposal after consultation with the required testbeds. These proposals are reviewed by external reviewers and a selection of up to 15 proposals is made. The selected experiments receive a budget of max. 10 000 euro (SME experimenter) and of max. 2 500 euro (for the testbed) to prepare for the next stage.

- Stage 2: proposals selected after Stage 1 are elaborated more in detail together with the testbeds, which will be used in the testbed and are submitted for review. Only proposals selected in Stage 1 are admitted. External reviewers make a selection of max. up to 6 experiments to be funded. Selected experiments receive a budget of max. up to 50 000 euro (SME experimenter) and of max. 5 000 euro (for the testbed) to execute the experiment.

The experiments submitted in Stage 1 are innovative experiments with a limited time in order to collect information on feasibility, requirements, and challenges, to prepare for the 2nd stage. The experiments submitted in the 2nd stage are proposals for more extensive innovative experiments which are built upon the proposals and experiments run after selection in the 1st stage.

Examples of such experiments may include but are not limited to testing of new protocols or algorithms, performance measurements, service experiments. It is required that these experimenters will come from parties or organisations that are not part of the Fed4FIRE+ project consortium and which have NOT submitted any proposal yet in the previous Open Calls of the Fed4FIRE+ project. Parties which have submitted proposals in Open Calls from other projects are eligible.

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

This 2nd Open Call targets only experiments originating from SME's:

In both stages, external reviewers will evaluate proposals and selection of up to 15 proposals in Stage 1 and up to 6 proposals in Stage 2 will be made upon ranking of the proposals after review.

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

- Possibility to perform experiments that break the boundaries of different testbeds or domains (wireless, 5G, wired, OpenFlow, cloud computing, smart cities, services, etc.).

- Easily to access all the required resources with a single account.

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- Focus on your core task of experimentation, instead of on practical aspects such as learning to work with different tools for each testbed, requesting accounts on each testbed separately, etc.
- An extra benefit which is offered in this call is the
  - A 2-stage approach with a minimum effort in Stage 1.
  - A dedicated support from specific Fed4FIRE members. Each proposer, preparing a proposal is required to seek a supporting Fed4FIRE consortium partner or partners (the "Patron") that will be in charge of dedicated (advanced) support of the experiment.
  - A limited budget available for running small experiments in preparation of the Stage 2 proposal submission.

3.2.3 Call outcome

The experiment proposals for stage 2 were intended to be small experiments to be implemented, in order to concretely elaborate and prepare the stage 2 experiment proposals, so that only the successful proposals from the stage 1 could qualify to make proposals for the stage 2. Deadlines for submission of the proposals were on 18 September (stage 1) and 12 December (stage 2) 2017.

During the 2nd Open Call – stage 1 – we received 11 proposals and 10 have been accepted, whereas 9 proposals were submitted during the stage 2. After the second stage, six proposals have been accepted (success ratio of 54% by considering the entire OC-2 process).

Numbers of submitted and accepted experiments per country of origin of the proposing organizations are presented in the Table 3 below.

Table 3 – Outcome of the 2nd Open Call per country

Country	Submissions	Accepted
Belgium	3	2
Greece	3	2
Slovenia	2	1
Ireland	1	
Poland	1	1
Spain	1	

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3.3 3RD OPEN CALL

3.3.1 Call definition

The 3rd Open Call - Call identifier: F4Fp-03 – was targeting innovative experiments in categories "Medium Experiments" & "Large Experiments" with the submission deadline on 15 January 2018.

Available funding for individual proposals:

- Medium: 55,000€ + 5,000€ for patron (max. duration of 6 months, maximum 5 experiments).
- Large: 95,000€ + 5,000€ for patron (max duration of 12 months, maximum 5 experiments).

Formal requirements for participation / eligibility:

- Proposals will only be accepted from a single party eligible for participation in EC H2020-projects.
- Proposers must from parties or organisations that are not already part of the Fed4FIRE+ project consortium.
- Proposers can submit multiple experiment proposals, but only one experiment per proposer will be selected for funding in this Call.
- Proposers who have submitted proposals in previous calls of the Fed4FIRE+ – project (Open Call 01 and Open Call 02) are allowed to re-submit.

3.3.2 Call objectives

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

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

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

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This 3rd Open Call targets 2 specific categories for experiments:

- "Medium Experiments" with a maximum budget (including the financial support to the Fed4FIRE+ partner(s) acting as a Patron) of € 60 000 and a maximum duration of 6 months.
- "Large Experiments" with a maximum budget (including the financial support to the Fed4FIRE+ partner(s) acting as a Patron) of € 100 000 and a maximum duration of 12 months.

The proposal template will allow ticking one and only one of these categories. The top ranked proposals in the category "Medium Experiments" with a maximum of 5 experiments and the top ranked proposals in the category "Large Experiments" with a maximum of 2 experiments will be selected for funding.

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

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

3.3.3 Call outcome

We received 10 proposals for the large experiments and 24 proposals for the medium experiments. After evaluation of the received proposals by independent experts, five medium and two large experiment proposals have been accepted.

Table 4 below presents number of submissions received from different types of organizations for both medium and large experiments as well as number of proposals accepted per category and type of organizations.

Table 4 – Outcome of the 3rd Open Call

	Submitted		**Accepted**		**Success ratio**		
	Medium	Large	Medium	Large	Medium	Large	All
Academia	8	4	1	1	12.5%	25%	17%
Industry	2	0	1	0	50%	/	50%
Research	4	2	0	1	0%	50%	17%
SME	10	4	3	1	30%	25%	28%
Total	**24**	**10**	**5**	**3**	**21%**	**30%**	**24%**

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Numbers of submitted and accepted experiments per country of origin of the proposing organizations are presented in the table below.

Table 5 – Outcome of the 3rd Open Call per country

Country	Submissions	Accepted
Belgium	1	1
Colombia	1	
Germany	1	
Greece	7	1
Italy	7	
Montenegro	1	1
Poland	1	
Portugal	6	2
Serbia	1	1
Spain	7	2
UK	1	

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3.4 4TH OPEN CALL

3.4.1 Call definition

The 4th Open Call - Call identifier: F4Fp-04-M – is again targeting the innovative experiments in the category "Medium Experiments" but with focus on IoT & 5G, with the **submission deadline on 18 September 2018**.

Available funding for individual proposals: 60,000€, including maximum 5,000€ for patron, for maximum 5 proposals.

Formal requirements for participation / eligibility:

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

3.4.2 Call objectives

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

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

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

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

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- Medium Experiments" with a maximum budget (including the financial support to the Fed4FIRE+ partner(s) acting as a Patron) of € 60 000 and a maximum duration of 5 months. This 4th Open Call focusses on experiments in the area of IoT (Internet of Things) and 5G. Experiments targeting other areas, applications and/or technologies can also be submitted, however the focus of this call implies that experiments in the area of IoT and 5G will be ranked with higher priority during evaluations.

- The focus on IoT covers topics such as (non-exhaustive list): smart devices, smart buildings, smart cities, smart interfaces, sensors and monitoring devices and (wireless) IoT networks and protocols, IoT architectures, security, power consumption, battery life, etc.

- The focus on 5G covers topics such as (non-exhaustive list): networks, MIMO, Multi-Radio Access technologies, end-to-end performance, contextual awareness, intelligent data mining, (distributed) cloud, software-defined networking and network function virtualization. new applications and requirements.

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

- Possibility to perform experiments that break the boundaries of different testbeds or domains (wireless, 5G, wired, OpenFlow, cloud computing, smart cities, services, etc.).

- Easily to access all the required resources with a single account.

- Focus on your core task of experimentation, instead of on practical aspects such as learning to work with different tools for each testbed, requesting accounts on each testbed separately, etc.

- An extra benefit which is offered in this call is the dedicated support from specific Fed4FIRE members. Each proposer, preparing a proposal is required to seek a supporting Fed4FIRE consortium partner or partners (the "Patron") that will be in charge of dedicated (advanced) support of the experiment.

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4 FEEDBACK FROM EXPERIMENTERS

Following the end of each experiment, the proposers are requested to submit a final report, a poster and a presentation. They are also requested to present a demo at one of the FEC meetings at which occasion also a formal review is organized. At the FEC events, our partner P08 Martel also takes a 2-minute interview from each of the experimenters, to be used for dissemination purposes.

The submission of the final report, which is required to follow a specific template, opens the possibility to pay 75% of the agreed budget to the experimenter. The remaining 25% can only be paid after the formal review which includes the poster presentation, the demo and PowerPoint presentation of the experiment at one of the FECs.

In view of the size of all reports and the presentations, and as some of these might contain proprietary information, they are not included in this report, but are made available for review. The poster however is considered as public information and is included as Annex 6.

Out of these reports, discussions and demo's, feedback is collected on how the experimenters experience their participation in Fed4FIRE+. This is summarised through a short on-line survey which is completed by all of the experiments. The results from this on-line survey are presented below.

From this survey held amongst all experimenters participating in the 3 Open Calls since the start of Fed4FIRE+, it is clear that the experiment which was submitted by the proposer was very important for the business of the proposer. When asking for the impact on their business, the responses show a great impact.

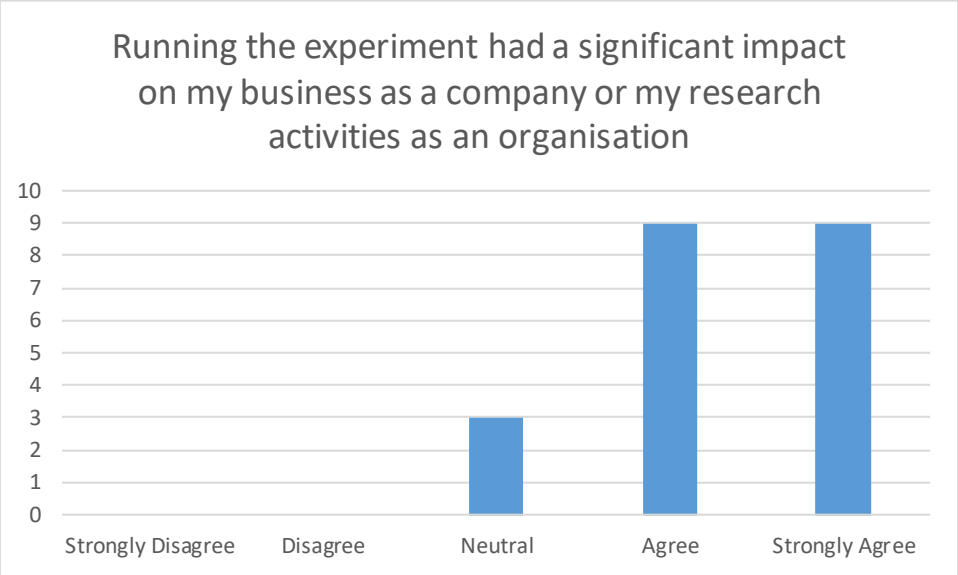

Figure 8: Feedback from experimenters on "Impact on Business"

The objective of Fed4FIRE+ is to lower the threshold for SMEs to use the testbed facilities to work on, test and improve their products. It is clear that this objective is also reached from the feedback received by the experimenters. As for some organisations (e.g. research organisations, academic groups, etc.) the experiment is not really linked to a product, some responses show "not applicable",

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but for the others it is clear that running the experiment was part and contributed to improving the product during development and before going to market.

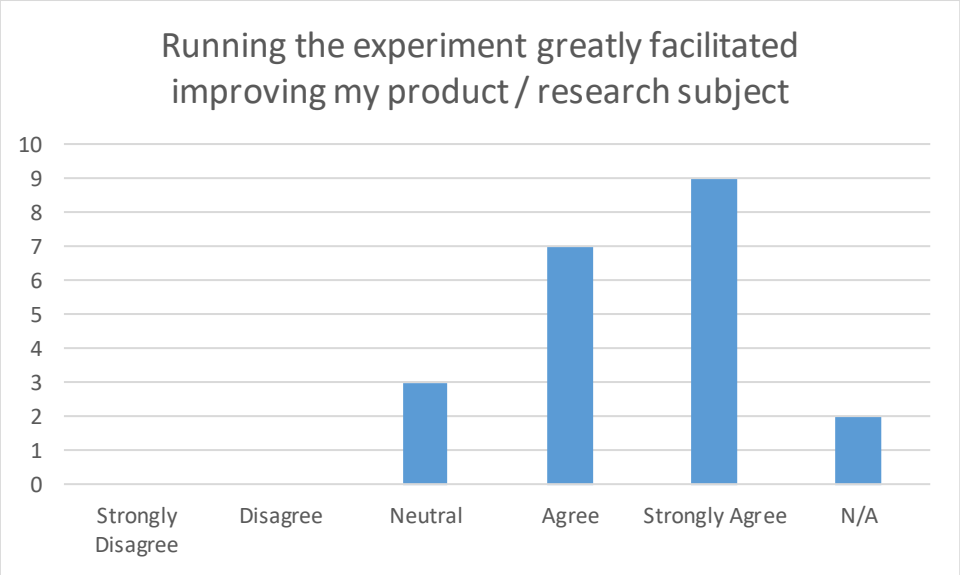

Figure 9: Feedback from experimenters on "Product Improvement"

It is also clear that experimenters gained more and additional competences from running the experiment on the Fed4FIRE+ facilities (Figure 10).

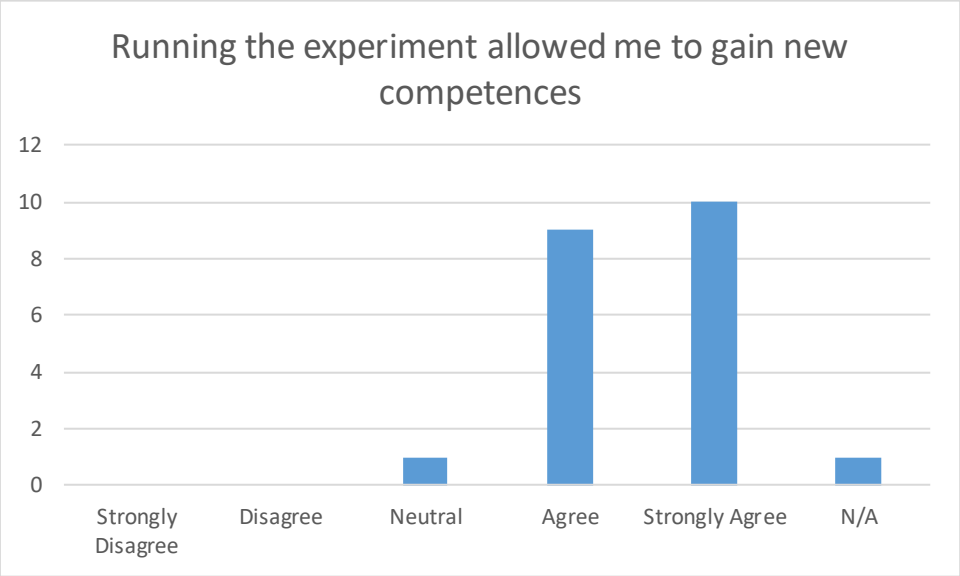

Figure 10: Feedback from experimenters on "New Competences"

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Fed4FIRE+ is a federation of testbeds, so it is also interesting to notice that about 1/3rd of the experiments make use of at least 2 testbeds (Figure 11), showing clearly the need for a real federation.

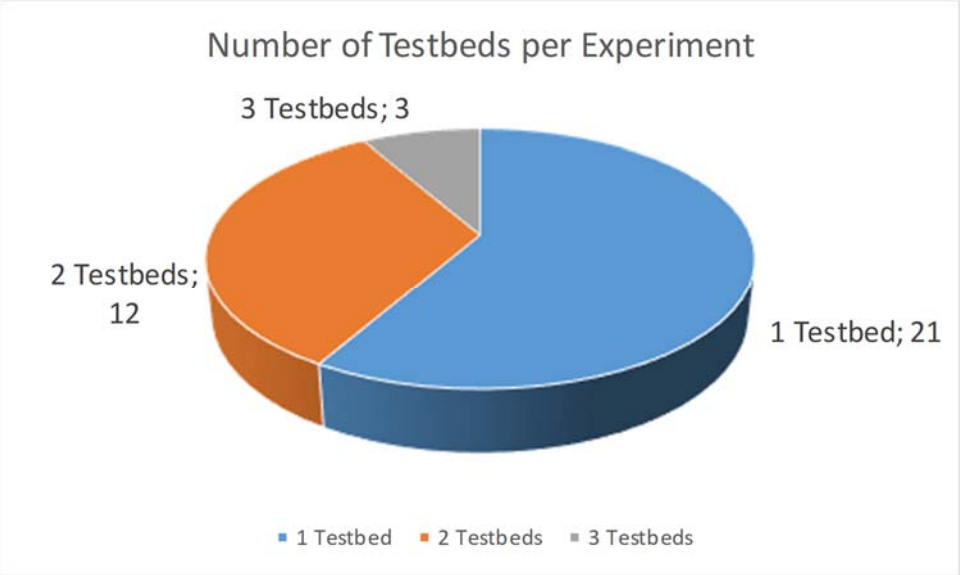

Figure 11: Number of Testbeds per Experiment

The federation offers however also another advantage over single testbeds, and this is illustrated by the answers below which lists the most important drivers for experimenters to come to Fed4FIRE+. A number of possible answers and drivers were listed and ranked by the experimenters in view of their importance. The top 6 is listed below in Figure 12.

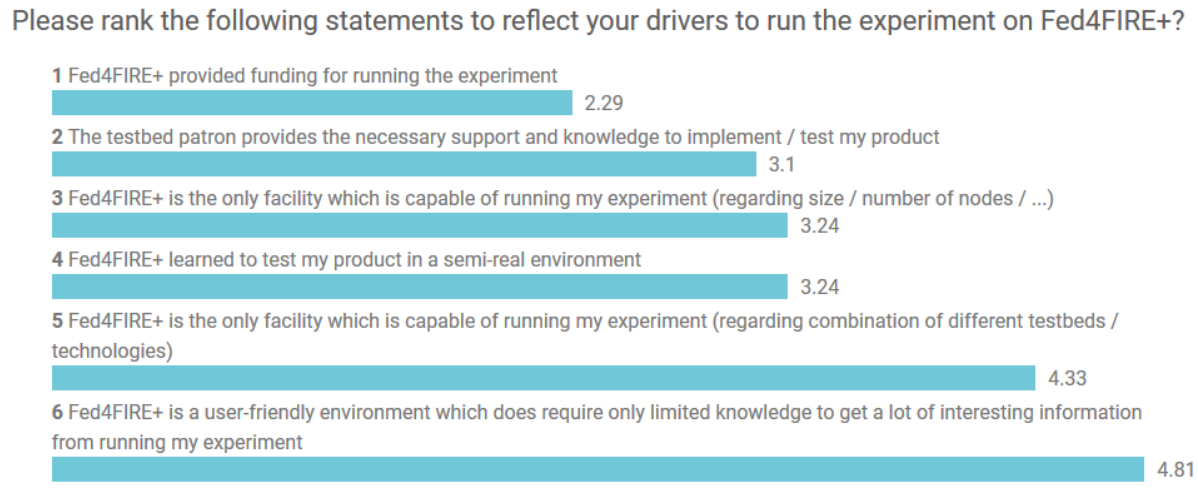

Figure 12: Drivers for experimenters to participate in Fed4FIRE+ Open Calls

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Although the support provided by the Patrons is highly appreciated (Figure 13), more effort can clearly be made on easing the access and setting up the experiment (Figure 14). As a result of these remarks, efforts have been made in increase the reproducibility and the monitoring of the testbeds and include several extra features in the jFed tool. These modifications are described in the review report and the deliverables of the corresponding workpackages of the project.

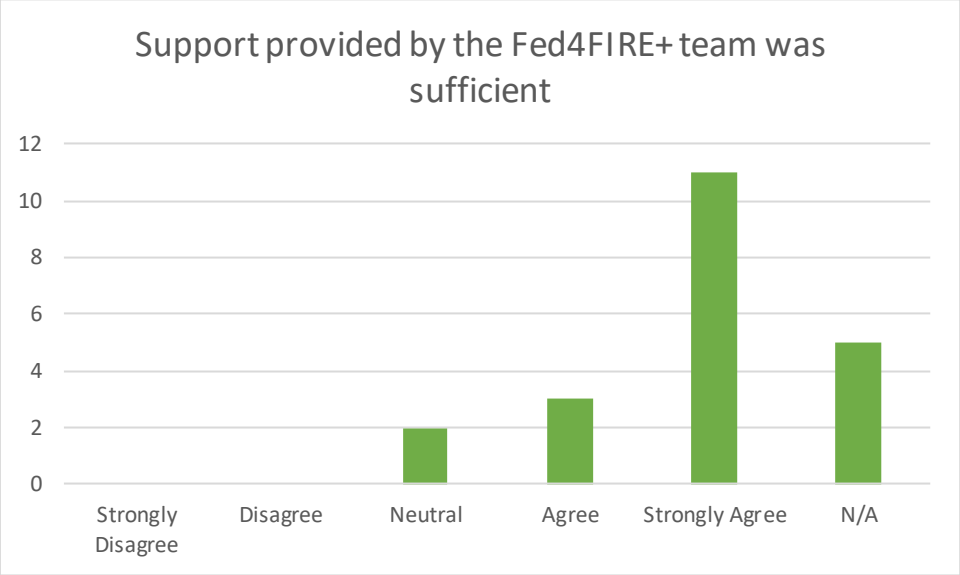

Figure 13: Feedback from experimenters on "Support by the Fed4FIRE+ Team"

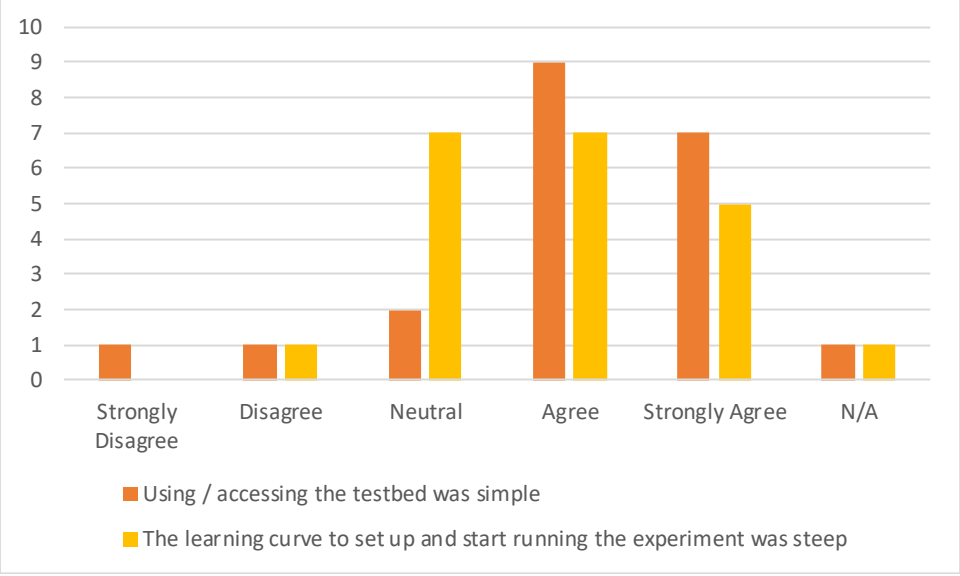

Figure 14: Feedback from experimenters on "Setting Up the Experiment"

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5 FEEDBACK FROM AND ACTIONS TAKEN BY THE TESTBED OPERATORS.

Running the experiments also provides very useful information for the testbed owners. The support provided by the Patron to the experimenter directly brings the testbed in contact with the experimenter and results in direct feedback on the use of the testbed and the implementation of the experiment. This kind of interaction, as well as the continued contacts after the experiment has finished as well as the impression on how the testbed owner profits from the experiment is grabbed through 2 on-line surveys ran amongst all testbeds after completion of the experiment. The results of these surveys are summarized below and individual answers on the survey soliciting more detailed information on which actions were taken by the testbeds following the feedback from the experiments are provided in Annex.

First it should be noted that nearly all of the Fed4FIRE+ testbeds are not solely used in Fed4FIRE+ (Figure 15) and this is of course also of benefit for the project itself. The testbeds, and consequently the federation, are better known in a wider community, increasing the number of potential interested parties for submitting proposals for experiments. However this also makes clear that actions taken by the testbed providers are not solely triggered by feedback from the Fed4FIRE+ experiments but may also originate from other feedback. It should also be noted that changes or modifications to the testbeds to accommodate 1 or more experiments from the Fed4FIRE+ Open Calls may not be implemented if these might compromise other uses of the testbed or are considered of less importance and consequently less critical to be implemented on a short term, than modifications requested by other users or communities. It should be noted however that feedback and comments are in most cases very much in line amongst all communities of users.

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	No other use, the Testbed is used solely for Fed4FIRE+	Yes, also in the framework of other European funded projects	Yes, also in the framework of other non-European, but government agency funded projects	Yes, also in the framework of industry-funded projects (without involvement of government agencies)	Yes, also in the framework of internal projects (internal researchers, students, PhD,..)	Other (Please Specify)	Responses
All Data	1 (6%)	11 (69%)	10 (63%)	8 (50%)	**12 (75%)**	1 (6%)	16

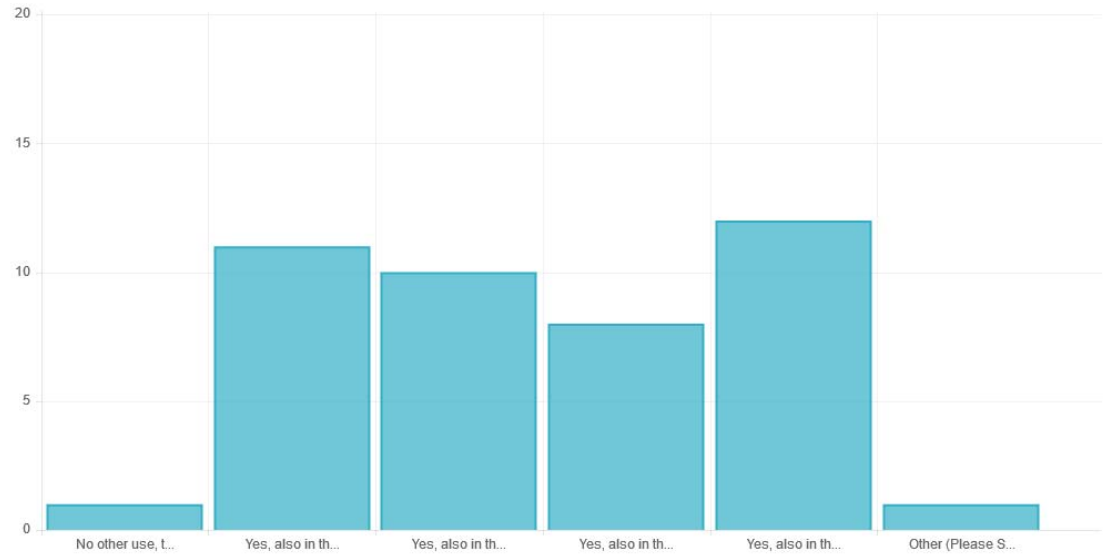

Figure 15: Use of Fed4FIRE+ Testbeds outside Fed4FIRE+

The testbeds were also asked to evaluate the technical outcome of the experiments on different criteria.

In general, the testbeds see the experiments as very innovative and challenging with respect to the technical outcome (Figure 16), however, the results themselves are scored lower with respect to the complexity of the experiment. The results themselves are very much in line with was originally proposed and fulfill the set goals and expectations.

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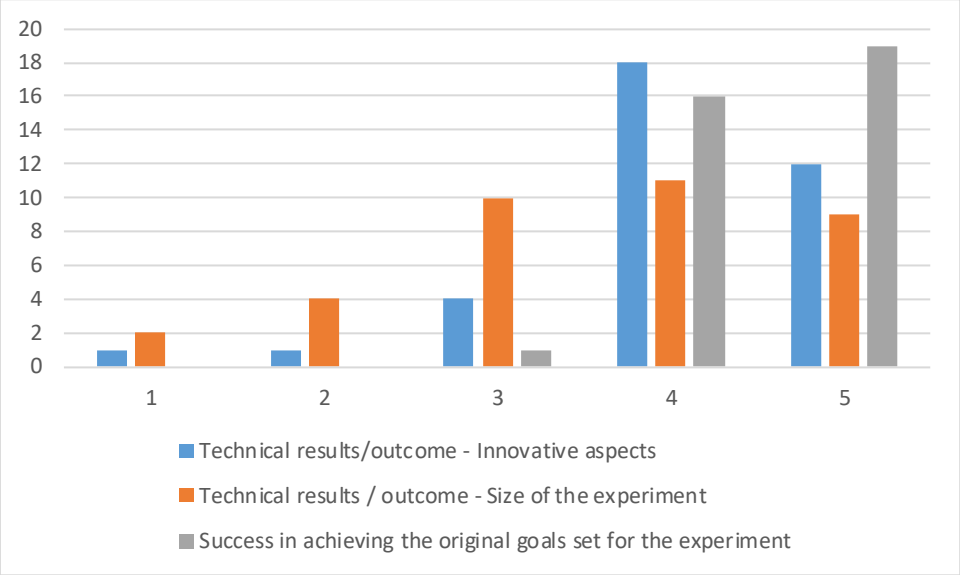

Figure 16: Scoring by the Testbed operators on the Technical results and success in achieving the original goals of the experiment (1 = low score, 5 = high score)

Secondly, the testbeds see, for most of the experiments a very distinctive market potential and a significant impact on the business of the experimenter. This is very much in line with the feedback received from the experimenters themselves. It illustrates, from both sides and from both groups of stakeholders that the impact of being able to implement and run the experiment and to have the Fed4FIRE+ facilities available clearly is of benefit to all organizations business-wise.

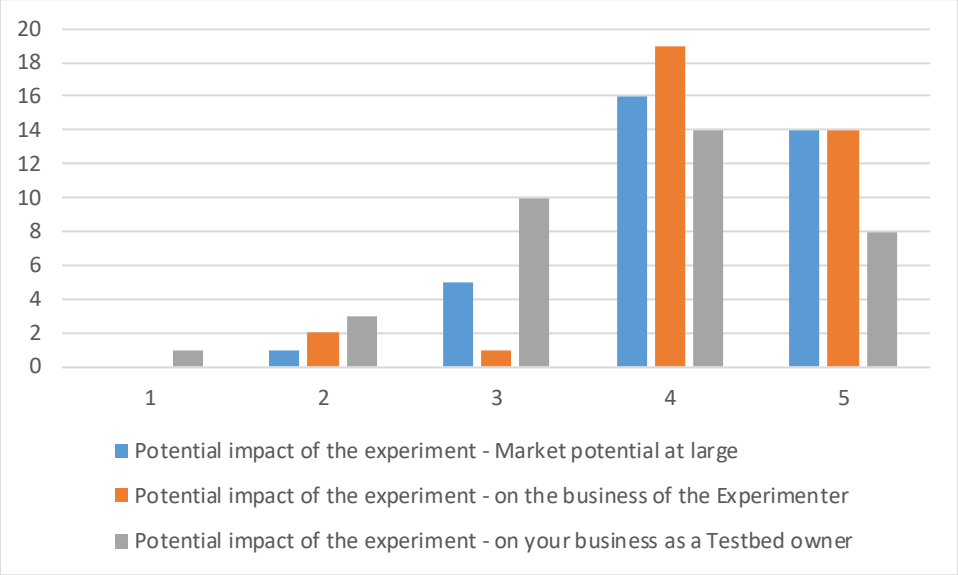

Figure 17: Scoring by the Testbed operators on the Market Potential as well as on Business of the experimenter and the Testbed owner. (1 = low score, 5 = high score)

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Fed4FIRE+ has Open Calls which target experiments which fall in the wide application area of the NGI initiative. It can therefore be expected that the experiments learn something on potential input towards this initiative.

In a first instance, it is very clear that the interest in the Open Calls shows a clear need for experimentation. to the expectations whether the experiment carried out may have an impact or may be a potential source of information with respect to the NGI roadmap, the experiments, of course, all clearly show the need for experimentation. This is expressed by the evaluation of the F4Fp-03-M23 PiAS (Televic Rail) experiment:

The experiment shows an application in which there is a need to carry out a test on a very large number of nodes. Scaling up of existing solutions and products, especially in view of IoT, networks and other areas, is a future challenge for testbeds. This experiment also makes clear that experimentation is an essential step in the development of products by industrial partners. As the stakes are extremely high and there is no way to implement new tools, software or launch new products without proper testing, experimentation on a set of testbeds in all areas covered by NGI is required. So this experiment, to our opinion, does not have any impact on the NGI research and innovation agenda, except for the clear fact that as NGI penetrates more and more into our personal and daily life, experimentation becomes even more essential to guarantee proper and reliable implementation.

Experimentation is however also needed in other areas of the NGI initiative:

- Network architecture as e.g. the experiment on testing and implementation of RINA as one of the possible architectures of the future internet.
- Testing of scalability as e.g. the ThinkINFIRE+ with its main goal to test the scalability of a service using accurate indoor localization (IoT sensors over WiFi networks) with scalable computing resources (Big Data).
- IoT-related issues amongst which experiments on advanced wireless vehicle-to-vehicle communications.
- Human centric Internet as e.g. the experiment for testing and scaling of NFV as the basis for human centric internet as well as the experiments robust wireless devices and on pop up services such as the one provided by Crowdbeamer which will be central in the human centric internet.
- Long-distance communications over multiple testbeds showing the possibility to deploy applications around the world for research on e.g. trustworthiness, human centric internet.

More individual responses can be found in Annex.

When looking for feedback on how the testbeds dealt with the results and the feedback from the experiments, one has to look first into the compatibility and the usefulness of the Testbed for the experiment. Figure 18 shows the scoring by the testbed owner on a scale of 0 to 10 on how they felt the testbed was serving the needs of the experiment. These results show a clear match between the testbeds and the experiments in most of the cases. The experiment scoring “4” was the F4F4p-01-20-L LASH-5G (CNIT) - experiment on the Ofelia Island (i2cat), but finally the experiment was taken over by the Virtual Wall (imec) as it was recognised that the Ofelia Island was indeed not very well suited.

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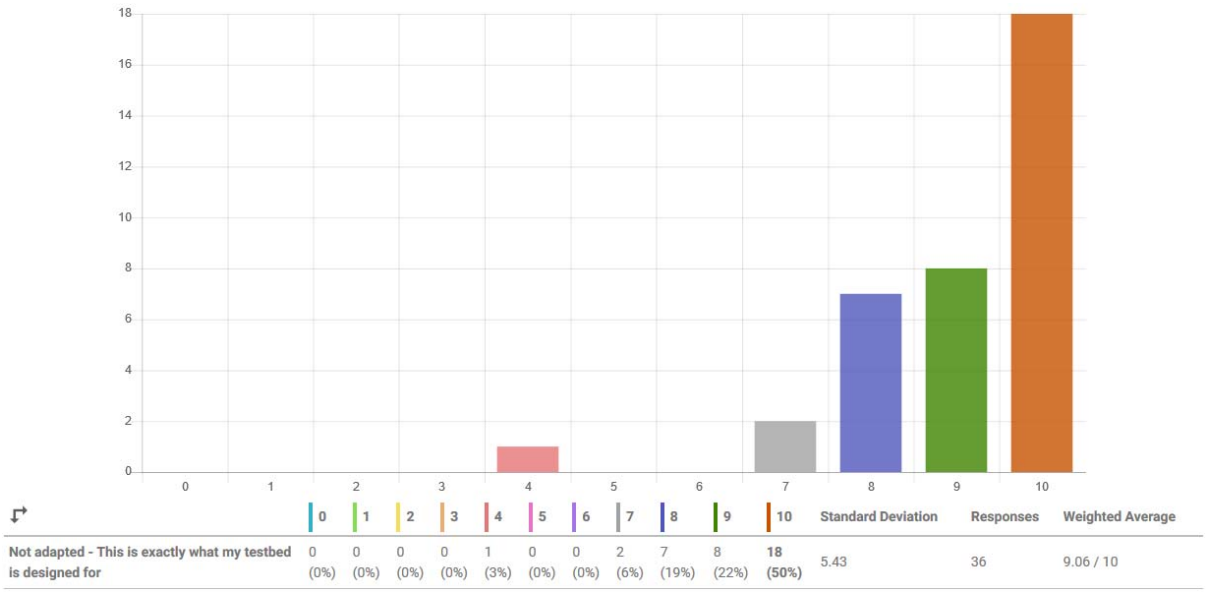

	0	1	2	3	4	5	6	7	8	9	10	Standard Deviation	Responses	Weighted Average
Not adapted - This is exactly what my testbed is designed for	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (3%)	0 (0%)	0 (0%)	2 (6%)	7 (19%)	8 (22%)	**18 (50%)**	5.43	36	9.06 / 10

Figure 18: Responses on a scale from 0 (not suited) to 10 (well suited) on how well the testbed served the needs for this experiment.

Figure 19 shows how the testbed providers felt this push from the experiments towards improvement and adding more features. The graph shows the responses on the question whether running the experiments required modifications or improvements on the testbeds. The fact that modifications are implemented shows the flexibility of the testbed providers and the willingness to really fulfil the needs of their customers. This is clearly also fulfilling a need, as this flexibility cannot be expected from similar commercially oriented testbeds.

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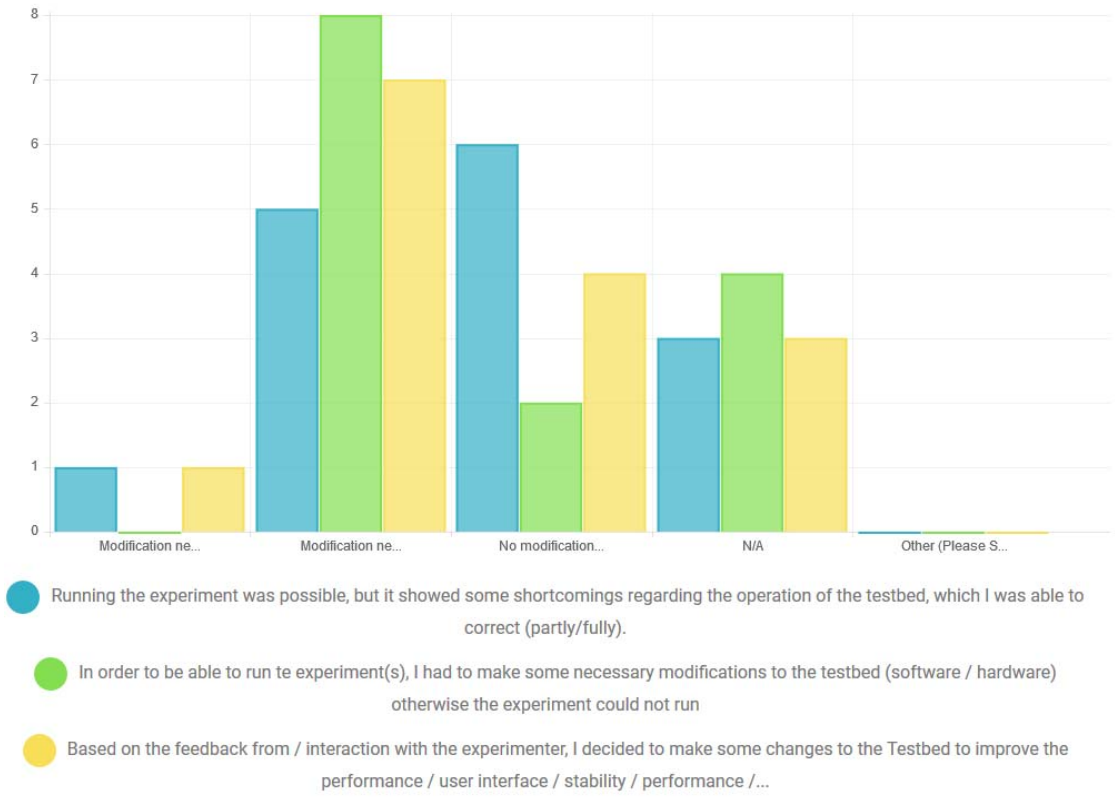

Figure 19: Did the experiment(s) learn you something on your testbed (e.g. how to operate / modify / improve your testbed / shortcomings)?

As most of the modifications were very specific with respect to the testbed, a more general "categorization" was used to establish some sight on what modifications were required. Obviously modifications were required both on hardware-side as well as on the software-side (Figure 20).

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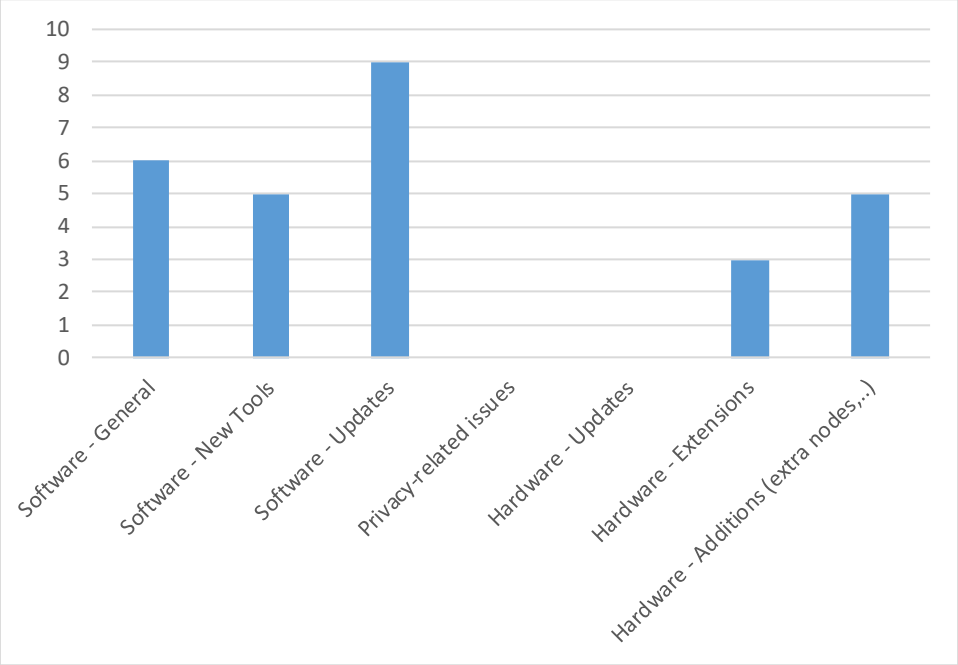

Figure 20: Type of modification needed on the Testbeds as a result of the experiments

The details of what was modified can be found in the individual survey notes in Annex. In the survey it was also explicitly asked whether security issues were raised during the experiments, but none of the testbeds need to make any adaptations here. It indicates that the type of experiments carried out on the testbeds do not require any modification of the security related issues on the testbeds or do not involve any of the more sensitive issues.

It is also interesting to check the time the testbeds are involved in the different stages of the experiment, going from proposal preparation through setting up the experiment, running and analysing the results (Figure 21). The feedback indicates that for most of the experiments very little time is spent on support during the proposal phase and the analysing of the results. Most testbeds indicate here less than 1-person day of time spent. Setting up the experiment requires more time, i.e. for most of the experiments several person days, just as is the case for running the experiment. Modifications which need to be implemented on the testbed also take up several person days, but these cannot be "charged" to the experiment, but are spent by the Testbed owner on upgrading and adapting the testbed to the needs and preparing it for better and future experimentation.

Figure 22 finally provides some information on how the involvement from the testbed owners is judged on scale from "Design of experiment" (left) to "Technical Support" (right).

It shows a group of experiments where a balance is experienced between support during the design of the experiment (more consulting-type of activities) and technical support, and a 2nd group of experiments with explicit technical support (right hand side of the graph).

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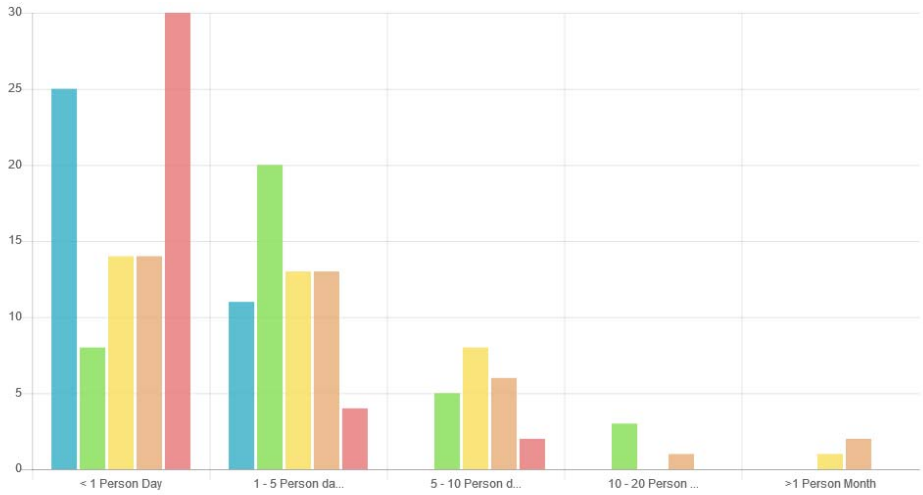

	< 1 Person Day	1 - 5 Person days	5 - 10 Person days	10 - 20 Person Days	>1 Person Month	Standard Deviation	Responses	Weighted Average
Initial preparations (proposal/feasibility check)	**25 (69%)**	11 (31%)	0 (0%)	0 (0%)	0 (0%)	9.87	36	1.31 / 5
Experiment set-up	8 (22%)	**20 (56%)**	5 (14%)	3 (8%)	0 (0%)	6.91	36	2.08 / 5
Adaptations to your testbed	**14 (39%)**	13 (36%)	8 (22%)	0 (0%)	1 (3%)	5.84	36	1.92 / 5
Running the experiment	**14 (39%)**	13 (36%)	6 (17%)	1 (3%)	2 (6%)	5.42	36	2 / 5
Analyzing results	**30 (83%)**	4 (11%)	2 (6%)	0 (0%)	0 (0%)	11.5	36	1.22 / 5

Figure 21: Resources spent by the Testbed on the different phases in the experiment

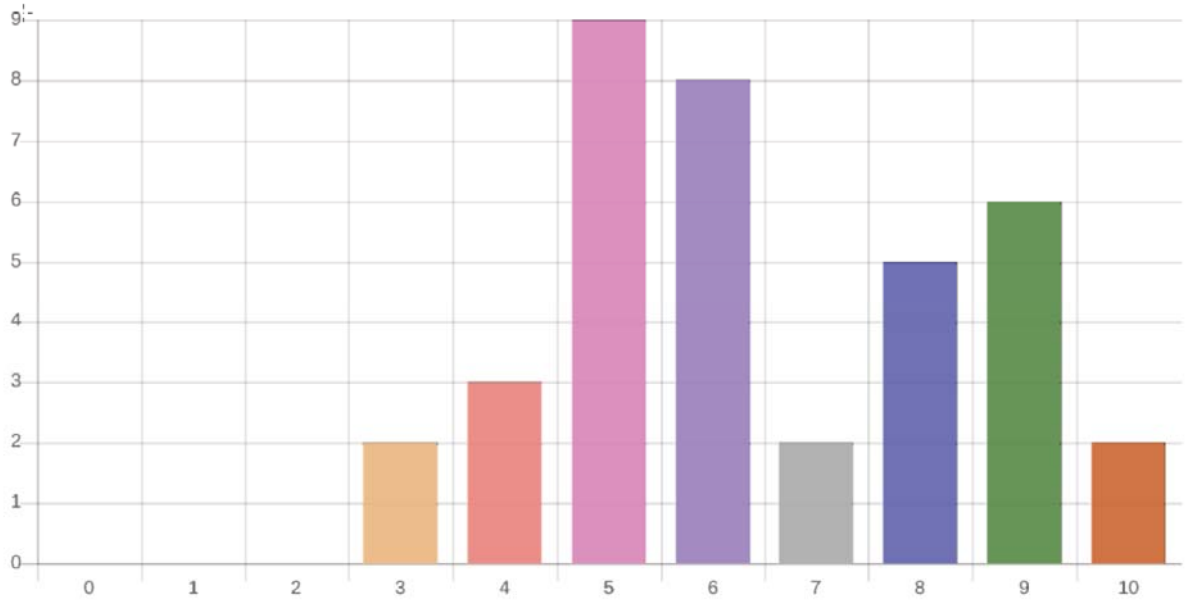

Figure 22: Evaluation of the balance in way of support to the experiment on a scale between "0"= "pure design of experiment (no technical work)" to "10"= "Technical support (helping executing the experiment)"

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6 CONCLUSIONS AND OUTLOOK

During its first 18 months of operation (the first project period January 2017 – June 2018), the Fed4FIRE+ project established all necessary processes for implementation of competitive Open Calls, planned in the scope of the project, as listed below:

- Process for technical and formal definition of the Open Calls.
- Templates for Open Call proposals.
- Wide promotion of the Open Calls.
- Submission tool.
- Permanent support for potential proposers.
- Evaluation criteria and needed evaluation forms.
- Group of independent experts for evaluation of Open Call proposals.
- Evaluation process consisting of remote evaluations and consensus meetings.

By applying the Open Call process, the Fed4FIRE+ project organized four competitive Open Calls for innovative experiments. The 1st and the 2nd Open Calls are completed, the 3rd Open Call is completely implemented and main part of the experimentation is finished as planned, whereas the 4th Open Call has been launched (announced / submission open) during the reporting period.

Details about number of submitted proposals from various categories of the proposers' organizations, countries of origins, and type of experiments are presented. Below, the key-figures for the first three Open Calls:

- 1st OC – 43 proposals received, 12 accepted, success ratio of 28%; for small experiments 33.33%, for large experiments 15%.
- 2nd OC (two-stage process for SMEs) – 11 proposals received, six accepted after the second stage (success ratio 54%).
- 3rd OC – 34 proposals received, 8 proposals accepted, success ratio of 24%; for medium experiments 21%, for large experiments 30%.

Beside the already announced OC-4 (submission deadline in September 2018), the following Open Calls are planned to be launched in the upcoming period:

- Continuous Open Call for SMEs (submission cut-off dates every two weeks) to start in September 2018 and serve as first stage evaluation point for larger experiments by SMEs in the second stage.

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- 5th (standard) Open Call – to be launched in autumn 2018, submission deadline in early 2019.
- 6th and 7th Open Calls are planned to be launched during 2019.

Other calls which are being prepared are:

- Open Calls for Testbeds which will focus new testbeds and new additions to the federation, as well as;
- Open Calls for new Functionality which will focus on new functionalities within the federation and over tall testbeds; and
- Internal Open Calls for on-demand extensions.

The Open Calls and the experiments which have run on the testbeds in Fed4FIRE+ have also learned much about the use of the testbeds, the accessibility and the value for both the experimenters as well as the testbed owners. Evaluation of the experiments and how they ran on the testbeds has shown that the testbeds are very keen in upgrading their software and hardware to adapt the needs of the experiments and keeping their testbeds up-to-date.

The surveys also show the compatibility of the testbeds with the needs for the experiments, which is of course strongly related to the support and the feasibility-check which is carried out during the preparation phase of the proposals.

The evaluation of the feedback clearly shows the added value of the Open Calls and the impact of the experiments and of the Fed4FIRE+ facilities on the business of the experimenters and the testbed owners.

Experimentation has also clearly been identified as a keystone in the whole NGI initiative by the parties participating in these Open Calls.

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7 ANNEXES

7.1 STRUCTURE OF PROPOSAL TEMPLATE – 4TH OPEN CALL

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

Section A Information page and Summary (300 word summary)
The information in this section may be used in public documents and reports by the Fed4FIRE+ consortium.

Section B Description and Expected Results (target length 6 pages)
describing the details on the planned experiment (what do you hope to obtain, how, why is it relevant,…). This section should also include all information with respect to the State-of-the-Art to show the innovative character of the experiment and the expected business impact

Section C Requested Fed4FIRE+ tools, testbeds and facilities (1 page, standard form)
The information in this section needs to be collected in collaboration with the Fed4FIRE partner acting as patron on this experiment. For this section a specific format needs to be used, which is attached to this document and available for download.

Section D Compliance check (max. 1 page, standard form to be provided by the Fed4FIRE+ Patron)
This section contains the formal statement of the Fed4FIRE+ partner(s) acting as patron on this experiment that he/she has been informed about your proposed experiment and that he agrees that it can be carried out on the required testbed(s). To be able to complete this form, the Patron needs to be informed about the proposal itself. Therefore, a "**feasibility-check**" deadline is set, by which the Patron needs to have received the draft proposal to be able to complete this form.

Section E Background and qualifications (target length 1-2 pages)
This section describes the proposing experimenters and includes an overview of the activities, your qualifications, technical expertise and other information to allow the reviewers to judge your ability to carry out the experiment.

Section F Expected feedback to the Fed4FIRE+ Consortium (target length 1-2 pages)
This section contains valuable information for the Fed4FIRE consortium and should indicate the expected feedback the Fed4FIRE consortium can expect form the use of its federated facilities after carrying out your experiment. This information is essential in view of the sustainability of the facilities and use of tools and procedures. Note that the production of this feedback is one of the key motivations for the existence of the Fed4FIRE Open Calls.

Section G Future plans (target length 1 page)
This section contains information regarding expected possible follow-up experiments, new initiatives, new projects which may follow out of the experiment as proposed in this Open Call.

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Section H Requested funding (1 page. standard form).
This section provides an overview of the budgeted costs and the requested funding. A split is made in personnel costs, other direct costs (travel, consumables,..) and indirect costs. This section also includes the split between the budget allocated to the experimenter and the budget allocated to the Patron(s), clearly argumenting this split (max. €5 000 in total for the patron(s)). It is thus possible to have e.g. one patron providing specific testbed resources and setup for €3 500 and another patron offering consulting help for €1 500 for the same experiment.

Section I Participation in previous Open Calls of the Fed4FIRE+ project.
This section provides information on previous participation in Open Calls of the Fed4FIRE+ project:

- Parties who have submitted proposals in previous calls which were NOT selected for funding should indicate the exact dates and details of the previous submissions.
- Parties who have submitted proposals in previous calls which were selected for funding should indicate the difference between the current proposal and the previously submitted proposal.
- Parties belonging to a legal entity of which other groups have submitted proposals in previous calls also need to indicate the difference between the current proposal and the previously submitted proposals.

Section J Data Management
This section begins with the question: “Will you provide a complete, publicly-accessible dataset of your experiment results and supporting data, uploaded in Fed4FIRE+’s chosen repository?”
For the Answer “NO”: The experimenter needs to provide reasons why they will not make their experiment data open as part of the proposal. Guidance on opt out reasons can be found in Section **Error! Reference source not found.**.
For the Answer “YES”: The experimenter needs to fill in the table provided in the template, and this becomes the initial Data Management Plan, to be submitted with the experiment proposal. Guidance notes are provided in the table.

Section K Survey.
This survey contains a list of specific requirements which you expect your experiment has for our federated testbeds. This survey will be done through a specific template which will become available on-line. This survey is an integral part of your proposal. Proposing parties who do not complete this survey by the set deadline are not eligible for evaluation.
The survey responses will remain within the Fed4FIRE consortium and will be used for reports and evaluation of the Fed4FIRE tools, testbeds and concept. The results will not be forwarded to the reviewers and will consequently not influence the scoring of your proposal during the evaluation process.

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7.2 EVALUATION FORM USED IN 3RD OPEN CALL

3rd Fed4FIRE+ Competitive Call

Call identifier: F4Fp-03

INDIVIDUAL EVALUATION FORM

Proposal Acronym:

1. Industrial and/or scientific innovation & motivation *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 then 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.* *Note:* *In view of the scope of this call, the topics "industrial" and "scientific" are scored in a similar manner. Proposals addressing both will however NOT be scored higher because of addressing both issues.* *The topics "Innovation" and "Motivation" are also scored equally but addressing both will be POSITIVELY reflected in the scoring of this criterion.*	**Score:** *(Threshold 3/5; Weight 2)*
2. Industrial relevance *This score should reflect the industrial relevance (Section B of the Proposal Template) including the expected and projected impact, e.g. through a product development.*	**Score:** *(Threshold 3/5; Weight 2)*

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3. Clarity and methodology *The experiment should be scientifically and/or technically sound. There should be a clear problem statement, a solid experiment design, a good methodology, etc. (Section B of the Proposal Template)*	**Score:** *(Threshold 3/5; Weight 1)*
4. Scale and complexity of experiment *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 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.*	**Score:** *(Threshold 3/5; Weight 1)*
5. Relevance for Fed4FIRE *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)* *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, flack, 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,*	**Score:** *(Threshold 3/5; Weight 2)*

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that is not a problem as long as they clearly indicate the added value of these additional tools.	
6. Possible future follow-up experiments *Indication on possible future follow-up experiments and how this can support the sustainability of the federated testbed facilities.* *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.*	**Score:** *(Threshold 3/5; Weight 1)*
7. Technological expertise and quality *The proposer should exhibit technological expertise and quality. This information must be included in Section E of the Proposal Template.*	**Score:** *(Threshold 3/5; Weight 1)*
Remarks *Note: General remarks can be made here, including remarks regarding the proposed budget. The budget will NOT be scored in this evaluation, however any comments can be made.*	**Overall score:** *(Threshold 35/50)*
Does this proposal contain ethical issues that may need further attention?	**NO / YES**

I declare that, to the best of my knowledge, I have no direct or indirect conflict of interest in the valuation of this proposal.

Name	
Signature	

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Date	

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7.3 FORMAL AGREEMENT WITH EXPERIMENTERS – TEMPLATE

Agreement for the Use of the Fed4FIRE+ Testbed for Experimentation

Experiment title: F4Fp – SME – Acronym of your experiment

This Agreement for the Use of the Fed4FIRE+ Testbed for Experimentation (hereinafter referred to as the "Agreement") is executed by and between:

1. Experimenter:

[FULL NAME + LEGAL FORM], with its registered office situated at [ADRESS] and hereby duly represented by [NAME+TITLE]

2. Coordinator:

Interuniversitair Micro-Electronica Centrum vzw (IMEC), a non-profit organisation duly organized under the laws of Belgium, Register of Legal Entities Leuven VAT BE 0425.260.668, with its registered office situated at Kapeldreef 75, 3001 Leuven, Belgium and hereby duly represented by Luc Van den hove, President and CEO

relating to the research project under the Horizon 2020 – the Framework Programme for Research and Innovation (2014-2020), Call: H2020-ICT-2016-2017, Topic: ICT-13-2016 for the implementation of the project entitled "Federation for FIRE Plus" (hereinafter referred to as "Fed4FIRE+" or "the Project)

Hereinafter individually referred to as the "Party" and jointly as the "Parties"

- WHEREAS as from January 1st, 2017, the Coordinator participates in the Project together with Université Pierre et Marie Curie – Paris 6 ("UPMC"), Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V ("Fraunhofer"), Technische Universität Berlin ("TUB"), Ethniko Kentro Erevnas Kai Technologikis Anaptyxis ("CERTH"), Mandat International alias Fondation pour la Cooperation Internationale ("MI"), EURESCOM – European Institute for Research and Strategic Studies in Telecommunications GmbH ("EURESCOM"), MARTEL GmbH ("MARTEL"), ATOS Spain S.A.U ("ATOS"), National Technical University of Athens ("NTUA"), Institut National de Recherche en Informatique et

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Automatique ("INRIA"), University of Southampton ("IT Innovation"), GEANT Limited ("GEANT"), Fundacio Privada I2CAT, Internet i Innovacio Digital a Catalunya ("I2CAT"), Instytut Chemii Bioorganicznej Polskiej Akademii Nauk ("PSNC"), Universidad de Cantabria ("UC"), Universidad de Malaga ("UMA"), Universiteit van Amsterdam ("UVA"), Institut Jozef Stefan ("JSI"), The Provost, Fellows, Foundation Scholars & The Other Members of Board of the College of the Holy & Undivided Trinity of Queen ("TCD) and NORDUNET A/S ("NORDUNET") (hereinafter collectively referred to as the "Fed4Fire+ Partners" or "Beneficiaries";

- WHEREAS the Fed4FIRE+ Partners have amongst themselves entered into a written agreement detailing their respective rights and obligations under the Project;
- WHEREAS the purpose of Fed4Fire+ is to provide, run and further improve Fed4FIRE+'s "best-in-town" federation of experimentation facilities covering technologies ranging from wireless, wired, cloud services and open flow for the Future Internet Research and Experimentation initiative;
- WHEREAS the Fed4FIRE+ platform consists of individual testbeds and tools put at the disposal by different resource providers;
- WHEREAS the Experimenter through the execution of the submitted proposal (hereinafter referred to as the "Proposal") under an Open Call (in accordance with the rules detailed in the Open Call documents) has applied to use the Testbed to be provided by the Fed4FIRE+ Partner(s) identified in the Proposal;
- WHEREAS on the basis hereof the Experimenter will be entitled to use the Testbed subject to the terms and conditions described hereunder;

NOW, THEREFORE, the Parties agree as follows:

Article 1 - Definitions

When used herein, unless the context requires otherwise, the following words and expressions shall have the meaning as stated hereunder:

1.1. "Experiment(s)" means the experimentation activity(ies) undertaken by the Experimenter, alone or (if applicable) with the patron, for testing new ideas and technologies in the area of computer networking. Details of the Experiment can be found in the Proposal submitted by the Experimenter.

1.2. "Experiment Results" means any tangible and intangible outputs of the Experiments that are generated by or on behalf of the Experimenter (e.g. involvement of patron) as well as any rights attached to them.

1.3. "Maximum Budget" means the maximum amount of funding to be made available by the Coordinator to the Experimenter by way of financial support as further detailed in Appendix 1 hereto.

1.4. "Platform" means the Fed4FIRE+ testbed resources and tools in the Fed4FIRE+ federation. The Platform has been constructed for experiment-driven research activities, where experiment-driven research is defined as any activity that furthers the Experimenters' knowledge and/or understanding of concepts, algorithms, protocols of wireless solutions, provided that this activity is legal.

1.5. "Testbed" means the specific Platform components that are to be made available to the Experimenter for the performance of Experiment(s) in accordance with the terms and conditions of the Agreement.

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Article 2 – Scope of the Agreement - Responsibilities

2.1. Subject to the terms and conditions set forth in the Agreement, the Experimenter is hereby granted the non-exclusive, non-sub licensable, non-transferable right to use the Testbed for the performance of Experiments. Any other use of the Testbed by the Experimenter than the use expressly described in the Experiments is not permitted.

2.2. Responsibilities of the Experimenter

2.2.1. The Experimenter shall perform its tasks in accordance with the conditions of the Agreement and the Proposal towards the implementation of the Experiment to the best of its ability and in accordance with any guidelines issued by the Coordinator.

2.2.2. The Experimenter shall not, directly or indirectly:

- rent, lease, transfer or sub-license the Testbed, nor permit any third party to do so;
- use the Testbed to host commercial activities or in a way that limits the rights of others to use the Testbed;
- remove, alter, cover or obscure any copyright notices or other proprietary rights notices placed or embedded on or in Testbed;
- reverse engineer, decompile, disassemble, re-engineer, translate, integrate, adapt, create derivate works or updates of the Testbed or any part thereof nor permit, allow, or assist any third party to do so.

2.2.3. The Experimenter acknowledges and agrees that besides the terms and conditions detailed in the Agreement, specific regulations of the party providing the Testbed (the "Provider") may apply. It is the Experimenter's responsibility to remain aware of all applicable regulations and of any changes made to them.

If there is evidence that the actions of the Experimenter are adversely impacting the quality offered by the Platform, the Coordinator is empowered to take reasonable measures to terminate or reprioritize usage in order to protect the overall operation of the Platform.

2.2.4. Should the Experimenter's usage imply giving access to the Testbed to third parties, the Experimenter understands it will need to gather explicit consent from the Coordinator and agrees to enforce any restrictions imposed by the Coordinator and accepts to fulfill its legal obligations as a service provider regarding data protection and retention laws.

2.2.5. The Experimenter is responsible and liable for any and all actions performed by using the Testbed. The Experimenter undertake that it shall:

- comply with all instructions and regulations relating to the use of the Testbed;
- not use the Testbed in a manner which is or is likely to adversely affect the Testbed or which may disturb the working of, interfere or damage the Testbed or any other system. In case of misuse, the

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Experimenter is responsible for restoring all damages to the Testbed and is responsible for any loss and damages incurred;

- not interfere with others' work or attempt to invade their privacy;
- not use the Testbed in a manner that may damage the Fed4Fire+ Partner'(s) t's good name and reputation or may infringe the intellectual or industrial property rights of a Party or any other third party. Copyright, other intellectual property right and data protection legislation must be observed by the Experimenter.

2.2.6. The Experimenter shall, in a timely manner, provide all information reasonably required by the Coordinator such as but not limited to the information required for the Coordinator to comply with its obligations under the Agreement, the Grant Agreement with the European Commission and the Consortium Agreement.

2.2.7. The Experimenter shall ensure that neither the Experimenter nor anyone of its behalf or with its consent causes any damage to the Testbed.

2.2.8. The use of the Testbed is at Experimenter's own risk and responsibility. The Coordinator does not assume any liability in regards to interruption, corruption, loss or disclosure of services, processes and data hosted on the Platform. The Experimenter acknowledges and agrees that the uninterrupted availability and use of the Testbed cannot be ensured ("reasonable efforts").

The Experimenter shall take appropriate measures to protect its credentials and prevent their use by third parties. The information the Experimenter provides when requesting an account should be correct. The Experimenter is responsible for all and any loss or damages incurred by the Coordinator, the Provider and/or the Beneficiaries as a result of any unauthorized transfer by them of their password.

2.3. The Testbed will be put at the disposal of the Experimenter free of charge for the Experiments detailed in the Proposal and on a reasonable effort basis.

2.4. The Coordinator shall give the Financial Support for the Experiment in accordance with the conditions detailed in article 3 of the Agreement.

Article 3 – Financial support

3.1. For the performance of the Experiment in accordance with the terms and conditions of the Agreement, the Coordinator agrees to provide within the Maximum Budget financial support to the Experimenter. Details can be found in Appendix 1.

3.2. Invoicing of the financial support will effectuated by the Coordinator for the Experimenter as detailed in the Open Call document. Payment is subject to receipt of the funding from the European Commission, acceptance by the Beneficiaries of the reports and the attendance of the meetings as detailed in the Open Call documents.

3.3. The Experimenter hereby agrees to be bound by the obligations as set forth in the articles 22, 23, 35, 36, 38 and 46 of the Grant Agreement. These articles can be found

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http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/amga/h2020-amga_en.pdf

Article 4 – Intellectual property – Consent to use data

The Results achieved by the Experimenter using the Testbed will be owned by the Experimenter.

The Experimenter will deliver a final report describing the Results of the Experiment and the experience gained in using the Testbed. This final report can be made public to the European Commission and all Beneficiaries including their Affiliated Entities.

Publications and demonstrations made based on the Results of the Experiment should clearly mention the usage of the Testbed and the provider and refer to the Project even if the publication or demonstration takes place after the end of the Experiment.

The Experimenter agrees the Coordinator and the other relevant Fed4Fire+ Partner(s) may monitor the Testbed and traffic for vulnerabilities and conformance to authorized use and may collect and use data and information, including but not limited to the information about Experimenter's use of the Testbed. This information, provided it is anonymized, can be used by to improve the Testbed.

Article 5 - Liability – Warranty

5.1. The Experimenter shall fully and exclusively bear the risks in connection with the Experiment, including without limitation to any risk arising from the use of the Testbed. The Experimenter shall hold harmless and indemnify the Coordinator and/or the Fed4Fire+ Partners harmless against all losses, repayments, liabilities, claims or damages which the Fed4Fire+ Partners and/or the Coordinator as a result thereof would incur or suffer or have to pay to the European Commission or any third parties. In addition, should the European Commission have a right of recovery against the Coordinator or any other Beneficiary regarding any or all of the Financial Support granted under the Agreement, the Experimenter shall repay the sums in question in the terms and on the dates stipulated by the Coordinator.

5.2. No warranty whatsoever is given with respect to the Testbed, support and all information provided hereunder including, but not limited to, any express or implied warranty for use, availability, reliability, quality, fitness for a particular purpose or non-infringement of third party intellectual property rights. They are provided "AS IS".

5.3. To the extent authorized under mandatory law, in no event shall the Coordinator or any of the other Beneficiaries be liable to the Experimenter or any person or entity connection with any of them for costs of procurement of substitute goods, property damage, personal injury, profit loss, business interruption, or for any other special, indirect, consequential or incidental damages, however caused, whether for breach of warranty, contract, tort or negligence, strict liability or otherwise.

The Coordinator's liability in aggregate, arising out of or in connection with the Experiment and/or the Agreement, however caused, whether for breach of warranty, contract, tort or negligence, strict liability or otherwise, shall not exceed the Maximum Grant.

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5.4. The Coordinator is not liable for any failure due to the direct or indirect use, loss of use, or delay in delivery of the Testbed or the services provided herein, unless the Experimenter can show willful misconduct, fraud or deceit by the Coordinator.

Article 6 – Term and termination of the Agreement

The Agreement enters into force on the date detailed in Appendix 1 for the period provided in Appendix 1, unless sooner terminated in accordance with article 6. The Experimenter acknowledges and agrees that its authorized use of the Testbed is only effective during the term of the Agreement.

The Experimenter's right to use the Testbed and the Agreement are automatically and without notice from the Coordinator terminated if the Experimenter fails to comply with any of the obligations detailed in the Agreement.

Upon termination of the Agreement, the Experimenter shall immediately discontinue all use of the Testbed.

Article 7 - Applicable law

The Agreement is governed by the laws of Belgium without reference to its conflict of law principles. Any dispute arising out of the Agreement shall be settled by the competent courts located in Brussels (Belgium).

Article 8 - Miscellaneous

8.1. The Experimenter represent and warrant that the Testbed shall not be evaluated or employed for the purpose of use in the design, development, production, stockpiling or use of weapons of mass destruction, such as nuclear, chemical or biological weapons or in any manner for a military end use or with a military end-user. The Experimenter shall comply with applicable laws and regulations controlling the export of technical data, computer software and all other export controlled commodities and ensures that it will not include the participation of persons on any restricted party listing in accordance with applicable national and international regulations. The Experimenter agree to indemnify, defend and hold harmless the Coordinator and the other Fed4Fire+ Partners from any and all claims, damages and other liabilities resulting from the Experimenter's violation of any applicable export regulations.

8.2. The Parties may sign and deliver this Agreement by electronic transmission. Each Party agrees that the delivery of this Agreement by electronic transmission shall have the same force and effect as delivery of original signatures and that each Party may use such electronic or facsimile signatures as evidence of the execution and delivery of this Agreement by the Parties to the same extent that an original signature could be used.

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AS WITNESS, the Parties have caused the Agreement to be duly signed by the undersigned authorised representatives in separate signature pages.

For Experimenter,

Name:

Title:

Date:

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For IMEC,

Luc Van den hove

President & CEO

Date:

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Appendix 1:

Experiment – financial information

Duration of the Experiment:

Start date:

End date:

Budget of the experiment € xx xxx

Payment conditions (subject to payment conditions detailed in article 3.3): (timing of the payment, unless this is included in the Open Call document)

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7.4 INDIVIDUAL RESPONSES BY THE TESTBEDS ON RUNNING OF THE EXPERIMENTS

The following survey results are attached:

Experiment number & title	Testbed
F4F4p-01-08-S DDLP	PL-Lab
F4F4p-01-11-S EMPATIA_XXL	Virtual Wall
F4F4p-01-15-S Go-Quick	Ofelia Island
F4F4p-01-20-L LASH-5G	Ofelia Island
F4F4p-01-20-L LASH-5G	Virtual Wall
F4F4p-01-22-S LTESCHED	Perform LTE
F4F4p-01-23-S MEC4FAIRFEST	NITOS
F4F4p-01-24-S MOCAP	Virtual Wall
F4F4p-01-27-S POI	Grid5000
F4F4p-01-27-S POI	Virtual Wall
F4F4p-01-37-S UbiMed4K	PL-Lab
F4F4p-01-37-S UbiMed4K	Virtual Wall
F4Fp-01-02-S Aerial Insights	Virtual Wall
F4Fp-01-06-S CLC	NITOS
F4Fp-01-35-L ThinkINFIRE	Tengu
F4Fp-02-Stage1-02 FARMSENS	Virtual Wall -- W-iLabt
F4Fp-02-Stage1-05 Robotview	NITOS
F4Fp-02-Stage1-08 RobotWiFi	w-iLabt
F4Fp-02-Stage1-11 D2D4P	Log-a-TEC
F4Fp-02-Stage2-02 CLONE	IRIS
F4Fp-02-Stage2-03 Comfort-App	NETMODE
F4Fp-02-Stage2-03 Comfort-App	w-iLabt
F4Fp-02-Stage2-05 PERCEVAL	Perform LTE
F4Fp-02-Stage2-06	F4F-LWA
F4Fp-02-Stage2-07 Crowdbeamer	w-iLabt
F4Fp-02-Stage2-08 FIVE	NITOS
F4Fp-02-Stage2-08 FIVE	w-iLabt -- Portable
F4Fp-03-L04 SODA	w-iLabt
F4Fp-03-L05 SIMBED	NITOS
F4Fp-03-L06 MAGIC	w-iLabt
F4Fp-03-M13 InteligentNFVscaler	Virtual Wall
F4Fp-03-M14 ERASER	Virtual Wall
F4Fp-03-M15 Fed4QoE	CityLab
F4Fp-03-M15 Fed4QoE	NITOS
F4Fp-03-M15 Fed4QoE	Perform LTE
F4Fp-03-M23 PiAS	Virtual Wall

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Complete

Referrer

Date Taken 2018-10-31 12:04

Location PL - WP

1*) Identify the experiment to which this input refers to

F4F4p-01-08-S DDLP (Male Labs)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

PL-Lab

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

Automation of ML processes is very important and this was the main scope of the experiment. The experiment was very successful and, according to the knowledge of the testbed owner, the experimenter will continue development towards the final product.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

The experiment and its results will have significant impact on the future NGI research. Artificial Intelligence is one of the key pillars of the today's NGI vision and this experiment heavily contributes to this topic.

7*) Describe the main challenges of this experiment to your testbed.

We haven't faced significant challenges during the experiment execution.

8*) How well was your testbed serving the needs for this experiment

Not adapted 8 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): The experiment was perfectly suited for our facilities. No significant changes were necessary.

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

none

11*) What did you learn from the experiment?

We learned new techniques for ML and also new opportunities arising from Artificial Intelligence as the whole. We also realized the importance of HPC/networking in the AI landscape - PSNC is now looking forward for future collaboration with the experimenter, e.g. commercial deployments of the solution for experimenters' customers.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

1 - 5 Person days

Experiment set-up

10 - 20 Person Days

Adaptations to your testbed

1 - 5 Person days

Running the experiment

1 - 5 Person days

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 7 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-4 08:37

Location BE - VBR

1*) Identify the experiment to which this input refers to

F4F4p-01-11-S EMPATIA_XXL (OneSource)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Virtual Wall

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

Scaling up test with scaling number of users targetting a specific back-end

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

Yes, testing scalability of platforms to be used by the human centric internet

7*) Describe the main challenges of this experiment to your testbed.

Users still need to set up everything themselves. Offering scale up tools could help those experimenters.

8*) How well was your testbed serving the needs for this experiment

Not adapted 10 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): none

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

N/A

11*) What did you learn from the experiment?

We could help with an automatic scale up tool.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

< 1 Person Day

Running the experiment

< 1 Person Day

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 6 **Technical support (helping execute experiment)**

Complete

Referrer mail.google.com
Date Taken 2018-10-26 09:08
Location US - OR

1*) Identify the experiment to which this input refers to

F4F4p-01-15-S Go-Quick (Eight Bells)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

i2cat Ofelia Island

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

The GO-QUICK proposal concerns the benchmarking of some protocols responsible for delivering typical content in webpages (QUIC vs HTTP vs SDPY) to a large number of devices. Eight Bells was interested on evaluating the performance of these three protocols under different network conditions; where this would be used to meet client's requirements. Such network conditions were to be simulated through virtual overlay networks with dynamic allocation of bandwith, priorisation of traffic and the classic dynamic traffic routing. The introduction of SDN overlays simplifies the network management and introduces a wider range of tests on the network conditions to be tested, which would otherwise need more manual intervention and thus more time. As it was a small-scale and single facility experiment, Eight Bells was able to fulfil the experiment in time.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

This experiment tested different web content-like delivery protocol. Such protocols rely completely on the status of the network, yet some show great tolerance to moderate delay and loss values. This helps moving to a more resilient and adaptive (w.r.t. the user's network conditions) Internet, as requested by NGI. Other than that, this experiment does not seem to have a direct impact on the NGI research and innovation agenda.

7*) Describe the main challenges of this experiment to your testbed.

The experiment required more up-to-date flavours than those offered by default through jFed, so we opted to provide a dedicated server that was explicitly configured for their needs and wired to the OpenFlow equipment as appropriate.

8*) How well was your testbed serving the needs for this experiment

Not adapted 7 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Hardware - Additions (extra nodes, ...)
Software - Updates

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

A dedicated server was provided to the experimenter to give further control, improve their ease of operation and reduce the time required for the experimentation The software for the Operating System was updated and KVM was installed so as to deploy the expected machines of choice

11*) What did you learn from the experiment?

This experiment reaffirmed the need of more flavours with more up-to-date Operating Systems for the testbed.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

1 - 5 Person days

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

5 - 10 Person days

Running the experiment

< 1 Person Day

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work)	4	**Technical support (helping execute experiment)**

Complete

Referrer mail.google.com
Date Taken 2018-10-26 11:31
Location ES

1*) Identify the experiment to which this input refers to

F4F4p-01-20-L LASH-5G (CNIT)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

i2cat Ofelia Island

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

The LASH-5G proposal targeted the testing of an adaptive service chaining mechanism (for end-to-end orchestration in NFV environments). The major point contributed by the experiment was to apply mechanisms to identify end-to-end values for network conditions (such as latency, adaptability and availabily requirements) and, using SDN and NFV, provide a service chain of Virtual Functions such that the latency (considering network and computing processing delays) is minimised.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

This experiment detects the end-to-end latency and other network conditions and identifies the best placement of Virtual Functions to provide connectivity with the minimum latency affecting the end-user (both the processing latency of a compute resource and the network latency). Regarding this aspect, the experiment can work on the front of an adaptive Internet, as requested by NGI. Other than that, this experiment does not seem to have a direct impact on the NGI research and innovation agenda.

7*) Describe the main challenges of this experiment to your testbed.

The experiment was initially devised to connect two Fed4FIRE+ infrastructures; and for that matter, a steady L2 link should be assured at all times. This requires interacting with the network operators and also the owners of the different segments to troubleshoot and find the failure. The network issues to connect the two infrastructures prevented the experiment from realising as initially devised, having to move all resources to the other testbed. Also, more up-to-date flavours were required than those offered by default through jFed. We opted to provide specific VMs interconnected with the rest of the experiment resources by a VPN.

8*) How well was your testbed serving the needs for this experiment

Not adapted 4 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): Software - Additions (extra nodes, ...)

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

- A new VM was added for the SDN controller, running on top of Ubuntu and connected to the OpenFlow equipment to be managed

11*) What did you learn from the experiment?

This experiment demonstrated that the L2 link, stable or mostly stable in past experiments, was broken at some point and thus connectivity between the two infrastructures could no longer be ensured. This experiment reaffirmed the need of more flavours with more up-to-date Operating Systems for the testbed.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

5 - 10 Person days

Adaptations to your testbed

5 - 10 Person days

Running the experiment

10 - 20 Person Days

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work)	6	**Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-3 10:13

Location BE - VBR

1*) Identify the experiment to which this input refers to

F4F4p-01-20-L LASH-5G (CNIT)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Virtual Wall

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

Very advanced combination of multiple innovative technologies (openstack cloud, ovs, onos, sdn) and scaling of those.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

Yes, it shows that the Fed4FIRE+ testbeds are ready for 5G/SDN/NFV experimentation.

7*) Describe the main challenges of this experiment to your testbed.

As they combined advanced technologies, the network is really complex, also interactiving with the standard network of the testbed. All worked out well, because of very skilled (academic) users.

8*) How well was your testbed serving the needs for this experiment

Not adapted 10 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): Nothing

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

none

11*) What did you learn from the experiment?

That our testbed indeed serves this kind of experimentation, but that you need the skills and time to set this up. An SME will not be able to do the same in 2 months.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

1 - 5 Person days

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

< 1 Person Day

Running the experiment

1 - 5 Person days

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 9 **Technical support (helping execute experiment)**

Complete

Referrer webmail.lcc.uma.es
Date Taken 2018-10-31 16:35
Location ES - MA

1*) Identify the experiment to which this input refers to

F4F4p-01-22-S LTESCHED (Innovative Solutions)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Perform LTE

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

Implementation of new scheduling algorithm for radio resources in 4G-LTE base stations

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

Experiment focused in control of physical radio resources, more aligned with 3GPP standardization process than with the goals of NGI

7*) Describe the main challenges of this experiment to your testbed.

The experimenters needed access to a Software Defined Radio card connected to a real (shared) computer, and requested a higher degree of confidientiality for their experiment. The testbed needed to find a way to provide direct access for the hardware (the card) but isolating the operating system used by then

8*) How well was your testbed serving the needs for this experiment

Not adapted 8 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Software - General

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

Not used, communication was always direct with the experimenter

11*) What did you learn from the experiment?

LTE scheduling in commercial phones are more or less fixed in firmware, it is difficult to try new algorithms other than 3GPP standard ones

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

5 - 10 Person days

Running the experiment

>1 Person Month

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 6 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-10-31 15:35

Location GR

1*) Identify the experiment to which this input refers to

F4F4p-01-23-S MEC4FAIRFEST (Vicomtech)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

NITOS (CERTH)

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

The MEC4FAIRFEST experiment is using NITOS infrastructure in order to build a Mobile Edge Computing approach that improves QoS in media data streams by controlling the bitrate selection criteria. The experiment tests different content types and networking conditions, in order to offer a robust user experience for media consuming.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

The experiment showcases a media consuming application using MEC technologies. This experiment falls within the scope of NGI and 5G networks as it presents a solution for high quality video adaptive streaming with low latency times.

7*) Describe the main challenges of this experiment to your testbed.

All technologies required by this experiment were already supported by NITOS, thus there were no major challenges for this experiment. The only challenge was related to user friendliness of the platform and getting new experimenters to familiarize with the platform.

8*) How well was your testbed serving the needs for this experiment

Not adapted 9 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): No testbed adaptation/changes were required

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

No testbed adaptation/changes were required

11*) What did you learn from the experiment?

NITOS was build having this kind of experiments in mind. The interaction with new experimenters showed us that documentation and user-friendliness of the platform should be improved.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

1 - 5 Person days

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

< 1 Person Day

Running the experiment

1 - 5 Person days

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 8 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-4 12:39

Location BE - VBR

1*) Identify the experiment to which this input refers to

F4F4p-01-24-S MOCAP (Castoola)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Virtual Wall

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

Scaling up number of users towards a back-end running in the cloud.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

Yes, scaling up tests on the number of users to prepare platforms for the human centric internet

7*) Describe the main challenges of this experiment to your testbed.

Scaling up to 50 bare metal servers. They could benefit from an easier tool for the scaling up part.

8*) How well was your testbed serving the needs for this experiment

Not adapted 10 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): none

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

N/A

11*) What did you learn from the experiment?

They could benefit from an easier tool for the scaling up part.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

< 1 Person Day

Adaptations to your testbed

< 1 Person Day

Running the experiment

< 1 Person Day

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 5 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-10-31 08:46

Location FR

1*) Identify the experiment to which this input refers to

F4F4p-01-27-S POI (atSistemas)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Grid 5000

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

The goal of the experiment is to evaluate the deployment of a PaaS application on top of several IaaS cloud. atSistemas did not perform such evaluations previously.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

not really: this experiment is focused on the business case of the experimenter.

7*) Describe the main challenges of this experiment to your testbed.

The experimenters was looking for ready-to-use IaaS stacks. We provide that for OpenStack (which the experimenter used), but not for other IaaS stacks. Maintaining high-level, easy-to-use tools for the deployment of IaaS stacks is extremely difficult in the long run, because such software stack are changing very frequently.

8*) How well was your testbed serving the needs for this experiment

Not adapted 8 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): Nothing

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

The testbed suited the experimenters' needs.

11*) What did you learn from the experiment?

The experiment helped us validate our approach to OpenStack deployment on Grid'5000 (namely the EnOS tool). It confirmed that this tool can meet experimenters' needs. The experiment also stressed the need for a better integration of Grid'5000 inside the Fed4FIRE ecosystem (through technical federation using the SFA protocol suite, and integration in jFED).

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

1 - 5 Person days

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

< 1 Person Day

Running the experiment

5 - 10 Person days

Analyzing results

5 - 10 Person days

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 5 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-4 13:08

Location BE - VBR

1*) Identify the experiment to which this input refers to

F4F4p-01-27-S POI (atSistemas)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Virtual Wall

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

They tested out building infrastructure on top of Virtual wall testbed and jFed command line version.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

It shows how to build automatcally infrastructure on top of Fed4FIRE testbeds. This can be used by other NGI projects needing infrastructure.

7*) Describe the main challenges of this experiment to your testbed.

Tested extensively jFed CLI version and automatisation with ansible.

8*) How well was your testbed serving the needs for this experiment

Not adapted 9 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Software - General

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

fixed some bugs in jFed CLI and ansible support.

11*) What did you learn from the experiment?

That jFed CLI is very useful for some experimenters and that it is possible to build stuff on top of the testbeds. It was a pity that Grid5000 was not yet fully federated at that moment.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

1 - 5 Person days

Running the experiment

1 - 5 Person days

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 8 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-10-31 12:14

Location PL - WP

1*) Identify the experiment to which this input refers to

F4F4p-01-37-S UbiMed4K (medVC.eu)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

PL-Lab

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

High resolution streaming of medical images over optical networks

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

e-Health and related services are definitely in scope of the NGI, as these technologies always put human in the centre of the future Internet.

7*) Describe the main challenges of this experiment to your testbed.

The experiment required extra resources which are not part of the PL-LAB testbed. Running the experiment required some extra work on our side to prepare the testing environment for the experimenter.

8*) How well was your testbed serving the needs for this experiment

Not adapted 8 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Hardware - Additions (extra nodes, ...)

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

Since the experiment focused on adaptation of the experimenter's streaming terminals to the 4K resolution, the testbed in PSNC has been extended with new hardware and network interconnections to enable testing of new functionality implemented by the experimenter. The extensions included extra 4K streaming nodes, 4K codecs and 4K visualization facilities.

11*) What did you learn from the experiment?

Once talking to the experimenter we realized the importance of our facilities for such new developments. Moreover, we identified future collaboration areas, e.g. sharing our cloud facilities for the experimenter to store high-definition images from their medical terminals.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

1 - 5 Person days

Experiment set-up

10 - 20 Person Days

Adaptations to your testbed

>1 Person Month

Running the experiment

1 - 5 Person days

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 9 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-4 14:56

Location BE - VBR

1*) Identify the experiment to which this input refers to

F4F4p-01-37-S UbiMed4K (medVC.eu)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Virtual Wall

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

Long distance high-bandwidth connection between Virtual Wall and GENI and PLLab testbed to test advanced 4k streaming for medical applications.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

It shows that the use of multiple testbeds, e.g. for long distance connections, is possible, and usable. So it is possible to deploy applications around the world for research on e.g. trustworthiness, human centric internet.

7*) Describe the main challenges of this experiment to your testbed.

Layer 2 connection over Geant.

8*) How well was your testbed serving the needs for this experiment

Not adapted 10 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): nothing

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

N/A

11*) What did you learn from the experiment?

There was no automated connection setup over Geant for this connection, and this took some time to get right at PLLab side.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

1 - 5 Person days

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

< 1 Person Day

Running the experiment

1 - 5 Person days

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 8 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-3 10:25

Location BE - VBR

1*) Identify the experiment to which this input refers to

F4Fp-01-02-S Aerial Insights

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Virtual Wall

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

Scaling up test with real emulated user behaviour and network impairment

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

Yes, they researched the user impact on a cloud based service using the testbeds to scale up.

7*) Describe the main challenges of this experiment to your testbed.

Setup of advanced environment, including docker, scaling up and network impairment + verification of performance

8*) How well was your testbed serving the needs for this experiment

Not adapted 9 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): nothing

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

N/A

11*) What did you learn from the experiment?

They ask for more consulting at the start of the experiment. We are working to bring our kubernetes (docker) automatic deployment to production use, for experiments like this.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

< 1 Person Day

Adaptations to your testbed

< 1 Person Day

Running the experiment

< 1 Person Day

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 6 **Technical support (helping execute experiment)**

Complete

Referrer freeonlinesurveys.com
Date Taken 2018-10-31 15:29
Location GR

1*) Identify the experiment to which this input refers to

F4Fp-01-06-S CLC (National and Kapodistrian University of Athens)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

NITOS (CERTH)

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

The CLC experiment is using SDN and SDR in order to target 5G heterogeneous networks, by deploying and evaluating a Cross Layer Controller (CLC), which acts on top of the SDN and SDR controllers, and monitors in real-time the conditions in the radio environment. The CLC then dynamically updates the policies of those controllers. During CLC two scenarios have been executed, one regarding Ultra Dense Networks and one regarding network and radio slicing for broadband services.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

The experiment showcases two scenarios regarding 5G HetNets and more specifically the trustworthiness of them, given the fact that HetNets are a major part of NGI, to our opinion, these experiments are closely related to NGI.

7*) Describe the main challenges of this experiment to your testbed.

What was required in the CLC experiment was the creation of openwrt images for our resources.

8*) How well was your testbed serving the needs for this experiment

Not adapted 10 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): No testbed adaptation/changes were required

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

No testbed adaptation/changes were required

11*) What did you learn from the experiment?

NITOS was build having this kind of experiments in mind. The interaction with new experimenters showed us that documentation and user-friendliness of the platform should be improved.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

1 - 5 Person days

Running the experiment

1 - 5 Person days

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 6 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-6 15:08

Location BE - VOV

1*) Identify the experiment to which this input refers to

F4Fp-01-35-L ThinkINFIRE+ (ThinkInside)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Tengu

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

ThinkINFIRE+ aims to experiment with an analytics service for the retail business (how customers interact with products, based on indoor locations), to assess its performance on a large scale. The Tengu testbed is used to first re-engineer the service (as Tengu offers a wide variety of off-the-shelf big data tools and platforms) and then test its scalability per cloud instance. The innovation lies in the possibility to personalize retail experience for physical shops, compared to e-commerce, through large-scale in-store analytics. Tengu helped in determining the KPIs of this service: how many computational nodes are required and what is the system delay to provide output.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

ThinkINFIRE+ has the main goal to test the scalability of a service using accurate indoor localization (IoT sensors over Wifi networks) with scalable computing resources (Big Data). Such experimentation involving IoT, networking and computation is a critical step in product development, testing and scaling for many industry players in different NGI domains and is important to enable the development of thrustworthy and human-centric services, in line with NGI research initiatives.

7*) Describe the main challenges of this experiment to your testbed.

As the available big data tool set is rather large, the initial selection of the appropriate components is not straightforward. Defining consecutive experiments after the initial setup was easier. The required technologies themselves were provided from the beginning.

8*) How well was your testbed serving the needs for this experiment

Not adapted 9 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): No real changes to software components were required, except for some manual configurations.

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

VM configuration for deployment on Tengu can be required for specific services (e.g. Spark), which has been dealt with during the experiments.

11*) What did you learn from the experiment?

The project confirmed the ease of use after initial setup of an experiment, but also presented difficulties in choosing the right technologies and setup to start with.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

5 - 10 Person days

Adaptations to your testbed

1 - 5 Person days

Running the experiment

< 1 Person Day

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work)	3	**Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-4 19:05

Location BE - VBR

1*) Identify the experiment to which this input refers to

F4Fp-02-Stage1-02 FARMSENS (Telesis)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Virtual Wall & wilab.t

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

They tested in stage 1 the usability of virtual wall and w-iLab.t for generating IoT sensor information for their platform.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

Not directly, the stage 2 would have been scaling up.

7*) Describe the main challenges of this experiment to your testbed.

Nothing really on first sight.

8*) How well was your testbed serving the needs for this experiment

Not adapted 0 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): nothing

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

N/A

11*) What did you learn from the experiment?

Nothing

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

1 - 5 Person days

Experiment set-up

< 1 Person Day

Adaptations to your testbed

< 1 Person Day

Running the experiment

< 1 Person Day

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 4 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-10-31 15:50

Location GR

1*) Identify the experiment to which this input refers to

F4Fp-02-Stage1-05 Robotview (Cybernetic Technologuies Netictech)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

NITOS (CERTH)

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

The Wireless Robotic Surveillance Platform “RobotView” is a platform in development that enables real time video surveillance using Wi-Fi and mobile networks from remote controlled robots. This experiment is using NITOS to test the platform in heterogeneous wireless networks (LTE and Wi-Fi).

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

In our opinion the results of RobotView are not closely related to NGI.

7*) Describe the main challenges of this experiment to your testbed.

All technologies required by this experiment were already supported by NITOS, thus there were no major challenges for this experiment.

8*) How well was your testbed serving the needs for this experiment

Not adapted 10 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): No testbed adaptation/changes were required

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

No testbed adaptation/changes were required

11*) What did you learn from the experiment?

NITOS was build having this kind of experiments in mind. The interaction with new experimenters showed us that documentation and user-friendliness of the platform should be improved.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

< 1 Person Day

Adaptations to your testbed

< 1 Person Day

Running the experiment

< 1 Person Day

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 10 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-5 01:12

Location BE - VBR

1*) Identify the experiment to which this input refers to

F4Fp-02-Stage1-08 RobotWiFi (Zorarobotics)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment is still running

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

w-iLab.t

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

Verifying the wireless capabilities of a device under test (in this case a social robot) and the improved wireless software stack.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

yes, robust wireless devices are key in a human centric internet

7*) Describe the main challenges of this experiment to your testbed.

Providing a 'real' and reproducible environment for wireless stress testing

8*) How well was your testbed serving the needs for this experiment

Not adapted 9 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Software - Updates

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

need better tooling for creating realistic wireless environments

11*) What did you learn from the experiment?

Instead of setting up a realistic environment, they want to have this off the shelf

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

1 - 5 Person days

Running the experiment

1 - 5 Person days

Analyzing results

1 - 5 Person days

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 5 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-2 04:17

Location SI

1*) Identify the experiment to which this input refers to

F4Fp-02-Stage1-11 D2D4P (ComSens)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Log-a-TEC (JSI)

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

The experiment deals with the D2D communication framework using the ISM band and open technologies, for which no de facto standard exists for D2D. It is inspired by infomation centric networking, which are for specific use cases gaining some traction.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

Potentially yes, but these aspects has not yet been evaluated into details.

7*) Describe the main challenges of this experiment to your testbed.

Support continuous development and integration, as the experiment reused liitle of the provided building blocks for integration.

8*) How well was your testbed serving the needs for this experiment

Not adapted 8 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Hardware - Extensions
Software - new tools
Software - Updates

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

Support of proprietary communication protocol stack. Inclusion of portable experimenting hardware node.

11*) What did you learn from the experiment?

We have learned on the importance of having portable experimentation nodes that can be included in the infrasturcture during the execution of the experiment as well as put on disposal for laboratory developments.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

1 - 5 Person days

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

1 - 5 Person days

Running the experiment

5 - 10 Person days

Analyzing results

5 - 10 Person days

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 5 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-10-26 10:08

Location IE - L

1*) Identify the experiment to which this input refers to

F4Fp-02-Stage2-02 CLONE (Tara Hill)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

IRIS (TCD)

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

The CLONE cloudlet architecture experiment was very interesting as it utilised the Named Data Networking (NDN) Future Internet architecture to distribute content close to end-users. The experimenters overlayed the architecture across the IP network at Iris. Due to the architectures design, it is also possible for NDN to run natively across different radio access technologies, which makes it an interesting candidate for 5G networks. The experimenters were acutely aware of this fact. Typical experiments at Iris run algorithms and test different wireless technologies, so this was something new and interesting for us.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

Yes. NDN natively supports the mechanisms such as data: i) security, ii) privacy, iii) decentralisation, iv) provenance, and iv) edge computing, etc., which are key Next Generation Internet (NGI) values. Due to these advantages and others including reducing the network traffic and the content-delivery delay experienced by end-users, NDN has been defined as a standard for 5G wireless network technologies, by the International Telecommunications Union (ITU). Furthermore, recent interviews with Angelo Corsaro [1] (PhD, chief technology officer at ADLINK and HUB4NGI expert), identify that NDN is already being spoken about in the context of NGI. The CLONE team published a paper at ACM ICN conference entitled “CLONE: An NDN Architecture for Content Distribution at Remote Tourist Sites - a TCP/IP and NDN Comparison”, which is available to the community for to use. Unfortunately these results are from an early stage in the project. The results from the final report would be much more interesting as a publication. [1]https://www.ngi.eu/news/2018/09/20 /angelo-corsaro-living-on-the-edge/

7*) Describe the main challenges of this experiment to your testbed.

The CLONE Team needed to use Android handsets running Named Data Networking (NDN) software for data retrieval. This necessitated support for full stack wireless IP protocol at the Iris testbed. We did not need this kind of support before, so working with the CLONE team to get this working was a challenge. Furthermore, getting the right handsets and SIM cards to work with the Iris testbed equipment was difficult. This required a lot of interaction with the experimenters. On the plus side, Iris now has a full stack SDR implementation with two Android handsets and associated SIM cards available to TCD users and other Fed4FIRE+ experimenters.

8*) How well was your testbed serving the needs for this experiment

Not adapted 10 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Software - General
Hardware - Additions (extra nodes, ...)
Software - Updates

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

Updated virtual machine images with srsLTE eNodeB software running with srsLTE Evolved Packet Core. New virtual machine images with the Named Data Networking - CXX library, a C++ library implementing the NDN primitives that supports the development of NDN-based applications, ii) the NDN Forwarding Daemon (NFD), a network forwarder that implements the NDN communication protocol, i.e. the Interest and Data packet formats, iii) the NDN Repo-Ng, a repository supporting the Repo protocol. Two Xiaomi Redmi 5 Android phones with sysmocom.de test SIM cards

11*) What did you learn from the experiment?

We learned a lot with regards to the Iris testbeds current capabilities, and how SDR technologies compare to commercial 2G, 3G, and 4G technologies. Furthermore, we learned a lot about the Named Data Network Future Internet Architecture.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

1 - 5 Person days

Experiment set-up

10 - 20 Person Days

Adaptations to your testbed

1 - 5 Person days

Running the experiment

5 - 10 Person days

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work)	5	**Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-10-26 14:17

Location GR - I

1*) Identify the experiment to which this input refers to

F4Fp-02-Stage2-03 Comfort-App (Wings ICT)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Netmode (NTUA)

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

The actual implementation and experimentation of a complete MEC offloading scheme with basic objective the low energy consumption of IoT-enabled devices. The experimentation of the Horizontal and Vertical scaling of the available Edge server resources in order to achieve optimal allocation and utilization of resource. Moreover, the proposed computation offloading mechanism is generic and applicable on several types of Mobile Edge Computing (MEC) applications.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

This experiment and the extended results indicate is in the direction of MEC and 5G architectures that will enable resource- and power-hungry applications to be executed in mobile devices, with one hop network-supported Computational Offloading.

7*) Describe the main challenges of this experiment to your testbed.

The experimental setup (both networking and software mainly) in Netmode testbed, using bare metal nodes, along with the need for scaling up the experiment.

8*) How well was your testbed serving the needs for this experiment

Not adapted 8 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Software - General
Software - new tools
Software - Updates

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

The installation of Docker and the update-installation of all the required packages for the applications that run in user space of the nodes

11*) What did you learn from the experiment?

The main conclusions drawn from this experiment are: -Horizontal and Vertical Scaling of Edge Servers is essential for guaranteeing the QoS metrics of time or mission critical applications. -50% reduction of the energy consumption of the Raspberry Pi devices is achievable through dynamic offloading. -Horizontal Scaling enables Load Balancing between MEC and Cloud. -Dynamic resource allocation prevents over- or under- provisioning of edge servers. -Dynamic MEC offloading significantly outperforms static offloading in terms of averages task execution latency and optimized use of resources.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

5 - 10 Person days

Running the experiment

>1 Person Month

Analyzing results

1 - 5 Person days

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work)	9	**Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-4 19:29

Location BE - VBR

1*) Identify the experiment to which this input refers to

F4Fp-02-Stage2-03 Comfort-App (Wings ICT)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

w-iLab.t

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

Quite complex software stack on top of a reasonable simple testbed configuration. Multi-testbed experiment.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

yes, it shows that offloading of services from mobile to cloud can be experimented on Fed4FIRE testbeds.

7*) Describe the main challenges of this experiment to your testbed.

It seems they struggled with deploying software on their nodes. It is not clear which testbed they refer to (as they used two).

8*) How well was your testbed serving the needs for this experiment

Not adapted 7 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): nothing

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

All the issues they describe in their report did not reach us during the experiment :-(.

11*) What did you learn from the experiment?

A unified starting information is needed, because the single point of contact is there (google forum), it is possible to save an image on w-Ilab.t (maybe they mean it is not possible on netmode ?), and it is very strange that jFed has a steep learning curve according to them and that the bugreport does not work (as we got more then 1000 bugreports yet).

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

< 1 Person Day

Adaptations to your testbed

< 1 Person Day

Running the experiment

< 1 Person Day

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 5 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-10-31 15:39

Location ES - MA

1*) Identify the experiment to which this input refers to

F4Fp-02-Stage2-05 PERCEVAL (Nemergent)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Perform LTE

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

The experiment tested MEC/FOG response for a public safety/emergency app (i.e. Police-targeted push-to-talk application running in Android devices) against normal network operation (traversing all the operator's network and commercial Internet). It was demonstrated reductions up to 5:1 in latency when the MEC service is used

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

The product is already been marketed to public safety agencies (without the MEC service). The addition of the MEC component is in line with the objectives of the NGI regarding deployment of services and resilience of the network, as it can be used to provide new connectivity possibilities to the end user, reducing overall traffic and improving public safety protocols

7*) Describe the main challenges of this experiment to your testbed.

The testbed needed to be manually configured to accommodate this experiment, as the introduction of the MEC component implied a disruption in its "operator's network". A new non-mobile server in the network range assigned to the phones, and the interruption of the signaling plane between the base station and the core required a physical rewire of portions of the testbed. Also, the MEC component used in this experiment was an in-house development of the University

8*) How well was your testbed serving the needs for this experiment

Not adapted 9 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Software - General
Hardware - Additions (extra nodes, ...)
Software - new tools

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

Not used, communication was always direct with the experimenter

11*) What did you learn from the experiment?

For us the main results is the validation of the MEC component developed by the team, as we only had the opportunity to use it with "generated data", not real applications where throughput and latency directly affects the behaviour of the final application

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

5 - 10 Person days

Adaptations to your testbed

5 - 10 Person days

Running the experiment

5 - 10 Person days

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work)	6	**Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-10-31 15:45

Location GR

1*) Identify the experiment to which this input refers to

F4Fp-02-Stage2-06 F4F-LWA (ATC)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

NITOS (CERTH)

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

The F4F-LWA experiment is an implementation if a Cloud-RAN infrastructure over the NITOS facility. It follows the CU/DU split paradigm and incorporates heterogeneous networking technologies. On the first stage F4F-LWA focuses on the development of the signaling protocol between CU/DU, the development of the different technologies of the fronthaul and the development of the Wi-Fi DU functionality. On the second stage the respective policies for the network selection/switching from an operator's perspective were developed. The developed solution was evaluated with two use case scenarios, addressing the dynamic network reconfiguration from the operator’s perspective.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

The F4F-LWA experiment is an implementation of Cloud-RAN infrastructure, compatible with 5G, that enables more flexible, resilient, trustworthy and sustainable networks. The results of this experiment are closely related to NGI.

7*) Describe the main challenges of this experiment to your testbed.

No major challenges for the testbed, help was provided during the last stage of the experiment for the large-scale evaluation of the solution.

8*) How well was your testbed serving the needs for this experiment

Not adapted 10 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): No testbed adaptation/changes were required

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

No testbed adaptation/changes were required

11*) What did you learn from the experiment?

NITOS was build having this kind of experiments in mind. The interaction with new experimenters showed us that documentation and user-friendliness of the platform should be improved.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

< 1 Person Day

Running the experiment

< 1 Person Day

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work)	7	**Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-5 01:16

Location BE - VBR

1*) Identify the experiment to which this input refers to

F4Fp-02-Stage2-07 Crowdbeamer (Roryco)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

w-iLab.t

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

Scalability stress testing of a wifi based local multicast presentation streaming

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

yes, pop up services such as the one provided by crowdbeamer will be central in the human centric internet

7*) Describe the main challenges of this experiment to your testbed.

providing the scalable environment

8*) How well was your testbed serving the needs for this experiment

Not adapted 10 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): nothing

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

N/A

11*) What did you learn from the experiment?

the consulting service offered by the testbed people is key for this to work.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

< 1 Person Day

Running the experiment

5 - 10 Person days

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 5 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-10-31 15:39

Location GR

1*) Identify the experiment to which this input refers to

F4Fp-02-Stage2-08 FIVE (Feron Technologies)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

NITOS (CERTH)

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

FIVE aims at the experimental evaluation and demonstration of an end-to-end solution prototype for the vehicular communications domain. More specifically the USRP devices supported by NITOS were used in order to use novel software modems implemented in SDR platforms. On top of those platforms they integrated the NITOS intelligent transportation systems (ITS) end-to-end protocol stack. The final goal was to demonstrate/evaluate their V2X communication application in real-world conditions.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

This experiment falls within the scope of NGI and 5G networks as it presents an end to end solution for V2V communications.

7*) Describe the main challenges of this experiment to your testbed.

The main challenge of this experiment was to tailor the software Intelligent Transportation Systems (ITS) stack of NITOS to interface the D2D modem of FIVE. The stack was altered in order to increase the accuracy of positioning based on GPS values, and in order to allow its execution in virtualized containers.

8*) How well was your testbed serving the needs for this experiment

Not adapted 10 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Software - General

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

A) Tailor the software Intelligent Transportation Systems stack of NITOS to interface the D2D modem of FIVE.

11*) What did you learn from the experiment?

The experiment showed us the importance of the ITS stack and the role it can play in NGI and 5G.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

5 - 10 Person days

Running the experiment

< 1 Person Day

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 5 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-4 19:58

Location BE - VBR

1*) Identify the experiment to which this input refers to

F4Fp-02-Stage2-08 FIVE (Feron Technologies)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

w-iLab.t and portable testbed

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

Advanced wireless car to car and car to environment communication.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

yes, advanced wireless communications with vehicles.

7*) Describe the main challenges of this experiment to your testbed.

Connection of extra hardware and also SDRs to the mobile nodes.

8*) How well was your testbed serving the needs for this experiment

Not adapted 10 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Hardware - Extensions

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

added hardware of the experimenter, both to w-iLab.t and to the portable testbed.

11*) What did you learn from the experiment?

This is really for what the w-iLab.t testbed and especially the portable testbed are created.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

5 - 10 Person days

Adaptations to your testbed

1 - 5 Person days

Running the experiment

1 - 5 Person days

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 9 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-5 01:19

Location BE - VBR

1*) Identify the experiment to which this input refers to

F4Fp-03-L04 SODA (University of Montenegro)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment is still running

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

w-iLab.t

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

Automatic IoT 6TISCH testing

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

yes, advanced wireless IoT communication for the human centric internet

7*) Describe the main challenges of this experiment to your testbed.

offering the right automation handles for experimenters

8*) How well was your testbed serving the needs for this experiment

Not adapted 10 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Software - Updates

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

we will use jFed and ansible to deploy automatically the opentestbed IoT firmware flashing framework

11*) What did you learn from the experiment?

it helps to clearly discuss what will be done to avoid duplicating work already done (by the testbed administrators)

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

< 1 Person Day

Adaptations to your testbed

1 - 5 Person days

Running the experiment

< 1 Person Day

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 5 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-10-31 15:53

Location GR

1*) Identify the experiment to which this input refers to

F4Fp-03-L05 SIMBED (INESC TEC)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment is still running

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

NITOS (CERTH)

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

SIMBED is using wireless testbeds to capture the state of the spectrum in a real-life situation and then uses this information to train a simulation (using ns-3). The purpose of SIMBED is to create and test a method that is capable of repeating and reproducing wireless experiments.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

In our opinion the results of SIMBED are not closely related to NGI.

7*) Describe the main challenges of this experiment to your testbed.

There were no major challenges relative to SIMBED since practically they only needed a spectrum analyzer in order to gather data and then use those data offline.

8*) How well was your testbed serving the needs for this experiment

Not adapted 10 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): No testbed adaptation/changes were required

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

No testbed adaptation/changes were required

11*) What did you learn from the experiment?

The interaction with new experimenters showed us that documentation and user-friendliness of the platform should be improved.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

< 1 Person Day

Adaptations to your testbed

< 1 Person Day

Running the experiment

< 1 Person Day

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 10 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-5 01:06

Location BE - VBR

1*) Identify the experiment to which this input refers to

F4Fp-03-L06 MAGIC (AOIFE Solutions)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment is still running

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

w-iLab.t

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

Scalability, robustness and mobility tests on a wifi solution/algorithms

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

yes, advanced wifi coverage for human centric internet

7*) Describe the main challenges of this experiment to your testbed.

Use of mobile nodes in w-iLab.t by experimenter

8*) How well was your testbed serving the needs for this experiment

Not adapted 0 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Other (please specify): nothing

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

N/A

11*) What did you learn from the experiment?

They want to have a real-time monitoring tool for radio waves.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

< 1 Person Day

Adaptations to your testbed

< 1 Person Day

Running the experiment

1 - 5 Person days

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 9 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-5 01:23

Location BE - VBR

1*) Identify the experiment to which this input refers to

F4Fp-03-M13 InteligentNFVscaler

2*) Has the experiment this input refers to already finished or is it still running?

Experiment is still running

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Virtual Wall

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

Autoscaling of NFV

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

yes, nfv will be one of the bases for human centric internet

7*) Describe the main challenges of this experiment to your testbed.

Scaling through kubernetes of nfv functions and the combination with w-iLAb.t and Tengu/big data analysis

8*) How well was your testbed serving the needs for this experiment

Not adapted 10 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Software - Updates

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

we offered our kubernetes deployment RSpec

11*) What did you learn from the experiment?

it is still ongoing, so not much yet to say

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

1 - 5 Person days

Running the experiment

< 1 Person Day

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 4 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-11-5 01:31

Location BE - VBR

1*) Identify the experiment to which this input refers to

F4Fp-03-M14 ERASER (Univ Politechnica de Catalunya)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment is still running

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Virtual Wall

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

Large scale experimentation with the RINA framework. Experimentation backed up by research in EU projects.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

yes, RINA is one of the possible architecture for the internet of the future.

7*) Describe the main challenges of this experiment to your testbed.

the scale of the testing with new protocols and architectures.

8*) How well was your testbed serving the needs for this experiment

Not adapted 10 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Software - Updates

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

They use Rumba which creates large RINA topologies in an RSpec which is then deployed by jFed.

11*) What did you learn from the experiment?

That extra tools are needed for real scale up experimentation.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

1 - 5 Person days

Running the experiment

1 - 5 Person days

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 8 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-10-31 12:03

Location BE - VBR

1*) Identify the experiment to which this input refers to

F4Fp-03-M15 Fed4QoE (Allbesmart)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

CityLab

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

The experiment wanted to validate the existing QoE solution in real life conditions, based on the existing software. The fact that this was an existing application primarily targeted at LTE was innovative, on top of the innovative application where user experience instead of raw metrics where used. Also, the combination with longitudinal tests contributed to this.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

The experiment does not have a direct impact, I assume. However the experiment approach where the "behind the scenes" technology and its impact on user experience is measured does fit perfectly with the human internet vision, where resilience leads to a perfect user experience. I expect this approach to serve as a valuable example, close to market.

7*) Describe the main challenges of this experiment to your testbed.

The experiment wanted to test both LTE and WiFi connections, for validation of UX over a longer period of time, in the context of a smart city. CityLab does not have an LTE connection readily available, for this we collaborated with private testbed partners to provide an LTE link to test with. Because of the high data requirements, multiple gigabytes, this turned out to be a challenge in Belgium where such data transit contract are unusual. This has been tackled in the end. More straightforward was the WiFi performance testing, on top of the existing WiFi infrastructure offered by CityLab. This went perfectly, in general. What turned out to be a challenge in such a realistic environment are the mandatory WiFi downtimes. Those are in place to avoid interfering with existing (host university) wifi networks. This was challenging for us and the experimenters, but has been taken care of.

8*) How well was your testbed serving the needs for this experiment

Not adapted 9 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Hardware - Extensions

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

We added additional LTE hardware in order to enable LTE comparison for the experimenters.

11*) What did you learn from the experiment?

There is a strong need for LTE experimentation in smart cities, something which we did not expect upfront. This will imply changes in our roadmap, where we are working towards also including this in our feature offering. For the WiFi experimentation we have validated our hardware and software offer, which proved to be very accessible and user-friendly for the experimenters, given their experience with w-iLab.t in Ghent, Belgium. Also, our offer of realism has been validated, the experiment outcomes contained sufficient noise to validate this offer externally.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

1 - 5 Person days

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

5 - 10 Person days

Running the experiment

1 - 5 Person days

Analyzing results

1 - 5 Person days

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work)	6	**Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-10-31 16:13

Location GR

1*) Identify the experiment to which this input refers to

F4Fp-03-M15 Fed4QoE (Allbesmart)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment is still running

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

NITOS (CERTH)

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

The experimenter is in the process of developing a Quality of Experience analytics solution called UXPERT. In Fed4QoE the goal is to use F4F testbeds in order to test, calibrate and showcase UXPERT prototype in realistic scenarios.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

In our opinion Quality of Experience topics should be closely related to NGI, having that in mind Fed4QoE should impact NGI.

7*) Describe the main challenges of this experiment to your testbed.

In order for Fed4QoE to be tested in NITOS we had to install hardware provided by the experimenter. Mobility emulation patterns were replicated over the testbed using programmable attenuators.

8*) How well was your testbed serving the needs for this experiment

Not adapted 10 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Hardware - Additions (extra nodes, ...)

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

B) A hardware node provided by the experimenter was installed to our testbed and connected to the LTE network.

11*) What did you learn from the experiment?

The interaction with new experimenters showed us that documentation and user-friendliness of the platform should be improved.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

1 - 5 Person days

Running the experiment

1 - 5 Person days

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 6 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-10-31 15:37

Location ES - MA

1*) Identify the experiment to which this input refers to

F4Fp-03-M15 Fed4QoE (Allbesmart)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Perform LTE

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

The experiment have help to the company to test it solution in a realistic and controlled environment, reducing the field testing, which is very consuming task.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

OPEN INTERNET ARCHITECTURE RENOVATION

7*) Describe the main challenges of this experiment to your testbed.

Automation of the test

8*) How well was your testbed serving the needs for this experiment

Not adapted 8 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Software - new tools
Software - Updates

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

The tests were ran manually

11*) What did you learn from the experiment?

The experiment helps us in the identification of the functionalities that should be automated to support unattended testing.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

1 - 5 Person days

Adaptations to your testbed

1 - 5 Person days

Running the experiment

5 - 10 Person days

Analyzing results

1 - 5 Person days

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work) 8 **Technical support (helping execute experiment)**

Complete

Referrer

Date Taken 2018-10-25 05:10

Location JP - 13

1*) Identify the experiment to which this input refers to

F4Fp-03-M23 PiAS (Televic Rail)

2*) Has the experiment this input refers to already finished or is it still running?

Experiment has finished

3*) Select the testbed on which you describe the impact. If mulitple testbeds were used, please fill in a survey per testbed

Virtual Wall

4*) Describe in your own words the scope / innovative aspects of the experiment. This is your impression! do not copy from report!

The PiAS experiment by Televic concerns a passenger information system for trains. Televic wanted to test an upscaled version of the system (up to 25.000 trains) in this experiment, which is not easy to do on a testbed (with 25000 virtual or physical machines). Even with containers this imposes a lot of problems (networking subnets etc). Although the 25.0000 nodes could not be implemented, Televic was able to identify some flaws and problems in the version testbed in the experiment. It shows that they could not have implemnented the upscaled information system on an operational network of trains withgout prior testing on Fed4FIRE. They also indicated their clear intention to ,make further use of Fed4FIRE testbeds in the future.

5*) Score (to your opinion) the value of the outcome of the experiment

Technical results / outcome - Innovative aspects

Technical results / outcome - Size of the experiment

Potential impact of the experiment - Market potential at large

Potential impact of the experiment - on the business of the Experimenter

Potential impact of the experiment - on your business as a Testbed owner

Success in achieving the original goals set for the experiment

6*) Can you expect an impact from this experiment on the future NGI research and innovation agenda? (Human centric internet, Trustworthiness, ...) More information can be found on www.ngi.eu

The experiment shows an application in which there is a need to carry out a test on a very large number of nodes. Scaling up of existing solutions and products, especially in view of IoT, networks and other areas, is a future challenge for testbeds. This experiment also makes clear that experimentation is an essential step in the development of products by industrial partners. As the stakes are extremely high and there is no way to implement new tools, software or launch new products without proper testing, experimentation on a set of testbeds in all areas covered by NGI is required. So this experiment, to our opinion, does not have any impact on the NGI research and innovation agenda, except for the clear fact that as NGI penetrates more and more into our personal and daily life, experimentation becomes even more essential to guarantuee proper and reliable implementation.

7*) Describe the main challenges of this experiment to your testbed.

The option to easily implement a "scale up" of an experiment was only recently added and in this experiment first used by an external experimenter. We needed to fix some bugs.

8*) How well was your testbed serving the needs for this experiment

Not adapted 9 **This is exactly what my testbed is designed for**

9*) What did you adapt/change to your testbed to run the experiment

Software - new tools

10*) Describe for each of the issues ticked in Q9 in a few lines what adaptations/changes were implemented

Rolling out of the scale up tool with kubernetes and docker containers we had been working on internally. Need more documentation.

11*) What did you learn from the experiment?

The experiment clearly showed the usefullness of our testbed and the scaling tool. It also clearly showed that better documentation as well as improved user-friendliness of the scaling-up tool is required and that this option and route should be further exploited.

12*) Estimate the amount of resources spent on supporting the experiment

Initial preparations (proposal/feasibility check)

< 1 Person Day

Experiment set-up

5 - 10 Person days

Adaptations to your testbed

5 - 10 Person days

Running the experiment

< 1 Person Day

Analyzing results

< 1 Person Day

13*) How do you balance your way of support to the experiment

Design of experiment (no technical work)	3	**Technical support (helping execute experiment)**