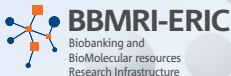# BBMRI Competence Center Update: Integrating BioBankCloud and EGI Federated Cloud technologies to enable private clouds within biobanks

Assoc. Prof. RNDr. Petr Holub, Ph.D.
IT & Data Protection Manager @ BBMRI-ERIC

EGI Conference 2016, 2016–04–06

**BBMRI-ERIC**
Biobanking and
BioMolecular resources
Research Infrastructure

**EGI-ENGAGE**

‣ An infrastructure that provides secure and privacy-protecting access to key resources in order to support biomedical research and to support healthcare/public health advancement:

- bio**samples** from biobanks,
- related **data**: clinical, omics, phenotypes, etc.,
- **expertise** and other **services** (e.g., sample & data hosting),
- biomolecular resources.

```
biobanks := samples + data + expertise + services;
```

# What is BBMRI-ERIC

▸ Hierarchical distributed architecture ≡ "hub-and-spokes architecture"
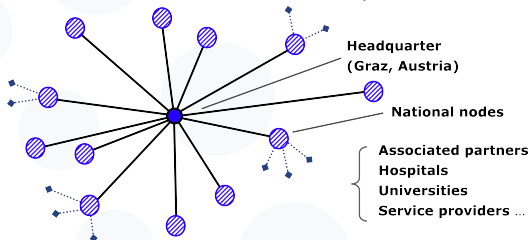


- BBMRI-ERIC headquarters → national nodes → local facilities (biobanks, hospitals, universities, …)
- ⟹ federated IT architecture

▸ Subject to regulatory frameworks: privacy-protection, health,…
- e.g., upcoming General Data Protection Regulation.

# BBMRI-ERIC: Updates

▸ Common Service IT (CS IT) setup
  ■ effectively started January 1, 2016

# BBMRI-ERIC: Updates
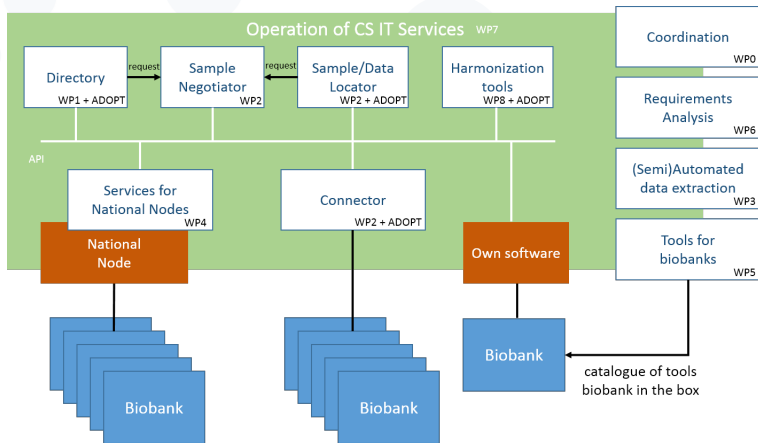
- ADOPT BBMRI-ERIC project has started
  - booster funding to accelerate development of BBMRI-ERIC
  - substantial part goes to IT
- New BBMRI-ERIC members:
  - BBMRI.uk
  - BBMRI.no
- BBMRI-ERIC Directory 2.0 release

# BBMRI-ERIC: Updates

**EGI-ENGAGE**

- ‣ Progress regarding AAI:
  - ■ deployment of BBMRI-ERIC identity
    - • implemented as proxy IdP with support for identity linking: pilot for AARC and GÉANT VOPaaS
  - ■ one of pilots for submitted AARC2
    - • focus on LoA definitions relevant for accessing human data
  - ■ also as a part of BBMRI-ERIC ↔ CORBEL WP5 ↔ AARC2 collaboration

- ▸ Pilot with EGI and EUDAT to support BBMRI-related workflows on clouds
  - ■ processing privacy/sensitive data: pseudonymized & anonymized
  - ■ compliant with relevant regulatory frameworks,
  - ■ focus on processing omics data, most likely next-generation sequencing (NGS).
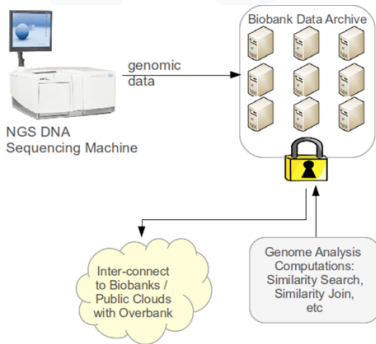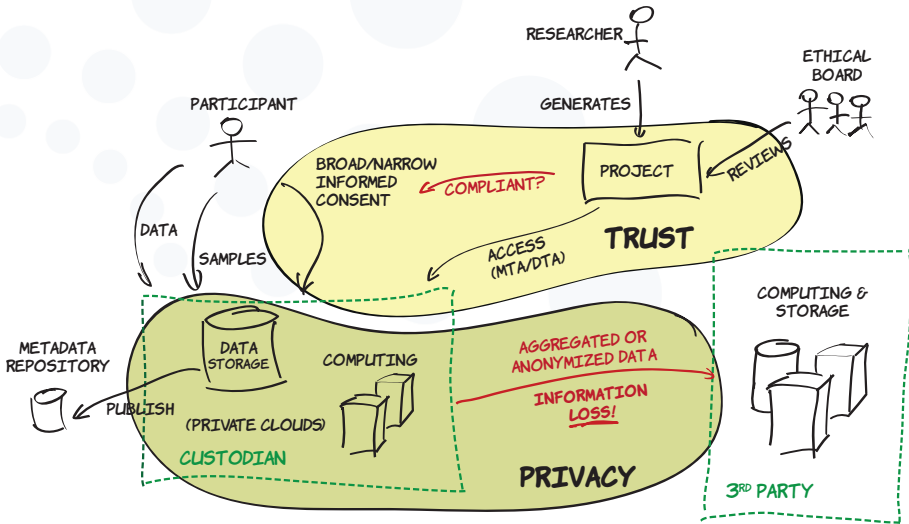
- Pilot with EGI and EUDAT to support BBMRI-related workflows on clouds
  - start with private clouds
    - by integrating BiobankCloud and EGI technologies,
    - allowing biobanks to easily setup their private clouds on their own hardware,
    - enable users from outside to access these private clouds as a part of "access procedure".
  - Explore what can be done beyond that, e.g.,
    - ingesting (certified) clouds into logically private clouds,
    - how 3$^{rd}$ party clouds can be used,
  - explore possible collaboration with EUDAT,
  - deploy next-generation sequencing data processing pilots in several biobanks in different countries.

# What is BiobankCloud
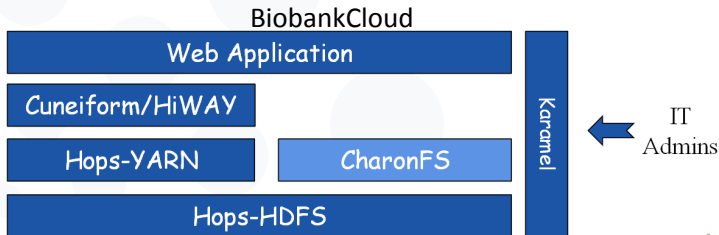
BiobankCloud



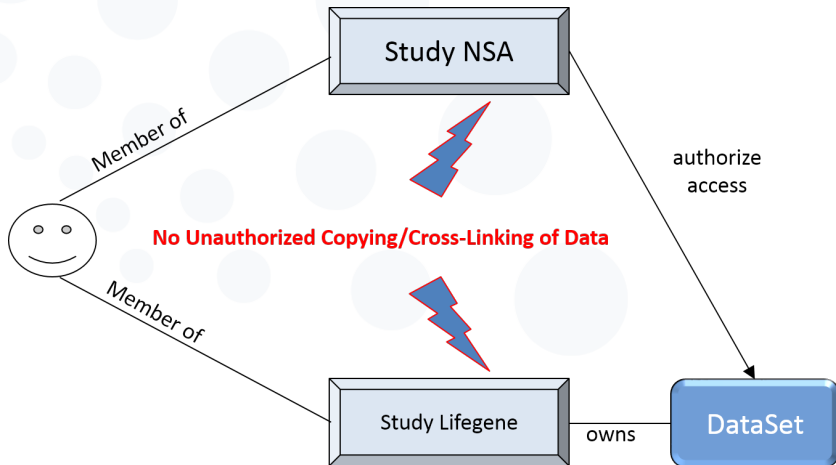ScAlAble ScientiFic workflow Execution Engine (Saasfee)
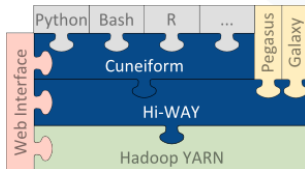
# What is BiobankCloud

# BBMRI CC Partners

- IT partners:
  - EGI, EUDAT
  - CESNET, SurfSARA, KTH
- Biomedical/health/bioinformatics partners:
  - BBMRI-ERIC
  - BBMRI.nl, BBMRI.se, BBMRI.cz

# BBMRI CC: Updates

- **Delivered** M6.2 – "Security and privacy requirements and secure storage architecture"
  - first release of BBMRI-ERIC privacy & security requirements
    - more than an average milestone document :-)
  - description of relevant concepts
  - analysis of BBMRI-ERIC use cases
  - general requirements
  - use case specific requirements
  - AAI requirements & architecture
  - cloud-based data processing architecture
  - secure storage architecture

# BBMRI CC: Updates

- ‣ Ongoing porting BiobankCloud to EGI platform
  - ■ BiobankCloud relies on Apache jclouds and Hadoop
    - • via Karamel = orchestration backend of BiobankCloud
    - • modified HDFS for multi/tenancy support
  - ■ implementing OCCI support for Karamel using jOCCI (led by CESNET)
    - • prototype working, working on final implementation

- ‣ Ongoing integration with federated AAI
  - ■ BiobankCloud relies on GlassFish and supports even multi/factor authentication
  - ■ implementation of Shibboleth/SAML support (led by KTH)
  - ■ setting up proxy IdP for BBMRI-ERIC with GÉANT VOPaaS

- ‣ Expected delivery ≈ June 2016

# BBMRI CC: Updates

- ‣ Progress with BBMRI-ERIC–EUDAT collaboration
  - ■ EUDAT represented by SurfSARA partner in BBMRI CC
  - ■ use of tools developed by EUDAT deployed in the biobanks
  - ■ series of strategy meetings BBMRI-ERIC representatives and EUDAT representatives
  - ■ successful technical meeting between BBMRI-ERIC IT representatives and EUDAT technical representatives – March 2016, Barcelona
- ‣ Organized hands-on BiobankCloud workshop
  - ■ November 25, 2015 – Vienna

**Thank you for your attention!**
Q?/A!

http://www.bbmri-eric.eu/
petr.holub@bbmri-eric.eu