



Irish National Release Centre
Vendor Engagement Procurement
Specification Document
For SNOMED CT
19/12/2018

Date Issued	19/12/2018
Version No.	V0.8
Status	Complete
Prepared By	Theresa Barry
Security Classification	

Document Control

Revision History

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Version	Author	Date	Changes
V0.1	Theresa Barry	02/09/2018	
V0.2	Rory Davidson	18/09/2018	
V0.3	Ian Green	19/09/2018	
V0.4	Theresa Barry	30/09/2018	
V0.5	Theresa Barry	12/11/2018	
V0.6	Theresa Barry	13/12/2018	
V0.7	Brian Dunne and Mary Gaskin	14/12/2018	
V0.8	Theresa Barry	18/12/2018	
V0.9	Theresa Barry	06/02/2019	

Approvals

Name	Latest Version Signed off	Sign off Date
<i>SNOMED Governance Group (Appendix 1)</i>	<i>06/02/2019</i>	<i>06/02/2019</i>
<i>Rory Davidson & Ian Green SNOMED International</i>	<i>19/08/2018</i>	<i>19/09/2018</i>

References

Document Name	Document Link eHealth Ireland
National Release Centre Vendor Engagement Procurement Specification Document	

SCT-001	The system must Incorporate SNOMED CT as the primary, clinical terminology in the EHR/ICT solution including the international edition, national edition, and any relevant local extensions, including mappings to other classifications/terminologies as per HIQA's recommendation.
SCT-002	<p>The system must exclude inappropriate content</p> <p>Certain terms must not be browsable or selectable in any clinical context as the primary code to record a clinical finding or procedure.</p> <p>Examples of SNOMED CT terms (except in a post-coordinating context) that should be excluded:</p> <ul style="list-style-type: none"> Navigational terms - (e.g. Poisoning / Injury) Organisms - (e.g. Salmonella) SNOMED Attributes - (e.g. Cuff deflated) Record artefacts - (e.g. Kick chart) Physical forces - (e.g. High temperature) Action qualifiers - (e.g. Cryosurgery) <p>Only appropriate SNOMED CT hierarchical terms must be available. Suppressing top level hierarchical terms from appearing for selection - including when no user configurable contextual filters are applied - is very strongly recommended.</p>
SCT-003	<p>The system must exclude inactive concepts & descriptions</p> <p>The system must allow for those SNOMED CT concepts that are inactive should not be browsable or selectable by the user when picking codes. System to allow the user to visualise inactive codes only under certain circumstance e.g. reports.</p>
SCT-004	<p>The system must present only SNOMED CT concepts and descriptions relevant to context</p> <p>The system must only include those SNOMED CT concepts and descriptions that are relevant to the clinician's current context of work. Avoiding irrelevant concepts and descriptions will help reduce the workload on the clinician and make it easier to find the desired term.</p> <p>The context setting should be done automatically by the system when it is clear that the items for a particular field should be restricted e.g. A field for procedures.</p> <p>Context setting to be set on factors such as clinical specialities, healthcare provider (e.g. <i>consultant or GP</i>), and corporate requirements where different clinical practices may have different requirements for clinical data input and selection</p>
SCT-005	<p>The system must use plain English in the user interface</p> <p>The system must not use SNOMED CT concept model words or phrases in the user interface. Most users will not be familiar with this and won't necessarily understand it. The following are examples of SNOMED CT words or phrases that most users will not understand e.g.</p> <ul style="list-style-type: none"> • Preferred term • Synonym • Concept ID • Concept • Fully specified name
SCT-006	The system must only display the results descriptions which have a language acceptability flag in the Irish English language reference.
SCT-007	The system must ensure that all inactivated concepts, descriptions and relationships remain available to support querying over historical clinical data.
SCT-008	The system must ensure it is clear which text entry fields are for data input

	<p>System to clearly distinguish in the user interface between those fields which are for SNOMED CT data input and those which are not (e.g. normal text entry fields). The SNOMED CT search entry field should be placed where the user can easily find it.</p> <p>If users recognise in advance that a field is designated for SNOMED CT data, they can modify their typing behaviour accordingly.</p>
SCT-009	<p>The system should ensure that the text entry field can hold sufficient characters</p> <p>The text entry field should be able to display at least 60 characters and hold up to 255 characters in total. If the user types beyond the 60 character visible limit, the field scrolls from left-to-right (but without a scroll bar), in order to ensure that the last character that the user has typed is visible.</p> <p>The user should be able to direct the cursor to the beginning of the search string by using the keyboard.</p>
SCT-010	<p>The system should ensure searching in the following manner; three character minimum</p> <p>The search to only be triggered after the user has entered a minimum of three valid characters in the search term. These characters to not be whitespace or blank characters</p>
SCT-011	<p>The system must allow the entry of single or multiple search tokens</p> <p>The user to be able to enter either single (e.g. diab) or multiple (e.g. com acq pneu) search tokens.</p>
SCT-012	<p>The system must allow for search token order independent</p> <p>The users to be able to enter search tokens in any order (e.g. fract ankle and ankle fract) and return the same results).</p>
SCT-013	<p>The system must not require the user to enter wildcard characters to enable partial matching</p> <p>The user to not have to add any wildcard characters or symbols to the search string to denote partial matching. Partial matching should be enabled by default</p>
SCT-014	<p>The system must offer case-insensitivity</p> <p>The system to not require the user to have to apply capitals or lower-case letters to search terms</p>
SCT-015	<p>The system must allow for searching by SNOMED CT code</p> <p>System to provide the ability for users to search by SNOMED CT code.</p>
SCT-016	<p>The system must allow for copy and pasting</p> <p>System to allow the user to copy and then paste text into the search field or Concept ID (for example from a guidance document).</p>
SCT-017	<p>The system must manage International characters</p> <p>System to convert international characters to English equivalent. Where a search term is entered for example Sjög in order to locate the SNOMED CT concept Sjögren-Larsson syndrome (disorder), system to recognise ö as o and present the user with Sjogren Larsson syndrome</p>
SCT-018	<p>The system should allow for replacing of foreign characters with English ones</p> <p>Users to also be able to search without having to enter foreign characters where a SNOMED CT description contains them</p>
SCT-019	<p>The system should handle entered superscript and subscript characters</p> <p>The system to be able to recognise and return results where the user types in or copy & pastes superscript or subscript characters in their search term</p>

SCT-020	<p>The system should provide progressive matching (performance permitting) Progressive matching (where results are returned for each successive character that the user types in) to be provided where it does not impact performance</p>
SCT-021	<p>The system should provide auto-completion as a user option Auto-completion offers suggestions to finish the words being typed in by the user. In some cases it can improve the user experience of searching by reducing the number of keystrokes a user has to make and to help reassure them that the system “understands” their intentions. Where this feature is offered it is recommended that it is possible for the user to switch this off if this is not their preferred approach.</p>
SCT-022	<p>The system must allow for multiple search options If additional search options are provided, these to be offered as an advanced function. These can be made available through various techniques such as function keys and on-screen icons; and should be consistent with the general UI approach in the application.</p>
SCT-023	<p>The system must provide favourites and/or frequently used terms System to provide commonly used SNOMED CT descriptions. These may include:</p> <ul style="list-style-type: none"> • Terms chosen by the user (eg. highlighting a term is a favourite) • Frequently used terms • Recently used terms • Local Department / Specialty terms provided at configuration • Conduit terms - a term that acts as a link to a collections of other terms (e.g. the term “eczema” could provide the user with a list of all SNOMED CT eczema terms)
SCT-024	<p>The system must allow for where multiple search terms are entered apply the AND operator When multiple search terms are entered (e.g. prod cough) the system to match terms that contain both tokens prod and cough. System to not return results for each of the single tokens.</p>
SCT-025	<p>The system must allow for search STARTS WITH matching for each search token System to return results that match with the <i>start with</i> entered search token. For example, when pneu is entered the system to search for terms starting with pneu and not terms that contain or end with pneu.</p>
SCT-026	<p>The system must allow for the following search function Option 1 Return all lexically matching concept descriptions All returned results to be SNOMED CT concept descriptions that lexically match the entered search term. For example, if urinary infection is entered then all concept descriptions containing terms starting with urinary and infection will be returned as a matched result. This means that several descriptions for a single concept could be returned in the results list significantly increasing the number of results returned. E.g. acu sin could return the following:</p> <ul style="list-style-type: none"> • Acute sinusitis • Acute inflammation of sinus • Acute inflammation of nasal sinus • Acute infection of sinus

	<p>The system could assist the user experience by highlighting (for example through colour) those descriptions of the same concept if the user selects one description.</p> <p>Option 2 Return one description per unique concept where that concept has at least one lexically matching description</p> <p>In this option, one result per unique single concept is displayed. The result Description may be one of the following:-</p> <ul style="list-style-type: none"> • Preferred term (note this may not contain any of the search text) • Fully Specified Name • Synonym that is lexically closest to the search term (e.g. lowest Levenshtein distance from the search term) <p>The above items could also be prefixed with additional information, such as the SNOMED CT hierarchy (taken from the Fully Specified Name)</p>
<p>SCT-027</p>	<p>The system must provide for word equivalence matching</p> <p>The system to, by default (without any user prompting), perform word equivalence matching. By using the other descriptions and terms for a given concept, equivalent terms could be included in the results list. For example, if a clinician enters 'nose boil' the equivalent term 'nasal furuncle' could also be provided in the results.</p> <p>As well as working for complete terms or phrases, the equivalence matching to also work for single input words. For example, the term 'rupture of cervix' could also return the equivalent 'tear of cervix' as the equivalence tables could recognise that the single words 'tear' and 'rupture' are equivalent.</p>
<p>SCT-028</p>	<p>The system should allow for highlighting the use of word equivalence matching by the system</p> <p>When word equivalence matching is used, it may appear to users that it “breaks” the normal matching applied. For example, a result may appear that does not resemble the entered search text (e.g. they enter kidney failure and see a result that does not include both these terms, such as renal failure) which may cause confusion.</p> <p>System to inform users that word equivalence matching is being used by:</p> <ul style="list-style-type: none"> • Clearly indicating where word equivalence matching is being used. • Providing a control to allow the user to choose whether equivalence matching is switched on or off.
<p>SCT-029</p>	<p>The system should Inform the user that a search is taking place</p> <p>The system to inform the user that a search is running.</p>
<p>SCT-030</p>	<p>The system should allow for the following search function; Search time</p> <p>The system should be performant enough to return the first 30 results in a given time period (less than 1s)</p>
<p>SCT-031</p>	<p>The system must allow for the t following search function; Provide a scrollable results list</p> <p>The search results to be delivered in a small list with vertical scrolling. System to avoid horizontal scrolling.</p>

SCT-032	<p>The system should allow for the following search function; Display a maximum of 20 results simultaneously</p> <p>A maximum of 20 results to be visible on screen at once with the ability to page through for further results if necessary.</p>
SCT-033	<p>The system should allow for the following search function; Results list width</p> <p>The results list width to allow at least 60 characters in a line. If the SNOMED CT concept exceeds this length, it should wrap onto a second line which is indented by two characters.</p>
SCT-034	<p>The system must allow for the following search function; Displaying results longer than 2 lines</p> <p>Option 1 Display the full SNOMED CT concept without truncation The concept to always be displayed in full – without truncation. This would mean that the concept should wrap to as many lines as it needs in the results list. Wrapping to 3 lines would ensure that 94% of SNOMED CT descriptions (Preferred terms and Synonyms of active terms) would be displayed in full.</p> <p>Option 2 Truncate the SNOMED CT concept If the concept text length exceeds two lines, the system to display all that it can over the two lines and then add an ellipsis („...“) at the end of the text to indicate that it has been truncated. If this is done, the user to be given the ability to see the concept text in full by another mechanism, such as a tool-tip or pop-up display.</p>
SCT-035	<p>The system must allow for the following results function; Positioning the results list</p> <p>The results list to be located in an easily noticeable, consistent relative position. It should not obstruct any text being entered nor distract the user to such an extent that it obstructs the typing of further notes. The results list to be displayed next to, or as close as possible to, the text input area (where the user entered their search term</p>
SCT-036	<p>The system should allow for the following results function; Display the results as a flat list</p> <p>The default method for displaying the descriptions in the result list to be in the form of a “flat list” without taxonomy. Option to display the SNOMED CT taxonomy to be available to the user.</p>
SCT-037	<p>The system should allow for the following results function; Visually distinguishable descriptions in results list</p> <p>System to ensure that individual terms in the results list are clearly distinguishable from each other.</p>
SCT-038	<p>The system must allow for the following results function; Do not display SNOMED CT codes in the returned results</p> <p>SNOMED CT concept ids to not be displayed as part of the returned results in the user interface as default. System to allow user configuration to enable the SNOMED CT code to be displayed in the returned results list.</p>
SCT-039	<p>The system must allow for the following results function; Provide additional information per result</p> <p>The system to allow the user to view the Fully specified name for any concept.</p>
SCT-040	<p>The system should allow for the following results function; Highlight search tokens in the result</p> <p>For each result displayed, the part that matches with the search term to be</p>

	highlighted.
SCT-041	<p>The system should allow for the following results function; Prioritise some descriptions by putting them to the top of the results list</p> <p>Some descriptions are more likely to be chosen by the user, they should be given a higher priority than other descriptions by placing them at the top of the results list making them easier for users to locate. Some examples of these could be the following type of matches:-</p> <ul style="list-style-type: none"> • Exact matches • Near matches • Frequently used terms <p>There may also be different variations of “Frequently used terms”, those based upon frequency of terms chosen by the user, or by the local department, or frequency of use within a particular specialty. In the case of a locally produced list, this would need to be managed by the supplier who created it.</p>
SCT-042	<p>The system should allow for the following results function; Provide ability to apply different ordering to results list</p> <p>In order to find the wanted concept, system to provide the user the ability to switch between ordering strategies. At all times, it should be clear to the user which ordering strategy is in use.</p>
SCT-043	<p>The system should allow for the following results function; Highlight favourites appearing in results list</p> <p>If the results list contains one of the user’s favourites, this term should be highlighted so the user is made aware of this, or the term to be put at the top of the results list.</p> <p>Any highlighting to be done in a way that the user’s attention is drawn to this result.</p>
SCT-044	<p>The system must allow for the following results function; Display number of results returned</p> <p>The system to display the number of results returned for each search so the end user is aware of the number of matches when they are shown say the first 20.</p>
SCT-045	<p>The system must allow for the following results function; Explicitly state when no results are found</p> <p>When no results are returned, the system should clearly state this.</p>
SCT-046	<p>The system should allow for the following results function; With no results returned, offer further assistance</p> <p>If the system returns no results, the system to offer further assistance to the user.</p>
SCT-047	<p>The system must allow for the following results function; Provide an option to expand beyond the default context</p> <p>Where a user is searching within the default context and the desired term cannot be found, users to be allowed to search outside of this (e.g. search beyond their current specialty across other specialties). This only applies when the context has been sensibly restricted to acceptable results.</p>
SCT-048	<p>The system should allow for the following results function; Provide hierarchical browsing for refinement</p> <p>System to allow users to refine a concept in the results list by browsing other concepts that are hierarchically related to it. The related concepts may include the following:</p> <ul style="list-style-type: none"> • Parents of the selected concept. • Children of the selected concept. • Siblings of the selected concept (that is, the children of the concepts”

	<p>parents).</p> <p>System to clearly distinguish between the parents, siblings and children of a selected concept. This search technique may be initiated by pressing an icon, a function key and how the developer deems fits their standard UI approaches.</p>
SCT-049	<p>The system must allow for; control of the clinical data input and selection process entirely by mouse, entirely by keyboard, entirely by touchscreen, and a combination of any 3.</p> <p>The system to allow the user to trigger the search, navigate the results list and select a result using the keyboard/ mouse or touchscreen, this would include:</p> <ul style="list-style-type: none"> • Allow the <enter> key to trigger the search. • When the result list is populated, the user to be able to directly give focus to and navigate up/down the results list with arrow keys or mouse. • Allow the <enter> key or double click to select a term from the results list and populate the search text field.
SCT-050	<p>The system should allow for the following results function; Display the selected concept as the encoded concept</p> <p>When the user has selected a concept from the results list, the system to replace the user-typed “original” search text with the SNOMED-CT description.</p>
SCT-051	<p>The system should show in the text entry field that a concept has been encoded</p> <p>Users to be able to distinguish between text in the search text entry field that has been encoded, and text that has simply been typed into (which has yet to be encoded).</p> <p>This can be done by styling the text or the text entry field differently when it contains an encoded field or just normal text.</p>
SCT-052	<p>The system should allow for the following results function Re-selecting a result</p> <p>Once a concept has been selected from the results list and this has been added to the search text entry field, the user to still be able to easily go back to the results list and select a different concept.</p> <p>When the user does return to the results list, they should not have to re-enter their original search text. They should also not have to re-start the search. The results list to still present the results from the previously entered search text.</p> <p>In addition, any other settings that the user had made (e.g. changed the default ordering, opted for taxonomy browsing, searching across other specialties and so on) to also be presented as they were previously.</p>
CT-053	<p>The system must not require nor allow the user to choose the clinical terminology</p> <p>The clinical terminology should be automatically set – the user should not be asked or offered to choose a different one</p>
SCT-054	<p>The Vendor must have the ability to take in RF2 files and Ref sets they should never be more than n-2 releases (i.e. 18 months) behind the International release. And include the most recent edition/version of SNOMED CT as well as Irish defined ref sets as released by the Irish National Release Centre</p>
SCT-055	<p>The system must have the capacity to take in mappings to other terminologies/classifications where available from the Irish NRC such as ICD-10, ICPC2, LOINC, Orphanet codes, and make the mappings available in the relevant contexts. inclusion in generated documents, reports and data extracts.</p>

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SCT-056	The Vendors must engage with the NRC if additional content is required,
SCT-057	The system must allow for the following results function Support searching for SNOMED CT concepts using any term that is preferred or acceptable in the national language reference set.
SCT-058	<p>The system must allow for the following results function;Include one of the following options for each SNOMED CT coded data element (depending on user preferences and local requirements for standardization of interface terms):</p> <ul style="list-style-type: none"> • Upon selection of a concept, use the term entered by the user to display the selected concept; OR • Upon selection of a concept, use the preferred term from the national language reference set) to display the selected concept; OR <p>Upon selection of a concept, use the preferred term from the specialty, care-setting, regional, or institution specific language reference set to display the selected concept</p>
SCT-059	The system should allow for the following search function For each SNOMED CT coded data element, only allow searching and selection of concepts from the SNOMED CT subset that has been specifically bound to that data element
SCT-060	The system should allow for the following search function Support searching for SNOMED CT concepts using any term that is preferred or acceptable in the national language reference set.
SCT-061	The system should allow for the following results function For each SNOMED CT coded data element bound to a subset containing more than 20 concepts, display the most frequently selected concepts (for the given user) at the top of the list.
SCT-062	The system should allow for the following results function As the user types each character into a SNOMED CT coded data element, limit the selection of concepts to those with a preferred or acceptable term that matches the characters types (using a 'word prefix any order' algorithm), and use auto-complete when only one option is available for selection. When displaying the list of possible matches, display the concept with the shortest matching term first.
SCT-063	The system should allow for the following function For each free text data element that records clinical information (e.g. Past history, Clinical notes) use SNOMED CT-enabled Natural Language Processing techniques to suggest appropriate SNOMED CT codes and expressions (including appropriate contextual information)
SCT-064	The system must allow for the following function Support the capture of SNOMED CT post coordinated expressions using predefined expression templates and automatically-generated interface terms – for laterality, allergies and family history.
SCT-065	The system should allow for the following function Store the SNOMED CT concept identifier (or SNOMED CT expression) together with the term selected by the user in the EHR /ICT solution for SNOMED CT coded data element.
SCT-066	The system should allow for the following function Ensure that the context of each SNOMED CT concept identifier or expression is clearly represented in either

	the information structure or the terminology (but not both).
SCT-067	The system should allow for the following function Use SNOMED CT concept identifiers and/or SNOMED CT expressions to populate SNOMED CT coded data elements for all relevant message exchanges
SCT-068	The system should allow for the following function Use SNOMED CT concept identifiers stored in the EHR/ICT solution to suggest patient-specific clinical knowledge to the clinician, and to test clinical decision support rules
SCT-069	The system should allow for the following function Provide support for retrieval, querying, reporting, and analysis over EHRs/ICT solutions using both hierarchical and attribute relationships in SNOMED CT

Appendix 1

SNOMED Governance Group Membership

Kevin O Carroll Standards and Technology Manager, HIQA, **Chair**

Niall Sinnott, Head of eHealth and Information Policy. Dept of Health, **Vice-Chair & General Assembly Representative for Ireland**

Peter Connolly, Head of Enterprise Architecture, Office of CIO, HSE.

Helen Lambert, Compliance, Assurance and IG Lead, Enterprise Architecture, Office of CIO, HSE

Lilly Walsh, Business Architecture Lead, Enterprise Architecture, Office of CIO, HSE

Theresa Barry, Clinical Terminology Architecture Lead, Enterprise Architecture, Office of CIO, HSE & **Member Forum Representative for Ireland**

Anne O Donoghue, Health and Research Board, HSE

Eamon Coyne, Technical Architecture Lead, Enterprise Architecture, Office of CIO, HSE

Prof Richard Greene, Clinical Lead for Electronic Health Records, HSE

Dr Conor O Shea, National Co-ordinator GPIT group, Irish College of General Practitioners & Management team, Council of Clinical Information Officers, eHealthIreland

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