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Embedding IHE Profiles Standards and Test Tools in Cross Border and National Use Cases



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- MyHealth@EU eHealth Member State Expert Group Co-Chair



* The **Health Service Executive (HSE)** is the publicly funded healthcare system in Ireland, responsible for the provision of health and personal social services. It came into operation on 1 January 2005.

The HSE is a large organisation of over 100,000 people, whose job is to run all of the public health services in Ireland. The HSE manages services through a structure designed to put patients and clients at the centre of the organisation.

** **eHealth and Disruptive Technologies** is the HSE office responsible for **the delivery of technology** to support and improve healthcare in Ireland. eHealth and Disruptive Technologies is **committed to realising the eHealth Ireland Strategy** by ensuring that information and technology support healthcare efficiently and effectively throughout the whole health service. The purpose of the strategy is to provide an outline of eHealth and demonstrate how the individual citizen, the Irish healthcare delivery systems – both public and private – **and the economy as a whole will benefit from eHealth.**



Source: * <https://www.hse.ie/eng/about/foi-publication-scheme/about-us/>

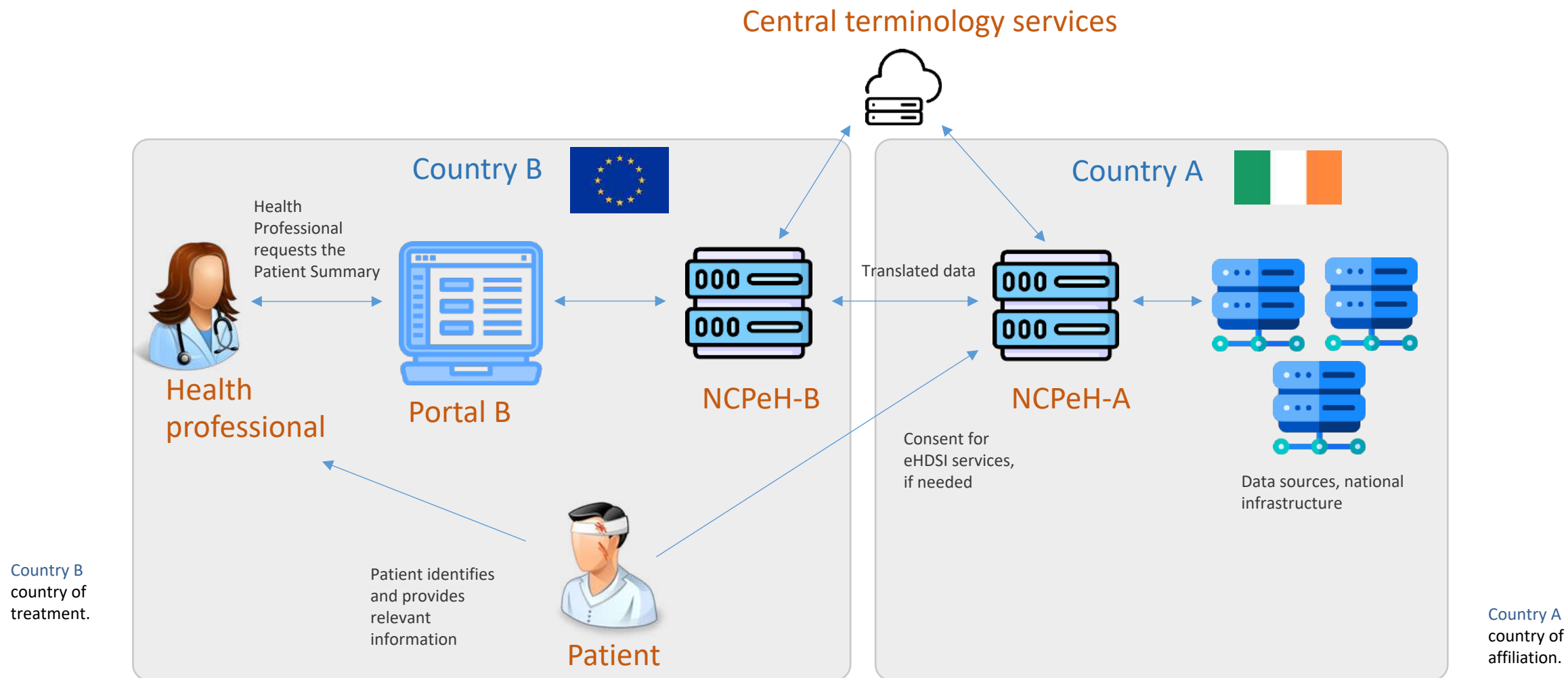
Source: ** <https://www.hse.ie/eng/about/who/ehealth-and-disruptive-technologies/>



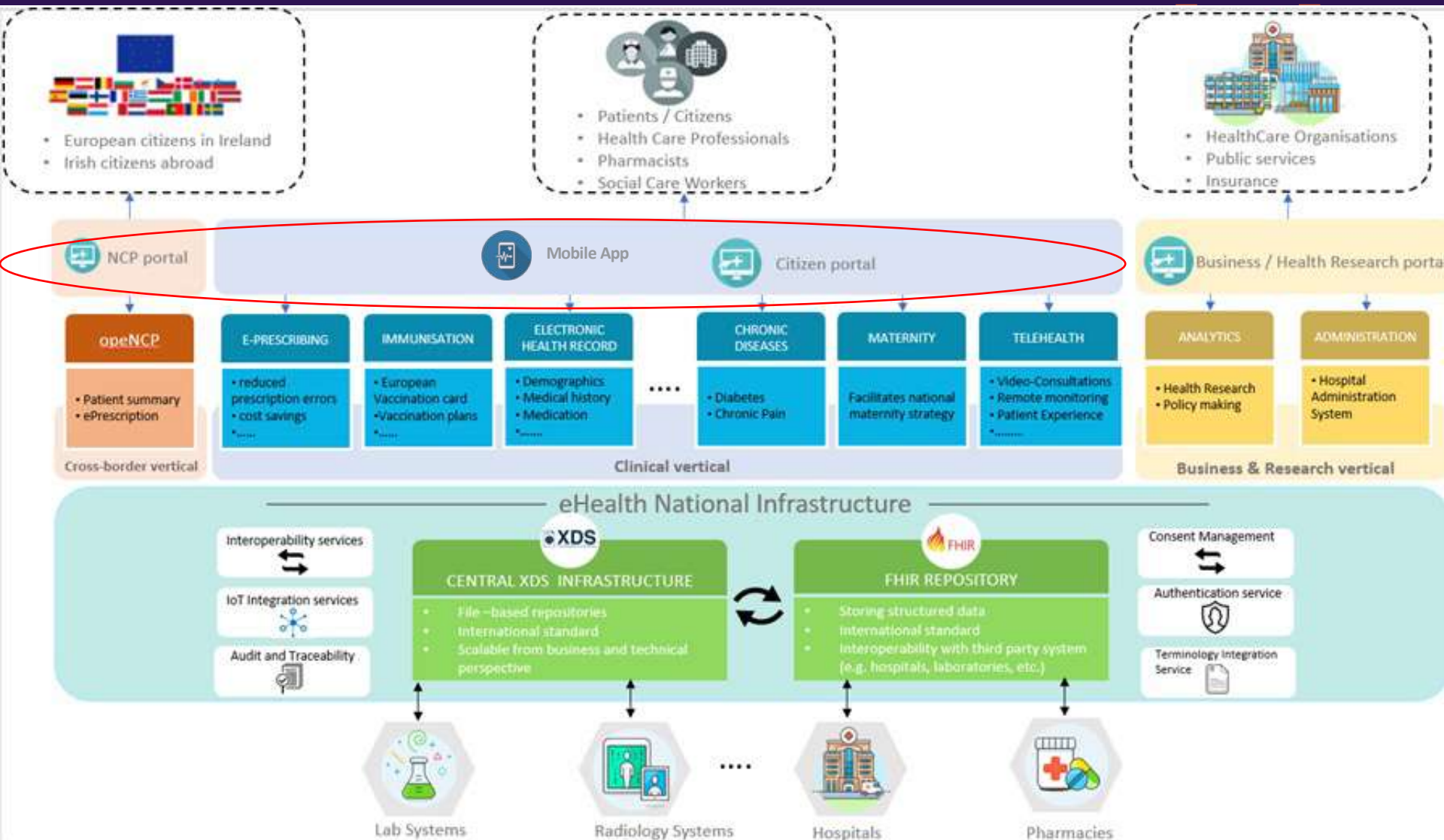
*“At the **core of an integrated health and social care system** is the need to share information between healthcare practitioners **both within and across organisational boundaries** including public and private. This requires a **standards-based approach to health information and interoperability**, that is to say projects are underpinned by **international and national standards**”*
(HIQA, 2021).



MyHealth@EU Use Case for Ireland



An architecture and infrastructure to enable Digital Reform in Ireland



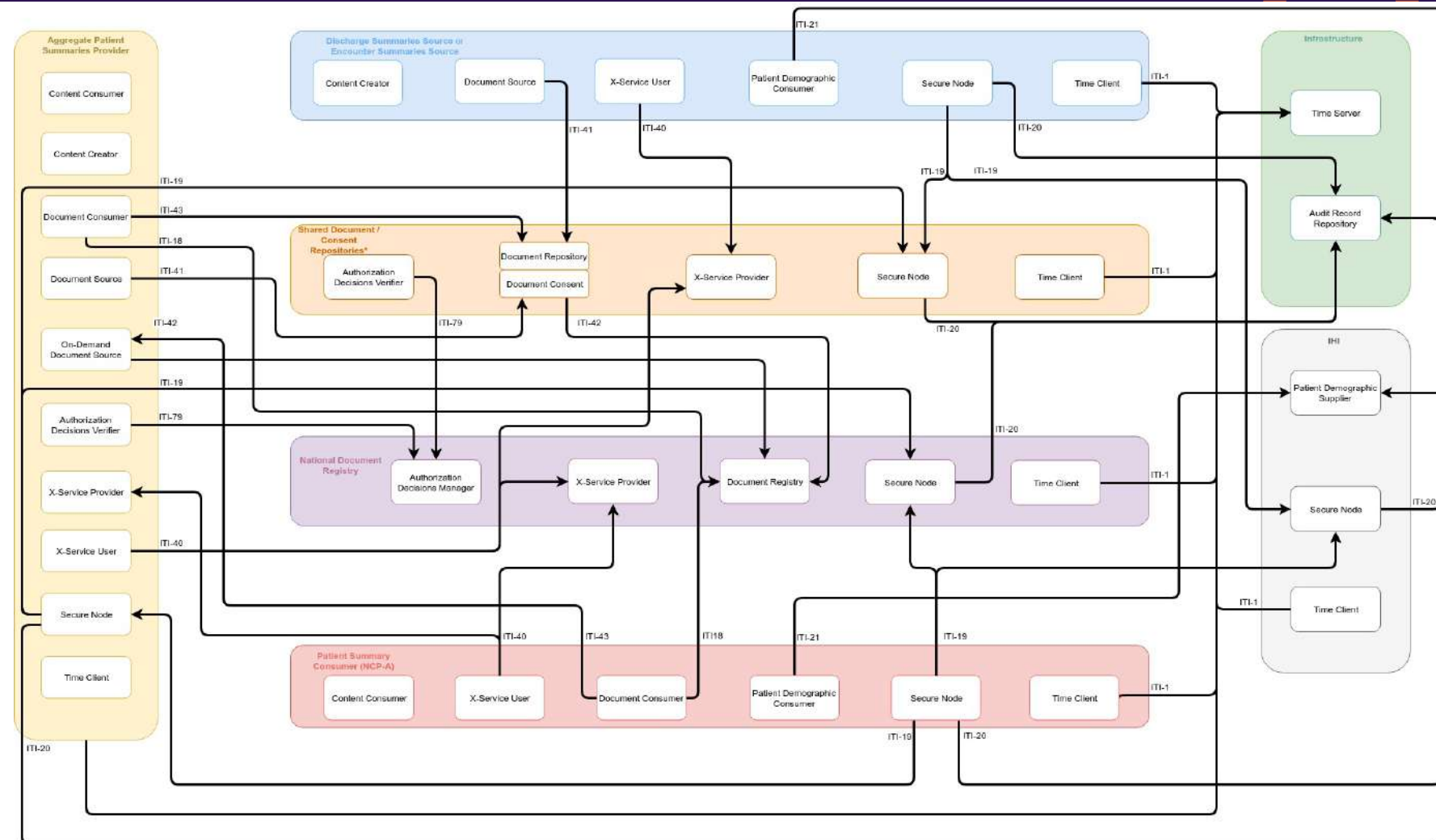
We needed to address and support the sharing of both Patient Summary and ePrescriptions via **MyHealth@EU** for **Irish Citizens** abroad in need of emergency treatment as per **directive 2011/24/EU**; We did this based on the **Use Case driven interoperability methodology**.

We have created **modular architecture** and **EHR data sharing infrastructure** based on proven international **IHE Profiles** and applicable **data exchange standards (XDS, CDA and FHIR)** which can also support the domestic use cases such as national EHR's and the other **EHRxF domains** coming down the tracks.

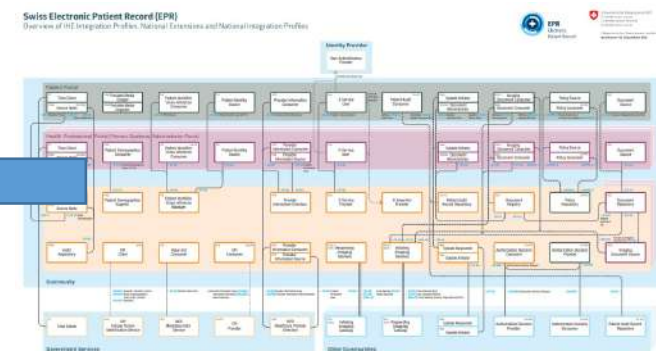
A standards Trojan Horse!!!



Irish Patient Summary Blueprint and IHE Transactions



We took **inspiration** from the **eHealth Suisse ePR Blueprint***



and created our own for both Patient Summary and ePrescription.

Detailed blueprints which call out the **IHE ITI transactions** that need to be supported by the relevant actors to enable the use case.

Source: * https://www.e-health-suisse.ch/fileadmin/user_upload/Dokumente/E/Graphic_Swiss_Electronic_Patient_Record_v4.0-2021-04-15.pdf





Modelling the CDA documents Patient Summary, ePrescriptions etc. in Art Décor



testing.ehealthireland.ie/art-decor/decor-templates--EHI--section=templates

eHealthireland - Templates

From the CDA template in Art Décor

To the CDA XML

To display in HTML

- Art Decor is an open-source tool and a methodology for various multidisciplinary stakeholders of healthcare information exchange. It supports comprehensive collaboration of team members within and between governance groups. It allows separation of concerns and different views on a single documentation for different domain experts. It supports creation and maintenance of HL7 templates (STU), value sets, data sets and more.
- It enables Irish Health Service staff to model clinical documents and templates to ensure the appropriate standards based interoperability and governance.

EHIE ePrescription -

Id: 1-2.372.980010.4.10.2
Status: Draft
Name: EHI-eP

Description

Classification: 1-2.372.980010.4.10.2
Open/Closed: EHI-eP
Used by / Users: EHI-eP

Relationship

Expand All | Collapse All | Search

Items

- 11.1 Clinical Document
- 11.2 Clinical Document
- 11.3 Clinical Document
- 11.4 Clinical Document
- 11.5 Clinical Document
- 11.6 Clinical Document
- 11.7 Clinical Document
- 11.8 Clinical Document
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Home

Book a Vaccination

Appointments

Vaccinations

Summary of Care

Health Care Finder

E-Referrals

Lab Orders/Results

Medications

Vitals

Allergies

Conditions

Insurance

Care Team

Documents

Health Passport

English | Irish

Patient Summary (15, 2021)

COYNE Eamon
15, 2021, MOLLONEY David
MOLLONEY David, Test, Secretaris, 15, 2021

539305450053997965, 1431218Q

9

Allergies and other adverse reactions

Onset Date	Description
03/10/1994	Medication allergy, Januvia, Severe
01/01/1999	Allergy to substance, Latex, Moderate

Problem list

Onset Date	Description
03/01/1995	Q Fever, Q fever
03/01/1996	Benign lipomatous neoplasm of skin and subcutaneous tissue of head, face and neck, rt neck lesion
10/01/2004	Other headache syndromes, headaches - inv. including CT NAD 7migraine
05/09/2007	Low back pain, recurrent back pain
20/06/2009	Essential (primary) hypertension, hypertension
20/06/2009	Type 2 diabetes mellitus, diabetes mellitus type 2
12/09/2015	Diabetic retinopathy E10-E14 with common fourth character -2, Diabetic Retinal Camera Screen - No diabetic retinopathy

History of Procedures

Procedure date	Description
12/04/2002	fracture 4th metacarpal
14/10/2013	resection of a benign salivary gland tumor

History of medication use

Onset Date	Description	Frequency	P
02/02/2011	Atrovastatin, Oral Use, Atrovastatin	Take one before breakfast	9 months
21/07/2011	Ramipril, Oral Use, Ramipril	Take one before breakfast	9 months
27/01/2012	Metformin, Oral Use, Metformin	One tablet twice daily	9 months

History of medical device use

No known devices in use

History of past illness

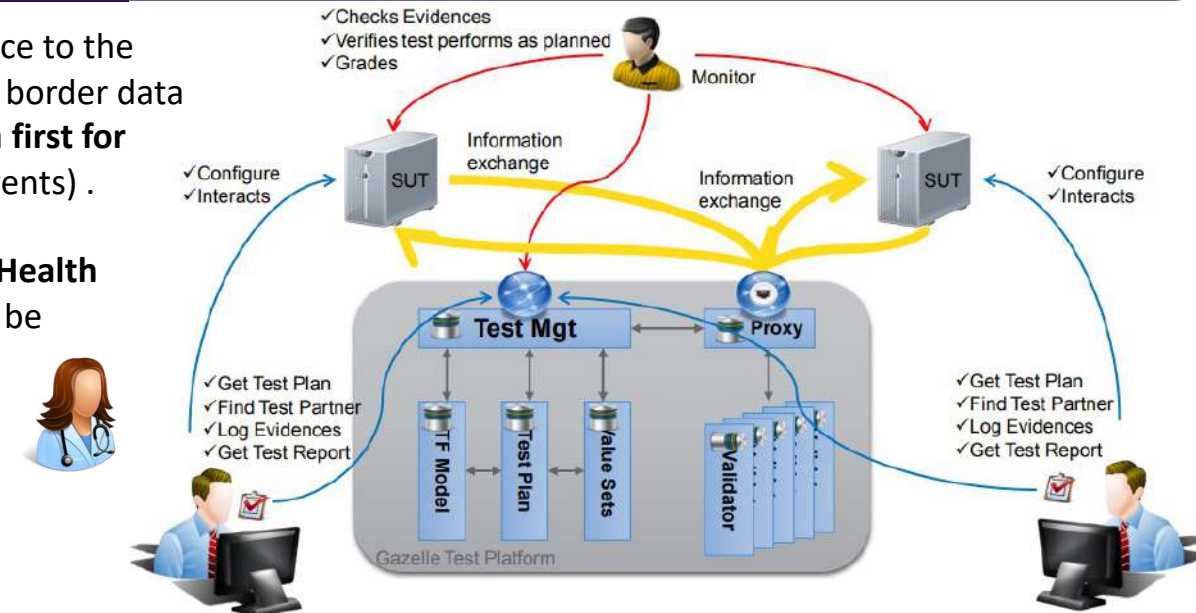
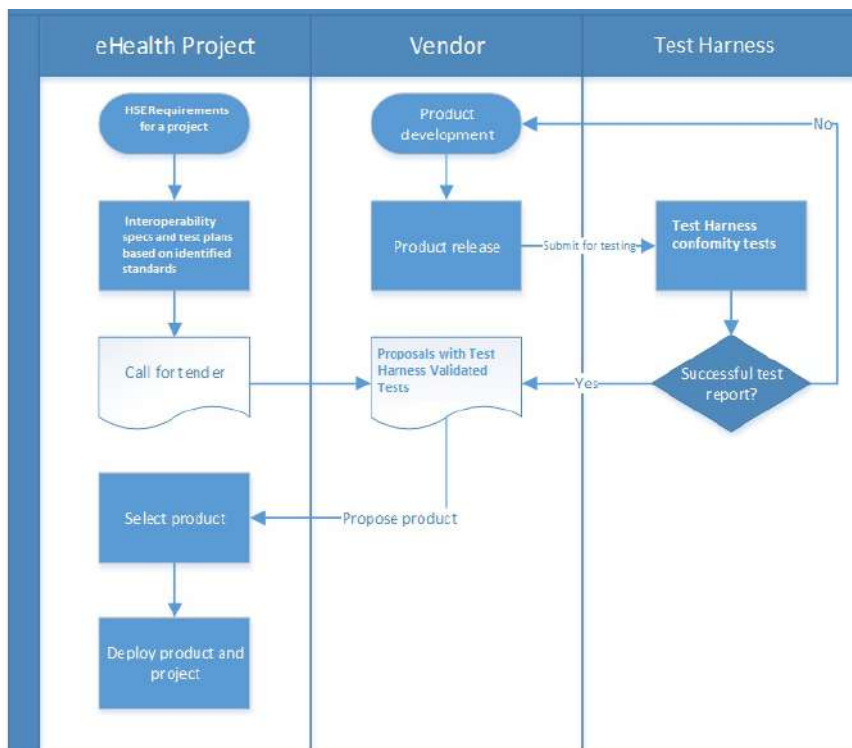
Onset Date	Description
01/01/1996	A78, Problem resolved
01/01/1996	3750S003, Problem resolved



Expand the Irish National Test Harness ensuring interoperability in the Irish digital health ecosystem building workforce capacity

We have developed the **Irish National Test Harness** built on **Gazelle** to ensure compliance to the relevant digital health standards via **interoperability testing**. Initial focus is on the cross border data sharing use cases of Patient Summary and ePrescriptions for EU exchange, resulting in a **first for Ireland** with the successful hosting of **2 National Projectathons** (Interoperability Test Events) .

Working with the **IHE team**, **HSE staff** have **upskilled significantly** in relation to **Digital Health interoperability** as a consequence of these test events. This interoperability testing can be **replicated across** the other **national and cross border Digital Health** use cases.



The **Irish Test Harness** can be expanded in to the **procurement cycle**, by calling out our Technical and Semantic interoperability requirements in advance of award, thereby **ensuring the Vendors fit in our shoes** (i.e. HSE ecosystem).

During the procurement process **Project Managers** can outline what the required standards are to support the **interoperability Use Case(s)** .

Avoids costly re-works during and post implementation. **Reduces clinical risk. Reduces risk levels** for both HSE and the vendors whilst enhancing/delivering the solution.

Greater efficiency of operation which enables **enhanced patient care** and **patient safety**.



In relation to sharing of health information the primary focus “can” be on making it available to the Healthcare Professional. But what about the patient?

There is an EU Digital Decade target that by 2030 all EU citizens will have access to their healthcare records*

At home in Ireland IPPOSI (Irish Platform for Patient Organisations, Science and Industry) conducted a Citizen Jury whereby a message was strongly conveyed that Irish citizens want to access to their own Health information **.

So how can we do it?

Source:* https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en

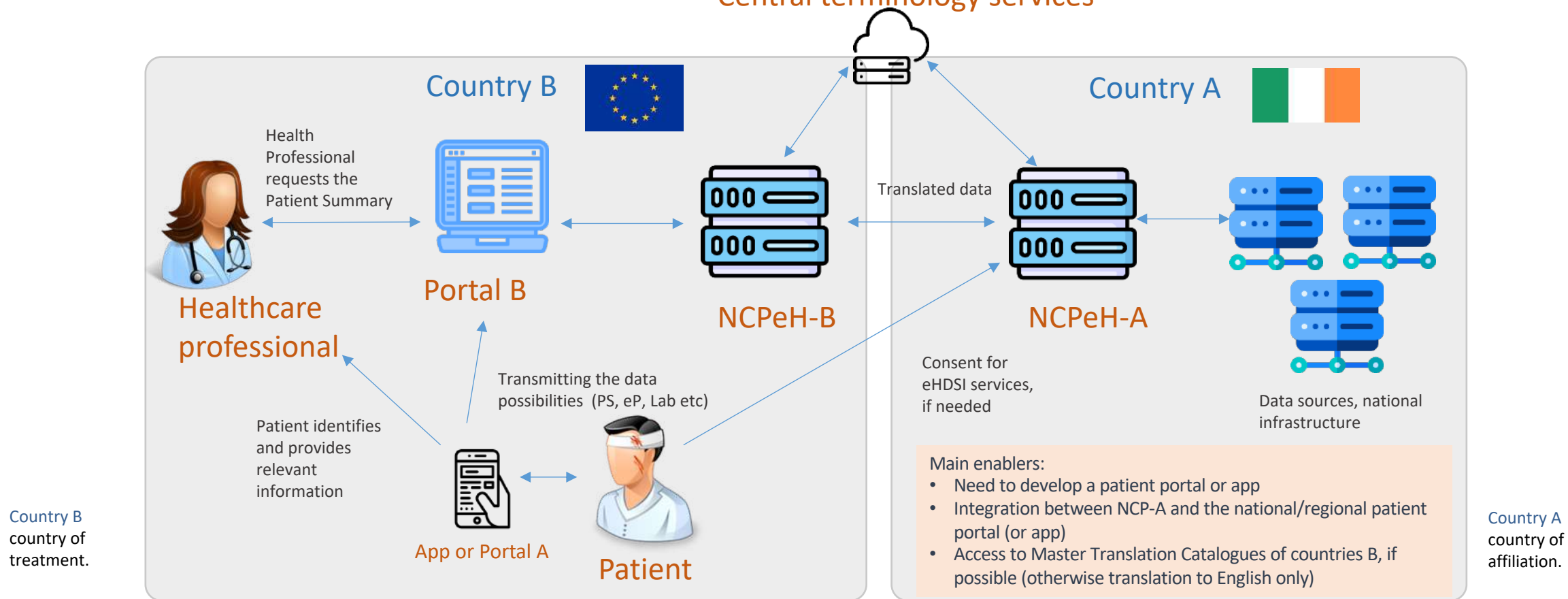
Source: ** <https://www.ipposi.ie/our-work/policy/health-information/citizens-jury/>



The future state MyHealth@EU infrastructure landscape including a patient app/portal allowing citizens access to their own healthcare data.

Ireland are participating in the Patient Access to their Healthcare Data consortium with 11 other Member States

Central terminology services





With the build up of structured and standardised data in the **Irish modular architecture** and **EHR data sharing infrastructure**. Leveraging the appropriate standards and technology **Irish Citizens can access and gain control** of their **relevant healthcare information** such as Patient Summary, ePrescriptions and other digital health use cases also further enabling mobile and telehealth services in our ecosystem. This is in alignment with the **EU Digital Decade target that by 2030 all EU citizens** will have access to their electronic health records. We have begun this work as shown....

Citizen Portal connecting to EHR data infrastructure to display Patient Summary



eHealth Pass Mobile application connecting to EHR data infrastructure to display Patient Summary



Not just System but also Human interoperability



The HSE Technical Architecture team have benefitted greatly from working with the IHE team

Together with applicable stakeholders they have

- ✓ Designed a standards based architecture
- ✓ Supporting interoperability framework
- ✓ Modelled Blueprints based on best practice
- ✓ Created CDA Templates for Irish EU Cross Border exchange
- ✓ Created test plans and test tools and hosted National Projectathons



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