

FHIR USE CASE



CoZo SHIFT project

Standardized sharing of allergies and patient-related problems between hospitals and hospital networks via HL7® FHIR® careset profiles

In the long term, all Belgian hospitals are expected to make data from "caresets" - i.e., FHIR profiles and bundles containing problems, diagnoses, etc. - available in a structured way through their EHR systems. The FHIR standard plays a key role in this process.

Against this backdrop, the SHIFT pilot project was launched at the Ghent University Hospital (UZ Gent). SHIFT, which stands for Structured Healthcare InFormation Transmural, aims to develop a robust solution that enables healthcare organisations to make data on allergies and patient-related problems available across institutions via the existing Collaborative Care Platform (CoZo). For instance, if a patient is admitted to a Belgian hospital, healthcare providers will be able to check directly via CoZo whether the patient has had an allergic reaction to certain drugs in the past.



Background

Belgium has already made significant progress in sharing medical information across primary, secondary and tertiary care. For example, patients and healthcare providers can view relevant results registered in any Belgian hospital.

The data is primarily accessed via a network of hubs, with CoZo being one of the largest players. The hubs do not store medical data, but make such information available to connected institutions and healthcare providers through real-time queries.

CoZo's main strength lies in its extensive network of over 190 connected sources, including hospitals, psychiatric institutions, laboratories, medical imaging centres, home care providers, rehabilitation facilities, nursing homes, and more. Combined, healthcare providers and patients retrieve nearly 4 million results per month via CoZo.

Challenges

Despite the success of the hubs, and particularly of CoZo, several challenges remain:

- The current architecture is based on KMEHR, a **standard** used exclusively in Belgium.
- Most of the information provided is **unstructured** (txt, pdf).
- Searching is increasingly difficult due to the lack of well-structured **metadata**.

The SHIFT project aims to address these challenges.

The goal of SHIFT

The goal of the SHIFT project is to enable the retrieval of known allergies and related problems registered for a patient during previous admissions or consultations, in a structured manner, from the EHR systems of hospitals participating in the project. The information will be made available through the CoZo services and will be visible for both healthcare providers and patients. This adds direct value, also for healthcare organisations that do not yet support FHIR compatibility.

In the long term, the project aims to:

- Accelerate the use of **international standards** and improve data structuring.
- Promote the introduction of a **forward-looking, scalable and distributed FHIR architecture**.

The SHIFT project: overview

Who?

- **2 coordinating parties:** UZ Gent and CoZo
- **5 participating hospitals:** UZ Gent, AZ Sint-Lucas, AZ Jan Palfijn, AZ Maria Middelares and Heilig Hart Hospital Lier

What?

Make medical patient-related problems and allergies transmurally available for patient care (primary use of data)

How?

- Translate the hospitals' own EHR data to FHIR profiles.
- Make these available in a FHIR Repository, and queryable via the CoZo hub infrastructure.

Project approach:

Coding/structuring data:

International standards such as LOINC and SNOMED-CT are used to record data in a structured way, and to ensure clear interpretation. When coding information from the EHRs that cannot be interpreted easily (such as free text), the project partners will use various tools, potentially supported by AI.

HL7® FHIR® careset profiles:

The FHIR standard is utilised for data exchange. In order to convert the structured data into FHIR messages that contain all the necessary information and are exchangeable nationally, various FHIR profiles are applied, tailored to the needs of the Belgian healthcare system. Examples include the BePatient, BeOrganization, BeAllergyIntolerance, and BeProblem profiles.

FHIR exchange via CoZo:

Notably, queries are performed in a distributed way rather than point-to-point, allowing dynamic interaction with potentially hundreds of data sources.

Visualization:

Using standardised FHIR building blocks enables clear agreements on the representation of clinical concepts at the national level, simplifying integration and visualisation.

Core infrastructure:

The project provides the central components needed to access the required information from connected hospitals, and make it available via CoZo.

Amaron's solution:



A central **FHIR Station Hub** at CoZo ensures that CoZo queries are FHIR-compliant, and are only submitted to healthcare institutions where the patient is known.



FHIR Station Gateways at the hospitals participating in the SHIFT project allow them to securely unlock their local, connected FHIR data sources.



In hospitals that cannot yet provide their data via FHIR, an optional **FHIR Box** is installed.



Thanks to Amaron's FHIR expertise, CoZo has made rapid progress in realising FHIR data exchange. Amaron's support allows CoZo to take this leap safely and in a controlled manner. As a result, we have a scalable and reusable solution for FHIR data exchange.

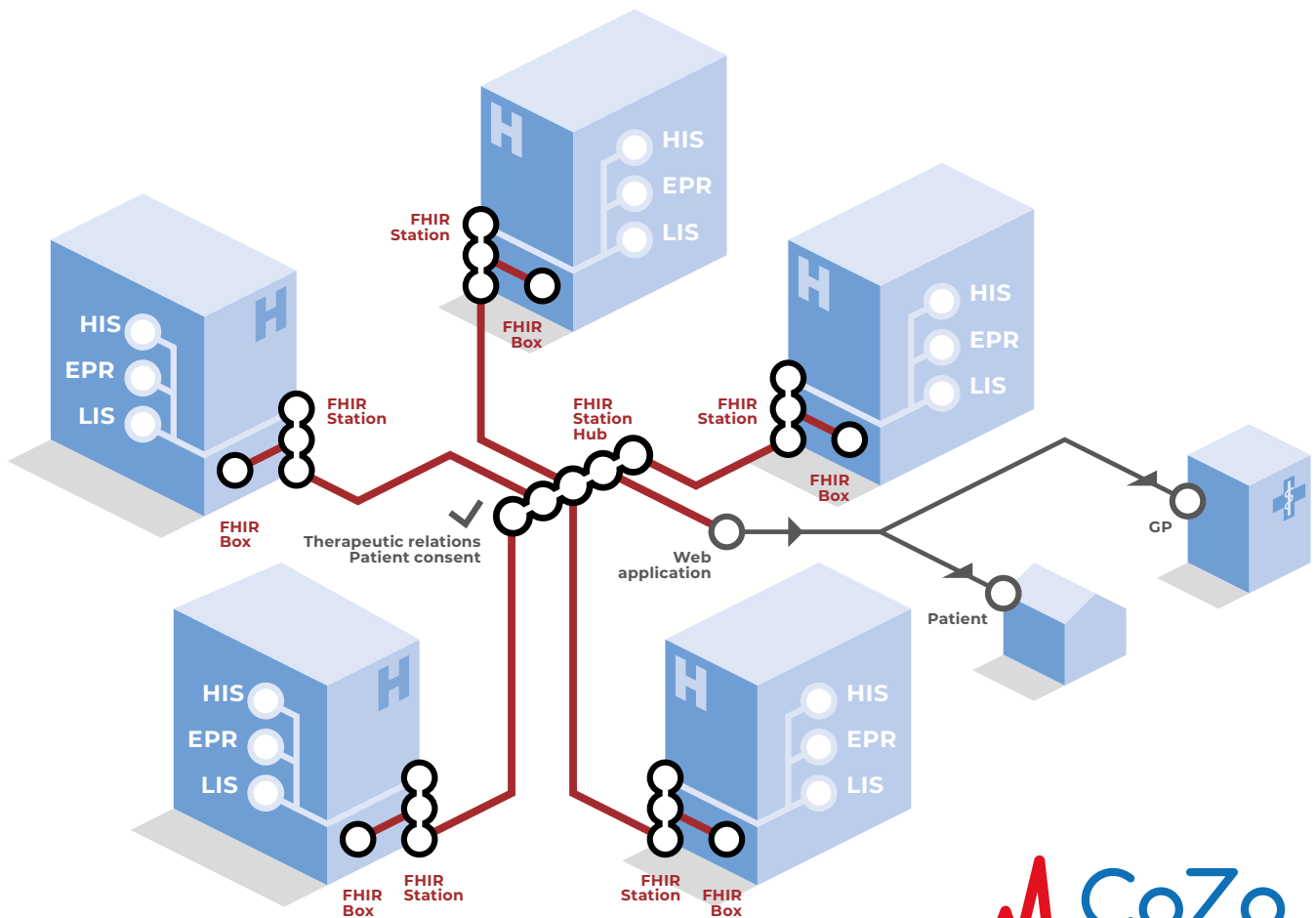
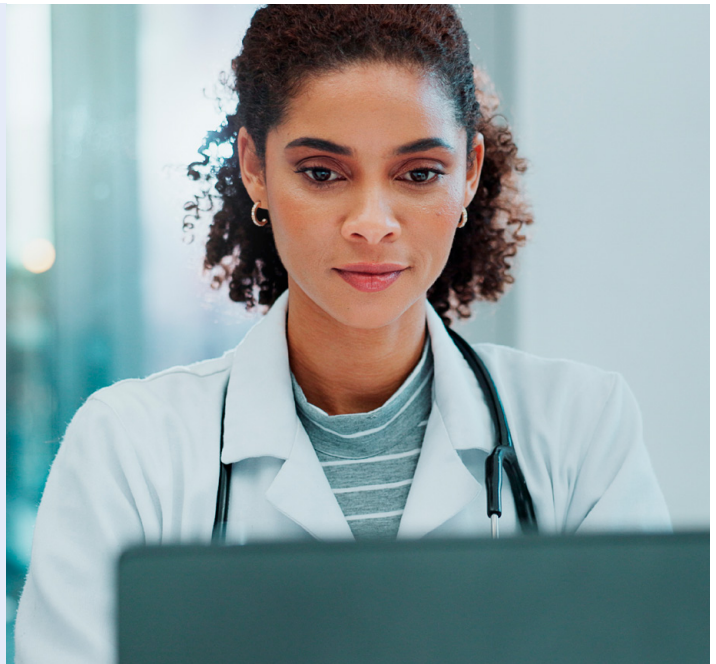


Elien De Koker
project manager CoZo

Data capability project

SHIFT is a data capability project, financially supported by the Belgian government through European funds. Data capability projects aim to use available structured data meaningfully for healthcare decision-making. This includes data reuse and the transformation of raw data into valuable information, starting with its collection and management.

In the long run, successful projects will be incorporated into the Belgian Meaningful Use Criteria (BMUC) funding, allowing the entire healthcare sector to benefit from the achievements.



How it works:

- 1 A **healthcare professional** wants to check whether a patient had any problems and/or allergies registered in the past. They **initiate a query** via CoZo, either through a healthcare application or interactively via the portal.
- 2 **CoZo identifies** the healthcare institutions where the patient is known, and whether the patient has given **consent to share** their data ('patient consent'). It also verifies the therapeutic relationship between the querying healthcare professional and the patient, and that no national exclusion has been registered for the healthcare professional.
- 3 If the checks confirm that CoZo is authorised to perform the query, it is converted into a **FHIR query**. The FHIR Station Hub processes the query and distributes it according to the applicable **security rules** to the relevant healthcare institutions.
- 4 Each connected hospital has a **FHIR Station** that receives the query and forwards it to the hospital's local FHIR repository where the data is stored: either an Amaron **FHIR Box** or a FHIR repository from another supplier.

With the FHIR Station, each healthcare institution can respect local **security measures** and **maintain an overview** of the (external) FHIR data flows.
- 5 The querying healthcare application receives the result, and can integrate the **structured information** into its own application.
- 6 This information is also displayed in the **CoZo web portal** as part of the list of all available results for the patient. A **download button** on the portal allows the FHIR result bundle to be downloaded.

Benefits of Amaron's solution:

Ease of use:

With FHIR Station, you can easily define who has access to which sources and fields, for each of your FHIR projects – all through a single, central user interface. The data can be pseudonymised if needed; for example, for secondary data usage.



Federation:

With a single query, you can query multiple sources simultaneously: whether of the same type (e.g., different EHRs) or not (e.g., EHR, HIS, LIS, etc.). The data is returned in a consolidated manner.



Scalability:

The solution is scalable and grows with your needs.



Security:

All data is logged. Using an ATNA-based audit repository, you can track who accessed which data and when.



Insight:

The dashboard provides a clear visual overview of all data-sharing projects. Additionally, FHIR Station enables the analysis of incoming queries and checks whether security measures are respected.



Knowledge and experience:

Amaron is highly knowledgeable about the sector and has 15 years of experience with healthcare interoperability.



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Would you like more information,
a quote or a demonstration?
Call us on **+32 51 62 73 20**
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