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Grid Application Platform (GAP)

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Describe the scientific/technical community and the scientific/technical activity using (planning to use) the EGEE infrastructure. A high-level description is needed (neither a detailed specialist report nor a list of references).

Grid Application Platform (GAP) is a light-weight framework for developing problem solving applications. GAP was designed by layered architecture to make the system easy to extend. Compared to traditional grid services, it provides a simpler way for both users and developer to use grid and create grid application. Avian Flu docking services were integrated to GAP with improved portal-based user interface, and have been promoted to wider auto-docking applications in Taiwan and Asia Pacific.

Report on the experience (or the proposed activity). It would be very important to mention key services which are essential for the success of your activity on the EGEE infrastructure.

GAP consists of Core Framework(CF), Application Framework(AF), and Presentation Framework(PF), to simplify staged works in developing scientific applications. For reliability and scalability, Service Oriented Architecture is deployed to make the framework scalable from a single box to highly distributed network.
CF introduces an abstraction layer for bridging utility applications deployed on distributed environments. Handling of computing jobs and Grid users are simplified by a set of well-defined Java APIs.
AF provides an action-based approach for problem solving. Applications are modeled by a collection of commands corresponding to certain actions. The outcome is a collection of reusable commands which can be reused for new application development.
PF can adopt any java-based presentation frameworks to meet user requirement by flexible UI customization. For example, BeanShell is used for developing an interactive shell, while Java Server Face could be used for web interface design.

With a forward look to future evolution, discuss the issues you have encountered (or that you expect) in using the EGEE infrastructure. Wherever possible, point out the experience limitations (both in terms of existing services or missing functionality)

GAP is adopted to the drug discovery, digital archive application, earthquake data center services and so on. The first version of Avian Flu drug discovery application is scheduled to be released in March, 2007. GAP is designed for multiple Grid middleware although the current focus is gLite. Once the interoperation specification is defined, the wrapper of GAP could be adapted to that standard very easily.
Overhead would be an issue and should be evaluated to spot the bottleneck in the future.

Describe the added value of the Grid for the scientific/technical activity you (plan to) do on the Grid. This should include the scale of the activity and of the potential user community and the relevance for other scientific or business applications

The added value of GAP is that the GAP is developed with the following aspects:

- The GAP is easy to use for not only the end-users but also the grid application developers. GAP provides higher level of Java API which maps the problem domain model to programming domain model very easily.
- The GAP is easy to evolve for adapting new IT technologies, and the accommodation must be transparent to both developers and users. The GAP abstracts the difference of grid middleware with an unified interface and could be extended with new middleware.
- The GAP is light-weight in terms of the deployment effort and the system overhead. Its goal is to provide problem domain models for grid application and prevent developers from reinventing the wheels.

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