



CLOUDFLOW OPEN CALL 2

Guide for Applicants (GfA)

Call identifier: CloudFlow-2
Submission Deadline: 30th September 2015, at 17:00 h (Brussels local time)
Expected duration of participation: 1st January 2016 to 30st September 2016

Foreseen budget for CloudFlow-2: up to approx. 600.000 € funding for new beneficiaries which corresponds to approx. 1 Mio. Euros budget

This amount of funding is planned to be spent on seven experiments.

- The maximum funding for new beneficiaries per experiment is expected to be: approx. 90.000 € for experiments with more than one and up to four beneficiary/-ies new to CloudFlow.
- For experiments with only one beneficiary new to CloudFlow the maximum funding for the new beneficiary is expected to be in the range between 30.000 and 50.000 €.

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1 CLOUDFLOW

CloudFlow - Computational Cloud Services and Workflows for Agile Engineering - is a European Integrating Project (IP) in the framework of Factories of the Future (FoF) that aims at making Cloud infrastructures a practical solution for manufacturing industries, preferably small and medium-sized enterprises (SMEs). The objective of CloudFlow is to ease the access to computationally demanding virtual product / process development and simulation tools, such as CAD, CAM, CAE, etc., and make their use more affordable by providing them as engineering Cloud services.

CloudFlow is a project which is open for new (teams of) participants. With this guide we would like to stimulate you to respond to our call for proposals by submitting the description of an *Application Experiment*. Small consortia consisting of 1 to 4 partners (end users, software vendors, HPC/Cloud infrastructure providers and research organizations) have the opportunity to propose use cases involving manufacturing industries to be run in the framework of CloudFlow. In this second CloudFlow Open Call we welcome experiments that - at least partially - build on workflows, services and applications from the completed and on-going experiments complementing these. As these experiments will involve the CloudFlow Competence Center and Independent Software Vendors (ISVs) already part of CloudFlow such experiments can have as little as one new end user and no other new beneficiary.

Accepted proposers will have the opportunity

- to investigate and gather experience on Cloud Computing options for their use case,
- to explore technical benefits, e.g., better product verification by more accurate simulation results using HPC/Cloud resources, and
- to examine Cloud-based business models and their impact as well as
- to extend the range of services offered via the CloudFlow Portal.

CloudFlow offers via its Competence Center:

- Vendor-independent Cloud infrastructure already containing computational engineering services, such as CAD, CAM, CFD, PLM, etc., on which new experiments can be built.
- A tailored HPC-Cloud infrastructure (with a contractual environment protecting IPR).
- A methodology to describe and execute services and workflows in a Cloud environment.
- Independent evaluation of experiments against your requirements.
- Experience from 13 currently running experiments including consultancy on business models and participation in the I4MS ecosystem (www.i4ms.eu).

For a more detailed description of the CloudFlow project please see:

www.eu-cloudflow.eu

The initial set of and the ongoing experiments are described respectively at:

<http://www.eu-cloudflow.eu/experiments/first-wave/>

and

<http://www.eu-cloudflow.eu/experiments/second-wave/>

More information on the CloudFlow infrastructure you can find under:

http://eu-cloudflow.eu/files/2015-07-03_CloudFlow_TechnicalDocument_secondOpenCall_final.pdf

2 OBJECTIVES OF THE OPEN CALL

This Open Call for proposals seeks to increase the number of partners and Application Experiments currently being carried out within the CloudFlow project. Application Experiments shall be rooted in computational technology for manufacturing and engineering industries, preferably small and medium-sized enterprises (SMEs), giving them affordable access to Cloud technology. Application Experiments are expected to extend the CloudFlow infrastructure and to address workflows along the value chain in and across companies. Priority will be given to innovative product development and products as described below. In this second Open Call of CloudFlow experiments are welcome that - at least partially - build on workflows, services and applications from the completed and on-going experiments complementing these.

3 NEW CLOUDFLOW APPLICATION EXPERIMENTS

Application Experiments shall be rooted in computational technology for manufacturing and engineering industries, preferably SMEs, in stages covering but not limited to:

- design (CAD),
- simulation (product, process, factory, ...),
- optimization,
- visualization,
- manufacturing planning and execution,
- quality control and
- data management

addressing workflows along the value chain in and across companies.

Priority will be given to innovative product development and products such as mechatronic systems and cyber-physical systems, including, e.g., multi-domain simulation (mechanics, electronics, software, fluid dynamics, acoustics, etc.).

3.1 TARGETED MANUFACTURING INDUSTRIES

Manufacturing industries from the following branches are welcome to the CloudFlow project:

- transportation
 - aerospace, automotive, maritime, ...
- production machinery
- consumer goods
 - furniture, electronic devices, kitchen aids, ...
- plant design and construction industry
(Architecture, Engineering and Construction - AEC).
- medical/life science/bio-technology

3.2 CHARACTERISTICS OF APPLICATION EXPERIMENTS

Application Experiments shall demonstrate as many as possible of the following characteristics:

1. An Application Experiment is driven by an end user need coming from an engineering/manufacturing company, preferably an SME, which is the 'driver' behind the Application Experiment.

2. An Application Experiment deals with/addresses a real use case exploring business opportunities and models. The business opportunities can be twofold:
 - a) affordable access to HPC/Cloud technology for an end user and/or
 - b) provision of computation services on a pay-per-use basis for a software vendor.
3. Application Experiments should build on the CloudFlow infrastructure expanding it with new engineering Cloud services of good usability including easy access.
4. Application Experiments shall build on existing CloudFlow workflows, services and applications extending them – at least partially.
5. Application Experiments must be complementary to the existing experiments in CloudFlow (www.eu-cloudflow.eu/experiments)
6. Application Experiments have to be innovative in as many aspects as possible, e.g., with increasing priority:
 - a) to enable end users to access computational Cloud engineering services that are new to them.
 - b) to allow simulations for more complex models, developing better products, improving predictability of product behavior and assessing compliance with requirements ("design for X" and simulation/optimization).
 - c) to enable/support complex computational engineering workflows in the Cloud enhancing the interoperability of data and tools, thus the efficiency of performing /automating tasks in chains (workflows) of end users collaborating to achieve one goal
7. Application Experiments should demonstrate high potential impact to benefit from Cloud technology, e.g.:
 - a) for the end user:
 - to solve a difficult challenge that re-appears frequently and entails high costs, avoids innovation, shorter time-to-market, etc.
 - b) for the ISV:
 - the challenge of the end user is a representative case for a certain market segment, its solution can be exploited to this market segment of considerable size and possibly to related market segments where similar problems can be addressed to gain higher market share, more revenue and ultimately create new jobs.

The latter criterion (7) has to be answered in section 1 of the proposal template in all its facets, whereas the other points have to be addressed in the other sections (please see the proposal template and the guiding questions and explanations within the proposal template).

3.3 APPLICATION EXPERIMENT EXAMPLES

In this section we provide some indication of valid and possibly unfeasible experiments, respectively. Please also consult the section 4 on the set-up of Application Experiment consortia.

3.3.1 EXAMPLES FOR VALID APPLICATION EXPERIMENTS

1. Let's imagine a shoe-producing company (new end user with respect to the current CloudFlow consortium) wants to optimize air flow / circulation for a new running shoe using Numeca's CFD solution (Numeca is part of the current CloudFlow consortium) on the CloudFlow infrastructure and running on Arctur's HPC/Cloud hardware.

This addresses the above characteristics and is innovative with respect to 6a of section 3.2.

2. Let's imagine an aircraft seat manufacturing company as an end user and an ISV offering a structural mechanics solution. The weight of the seats shall be minimized through topology optimization which requires many simulation runs. The end user wants to use an HPC/Cloud infrastructure to speed up the process and to execute calculations based on more detailed numerical models to increase the predictability of the product behavior. The ISV is interested in porting its software to the CloudFlow environment.

This addresses the above characteristics and is innovative with respect to 6a and 6b of section 3.2.

3. Let's imagine the virtual development process of a mechatronic system such as an electric sunroof for a car. The sunroof supplier teams up with the carmaker, a software supplier and a research institute to integrate the three simulation domains of software, mechanics and electronics to better harmonize the interplay of these different domains. Such a co-simulation of three domains would require a lot of computational power depending on the desired accuracy of the simulation. The end users want to use the CloudFlow infrastructure to efficiently execute their simulations and to improve collaboration along the workflow bridging the two companies.

This addresses the above characteristics and is innovative with respect to 6a, 6b and 6c of section 3.2.

3.3.2 EXAMPLES FOR POTENTIALLY UNFEASIBLE APPLICATION EXPERIMENTS

A valid Application Experiment proposal may be considered unfeasible by the CloudFlow Competence Center due to the financial constraints of the overall project or the work imposed to adapt the CloudFlow infrastructure. In the following, we give two examples where there is a substantial risk that this could happen.

1. An end user wants to use software from a third party vendor that is neither part of the Application Experiment consortium nor of the current CloudFlow consortium. It may still be feasible to bring such software to the HPC/Cloud infrastructure through one of the CloudFlow partners but it needs to be checked by the CloudFlow Competence Center during the review process.

The CloudFlow Competence Center keeps the right to reject such a proposal and recommends discussing such a case with the CloudFlow Competence Center as early as possible in the process of the proposal generation.

The CloudFlow Competence Center recommends including the software vendor as a partner in the Application Experiment proposal if not already part of CloudFlow.

2. Referring to the 3rd valid example above, the proposal has to demonstrate convincingly that the proposed work can be successfully executed within the time and cost limits of an Application Experiment. The CloudFlow Competence Center again recommends discussing such a case with the CloudFlow Competence Center as early as possible in the process of the proposal generation.

4 APPLICATION EXPERIMENT CONSORTIA

An Application Experiment consortium should typically have 1-4 partners out of the following range:

- End user(s) of which one is driving (leading) the experiment with activities including:
 - providing the use-case
 - defining the workflow and its requirements
 - evaluating the experiment outcome
- Independent software vendor (ISV) with activities including:
 - bringing functionality of its software solution to the Cloud thus expanding the CloudFlow infrastructure
 - running experiments in the CloudFlow infrastructure
 - evaluating different options for business models in a Cloud setting
 - developing usable (web) applications for their Cloud services
 - training users
- HPC provider with activities including:
 - contributing their hardware environment for running Application Experiments
 - installing necessary Cloud middleware
 - keeping track of resource use for testing business models
- Research institution
 - providing technology needed to realize the experiment
 - adapting existing technology (software)
 - consulting the experiment partners

Each proposal has to include an HPC provider. We currently have three HPC providers: ARCTUR, UNIZAR-BIFI and CSUC. If a new HPC provider is proposed in an Experiment the rationale behind and the complementarity to the three HPC centres has to be explained. Please also take into consideration that the duration of experiments in the CloudFlow-2 Open Call is only 9 months. This gives little time to both port the CloudFlow infrastructure to a new HPC platform and run the experiment.

Note that all activities have to be carried out in collaboration with the existing CloudFlow partners via the CloudFlow Competence Center that offers:

- adaptation of the CloudFlow infrastructure
- additional services with new functionality
- consultancy and training

For more details on the various roles please see the following table.

Type of Partner Criteria	End user	Independent software vendor - ISV	HPC provider	Research institution	Competence Center (existing CloudFlow partners)
Required number of partners	Minimum one (mandatory) The new experiment uses existing CloudFlow infrastructure (incl. services and applications) for new use cases and workflows	Zero or more Zero: the new experiment uses existing CloudFlow infrastructure (incl. services and applications) for new use cases and workflows One or more: the ISVs have to port / adapt new functionality to the CloudFlow infrastructure complementing existing services and applications	One	Zero or more	n/a The CloudFlow Competence Center decides which existing partners are needed to support a specific new experiment including the necessary efforts of these partners
“Newness” of partner	New or existing CloudFlow partner	New or existing CloudFlow partner	ARCTUR, CSUC, UNIZAR-BIFI (existing CloudFlow partners) or new HPC if justified	New or existing CloudFlow R&D partner	CloudFlow partners which constitute the Competence Center
Size of company	SMEs strongly recommended	SMEs recommended	SME recommended		
Recommended effort	5 – 9 person months (PM)	2 – 9 PM	1 – 5 PM	0 – 5 PM	4 PM on average

4.1 EXAMPLES FOR APPLICATION EXPERIMENT CONSORTIA

In the following section we draw up examples for valid consortia and indicate some that are not recommended. Please note that the examples are not exhaustive.

4.1.1 EXAMPLES FOR VALID CONSORTIA

1. A consortium that consists of just one end user. This end user wants to use the existing CloudFlow infrastructure in a new application scenario / workflow for a design and engineering task requiring large computations for an innovative product/process.
2. A consortium that consists of two end users (both SME or one SME and one larger industrial company). They want to use the existing CloudFlow infrastructure in a collaborative set-up for a design and engineering task / workflow requiring large computations for an innovative product/process.
3. A consortium that consists of an end user and an ISV. The software of the ISV is to be ported to the CloudFlow infrastructure resulting in a new application for the end user.
4. A consortium that consists of an end user and an HPC partner. The existing CloudFlow software infrastructure has to be ported to the new HPC infrastructure to realize a new application for the end user.
5. A consortium that consists of an end user, an ISV and an HPC partner. The existing CloudFlow software infrastructure has to be ported to the new HPC infrastructure resulting in a new application for the end user involving new software components from the new ISV.
6. A consortium that consists of an end user, an ISV and a research institute. A new application for the end user is realized by a software component of the new ISV involving the help/consultancy/technology of a new research partner. The hardware infrastructure will be provided by the existing CloudFlow HPC partner.
7. A consortium that consists of an end user, an ISV, an HPC center and a research institute. The existing CloudFlow software infrastructure has to be ported to the new HPC infrastructure for a new application of the end user involving software components by the new ISV and the help/consultancy/technology of a new research partner.

In case an HPC center, new to CloudFlow, is part of the consortium, please describe the rationale and make convincingly clear that the porting of the infrastructure and the execution of the experiment can be done within 9 months time.

4.1.2 EXAMPLES FOR NON-RECOMMENDED CONSORTIA

1. One new HPC Center that wants to implement the CloudFlow infrastructure - without any end user.
2. One ISV that wants to get funding for porting its software to the CloudFlow infrastructure - without any end user.
3. One research institution that wants to experiment with the CloudFlow infrastructure - without any end user.
4. An end user with an HPC Center that just wants to run an experiment without any relation to the CloudFlow infrastructure.

5. An experiment which suggests developing new software from scratch and wants to port the resulting software to the Cloud. The duration for the whole experiment is 9 months. 9 months is little time to start a new software development. The experiments are rather designed for porting existing software to the Cloud and adapting it instead for new software developments - this is clearly a differencing factor of this type of project from many other more R&D-centric EC projects.

5 RULES FOR PROPOSAL PREPARATION AND SUBMISSION

5.1 ONE-STAGE PROPOSAL PROCESS

Proposals for a new Application Experiment in CloudFlow are submitted in a single stage by submitting a complete application following the proposal template for the CloudFlow-2 Open Call found at:

[http://eu-cloudflow.eu/files/2015-06-29 CloudFlow 2nd Open Call proposal-template-final.docx](http://eu-cloudflow.eu/files/2015-06-29%20CloudFlow%202nd%20Open%20Call%20proposal-template-final.docx)

Note that there are major changes in the template from the CloudFlow-1 Open Call. Only proposals using the CloudFlow-2 template will be evaluated.

5.2 PROPOSAL LANGUAGE

The application as well as all corresponding documentation have to be written in English. Proposals submitted in any other language will not be evaluated.

5.3 SUBMISSION OF PROPOSALS

Proposals must be submitted electronically in PDF form via the following web-page:

www.eu-cloudflow.eu/open-calls/submission-tool

Proposals not using the proposal template for the CloudFlow-2 Open Call will not be evaluated. PDF files must not exceed 5 MB.

Proposals must be received before the closing time and date of the call:

30th September 2015, 17:00 h (Brussels local time).

Provided the call is not yet closed, the consortium can upload their proposal several times, overwriting previous versions. Only the last version received before the closing time will be considered for evaluation. Proposals handed in later or provided by any other means (e.g., by e-mail) will not be considered.

It is strongly recommended not to wait until the last minute to submit the proposal. Failure of the proposal to arrive in time for any reason including communication delays is not acceptable as an extenuating circumstance.

The time of receipt as recorded by the submission system will be definitive.

5.4 ACKNOWLEDGEMENT OF RECEIPT

Applicants will receive a formal acknowledgement e-mail as soon as possible after the close of the call. The sending of this acknowledgement does not imply that the proposal is eligible.

6 PROPOSAL EVALUATION AND SELECTION

CloudFlow will evaluate the proposals in the light of refined criteria to ensure compatibility of the new experiments with the CloudFlow infrastructure, respecting the usual evaluation goals and criteria of project proposals submitted to the European Commission.

The CloudFlow application experiment evaluation criteria and the evaluation form can be found as annexes of the proposal template for the CloudFlow-2 Open Call at:

www.eu-cloudflow.eu/files/open-calls_second-call_CF-proposal-template.pdf

For each proposal, the evaluation will be carried out with the assistance of two independent experts external to the CloudFlow consortium (and the proposed experiments), and one expert representing the CloudFlow project. The experts will be individuals from the fields of industry, science and/or innovation management. Each expert will record his/her individual opinion on each proposal in an evaluation form. The three experts will then have a (remote) meeting to prepare a consensus evaluation form for the proposal.

Using the consensus evaluation forms the CloudFlow consortium will select the seven best ranked proposals. The consortium, however, is not obliged to select a proposal if it has objective grounds for refusal, such as feasibility with respect to the CloudFlow infrastructure in the financial framework of the project. In this case the choice may pass to the next ranked proposal. The CloudFlow consortium may also conclude that even the highest scoring proposal is of inadequate quality, in which case it will make no selection. In the event of no selection being made, the CloudFlow project may or may not re-open the call at a later date.

Please note that in case there are equally ranked proposals, preference will be given to those where the consortium shows a European dimension (not only a regional or national dimension) and/or where regions are represented by partners not yet covered by the existing Consortium, e.g., partners from New Member States. Of course this does not exclude any proposals, since this rule only applies in case of equality of the assessment.

All proposers will receive an evaluation summary report as the result of the consensus meeting of the experts that evaluated their proposal. The selected Application Experiments will be invited to negotiations for accession to the CloudFlow project's grant agreement.

6.1 FURTHER INFORMATION

For further questions please first consult our frequently asked questions list (FAQ) under:

www.eu-cloudflow.eu/open-calls/faq

In case you do not find the answer to your question there, you can add a question by contacting:

info@eu-cloudflow.eu

which the CloudFlow Competence Center will try to answer within 3 working days.

7 FUNDING REGULATIONS

Participation as a beneficiary in an FP7 project is on a cost-shared basis, the European Commission making only a partial contribution to the total cost of the work. Selected applicants may only receive funding via the CloudFlow project which they join if they are eligible to receive funding under the rules of the Seventh Framework Programme (FP7). The following applicants may receive EU funding in an ICT project:

- any legal entity established in a Member State or an FP7 Associated Country (including the European Commission's Joint Research Center), or created under Community law (e.g. a European Economic Interest Grouping),
- any international European interest organisation,
- any legal entity established in an FP7 International Cooperation Partner Country (ICPC). A complete list of these countries is given in annex 1 of the ICT work programme, but in principle it includes the developing countries of Africa, Asia and Latin America, as well as some lower-income European countries which are not already Member States or Associated Countries.

Organisations from other countries may also participate in ICT projects, but normally without funding. There are also a number of other conditions which exclude funding, specified in Articles 93 and 94 of the Commission's Financial Regulation. Full details of the Commission's funding arrangements can be found in the "Guide to Financial Issues" document of FP7 at:

ec.europa.eu/research/participants/portal/desktop/en/funding/reference_docs.html

The FP7 funding rules for EC contributions apply, i.e. 75% funding for SMEs and research organizations, 50% for larger industries. In addition to this funding, technical support from the CloudFlow partners is available.

8 FORMAL VALIDATION OF PARTNERS

All partners to a possible proposal for the CloudFlow-2 Open Call should check their validation status in the participant portal as soon as possible. The validation is more comprehensive now than at the start of FP7 so there is a chance that a partner that believes that the validation is complete has to provide additional information to complete the validation.

The Factories of the Future I4MS initiative that CloudFlow belongs to has a special focus on including SMEs into the experiments following the Open Calls – esp. SMEs that so far have not been part of EC's framework programmes. Partners that are new to EC's framework programmes have to be formally validated by the EC validation unit (REA) to be eligible for funding under a CloudFlow experiment. The validation consists of a number of steps:

1. Validation of the partner as a legally entity
2. Appointment of a legal representative with an extended mandate
3. For partners that are SMEs and want to be funded as an SME (75%), a formal validation of the SME status is necessary. Note that SMEs have a higher funding rate than larger industries in FP7 and have the option to use a special cost model in FP7. It should be noted that the self-declaration of the SME status as for Horizon 2020 is not sufficient to be eligible for the SME funding model in FP7 projects such as CloudFlow.

Experience shows that validation sometimes takes a long time. This has been experienced especially for SMEs with a complex ownership structure. So we urge all partners of experiment proposals that are new to the EC framework programmes to immediately start the validation process. For an experiment to be amended to the CloudFlow Grant Agreement all partners have

to have completed their validation. Also remember that only partners that are validated as SMEs are eligible for the SME funding rates.

The validation is a process between the Validation Unit and the individual partners where the CloudFlow Core Management team has little insight. When an experiment is selected to be part of CloudFlow the Core Management will check the validation status. The group of selected experiments where all partners have completed their validation will follow a 'fast track' to be amended to the CloudFlow Grant Agreement. The group of experiments with some partners which did not complete their validation procedure will have to wait for the validation to be finished and risk ending in a second bunch to be amended to the Cloudflow Grant Agreement later. Pre-financing for any selected experiment will first be distributed to experiments when they are formally amended to the Grant Agreement. Prerequisite for signing the Grant Agreement is the finalization of the partner and SME status validation. It is the responsibility of the experiment partners to have completed their validation by the time an experiment is selected for contract negotiations to not jeopardize/delay transfer of pre-financing on-time.

For details on the validation process please consult the procedure in the participant portal. Go to:

<https://ec.europa.eu/research/participants/portal/desktop/en/home.html>

and scroll down to "How to participate".