



IHE in the era of EHDS and the collaboration with HL7 for the EEHRxF specifications

Alexander Berler

Global Business Development Director, IHE Catalyst
Vice Chair HL7 Hellas



- **Introduction IHE and IHE methodologies**
- Interoperability testing approaches
- EURIDICE and EHDS Work

What is IHE?

Integrating the Healthcare Enterprise (IHE) is an international health IT standards development and testing organization:

- Founded in 1997 by RSNA and HIMSS
- Develops and publishes standards-based implementation guides, called IHE Profiles
- Holds annual IHE Connectathons for specification testing

*In 2024, **IHE** has celebrated **its 25th anniversary** of providing testing and implementation services **around the globe**.*

*In 2026, **IHE-Europe** will celebrate the **25th edition of the IHE-Europe Connectathon**.*



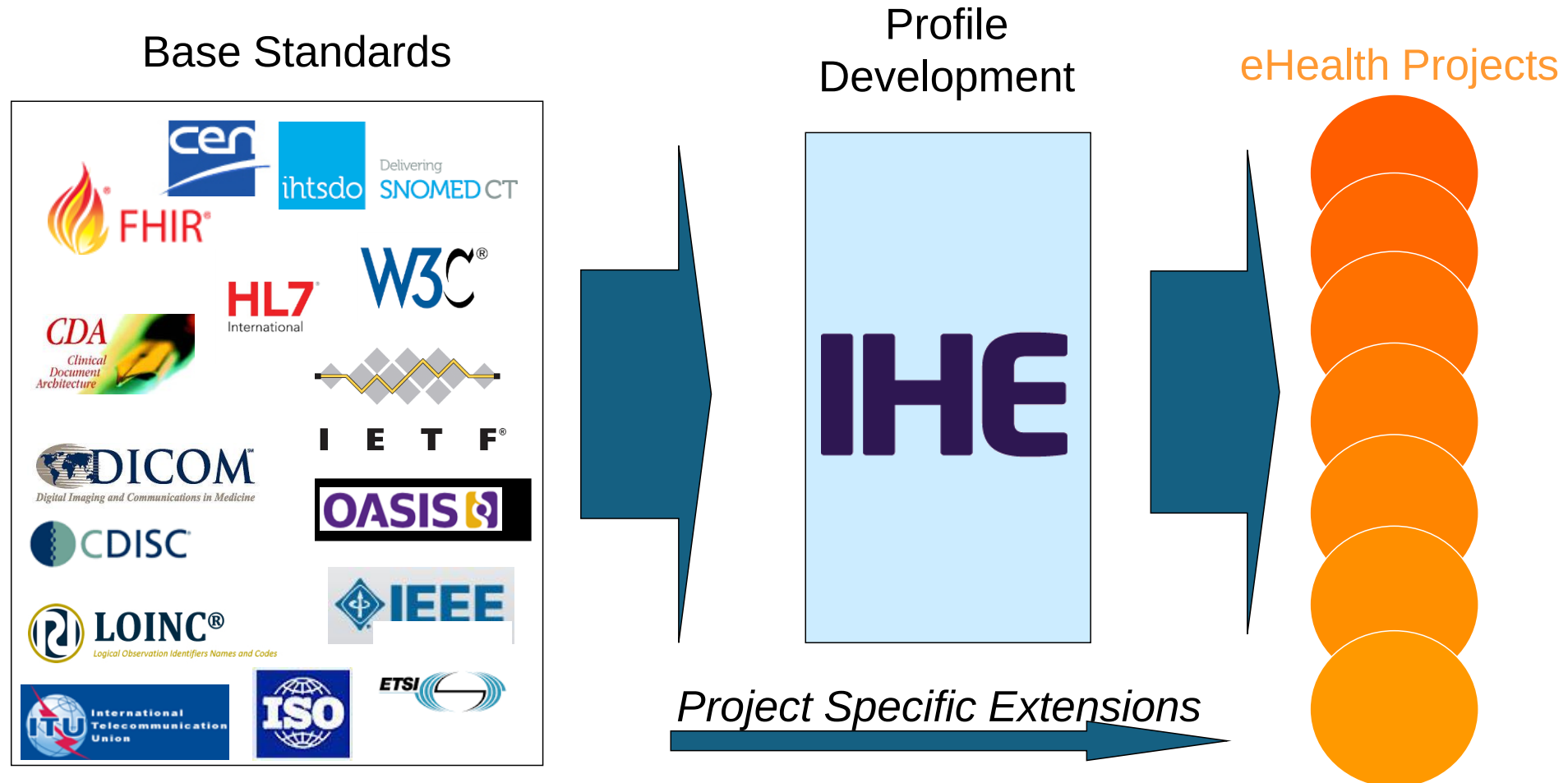
Vision

To enable seamless and secure access to information whenever and wherever it is needed

Mission

To improve healthcare by providing specifications, tools and services for interoperability

Interoperability: From a problem to a solution



Profiling Organizations Are Well Established

- Healthcare professionals work with industry
- Coordinate implementation of standards to meet clinical and administrative needs
 - Clinicians and HIT professionals identify the key interoperability problems they face
 - Providers and industry work together to develop and make available standards-based and tested specifications
 - Implementers follow common guidelines in purchasing and integrating effective systems

IHE: A forum for agreeing on how to implement standards and processes for making it happen

What is IHE-Europe?

IHE-Europe is a community of experts, vendors, and users working together to make health IT systems communicate seamlessly.



Name: **Integrating the Healthcare Enterprise-Europe (IHE-Europe)**

Type: Non-profit association founded in **2000**, part of the **global IHE** initiative

Mission: Enable **seamless health data exchange** by making standards **work together**

What we do:

- Develop **IHE Integration Profiles** (HL7, DICOM, FHIR, SNOMED CT, etc.)
- Organize the **IHE Connectathon** interoperability testing event
- Support **EU projects** and **national eHealth initiatives**

Community: Vendors, Healthcare Professionals, Authorities, and experts across Europe

IHE's goal: testing standardised interoperability and implementation



- **Make Healthcare IT interoperable**
 - In reality, with real systems, not on Powerpoint or in lab
 - Considering all tricky details of a „real“ rollout

- **Difficulties of a „real“ HIE project**

- Governance and Policies
- Agreement on standard(s) by all stakeholders
- Need of being interoperable to other HIEs
- Onboarding of new participants to the HIE
 - Organizational, Legally, **Technically (testing)**

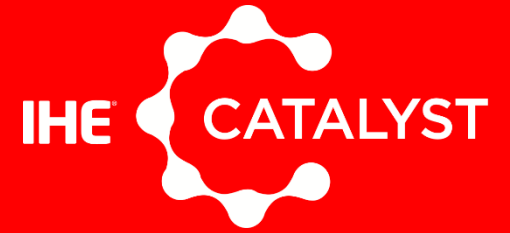
IHE

- **Cost-factors („technical“ only)**

- Initial
 - Interoperability Specification
 - Tendering & Procurement
 - Testing
- Ongoing
 - Maintenance, improvement, new services
 - Testing (onboarding)

**Each % effort
you save here
is big \$**

Why ehealth programs/projects have for controlling interoperability?



Solution choice: Enables procurement of the IT systems from different organizations, vendors or open source, initially and over time (replacement, future proofing)



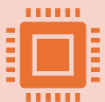
Consistent security and privacy: Policies are simpler to deploy when relying on same interoperability technical measures



Quality in exchange and information:

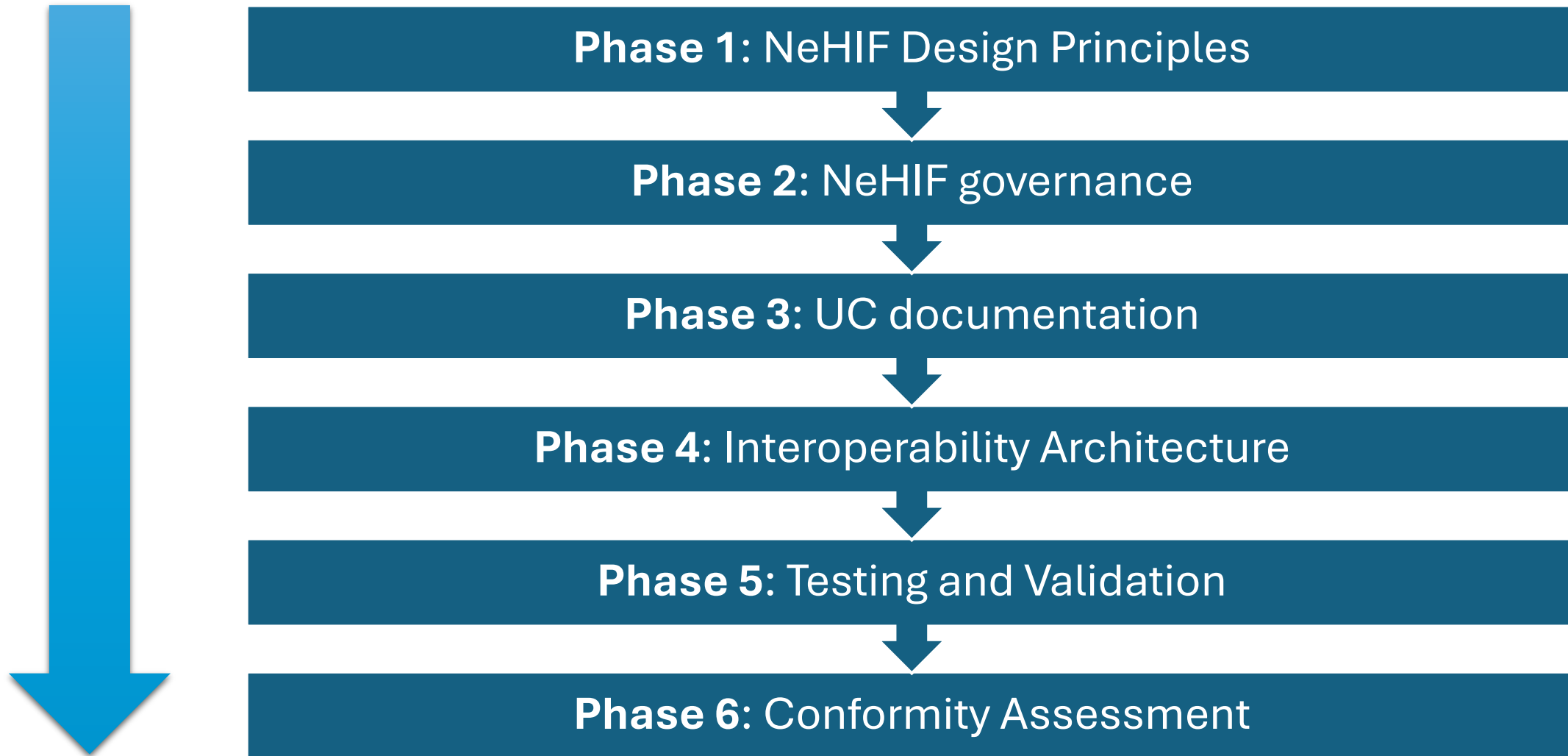
Reduces finger pointing between:

1. care providers and health policy makers
2. systems buyers and vendors

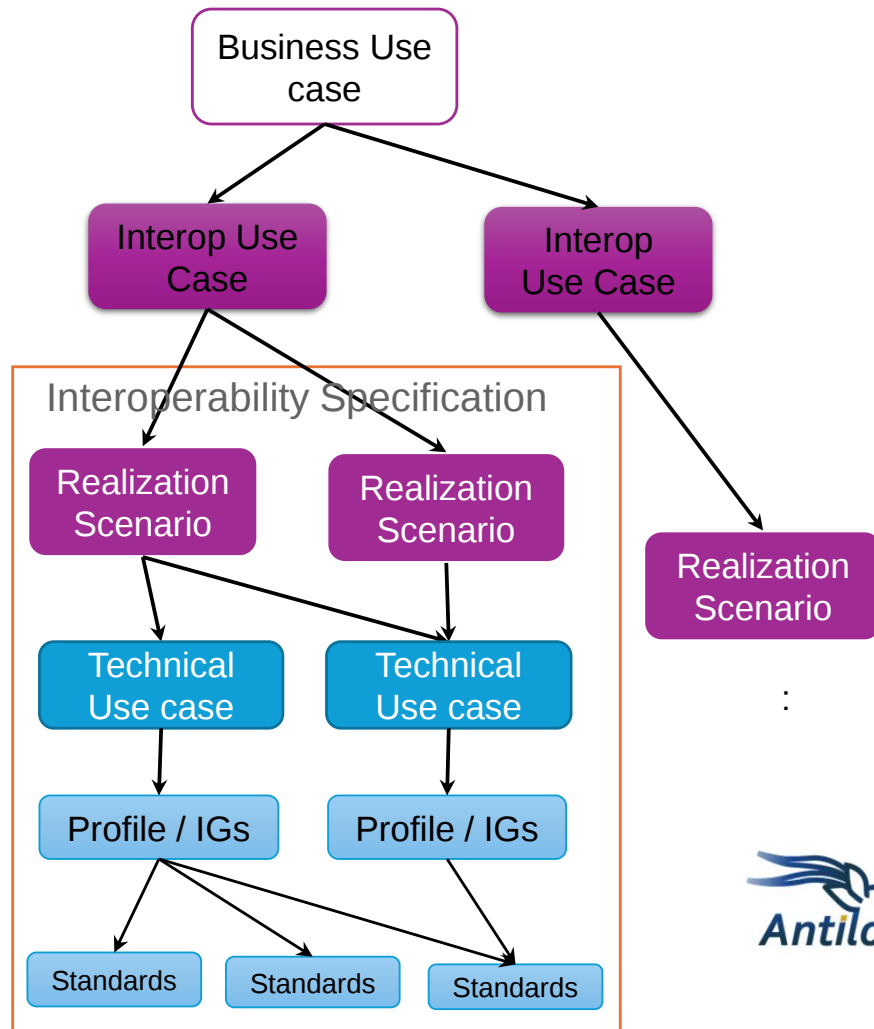
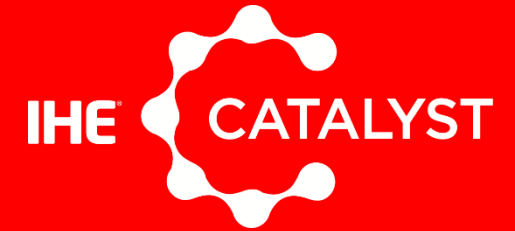


Reduce costs and project risks: Building gateways is complex and needs constant investments to implement proprietary/ad-hoc interoperability specifications and maintain competences.

Roadmap towards a National eHealth Interoperability Framework



Use-case driven approach



Interoperability Use Case

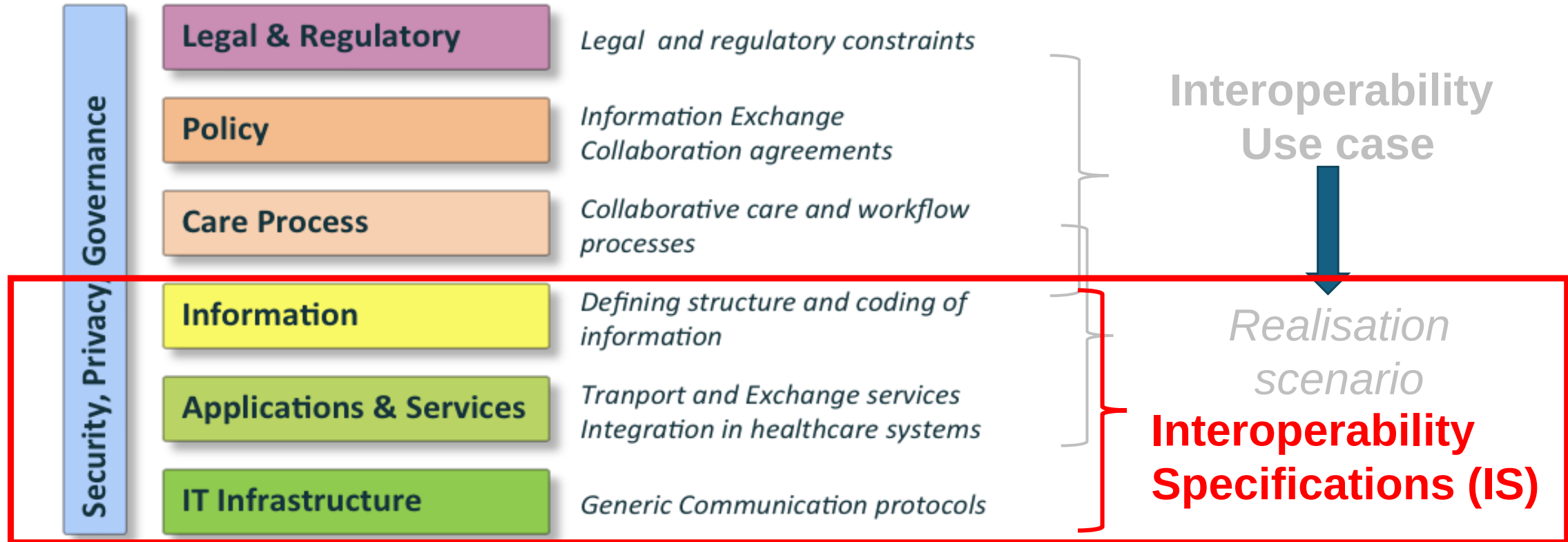
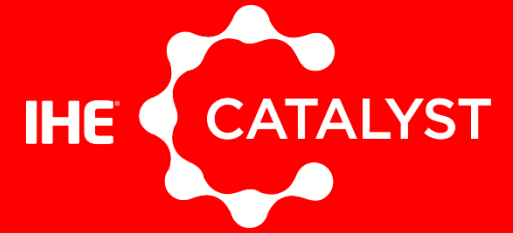
Uses Cases to be defined that include interoperability functions

Interoperability architecture

Realisation scenarios and Interoperability Specifications

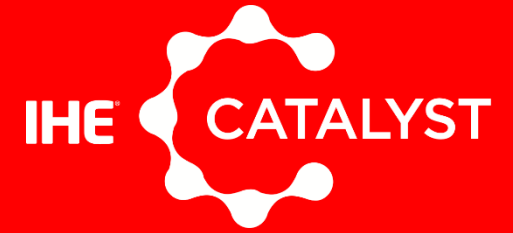
TESTING Strategy

Interoperability is not a simple concept...

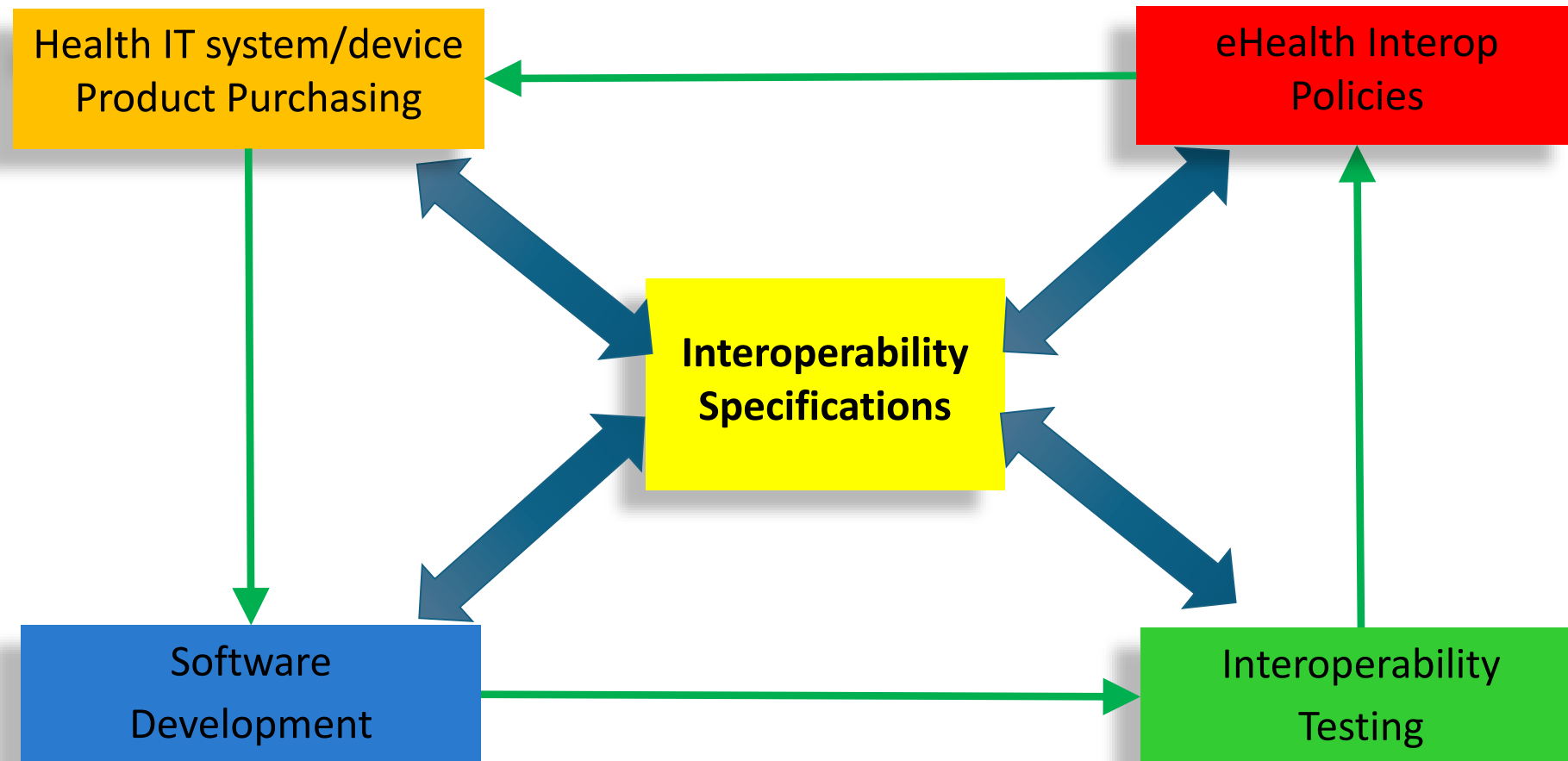


From Refined ehealth European Interoperability Framework
EU eHealth Network, 23/10/2015

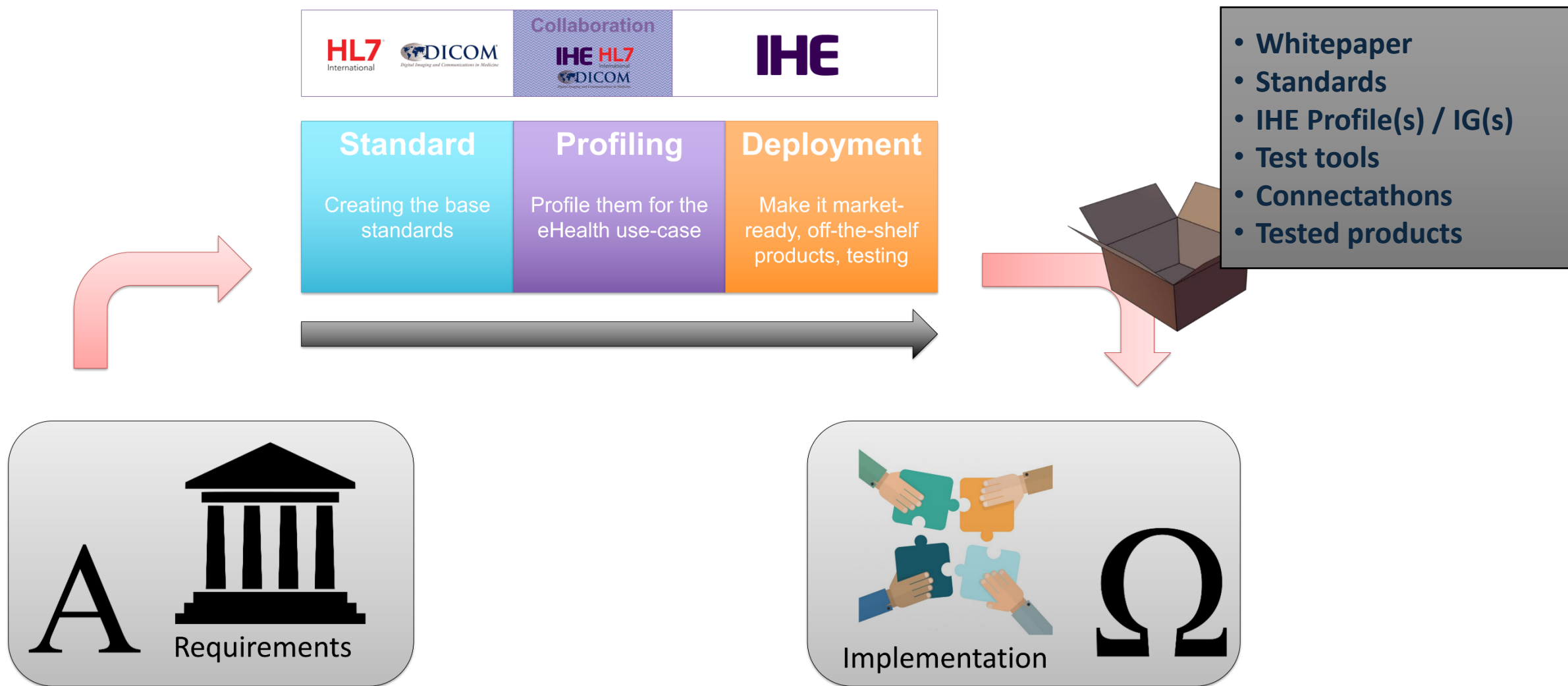
Critical Role of Interoperability Specifications



Interoperability “referee” – Closes the loop

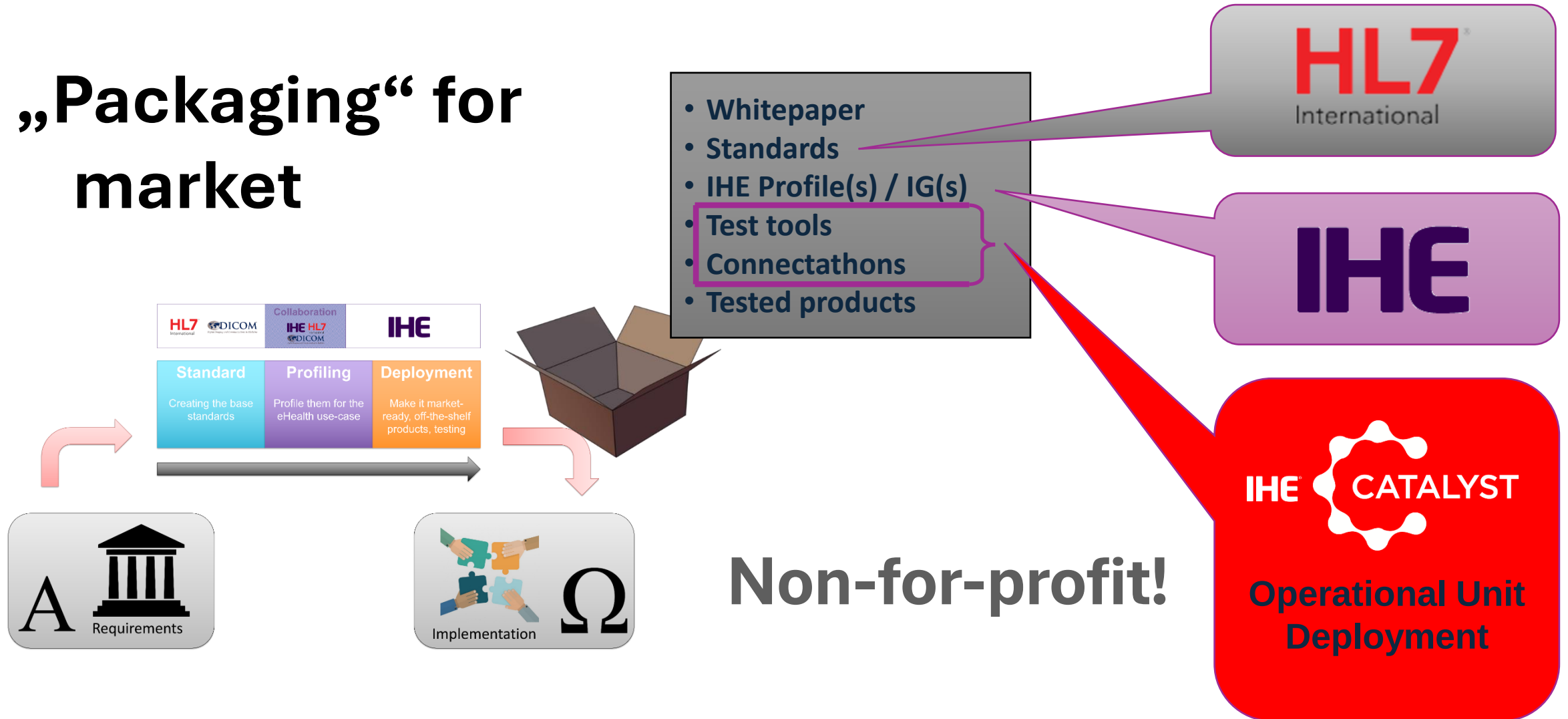


Standards Development pipeline



Standards Development pipeline

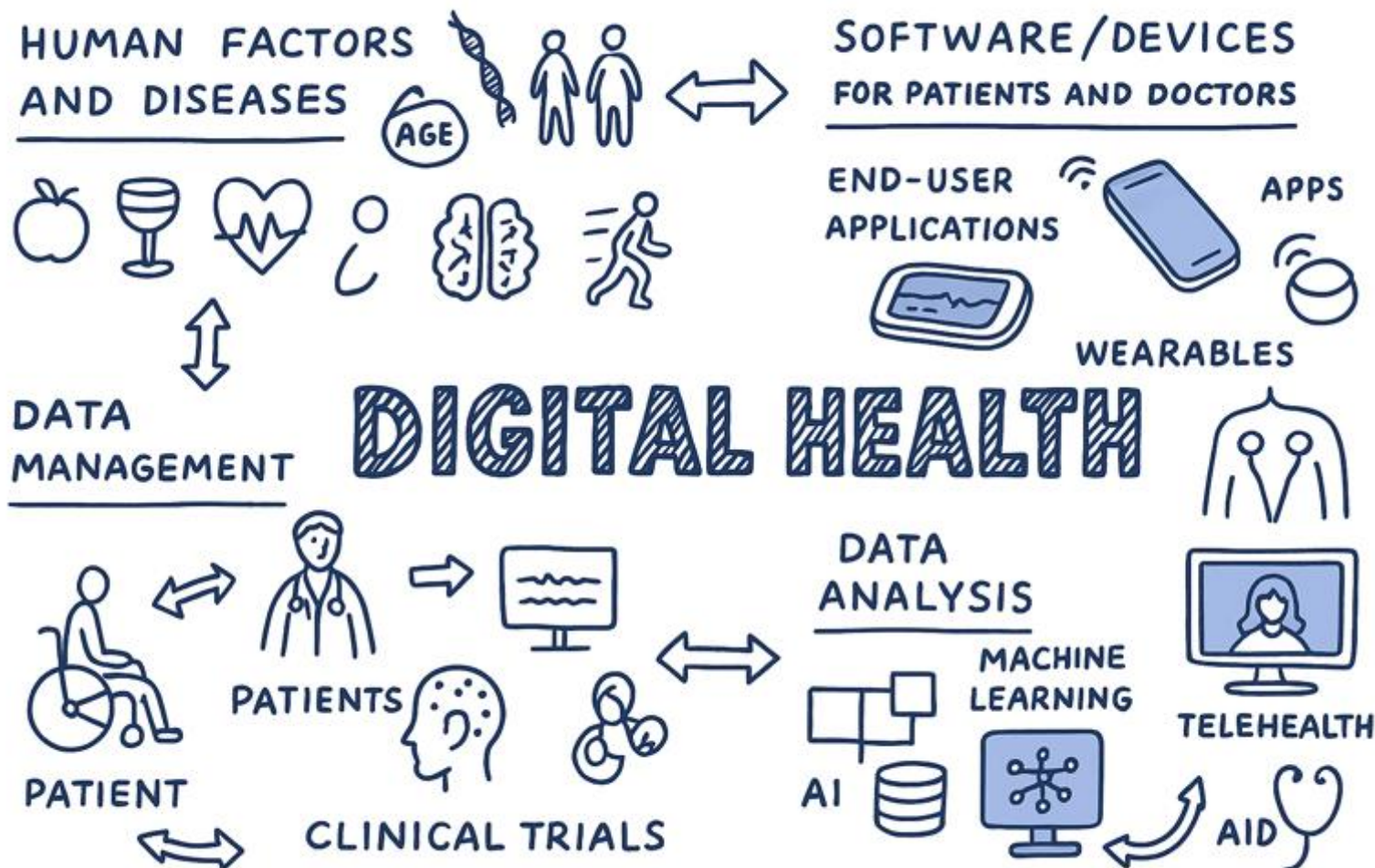
„Packaging“ for market



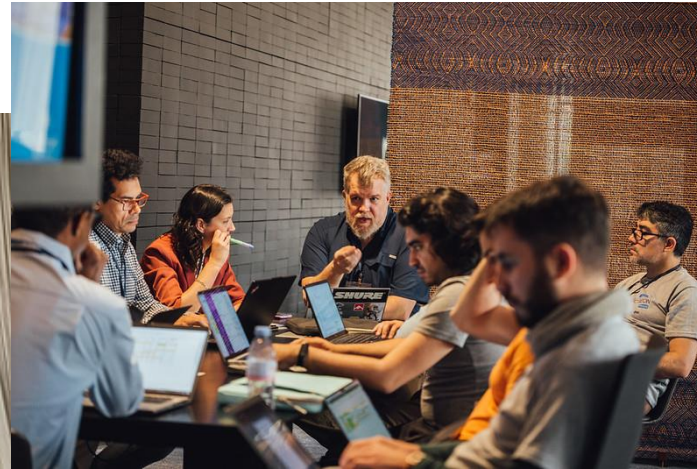
Healthcare is changing... need Interoperability by design

Interoperability is a race without a finish line:

- New clinical knowledge
- New technologies and data resources
- Organization and regulatory shifts
- New requirements of data flow and consumption across the ecosystem
- New data standards to mapped to legacy
- Ensuring compliance is key



Human Interoperability – Ecosystems of Stakeholders



Human Interoperability – Ecosystems of Stakeholders



Connecting the Americas:

Launch of the Pan-American Highway for Digital Health
+ 3rd Regional Connectathon

October 22-25
Bogotá, Colombia



The concept of an interoperability lab



Create and operate an **interoperability framework** as the cornerstone of building complex digital transformation strategies in healthcare



Bring experts together and solve problems



Test before you implement



Reuse, collaborate, co-create do not re-invent the wheel



Align implementation with real capacity of the stakeholders and make realistic roadmaps



Perform **continuous education** and capacity building

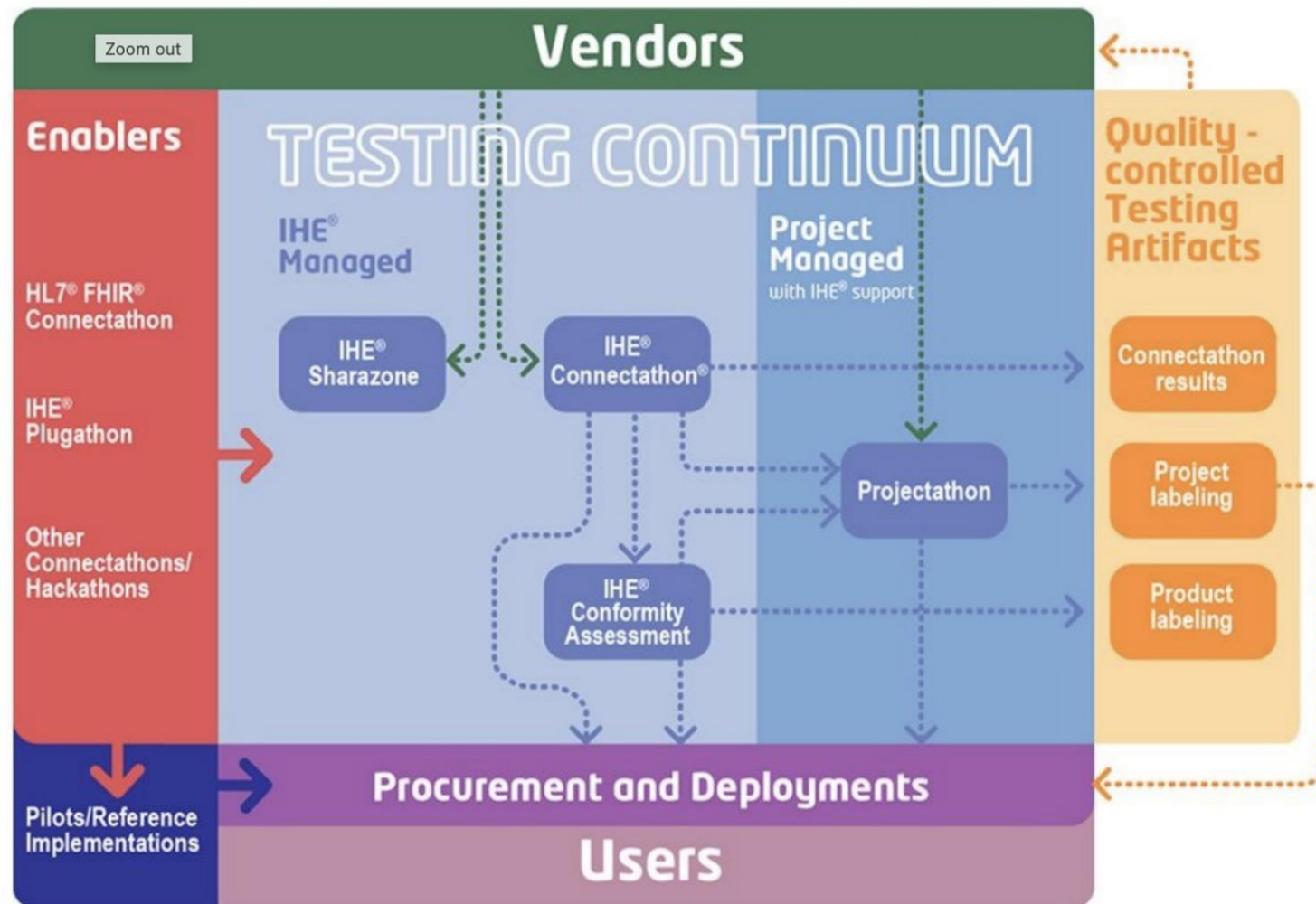


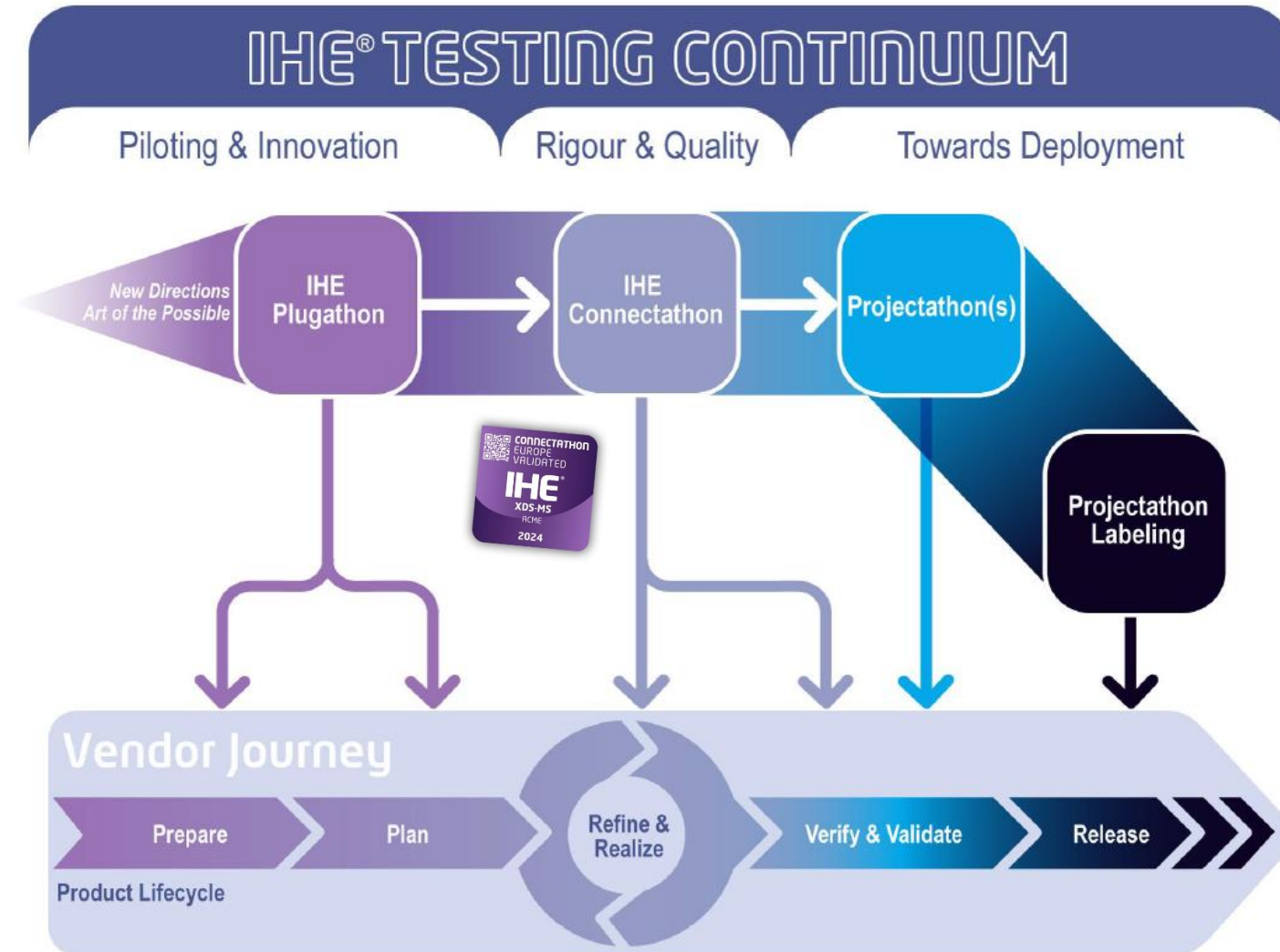
Enable the ecosystem of stakeholders



- Introduction IHE and IHE methodologies
- **Interoperability testing approaches**
- EURIDICE and EHDS Work

Testing Continuum





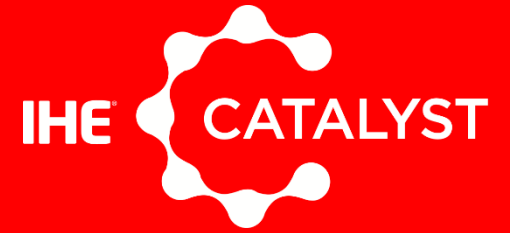
Why Plugathons Matter for Policy Makers



- **Standardization:** Ensures national and EU digital health projects adopt common, tested standards.
- **Trust:** Builds confidence that systems can securely exchange patient data.
- **Innovation:** Encourages SMEs and startups to integrate with national infrastructures (e.g., EHRs, ePrescription, patient summary).
- **Capacity Building:** Creates a community of trained experts aligned with policy frameworks (EHDS, WHO interoperability roadmap).

IHE Connectathons

Connectivity Marathons

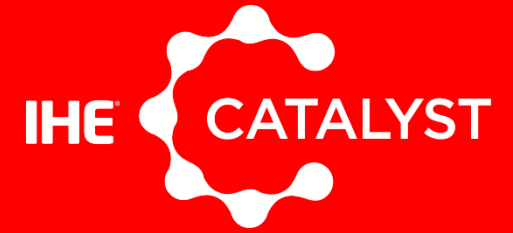


- Open invitation to vendor and other implementers community
- Advanced testing tools (GAZELLE, a GITB platform)
- Testing organized and supervised by IHE technical management team and monitors
- Thousands of cross-vendor tests performed
- Results recorded and published



IHE Connectathons

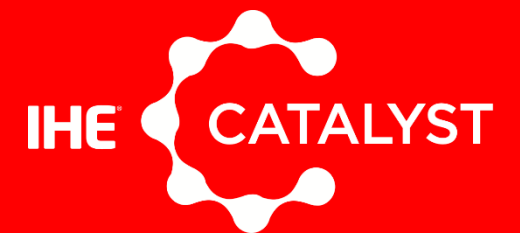
Triple purpose



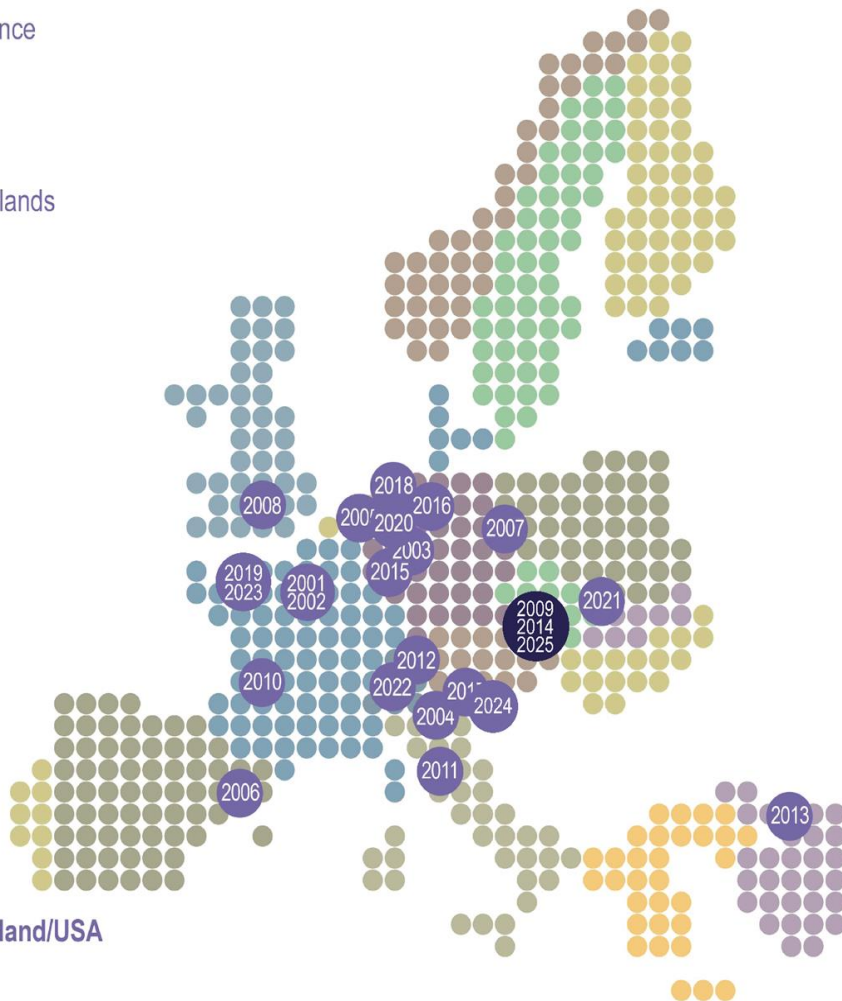
- **Test implementation of the IHE profiles** within product/open source
 - Verify that the vendors did a good job
- **Verify** that what the committees specified is clear!
 - Verify that the Technical Frameworks are not ambiguous
 - Verify that that the Technical Committee did not miss anything
- **Build a community** of computer geeks who loves local brewed beers and have fun working together to connect healthcare



IHE Connectathon through the years



2001: Charenton-le-pont Paris, France
2002: Villejuif in Paris, France
2003: Aachen, Germany
2004: Padova, Italy
2005: Noordwijkerhout, The Netherlands
2006: Barcelona, Spain
2007: Berlin, Germany
2008: Oxford, UK
2009: Vienna, Austria
2010: Bordeaux, France
2011: Pisa, Italy
2012: Bern, Switzerland
2013: Istanbul, Turkey
2014: Vienna, Austria
2015: Luxembourg
2016: Bochum, Germany
2017: Venice, Italy
2018: The Hague, The Netherlands
2019: Rennes, France
2020: Brussels, Belgium
2021: Ostrava, Czech Republic
2022: Joint Connectathon, Switzerland/USA
2023: Rennes, France
2024: Trieste, Italy
2025: Vienna, Austria



From Monday, 23 March to Friday, 27 March 2026

Brussels, Belgium

Where?

The EGG, Rue Bara 175, 1070 Brussels

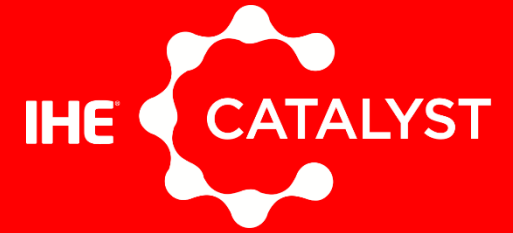
About a 10-minute walk from Brussels-South Station (Gare du Midi)



IHE Connectathon seal!



Projectathon

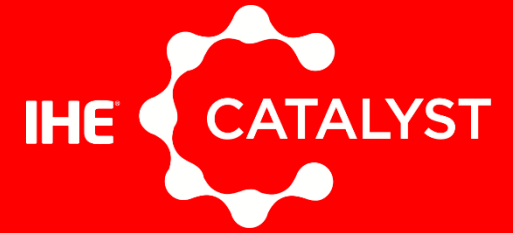


- Countries test their Interoperability specifications
 - National Interop. specifications should use IHE profiles
 - Testing concept same as Connectathon (“familiar”)
 - All eHealth use-cases can be tested in the same way
 - End to end testing like in real life use cases
- Triple purpose
 - Test implementation of the specifications by vendors active in the country
 - Test and refine the quality of your interoperability specifications
 - Establish digital health ecosystems and communities of practice

Efficient!



Connectathon® vs Projectathon



	Connectathon®	Projectathon
Governance	Under the supervision of IHE regional/national deployment.	Under the supervision of the project (the lead organisation).
Rules for passing	IHE test methods are used. Criteria are developed in the IHE Test Plan.	Test methods are customized to fit the project specifications. Criteria are developed by the project.
Publication of the results	IHE Connectathon® Results.	Published by the project (the lead organisation).

Examples of Projectathons





- Introduction IHE and IHE methodologies
- Interoperability testing approaches
- **EURIDICE and EHDS Work**

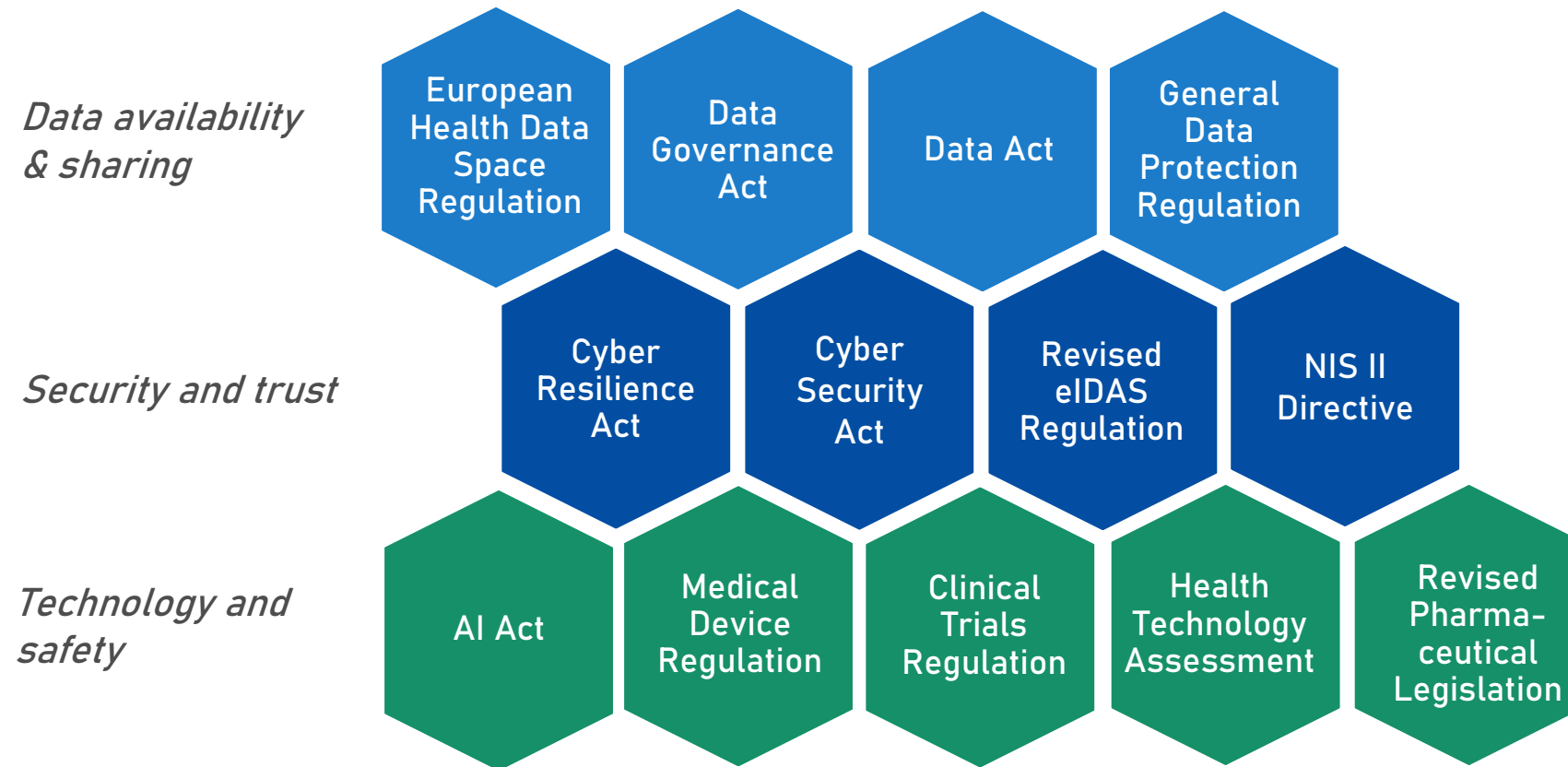
The European Union Use Case

- Implementation of the myHealth@EU services



<https://eur-lex.europa.eu/eli/reg/2025/327/oj/eng>

Digital transformation of healthcare: the building blocks

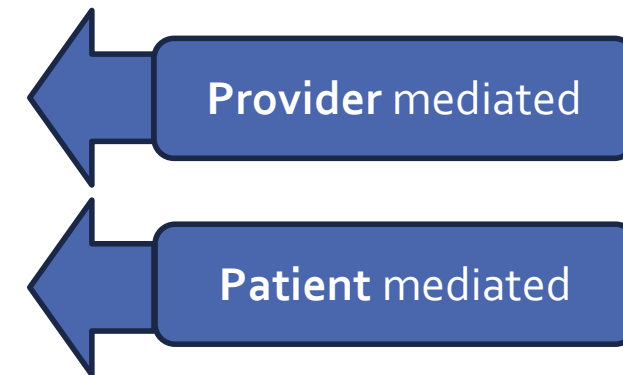


e-Health target: 100% of
EU citizens access to
**electronic health
records** by 2030

Source: Konstantin Hyppönen, European Commission

EHDS in a Nutshell –what is it about?

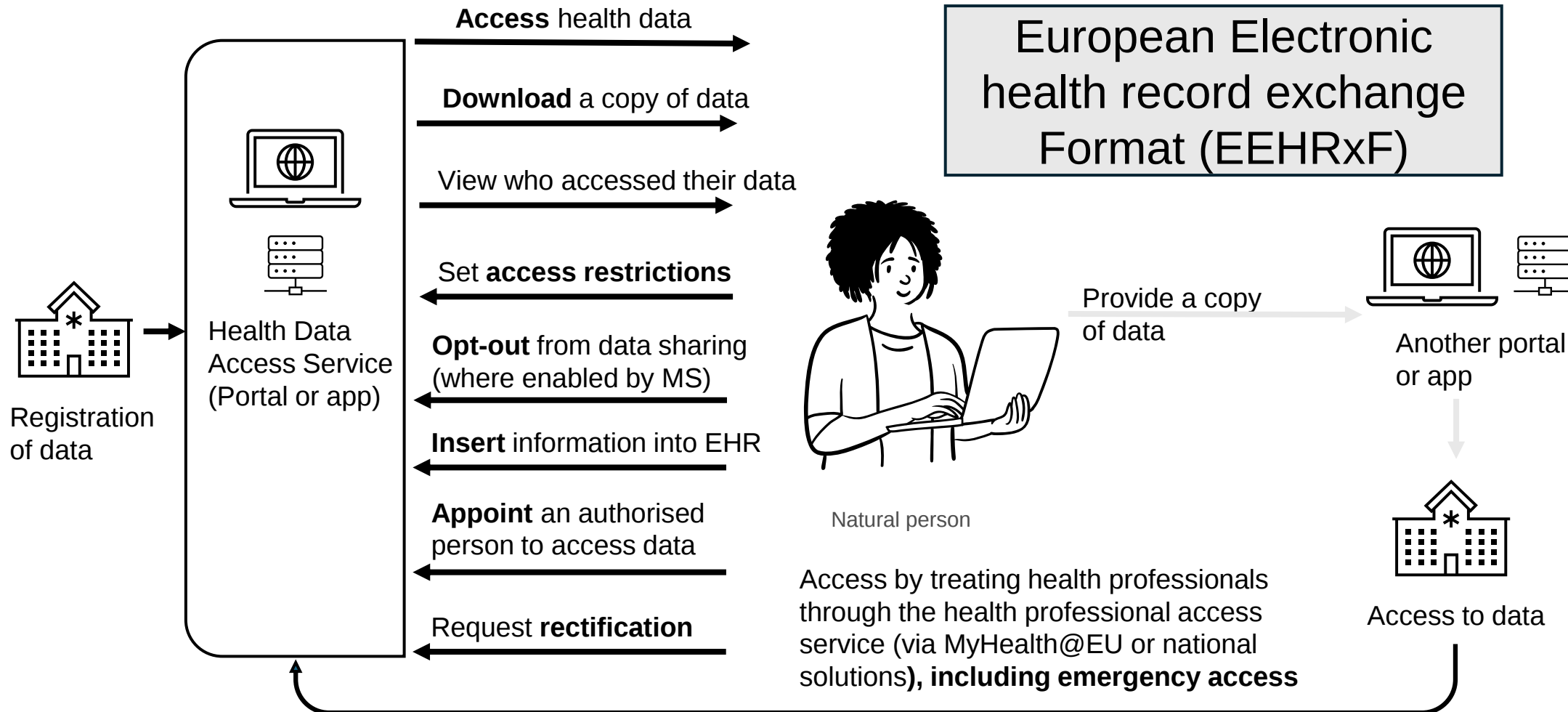
1. Primary use = use of data for the delivery of healthcare
 - Improving patients' access to their health data;
 - Ensuring seamless exchanges for continuity of healthcare – also across borders
2. Secondary use = use of data for research and public interest purposes
 - Making data available for research, policy-making etc. in a safe and secure way - also across borders
3. Requirements for electronic health record (EHR) systems
 - Creating a single market for electronic health records systems, supporting both primary and secondary use.



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

HealthData@EU

Rights of natural persons in primary use



Focus on Patient Rights

Building on existing cooperation

MyHealth@EU under Cross-border Healthcare Directive

- Voluntary system for exchanging patient summaries, prescriptions and dispensations (= first group of priority categories) **16 countries** live with at least one service, up to **9 more** expected to go live with first service(s) this year

Evolution of MyHealth@EU for the EHDS

- Voluntary => mandatory
- New services
- New data categories



MyHealth@EU high-level architecture

Article 23

Data categories

Priority group 1:

- Patient summaries
- ePrescriptions and eDispensations

Priority group 2:

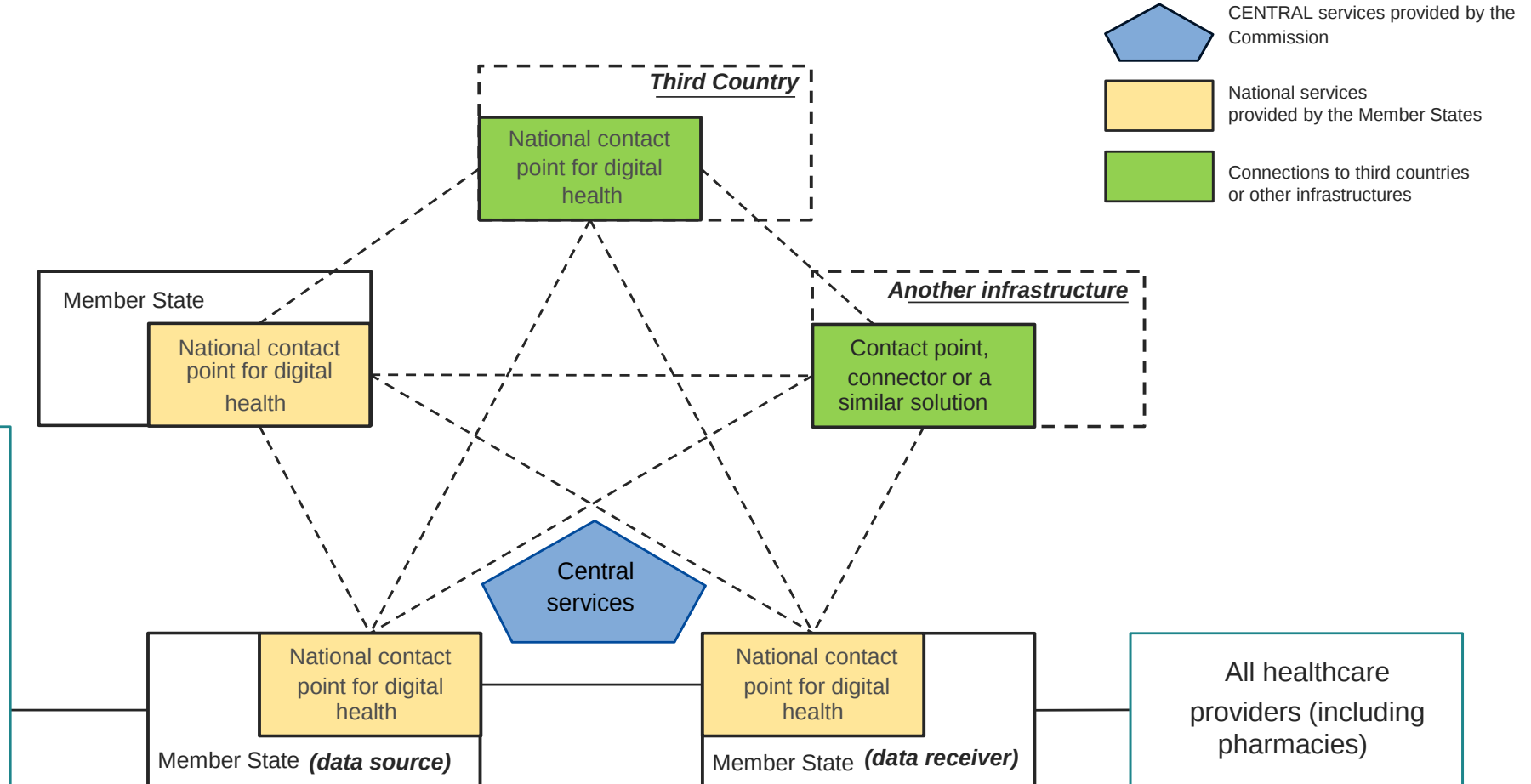
- Medical test results: laboratory, other diagnostics, related reports
- Medical imaging: studies and reports
- Discharge reports

Additional data categories:

May be exchanged where supported

Data suppliers:

all healthcare providers.



- **FHIR-based IHE Profiles = FHIR Implementation Guides**
 - Same structure as other profiles:
 - Volume 1 ... Use-case description, Actors and Transactions, Options, Groupings, ...
 - Volume 2 ... Technical specifications (of transactions)
 - Volume 3 ... Content specifications
- **They are ...**
 - ... designed for “Universal Realm”
 - = “global”
 - ... following the FHIR Community Process
 - <https://www.fhir.org/community/process>
 - ... following the IHE methodology
 - Even more rigor than governance on its creation

- **FHIR-based IHE Profiles = FHIR Implementation Guides**

- Same structure as other profiles:

Overview on IHE Profiles: <https://wiki.ihe.net/index.php/Profiles>

(marked with )

- **They**

Documents

(FHIR documents)

Data

(FHIR resources)

- ... following the IHE methodology
 - Even more rigor than governance on its creation



**A Joint Initiative of IHE and HL7
to Advance Use of FHIR for
Interoperability**

IHE

HL7
International

[Gemini Homepage](#)



Gemini projects



Device Interoperability using SDPi+FHIR

Service-oriented Device Point-of-care Interoperability (SDPi) Technical Framework

HL7

Devices

IHE

Devices

Confluence

Spaces

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Device Interoperability using SDPi+FHIR

Created by Joshua Prociou, last modified by Todd Cooper on Aug 02, 2022

Note to reader: Mysterious words and symbols?: Go To Abbreviations and Glossary Page

Gemini SDPi+FHIR Program Backgrounder

This joint HL7-IHE Gemini program pulls together established and emerging work in the HL7 Devices and IHE Devices working groups to achieve a greater degree of collaboration efficiency as well as coordination and cohesion between the activities and work products of the two groups. The program objectives include:

- One simple device interoperability story – from Surgery to Surfing!
- One coordinated / cohesive set of specifications & implementation / test tools
- One centralized collaboration place & tool set flying under the "SDPi+FHIR" banner

The Gemini project proposal and regular program updates provide an overview of the objectives and initial work program of the initiative, as well as its current status. Here are a couple of the early presentations, but a more current and comprehensive list is in the Library:

What Lays Below ...

- Gemini SDPi+FHIR Program Backgrounder
- SDPi+FHIR Narratives
- Standards Framework Models ... never enough!
- SDPi+FHIR Projects
- SDPi+FHIR Development Support
- SDPi+FHIR Documents
- Gemini SDPi+FHIR Program Backgrounder
- SDPi+FHIR Narratives
- Standards Framework Models ... never enough!
- SDPi+FHIR Projects
- SDPi+FHIR Development Support
- SDPi+FHIR Documents

HL7 FHIR IHE SDC

IHE-HL7 Gemini SES MDI SDPi+FHIR – Program Update

for

Joint IEEE – HL7 Devices Working Group Meetings

2022.09.24

IEEE IEC TC 215 OR.NET

FHIR Multi-domain HIE Architecture

Develop guidance on using the FHIR API that allows intermediaries to be deployed with

HL7

FHIR-I

IHE

ITI

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HL7 FHIR Multi-domain HIE Architecture

Created by Daniel Vreeman, last modified on Sep 27, 2023

ACTIVE

Description

Many health information exchange (HIE) projects globally are eager to use FHIR for their architecture, yet there are some "tricky" technical questions that are still unresolved. A variety of local attempts and solutions have been demonstrated, we lack a global blueprint. The purpose of this project is to describe and vet the technical difficulties within the SDO community to provide a consistent way to use the FHIR API. This project intends to address questions such as:

1. How should I propagate queries across (or even within) domains?
2. What are the best practices for deploying intermediaries?
3. How do trust frameworks relate to architectures?

Our goal is to describe a consistent way to use the FHIR API that allows intermediaries to be deployed with minimal impact, such that deployment and security concerns can be addressed faster than software development cycles 🙏.

Team

- @Grahame Grieve
- Jürgen Brandstätter
- Daniel Vreeman
- @John Koshirke
- @Tarik Idris
- Orissa Deubner (orissa.deubner@x-tention.at)
- Others TBD

Join the mailing list:

Look for All Public Lists → FHIR Infrastructure → Gemini FHIR Multi-Domain

Join the Project Mailing List

Medication Prescription and Delivery

Create FHIR-based IHE Profile for medication prescription and delivery workflow

HL7

Pharmacy

IHE

Pharmacy

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Medication Prescription and Delivery

Created by Juergen Brandstätter, last modified on Sep 27, 2023

ACTIVE

Description

The goal of this work item is to produce IHE Profiles for Medication Prescription and Delivery purposes

Work-items

Within this Gemini Project the following work-items are maintained:

IHE Profile: "Medication Prescription and Delivery (MPD)"

Creation of a FHIR-based IHE Profile for the Medication Prescription and Delivery Workflow, fully utilizing medication related FHIR R5 resources and RESTful transport.

Work is performed in regular working meetings (see schedule, agenda and minutes on MPD main page).

Home of the work-item:

- Hosting Committee: IHE Pharmacy
- Accompanying Committee: HL7 Pharmacy

Work-item Kickoff: March 2023

More information

See the IHE Pharmacy workspace for more information

MPD Main page: https://wiki.hl7.org/wiki/index.php/MPD_Main_Page

Radiology Reporting

Radiology Reporting use cases using FHIR Resources

HL7

II/DICOM WG-20

IHE

Radiology

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- Others TBD

Join the mailing list:

Look for **All Public Lists** → **FHIR Infrastructure** → **Gemini FHIR Multi-Domain**

[Join the Project Mailing List](#)

- o Memorandum of Understanding signed with Xt-EHR
 - o IHE-Europe can not participate directly, only EU Member States can
 - o MoU allows IHE Europe to participate in work and give formal feedback
 - o Xt-EHR is structured in 9 work packages, IHE-Europe is active in 4
- o Role in European Commission Governance eHealth Stakeholders Group
- o Invited entity in COPEF
- o IHE-Europe / IHE Catalyst operated myHealth@EU test tools since 2015
- o Founding members of ESHIA (xShare)
- o Active partners in xShare, myHealth@myhands, i2X

EURIDICE supports the development of EHDS-aligned, endorsed implementation specifications.



What EURIDICE is:

- Joint **IHE-Europe** and **HL7 Europe** initiative
- Focused on developing **implementable specifications** for the EHDS
- Designed to be **proposed to the European Commission** for reference in **EHDS Implementing Acts**

What EURIDICE delivers:

Technical specifications that:

- Support **EHDS regulatory requirements**
- Combine **HL7® FHIR® agility** with **IHE methodology and testability**

Community-validated artefacts, tested at European level

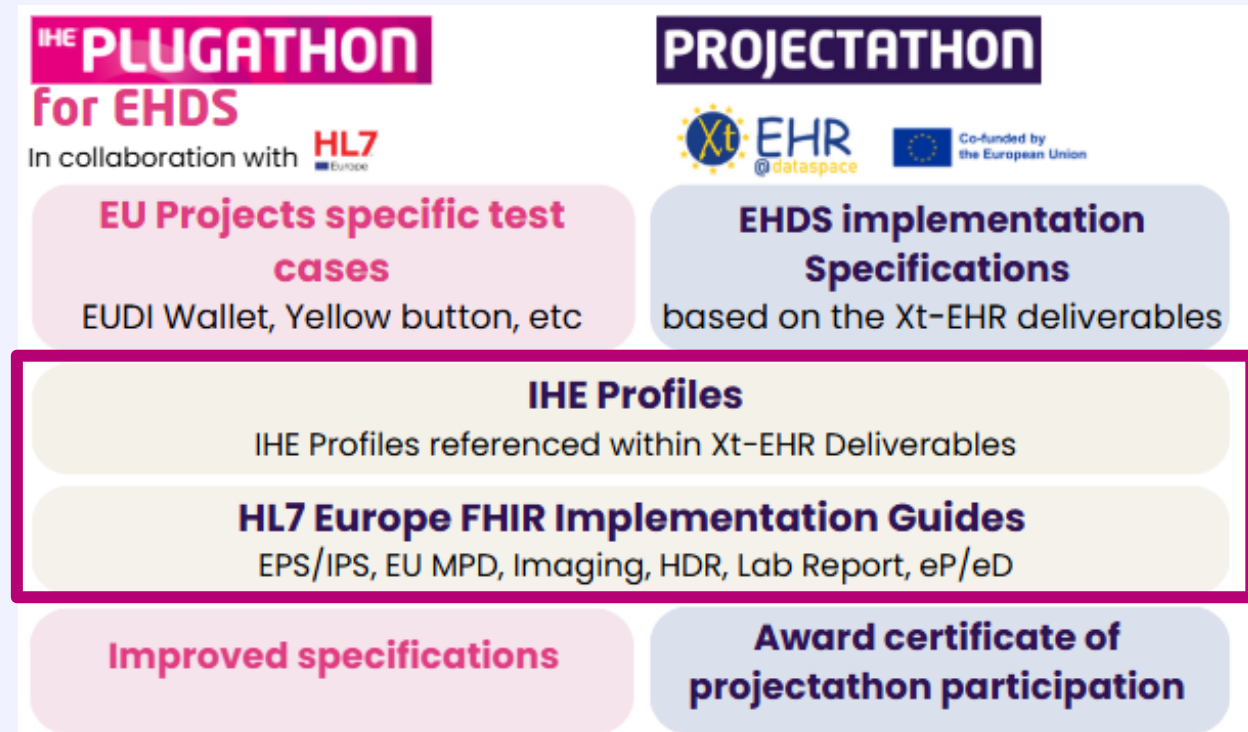
A **central reference list** for EHDS-aligned technical specifications

EURIDICE supports the development of EHDS-aligned, endorsed implementation specifications.



Outcomes & benefits:

- Endorsed by IHE-Europe and HL7 Europe
- Tested in Projectathon environments
- Proposed for reference in EHDS Implementing Acts



New activities in IHE family

- IHE International launch of PRISM
- A global program to prioritize interoperability for specific market imperatives
- Shortens the path, while aligned with IHE approach,
- Delivers structured, standards-aligned outputs
- IHE PRISM EHDS – 1st live
- AI to be expected soon

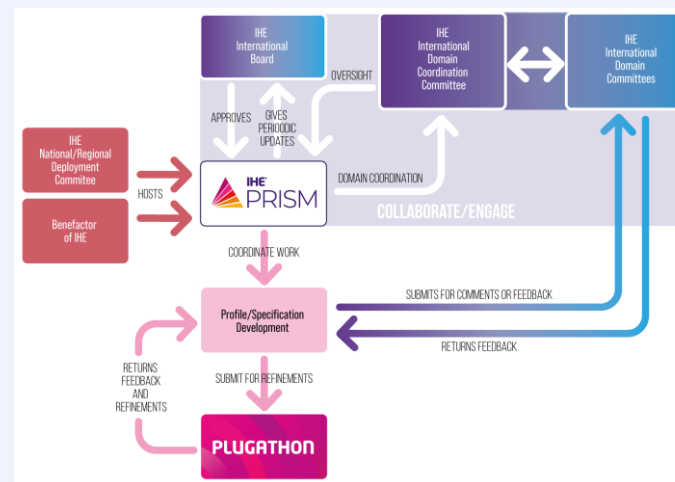


IHE PRISM makes EURIDICE and other EHDS-aligned specifications visible, reusable, and actionable for implementers.

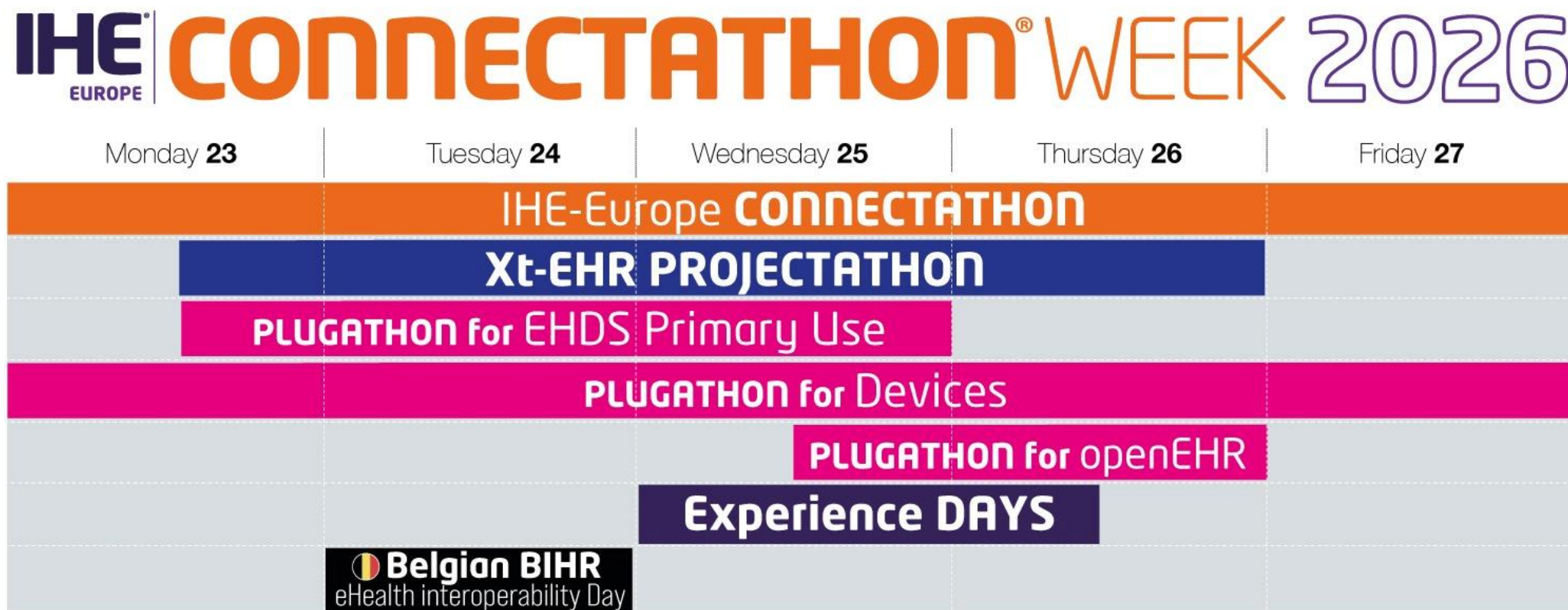


Operationalising EURIDICE specifications

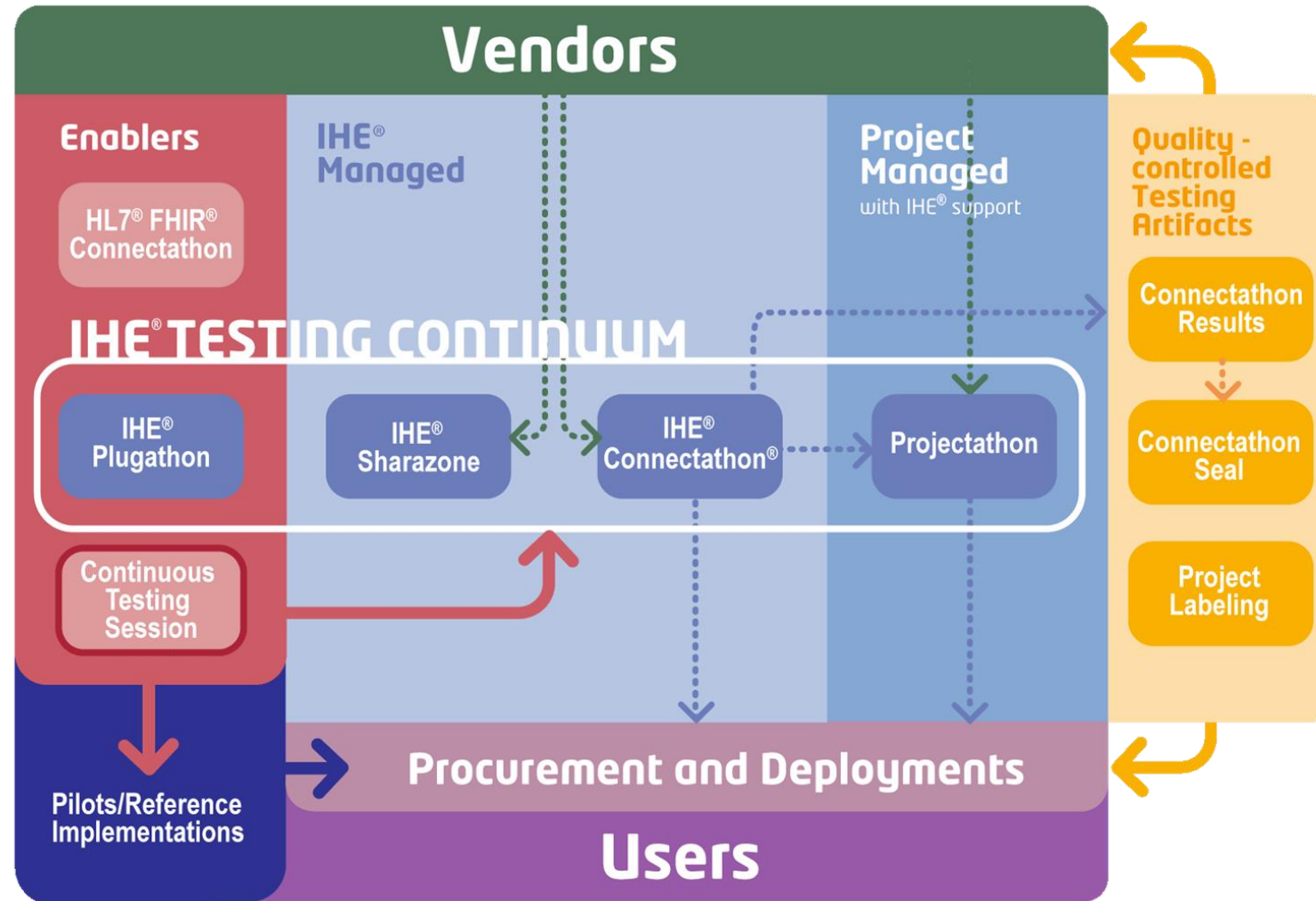
- **IHE PRISM** provides a curated reference to reuse the **EURIDICE specifications** in practice
- Organises EURIDICE and IHE artefacts by EHDS use cases and functional needs
- Supports consistent technical choices across Member States and EU projects
- Reduces fragmentation and accelerates EHDS implementation



The IHE Connectathon Week represents a **broader value proposition**, encompassing not only the activity on the floor but also the **several side events and delegations**



IHE Testing Continuum – Continuous Testing for EHDS



Testing session focused on **European Implementation Guides for EHDS primary data use** (IPS, Imaging, Laboratory, HDR). Participants test real **EU project use cases** and strengthen their interoperability readiness.

What participants will:

- Test and validate European **IGs and EU project test cases** (e.g. EUDI Wallet, Yellow Button)
- Troubleshoot technical issues
- Gain hands-on experience with interoperability tools and profiles (e.g. **Gazelle**)

Who should attend:

- **Technical teams** from **EU-funded projects** preparing for EHDS-aligned integration
- **Health IT vendors and developers** testing against European IGs

Outputs:

- Concrete **technical feedback** per team (gaps, improvements, successes)
- **Verified implementations** of European **IGs and EU project test cases**



IHE[®] **CONNECTATHON**
EUROPE | BRUSSELS 2026 MARCH 23/27

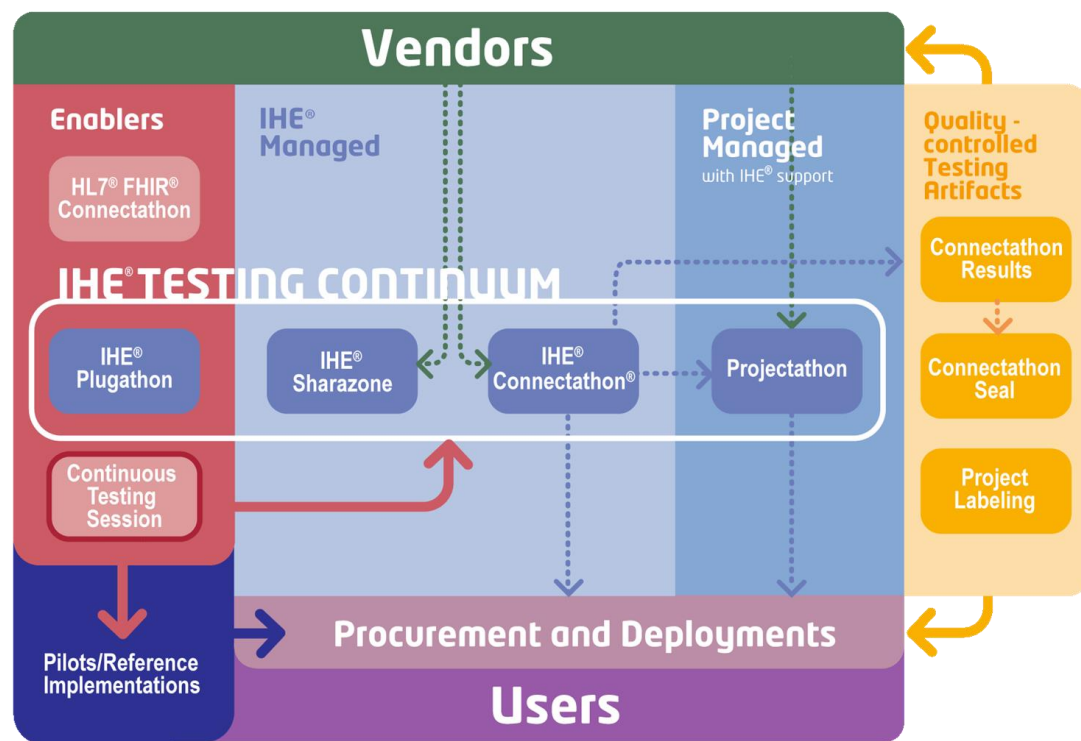
Validating EHDS-
ready EHR
implementations in a
hands-on, multi-
vendor environment



Testing the EEHRxF and EHR requirements

- Organized by Xt-EHR and IHE-Europe during Connectathon Week, 23–27 March 2026, Brussels
- Hands-on environment to test EEHRxF and related EHR requirements
- Enables vendors and implementers to validate implementations and exchange with peers
- Guided by international experts and real testing scenarios
- Complements EHDS Plugathon: practical validation of EHDS-aligned profiles**

Mon	Tue		Wed		Thu	
pm	am	pm	am	pm	am	pm
Connectivity/preparatory tests in Gazelle on the testing floor 14:00 - 18:00	Testing 9:00 - 13:00	Testing 14:00 - 18:00	Testing 9:00 - 13:00	Testing 14:00 - 18:00	Testing 9:00 - 13:00	Closing Ceremony Starts at 14:00
	Opening Ceremony and Educational Sessions Starts at 10:30	Educational Sessions		Educational Sessions		



The Continuous Testing Session for EHDS in support of EHDS-related projects serves as a preliminary and preparatory step towards the IHE Plugathon activities. It offers both a training opportunity and a chance for vendors/organizations to collaborate with support teams between events.

No-peer testing: The focus will be on validator and simulator-based testing, without peer-to-peer evaluations. In IHE, no-peer testing is conducted without live partner systems.

Facilitators: A facilitator is a Subject Matter Expert (SME) who will follow, help and guide participants in the will accompany participants throughout the process, offering guidance and support to ensure they are prepared for the event.

Online space: To support communication and collaboration, participants will also be included in a dedicated Zulip channel, organized by domains.

We will adapt the Continuous Testing Session for EHDS based on the requirements and needs of these projects

Putting new things into practice like:

- new validators and introduction of simulators
- peer-to-peer testing
- automated test cases

- **HL7 FHIR IGs for ...**
 - EU Base (R4/R5)
 - ePrescriptions/eDispensations (R4/R5)
 - European Patient Summary
 - Discharge Summary
 - Laboratory Report
 - Imaging Report (R4/R5)

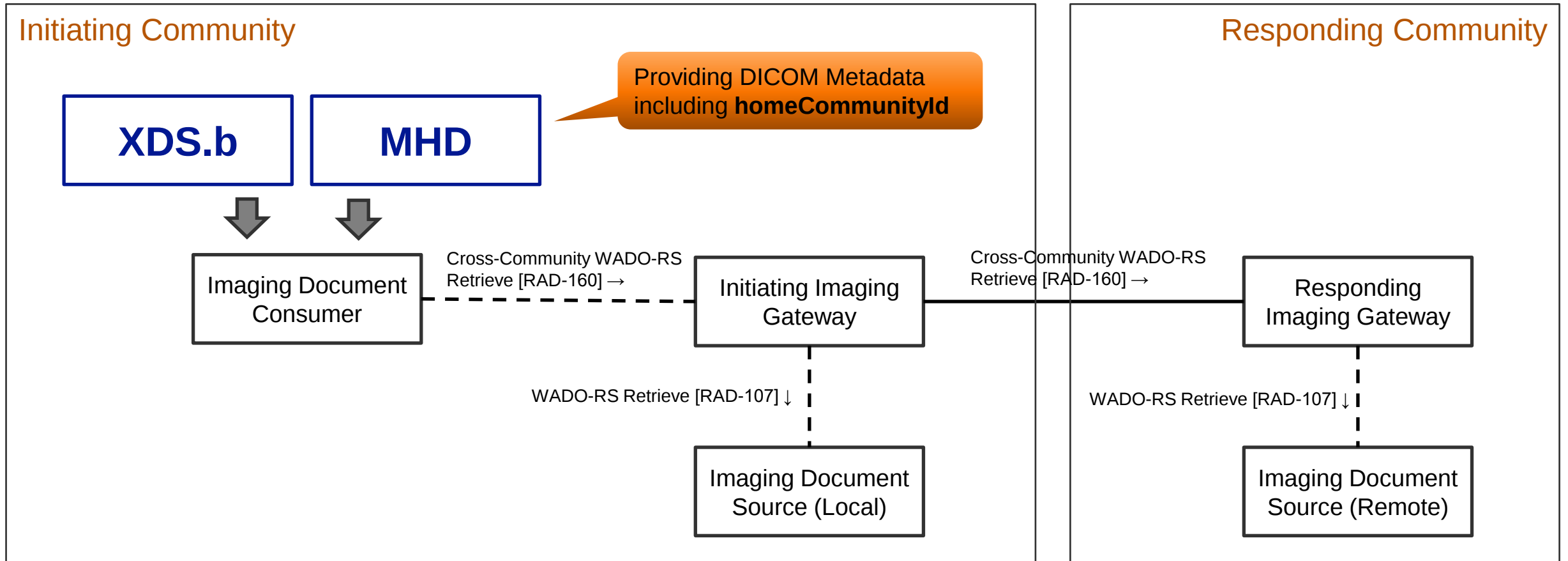


European Interoperability Specifications
for Digital Solutions in Healthcare

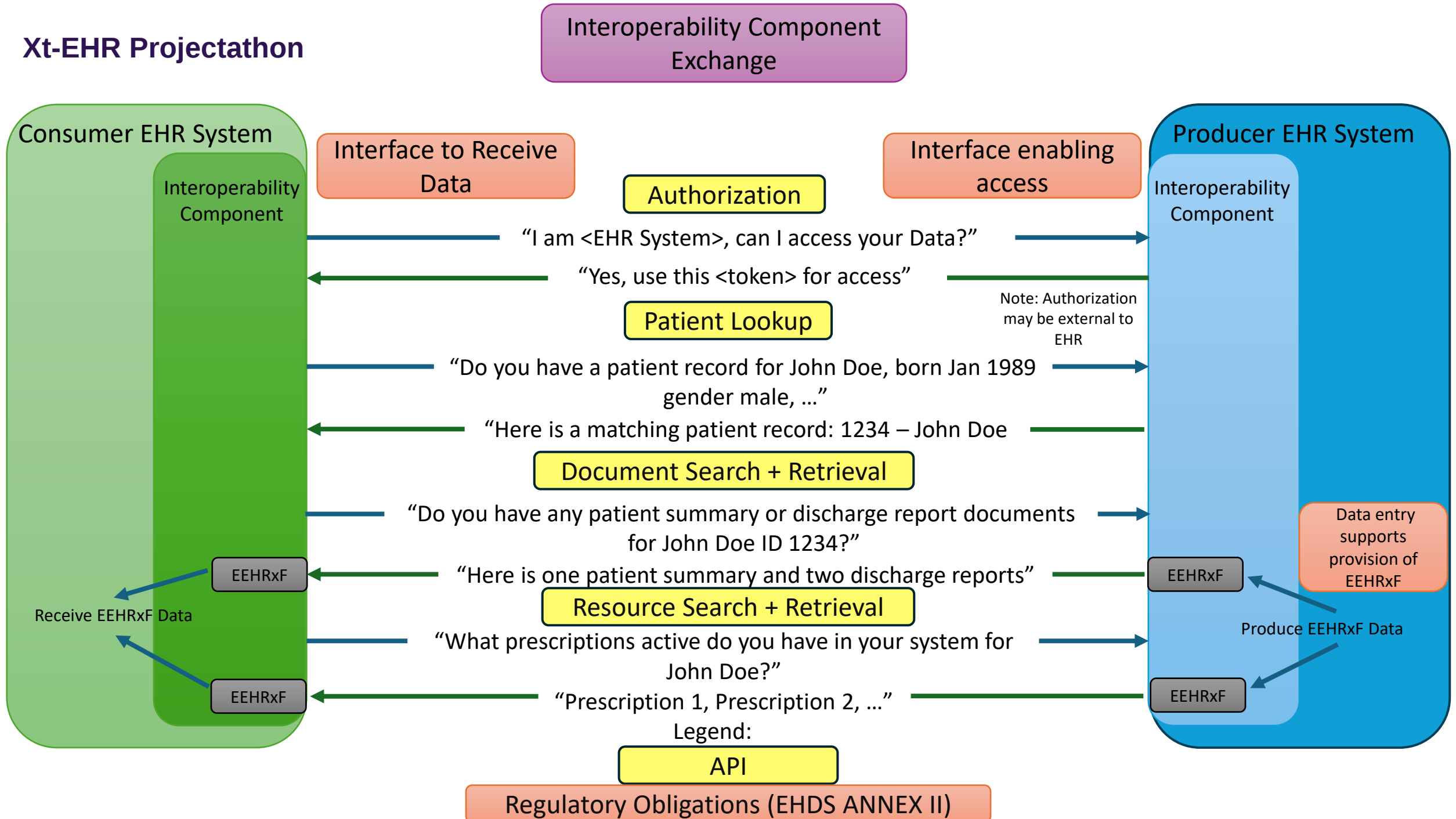
Cross-Community Web-Based Access to DICOM Objects (XC-WADO)



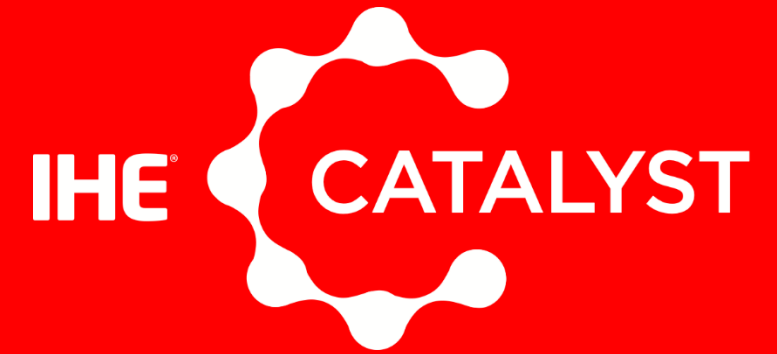
- Cross-Community Web-Based Access to DICOM Objects (XC-WADO)



Xt-EHR Projectathon



- **Single profile testing**
 - Including content profiles and eP/eD
- **2 “interest areas”**
 - **Clinical documentation workflow(s)**
 - Workflow 1: Create and send a DisSum, LabReport, RadReport or PS
 - Workflow 2: Query, retrieve and display a DisSum, LabReport, RadReport or PS
 - **Imaging workflow(s)**
 - Workflow 1: Create Metadata
 - Workflow 2: Get Metadata and Retrieve DICOM objects
 - Workflow 3: Get Metadata and Retrieve DICOM objects in a cross-community setting



Thank you!

Alexander Berler

Global Business Development Director

Jürgen Brandstätter

Global Standards Director