RHEA Project Rwanda
Requirements for Terminology Services for a Health Information Exchange in Rwanda

Version History

Version	Date	Description of Change	Distribution
0.1	Nov 2011	Initial document delivered for comment and review.	RHEA project work group[1], Gilbert Uwayezu
0.2	Nov 2011	First revision of the document to incorporate comments and revisions suggested by the review group. This version still has highlighted questions and areas for clarification.	RHEA project work group, Gilbert Uwayezu
1.0	Dec 2011	Second revision based on incorporation of the comments of multiple reviewers. These revisions were also discussed during a RHEA technical call and there was unanimous consent for the changes. The most notable chage includes that requirement to perform many to one mapping, provide a web based user interface and accommodate local codes.	RHEA project work group[2], Gilbert Uwayezu, Randy Wilson
FINAL	Jan 2012	Final review and approval with minor modifications and clarifications.	Dr. Richard Gakuba

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Background and Purpose of This Document

Rwanda seeks to implement a health information exchange. This will be done initially through a pilot application of the "technology stack" in a specified geographical area, followed by an incremental roll out.

Although the immediate need for terminology services will be to serve only the initial pilot- this document is intended to identify the requirements for terminology services to support Rwanda's Health Information Exchange both from the initial pilot as well as into the foreseeable future. It is fully recognized that this is a rapidly changing environment, and Rwanda will learn a great deal from the experience with implementing a pilot instance. These requirements are to be considered the collective "best estimate" based on the current and anticipated future need, and will likely be revisited and revised.

These requirements are intended to provide the basis for making decisions regarding build or buy, and if software is to be acquired- guidance for the procurement/selection process. The requirements on their own are not intended to serve as full software development requirements.

The Health Information Exchange consists of many "foundational components" such as National registries (Client, Professional/Provider and Facility) and a Shared Health Record. These components will be connected to Point of Care Systems through an interoperability layer. Each component of the System is being considered as an independently functioning entity for the purposes of planning and requirements gathering.

Methodology and Approach

Rwanda has limited practical experience with terminology services. This provides challenges for engaging local resources to articulate and identify requirements without some background information, best practice advice and context. In order to engage local resources in the process in a meaningful and practical way some sensitization, examples and information sharing had to occur in advance.

High level decisions such as the desire or need (and implication of) accepting data in multiple formats, standardization of incoming data and the use of the terminology services as an externally accessed "service" was approached and explained first in order to better direct the specific requirements.

In order to ensure important requirements were not overlooked, a search of the literature was done and several articles describing experience, service requirements and future extensions to terminology services. One article by (Barrett and Weber-Jahnke 2009) provided guidance on requirements (and future needs) based on a systematic review of the literature and those findings were incorporated as appropriate.

Clarifications and Assumptions

The "system" when used without qualification refers to the terminology service.

The "sending system" means any point of care application or system.

All messages will pass through an interoperability layer- so NO direct communication with a sending system is expected.

For the functional requirements, terminologies, vocabularies, ontologies etc will all be referred to by the generic term coding system.

Functional Requirements

In general this system is intended to serve as a library of terminologies to distribute across the country

The system must be able to manage multiple coding systems in the same environment.

The system must be able to store the content of each of the following (in accordance to the Ministerial Instructions):

> ICD-10 (2nd edition)
>
> Canadian Classification of Health Interventions (CCHI)
>
> Logical Observation Identifiers Names and Codes (LOINC)
>
> Anatomic Therapeutic Chemical (ATC) for the classification of medical products
>
> The Rwanda Coded Medicine List (for all medications in Rwanda)
>
> Dictionary of medicines and devices (Dm+d) for detailed route descriptions
>
> Universal Medical Device Nomenclature System™ (UMDNS) as the standard international nomenclature and computer coding system for medical devices, consumables and reagents
>
> SNOMED (to be deployed at a later date)

The system must be able to maintain minimal data sets of various local codes (such as specific indicators and data elements already in use in legacy systems).

The system must be able to store and retrieve (at a users request) both the data as well as the metadata for each coding system.

The system must provide a method to load a mass number (i.e. a bulk loading) of the coding system elements.

The system must provide a method to delete a mass number (selected group) of coding system elements.

The system must provide a method to update the stored content by modifying, adding or deactivate items individually.

The system must version (deprecate) modified or deactivated codes. This is necessary to provide the context to interpret requests for older data.

The system must provide a methodology to verify a given code or identifier as a valid member of a coding system in use and this functionality should be exposed as a service that the interoperability layer can call.

The system must have sufficient privacy and security features to be able to be able to limit users from changing or deleting data. This is necessary for data integrity.

The system must provide analytical tools to be able to: track usage, identify errors, log searches (successful and not) and provide audit information.

The system must maintain an audit log of all changes to content, including the date and time, content changed and by whom.

The system must be able to respond to queries in a timely manner (less than 2 seconds) This may require a system to provide a method to tune allocation, distribution and scheduling of resources to handle requests.

The system must be able to generate a report of the inventory of terminologies. This report should be downloadable into a common format (such as csv) or printable directly.

The system must have a way to alert other systems of a change in content. This may be as simple as an alert generated from an audit which can be manually processed. It does not mean that alert is to be pushed to other systems.

The system must be able to map a given code/identifier to a valid (active) existing code/identifier in one of the coding systems and this functionality should be exposed as a service that the interoperability layer can call.

The system must be able to map local codes to appropriate international standards in use- this will be a many to one mapping. There must be a secure tool (and a user interface) to allow select users to provide the specific information for this mapping.

The system must provide a web based user interface that will support the following:

- Role based access
- Searches for terms or codes using pattern matching, wildcards and tokens

- Searches expected to return full and partial coding systems, as well as matches across coding systems (for example all ICD codes related to infectious diseases, or all codes including "glucose")

The system should be extendable to handle natural language processing (such as word normalisation and spelling correction)

References

Balkaįnyi, L., G. Heja, et al. "Building and Using Terminology Services for the European Centre for Disease Prevention and Control." Electronic Healthcare: 116-123.

Barrett, N. and J. H. Weber-Jahnke (2009). "eHealth Interoperability with Web-based Medical Terminology Services-A Study of Service Requirements and Maturity." Journal of Emerging Technologies in Web Intelligence **1**(2): 153-160.

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