The EPI project aims to provide self/joint management of medical treatments throughout the healthcare cycle by effectively utilising data usage with scientific algorithms. As an end result, the EPI project processes health data having various sources, governance, and ownership to formulate a personalized outcome of diagnostics, prevention, advice in a real-time effective manner, hence acting as a health digital twin. The EPI project considers the infrastructure which will support the system’s data sharing.

Fig1: The need for a dynamic infrastructure in healthcare

- Achieving secure health data sharing can result with an efficient and effective health care cycle
- Adaptive infrastructure to enforce a different set of rules for a specific duration of time with the aim of supporting numerous use cases
- Avoid the "one fits all" security standards

Fig2: The workflow of building the EPI infrastructure/ application scenario

First, the requirements/ regulations/ consent are translated in to a set of rules that will dictate source, destination, and data shared. 

\[
\text{Translate}(\text{requirements}) = \Sigma \text{Rules}
\]

That can be better represented as a set of matrices.

\[
\begin{bmatrix}
00 & r01 & r02 & r03 & r04 \\
10 & r11 & r12 & r13 & r14 \\
r20 & r21 & r22 & r23 & r24 \\
r30 & r31 & r32 & r33 & r34 \\
r40 & r41 & r42 & r43 & r44
\end{bmatrix}
\]

Second, the rules are applied to the infrastructure through IFC mechanisms. This maps to what is allowed/denied. The following arguments ideally should align with what is supported in terms infrastructural attributes.

\[
\text{Apply}(\text{Rules, infrastructure}) = \Sigma \text{IFC}
\]

Resources are defined as infrastructural attributes. Each network node has a set of attributes. Nodes relevant to a specific application are segregated to EPI areas to help map to what is supported/not supported.

\[
\text{Build}(\text{Infra-Attributes}) = \text{infrastructure}
\]

Fig2: The high level view of an EPI architecture

As a result, the architecture will build a different infrastructure/ application request. The future steps of the project will be:
- Bridging the attribute gaps to make other requests feasible
- Auditing information flows
- Evaluate security and complexity of the system