

gCube Grid Services

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gCube reflects within its name a three-sided interpretation of the Grid vision of resource sharing: sharing of computational resources, sharing of structured data, and sharing of application services. As such, gCube embodies the defining characteristics of computational grids, data grids, and virtual data grids. Precisely, it builds on gLite middleware for managing distributed computations and unstructured data, includes dedicated services for managing data and metadata, provides services for distributed information retrieval, allows the orchestration of workflows, and offers a novel approach for managing these services. Rather than interfacing the infrastructure, the gCube services are transparently deployed across its constituent nodes. This is genuinely ambitious and entirely novel: like computational resources and data before, application logic in gCube becomes a pervasive commodity within an infrastructure which abstracts over its physical location at any point in time.

3. Impact

The dynamic deployment mechanisms of the gCube services allow the creation and management of VREs, i.e. aggregations of users, computational, data, and service resources which characterize the activities of distributed research collaborations. Users interface VREs in order to select resources, define the policies which control their sharing, and to interactively orchestrate services into executable workflows to satisfy their domain specific needs. Through the D4Science project, gCube will offer VREs to users from two distinct eScience areas: Environmental Monitoring and Fishery resources Management. By supporting these communities, gCube will provide them a powerful, innovative, reliable and easy-to-use infrastructure allowing the shared access to data, services and applications that will dramatically reduce the time needed to perform their scientific activities.

URL for further information:

www.gcube-system.org

4. Conclusions / Future plans

The gCube system, as developed by the DILIGENT project, already offers a basic framework to support scientific collaboration as it provides mechanisms to create VREs that support on-demand sharing of resources and application services. However, in order to fully address the requirements of the two D4Science communities, the gCube application framework will be appropriately consolidated and expanded in particular with respect to service performance, dependability, and resilience.

Provide a set of generic keywords that define your contribution (e.g. Data Management, Workflows, High Energy Physics)

Virtual Research Environments, Collaboratories, Grid Computing

1. Short overview

gCube is a service-based framework for eScience applications requiring collaborative, on-demand, and intensive information processing. It provides to these communities Virtual Research Environments (VREs) to support their activities. gCube is built on top of standard technologies for computational grids, namely the gLite middleware. The software was produced by the DILIGENT project and will continue to be supported and further developed by the D4Science project.

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