SLPG Meeting - 2020-01-29

Date & Time
20:00 UTC Wednesday 29th January 2020

Location
Zoom meeting: https://snomed.zoom.us/j/471420169

Goals
- To finalize any feedback on updates to SCG, ECL, URIs, Templates
- To progress
  - Query language (accessing reference sets)

Attendees
- Chair: Linda Bird
- Project Group: Daniel Karlsson, Anne Randorf Højen, Michal Lawley, Ed Cheetham

Agenda and Meeting Notes

<table>
<thead>
<tr>
<th>Description</th>
<th>Owner</th>
<th>Notes</th>
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<tr>
<td>Welcome and agenda</td>
<td>Linda Bird</td>
<td>Please note that the SLPG will be meeting in London on Sunday 4th April (9am to 12:30pm) - see schedule</td>
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</table>
| Concrete values | Linda Bird | Boolean added to draft SCG, ECL, STS and ETL specifications

**PLEASE REVIEW BEFORE NEXT MEETING!**

- Draft SCG (v2.4) - Compositional Grammar - Specification and Guide
  - 1. Introduction History
  - 3.2 Representation of clinical Meanings Requirement M4
  - 4. Logical Model
  - 4.1 Details
  - 5.1 Normative Specification
  - 5.2 Informative Comments
  - 6.6 Examples Expressions with Concrete Values
- Draft ECL (v1.4) - Expression Constraint Language - Specification and Guide
  - 1. Introduction History
  - 3.2 Expression Constraint and Query Requirements
  - 3.3 Concept Model Requirements
  - 4. Logical Model
  - 4.1 Details
  - 5.1 Brief Syntax (Normative)
  - 5.2 Long Syntax (Informative)
  - 5.3 Informative Comments
  - 6.2 Refinements
- Draft STS/ETL (v1.1) - Template Syntax Specification
  - 1. Introduction History
  - 4. Logical Model
  - 4.1 UML Class Diagram
  - 5.1 Normative Specification (boolean changes in blue / other proposed changes in red)
  - 5.2 Informative Comments (only boolean changes made)
  - 6.1 Expression Template Language
  - 6.2 Typed Replacement Slots Concrete Values
  - 8.3 Constrained Replacement Slots Value List Constraints? (currently unchanged)

URIs
- Peter G. Williams & Linda Bird

**PLEASE REVIEW BEFORE NEXT MEETING!**

Draft URI standard for review - URI Standard

- 2.1 URIs for Editions and Versions (formatting and examples only)
- 2.2 URIs for Components and Reference Set Members (formatting and examples only)
- 2.3 Version-Relative Component URIs (formatting and examples only)
- 2.4 URIs for Modules (formatting and examples only)
- 2.5 URIs for Properties (formatting and examples only)
- 2.6 URIs for Language Syntaxes
- 2.7 URIs for Language Instances
- 2.8 URIs for Modelling Resources
- 3.1 Resolving SNOMED CT URIs

Querying
- Linda
<table>
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<tr>
<th>Refset Attributes</th>
<th>Bird</th>
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<tbody>
<tr>
<td>Proposed syntax to support querying and return of alternative refset attributes (To be included in the SNOMED Query Language)</td>
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- Example use cases
  - Execution of maps from international substance concepts to AMT substance concepts
  - Find the anatomical parts of a given anatomy structure concept (in Anatomy structure and part association reference set)
  - Find potential replacement concepts for an inactive concept in record
  - Find the order of a given concept in an Ordered component reference set
  - Find a concept with a given order in an Ordered component reference set
Potential syntax to consider (brainstorming ideas)

- **SELECT ??
  - SELECT 123 |referenced component|, 456 |target component|
  - FROM 799 |Anatomy structure and part association refset|
  - WHERE 123 |referenced component| = (< 888 |Upper abdomen structure| |
    term = "heart" )
  - SELECT id, moduleId
  - FROM concept
  - WHERE id IN (|Clinical finding|)
  - AND definitionStatus = |primitive|
  - SELECT id, moduleId
  - FROM concept, ECL("< |Clinical finding") CF
  - WHERE concept.id = CF.sctid
  - AND definitionStatus = |primitive|
  - SELECT ??? |id|, ??? |moduleId|
  - FROM concept (|Clinical finding| |
    term = "heart" )

- **Question**
  - Can we assume some table joins - e.g. Concept.id = Description.conceptId etc ??

- **Examples**
  - Try to recast relationships table as a Refset table + graph-based extension
  - Find primitive concepts in a hierarchy

- **ROW ... ?**
  - ROWOF(|Anatomy structure and part association refset|) ? |referenced component|, |target component|
  - same as: ^ |Anatomy structure and part association refset|
  - ROWOF(|Anatomy structure and part association refset|) . |referenced component|
  - same as: ^ |Anatomy structure and part association refset|
  - ROWOF(|Anatomy structure and part association refset|) {{ |referenced component| = << |Upper abdomen structure|) ? |targetComponentId|
  - ROWOF(< 900000000000496009|Simple map type reference set| {{ term = "My hospital"}) : 
    449608002|Referenced component| = 80581009 |Upper abdomen structure| ).
    900000000000505001 |Map target|
  - [ROW (< 900000000000496009|Simple map type reference set| {{ term = "My hospital"}) : 
    449608002|Referenced component| = 80581009 |Upper abdomen structure| ).
    900000000000505001 |Map target|

- **# ... ?**
  - |Anatomy structure and part association refset| ? |referenced component|
  - |Anatomy structure and part association refset| {{ |referenced component| = << |Upper abdomen structure|) ? |targetComponentId|

- **notation + Filter refinement**
  - |Anatomy structure and part association refset| ? |targetComponentId|
  - |Anatomy structure and part association refset| . |referenced component|

- **Specify value to be returned**
  - 7 449608002 |Referenced component|?
  - 734139008 |Anatomy structure and part association refset| |
    Same as previous
  - 7 900000000000533001 |Association target component|?
  - 734139008 |Anatomy structure and part association refset|
  - 9 900000000000533001 |Association target component|?
  - 734139008 |Anatomy structure and part association refset| |
    449608002 |Referenced component| = << |Upper abdomen structure|)
  - 7 900000000000533001 |Association target component|?
  - 734139008 |Anatomy structure and part association refset| |
    449608002 |Referenced component| = << |Upper abdomen structure|) |
    Finding site = *)

Returning Attributes

Michael Lawley

Proposal (by Michael) for discussion

- Currently ECL expressions can match (return) concepts that are either the source or the target of a relationship triple (target is accessed via the 'reverse' notation or 'dot notation', but not the relationship type (ie attribute name) itself.

  For example, I can write:

  $$<< 404684003|\text{Clinical finding}| : 363698007|\text{Finding site}| = <<66019005|\text{Limb structure}|$$

  $$<< 404684003|\text{Clinical finding}| . 363698007|\text{Finding site}|$$

  But I can't get all the attribute names that are used by $$<< 404684003|\text{Clinical finding}|$$

  - Perhaps something like:
    - ? R.type ? $$<< 404684003|\text{Clinical finding}|$$
    - This could be extended to, for example, return different values - e.g.
      - ? |Simple map refset|.maptarget| ? (^|Simple map refset| AND < |Fracture|)

Reverse Member Of

Michael Lawley

Proposal for discussion

What refsets is a given concept (e.g. 421235005 |Structure of femur|) a member of?

- Possible new notation for this:
  - ^ . 421235005 |Structure of femur|
  - ? X ? 421235005 |Structure of femur| = ^ X
ON HOLD WAITING FROM IMPLEMENTATION FEEDBACK FROM INTERNAL TECH TEAM

WIP version: [https://confluence.ihtsdotools.org/display/WIPSTS/Template+Syntax+Specification](https://confluence.ihtsdotools.org/display/WIPSTS/Template+Syntax+Specification)

- Added a 'default' constraint to each replacement slot - e.g. default (72673000 |Bone structure (body structure))
- Enabling 'slot references' to be used within the value constraint of a replacement slot - e.g. [[+id (<<123037004 |Body structure| MINUS << @findingSite1)] $site@SELF]
- Allowing repeating role groups to be referenced using an array - e.g. $rolegroup[1] or $rolegroup[!$SELF]
- Allow reference to 'SELF' in role group arrays
- Adding 'sameValue' and 'allOrNone' constraints to information slots - e.g. sameValue ($site), allOrNone ($occurrence)
- See changes in red here: 5.1. Normative Specification

Examples:

```
[[+id]: [[1..*] @my_group sameValue(morphology)] ( [Finding site] = [[+id (<<123037004 |Body structure| MINUS << @site@SELF)] , [Associated morphology] = [[+id @my_morphology ]])
```

- Implementation feedback on draft updates to Expression Template Language syntax
  - Use cases from the Quality Improvement Project:
    - Multiple instances of the same role group, with some attributes the same and others different. Eg same morphology, potentially different finding sites.

Note that QI Project is coming from a radically different use case. Instead of filling template slots, we're looking at existing content and asking "exactly how does this concept fail to comply to this template?"

For discussion:

```
[[0..1] [[0..1]] 246075003 |Causative agent| = [[+id (< 410607006 |Organism| ) @Organism]]]
```

Is it correct to say either one of the cardinality blocks is redundant? What are the implications of 1..1 on either side? This is less obvious for the self grouped case.

Road Forward for SI

1. Generate the parser from the ABNF and implement in the Template Service
2. User Interface to a) allow users to specify template at runtime b) tabular (auto-completion) lookup STL
3. Template Service to allow multiple templates to be specified for alignment check (aligns to none-off)
4. Output must clearly indicate exactly what feature of concept caused misalignment, and what condition was not met.

Additional note: QI project is no longer working in subhierarchies. Every 'set' of concepts is selected via ECL. In fact most reports should now move to this way of working since a subhierarchy is the trivial case. For a given template, we additionally specify the "domain" to which it should be applied via ECL. This is much more specific than using the focus concept which is usually the PPP eg Disease.

FYI Michael Chu

**ON HOLD**

Previous discussion (in Malaysia)

- Overview of current use
- Review of General rules for generating descriptions
  - Removing tags, words
  - Conditional removal of words
  - Automatic case significance
  - Generating PTs from target PTs
  - Reordering terms
- Mechanism for sharing general rules - inheritance? include?
- Description Templates for translation
- Status of planned specification

**STILL TO DO:**

- Agreement in Malaysia - ECL will add the following term searching syntax (no regex - just wild card and word prefix any order):

```
```

Term Search Type
a. Wild Card Match (collation) - e.g.
   • \{\text{term = wild:}^{*}\text{"heart"}\}  
   • \{\text{term = wild (sv):}^{*}\text{"hjärta"}\}

a. Word Prefix Any Order - e.g.
   • \{\text{term = match:}^{*}\text{"hear att"}\}
   • \{\text{term = "hear att"}\}
   • \{\text{term = "heart"}\}

Potential Examples

• \text{\langle\langle 64572001 \text{ Disease} \{\text{term = "heart"}\} \text{\rangle\rangle} OR \langle\langle 64572001 \text{ Disease}\{\text{term = "hjärta", languageCode = "sv"}\} \text{\rangle\rangle}

• \text{\langle\langle 64572001 \text{ Disease}\{\text{term = "heart", languageCode = "en"}\}} AND \langle\langle 64572001 \text{ Disease}\{\text{term = "hjärta", languageCode = "sv"}\} \text{\rangle\rangle}

• \text{\langle\langle 64572001 \text{ Disease}\{\text{term = "heart", languageCode = "en"}\}} OR \langle\langle 64572001 \text{ Disease}\{\text{term = "hjärta", languageCode = "sv"}\} \text{\rangle\rangle}

Use Cases

• Intentionally define a reference set for chronic disease. Starting point was ECL with modelling; This misses concepts modelled using the pattern you would expect. So important in building out that reference set.
• Authors quality assuring names of concepts
• Checking translations, retranslating. Queries for a concept that has one word in Swedish, another word in English
• AU use case would have at most 3 or 4 words in match
• Consistency of implementation in different terminology services
• Authoring use cases currently supported by description templates
• A set of the "ectomy"s and "titis"s

Questions

• Do we include 'typeld' - e.g. \langle\langle 64572001 \text{ Disease} \{\text{D.term = "heart"}, \text{typeld} = 90000000000013009 \text{ Synonym}\} \text{\rangle\rangle} ?
   • NO
• Do we include 'type' - e.g. \langle\langle 64572001 \text{ Disease}\{\text{D.term = "heart"}, \text{D.type = synonym}\} \text{\rangle\rangle}
   • NO
• Do we include 'languageCode' - e.g. \langle\langle 64572001 \text{ Disease}\{\text{D.term = "heart"}, \text{D.type = synonym, D.languageCode = en}\} \text{\rangle\rangle}
   • YES
• Do we include 'caseSignificance' - e.g. \langle\langle 64572001 \text{ Disease}\{\text{D.term = "heart"}, D.caseSignificance = D.caseSignificance = sensitive}\} \text{\rangle\rangle}
   • NO
• Do we include 'language' and 'version' - e.g. \langle\langle 64572001 \text{ Disease}\{\text{term = "heart"}\} \text{VERSION = http://LANUAGE = (9990189100001056(Gastro LRS), GB English)} \text{\rangle\rangle}
   • NO
• Do we include syntactic sugar - e.g.  
   • \langle\langle 64572001 \text{ Disease}\{\text{preferredTerm = "heart"}, languageRefSet = en-gb}\} \text{\rangle\rangle}
   • \langle\langle 64572001 \text{ Disease}\{\text{fullySpecifiedTerm = "heart"}, languageRefSet = en-gb}\} \text{\rangle\rangle}
   • \langle\langle 64572001 \text{ Disease}\{\text{acceptableTerm = "heart"}, languageRefSet = en-gb}\} \text{\rangle\rangle}
   • \langle\langle 64572001 \text{ Disease}\{\text{preferredTerm = "heart"}\} \text{FROM version = X, language = Y}\} \text{\rangle\rangle}
   • NO
• Do we use/require the "D" at the start of "term"?
   • NO
• Packaging - How do we package this extension to ECL
   • A new version of ECL - version 1.5
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<th>Linda Bird</th>
<th>FUTURE WORK</th>
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<td>Examples: version and dialect</td>
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- `<< 64572001 | Disease| {{ term = "*heart*" }} VERSION http://snomed.info/sct/900000000000207008 /version/20180131`
- `<< 64572001 | Disease| {{ synonym = "*heart*" }} VERSION http://snomed.info/sct /900000000000207008/version/20180131`
- `<< 64572001 | Disease| {{ FSN = "*heart*" }} VERSION http://snomed.info/sct/900000000000207008/version/20180131`
- `<< 64572001 | Disease| {{ preferredTerm = "*heart*" }} VERSION http://snomed.info/sct /900000000000207008/version/20180131, DIALECT W`
- `<< 64572001 | Disease| {{ acceptableTerm = "*heart*" }} VERSION http://snomed.info/sct /900000000000207008/version/20180131, DIALECT Y`
- `X MINUS Y WHERE X = *, Y = (* {{ term = "*heart*" }})) VERSION http://snomed.info/sct /900000000000207008/version/20180131, DIALECT W`

**Notes**
- Allow nested where, version, language
- Scope of variables is inner query

**Examples: where**

- `X MINUS >! X WHERE X = (<< 1234 : 5678 = << 6547) YEARS`
- `X MINUS >! X WHERE X = (<< 1234 : 5678 = << 6547) VERSION http://snomed.info/sct /900000000000207008/version/20180131`
- `X MINUS >! X WHERE X = (<< 1234 : 5678 = << 6547), Y = (<< 1456) VERSION http://snomed.info/sct /900000000000207008/version/20180131, LANGUAGE 999001881000000108|GB clinical extension LRS|`

**Notes**
- Allow nested variable definitions, but recommend that people don’t due to readability
- Scope of variables is the inner query
- No recursion e.g. `X WHERE X = 1234 MINUS X`
- `X can’t use a variable in its own definition`
- `X is only known on the left of the corresponding WHERE, and not on the right of the WHERE`
Keywords for Term-based searching:

- **D.term**
  - `D.term = "heart"`
  - `D.term = "heart"`
  - `D.term = regex:"heart"`
  - `D.term = match:"hear att"`
  - `D.term = (sv) wild: "heart"`

- **D.languageCode**
  - `D.languageCode = "en"`
  - `D.languageCode = "es"`

- **D.caseSignificance**
  - `D.caseSignificance = "insensitive"`
  - `D.caseSignificance = "sensitive"`
  - `D.caseSignificance = "initialCharInsensitive"`

- **D.typeId**
  - `D.typeId = 900000000000003001 |fully specified name|
  - `D.typeId = 900000000000013009 |synonym|
  - `D.typeId = 900000000000550004 |definition|

- **D.type**
  - `D.type = "FSN"`
  - `D.type = "fullySpecifiedName"`
  - `D.type = "synonym"`
  - `D.type = "textDefinition"`

- **D.acceptabilityId**
  - `D.acceptabilityId = 900000000000549004 |acceptable|
  - `D.acceptabilityId = 900000000000548007 |preferred|

- **D.acceptability**
  - `D.acceptability = "acceptable"`
  - `D.acceptability = "preferred"`

Additional Syntactic Sugar

- **FSN**
  - `FSN = "heart"`
  - `FSN = "heart", D.type = "FSN"`
  - `FSN = "heart", D.type = "FSN", D.acceptability = " accepts"`
  - `FSN = "heart", D.type = "FSN", D.acceptabilityId = 900000000000548007 |preferred|

- **synonym**
  - `synonym = "heart"`
  - `synonym = "heart", D.type = "synonym"`
  - `synonym = "heart", D.type = "synonym", D.acceptabilityId = " accepts"`
  - `synonym = "heart", D.type = "synonym", D.acceptabilityId = 900000000000548007 |preferred|

- **synonymOrFSN**
  - `synonymOrFSN = "heart"`
  - `synonymOrFSN = "heart", D.type = "synonym OR D.type = "fullySpecifiedName""
  - `synonymOrFSN = "heart", D.type = "synonym OR D.type = "fullySpecifiedName", D.acceptabilityId = 900000000000548007 |preferred|

- **textDefinition**
  - `textDefinition = "heart"`
  - `textDefinition = "heart", D.type = "definition"`
  - `textDefinition = "heart", D.type = "definition", D.acceptabilityId = 900000000000548007 |preferred|

- **Unacceptable Terms**
  - `(D.term = "heart") MINUS (D.term = "heart", D.acceptabilityId = 900000000000548007 |preferred) LANGUAGEX`
Language preferences using multiple language reference sets

- LRSs that use the same Language tend to use 'Addition' - i.e. child LRS only includes additional acceptable terms, but can override the preferred term
  - E.g. Regional LRS that adds local dialect to a National LRS
  - E.g. Specialty-specific LRS
  - E.g. Irish LRS that adds local preferences to the en-GB LRS

- LRSs that define a translation to a different language tend to use 'Replacement' - i.e. child LRS replaces set of acceptable and preferred terms for any associated concept
  - E.g. Danish LRS that does a partial translation of the International Release

99999900 |Irish language reference set|
PLUS |GB English reference set|

999999999 |Danish language reference set|
ELSE |GB English reference set|

Confirm next meeting date/time  Linda Bird  Next meeting is scheduled for Wednesday 29th January 2020 at 20:00 UT. Please enjoy your holidays everyone!