DRMAA Working Group

Cochairs

John Tollefsrud [j.t@sun.com], Sun Microsystems
Hrabri Rajic [hrabri.rajic@intel.com], Intel

GGF8

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First things first

- **DRMAA scope and purpose:**
  - Submit, control & monitor, and query status of jobs.
  - DRMAA library could be implemented on top on OGSA and DRM systems.
- **Need two volunteers for taking this session minutes**
- **Sign-up sheet**
- **GGF IP policy**

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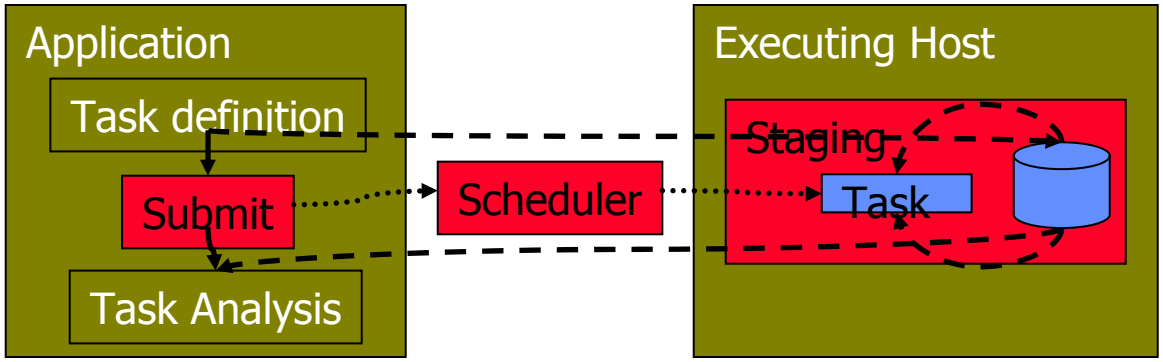
DRMAA Charter

- Develop an API specification for the submission and control of jobs to one or more Distributed Resource Management (DRM) systems.
- The scope of this specification is all the high level functionality which is necessary for an application to consign a job to a DRM system including common operations on jobs like termination or suspension.
- The objective is to facilitate the direct interfacing of applications to today's DRM systems by application's builders, portal builders, and Independent Software Vendors (ISVs).

Resource Management Systems Differ



- Core services are fundamentally the same
  - especially from the users perspective
- DRM programming interfaces differ
  - ISVs are disinclined to use

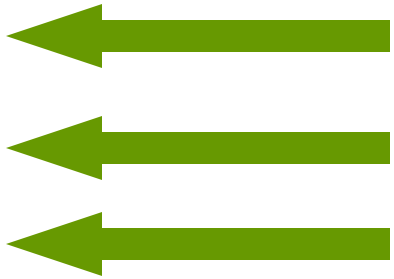
Characterizing DRMAA

- High level attributes
  - Application centric
  - Ease of use for end users
  - Focused on programming model
- Benefits
  - Faster distributed application deployment
  - Opportunity for new applications
  - Increased end user confidence
  - Improvements in Resource Management Systems
  - Distributed application portability

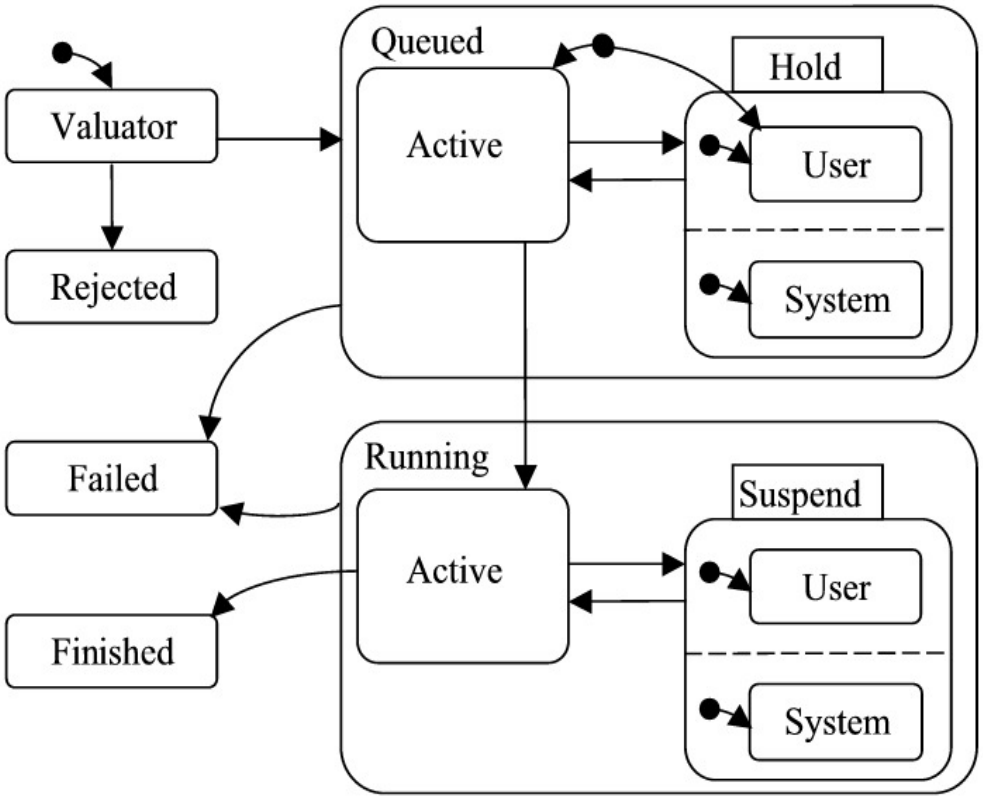
Scope: Run a Job API

(Steps from: Ten Actions when SuperScheduling", GGF SchedWD 8.5, J.M. Schopf, July 2001)

- Phase 1: Resource Discovery
  - Step 1 Authorization Filtering
  - Step 2 Application requirement definition
  - Step 3 Minimal requirement filtering
- Phase 2 System Selection
  - Step 4 Gathering information (query)
  - Step 5 Select the system(s) to run on
- Phase 3 Run job
  - Step 6 (optional) Make an advance reservation
  - **Step 7 Submit job to resources**
  - Step 8 Preparation Tasks
  - **Step 9 Monitor progress (maybe go back to 4)**
  - **Step 10 Find out Job is done**
  - Step 11 Completion tasks



DRMAA State Diagram



The remote job could be in following states:

- **system hold**
- **user hold**
- **system and user hold simultaneously**
- **queued active**
- **system suspended**
- **user suspended**
- **system and user suspended simultaneously**
- **running**
- **finished (un)successfully**

DRMAA Job Attributes

Mandatory job attributes:

- Remote command to execute
- Remote command input parameters, a vector parameter
- Job state at submission
- Job environment, a vector parameter
- Job working directory
- Job category
- Native specification
- Standard input, output, and error streams
- E-mail distribution list to report the job completion and status, a vector parameter
- E-mail suppression
- Job start time
- Job name to be used for the job submission

Optional job attributes:

- transfer files
- absolute job termination time
- wall clock time limit
- soft wall clock time limit
- job run duration hlimit
- job run duration slimit

Implementation requirements

- **C-API library interface - no protocol**
  - Simplifies utilization by ISV
  - Not transactional
  - Object oriented wrappers/classes specification in the works
- **Shared library binding**
  - Prerequisite to allow end user to select DRM technology of their choice
- **One session at the time**
- **Library supports only one DRM system per implementation**
  - Simultaneous support of different DRM systems is beyond the scope of our project

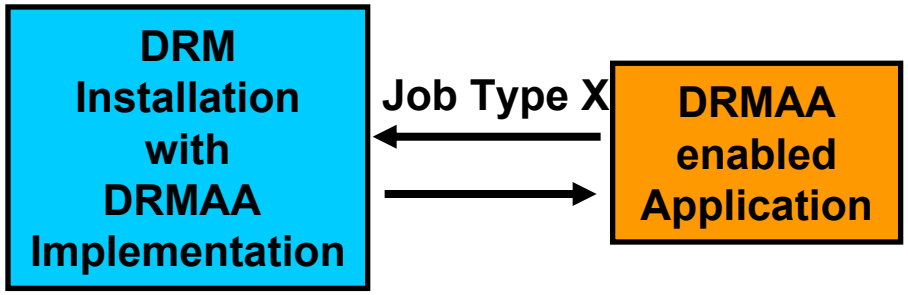
Site specific requirements

- **Application Developers and DRMS vendors are not involved in the local environment specification**
  - Execution policies
  - Physical environment

- **Two hierarchical mechanisms**
  - Job categories
    - Vendor determines the name and application parameter guidelines
    - Administrators, installation people
  - Native specification
    - Opaque string that DRMAA impl. resolves
    - The burden is on the end users to define the execution environment
      - Need to know DRM
      - Need to know the remote application installation

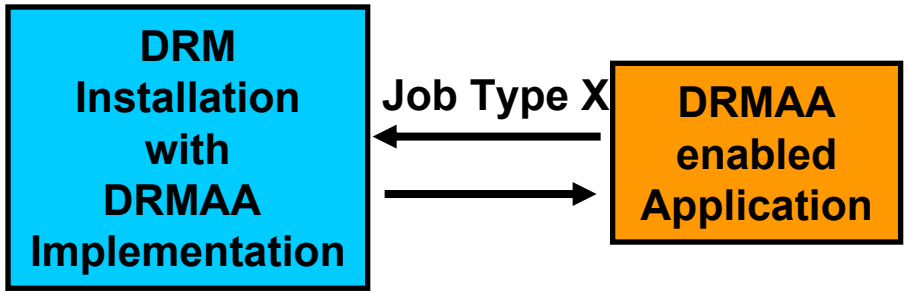
Job Categories

Site A



- Cluster consists of machines where X jobs run and others where they don't run

Site B



- X jobs run at all machines in cluster

DRMAA C Bindings

- Andreas Hass

Version 2.0 Directions

- Support for workflow
- Parameterized job submission
- Transactional interfaces

Backup slides

- **Additional details**