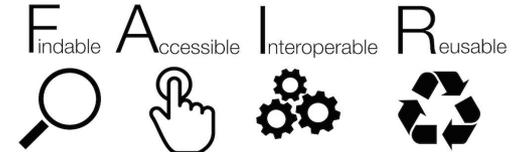


# **FAIRness for FHIR: Towards Making Health Datasets FAIR using HL7 FHIR**

Alicia MARTÍNEZ-GARCÍA, Giorgio CANGIOLI,  
Catherine CHRONAKI, Matthias LÖBE, Oya BEYAN,  
Anthony JUEHNE, Carlos Luis PARRA-CALDERÓN

## Introduction

- [FAIR principles](#).
- EOSC & [GoFAIR](#).
- [HL7 FHIR](#).
- [FAIR4Health project](#).
- [RDA](#)  
[FAIR Data Maturity Model WG](#).



Performed work and next steps of the [‘FAIRness for FHIR’ project](#) in the direction of developing a roadmap for FAIR data certification.

## FAIRness for FHIR project objectives

The main goals of the ['FAIRness for FHIR' project](#) are:

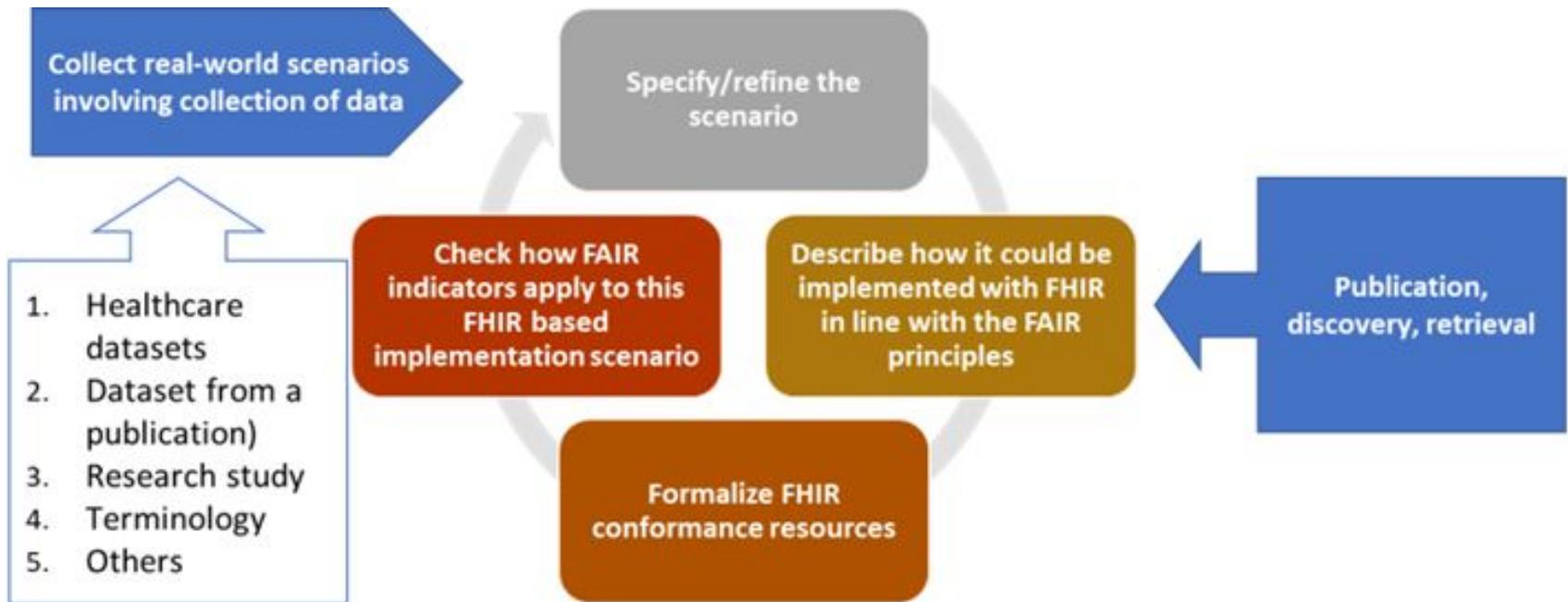
- Facilitate the collaboration between the FAIR and the FHIR communities.
- Enable cooperative usage of the FHIR standard to consistently implement the FAIR principles.
- Support the assessment and implementation of FAIR health data by using HL7 FHIR.

# FAIRness for FHIR project objectives

The [FHIR4FAIR IG](#) aims:

- To provide guidance on how HL7 FHIR can be used to support FAIR health data implementation and assessment.
- To guide researchers who wish to make available a FAIR health dataset derived from a data source collected and curated for use in a specific context.
- To help researchers and data scientists to search and access collected FAIR health datasets to answer specific research questions.

# Methods



# Methods

## Real-world scenarios



- [FAIR4Health datasets.](#)
- [NInFEA.](#)
- [ImmPort.](#)
- [MIMIC.](#)
- [FITBIR.](#)

# Methods

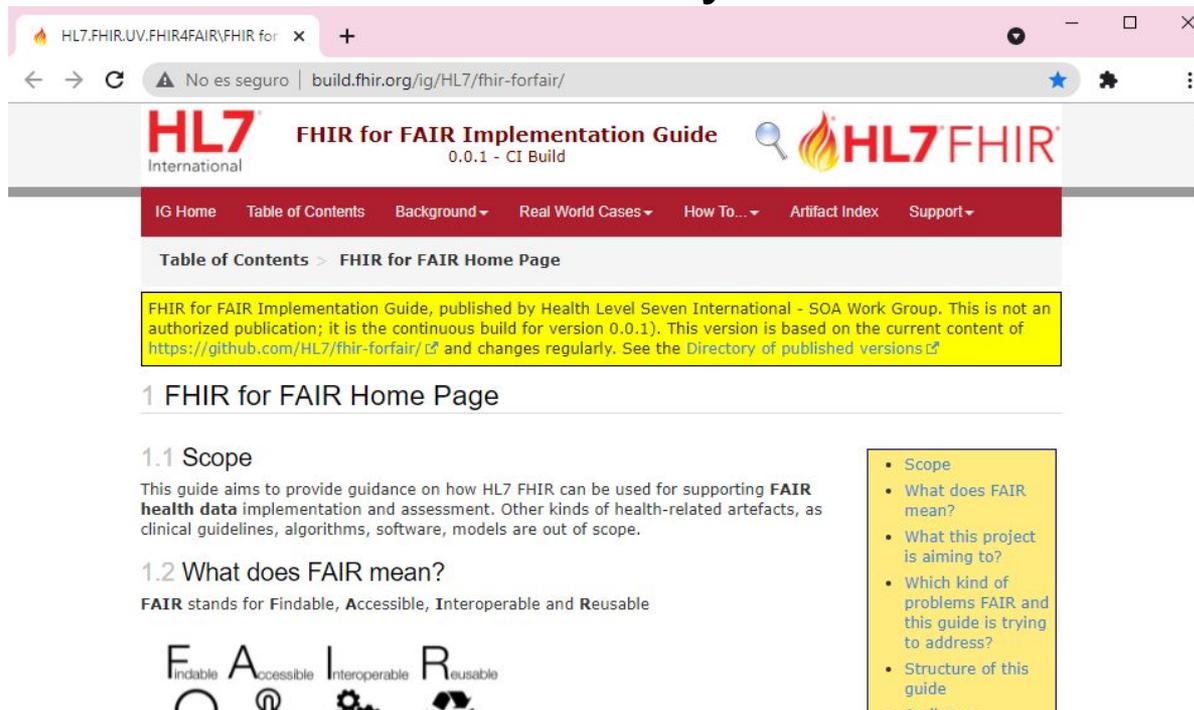
## Checking how the FAIR indicators apply

Check how FAIR indicators apply to this FHIR based implementation scenario

| ID | PRINCIPLE | INDICATOR_ID | INDICATORS | PRIORITY   | METRIC    | VIZ                         | SC  |
|----|-----------|--------------|------------|--|-----------|-----------------------------|-----|
| 1  | F         | F1           | RDA-F1-01M | Metadata is identified by a persistent identifier                          | Essential | 4 – fully implemented       | 4 1 |
| 2  |           | F1           | RDA-F1-01D | Data is identified by a persistent identifier                              | Essential | 4 – fully implemented       | 4 1 |
| 3  |           | F1           | RDA-F1-02M | Metadata is identified by a globally unique identifier                     | Essential | 4 – fully implemented       | 4 1 |
| 4  |           | F1           | RDA-F1-02D | Data is identified by a globally unique identifier                         | Essential | 4 – fully implemented       | 4 1 |
| 5  |           | F2           | RDA-F2-01M | Rich metadata is provided to allow discovery                               | Essential | 4 – fully implemented       | 4 1 |
| 6  |           | F3           | RDA-F3-01M | Metadata includes the identifier for the data                              | Essential | 4 – fully implemented       | 4 1 |
| 7  |           | F4           | RDA-F4-01M | Metadata is offered in such a way that it can be harvested and indexed     | Essential | 4 – fully implemented       | 4 1 |
| 8  | A         | A1           | RDA-A1-01M | Metadata contains information to enable the user to get access to the data | Important | 4 – fully implemented       | 4 1 |
| 9  |           | A1           | RDA-A1-02M | Metadata can be accessed manually (i.e. with human intervention)           | Essential | 4 – fully implemented       | 4 1 |
| 10 |           | A1           | RDA-A1-02D | Data can be accessed manually (i.e. with human intervention)               | Essential | 3 – in implementation phase | 3 0 |
| 11 |           | A1           | RDA-A1-03M | Metadata identifier resolves to a metadata record                          | Essential | 4 – fully implemented       | 4 1 |
| 12 |           | A1           | RDA-A1-03D | Data identifier resolves to a digital object                               | Essential | 4 – fully implemented       | 4 1 |
| 13 |           | A1           | RDA-A1-04M | Metadata is accessed through standardised protocol                         | Essential | 4 – fully implemented       | 4 1 |
| 14 |           | A1           | RDA-A1-04D | Data is accessible through standardised protocol                           | Essential | 4 – fully implemented       | 4 1 |
| 15 |           | A1           | RDA-A1-05D | Data can be accessed automatically (i.e. by a computer program)            | Important | 4 – fully implemented       | 4 1 |

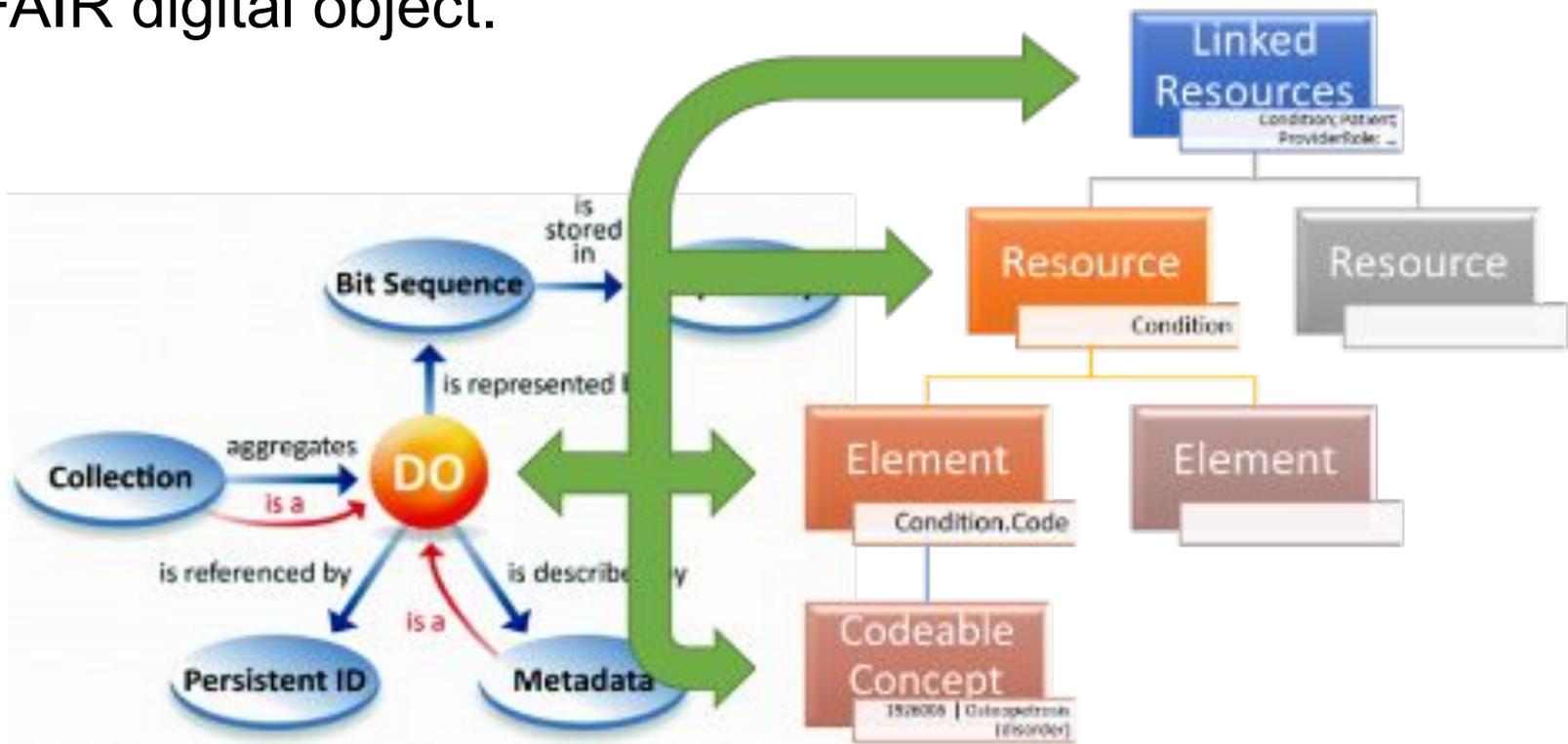
# Results

- 'FAIRness for FHIR' project meetings.
- First draft of the FHIR4FAIR IG, planned to be presented in the HL7 January 2022 Ballot.

A screenshot of a web browser displaying the "FHIR for FAIR Implementation Guide" website. The browser address bar shows "build.fhir.org/ig/HL7/fhir-forfair/". The page header includes the HL7 International logo and the text "FHIR for FAIR Implementation Guide 0.0.1 - CI Build". A navigation menu contains links for "IG Home", "Table of Contents", "Background", "Real World Cases", "How To...", "Artifact Index", and "Support". Below the menu, the "Table of Contents" is expanded to show "FHIR for FAIR Home Page". A yellow highlighted box contains a disclaimer: "FHIR for FAIR Implementation Guide, published by Health Level Seven International - SOA Work Group. This is not an authorized publication; it is the continuous build for version 0.0.1). This version is based on the current content of https://github.com/HL7/fhir-forfair/ and changes regularly. See the Directory of published versions". The main content area is titled "1 FHIR for FAIR Home Page" and includes sections for "1.1 Scope" and "1.2 What does FAIR mean?". The "1.2 What does FAIR mean?" section states that FAIR stands for Findable, Accessible, Interoperable and Reusable. At the bottom, there are icons for each of these four principles: Findable (magnifying glass), Accessible (person with a speech bubble), Interoperable (gears), and Reusable (circular arrows). A yellow highlighted box on the right side of the page lists a table of contents for the "Scope" section, including items like "What does FAIR mean?", "What this project is aiming to?", "Which kind of problems FAIR and this guide is trying to address?", and "Structure of this guide".

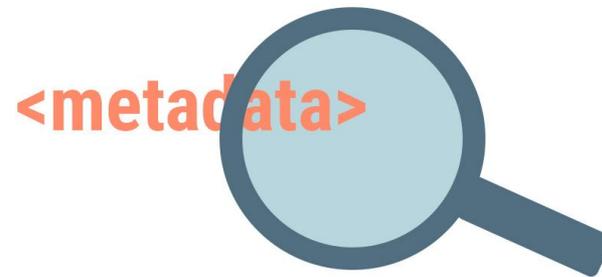
# Discussion

FAIR digital object.



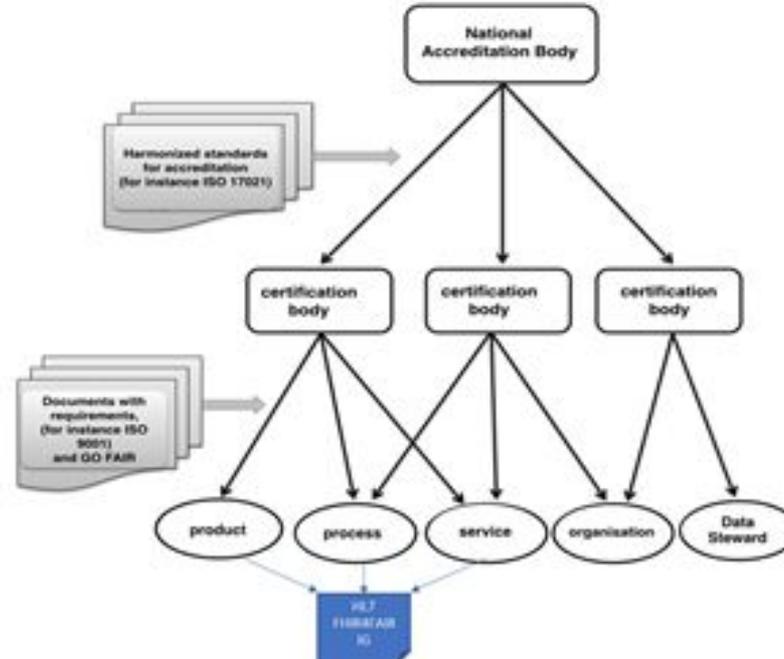
# Discussion

The importance of metadata.



# Discussion

The FAIR4Health FAIR data certification roadmap, taking into account the gaps identified by the EOSC [report](#) for the [FAIR certification](#) of data repositories.



## Conclusions

- Providing guidance on how the HL7 FHIR standard could support the FAIRification process in the case of health datasets.
- The [‘FAIRness for FHIR’ project](#) is on-going, with the short-term aim to present the [FHIR4FAIR IG](#) in HL7 January 2022 Ballot.
- This work serves to provide practical underpinnings for the [FAIR4Health FAIRification workflow](#), which is a domain-specific extension of the GoFAIR process.
- The team working in this project stimulates discussion on how HL7 FHIR standard can simplify the FAIRification process, over different kinds of health data (healthcare datasets, publications, research studies, etc).



Questions? [alicia.martinez.garcia@juntadeandalucia.es](mailto:alicia.martinez.garcia@juntadeandalucia.es)



@FAIR4Health  
#FAIR4Health



<https://www.linkedin.com/company/13977340/>



[www.fair4health.eu](http://www.fair4health.eu)



[https://www.youtube.com/channel/UCpqcUIqaxXM\\_AJCZPatqcm4cg](https://www.youtube.com/channel/UCpqcUIqaxXM_AJCZPatqcm4cg)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824666