## GridSpace2 - Comprehensive Platform for Managing e-Science Applications

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### Experiment Workbench

As a single user entry point to the GridSpace2, the Experiment Workbench facilitates exploratory writing, running and managing e-science experiments. URL-accessible experiments and their results can be shared, published and catalogued as any other web resources.

### Experiment

E-science application is composed of code fragments called snippets, expressed in either general-purpose scripting programming language (e.g., Python, Ruby, Perl, Bash etc.), domain-specific language (e.g., quantum chemistry problem specification, nanostucture description) or purpose-specific notation (e.g., for drawing plots). Snippets are evaluated by respective programs called interpreters.

### Computational Resources

Behind the scenes a tremendous computational capabilities are enabled to be used by scientific applications including public e-infrastructure sites and private clusters. Depending on processing and interactivity demands the computations can be submitted to the server, cluster, grid e-infrastructure or executed within a user’s web browser.

### Solution

- Provide convenient web interface for managing e-science applications throughout their entire life-cycle including prototyping, authoring, sharing, operation, and evolution  
- Provide generic interface to heterogeneous computational resources including PCs, private clusters, supercomputers, grid  
- Allow for specifying and publishing e-science applications in a portable execution environment-agnostic format

### Embedded Experiment

Published experiment can be embedded on arbitrary web sites owing to the Collage Authoring Environment feature and thus enrich web content by allowing experiment execution by one click trigger.

### GridSpace2 Web Layer

GridSpace2 Core - a Java library providing API for creating, persisting, managing and running experiments. It is configured by GridSpace configuration file which records all available interpreters and their installations on the underlying computational resources. The experiments are handled in execution environment-agnostic portable format, not dependent on execution environment - they are mapped to specific computational resources only at the execution step.

### GridSpace2 Core API

- GridSpace2 Core API for creating, managing and running experiments. It is configured by GridSpace configuration file which records all available interpreters and their installations on the underlying computational resources. The experiments are handled in execution environment-agnostic portable format, not dependent on execution environment - they are mapped to specific computational resources only at the execution step.

### GridSpace2 Executor API

- GridSpace2 Executor API for submitting experiments to the server, cluster, grid e-infrastructure or executing within a user’s web browser.

### Portable Experiment Format

- Analysis of nano-materials and protein structures by using the specialized software installed on the PL-Grid e-infrastructure  
- Multiscale applications that span over diverse resources and e-infrastructures

### Example Applications

- Analysis of nano-materials and protein structures by using the specialized software installed on the PL-Grid e-infrastructure
- Multiscale applications that span over diverse resources and e-infrastructures

### References


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