Fenix: A template for future e-infrastructure services layers involving HPC

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www.fenix-ri.eu

Fenix Concept

- Service multiple user communities (including the brain research community)

- Provide federated infrastructure services to support community specific platform services (e.g. EBRAINS services)

- Composability of services according to the needs of users

- Support for different site-local implementations of services to avoid technology/vendor lock
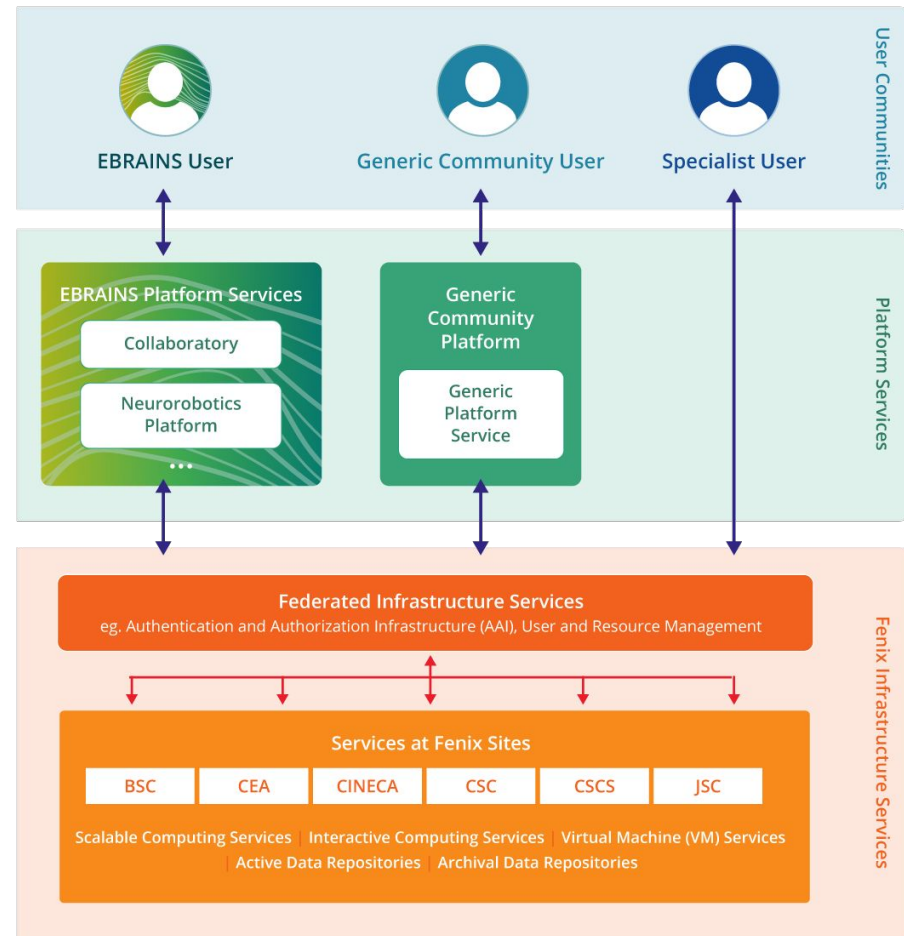
Fenix Services

- Computing services
  - Interactive Computing Services
  - Scalable Computing Services
  - Virtual Machine Services (with different VM models)
- Data services
  - Active Data Repositories
  - (Federated) Archival Data Repositories
  - Data Mover Services, Data Location and Transport Services

- Federation services
  - Authentication and Authorisation Services (AAI)
  - User and Resource Management Services (FURMS)

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Architecture Overview
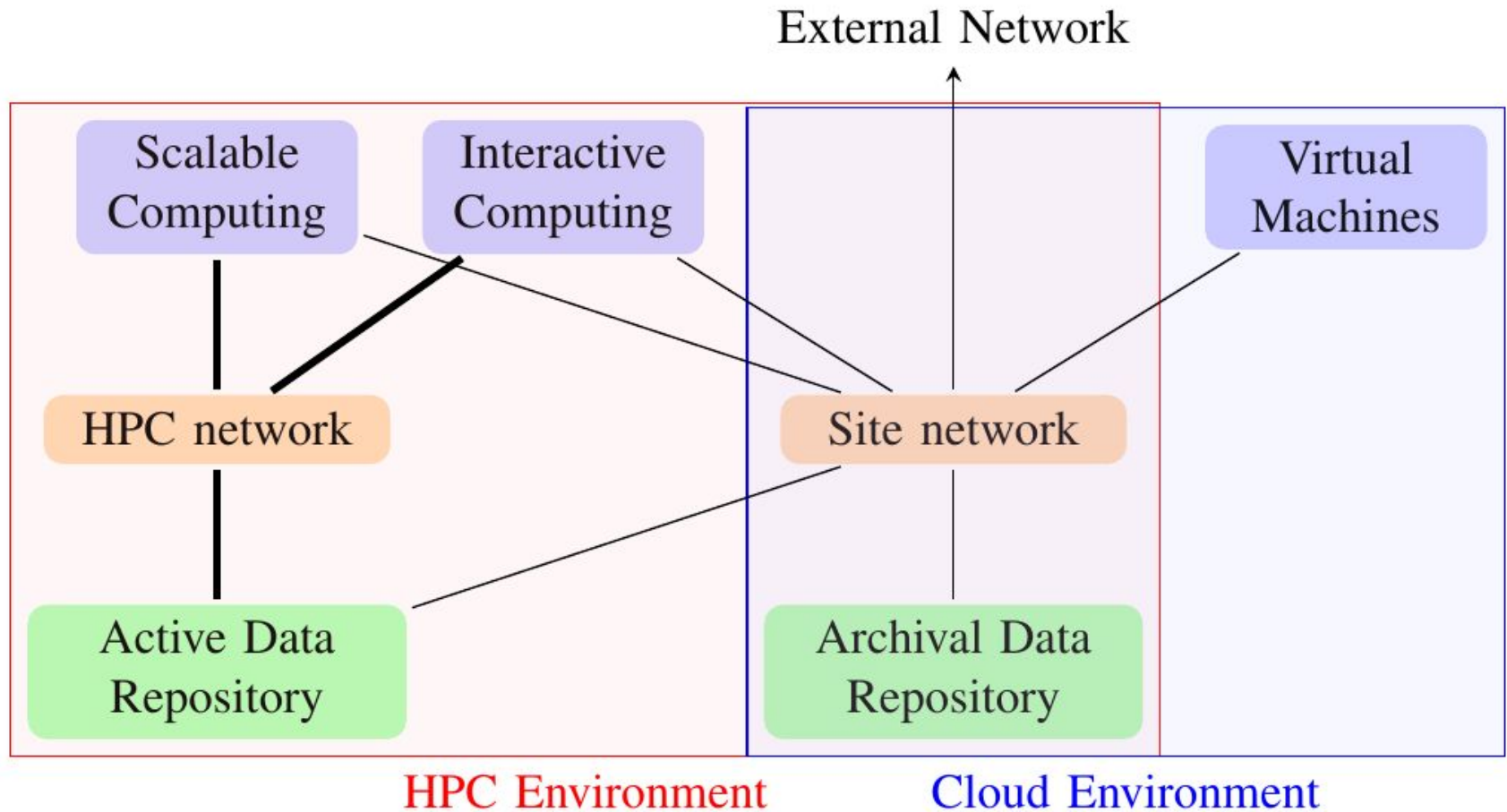
Initial Approach to Federation

- Lightweight federation layer including support for
  - Identity and access management
  - Resource management
  - Other attributes provisioning

- Federation services
  - AAI: Central Proxy IdP for federating different IdPs
    - Follow AARC Blueprint Architecture
    - GEANT has been subcontracted to run the Central Proxy IdP
  - Fenix User and Resource Management Service (FURMS)
    - FURMS = Attribute provider
    - Examples: SSH keys, group membership

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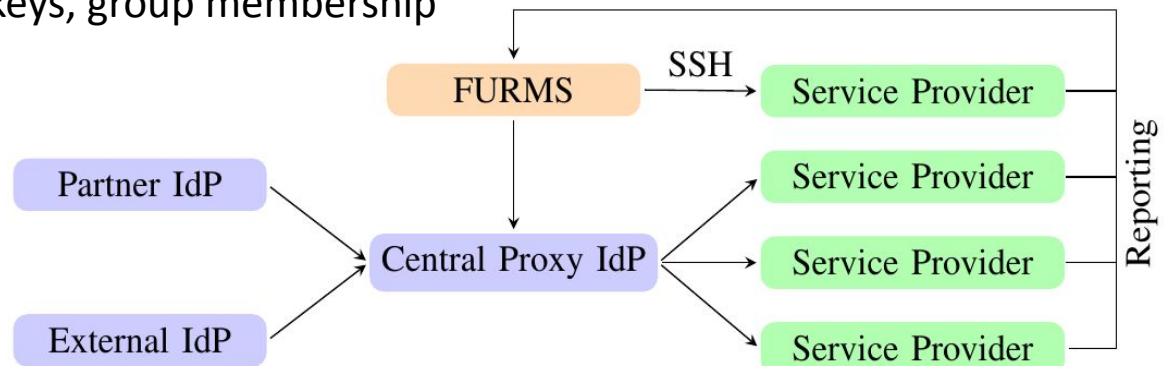
Federation: Next Step
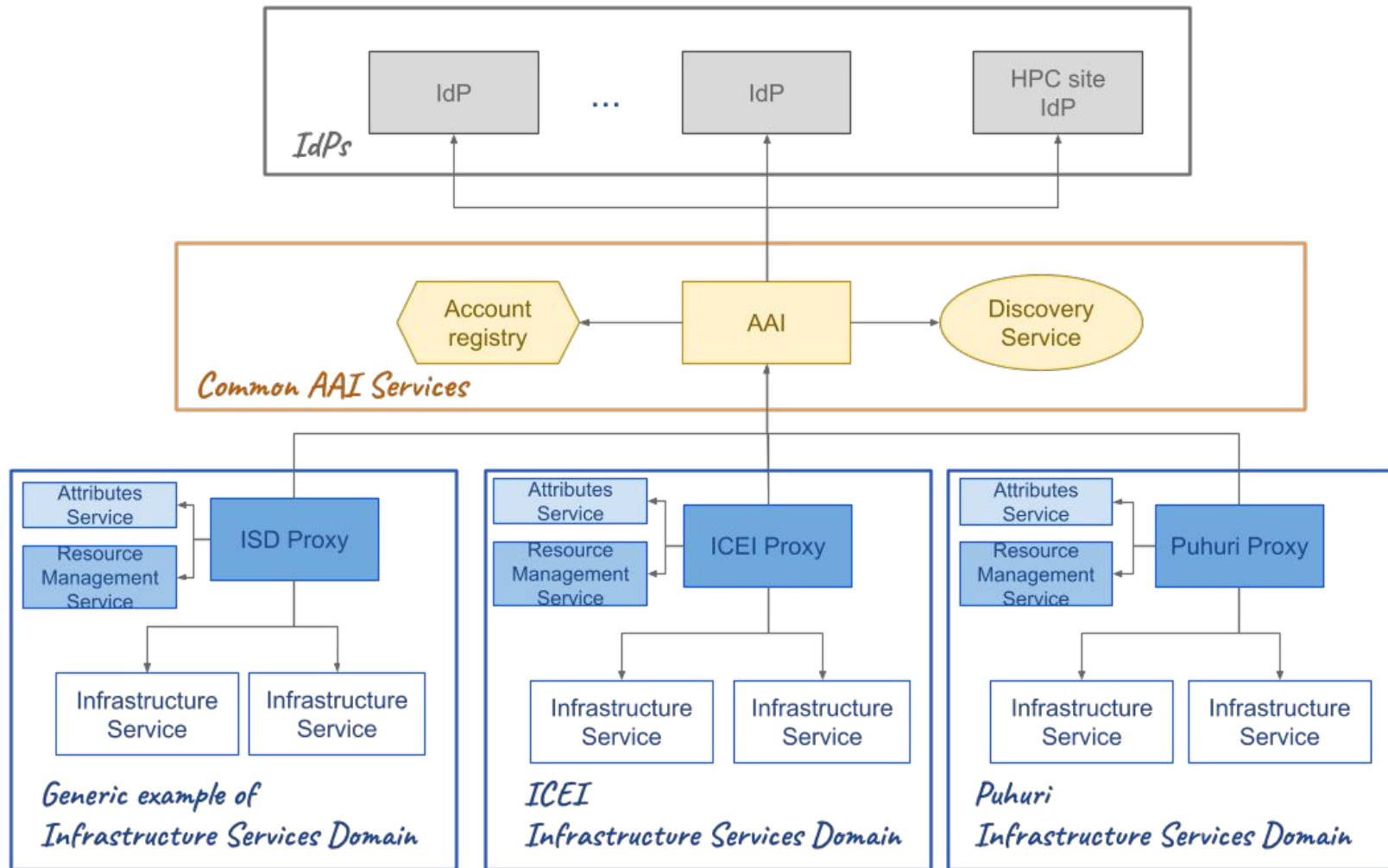
Fenix Implementation: ICEI Project

- Fenix was initiated by the Human Brain Project leading to the Interactive Computing E-Infrastructure (ICEI) project
  - Basis for the upcoming EBRAINS Research Infrastructure
- Available Resources as of Today

Scalable Computing Services	445 servers
Interactive Computing Services	437 servers
VM Services	40 physical servers
Archival Data Repositories	18.5 PByte
Active Data Repositories	6.55 PByte

For more details see https://fenix-ri.eu/infrastructure/resources

Access to Fenix Services and Resources

- Fenix acts as a neutral provider of compute and storage resources
  - Access decisions are made by other stakeholders
- Currently only excellence-driven access model
  - Available to work on support of market-driven and wide access models
- Access mechanisms
  - HBP-ICEI access for neuroscientists
  - PRACE-ICEI access for European researchers at large
    - Quarterly open calls for access to 15% of ICEI resources for European research at large
    - Access is managed by PRACE

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Summary and Conclusions

- Fenix is a long-term effort of supercomputing centres to provide a variety of e-infrastructure services

  - Resources not limited to HPC but also includes Cloud-type resources

- Fenix aims at supporting diverse science and engineering communities in deploying domain-specific platform services

- Lightweight approach to federation of e-infrastructure services

  - Avoid technology lock-in and preserve site autonomy

- Through the ICEI project e-infrastructure services and resources are being provided for research since 2018

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