# Appendix A: Science Gateway

CIG proposes to develop a web portal that can run any of the software installed in our Community Software Area (CSA), which currently consists of CitcomS, PyLith, Gale, and CIGMA, and requests ASTA support for 6 months of .5 FTE to assist in the initial development and deployment of this web portal, which will interface with the TeraGrid portal services.

## Gateway Description

CIG plans to support the following use cases for its science gateway:

1. Temporary user accounts for use in CIG workshops and training sessions.
2. Registered users who wish to compare their benchmark results against published CIG benchmarks.
3. Registered users of the CIG gateway who will submit typical simulations for CitcomS, PyLith, and Gale. The goal is also to transition these users to obtain a TeraGrid allocation of their own.
4. Registered users of the CIG gateway who submit on-demand simulations through the SPRUCE TeraGrid service. This will be used mainly in conjunction with the SPECFEM3D portal.

The grid portal software will interface with the CIG Pyre framework for scientific simulations.

## Specific Goals

- Help with installing and configuring GridSphere-3.0 and the Tomcat application server.
- Configuring PURSe for maintaining CIG's user registry for its community allocation, and integrating it into the CIG web portal. Also, setup of the GT4 workspace management system to enable creation of dynamic user accounts.
- Setting up the GRAM4 auditing system for job submissions, and integrating it into the CIG web portal.
- Making efficient use of the GPFS filesystems at SDSC and NCSA. Some of CIG's numerical codes already make use of the Parallel HDF5 library, which has to be tuned for each specific parallel filesystem. CIG requests expert advice for redesigning its data access patterns to obtain optimal parallel I/O throughput.
- Integrating GridFTP into the web portal through a GridSphere portlet, and/or possibly a Firefox browser extension.
- Setting up a public web service that can take an input dataset from an OPeNDAP service, process it through a CIGMA filter, and offer an output dataset accessible either through GridFTP or as an OPeNDAP service.
- Configuring the CIG web portal to submit benchmarking scripts to the Inca verification and validation system installed at SDSC.
- Updating the TeraGrid Wiki with a detailed description of how CIG accomplished the above steps, for the benefit of future grid developers. The source code for the portal will be also available under an open source license and hosted on a Subversion repository located at the URL:

  http://geodynamics.org/svn/cig/cs/portal/trunk/

## Links

- Pyre - http://www.cacr.caltech.edu/projects/pyre/
- PURSe - http://www.grids-center.org/solutions/purse/
- GRAM Audit - http://www.teragridforum.org/mediawiki/index.php?title=GRAM4_Audit
- OPeNDAP - http://www.opendap.org/
- Inca - http://inca.sdsc.edu/