Getting access to compute and storage resources

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Fenix infrastructure services built by ICEI

The Interactive Computing e-Infrastructure (ICEI) project builds the Fenix infrastructure:

- **Computing services**
  - Interactive Computing Services
  - (Elastic) Scalable Computing Services
  - VM Services

- **Data services**
  - Active Data Repositories
  - Archival Data Repositories
  - Data Mover Services, Data Location and Transport Services

- **Other services**
ICEI resources are available to HBP!

The communities (e.g., HBP) decide on the distribution of their share within the community, not the resource providers.

**Available resources end of 2019 in total** (subject to change)

- Scalable computing: 250 nodes
- Interactive computing: 991 nodes
- VM Services: 164 nodes
- Archival data repositories: 22 PByte
- Active data repositories: 2.3 PByte

**Resources already available at CSCS for the HBP** (quarterly basis)

- 116,344 node hours on Piz Daint Multicore
- 186,150 node hours on Piz Daint Hybrid
- 250 TByte Store POSIX and Object
- 750 TByte Tape library
- 1,551 TByte*day Low Latency storage tier

**Resource allocation**

- **HBP-internal** mechanism for HBP members
- Mechanism for scientists outside HBP will be put in place soon, e.g. via PRACE
Access to ICEI resources for HBP members

- **Current process** (subject to change):
  - Send 2-3 page proposal to icei-coord@fz-juelich.de
  - Template: [link](https://docs.google.com/document/d/1T09Pl4yd3Rahwuz1MAqX4LpPtvLzSPkNs5jNcfhcEg/edit?usp=sharing)
  - ICEI will perform a technical review
  - HBP Directorate will decide on awarding the resources
  - ICEI will make resources available

- **Final HBP-internal procedure will be based on peer review**

- **First groups already started to use infrastructure**
  - Allocations awarded at CSCS to HBP groups
Writing a proposal for ICEI resources

1. Description of scientific goals
Could you provide a short description of scientific question that you intend to address using these resources (1 paragraph)?

2. Relation to DoA of the HBP
Please provide information on the related SP or CDP and explain how the project relates to the goals and objectives of HBP.

3. IT resources requested

3.1 Resources

<table>
<thead>
<tr>
<th>Resource</th>
<th>Units</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piz Daint Multicore</td>
<td>node\times hour</td>
<td></td>
</tr>
<tr>
<td>Piz Daint Hybrid</td>
<td>node\times hour</td>
<td></td>
</tr>
<tr>
<td>Store POSIX and Object</td>
<td>TByte</td>
<td></td>
</tr>
<tr>
<td>Tape library</td>
<td>TByte</td>
<td></td>
</tr>
<tr>
<td>Low latency storage tier</td>
<td>TByte\times day</td>
<td></td>
</tr>
</tbody>
</table>

3.2 Implementation plans
What kind of jobs are planned (number and type of nodes, typical job duration)? How much storage needs to be available to execute the jobs?
Access to ICEI resources for HBP members

See *Fenix/ICEI* Collab in the Collaboratory for latest information

https://collab.humanbrainproject.eu/#/collab/28520
Access to ICEI resources for non-HBP members

See the Fenix website for latest information

WELCOME TO FENIX

The European ICEI project is funded by the European Commission and is formed by the leading European Supercomputing Centres BSC (Spain), CEA (France), CINECA (Italy), ETH Zuerich/CSCS (Switzerland) and Forschungszentrum Juelich/JSC (Germany).

The ICEI project plans to deliver a set of e-infrastructure services that will be federated to form the Fenix Infrastructure. The distinguishing characteristic of this e-infrastructure is that data repositories and scalable supercomputing systems will be in close proximity and well integrated. The European Human Brain Project will be the initial prime user of this research infrastructure. It will take care of developing the community-specific services on top of the Fenix infrastructure services. Part of the resources within the ICEI infrastructure will be provided to European researches at large through PRACE.

https://fenix-ri.eu/
Access to resources not part of ICEI

HPC pyramid

Source: https://events.prace-ri.eu/event/729/contribution/1/material/slides/0.pdf
Access to resources not part of ICEI

**PRACE I Tier-0 Systems in 2018**

- **MareNostrum**: IBM
  BSC, Barcelona, Spain
  #22 Top 500

- **Piz Daint**: Cray XC50
  CSCS, Lugano, Switzerland
  #6 Top 500

- **NEW ENTRY 2018**
  **JOLIOT CURIE**: Bull Sequana
  GENCI/CEA, Bruyères-le-Châtel, France
  #34 Top 500

- **MARCONI**: Lenovo
  CINECA, Bologna, Italy
  #18 Top 500

- **SuperMUC**: Lenovo cluster
  GAUSS @ LRZ, Garching, Germany
  #57 Top 500

- **Hazel Hen**: Cray
  GAUSS/HLRS, Stuttgart, Germany
  #27 Top 500

**NEW ENTRY 2018**
- **JUWELS (Module 1)**: Bull Sequana
  GAUSS @ FZJ, Jülich, Germany
  #23 Top 500

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All sites apart from LRZ and HLRS are in ICEI/HBP

Source: [https://events.prace-ri.eu/event/729/contribution/1/material/slides/0.pdf](https://events.prace-ri.eu/event/729/contribution/1/material/slides/0.pdf)
Access to resources not part of ICEI

HPC resources at BSC, CEA, Cineca, CSCS and JSC are available through PRACE and national calls

- Tier-0 systems at these sites are closely connected with the Fenix infrastructure, in some cases also Tier-1 systems
- PRACE: two Tier-0 calls per year, scientists from around the world are eligible
- National calls:
  - RES (Spain), ISCRA (Italy), GCS/NIC (Germany), DARI (France)
  - Different eligibility criteria (based on affiliation)
  - More information: https://hbp-hpc-platform.fz-juelich.de/?page_id=68
Access to resources not part of ICEI

PRACE | current services

**Access**
- Tier-0 systems (open R&D)
  - Project Access
    - 1-3 years
  - Preparatory Access
    - Type A, B, C, D
- Tier-1 systems (open R&D)
  - DECI Programme

**Support**
- Application Enabling & Support
  - Preparatory access Type C
  - Preparatory access Type D
    - Tier-1 for Tier-0
  - SHAPE
  - HLST support
- Training
  - Training Portal
  - PATC, PTC
  - Seasonal Schools & on demand
  - International HPC Summer School
  - MOOC
  - Code Vault
  - Best Practice Guides
  - White Papers

**Towards PRACE Partners**
- Communication, Dissemination, Outreach
  - Website
  - Public Relations
  - Scientific Communication
  - Summer of HPC
- Events
  - PRACEdays
  - SC, ISC, ICT, ICRI, DI4R, ...
- Operation & Coordination of the common PRACE Operational Services
  - Service Catalogue
  - PRACE MD-VPN network
  - Security
- HPC Commissioning & Prototyping
  - Technology Watch, PCP
  - Infrastructure WS
  - Best Practices
  - UEABS
Access to resources not part of ICEI

- **General principle:**
  Resource distribution based on scientific excellence, independent peer-review of proposals

- **Process:**
  1. Computing time proposals outlines scientific project and technical details, e.g. scaling behavior of the application(s), compute and memory requirements etc.
  2. Review by technical experts of the site for technical feasibility
  3. Review of scientific part by independent domain experts
  4. Access committee decides on resource allocation

- **Prerequisite for successful proposal:** ability to show technical feasibility of the project
Support for getting started with HPC

- Preparatory Access
  - Getting a small amount of computing time complemented by support from technical experts with the aim to prepare the technical part of a full project proposal
  - Available through PRACE and at JSC (supported by SimLab Neuroscience)

- Trainings of the HPC centers and the HPAC Platform
  [https://hbp-hpc-platform.fz-juelich.de/?page_id=583](https://hbp-hpc-platform.fz-juelich.de/?page_id=583)
  - Introductory and advanced HPC courses, introductions to GPU programming and KNL...

- HBP High-Level Support Team (contact info available soon)
  - Offers support for writing access proposals and also for complex implementation cases
  - Forwards requests to HPAC Support Team as appropriate

- HBP High Performance Analytics and Computing Platform Support
  - [hpac-support@humanbrainproject.eu](mailto:hpac-support@humanbrainproject.eu)
Questions?

Contact our HPAC Support Team
hpac-support@humanbrainproject.eu