FF4EuroHPC: HPC Innovation for European SMEs

EuroHPC Project 951745   **https://www.ff4eurohpc.eu**

Call for Proposals for HPC Application Experiments

Identifier: FF4EuroHPC Call-2

Call title: Second call for FF4EuroHPC application experiments

Project full name: HPC Innovation for European SMEs

Acronym: FF4EuroHPC

Grant agreement number: 951745

Deadline: 29th September 2021, at 17:00 Brussels local time

Expected duration of participation: 15 months, with expected commencement on 1st March, 2022

The indicative total funding budget is € 5 M.

Maximum funding request per proposal: € 200,000 (covering all participants)

Funding constraints: The maximum funding that can be allocated to any Third Party, across all experiments in which that Third Party is involved (including any experiments selected under Call-1), is € 150,000. While the participation of certain[1] FF4EuroHPC beneficiaries in experiments is eligible, the funding for their activities in experiments is not included within the experiment budgets.

Submission language: English

Internet address for full open call information **https://www.ff4eurohpc.eu/calls**.

Proposal submission: https://www.ff4eurohpc.eu/calls/submission

E-mail: ff4eurohpc-calls@scapos-tools.de

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[1] Specified in the FF4EuroHPC Grant Agreement and excluding those beneficiaries involved in the coordination and evaluation activities linked to the open calls.

Introduction

FF4EuroHPC is funded by the EuroHPC Joint Undertaking (EuroHPC JU) within the section of its work programme covered by the call H2020-JTI-EuroHPC-2019-2, topic EuroHPC-05-2019, "Stimulating the innovation potential of SMEs". The project will contribute to the achievement of the broader EuroHPC goals in addition to those of the abovementioned specific topic:

- *Increasing the innovation potential of industry, and in particular of SMEs, using advanced High Performance Computing (HPC) infrastructures, applications and services.*
- *Providing access to HPC-based infrastructures and services to a wide range of users - in the FF4EuroHPC context, specifically industrial users and SMEs in particular - for new and emerging data and compute-intensive applications and services.*
- *Fostering wider innovations, for example by exchanging and promoting best practice use cases or application experiences.*
- *Providing an effective mechanism for inclusion of innovative, agile SMEs lowering the barriers for small actors to enter the market and exploit new business opportunities.*

FF4EuroHPC is a successor project to the Fortissimo and Fortissimo 2 projects, funded within the Factories of the Future (ICT for Manufacturing SMEs) work programmes of the European Commission's 7th Framework Programme and Horizon 2020 Framework Programme.

This call for proposals targets highest quality experiments involving innovative, agile SMEs and with work plans built around innovation targets arising from the use of advanced HPC services. Proposals are sought that address business challenges from European SMEs from varied application domains, but a strong preference is given to engineering and manufacturing, or sectors able to demonstrate fast economic growth or particularly strong economic impact for Europe.

The highest priority is given to proposals directly addressing the business challenges of manufacturing SMEs, and this priority is reflected in the assignment of scores under the evaluation criterion of "Impact" (as explained below). It should also be noted that research-focused business models are not within the scope of the Call, even though, as in the case of computer-aided drug design (for example, relating to the Corona pandemic), a high European scientific and societal impact might be demonstrated.

Priority will be given to consortia centred on SMEs that are new to the use of advanced HPC services; in particular, a prior involvement in the Fortissimo or Fortissimo 2 projects or in experiments funded in FF4EuroHPC Call-1 would require the innovation aspects for the proposed experiment to be clearly justified, the same applies for activities already funded through other European Commission R&D funding programs.

The key concept behind FF4EuroHPC is to demonstrate to SMEs how they can strongly benefit from the use of advanced HPC services (for example, modelling & simulation, data analytics, machine-learning and AI, and possibly combinations thereof) and thereby take advantage of these innovative ICT solutions for their business benefit. Europe has all of the components to enable, in particular, engineering and manufacturing SMEs to benefit from these new technologies: public and private HPC and HPDA resource providers; modelling, simulation, data analytics and AI experts; a thriving Independent Software Vendor (ISV) sector; and excellent public and private applied research organisations.

The FF4EuroHPC project is organised around its portfolio of experiments using HPC resources, technologies and advanced services to address SMEs' business needs and thereby creating innovation potential for the participating SMEs. These will create demonstrations to the corresponding industrial sectors of the impact and business benefits, thus promoting the widening of the HPC user base.

The FF4EuroHPC experiments are encouraged to collaborate with European HPC centres – for example relating to the use of HPC systems – and in particular with the HPC National Competence Centres[2]. In contrary to the past Fortissimo projects, there is no requirement for collaboration with the HPC Centres that are included within the FF4EuroHPC consortium.

FF4EuroHPC has the mandate to organise two calls for proposals for HPC application experiments. "Call-1" was published on November 2nd 2020, closed on January 27th, 201, and resulted in 16 experiments being funded[3]. "Call-2", covered by this document, addresses experiments executing for a 15-month period, with expected commencement in March 2022.

With respect to the objective to promote a widening of the HPC user base amongst European SMEs, FF4EuroHPC seeks to achieve a broad geographical distribution of participants. In particular, SMEs based in countries with a previously low level of HPC adoption are encouraged to submit a proposal and may expect to be assisted by their national HPC Competence Centre. Furthermore, the selection process will include a mechanism to target the inclusion of high scoring proposals involving organisations from European countries other than those already receiving funding as a result of FF4EuroHPC Call-1.

Demonstrating additional innovation potential beyond that achieved within the prior Fortissimo, Fortissimo 2 and FF4EuroHPC Call-1 experiments is extremely important, and complementarity with respect to those is thus a priority (a description of the existing Fortissimo

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[2] For more info see the EuroCC website: https://www.eurocc-project.eu/
[3] A short description of these experiments can be found at: https://www.ff4eurohpc.eu/en/experiments/

and Fortissimo 2 experiments can be found at: http://www.fortissimo-project.eu/en/experiments).

For the sake of clarity, there is no requirement for FF4EuroHPC experiments to have links to the prior Fortissimo projects.

Expectations for the experiments

The proposed experiments are expected to:

- **Involve all necessary parties required for the effective and efficient execution of the experiment and the demonstration of the impact on SME business challenges through the use of HPC systems or advanced HPC services. Appropriate technical management within an experiment is a required component.**

- **Define the HPC computing resources they need and budget for them, possibly using computing resources provided directly by the EuroHPC JU, PRACE or through national actions. The HPC National Competence Centres may be able to provide assistance with the selection of appropriate resources and the application process. (FF4EuroHPC will <u>not</u> be in a position to provide computing resources).**

- **Declare any data protection issues that might impact its proposed work plan, define data/information protection mechanisms addressing these in the framework of European law, and ensure that the operation of the experiment adheres to these.**

- **Generate publishable success stories – preferably in multi-media form – which discuss how the SME's real-world problems were addressed and clearly identify the business benefits realised or obtained.**

- **Align, where appropriate, with regional priorities, such as industrial specialisation areas.**

- **Be complementary to those already included in the past Fortissimo and Fortissimo 2 projects and to those selected in FF4EuroHPC Call 1.**

Taking into consideration the first three points above, proposers are encouraged to include a European resource provider within the consortium for the proposed experiment.

In the context of the FF4EuroHPC calls, complementarity of experiments is understood to mean activities that address new applications, services, business cases, industrial sectors and market segments and the enhancement of the project's ability to demonstrate the impact of

the Fortissimo approach for a broad set of industrial users. Proposals that just extend past experiments are thus not considered to be complementary.

As previously mentioned, priority will be given to experiments that

- are driven by the requirements of first-time users of advanced HPC services and
- address business challenges of European SMEs, with an emphasis on those from engineering and manufacturing, but also from sectors able to demonstrate fast economic growth or particularly strong economic impact for Europe.

The business-relevance of the application experiments is essential, as FF4EuroHPC places considerable emphasis on the exploitation of opportunities at all levels of the value chain ranging from the end-user, through Independent Software Vendors (ISVs), domain experts and technology providers to the HPC infrastructure provider.

Innovation in the experiments shall be addressed at all levels of the value chain:

(1) End-users get access to HPC resources, technologies and advanced services that are novel to them.

(2) Independent software vendors provide access to their software and ensure the full and effective use of available HPC resources.

(3) Domain and software experts deliver the innovative ICT solution to the end-user while making sure that the HPC resources are used effectively.

(4) Resource providers arrange efficient, secure and adequately private access to well-managed HPC resources.

Submission Details

Submission deadline:

All submissions must be made by 17:00 Brussels local time on September 29th 2021.

Electronic submission: Proposal submission is exclusively in electronic form using the proposal submission tool accessible via the Fortissimo web-site: **https://www.ff4eurohpc.eu/calls/submission**

The central component of proposal submission is the uploading of two PDF-documents (whose individual size must not exceed 5.0 MB) compliant with the instructions on proposal structure given below.

Proposal format and structure: Proposals must be submitted in English. Each proposal must comprise 2 parts: Part A (containing administrative information), Part B (containing the body of the proposal, the structure of which is explained below).

Part A of the proposal contains a cover page and a set of tables to provide administrative data, including a tabular list of proposal participants. The participant list should include for each participant, if available, the Participant Identification Code (PIC) issued by the European Commission[4]. and valid address, telephone/telefax and email contact data.

Only requested information should be included in Part A. Addition of extraneous information such as letters of support etc will result in the proposal being rejected without further evaluation.

The main section of the proposal – Part B - must not exceed 10 pages in length (including any appendices, but excluding the Part B cover page). The Part B text should be no smaller than 11 point Arial font. **Proposals submitted with a Part B whose length (excluding the cover page) exceeds the 10 page limit will be rejected without further evaluation.**

ALL PROPOSERS MUST TAKE CAREFUL NOTE OF THE ABOVE RULES.

The structure of the proposal Part B (and indicative length per section) should be as follows:

1. Summary (0.5 pages)
2. Industrial relevance, potential impact and exploitation plans (3.5 pages)
3. Description of the work plan and concept (3 pages)
4. Quality of the consortium as a whole and of the individual proposers (2 pages)
5. Justification of costs and resources (1 page)

A management structure will be imposed on the successful proposals. That is, the proposal will not need to contain a description of how the management of the experiment in the framework of the overall FF4EuroHPC project will be achieved, but should include tasks for the technical management of the experiment activities.

Proposal exemplars for both Part A and Part B can be found at
https://www.ff4eurohpc.eu/ /calls/submission.

It is a requirement that these exemplars be followed and in particular that the proposal budget be provided using the embedded Excel spread-sheets.

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[4] To obtain a PIC, register at http://ec.europa.eu/research/participants/portal/desktop/en/organisations/register.html .
Please note that having a PIC is not a requirement of the call.

Indicative budget for Call-2

FF4EuroHPC will make use of the Financial Support for Third Parties method[5] to enable the inclusion of new experiment partners. The indicative total funding budget for Call-2 is € 5 M.

The funding of Third Parties will follow the same principles as used for beneficiaries of FF4EuroHPC, which receive European Commission funding within the R&D&I programme of the EuroHPC Joint Undertaking. In particular, Third Parties will receive 100% funding of incurred eligible costs[6].

The funding for an individual experiment may not exceed € 200,000 (covering all participants, but noting that the requested funding for the experiment must exclude costs for any FF4EuroHPC beneficiaries that might be involved in the experiment activities). Proposers should consider their actual needs and not target this maximum figure. The evaluation will take into account the appropriateness of the requested resources.

The maximum funding that can be allocated to any Third Party, aggregated across all FF4EuroHPC experiments (selected in FF4EuroHPC Call-1 or Call-2) in which that Third Party is involved, is € 150,000.

Proposals to FF4EuroHPC Call-2 that do not adhere to the abovementioned funding restrictions (proposal maximum funding of € 200,000; max. aggregated funding of an organisation by the project of € 150,000) **will be rejected without further evaluation[7]**.

FF4EuroHPC reserves the right to make the appropriate and necessary effort and budget cuts in the case that erroneous budget data is included in accepted proposals.

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[5] Integration of new Third Parties will conform with the Horizon 2020/EuroHPC JU grant agreements
[6] The details of funding rules that will be applied can be found in the annotated model grant agreement for the Horizon 2020 programme:
https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/amga/h2020-amga_en.pdf
[7] For the avoidance of doubt, in the case that an organisation is involved in multiple proposals to Call-2 with funding requests that individually adhere to the maximum aggregated funding rule, then an evaluation will be performed and potential rejection of a proposal due to non-adherence to the aggregate funding rule will be decided during proposal selection.

Evaluation Criteria

The criteria for evaluation will comprise:

1. Impact including industrial relevance and exploitation plans;
2. Soundness of concept, innovation and quality of the work plan;
3. Quality of the consortium as a whole and of the individual proposers;
4. Effective and justified deployment of resources.

Criteria 1 to 4 will carry a score ranging from 0 to 5. Criterion 1 will have a weight of 2×, Criteria 2 to 4 a weight of 1× (leading to a maximum score of 25 points). A threshold score of 3 will apply to the first three criteria. In order to implement the prioritisation of experiments involving manufacturing SMEs, the maximum score on Criterion 1 that will be assigned to a proposal not directly addressing the business challenges of manufacturing SMEs will be 4.0 points.

The selection of experiments - from those proposals evaluated above threshold in Criteria 1 to 3 - will be executed in two phases with the specific intent to increase the geographic distribution of FF4EuroHPC experiments. In FF4EuroHPC Call-1, experiments were selected involving organisations from the countries of: Croatia, France, Germany, Greece, Italy, Montenegro, Serbia, Spain, and the United Kingdom.

In the first phase of the Call 2 selection process, a selection of experiments with a cumulative funding of up to € 3 M will be made from those proposals with a score exceeding 17 points and taking, for each country not in the aforementioned list, the highest ranked proposal involving an organisation from that country (if any). In that context it is important to note that, in line with the stated expectations for experiments, each participant should have a significant and well-justified role. The second phase of the selection process will use the ranking of all remaining proposals irrespective of country affiliations to select the remaining experiments for funding with the budget not used in the first phase (at the minimum an indicative amount of € 2 M).

Adherence to the proposal format and structure described previously – and notably to the prescribed page limit – will allow the independent external evaluators to evaluate the proposal against all of the above-mentioned evaluation criteria. As explained earlier in this document, failure to adhere to the funding restrictions and to the proposal format instructions will lead to immediate rejection of the proposal. The proposers will be provided with the results of the evaluation in the form of an evaluation summary report comprising the consolidated findings of the independent expert evaluators and a decision from the project on the result of the selection procedure. That decision is final and the project will not enter into discussions concerning the evaluation results, and no appeals process will be provided.