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gridCake & gridCamp: Making the Grid easier

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Description of the Work

Grid technologies have reported an useful solution for researches in the last decade [1]. They allow to federate computational and storage resources distributed across different centers and administrative domains. The most common Grid front-end is a command line interface (CLI) which implies that final users have to memorize complex commands to start using Grid services. This is a big problem, because not every researcher has the skills needed to use a CLI without a previous training, and this fact could lead to the rejection as a feasible alternative.

The motivation of the present work is twofold: to ease the Grid interactions for the end user and to develop a simple Grid web portal. The first objective is the development of a Grid library which softens the learning curve for novice Grid developers. The second objective consists of the development of a simple Grid web portal focused on the usability for non-technical users, mixing concepts from the “classic” Grid web portals and the social networks (which is a familiar tool nowadays).

A Java library called gridCake that is almost fully functional is addressed. It interacts with basic Grid services in a very simple way, and it is suitable for educational purposes. Using gridCake, a Grid web portal prototype called gridCamp has been developed. It is a social network where users can work in a collaborative way, and perform operations on a Grid infrastructure easily within the same portal.

[1] I. Foster and C. Kesselman, The Grid: Blueprint for a New Computing Infrastructure. Morgan Kauffman, 1999.

Conclusions

Nowadays, there are some working projects on developing friendly user interfaces to interact with Grid, but the existing Grid libraries are very complex and have poor documentation for developers. It is extremely necessary to have a rich “ecosystem” of Grid development tools, allowing software developers to create easy and powerful applications for the Grid.

Almost all existing projects aiming to make user-friendly interfaces for Grid services are focused on web applications (commonly called “Grid portals”). Using a web application for Grid interaction renders a lot of advantages: any kind of installation or configuration by the end user is unnecessary, they work on every operative system, etc. The next step on Grid evolution will likely come from this type of applications.

Impact

In this work we report two different types of results. First, a brief summary of the current state of the art of Grid development tools and Grid web portals is addressed. Also, It is described the development of two tools created to ease user interaction with Grid resources. The first tool, gridCake, is a Java Grid library designed thinking on its simplicity. There is a first open sourced version ready to use. The second tool is gridCamp, a pilot project developed using gridCamp. It provides a simple, but fully functional social network environment

which allows users to interact with Grid services easily. By using gridCamp, users with almost no knowledge about Grid can send jobs, consult their status and get the outputs. The portal it is only a pilot project, but it proves that, with good development tools, developers can build easily front-ends that make accessing to Grid resources easier.

URL

<http://www.ceta-ciemat.es> & <https://github.com/csuarez/gridcake>

Overview (For the conference guide)

The Grid is a very useful technology for researchers, but its front-ends aren't very user-friendly because they are usually designed for users with computational skills. This fact could cause contempt to end users because they, generally, want to focus their efforts on their research, avoiding learning concepts not related with their studies.

Furthermore, the existing tools for software development that interacts with Grid services are complex, generally poorly documented and don't support the latest Grid middleware versions. This makes very difficult to develop user interfaces for Grid services.

This work deals with the limitations of existing Grid user interfaces and development tools. It describes the development of a very easy to use Java Grid library called gridCake. Finally, a Grid web portal, called gridCamp, is presented. GridCamp uses gridCake, and mixes Grid resources with social network features.

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