



**DOCUMENTATION OF THE FIRST
PROTOTYPE
- PORTALS AND ROAMING ACCESS -
FUNCTIONALITY
FINAL VERSION**

WP3.1

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Abstract: This document briefly describes functionality implemented in confines of task Wp 3.1: "Portals and Roaming Access" that will be available for first prototype. The last part describes what functionality is still required from other Work Packages for first prototype and future development. The document consists of two sections: "Migrating Desktop" and "Application Portal".

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1. EXECUTIVE SUMMARY.

The purpose of this document is:

- to define the functionality that will be available for the first prototype of Migrating Desktop and underlying modules (Roaming Access Server), as well as the Application Portal.
- To point out functionality, which is still required from other Work Packages for first prototype and future development.

2. INTRODUCTION TO THE MIGRATING DESKTOP

2.1. MAIN GOALS OF “MIGRATING DESKTOP” SUBTASK

The Migrating Desktop is a user friendly graphical tool implemented as a subtask of task “Portals and Roaming Access”.

The Migrating Desktop should produce a transparent user work environment, independently of the system version and hardware. The Migrating Desktop will allow the user to access grid resources and his local resources from remote computers. It will allow to run applications, manage data files, store personal settings (configuration definitions that characterise e.g. links to the user data files, links to applications, access to portals and HPC infrastructure, as well as windows settings), independently of the localisation or the terminal type.

This tool will extend the functionality of the portal by providing a specialised advanced graphical user interface. It will be useful for the designing of the workflow.

2.2. AVAILABLE FUNCTIONALITY

The Migrating Desktop will offer for the first prototype basic set of functions, among which one can distinguish:

- Handling the Graphical User Interface;
- User configuration management;
- Handling transmission of files;
- Job submission;
- Monitoring of the job execution;
- Managing local application and files;
- Managing remote files;

Because of Migrating Desktop acts as a client, these main mechanism of Migrating Desktop are of course supported (via web-services mechanism) by underlying, server layer – Roaming Access Server (see Design Description document for details).

In order to show the availability of the Migrating Desktop the cooperation with the different grid environments has been established, some ready-to-use modules from Polish national project PROGRESS (co-funded by Polish Ministry of Infrastructure and Sun) were used (e.g. Data Management System, Job Submission System). DMS in the CrossGrid is still undefined and should be specified as quickly as possible.

3. FUNCTIONALITY DESCRIPTION

3.1. GRAPHICAL USER INTERFACE

Migrating Desktop GUI offers set of functionality typical for “windows” based applications:

- Changing/settings windows properties;
- Handling menus, toolbars, popups and other graphical components;
- Handling icons representing local/remote files or jobs - drag and drop mechanism, “cut-copy-paste” mechanism, changing icon properties, etc;
- Handling dialogs responsible for transmitting files, submitting jobs.

3.2. USER CONFIGURATION MANAGEMENT

The Migrating Desktop manages user configuration in two ways:

- User working environment is stored in remote database, so the user configuration can be restored every time the user begins their work, independently on a machine localisation and operating system;
- User can create set of ready-to-use configurations which can be easily loaded on his/her demand;

3.3. FILES HANDLING

The Migrating Desktop supports the User Virtual Directory that is an abstract entity collecting information about all user files independent on their physical location (its idea and functionality has not been established exactly yet and will be the matter of further discussions). (For the prototype version that functionality is limited);

Operations on files available to the user are:

- Saving local file in abstract User Virtual Directory;
- Getting file from User Virtual Directory and storing them locally;
- Creating links to local files (for the prototype version that functionality is limited);
- Creating links to the files stored in the User Virtual Directory;
- Creating links to the local application (for the prototype version that functionality is limited);

3.4. JOB HANDLING

3.4.1. Submitting a job

Using Migrating Desktop the user can define application settings and parameters and submit it to Submission Agent (for the prototype version to given Computing Element) using graphical Job Submission Wizard.

3.4.2. Monitoring job execution

The user can check the state of submitted jobs, suspend or delete selected job using Job Monitoring tool.

4. REQUIRED FUNCTIONALITY

The Migrating Desktop and Roaming Access Server will need functionality from other tasks in order to provide various other operations. These tasks are:

- task 1.(all) Application XML schemas describing the input and verification of the parameters. They will be used for automatic generation application parameter input form (that are application specific) in graphical Job Submission Wizard.
- task 2.3 "Metrics and Benchmarks": Functionality is needed from this task in order to implement the operations for running and controlling benchmarks.
- Data Management System should be a common venture of TAT, us, and task 3.4.

5. INTRODUCTION TO THE APPLICATION PORTAL

5.1. MAIN GOALS OF THE "APPLICATION PORTAL" SUBTASK

In the context of the "Portals and Roaming Access" task, the Application Portal will stand alongside the Migrating Desktop and provide its own functionality.

The Application Portal will provide a user-friendly web-based environment for carrying out various tasks related to the handling of jobs that are processed by the individual applications of CrossGrid. These tasks will include the submission of jobs, the running of benchmarks, Grid monitoring, file transfer, management of Grid resources, MPI verification, performance measurement, user authentication and storage of personal user settings.

5.2. AVAILABLE FUNCTIONALITY

Like the Migrating Desktop, the Application Portal relies on support from the Roaming Access Server, by means of web services. These web services are called from the portal itself and provide a means with which to communicate with the Roaming Access Server in both directions. All interaction between the portal and the Grid is handled by means of these web services.

For the first prototype, the Application Portal will offer a basic set of functions, such as:

- the handling of the Graphical User Interface
- the authentication of users
- the modification of user-specific settings
- selection of application
- the submission of jobs
- the monitoring of the progress of a job
- the stopping of a job

6. FUNCTIONALITY DESCRIPTION

6.1. THE GRAPHICAL USER INTERFACE

The Application Portal provides a browser-based graphical user interface. Functions appear as links that are partitioned into groups or blocks (see figure 1).

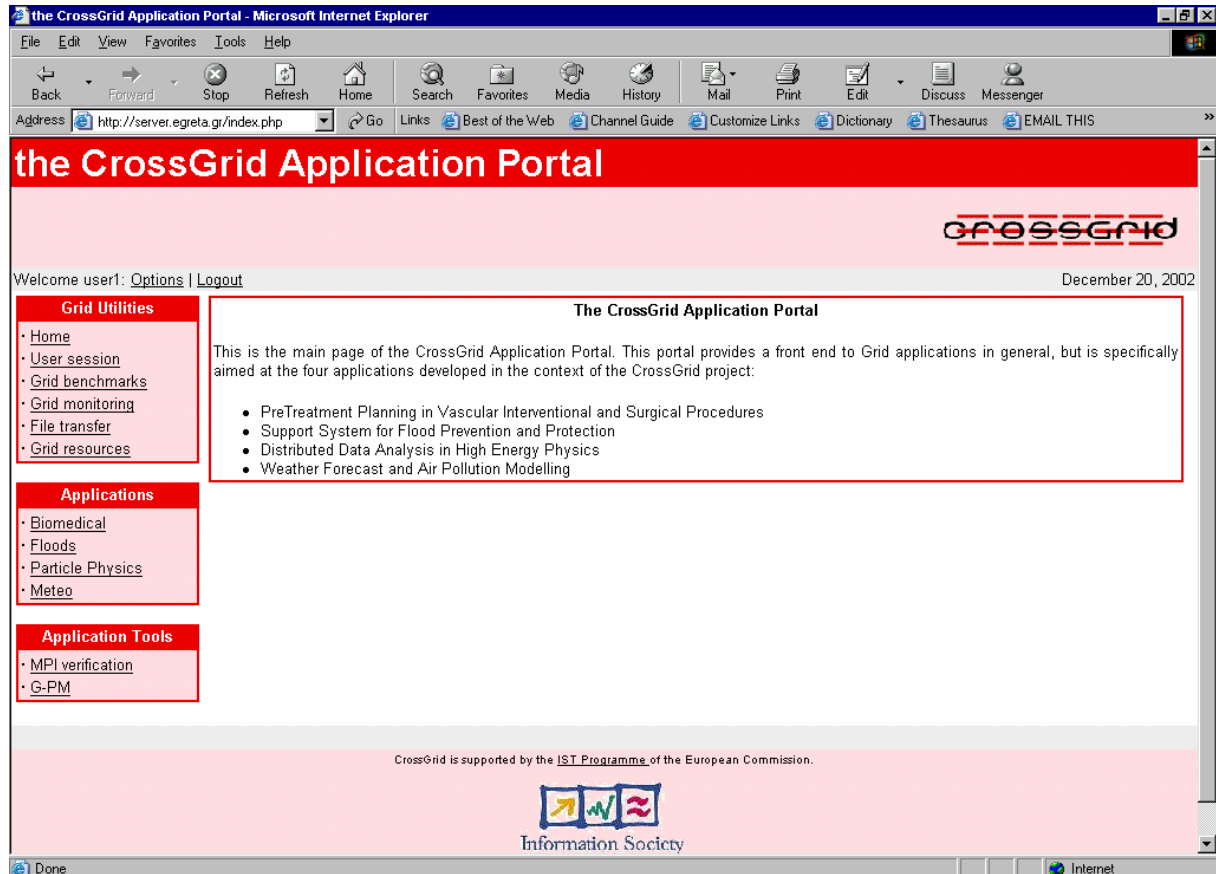


Figure 1 The Graphical Portal User Interface

Blocks are:

- either static i.e. are always visible to the user, or
- (dynamic) context-sensitive i.e. their appearance depends upon particular choices made by the user

Blocks may appear to the left or right of the main content of the portal window.

6.2. THE AUTHENTICATION OF USERS

The user may authenticate himself by supplying a username and password or loading a certificate from a myProxy server.

This procedure is carried out by means of block that has been drawn aside for this purpose.

6.3. USER SETTINGS

The Application Portal allows the modification of a number of settings/parameters that are specific to the user and are the following:

- the appearance or "theme" of the portal windows
- the choice of whether or not to display a personal menu which acts as a new block
- the choice of position of the menu (left or right)
- the content of the menu

6.4. SELECTION OF APPLICATION

The user may select any one of the four CrossGrid applications (Biomedical, Floods, Particle Physics and Meteo) by means of a block that has been drawn aside for this purpose (see figure 1).

More applications will be easily added in the future thanks to the open application plug-in architecture of CrossGrid.

The portal provides more or less the same functionality for all applications. Of course, it provides and will provide additional functionality specific to the application.

6.5. JOB SUBMISSION

The portal allows the creation of a job, by means of entering a number of settings and parameters, and its subsequent submission to the Submission Agent.

The portal will compile the set of input parameters into the appropriate JDL script and will submit the job to the Grid using the Job submission Web service.

Output will be provided to the portal user by means of application dedicated graphical applets.

6.6. JOB PROGRESS MONITORING

The job submission procedure provides a unique job id which will serve in all further management of a particular job. To monitor a job's progress, the user simply selects the id. The portal returns:

- the status of the job (running, paused, finished)
- the estimated time to finish
- a link to the MPI verification log file that will be available upon completion of the job

6.7. STOPPING JOBS

Jobs may be stopped by submitting their id.

7. REQUIRED FUNCTIONALITY

The Application Portal will need functionality from other tasks in order to provide various other operations. These tasks are:

- task 2.2 "MPI Code Debugging and Verification": Functionality is needed from this task in order to implement an operation for setting the MPI verification library options.
- task 2.3 "Metrics and Benchmarks": Functionality is needed from this task in order to implement operations for running and controlling benchmarks.
- task 2.4 "Interactive and Semiautomatic Performance Evaluation Tools": Functionality is needed from this task in order to implement an operation for performance measurement.
- task 3.2 "Grid Resource Management": This task must provide functionality so that an operation for managing Grid resources may be realized.
- task 3.3 "Grid Monitoring": This task must provide functionality so that an operation for monitoring the Grid may be realized.