



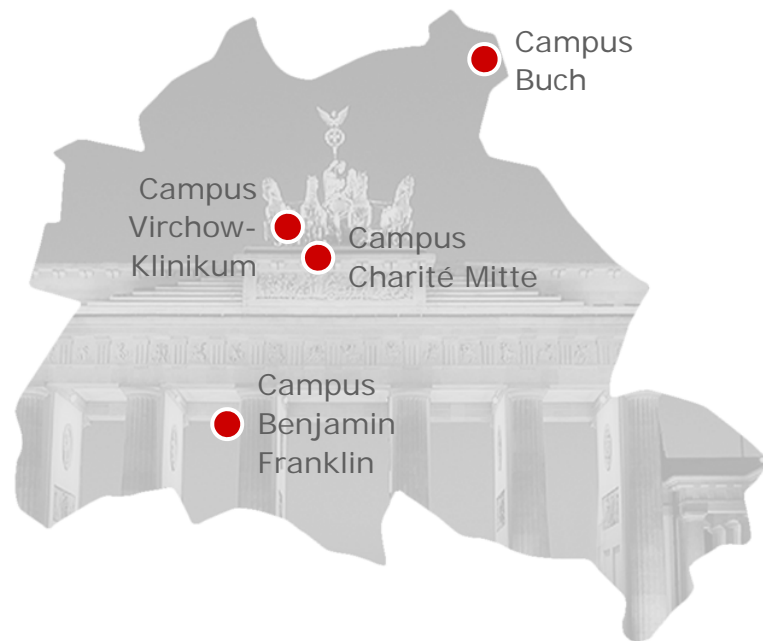
MEDICAL INFORMATION GATEWAY ON HANA

Michael Mallach,
Head of IT Project management
Dr. Adam Low
Application Manager Campusmanagement

AGENDA

- **Introduction Charité**
- **Challenges translational research chain**
- **Experience with HANA**
- **Medical Information Gateway Concept**
- **Collaboration with SAP**

CHARITÉ UNIVERSITY HOSPITAL, BERLIN



€1.3 billion in revenues/
€158 million in outside funding

7,300 students

3,200 beds/Avg. stay: 6.4 days

3,700 doctors and researchers

740,000 cases

4 sites/607,200 m²

CHARITÉ UNIVERSITY HOSPITAL, BERLIN

Campus Virchow-Klinikum

Regenerative Therapies, Cardiovascular
Research, Genetics, Oncology

BCRT, BSRT, BMFZ, DKTK, DZHK
DHZB, GenoRare, BSIO

Campus Benjamin Franklin

Medicine of the second half of life

RCIS, CSB
DifE, MPI (Molecular Genetics)
LoE

Charité Campus Berlin Buch

Translational research: Cardiovascular
Metabolism, Oncology, Neuroscience

RRI, DZHK, ECRC+, FMP

MDC

Campus Charité Mitte

Neuroscience, Immunology, Systems biology

NWFZ, CCR, RCIS, VK/FZ
DZNE, BIMSB, CSB, CCCC, Neurocure,
Mind & Brain, DRFZ, MPI (Infection Biology)



Charité

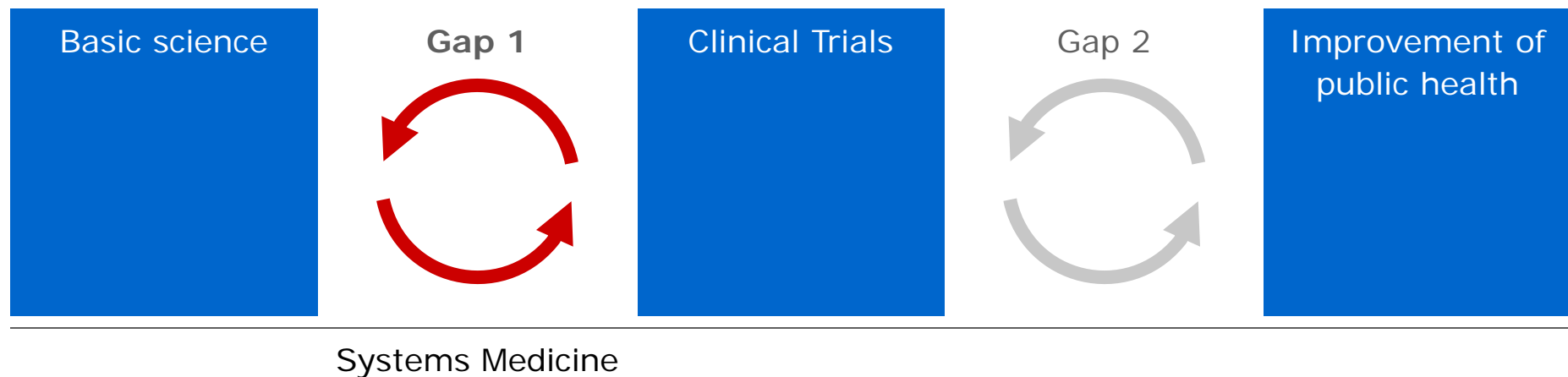
Berlin Institute
of Health (BIH)

MDC



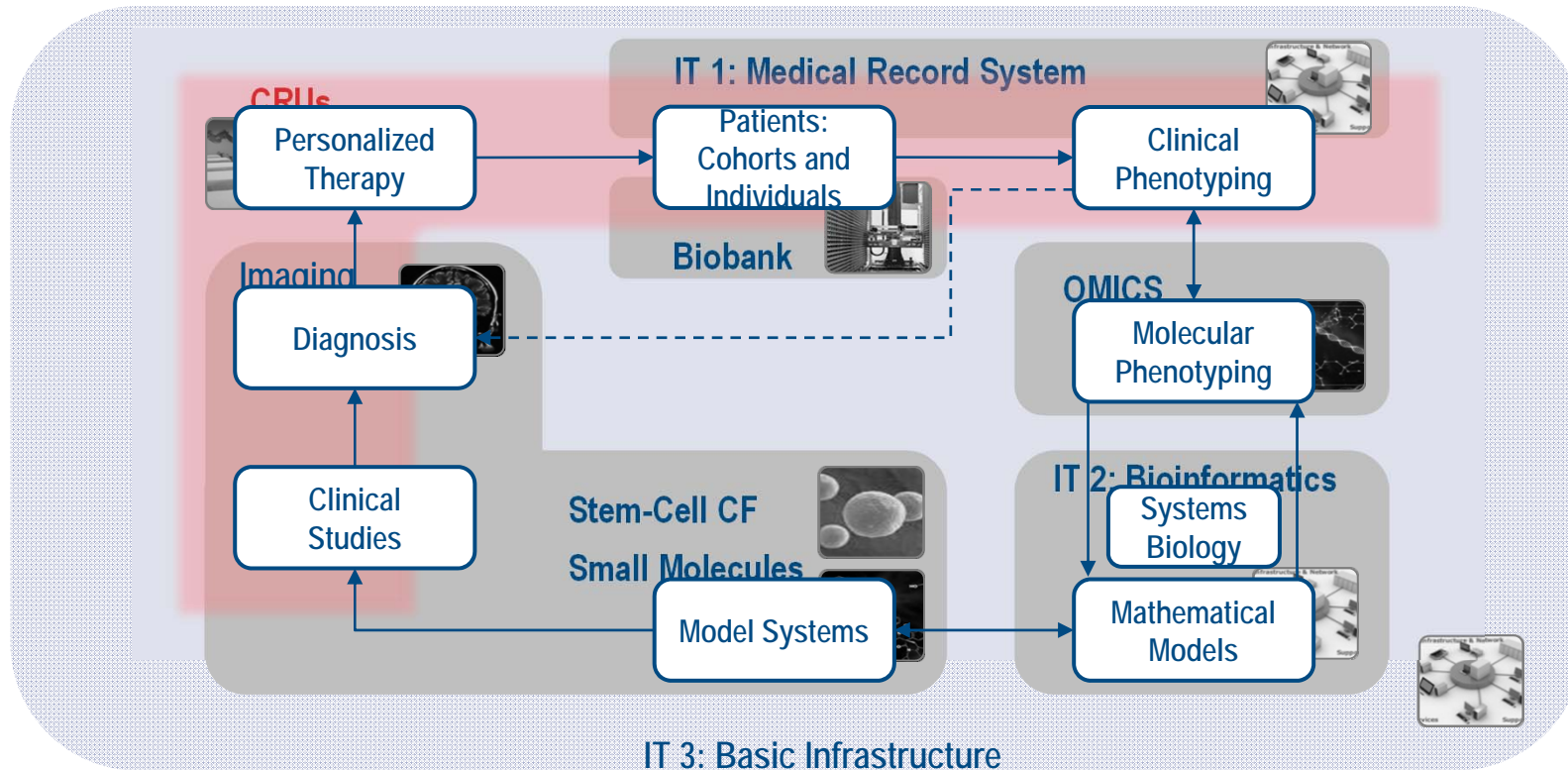
Joint translational research
space for **Systems Medicine**

GAPS IN THE TRANSLATIONAL CHAIN

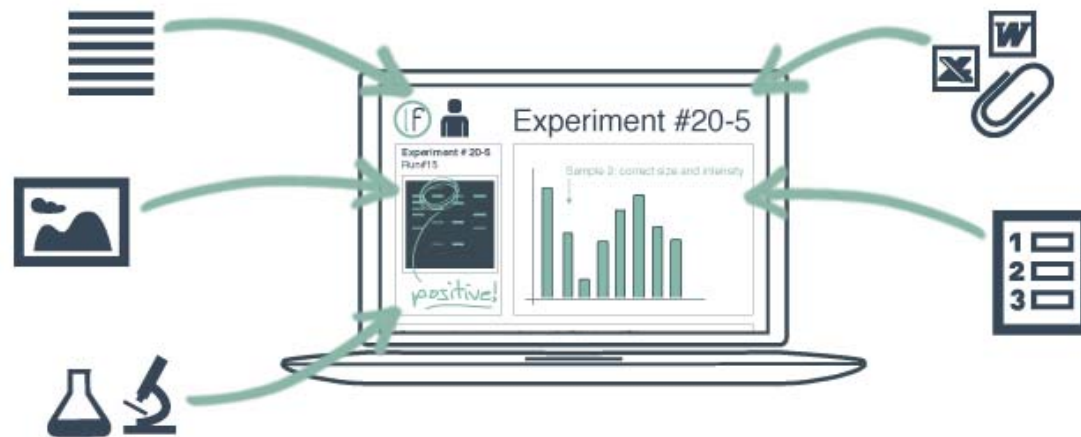


- Translation into better prevention, diagnosis and treatment of disease
- Advent of new technologies (omics, imaging, stem cells, bioinformatics etc.)

Systems Medical Cycle of the BIH



WORKPLACE CLINICAL SCIENTIST



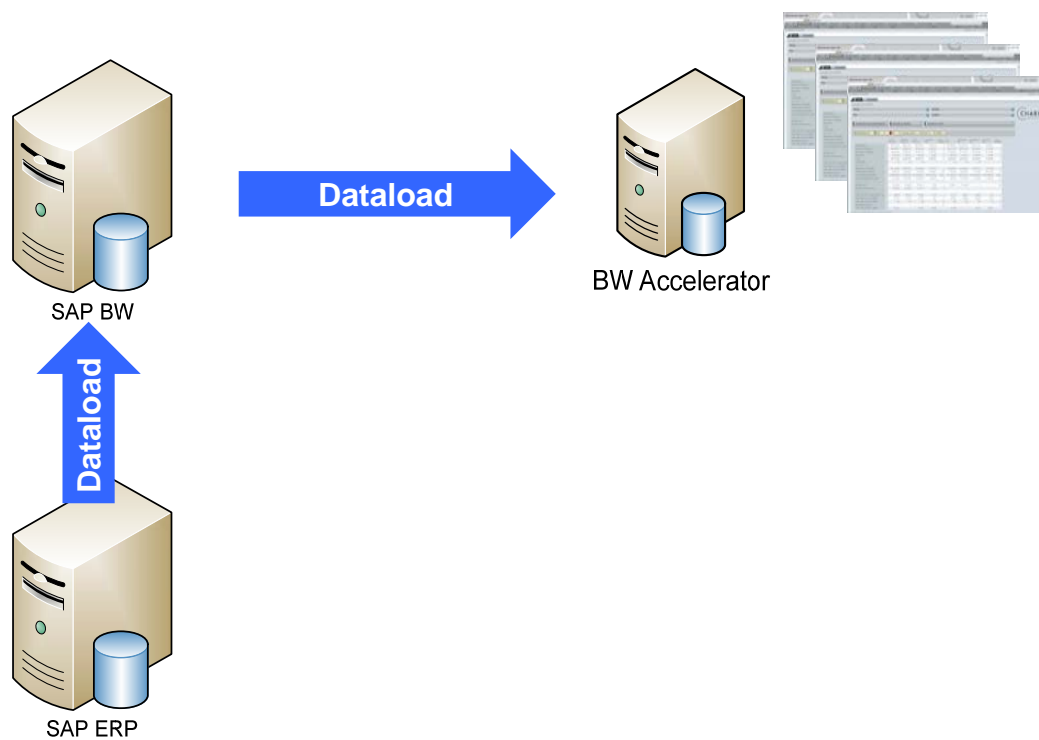
source :Labfolder.com

Integration and access to all clinical and research information

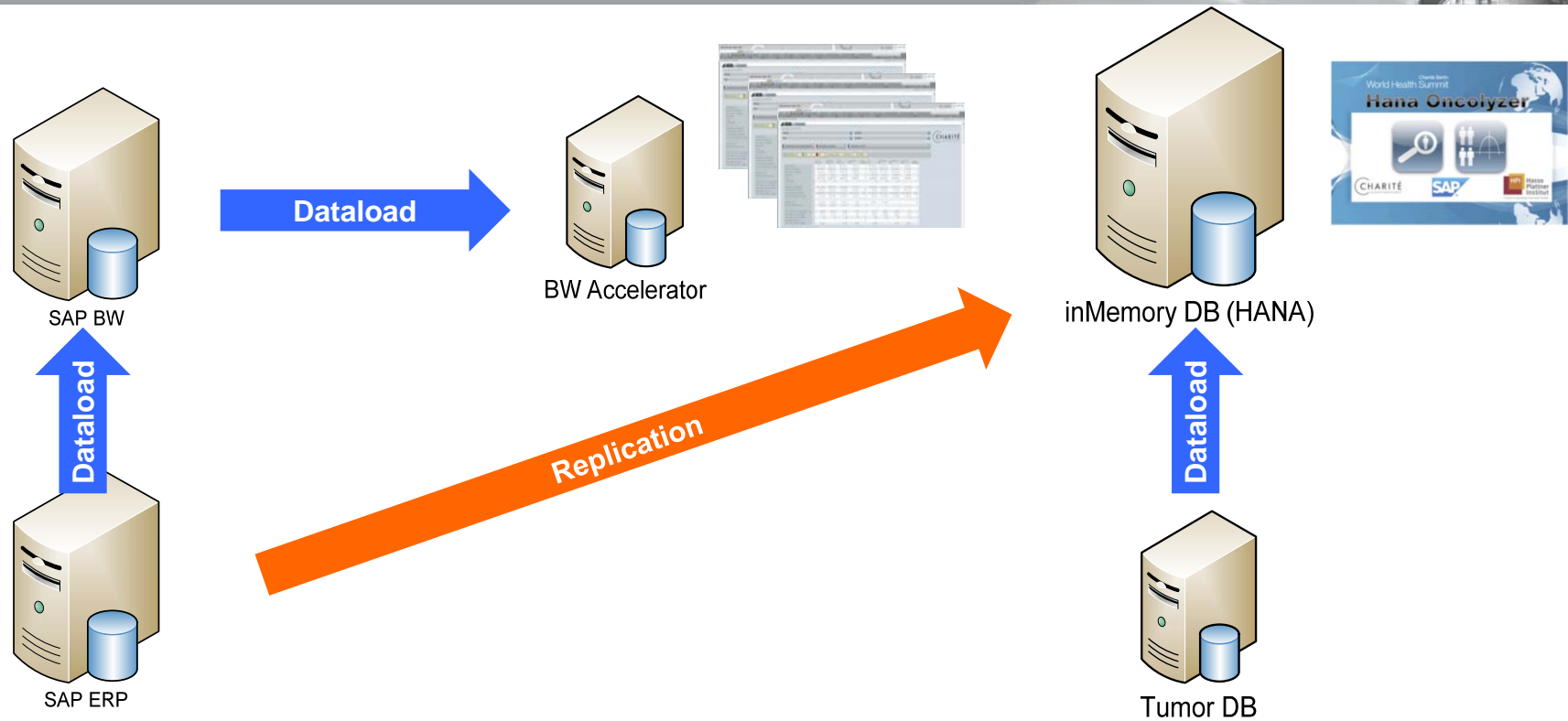
AGENDA

- Introduction Charité
- Challenges translational research chain
- **Experience with HANA**
- **Medical Information Gateway Concept**
- **Collaboration with SAP**

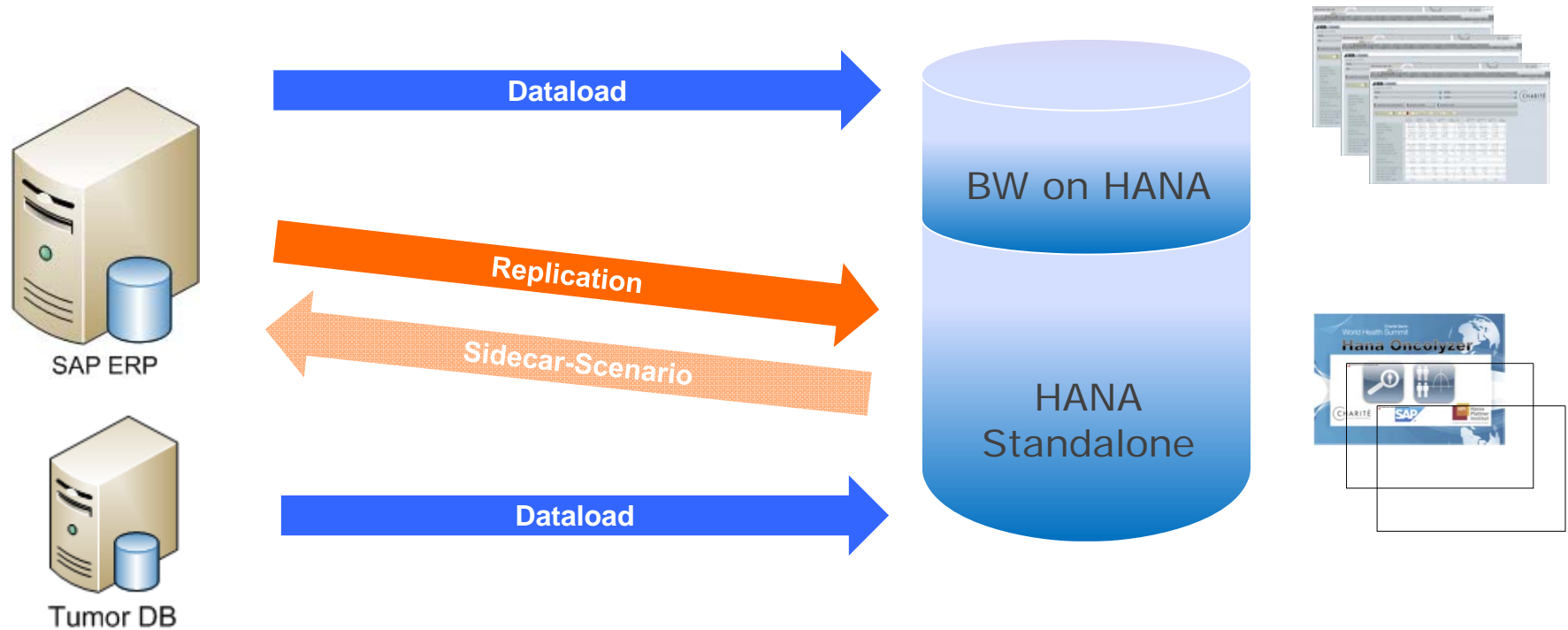
FORMER BI LANDSCAPE



FORMER BI LANDSCAPE



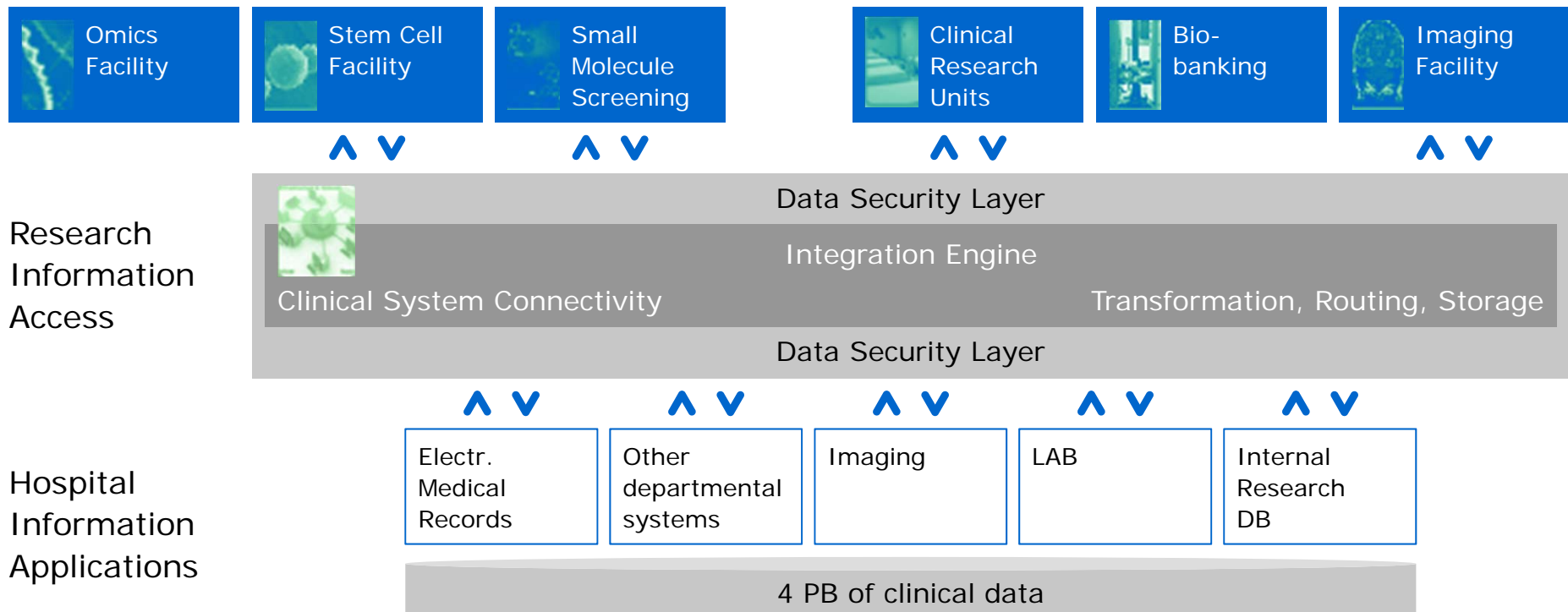
CURRENT BI LANDSCAPE



AGENDA

- Introduction Charité
- Challenges translational research chain
- Experience with HANA
- **Medical Information Gateway Concept**
- **Collaboration with SAP**

DATA LAYER



DATA AVAILABILITY



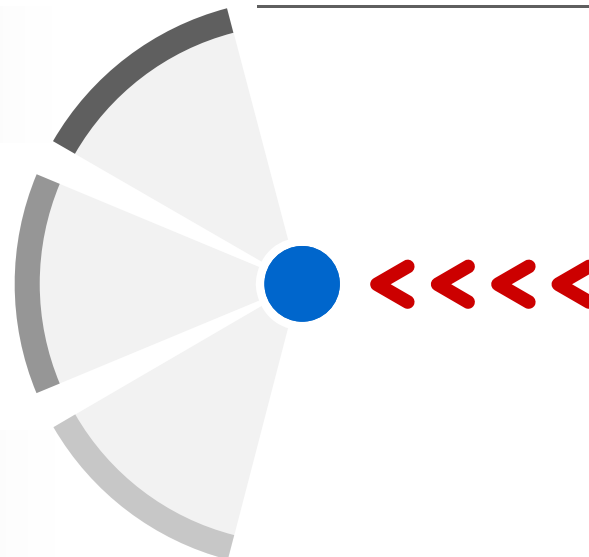
Structured data



Unstructured data

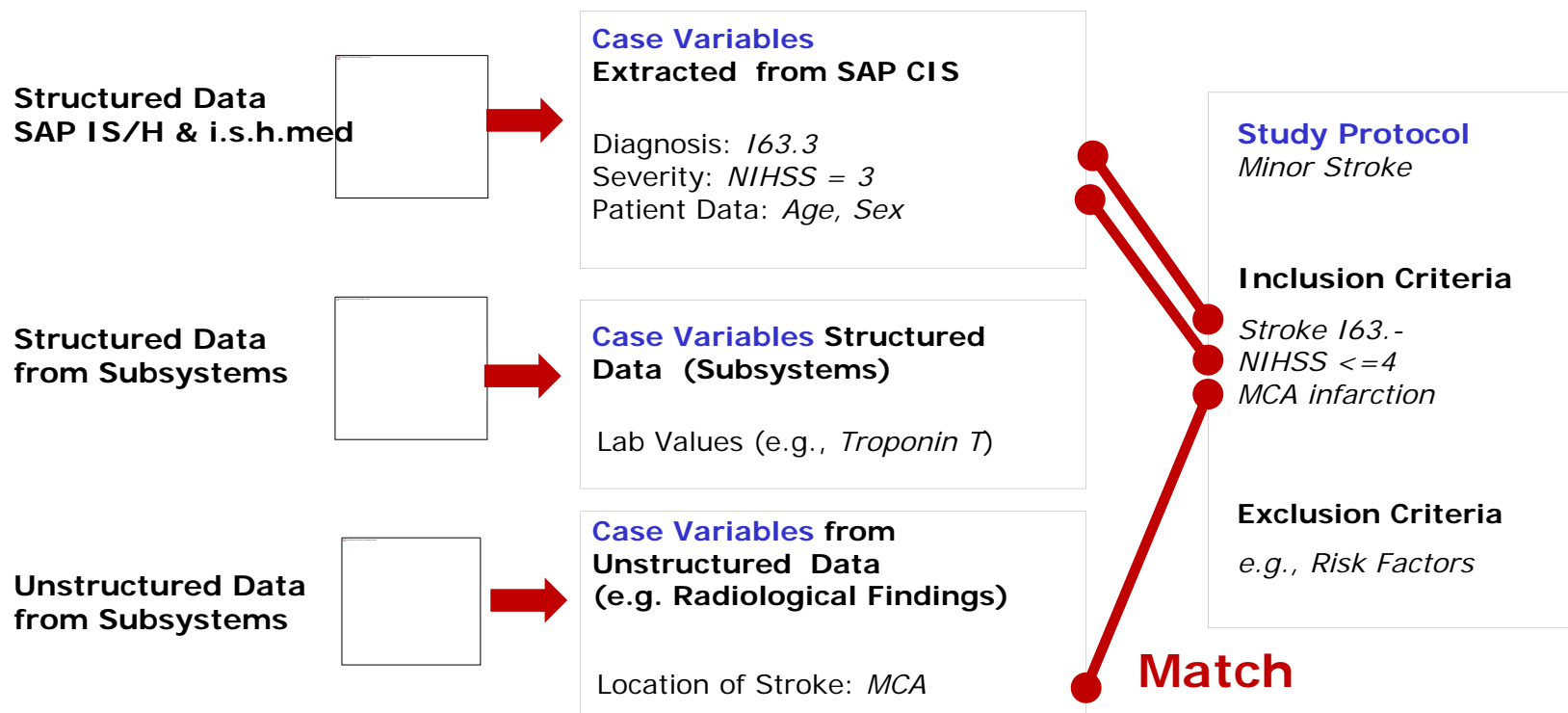


Paper-based data



- Prerequisite for personalized medicine (IT for healthcare)
- Greater efficiency in clinical research (IT for health research)

PATIENT IDENTIFICATION FOR CLINICAL TRIALS



Source: BFG Project

EXAMPLE IMPLEMENTATION

To add structure to unstructured data sources

- BFG (Berliner Forschungsplattform Gesundheit) (Translation: Berlin Health Research Platform)

Through doing linguistic analysis on patient data



Linguistic Analysis can be made automatically in the Medical Information Gateway, with results quickly available to researchers

Source: BFG Project

LINGUISTIC ANALYSIS

Input: „*The MRI shows an acute media infarction. No evidence of an ACI stenosis.*“

Phrases/Chunks: [The MRI] [shows] [an acute media infarction] ...

Negation („no evidence“) + Coordination („and“, „or“)

Concept mapping

Maps phrases to concepts of an ontology (diagnoses/therapies + attributes)

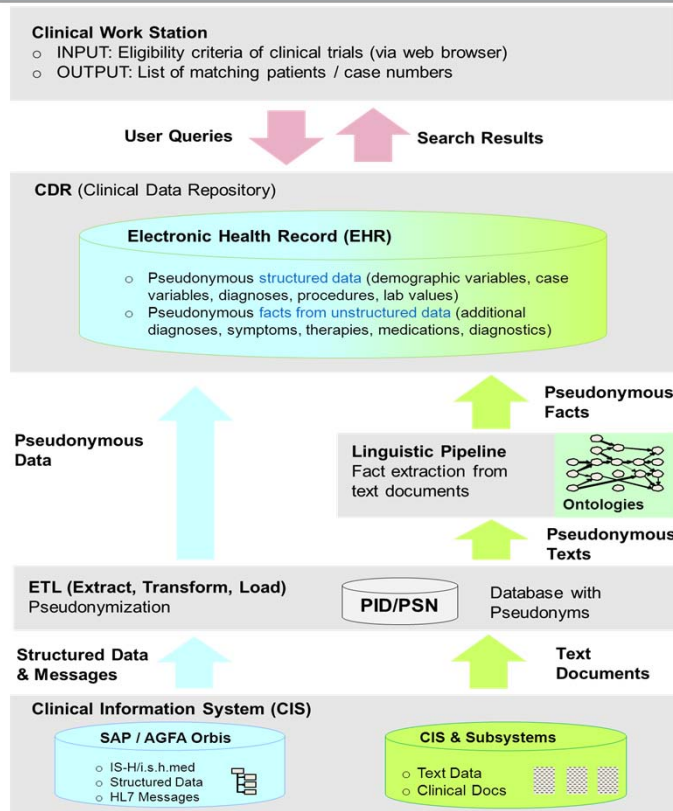
Enables semantic search (synonyms and syntactic variants)

Output:

:Infarction(:MiddleCerebralArtery, :Acute, :MRI, :true)

:Stenosis(:ACI, :MRI, :false)

EXAMPLE IMPLEMENTATION – BFG PROJECT



Applications, e.g. StudyMatcher

- Creation of Trials with in- and exclude criteria
- Case search
- Dayly view and ranking of new Cases

Clinical Data Repository

- Research Datawarehouse with integrated, pseudonymous Data
- NoSQL-Technologie

Linguistic Pipeline

- Morphosyntactical Analysis
- Concept Mapping with Ontologies

Pseudonymisation

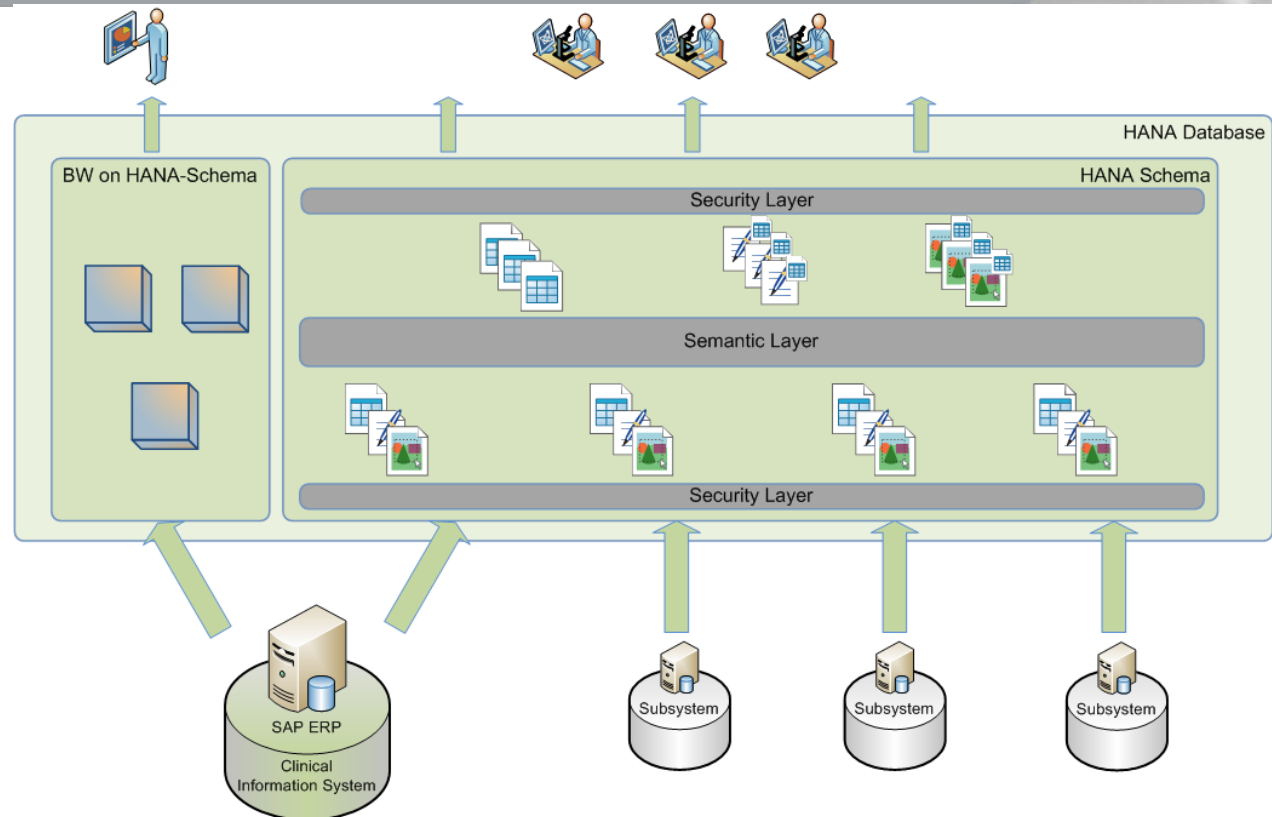
- Structured Data (First- und Last Name, Address, Date of Birth, Case- and Patientnumber)
- Pseudonymisation of text

Extraction of Data from primary systems

- SAP IS-H/i.s.h.med
- NPAT, NFAL, NBEW, NDIA, NICP, N2LABOR
- Radiology Findings (PMDs)
- Doctors Letter (ZADOK)

Source: BFG Project

FUTURE HANA LANDSCAPE



AGENDA

- Introduction Charité
- Challenges translational research chain
- Experience with HANA
- Medical Information Gateway Concept
- **Collaboration with SAP**

COLLABORATION WITH SAP

Collaboration with SAP

Customer Relationship

Software, Lizenzen, Service

- Human Resources
- Selfservices / Talentmanagement
- Qualifikation / Recruiting
- SLcM
- Maintenance (PM)
- Identity-Management

Based on RFP's etc.

Pilot Projects

„first time in Clinic“

- Immobilienmanagement incl. Energy (SmartGrid)
- Predictive Analysis (BI Analytics)
- Mobile Solution → EMR
- Database Migration from Oracle

Based on Collaboration Agreement

Development Cooperation

Product development e.g. PPP

- Medical Explorer
- Development on HANA (BIG DATA)
- Trial Software „ALMANACH“
- Development of mobil solutions for clinical use
- ...

SAP PATIENT DATA EXPLORER

A tool for researchers to find particular groups of patients for studies

Based on SAP HANA technologies, with the goal of providing BI like tools for medical researchers



CHARITÉ AND M8 ALLIANCE

The M8 Alliance of Academic Health Centers, Universities and National Academies is a unique collaborative network of academic institutions of educational and research excellence.



World Health Summit 2014 October, 19 – 22 in Berlin

www.worldhealthsummit.org

THANK YOU!

Michael Mallach

michael.mallach@charite.de

Charité Universitätsmedizin Berlin

Charitéplatz 1

10117 Berlin

