This guide has been designed following an **incremental, iterative** and **meet-in-the -middle** approach.

In this sense authors **do not pretend to cover** in this version of the guide **all the aspects** related to the data FAIRification (e.g., security and privacy) or all the possible kind of data.

The intent of this guide is to promote as possible the **reuse of existing artefacts**, in this sense no new FHIR profiles have been specified when covered by existing guides (e.g. genomic, lab results, vital sign).

This guide **is not about FAIR in general**, but on how FHIR should be used to better support the FAIR principles. The design choices will be therefore based on how FHIR is designed: this may imply that some FAIR expectations might not be fully accomplished. A list of possible shortages, including those related to the FAIR digital object to FHIR resource mapping, are summarized hereafter.

The following figure shows how the incremental, iterative and meet-in-the -middle approachhas been realized.

A set of possible domains have been identified and a set real-world scenarios selected.

For each selected scenario (iteratively):

1. The scenario has been specified and refined (e.g. creating several sub-scenarios, considering different architectures) when needed.
2. It has been analyzed how it could be realized using the FHIR standard.
3. When needed, FHIR conformance resources have been specified.
4. Finally, it has been checked how the proposed solution fulfills the FAIR RDA indicators

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This has been done considering different possible [deployment architectures](deployment.html), and evaluating how the adoption of FHIR may improve the FAIRness, assessing this by using the RDA indicators.

### FAIR digital object to FHIR resource mapping: shortages

#### FAIR digital object to FHIR resource mapping

The concept of FAIR digital object is quite wide and can vary in term of granularity and type of data that should be represented.

In fact, a FAIR digital object can be a single atomic information (e.g. a coded diagnosis) up to a collection of data (e.g. a data set). Data, moreover, can represent quite different kinds of information: it might be for example a waveform, an image, a condition, a medication, or other kinds of data.

This variety makes not so straightforward the mapping between FAIR data objects and the FHIR resources covering a large range of resources and elements (see figure below).

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Similar considerations can be done also for the metadata, where, depending on what the metadata is, the metadata elements can be represented within the same resource documenting the data, or by a set of linked resources.

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#### Data vs metadata

In addition to the issue reported above, depending on what a "FAIR object" is the boundary between data and metadata may change. That means that based on the context, the same information can be considered as part of the data or of the metadata. This makes even more complex the mapping to the FHIR resources.

The figure below shows how information that were part of the metadata in the previous example are now part of the data; and how metadata and data elements are represented in the same FHIR resource.

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#### Metadata identification

In consideration of the previous arguments, the expectation of having a persistent and unique ID that identifies the metadata FAIR data object, distinct from the data FAIR data object, cannot be always satisfied in the FHIR space, except for specific contexts.

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### Mathias’ comment on the old home page

select one of them as reference case and focus on that kind of object

identify a minimal set of information that are relevant in real life for the components of that FAIR object.

proceed incrementally starting from few essential information, in order to excursive also the development process (i.e. not to try to cover everything from the beginning)

a) FAIRification of FHIR resources in general, but with a focus on data-holding entities like observations.

b) FAIRification of FHIR datasets (resource connection still unclear), but with the intention of describing compounds of related data instances like a database that can be queried or a snapshot used in a publication.

c) FAIRification of Research projects such as studies, cohorts, registers, survelliance, quality assurance.

d) Other research data management entities such as publications, researchers, projects.

e) I could image the usefulness of describing services, making them FAIR and promote use. That would go inline with the SOA group intentions.