



HL7 FHIR adoption in European health systems: A spotlight on Belgium

**Webinar, 15 May 2024
15.00-16.00 CET**

Online on Teams



HL7 FHIR adoption in European health systems: A spotlight on Belgium

Speaker introductions

- Jean-Michel Polfliet, Belgian eHealth Platform
- Panel:
 - Giorgio Cangioli, HL7 Europe
 - Reinhard Egelkraut, CGM Clinical, HL7 Austria TC FHIR
 - Maria Marques, UNINOVA (PT)
 - Alexis Van Zeveren, Medispring (BE)
- Facilitator: Karolina Mackiewicz, ECHAlliance



Housekeeping



- Your facilitator: Karolina Mackiewicz, ECHAlliance
- The webinar will be recorded, slides will be shared.
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 - Stay muted
 - Feel free to use reactions/emojis during the presentations
 - Use the chat to make comments or raise your questions
 - Raise your hand if you'd like to speak
 - If you are invited to speak, please turn on your video and say who you are

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Agenda

- Welcome and introductions (Karolina Mackiewicz, ECHAlliance)
- Jean-Michel Polfliet, Belgian eHealth Platform
- Panel:
 - Reinhard Egelkraut, CGM Clinical, HL7 Austria TC FHIR
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- Discussion
- End

DIGIRELAB

FHIR Labo Result in the Belgian ecosystem

Agenda

1. Current challenges
2. Project Phases
3. Process and Project Approach
4. Tooling – Visualization Tool and TestServer
5. Rollout
6. Q&A

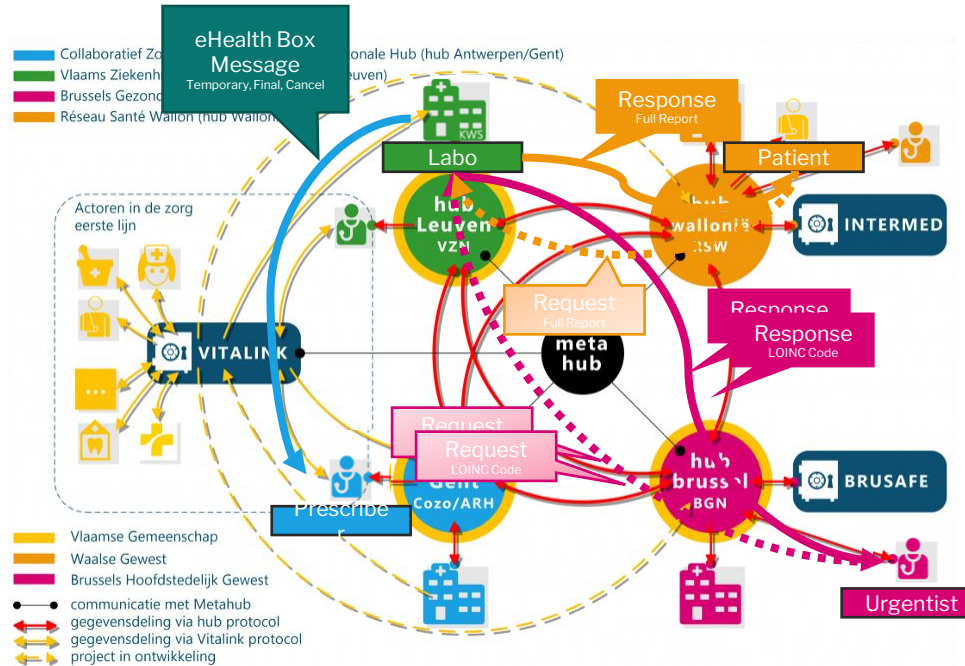
Challenges and Project Phases

DIGIRELAB - Current challenges

- Reports sent in PDF
- Some local formats (HealthOne, Medidoc, Medar)
- No semantic standard used
- No integration in Patient Dossier
- No European alignment
- There is a clear need to have a Standardized solution in-line with EHDS challenges

Transport Layers: eHealthBox, interHub, ..
Payload: FHIR, LOINC, Snomed-CT

DIGIRELAB Project Phases



DIGIRELAB Phase1

DIGIRELAB Phase2

DIGIRELAB Phase3

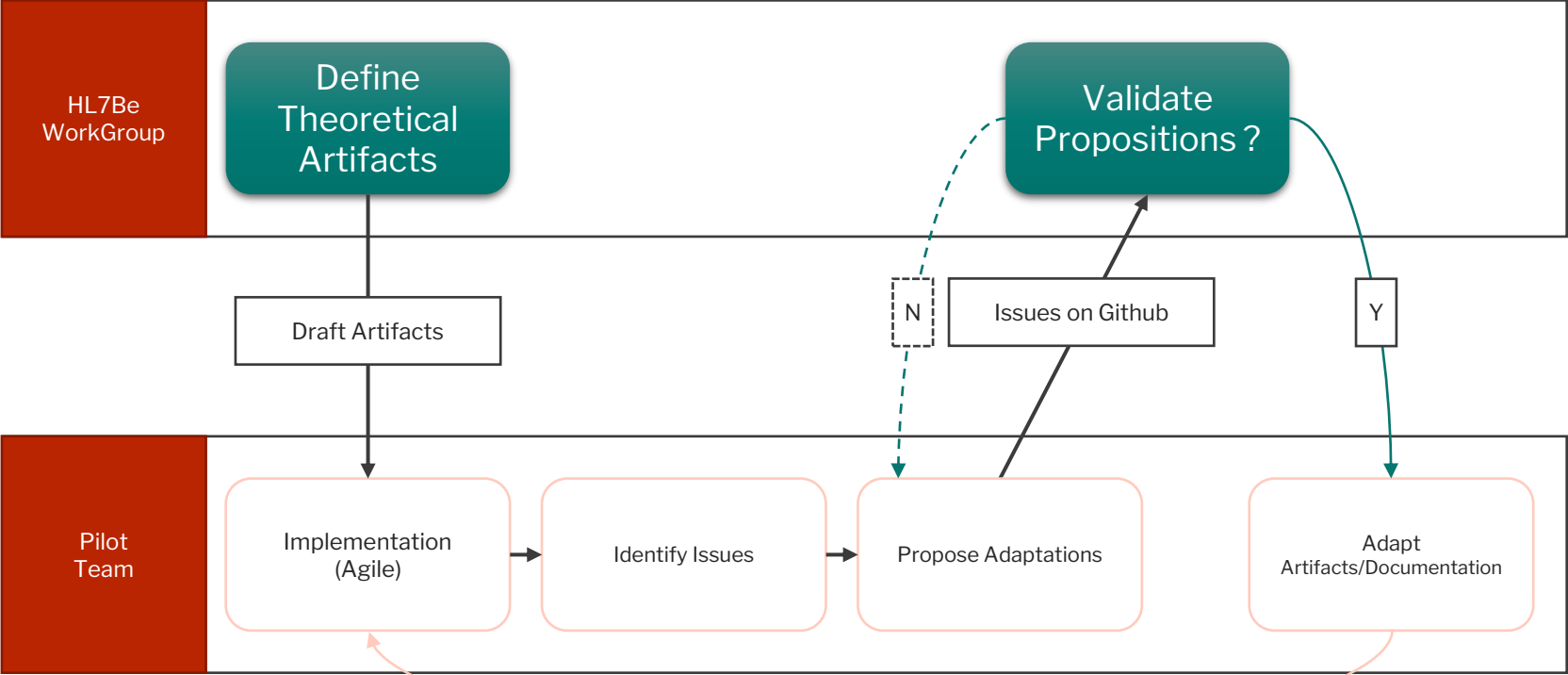
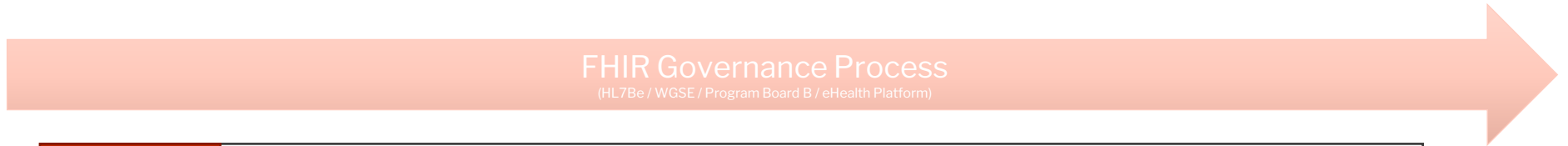
Process and Project approach

CoW – Coalition of the willing

Main Principles

- Scope:
 - Create a first real implementation based on the Theoretical work
 - Help to improve the quality of the IG before official publication
- CoW Team:
 - 2 GP Soft vendors
 - 2 Labo LIS Soft vendors
 - 3 Expert Biologists
 - Standardization Team
 - Terminology Center

The COW approach



14. 15-03-24

DIGIRELAB - Project Presentation



Tooling Visualization Tool

Visualization Tool

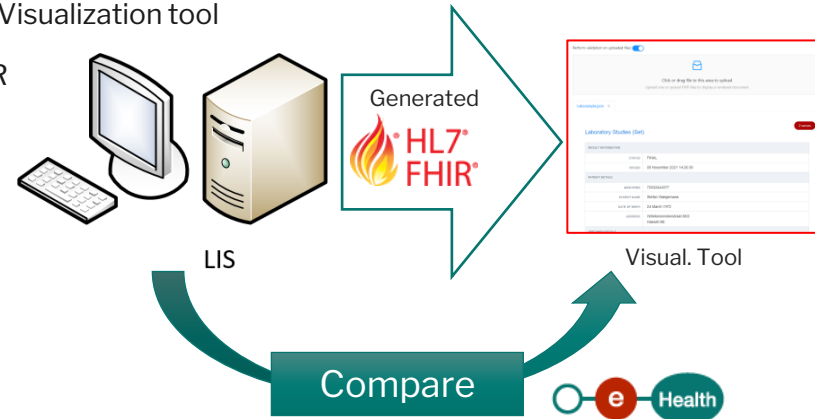
In the DIGIRELAB Project it has been identified that having an official visualization of the FHIR instance can be of added value

- Usage:
 - This toolset is aimed to help during the development phase
 - Designed to be accessible also for non-technical staff:
 - Business analyst
 - Medical staff
 - Can be used to help at Generating/Sender Side and at Receiver Side
- Not designed to be a guideline for the UX/UI in the Software Packages
- No role in the homologation process
- Business rules are not tested by this tool
- https://fhir-testserver.be/index.php/visualization_webapp

Visualization Tool

Sender Side example of process for Labo Result Project:

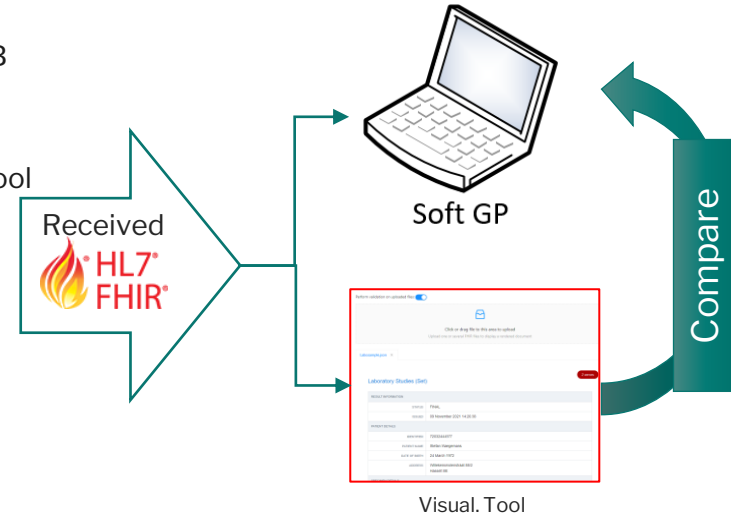
- The biologist creates a new Labo Result in his LIS (Labo Information System)
- The FHIR Message is generated by the LIS
- The file (xml or json) is stored locally
- The biologist can drag & drop this FHIR file in the WebApp Visualization tool
- The WebApp renders the official interpretation of this FHIR
- The biologist can compare the two screens
 - What was introduced in the LIS
 - What the Visualization Tool interprets



Visualization Tool

Receiver Side example of process for Labo Result Project:

- The GP receives a FHIR file (xml or json)
- This file is imported in the GP Software and stored in the GP Soft DB
- The GP opens the Labo Result in his GP Software
- The GP can drag & drop this FHIR file in the WebApp Visualization tool
- The WebApp renders the official interpretation of this FHIR file
- The GP can compare the two screens
 - What is displayed in the GP Software
 - What the Visualization Tool interprets



Tooling FHIR TestServer

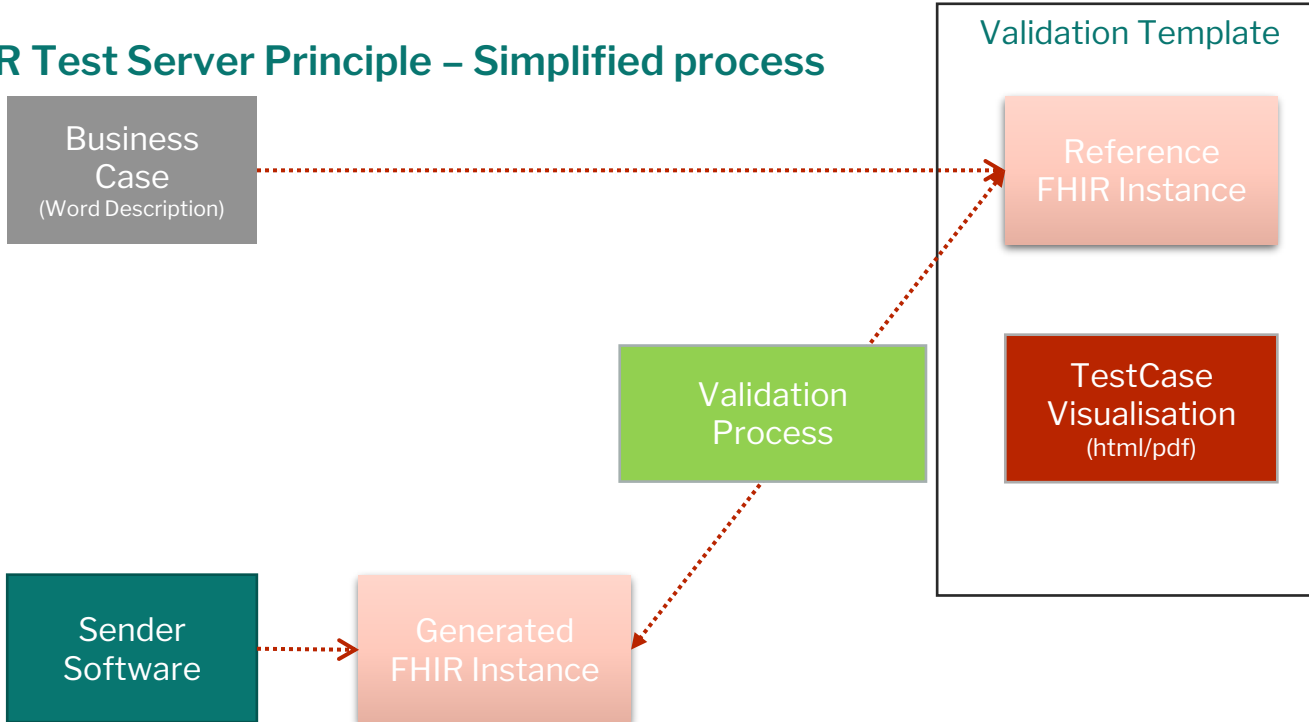
FHIR TestServer

Validate project implementations by:

- Defining a project testplan
 - Specific detailed testcases
- Onboarding project implementers
 - SW vendors, hospitals, labos, ...
- Executing the test campaign
 - Testers have 24/7 access
 - Testers can visualize the testplan
 - Technical view (JSON)
 - Business view (HTML and/or PDF)
 - Testers have to send all defined testcases via REST API
 - Testers can track their progression via a personal dashboard
 - Supervisors can follow up the progression of all implementers

FHIR TestServer

The FHIR Test Server Principle – Simplified process



FHIR TestServer

Validation Process

- FHIR Instances received are validated:
 - Structure validation:
 - Based on the related FHIR IG
 - Content validation:
 - Values are validated based on the detailed testcase definition
 - Exceptions can be configured:
 - Times stamps
 - Practitioners details
- Validation results are stored
 - In case of error: Error report is available for the tester

FHIR TestServer

Selfservice approach

Project TestPlan								
Show 10 entries			Search:					
id	Label	Description	Available Patient Id's	Project	Passed	Shared Files (Total received)	Actions	
1	1A	Results on different levels in hierarchy; panels and "titles" on different sublevels. Including very complex structures (fruit & food allergies).	00010199945;	DIGIRELAB	✓	5(5)	i	
2	1B	RBC/Glucose in different specimen (Blood/urine/CSF)	00010299915;	DIGIRELAB	—	3(3)	i	
3	1C	Bundfield and DiagnosticReportId conform to Belgian HL7 standards	00010399982;	DIGIRELAB	—	4(4)	i	

Testcase Detail

#196

Label1A

DescriptionResults on different levels in hierarchy; panels and "titles" on different

Patient ID00010199945

Github URL

Beautified PayloadVisualizationRaw Payload

```
{
  resourceType: "Bundle",
  type: "document",
  timestamp: "2023-05-24T10:00:26+02:00",
  identifier: {
    system: "https://www.ehealth.fgov.be/lab-report/bundle-id",
    value: "81365677998.818818201.21"
  },
  entry: [
    {
      fullUrl: "Composition/818818201",
      resource: {
        resourceType: "Composition",

```

Close

Testcase Detail

Laboratory report

RESULT INFORMATION

STATUS

FINAL

ISSUED

17 May 2023 00:00:00

VERSION ID

21

PATIENT

IDENTIFIER

81365677998-7695316 (https://www.macsys.be/hl7/Patient)

IDENTIFIER

00010199945 (https://www.ehealth.fgov.be/standards/fhir/core/NamingSystem/ssi)

PATIENT NAME

Patient1 Patientname1

DATE OF BIRTH

02 January 1900

GENDER

male

REPORT NOTES

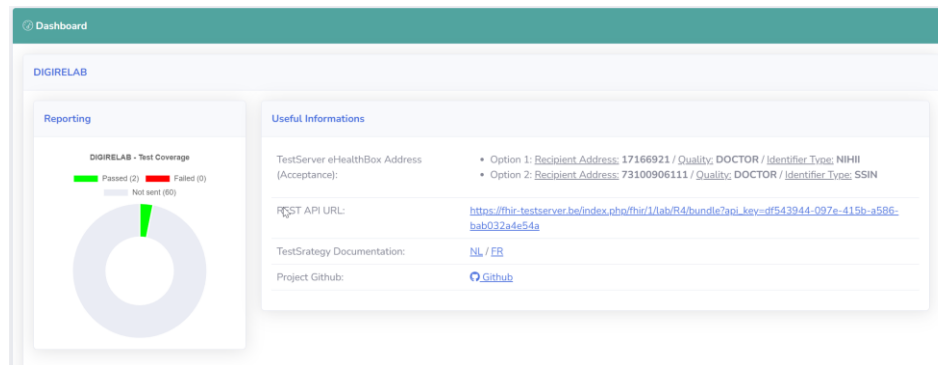
NOTE

Elektronisch gevalideerd. Met collegiale groeten: M.R.Bracke, L. Creemers, E. De Bont, E.De Maertelaere, K.Eeckhout, F.Enaellen, T.Geens, V.Goossens, D.Jamaer, G.Schietekatte, M.Thys, W.Top, R.Van Roodbroeck, F.Verbeke.

Close

FHIR TestServer

Selfservice approach



My Test Results (Note: only the last message received is taken into account)

Show 10 entries

id	Tenant	Reception Date	Patient Id	Test Case	Passed
123	CGM LAB Belgium	2023-08-21 17:42:56	00021999994	9A4	✓
122	CGM LAB Belgium	2023-08-21 12:34:34	00022399971	9AB	✓
121	CGM LAB Belgium	2023-08-21 09:50:19	00020999906	7A	✗
120	CGM LAB Belgium	2023-08-18 16:11:44	00020499959	5	✗
119	CGM LAB Belgium	2023-08-18 16:06:43	00020799966	5C	✓
118	CGM LAB Belgium	2023-08-18 16:08:08	00020699996	5B	✗

My Test Result Detail

#	121
Tenant	CGM LAB Belgium
Reception Date	2023-08-21 09:50:19
Patient Id	00020999906
Passed	✗
Mime Type	application/json

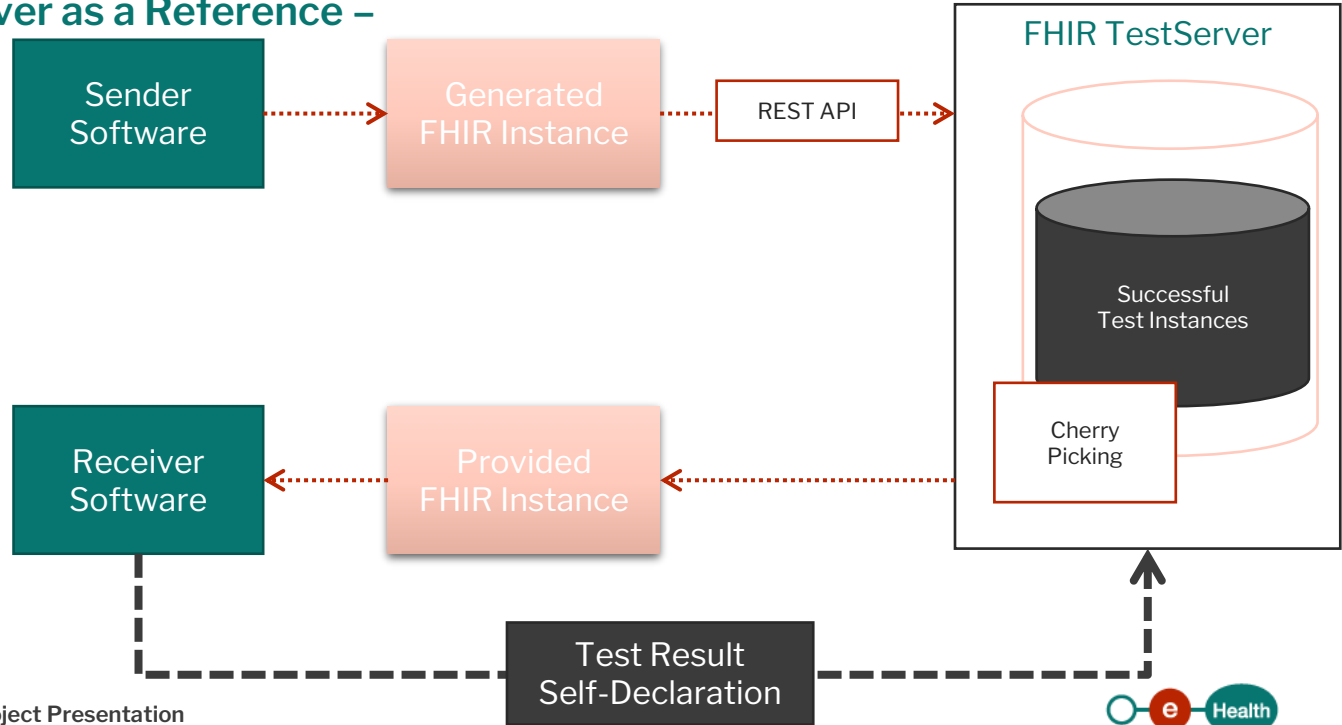
Diff Result | Beautified Payload | Visualization | Raw Payload

```
{
  "path": [
    {
      "actual": false,
      "field": "Bundle.entry.where(resource is Observation).resource.where(code.coding.where(system = \"http://loinc.org\" and code = \"1\"))",
      "expected": true
    },
    {
      "actual": false,
      "field": "Bundle.entry.where(resource is Observation).resource.where(code.coding.where(system = \"http://loinc.org\" and code = \"1\"))",
      "expected": true
    }
  ]
}
```

Control this test result Close

FHIR TestServer

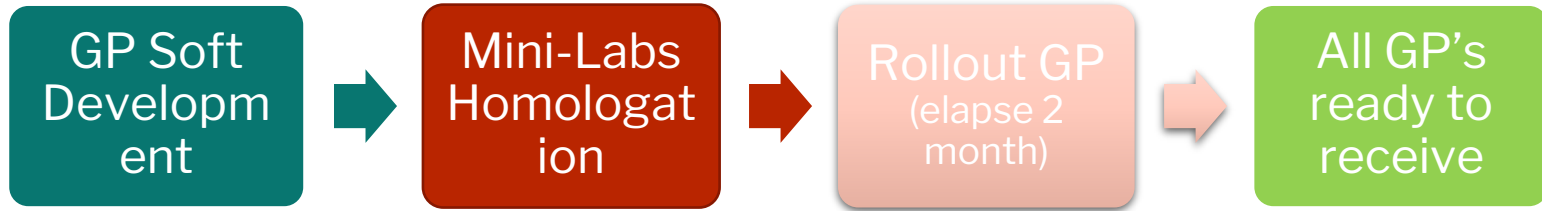
The FHIR Test Server as a Reference –
Test the reception



Rollout

DIGIRELAB Project Deployment

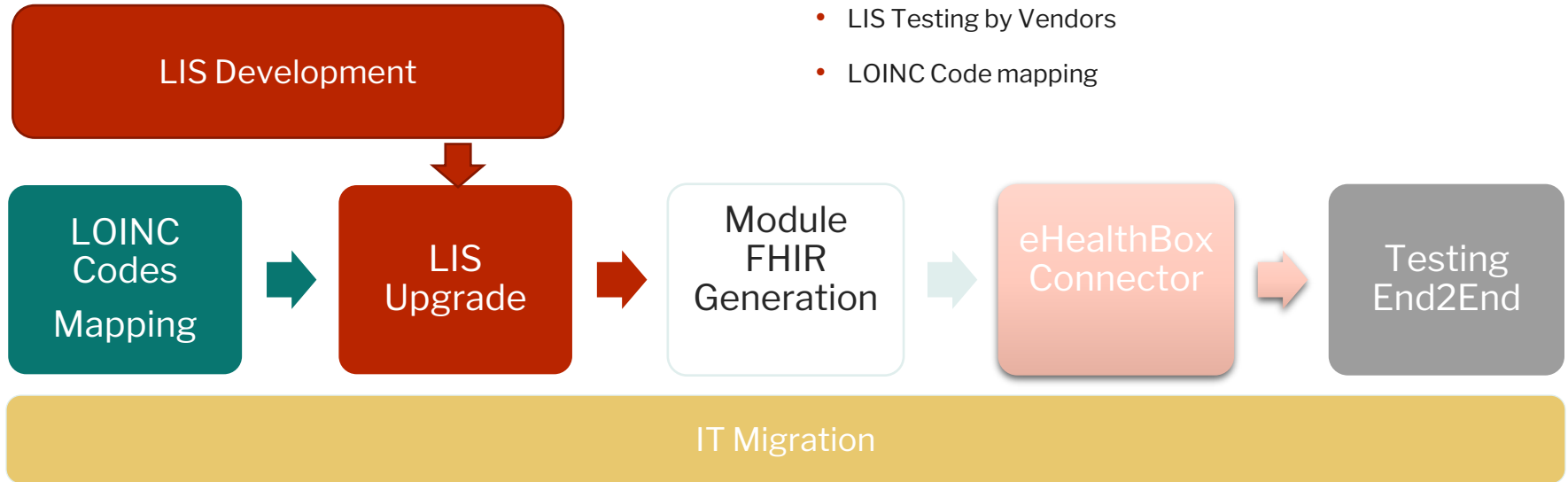
GP Soft Deployment



- Challenges
 - Display of Microbiology Tables
 - Homologation Process (linked to Telematics Financial Incentive for End User)

DIGIRELAB Project Deployment

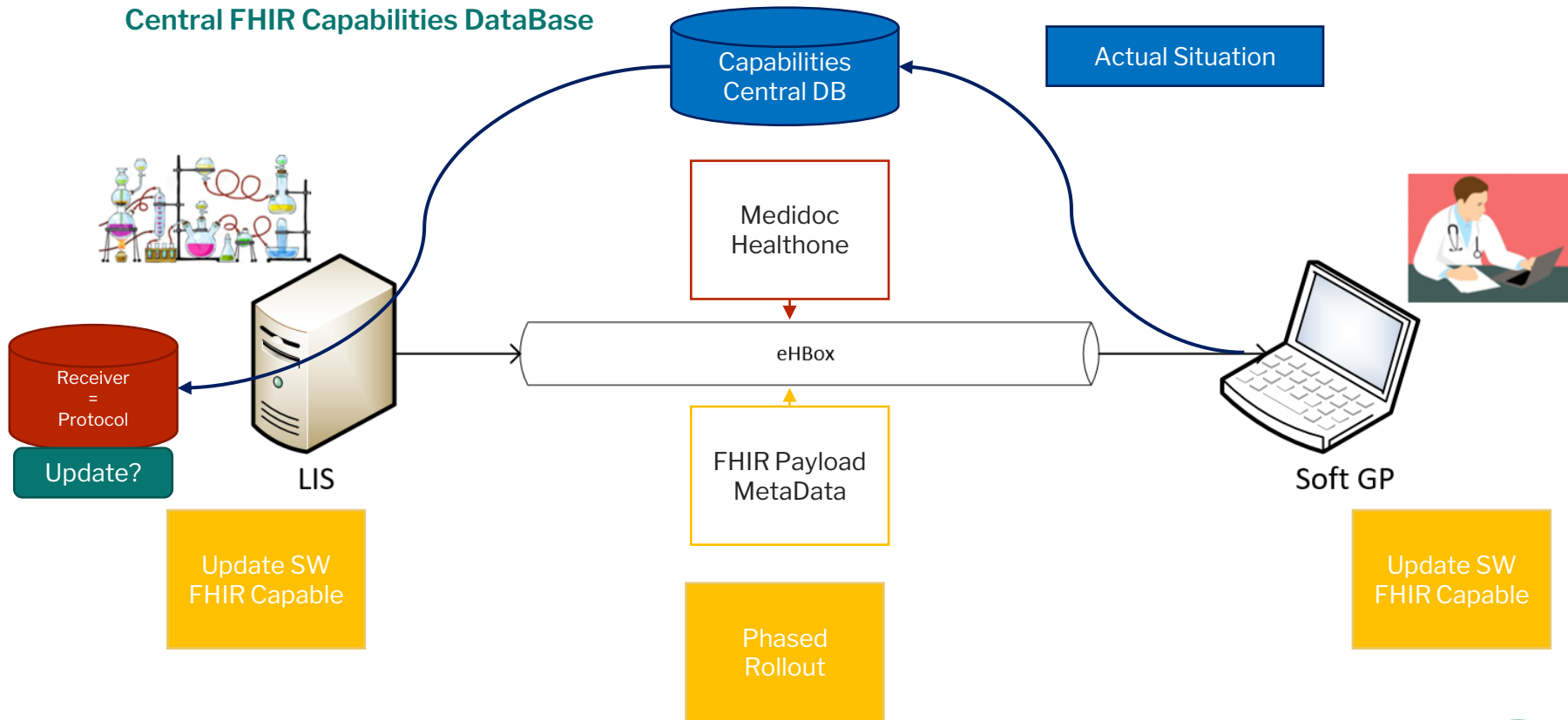
Labo's Deployment



- Challenges
 - LIS Testing by Vendors
 - LOINC Code mapping

DIGIRELAB Project Deployment – Phased Rollout

Central FHIR Capabilities DataBase



Project Followup and Incentives

Project Followup

- Monthly meetings
- Google Surveys
- Homologations (linked to Financial Incentives)
- Adapted Regulation (not yet started)
- Usage Metrics (from GP Softwares)

DIGIRELAB

Questions & Answers



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Reinhard Egelkraut

- CGM Clinical
 - Solution Architect with focus on interoperability (IHE & FHIR) for the hospital segment
 - Participation at the IHE Connectathons as a vendor since 2014
- HL7 Austria
 - Chair of the technical committee for FHIR
 - Co-opted member of the board
 - Voter for HL7 Austria at HL7 International and HL7 Europe Ballots
- HL7 International
 - Co-Chair of the working group Patient Administration
 - „FHIR Editor“, Committer for the FHIR specification
 - Regular participation at HL7 Int. WG Calls, Working Group meetings (WGMs), FHIR Connectathons, etc.





Maria Marques, *PhD*
Principal Investigator

Email: mcm@uninova.pt

Smart4Health

Citizen-Centred EU-EHR Exchange for Personalised Health

Deputy Project Coordinator



XpanDH

Expanding Digital Health through a pan-European EHRx-F-based Ecosystem

Expanding Digital Health through a pan-European EHRx-F-based Ecosystem

Leader of WP4 Feasibility & Experimentation



SHARE

EHR Xchange Format

Expanding the European EHRx-F to share and effectively use health data within the EHDS

Co-leader of WP3 Patients' Right to Data Portability: the case of continuity of care

MADEIRA
Digital Health
and Wellbeing

Collaborative initiative for digital health promotion

Co-Founder & co-leader

UNINOVA

Alexis Van Zeveren

analyst
GP software
(co-operative of GP's)



MEDISPRING

Why we joined the C.O.W

- getting acquainted with FHIR
- we value collaboration
- fine-tuning the homologation criteria before imposing them on all
- our open source partner/provider was selected to develop the visualiser

Key Takeaways

- C.O.W. approach with all types of stakeholders got things moving
- github for issues allows everyone to follow & contribute
- FHIR & its (publication) tools really help
- test-server with all test cases allows testing on our own pace



Giorgio Cangioli

- Co-facilitator of the HL7 EU Laboratory Report FHIR IG
- eHMSEG STF Architecture WG chair
- XpanDH and xShare Tech Specs WP leader (WP2)
- Technical Lead, Board member HL7 Europe
- Board member, CDA MG co-chair, EAC member at HL7 International



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Thank you!

