

Xt-EHR Logical Models & HL7 Europe's Implementation Guides as a Proposal for EHDS

Helsinki, 19.01.2026



Rutt Lindström



eHealth Network
Subgroup of Semantics



My health @ EU
eHealth Digital Service Infrastructure
A service provided by the European Union



Seven and HL7 are registered trademarks of Health Level Seven International, registered with the United States Patent and Trademark Office.



EEHRxF for Priority Categories

Article 14

Priority categories of personal electronic health data for primary use

For the purposes of this Chapter, where data are processed in electronic format, categories of personal electronic health data shall be the following:

- (a) patient summaries;
- (b) electronic prescriptions;
- (c) electronic dispensations;
- (d) medical imaging studies and related imaging reports;
- (e) medical test results, including laboratory and other diagnostic results and reports; and
- (f) discharge reports.

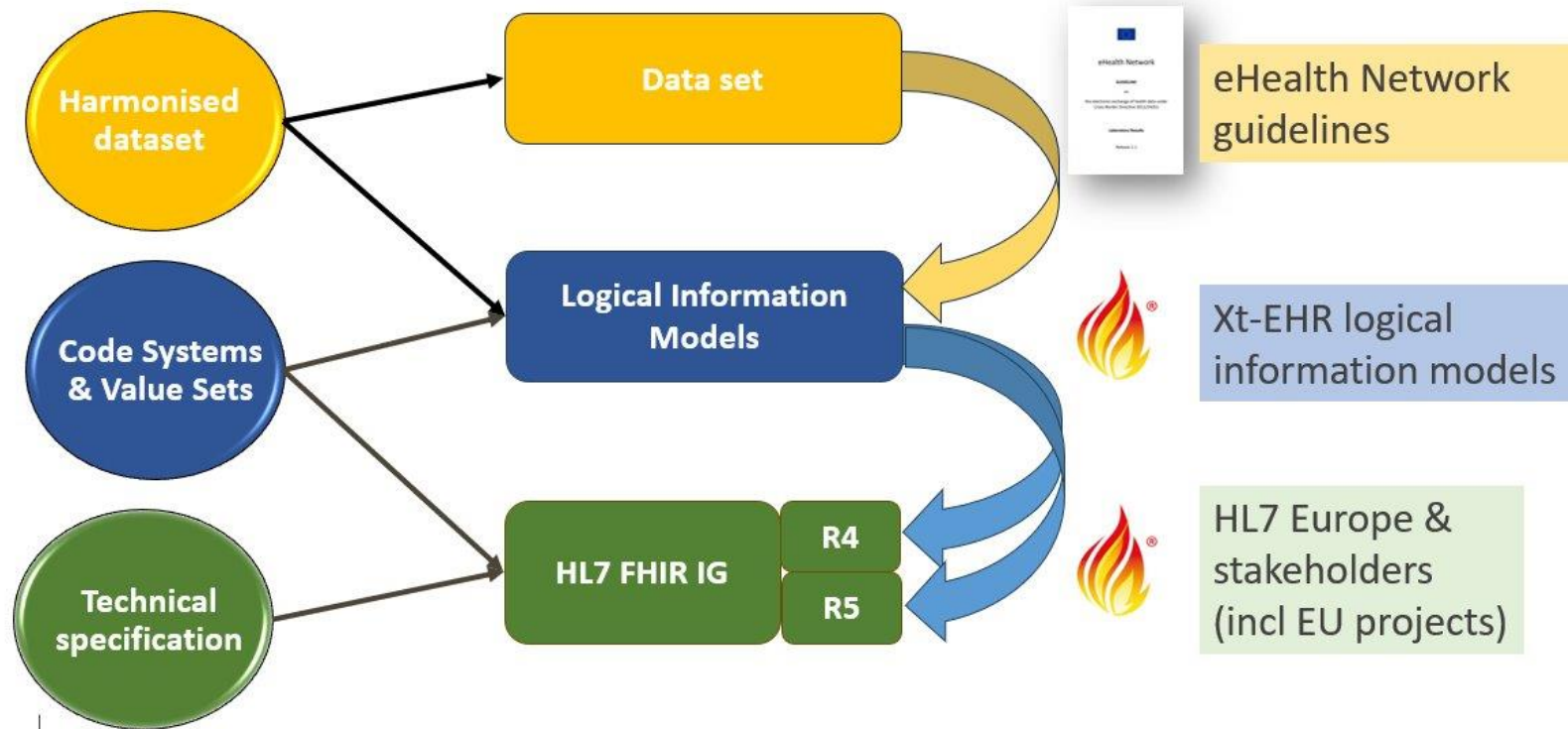
Article 15

European electronic health record exchange format

By ... [two years from the date of entry into force of this Regulation], the Commission shall, by means of implementing acts, lay down the technical specifications for the priority categories of personal electronic health data referred to in Article 14(1), setting out the European electronic health record exchange format. Such format shall be commonly used, machine-readable and allow transmission of personal electronic health data between different software applications, devices and healthcare providers. Such format shall support transmission of structured and unstructured health data and shall include the following elements:

- (a) harmonised datasets containing electronic health data and defining structures, such as data fields and data groups for the representation of clinical content and other parts of the electronic health data;
- (b) coding systems and values to be used in datasets containing electronic health data;
- (c) technical interoperability specifications for the exchange of electronic health data, including its content representation, standards and profiles.

EEHRxF: European EHR eXchange Format

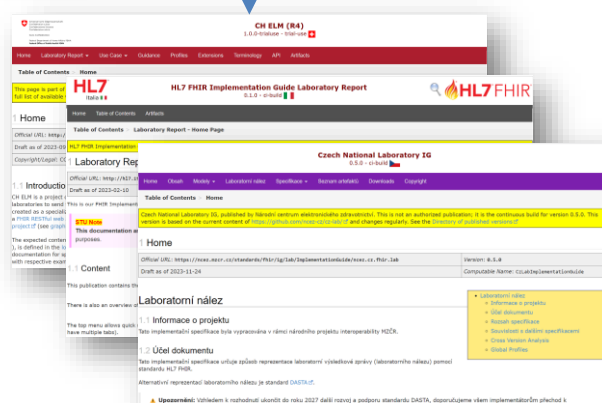


The Format is not one-size-fits-all

high quality. The use of a European electronic health record exchange format should become more widespread at Union and national level. The European electronic health record exchange format could allow for different profiles for its use at the level of EHR systems and at the level of the national contact points for digital health in MyHealth@EU for cross-border data exchange.

EHDS Recital 26

Flexible EEHRxF IG



Crossborder exchange with **transformation** at National Contact Point

Xt-EHR Logical Models



Funded by
the European Union

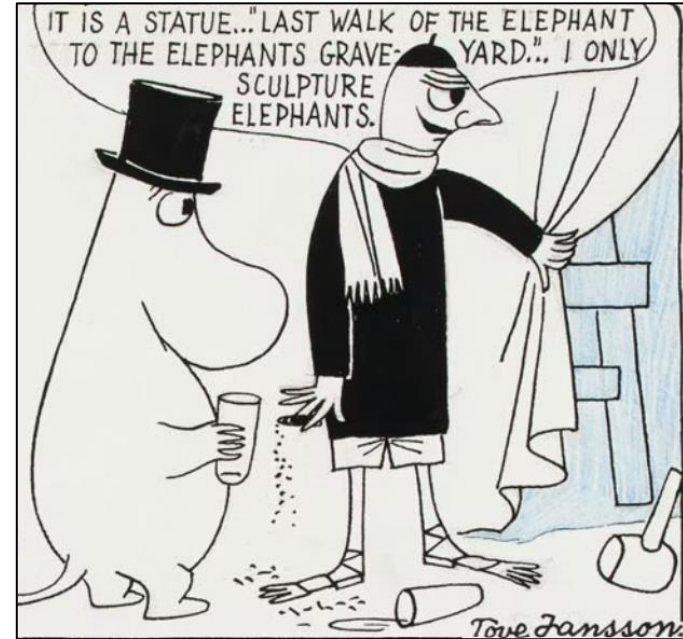


My health @ EU
eHealth Digital Service Infrastructure
A service provided by the European Union

What is Xt-EHR - Objectives

The objectives:

- Proposal for EEHRxF
- Proposal for common requirements for EHR systems
- Proposing a conformity assessment framework



Challenges of Xt-EHR Joint Action

The challenge:

- Over 20 member states involved
- Everyone has a different starting point
- Making compromises
- Accepting our limits

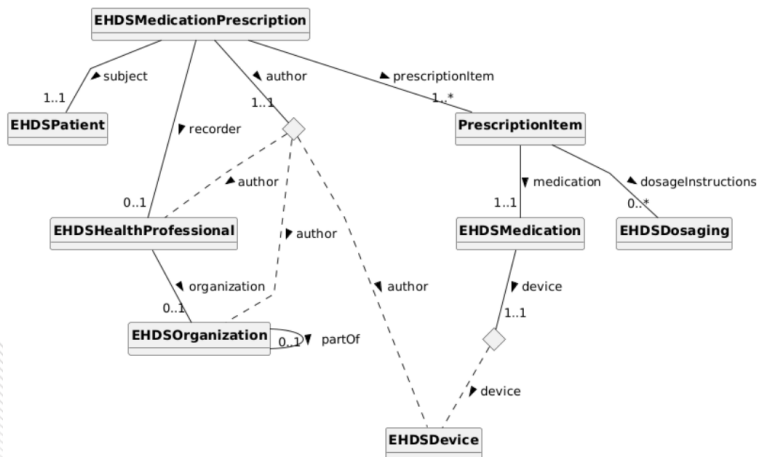


Logical Information Models (Xt-EHR)

- Reflect business/logical viewpoint
- Key data elements
- Preliminary preferred code systems
- Implementation agnostic

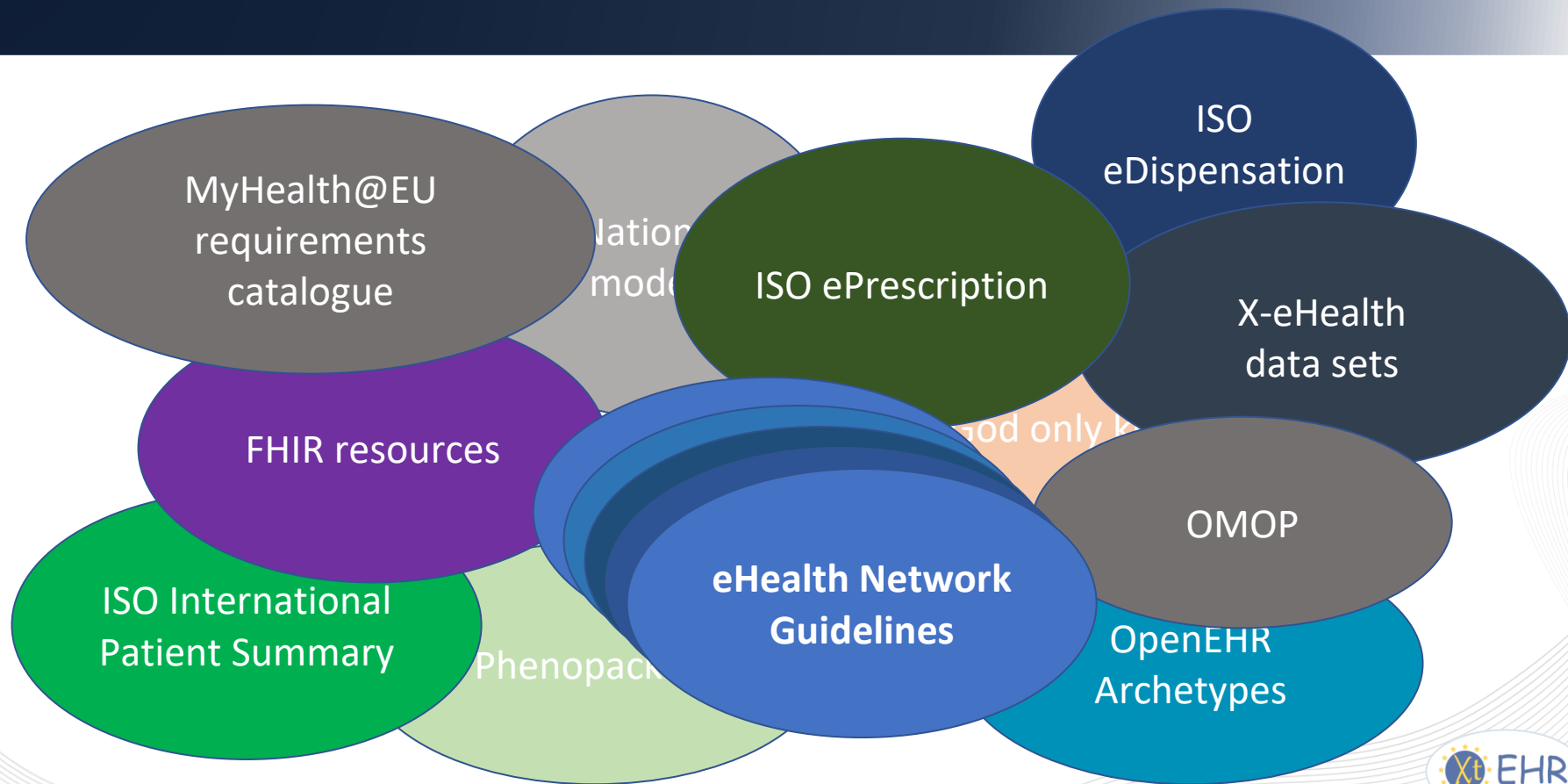
<https://build.fhir.org/ig/Xt-EHR/xt-ehr-common>

Published: <https://www.xt-ehr.eu/fhir/models>



The screenshot shows the website for EHDS Logical Information Models, version 0.2.1 - qa-preview. The navigation bar includes links for Home, Introduction, EHDS Use Cases (selected), About, Artifacts, and Download. A 'Table of Contents' dropdown menu is open, listing various artifacts: ePrescription, eDispensation, Laboratory Report, Patient Summary, Medical Images, and Discharge Report. The main content area features a yellow banner with a disclaimer: 'EHDS Logical Information Models are a continuous build for version 0.2.1 - qa-preview. This guide is not an authorized public release of the FHIR (HL7® FHIR® Standard) CI Build. This version is based on the current content of the build. For more information, see the Directory of published versions at <https://build.fhir.org/ig/Xt-EHR/xt-ehr-common/> and changes regularly.' Below the banner, there is a section titled '14 Artifacts Summary' and a paragraph stating: 'This page provides a list of artifacts that are implemented as part of this implementation guide.' A 'Contents' dropdown menu is also visible at the bottom right, showing 'EHDS Patient' as the first item.

Abundance of harmonised data sets!

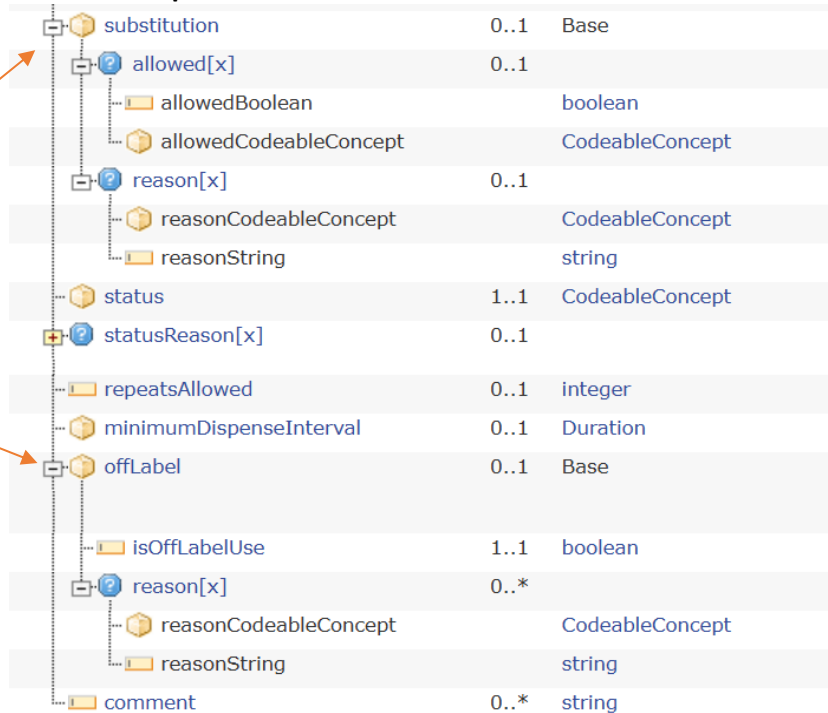


Starting Point: eHN Guidelines + MyHealth@EU

- eHN Guidelines don't have cardinality or data types. Includes unmodeled content.
- MyHealth@EU specific to crossborder, closer to technical specs.



A.1.5.10	Reason prescription for	The reason why the medicine is being prescribed, including the option to mention that the medicinal product is being prescribed for 'off label' use. The reason for the prescription gives the dispenser the opportunity to review the prescription for medication safety issues. Note: in some countries it is obligatory to state the reason for prescription on the prescription itself for some or all medicinal products.	
A.1.5.11	Substitution	Substitution handling can be recorded to indicate whether and to what extent substitution is allowed by the prescriber.	



Logical Information Models: technical considerations

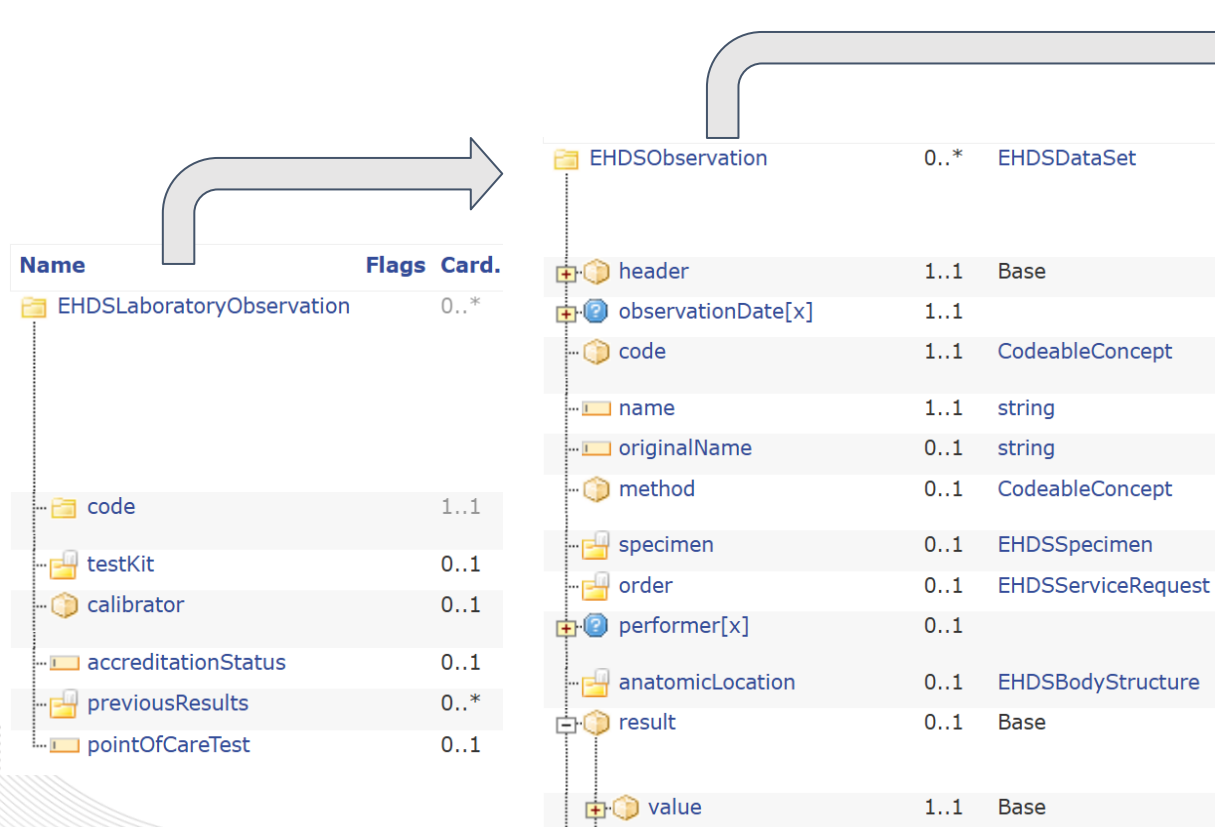
Technical considerations

- Building blocks approach (like CIMs)
- Uses FHIR infrastructure
- Data types slightly simplified
- Mappings to FHIR resources in the HL7 Europe FHIR IGs

<https://build.fhir.org/ig/Xt-EHR/xt-ehr-common>

Name	Flags	Card.	Type	Description & Constraints	Filter:
EHDSAlert		0..*	EHDSDataSet	Alert model	
header		1..1	Base	Elements defined in Ancestors:header Instances of this logical model can be Common header for all patient-related data	
subject		1..1	EHDSPatient	Patient/subject information	
identifier		0..*	Identifier	Business identifier for the object	
authorship		1..*	Base	Resource authoring details	
lastUpdate		0..1	dateTime	Date and time of the last update to the resource	
status		1..1	CodeableConcept	Current status of the alert, indicates whether the alert is longer needed or was entered in error. Binding Description: (preferred): hl7:FHIR	
statusReason[x]		0..1		Reason for the current status of the resource	
language		0..1	CodeableConcept	Language in which the resource is written Binding Description: (preferred): BCP-47	
code		0..1	CodeableConcept	A coded representation of the alert. Binding Description: (preferred): SNOMED-CT	
description		0..1	string	Narrative representation of the alert.	
priority		0..1	CodeableConcept	A code that identifies the priority of the alert. Binding Description: (preferred): hl7:FHIR	
period		0..1	Period	Time period when alert is active. The period starts when the alert is active, the end of the period should be when the alert is no longer active.	
sourceReference		0..*	Reference(Resource)	A reference to the resource the alert is associated with.	

Reuse of models

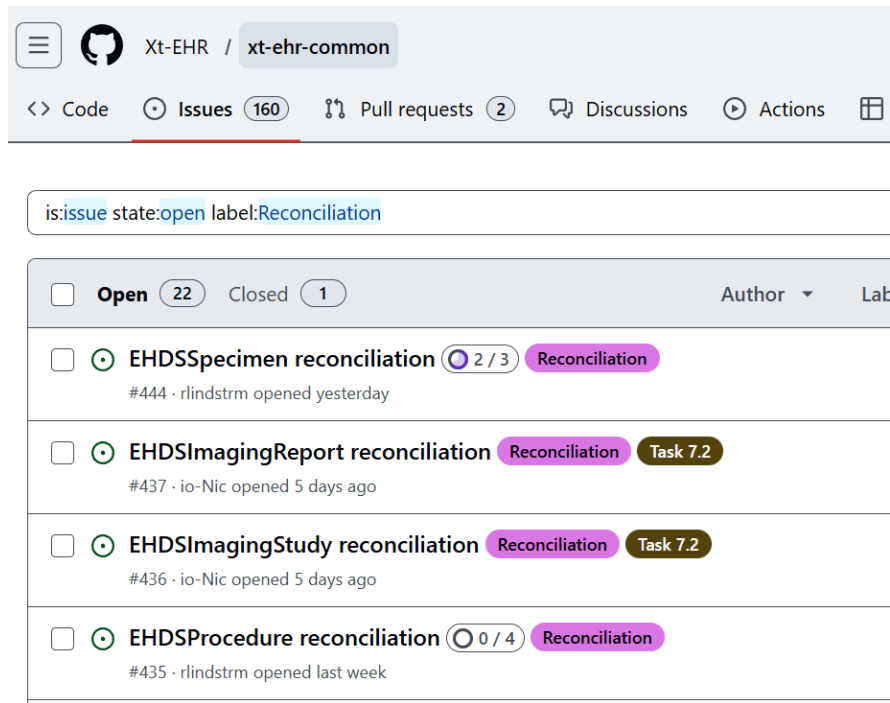


Challenges:

- Use cases differ
- Read/write obligations

Feedback

- 5 overlapping consultations
- Ca 1500 comments for data models (ca 8000 comments altogether)
- Reconciliation followable in GitHub:
<https://github.com/Xt-EHR/xt-ehr-common/issues>
- Requests to reduce models as well as provide more details and expand scope



Next steps: obligations on data level

- Models have very relaxed cardinalities on instance level
- Conformity framework proposes obligations to indicate which elements an EHR system should support

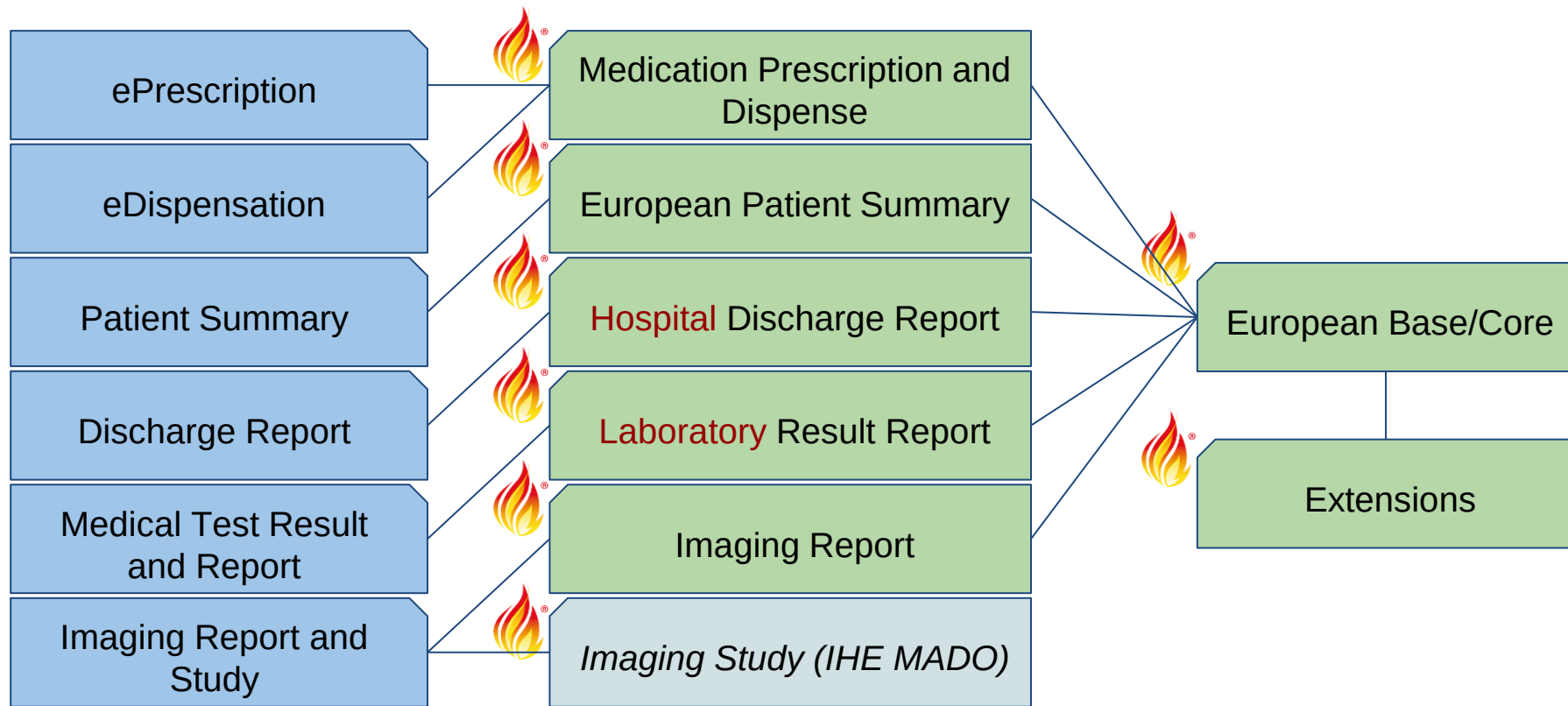
 dosageInstructions		0..*	EHSDosaging	Dosaging and administration instructions						
				<table><tr><th>Obligations</th><th>Actor</th></tr><tr><td>SHOULD:able-to-populate</td><td>Prescriber</td></tr><tr><td>SHALL:display</td><td>Dispenser</td></tr></table>	Obligations	Actor	SHOULD:able-to-populate	Prescriber	SHALL:display	Dispenser
Obligations	Actor									
SHOULD:able-to-populate	Prescriber									
SHALL:display	Dispenser									
 preparationInstructions		0..1	string	Additional instructions about preparation or dispense						
  substitution		0..1	Base	Whether and which type of substitution is allowed for th						
				<table><tr><th>Obligations</th><th>Actor</th></tr><tr><td>SHOULD:able-to-populate</td><td>Prescriber</td></tr><tr><td>SHALL:display</td><td>Dispenser</td></tr></table>	Obligations	Actor	SHOULD:able-to-populate	Prescriber	SHALL:display	Dispenser
Obligations	Actor									
SHOULD:able-to-populate	Prescriber									
SHALL:display	Dispenser									
  allowed[x]		0..1		Whether and to what extent substitution is allowed.						
				<table><tr><th>Obligations</th><th>Actor</th></tr><tr><td>SHOULD:able-to-populate</td><td>Prescriber</td></tr><tr><td>SHALL:display</td><td>Dispenser</td></tr></table>	Obligations	Actor	SHOULD:able-to-populate	Prescriber	SHALL:display	Dispenser
Obligations	Actor									
SHOULD:able-to-populate	Prescriber									
SHALL:display	Dispenser									

How do you implement logical models?



Keksijäkylän
Giovanni

Xt-EHR models >> HL7 Europe FHIR IGs

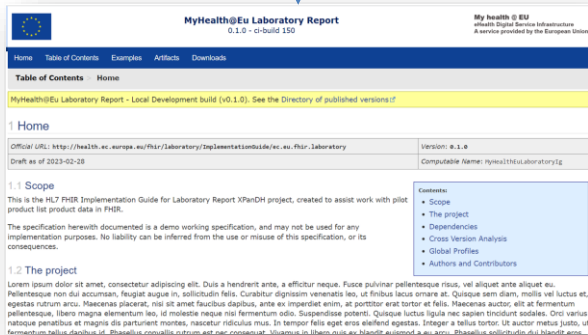


Reminder: it's not one-size-fits-all

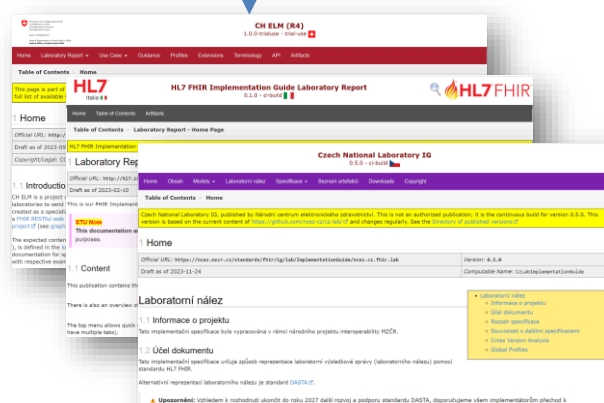
Flexible EEHRxF IG



Crossborder IG



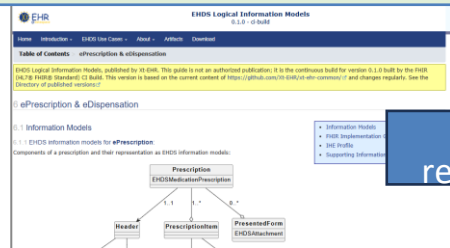
National IGs



Crossborder exchange
with **transformation** at
National Contact Point

It's a maze of dependencies (MPD example)

EHDS Logical models (Xt-EHR)

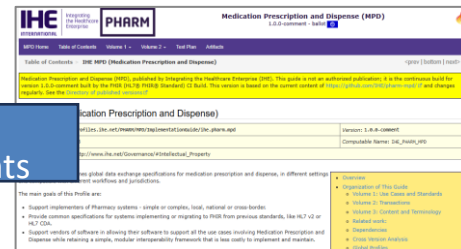


EU requirements

HL7 Europe FHIR IG

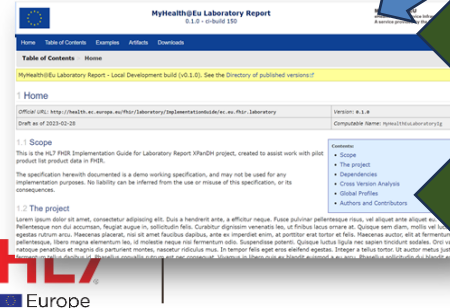


IHE global IG

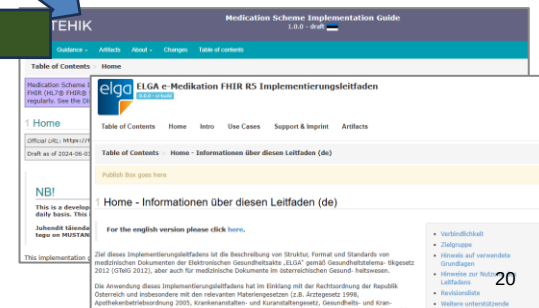


Global requirements

MyHealth@EU crossborder specification



National Specifications



Transform

Transform

Status of Work



Patient Summary



ePrescription
eDispensation



Medical Imaging
and reports



Laboratory Results



Hospital Discharge
report



eHN Guidelines

Since 2013

Since 2014

Since 2023 Nov

Since 2023 June

Since 2023 Nov



Xt-EHR Logical
Models

Draft

Draft

Draft

Draft

Draft



MyHealth@EU
crossborder service

In operation
(CDA)

In operation
(CDA)

2026/27
(FHIR)

In operation*
(FHIR)

2026/27
(FHIR)



HL7 Europe FHIR IG

R4 started

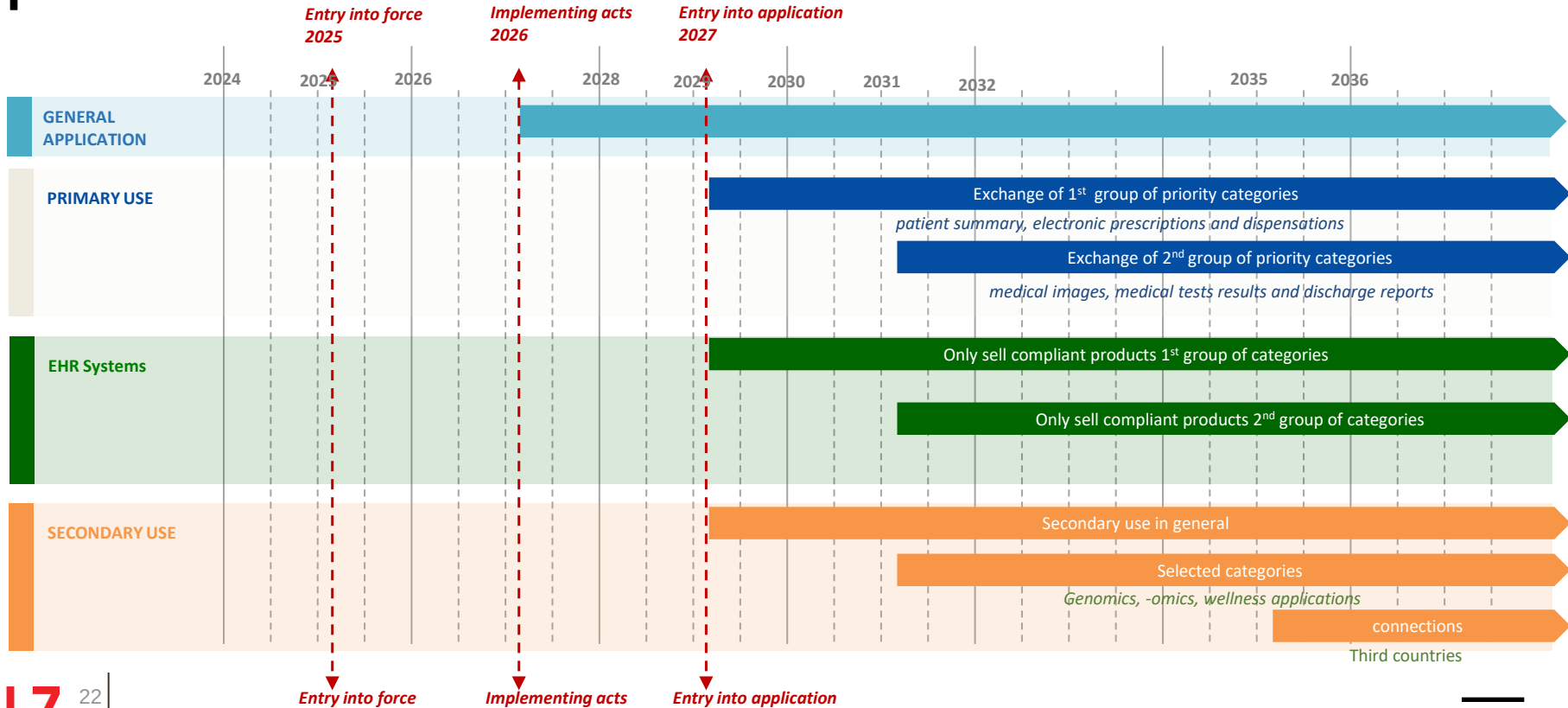
R4/R5 ballot
reconciliation

R5 ballot
reconciliation,
R4 ballot soon

R4 published.
Trial Use. Being
updated.

R4 ballot
reconciliation

EHDS Timeline



What's next

- Xt-EHR finishes April 2026
 - Logical models
 - Partial references to terminology requirements
 - References to HL7 Europe FHIR implementation guides
- eHN Network continues terminology work
 - Task force for choosing preferred code systems for value sets
- HL7 Europe continues with IGs (not officially EHDS!)
 - Collaboration with IHE
- EHDS Implementing Acts before 2027
- MyHealth@EU timeline is ahead of EHDS timeline
- Future maintenance of EHDS specs not fully defined

Contributions welcome

- HL7 Europe working groups are open and active
- HL7 Europe Base/Core ballot ongoing
- Other ballots coming up soon
- Testing event in Brussels end of March (IHE)

<https://confluence.hl7.org/spaces/HEU/pages/358255737/Implementation+Guides>

Thank you!
Kiitos!
Tack!
Aitäh!

