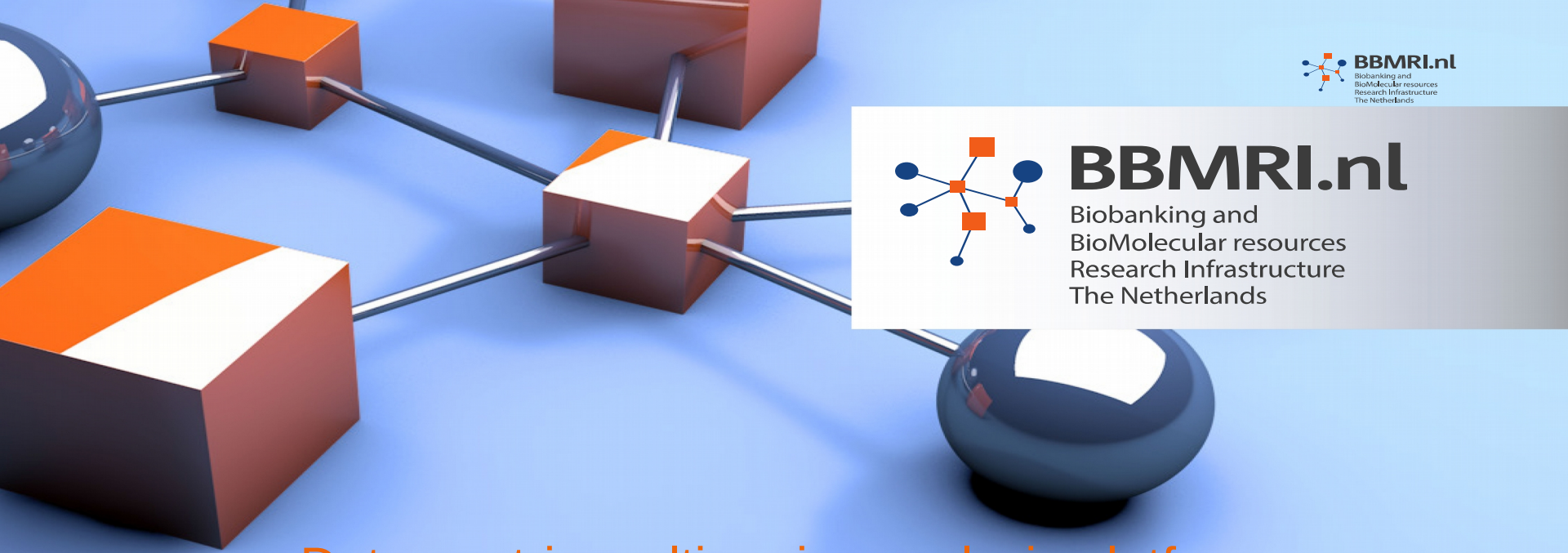

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Research Infrastructure
The Netherlands

Data-centric multi-omics analysis platform used in the BBMRI-NL project

Leon Mei, Leiden University Medical Center

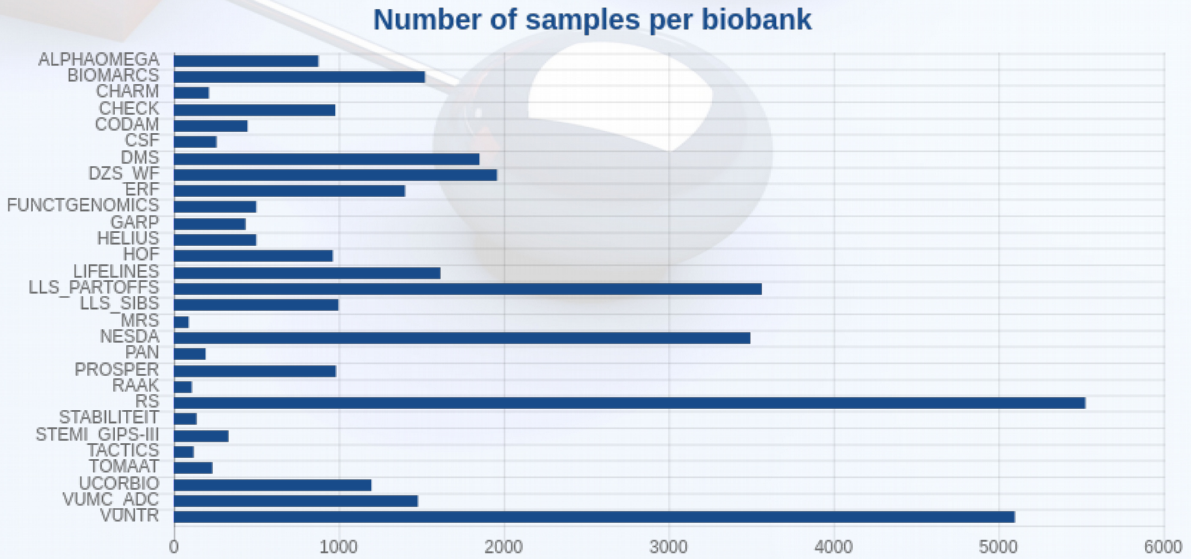
X-omics/BBMRI-NL workshop on 2021-01-20

BBMRI-NL

For many, by many*

https://www.bbmri.nl/

https://omics-explorer.bbmri.nl/



*100+ researchers working on 25 Cohorts, BIOS, GoNL, Metabolomics Rainbow together building BBMRI-omics.

Multi-omics Data

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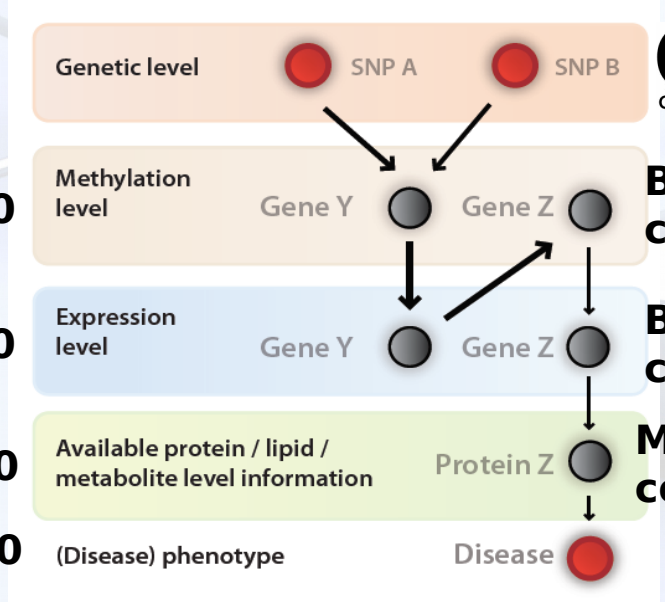
N~100,000 GWAS
N=770 Go.NL



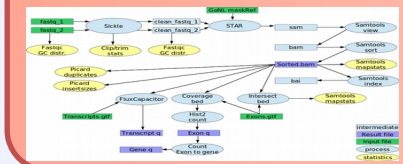
N~4,000 — **BIOS consortium**

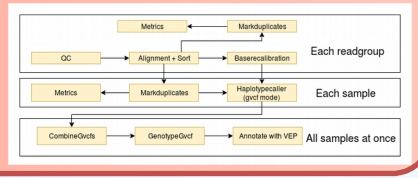
N~4,000 — **BIOS consortium**

N~35,000 — **METABOLOMICS consortium**

N>250,000

Data analysis pipelines





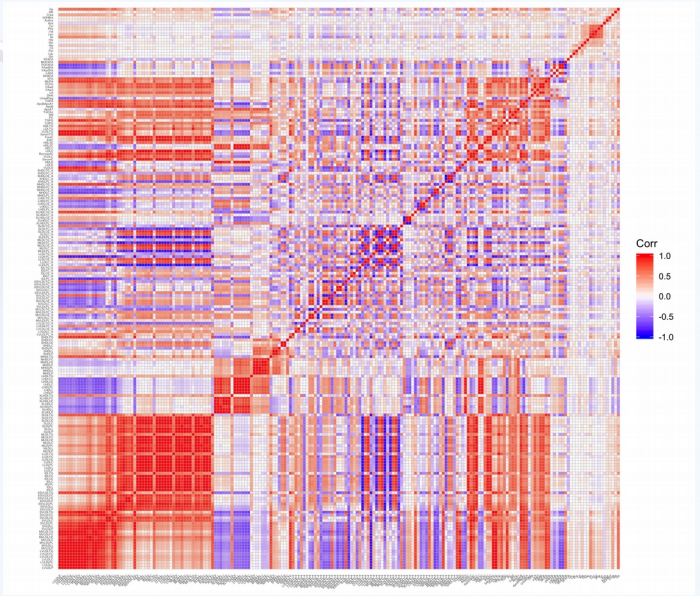
Building a central database for the research community

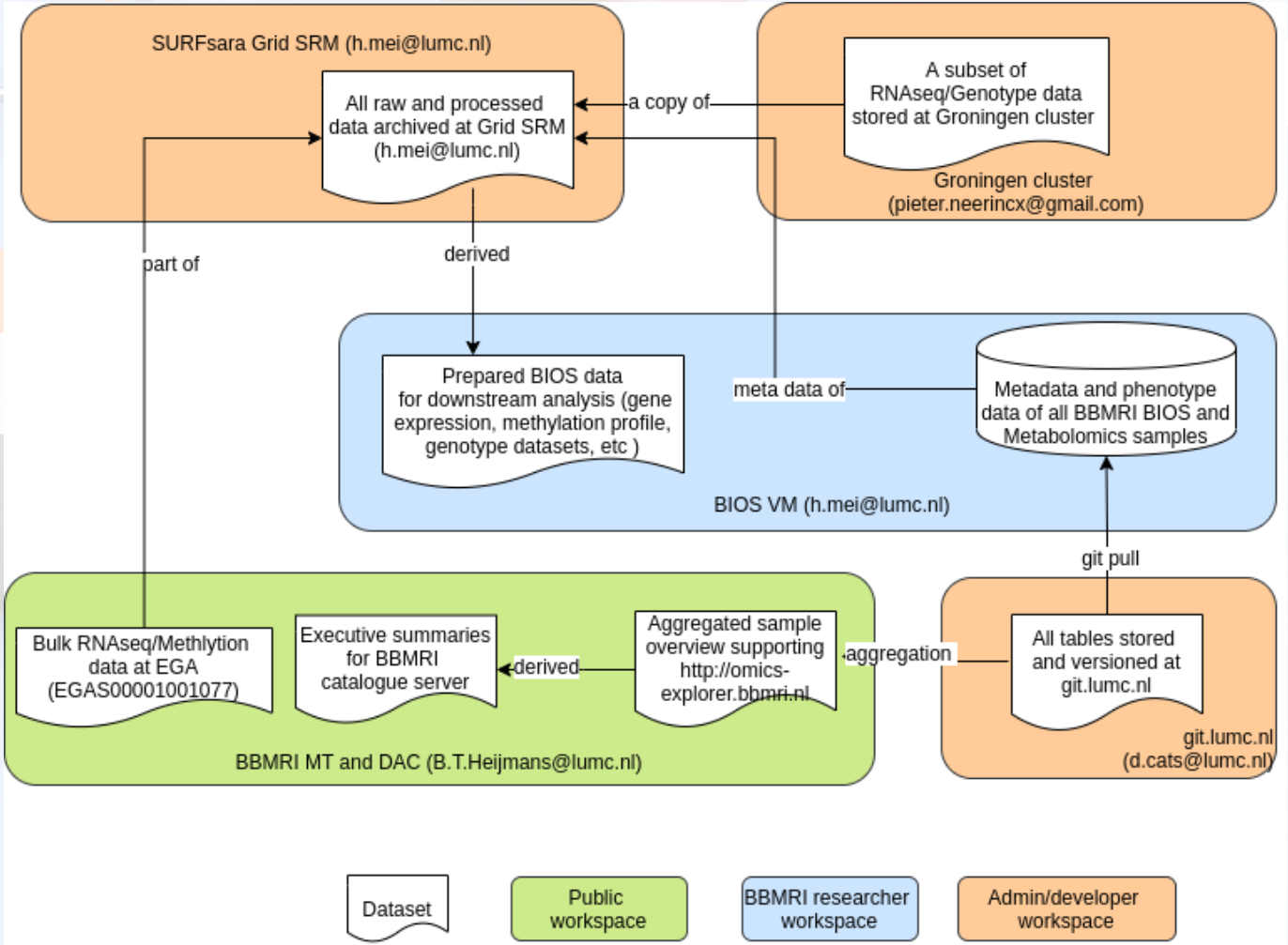
- To store raw and processed data
- Reference data for case-control studies and imputation
- Linking to clinical phenotypes

Metabolomics

Available metabolic measurements from the plasma of ~35,000 individuals

NMR metabolomics (Nightingale Health Ltd): It comprises 226 features (metabolites and derived measures)

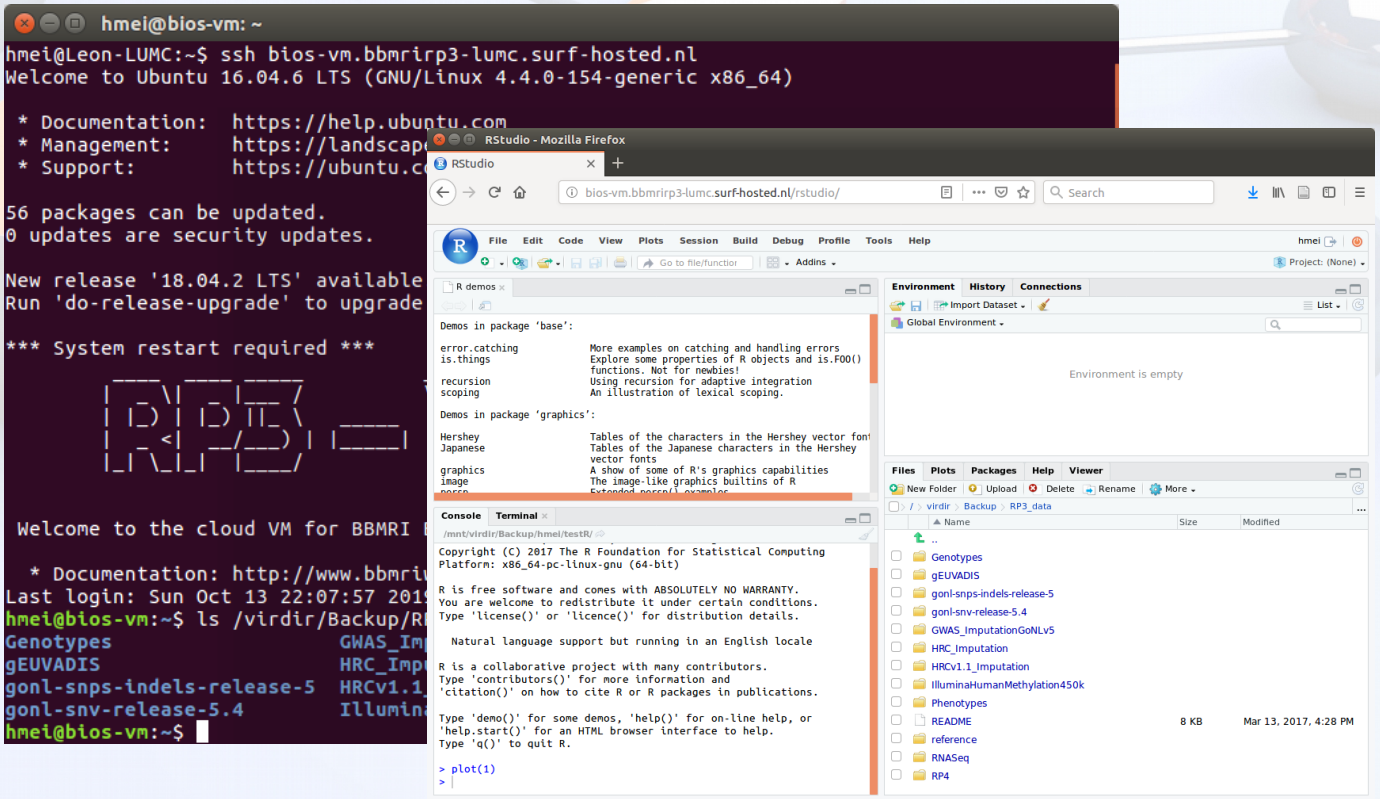




BBMRI-omics data and compute infrastructure and contact person, 2020-01-01

Data-centric multi-omics

BIOS-VM



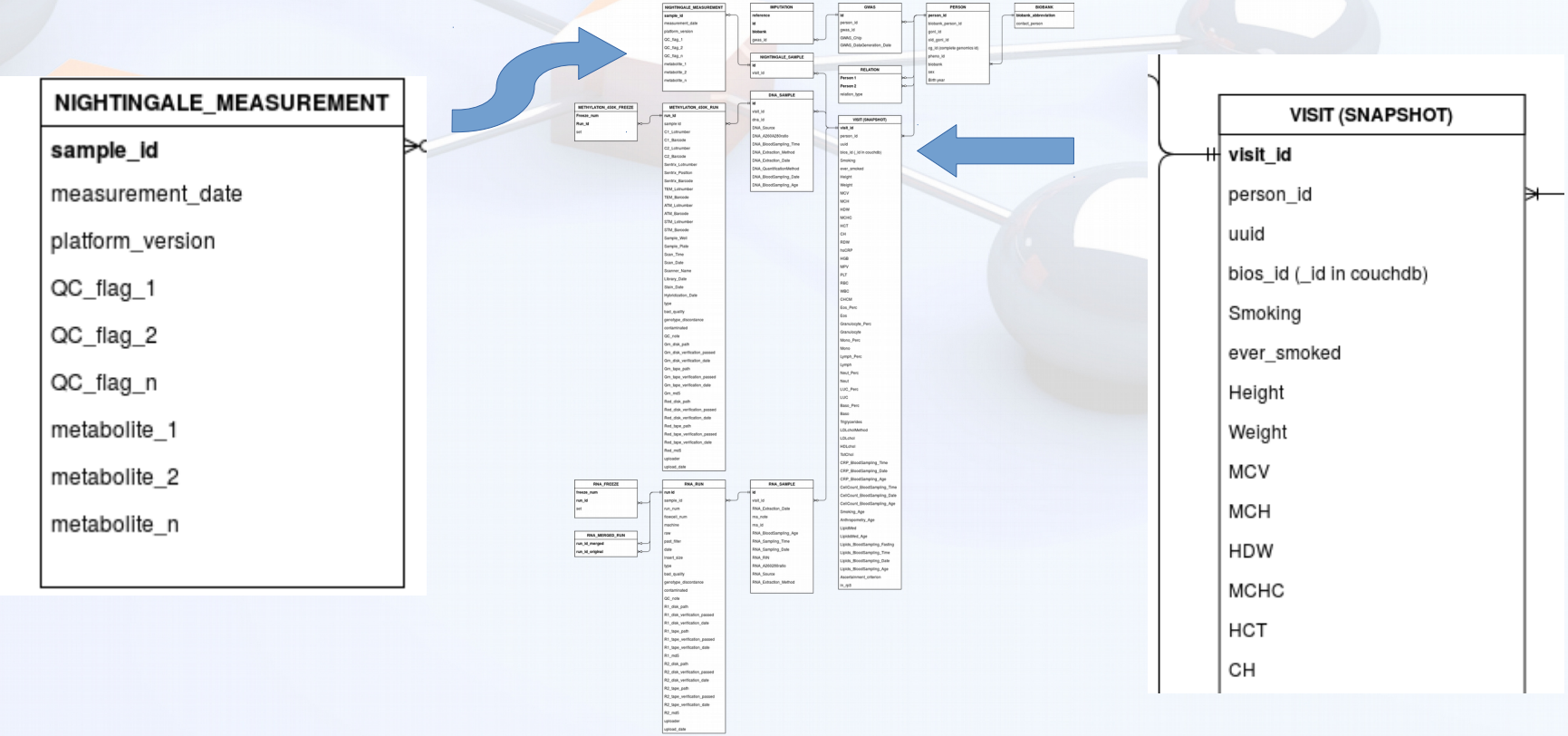
~50 users

64core, 250G mem, 5TB

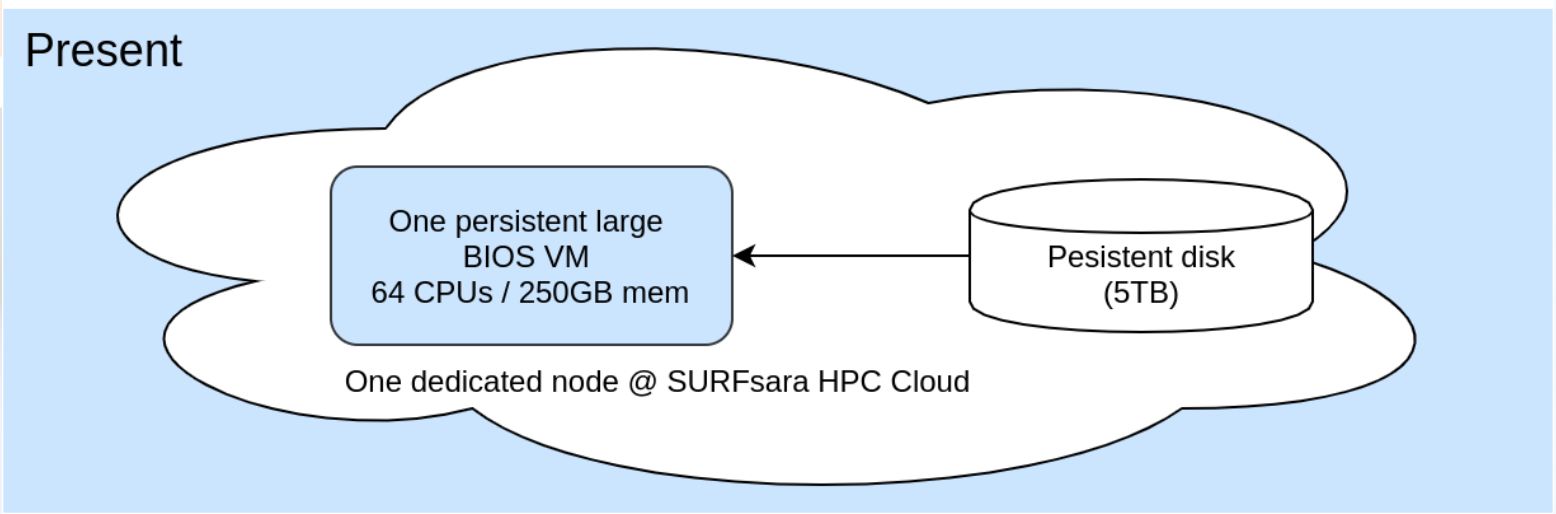
PKI auth

IP whitelisting

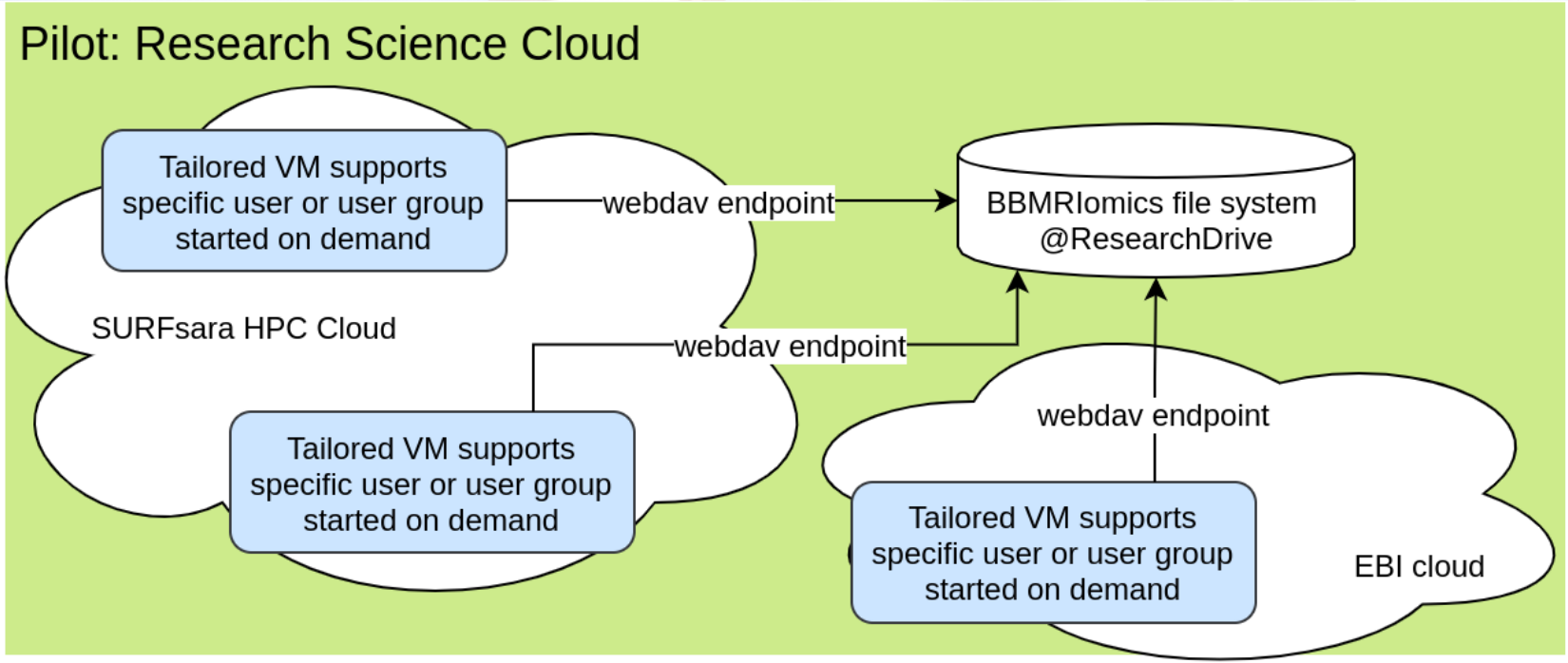
BBMRIomics data model



BIOS VM Present

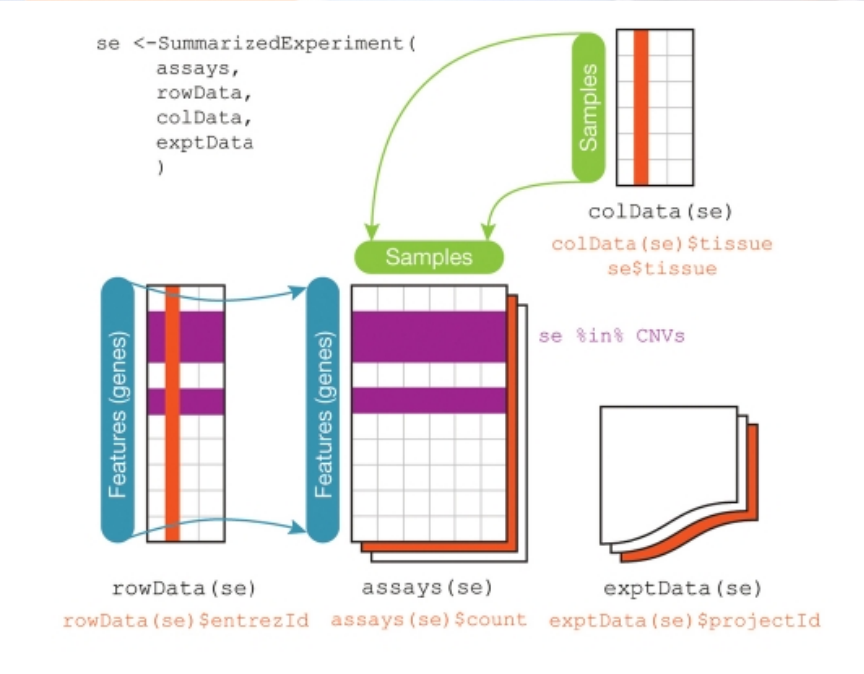


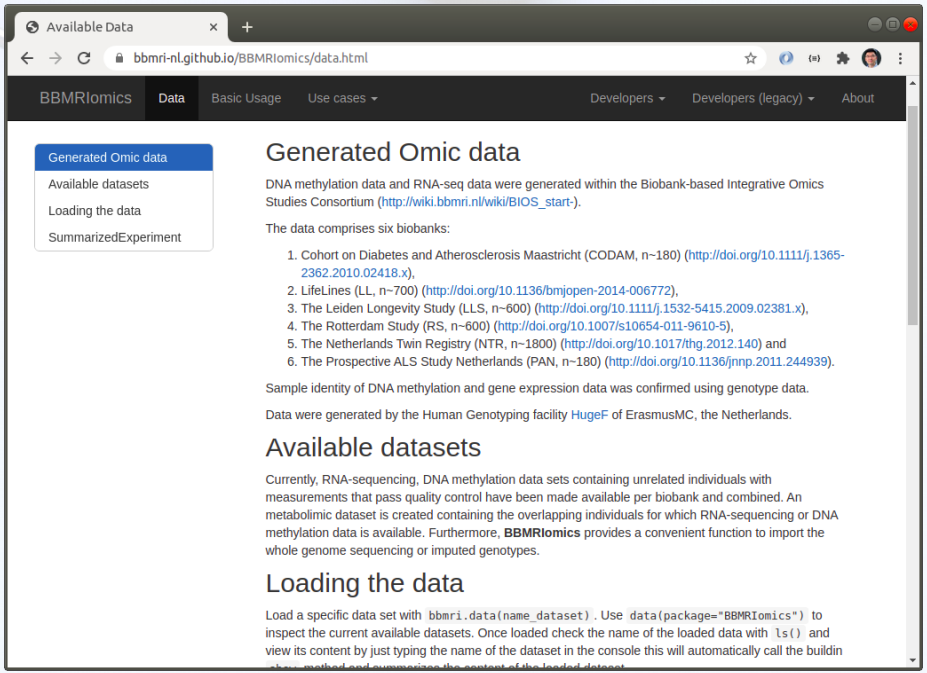
Scalable BBMRIomics Workspace



Ready to use data

BBMRIomics: An *R* interface to BBMRI-NL data





BBMRIomics workspace

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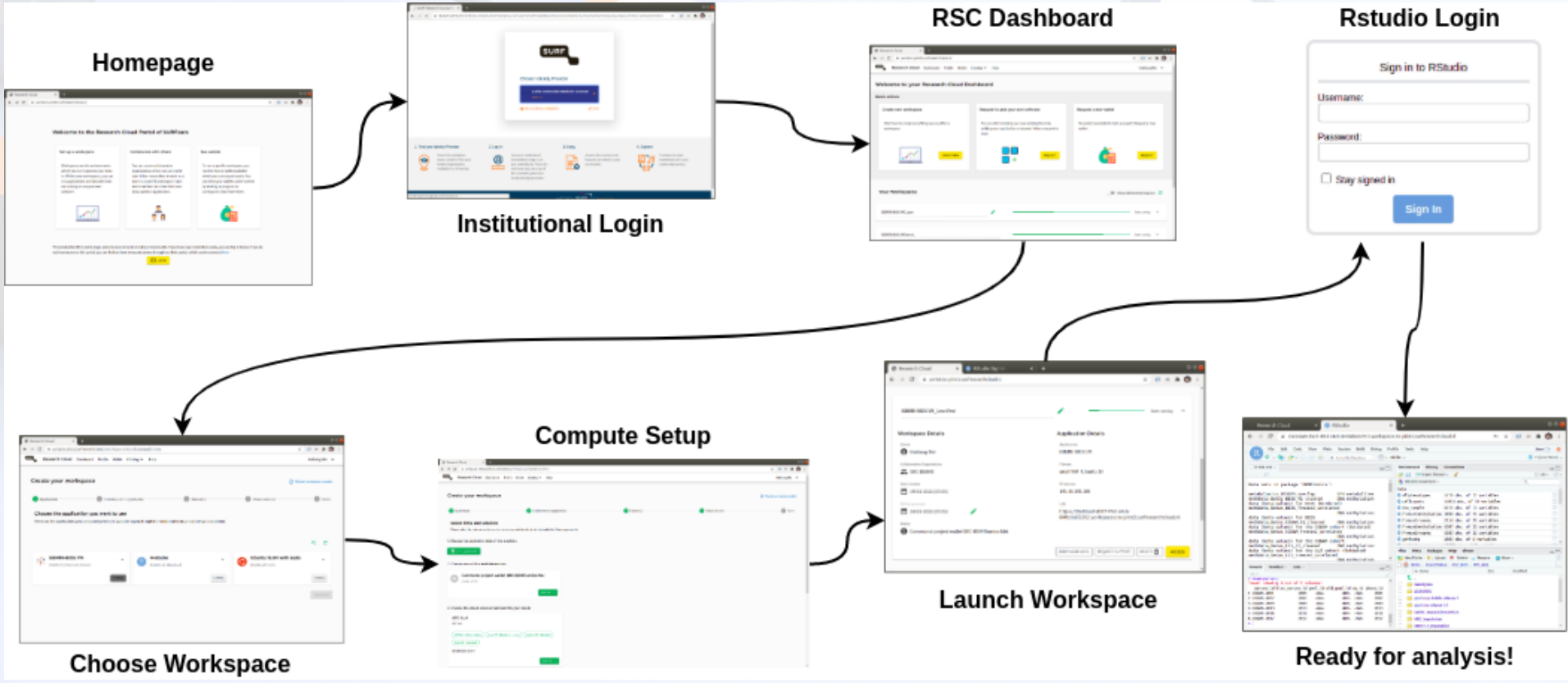

http://www.bbmriwiki.nl/wiki/BIOS_RSC

Issues & Opportunities

- More cloud back-ends will be connected, e.g., Azure, Google.
- Programs and R-libs are pre-installed (template could be soon modifiable by CO admins
- User specific libraries are not persistent
  - Executables and libraries could be persistently installed using softdrive in future
- NO automatic data backup at Researchdrive
- User accounts are manually created at RD and RSC. Connection to Podium will be nice.

BBMRI-OMICS:

Warehouse of data shared and used by the community

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umcg

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amc

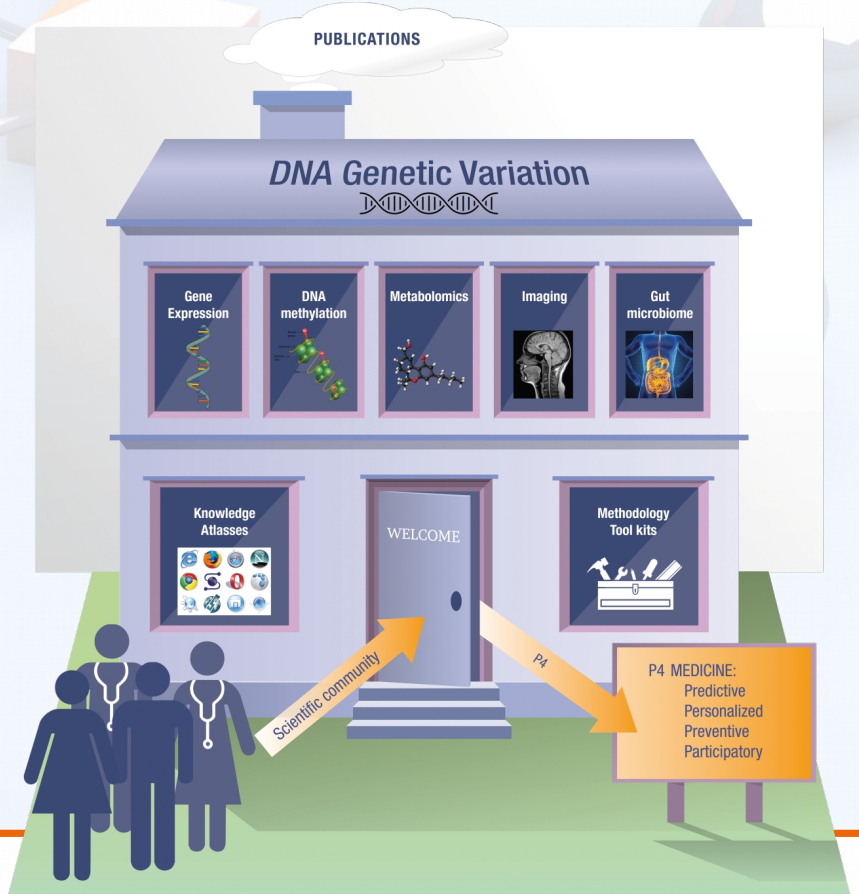
LUMC

UMC Utrecht

Erasmus MC University Medical Center Rotterdam

Radboudumc

Maastricht University



BBMRI-OMICS

For many, by many*

RDNL - Dutch Data Prize 2018!

https://www.bbmri.nl/

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And special credits to Davy Cats (LUMC), Martin Brandt and RSC team (SURFsara), Maarten van Iterson (LUMC), Bas Heijmans (LUMC)