ICEI: Towards a Federation of Supercomputing and Cloud E-Infrastructure Services

FENIX

The ICEI (Interactive Computing E-Infrastructure) project is funded by the European Commission under the Framework Partnership Agreement of the Human Brain Project (HBP) with a project duration from 01/2018 to 09/2023. The ICEI project delivers a set of e-infrastructure services that will be federated to form the Fenix Infrastructure, which is enabled by five leading European Supercomputing Centres BSC (Spain), CEA (France), CINECA (Italy), ETHZ-CSCS (Switzerland) and JUELICH-JSC (Germany).

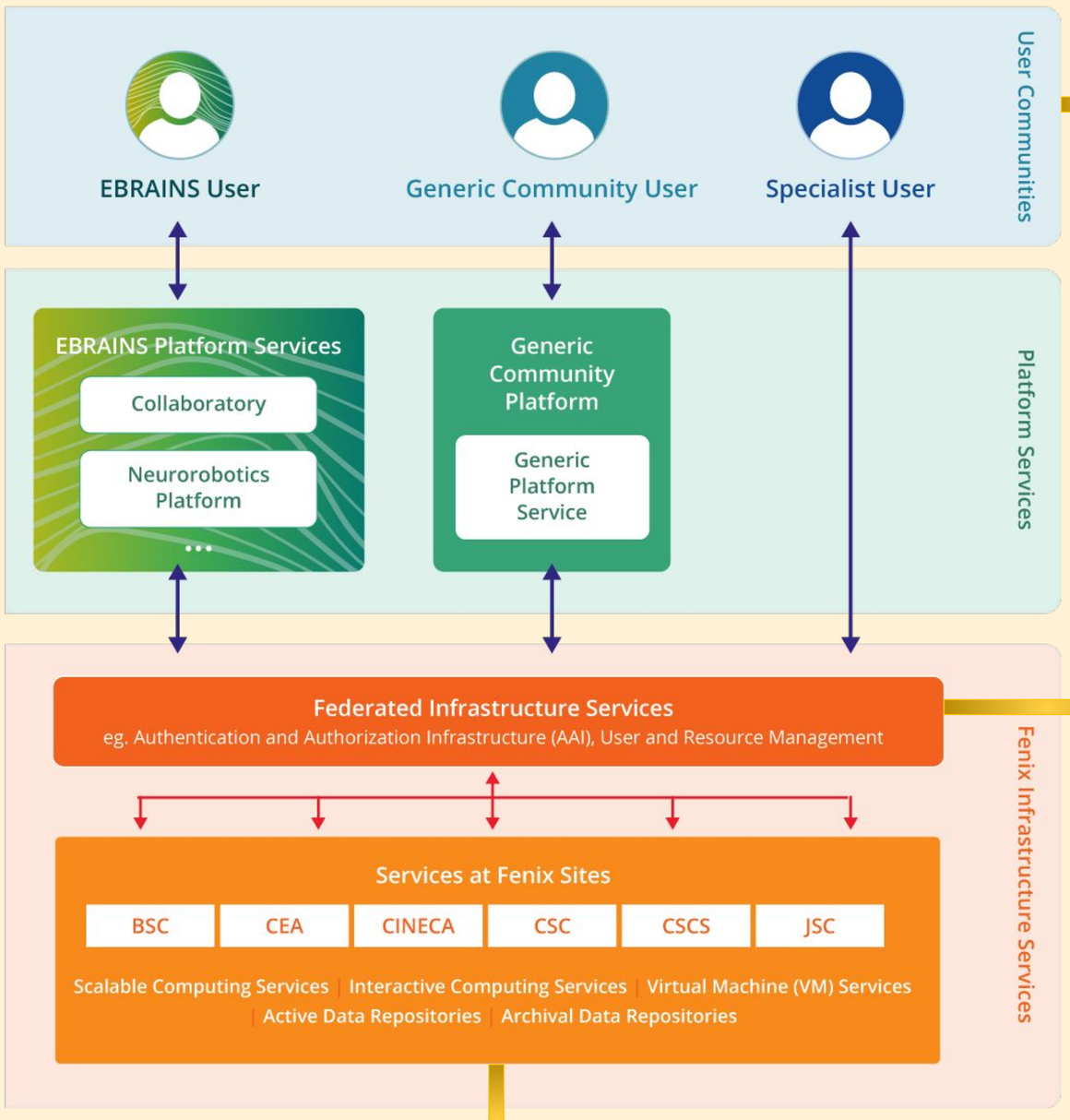
Goal of ICEI

To implement a first version of the Fenix Infrastructure that harmonises and federates the computing, cloud, storage and network services of HPC centres with the goal of supporting a variety of science and engineering communities, and in particular their collaborative research.

Achievements

As of today, all the procurements for equipment have been successfully completed and computing, cloud and storage resources are available at all 5 centres. All 6 R&D service contracts have been awarded and service development is completed for most of the services.

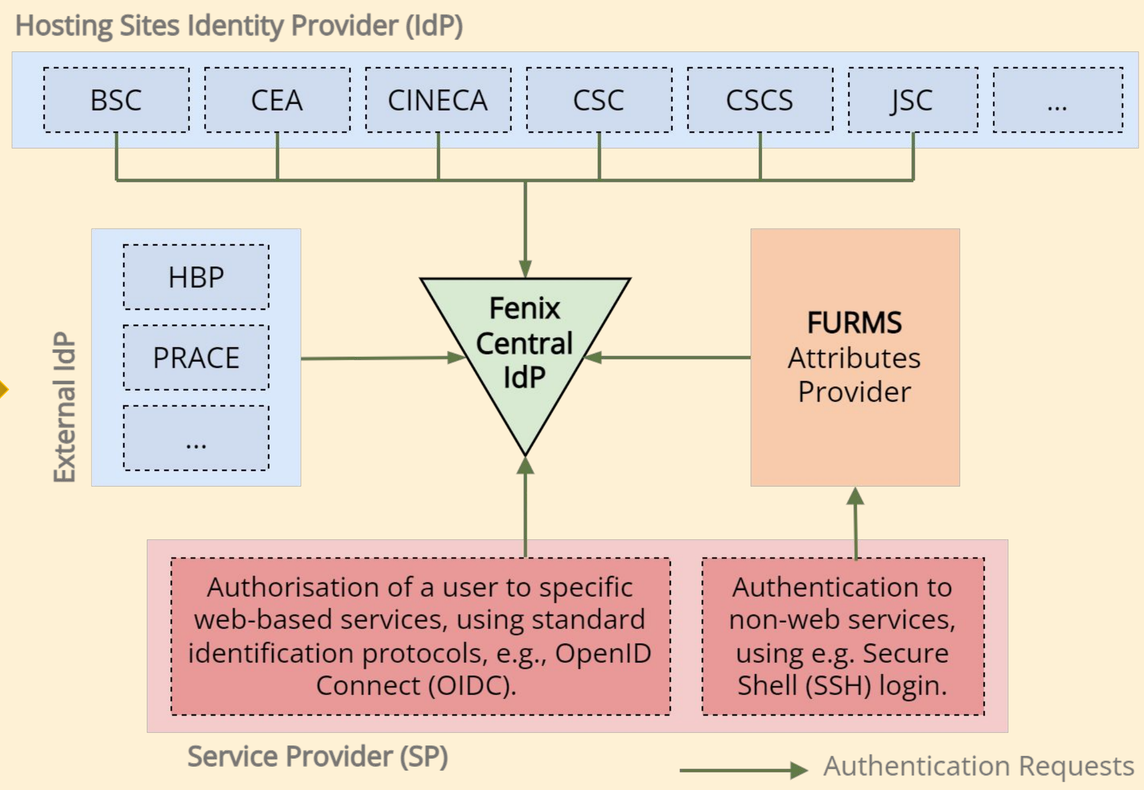
Fenix Architecture Concept



User Access & Communities

- Brain research community through HBP (25% of resources).
- European researchers at large through PRACE (15% of resources).
- Fenix is open for other communities who want to contribute resources and use the infrastructure. Community-specific allocation mechanism is based on peer-review.

Fenix AAI & FURMS



Available Fenix Resources through ICEI

Scalable Computing Services *Massively parallel HPC systems for scalable and/or compute heavy applications*		**Interactive Computing Services** *Interactive access to powerful servers and large-scale data stores*		**Virtual Machine (VM) Services** *Service for deploying virtual machines in a stable and controlled environment*		**Archival Data Repositories** *Suitable for large-scale data sets, access via Swift interface*		**Active Data Repositories** *Typically standard parallel file system*	
Site	*Total ICEI*	*Site*	*Total ICEI*	*Site*	*Total ICEI*	*Site*	*Total ICEI*	*Site*	*Total ICEI*
CSCS	250 nodes	CSCS	400 nodes	CSCS	35 servers	CSCS	4000 TB	CSCS	80 TB
JSC	187 nodes	JSC	2 nodes	JSC	16 nodes	CEA	7000 TB & 7500 TB+	JSC	2000 TB
		CEA	32 nodes	CEA	20 servers			CEA	3500 TB & 970 TB
CINECA	340 nodes	BSC	3 nodes	BSC	84 nodes	BSC	6000 TB	BSC	70 TB
		CINECA	214 nodes	CINECA	77 nodes	CINECA	10000 TB (TBD)	CINECA	10500 TB

* The Finnish Supercomputing Centre CSC joined Fenix in 2021 as a non-ICEI partner and is an integral part of the plans and discussions for the future of Fenix.

Success Stories

- **The Virtual Brain (TVB)** is a stack of open-source software for constructing, simulating and analysing brain network models. It is hosted on the EBRAINS platform as a cloud service for brain simulation. The Fenix infrastructure supports TVB workflows by providing various cloud components and HPC backend. The services can be accessed at thevirtualbrain.apps.hbp.eu.
- Michele Migliore of the Italian National Research Council (CNR), and the Human Brain Project (HBP) hippocampus team are using the Fenix computing and storage services to develop the first detailed and realistic **3D model of an area of the hippocampus**.
- Read more about the success stories on Fenix Website:

Access Fenix & Contact

- **Submit your proposal** at: http://www.fenix-ri.eu/access
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