



THE WHITE ROSE GRID e-Science Centre of Excellence

White Rose Grid Portals

“WRG portals are designed to simplify access to and use of WRG computational assets.”

Introduction

The White Rose Grid (WRG) offers an advanced means of access to a federated set of computational resources available at the three Yorkshire Universities of Leeds, Sheffield and York. To hide the complexity of heterogeneous computer systems and Grid middleware technologies (Globus Toolkit) integrating these distributed systems, the WRG has undertaken the development of application specific portals.

These portals aim to:

- offer an easy-to-use single point gateway to all WRG resources
- provide secure remote access with a valid personal X.509 digital certificate to WRG computational assets
- present a comprehensive view of all available resources
- be used from a regular web browser to create job specifications, manipulate data and files, and/or present graphically the outcome of simulations for further analysis
- offer application specific environments to suit the needs of researchers

WRG portals are designed to simplify access to and use of WRG computational assets. They could be particularly useful to those of WRG users who execute routinely the same production codes with a different set of data; for example for our physicists who regularly run Brownian dynamics simulations utilising WRG systems intensively.

The WRG DAME Portal

The DAME portal [1] (see Figure 1) supports the case study from the pilot e-Science project funded by EPSRC and named DAME (Distributed Aircraft Maintenance Environment). It provides a collaborative environment with the three main profiles that address specific needs of Maintenance Engineers (see Figure 2), Maintenance Analysts and Domain Experts. In particular, it offers aeronautical engineers a web interface to execute their application, processing vibration data captured from aircraft engines, on selected WRG systems. Furthermore the results can be visualised to enable their analysis (see Figure 3).

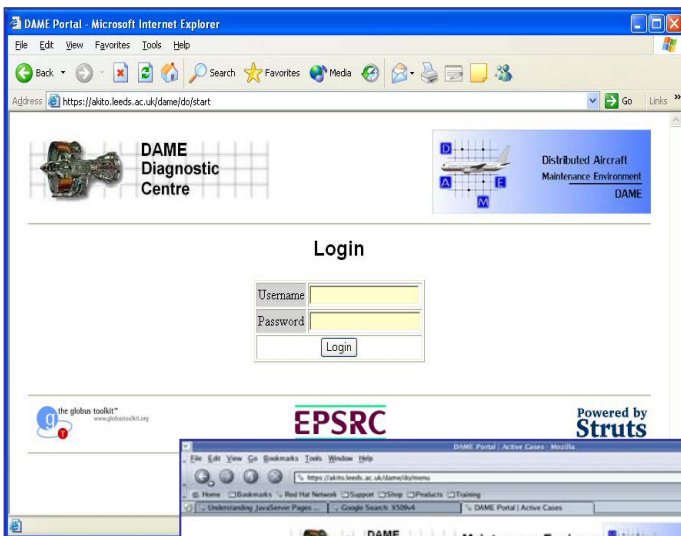


Figure 1 (above): DAME portal

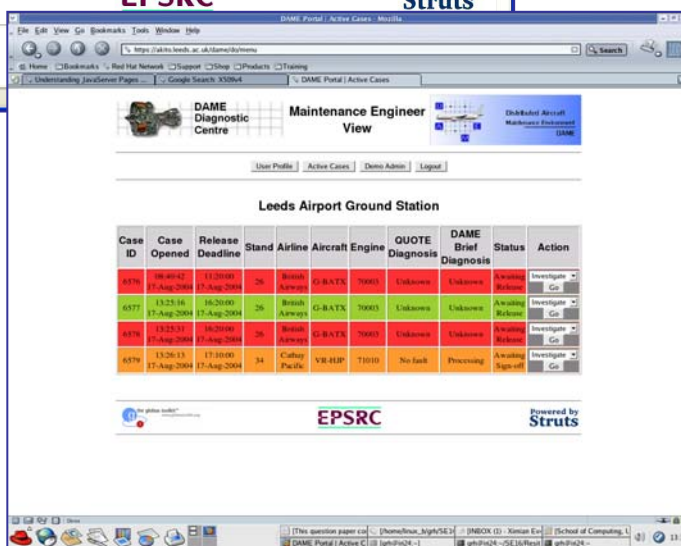


Figure 2 (right): Maintenance Engineer's View in the DAME portal



The portal uses the MyProxy [2] server, which provides a credential repository for the WRG, during the login session to authenticate on the user's behalf.

The portal itself interacts with the workflow manager which orchestrates an array of Grid services providing the core functionality of the DAME project.

This is a lightweight web application, purely concerned with aspects of the presentation layer.

portlets within the new version of the portal. Importantly, due to the recent portlet standardisation efforts the prospect of re-using portal components is becoming an attractive reality. We are experimenting with an early implementation of this standard, the open source GridSphere [5] portlet container created by the GridLab project. It is envisaged that further work will focus on developments of a set of re-usable portlets, each performing a specific role. These portlets will enable our WRG users to build portals offering the required functionality, and later maintain them within their research groups with minimal support efforts from developers.

Further Information

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The relevant web pages are at:

- [1] The DAME portal: <https://akito.leeds.ac.uk/dame/>
- [2] MyProxy: <http://grid.ncsa.uiuc.edu/myproxy>
- [3] Struts: <http://jakarta.apache.org/struts>
- [4] MVC: <http://www.javaworld.com/javaworld/jw-12-1999/jw-12-ssj-jspmvc.html>
- [5] GridSphere: <http://www.gridisphere.org>

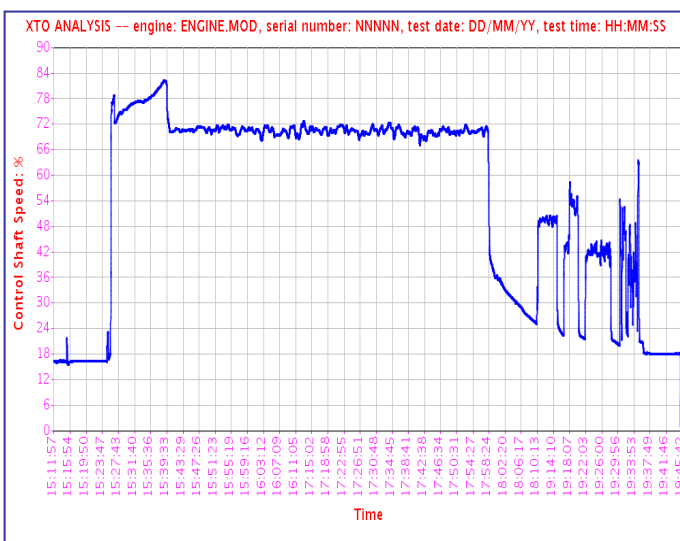


Figure 3: Visualisation of results within portal

The portal utilises the Struts framework [3] with a JSP Model 2 Architecture [4]. The advantage of this approach is that it centralises request handling and decision points (e.g. security), avoids "cut & paste" code distribution, and reduces the maintenance overhead.

Current and Future Developments

The experience gained from developing the WRG DAME portal is being used to deliver a portal that can be customised by end users in the future. We are investigating the potential use of Grid



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