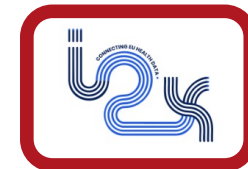


Integrating Multimodal Health Data with openEHR and Export to FHIR

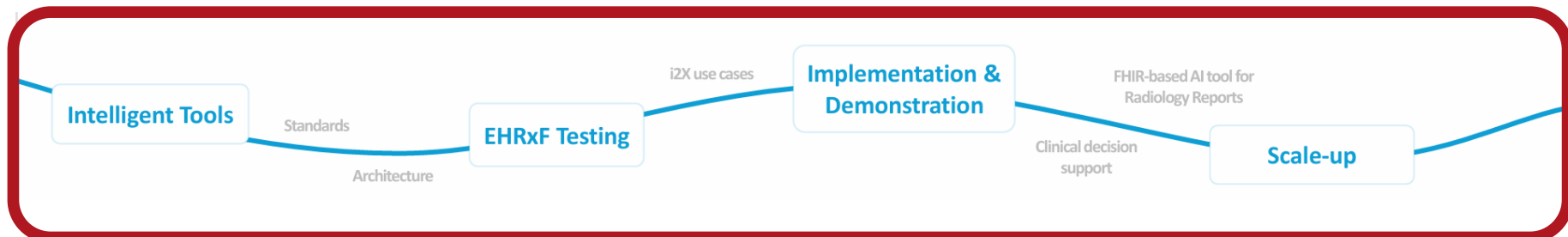
Building on the work we carried out during HiGHmed and
extending that effort toward the EHDS

Why the EHDS & EEHRxF Matter

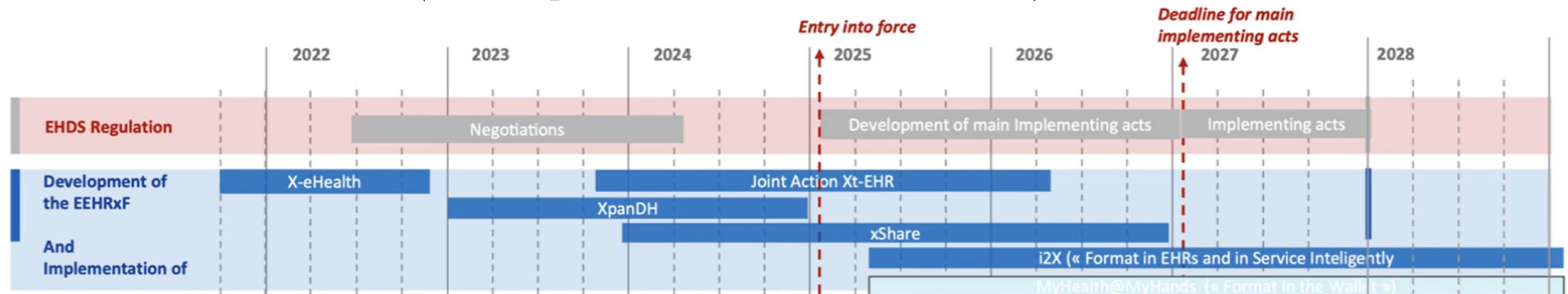
- EU Horizon Europe project:
Preparing Europe's health-data ecosystem
for EHDS compliance.
- Core work packages:
 - legal & governance
 - semantic harmonisation
 - secure exchange architectures
 - EEHRxF reference implementations



<https://ehr-exchange-format.eu/working-on-ehrx/>



Implementation plan for primary use of health data (adapted from EC)



https://connectathon.ihe-europe.net/sites/ihe-cat2014.org/files/IHE_EU_EXP_DAYS_2025-European_Commission_EHDS_Fulvia_Raffaelli.pdf?utm_source=chatgpt.com

- ⇒ EHDS Implementation Act enters into force 2027 - health-care providers must comply
- ⇒ EEHRxF is the mandated EU-wide FHIR-based technical format (also 2027).

i2x - Intelligent Implementations of EEHRxF:

- EEHRxF acronym for European Electronic Health Record Exchange Format
- aim is to deliver reference pipelines and conformance test suites for EEHRxF.

How We Address This for i2x - Our Data Pipeline

Sharing data in FHIR format is something we are familiar with:

In Germany, the Medizininformatik-Initiative (MII) started 10 years ago with the vision to build up so-called

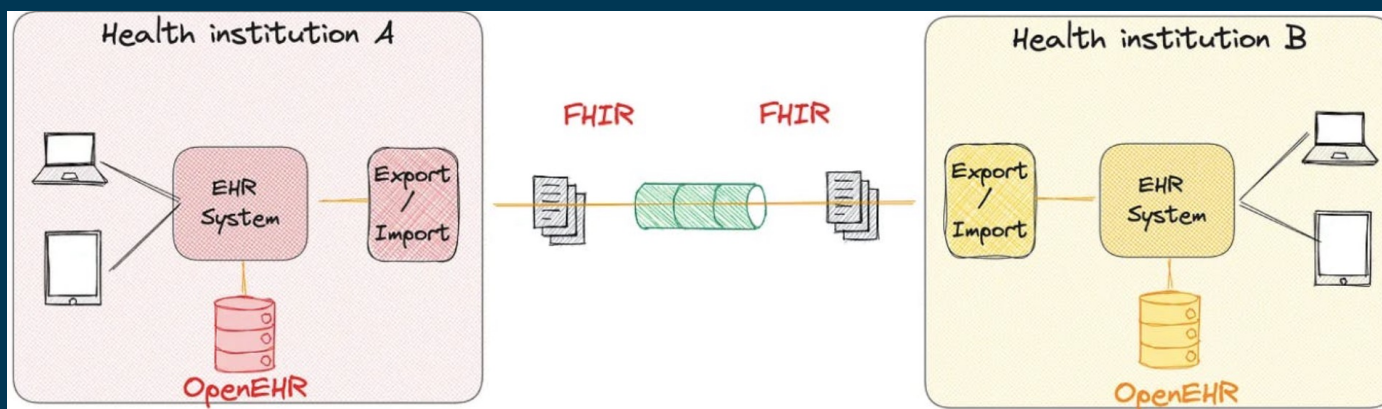
Data Integration Centers (DIC) - enabling the university clinics to share their data, at least for research purposes.

FHIR serves as the exchange format, with the core data set (CDS) expressed in FHIR.



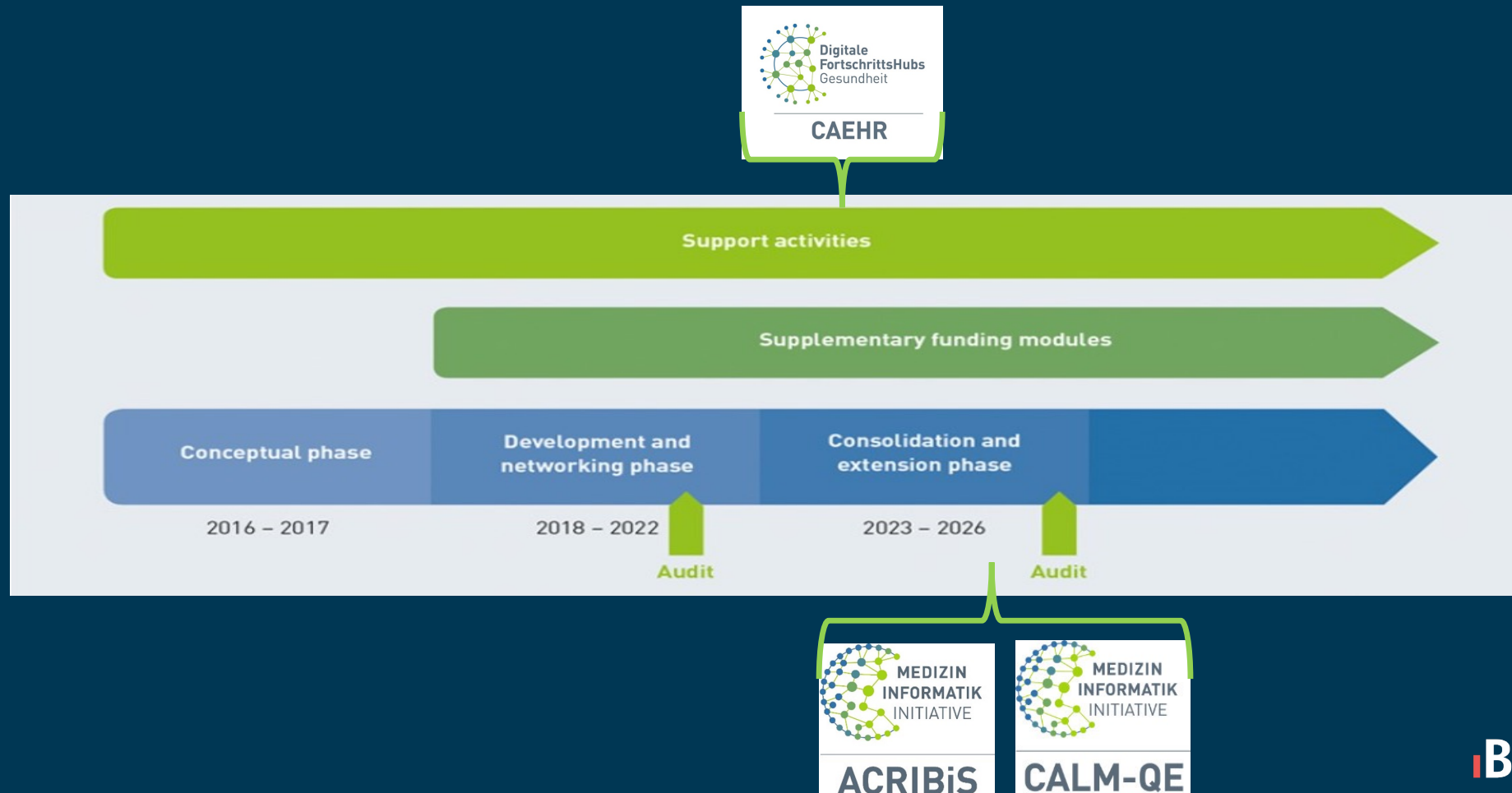
Preliminary Work: MII & HiGHmed

On top of the DIC/CDS work, HiGHmed - one of the four MII consortia - additionally defined a format for the persistent storage of structured data: openEHR.

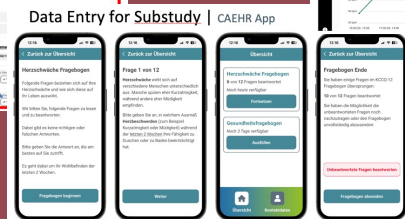
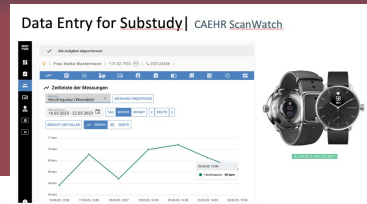
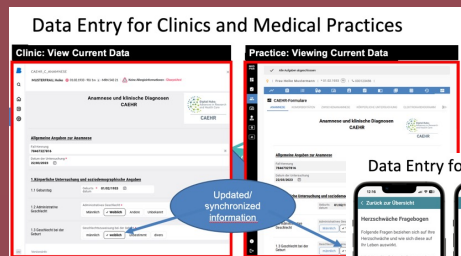


This “FHIR + openEHR = two standards, one mission” decision was established in HiGHmed more than 10 years ago (<https://www.highmed.org/news/fhir-openehr-two-standards-one-mission>)

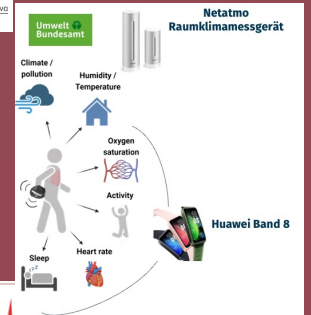
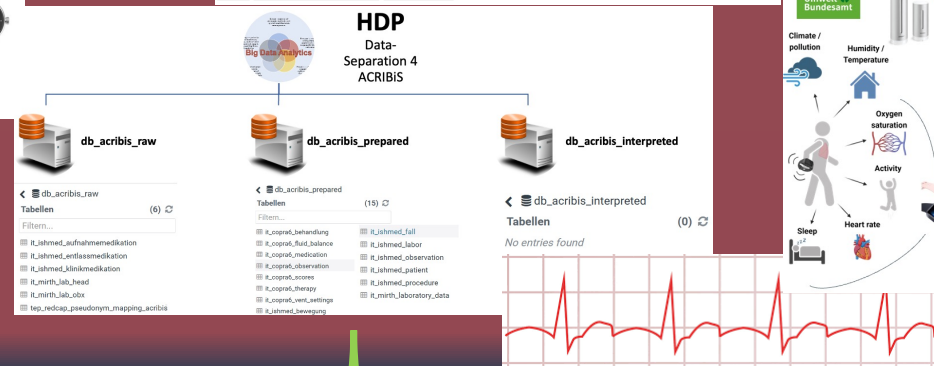
Project involvements of AG Eils



1st Step: Consolidating Heterogeneous Sources

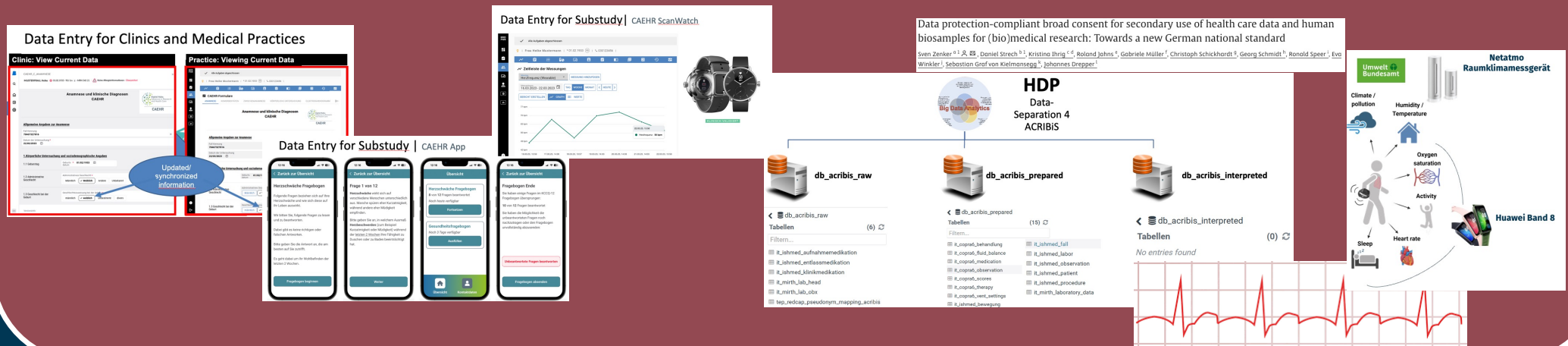


Data protection-compliant broad consent for secondary use of health care data and human biosamples for (bio)medical research: Towards a new German national standard
Sven Zenker^{1,2}, Daniel Strehl^{3,4}, Kristina Ihrig^{5,6}, Roland Johns⁷, Gabriele Müller⁸, Christoph Schickhardt⁹, Georg Schmidt¹⁰, Ronald Speer¹¹, Eike Winkler¹², Sebastian Graf von Kielmansegg¹³, Johannes Drepper¹⁴

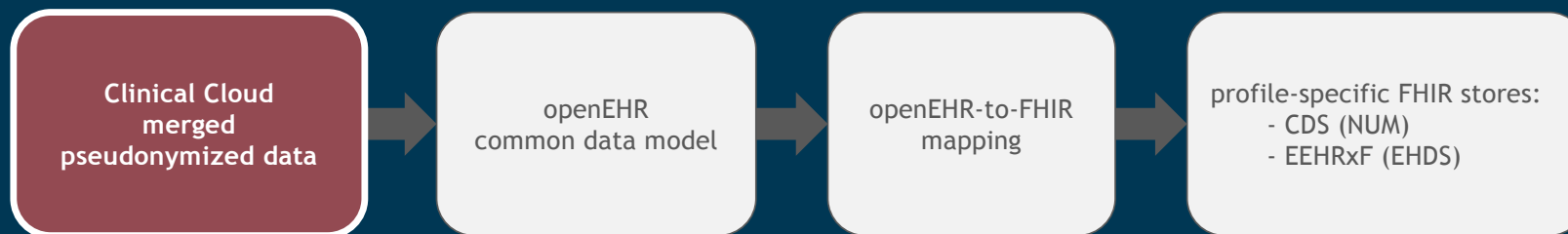


2nd Step: Integrating health data into one platform

Clinical Cloud
a protected data space
one access point for merging and structuring data

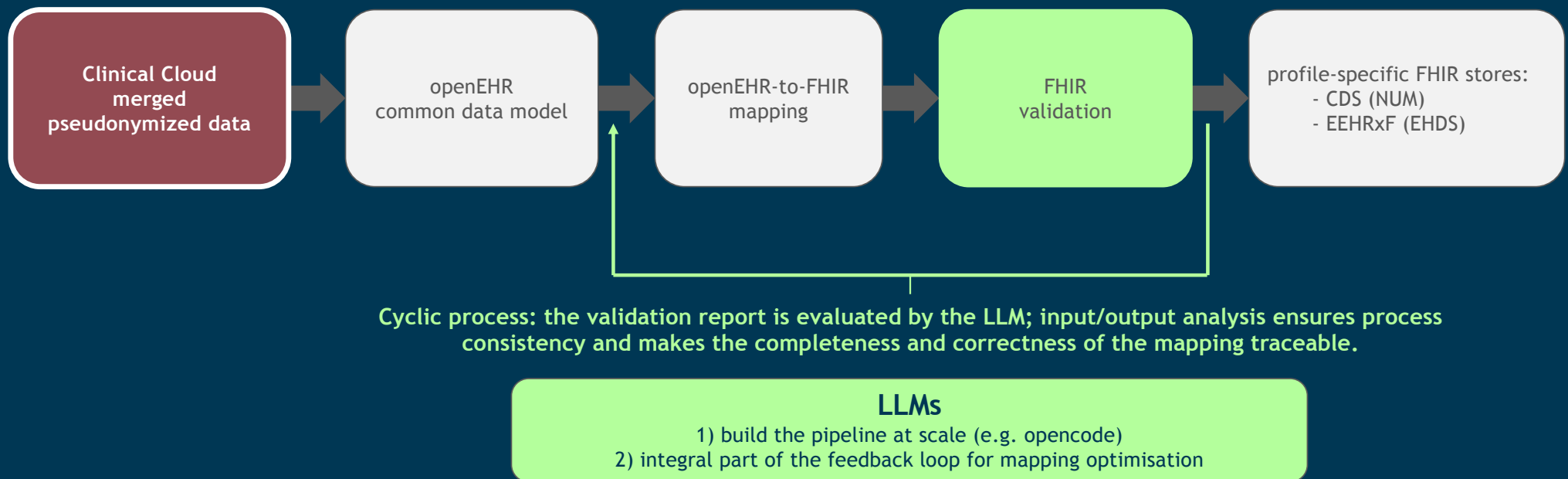


3rd Step: Enabling Interoperable Exchange



One pipeline handles diverse FHIR profiles and enables their different research-reuse applications

3rd Step: Enabling Interoperable Exchange



One pipeline handles diverse FHIR profiles and enables their different research-reuse applications

What we still have to work on



R (Reusable):

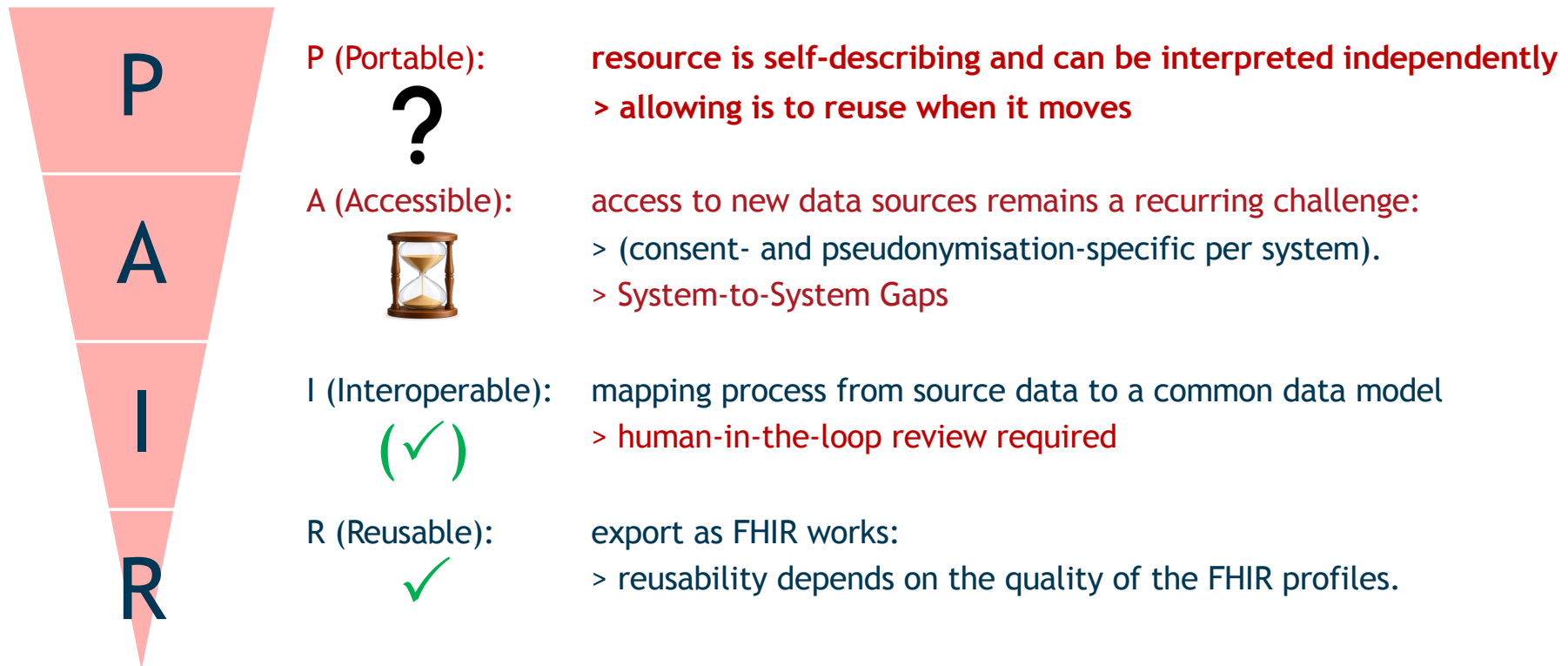


export as FHIR works:

> reusability depends on the quality of the FHIR profiles.

What we still have to work on:

> transfer Data into Information



Take-Home Message

We have built **an openEHR-based infrastructure that fulfils the EEHRxF technical profile:**

This builds on the **“FHIR + openEHR = two standards, one mission” initiative launched with HiGHmed over a decade ago** - well before the EHDS agenda - and now underpins the EEHRxF profile realised in i2x.

And the journey from data to information is only just beginning, and much remains to be done, even after HiGHmed...

Thank you

www.bihealth.org

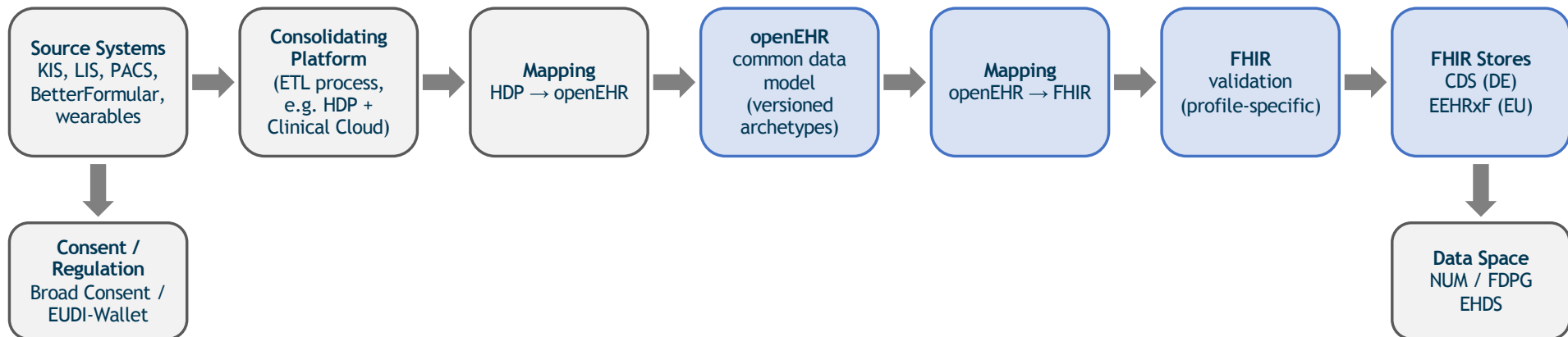
AG Eils
Roland Eils
Jürgen Eils
Severin Kohler
Maximilian Meixner
Adrian Neubauer
Leon Schüßler
Vivien Schubert
Alexandra Friedrich

AG Lehmann

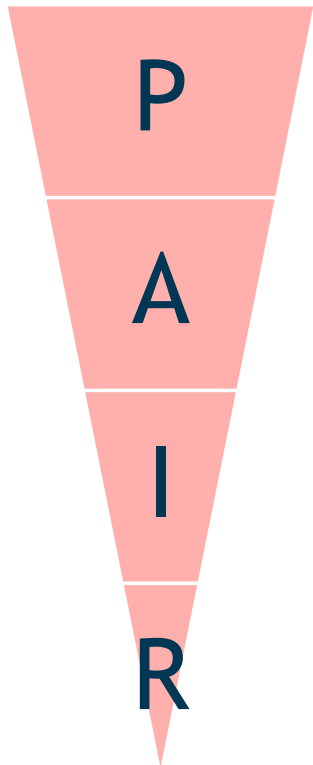
MeDIC (BIH@Charité)
Kardiologie CBF
CAEHR
ARCIBiS
CALM-QE
ARCIBiS
i2x

Better
SVA
Thryve

The Data Pipeline - Components & Generic Scope



- Blue = derived from the FHIR profile or its data items - generically captured by the pipeline.
 - Gray = governance (consent, data space) and source mapping - needs stewardship / human review.
- For item-driven structures: no difference between EHDS (EEHRxF) and HiGHmed (CDS) approach.



P (Portable):



A (Accessible):



I (Interoperable):



R (Reusable):



Even if you have a 4K TV,
you can't watch
Gone with the Wind
in 4K.

