

SNOMED
International

Expo 2017 Tutorial

Introduction to Mapping

Anne Randorff Højen and Donna Morgan
SNOMED International

• INFEKTIÖS LUNGSJUKDOM
14669001
• ACUTE RENAL FAILURE
• SÍNDROME DE INSUFICIENCIA RENAL
• NYRESVIGTSYNDROM

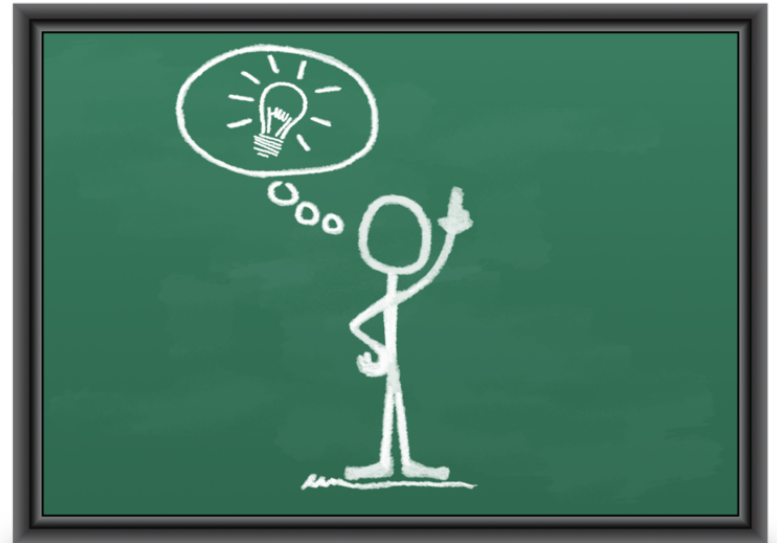


Overview

- **Introduction to mapping**
 - *Purpose and definition of maps*
 - *Types of maps*
 - *Map considerations*
 - *Selecting concepts for a map*
- **SNOMED International maps**
 - *Overview of maps that SNOMED International manage and distribute*
 - *Examples from SNOMED International Mapping Tool*
 - *Summary of mapping guidelines*
- **Q/A and ending**



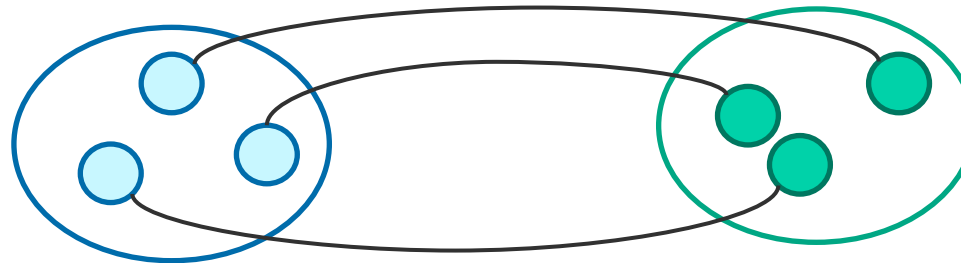
Purpose and definition of maps



Definition

One code system

Another code system



- Maps are associations between codes, concepts or terms in one code system and codes, concepts or terms in another code system with the same (or similar) meanings
- Maps are developed in accordance with a documented rationale, for a given purpose
 - There may be different maps between the same pair of code systems to meet different uses cases

Purpose

Mapping to/from
interface
terminology

Mapping to/from
classifications and
other code systems

User Interface

Mapping to/from
knowledge
resources

Reporting and
Analytics

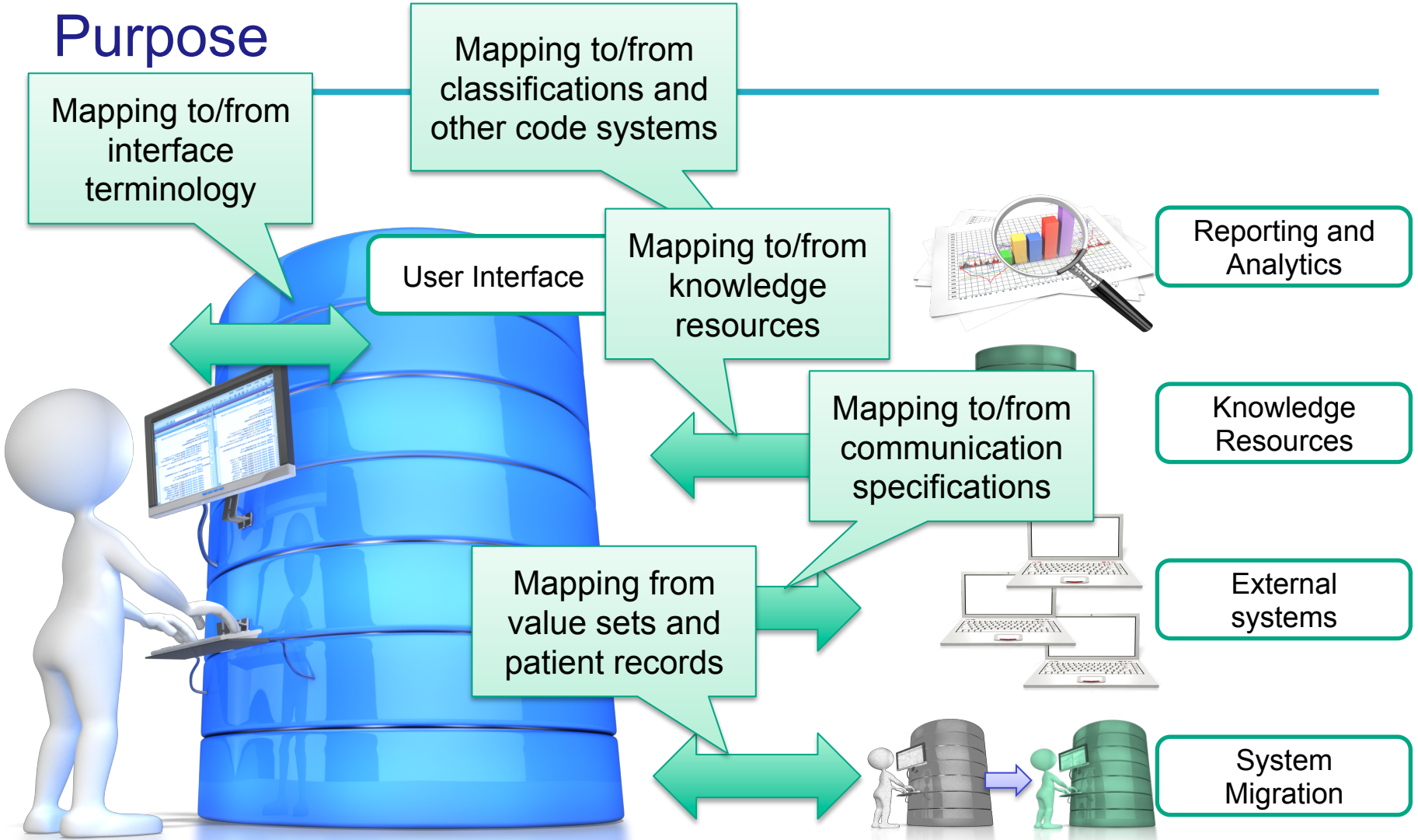
Mapping to/from
communication
specifications

Knowledge
Resources

Mapping from
value sets and
patient records

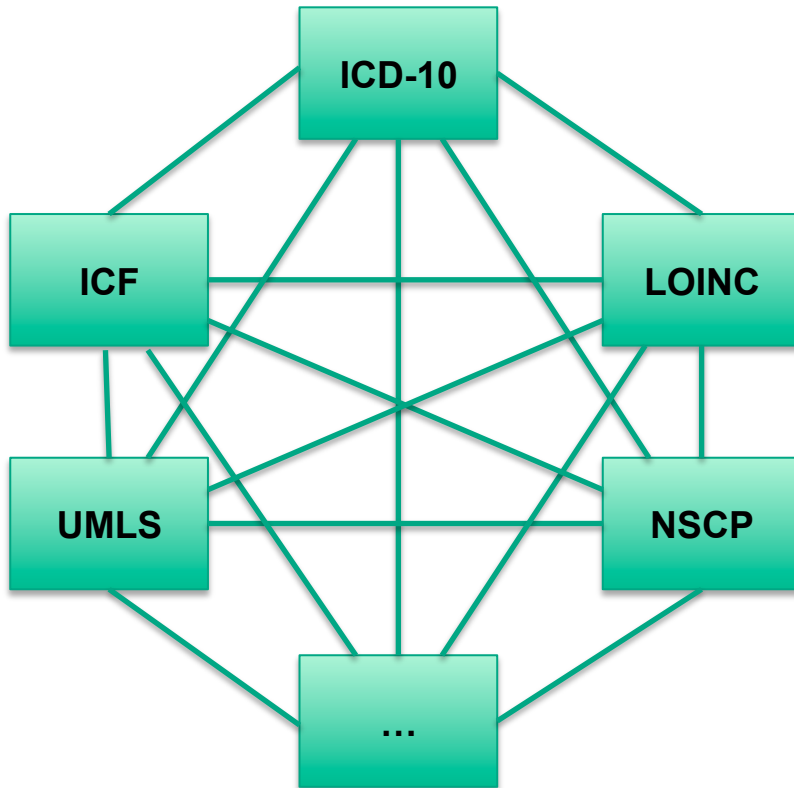
External
systems

System
Migration

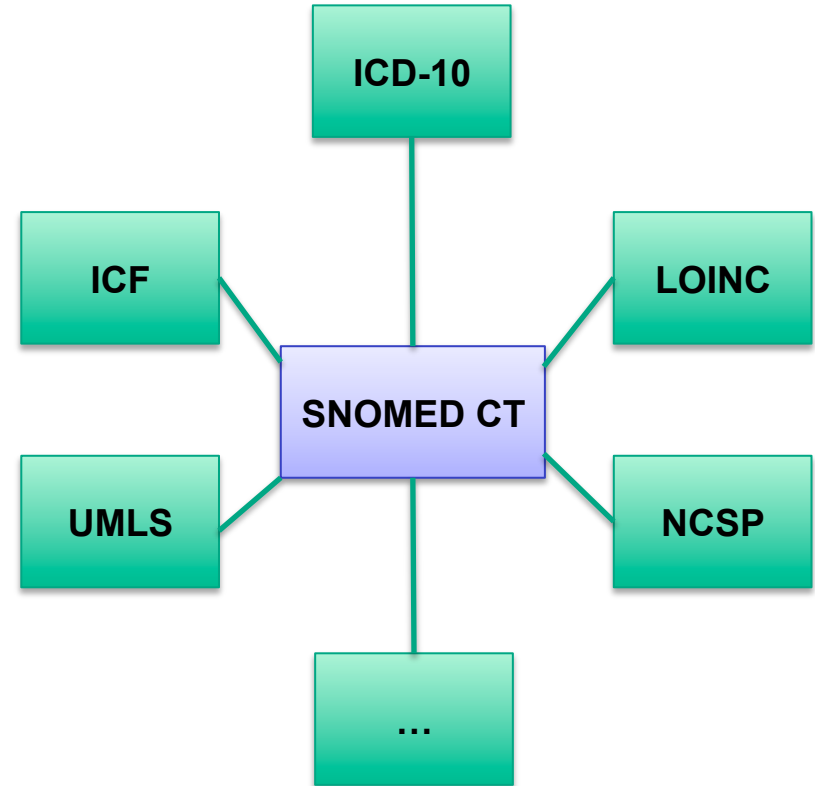


SNOMED CT – a Reference Terminology

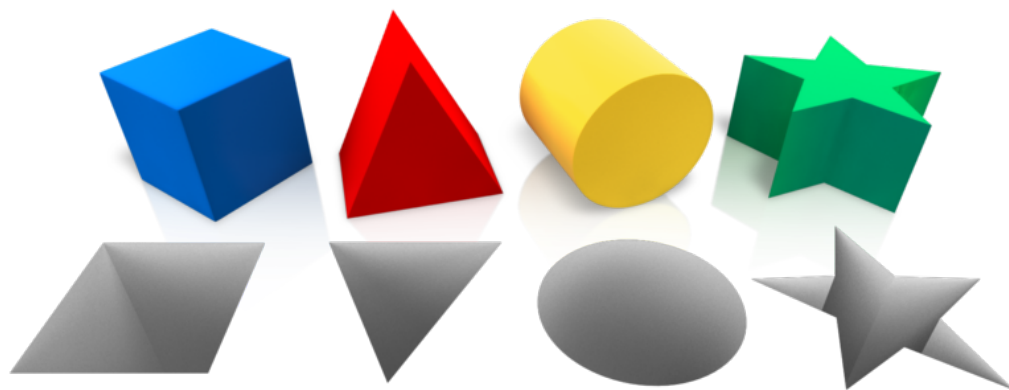
Independent maps between multiple terminologies and code systems



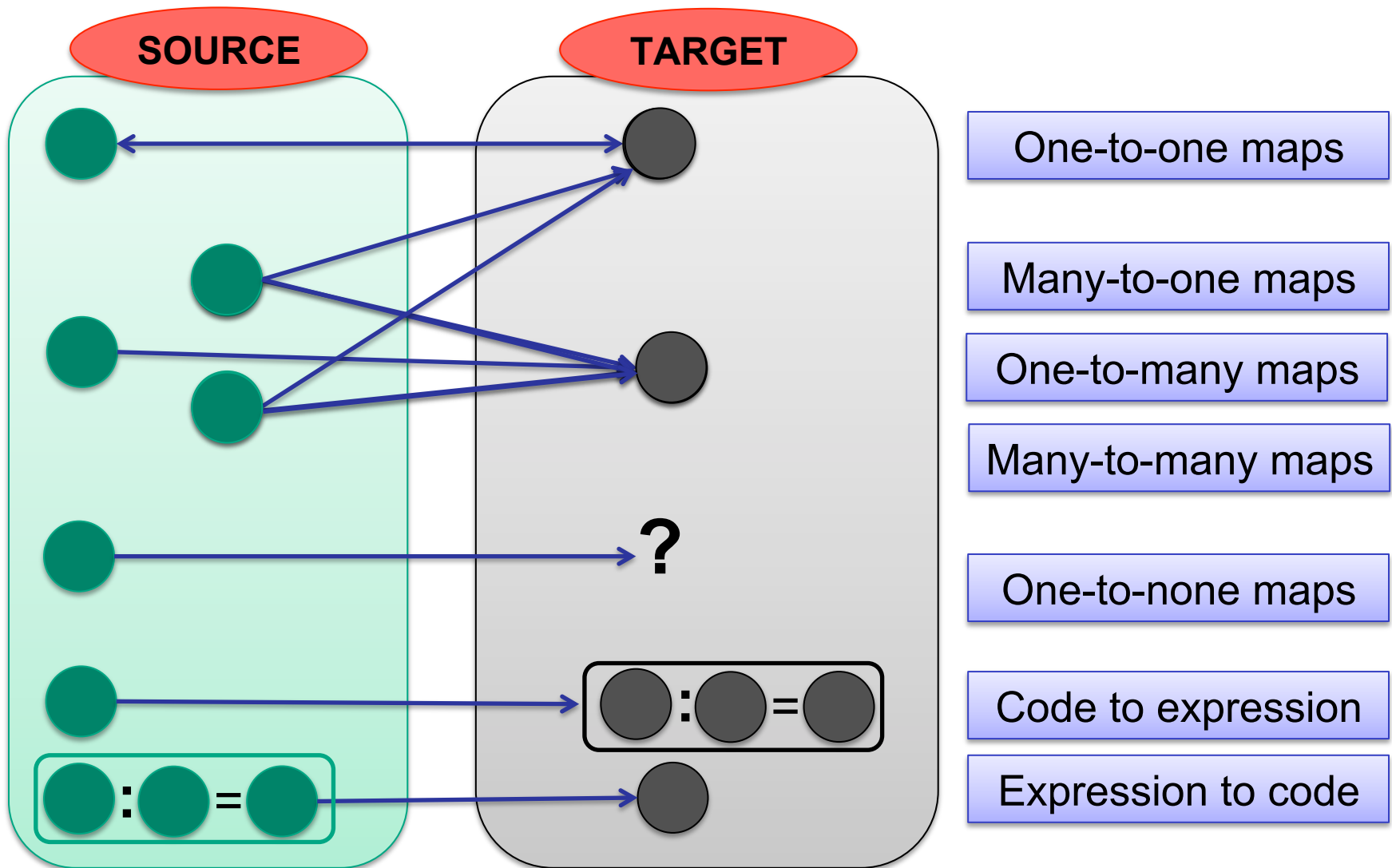
SNOMED CT used as common Reference Terminology



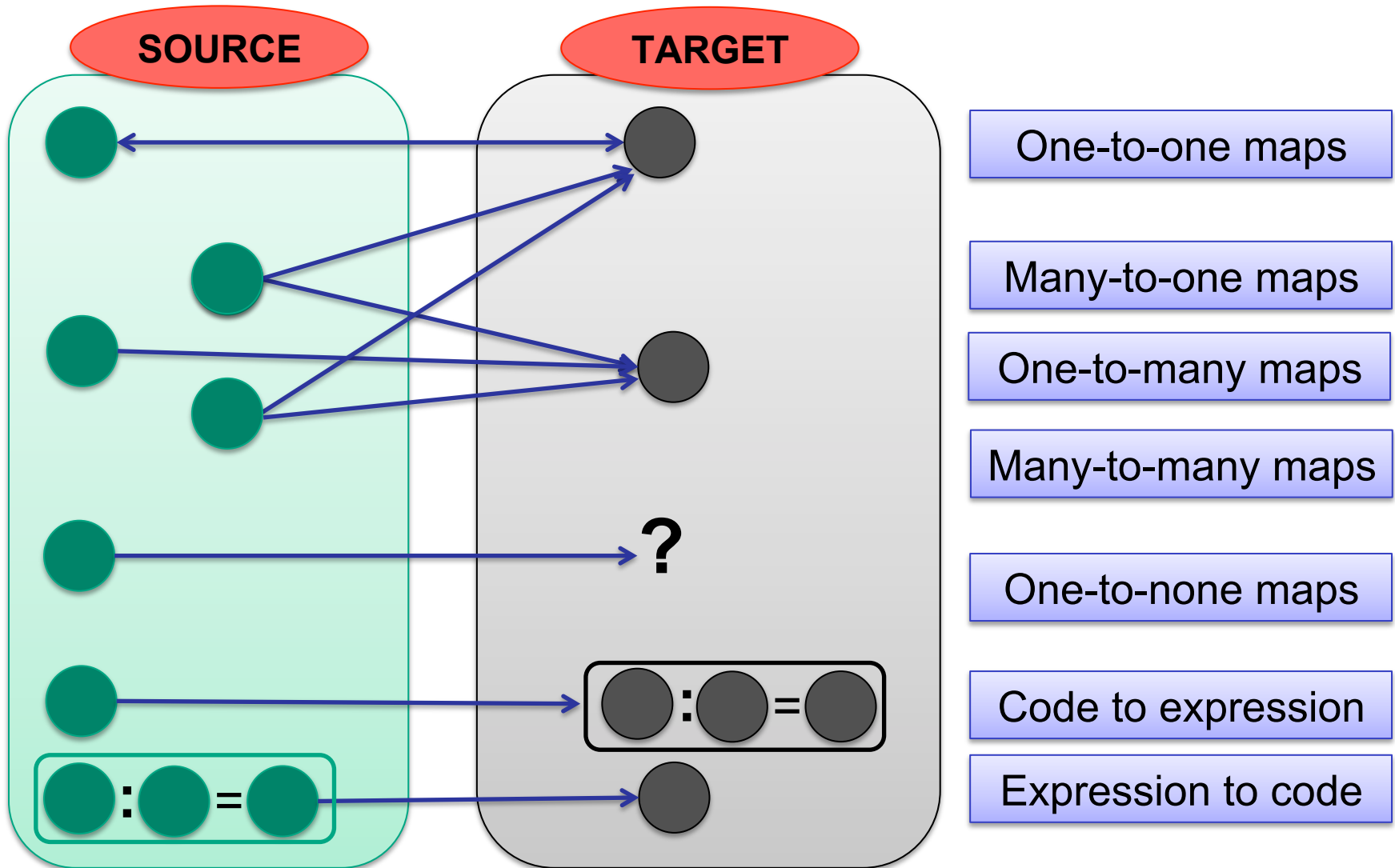
Types of Maps



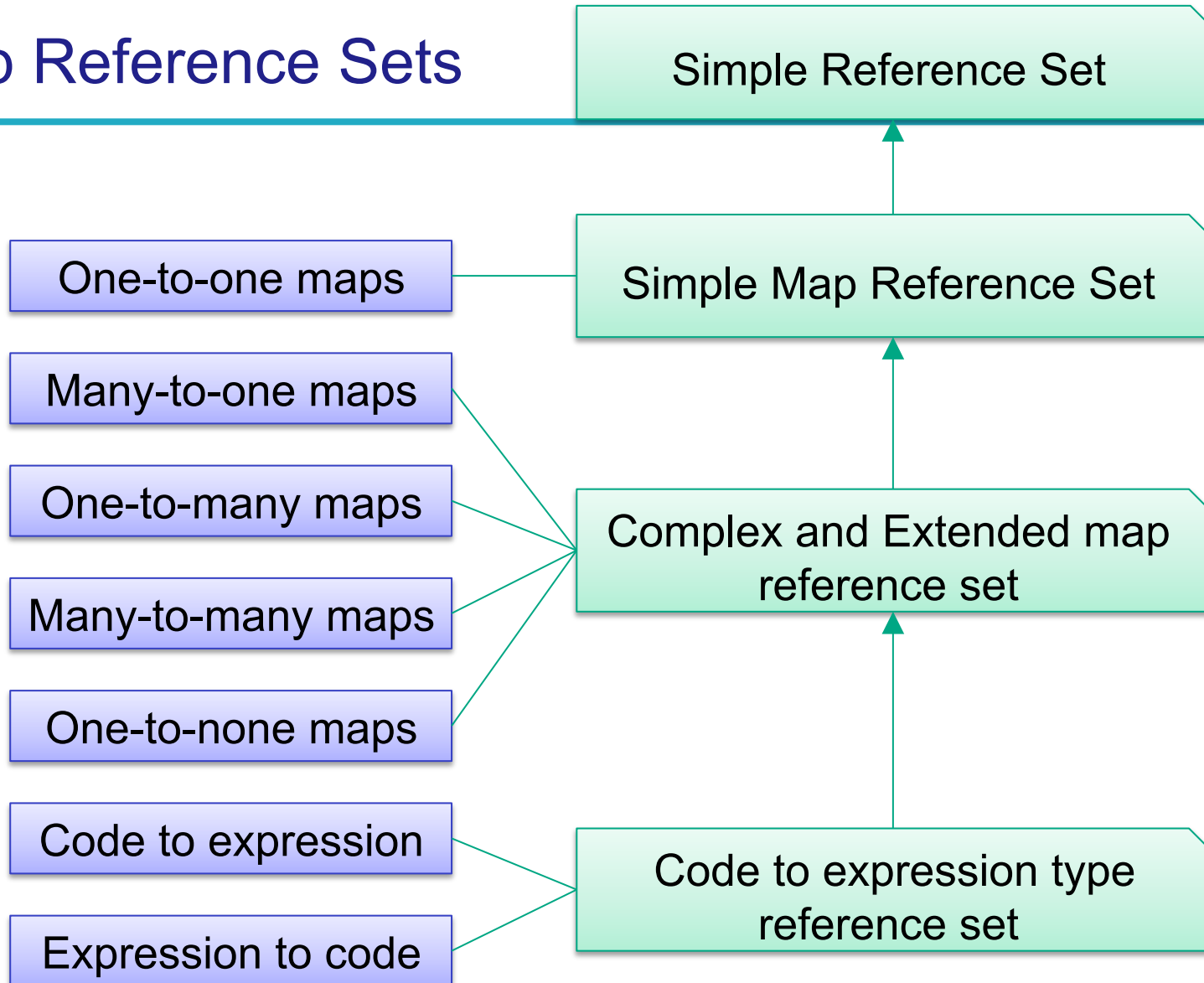
Types of Maps



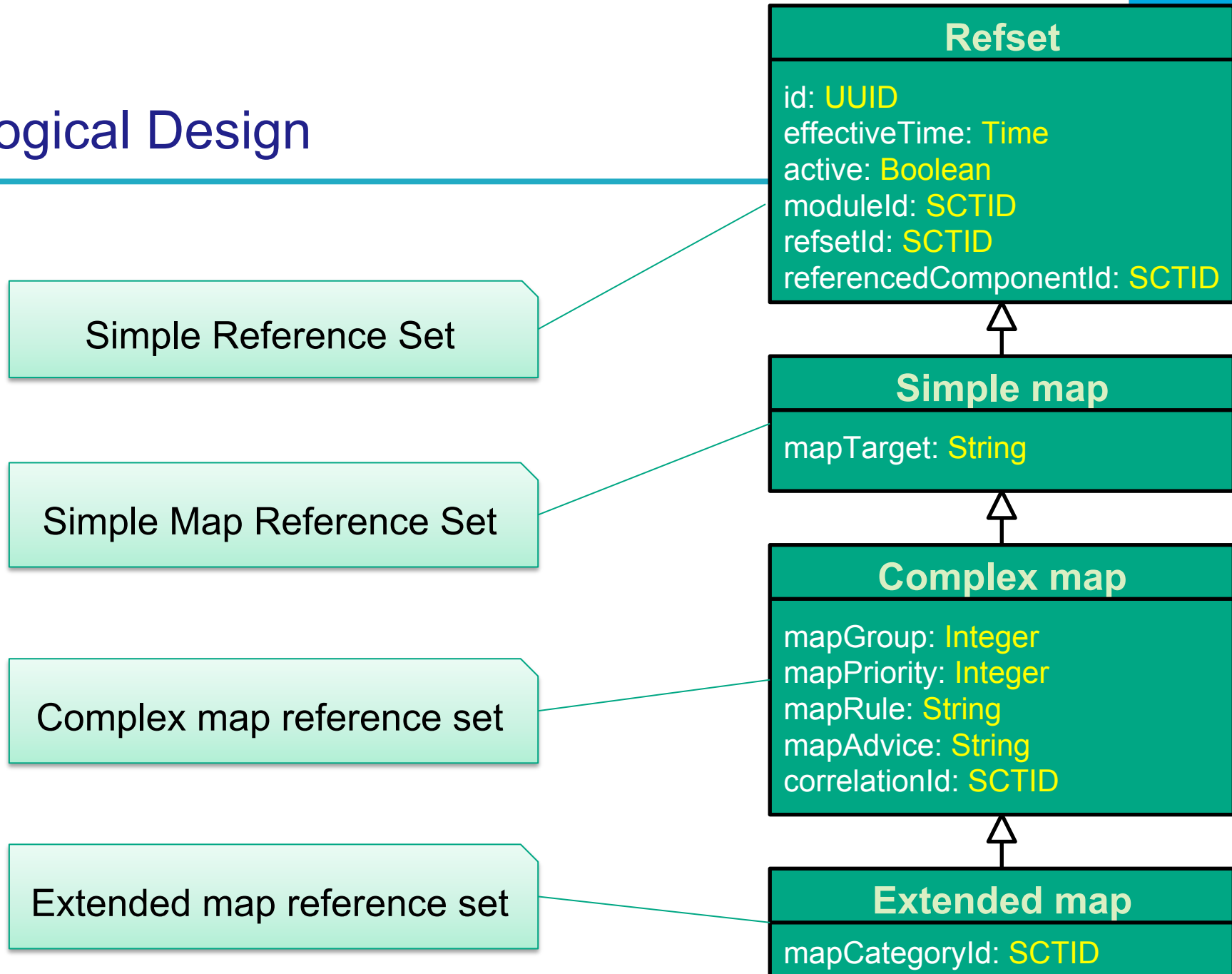
Types of Maps



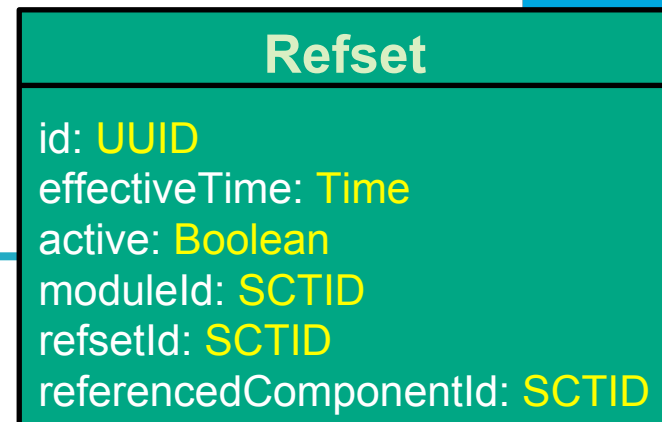
Map Reference Sets



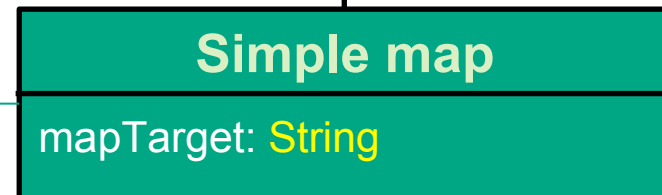
Logical Design



Reference Set Example



Simple Map Reference Set



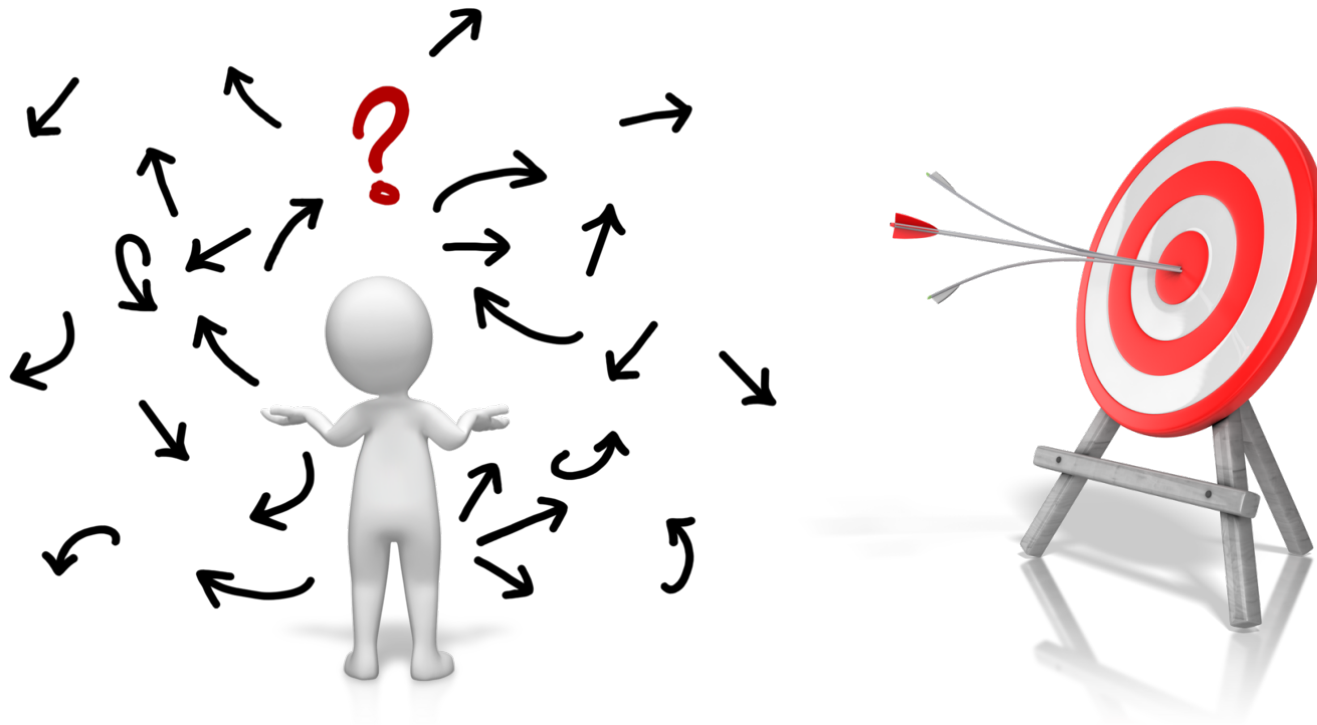
id	effectiveTime	active	moduleId	refSetId	Referenced ComponentId	mapTarget
...	20020131	1	900000000000207008	446608001	9294008	9063/3
...	20020131	1	900000000000207008	446608001	9618003	8562/3
...	20020131	1	900000000000207008	446608001	9671003	8820/0
...	20020131	1	900000000000207008	446608001	89796001	9740/1
...	20020131	1	900000000000207008	446608001	90955001	8892/0

SNOMED CT Core

ICD-O simple map reference set

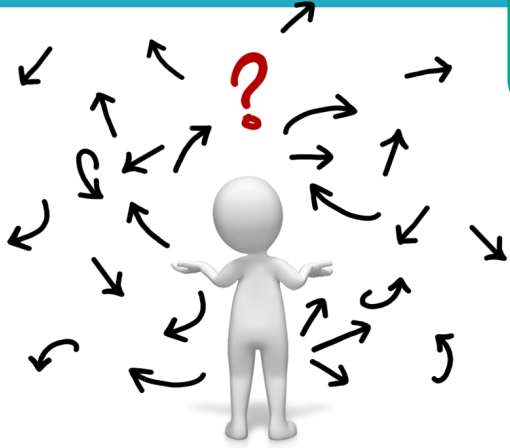
Map Considerations

Direction and Correlation



Map Direction

All maps have a direction



Data entry

Interface terminology

Migration

Legacy codes

SNOMED CT

Reporting and statistical analysis

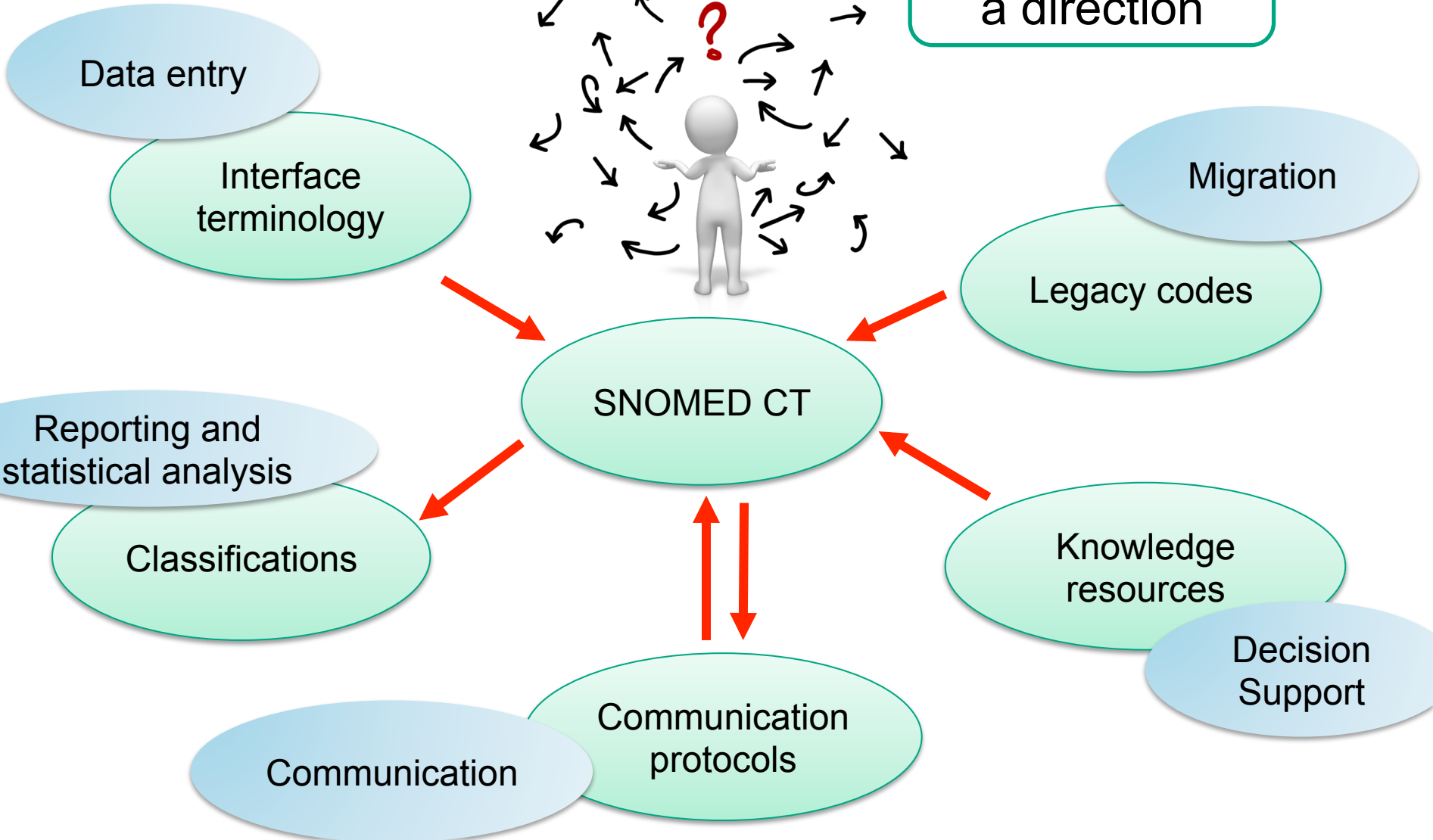
Classifications

Knowledge resources

Communication

Communication protocols

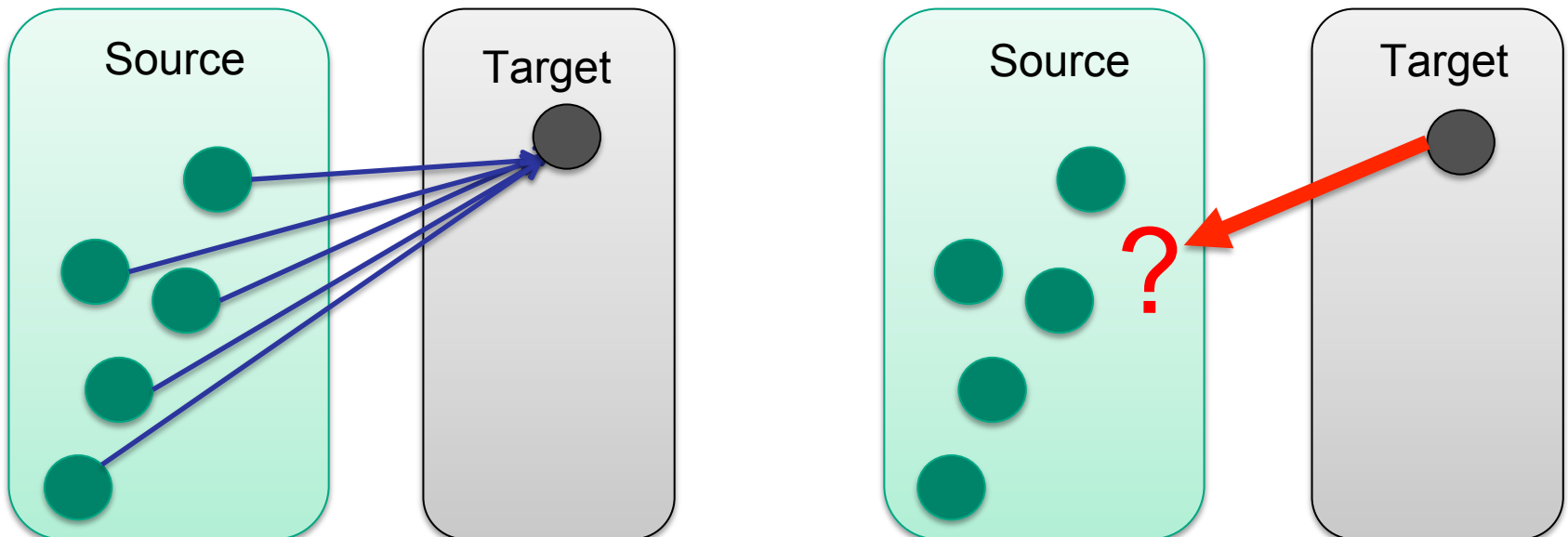
Decision Support



Map Direction – Unidirectional and bidirectional



Directional Maps shouldn't be used in reverse



Map Direction – Example

195967001 | Asthma |

304527002 | Acute asthma |

225057002 | Brittle asthma |

233679003 | Late onset asthma |

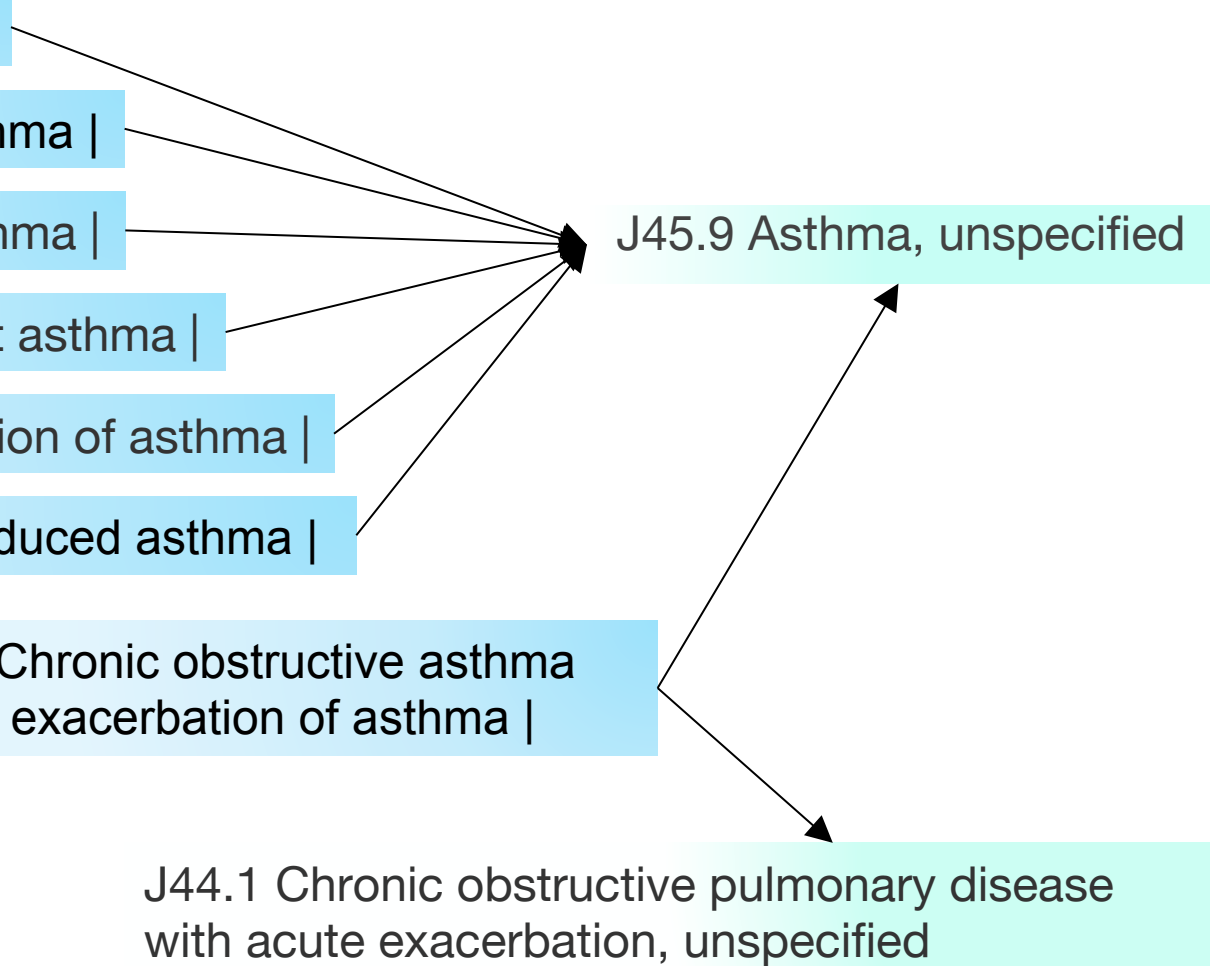
281239006 | Exacerbation of asthma |

31387002 | Exercise-induced asthma |

10692721000119102 | Chronic obstructive asthma
co-occurrent with acute exacerbation of asthma |

J45.9 Asthma, unspecified

J44.1 Chronic obstructive pulmonary disease
with acute exacerbation, unspecified



Map Correlation

Parents

- ▶ ● Reference set attribute (foundation metadata concept)

● SNOMED CT source code to target map code correlation value (foundation metadata concept)

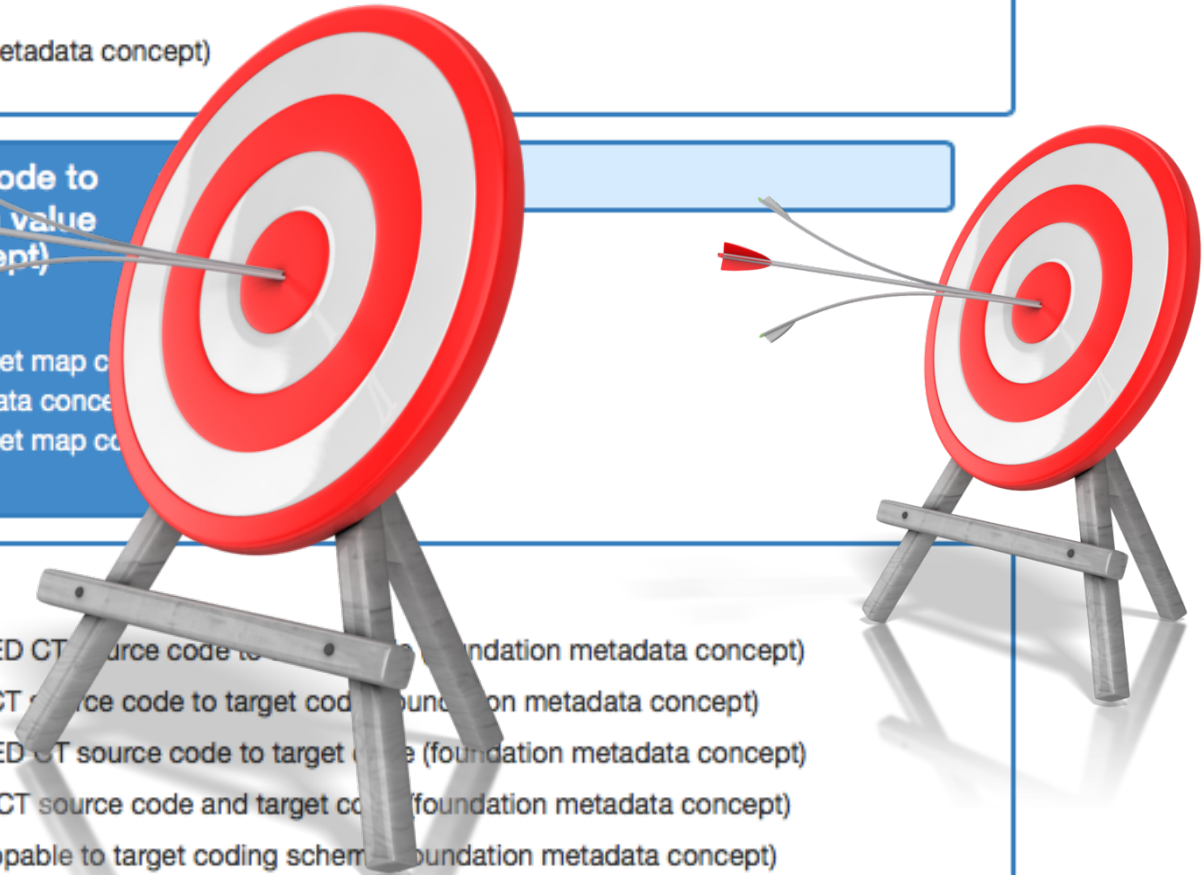
SCTID: 447247004

SNOMED CT source code to target map code correlation value (foundation metadata concept)

SNOMED CT source code to target map code correlation value

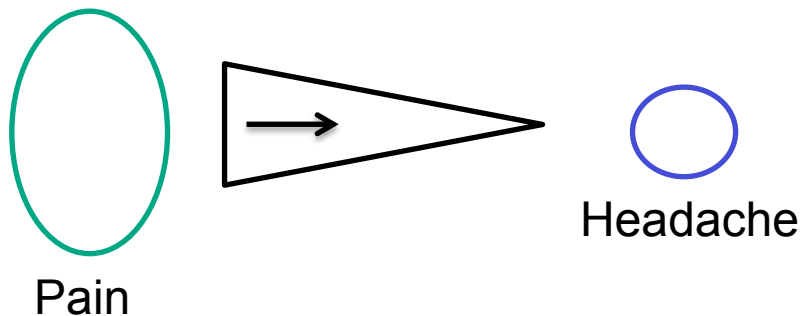
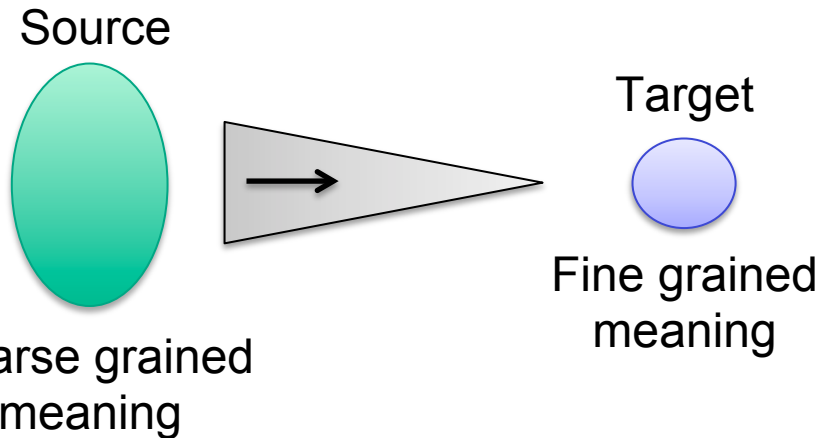
Children (6)

- ● Broad to narrow map from SNOMED CT source code to target code (foundation metadata concept)
- ● Exact match map from SNOMED CT source code to target code (foundation metadata concept)
- ● Narrow to broad map from SNOMED CT source code to target code (foundation metadata concept)
- ● Partial overlap between SNOMED CT source code and target code (foundation metadata concept)
- ● SNOMED CT source code not mappable to target coding scheme (foundation metadata concept)
- ● SNOMED CT source code to target map code correlation not specified (foundation metadata concept)

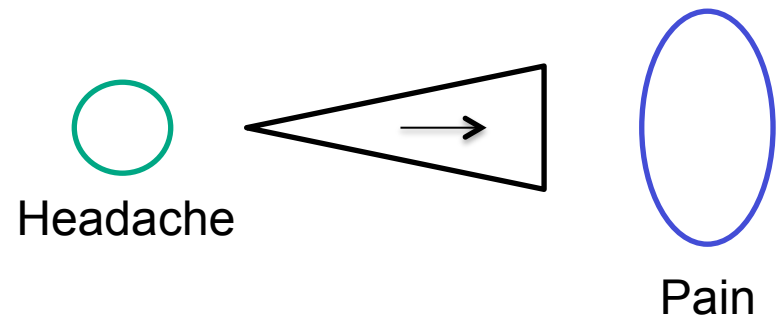
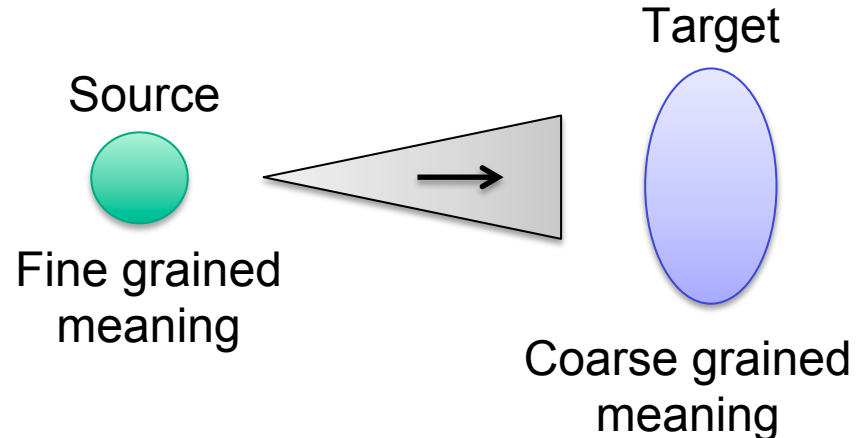


Map Correlation

Broad to narrow map

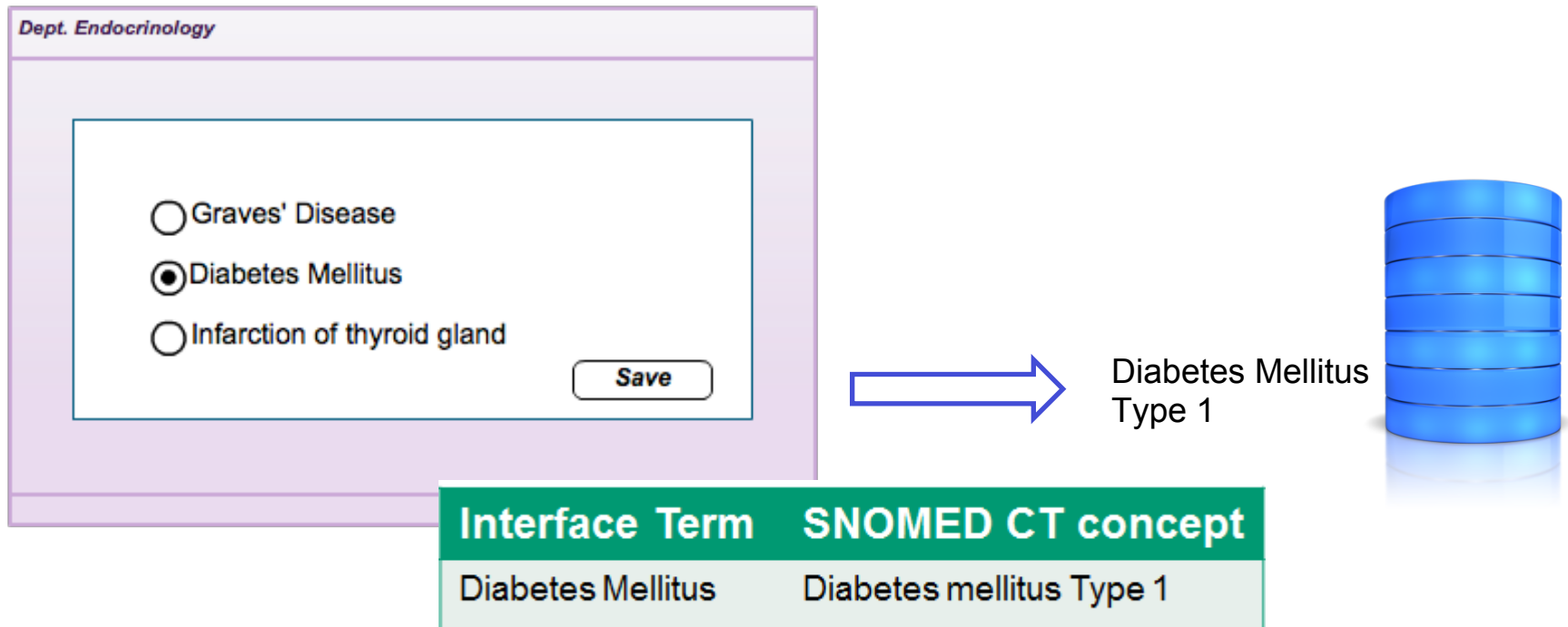


Narrow to broad map



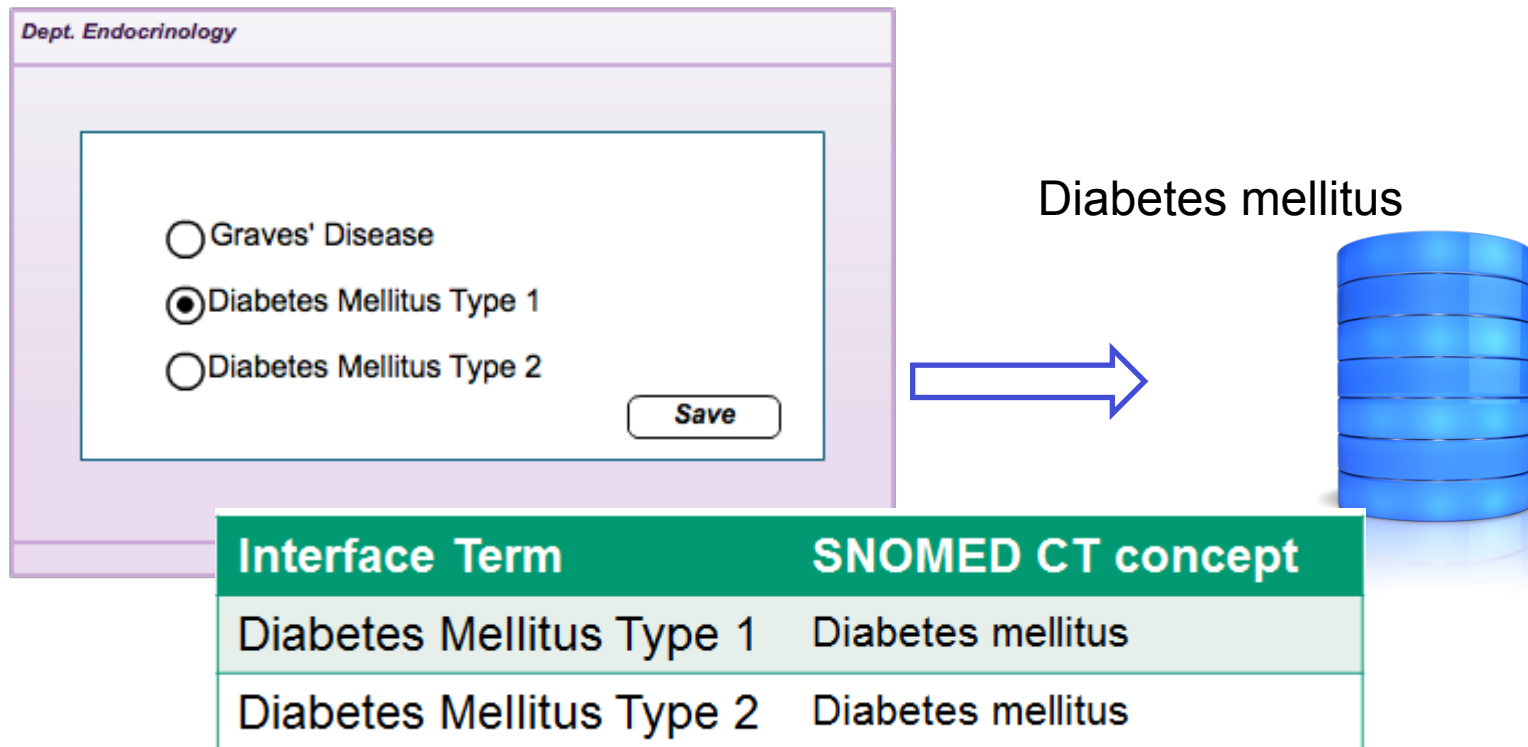
Broad to Narrow Map Implications

- A broad to narrow map may result in inaccurate retrieval and aggregations.
 - Patients diagnosed with Diabetes Mellitus Type 2 will potentially be included in the Diabetes Type 1 statistics.



Narrow to Broad Map Implications

- A narrow to broad map will have implications for the level of granularity in which information can be retrieved using the target code system.



Selecting Concepts for a Map



Pre-requisites for Mapping

- Map requirements
 - Maps are developed for a specific purpose
 - Using a map for other purposes is not safe
 - E.g. a map developed for identifying clinical trial candidates may not be useful for clinical decision support
- Understand source and target code system
 - Different ways of defining the meaning of codes
 - Structural differences
 - Coding rules and conventions

Selecting SNOMED CT Concepts for a Map

Determine the type
of concept



Review the meaning
of candidates



Determine level of
granularity



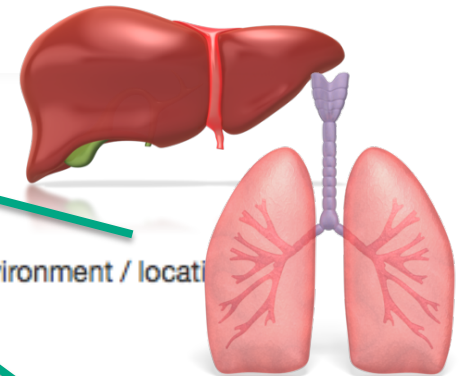
Selecting SNOMED CT Concepts for a Map

Determine the type
of concept

Review the meaning
of candidates

Determine level of
granularity

- ▼ ● SNOMED CT Concept
 - > ● Body structure (body structure)
 - > ● Clinical finding (finding)
 - > ● Environment or geographical location (environment / location)
 - > ● Event (event)
 - > ● Observable entity (observable entity)
 - > ● Organism (organism)
 - > ● Pharmaceutical / biologic product (product)
 - > ● Physical force (physical force)
 - > ● Physical object (physical object)
 - > ● Procedure (procedure)
 - > ● Qualifier value (qualifier value)
 - > ● Record artifact (record artifact)
 - > ● Situation with explicit context (situation)
 - > ● SNOMED CT Model Component (metadata)
 - > ● Social context (social concept)
 - > ● Special concept (special concept)
 - > ● Specimen (specimen)
 - > ● Staging and scales (staging scale)
 - > ● Substance (substance)

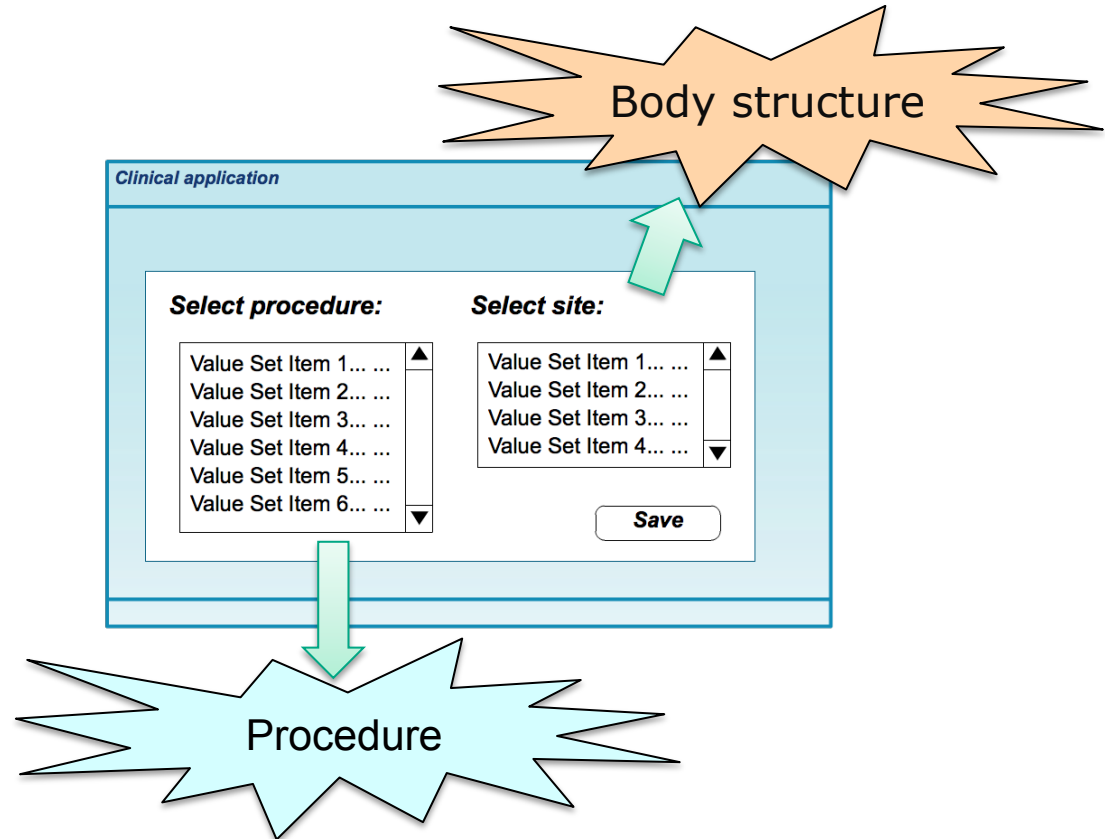


Selecting SNOMED CT Concepts for a Map

Determine the type
of concept

Review the meaning
of candidates

Determine level of
granularity



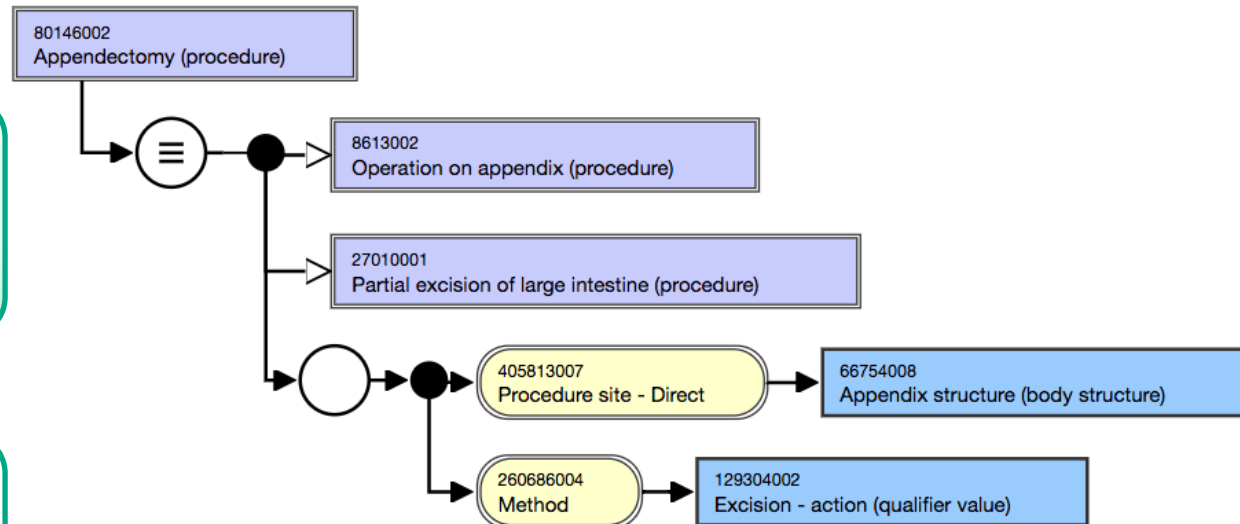
Selecting SNOMED CT Concepts for a Map

Determine the type
of concept

Review the meaning
of candidates

Determine level of
granularity

- Review each concept's **FSN** and **defining relationships**
 - Ancestors and descendants



Selecting SNOMED CT Concepts for a Map

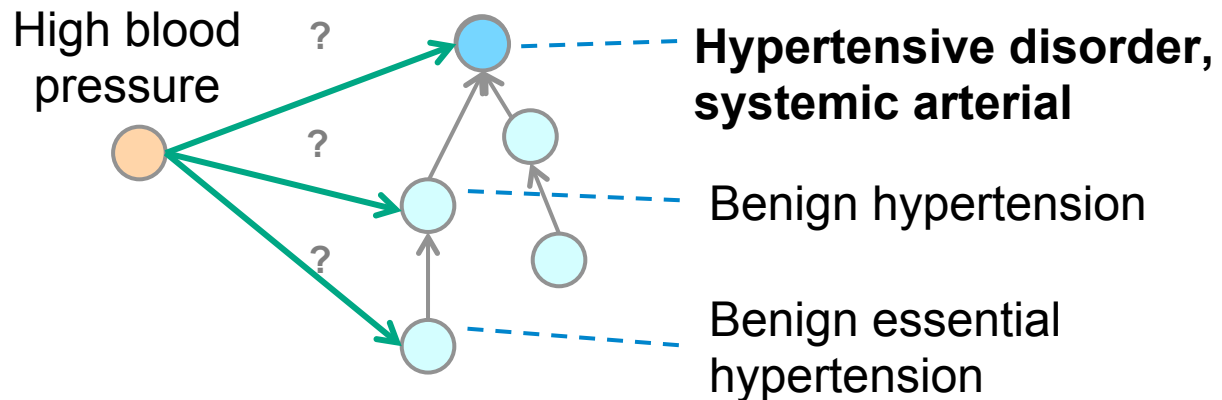
Determine the type
of concept

Review the meaning
of candidates

Determine level of
granularity

Choosing between two subtype
candidate concepts

- Select the most general concept that matches the required semantics
 - ALL subtypes will be subsumed by the more general concept when applying rules or queries



Approaches to Dealing with Gaps

- What if no equivalent SNOMED CT target concept exists?
 - Map to a SNOMED CT postcoordinated expression
 - Create an equivalent extension concept and map to this
 - Map to a more general concept
- What if no equivalent non-SNOMED CT target code exists?
 - Use the correlation concept | SNOMED CT source code not mappable to target coding scheme |



SNOMED International Mapping Service Team



Overview

- Overview of maps that SNOMED International manage and distribute
- Examples from mapping tool
- Summary of mapping guidelines



Mapping Personnel Handbook

Example of mapping principles (map advice)

- **Principle 05:** POSSIBLE REQUIREMENT FOR MORPHOLOGY CODE
- **Principle 07:** THIS IS AN EXTERNAL CAUSE CODE FOR USE IN A SECONDARY POSITION
- **Principle 08:** POSSIBLE REQUIREMENT FOR CAUSATIVE AGENT CODE
- **Principle 10:** FIFTH CHARACTER REQUIRED TO FURTHER SPECIFY THE SITE
- **Principle 11:** THIS CODE IS NOT TO BE USED IN THE PRIMARY POSITION



SNOMED International Maps

- SNOMED – ICD-10 maps are all reviewed by another map specialist as part of our Quality Assurance process
- Feedback on the maps info@ihtsdo.org





Questions?