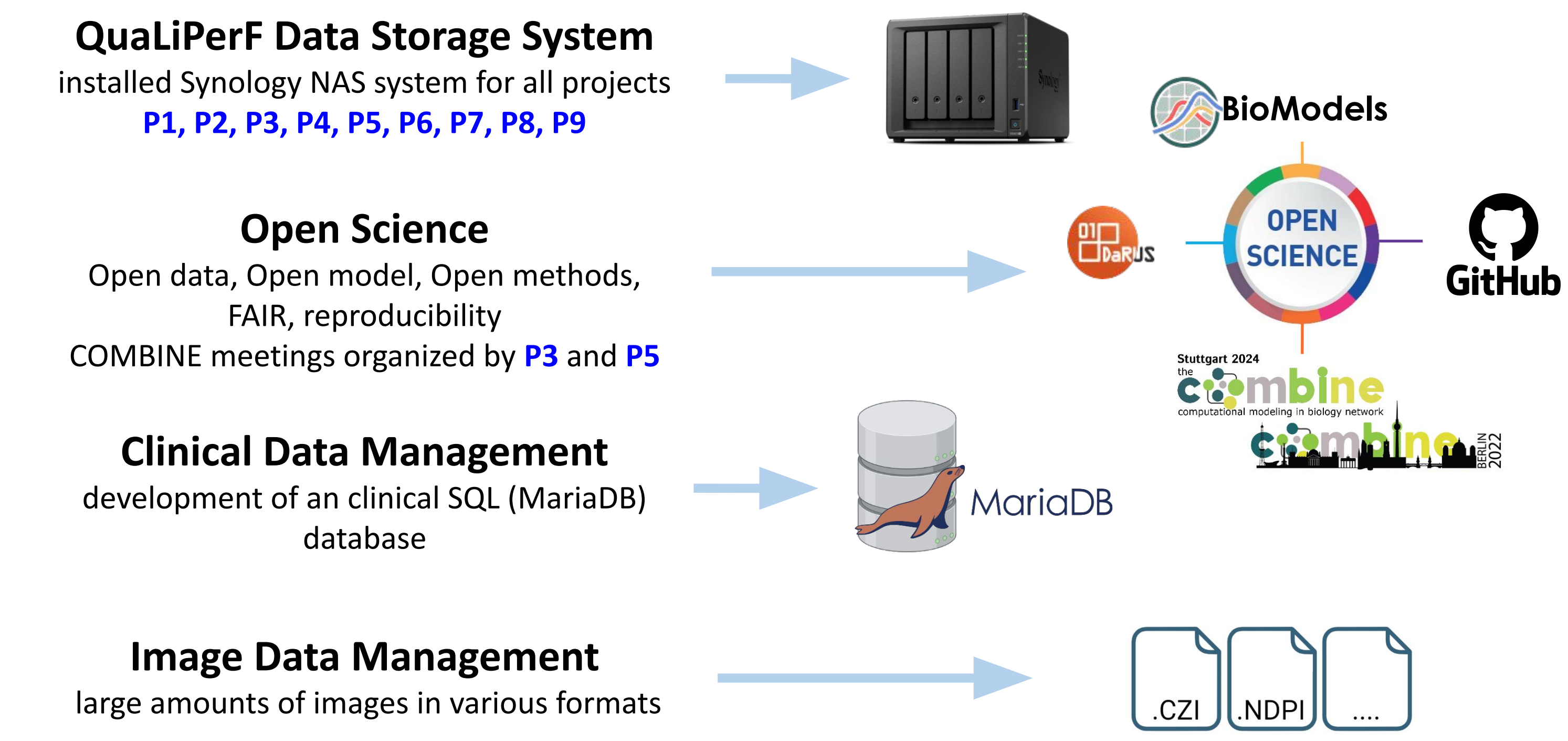


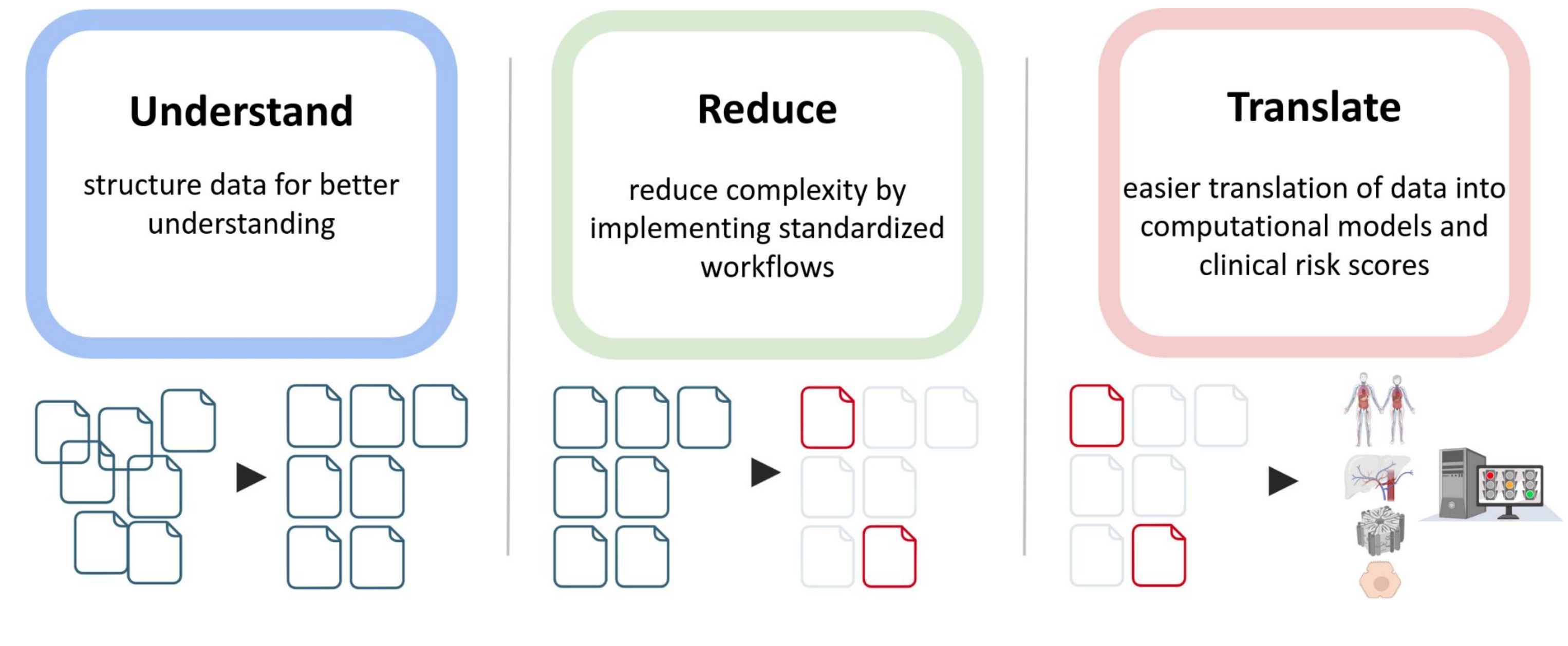
Data Management Project

Matthias König, Humboldt Universität zu Berlin & Hans-Michael Tautenhahn, Universitätsklinikum Leipzig

Previous Work



Hypothesis & Research Strategy



Tasks & Work Program

T1 Central data management
Provide essential services and infrastructure

Management

- user and infrastructure management
- data management support
- backups

Best Practices

- use of open standards
- data annotation support
- data documentation
- training sessions for tools

New Infrastructure
Large amount of image data require two additional Linux servers at HU Berlin

T2 Image data management
Implement OMERO for managing and analyzing images

Whole-slide scans P1, P2, P9

Microcirculation P1, P2, P9

3D geometries P7, P10

Functional & perfusion MRI P6

Synthetic vessel trees P3

Spatial transcriptomics P3, P4, P9

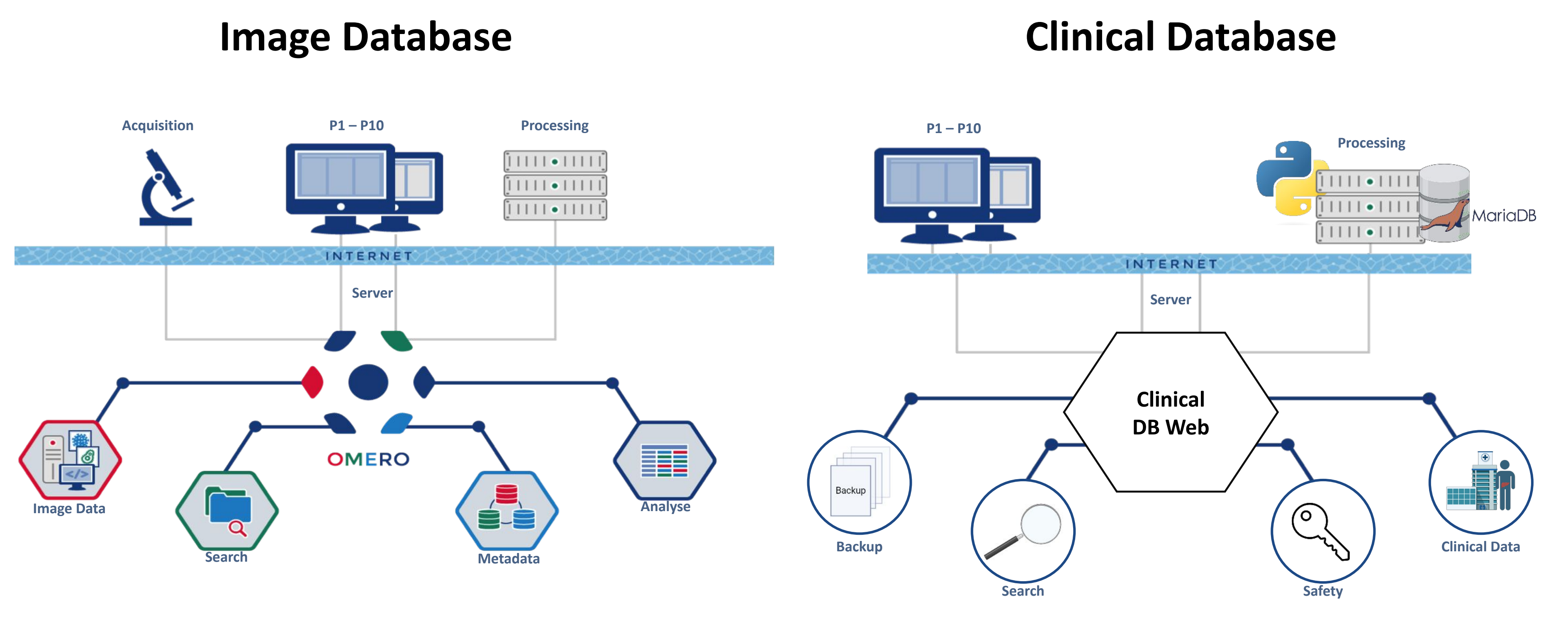
T3 Clinical data management
Standardized exchange of clinical data while adhering to regulations

Continuous Data Integration

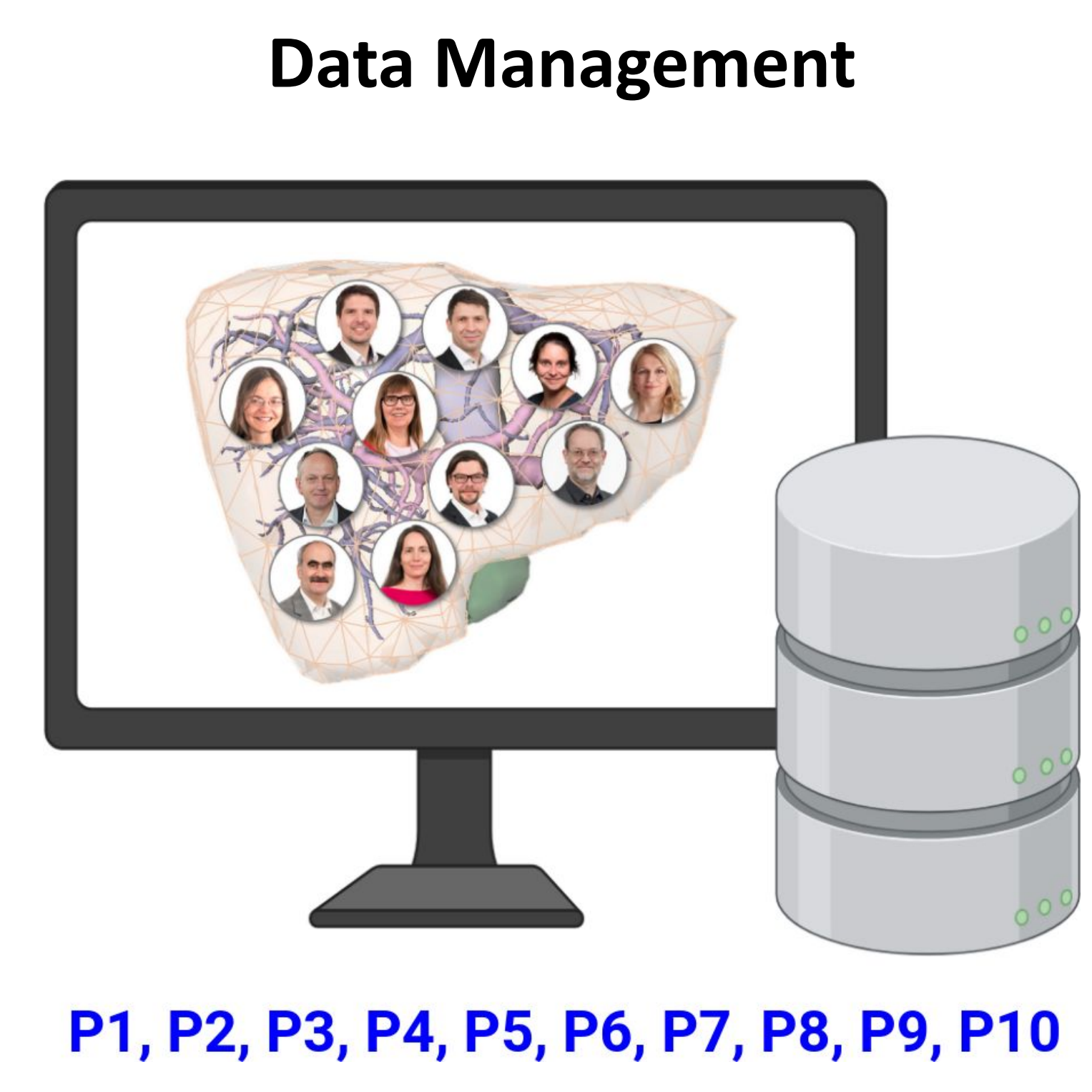
Clinical Database ↔ Data Integration Center UKL (P9)

Graphical User Interface

Highlights



Embedding in QualiPerF 2.0



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- [1] **M. König**, P. Gleeson, M. Golebiewski, T. Gorochofski, M. Hucka, S. Keating, C. Myers, D. Nickerson, F. Schreiber. **Specifications of Standards in Systems and Synthetic Biology: Status and Developments in 2022 and the COMBINE meeting 2022**. J Integr Bioinform. 2023 Mar 29;20(1). doi:10.1515/jib-2023-0004
- [2] S Höpfl, M Albadry, **U Dahmen**, **KH Herrmann**, EM Kindler, **M König**, **JR Reichenbach**, **HM Tautenhahn**, W Wei, WT Zhao, **NE Radde**. **Bayesian modelling of time series data (BayModTS)-a FAIR workflow to process sparse and highly variable data**. Bioinformatics. 2024 May 2;40(5):btae312. doi:10.1093/bioinformatics/btae312.
- [3] **M König**, Grzegorzewski J, Golebiewski M., Hermjakob H, Hucka M, Olivier B, Keating SM, Nickerson D, Schreiber F, Sheriff R, Waltemath D. **Ten Simple Rules for FAIR Sharing of Experimental and Clinical Data with the Modeling Community**. Preprints 2021, 2021080303, doi: 10.20944/preprints202108.0303.v2
- [4] K Ramachandran*, **M König***, M. Scharm, TVN Nguyen, H Hermjakob, D Waltemath, S Malik. (* equal contribution). **FAIR Sharing of Reproducible Models of Epidemic and Pandemic Forecast**. Preprints 2022, 2022060137, doi: 10.20944/preprints202206.0137.v1
- [5] M Keating, D Waltemath, **M König**, ..., M Hucka, and SBML Community members. **SBML Level 3: an extensible format for the exchange and reuse of biological models**. Mol Syst Biol. 2020;16(8):e9110. doi:10.15252/msb.20199110.
- [6] FE Kohrs, ... , **M König**, ..., P Zumstein, TL Weissgerber. **Eleven Strategies for Making Reproducible Research and Open Science Training the Norm at Research Institutions**. eLife (2023) 12:e89736.. doi:10.7554/eLife.89736
- [7] J Grzegorzewski, J Brandhorst, K Green, D Eleftheriadou, Y Duport, F Bartsch, A Köller, DYJ Ke, S De Angelis, **M König**. **PK-DB: pharmacokinetics database for individualized and stratified computational modeling**. Nucleic Acids Res. 2021 Jan 8;49(D1):D1358-D1364. doi:10.1093/nar/gkaa990.
- [8] K Raman, M Kratochvil, BG Olivier, **M König**, ... RS Malik-Sheriff. **FROG Analysis Ensures the Reproducibility of Genome Scale Metabolic Models**. bioRxiv 2024.09.24.614797 (preprint). doi:10.1101/2024.09.24.614797
- [9] S Höpfl, J Pleiss J, **NE Radde**(2023). **Bayesian estimation reveals that reproducible models in Systems Biology get more citations**, Sci Rep 13, 2695 (2023). <https://doi.org/10.1038/s41598-023-29340-2>