

UBIVERTEX - Letter of Intention

Institute : Institut National Polytechnique

Name: IRIT

Country: France

Activity domain: Expertise in sparse linear problems

Number of employees: 9 in the group, >600 in the whole laboratory

Name of the department/research team: IRIT / TLSE project

Scientific contact

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Challenge descriptions:

The GRID-TLSE (www.gridtlse.org/) web site provides facilities to compare direct solvers for sparse matrices and to share sparse matrices.

Several features are available: consult the database of collections of public sparse matrices and download matrix files; consult the database of bibliography references on sparse linear algebra. It is also possible to perform experiments on your own sparse matrix using direct solvers and so, quickly evaluate sparse direct solvers and obtain statistics on solving sparse linear systems. The site is also used in different projects as as a platform for cooperative work: work group could be created to share private matrices.

In this context, we need to store a lot of matrices; our current need corresponds to around 700 public matrices for few hundred GBytes and a maximum size file of 2,5 GB.

We expect to reference in the near future as many matrices as other reference matrix collection sites (University of Florida references around 2500 matrices).

Considering this and the fact that numerical problems with 10 GB matrices are now commonly handled by our industrial partners, it is obvious that we will face an exponential increasing storage challenge.

A second aspect is the location and migration of matrices during the computation phase. Indeed, as the sparse solvers are deployed on the Grid, the location of data is very important. We have already some migration and persistence solutions as the data manager DAGDA from the DIET middleware. Although storage and system virtualization could be interesting and this solution has to be explored for our platform.

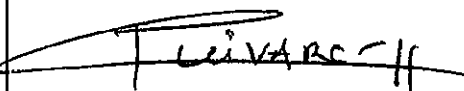
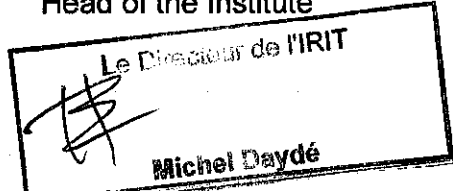
Type of commitment (internship, Phd grant, engineering staff):

The GRID-TLSE project has been initially funded by the French Ministry through ACI "Globalisation des Ressources Informatiques et des Données". It has started in 2003. The partners of the initial project were : research laboratories CERFACS, IRIT, LaBRI, and LIP-ENS, and industrial partners CNES, CEA, EADS, EDF and IFP.

Currently, the GRID-TLSE project is supported by the ANR (Agence National de la Recherche) through: the COOP project (ANR-09-COSI-001) funded by the French ANR COSINUS program, the FP3C Collaborative Project between Japan and France (ANR-JST FP3C).

Previously, the GRID-TLSE project was part of other projects: the ANR LEGO project 2005-2009 (ANR-CICG05-11), the SOLSTICE project (ANR-06-CIS6-010). And the ReDIMSoPS project through the CNRS/JST (Japan) cooperation.

Number of persons involved in these challenges: 2 permanent researchers, 2 engineers.

Signature of Scientific Contact:	Signature of the Head of the Institute
Ronan GUIVARCH 	 Michel Daydé
Date: 9 Sept 2011	Date: