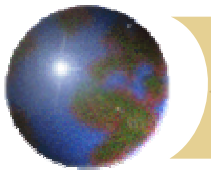


# *The Making of GaiaGrid*

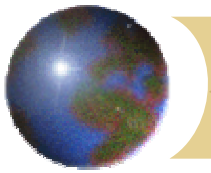
Definition Phase

**S.G. Ansari**



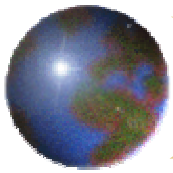
## *Problem*

- ✦ Due to the intense computational complexity of the core algorithms, the computation has been centralised
- ✦ Shell Algorithms are provided by the scientific community across the whole of Europe
- ✦ Shell tasks can initially be maintained and tested by each algorithm provider with assistance of a core team.
- ✦ Each shell provider has direct access to the Gaia Query Interface in Barcelona

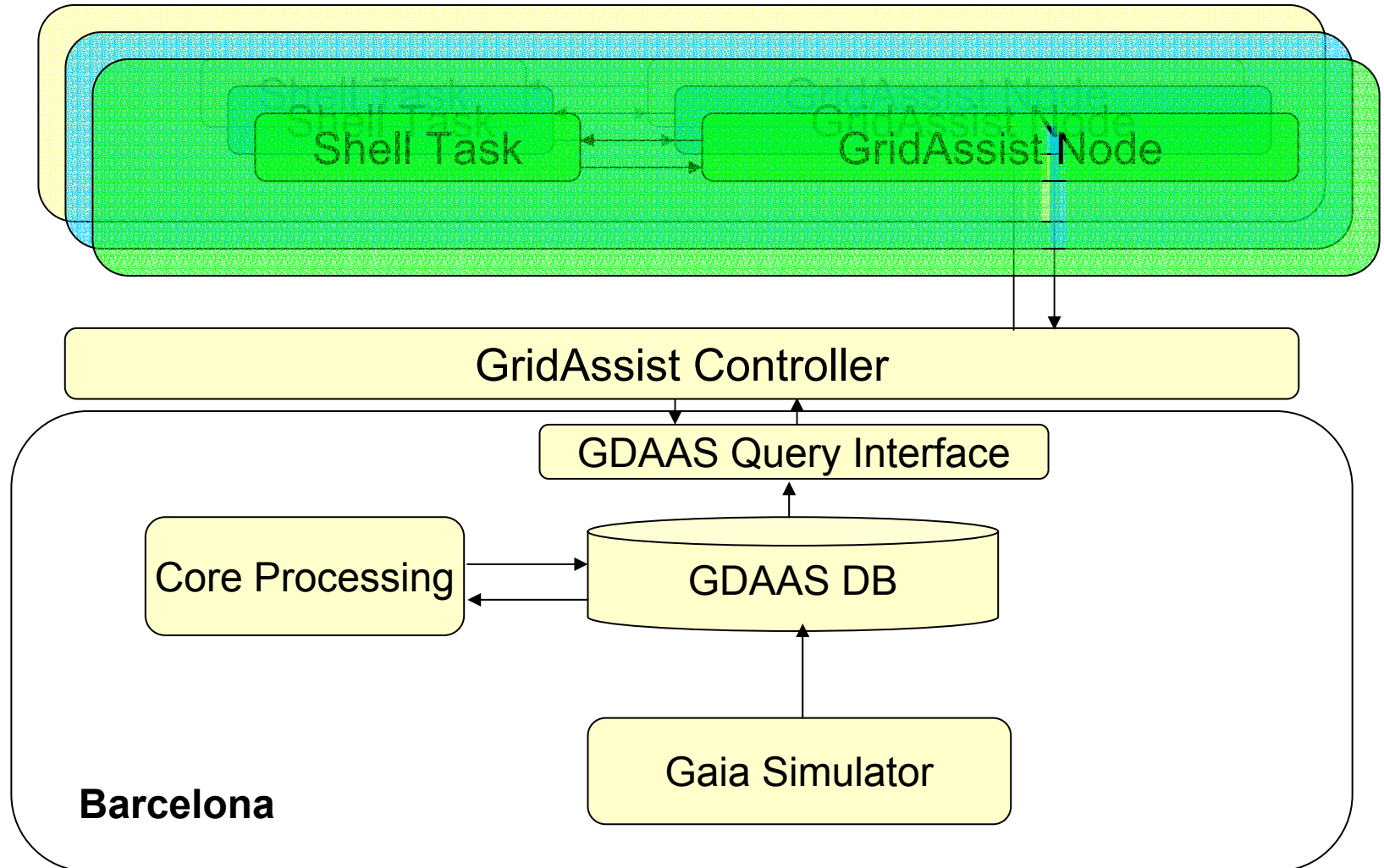


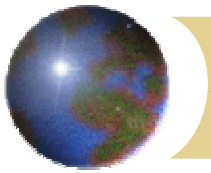
## *Rationale*

- ✦ About 20 institutes across Europe are involved in providing data processing algorithms to the Gaia mission
- ✦ These algorithms rely on “calibrated” data provided by a core centre.
- ✦ Intensive processing power and data storage are required to make this work
- ✦ We cannot rely on a single centre to provide all the processing power and know-how. The problem is much too complex



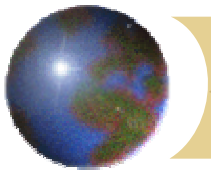
## *Data Access Analysis on GaiaGrid*





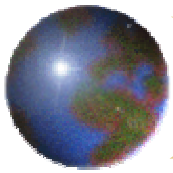
## *What should an algorithm provider typically do?*

- ✦ Each Algorithm provider is responsible for his/her own code
- ✦ Each Algorithm must be scalable. It should be possible to create more than one instance of the algorithm taking as input parameters either spatial or temporal.
- ✦ The GDAAS Query Interface will be capable of returning all the necessary parameters to analyse the data
- ✦ The Algorithm Provider must learn to interface to the GDAAS Query Interface
- ✦ Using the Workflow Interface in GridAssist, each Algorithm Provider can create his/her own workflow for each Algorithm
- ✦ After experimenting with the data and testing it, the Algorithm Provider will be expected to submit the code to be placed under Configuration Control on the GaiaGrid

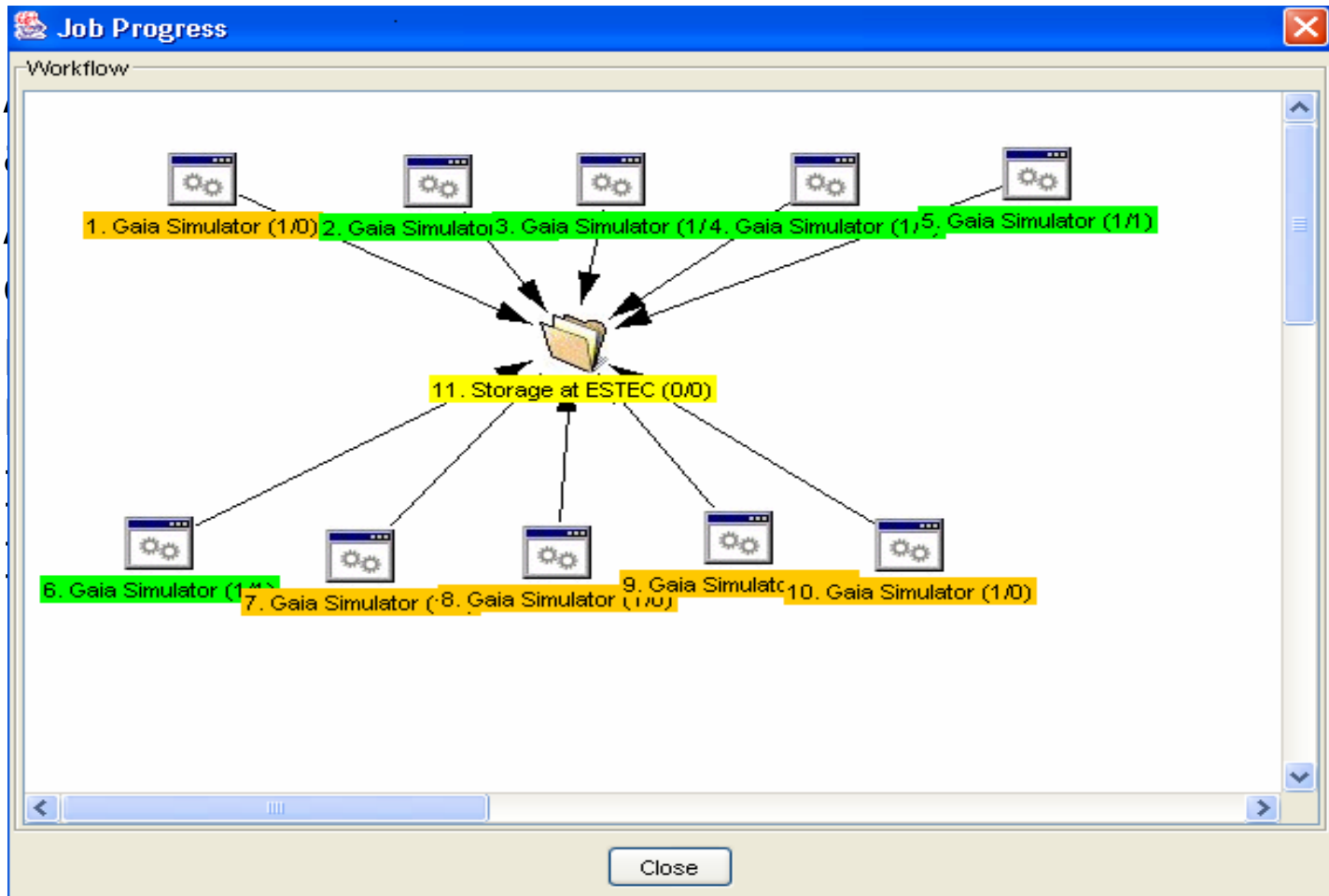


## *Requirements*

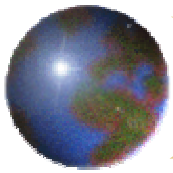
- ✦ Need a tool that will allow remote access to the Barcelona Database
- ✦ Need a tool that will help me test my algorithms and allow me to examine the results
- ✦ Need a tool that will help me collaborate and share my results with others
- ✦ Need a tool that will provide the necessary computing power to run my algorithm
- ✦ Need a tool that would allow my result to seamlessly pipe to the next chain of data processing
- ✦ Need a tool, where I can “publish” my algorithm and keep it under Configuration Control



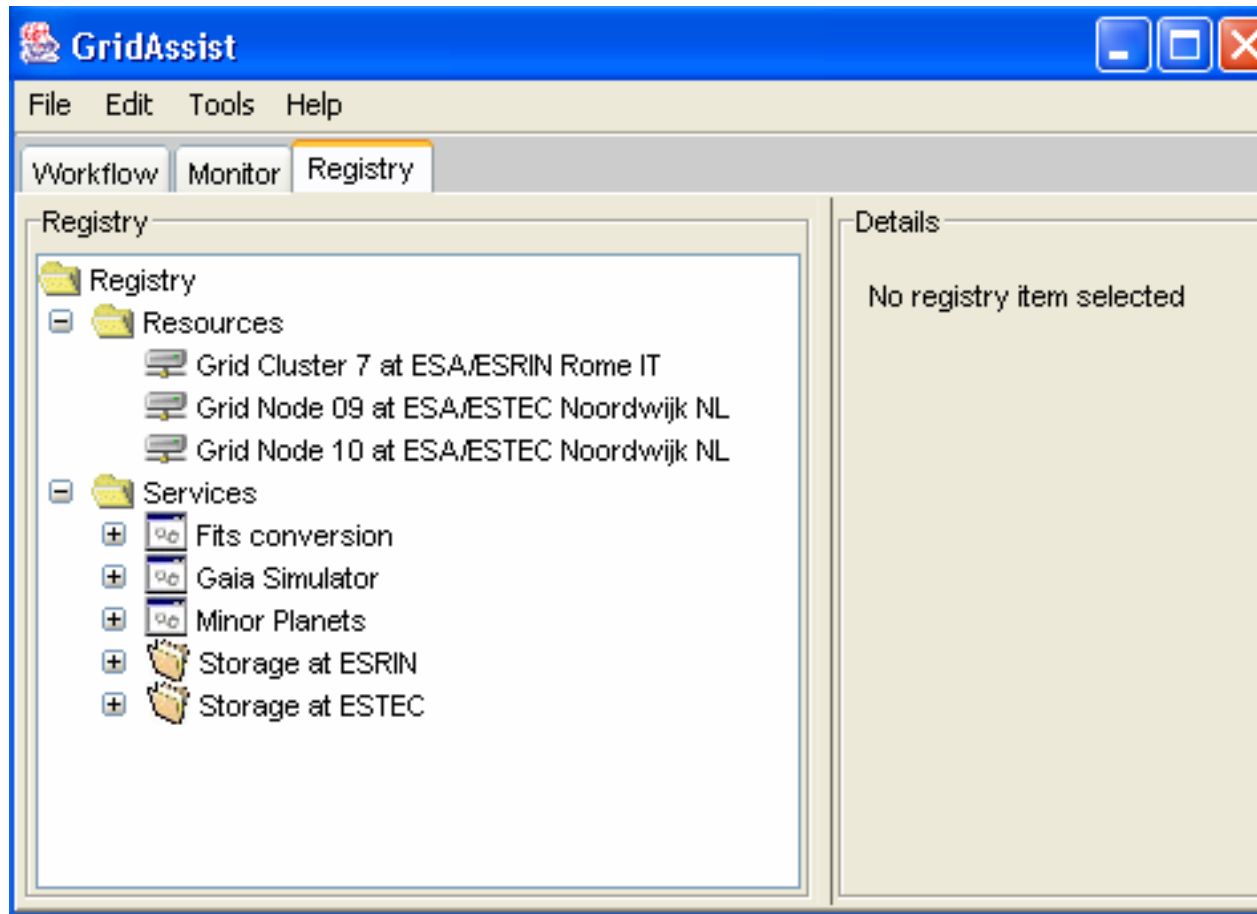
# GridAssist



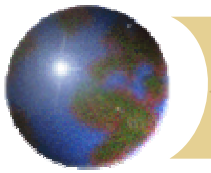
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## *GridAssist: A Resource Management Tool*

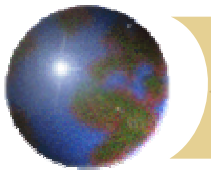






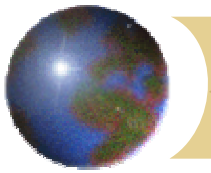
## *What will GaiaGrid do?*

- ✦ ESTEC will issue certificates to all Algorithm Providers wishing to make use of GaiaGrid
- ✦ The GridAssist client/server software will be distributed to each Algorithm provider to install on their machines. It will be maintained by ESA.
- ✦ Algorithm Providers are at liberty to make computational resources at their individual institutes available to the Gaia Shell Computational Initiative



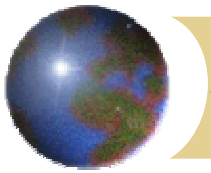
## *What has been done so far?*

- ✦ Installed GridAssist at ESTEC
- ✦ Installed GridAssist at ESRIN
- ✦ Installed GridAssist at Barcelona
- ✦ Installed and ran GASS on GaiaGrid
- ✦ Installed and ran the GDAAS Query Interface (DAL) in BCN
- ✦ Installed and ran the Astrometric Binary Stars Analysis algorithm



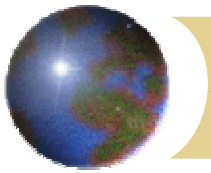
## *Status of GaiaGrid deployment (May 2004)*





*Phase II Deployment (red lines can be moved to a CNES centre)*





## *Work to be done*

- ✦ Globus only runs on a specific flavour of Linux (Redhat 8)
- ✦ The GridAssist interface is still very rudimentary, but has a lot of potential
- ✦ The software is currently more like a resource management tool than an end-user product
- ✦ Data storage and file view functionalities need to improve.