The DEISA Life-Science Portal based on UNICORE 6

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www.deisa.eu
Overview

- What is DEISA?
- The existing DEISA Life Science Portal (LSP)
- Why a move the Life Science Portal to UNICORE 6?
- Status of the UNICORE 6 based Life Science Portal
Distributed European Infrastructure for Supercomputing Applications

DEISA, the Distributed European Infrastructure for Supercomputing Applications, is a consortium of leading national supercomputing centres that aims at fostering the pan-European world-leading computational science research.

DEISA deploys and operates a persistent, production-quality, distributed supercomputing environment with continental scope, it aims at delivering a turnkey operational solution for a future European HPC ecosystem. And by extending the European collaborative environment in the area of supercomputing, DEISA is paving the way towards the deployment and operation of a persistent cooperative European HPC ecosystem, as suggested by ESFRI.

DEISAs, funded by the European Commission in FP7, continues to develop and support the pan-European distributed high performance computing infrastructure established since 2002 within the predecessor project DEISA1, that was funded in FP6. The DEISA infrastructure is based on a tight coupling of eleven national supercomputing centres from seven European countries, using dedicated network interconnections of GÉANT2 and the NRENs.

The DEISA consortium is currently consolidating the existing HPC infrastructure and services. Activities and services relevant for Applications Enabling, Operations, and Technologies are continued and enhanced, as these are indispensable for the effective support of computational sciences in the area of supercomputing. In addition, DEISA is extending the service provisioning model towards the inclusion of non-localized Virtual Science Communities. Accordingly, collaborative activities are exploited with further European and international initiatives.

DEISA Highlights

- Until May 4, 2009: New DECI Call for Proposals open
  Read more...

- May 11-13, 2009: DEISA PRACE Symposium 2009
  "HPC Infrastructures for Petascale Applications" in Amsterdam
  Read more...

- Mar 2-6, 2009: DEISA/PRACE at DG-F25 EGEE User Forum
  "HPC Infrastructures for Petascale Applications" in Catania
The DEISA Life Science Portal
BLAST Service

This service lets users submit BLAST. Please choose the input parameters:

- **Blast job name**: blank
- **Blast program**: select the DB
- **Blast database**: select
- **Blast parameter (FASTA NCR)**
- **E-value threshold (FASTA)**
- **Num of correct alignments**
- **Num of conserved sequences**
- **Type of job**: short
Job Management View

### Status: Completed (no reason pending)

<table>
<thead>
<tr>
<th>ID</th>
<th>Owner</th>
<th>Project</th>
<th>Queue</th>
<th>Time</th>
<th>Status</th>
<th>Mode</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1234</td>
<td>User1</td>
<td>Project1</td>
<td>Queue1</td>
<td>Jan 27 12:00</td>
<td>RUN</td>
<td></td>
<td>Name1</td>
</tr>
<tr>
<td>5678</td>
<td>User2</td>
<td>Project2</td>
<td>Queue2</td>
<td>Jun 21 09:45</td>
<td>PEND</td>
<td></td>
<td>Name2</td>
</tr>
</tbody>
</table>

### Agent: type = jobs

<table>
<thead>
<tr>
<th>ID</th>
<th>Owner</th>
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<th>Queue</th>
<th>Time</th>
<th>Status</th>
<th>Mode</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>9012</td>
<td>User3</td>
<td>Project3</td>
<td>Queue3</td>
<td>Jun Wed 09:44</td>
<td>RUN</td>
<td></td>
<td>Name3</td>
</tr>
</tbody>
</table>

Change grid status from RUN to | T | F

### Details
- Resource usage: CPU: 12.3
- Memory: 1024MB
- Network: 1000Mbps
Data view
Existing Portal Architecture
Why move the Life Science Portal to UNICORE 6?

- EnginFrame portal framework requires DEISA to maintain another infrastructure to handle operating system and batch scheduler heterogeneity
  - That is, it duplicates existing DEISA UNICORE infrastructure for handling heterogeneity
  - A change means more efficient operation of DEISA infrastructure
- Want to remove conflicts between EnginFrame and site policies e.g. generic accounts due to processes running as privileged user mean accounting on individuals cannot be done
  - UNICORE 6 handles this much better and it can use the other DEISA user management mechanisms
- Want to use standards-based open source technology
- Want to remove dependence on the proprietary NICE EnginFrame portal framework
Results of technology studies

- Liferay portal framework
  - Open source
  - Very active user community
  - Standards

- UNICORE 6
  - DEISA moving from UNICORE 5
  - Innovative security model

- DESHL SAGA/HiLA
  - Open Grid Forum standard Simple API for Grid Applications
  - Hides complexity of grid m/w interactions behind simple standard APIs
  - UNICORE HiLA API (see Achim’s slide earlier)
Architecture of Unicore 6 based Life Science Portal

DEISA Portlet

LIFERAY Portal Framework

Deshl Saga
HiLA

UNICORE 6

DEISA
Detailed View

- Submission Portlet
- Data Mng Portlet
- Accounting Portlet
- Other Portlet
- Admin Portlet

LIFERAY Theme Engine
LIFERAY Portlet Container
LIFERAY Remoting (Java/WS)

LIFERAY Service Interface
- Grid Info Service (DART)
- Grid Service (DESHL/HiLA)
- Other Service
- Security Service
- User Service

LIFERAY Persistence

Portal Database

LDAP Server

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1. The user creates and uploads the trust delegation

2. The portal stores the delegation document into the local store

3. On job submission if the delegation document has already been provided and it is still valid the portal retrieves it from the local store

4. The portal puts the delegation document in every job or request to the grid
Status of UNICORE 6 Life Science Portal

• Currently under development
  – Security and NAMD in place

• Awaiting production installation of UNICORE 6 on DEISA infrastructure for pre-production testing with beta scientific users

• Production release – late summer 2009
DEISA Partners involved

EPCC – Malcolm Illingworth, David Scott, Thomas Seed, Terry Sloan, Nix McDonnell
IDRIS – Vincent Ribaillier, Patrice Gelebart
CINECA – Guiseppe Fiameni, Davide Guidotti
SARA – Evert Lammerts, Pieter van Beek
CSC – Jukka Juslin, Jussi Hyninnen
LRZ – Cerlane Leong, Ilya Saverchenko
BSC – David Vincent, Christian Simarro