e-FISCAL

Summary: The e-FISCAL project analyses the costs and cost structures of the European High-Throughput and High-Performance Computing (HTC and HPC) e-Infrastructures. These research infrastructures are facilitated by national entities participating in EGI and PRACE, and e-FISCAL will compare their costs and cost structures with similar commercially leased or on-demand offerings.

Understanding the overall costs of these European research services is a prerequisite in planning their long-term sustainability, e.g. by developing new business models for service provision. A quantitative analysis of the cost factors involved will help service providers and user communities to identify areas where the overall cost efficiency of ICT-enabled research can be optimised. The study will also go beyond a simple "cost per core hour" comparison by analysing qualitative differences in service between HTC and HPC e-Infrastructures and their closest commercial counterparts.

Objectives: The overall goal of the project is to contribute to a more accurate understanding of the costs of HTC and HPC services, both at a national and European level. The project aims to achieve this goal through the following activities:

1. Study the dedicated HTC and HPC e-Infrastructure costs by surveying European National Grid Initiatives (NGIs) and national (or pan-European) HPC centres and analysing cost factors to better understand what e-Infrastructure related services are included in the infrastructure costs in different organisations.
2. Based on the survey results and cost model, approximate and evaluate the overall cost of the entire European HTC and HPC infrastructures.
3. Compare these results with commercial leased and on-demand offerings, such as Amazon services (EC2, S3 and "HPC on the cloud"), both in terms of cost and the differences in the various aspects these services when compared with the dedicated HTC and HPC e-Infrastructures.
4. Communicate the results to the wider European e-Infrastructure community through active dissemination, contributions to policy formation and organisation of dedicated workshops.

Action plan: Input on cost data will be gathered through questionnaires, interviews and workshops. Other recent relevant studies commissioned by the EC or available from other sources will also be taken into account, incorporating key elements where appropriate. The questionnaire will be designed to provide enough flexibility in categorising the computing infrastructure costs into groups in order to fit the practices and models of all respondents. The analysis of the data received will permit the identification of the variable and fixed cost components of HTC and HPC structures. These findings will provide input for applying pricing methodologies and executing comparisons with services provided by alternative and commercial providers.

Calculation of cost related variables will be used to make comparisons at the European level and assess the effectiveness of HTC and HPC operations. They will also be used as a basis for comparing cost-related outputs (e.g. cost per logical CPU, thresholds where scaling issues will change this ratio) among different settings. The overall cost of the dedicated European HTC and HPC infrastructure will be estimated by extrapolating (if necessary) the costs of different-sized entities.

continued overleaf

Financial Study for Sustainable Computing e-Infrastructures -RI

European Commission
Information Society and Media

e-FISCAL

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e-FISCAL

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EGI.eu	NL
NUI Galway	IE
ETL	UK

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PRACE
e-IRGPS3
e-ScienceTalk
EuroRIsNet+

Coordination and/or support activities: Through the course of the project, e-FISCAL will organise two major workshops reporting on the progress and results of the work and engaging with the e-Infrastructure community. These workshops will be co-located with major events, one from the HTC community and one from the HPC community, to ensure attendance by members of key target groups and to increase the visibility of the project. The results of these workshops will be major inputs and quality control mechanisms for the reports the project will produce.

User communities: The e-FISCAL project does not in itself provide a user-centric focus; rather its work will facilitate the dialogue between e-Infrastructure practitioners, user communities and funding agencies. As such, its target audiences are all the major actors in the e-Infrastructure field, rather than any particular community. Nevertheless, a better understanding of the real costs and capabilities of various computing infrastructures will enable users and user communities to make rational decisions about which infrastructures to use, and promote efficiency and competitiveness in European e-Infrastructure that will benefit end users.

International aspects: While the focus of the analysis is European e-Infrastructures, this kind of comprehensive cost analysis will be of global interest and will likely influence funding models in the broader e-Infrastructure community. This will make it easier to initiate discussions related to global pricing models, especially as many of the user communities supported by European e-Infrastructures are participating in research activities that are not limited to Europe. The results should also be of interest to commercial actors, in particular in the cloud domain where providers seek to serve a global customer base.