



# SciDAC Commodity Grid Kits

MICS/SciDAC Middleware

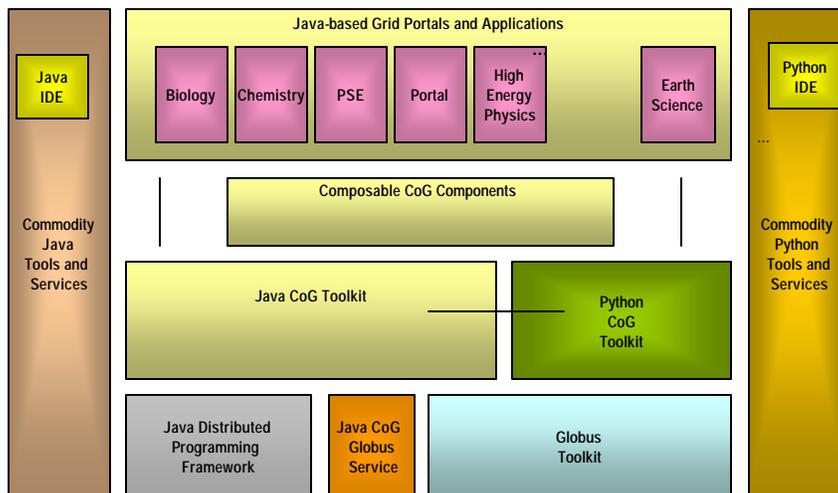


## PROBLEM

Many application developers desire to program the Grid in frameworks familiar to them. Current Grid toolkits are not supported in such frameworks.

## SOLUTION

The SciDAC CoG Kit project integrates Grid software based on the Globus Toolkit and a commodity framework such as Java and Python.

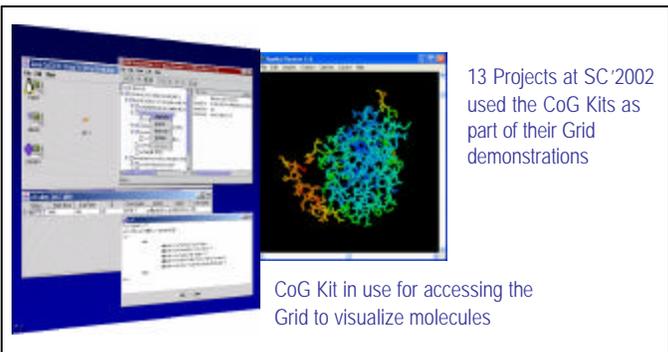


The role of the Java and Python CoG Kits

**BENEFIT :** Access to basic Globus Toolkit services via the Java and Python CoG Kit

## IMPACT

- Easier development of advanced Grid services
- Easier and more rapid application development
- Easier deployment of Grid services
- Code reuse and use of component repositories
- Use of Web services as part of the Grids
- Widespread use of the Grid



### Job submission in Java using the Java event model

```

GramJob job = new GramJob (
    "&(executable=myBigJob.exe)(arguments=15)");
Job.request("windy.mcs.anl.gov");

job.addListener( new GramJobListener() {
    public void statusChanged(GramJob job) {
        Integer status = job.getStatus();
        if (status == Gram.JOB_STATE_PENDING) {
            System.out.println("Job is pending");
        } else if (status == Gram.JOB_STATE_ACTIVE){
            System.out.println("Job is pending");
        }
    }
});

```

### Job submission in Python with the callback model

```

try:
    gramClient = GramClient.GramClient()
    callbackContact = gramClient.set_callback(func, condV)
    jobContact = gramClient.submit_request("sunny.lbl.gov",
        "&(executable=myBigJob.exe)(argument=15)",
        GramClient.JOB_STATE_ALL)
except GramClient.GramClientException, ex:
    print ex.msg

def func(cv, contact, state, error):
    if state == GramClient.JOB_STATE_PENDING:
        print "Job is pending"
    elif state == GramClient.JOB_STATE_ACTIVE:
        print "Job is active"

```

Example: Job submission in Java and Python

## MILESTONES

- Deliver high-quality CoG Kits for Java and Python
- Provide access to basic Grid services:
  - GRAM, MDS, security, GridFTP, GSI
  - Replica Catalog, co-scheduling
- Develop composable components:
  - Develop guidelines for component development
  - Design and implement component hierarchies
  - Develop a component repository
- Integrate Web and Grid services

**ASSOCIATION WITH OTHER PROJECTS:** We are working closely with the Globus Project. We also work with a variety of major funded applications through SciDAC, NSF( e.g., DOE Science Grid, Earth Systems Grid), and NASA IPG.

