# National Data Dictionary

# Metadata Registry Framework Briefing Paper


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## Background

Building capacity on enterprise architecture function within the Health Services Executive provides a pathway to delivering a sustainable return on investment for eHealth Ireland by 2030. The World Health Organisation (WHO) eHealth Action Toolkit published in 2012 currently locates eHealth Ireland in phase two of this action toolkit [1]. Suggesting therefore that we are in process development mode and developing our eHealth action lines. WHO qualify their approach to the adoption and use of the toolkit by advising how the resource can be used, the end result, they argue will depend on a country's context, priorities and vision [1]. This simple but significant qualifying statement can be linked to an additional set of activities identified in phase two of the toolkit. Such as determining a set of high level resource requirements in addition to the application of funding constraints to refine a national eHealth action plan. In this report our goal is to provide insight into both of these activities to inform the "how to" and advance strategic agendas within eHealth Ireland.

Recent communications from OoCIO and discussions at the recent Health Informatics Conference [2] suggest we are at a crossroads where decisions need to be made about the information requirements for the national infrastructure platform to support eHealth Ireland. There are a number of strategic directions and management choices that the DHGG (Digital Health Governance Group) senior eHealth team must consider, particularly in regard to building in-house capacity and potential outsourcing of technical services. This summary report has been developed to assist in the decision making process and defines what we consider to be phase one requirements for a national data dictionary to support both semantic and technical interoperability.

Specifically, this report provides insight in order to inform information architecture activity for the Enterprise Architecture Function of the OoCIO. In partnership with HSE, DCU has completed a scoping exercise to deliver a Metadata Registry Framework to progress both the existing information and future technical metadata requirements for integrated care. With an eye to both national service plan and the Open NCP programme, a review of relevant evidence was completed [3], and the 2016 edition of the Principles of Health Interoperability SnomedCT, HL7 and FHIR by Benson and Grieve informed the thinking and process [4]

An agreed guiding principle is that a meta data registry framework is considered as an evolving resource. The complexity of system specifications, associated workflow and the procurement requirements are dynamic in nature and emerging frameworks must evolve over time. For now, appendix one of this document provides a summary view of the emerging metadata registry template from two core viewpoints to support phase one discussions and inform developments.

1. From the information viewpoint: Column one includes titles and sub sections of Meta Data Registry Framework detail. Column two provides some explanatory text to support end users on Meta Data Registry Template detail from existing and emerging standards in ISO and CEN

2. From the technology viewpoint: Column three provides examples of technical metadata requirements to be used to support the “to be” development of existing standards such as HL7 v3 CDA and RIM domain models as applied in the Irish context. The structural attributes required to inform ongoing work in this space needs further investigating with relevant stakeholders (Healthlink and HIQA). Examples provided in this draft relate to Health Level 7 version 2.x, version 3 RIM CDA), in addition to HIQA HL7 version 2.4 General Practitioner Standard Message Framework [5].

## Introduction

In accordance with the successful HSE tender for the provision of ICT Terminology and Data Modelling Services, and in partnership with Information Architecture OoCIO, this briefing paper outlines the proposed approach to support mapping of terminology to messaging standards, with the Meta Data Conceptual Framework acting as the overarching bridge in order to support integrated care. What follows is a scoping review of the literature and a summary report arguing the case for a national Metadata Conceptual Framework to support the National Data Dictionary within the Information Architecture (I.A) function of Enterprise Architecture OoCIO HSE. Recommendations which are also included in the framework include two proposed key deliverables. Firstly, an evolving set of domain specific metadata concept models and secondly, an associated data dictionary master template, both of which are designed with a view to generate value for money from the IA function within the HSE. The guiding principle underpinning this work (and this report) is that the Metadata Conceptual Framework is an evolving one. The associated proposed domain specific models and identified data elements contained within the template will be agreed with the proposed Data Dictionary Governance Board (Appendix 2) as the process of requirements development advances. The Metadata Conceptual Framework is therefore considered a foundation stone and a key deliverable for the IA function.

## 1. The Need for a Meta Data Conceptual Framework

Metadata provides structured information about resources used to facilitate health and social care delivery. The term *Meta* derives from the Greek word meaning *a nature of a higher order or more fundamental kind*, such as Meta language or Meta theory. Metadata is therefore data about other data [7]. For harmonisation of national information architecture, a Metadata Conceptual Framework and associated Data Dictionary are required. The recently procured Hiveworx software tool [8] provides scope to the HSE to deliver a national data dictionary platform. Initial testing and training with key stakeholders confirms its core functionality and usability are fit for purpose. To date a number of data sets (n=14), have been migrated into the data dictionary as part of the business catalogue. In addition, stakeholder engagement in Q1 and Q2 has led to identifying a suite of datasets to progress and publish by Q4 in 2017. Bridging the gap between communication of interface languages, and data for machine translation to achieve system to system communication can be a costly exercise. It also has potential to impact indirectly on patient outcome. Information Systems need to be able to talk the same language to process health information across and between services, and controlled standardised language plays an important part in defining this important function [9; 10]. Metadata can provide the interface between internal codes and human-readable names, so that individuals can source information the way they want it, rather than the way the applications manage it [11].

The evidence base suggests deployment of information systems often fails to deliver on anticipated benefits [12, 13]. Electronic information systems operate at two different levels this is described initially by Rector et al in 2009 where he discusses terminology binding as a process which involves aligning terminology systems to information systems to achieve interoperability . In this paper they describe the process as engaging with both Models of Use and Models of Meaning [14]. The Model of Use describes how the information appears to the end user. The Model of Meaning on other hand is a representation of the information for reporting and statistical data analysis purposes. The Model of Meaning provides a format to process data and required information in a common standardised format [4, P.194]. Models of Meaning are primarily concerned with presenting a common representation of information, storage, communication and reporting. Models of Meaning are closely aligned with reference models. Drawing on ISO 20020 the Universal Financial Industry Message Scheme, Figure 1 provides an abstract image is demonstrating the conceptual structures included in the data dictionary and how they are aligned [15].

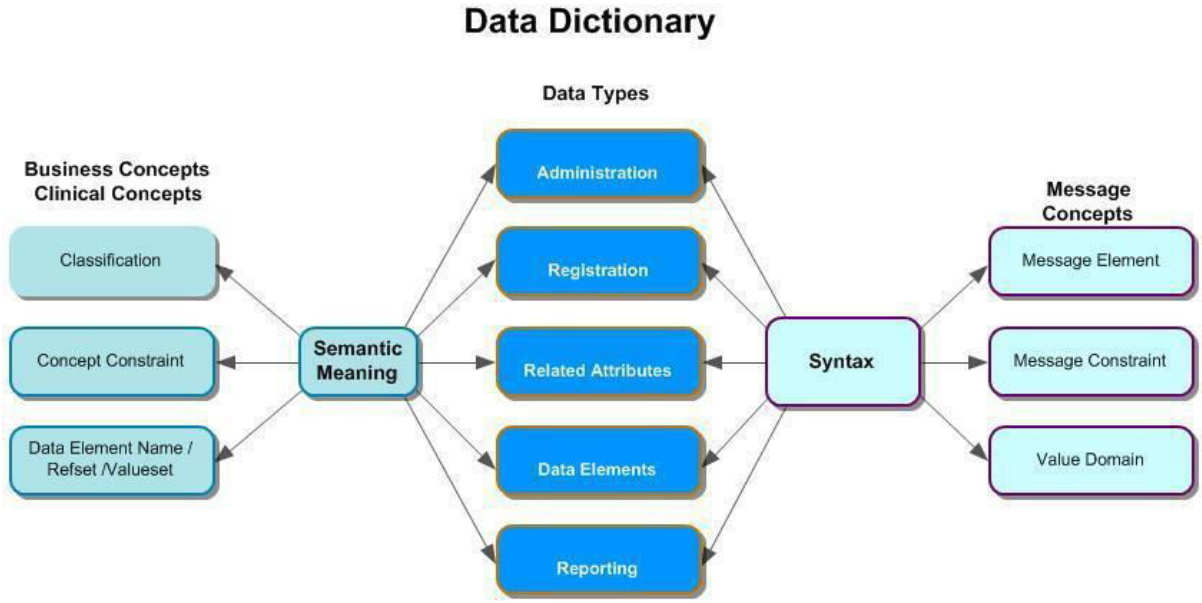


Figure 1 Abstract view of data dictionary and Models of Use adapted from ref ISO 20022 [15].

From a health perspective standards underpinning Models of Use for Electronic Health Record communication are reference models such as HL7 v.3 RIM or ISO 13606 EHRcom [4]. As the focus of this resource relates to a metadata framework the IA team have focused on reviewing standards relating to Meta data development some of which include;

- Reference Model for Open Distributed Processing [16]
- International Standard Organisation ISO 11179 -1-5 [17]
- ISO TS 21526 Working Draft Stage Health Informatics Metadata Repository Requirements (MetaRep) [18].

According to ISO 11179-6, the International Standard for Metadata registration, conformance needs to be considered in the context of roles and responsibilities between parties. In addition guidelines to address the use of software products and associated conversions from other systems needs to be factored in. A meta-model is defined as a model that describes other models. A meta-model provides a mechanism for understanding the precise structure and components of the specified models which are needed for the successful sharing of representations by users and or software facilities [17, part 3 p.24].

Here we set the scene and background for the role and function of the ICT Terminology and Data Modelling Services to support a sustainable integrated platform for eHealth Ireland. In line with stated requirements, our goal is to provide support to the Anatomical Therapeutic Chemical (ATC) Classification System [19], which is a key deliverable recommended for the Open NCP project for ePrescribing and eDispensing. As a prerequisite to achieve this process, the defined collections of metadata are needed to develop and support standard repositories of information for interoperable registries [20]. Working in partnership with Hiveworx [8], our goal is to provide a persistent and sustainable data dictionary platform to support conformance within the I.A Function of the OoCIO. We consider the metadata concept model an enabler to provide a scheme to support the process of conformance. As a resource it is also a key building block to set in place roles and responsibilities for registration in line with national HIQA standards [21]. The proposed structure described in the data dictionary and associated meta model conceptual framework can be used across one to many implementations e.g. in databases , data repositories and therefore lays the foundation stone for the bridge between the National Release Centre and the Data Dictionary Platform. It also provides a basis for collaboration going forward with EA business requirements harmonisation. For example, specifying the semantics of systems from an existing group of conceptual domains (e.g. pharmacy, oncology, pathology) within a Meta data framework will ensure that the HSE can provide transparency on how the concepts can be interconnected within the planned systems. The development of metadata standards improves quality, relevance, consistency and the availability of national information. The drivers for standard development arise from the need for better information - whether it is statistical, administrative, clinical or other information. The benefits also include, consistency of content and definition, avoiding duplication and diversity of solutions and reduction in cost of data development [22].

Figure 2 presents a summary view of the initial Metadata Conceptual Framework

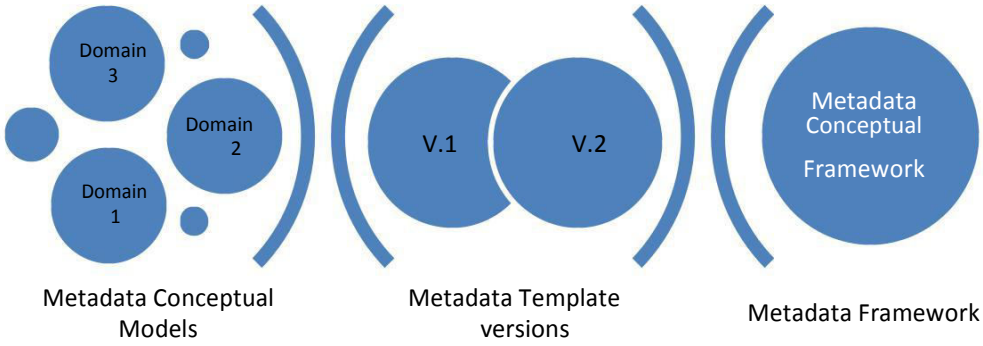


Figure 2 An evolving Metadata Conceptual Framework V.1

The Metadata Conceptual Framework is the first step in providing an integration layer for information to support a suite of national programme objectives. It can support processes and constraints needed to define what the systems being interconnected should do, and what the properties are that they should share for machine to machine and person to machine interactions. This comprehensive approach is not just stating the means by which they are interconnected, but provides critical detail for sustainable semantic and future technical interoperability. Necessary for coordination of data representation between persons and /or systems that store manipulate and exchange data [17 part 3, p.25], the metadata concept model will under pin the data dictionary supports function. It can provide a common reference point of defined concepts to support a distributed system [24].

## 2. Creating a Meta Data Conceptual Framework

The process of developing a working metadata conceptual framework taking on board existing strategic plans for eHealth Ireland and available resources [25] is estimated to take a minimum of six months. The timeframe for version 1 sign off is therefore estimated in line with evidence base to be December 2017 [9]. The process to date has included the following action steps;

a. Scoping review of existing related national EU and International standards in use.
b. Scoping review of other similar countries data dictionary metadata standards.
c. Instigating collaboration stakeholder engagement and consensus with the proposed Data Dictionary Governance Group and Department of Health to report recommendations and sign off.

A number of existing data dictionary Meta models was reviewed in addition to the both international and national health informatics standards [7; 15-18; 26-28].

### 2.1 Results of Scoping Review

Some of the key findings in this review suggest metadata can provide detail at any level of aggregation. Depending on the proposed usage metadata can describe a collection, a single resource or can be embedded in a digital object. For the purpose of this report, three core types of metadata were considered relevant for evolving v1 of the Meta Data Registry Framework.

2.1.1 Descriptive – a metadata resource for purpose of discovery and identification

2.1.2 Structural – a metadata resource used to describe complex data items such as a health condition

2.1.3 Administrative – metadata which provides information to help manage a resource when it was created, and identify key stakeholders who will manage it [26].

From the author's perspective, Table 1 provides some hyperlinked examples of European and International collections which can illustrate the three data metadata types.

| Meta data type | Example |
|---|---|
| Descriptive | Dublin Core Metadata Initiative [7] |
| Structural | Cystic Fibrosis EU Network [29] |
| Administrative | WHO Global observatory [30] |

Table 1 Examples of websites linking to metadata types

There are a number of standards and standard bodies in existence relating to standards based metadata framework. For example Dublin Core Metadata Element Set listed in Table 1 as descriptive meta data type provides a set of fifteen properties for use [7].

The International Standards Organisation also provides a five part standard for Meta data registry entitled ISO 11179 Meta data registry (MDR) [17]. This standard lays down some key principles suggesting that the set of circumstances or purposes for which some data are used is called the Context. Therefore metadata are data about data under some context that are stored in a database that supports the functionality of the registry and is called a metadata registry (MDR). This would suggest the context in the metadata registry must be clearly defined and mapped to the metadata registry types listed above. [26].

On review of ISO 11179-3 Meta data registries part 3, five core attributes by type were identified and listed in Figure 2. The identifying attributes listed relate to the definitional attributes the naming attributes, the administrative attributes and the relational attributes. On review of existing data dictionary metadata registries there was some overlap with the attributes. For example Registration status which is listed as a naming attribute in ISO11179-3 is listed as an Identifying and Definitional attribute in the Australian Meta data registry.

A recent review of grey literature in the European Health Informatics repository on current working drafts identifies a new emerging technical specification ISO TS 21526 MetaRep [18]. The purpose of this working technical specification is to provide an extension to and clarification of ISO /IEC 11179 Metadata Registry to meet the requirements of healthcare. This was therefore considered critical grey literature and a teleconference was arranged with the relevant authors of this technical specification. What follows are some examples of the diagrams created in the process of review culminating in the development of an emerging metadata conceptual draft framework for the IA function.

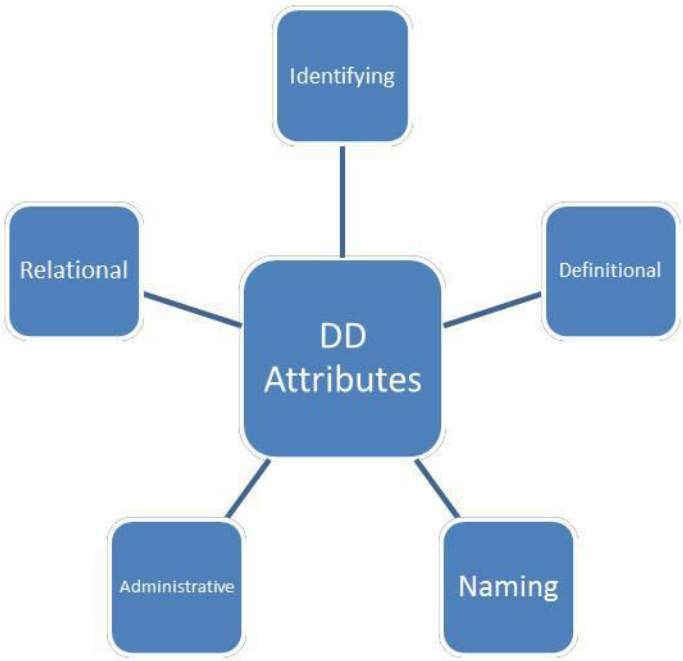


Figure 3 High level attributes ISO 11179-3 [17]

Figure 3 above demonstrates the key high level attributes within metadata registries in the standards ISO 11179-3 [17]. On review of an initial scoping exercise on related evidence available on line, these attributes were mapped to data dictionary resources such as aforementioned standards and data repositories critiqued. Some examples of resource used in this mapping exercise include the Dublin Core metadata registry, the Australian Meta data registry, the New Zealand Meta data registry, European Open National Contact Point Master Value Catalogue (Open NCP MVC). From the Irish perspective examples include existing HSE PBI data files, Open NCP summary care record and MECC a health behavioural change intervention from Department of Health. A review of related HIQA standards was also conducted [21]. Proposed mapping scheduled for 2018 includes Finance SAP Master Data Governance. Deliverable one from this mapping process is a Meta data concept template which is scalable for different domain contexts see Appendix 1.

A key deliverable from this scoping process include a preliminary package diagram summarising the six packages identified in ISO 11179-3. This diagram is included here as Figure 4 and can be used to inform future Meta data conceptual models development workshops. A package diagram is used as in Universal Modelling Language such diagrams are used to show packages of classes and their dependencies, it was considered relevant to IA to support current test harness procurement initiatives Packages own their content and therefore one cannot put the same class into two different packages [31]. Figure 4 illustrates the packages you may find in a Metadata registry [17]. In order to optimise harmonisation of service delivery detailed collaboration and analysis with EA toolkit and Test Harness Consultancy Services currently in procurement (in Q.1 2018) for delivery of Open NCP is advised. It is also anticipated that further collaboration with the HL7 community in Ireland can provide insight in to existing use of HL7 V.3 RIM to consider domain specific reference models for the Irish context. Specific structural attributes need to be built into the domain models for national programme deliverables. The structural attributes provide detail on the main classes to be used in the design of messages or groups of related messages for adoption of HL7 v.3 as part of the integrated care programme. Examples of classes include ACT Role and Entity and the frequently used attributes include id, code and statusCode [4, p247].

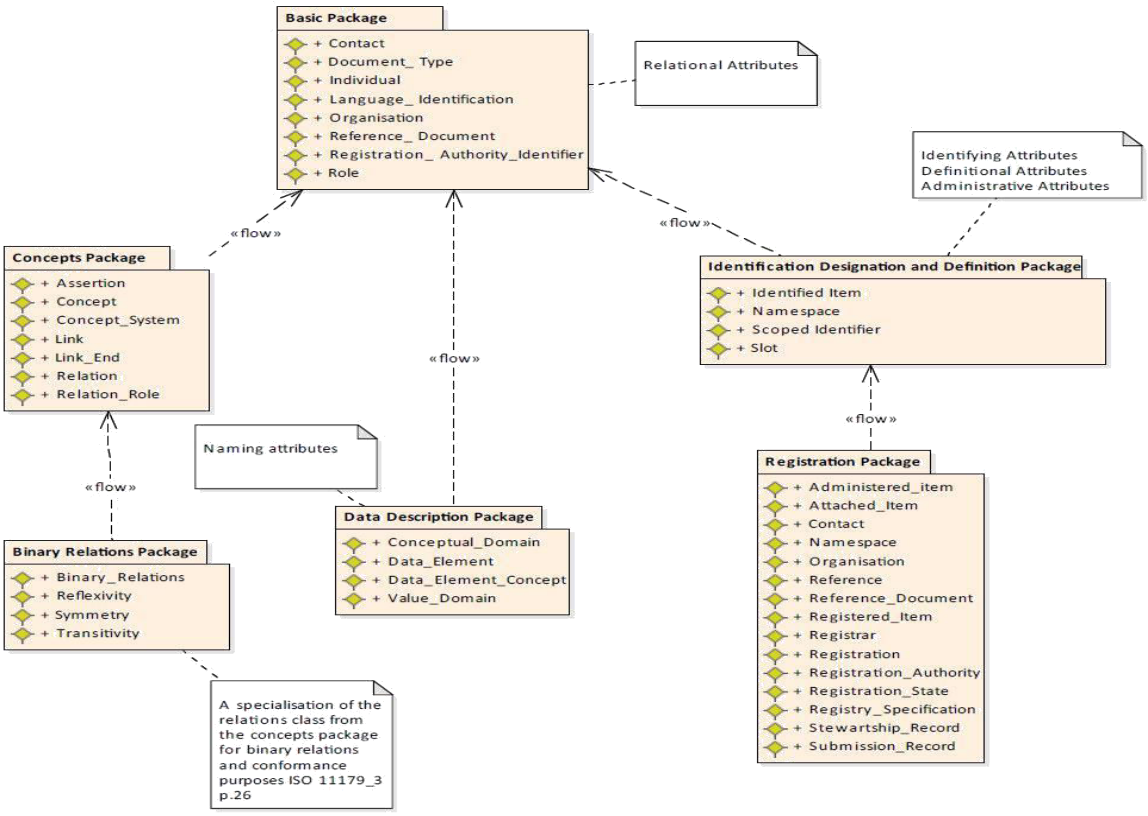


Figure 4 A package diagram illustrating key classes summarised from ISO11179_3 [13]

On review of ISO TS 21526 MetaRep a suite of definitions were sourced from this emerging standard explaining the definitions and common constraints and data elements [18]. Of particular interest some explanatory text on identity, context and value domains is included. As this is an emerging standard and considered grey literature caution is advised on adoption until further testing is completed. None the less the excerpts included as appendix 1 will inform further discussion with the relevant stakeholders such as newly formed Governance Groups and IA team. In addition there is evidence to suggest that the MetaRep approach has been used on a CancerGrid Project instigated in 2005 in the United Kingdom supported by the Medical Research Council [32]

## 1. Next Steps and Recommendations

The following actions to be agreed upon and actioned are recommended.

1. The IA team with consultation of the Data Dictionary Governance Group develop a set of MDR templates for core IA function (e.g. Open NCP) to facilitate co-ordination and data sharing with the Department of Health and general public searches.

2. The IA team with consultation of the proposed Data Dictionary Governance Group develop a core MDR data reference model to describe, store, and process an integration layer within HSE for Open NCP initially and subsequent in line with emerging eHealth deployment policy. It may be the case that this work is already underway with groups such as Healthlink and HIQA in which case the Data Dictionary Governance Group will need to access emerging reference domain models underpinned by HL7 v3 RIM potentially in progress and assure that the detail is aligned for terminology binding and conformance testing.

3. Align recommendations 1-2 with HIQA eSAG and National Health Information Standards in draft documents for publication as a national standard.

4. Recommendations for governance are based on collaborative activity completed by the NRC, DD and Open NCP team leads. For example, at a data dictionary training day (August 2nd, 2017), invited domain experts agreed unanimously that enforcement of the Data dictionary would be required to ensure training and conformance of all data stewards on IA requirements. Therefore the Data dictionary requires sponsorship from the key leaders from the Department of Health and HSE with an associated statement to come in to effect on a particular date. For example this statement may read potential detail as follows;

> *Beginning on January 1 201x all health information system components will be building following health information standards contained in the national data dictionary ( date xx/xx/xx, version x ).Similarly all new health information systems to be procured after January 1st 20xx will be compliant with said dictionary.*

Current consultation documents and survey detail such as the Draft Health Information Policy Framework available on the Department of health website would inform this process in 2018 [33].

5. The Data dictionary is a living document that evolves over time. One of the first actions of the DD governance group is to address the management of version control; a Meta data registry framework with an associated Meta data registry template and Meta data registry conceptual map can provide a reference document to signpost stakeholders on planned integration layers for integrated care and sustainable big data analytics. It is recommended a use case be used as a validating process to assist the team in determining the level of conformance, portability and reuse on each domain that is developed within the IA function EA OoCIO HSE. It is anticipated that the Data Dictionary Governance Board (Appendix 2) will endorse this approach. As the IA function is an evolving group we recommend an agreed process of version control with six monthly or annual releases to map with NRC governance terms of reference.

## Conclusion

Terminology services which provide detail on concepts and syntax have historically been allowed to grow independently of each other. For example Snomed International which deals with clinical concepts has emerged as a standard which is syntax neutral , and HL7 which deals with the syntax of electronic message communication and the associated reference information model (RIM ) have been designed to be terminology neutral [4 p.190]. We have today in Ireland an opportunity to address this. As WHO advises to consider carefully where to invest funds to determine the means to achieve Ireland's eHealth vision. We can prioritise specific infrastructure to support this vision (1). A national data dictionary platform underpinned by an evolving Meta Data Registry Framework will take time to develop; we need to build in house capacity. Such human resource and time investment can provide a core and critical deliverable to ensure a return on investment to optimise integrated care for our citizens now and in the future.

## References


1. World Health Organisation National eHealth Strategy Toolkit {Online} WHO website Available from http://handle.itu.int/11.1002/pub/8069793a-en Accessed 25th October 2017
2. Hussey P. Tully M. Information Architecture and the Data Dictionary Enterprise Architecture Workshop. 22nd HISI Annual Conference 2017 https://www.hisi.ie/conference 15th November 2017
3. eHealth Ireland, Enterprise Architecture {Online} eHealth Ireland website, Available from http://www.ehealthireland.ie/Our-Team/Enterprise-Architecture/ Accessed 25th October 2017.
4. Benson T ,Grieve G. Principles of Health Interoperability SnomedCT , HL7, and FHIR 3rd Edn Springer, Newbury UK; 2016
5. Health Level Seven (HL7) {Online} Health Level 7 International Website. Available from http://www.hl7.org/ Accessed 25th October 2017.
6. Health Business Services. HSE eTender Proposal, HSE Ref 7437 ICT Terminology and Data Modelling Services HSE Project
7. The National Library of Korea .Dublin Core Meta Data Initiative {Online} The DCM Website Available from http://dublincore.org/documents/dces/ Accessed 22nd August 2017
8. Hiveworx {Online} Available from www.hive-worx.com/ Accessed 25th October 2017
9. Office of the Chief Information Officer OoCIO Design Authority , eHealth Ireland Website , OoCIO & Launch Data Dictionary & Data Model Programme .{Online} eHealth Ireland Website. Available from http://www.ehealthireland.ie/News-Media/News-Archive/2017/OoCIO-eHealth-Ireland-Launch-Data-Dictionary-Data-Model-Programme-.html Accessed 22nd August 2017
10. Wilson K. Streveler D, Hesp C. Promoting Interoperability of Health Insurance Information Systems Through a Health Data Dictionary {Online} Seattle 2012 Connecting better health systems for health Joint Learning Network PATH Publication https://sites.path.org/hmis/what-we-do/projects/health-insurance/ Accessed 22nd August 2017
11. Avi Rappoport, Search Tools Consulting.Searchtools.com link {Online} Creative Commons 2016 http://www.searchtools.com/info/metadata.html Accessed 25th October 2017
12. Greenhalgh T., Stramer K., Bratan T., Byrne E., Russell J. & PottsmW. (2010) Adoption and non-adoption of a shared electronic summary in England: a mixed methods case study. The British Medical Journal 340(c 3111). Retrieved from: http://www.bmj.com/content/340/bmj.c3111 Accessed 22nd August 2017
13. Hussey, P.A.; Kennedy, M.A. Instantiating informatics within nursing practice for integrated patient centered holistic models of care: A Discussion Paper Journal of Advanced Nursing. 2016 72, 5, 1030–1041. doi: 10.1111/jan.12927.72:5
14. Rector A.L., Qamer R., Marley T. Binding Ontologies and coding systems to electronic health records and messages Applied Ontology IOS Press 2009:491):52-69
15. International Standards Organisation ISO 2022 Financial Services – Universal Financial Industry Message Scheme {Online} https://www.iso20022.org/ Technical Committee TC68 May 2013 Accessed 25th October 2017
16. International Standards Organisation Reference Model for Open Distributed Process Modelling (RM-ODP) Information Standard 12967-1-3 Health Informatics – Service Architecture Parts 1-3 Enterprise Information and Computational Viewpoints 2009

17. International Standards Organisation *Information technology — Metadata registries (MDR) —Part 3: Registry metamodel and basic attributes ISO 11179_3* Third Edition [Online] , Geneva: ISO Publications; [15th February 2013; cited 04th August 2017] Available from: http://metadata-standards.org/11179/ Accessed 22nd August 2017
18. ISO TC 215/26 Healthcare Informatics Metadata Repository Requirements (MetaRep) Working Draft Stage {Online} https://login.cen.eu/portal/ CEN TC 251 2017 Accessed 22nd August 2017
19. Anatomical Therapeutic Chemical (ATC) Classification System [Online] Geneva, World Health Organisation 19th December 2016 https://www.whocc.no/atc_ddd_index/ Accessed 22nd August 2017.
20. Hansen, A. S. The Experience of Selecting the Code Systems for the Development of the EpSOS Catalogue Version 1 Open NCP Working Draft July 2017 [Online] Brussels, Digital Health CFG https://ec.europa.eu/cefdigital/wiki/display/EHOPERATIONS/Master+Value+Sets+Catalogue Accessed 22nd August 2017.
21. Health Information and Quality Authority Standards Reports and Publications [Online] Dublin HIQA 2017 https://www.hiqa.ie/reports-and-publications/standards Accessed 22nd August 2017
22. Australian Institute of Health and Welfare {Online} Meteor website Available from http://meteor.aihw.gov.au/content/index.phtml/itemId/276533 Accessed 25th October 2017
23. Digital Health Master Value Catalogue (MVC) {Online} July 2017 Brussels https://ec.europa.eu/cefdigital/wiki/display/EHOPERATIONS/Master+Value+Sets+Catalogue Accessed 22nd August 2017
24. Kilov H. Linington P.F. Romero J. R. Tanaka A. Vallecillo A. The Reference Model of Open Distributed Processing: Foundations, experience and applications Computer Standards and Interfaces 2013 35, 247-256
25. Knowledge and Information Plan Report [Online], Dublin : eHealth Ireland Publications; [May 2015; cited 04th August 2017], Available from: http://www.ehealthireland.ie/search?q=knowledge+and+information+plan
26. ISO TC 215 WG3 N266 Reference Document Cal2Cal Standards Based Metadata Framework Document Datta G. *CHHS California Department of Public Health Standards Based Metadata Framework* Document December 17th 2014 [Online] NSAI Dublin https://www.nsai.ie/Our-Services/Standardization/Livelink.aspx Accessed 1st August 2017
27. Canadian Institute for Health Information (CIHI) NACRS Metadata Dictionary [Online] Toronto Ontario 30th November 2016 https://www.cihi.ca/sites/default/files/document/nacrs_meta_data_dictionary_2015_oct_en.pdf Accessed 22nd August 2017
28. Australian Institute of Health and Welfare 2015. National Health Data Dictionary: version 16.2. National Health Data Dictionary series. Cat. no. HWI 131. [Online] Canberra: AIHW. http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129550404 Accessed 23rd August 2017.
29. Cystic Fibrosis Network http://cf.eqascheme.org/

30. World Health Organization Global Health Observatory. {Online} http://www.who.int/gho/publications/world_health_statistics/en/index.html Accessed 1 October 2017
31. Chonoles M. J., Schardt J. A. UML 2 for Dummies Wiley Publishing 2003
32. Davies J., Gibbons J., Harris S., Crichton C. The CancerGrid Experience: Metadata Based Model Driven Engineering for Clinical Trials. *Science of Computer Programming* [Online] http://www.comlab.ox.ac.uk/people/jeremy.gibbons/publications/cancergrid.pdf September 2014 Accessed 12th September 2017
33. Department of Health Consultation Draft Health Information Policy Framework Document Online Department of Health Ireland http://health.gov.ie/consultations/ Open Consultation November 2017

| Appendix One Core Metadata Registry Template V.1d | | |
|---|---|---|
| **Attribute Names and Detail 11179_3** | **Related Explanation or Source Detail ISO TS 21526** | **Technical Viewpoint Detail HL7 V.2 V.3** |
| **A. Administrative status** | Information about the administration of an item in a metadata registry Details which provide registration items for which administrative status is recorded e.g. Final / Draft. | HL7 v.3 Instance identifier (II) has 2 main types UUID and OID based identifier.<br>OID to be held in a national register |
| A.1 Reference ID | Sequence of characters , capable of uniquely identifying that with which it is associated , within a specified context (MetaRep) | In HL7 v.3 CDA can be considered as metadata XDS based portals include a central registry however IHE, XDS and CDA are not tightly aligned and need to be considered.<br>For existing GP message standards HL7 2.4 see https://www.hiqa.ie/sites/default/files/2017-10/General-Practice-Messaging-Guidance-version-4.0.pdf |
| A.2 Version Number | Defining the series of the reference document over an evolving time interval | |
| A.3 Version Date | DD/MM/YYYY | Use HL7 Data type DT |

| Attribute Names and Detail 11179_3 | Related Explanation or Source Detail ISO TS 21526 | Technical Viewpoint Detail HL7 V.2 V.3 |
|---|---|---|
| **B. Identifying & Defining Attributes** | | |
| B.1Metadata Type | Meta data item type defining the characteristic of the data resource for inclusion in registry | For sharing documents IHE XDS metadata includes information about each document. The metadata about each document is defined in the Affinity Domain and specifies information stored in the Registry |
| B.2 Technical Name | Instance of metadata object item | For example a Clinical Document Architecture CDA – Continuity of Care Document CCD |
| *B.3* Namespace Authority | Namespace and naming convention interchangeable with designation in ISO 11179 Registry Administrator Namespace uniqueness , prefix, reference and ID (Appendix 5 ISO 11179-5) Scoped Identifier *The Organisation assigned the OID node used as the root of this namespace* | Pointer to the identifier of organisation managing the namespace<br>For example in HL7 V.2 Sender Message ID MSH |
| B.4 Data Element Definition | Unit of data for which the definition , identification , representation and permissible values are specified by means of a set of attributes (MetaRep) | HL7 Version 3 the RIM comprises of Attributes and Data types. Structural attributes include six main classes. Each class is named by its structural attributes. |
| B.5 Date Element Concept ID | DE Concept described independently of any particular representation (DE) (MetaRep) | |

| Attribute Names and Detail 11179_3 | Related Explanation or Source Detail ISO TS 21526 | Technical Viewpoint Detail HL7 V.2 V.3 |
|---|---|---|
| **C. Relational &Representational Attributes** | | |
| C.1 Classification Name | Classifiable item of a type for which classification is supported in a given metadata registry | HL7 V.3 Code system identifier to identify externally defined coding scheme |
| C.2 Classification Scheme | Classification scheme – a descriptive information for an arrangement or division of objects into groups based on characteristics which the objects have in common (MetRep) | Snomed CT hierarchies fall in to 3 main groups which are used in expressions Object , Value, and Miscellaneous. Object applies directly to patients and may be further qualified. |
| C.3Classification Scheme Identifier | May need to be included as extension of Coded Value CE codes with equivalents may include original code such as a local code using in the sending system to be sent along with a translation element using the type of code required by the receiving system which may have courser granularity | |
| C.4 Classification Scheme Item Value | Value of Item of content in classification scheme Example | HL7 v.3 CV has a code value and a code system identifier |

| Attribute Names and Detail 11179_3 | Related Explanation or Source Detail ISO TS 21526 | Technical Viewpoint Detail HL7 V.2 V.3 |
|---|---|---|
| **D. Data Element Attributes** | Description of a unit of data considered to be in context indivisible | Common attributes in HL7 V3 RIM which are found in more than one class include id , code, and StatusCode |
| D.1 DE Concept | The structural format and constraints of the data carried in the attribute. | Example CDA templates such as CCD Continuity of Care document OR SCR open NCP source template |
| D.2 DE Concept Name | Title of a unit of data relating to a unit of thought | In SnomedCT a clinical idea to which a unique ConceptID has been assigned |
| D.3 DE Concept Definition | Unit of knowledge created by a unique combination of characteristics (MetaRep) | |
| D.4 Object Class | To link with national domain models and conceptual domain class | RIM HL7 V.3 list diagram of RIM and associated classes ACT Role and Entity |
| D.5 Property | Part of the Conceptual Domain Class | Example Ref RIM, Property used to describes characteristics of entities the building blocks for describing the structure of data. The property therefore define the shape of the class and carry information about the object such as structural attributes such as id , name , quantity |
| D.6 Data Element Concept Entry ID | Unique identifier for an administered item within a registration authority (MetaRep) | |

| | | |
|---|---|---|
| D.7 Concept Name | Title of a unit of data | In SnomedCT A clinical idea to which as unique ConceptID has been assigned |
| D.8 Concept Definition | See DE Concept definition one or more attributes used to describe the meaning of a unit of thought. | |
| D.9 Concept Definition Entry ID | | HL7 V.3 typeId identifies the type of HL7 specified message type or Common Message Element Type to which this message or part of message conforms<br>A SnomedCT identifier uniquely identifies a concept |
| D.10 Concept Definition Origin | | |
| D.11 Data Type | Set of distinct values, characterised by properties of those values and by operations on those values source MetaRep ISO/IEC 11404:1996,4,11 | HL7 v.2 has 89 data types including simple and complex data types. Complex data types reflect associations of data that belong together such as the part of a person's name |
| D12 Data Format | | HL7 MSg Segment Syntax HL7 MSg Segment data type e.g. Trigger Table for Event Type |

| Attribute Names and Detail 11179_3 | Related Explanation or Source Detail ISO TS 21526 | Technical Viewpoint Detail HL7 V.2 V.3 |
|---|---|---|
| **E.Value Domain** | Is associated with information system interoperability linked with content models and a series of concept systems , value lists and data elements<br>Value domain is specified by a description or specification , such as a rule procedure or a range<br>Enumerated value domain – value domain that is specified by a list of all its permissible values ,non-enumerated value domain value domain that is specified by a description rather than a list of permissible values (MetaRep) | Suggest create a use case using a constrained general model to create an agreed subset for wider specification and adoption. Create an Enterprise view with specified Domain Message Information values of the structural attributes need to be defined for a national programme.<br>Ref RIM HL7 v.3 |
| E.1 Value Meaning | Meaning or semantic content of a value (MetaRep) | |
| E.2 Permissible Value | Permissible Value - Designation of a value meaning | For HL7 v.3 Define in national domain model with structural attributes as a minimum |
| E.3 Value Meaning Begin Date | Select HL7 Data types | For HL7 v.3 Define in national domain model with structural attributes as a minimum |
| E.4 Value Meaning End Date | Select HL7 Data types | For HL7 v.3 Defined in national domain model with structural attributes as a minimum |
| E.5 Value Meaning ID<br>( for each value meaning) | To be reviewed and developed | |
| E.6 Maximum Character Length | Link with permissible value | |
| E.7 Supplementary Values | | |

| Attribute Names and Detail 11179_3 | Related Explanation or Source Detail ISO TS 21526 | Technical Viewpoint Detail HL7 V.2 V.3 |
|---|---|---|
| **F. Administrative Attributes** | Linking to Namespace<br>Registration authority identifier of the registration authority registering the item (MetaRep) | To be developed or use existing eHealth registration detail |
| F.1Registration Authority | | For HL7 v3 XDS cross enterprise document sharing link to Affinity domain and specifies what information is stored in the registry. |
| F.2 Registration status | Requires the establishment of a registration with associated administrative status describing its position in the lifecycle and in any content creation or curation workflow(MetaRep) | To be developed |
| | | |
| F.3 Submitting Organisation | Organisation identifier - Identifier assigned to an organisation within an organisation identification scheme and unique within that scheme (MetaRep) | In IHE XDS document metadata under author the following detail is included authorPerson , authorinstitution , authotRole, authorSpecialty, legalAuthenticator |
| F.4 Responsible Organisation | Organisation ( management) Unique framework of authority within which a person or persons act , or are designated to act towards some purpose (MetaRep) | As above F3 |
| F.5 Stewardship Record | | As above F3 |

**Appendix 2 - Data Dictionary Governance Board (DDGB)**