Enabling Data Informed Health: Improving data accessibility and standardization using openEHR

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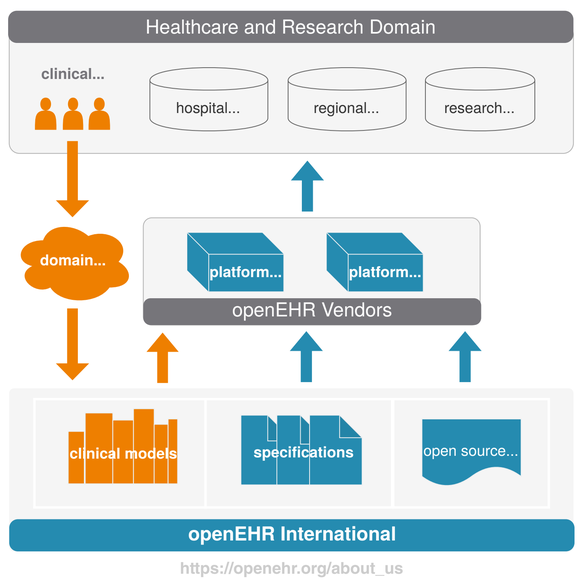
Introduction

Data is widely recognized as a potent catalyst for advancing healthcare effectiveness, increasing worker satisfaction, and mitigating healthcare costs. The ongoing **digital transformation** within the healthcare sector promises to usher in a new era of flexible patient care, seamless inter-provider communication, and **data-informed healthcare** practices through the application of data science. However, more often than not data lacks **interoperability** across different healthcare institutions and are not readily available for analysis. This inability to share data leads to a higher **administrative burden** for healthcare providers and introduces **risks** when data is missing or when delays occur. Moreover, medical researchers face similar challenges in accessing medical data due to the difficulty of extracting data from applications, a lack of standardization, and the required data transformations before it can be used for analysis. To address these complexities, a paradigm shift towards a **data-centric** application landscape is essential, where data serves as the bedrock of the healthcare infrastructure and is application agnostic.

In short, a modern way to think about data in general is to go from an **application driven landscape to a data driven landscape**, which will allow for better interoperability and innovative healthcare solutions.

openEHR

openEHR is a **non-profit organisation and community** that publishes technical standards for an Electronic Health Record (EHR) platform along with clinical models to define content. The principal architectural concepts include the lifelong, patient-centric shared health record, future-proof data and clinical process support. It is not open-source software that can be readily used, but rather an **open specification** that allows for both open and closed source implementations. Modelling and standardizing clinical concept models is done through the use of **archetypes** which are defined by healthcare and IT professionals.



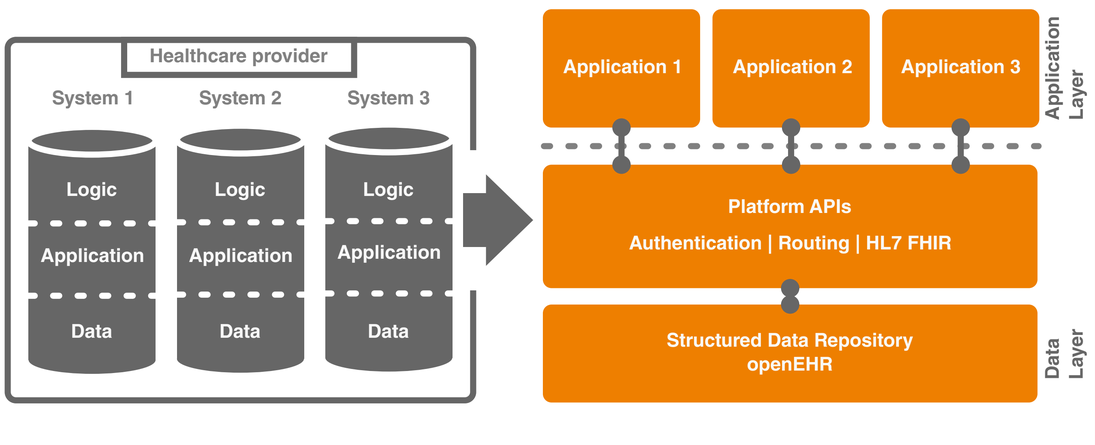
https://openehr.org/about_us

Application versus data driven

In a traditional application driven landscape the application is tightly coupled with its data and typically uses a **proprietary data model** to store its data. In healthcare ICT this means that every implementation of a Healthcare Information System (HIS) uses their own data model which requires transformation when data needs to be exchanged, which creates **data silos** and makes it difficult to migrate between different vendors (**vendor lock**). Moreover, when data sharing is not facilitated between different systems there will be a lot of data duplication.

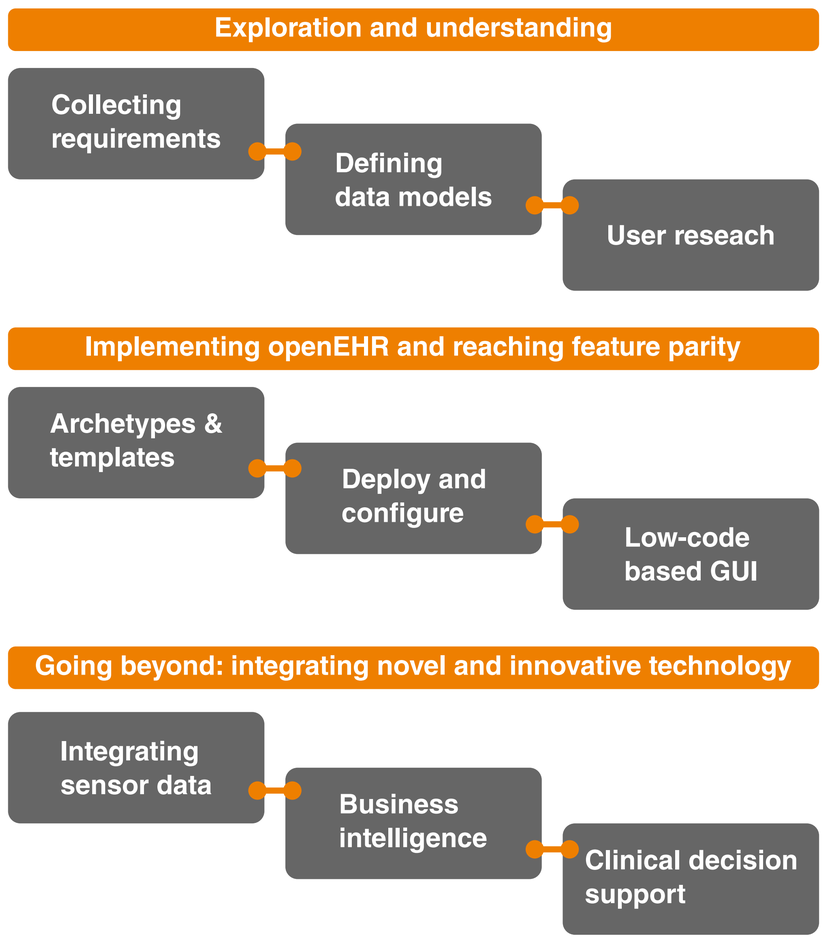
Modern healtcare information systems are, instead, based on a **data-centric approach with an open architecture**. Healtcare data is stored in a standardized manner using open standards and applications can communicate with the data layer using a standardized software-interface (application programming interface; API).

This allows for a more modular and **vendor neutral approach** and enables the development of an **open platform ecosystem** where healthcare institutions can pick best-of-breed or best-of-suite.



Present and future work

In the current project the **research group Digital Transformation** at Hanze University of Applied Sciences works together with industry partners to build an openEHR implementation for a Groningen-based **mental healthcare provider**. We employ a **user-centered approach** to ensure that development decisions are driven by the needs, preferences, and feedback of our target audience, ultimately striving to create a product that delivers the best possible user experience.



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