

Template for Cloud Computing Initiative Flagship Use Cases

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Introduction

This document provides a template for flagship use cases to be considered for the Strategic Plan for a Scientific Cloud Computing infrastructure for Europe¹. This Cloud Infrastructure will provide, initially, an R&D European Cloud Computing Infrastructure that serves the need of European Research Area (ERA) and Space Agencies. This Cloud Infrastructure will be a public-private partnership between the research organisations and commercial cloud service providers with the potential beyond this initial user base to offer similar services to a broad range of customers including government and SMEs. The initial focus will be on IaaS which can be used to quickly support a small number of scientific flagship use cases. These flagship use cases will be proposed by the demand-side and chosen for their scientific challenge with societal impact, ability to profit from existing services on the supply-side, community building aspects and innovation potential that will help form the private-public partnership. The flagship use cases will be selected so as to be complementary and maximise coverage of the objectives outlined in the Strategic Plan. The flagship use cases will be implemented as part of an initial pilot phase lasting no more than two years. As such, all flagships must be sponsored by organisations that have a long-term objective of outsourcing a portion of their computing requirements. The purpose of this template is to ensure sufficient information is gathered about the proposed flagships as part of the planning and selection process.

The supply-side will work closely with the flagship use case proposers to determine what features and capabilities of Cloud computing environments are needed to support the type of computing exemplified by the selected use cases.

Flagship proposers must be prepared to contribute their own resources during the pilot phase in order to port the application to the cloud infrastructure and contribute to the cost of procuring the required services from the supply-side.

The Flagships must be “photogenic” high-profile applications that can catch the public imagination and act as very visible use cases to encourage others to use the services. Important characteristics of the flagship projects include the need for a significant scale of resources, federation/aggregation of data sets, long-term archiving of data and on- demand processing by a global user community. The

¹ Strategic Plan for a Scientific Cloud Computing infrastructure for Europe, CERN-OPEN-2011-036, August 2011, <http://cdsweb.cern.ch/record/1374172>

impact of flagships on the user community and how the cloud deployment will become an integral part of the research environment are of great importance.

Proposers must be prepared to share information about the flagship applications, their scientific objectives, technical requirements and results so that the infrastructure can be established, improved and promoted to a wider audience. A business case study will be an important part of the pilot phase and the flagship proposing organisation must be prepared to participate in a costing exercise where the total cost of deploying and operating the flagship application on in-house resources can be compared to the cost of procuring the services via the cloud computing initiative.

Proposers are asked to complete the following sections in this template. Please limit your responses to a maximum of one page of text per question. If you have references that can provide additional information then please include them in your response.

The completed document should be returned to <mailto:admin-euro-cloud-computing-initiative-2020@cern.ch> by 23rd September 2011.

Flagship title:

Acronym for the flagship:

Scientific Organisation sponsoring the flagship:

Contact person (name, affiliation, email):

Scientific Objective:

Summarise the scientific objectives for the flagship in laymen's terms.

State-of-art in the use of computing in the scientific field:

Position the flagship with respect to the currently most advanced use of computing in the field

Expected Impact and Benefits:

By implementing the flagship on a commercial cloud system what impact will the result have on the scientific field? What benefit will it bring to the scientific community? Provide details about the scientific community that will benefit from this flagship. Include an estimate the number and distribution of users that will need access to the system.

Technical Characteristics:

Describe the computing characteristics of the flagship and estimate the cloud resources required, including but not limited to the following:

CPU requirements (total CPU hours)

Peak requirements in terms of CPU (GHz)/RAM (GB)/Storage (GB)
Data requirements (quantity of data, files/databases accessed/produced)
Single/multiple binaries (indicate dependencies between multiple binaries)

Peak server size required per resource (server size required in terms of the largest CPU configuration, largest RAM configuration etc.)

Programming model (serial, parallel: shared memory, threads, data parallel etc.)

Style of interaction with the user (interactive/batch)

External connections (e.g. data input/output rates and access to external databases)

Expected external connectivity volume (GB or TB)

Peak expected bandwidth to/from a cloud server (Mbps/Gbps)

Security requirements (e.g. confidentiality of data, algorithms)

Licensing aspects (e.g. does the software make use of third party packages requiring licenses)

Operating environment (operating system and version, libraries etc.)

Current status of maturity:

Indicate if the flagship is under development or already in production in a different environment.

Proposer Resources:

Indicate the level of resources (manpower and funds) your organisation is willing to contribute towards the cost of implementing your flagship during the 2 year pilot phase.

Proposer Motivation:

Explain which aspects (such as secure access, financial models, scalability of resources, portability between service suppliers, use of standardized interfaces etc.) you consider to be the most important to investigate in the porting and deployment of your flagship during the pilot phase.

Proposer Long-term Objectives:

Assuming your flagship is successfully ported and deployed during the pilot phase, what would be the long-term objectives of your organisation for the use of the cloud infrastructure?