**2019-12-04 - SLPG Meeting**

**Date & Time**
20:00 UTC Wednesday 4th December 2019

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

**Goals**
- To progress work on
  - URIs
  - Templates
  - ECL
  - Query language

**Attendees**
- Chair: Linda Bird
- Project Group: Daniel Karlsson, Michael Lawley, Rob Hausam

**Apologies**
- Anne Randorf Højen, Ed Cheetham

**Agenda and Meeting Notes**

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<td>Boolean added to draft SCG, ECL, STS and ETL specifications</td>
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<td>Concrete values</td>
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<td>• 8.3 Constrained Replacement Slots Value List Constraints? (currently unchanged)</td>
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<td>URIs</td>
<td>Peter G. Williams &amp; Linda Bird</td>
<td><strong>PLEASE REVIEW BEFORE NEXT MEETING!</strong></td>
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<td>Draft URI standard for review - URI Standard</td>
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<td>• 2.8 URIs for Modelling Resources</td>
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<td>• 3.1 Resolving SNOMED CT URIs</td>
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### Expression Templates

**Peter G. Williams**

- Any updates?
- 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 (body structure) MINUS << $findingSite2) @findingSite1]]
    ```
  - Allowing repeating role groups to be referenced using an array - e.g. $rolegroup[1] or $rolegroup[!SELF]
  - Allowing reference to 'SELF' in role group arrays
  - Adding 'sameValue' and 'allOrNone' constraints to information slots - e.g. sameValue ($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 (body structure) MINUS << $site[! SELF] ) @site ] , [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

### Description Templates

**Kai Kewley**

- Any updates?
- 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

### Expression Constraint Language

**Linda Bird**

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.
   • 
   •

a. Word Prefix Any Order - e.g.
   •

a. Default (word prefix any order) - e.g.
   •

Potential Examples
• << 64572001 [Disease] (((term = "heart")))
• << 64572001 [Disease] (((term = "heart", languageCode = "en")))
• << 64572001 [Disease] (((term = "heart", languageCode = "en"))) AND << 64572001 [Disease] (((term = "hjärta", languageCode = "sv")))
• << 64572001 [Disease] (((term = "heart", languageCode = "en"))) OR << 64572001 [Disease] (((term = "hjärta", languageCode = "sv")))
• << 64572001 [Disease] (((term = "heart", languageCode = "en"))) OR (term = "hjärta", languageCode = "sv")))
• (<< 64572001 [Disease]: [Associated morphology] = *) (((term = "heart", languageCode = "en"), )) (((term = "hjärta", languageCode = "sv")))
• (<< 64572001 [Disease]: [Associated morphology] = *) (<< 64572001 [Disease] (((term = "cardio")) MINUS (<< 64572001 [Disease] (((term = "heart")))))

Recommendation to be made on (based on investigation of grammar):
• << 64572001 [Disease] (((term = "heart", languageCode = "en"))) AND (term = "hjärta", languageCode = "sv")))
• << 64572001 [Disease] (((term = "heart", languageCode = "en"))) OR (term = "hjärta", languageCode = "sv")))
• << 64572001 [Disease] (((term = "heart", languageCode = "en"))) MINUS (<< 64572001 [Disease] (((term = "hjärta", languageCode = "sv"))))

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 "itis"s

Questions
- Do we include 'typeld' - e.g. << 64572001 [Disease] (((D.term = ""heart"", typeld = 900000000000013009 [Synonym])))
  • NO
- Do we include 'type' - e.g. << 64572001 [Disease] (((D.term = ""heart"", D.type = synonym)))
  • NO
- Do we include 'languageCode' - e.g. << 64572001 [Disease] (((D.term = ""heart"", D.type = synonym, D.languageCode = "en")))
  • YES
- Do we include 'caseSignificance cancelled' - e.g. << 64572001 [Disease] (((D.term = ""Heart"", D.caseSignificance cancelled = 900000000000017005 [case sensitive])))
  • NO
- Do we include 'caseSignificance' - e.g. << 64572001 [Disease] (((D.term = ""Heart"", D.caseSignificance = sensitive)))
  • NO
- Do we include 'language' and 'version' - e.g. << 64572001 [Disease] (((D.term = ""heart"", VERSION = http://LANGUAGE = (999001891000000106[Gastro LRS], [GB English])))
  • NO
- Do we include syntactic sugar - e.g.
  • << 64572001 [Disease] (((preferredTerm = ""heart"", languageRefSet = en-gb)))
  • << 64572001 [Disease] (((fullySpecifiedTerm = ""heart"", languageRefSet = en-gb)))
  • << 64572001 [Disease] (((acceptableTerm = ""heart"", languageRefSet = en-gb)))
  • << 64572001 [Disease] (((preferredTerm = ""heart"")) FROM version = X, language = Y)
  • 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
### Querying Refset Attributes

**Proposed syntax to support querying and return of alternative refset attributes** *(To be included in the SNOMED Query Language)*

- **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**
  - ? notation + Filter refinement
    - Anatomy structure and part association refset? [targetComponentId]
    - Anatomy structure and part association refset? [referencedComponent] (Same as ^ Anatomy structure and part association refset)
    - Anatomy structure and part association refset? ([referencedComponent] = <<Upper abdomen structure))?
    - Anatomy structure and part association refset? ([targetComponentId] = <<Upper abdomen structure))?
    - (My ordered component refset? [Referenced component] = [Upper abdomen structure] ? [priority order])
    - ? (My ordered component refset? ([Referenced component] = [Upper abdomen structure])
    - (My ordered component refset? , [referenced component]
    - equivalent to ^ (My ordered component refset)
    - ? (<<My ordered component refset?) ([Referenced component] = [Upper abdomen structure])
    - ? (<<My ordered component refset?) ([term = "map")} ([Referenced component] = [Upper abdomen structure])
    - ? (<<My ordered component refset? ([term = "map")} ([Referenced component] = [Upper abdomen structure])
    - (My ordered component refset? [Referenced component] = [Upper abdomen structure])
    - (My ordered component refset? [Referenced component] = [Upper abdomen structure])
    - (My ordered component refset? [Referenced component] = [Upper abdomen structure])
    - (My ordered component refset? [Referenced component] = [Upper abdomen structure])
    - (My ordered component refset? [Referenced component] = [Upper abdomen structure])

- **Specify value to be returned**
  - 73419008 [Anatomy structure and part association refset]
  - 73419008 [Anatomy structure and part association refset]
  - 73419008 [Association target component]
  - 73419008 [Association target component]
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---

### Reverse Member of

**All**

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

---

### Returning attributes

**Michael Lawley**

Proposal from Michael:

- 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:
  
  \[
  \text{<Clinical finding} : 363698007[Finding site] = <<66019005[Limb structure]\]
  \[
  <Clinical finding] : 363698007[Finding site]
  \]

  But I can’t get all the attribute names that are used by \(<Clinical finding]

  - Perhaps something like:
    - ? R.type ? (<< 404684003 |Clinical finding])
    - This could be extended to, for example, return different values - e.g.
      - ? (Simple map refset: |maptarget| ? (^|Simple map refset| AND < |Fracture|))
### Examples: version and dialect

- \texttt{\textless{} 64572001 |Disease| \{\{ term = "heart" \} \} \textbf{VERSION} http://snomed.info/sct/900000000000207008 \textit{version/20180131}}
- \texttt{\textless{} 64572001 |Disease| \{\{ synonym = "heart" \} \} \textbf{VERSION} http://snomed.info/sct/900000000000207008\textit{version/20180131}}
- \texttt{\textless{} 64572001 |Disease| \{\{ FSN = "heart" \} \} \textbf{VERSION} http://snomed.info/sct/900000000000207008\textit{version/20180131}}
- \texttt{\textless{} 64572001 |Disease| \{\{ FSN = "heart" \} \} \textbf{VERSION} http://snomed.info/sct/900000000000207008\textit{version/20180131, DIALECT W}}
- \texttt{\textless{} 64572001 |Disease| \{\{ preferredTerm = "heart" \} \} \textbf{VERSION} http://snomed.info/sct/900000000000207008\textit{version/20180131, DIALECT Y}}
- \texttt{\textless{} 64572001 |Disease| \{\{ acceptableTerm = "heart" \} \} \textbf{VERSION} http://snomed.info/sct/900000000000207008\textit{version/20180131, DIALECT Y}}
- \texttt{\textless{} 64572001 |Disease| \{\{ term = "heart" \} \} \textbf{VERSION} http://snomed.info/sct/900000000000207008\textit{version/20180131, DIALECT Z}} 

### Notes

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

### Examples: where

- \texttt{X MINUS Y WHERE X = \textless{} 1234 : 5678 = \textless{} 6547)}
- \texttt{X MINUS Y WHERE X = \textless{} 1234 : 5678 = \textless{} 6547) \textbf{VERSION} http://snomed.info/sct/900000000000207008\textit{version/20180131, LANGUAGE 900000000000508004 [GB English]}}
- \texttt{X MINUS Y WHERE X = \textless{} 1234 : 5678 = \textless{} 6547) \textbf{VERSION} http://snomed.info/sct/900000000000207008\textit{version/20180131, LANGUAGE 999001881000000108 [GB clinical extension LRS], 900000000000508004 [GB English]}}
- \texttt{X minus \textgreater{} X WHERE X = \textless{} M WHERE M = \textless{} 1234) \textbf{VERSION} http://snomed.info/sct/900000000000207008\textit{version/20180131, DIALECT 999001881000000108 [GB clinical extension LRS], 900000000000508004 [GB English]}}

### 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. \texttt{X WHERE X = 1234 MINUS X}
  - \textit{ie can't use a variable in its own definition}
  - \textit{ie 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 = wild:"*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 = 900000000000448009 |entire term case insensitive|
  - D.caseSignificance = 900000000000017005 |entire term case sensitive|
  - D.caseSignificance = 900000000000020002 |only initial character case insensitive|

- **D.caseSignificanceId**
  - D.caseSignificance = "insensitive"
  - D.caseSignificance = "sensitive"

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

Additional Syntactic Sugar

- **FSN**
  - FSN = "*heart"
    - D.term = "*heart", D.type = "FSN"
    - D.term = "*heart", D.typeId = 900000000000003001 |fully specified name|
  - FSN = "*heart" LANGUAGE X
    - D.term = "*heart", D.type = "FSN", D.acceptability = * LANGUAGE X
    - D.term = "*heart", D.typeId = 900000000000003001 |fully specified name|, acceptabilityId = * LANGUAGE X

- **synonym**
  - synonym = "*heart"
    - D.term = "*heart", D.type = "synonym"
      - D.term = "*heart", D.typeId = 900000000000013009 |synonym|
    - synonym = "*heart" LANGUAGE X
      - D.term = "*heart", D.type = "synonym", D.acceptability = * LANGUAGE X
      - D.term = "*heart", D.typeId = 900000000000013009 |synonym|, (D.acceptabilityId = 900000000000549004 |acceptable| OR D.acceptabilityId = 900000000000548007 |preferred|) LANGUAGE X

- **synonymOrFSN**
  - synonymOrFSN = "*heart"
    - synonym = "*heart" OR FSN = "*heart"
      - D.term = "*heart", (D.type = "synonym" OR D.type = "fullySpecifiedName")
    - synonymOrFSN = "*heart" LANGUAGE X
      - synonym = "*heart" OR FSN = "*heart" LANGUAGE X
      - D.term = "*heart", (D.type = "synonym" OR D.type = "fullySpecifiedName"), D.acceptability = * LANGUAGE X

- **textDefinition**
  - textDefinition = "*heart"
    - D.term = "*heart", D.type = "definition"
      - D.term = "*heart", D.typeId = 9000000000000550004 |definition|
    - textDefinition = "*heart" LANGUAGE X
      - D.term = "*heart", D.type = "definition", D.acceptability = * LANGUAGE X
      - D.term = "*heart", D.typeId = 9000000000000550004 |definition|, D.acceptabilityId = * LANGUAGE X

- **Unacceptable Terms**
  - (D.term = "*heart") MINUS (D.term = "*heart", D.acceptability = * LANGUAGE X)
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
    - 999999 [Danish language reference set] ELSE [GB English reference set]

Next steps

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<td>Discuss and plan next steps</td>
<td>Linda Bird</td>
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Confirm next meeting date /time

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Date & Time

20:00 UTC Wednesday 6th November 2019

Location

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

Goals

- To progress work on
  - URIs
  - Templates
  - ECL
  - Query language

Attendees

- Chair: Linda Bird
- Project Group:

Apologies

- 

Agenda and Meeting Notes

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## URIs

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<th>Peter G. Williams</th>
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<td>• Summary of discussions in Malaysia</td>
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<td>• Published version: <a href="https://confluence.ihtsdotools.org/display/DOCURI">https://confluence.ihtsdotools.org/display/DOCURI</a></td>
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<td>• Work in progress: <a href="https://confluence.ihtsdotools.org/display/WIPURI/URI+Standard">https://confluence.ihtsdotools.org/display/WIPURI/URI+Standard</a></td>
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<td>• Project group was asked to review WIP updates to URI proposal</td>
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<td>• Consistent structure and examples added to each URI page</td>
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<td>• New proposal on URIs for languages and language instances</td>
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<td>• New proposal on URIs for modelling resources e.g. valueSet, fhirStructureDefinition, openEHRArchetype</td>
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<td>• 2.8 URIs for Modelling Resources</td>
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<td>• Agreed format</td>
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<td>• <a href="http://snomed.info/valueSet">http://snomed.info/valueSet</a></td>
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## Expression Templates

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<thead>
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<th>Peter G. Williams</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Summary of discussions in Malaysia</td>
</tr>
<tr>
<td>• Published version: <a href="https://confluence.ihtsdotools.org/display/DOCSTS/Template+Syntax+Specification">https://confluence.ihtsdotools.org/display/DOCSTS/Template+Syntax+Specification</a></td>
</tr>
<tr>
<td>• Work in progress: <a href="https://confluence.ihtsdotools.org/display/WIPSTS/Template+Syntax+Specification">https://confluence.ihtsdotools.org/display/WIPSTS/Template+Syntax+Specification</a></td>
</tr>
<tr>
<td>• Added a ‘default’ constraint to each replacement slot - e.g. default (72673000 [Bone structure (body structure)])</td>
</tr>
<tr>
<td>• Enabling ‘slot references’ to be used within the value constraint of a replacement slot - e.g. [[ +id &lt;= 123037004 [Body structure] MINUS &lt;&lt; $findingSite2 @findingSite1]]</td>
</tr>
<tr>
<td>• Allowing repeating role groups to be referenced using an array - e.g. $rolegroup[1] or $rolegroup[! =SELF]</td>
</tr>
<tr>
<td>• Adding 'sameValue' and 'allOrNone' constraints to information slots - e.g. sameValue ($site), allOrNone ($occurrence)</td>
</tr>
</tbody>
</table>
| • For discussion: [
| | [0..1] | 246075003 | Causative agent | = | [0..1] | 410607006 | Organism | ] |
| • 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?” |

## 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
Summary of discussions 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

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.

```
{{ term = wild("\*heart\*") }}
```

b. Word Prefix Any Order - e.g.

```
{{ term = match("hear att") }}
```

c. Default (word prefix any order) - e.g.

```
{{ term = "hear att" }}
{{ term = "\*heart\*" }}
```

### Potential Examples

- `<< 64572001 Disease {{ term = "heart" }}
  AND {{ term = "hjärta", languageCode = "sv" }}
```
- `<< 64572001 Disease {{ term = "heart", languageCode = "en" }} OR {{ term = "hjärta", languageCode = "sv" }}
```
- `<< 64572001 Disease {{ term = "heart", languageCode = "en" }} OR ({{ term = "hjärta", languageCode = "sv" }})
```
- `<< 64572001 Disease {{ term = "heart", languageCode = "en" }} AND {{ term = "hjärta", languageCode = "sv" }}
```
- `<< 64572001 Disease {{ term = "heart", languageCode = "en" }} OR ({{ term = "hjärta", languageCode = "sv" }})
```
- `<< 64572001 Disease {Associated morphology} = "*" {{ term = "heart", languageCode = "en" }} OR {{ term = "hjärta", languageCode = "sv" }}
```
- `<< 64572001 Disease {{ term = "heart", languageCode = "en" }} AND ({{ term = "hjärta", languageCode = "sv" }})
```
- `<< 64572001 Disease {{ term = "heart", languageCode = "en" }} OR ({{ term = "hjärta", languageCode = "sv" }})
```
- `<< 64572001 Disease {{ term = "heart", languageCode = "en" }} MINUS ({{ term = "hjärta", languageCode = "sv" }})
```

### 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 "itis"s

### Questions
• Do we include 'typeId' - e.g. << 64572001 |Disease| {{ D.term = "heart"; typeId = 900000000000013009 |Synonym} }}
  • NO
• Do we include 'type' - e.g. << 64572001 |Disease| {{ D.term = "heart"; D.type = synonym }}
  • NO
• Do we include 'languageCode' - e.g. << 64572001 |Disease| {{ D.term = "heart"; D.type = synonym, D.languageCode = "en" }}
  • YES
• Do we include 'caseSignificanceId' - e.g. << 64572001 |Disease| {{ D.term = "Heart", D.caseSignificanceId = 900000000000017005 |case sensitive} }}
  • NO
• Do we include 'caseSignificance' - e.g. << 64572001 |Disease| {{ D.term = "Heart", D.caseSignificance = sensitive } }
  • NO
• Do we include 'language' and 'version' - e.g. << 64572001 |Disease| {{ term = "heart" }} VERSION = http://... LANGUAGE = (999001881000000108|Gastro LRS), |GB English|
  • NO
• Do we include syntactic sugar - e.g.
  • << 64572001 |Disease| {{ preferredTerm = "heart", languageRefSet = en-gb} }
  • << 64572001 |Disease| {{ fullySpecifiedTerm = "heart", languageRefSet=en-gb} }
  • << 64572001 |Disease| {{ acceptableTerm = "heart", languageRefSet=en-gb} }
  • << 64572001 |Disease| {{ preferredTerm = "heart" }) FROM version = X, language = Y
  • 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
Maps and History

Linda Bird

Recap discussions in Malaysia regarding querying historical patient records - e.g. Find all patients with a respiratory disease in the last 10 years. Do we include patients whose records contain |Recurrent chest infection| (an inactive concept)

Solutions suggested include:

1. **Multiple queries**
   Reverse memberOf function
   - What refsets is a concept a member of?

2. **Use historical associations** - either create map from inactive to active concepts, or update EHR to replace inactive concepts with active ones
   - Look at the latest snapshot before the concept is inactivated
   - Multiple queries run against successive releases of SNOMED CT with results collated
   - Update the EHRs to the latest concept using historical associations
   - Create an enhanced transitive closure table containing inactive concepts as their last known position
   - Augmented solution checks the position of replacement to determine concepts inactivated due to wrong placement

Proposed syntax to support execution of maps (Outstanding question: ECL or Query Language? Scope and packaging needs further discussion)

- **Example use cases**
  - Mapping from international substance concepts to AMT substance concepts
  - Anatomy structure and part association reference set - e.g. find the anatomical parts of a given structure

- **Potential syntax to consider**
  - **Functional**
    - `mapTarget (|Anatomy structure and part association refset|, << |Upper abdomen structure|)`
    - Return the map targets from the given map refset, where the referencedComponent matches the condition.
    - `mapSource (|Anatomy structure and part association refset|, << |Liver part|)`
    - Return the referencedComponent from the given map refset, where the targetId matches the condition.
  - **Dot notation + Attribute refinement**
    - `|Anatomy structure and part association refset| . |mapTarget|`
    - `|Anatomy structure and part association refset| . |referencedComponent|`
    - (Same as `|Anatomy structure and part association refset| : |referencedComponent| = << |Upper abdomen structure|` . `|mapTarget|`)
  - **Dot notation + Filters**
    - `|Anatomy structure and part association refset| {{ |referencedComponent| = << |Upper abdomen structure| }} . |mapTarget|`
    - `|Anatomy structure and part association refset| {{ mapTarget = << |Upper abdomen structure| }} . |referencedComponent|`
    - (Same as `|Anatomy structure and part association refset| : |referencedComponent| = << |Upper abdomen structure|` . `|mapTarget|`
    - `|mapTarget|? |Anatomy structure and part association refset|`
    - `|mapTarget|? |Anatomy structure and part association refset| {{ |referencedComponent| = << |Upper abdomen structure| }}`
    - `|mapTarget|? |Anatomy structure and part association refset| . |referencedComponent|`
  - **Reverse memberOf function**
    - What refsets is a concept a member of?
<table>
<thead>
<tr>
<th>Returning attributes</th>
<th>Michael Lawley</th>
<th>Proposal from Michael:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• 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.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For example, I can write:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;&lt; 404684003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;&lt; 404684003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>But I can’t get all the attribute names that are used by &lt;&lt; 404684003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Perhaps something like:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• ? R.type ? (&lt;&lt; 404684003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• This could be extended to, for example, return different values - e.g.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• {?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Query Language - Summary from previous meetings</th>
<th>Linda Bird</th>
<th>Examples: version and language</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• &lt;&lt; 64572001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• &lt;&lt; 64572001</td>
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<td>• &lt;&lt; 64572001</td>
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<tr>
<td></td>
<td></td>
<td>• &lt;&lt; 64572001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (* ([ term = &quot;heart&quot; ]) VERSION <a href="http://snomed.info/sct/900000000000207008/version/20180131">http://snomed.info/sct/900000000000207008/version/20180131</a>, LAND GUAGE Z) MINUS (* ([ term = &quot;heart&quot; ]) VERSION <a href="http://snomed.info/sct/900000000000207008/version/20170731">http://snomed.info/sct/900000000000207008/version/20170731</a>, LAND GUAGE W)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• X MINUS Y WHERE X = &quot;, Y = (* ([ term = &quot;heart&quot; ]) VERSION <a href="http://snomed.info/sct">http://snomed.info/sct</a> /900000000000207008/version/20180131, LANGUAGE W</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Examples: where</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X MINUS &gt;! X WHERE X = (&lt;&lt; 1234 : 5678 = &lt;&lt; 6547)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X MINUS &gt;! X WHERE X = (&lt;&lt; 1234 : 5678 = &lt;&lt; 6547) VERSION <a href="http://snomed.info/sct">http://snomed.info/sct</a> /900000000000207008/version/20180131</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X MINUS &gt;! Y WHERE X = (&lt;&lt; 1234 : 5678 = &lt;&lt; 6547), Y = (&lt;&lt; 1456) VERSION <a href="http://snomed.info/sct">http://snomed.info/sct</a> /900000000000207008/version/20180131</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X MINUS &gt;! X WHERE X = (&lt;&lt; 1234 : 5678 = &lt;&lt; 6547) VERSION <a href="http://snomed.info/sct">http://snomed.info/sct</a> /900000000000207008/version/20180131, LANGUAGE 999001881000000108</td>
<td>GB clinical extension LRS), 900000000000508004</td>
</tr>
<tr>
<td></td>
<td>X MINUS &gt;! X WHERE X = (&lt;&lt; 1234 : 5678 = &lt;&lt; 6547) VERSION <a href="http://snomed.info/sct">http://snomed.info/sct</a> /900000000000207008/version/20180131, LANGUAGE 999001881000000108</td>
<td>GB clinical extension LRS), 900000000000508004</td>
</tr>
</tbody>
</table>

| 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 |
| | | • ie can’t use a variable in its own definition |
| | | • ie 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 = wild:"*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 = "entire term case insensitive"
  - D.caseSignificance = "entire term case sensitive"
  - D.caseSignificance = "only initial character case insensitive"

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

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

Additional Syntactic Sugar

- **FSN**
  - FSN = "*heart"
  - D.term = "*heart", D.type = "FSN"
  - D.term = "*heart", D.typeId = 900000000000003001 [fully specified name]
  - D.term = "*heart", D.typeId = 900000000000013009 [synonym]
  - D.term = "*heart", D.typeId = 90000000000550004 [definition]

- **synonym**
  - synonym = "*heart"
  - D.term = "*heart", D.type = "synonym"
  - D.term = "*heart", D.typeId = 900000000000013009 [synonym]
  - D.term = "*heart", D.typeId = 90000000000550004 [definition]

- **synonymOrFSN**
  - synonymOrFSN = "*heart"
  - synonym = "*heart" OR FSN = "*heart"
  - D.term = "*heart", (D.type = "synonym" OR D.type = "fullySpecifiedName")
  - synonymOrFSN = "*heart" LANGUAGE X

- **textDefinition**
  - textDefinition = "*heart"
  - D.term = "*heart", D.type = "definition"
  - D.term = "*heart", D.typeId = 9000000000000550004 [definition]

- **Unacceptable Terms**
  - (D.term = "*heart") MINUS (D.term = "*heart", D.acceptability = " LANGUAGE X")
<table>
<thead>
<tr>
<th>Language preferences using multiple language reference sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 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</td>
</tr>
<tr>
<td>• E.g. Regional LRS that adds local dialect to a National LRS</td>
</tr>
<tr>
<td>• E.g. Specialty-specific LRS</td>
</tr>
<tr>
<td>• E.g. Irish LRS that adds local preferences to the en-GB LRS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Irish language reference set</th>
<th>GB English reference set</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLUS</td>
<td>999999900</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>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</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E.g. Danish LRS that does a partial translation of the International Release</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>999999</th>
<th>Danish language reference set</th>
<th>ELSE</th>
<th>GB English reference set</th>
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<table>
<thead>
<tr>
<th>Next steps</th>
<th>Linda Bird</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Discuss and plan next steps</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Confirm next meeting date /time</th>
<th>Linda Bird</th>
</tr>
</thead>
</table>

File | Modified  
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Microsoft Excel Spreadsheet RegexCheat.xlsx | 2019-Dec-02 by Linda Bird