

Widening the number of e-Infrastructure users with Science Gateways and Identity Federations

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Abstract

Grid infrastructures are being built in several areas of the world but, despite the huge investments made by the European Commission and by other funding agencies, both at national and international level, the total number of users is in the order of magnitude $O(10^4)$, much less than $O(10^7)$ which is the order of magnitude of the number of users of the international research and education networks (e. g., GÉANT in Europe) that have been funded more or less the same level of Grids. The reasons for this are the complexity for non-IT-expert users of the Grid security, based on a Public Key Infrastructure, the little adoption of standards to let different middleware be interoperable among each other, and the lack of general frameworks to build easily customizable high-level user interfaces.

In the recent past, interesting developments have been independently carried out by the Grid community with the Science Gateways and by the National Research and Education Networks with the Identity Federations to ease, from one side, the access and use of Grid infrastructures and, from the other side, to increase the number of users authorised to access network-based services.

A Science Gateway is a “community-developed set of tools, applications, and data that is integrated via a portal or a suite of applications, usually in a graphical user interface, that is further customized to meet the needs of a specific community.”

Identity federation is “federating an entity's identity to facilitate single sign-on or cross-domain single sign-on. It is an approach of authenticating a user across multiple sites within a company (intranet) or across independent and disparate domains (extranet) using open standards.” Identity Federations have the aim of setting up and supporting a common framework for different organisations to manage accesses to on-line resources. They are already established in many countries and currently gather a number of people which is in the order of $O(10^7)$.

In this presentation we intend to show the work done at INFN and Consorzio COMETA in Italy to develop a framework to easily and quickly build Science Gateways which can be configured

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as Service Providers of Identity Federations and then potentially accessible by huge numbers of users. The framework makes use of the Simple API for Grid Applications (SAGA) standard, defined by the Open Grid Forum, to perform middleware-independent job and data management. The architecture of the framework will be presented together with a few use cases belonging to different domains, including cultural heritage and e-collaboration. The advantages to create Identity Federations and Science Gateways in Africa will also be outlined.