Human Brain Project

Co-funded by
the European Union

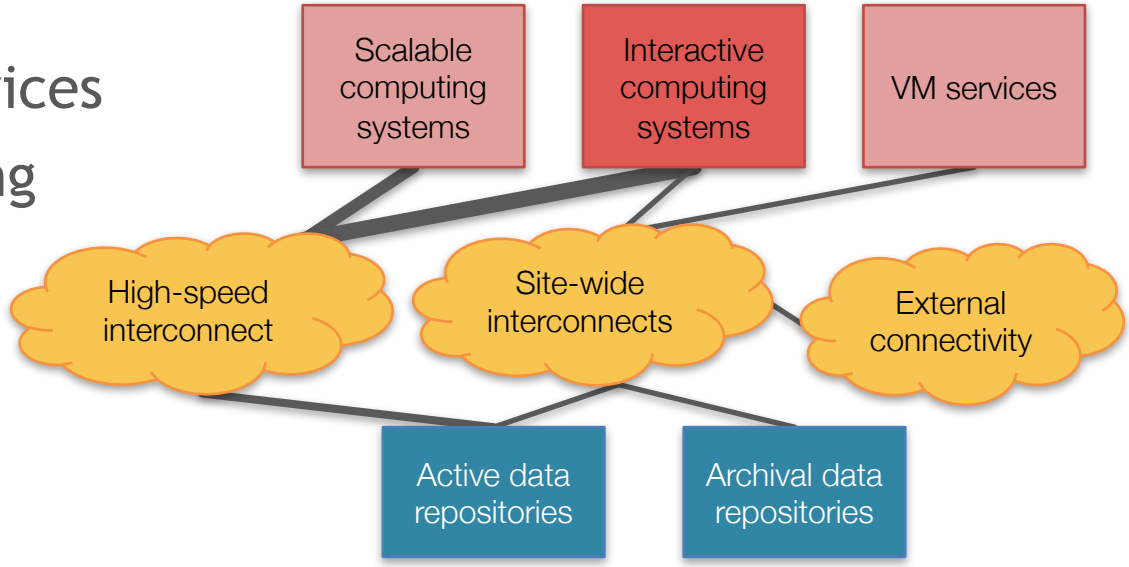
Getting access to compute and storage resources

Anna Lührs Jülich Supercomputing Centre

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



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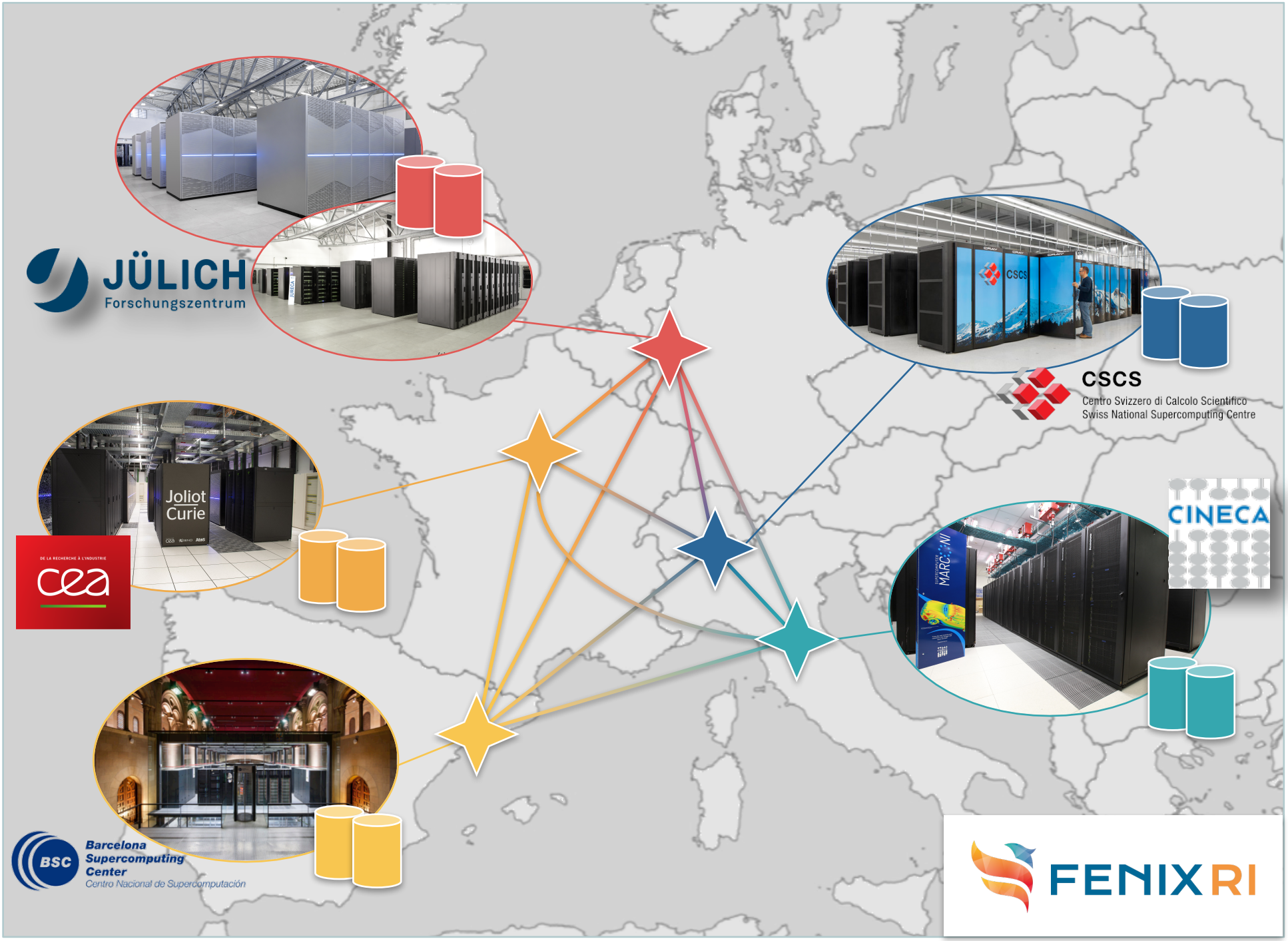
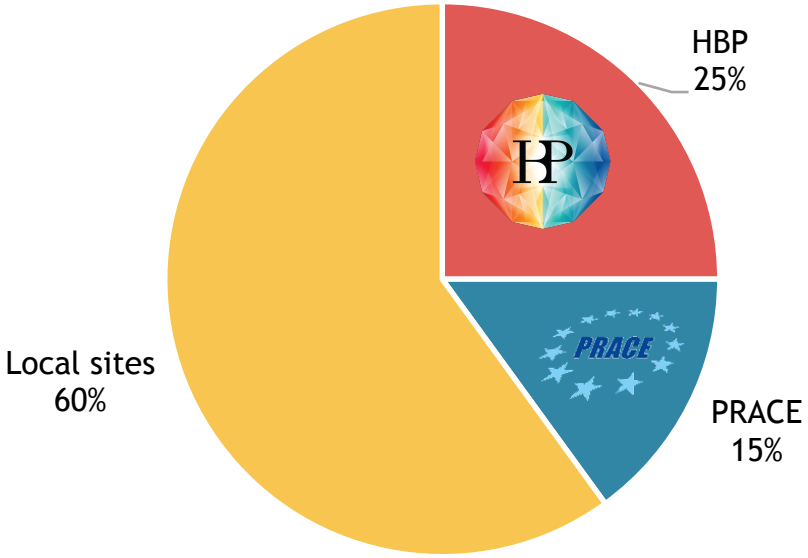

JÜLICH
Forschungszentrum
CSCS
Centro Svizzero di Calcolo Scientifico
Swiss National Supercomputing Centre
Joliot Curie
cea
CINECA
BSC
Barcelona Supercomputing Center
Centro Nacional de Supercomputación
FENIX RI

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.



Resource allocation

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

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

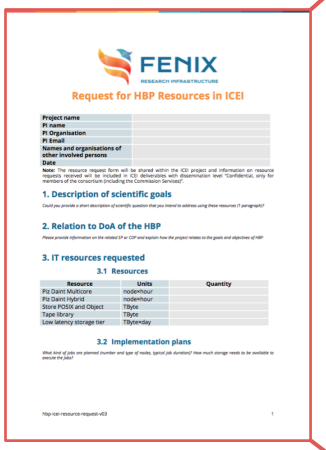
Available resources end of 2019 **in total** (subject to change)

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

Access to ICEI resources for HBP members

- Current process (subject to change):
  - Send 2-3 page proposal to icei-coord@fz-juelich.de
  - Template: https://docs.google.com/document/d/1T09Pl4yd3Rahwuz1MAqX4LpPbtvLzSPkNs5jNcfhcEg/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



FENIX
RESEARCH INFRASTRUCTURE

Request for HBP Resources in ICEI

Project name	
PI name	
PI Organisation	
PI Email	
Names and organisations of other involved persons	
Date	

Note: The resource request form will be shared within the ICEI project and information on resource requests received will be included in ICEI deliverables with dissemination level "Confidential, only for members of the consortium (including the Commission Services)".

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

Resource	Units	Quantity
Piz Daint Multicore	node×hour	
Piz Daint Hybrid	node×hour	
Store POSIX and Object	TByte	
Tape library	TByte	
Low latency storage tier	TByte×day	

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?

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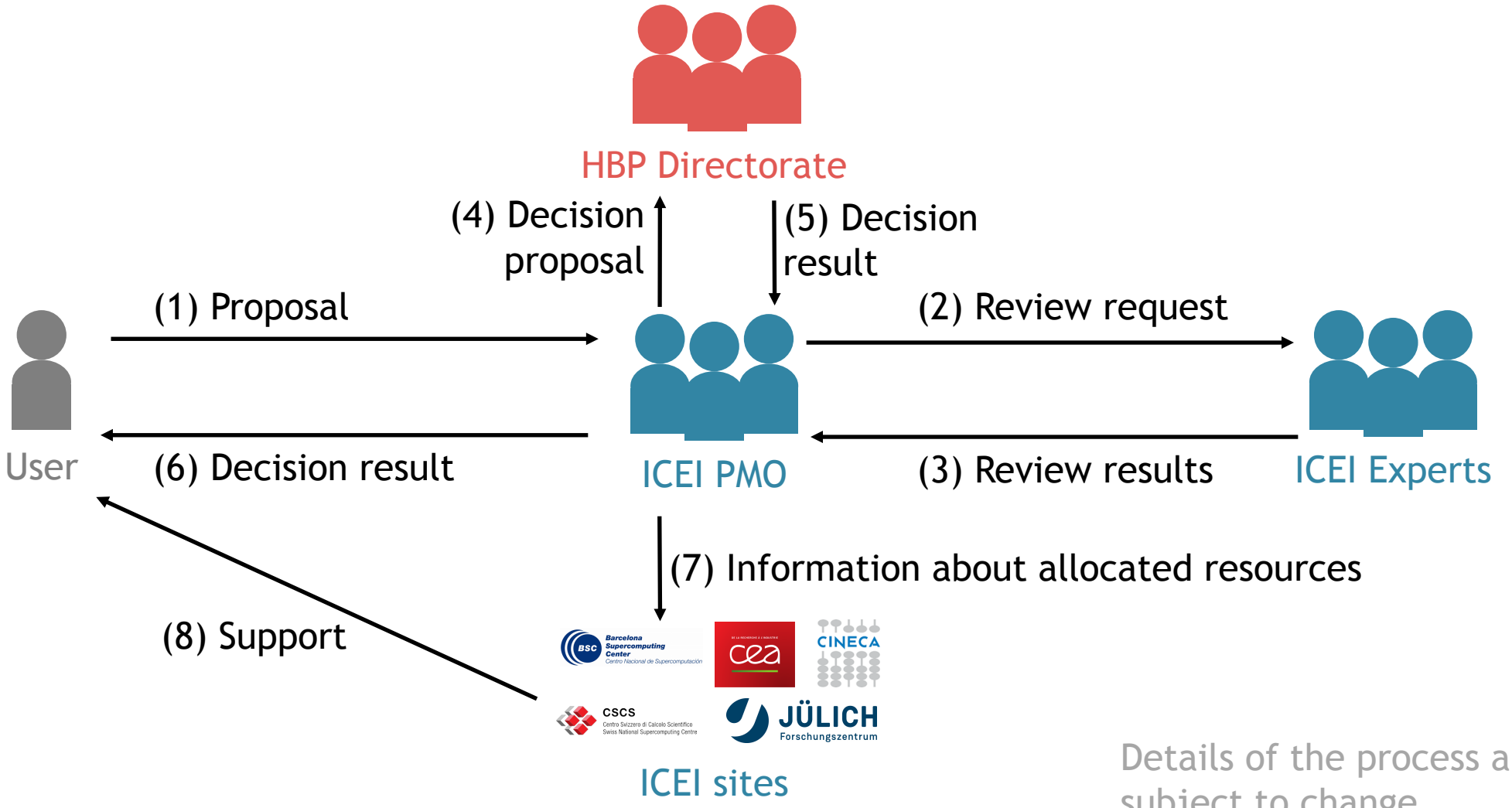
Access to ICEI resources for HBP members



Details of the process are subject to change

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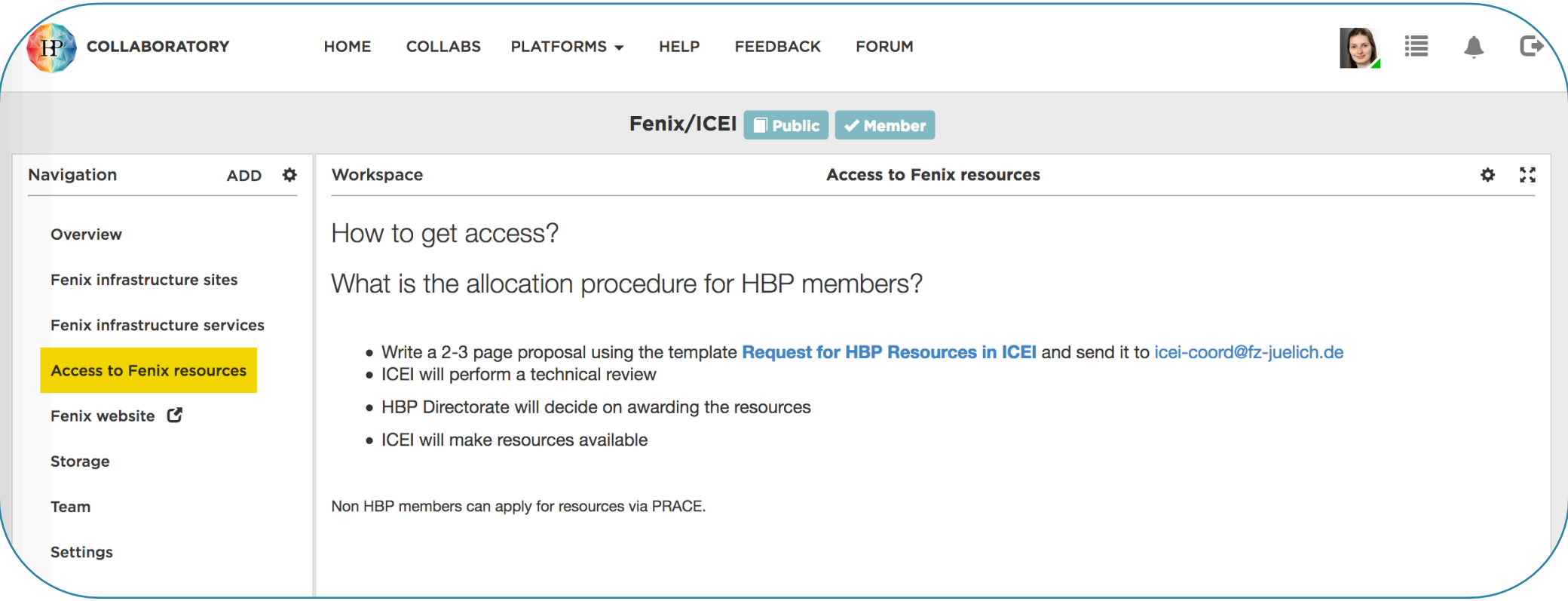
Access to ICEI resources for HBP members

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



https://collab.humanbrainproject.eu/#/collab/28520

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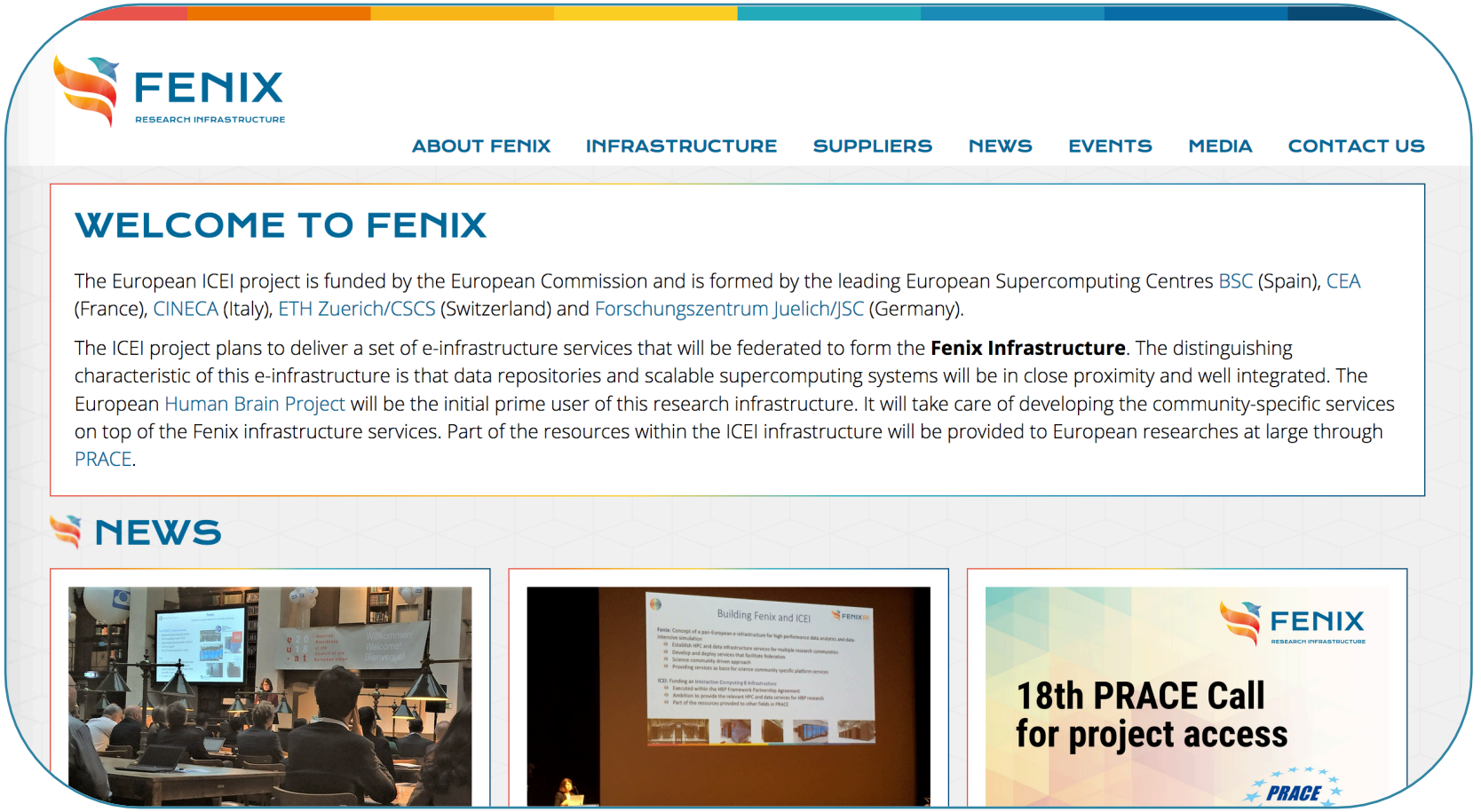
Access to ICEI resources for **non-HBP** members

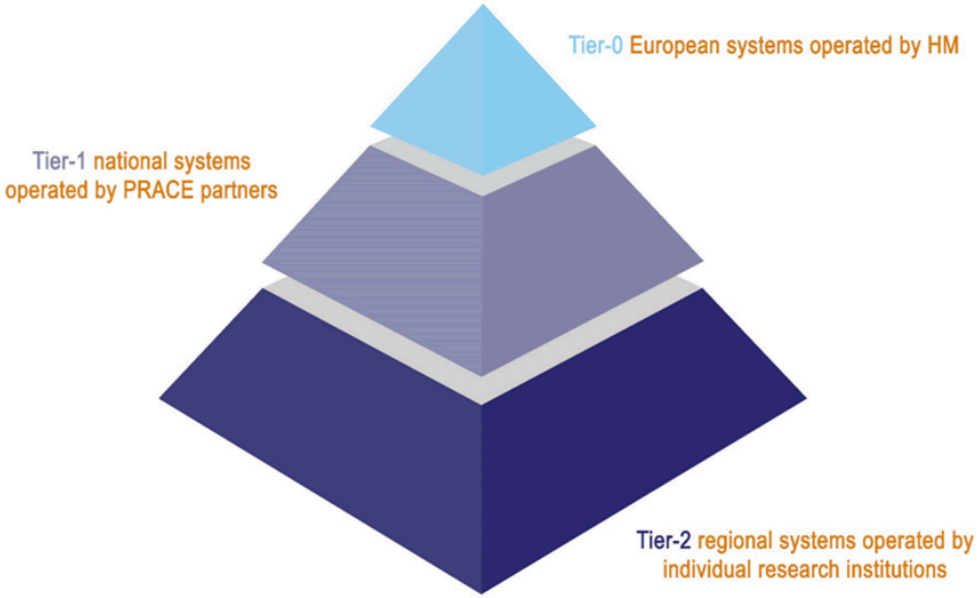
See the Fenix website for latest information



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 PARTNERSHIP FOR ADVANCED COMPUTING IN EUROPE

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
JUWELS (Module 1): Bull Sequana
GAUSS @ FZJ, Jülich, Germany
#23 Top 500

SuperMUC : Lenovo cluster GAUSS @ LRZ, Garching, Germany #57 Top 500 NEW ENTRY soon Su

Hazel Hen: Cray
GAUSS/HLRS, Stuttgart, Germany
#27 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

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

Close to 110 PFlops cumulated peak performance

9 The Partnership for Advanced Computing in Europe I PRACE

Source: 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 I current services

Towards End Users

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
  - 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

Contact our HPAC Support Team

hpac-support@humanbrainproject.eu

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