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SNOMED CT Subsets and Refsets

Tutorial 31st October 2014
SNOMED CT Implementation Showcase Amsterdam

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Delivering SNOMED CT The global language of healthcare

SNOMED CT Subsets and Refsets

- Introductions, format
  - Tutorial
  - Questions (mainly) at end of each section.
- Target
  - Anyone interested in implementation of SNOMED CT
  - Inform participants of key points of interest about specification, selection, development of subsets, and their distribution or use as SNOMED CT Refsets
- Prior knowledge
  - Assumes a basic knowledge of SNOMED CT
    - Components (concept, description, relationship, expressions)
    - Scope / clinical coverage

Topics

- Uses of subsets
- Techniques used in development, maintenance
- Formats for packaging, distribution
- Sharing and reuse
- Discovery of existing subsets – purpose – fitness for reuse

Related topics from Showcase

- **Sessions:** Subset and Refsets – 1 & 2
  - Showcase Track B: Sessions 3 (yesterday)
    - Favorites lists as subsets, UK
    - IS-A relations between subset members to give a semantic overview of single subsets, Denmark
    - SNOMED CT Cardiology Refset Development, Malaysia
  - Showcase Track B: Sessions 5 (after lunch today)
    - Experience developing a Refset for Optometrists, Holland
    - Query specifications maintained in parallel for more than one scheme, UK
    - SNOMED CT subset for home care nurses, Denmark

Definitions

- Refset (Reference set) IHTSDO definition:
  - A type of distribution file structure
  - Standardised in RF2
  - Used for subsets as well as for other ‘derivatives’ such as maps or language preferences
  - First IHTSDO use 2011
  - Standard for IHTSDO distribution since January 2012
- Subset definition:
  - IHTSDO does not assert its own definition for subset
  - IHTSDO uses ‘subset’ as defined in general dictionaries such as Miriam Webster and Wikipedia

Scope

- Subsets
  - Subset of SNOMED CT, mainly:
    - Concepts
    - Descriptions
- Refsets
- RF2 distribution format for subsets
  - Refsets from
    - International Edition
    - SNOMED CT extensions and national Editions
- Defined as either
    - Enumerated subsets
    - Intensionally defined subsets

Scope: Refset types

| Attribute value type |
| Simple map |
| Complex map type |
| Language type|
| Query Specification type|
| Annotation type|
| Association type |
| Ordered type |
| Simple type |

Illustration: simple Refset

xder2_Refset_DiagnosticImagingProcedureSimpleSnapshot_GB1000000_20121001.txt

id	effectiveTime	active	moduleId	refsetId	referencedComponentId
0008025b-c7dd-5983-9a25-e6c6178d164d	20050731	1	999000021000000109	999001111000000105	241639000
000a08a1-e77d-5e2f-bf76-09f127ea14b9	20101001	0	999000021000000109	999001111000000105	519031000000102
000c44d0-f4f0-55ae-a646-0881536e9ef8	20121001	1	999000021000000109	999001111000000105	840221000000106
00125930-3ac0-5df6-a3fc-18a716f590c8	20090401	0	999000021000000109	999001111000000105	356271000000108
00299244-06be-5c75-87c4-86fdc4f0b700	20050731	1	999000021000000109	999001111000000105	19490002
002fa473-9700-553d-b146-4fc6f7e9aee2	20081001	1	999000021000000109	999001111000000105	432874000
003665bc-c301-5b32-beda-a4a5a97d6a8e	20100401	0	999000021000000109	999001111000000105	505871000000108
003883ce-943e-5d1c-bcb1-20c698d41e13	20081001	0	999000021000000109	999001111000000105	318951000000102
003e4092-02af-503e-ae8e-f69d21521cc4	20060401	0	999000021000000109	999001111000000105	184651000000109
00653455-b8dd-57ee-bd21-bc52c97fa624	20121001	1	999000021000000109	999001111000000105	847511000000103
006a48b3-dfee-5963-9583-5fe0bbc2a3eb	20100401	0	999000021000000109	999001111000000105	505881000000105
0071b131-a5b0-5c96-95b2-63c1230c18dc	20080401	1	999000021000000109	999001111000000105	169002006
007d25d3-ced9-50b3-aa97-aa5124208553	20081001	0	999000021000000109	999001111000000105	311021000000102
00938268-cc4c-539d-8458-692a70b9bb95	20100401	1	999000021000000109	999001111000000105	443300009
009f738f-ddbe-5e27-b61a-756183fc8928	20081001	1	999000021000000109	999001111000000105	432979009
00a394e1-e2a2-54fc-81ef-98fd800131ae	20081001	1	999000021000000109	999001111000000105	319421000000107
00af6521-95c5-56cf-be66-9c847def1331	20081001	1	999000021000000109	999001111000000105	318741000000102
00b0b1e0-80aa-528f-91fc-6f194c6906b2	20081001	1	999000021000000109	999001111000000105	183831000000103
00b255c5-5270-5ef9-83ae-7721ffa43f47	20081001	1	999000021000000109	999001111000000105	241600009
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00b7fe9d-a0bc-577c-ac05-b	20080401	0	999000021000000109	999001111000000105	3127260
00cb9cc4-2ad1-52b2-866a-4	20090401	0	999000021000000109	999001111000000105	35
00e77fb5-14ff-5449-935f-e3 2296bd8	20060401	0	999000021000000109	999001111000000105	00107
00f51fda-33fe-534f-9ed1-4958ab72f04b	20081001	0	999000021000000109	999001111000000105	000000103
011d5e34-6790-525d-9f65-b89cd1374302	20101001	1	999000021000000109	999001111000000105	30291000000108
0120873d-232c-5971-94ac-b860b7a9fab5	20081001	0	999000021000000109	999001111000000105	327951000000107
0125320a-ecbc-548a-a634-f963d2b27290	20100401	0	999000021000000109	999001111000000105	433629004
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01464895-8a80-5c35-aabc-cc0c904b0d29	20060401	0	999000021000000109	999001111000000105	182381000000100
0165152d-46c7-5f07-b7e7-4e4b70938f63	20080401	0	999000021000000109	999001111000000105	420231008
0166da94-68d0-5750-8105-f2c592f7f751	20080401	0	999000021000000109	999001111000000105	419516008
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0182cabb-a7cb-5577-999b-d22c758383d8	20081001	0	999000021000000109	999001111000000105	338401000000104
01857669-eed3-5be6-9dee-843afeadc708	20090401	0	999000021000000109	999001111000000105	345371000000109
018ea7c0-8a69-518f-9c6d-19dcaebef1dd	20081001	1	999000021000000109	999001111000000105	431625000
0194e52f-654d-599a-93b8-ffef4cfdfaa3	20081001	0	999000021000000109	999001111000000105	322511000000102

Example Refset file

Subset members

... etc.

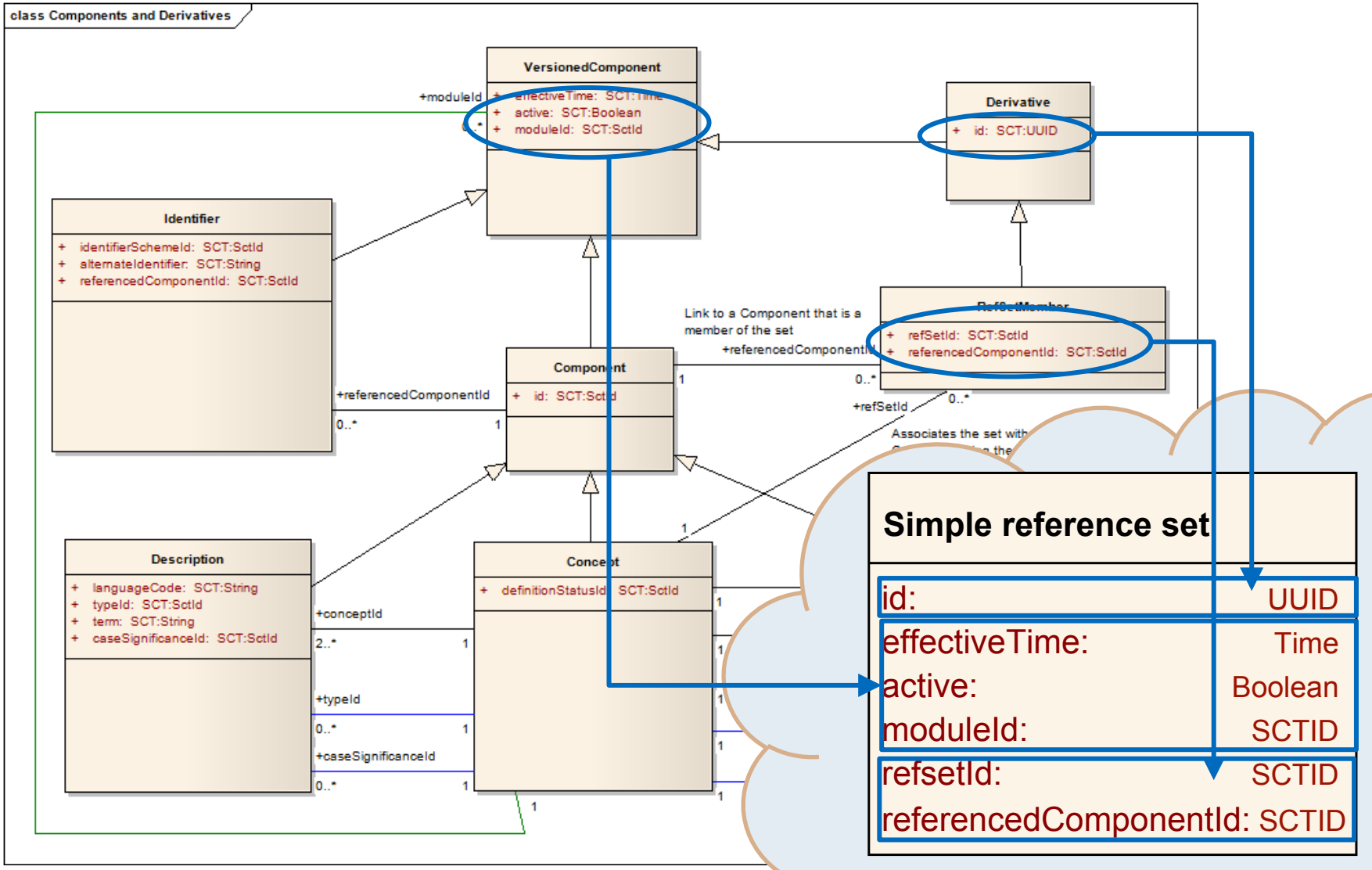
Illustration: Ordered Refset

ReferencedcomponentID	SNOMED CT term	Display order
237244005	Single pregnancy	1
65147003	Twin pregnancy	2
64254006	Triplet pregnancy	3
60810003	Quadruplet pregnancy	4
80997009	Quintuplet pregnancy	5
43990006	Sextuplet pregnancy	6
38720006		

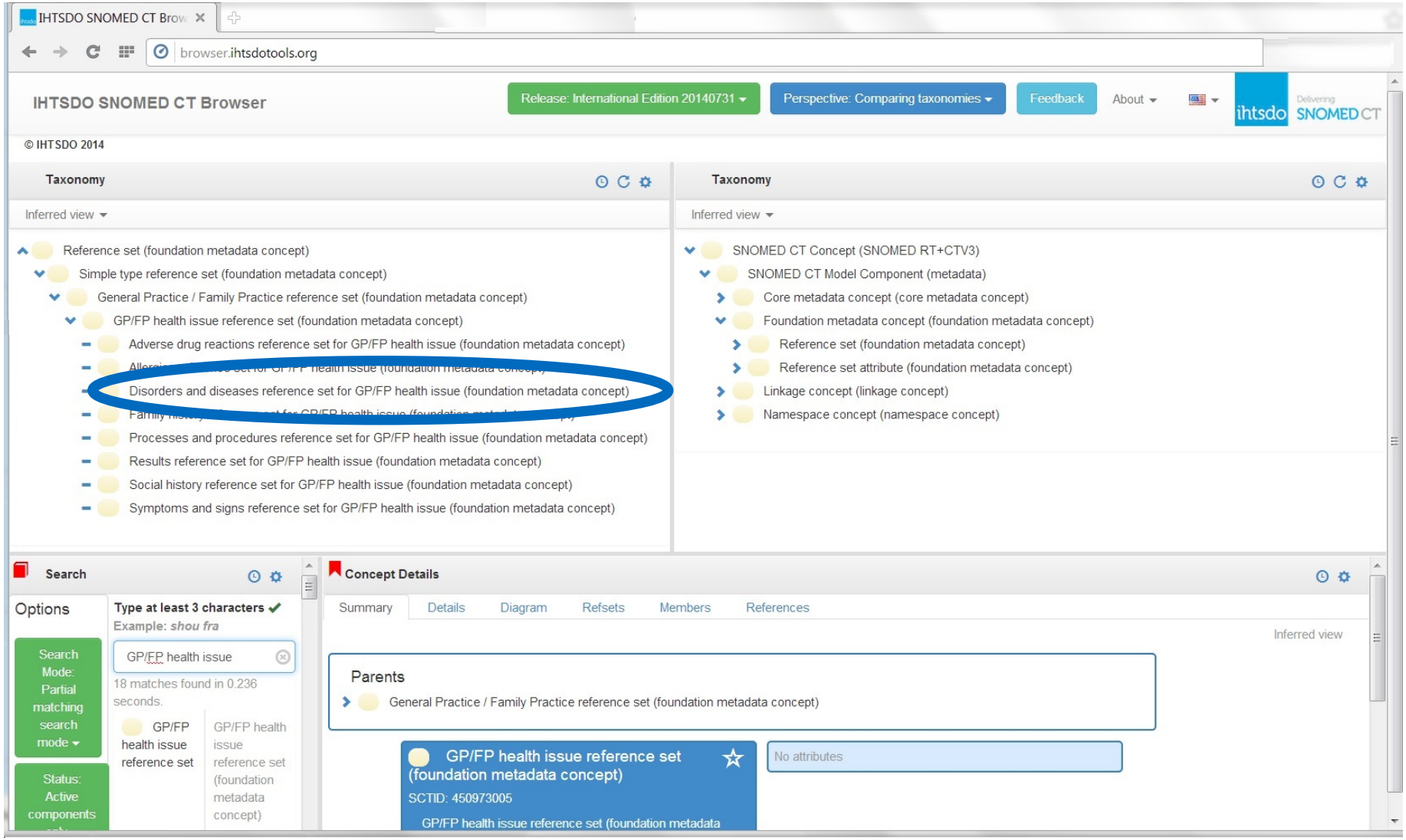
id	effectiveTime	active	moduleId	refsetId	referencedComponentId	order	linkedId
<uuid-0211>	20100731	1	<ModuleId-A>	<RefsetId-A>	<RefsetId-A>	1	237244005
<uuid-0212>	20100731	1	<ModuleId-A>	<RefsetId-A>	<RefsetId-A>	2	65147003
<uuid-0213>	20100731	1	<ModuleId-A>	<RefsetId-A>	<RefsetId-A>	3	64254006
<uuid-0214>	20100731	1	<ModuleId-A>	<RefsetId-A>	<RefsetId-A>	4	60810003
<uuid-0215>	20100731	1	<ModuleId-A>	<RefsetId-A>	<RefsetId-A>	5	80997009
<uuid-0216>	20100731	1	<ModuleId-A>	<RefsetId-A>	<RefsetId-A>	6	43990006
<uuid-0217>	20100731	1	<ModuleId-A>	<RefsetId-A>	<RefsetId-A>	7	38720006

- Triplet pregnancy
- Quadruplet pregnancy
- Quintuplet pregnancy
- Sextuplet pregnancy
- Septuplet pregnancy

Introductory notes: logical model



Introductory notes: Simple type Refset

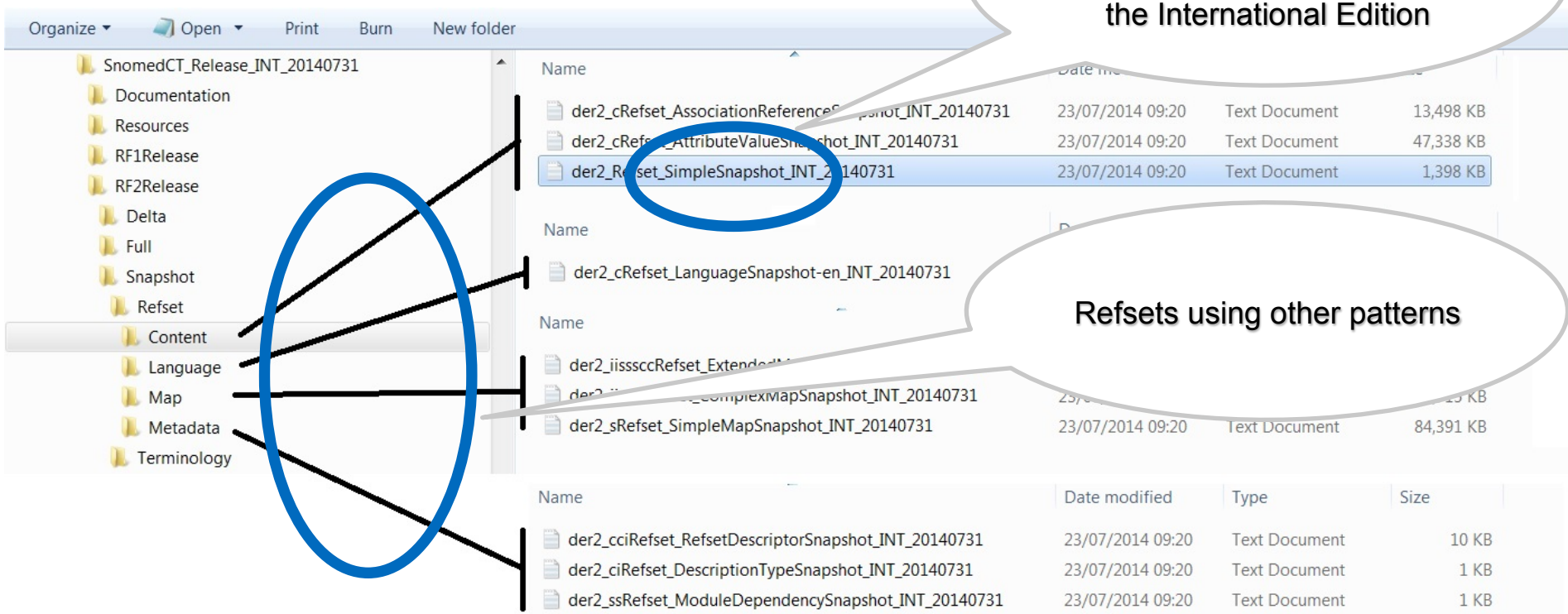


Introductory notes: Refset uses

- Reference sets are the RF2 format used:
  - To represent subsets
  - To prioritize particular items in a search list (ordering a subset)
  - To specify alternative hierarchies
  - To indicate language/dialect preference for terms
  - To attach metadata to a component
  - To attach annotations or other information to a component
  - To represent maps
- Subsets: distributed as Reference sets
  - Simple Refset pattern
  - Query Refset pattern

Introductory notes: Refset files

- One or multiple subsets within a Refset file
  - Simple Refset pattern: subset members
    - 1 ↔ 15,000 ↔ unrestricted number of members
  - Query Refset pattern: one or more subset int
- International Release Refsets

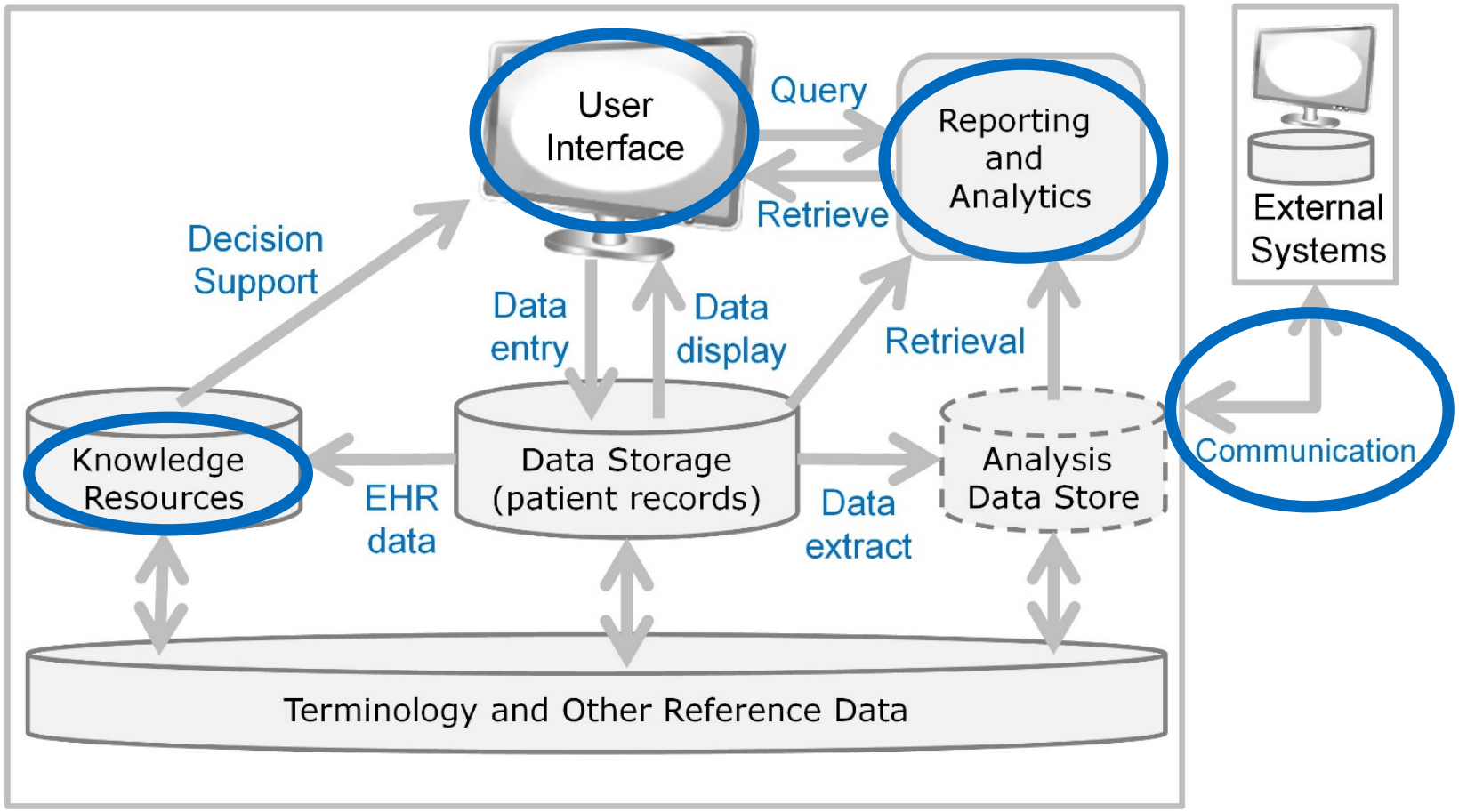


Topics

- Uses of subsets
- Techniques used in development, maintenance
- Formats for packaging, distribution
- Sharing and reuse
- Discovery of existing subsets – purpose – fitness for reuse

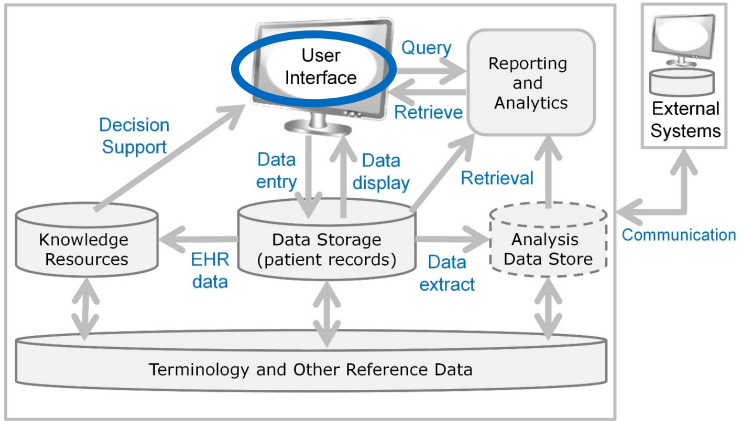
Subset uses: EHR systems

- Subsets: used to support many parts of an EHR system

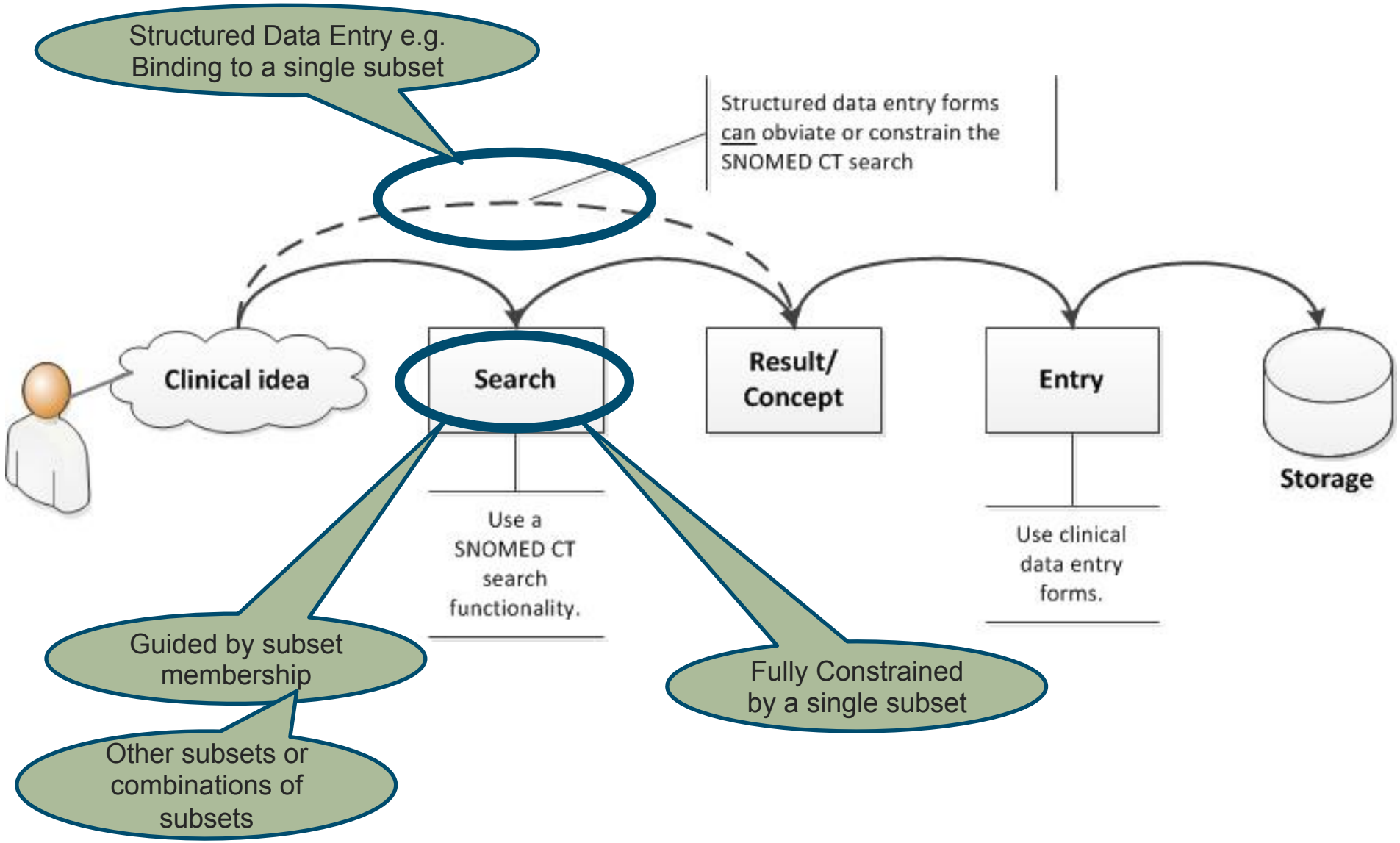


Uses of subsets at the EHR user interface

- Guiding data entry, supporting users search
  - Contextual
    - clinical specialty, workflow position, patient group etc.
  - Multiple subsets?
- Fully constraining data entry (‘hard limits’)
  - Contextual
- Fixed list for user selection (binding to SNOMED CT)
  - Binding of a subset to a design element e.g. an options list



Uses of subsets at the EHR user interface



Uses of subsets at the EHR user interface

- Data entry : Post-coordinated expressions
  - Prepared subsets can be used to constrain expression generation
    - Offering the qualifier values appropriate to the concept types
- Data display:
    - Prioritised display order in a search list (existing records)

Uses of subsets at the EHR user interface

- Choice between:
  - pre-enumerated
    - Extensionally defined
    - Intensionally defined, computed and stored

  or

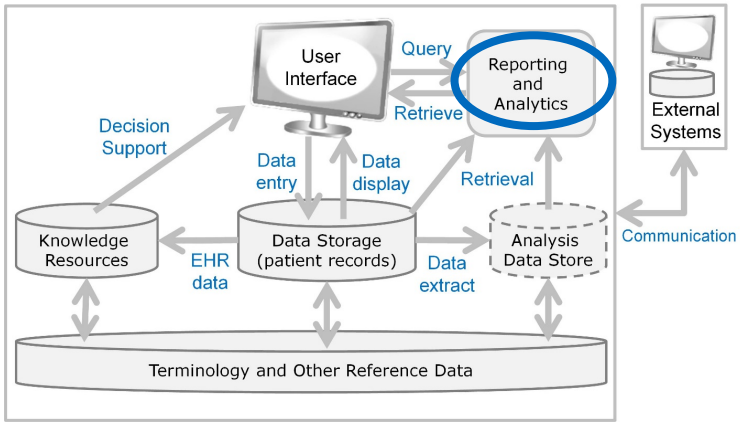
  real-time computed
    - Intensionally defined & real time computed
- Considerations
  - System performance
  - Target size of subset
  - Governance related preferences

    e.g. ‘our agreed subset’
  - Ease of maintenance by re-computation of members
  - Needs/demands of downstream consumers

    e.g. ‘their agreed subset’

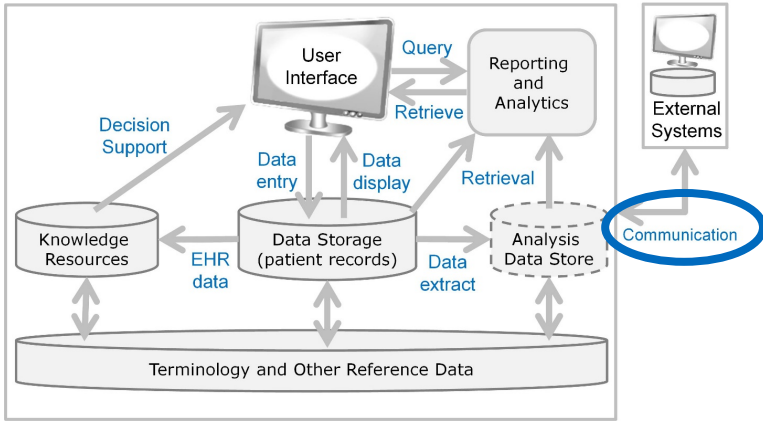
Uses of subsets in analytics & reporting

- Members of a subset – used to enumerate a category
  - Category test
    - To test items of data: if they are match a component present in the subset – to find if it is a member of the category
  - Aggregation – groupings to support alternative analyses
    - Analysis relying on non-exclusive categories
      - (some concepts in more than one category)
    - Analysis relying on exclusive categories
      - Subset expressed:
        - » Intensional
        - » extensional



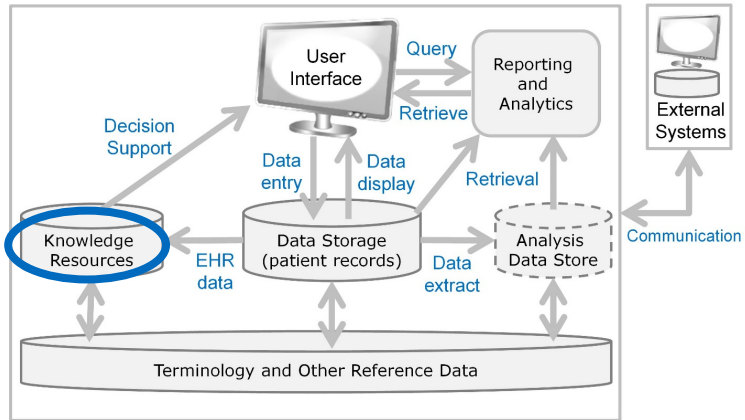
Uses of subsets with communications

- Definition of a constraint:
  - What content is permitted as the payload of a message element
- Use in validation of message the payload
  - Tests payload against the stated constraint
- Human inspection of the subset constraint
  - To understand its intended use



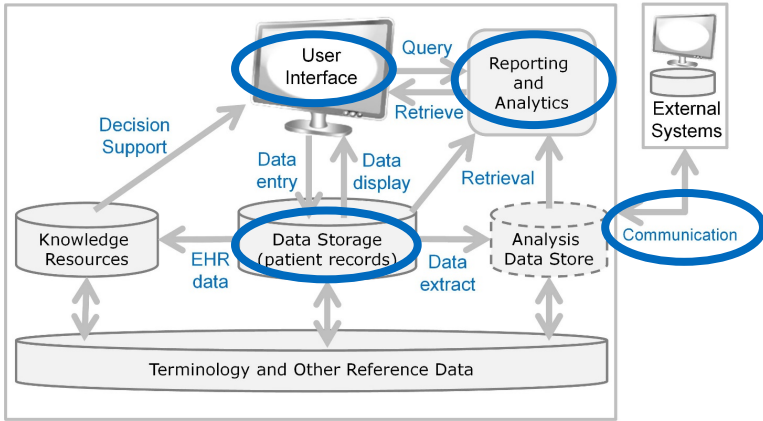
Uses in Knowledge Representation

- Use of SNOMED CT to tag resources that represent clinical knowledge
- Categories represented using subsets: ‘subsets as items of knowledge’
  - Related to specific decision support rules i.e. association of a rule to a subset



Uses: GP/FP subsets and map to ICPC-2

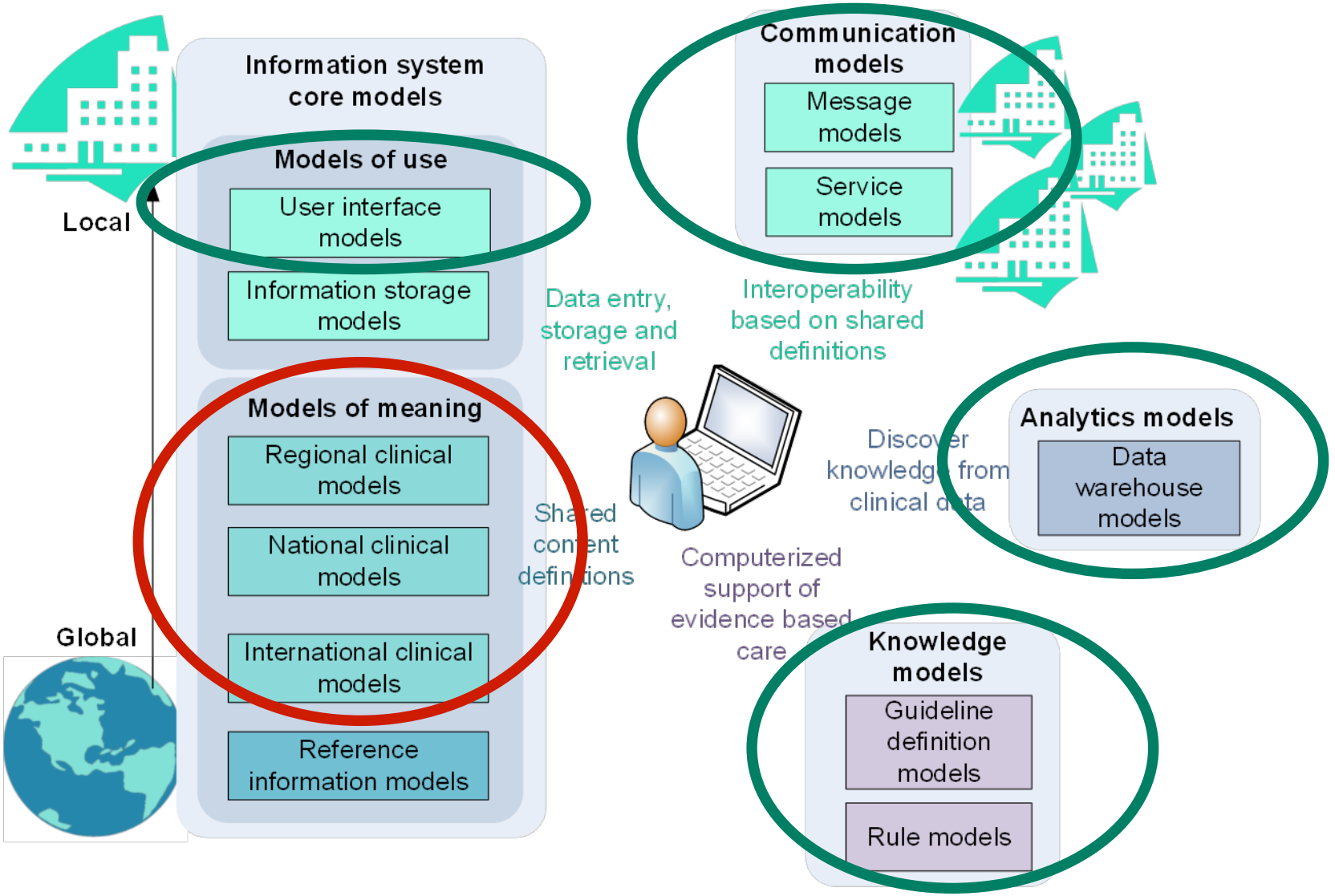
- Uses for a collection of reference sets for the collection of Refsets
  - Data entry
  - Electronic transfer of care – referrals
  - Research
  - Patient recall
  - Management of legacy data
  - Translations



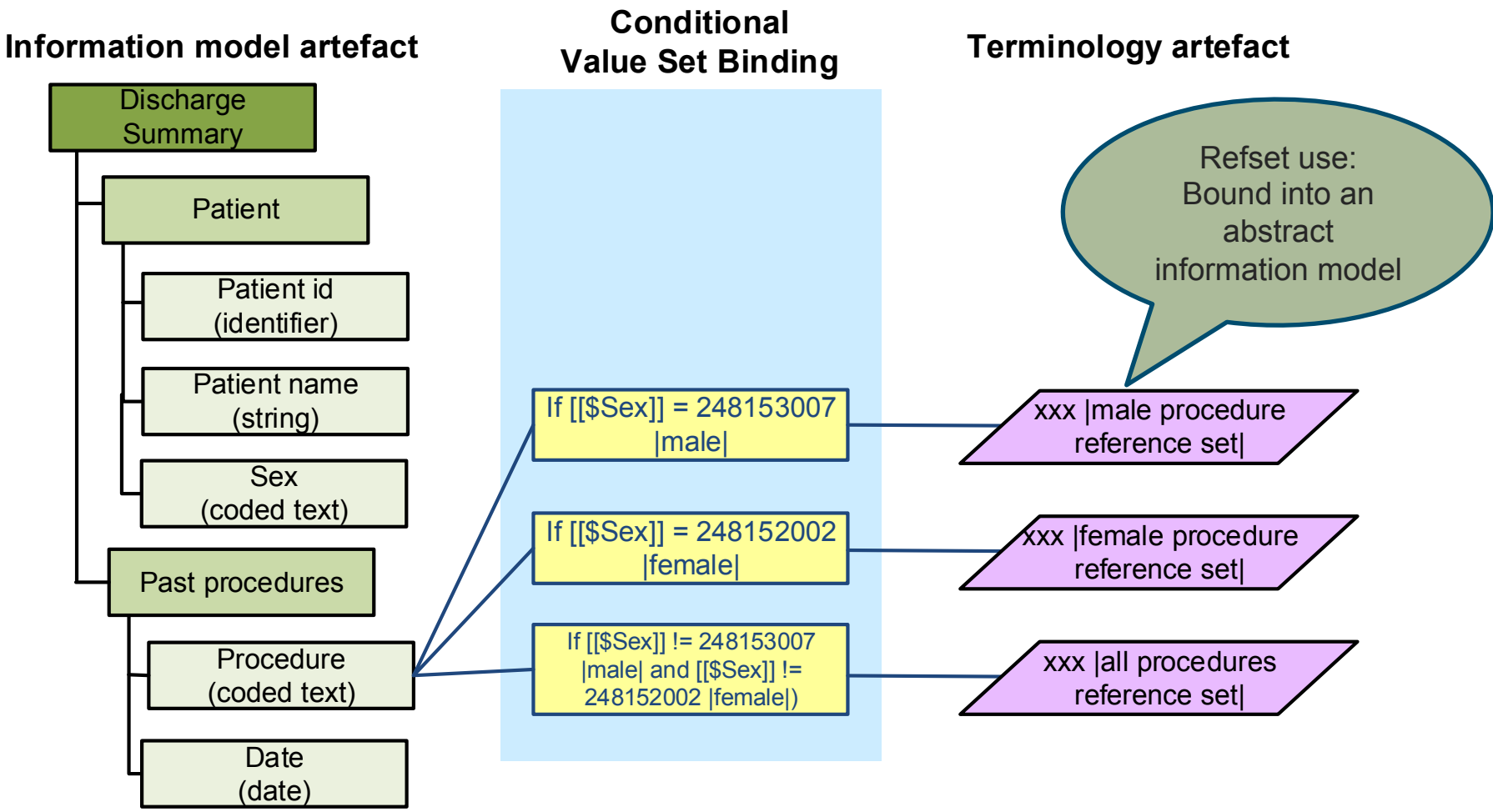
Refsets used with Information Models

- Supporting Knowledge Representation
  - Constraining what it makes sense to record or exchange
  - Binding subsets to information models
- Technical range
  - File based information models ↔ world class informatics

Types of Information Models
Refsets used with Information Models



Value Set Binding - Conditional Refsets used in Information Models



Patient's sex determines which Procedure reference set to use

Topics

- Uses of subsets
- Techniques used in development, maintenance
- Formats for packaging, distribution
- Sharing and reuse
- Discovery of existing subsets – purpose – fitness for reuse

Techniques: a process viewpoint

- Rules of Thumb
  - Ensure you have a clear purpose identified before you progress to subset selection or subset development.
    - Don't be surprised if your purpose becomes even clearer as you proceed, along with the refinements you make:
      - Design is iterative, not all requirements are explicit at the outset
    - Documented statement of purpose:
      - Extent and style should be in proportion to needs
      - Ideally the statement of purpose would inform any competent reader
      - Good practice would include expression for any reader, worldwide
  - Be clear what your maintenance programme and governance needs are, how they will be satisfied

EHR implementation as a team effort

- Clinical input needed to design system
  - Safe & fit for purpose for all specialties and environments
  - Compatible with clinical practice and local processes
- Technical input to design architecture and functionality
  - The system must be usable, reliable and efficient
  - Able to support data entry, storage, retrieval and communication
  - Compliant with relevant technical standards

Individuals and the subset lifecycle

- Subset Development
  - Solo developer ….. Multidisciplinary team
- Evaluation & approval - by inspection
  - What levels of evaluation are possible?
  - What are the expectations from gaining approval?
- Evaluation through use
  - Demonstration of utility of value via trial use
- Technical quality assurance, packaging and distribution

Enumeration or Intensional definition

- Options
  - Enumerated subset (also referred to as ‘Extensional’)
    - An unordered list of subset members
  - Intensional definition
    - The rules which can be used to generate a subset

Intensional definition

- Intensional definitions : Query specification Refset
  - Serialized according to the (pending publication) specification (Expression Constraint Language*)
- Serialization held in a field in a Query Specification type Refset
  - Refsets of this type should have their metadata concept as a descendants of:

    900000000000512005 | Query specification reference set |

* Draft language available for comment shortly

Intensional definition

- Expression Constraint Language*
  - Proposed operators include:

<	Descendant
<<	Descendant or self
>	Ancestor
>>	Ancestor or self

^	Member of ref set

!	Exclusion
And	Intersection
Or	Union

- Query Language*
  - Same operators plus addition of filters – for example:
    - version, moduleId, effectiveTime, active, languageRefSet
    - Term, preferredTerm, acceptableTerm, fullySpecifiedName

* Draft languages available for comment shortly

Expression Constraint and Query Languages

- Expression constraints, queries
  - Dedicated builder tools / text editor
- Examples:

^ 700043003 | problem list reference set | AND
    < 66091009 |Congenital disease|

<19829001 |disorder of lung| AND
    ! ^ 1527258510001541O6 |cardiology reference set|

Using query language:
    << 64572001 |disease| {{ term = ".* heart .*" }}

Enumeration / Extensionally defined

- Some are small and very highly stable
  - 703870008 | Laterality indicator reference set |
- No reason they cannot be large
  - 450985002 | Disorders and diseases reference set for GP/FP health issue |
- NHS dm+d VMP (UK drug extension)
  - 17161 active members
- VMP (International core)
  - 10014 active members

VMP = ‘virtual medicinal product’

Enumerated subset - example

- UK Discharge simple Refset (Link)
- By inspection references are about
  - Discharge
  - Case closure Vs Discharge
  - Delayed discharge …
  - Discharge(ed) by …
  - Discharge from …
  - Discharge to …
- Includes references to 384 concepts from the procedures hierarchy (only)
- Includes UK Extension content:

  846401000000101 | Discharge by Macmillan nurse |

Practical equivalence

- Enumeration & Intensional definitions
  - Different benefits and drawbacks
  - Stability (enumerations don't change)
  - Reflection of quality improvements to content (intensional definitions bring the changes into the subset)
  - 'Governance' and evaluation of changes (or their absence)
    - Ease of governance, meaning of governance, success of governance

Practical equivalence

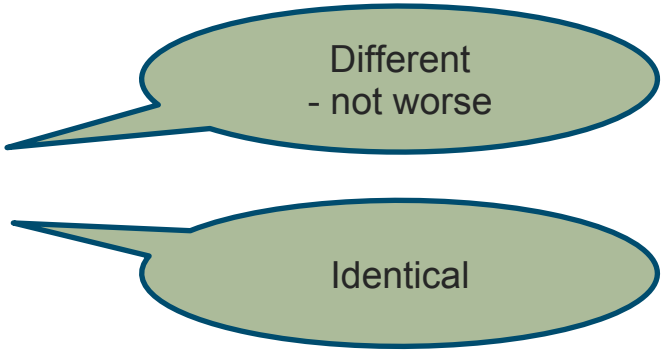
- Transformations between Enumeration & Intensional definitions
  - Intensional > Enumeration
    - Add the ‘substrate’ into the definition to precisely control the resultant subset
      - Generate enumeration
      - fully reproducible
  - Enumeration > Intensional
    - ‘Induced intensional definitions’ or ‘Find rules from members’
      - multiple are possible, equivalent (now), may diverge later

Extensional or intensional?

- Reflections on methods (1 of 2)
  - *How many* is too many rules in an intensional definition?
  - What type of rule is most likely, over time, to continue to give reliable results?
  - When is an extensional subset the right answer?
  - Subsets built from subsets: How many subsets can you 'stack up' before you worry something unexpected is too likely to happen?
    - Can you not just *'re-baseline'*?
      - –Take the membership as it is today: induce from that an intensional definition
      - –adopt that new definition and discard its heritage.

Extensional or intensional?

- Reflections on methods (2 of 2)
- Use both Intensional and Extensional or just one?
- Round trips
  - Intensional → Extensional → Intensional
  - Extensional → Intensional → Extensional
- Dependencies
  - Tools
  - Owners of other subsets
  - Intellectual property rights (e.g. if adapting or 're-baselining')



Subset building

- Crafting subsets
  - Adopt *(always SNOMED CT)*
  - Adapt from existing *(Seed can be SNOMED CT or not)*
  - Full replication *(not SNOMED CT)*
  - 'Blank sheet'
- Criteria for content inclusion or exclusion may:
  - Be stated prior
  - Become evident during development
  - Remain implicit, or be recorded explicitly
- Particular goals
  - Full Replication: requires zero unmapped content

Subset building techniques

- Using a mix of techniques:
  - New node: descendants selection
    - –Inspect the list of descendants
  - Existing node e.g. via map
    - –Inspect for additional descendants to add
  - Single Item picking
  - Lexical matching
    - –e.g. as a bulk preliminary match
  - Use of existing maps between terminologies
  - Semantic search
- Design patterns – common considerations
  - Check for members with specific contexts
    - –History of
    - –Family history of
  - Specificity levels
    - –Excessively specific content, excessively general

Inclusions + Exclusions

Subsets – newly built

- More than just a subtree from SNOMED CT's logical hierarchy
- Few subsets are constructed as a single subtree
  - e.g. to constrain a message element to contain only subtypes of 373873005 | Pharmaceutical / biologic product |
- Subsets represent things other than a logical hierarchy
  - Frequently found arrangements e.g. 'common chronic conditions in adults'
  - Team favorites
  - External knowledge e.g. 'the most prevalent {x}'
  - Self, descendants, selected siblings

Subsets – newly built

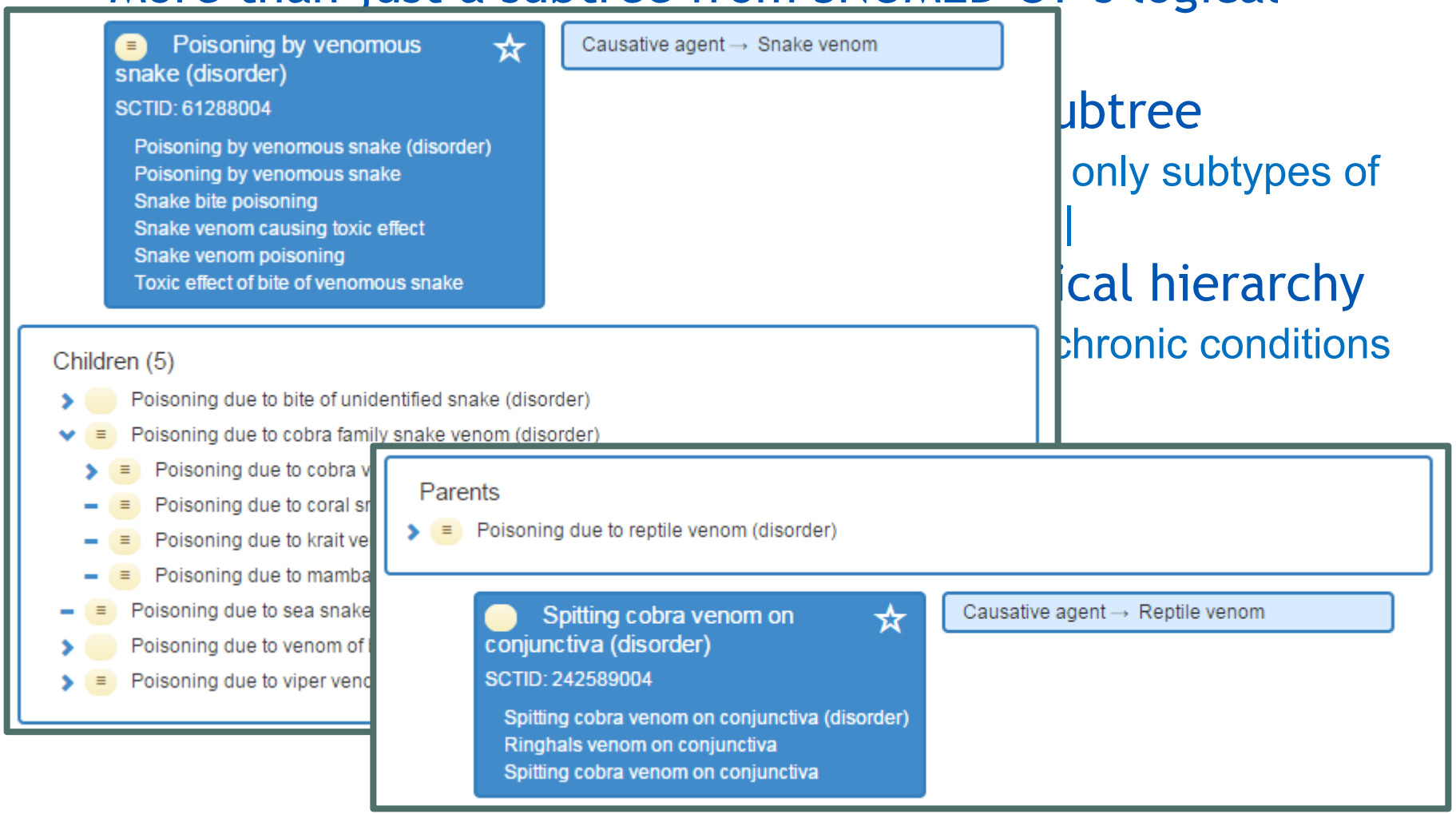
- More than just a subtree from SNOMED CT's logical

ubtree

only subtypes of

ical hierarchy

chronic conditions



Subsets - adapted from a seed

- Adapted from subsets which already exist
- Adaptation can be:
  - Re-apply existing SNOMED CT Query, but to a different Edition
    - Rework as needed
  - Rework, starting from the existing enumeration or intensional definition
    - Rework as needed
    - Convert between intensional definition and enumeration?

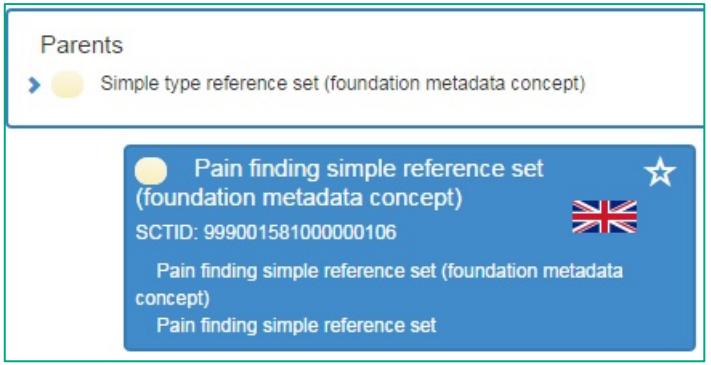
Full Replication of an existing subset

- Full Replication: 'Source Data Mapping'
  - Subset as category
    - Categories from other schemes can be replicated
    - Sequences and structures can be replicated
- Purpose/Benefit
  - Utility in existing analytics – business continuity
  - Familiar and demonstrably useful categories retained
- Extent of exact match
  - Term strings may differ, should be acceptable
  - Content addition to SNOMED CT extension
- Enhancements
  - Supplementary power of SNOMED CT analytics
  - Supports new ways for review & improvement

Cross-hierarchy content in subsets

- *Where needed* there is no restriction on membership from different top level hierarchies
  - Chest pain (finding)
  - Chest pain at rest (finding)
  - Chest pain due to pericarditis (finding)
  - Chest pain not present (situation)
  - Chest pain on breathing (finding)
  - Chest pain on exertion (finding)
  - Chest wall pain (finding)
  - Chest wall tenderness (finding)

i.e. Situation + Finding



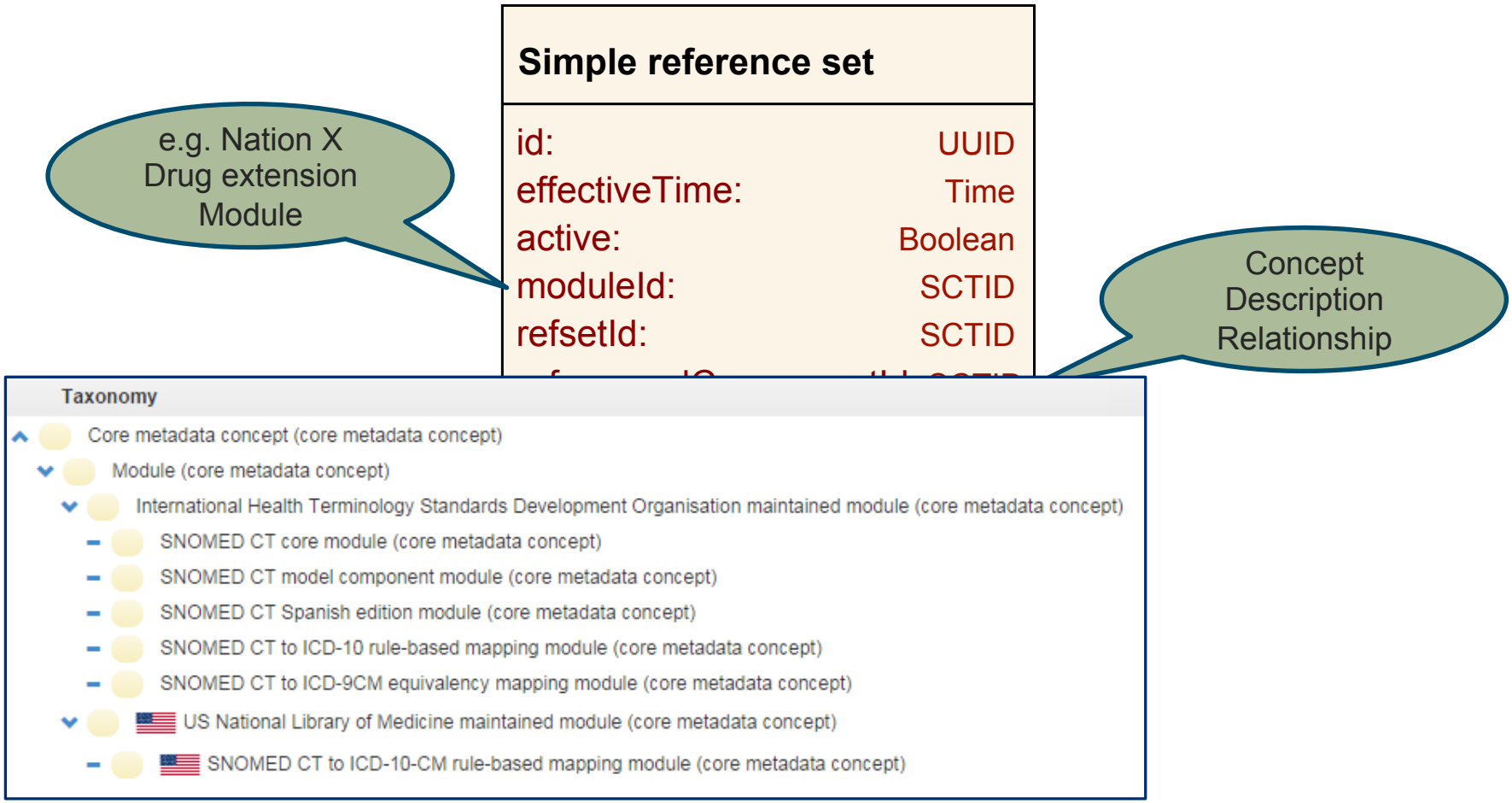
Maintenance

- Considerations for subset maintenance
  - Continued conformance to key design parameters e.g.
    - Nothing included from ‘wrong’ hierarchies
    - Size remains within tolerance
  - Content present in the subset, but has been *recently* inactivated
    - Identification of replacement content
  - Content which is *newly* included or excluded after re-executing an intensional definition
    - Refinement / update of the intensional definition
    - Review any dependencies
  - Synchronous or asynchronous maintenance to a SNOMED CT Edition

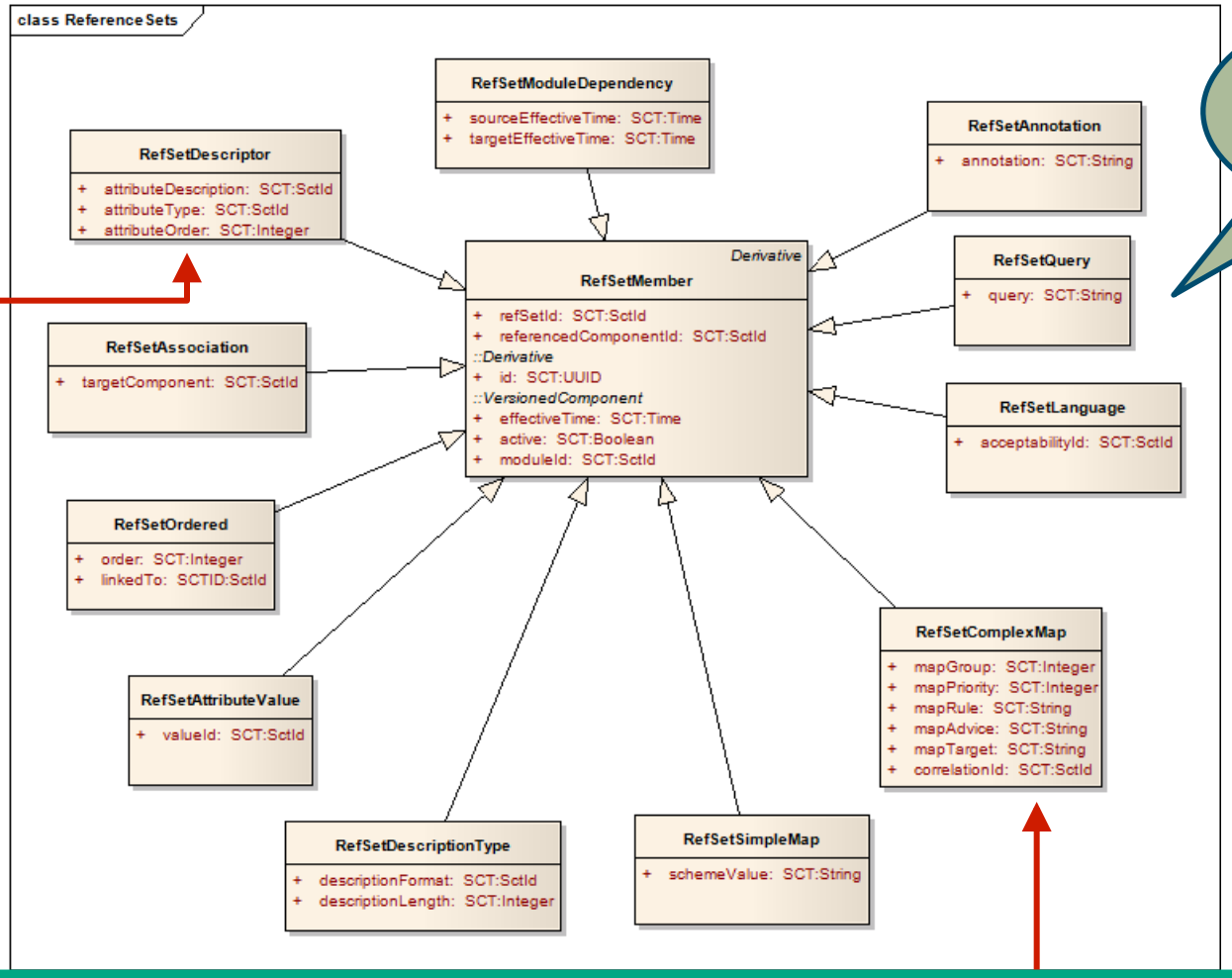
Topics

- Uses of subsets
- Techniques used in development, maintenance
- Formats for packaging, distribution
- Sharing and reuse
- Discovery of existing subsets – purpose – fitness for reuse

Simple Refset



Refset types



'Extensibility'
More types
More files

der2_iisscRefset_ComplexMapSnapshot_INT_20140731

der2_cciRefset_RefsetDescriptorSnapshot_INT_20140731

Naming of Refsets & files

- Refset name
  - IHTSDO naming convention

    e.g. Query specification type reference set (pattern) as

    '<My particular> query specification reference set'
- File name
  - Basic pattern for SNOMED CT release file names

<FileType>_<ContentType>_<ContentSubType>_<Country|Namespace>_<VersionDate>.<Extension>

  - Type and number of additional fields for a pattern

    'c' - Component

    's' - String

    'i' - Integer

der2_iisscRefset_ComplexMapSnapshot_INT_20140731

Other distribution formats

- Released as SNOMED CT : conforms to the standard
- Distributed any other way
  - Data files which omit part or all the SNOMED CT metadata
    - Versioning – by other method
    - Unique identifier of any particular reference – by other method
    - Multilingual terms string – by other method

Extracting subsets from a Refset file

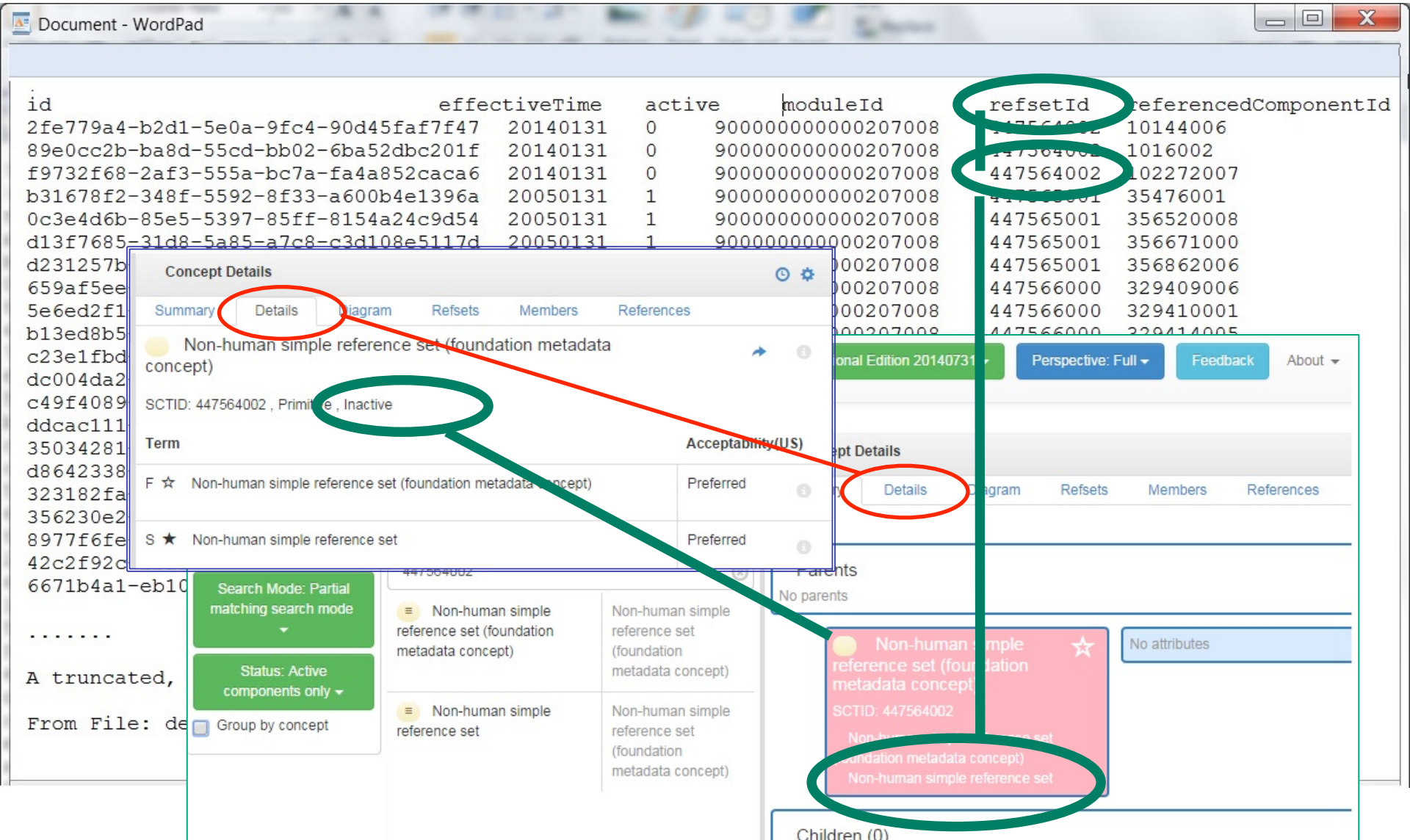
- If you know the RefsetID
  - From a Refset file
    - Simple type Refset file
    - Snapshot release type
  - The value in the referencedComponentId column identifies the member where:
    - RefsetId matches the RefsetID of your target Refset
      and
    - the active column has the value '1'
  - Result is an unordered list of members of the Refset

```
SELECT referencedComponentId FROM Refset_Snapshot
WHERE refsetId=[id of required Refset] AND active=1
```

Reviewing content

- Text viewer + file + IHTSDO Terminology Browser
  - + Spreadsheet / Database tool
    - (following slide)
- Dedicated Refset viewer, subset viewer
  - +/- Spreadsheet / Database tool
- Terminology Services + dedicated user interface

Text viewer + file + IHTSDO Terminology Browser



Contents of a Refset file

Der2_Refset_SimpleSnapshot_INT_20140731

- Contains 3 Refsets
- Contains inactive content in each, not only active
  - Inactive in the Refset differs from inactive component

Count of rows (Snapshot release file)	Active = 0	Active = 1
447564002 | Non-human simple reference set |	1,917	0
447565001 | Virtual therapeutic moiety simple reference set |	332	3,234
447566000 | Virtual medicinal product simple reference set |	789	10,014

No active members of this Refset

(Non-human content has been removed from the International Edition)

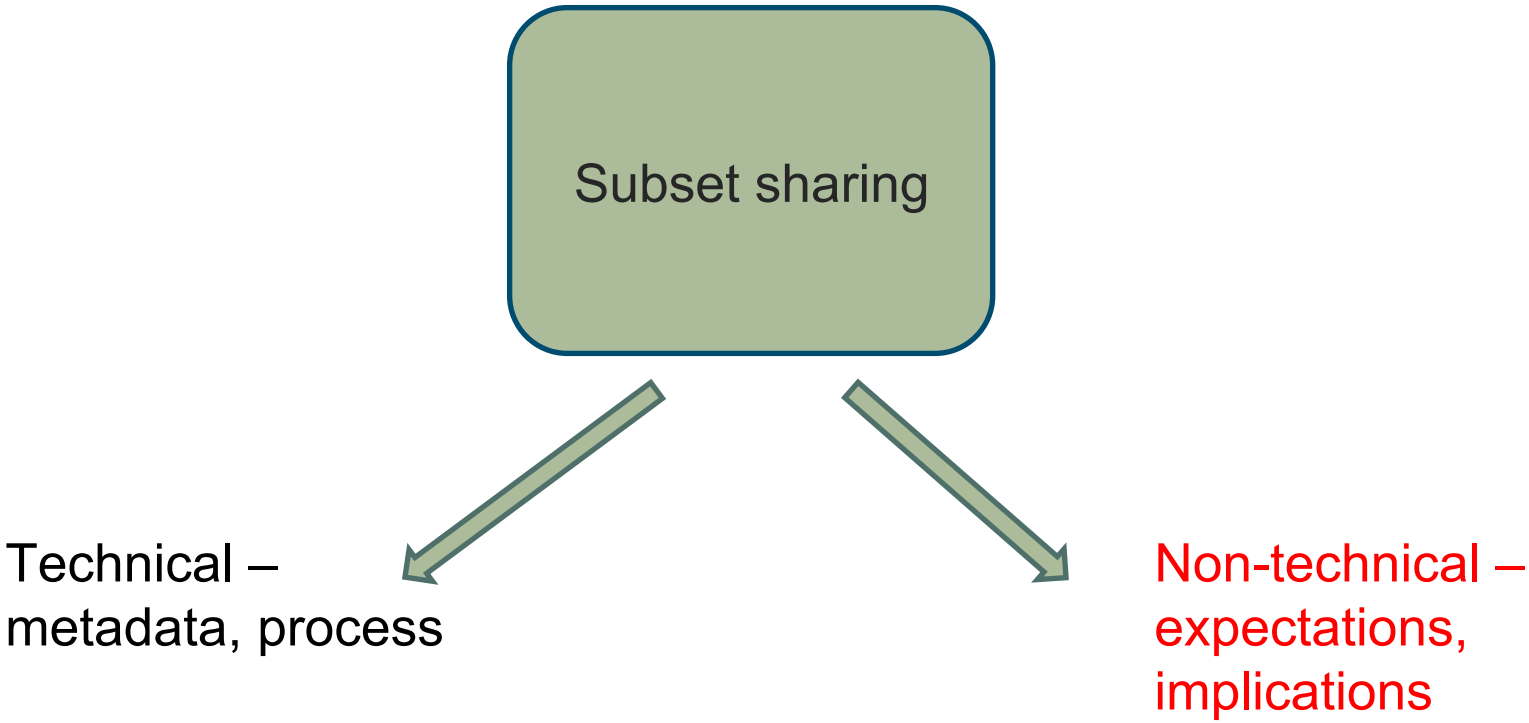
Terminology services & Refsets

- Terminology services which are used in conjunction with simple Refsets
  - ***Refset membership test***
    - This service returns true if a row in the specified Refset contains a referenced component identifier that matches the identifier being tested (e.g. is the concept in a specified subset)
  - ***Get membership of Refset***
    - This service returns the current members of a Refset e.g. for a simple Refset pattern used for a subset of Descriptions, all descriptions Identifiers will be returned

Topics

- Uses of subsets
- Techniques used in development, maintenance
- Formats for packaging, distribution
- Sharing and reuse
- Discovery of existing subsets – purpose – fitness for reuse

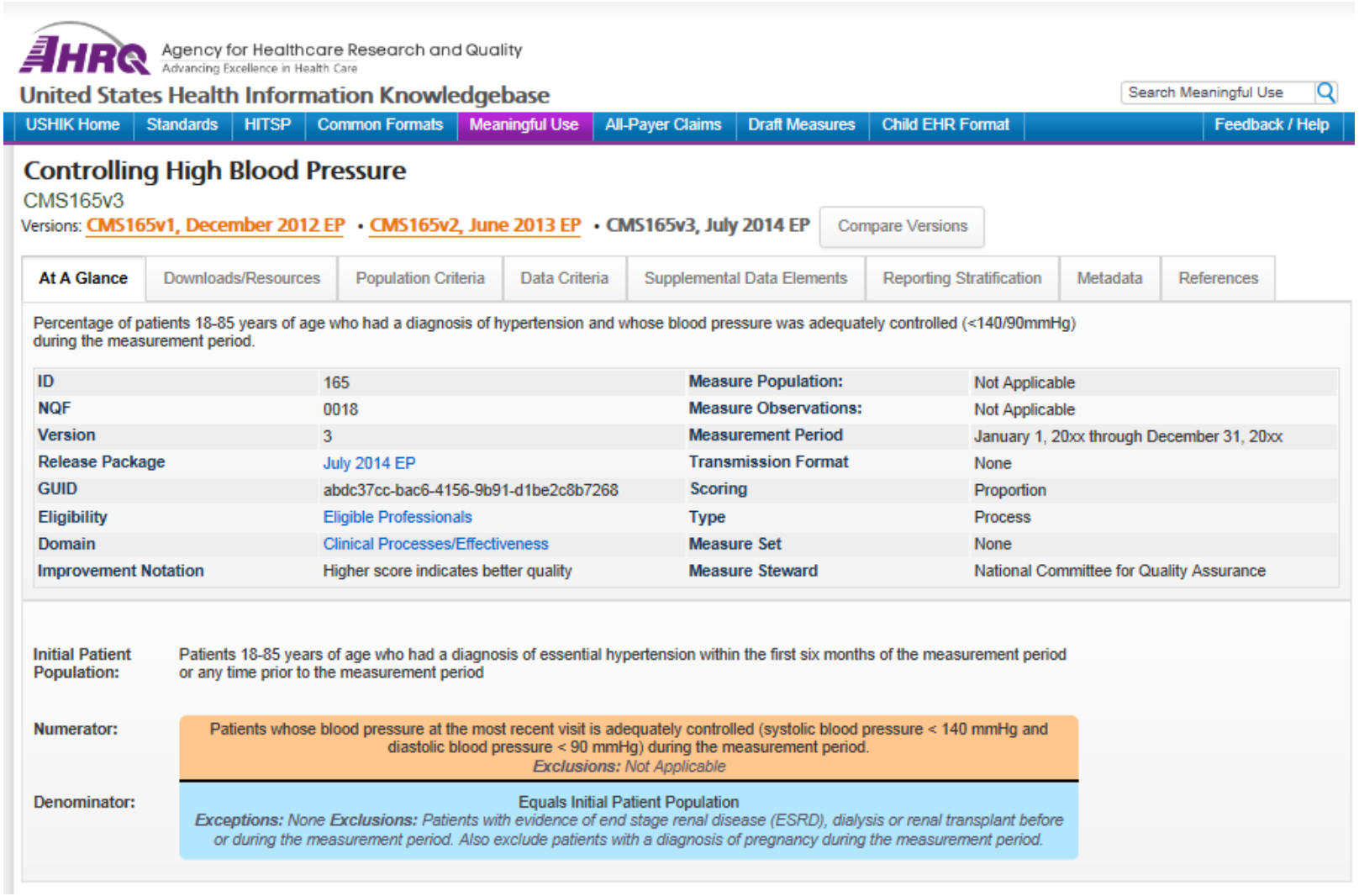
Two Perspective of Subset Sharing



What is Shared

- Description of subset intent
- Rationale
  - Reason to create the subset
  - Approach – assumptions in development
- Method
- Content

Example of Description - Clinical Quality Measure



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

United States Health Information Knowledgebase

Search Meaningful Use

USHIK Home | Standards | HITSP | Common Formats | Meaningful Use | All-Payer Claims | Draft Measures | Child EHR Format | Feedback / Help

Controlling High Blood Pressure

CMS165v3

Versions: CMS165v1, December 2012 EP • CMS165v2, June 2013 EP • CMS165v3, July 2014 EP Compare Versions

At A Glance | Downloads/Resources | Population Criteria | Data Criteria | Supplemental Data Elements | Reporting Stratification | Metadata | References

Percentage of patients 18-85 years of age who had a diagnosis of hypertension and whose blood pressure was adequately controlled (<140/90mmHg) during the measurement period.

ID	165	**Measure Population:**	Not Applicable
NQF	0018	**Measure Observations:**	Not Applicable
Version	3	**Measurement Period**	January 1, 20xx through December 31, 20xx
Release Package	July 2014 EP	**Transmission Format**	None
GUID	abdc37cc-bac6-4156-9b91-d1be2c8b7268	**Scoring**	Proportion
Eligibility	Eligible Professionals	**Type**	Process
Domain	Clinical Processes/Effectiveness	**Measure Set**	None
Improvement Notation	Higher score indicates better quality	**Measure Steward**	National Committee for Quality Assurance

Initial Patient Population: Patients 18-85 years of age who had a diagnosis of essential hypertension within the first six months of the measurement period or any time prior to the measurement period

Numerator: Patients whose blood pressure at the most recent visit is adequately controlled (systolic blood pressure < 140 mmHg and diastolic blood pressure < 90 mmHg) during the measurement period.
Exclusions: *Not Applicable*

Denominator: Equals Initial Patient Population
Exceptions: *None* ***Exclusions:*** *Patients with evidence of end stage renal disease (ESRD), dialysis or renal transplant before or during the measurement period. Also exclude patients with a diagnosis of pregnancy during the measurement period.*

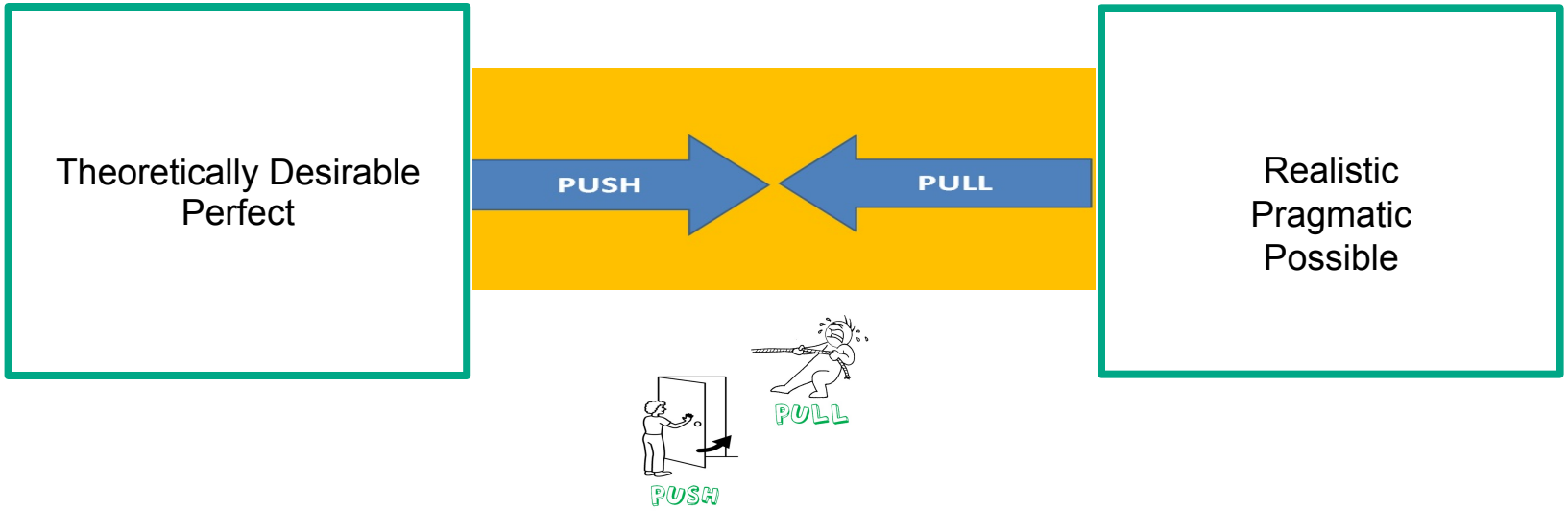
Example: Rationale - Clinical Quality Measure

Rationale:	Hypertension is a very significant health issue in the United States. Fifty million or more Americans have high blood pressure that warrants treatment, according to the National Health and Nutrition Examination Survey (NHANES) survey (Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure 2003). The United States Preventive Services Task Force (USPSTF) recommends that clinicians screen adults aged 18 and older for high blood pressure (United States Preventive Services Task Force 2007). The most frequent and serious complications of uncontrolled hypertension include coronary heart disease, congestive heart failure, stroke, ruptured aortic aneurysm, renal disease, and retinopathy. The increased risks of hypertension are present in individuals ranging from 40 to 89 years of age. For every 20 mmHg systolic or 10 mmHg diastolic increase in blood pressure, there is a doubling of mortality from both ischemic heart disease and stroke (Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure 2003). Better control of blood pressure has been shown to significantly reduce the probability that these undesirable and costly outcomes will occur. The relationship between the measure (control of hypertension) and the long-term clinical outcomes listed is well established. In clinical trials, antihypertensive therapy has been associated with reductions in stroke incidence (35-40 percent), myocardial infarction incidence (20-25 percent) and heart failure incidence (>50 percent) (Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure 2003).
Clinical Recommendation Statement:	The United States Preventive Services Task Force (2007) recommends screening for high blood pressure in adults age 18 years and older. This is a grade A recommendation. Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (2003): Treating systolic blood pressure and diastolic blood pressure to targets that are <140/90 mmHg is associated with a decrease in cardiovascular disease complications.
Definition:	None
Guidance:	In reference to the numerator element, only blood pressure readings performed by a clinician in the provider office are acceptable for numerator compliance with this measure. Blood pressure readings from the patient's home (including readings directly from monitoring devices) are not acceptable. If no blood pressure is recorded during the measurement period, the patient's blood pressure is assumed "not controlled."
Supplemental Data Elements:	For every patient evaluated by this measure also identify payer, race, ethnicity and sex.

Perspectives to be considered

Balance of theory and reality

principle vs. practical, what should be vs. what is

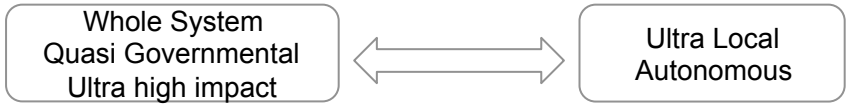


Influences (1): attitudes to sharing

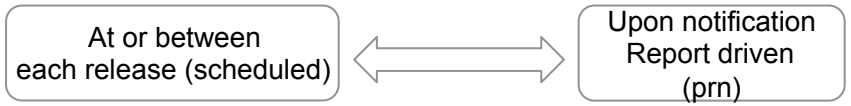
- Aspirations (what is desired)
  - An easy mechanism to support access to and assessment of existing subsets
- Expectations (what is possible)
  - Everything you need is available and easily implementable.
  - There is no benefit. It is just easier to create our own subsets.
- Previous experience (personal experience)
  - as Provider or Consumer. Were past experiences good? Fruitful?
- Hearsay/Myths (others' experience and perceptions)
  - Required governance. Burden on resources. Relief of responsibility – free work.

Influences (2): outcomes from attitudes

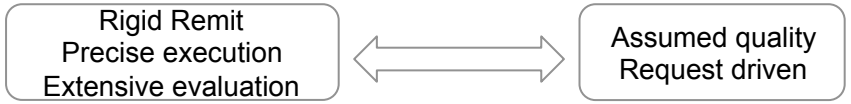
- Extent and style of Governance



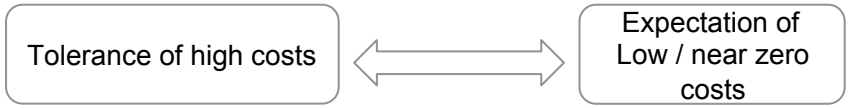
- Frequency and approach to subset maintenance
  - (inactivations, moved, remodelled content)



- Quality / fitness
  - Drift over time, atrophy
  - Tolerance of inappropriate inclusions



- Costs of ownership
  - Investment forecast



Considerations regarding subset sharing

Consideration	Participant Perspective	Context or Axis
Ability to find subset candidates that meet the use-case requirements.	Consumer	Quality & Fitness
Quality of shared subsets.	Consumer	Quality & Fitness
Assess if it is easier to create a new subset rather than modify and existing subset.	Consumer	Quality & Fitness
Perceived need to defend a submitted subset or the associated metadata.	Provider	Quality & Fitness
Relationship between Provider and Consumer. Is a relationship required?	Consumer/Provider	Quality & Fitness

Considerations regarding subset sharing

Consideration	Participant Perspective	Context or Axis
Design drift of a subset. Has the intent of the subset changed over time?	Consumer/Provider	Maintenance
Schedule for subset and/or metadata maintenance.	Provider	Maintenance & Governance
Synchronization of subset content and metadata.	Consumer	Maintenance
Synchronization of subset maintenance and SNOMED CT updates.	Consumer/Provider	Maintenance
External influences or control on the creation of subsets.	Provider	Governance
Legal implications.	Consumer/Provider	Governance
Impact upon business prospects and intellectual property.	Provider	Governance
Commitment to report to an authority.	Consumer/Provider	Governance
Resources required to participate in the Subset Sharing	Consumer/Provider	Cost

Benefits of Subset Sharing

Resource allocation - achieve a realistic balance of quality-time-cost

Quality improvement through collaboration

Potential for enhanced interoperability

BENEFITS of Subset Sharing

consistent content to support statutory requirements or guidelines

Membership in a subset “support” community

recognition of enterprise effort

Topics

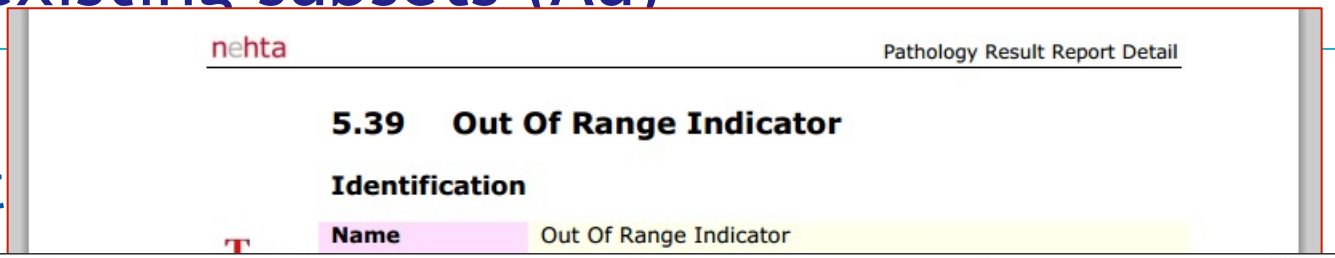
- Uses of subsets
- Techniques used in development, maintenance
- Formats for packaging, distribution
- Sharing and reuse
- Discovery of existing subsets – purpose – fitness for reuse

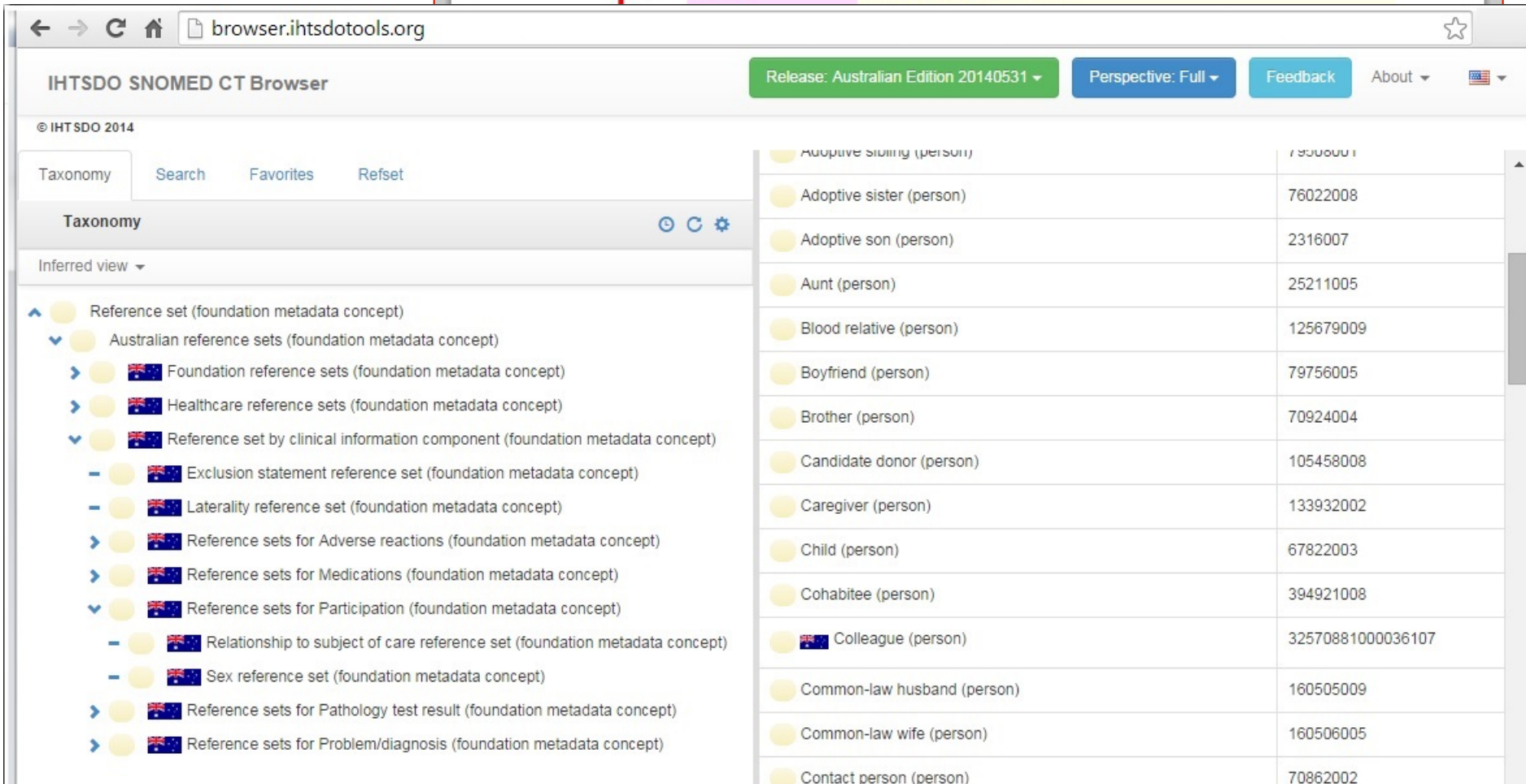
Discovery

- Current options:
  - IHTSDO browser – national Editions
  - National Release Centres
    release data, websites, dedicated locations
  - Personal networks, Community of Practice
  - Search engines
  - Vendors: Terminology products and services

Discovery of existing subsets (Au)

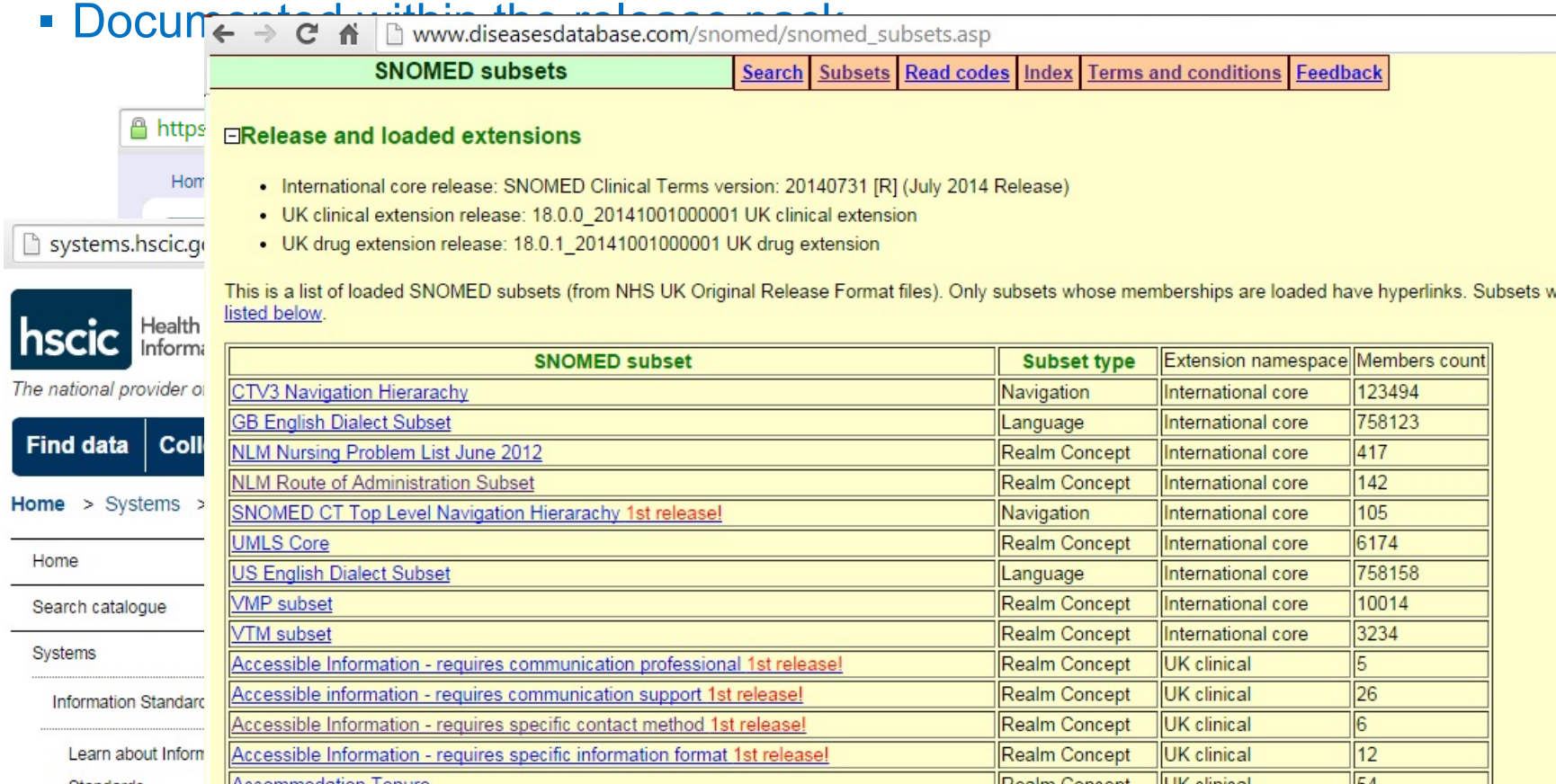
- Example: Out





Discovery of existing subsets (UK)

- Current UKTC approach
- Released Refsets
  - Refsets as part of SNOMED CT release UK Edition
  - Documented within the release pack



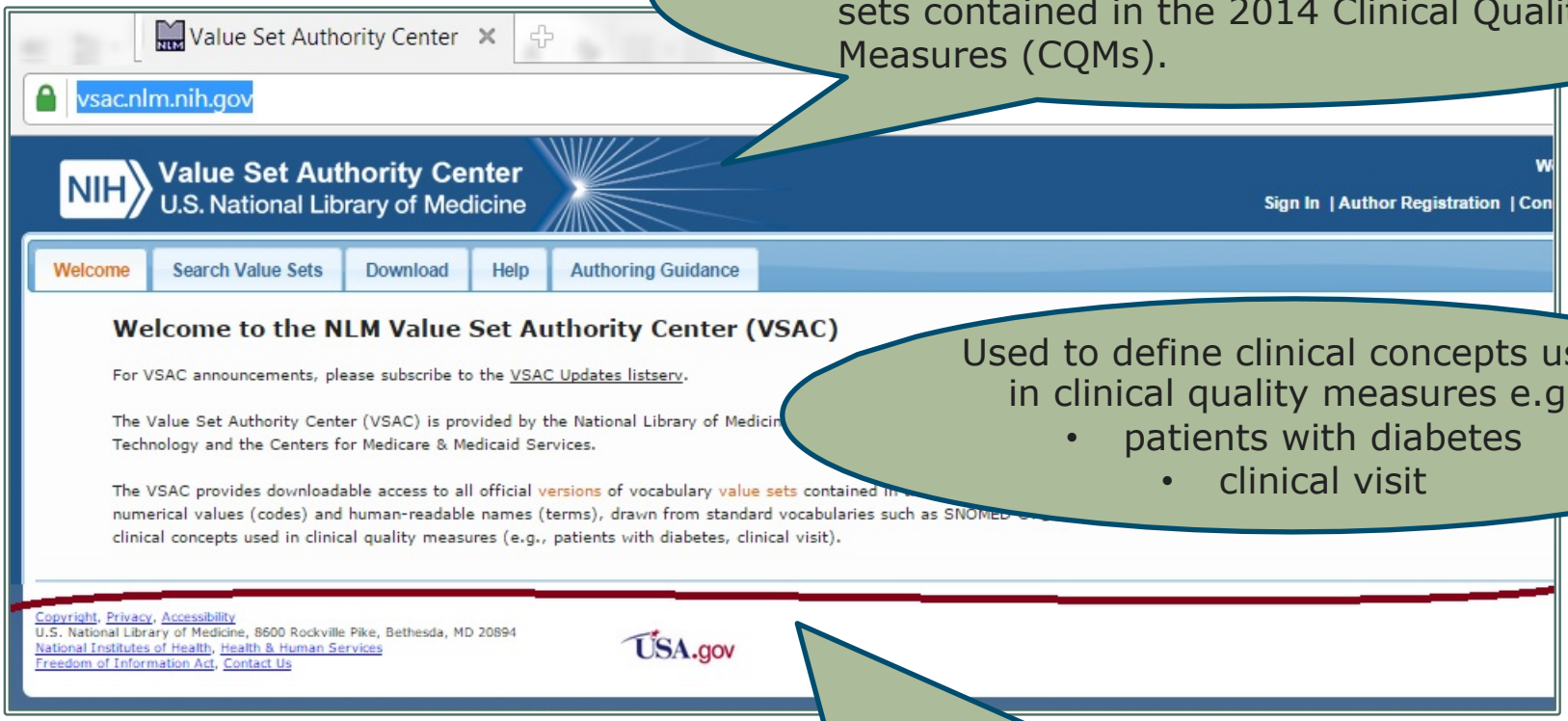
UK HSCIC subset service

- Adding a subset metadata repository (read only) to their ‘data dictionary for care’
  - Replacement for
    - Existing UKTC subset information repository
    - Subset overview document currently included in the UK Edition
- Data export functionality under active consideration
  - Potential uses:
    - Message vocabulary
    - Clinical content standards
    - Data collections and extractions

email contact dd4c@hscic.gov.uk

Discovery of existing subsets (USA)

- NLM resources



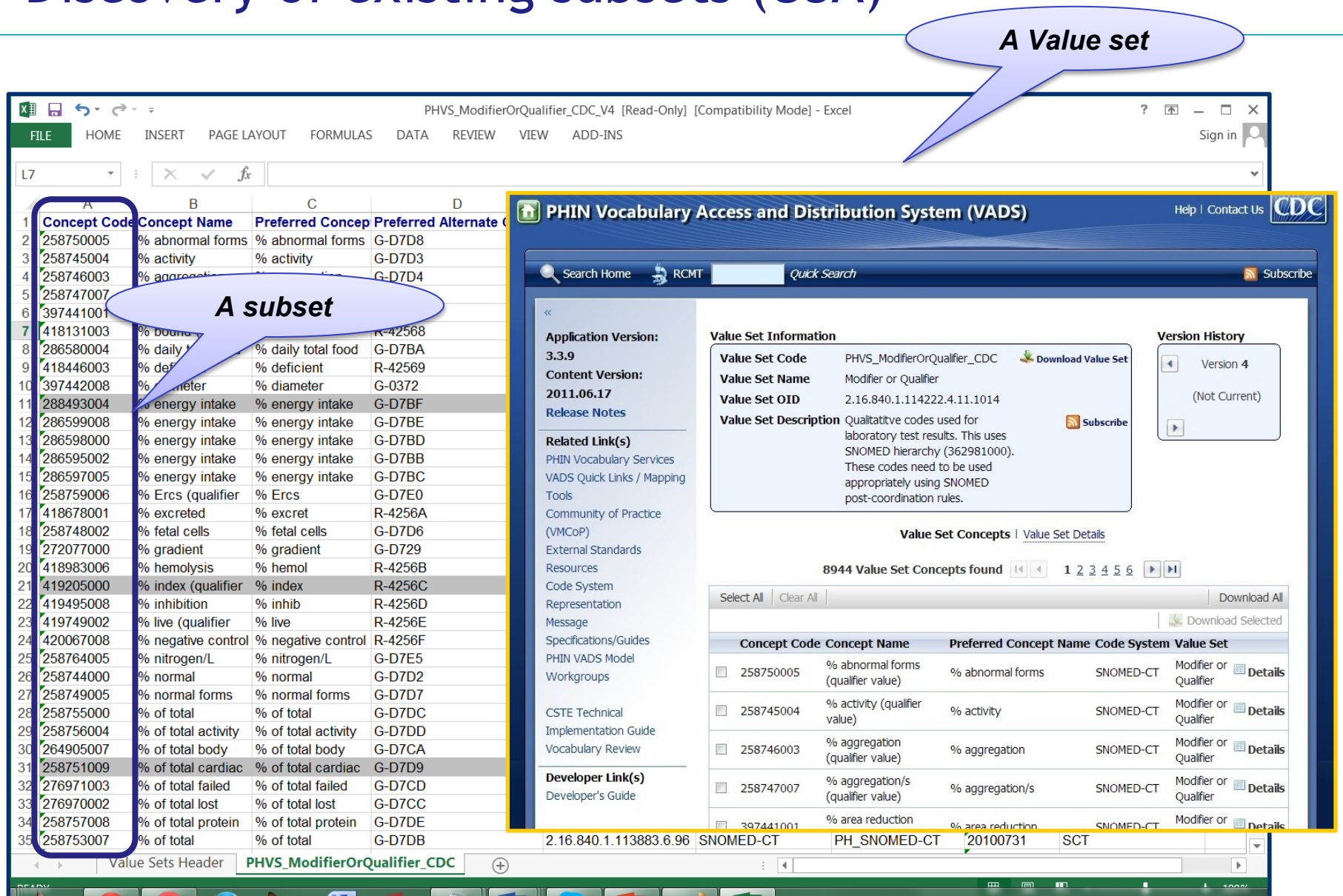
Provides downloadable access to all official versions of vocabulary value sets contained in the 2014 Clinical Quality Measures (CQMs).

Used to define clinical concepts used in clinical quality measures e.g.

- patients with diabetes
- clinical visit

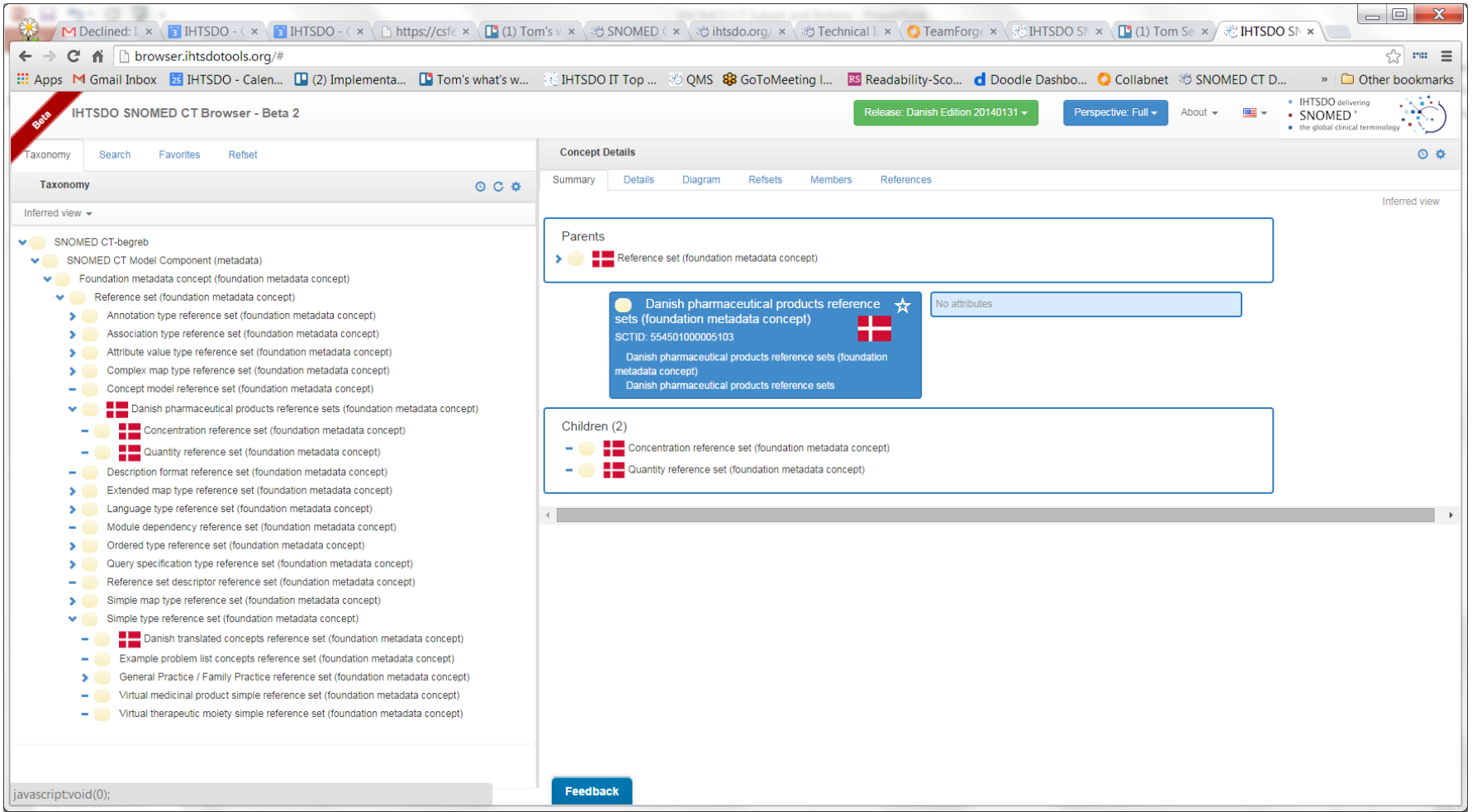
A free Unified Medical Language System® Metathesaurus License is required, due to usage restrictions on some of the codes included in the value sets.

Discovery of existing subsets (USA)

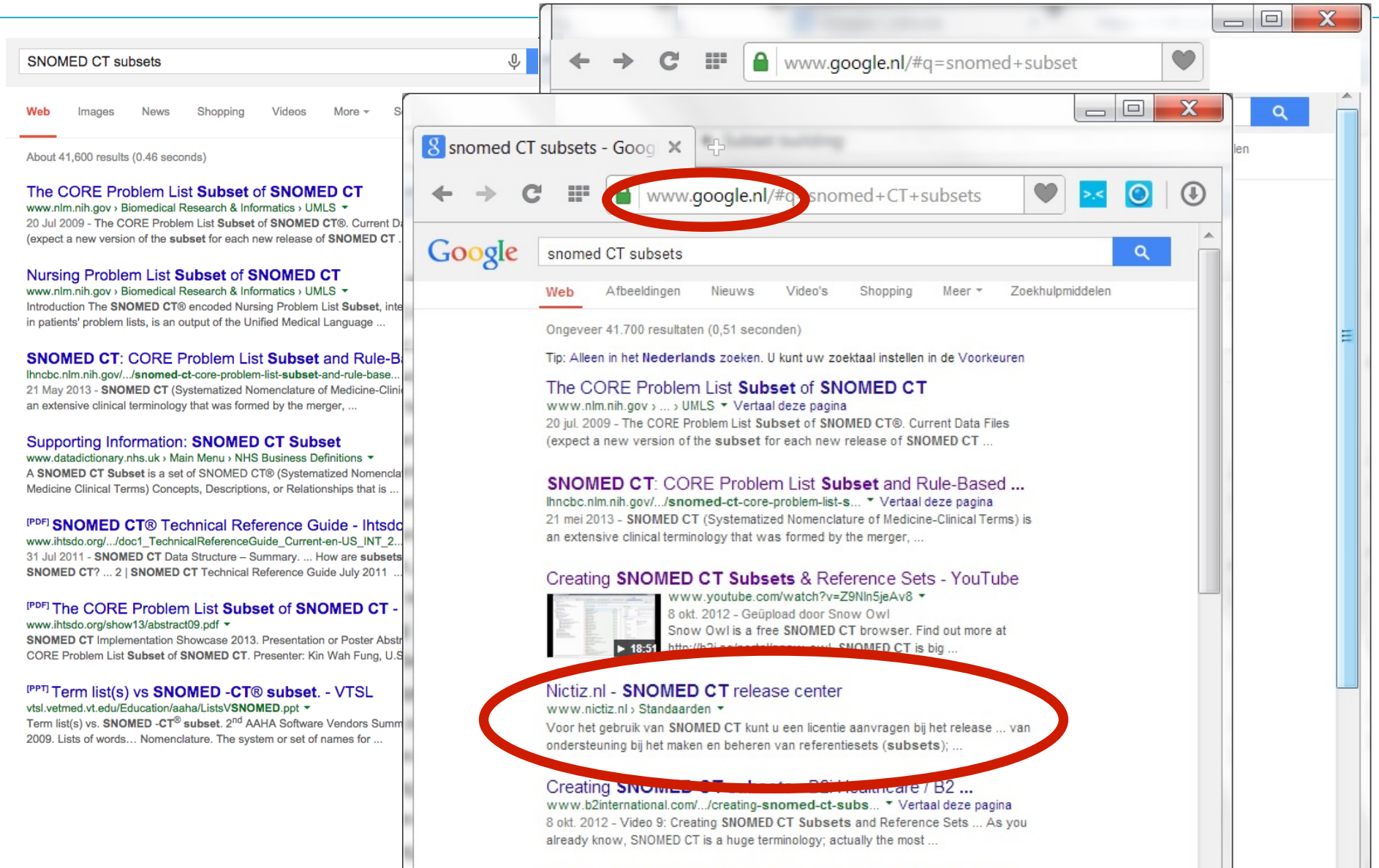


Discovery of existing subsets (Dk)

- Danish Edition



Search engine results



Evaluation: Fitness for purpose

- Compare basic parameters (vs. needs)
  - Number of members
  - Extension content included, if any
  - Hierarchy coverage
  - Common ancestors with counts for each
- Inspect the content
  - Sample for: False positives, appropriate level of specificity, ‘oddness’ of any type
  - Inspect to seek out what is desirable to include, but likely to be missing (false negatives)
  - Seek out ‘Edge cases’ present as needed, absent as needed
- Check my terminology tool supports this type?
  - Intensional designs using advanced features

A level of diversity which is tolerable

- Subset development: non-identical outcomes
- Test for fitness, not uniformity
- Anticipate:
  - Convergence of subset designs
    (where use & quality criteria are sim
  - Divergence of stated uses
    (where subsets differ)
  - Tolerance of difference
    (where use is identical but quality cr

= Tolerable diversity

- Each is fit for the same purpose, within quality limits

Round-up

- Uses of subsets
- Techniques used in development, maintenance and use
- Formats for packaging, distribution and use
- Sharing and reuse
- Discovery of existing subsets – purpose – fitness for reuse

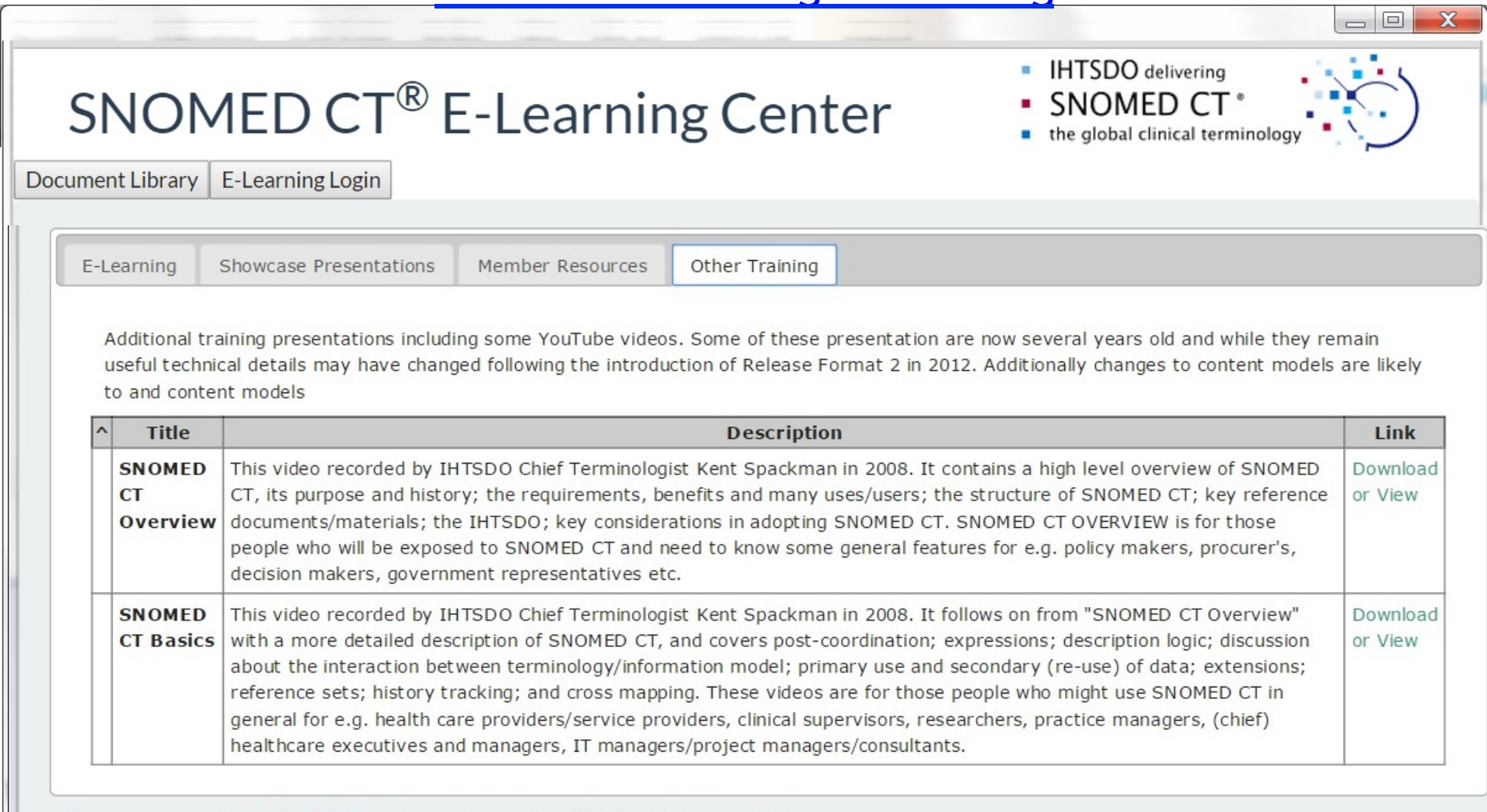
Further resources

- IHTSDO Terminology Browser: Version 1 (OTF)
- IHTSDO Refset Manager (IHTSDO Refset Management Service) http://ihtsdo.github.io/snomed-refset
- NRC developed or procured tools (use within Member territory)
- Commercial tools
- Simple solutions
  - Spreadsheets + browsers

*OTF - Open Tooling Framework is the overall framework within which IHTSDO tools are set but the convention is to refer to the individual elements as IHTSDO tooling services as per the names on http://www.ihtsdotools.org and pages linked from there.

SNOMED CT E-Learning Center

www.snomed.org/elearning



Questions and Discussion

- Contact IHTSDO: info@ihtsdo.org

Feedback

- Feedback: http://snomed.org/show_eval2