An Roinn Sláinte
DEPARTMENT OF HEALTH

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Health Service Executive

National Patient Identification Management Use Case

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EHEALTH DIGITIAL SERVICES INFRASTRUCTURE OPEN NATIONAL CONTACT POINT IMPLEMENTATION & TEST PLATFORM SERVICES

National Patient Identification Management Use Case

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Approval

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1. Introduction

Ireland as a European country is becoming involved in the eHDSI project led by the European Commission under the CEF (Connecting European Facilities) program and will participate in the deployment in wave 3 (2019). To prepare for the deployment of the NCPeH in Ireland, the HSE (Health Service Executive) procured in 2017 the support services that will facilitate the implementation of the NCPeH and its connection to central Irish services. The first step of the project is to define the needed use cases to support and to design the architecture for connecting the Irish NCPeH. These tasks will be followed by the design of the architecture within Ireland, the corresponding Interoperability Specifications, the testing strategy including test plans and the implementation of Gazelle test platform that includes test cases, test tools and test data.

2. Context

Directive 2011/24/EU provides rules for facilitating access to safe and high-quality cross border healthcare and promotes cooperation on healthcare between member states. The aims of implementing the Irish NCPeH exchange of Patient Summaries and ePrescription are in line with the principles of cross-border care. The NCPeH and cross border exchange implementations are all key building blocks that will interact with the national data dictionary (single source of trust for clinical data definitions across the enterprise) and the Patient Summary and ePrescribing will be exchanged as minimum data sets.

The main goals are to design the platform based on the needs that will be developed in the first steps of the project that includes:

- Use Cases for ePrescription and Patient Summary.
- Corresponding Interoperability specifications and architecture orchestration.
- Validated version of IHE Gazelle. The test harness will provide to the authority the ability to test prospective vendors and products against the above interoperability specifications.

This document will focus on the common Use Case for National Patient Identification Management that is a critical common component of the two clinical Use cases on Patient Summaries and ePrescription.

The Use Case specified in this document is enabled by the Individual Health Identifier (IHI) system that is under deployment. This Use Case reflects the current services intended to be offered in the short-term and that will have to be used by the Irish National Contact Point (NCPeH) which enables cross-border eHealth services. It is expected that it will be extended to all point of care systems.

3. Glossary

ePrescription: means a medicinal prescription issued and transmitted electronically, as elaborated in point 3 (f) of Commission Recommendation 2008/594/EC on cross-border interoperability of electronic health records. [PS/eP guidelines]

eDispensation: is defined as the act of electronically retrieving a prescription and giving the medicine to the patient. Once the medicine has been dispensed, a report on the items dispensed is sent to the prescribing Member State in a structured format. [PS/eP guidelines]

IHE Profile: provides a common language for purchasers and vendors to discuss the integration needs of healthcare sites and the integration capabilities of healthcare IT products. A Profile is a guideline for implementation of a specific process, by providing precise definitions of how standards can be implemented to meet specific clinical needs. [eHealth Interoperability Conformity Assessment Scheme for Europe (EURO-CAS)]

Patient Summary: is an identifiable “dataset of essential and understandable health information” that is made available “at the point of care to deliver safe patient care during unscheduled care (and planned care) with its maximal impact in the unscheduled care”. [PS/eP guidelines]

Interoperability use case: is a description of a specific use of HIT that includes depiction of both humans (business actors) and systems (technical actors), scope, workflows of tasks performed by healthcare professionals and associated data flows. It should be written in natural language and it may include several scenarios. One or more use cases are derived from one business case. [IHE taskforce]

Realisation Scenario: Is the description of human activities (business actors), systems (technical actors) roles (i.e., IHE actors) and transactions related to a set of technical use cases that support the interoperability infrastructure for use cases (implementable infrastructure). [IHE taskforce]

Interoperability Specifications: specify the interfacing of the various IT systems and devices to an eHealth infrastructure with all necessary technical details specific to allow the support of an ‘Interoperability Use Case’ in an eHealth deployment project. It covers not only the specification of the information that may flow back and forth across the interface, but also the policies that control the behaviour of the systems and users to ensure end-to-end interoperability (e.g. semantics, security, privacy, service level agreements). An Interoperability Specification references profile specifications (e.g. IHE Profiles) and standards, when profiles are not available. Interoperability Specifications (IS) are targeted to be the sole entry point for the technology developers, the compliance assessment testing, and the purchaser of IT systems in term of technical requirements that will ensure interoperability. [ISO/TR 23380-3 – IHE Global Standards Adoption Process – Deployment]

4. Methodology

4.1 Introduction of the Use Case driven approach

This methodology[1] has the objective to:

- Define Use Cases, and their prioritisation, to answer the eHealth strategy objectives of a nation/region.
- From Use Cases, design the interoperability specifications and infrastructure based on IHE profiles.
- To define the testing strategy and identify test plan and test methods (test cases, test tools and test data).
- To support Project teams to procure products or solutions for their eHealth Project (Telemedicine, national/regional EHR, replacement of product in hospitals etc.).

The methodology is based on experiences and good practices in other countries or regions.

The following figure synthesizes the methodology based on five steps:

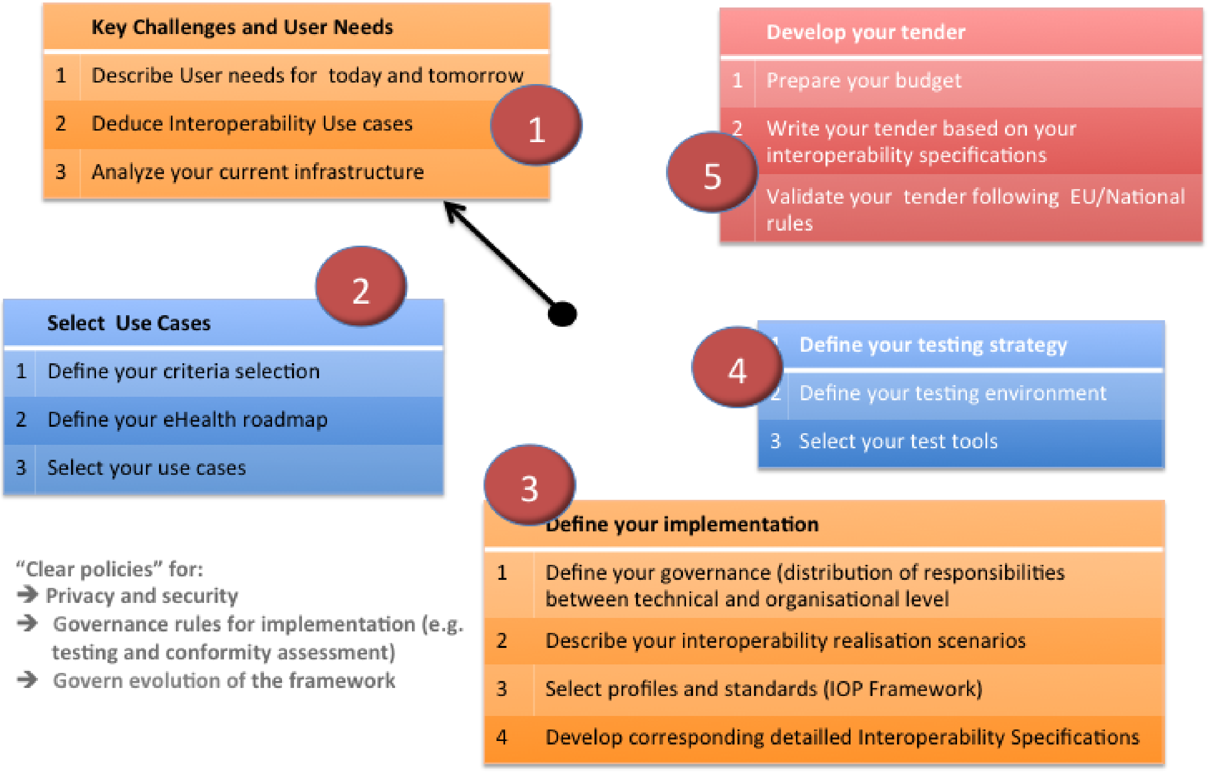

Figure 1: Use Case driven approach for the tender preparation

In the case of the Crossborder Irish project, the analysis focuses on the first four steps and excludes the last one (tender development).

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[1] Bourquard, Karima and Berler, Alexander. Use Case driven approach for a pragmatic implementation of interoperability in eHealth. IGI Global Journal

5. National Patient Identification Management Use Case

This Use Case will be described using the template developed by the European Antilope Project (See Appendix 8.1). It is a simple form that records the main characteristics of any interoperability Use Case. It is intended to be brief and textual to ensure that any stakeholder impacted by the interoperability in health captures the main aspects of the Use Case.

Purpose of Use Case: Nation/region-wide access to the patient medical information, by managing a nation-wide identification scheme.

Relevance: The medical information is indexed by a unique patient identifier in a consistent way. This facilitates the linkage of health information coming from multiple organizations that may be using an internal local patient identification scheme and corresponding identification traits. This is a critical enabler towards integrated care.

Domain: Patient, as subject of care.

Scale: National/regional and an enabler to cross-border health information exchange.

Context: The patient identification is one of the major activities of the care process. Without an unambiguous patient identification, the care delivered on the basis of shared information is subject to risks of medical errors, possibly threatening the life of the patient. Patient identification policies are developed in most countries in order to ensure the highest identification quality.

Information: Patient demographics data (or traits) and identifiers. One generally distinguishes:

- ***Local identifiers*** - Created by care delivery organisations (hospitals, general practitioner offices, etc.) along with locally captured (*Note 1*) ***demographics data*** (given name, family name, date of birth, gender, etc.).
- ***National individual health identification (IHI) numbers*** - Created and managed at a central national level with associated (*Note 1*) ***demographics data*** that originates from multiple sources, in particular from the personal public service identification used for Social Care.

Note 1: When an identifier is assigned (locally or nationally), a set of demographics data with specific values are associated or captured. This demographics data is used to decide that a new individual needs to be registered versus that such an individual is already identified. In the latter case, issuing a new identifier would create a duplicate.

Participants:

- Healthcare Professionals
- Citizen as Patient
- Ministry of Health

Functional process flow: When Healthcare Professionals want to access medical information of a specific patient, they need first to request/locate the identifier of the patient. This identifier can be available in an IT system accessible to the health professional (e.g. a hospital patient administration system, a national patient identification service), a physical token that the patient may carry (e.g. a card, a smart card, a cell phone app, etc.) with an identifier that is unique and recognised at a national (or regional) level. It is linked to local identifiers that are used within specific care delivery organisations. Such identifiers are used to access the shared information or the information delivered by the Health Care Professionals.

Such identification should apply to various types of individuals that need to receive care:
- Irish born individuals that are identified at birth.
- Irish citizens that are identified when applying for citizenship.
- Irish residents that are identified when residency is granted.
- Foreign visitors that may need to be identified during their visit.
- Other special cases.

In the above process flow, one distinguishes different business actors:
- A ***local point of care***, that issues local patient identifiers associated with demographic data.
- The ***National Department of Social Protection*** that issues a PPSN (Personal Public Service Number) and tracks associated demographics data.
- The Health Identifiers Index, a central information system that receives identifiers and demographics data updates from the ***National Department of Social Protection*** and the ***local points of care***.
- The ***IHI Register***, a central information system that uses the information gathered by the Health Identifiers Index to allocate ***Individual Health Identifiers.***
- Other ***National Health Information Systems*** that are managing individual patient health data and need to ensure their information is consistently linked to the correct patient.

The Health Identifiers Index offers patient identification management services to the ***local point of care*** and the ***National Health information systems***. These services are described in the following sections.

5.1 Query for an IHI Number based on demographics data (only single match are returned).

The Health Identifiers Index supports a query request with a set of demographics data.
- If this demographics data does not match any individual patient managed by the IHI Register:
    - A ‘no match’ is signaled and no patient information is returned.
- If this demographics data matches an individual patient managed by the IHI Register:
    - It returns the matching individual patient’s IHI Number.
- If this demographics data matches more than one individual patient managed by the IHI Register:
    - A ‘multiple match’ is signaled and no patient information is returned. The ‘multiple match’ indication allows the application that issued the query to issue another query with additional demographics data to disambiguate the multiple match.

The demographic data that can be passed as part of this request is documented in section 6.

5.2 Query for national demographics based on an IHI Number.

The Health Identifiers Index supports a query request for a patient identified by its IHI number.
- If this IHI number does not match any individual patient managed by the IHI Register:
    - A ‘no match’ is signaled and no patient information is returned.
- If this IHI number matches an individual patient managed by the IHI Register but the IHI number no longer matches because it has been updated on the Register:

    - ➢ A ‘purged IHI’ is signaled and the updated IHI is returned.
- If this IHI number matches an individual patient managed by the IHI Register:
    - ➢ It returns the matching individual patient’s IHI Number and a list of associated demographics data.

The demographic data that can be returned based on this request is documented in section 6.

5.3 Patient Identity Feed for add/update/merge of local demographics for a local patient Id.

The Health Identifiers Index supports receipt of a feed with a set of demographics data for an individual by the local or national systems. These demographic details are used to populate (add, update or merge) the index of local patient identifiers held by the Health Identifiers Index.

When a patient identity feed transaction is received and processed by the Health Identifiers Index, it returns to the sending local system:

- An acknowledgement, if the demographic details, including the local patient identifier, are sufficient for the identity to be added to the index.

Or if such an identity was already known:

- For the demographic details to be updated on the Health Identifiers Index.
- For a local patient identifier to be merged with another local patient identifier.

Or

- An error, **if** the demographic details are insufficient to be added to the Index (e.g. no First Name present).

The demographic data that can be passed as part of this request is documented in Section 6.

If this Service is activated by a source, local or national system for the patients, it registers any update to an individual patient ID (e.g. merge). Associated demographics shall be communicated timely (in less than 12 hours) with a Patient Id Feed to the Health Identifiers Index.

5.4 Query for Patient Id cross references based on a local Patient Id or an IHI number.

The Health Identifiers Index supports a query request for a patient identified by one Patient Identifier that may be either:

- A local Patient Id (e.g. one of those fed by the local or national systems using the above Service 5.3).
- An IHI number created by the IHI Register.

The Health Identifiers Index responds to this query request in the following way:

- If this patient identifier does not match any individual patient managed by the Health Identifiers Index;
    - ➢ An error is signaled, and no cross-referenced patient Ids are returned.
- If this patient identifier matches an individual patient managed by the Health Identifiers Index;

  - It returns the list of permitted cross-referenced patient Ids.
- Such a list may be empty in case no cross-referenced patients Ids are known to the Health Identifiers Index.
- Cross-referenced patient Ids include local Patient Ids (e.g. one of those fed by the local or national systems using the above Service 5.3)
- Cross-referenced patient Ids may include the IHI number if one has been assigned by the IHI Register (The IHI number returned may be different from the IHI number in the request, in case it has been updated).
- The PPSN may be returned in that list by the Health Identifiers Index, if the requesting entity is authorized to receive the patient's PPSN.

Appendix 8.2 proposes a number of future services. These are special services that are either providing a manual file exchange-based patient identification management or a more dynamic management of IHI number allocation.

6. Demographic Information for the Services 5.1 through 5.3.

The following is a list of the demographic information to be held on the Health Identifiers Index. For each attribute the table specifies if the attribute is required or optional, in specific services request or responses (defined above in Section 5.1 through 5.3) where demographics data is conveyed.

Note: The list of attributes below slightly differs from the HIQA demographic standard. The following four attributes are not specified at this time at the national level, due to their unreliable nature:

- Source of death notification
- Communication Details
- Preferred contact time

Services Support Access to which Demographics Data held on the Health Identifiers Index		**5.1 – Query Request for IHI number**	**5.2 – Query for national demographics based on an IHI Number**	**5.3 - Patient Id Feed**
	Repeating	**Required in Request?**	**Returned?** [4]	**Required in Request?**
IHI Number		N/A	Optional	Optional
Local (and national) Patient Identifiers	Yes	Optional	Optional	Required
PPSN		Optional [1]	Optional	Optional [1]
Legal Given Name		Required	Required	Required
Legal Middle Name		Optional	Optional	Optional
Legal Family Name		Required	Required	Required
Former Names	Yes	Optional	Optional	Optional
Date of Birth		Required	Required	Required
Gender		Required	Required	Required
Aliases	Yes	Optional	Optional	Optional
Nicknames	Yes	Optional	Optional	Optional
Address Line 1	Yes	Optional [1]	Optional	Optional [1]
Address Other Designation	Yes	Optional	Optional	Optional
City	Yes	Optional	Optional	Optional
County	Yes	Optional	Optional	Optional
Eircode	Yes	Optional [1]	Optional	Optional [1]
Country	Yes	Optional	Optional	Optional
Geographic Designation	Yes	Optional	Optional	Optional
Mothers Birth Family Name		Optional [1]	Optional	Optional [1]
Email Address		Optional	Optional	Optional
Place of Birth		Optional	Optional	Optional
Multiple Birth Indicator		Optional	Optional	Optional
Order of Birth		Optional	Optional	Optional
Nationality		Optional	Optional	Optional
Date and time of Death		Optional	Optional	Optional
Safe Level of Registration [2]		Optional	Optional	Optional
VIP indicator		Optional	Optional	Optional
Mother's Identifiers	Yes	Optional	Optional	Optional

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[1] One of PPSN, Address Line 1, Eircode or MBFN must be provided.

[2] The Safe Level of Registration is an attribute generated by the DSP.
It has 4 values 0, 1, 2 & 3. These can be broadly categorised as 0, 1 = Low level of confidence in the information provided. 2, 3 = High Level of confidence in the information provided.

[3] Refer to 5.2 (An out-of-date IHI will generate a 'purged IHI number' signal).

[4] Demographic information will be returned where permitted.

7. References

IHI National Register specifications: HIDs / Consumer System Interface - Template Project Scope and Functional Specification - Version 0.9 DRAFT DOCUMENT.

eHDSI specifications:
- https://ec.europa.eu/cefdigital/wiki/display/EHOPERATIONS/Specifications?preview=/35210463/47187481/PS%20functional%20requirements_v2.1.0.pdf
- https://ec.europa.eu/cefdigital/wiki/display/EHOPERATIONS/Specifications?preview=/35210463/47187482/eP%20functional%20requirements_v2.1.0.pdf
- https://ec.europa.eu/cefdigital/wiki/display/EHOPERATIONS/Specifications?preview=/35210463/47187044/Central%20Terminology%20Services%20Specifications_v2.1.0.pdf

8. Appendices

8.1 Antilope Use case template

Title	(Number and) Name of the Use Case
Purpose	The Purpose describes the main functionality of the use case – What is it, what does it do?
Relevance	The Relevance explains the "why" of the Use Case. It describes the rationale of the Use Case: both medical (what problem does it solve?) and economical (business case, costs and benefits).
Domain	The functional domain of the Use Case. For eStandards, the following domains are suggested as extension from Antilope/ReEIF: • Medication • Radiology • Laboratory • Patient Summary • Referral and Discharge Reporting • Participatory healthcare • Telemonitoring • Multidisciplinary consultation • Public Health, research and epidemiology • Antenatal care
Scale	Organisational dimensions of the Use Case. The following scale has been derived/extended from the Antilope/ReEIF Use Cases: • International • Cross-border • National/Regional • Intra-Organisational • Citizens at home and on the move
Context	Describes relevant aspects and influencing factors on the non-technical level.
Information	High-level description of what type of information is shared, like 'patient summary' or 'medication prescription'.
Participants	List of the main participants in the process. These can be individuals or Organisational units. They are real-world parties.
Functional process flow	Real-world, functional description of a sequence of interactions between the participants in the different interaction steps of a process.

8.2 Future Use Cases

The following are special services that are either providing a manual file exchange-based patient identification management or special services that are for future development.

8.2.1 (Future) Bulk Patient Identity Feed for local demographics with local patient Ids to the Health Identifiers Index

The Health Identifiers Index accepts as input a bulk feed with a set of demographics data for each individual patient as registered on the local system. These demographic details are used to populate the Health Identifiers Index. In addition, a file is returned giving the IHI number for each individual as follows -

- If this demographics data does not match any individual patient managed by the IHI Register, no IHI is returned.
- If this demographics data matches an individual patient managed by the IHI Register, it returns the matching individual patient’s IHI Number.
- If this demographics data matches more than one individual patient managed by the IHI Register, no IHI is returned.

The demographic data that can be passed as part of this Bulk Patient Identity Feed request is the same as the demographic data for the Patient Identity Feed (See section 5.3) documented in Section 6.

8.2.2 (Future) Request allocation of an IHI number based on a local ID

In the case of new born or foreign visitors, an IHI may not have been assigned yet. This service would allow the point of care to request such an allocation. One Approach is to extend the Patient Identity Feed for addition/update/merge of local demographics for a local patient service (5.3). These 5.3 services could trigger automatically such an IHI assignment as an internal process to the IHI Register. It needs to be studied; if there is no additional information needed than what is described for 5.3.

8.2.3 (Future) Notification of an allocation/update of an IHI number for a local identifier

This service allows the Health Identifiers Index to create a notification to inform the local system(s) of a change to the IHI number cross-referenced with one of their local identities. This could be used in situations where:

- The Health Identifiers Index quality policies allow issuing of a new IHI number.
- An update from DSP enables the issuing/allocation of an IHI number.
- Two IHI numbers are merged.

When the notification receipt is processed by the local system:

- If the local identifier is not found, an error is returned to the Health Identifiers Index by the local system.
- If the update is successful, an acknowledgement is returned to the Health Identifiers Index by the local system.