Meta Scheduler on NGPP

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National Grid Mission

to facilitate the seamless use of an integrated cyber infrastructure in a secure, effective & efficient manner to advance scientific, engineering & biomedical R&D,

with the longer term goal of transforming the Singapore economy using grid

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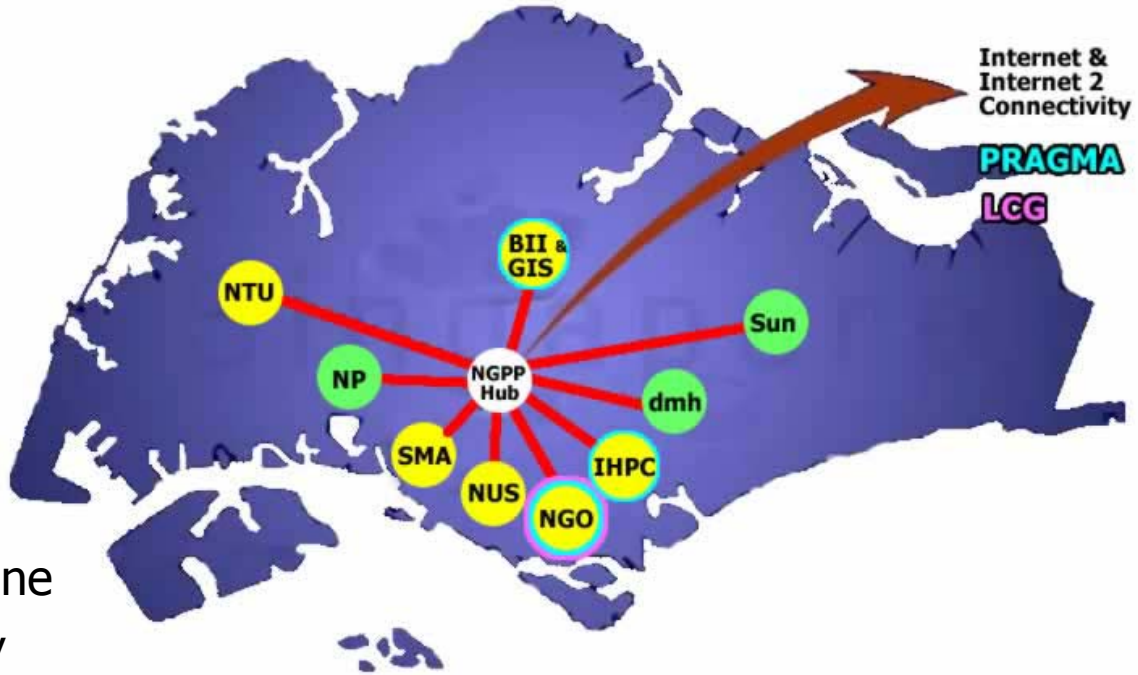
National Grid Pilot Platform

- Objectives:
  - Build grid computing awareness
  - Foster collaboration
  - Interconnect main compute resources
- Scope:
  - Establish 1GE backbone
  - Establish rudimentary infrastructure for R&D in universities/research centres
  - Testbed distributed applications



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Definition of Meta-Scheduler

- A meta-scheduler …
  - provides a consistent interface for users into the scheduling system for a grid.
  - coordinates communications between multiple heterogeneous schedulers that operate at the local or cluster level.
  - provides a common entry point
  - enables global access and coordination, while maintaining local control and ownership of resources.

[Definition by IBM for Community Scheduler Framework, http://www-128.ibm.com/developerworks/grid/library/gr-meta.html]

Technical Features/Requirements

User Interface

- Web-based user interface for job management (submission, deletion, file transfer, monitoring of progress)

Features of Scheduler

- Support automatic file staging.
- Parallel support.
- Job suspend and resume feature.
- Cycle harvesting mechanism.
- Job interdependency and chaining.
- Access Control List support.
- Fair-share configuration for complex mix of usage.
- Ensure Job confidentiality.
  - Different users must not be able to see each other's job. This includes job listings, files used in the jobs, files generated from the jobs.

Technical Features/Requirements

Operational Requirements

- Works across firewalls.
- Works across heterogeneous clusters and operating systems with variant local workload schedulers
- Minimally interface and interoperate with LSF and N1GE.
  - It must be able to perform the above requirements across LSF and SGE/N1GE local workload schedulers
- Provide job accounting.
  - Details of job submitted to local workload scheduler (CPU utilization, number of nodes used, time taken to complete the job.)
  - Accessible log files that captures such information, or other means for such information to be accessed.

Meta Scheduler Rollout

- Objective
  - To provide **LSF Meta-Scheduler (v6.1)** for seamless access to NGPP compute resources
- Collaboration with Platform Computing
- Meta-Scheduler must inter-operate with
  - LSF, PBS Pro & N1GE
- Completion: Q3 2005

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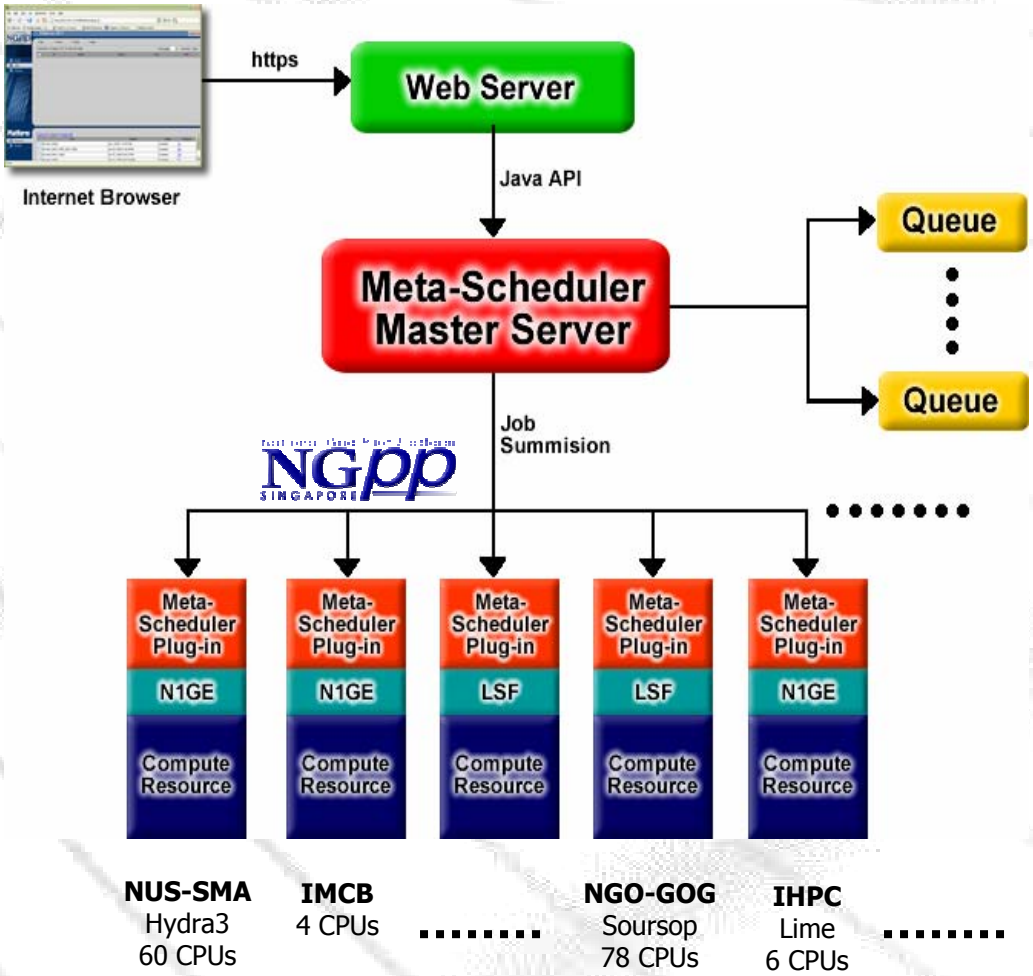
NGPP Meta-Scheduler

- The **LSF Meta-Scheduler interfaces** with these **local workload schedulers** (e.g. Sun's N1GE, Platform's LSF) of resources on NGPP, and **schedules** the job to the best available resources.

- Current applications using or planning to use the Meta-Scheduler include:
  - MicroRNA project (BII)
  - Media Grid (AE@SG)
  - DMG Portal (NGPP)
  - Multipitch Speech project (I^2R)



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Digital Media Portal

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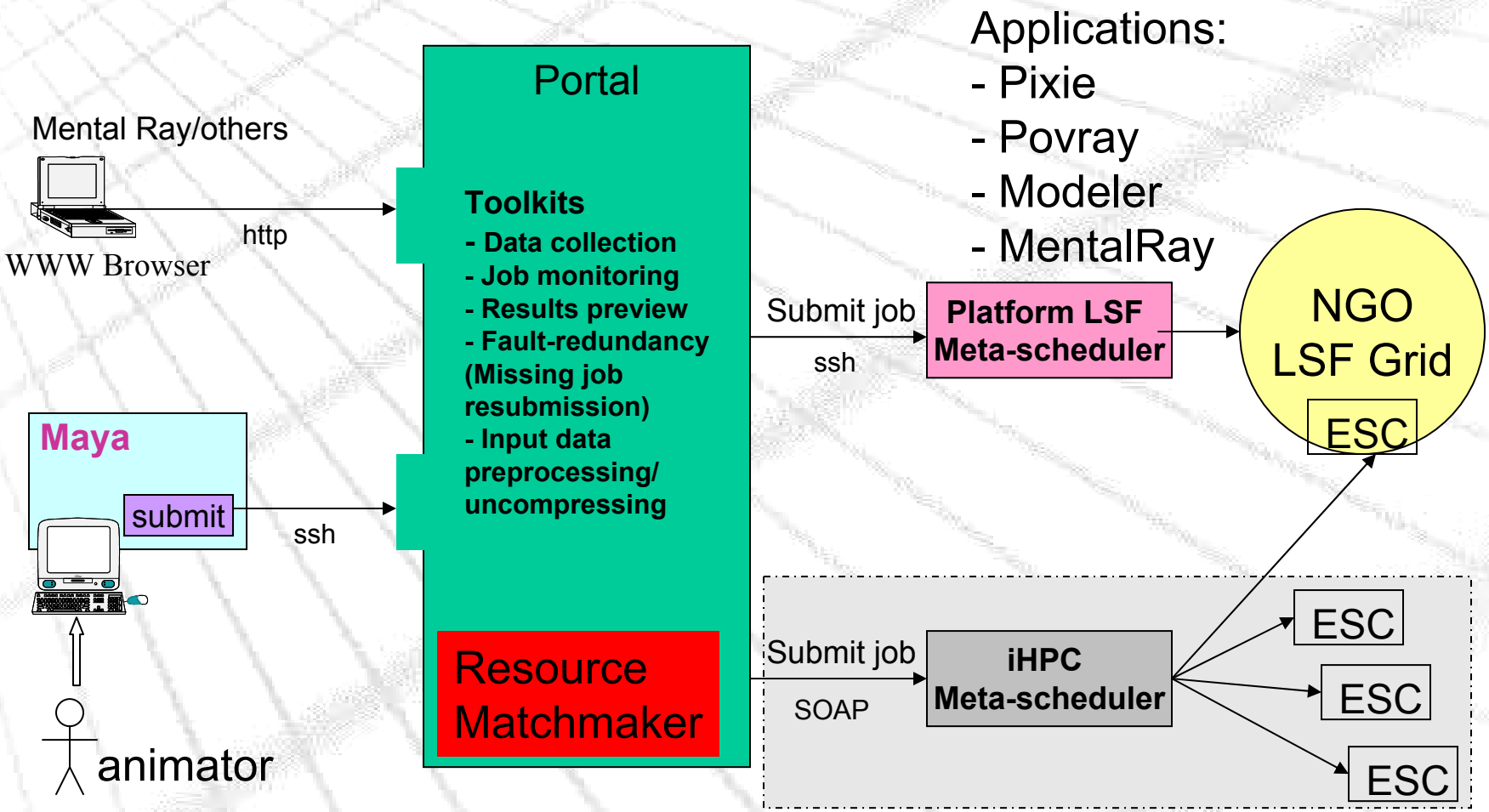
Media Grid Architecture



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Demo

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