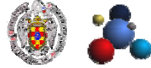


April 25, 2006



# The GridWay Metascheduler

GridWay Team  
[www.GridWay.org](http://www.GridWay.org)



Distributed Systems Architecture Group  
Departamento de Arquitectura de Computadores y Automática  
Universidad Complutense de Madrid

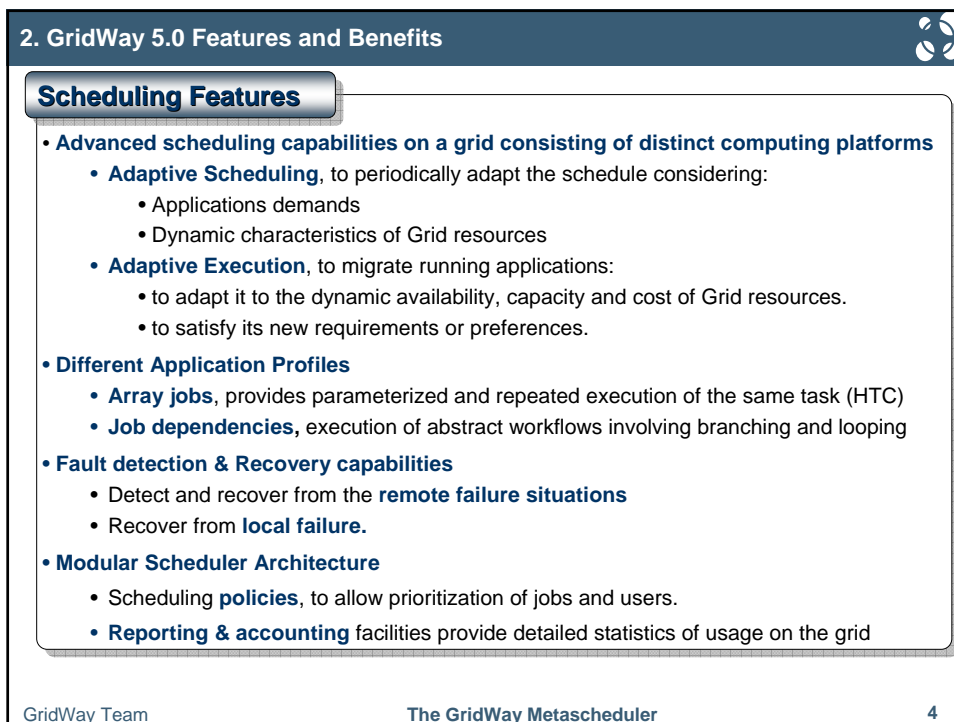
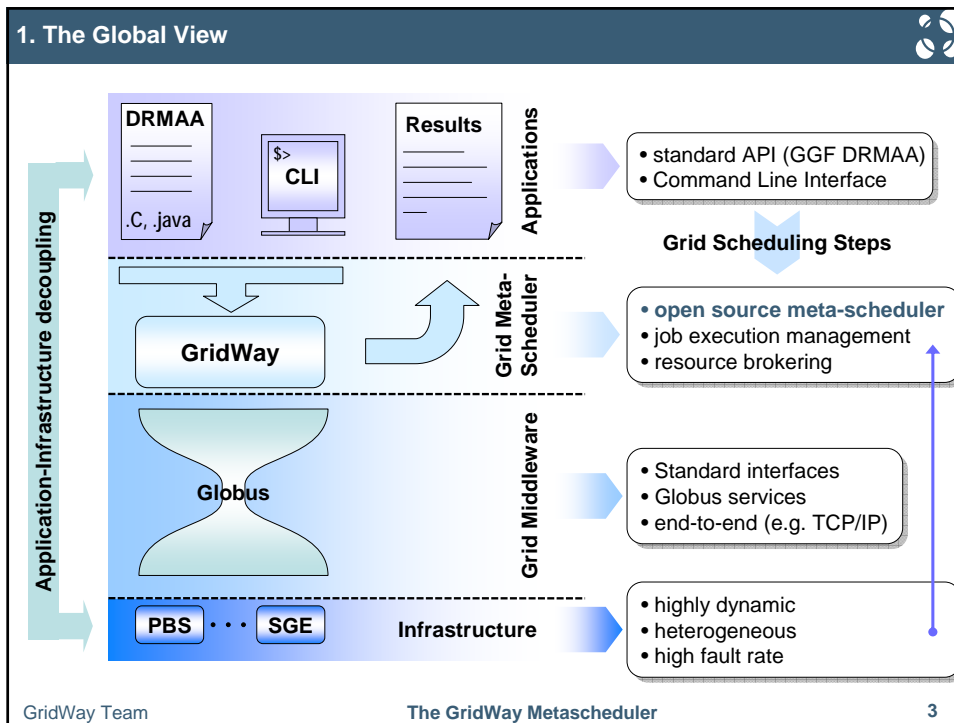
1

## The GridWay Metascheduler



### Contents

1. The Global View
2. GridWay 5.0 Features and Benefits
3. GridWay 5.0 Scheduling Architecture
4. Scheduling Infrastructures with GridWay 5.0
5. GridWay 5.0 Demonstration





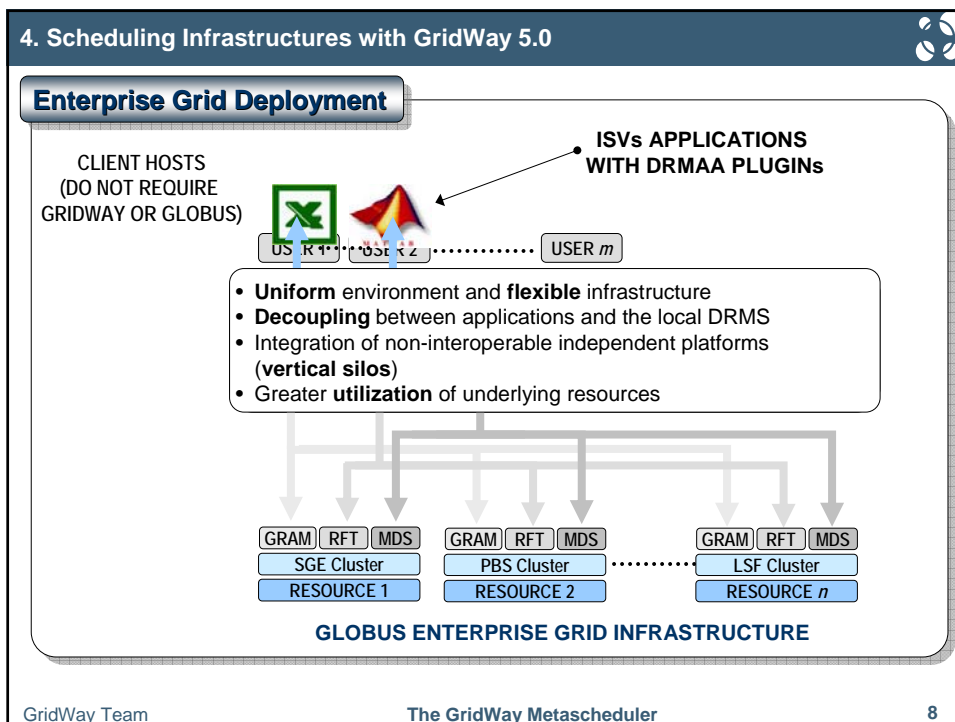
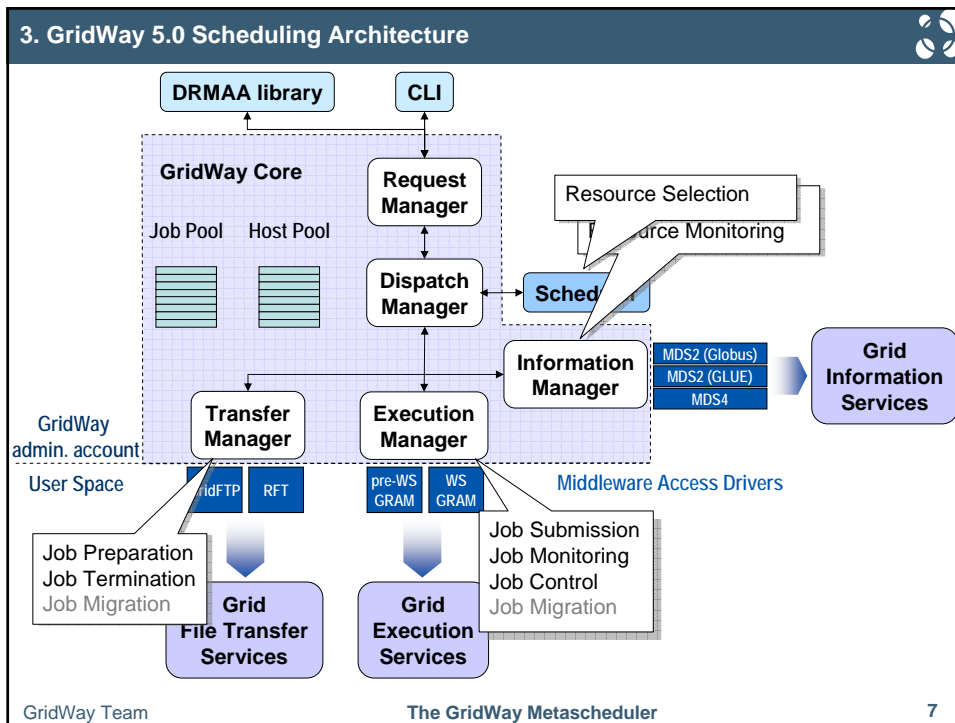
### User Interface Features

- **Application compatibility**
  - **Not bounded to a specific class of application**, generated by a given programming environment
  - **Not require specific application deployment** on remote hosts
- **DRM-like Command Line Interface**, CLI similar to that found on Unix and DRM systems such as PBS or SGE
- **Standard Applications API (DRMAA)**
  - Integration of ISV's applications to GridWay
  - Compatibility with DRM systems that implements the standard, such as SGE, Torque...



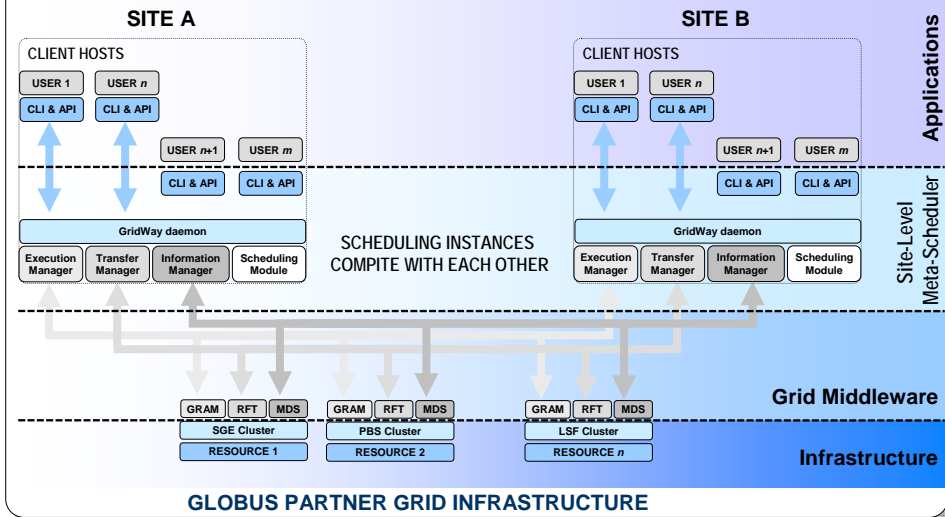
### Deployment Features

- **Support for multiple-users**
  - Globus installation is not required in each end-user system
  - Firewall requirements
  - The administrators have full control of meta-scheduling
- **Interoperability**, simultaneously interface to distinct middleware deployments (Globus WS, Globus pre-WS, LCG)
- **Flexible and extensible architecture**
  - **Information drivers**: MDS2 (MDS schema), MDS2 (Glue schema) and MDS4
  - **Execution drivers**: pre-WS GRAM and WS GRAM
  - **Transfer drivers**: GridFTP and RFT
- **Deployment Strategies**, does not require the installation or deployment of new services
  - Single user
  - Enterprise Grid
  - Partner Grid



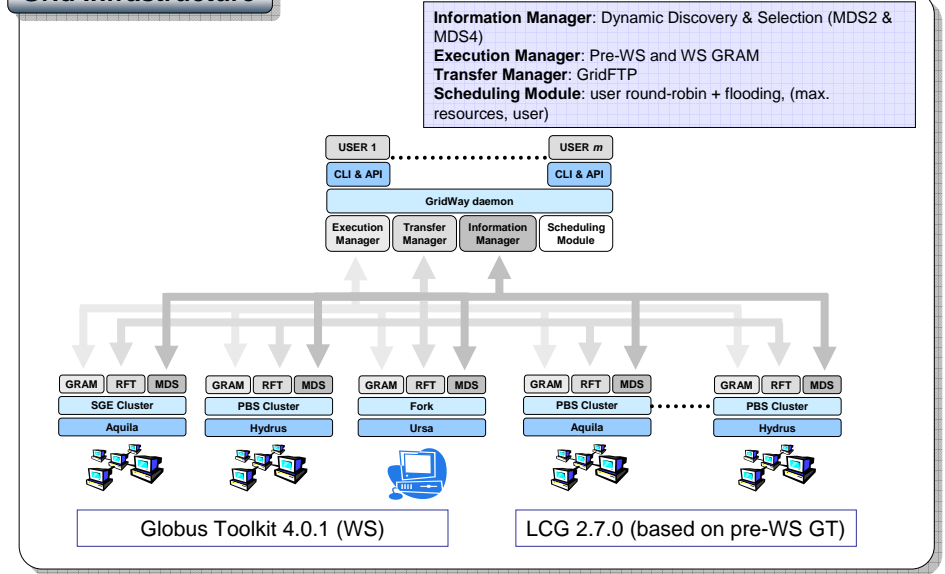
#### 4. Scheduling Infrastructures with GridWay 5.0

##### Partner Grid Deployment



#### 5. GridWay 5.0 Demonstration

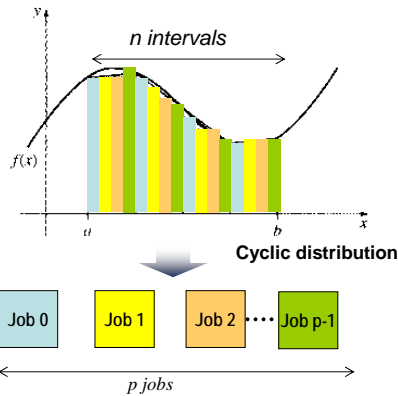
##### Grid Infrastructure



## 5. GridWay 5.0 Demonstration

### Sample Application: Computing $\pi$ on the Grid

$$\pi = \int_0^1 \frac{4}{1+x^2} dx \quad \xrightarrow{\text{Numerical Integration}} \quad \pi = \sum_{i=0}^{n-1} A_i \quad \text{with} \quad A_i = f\left(x_i + \frac{h}{2}\right)h$$



```
rc = drmaa_init(...);
setup_job_template();

//Bulk job successfully submitted
rc = drmaa_run_bulk_jobs(...);

//Waiting for job to finish...
rc = drmaa_synchronize(...);

//All Jobs finished
for (i=0; i < end + 1 ; i++){
    ...
    fscanf(fp, "%f", &pi_t);
    pi += pi_t;
}
printf(stderr, "\nPI=%f\n", pi);

drmaa_exit(...);
```

## The GridWay Metascheduler

Information and download at <http://www.GridWay.org>  
Open source license



Support Forum at <http://www.GridWay.org/forum/>



More Information and Tutorials



Grid Ecosystem at **Globus** site



Tutorial at **IBM** site



Installation on Solaris at **Sun Microsystems** site



DRMAA support and scheduling use case at **GGF** site



### Grid Infrastructures Using GridWay

- **IRISGrid**: The Spanish National Grid Infrastructure
- **CABGrid**: A Virtual Laboratory for Computational Astrobiology
- **C2VO**: Grid infrastructure development for the implementation of a Computational Chemistry Virtual Organization
- Grid Activities at **ESAC (European Space Agency)**
- **CRO-GRID** Infrastructure
- **Sun Solution Center World Grid**
- ...

More information at <http://www.gridway.org/solutions.php>



# Thank you for your attention!

More information...  
<http://www.GridWay.org>  
[contact@gridway.org](mailto:contact@gridway.org)