

Call for Proposals for HPC-Cloud Application Experiments

Fortissimo is funded under the European Commission's 7th Framework Programme through the Call for Proposals addressing ICT for the Enterprise and Manufacturing – call (part) identifier FP7-2013-NMP-ICT-FOF. Fortissimo contributes to the achievement of the objectives of the Factories of the Future initiative, described below, specifically those of the Call Objective FoF-ICT-2013.7.12 “Application experiments for robotics and simulation”, target area “Simulation services for engineering and manufacturing”.

This call for proposals (CfP) targets the expansion of the applications experiments currently being carried out within Fortissimo focusing on simulation services for the benefit of manufacturing SMEs.

The importance of advanced simulation to the competitiveness of both large and small companies is well established. The principal objective of Fortissimo is to enable European manufacturing, particularly small to medium enterprises (SMEs), to benefit from the improvements to the design process and resulting competitive advantage inherent in the use of simulation. However, such simulation requires significant computing power and specialised software tools and services. Generally, large companies, which have a greater pool of skills and resources, find access to advanced simulation easier than SMEs which can neither afford expensive High Performance Computing (HPC) equipment nor the licensing cost for the relevant tools. This means that SMEs are not able to take advantage of advanced simulation, even though it can clearly make them more competitive. The goal of Fortissimo is to overcome this impasse through the provision of simulation services running on an HPC-based cloud infrastructure and also by making appropriate skills and tools available in a distributed, internet-based environment.

Fortissimo will make advanced simulation more easily accessible, particularly to SMEs, through the realisation of a “one-stop shop” where hardware, expertise, applications, visualisation and tools will be easily available and affordable on a pay-per-use basis. In doing this it will create and demonstrate a sustainable commercial ecosystem where actors at all

levels in the value chain can realise sufficient commercial benefit to enable that ecosystem to persist independently of EU funding and continue to provide affordable services to manufacturing industry, particularly SMEs.

Fortissimo will be driven by end-user requirements where business-relevant application experiments will be used to develop, test and demonstrate both the infrastructure and the “one-stop pay-per-use shop”.

Fortissimo will organise two CfPs for additional application experiments. Following the successful first CfP, “Call-2”, covered by this document, addresses additional experiments executing for an 18-month period commencing in January 2015.

The target is for the additional experiments to complement the existing experiments (i.e. addressing different areas). The term “existing experiments” is to be understood to mean both the experiments already running and also those experiments selected from the first CfP and scheduled to commence in July 2014. A description of the existing experiments can be found at: <http://www.fortissimo-project.eu/experiments>. The additional experiments from Call-2 should expand the evaluation and demonstration of modelling and simulation services in the Fortissimo HPC Cloud that could create business benefits for manufacturing SMEs. Expectations for the proposed experiments are detailed below.

Background - FoF

The Factories of the Future (FoF) initiative is part of the European Economic Recovery Plan launched in November 2008 to respond to the global economic crisis. This Public-Private-Partnership (PPP) aims at helping EU manufacturing enterprises, in particular SMEs, to adapt to global competitive pressures by improving the technological base of manufacturing across a broad range of sectors. The ICT contribution to this initiative aims at improving the efficiency, adaptability and sustainability of manufacturing systems as well as their better integration within business processes in an increasingly globalised industrial context.

The aim of the ICT for the Enterprise and Manufacturing Challenge within the FoF initiative is to give support to industry for bringing together ICT suppliers and users for experiments that target the broad uptake of ICT towards a more sustainable, efficient, performant, and smarter European manufacturing industry. The focus is on emerging innovative technologies and processes, which need to be customised, tested and validated before being able to compete on the market. A special emphasis is on strengthening European SMEs, both on the supply and on the demand side. Application experiments include simulation services for engineering

and manufacturing SMEs involving a cloud-based service infrastructure that provides the necessary HPC resources.

Expectations for the new experiments

As discussed above, Fortissimo Call-2 targets the augmentation of the current set of application experiments. **The expectations for the proposed experiments are that they should:**

- **be complementary to those already included in the project,**
- **contain all those actors in the value chain necessary for the realisation of services meeting the end-users' engineering and manufacturing needs, and**
- **be based on the use of the (distributed) HPC resources already offered within the Fortissimo infrastructure.**

In this context, complementarity is understood to mean activities that address new applications, 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. Extensions of existing experiments are thus not considered to be complementary.

The new application experiments should provide business relevant investigations and demonstrations of simulation services in the Fortissimo HPC Cloud that have the potential to create business benefits for manufacturing SMEs. **The business-relevance of the application experiment is essential**, as Fortissimo 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.

Proposed experiments should include all participants necessary for the experiment, which may include HPC experts, HPC Centres or ISVs either already included within or external to the Fortissimo consortium. Experiments will employ the Fortissimo HPC infrastructure using the HPC Centres already involved in the project. Interactions with existing Fortissimo partners is supported by a partnering facility available on the Fortissimo web-site: **<http://www.fortissimo-project.eu/calls/partnering>**.

Innovation in the experiments shall be addressed at two levels: (1) Users get "one-stop-shop" access to simulation technologies novel for them, including expertise and tools for visualisation, analytics, customisation and integration, and dynamic, easy and affordable access to computing resources; (2) independent software vendors and simulation service

providers, supported by competence centres, port their applications to a cloud of HPC resources and run experiments with those cloud-based service and business models in controlled environments.

Proposal submission

Detailed instructions for proposal submission, together with information about the evaluation criteria to be applied, are provided online at:

<http://www.fortissimo-project.eu/calls/submission>.

Submission deadline: submission will be exclusively in electronic form and all submissions must be made by 17:00 Brussels local time, June 18th, 2014.

Foreseen budget for Call-2: up to 2 M€ funding for new beneficiaries; the funding for individual experiments should not exceed 250 K€.