HiGHmed
Medical Informatics

OpenEHR in HiGHmed

Experiences from a Modelling Journey

How It Started

MEDICAL INFORMATICS INITIATIVE GERMANY

HiGHmed Medical Informatics

Establishment of a **national infrastructure** to enable secondary use of data within and across hospitals

Facilitating **cross-institutional** data access, analytics, sharing and applications

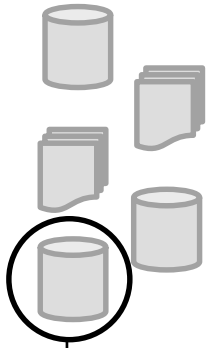
Development of semantically-enriched and interoperable **clinical information models**

openEHR

2018

First Impressions

Integration of clinical routine data into standardised data models in the local **Medical Data Integration Centres** (MeDIC)



MeDIC

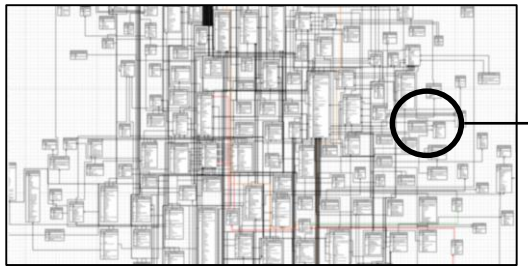
Standardised data models

Research

App

Data Sharing

...



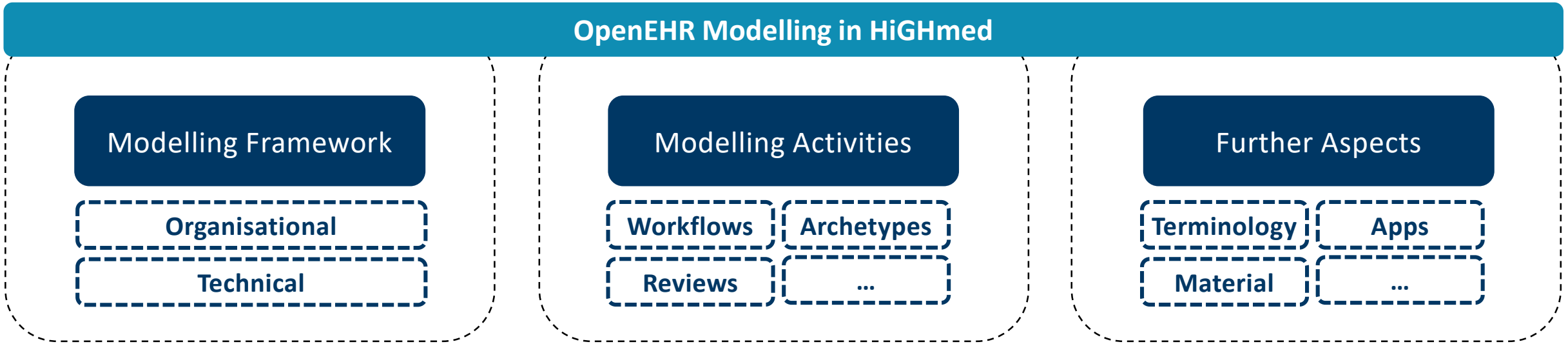
E+R, aerob (Flasche)	E+R, anaerob (Flasche),14 Tage
E+R, Pedibact (Flasche)	E+R (verlängerte Inkub.)
E+R, anaerob (Flasche)	E+R (verlängerte Inkub.: 10d)
E+R, FAN !! aerob Flasche)	E+R (verlängerte Inkub.: 14 d)
E+R, FAN !! anaerob (Flasche)	E+R, quant., verlängert (14 d)
E+R, Pedibact (Flasche)	E+R !!
E+R, Mycosis-Flasche	E+R ------
E+R,aerob (Fla), externes Syst	E+R, aerob (Fl.)
E+R,anaerob (Fla), exter. Syst	E+R, anaerob (Fl.)
E+R, aerob (Flasche), 14 Tage	E+R quant.

...

Modelling Balance

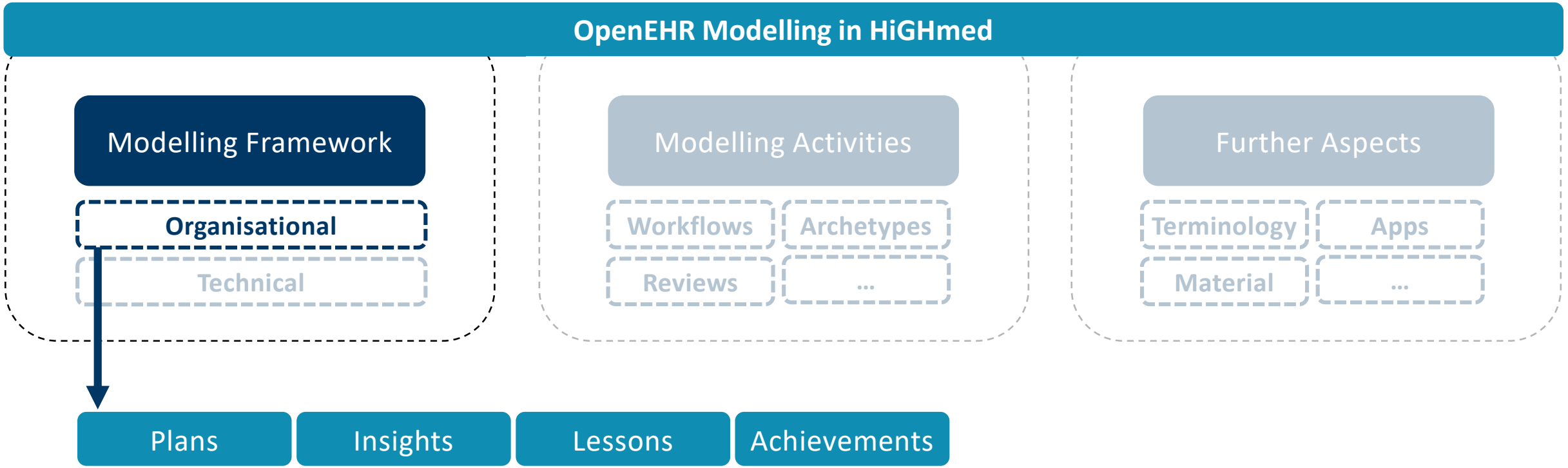
Primary Documentation

Journey Paths



Wulff A, Haarbrandt B, Marschollek M. Clinical Knowledge Governance Framework for Nationwide Data Infrastructure Projects. Stud Health Technol Inform. 2018;248:196-203.

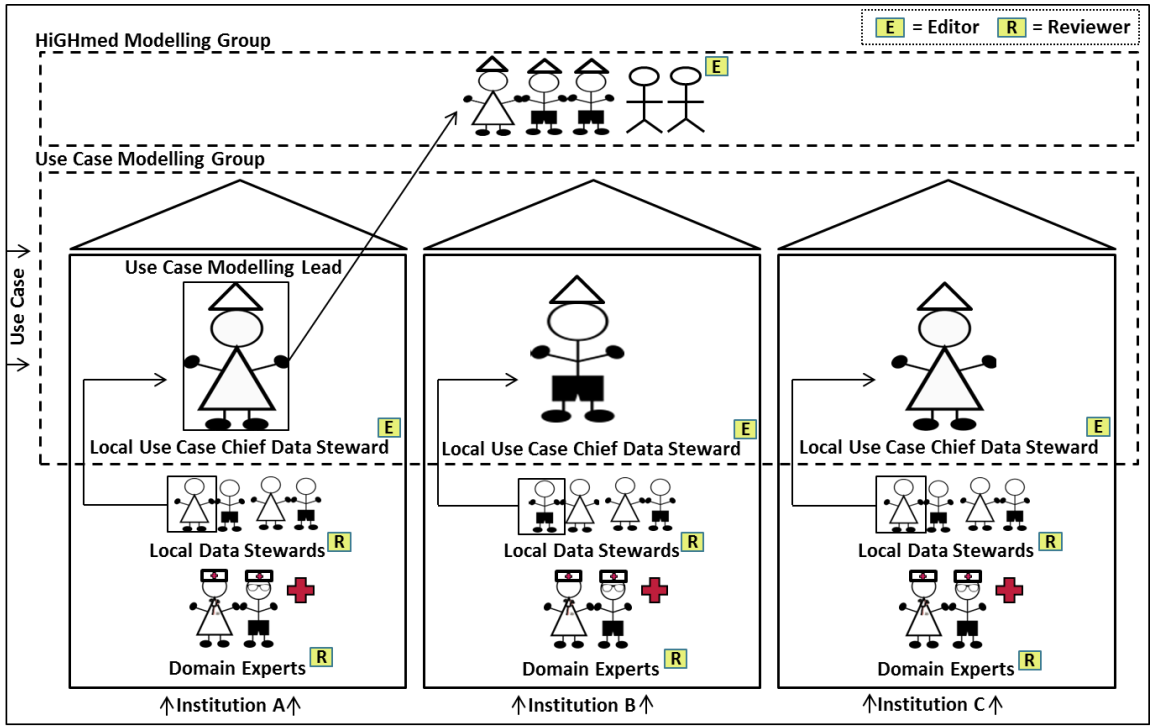
Journey Paths



Modelling Framework

Modelling Framework: Organisational

Plans | Insights | Lessons | Achievements



- Oncology
- Cardiology
- Infection Control

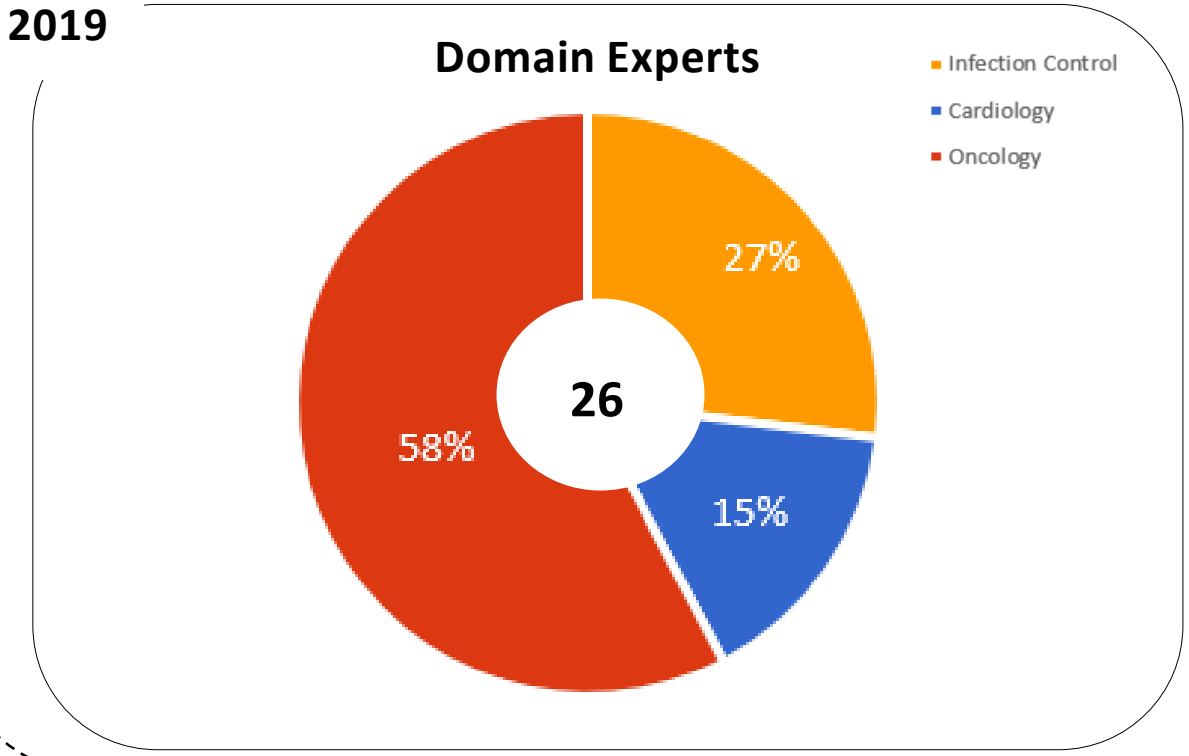
Wulff A, Haarbrandt B, Marschollek M. Clinical Knowledge Governance Framework for Nationwide Data Infrastructure Projects. Stud Health Technol Inform. 2018;248:196-203.

Modelling Framework

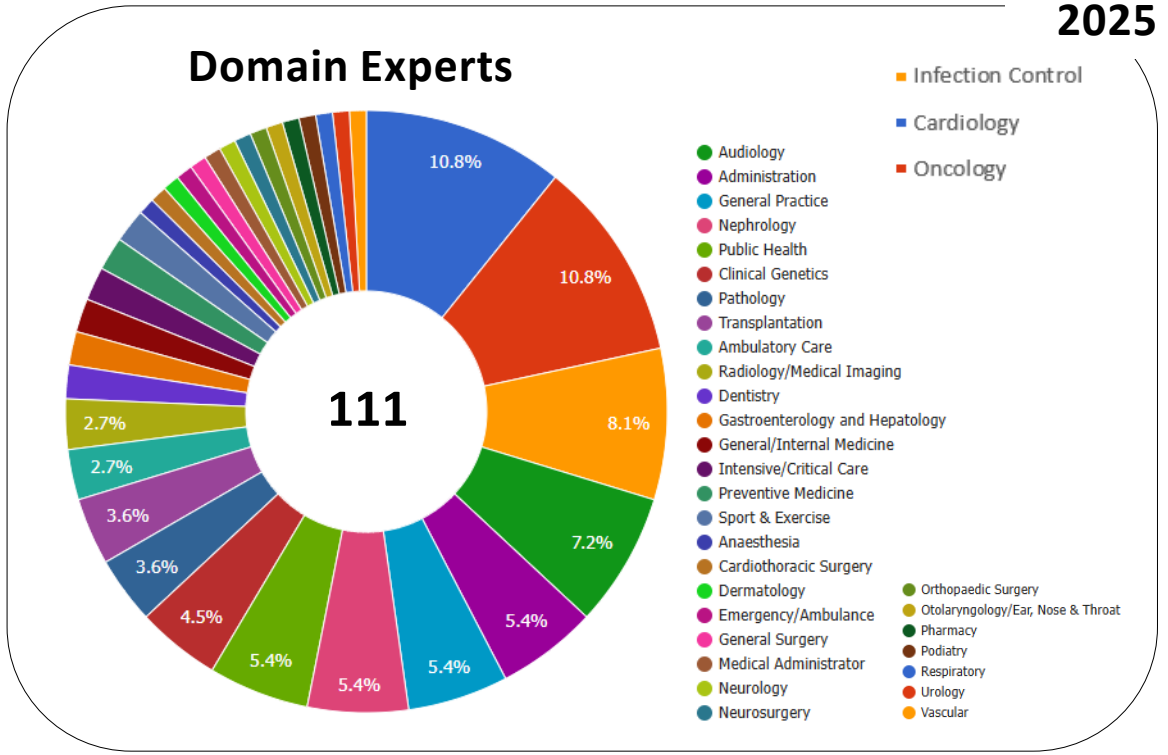
Modelling Framework: Organisational

Plans | **Insights** | Lessons | Achievements

2019



2025



Modelling Framework

Modelling Framework: Organisational

Plans | Insights | **Lessons** | Achievements

Involvement of Medical Experts

Further Modelling Roles

Enabling Data Stewards to Start

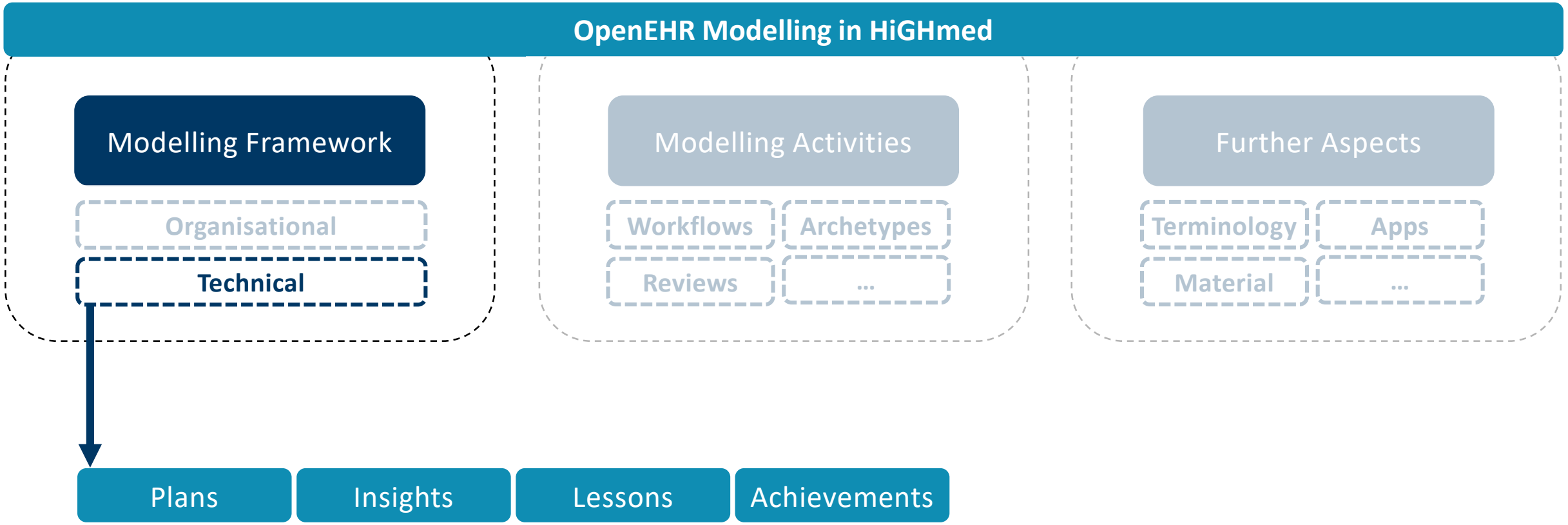
Modelling Framework

Modelling Framework: Organisational

Plans | Insights | Lessons | **Achievements**

- Medical and Technical Data Stewards
- German openEHR Modelling Group
- Further Roles, Collaboration and Projects

Journey Paths



Modelling Framework

Modelling Framework: Technical

Plans | Insights | Lessons | Achievements

HiGHmed Medical Informatics

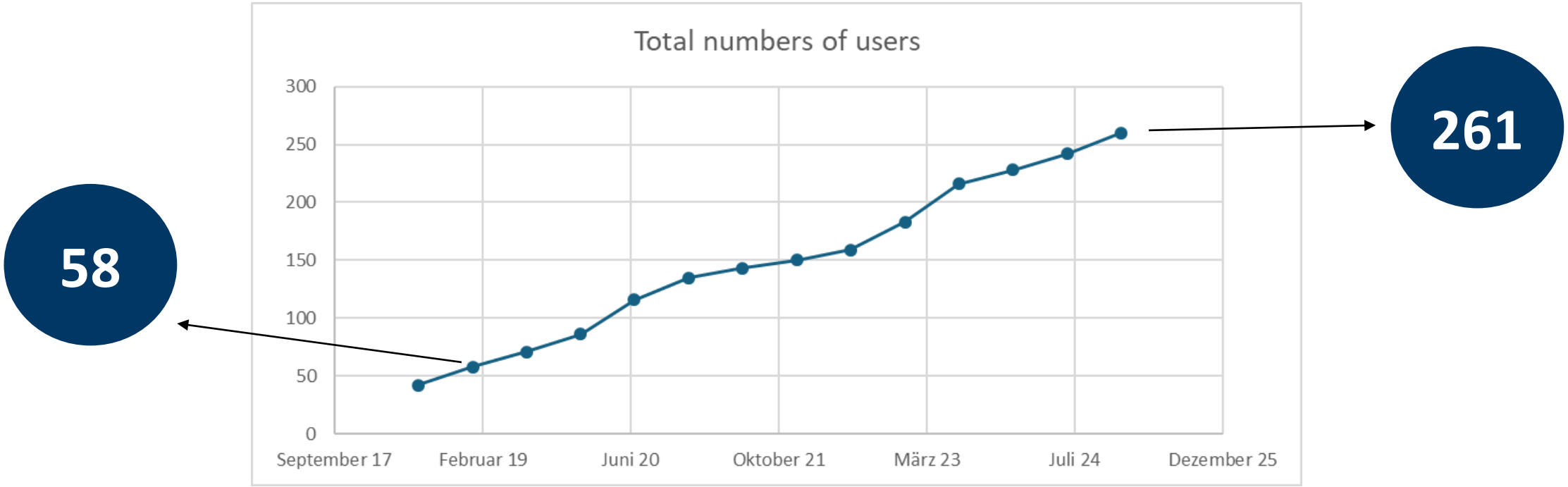
Clinical Knowledge Manager

Subdomains | **Incubators**

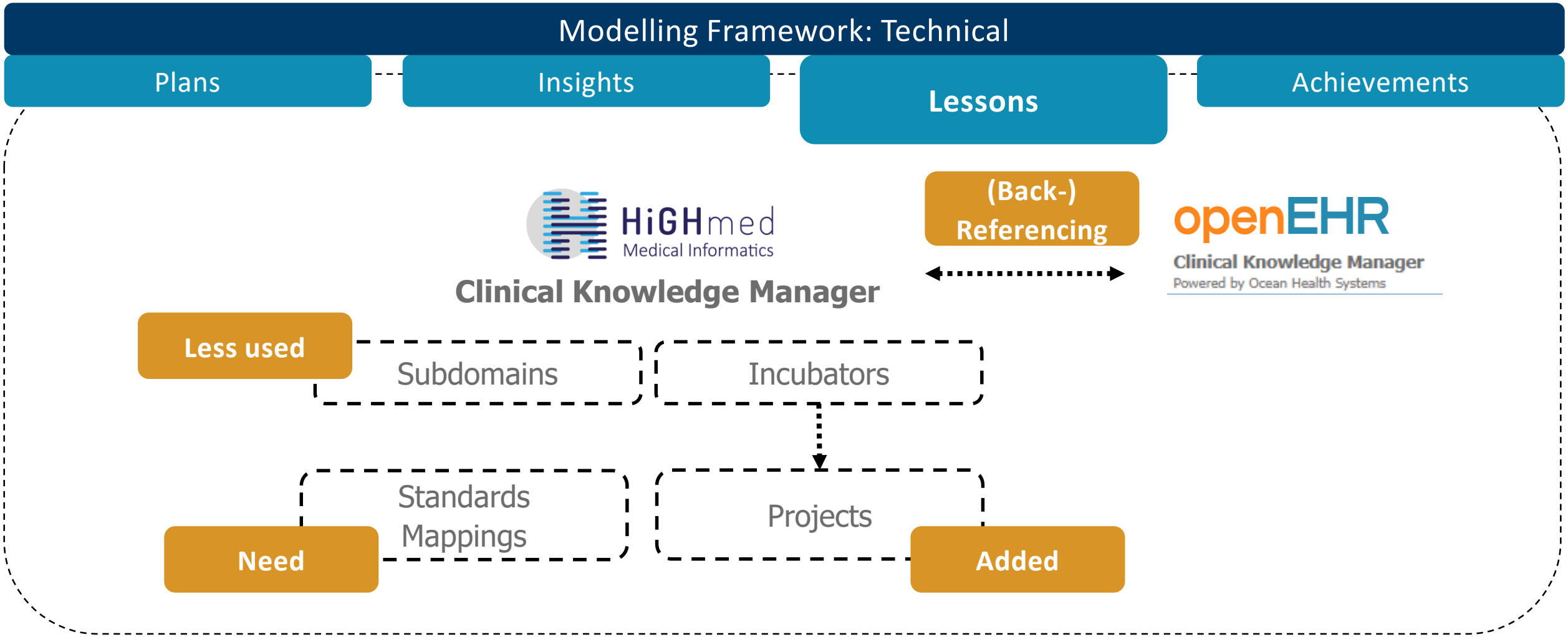
Modelling Framework

Modelling Framework: Technical

Plans | **Insights** | Lessons | Achievements



Modelling Framework



Modelling Framework

Modelling Framework: Technical

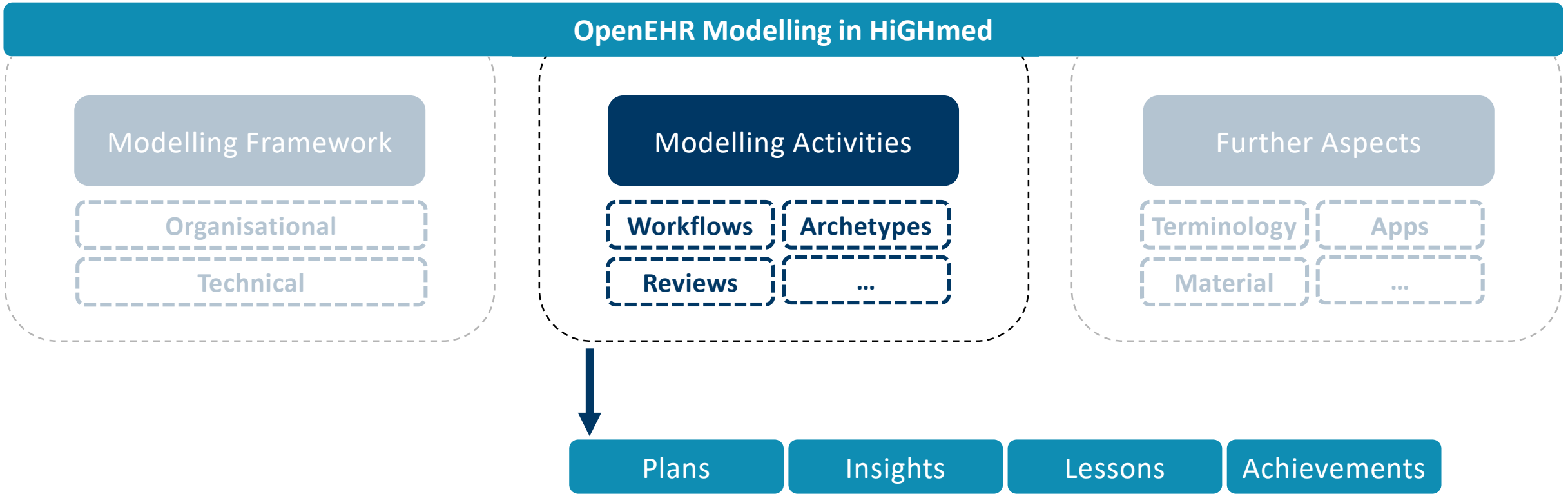
Plans | Insights | Lessons | **Achievements**

Establishment and Active Usage of CKM

HiGHmed Medical Informatics

Clinical Knowledge Manager

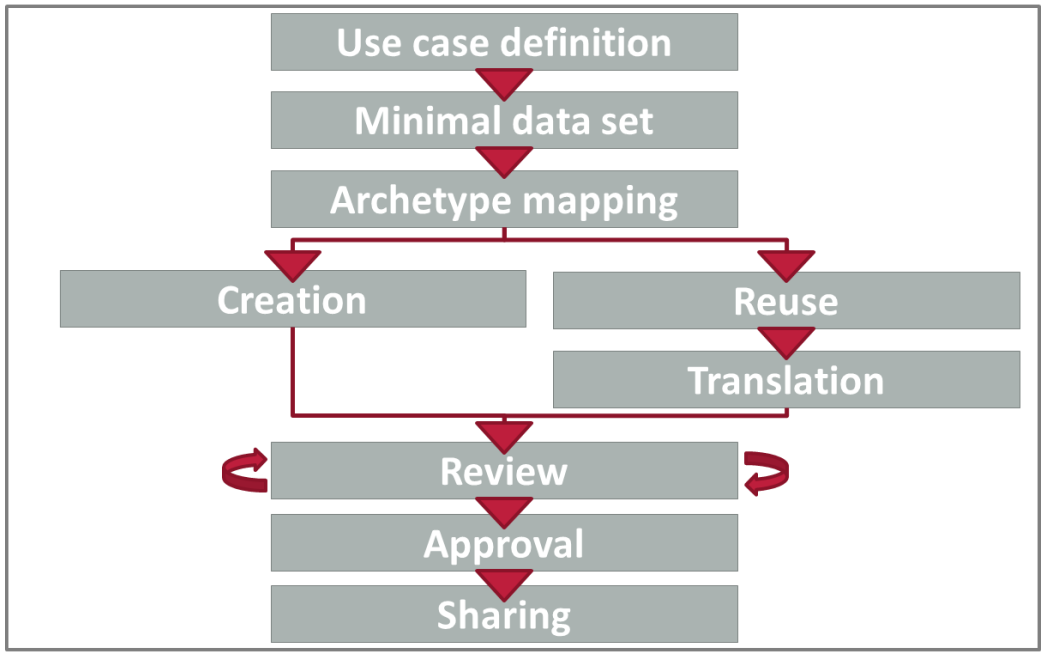
Journey Paths



Modelling Activities

Modelling Activities

Plans | Insights | Lessons | Achievements



Wulff A, Baier C, Ballout S, Tute E, Sommer KK, Kaase M, Sargeant A, Drenkhahn C; Infection Control Study Group; Schlüter D, Marschollek M, Scheithauer S. Transformation of microbiology data into a standardised data representation using OpenEHR. Sci Rep. 2021 May 18;11(1):10556

- **Modelling per Use Case**
- **Focus on Templates**
- **Reuse existing models**

Modelling Activities

Modelling Activities

Plans | **Insights** | Lessons | Achievements

2019

- **99** Archetypes
- **79%** Reuse Rate
- **23** Templates

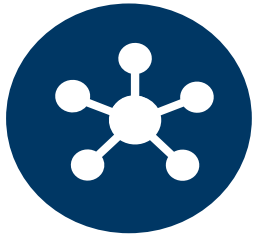
2025

- **259** Archetypes
- **57%** Reuse Rate
- **114** Templates

Modelling Activities

Modelling Activities

Plans | Insights | **Lessons** | Achievements

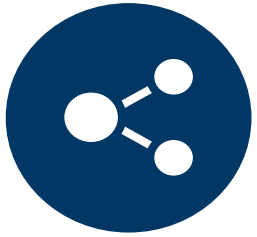


Prioritisation Shift to Archetypes

Communication of Drafts and Duplicates

International Archetype Sharing

Metadata and Translation Guidelines

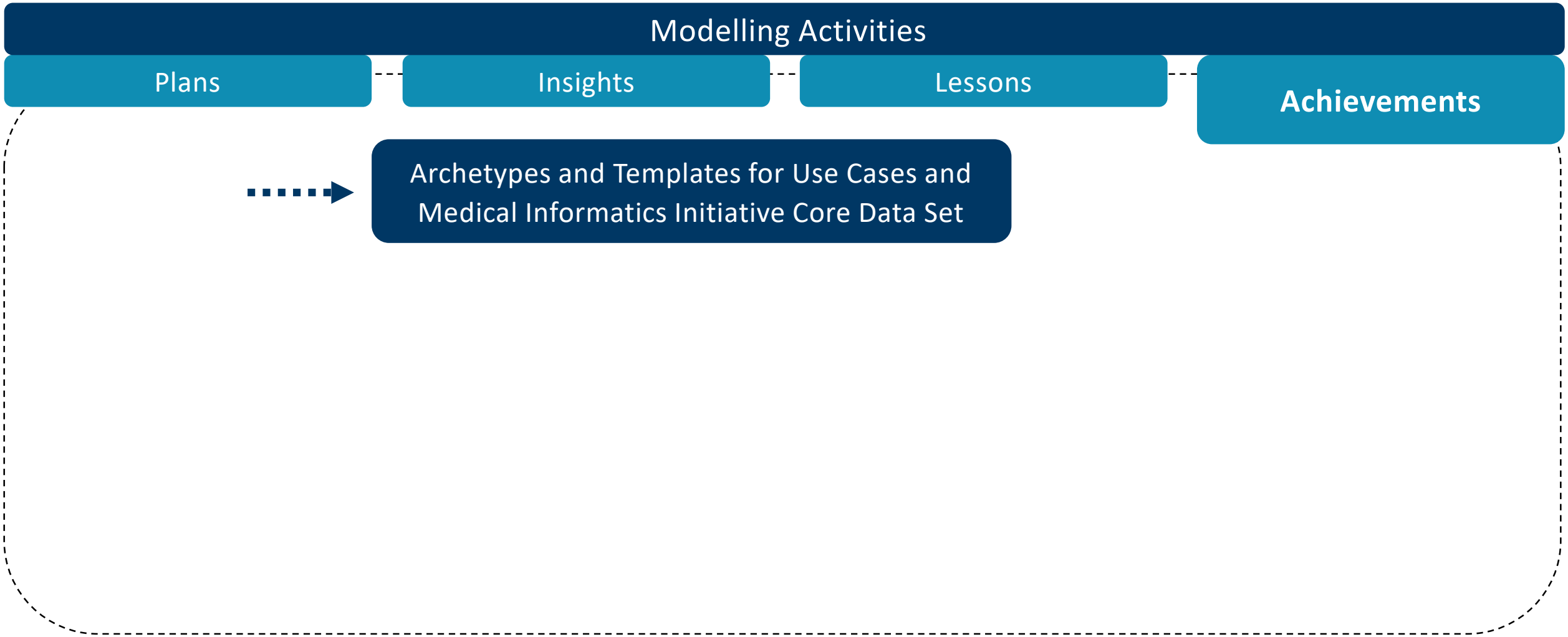


Terminology Bindings in Modelling Workflows

Standards Bridging in Modelling Workflows

Fixed Versions Called “Freezes”

Modelling Activities

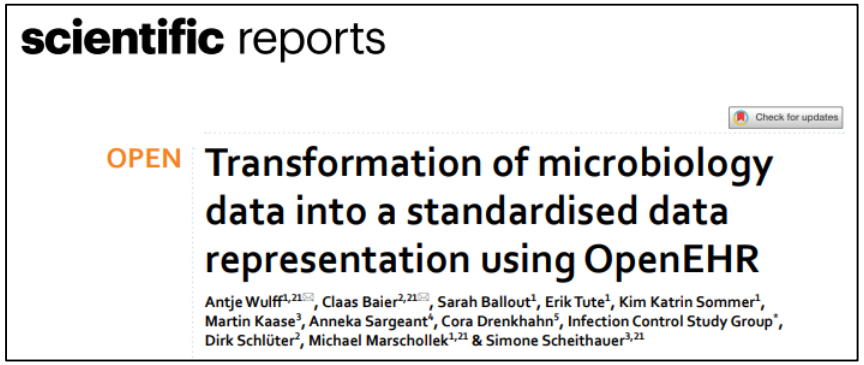


Modelling Activities

Modelling Activities

Plans — Insights — Lessons — **Achievements**

- Archetypes and Templates for Use Cases and Medical Informatics Initiative Core Data Set
- Complex Pattern Modelling


scientific reports

Check for updates

OPEN

Transformation of microbiology data into a standardised data representation using OpenEHR

Antje Wulff[1,21], Claas Baier[2,21], Sarah Ballout[1], Erik Tute[1], Kim Katrin Sommer[1], Martin Kaase[3], Anneka Sargeant[4], Cora Drenkhahn[5], Infection Control Study Group*, Dirk Schlüter[2], Michael Marschollek[1,21] & Simone Scheithauer[3,21]

Wulff A, Baier C, Ballout S, Tute E, Sommer KK, Kaase M, Sargeant A, Drenkhahn C; Infection Control Study Group; Schlüter D, Marschollek M, Scheithauer S. Transformation of microbiology data into a standardised data representation using OpenEHR. Sci Rep. 2021 May 18;11(1):10556

Modelling Activities

Modelling Activities

Plans | Insights | Lessons | **Achievements**

- Archetypes and Templates for Use Cases and Medical Informatics Initiative Core Data Set
- Complex Pattern Modelling
- Fast Track Modelling

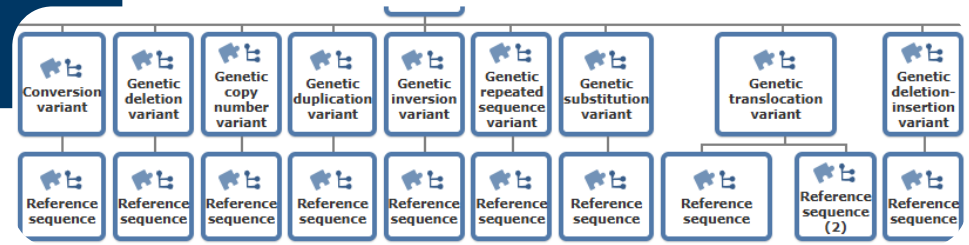
COVID-19 GECCO DATASET

Modelling Activities

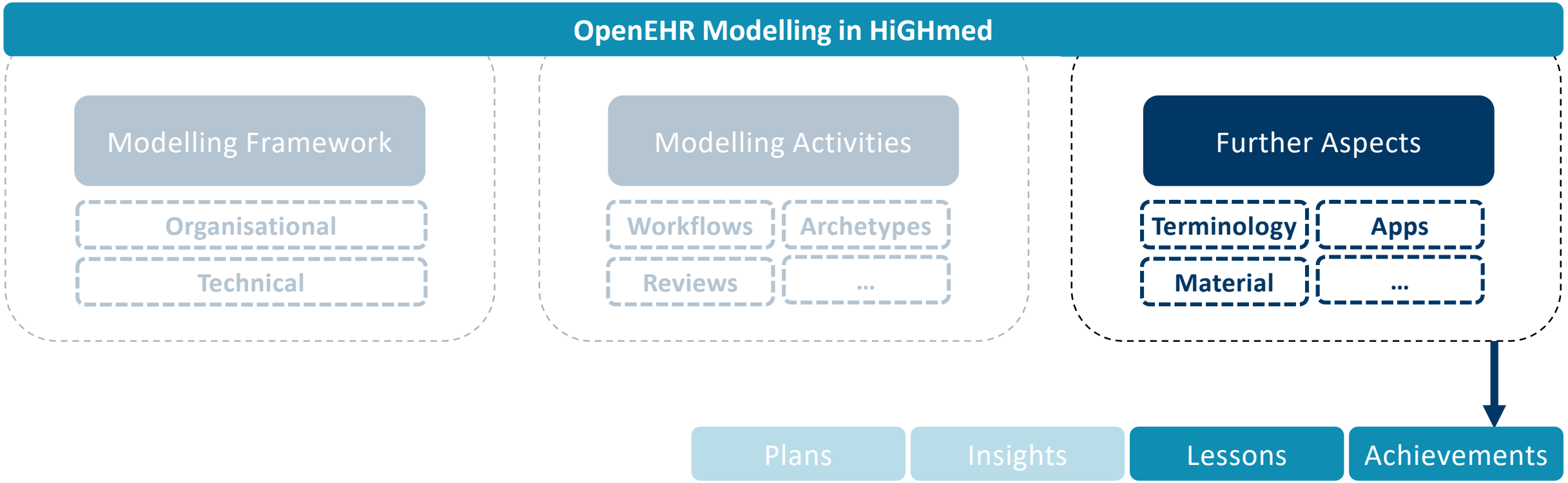
Modelling Activities

Plans | Insights | Lessons | **Achievements**

- Archetypes and Templates for Use Cases and Medical Informatics Initiative Core Data Set
- Complex Pattern Modelling
- Fast Track Modelling
- Successful International Collaboration (Oncology, Genomics)



Journey Paths



Further Aspects

Further Aspects

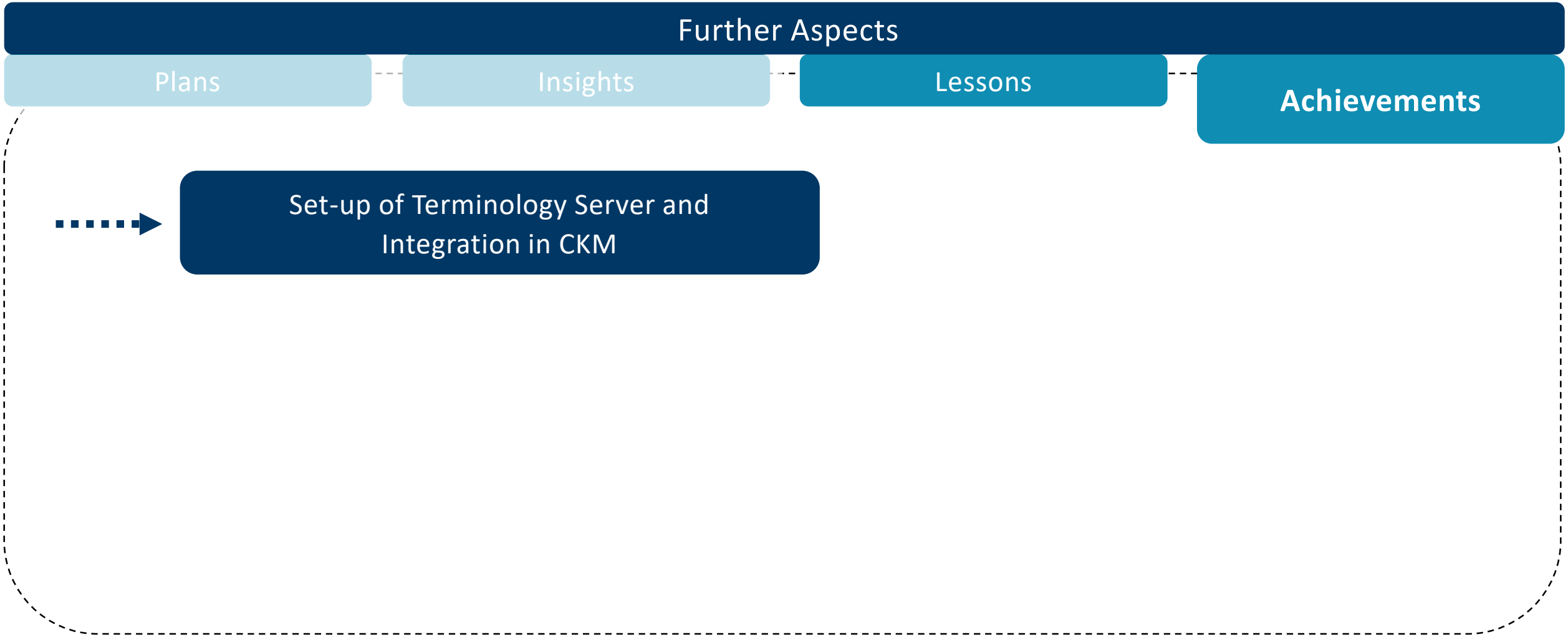
Plans | Insights | **Lessons** | Achievements

Archetype Query Language

Need for Workshops

Licensing and Copyrights

Further Aspects



Further Aspects

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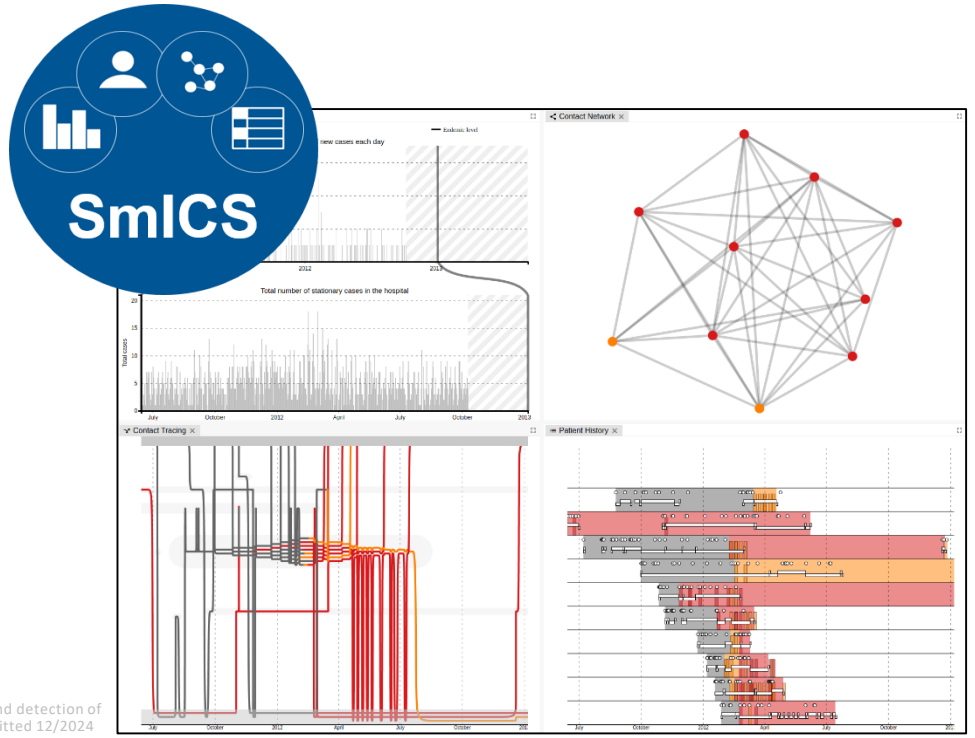
Plans | Insights | Lessons | **Achievements**

- Set-up of Terminology Server and Integration in CKM
- Design of Interoperable Applications



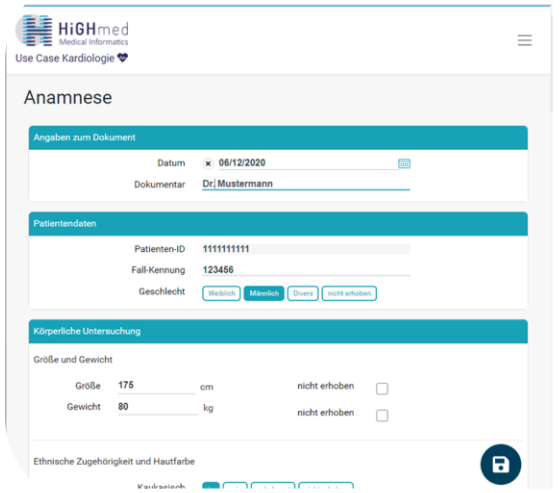
Biermann, P. et al. Towards digital infection control:
an open source, standards-based smart infection control system for monitoring and detection of nosocomial bacterial clusters, contact networks and epidemiologic analysis, submitted 12/2024

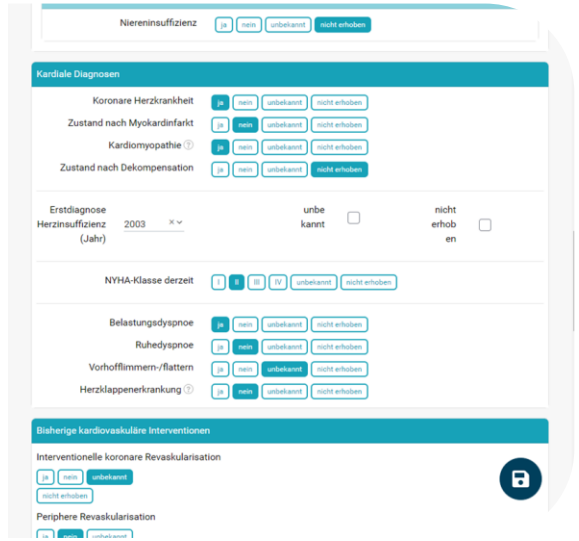
Further Aspects

Further Aspects

Plans | Insights | Lessons | **Achievements**

- Set-up of Terminology Server and Integration in CKM
- Design of Interoperable Applications
- OpenEHR-based Documentation Modules





Further Aspects

Further Aspects

Plans | Insights | Lessons | **Achievements**

- Set-up of Terminology Server and Integration in CKM
- Design of Interoperable Applications
- OpenEHR-based Documentation Modules
- Workshops, Materials, Courses

https://education.highmed.org/

Future Journey

MEDICAL INFORMATICS INITIATIVE GERMANY

HiGHmed Medical Informatics

Secondary use of data based on openEHR models is valuable

Reusing archetypes and **global contribution of models** is key

International archetype sharing and **bridging standards** are fostered

2025

Thank you!

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Carl von Ossietzky Universität Oldenburg