



CEITEC

Central European Institute of Technology  
BRNO | CZECH REPUBLIC

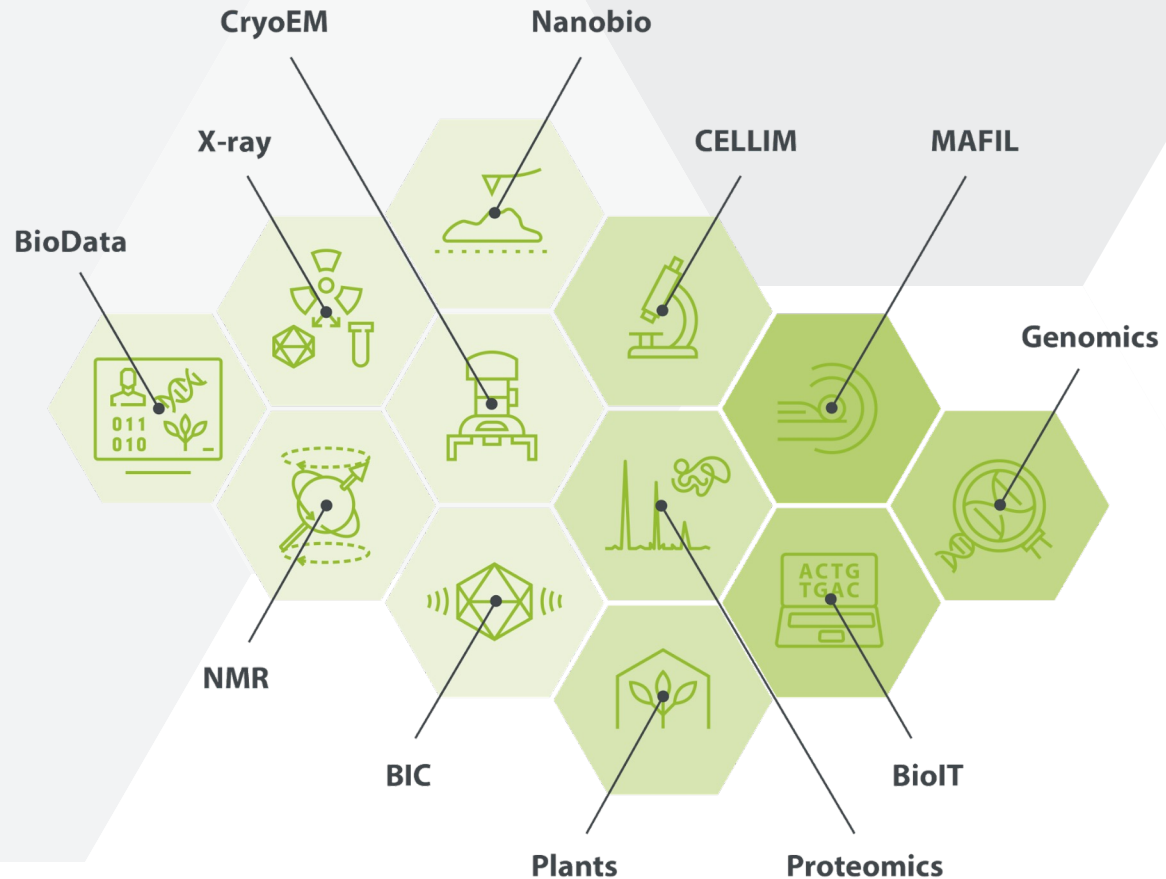
MUNI

Tomáš Svoboda

# Data Management of Biological Imaging Data

ELIXIR CZ Annual Conference 2024, 10.10.2024

# CEITEC MU Core Facilities



EB	Biophotonics
BIC	Biomolecular Interactions and Crystallization
BioData	Biological Data Management and Analysis
BioIT	Bioinformatics
CELLIM	Cellular Imaging
CryoEM	Cryo-electron Microscopy and Tomography
Genomics	Genomics
MAFIL	Multimodal and Functional Imaging Laboratory
NMR	Josef Dadok National NMR Centre
Plants	Plant Sciences
Proteomics	Proteomics
X-ray	X-ray Diffraction and Bio-SAXS

# CF BioData (Biological Data Management and Analysis)

- Established in 2022  
(leader: Radka Svobodová)
- Development of data management solution at CEITEC MU
  - EOSC, NRP compatibility
- Access to computing resources
  - CESNET, ICS MU
- Structural bioinformatics support
- Networking with communities and RIs
  - e-INFRA CZ, ELIXIR CZ



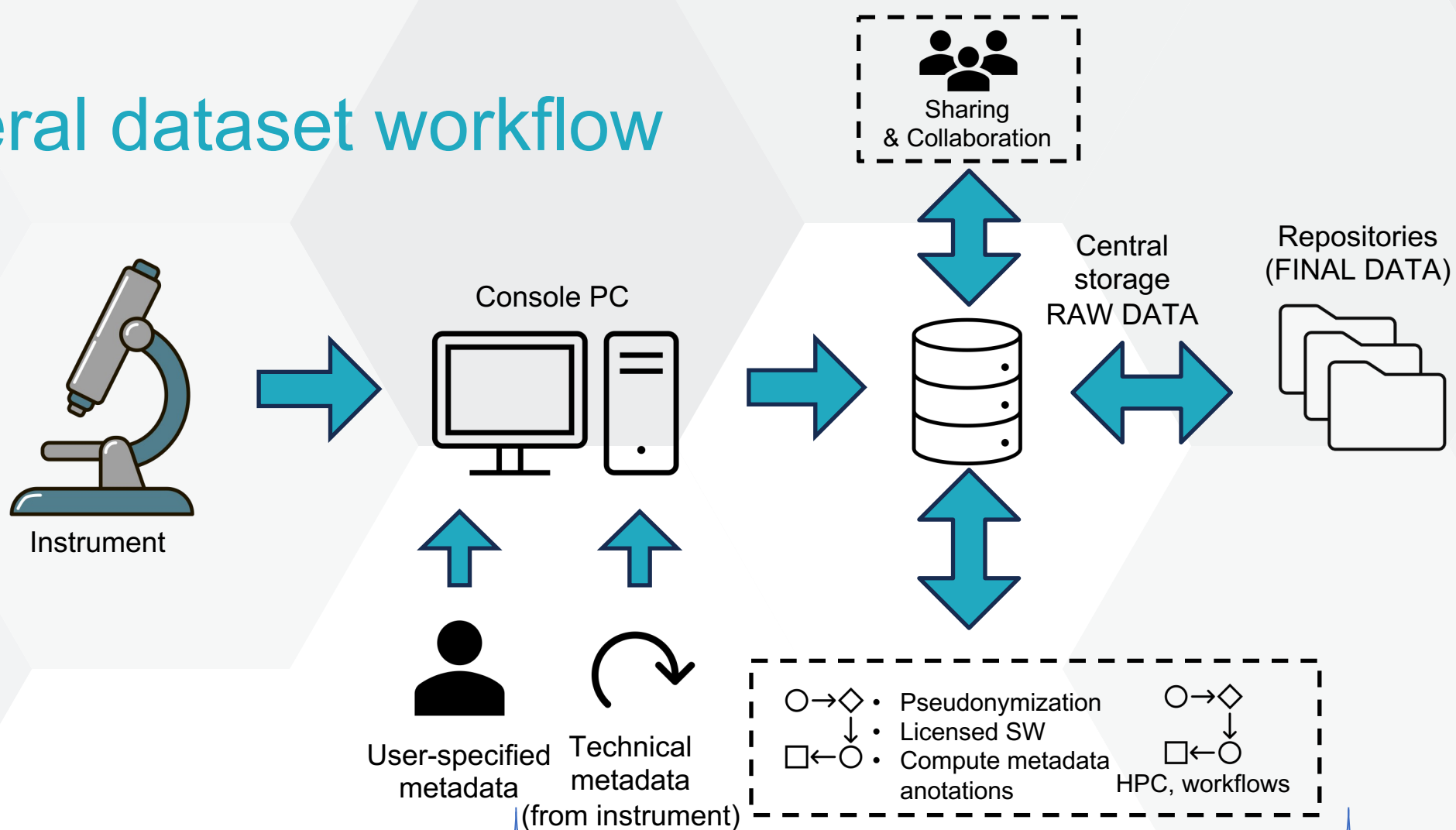


# Challenges

- Solution for data handover
  - How to get data from instrument to the user and his/her scientific publication
  - Avoid users using USB/CDs, public clouds, ...
- Evidence of emerging datasets
- Metadata management (extractors, schemas)
- Prevent data loss
  - Obtaining data is expensive (instruments and samples)
- Publishing of data to corresponding community data repositories
- “FAIRification” of CEITEC Data



# General dataset workflow



Laboratory notebooks



web interface



Data management systems

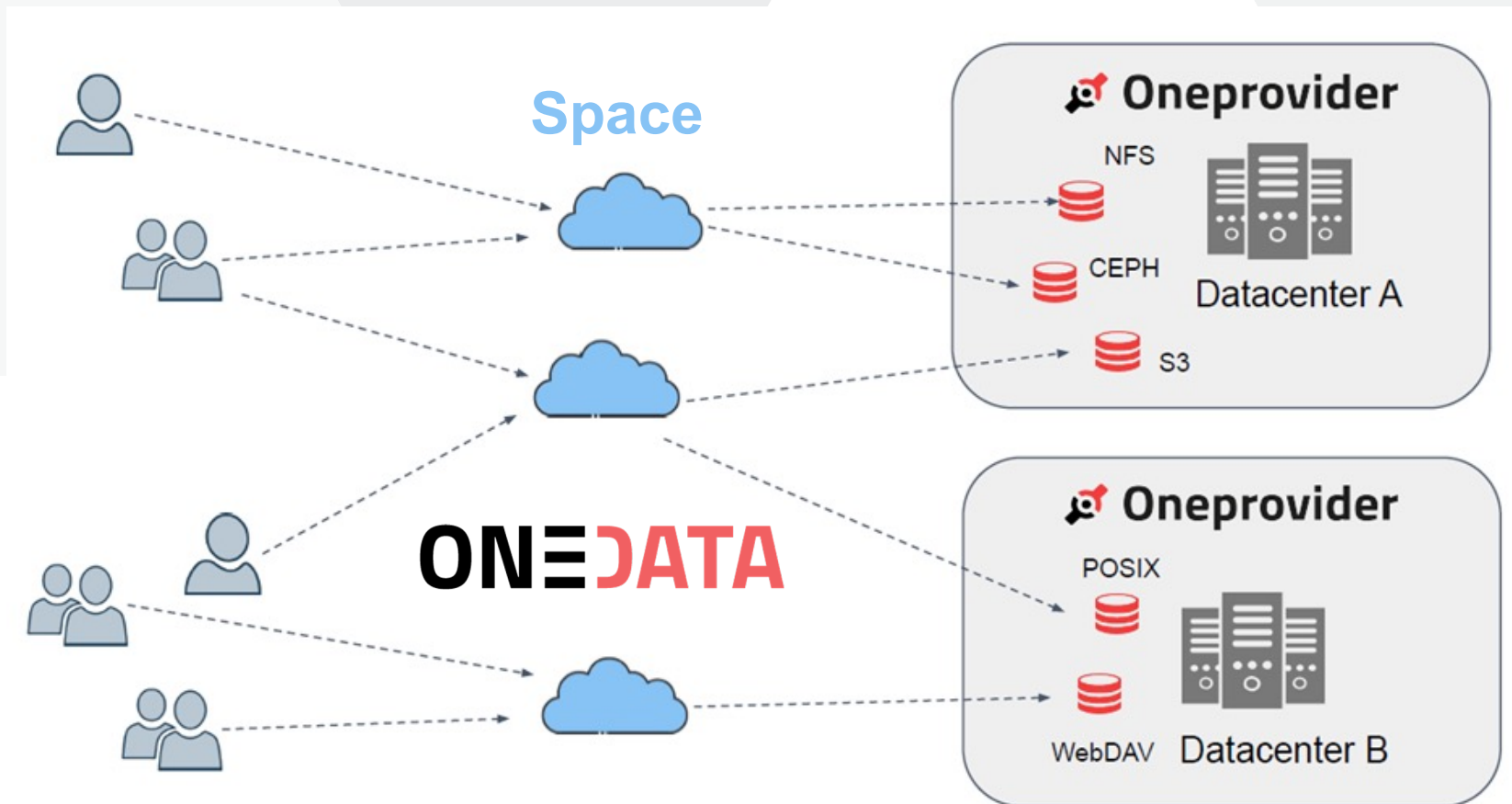
ONE DATA iRODS

Repositories

Invenio  
CLARIN Dspace  
ARL

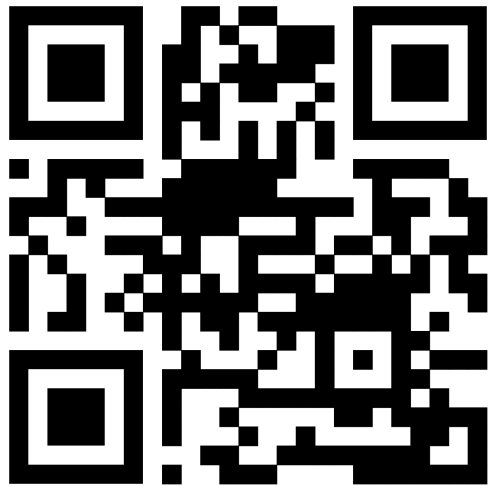
# Onedata

- Logical (virtual) data container
- Unified data access
- Emulating a POSIX-like filesystem
- Different locations and technologies



# Onedata at e-INFRA CZ

- Managed by the CESNET
- Access interface to object storage (S3)
- Possibility to connect own storages
- You can try



[onedata.e-infra.cz](https://onedata.e-infra.cz)

# Use cases

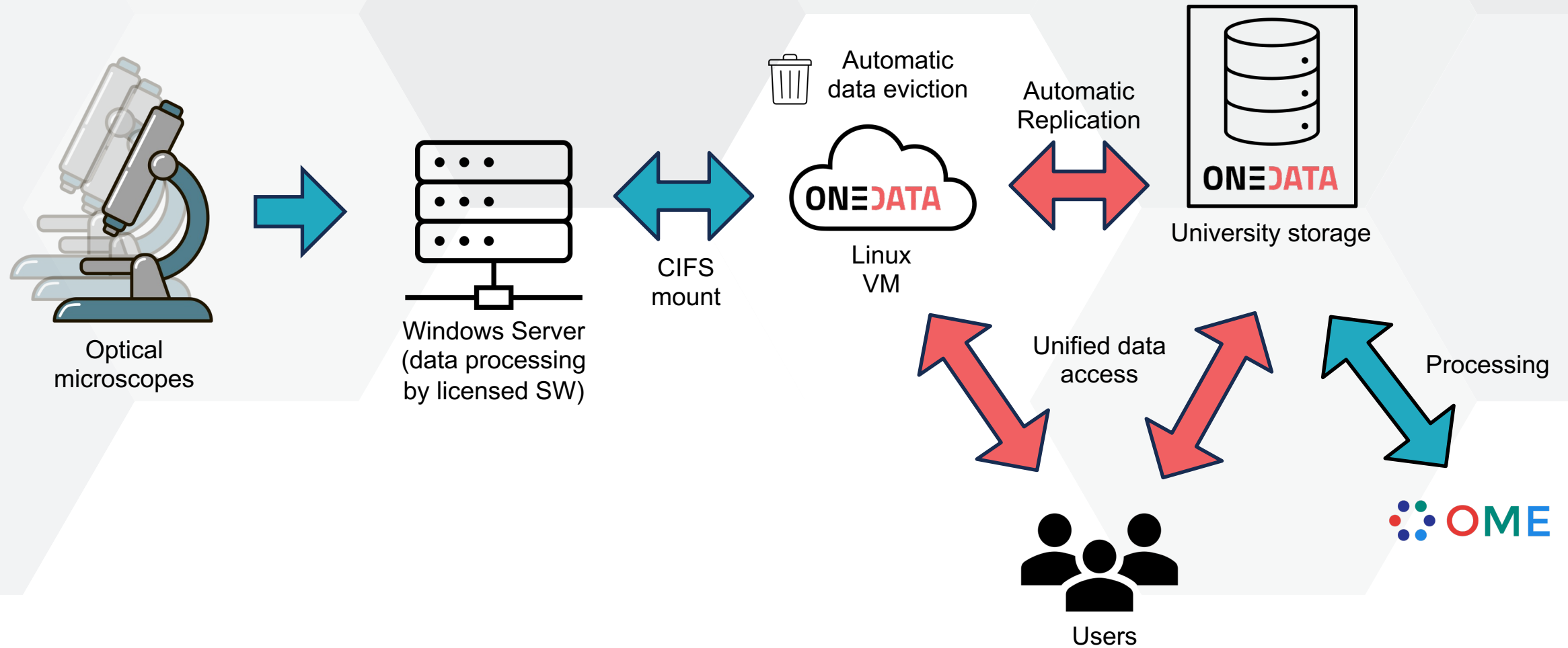


# CELLIM (Core Facility Cellular Imaging)

- Provides services in the field of light microscopy and offers expertise in sample preparation, image acquisition and data analysis
- Equipment
  - Several types of microscopes
  - Image processing workstation



# Use-case at CELLIM

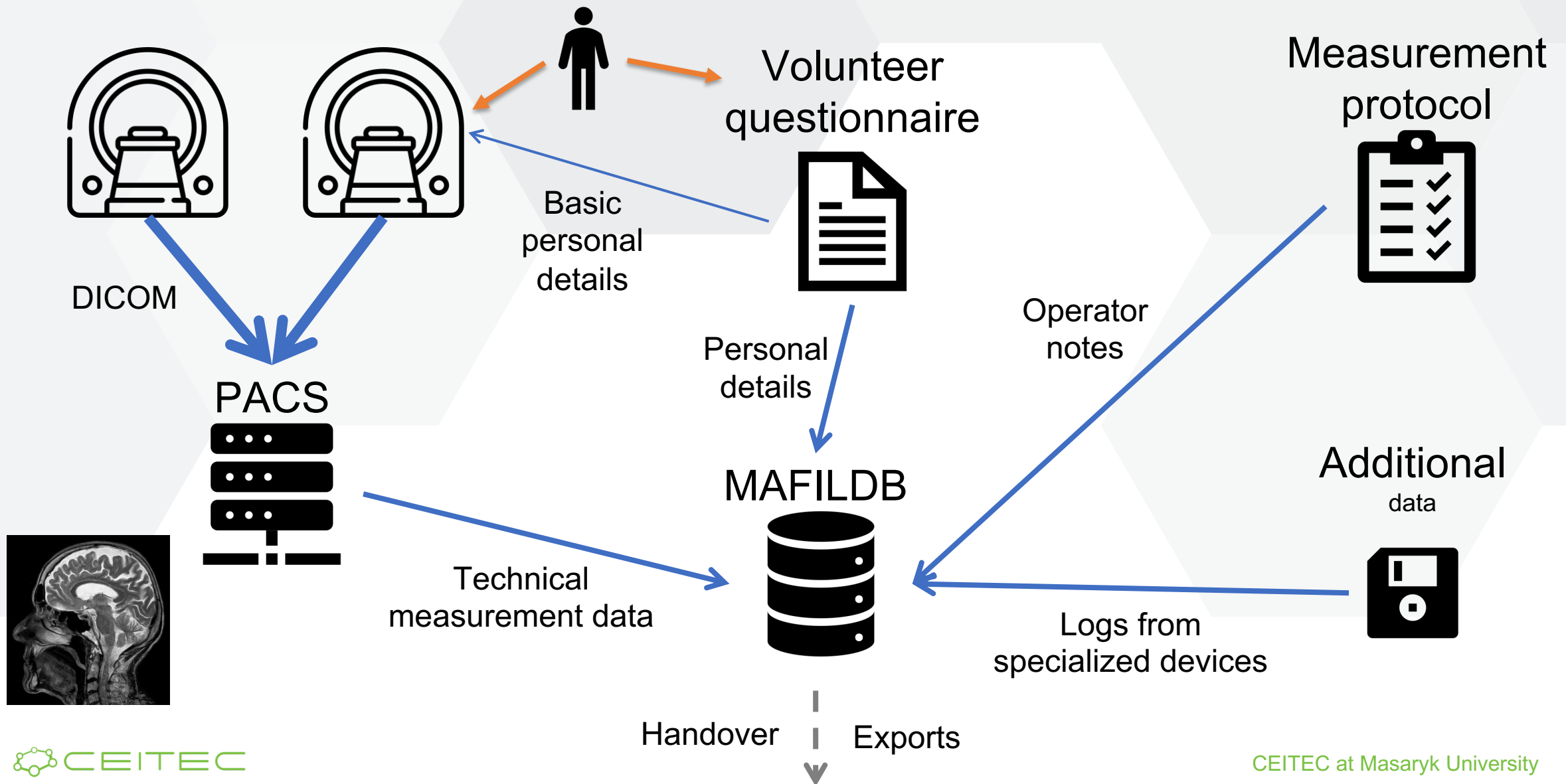


# MAFIL (Multimodal and functional imaging laboratory)

- Provides imaging services, particularly in the area of neuroimaging and human brain mapping
- Equipment
  - MR
  - EEG
  - Others (pulse, movements, eye-tracking, ...)
  - Simultaneous measurement

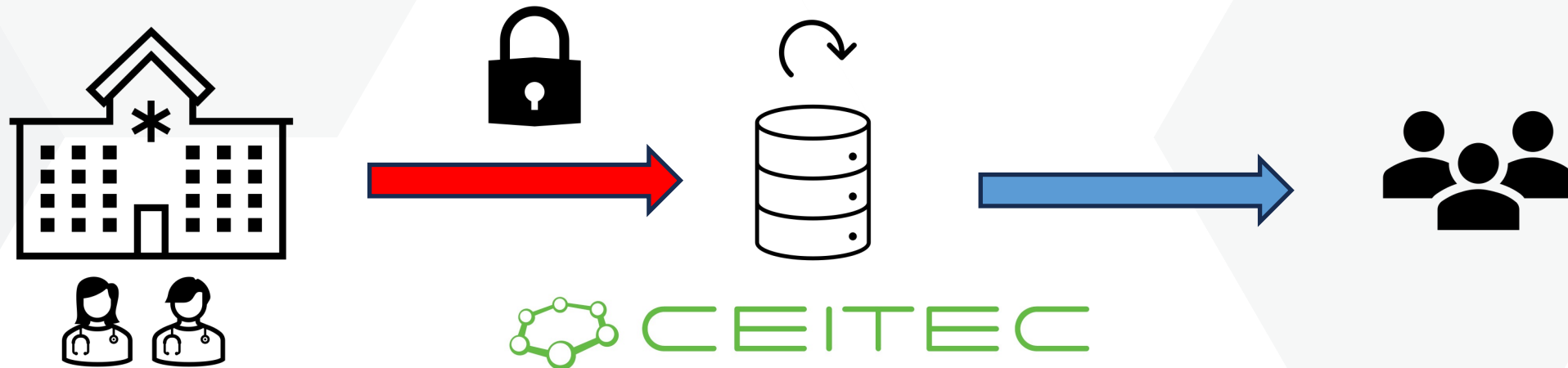


# Use-case at MAFIL



# Transfer use-case

- Secure transfer of sensitive data (from hospital)
- Storage and processing
- Data handover to internal users and partners



Thank you for your attention.