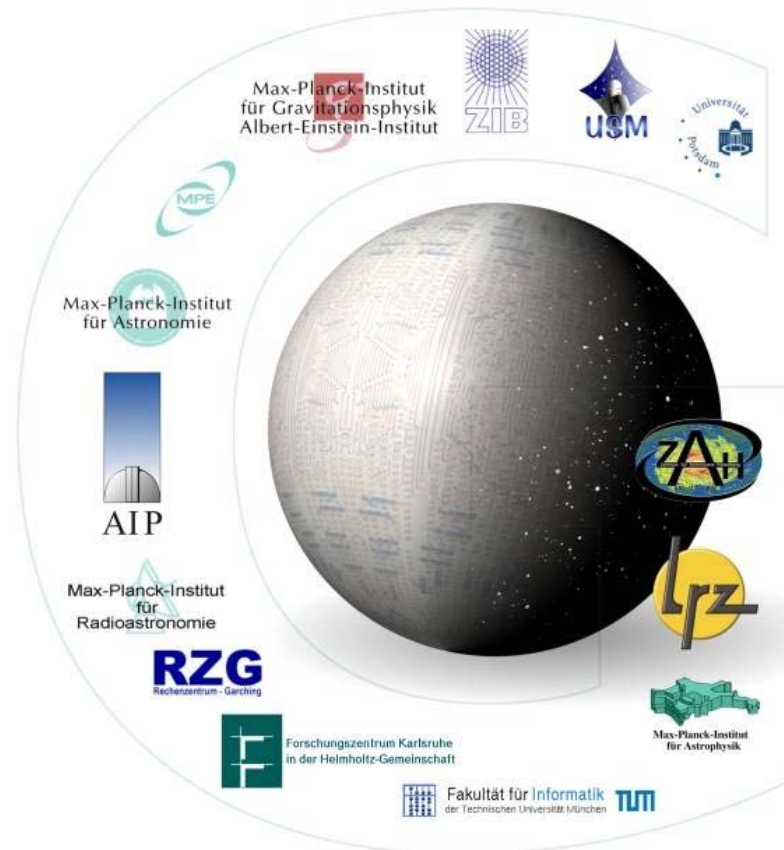


Status of the Dynamo Use Case

as prepared by Michael Braun



Frank Breitling

5th AstroGrid-D Meeting, MPE Garching

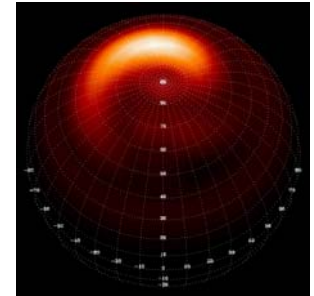
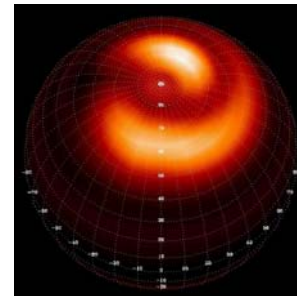
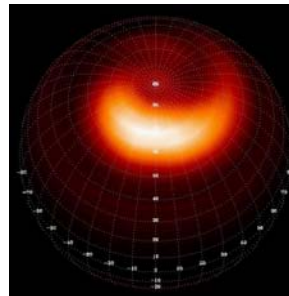
14./15. November 2006

■ Program for

modeling of turbulent dynamos in planets, stars and galaxies,
 i.e. solving the induction equation with turbulent electromotive forces

■ Numerical Methods

- finite differences
- fixed grid





Hard & Software Requirements



Moderate:

- Memory: 500 MB RAM
- Local disk usage: <10 GB
- Transfer of output: <10 GB
- Execution time: < a few days
- No network connection at runtime
- Code is a single Fortran binary



i.e. for the concurrent submission of multiple jobs with different input parameters:

- A directory for each job containing **input parameter files** and the **executable**
- Job description (XML) file, which defines the **data transfer** and the **grid resources** for the computation

Using the Globus Toolkit

■ Submit job to WS GRAM

```
globusrun-ws -submit -b -f job.xml -J -S -o epr.xml
```

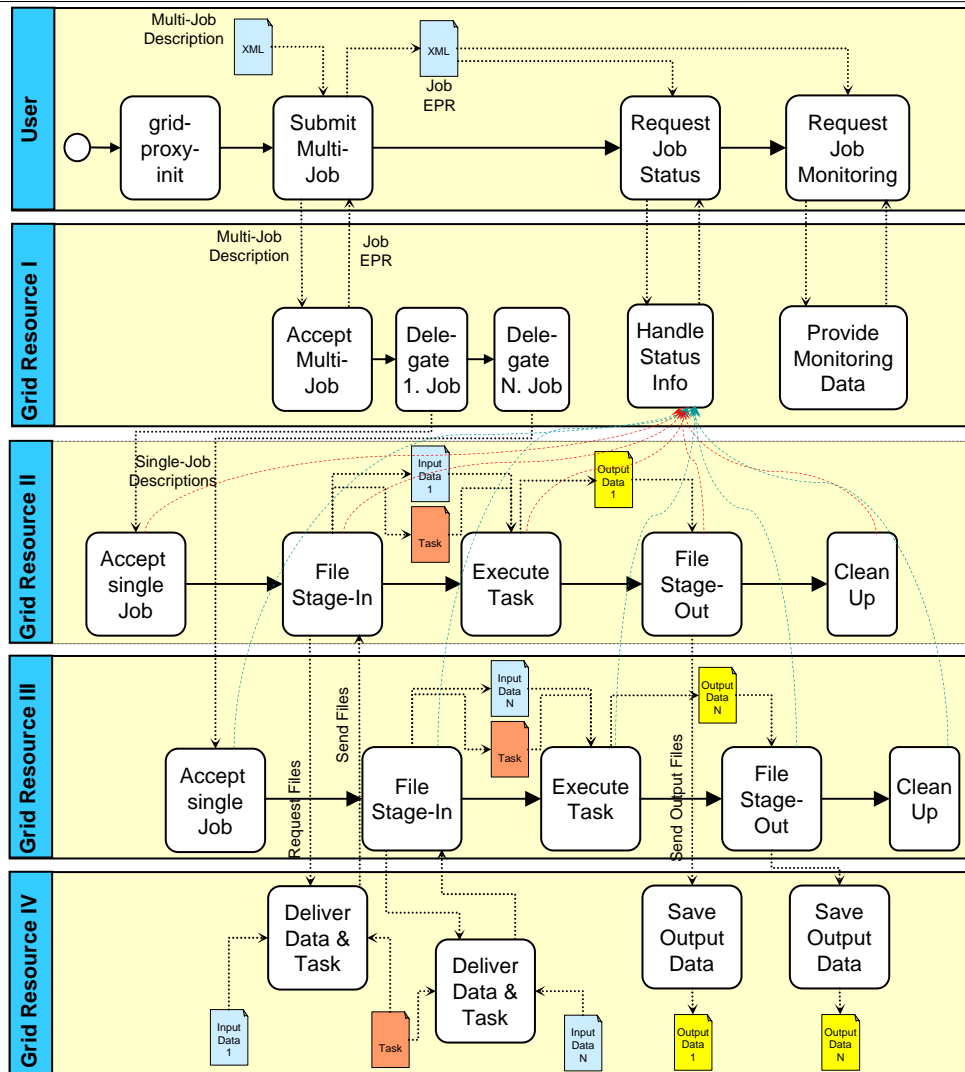
■ Status requests & monitoring

```
globusrun-ws -status -j epr.xml
```

```
globusrun-ws -monitor -s -j epr.xml
```



Flowchart of Taskfarming (WS GRAM Multi-Job)



Job Description File (XML) of the Multi-Job

Multi-Job Tag	<pre><?xml version="1.0" encoding="UTF-8"?> <multiJob xmlns:gran="http://www.globus.org/namespaces/2004/10/gran/job" xmlns:usa="http://schemas.xmlsoap.org/ws/2004/03/addressing"> <factoryEndpoint> <usa:Address> https://gavo3.aip.de:8443/usrf/services/ManagedJobFactoryService </usa:Address> <usa:ReferenceProperties> <gran:ResourceID>Multi</gran:ResourceID> </usa:ReferenceProperties> </factoryEndpoint> </multiJob></pre>
1. Job Tag	<pre><job> <factoryEndpoint> <usa:Address> https://astar.aip.de:8443/usrf/services/ManagedJobFactoryService </usa:Address> <usa:ReferenceProperties> <gran:ResourceID>Fork</gran:ResourceID> </usa:ReferenceProperties> </factoryEndpoint> <executable>test.x</executable> <directory>\${GLOBUS_USER_HOME}/dynano/</directory> <stdout>test.x.stdout</stdout> <stderr>test.x.stderr</stderr> <fileStageIn> <transfer> <sourceUrl> gsiftp://photon.aip.de/z/fkbreitl/Dynano/deltest/ </sourceUrl> <destinationUrl> file:///\${GLOBUS_USER_HOME}/dynano/ </destinationUrl> </transfer> </fileStageIn> <fileStageOut> <transfer> <sourceUrl> file:///\${GLOBUS_USER_HOME}/dynano/ </sourceUrl> <destinationUrl> gsiftp://photon.aip.de/tmp/dynano1/ </destinationUrl> </transfer> </fileStageOut> <fileCleanup> <deletion> <file>file:///\${GLOBUS_USER_HOME}/dynano/</file> </deletion> </fileCleanup> </job></pre>



Grid Services



AIP

- Used:
 - ◆ WS GRAM
 - ◆ GSIFTP

- Useful but missing
 - ◆ Resource Brokering
 - ◆ Scheduling
 - ◆ File-Management
 - ◆ Information Service

- **No** facilities like **GAT** or **P2P** are currently used



Conclusion



AIP

- Dynamo is Grid ready
- Additional services could be helpful and convenient for the user

