PRACE and HPC Centres of Excellence working in synergy

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PRACE Director
PRACE: the European HPC Research Infrastructure

- Enabling world-class science through large scale simulations
- Providing HPC services on leading edge capability systems
- Operating as a single entity to give access to world-wide supercomputers
- Attract, train and retain competences
- Lead the integration of a highly effective HPC ecosystem
- Offering its resources through a single and fair pan-European peer review process to academia and industry

- 25 members, since 2010
- 6 supercomputers in 4 hosting countries, nearly 15 Pflop/s
- Common operation procedure between 35 centers in Europe
- 22 prototypes evaluated
- 169 white papers produced
- 1500 communications from our users
- 166 Thesis
- HPC Community building: 183 events

- 8 billion hours granted since 2010 (a system with 900k cores for 1 year)
- 303 scientific projects enabled from 38 countries
- More than 20 SME and industries access in first year
- 360 PATC Training days
- 2734 Trained people
- 170 applications enabled
PRACE systems

From 2013, more than 16 Pflop/s provided

- **MareNostrum**: IBM IDPX at BSC, >48,000 cores
- **JUQUEEN**: IBM BlueGene/Q at GCS partner FZJ, >458,000 cores
- **CURIE**: Bull Bullx at GENCI partner CEA, >90,000 cores
- **SuperMUC**: IBM IDPX at GCS partner LRZ, >155,000 cores
- **FERMI**: IBM BlueGene/Q at CINECA, >163,000 cores
- **HERMIT**: Cray at GCS partner HLRS, >113,000 cores
How can researchers access the HPC resources?

1. The Preparatory Access call
2. The Project access call
How can researchers are accessing the HPC resources?

1. Preparatory Access

- Permanently open with quarterly cut-off dates (03/06/09/12)
- Intended to prepare proposals for Project Access
  *Not for production runs nor research activities*
  - Testing scalability: **Type A**, allocation for 2 months
  - Code development or optimisation:
    - **Type B**, allocation for 6 months
    - **Type C**, allocation for 6 months, including expert support
- Fixed amount of resources, depending on the system
- Technical review only
- Start date of awarded projects approx. 45 days after the cut-off date
Preparatory Access:
Resources per type of Preparatory Access

<table>
<thead>
<tr>
<th>(2014)</th>
<th>Type A – 2 months</th>
<th>Type B/C – 6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curie FN/TN</td>
<td>50.000 CPU</td>
<td>200.000 CPU</td>
</tr>
<tr>
<td>Curie H</td>
<td>50.000 GPU</td>
<td>100.000 GPU</td>
</tr>
<tr>
<td>Hermit</td>
<td>50.000 CPU</td>
<td>50.000 CPU</td>
</tr>
<tr>
<td>Fermi</td>
<td>50.000 CPU</td>
<td>250.000 CPU</td>
</tr>
<tr>
<td>JUQUEEN</td>
<td>100.000 CPU</td>
<td>250.000 CPU</td>
</tr>
<tr>
<td>MareNostrum</td>
<td>50.000 CPU</td>
<td>100.000 CPU</td>
</tr>
<tr>
<td>MareNostrum H</td>
<td>5.000 MIC</td>
<td>20.000 MIC</td>
</tr>
<tr>
<td>SuperMUC</td>
<td>100.000 CPU</td>
<td>250.000 CPU</td>
</tr>
</tbody>
</table>
How can researchers access the HPC resources?

2. Project Access

- 2 calls a year
  - Call open in February > Access starting in September
  - Call open in September > Access starting in March
- 12 months award period
- “On demand” resource request, usually above 5Mio CPU hours
- Proposals requesting resources on multiple machines are allowed
- Technical and Scientific peer review
- Start date of awarded projects approx. 15 weeks after call closed
## Project Access:
### Resources per Project Access (in MioH)

<table>
<thead>
<tr>
<th>(8th call)</th>
<th>Total available resources</th>
<th>Average awarded resources per project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curie FN/TN</td>
<td>201/28 CPU 0,5 GPU</td>
<td>15/11 CPU 0,3 GPU</td>
</tr>
<tr>
<td>Curie H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curie H</td>
<td>120 CPU</td>
<td>23 CPU</td>
</tr>
<tr>
<td>Hermit</td>
<td>360 CPU</td>
<td>47 CPU</td>
</tr>
<tr>
<td>Hermit</td>
<td>120 CPU</td>
<td>23 CPU</td>
</tr>
<tr>
<td>Fermi</td>
<td>100 CPU</td>
<td>20 CPU</td>
</tr>
<tr>
<td>JUQUEEN</td>
<td>120 CPU</td>
<td>25 CPU</td>
</tr>
<tr>
<td>MareNostrum</td>
<td>170 CPU</td>
<td>19 CPU</td>
</tr>
<tr>
<td>SuperMUC</td>
<td>170 CPU</td>
<td>19 CPU</td>
</tr>
</tbody>
</table>
Terms of Access

- **REPORTING**: providing a final report on the results obtained* is a mandatory condition to access PRACE resources
- No **EXTENSION**: exception possible in time only & only in case of unforeseen technical issues
- **ACKNOWLEDGEMENT**: applicants must acknowledge PRACE in all publications that describe results obtained using PRACE resources, using the text specified in the "Guide for Applicants to Tier-0 Resources" section 4.2.
- **DISSEMINATION**: applicants allow PRACE to publish the final report of the project (please check specific conditions), and should provide some material for additional dissemination activities (slides, pictures, reference of publications with work executed in PRACE systems).
CoE’s and PRACE working in Synergy

- Accessing HPC resources
  - Preparatory Access
  - Project Access
  - Multi year access
  - Communities, Large EC projects, CoE’s
- Prototype evaluation
- Application enabling support
  - In preparatory access type C
- Education and Training
  - PATCs, Sessional Schools, International schools
- HPC Ecosystem
  - Dissemination, Outreach, …
  - European Scientific Software
  - Path to Exascale