

# Information and Monitoring

WP3



Steve Fisher, RAL  
s.m.fisher@rl.ac.uk

# Outline

- ◆ Objectives of WP3
- ◆ Achievements
- ◆ Lessons Learned
- ◆ Future Work
- ◆ Exploitation Plans

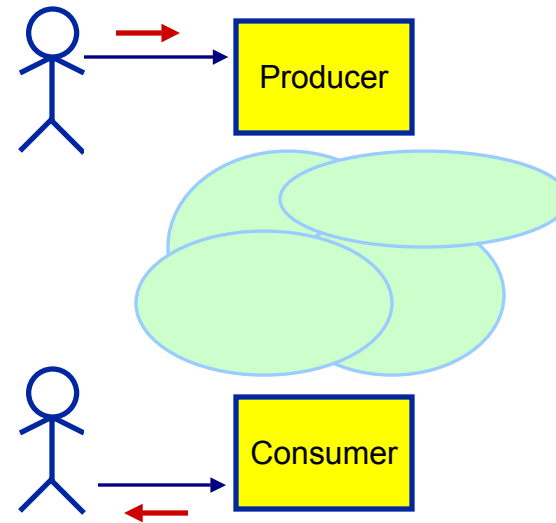
# Objectives of WP3 (TA)



- ◆ To provide a system or systems able to meet all the information and monitoring needs within a Grid from resource discovery to application monitoring

# Objectives (D3.2) – part 1

- ◆ Base on the Grid Monitoring Architecture (GMA) from the GGF
  - Very simple model
- ◆ For Relational Grid Monitoring Architecture (R-GMA): hide Registry mechanism from the user
  - Producer registers on behalf of user
  - Mediator (in Consumer) transparently selects the correct Producer(s) to answer a query
- ◆ Users just think in terms of Producers and Consumers
- ◆ Use relational model (R of R-GMA)
  - Facilitate expression of queries over all the published information



## Objectives (D3.2) – part 2

- ◆ Following the GMA, the system should offer one-off and streaming queries
- ◆ Ensure that all records carry a timestamp - then all information can be used for monitoring
- ◆ Highly scalable
- ◆ No single point of failure
- ◆ Dynamic schema mechanism to make it easy for applications to publish information
- ◆ Fine grained authorisation mechanism
- ◆ Ability to deal with very high rates of data to monitor the performance of parallel jobs
- ◆ Interoperation with other information systems – e.g. MDS

# Achievements



- ◆ Since December the R-GMA code has become very much more stable – as recorded in D3.6
- ◆ We achieved what we set out to do by the end of the project
- ◆ Unfortunately much of the experience of the Application Work Packages has been with the earlier versions

# Achievements



- ◆ We have successfully challenged the conventional wisdom on information and monitoring services on the Grid and produced a system that the user community is keen to use
- ◆ The main product is R-GMA, which does treat the whole area of information and monitoring as a single coordinated system
- ◆ Tools have been developed to allow R-GMA to interoperate with other systems:
  - ⑩ GIN/GOUT – for compatibility with MDS
  - ⑩ Nagios integration for displays and alerts
  - ⑩ Ranglia (ganglia integration) to allow R-GMA access to ganglia
- ◆ We have a new version of GRM, which is integrated with the GridLab Mercury monitor for performance monitoring of parallel applications. This combines the flexibility of R-GMA with the performance of the Mercury monitor

# Users



- ◆ WP1,2,4 and 5 for MDS like use
- ◆ WP8: CMS for BOSS – for job monitoring
- ◆ WP8: D0 – similar job monitoring
- ◆ WP7 – Network monitoring
- ◆ LCG – Trying it for accounting information



# Lessons learned

- ◆ Release working code early
- ◆ Distributed Software System testing is hard
  - We learned the tremendous value of a private WP3 testbed. While some problems only appear with real users, we were able to detect most problems on our own testbed
  - Have recently added code to stress R-GMA on the WP3 testbed. This shows up problems which previously only showed up on the application testbed
- ◆ Automate as much as possible
  - Have made use of an open source product, Cruisecontrol, to rebuild and test software whenever people check in
    - Most of the time, most people run most of the tests
    - Cruisecontrol *always* runs *all* of them

## ◆ Functionality

- Improve Virtual Organisation (VO) support so that each VO only sees its own information
- Need multiple physical registries for performance and for resilience
- Implement fine-grained authorisation
- The mediator should support a broader range of queries

## ◆ Packaging

- Web services will be the base grid technology for the next few years, so it is essential that all WP3 software be migrated to Web services
- The portability of the system will be improved
  - Need to make it easy to install “anywhere on any platform”

# Exploitation – R-GMA in GGF



- ◆ The inclusion of GMA concepts in OGSA will be very beneficial to OGSA and to the widespread acceptance of R-GMA
- ◆ Have submitted documents to the OGSA working group of the GGF to explain how GMA fits into OGSA
  - We bring an implementation: R-GMA
  - Participated in phone meetings with the OGSA-WG discussing these documents (23:00 – 01:00 UK time)
  - Attended F2F meeting of the OGSA-WG in San Diego last week

# Exploitation – R-GMA in EGEE



- ◆ R-GMA will be reengineered within EGEE
  - Continue to meet the ARDA requirements
  - Produce the web service wrappers
- ◆ University-based research groups should be able to attract the necessary funding to take the ideas forward
  - Seeking collaborations to make this happen
  - Once the direction is established, those working on EGEE can produce the necessary production quality code

# Exploitation – R-GMA in the world



- ◆ To increase visibility and to provide a focus for our users a web site (<http://www.r-gma.org/>) has been constructed
- ◆ Once the system is repackaged to make it easy to build and configure on most platforms and with good documentation we anticipate a good take-up

# Summary



- ◆ We did what we said we would
- ◆ Now the challenge is to make it a real success worldwide
  - ◆ Thanks to:
    - The EU for their funding
    - GridPP/PPARC who provided much more than contracted
    - UK Core Programme for funding effort at Heriot-Watt
    - CrossGrid colleagues in Dublin
    - Our users
  - ◆ Personally, I wish to thank:
    - All members of WP3 who have worked long hours over a long period to achieve success