GISELA

COMMENTS TO THE E-IRG WHITE PAPER 2011

GISELA Note – ADM04

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Abstract: This document presents the comments of the GISELA Project to the e-IRG White Paper 2011.

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1. INTRODUCTION

1.1. PURPOSE OF THE DOCUMENT

This document contains the GISELA comments about the e-IRG White Paper 2011 that can be found at: http://www.e-irg.eu/news/news/355/comment-on-the-e-irg-white-paper-2011.html

1.2. APPLICATION AREA

This note is mainly destined to the e-IRG Members and to the GISELA community.

1.3. DOCUMENT AMENDMENT PROCEDURE

Amendments to this document can be requested by any Project Member to the Project Coordinator, via the Project Office (hlp-gisela@hlpdeveloppement.fr).

2. PREAMBLE

Having followed regularly the various e-Infrastructures Reflection Group (e-IRG) Workshops over the course of both the EELA-2 (http://www.eu-eela.eu/) and GISELA (http://www.gisela-grid.eu/) EU funded Projects, we would like to bring a few comments on the e-IRG White paper 2011.

We first acknowledge the quality of the e-IRG White papers, this last one being very complete in its intention to cover crucial issues for the long-term success of e-Infrastructures.

As a preamble we want to stress the multiple nature of our comments:

- Most of them expressed our views considering the situation of e-Infrastructures (i.e. of e-Science) in Latin America;
- A few are directly coming from the professional experience of some of us;
- Several are personal opinions of some of us that we thought fair to witness. They are given in the context of the "Foreword" section.

2.1. FOREWORD

Data deluge: Some of us believe that it is not a new characteristic of today scientific data. The volume of raw data has always been directly linked to the granularity of the measurements that is governed by the precision of the instruments, both being ultimately bounded by the available computing capacity (CPU and storage) to process the data. In other words, mega/gigabytes of raw data produced by the previous generation of instruments were as challenging to analyse with existing computing resources as the Tera / Petabytes produced nowadays by modern equipments and processed in the Distributed Computing Infrastructures. Hence the data deluge is the natural consequence of the tremendous increase of computing capacity (per €), not an independent phenomenon as it is often presented.

Eco-system: Some of us would appreciate a precise definition of what is a "research ecosystem". Indeed ecosystem is more a life science concept. Its extension to other domains needs to be precisely defined especially if self-sustainability is meant.

Digital divide: It is mentioned in several occasions to stress the capacity of e-Infrastructures to reduce the inter-regional differences. Surprisingly nothing is said on opportunistic desktop-based computing rather popular in developing countries because it is more affordable. On the other hand, several Desktop Grid Projects are funded by the EU (e.g. DEGISCO).

2.2. INTRODUCTION AND SUMMARY

No special comment.

3. GISELA COMMENTS ON THE E-IRG DOCUMENT SECTIONS

1. e-Infrastructure Governance

"The essence of the proposed approach is that e-Infrastructure governance will have to show a shift towards a user-driven approach"

We are very sensitive to this approach.

As a matter of fact, in 2009, EELA-2 has proposed to the EGEE Collaborating Projects to realise an e-Infrastructure survey to gather from DCI end-users, their appreciation of the usefulness of e-infrastructures, their possible dependability on them for their research, how they see the need for national (NGI) and international (EGI) coordination, etc.. The objective was to get the widest support for DCI computing as relevant feedback on the existing projects, e.g. EELA-2, and moreover to support ongoing NGI, EGI and LGI initiatives. The survey has been realised by eResearch2020 (www.eResearch2020.eu) in collaboration with Belief (http://www.beliefproject.org/) after agreement of the respective Project Officers. The outcomes of the survey have been acknowledged at the *"eResearch2020: The role of e-Infrastructures in the creation of global virtual research communities"* Workshop held in Brussels on February 24th , 2010.

2. Future of Research Networking

"Networks are an essential element of the e-Infrastructure. The goal of this chapter is to make recommendations for national and international policy makers for the further advancement of research networks, given the expected technological developments, the needs of the user communities and the evolution in the markets for information and communication services."

We are very concerned to discuss Network and Computing as a whole.

Indeed the originality of the GISELA approach is to associate, from the very beginning, CLARA and the Latin American NRENs to the e-Infrastructure activities, currently under the Latin American JRU / NGI responsibility. It takes advantage of the fact that NRENs are rather recent in Latin America, as compared to Europe, and can more easily integrate e-Infrastructures services to their network services offer.

In fact GISELA is promoting tight integration of Network and Grid services over the Latin American continent, under the auspices of CLARA. This looks rather natural nowadays, thanks to the improved performance of networks, to associate network and computing as the basic components of all e-technologies (as exemplified by the emergence of Web 2.0 services, Cloud computing, etc.). This integration could not be done easily in Europe, because at the time of creating DCIs, GEANT-2 and European NRENs had, independently of them, their proper history. The situation is rather different in Latin America where CLARA and NRENs have been created more recently. The opportunity to foresee a coupled provision of network and DCI services, now recommended at the e-IRG level, could be envisaged from the beginning in Latin America.

3. Authentication, Authorisation and Accounting

No special comment.

4. Energy and Green IT

"Changing the cooling medium from air to better heat conductors such as water can increase the cooling efficiency. Such a change may be difficult or even impossible to apply in existing facilities as it may be limited by the infrastructure of the data centers or proximity to lake or river."

We are directly interested by the Green Data Centre approach as the solutions chosen in Europe or in the US are generally adopted in Latin America.

One of us (PhG) has coordinated the development of the infrastructures of the Online computer farms of the LHC experiments: typically 2500 CPU boxes (i.e. 10000 cores) housed underground in rooms not larger than about 80-100 m^2.

The only possible approach has been water-cooling. A complete solution has been worked out. It is currently operational at CERN where it can be seen. It is based on a universal (vertically) water-cooled rack now commercialised (http://www.ciat.fr/). It is by far the most optimised solution especially from the density, cooling / energy recuperation and safety point of views, adaptable with minimum modifications to any Data Centre.

References:
- "*A water-cooling solution for PC-racks of the LHC experiments*", Ph.Vannerem, N.Elias, LHCb-2004-035 DAQ http://cdsweb.cern.ch/record/732069?ln=en
- "*Large CPU-farm implementation in a HEP experiment with tight constraints*", L. Brarda, B. Gaidioz, D. Ruffinoni, P. Gavillet, G. Decreuse, RTC'05 Proceedings of the 14th IEEE-NPSS conference on Real time 2005, p325
- We also mention the US Uptime Institute (http://www.uptimeinstitute.org/) that is, in our opinion, one of the best references on Data Centre infrastructures.

5. Exascale computing and related software

No special comment.

6. e-Infrastructure services

No special comment.

7. Data infrastructures

No special comment.