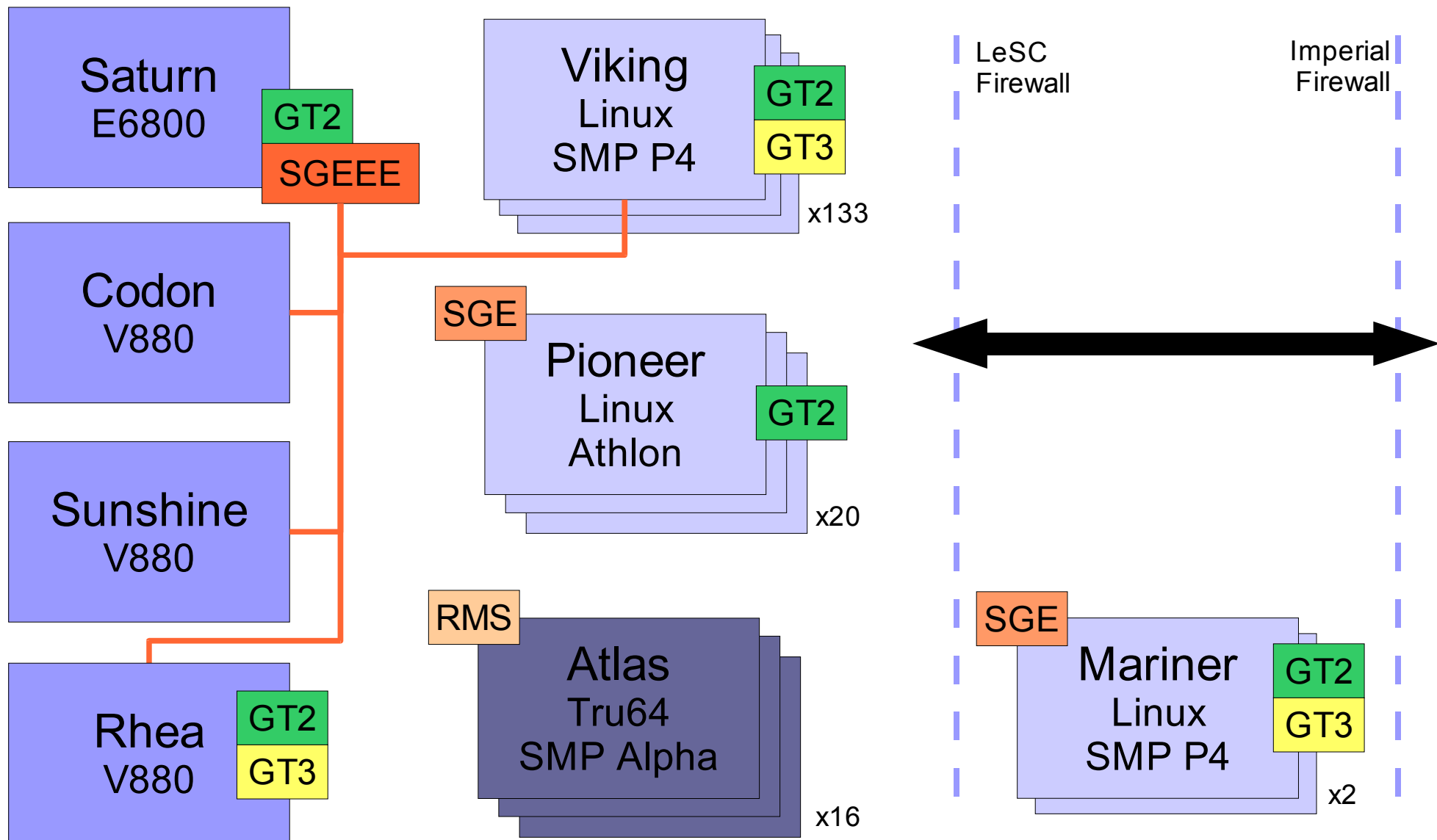


Integrating SGE and Globus in a Heterogeneous HPC Environment

David McBride
<dwm99@doc.ic.ac.uk>

London e-Science Centre,
Department of Computing, Imperial College

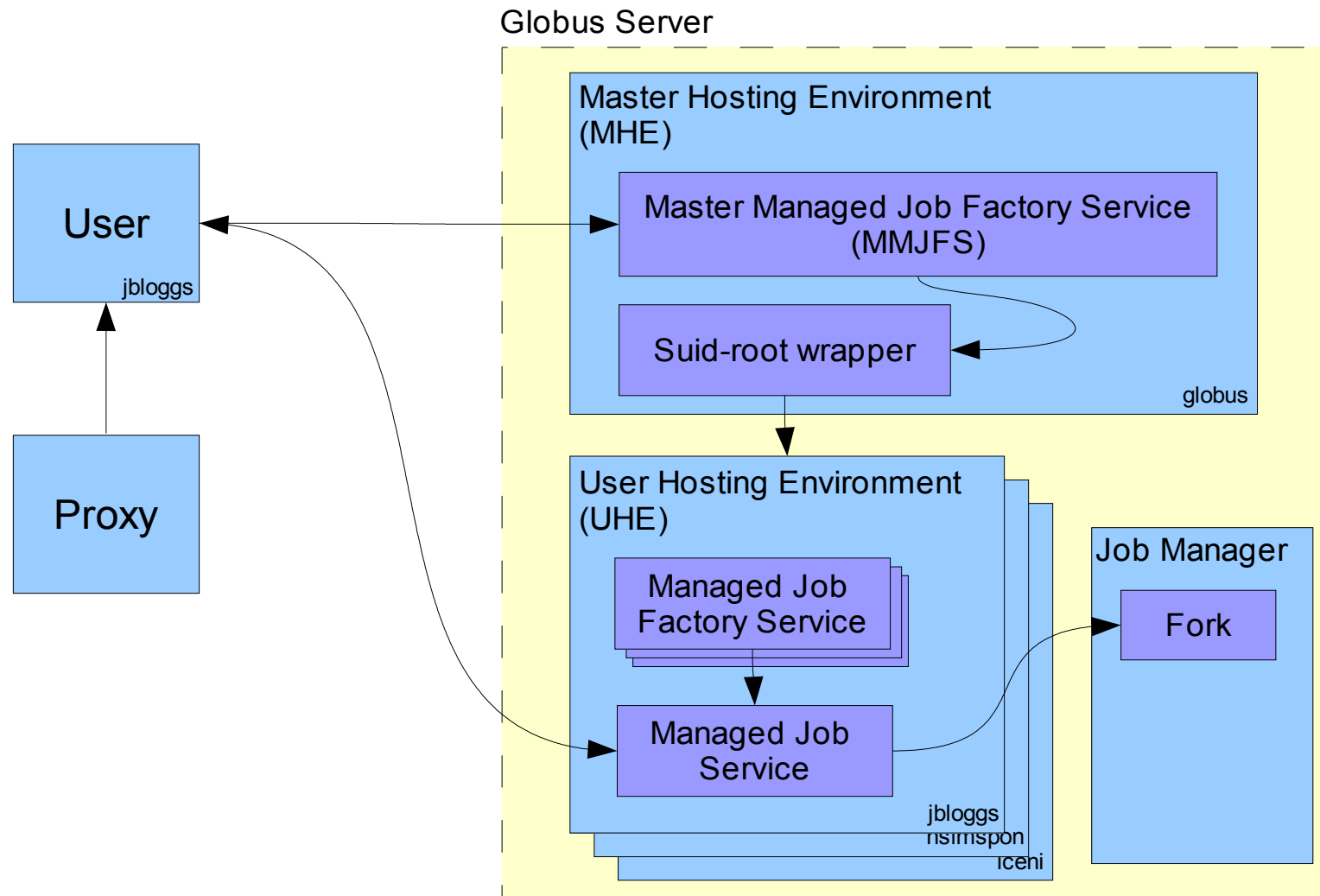
- Overview of Centre resources
- A brief description of Globus
- Integration of SGE
- Deployment issues
- Further information



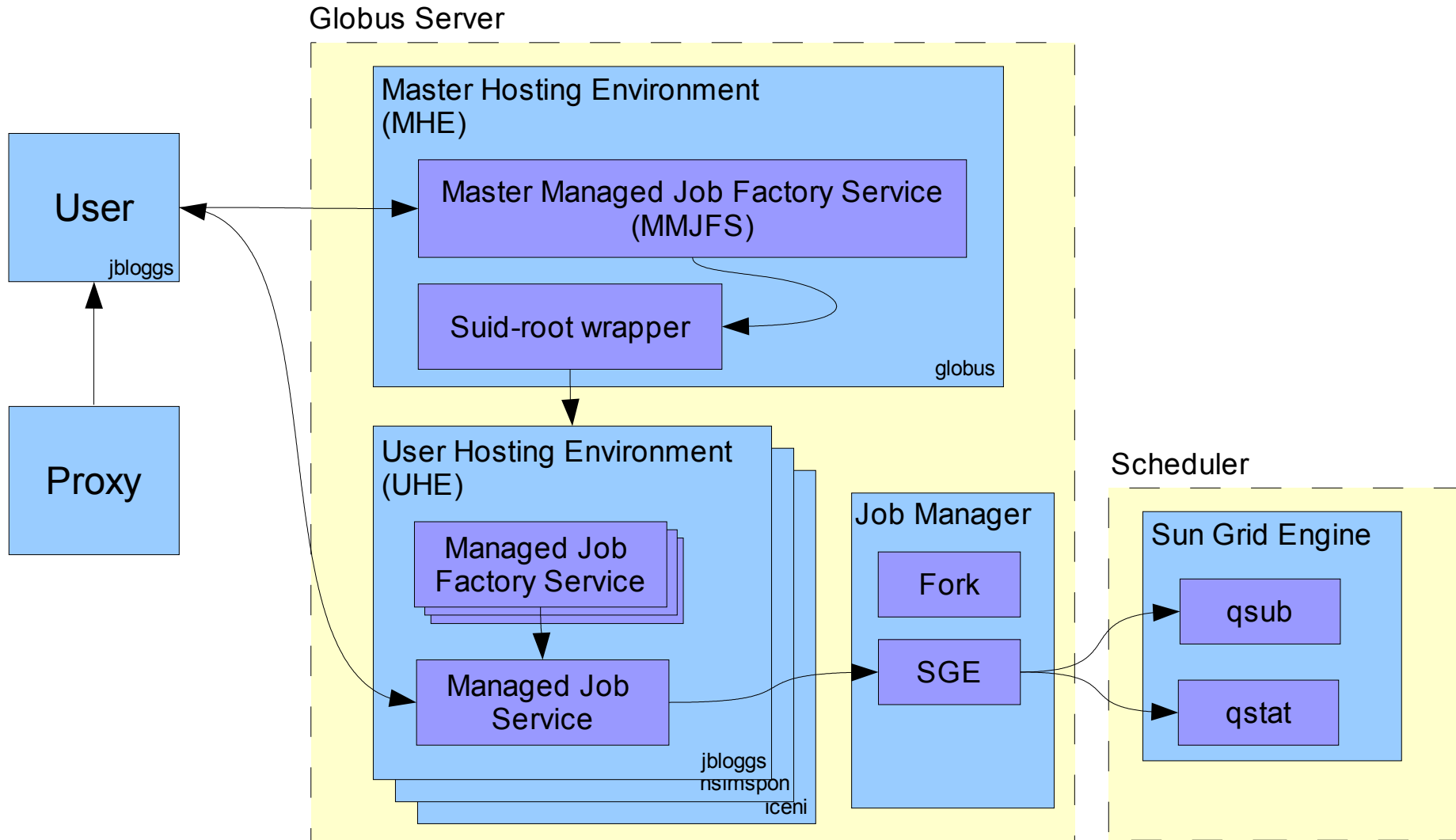
- SGEEE v5.3 deployed on each cluster
 - Uses reserved port-based authentication
 - Single scheduler for all production resources
 - Multiple queues exist with different constraints
 - A subset of nodes have restrictions on maximum runtime to allow a quick response time for short tasks
 - Multiple environments are available which specify how many nodes a job may use. Some are restricted.
 - Myrinet-equipped nodes share a primary queue for parallel jobs and a secondary, restricted queue for sequential tasks

- Open-source project managed by the Globus Alliance (formerly Globus Project)
- Provides a hosting environment for OGSA Grid Services
- Also provides an implementation of core services and client-side tools

- Globus 2.x implements bespoke standards
 - Job execution framework uses a separate gatekeeper process
- Globus 3.x implements OGSI standards
 - Job execution framework uses a grid service to provide gatekeeper functions.
- Both use a modular Perl “job-manager” to handle scheduler interaction



- Globus jobs are specified using RSL, the Resource Specification Language
- Used to construct the local execution environment and specifies the program to be executed.
- job-manager executes parsed RSL instructions and monitors running jobs
- LeSC Perl module provides SGE-specific backend within the Globus framework



- Globus Toolkit is an evolving codebase
- OGSI-capable 3.x series is relatively new
- Not quite production quality
 - UHE's are intended to be short lived but are sometimes not reaped
 - Components initialised on demand sometimes exceed timeouts set for their response

- Globus Alliance:
<http://www.globus.org/>
- SGE and Globus integration:
<http://www.lesc.ic.ac.uk/projects/epic-gt-sge.html>
 - GPT packages and documentation freely available