

## AstroGrid-D: Atomic Use Case Demo

### Introduction: Atomic Use Cases

In the Astrogrid-D community a set of Use Cases have been developed reflecting the research and the requirements for the Grid computing.

Atomic Use Cases are grid jobs with simple submission requirements (no workflows).

Examples of Atomic Use Cases from the AstroGrid-D Community are NIRVANA, AMIGA, NBODY6, GADGET, GEO600, DYNAMO

### Use Case Demo: DYNAMO

The Dynamo Use Case comes from the field of Magneto-Hydro-Dynamics (MHD)

Rotation and turbulence in stars, accretion disks, and galaxies cause a 'Dynamo' effect.

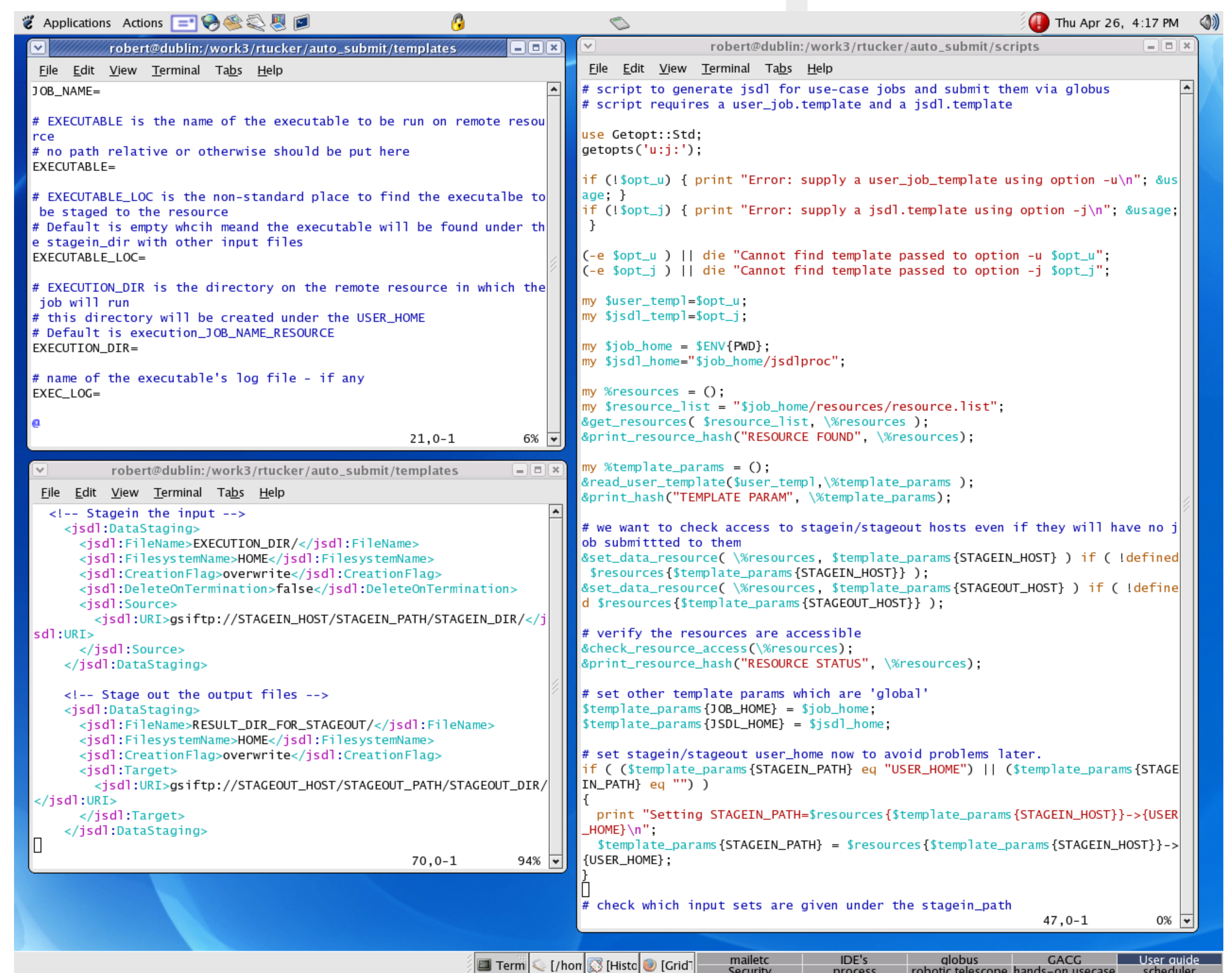
Computer simulations of Dynamos solve the induction equation with turbulent electromotive force (alpha tensor).

The Dynamo program serves here as an example for similar atomic use cases.

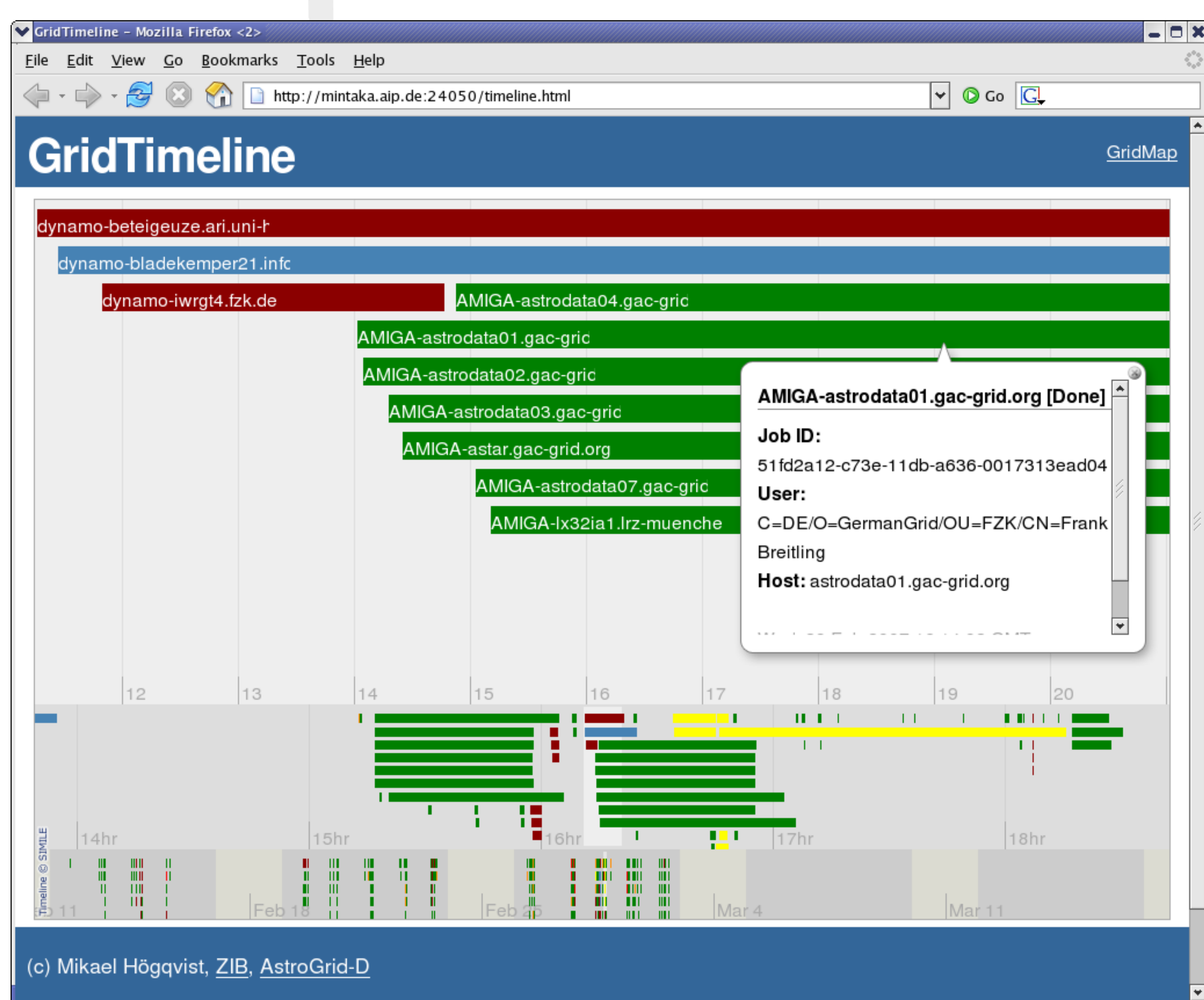
### Job Submission

- A simple template based job-submission script has been developed which creates a JSDL (Job Submission Description Language - XML based) document.
- The user specifies in the template the job input data, executable name and location and the output location for the results.
- Multiple input sets are allowed and produce independent jobs running on different resources
- The template is then parsed by the perl script jSDL\_submit.pl.
- This produces a JSDL document for each required job input set.
- The JSDL document is further translated to the RSL language which is submitted to globus.
- Jobs are submitted to a resource taken from a preset list.
- The availability of resources is verified before submission.
- Results are copied to the required output location

### Templates and submit script



### Job Monitoring



### Visualisation of Dynamo using IDL

