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Practical Guide to SNOMED CT Reference Sets

Expo 2016 Tutorial







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The global language of healthcare

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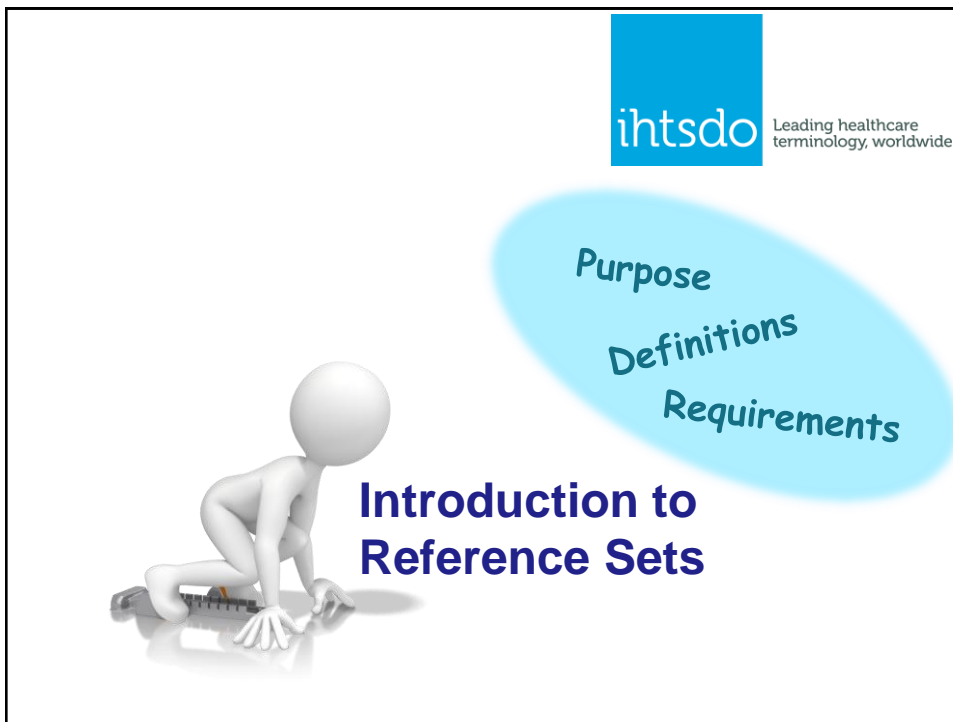
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Overview

- **Part 1. Introduction to Reference Sets**
 - Purpose of refsets
 - Subsets, value set and reference sets
 - Requirements design
 - Requirements, types and examples

- **Part 2. Reference Set Life Cycle**
 - Overview of development process
 - Practical examples
 - Questions



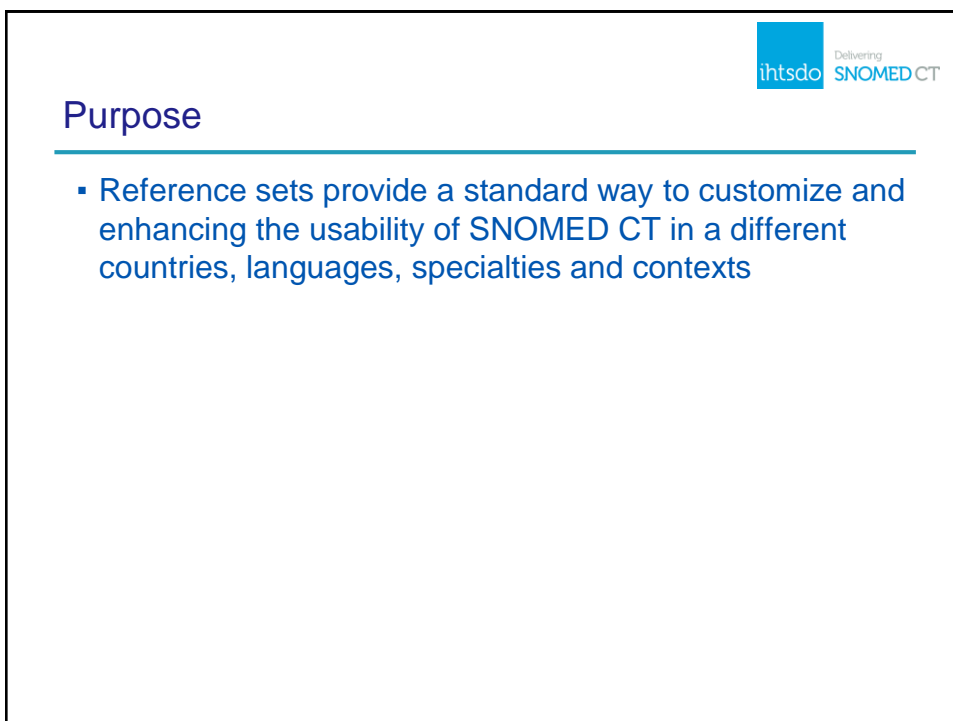


The slide features a white 3D figure of a person kneeling and holding a syringe. To the right, a light blue oval contains the words "Purpose", "Definitions", and "Requirements" stacked vertically. The main title "Introduction to Reference Sets" is in bold blue text. The IHTSDO logo and tagline "Leading healthcare terminology, worldwide" are in the top right corner.

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Purpose
Definitions
Requirements

Introduction to Reference Sets




The slide features the IHTSDO logo and tagline "Delivering SNOMED CT" in the top right corner. The word "Purpose" is underlined. A single bullet point describes the purpose of reference sets.

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Purpose

- Reference sets provide a standard way to customize and enhancing the usability of SNOMED CT in a different countries, languages, specialties and contexts



Subsets, Value Sets and Reference Sets

Definitions
Connections
Differences

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Subsets, Value Sets and Reference Sets – Definitions and Differences

Definition of a Subset ...

- A set whose members are all contained in another set
 - This is a general definition not specific to SNOMED CT
- Example

A
E
I
O
U


English Vowels

➔

D	A	B	C	H
I	E	F	G	M
N	J	K	L	R
S	O	P	Q	W
	T	U	V	
	X	Y	Z	

English Alphabet


Vowels are a subset of the set of alphabet characters


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Subsets, Value Sets and Reference Sets – Definitions and Differences

Definition of a Value Set...

- A set of concept representations used to represent values in a particular data item
 - This definition is not specific to SNOMED CT
 - May include coded from different code systems and other concept representations including coded refinements or defined text strings
- **Example**
 - A message or reporting specification for a problem list might define a single value-set including:
 - SNOMED CT disorder concepts
 - SNOMED CT expressions that are subtypes of disorder
 - ICD-10 classification codes representing diseases

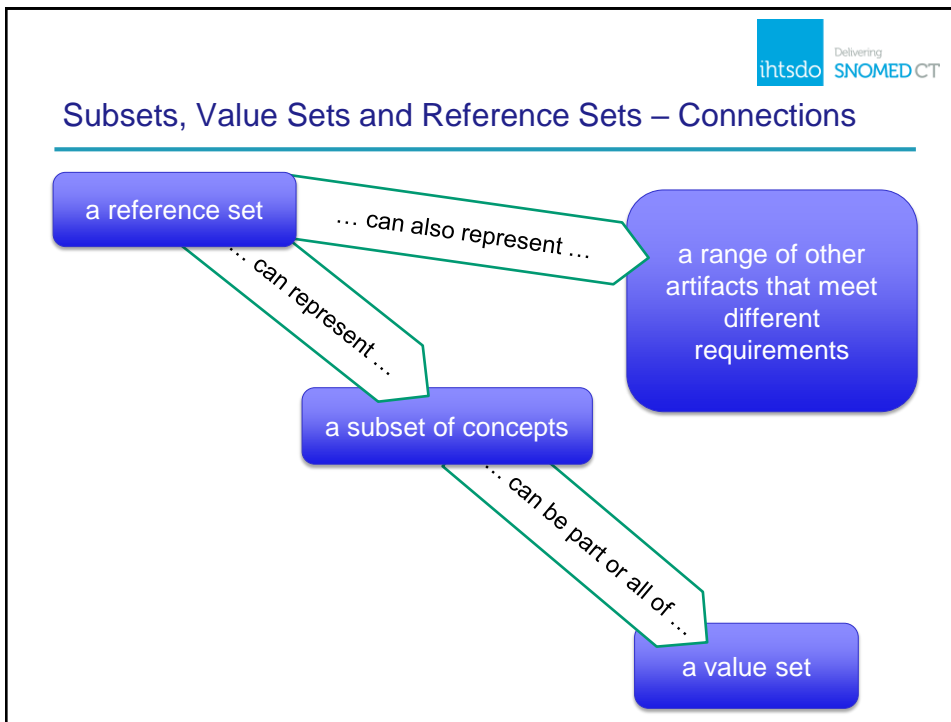

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Subsets, Value Sets and Reference Sets – Definitions and Differences

Definition of a Reference Set

- A standard SNOMED CT release file format
 - A set of references to SNOMED CT components
 - May include additional information for each component

General versioning information	id
	effectiveTime
	active
	moduleId
Reference set identifier	refsetId
Component reference	referencedComponentId
Additional information depending on reference set type	<i><attribute-1 ... attribute-n></i>




Subsets, Value Sets and Reference Sets – Definitions and Differences

Reference Set Types

General versioning information	id	Each additional attribute has one of a set of defined basic data types
	effectiveTime	
	active	
	moduleId	
Reference set identifier	refsetId	
Component reference	referencedComponentId	
Additional information depending on reference set type	<attribute-1 ... attribute-n>	<ul style="list-style-type: none"> • component (id) • string • integer

Reference set types are defined with particular patterns of additional attributes to meet specific requirements


- Reference set types that meet many common requirements are predefined in SNOMED CT release file specifications
- New reference set types can be defined to meet emerging requirements
- Customized reference set types can also be defined as part of an extension



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Requirements for Reference Sets

Practical Design Representation




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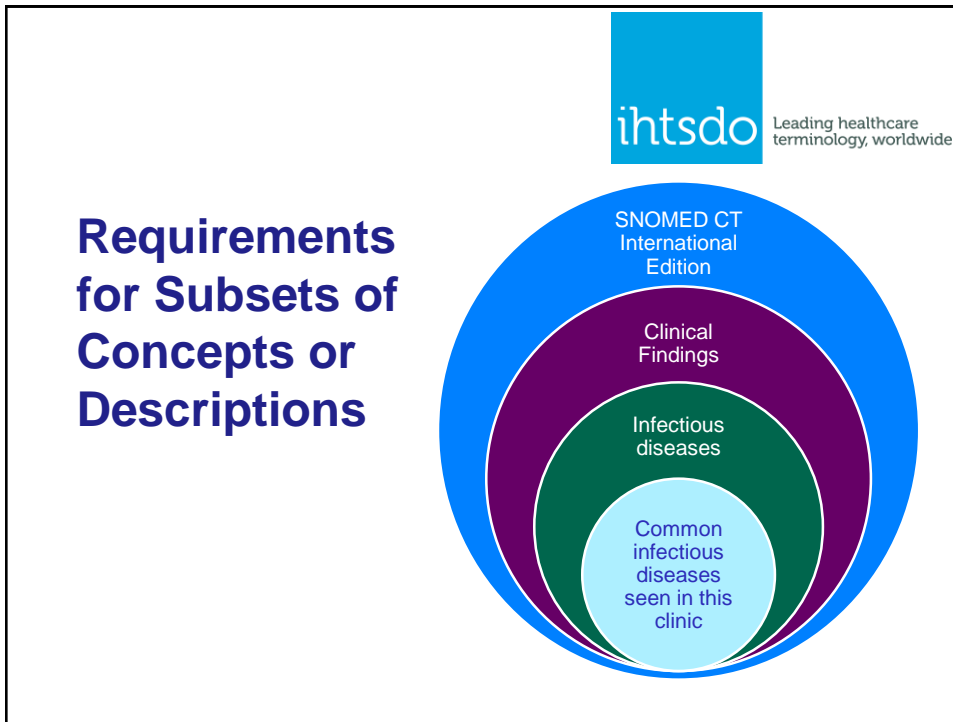
Requirements for Reference Sets

- Subsets of concepts or descriptions (components)
- Ordered lists of components and prioritization
- Sets of components annotated with additional data
- Sets of associations between components
- Sets of ordered associations between components
- Sets of maps or links to or from another code system


For each type of requirement we will look at:

- One or two practical examples of the requirement
- The data structure needed to meet the requirement
- A reference set type that meets the requirement





Practical Requirements for Subsets



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- **Requirements for subsets of concepts**
 - Restricting searches to terms associated with specified concepts
 - Constraining data entry
 - Specifying value sets for particular data items
 - Specifying queries for data retrieval
- **Requirements for subsets of descriptions**
 - Restricting searches to specified sets of terms
 - Specifying descriptions to appear in a list of options
- **Inclusion and exclusion of subset content**
 - A subset typically contains the components to be included
 - For some requirements a subset of components to be excluded can also be helpful

Data Structure Requirements for Subsets

1. A simple list of identifiers can represent a subset of SNOMED CT components

- For example:
 - 82272006
 - 6142004
 - 55604004
 - ... etc. ...

When a subset is represented by a SNOMED CT simple reference set:

- The list of component identifiers is represented by the **referencedComponentId**



Subset Represented by a Simple Reference Set

Subset



Reference Set

Id	Term
82272006	Common cold
6142004	Influenza
55604004	Avian influenza

id	effective Time	active	moduleId	refsetId	referenced ComponentId
0000d6608041-005b-5108-b608-07891b210365	20140731	1	19999999103	49999999102	82272006
00008774f374-5f54-5234-8af1-8aca6e73b5c2	20140731	1	19999999103	49999999102	6142004
00006ac9-2f97-5ed4-b37e-84cb158c388d	20140731	1	19999999103	49999999102	55604004

Data Structure Requirements for Subsets

1. A simple list identifiers can represent a subset of SNOMED CT components
2. **For practical use, a subset needs to be identified and named so it can be referred to unambiguously**

When a subset is represented by a reference set:

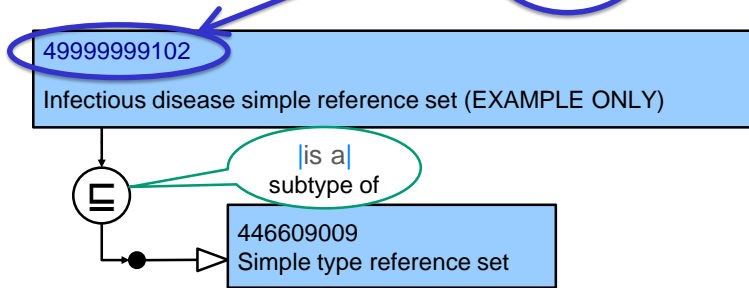
- The subset is identified by the **refsetId**
- The **refsetId** refers to a concept
- Descriptions of that concept name the reference set
- A relationship of that concept refers to the reference set type (in this case |is a| |simple type reference set|)



Subset Represented by a Simple Reference Set

Reference Set

id	effective Time	active	moduleId	refsetId	referenced ComponentId
0000d6608041-005b-5108-b608-07891b210365	20140731	1	19999999103	49999999102	82272006
00008774f374-5f54-5234-8af1-8aca6e73b5c2	20140731	1	19999999103	49999999102	6142004
00006ac9-2f97-5ed4-b37e-84cb158c388d	20140731	1	19999999103	49999999102	55604004



Data Structure Requirements for Subsets

1. A simple list identifiers can represent a subset of SNOMED CT components
2. For practical use, a subset needs to be identified and named so it can be referred to unambiguously
3. **Subset membership may need to change with future releases of SNOMED CT or due to evolving requirements for inclusion of different content**

When a subset is represented by a reference set:

- The standard SNOMED CT approach to versioning and modularization allows full tracking of changes.
- This uses the following columns
 - id, effectiveTime, active, moduleId



Subset Membership Changes Represented by a Simple Reference Set

Changes in July 2016

Remove
(inactivate)

Add

Id	Term
82272006	Common cold
6142004	Influenza
55604004	Avian influenza
3928002	Zika fever

Reference Set

id	effective Time	active	moduleId	refsetId	referenced ComponentId
0000d6608041-005b-5108-b608-07891b210365	20140731	1	19999999103	49999999101	82272006
00008774f374-5f54-5234-8af1-8aca6e73b5c2	20140731	1	19999999103	49999999102	6142004
00006ac9-2f97-5ed4-b37e-84cb158c388d	20140731	1	19999999103	49999999102	55604004
00006ac9-2f97-5ed4-b37e-84cb158c388d	20160731	0	19999999103	49999999102	55604004
0000c5c4-50bb-5937-9141-1ec3e2d517e8	20160731	1	19999999103	49999999102	3928002

Data Structure Requirements for Subsets

1. A simple list identifiers can represent a subset of SNOMED CT components
2. For practical use, a subset needs to be identified and named so it can be referred to unambiguously
3. Subset membership may need to change with future releases of SNOMED CT or due to evolving requirements for inclusion of different content
4. **It may be useful to define the membership of a subset using rules rather than a list of identifiers**
 - This is called an *intensional subset definition*

Not a misspelling !
Intensional is not the same as intentional

Extensional and Intensional Subset Definitions

- Extensional subset definitions
 - Subset membership defined by enumeration
 - Identifying each of the members individually

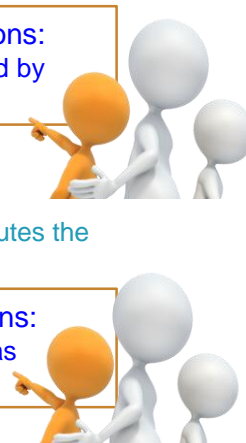
SNOMED CT supports extensional subset definitions:

- **Simple type reference sets** with members identified by component identifiers (referencedComponentId)


- Intensional subset definitions
 - Subset membership is defined by a set of rules
 - The rules are expressed as a query that computes the membership of a subset

SNOMED CT supports intensional subset definitions:

- **Query type reference sets** with rules represented as
- **SNOMED CT expression constraints**



Intensional Subset Definitions: Substrate and Expansion


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Substrate

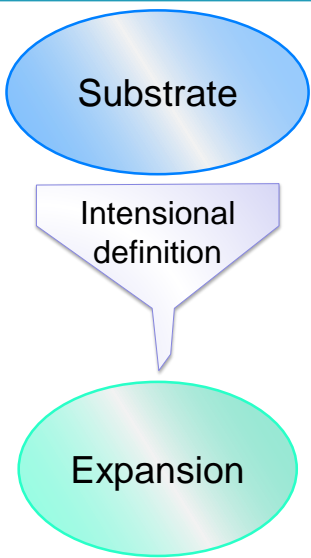
- The superset of members to which an intensional subset definition is applied

Intensional definition

- The set of rules (query) that defines whether a member of the substrate is included in the subset

Expansion

- The result of applying an intensional definition to a given substrate




Substrate

Intensional definition

Expansion

Intensional Subset Definitions: Substrate and Expansion (General Example)


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Substrate

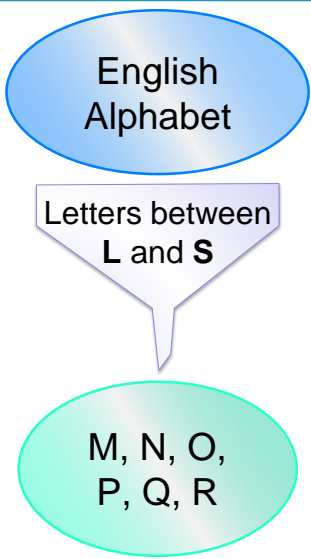
- The superset of members to which an intensional subset definition is applied

Intensional definition

- The set of rules (query) that defines whether a member of the substrate is included in the subset

Expansion

- The result of applying an intensional definition to a given substrate




English Alphabet

Letters between
L and **S**

M, N, O,
P, Q, R

Intensional Subset Definitions: Substrate and Expansion (SNOMED CT Example)



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Substrate

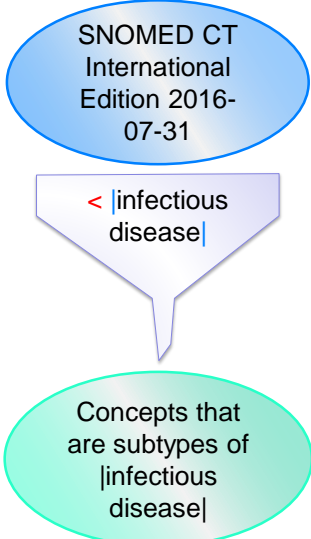
- The superset of members to which an intensional subset definition is applied
 - A specified version of a SNOMED CT edition

Intensional definition

- The set of rules (query) that defines whether a member of the substrate is included in the subset
 - A SNOMED CT expression constraint

Expansion

- The result of applying an intensional definition to a given substrate
 - Concepts in specified version of the edition that comply with the constraint




SNOMED CT International Edition 2016-07-31

< |infectious disease|

Concepts that are subtypes of |infectious disease|

Query Specification Type Reference Set Representing Intensional Subset Definitions



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To save space, **id** values are not shown for this example


The **query** column contains a text string using SNOMED CT expression constraint language to represent rules applied to the substrate to define the required subset

id	effective Time	active	moduleId	refsetId	referenced ComponentId	query
...	20160731	1	19999999103	59999999104	69999999101	< 40733004 infectious disease
...	20160731	1	19999999103	59999999104	79999999109	<40733004 infectious disease :363698007 finding site = <<20139000 structure of respiratory system


The default substrate for the query is the module identified by **moduleId** and all modules on which that module depends

A single identified **query reference set** may contain several members (rows) each with a separate query


The **referencedComponentId** identifies an *actual* or *virtual* reference set representing the expansion created by applying the query to the default substrate



Reference Set Requirements Beyond Subsets



Order Lists
Associations
Maps
Annotations



Requirements for Ordered Lists

- Requirements for ordered lists of descriptions
 - Presenting terms in an order that is rational or helpful for a particular purpose in user interface controls including:
 - Simple lists
 - Drop down lists
 - Popup menus
 - Ordering search results
- Requirements for ordered lists of concepts
 - Presenting concepts in an order that is rational or helpful for a particular purpose irrespective of the term displayed
 - Examples
 - Body parts including fingers, cranial nerves and vertebrae
 - Enumerated values and scales including frequencies, severities and stages


Requirements for Prioritization

- Prioritization is similar to order but multiple components may have the same rank
- Requirements for prioritization of concepts
 - Making it easier to find concepts that are most commonly used in a particular specialty, department or data entry scenario
 - Highlighting concepts that are preferred options for a particular purpose without preventing access to a wider selection of concepts

Approaches to Implementing Prioritization

- Display search results in priority order
 - Results with same rank ordered by shortest or closest match
- Displaying a rank indicator in search result list
- Limit initial search to high priority concepts
 - Extend searches to lower priorities
 - If no high priority matches
 - If user requests more matches

Ordered Type Reference Set Representing Display Order or Priority


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Fingers sorted A-Z	
21356012	Fifth finger
136021011	Fourth finger
138873019	Second finger
108884010	Third finger
127053016	Thumb

The **order** column is an integer that specifies:


- Display order
- Priority rank: 1 (first) highest rank

id	effective Time	active	moduleId	refsetId	referenced ComponentId	order
...	20160731	1	19999999103	109999999109	127053016	1
...	20160731	1	19999999103	109999999109	138873019	2
...	20160731	1	19999999103	109999999109	108884010	3
...	20160731	1	19999999103	109999999109	136021011	4
...	20160731	1	19999999103	109999999109	21356012	5

Thumb

- Second finger**
- Third finger**
- Fourth finger**
- Fifth finger**

Requirements for Adding Information to a Referenced Component


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- Displaying a textual note or comment about a listed or selected concept
 - For example, a guidance note on requesting a particular procedure or service
- Marking particular concepts with specific values to provide processable and/or displayable information
 - For example, marking inactive concepts with indicators of the reasons for inactivating them
- Marking descriptions with indications of whether the terms they contain are acceptable or preferred in a specified language or dialects
 - For example, distinguishing term usage between different languages, dialects, local or specialty groups

Annotation Type Reference Set

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Adding Unstructured Information to a Concept

Id	Term
82272006	Common cold
6142004	Influenza
55604004	Avian influenza
3928002	Zika fever

The **annotation** column is a string that contains a free text note about the referenced component.

id	effective Time	active	moduleid	refsetid	referenced Componentid	annotation
...	20160731	1	19999999103	119999999106	82272006	Trivial just treat symptoms.
...	20160731	1	19999999103	119999999106	6142004	Risk in elderly. Advise immunization in future years.
...	20160731	1	19999999103	119999999106	55604004	Report to public health is suspected. Admit if any respiratory distress.
...	20160731	1	19999999103	119999999106	3928002	Indicate if pregnant or potentially pregnant. Note travel in affected area.

Attribute Value Type Reference Set

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Adding Structured Data to a Concept

The **valueid** column refers to a concept that represent the additional data applicable to the concept

id	effective Time	active	moduleid	refsetid	referenced Componentid	valueid
...	20160731	1	900000000000207008	900000000000489007	1720006	900000000000482003
...	20160731	1	900000000000207008	900000000000489007	4515009	900000000000484002
...	20160731	1	900000000000207008	900000000000489007	4961001	900000000000485001
...	20160731	1	900000000000207008	900000000000489007	5381002	900000000000483008

1720006 Dextroposition of aorta	Duplicate
4515009 Keratoderma punctata	Ambiguous
4961001 Psychiatric function	Erroneous
5381002 Enterobacter gergoviae	Outdated

Language Type Reference Set Indicating Acceptability of Descriptions


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The **refsetId** specifies the refset for a language

referencedComponentId refers to a description to which an acceptability applies


acceptabilityId refers to a concept that represents |acceptable| or |preferred|

id	effective Time	active	moduleId	refsetId	referenced ComponentId	acceptabilityId
...	20160731	1	900000000000207008	900000000000509007	132967011	900000000000548007
...	20160731	1	900000000000207008	900000000000509007	132972019	900000000000549004
...	20160731	1	900000000000207008	900000000000508004	132972019	900000000000549004
...	20160731	1	900000000000207008	900000000000508004	132973012	900000000000548007

132967011 Appendectomy	Preferred
132972019 Excision of appendix	Acceptable

132973012 Appendicectomy	Preferred
132972019 Excision of appendix	Acceptable


Requirements for Associations Between Components


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- Historical associations between components
 - For example, associating an concept that has been inactivated as a duplicate with the active concept that it duplicates
- Grouping concepts together
 - For example, representing categories containing concepts that are used for reporting
- Presenting alternative hierarchical views of concepts of descriptions at the user interface data entry

Association Type Reference Set

Representing Unordered Directed Associations


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referencedComponentId refers to a component that is the source of the association

The **targetComponentId** refers to a component that is associated with the referenced component

id	effective Time	active	moduleId	refsetId	referenced ComponentId	targetComponentId
...	20160731	1	19999999103	149999999107	82272006	85562004
...	20160731	1	19999999103	149999999107	6142004	70327001
...	20160731	1	19999999103	149999999107	55604004	70327001
...	20160731	1	19999999103	149999999107	3928002	70327001

Ordered Type Reference Set

Representing Ordered Directed Associations



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referencedComponentId refers to a component that is the source of the association

linkedToid refers to a component that is associated with the referenced component

id	effective Time	active	moduleId	refsetId	referenced ComponentId	order	linkedToid
...	20160731	1	19999999103	159999999105	127053016	1	85562004
...	20160731	1	19999999103	159999999105	138873019	1	70327001
...	20160731	1	19999999103	159999999105	108884010	2	70327001
...	20160731	1	19999999103	159999999105	136021011	3	70327001
...	20160731	1	19999999103	159999999105	21356012	4	70327001

order indicates the order of the association


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Associations and Maps to Other Code System

referencedComponentId refers to a component that is the concept that is mapped

mapTarget is a code in the other code system


id	effective Time	active	moduleId	refsetId	referenced ComponentId	mapTarget	... other attributes ...
...	20160731	1	19999999103	169999999108	9389005	B00.5	
...	20160731	1	19999999103	169999999108	13608004	B00.5	
...	20160731	1	19999999103	169999999108	13710008	B00.7	
...	20160731	1	19999999103	169999999108	3401001	B00.8	
...	20160731	1	19999999103	169999999108	16592009	B00.8	

Other attributes depend on the complexity of maps between SNOMED CT and the other code system. The attributes may represent: correlation, options, groups, rules, advice, etc.


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Reference Set Customization to Meet Additional Requirements

- The reference set specification defines a special reference set that can be used to specify the structure of other reference sets
 - The **reference set descriptor reference set**
- Therefore ...
 - Reference sets offer a standard SNOMED CT format for representing and versioning collections of data linked to SNOMED CT components
 - Reference sets can meet a wide variety of requirements. There may be other ways to meet those requirements but the added value of reference sets is the standard systematic approach to versioning and change tracking


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Overview

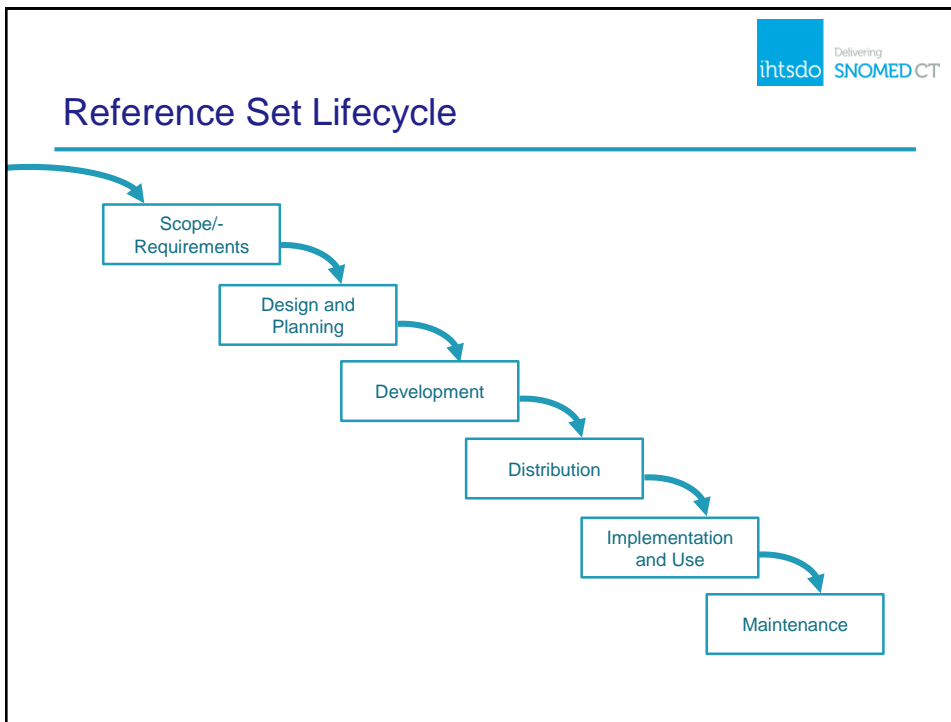
- **Part 1. Introduction to Reference Sets**
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 - Overview of development process
 - Practical examples
 - Questions




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Refset Lifecycle

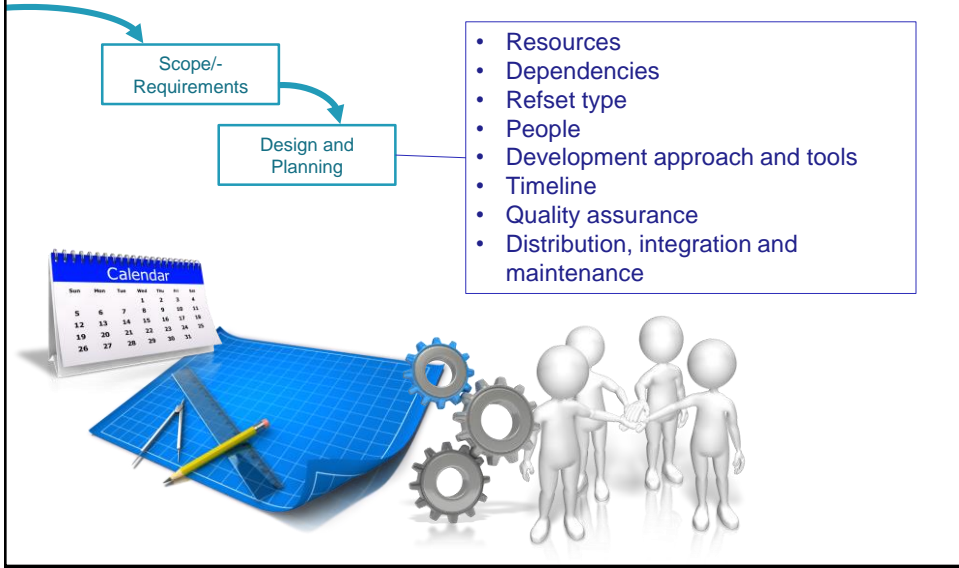


This slide focuses on the 'Scope/- Requirements' stage of the Reference Set Lifecycle. It includes a list of five key questions to consider:

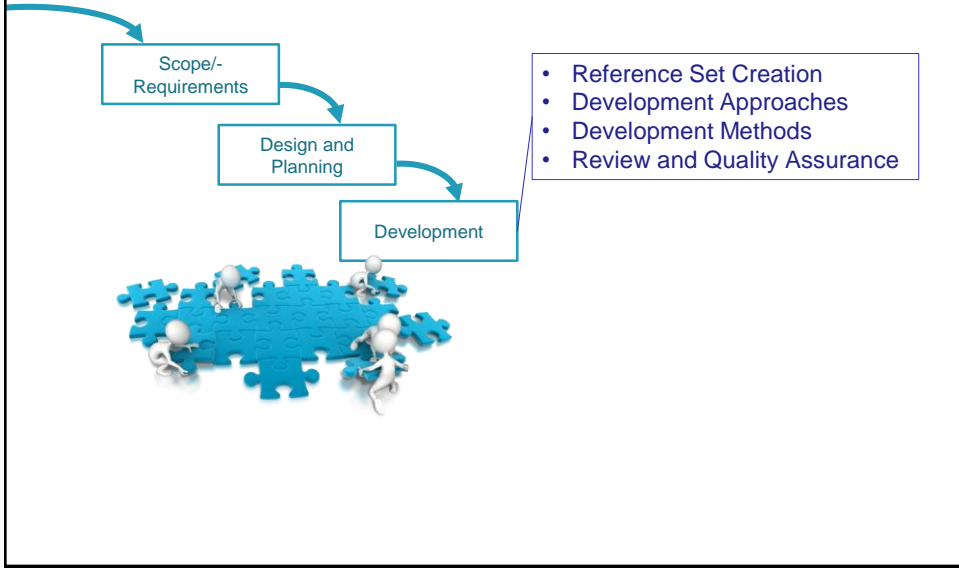
- What is the main **purpose** of the reference set?
- Who are the **users** of the reference set?
- What is the **scope** of content of the reference set?
- Who is **responsible** for developing and maintaining the reference set?
- Should we develop a **new** reference set **or** does any **existing** reference set meet our requirements?

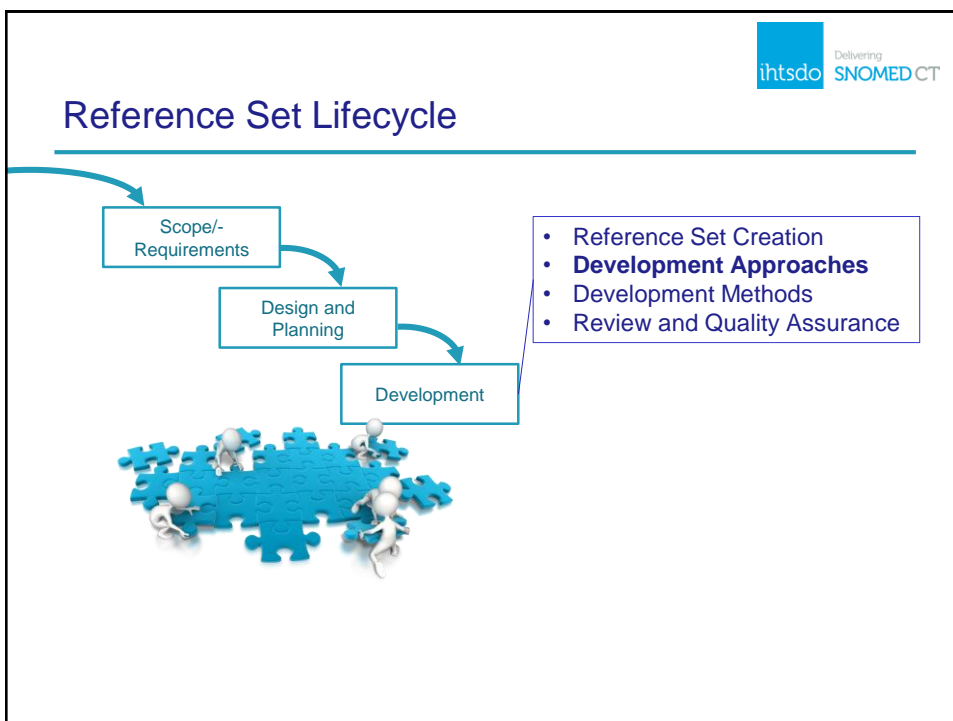
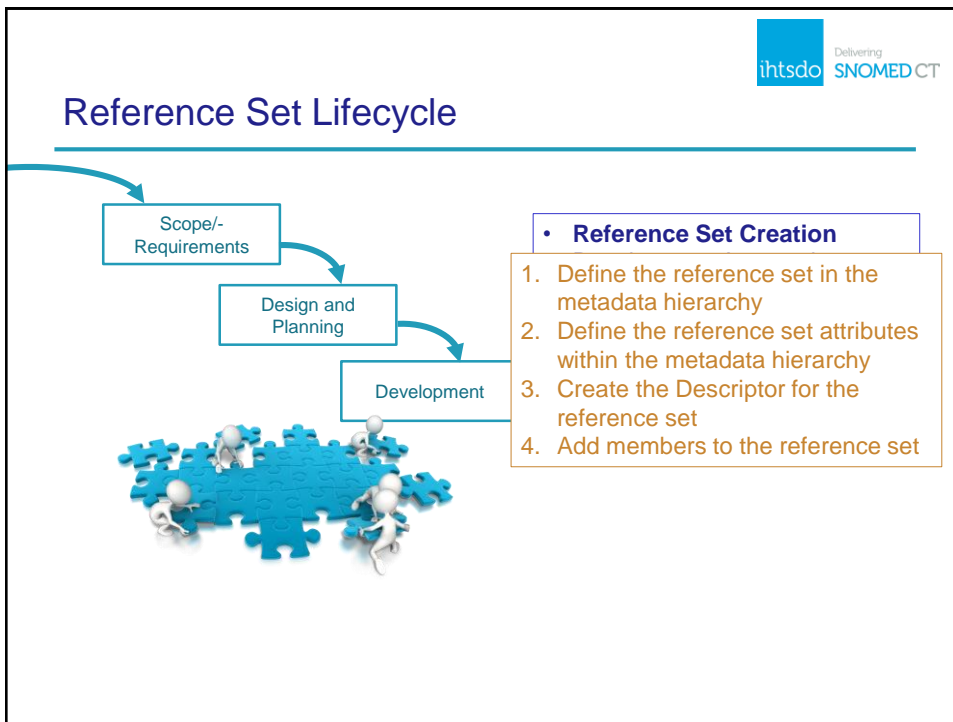
Below the text, there is a 3D white figure holding a blue pen, surrounded by several glowing lightbulbs, symbolizing the creative and thoughtful nature of the requirements phase.

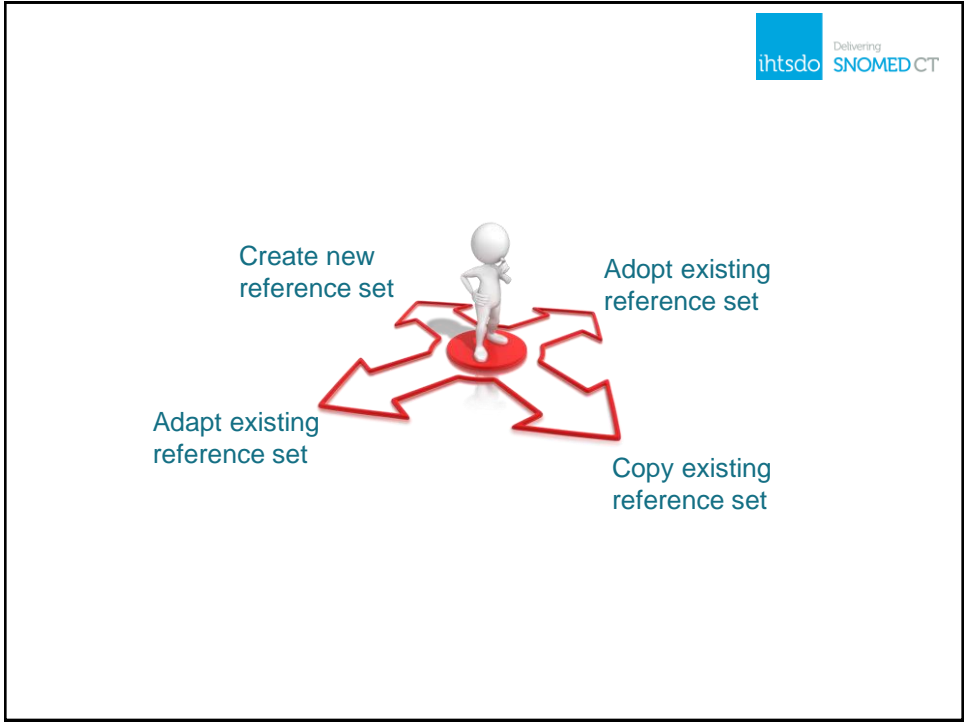
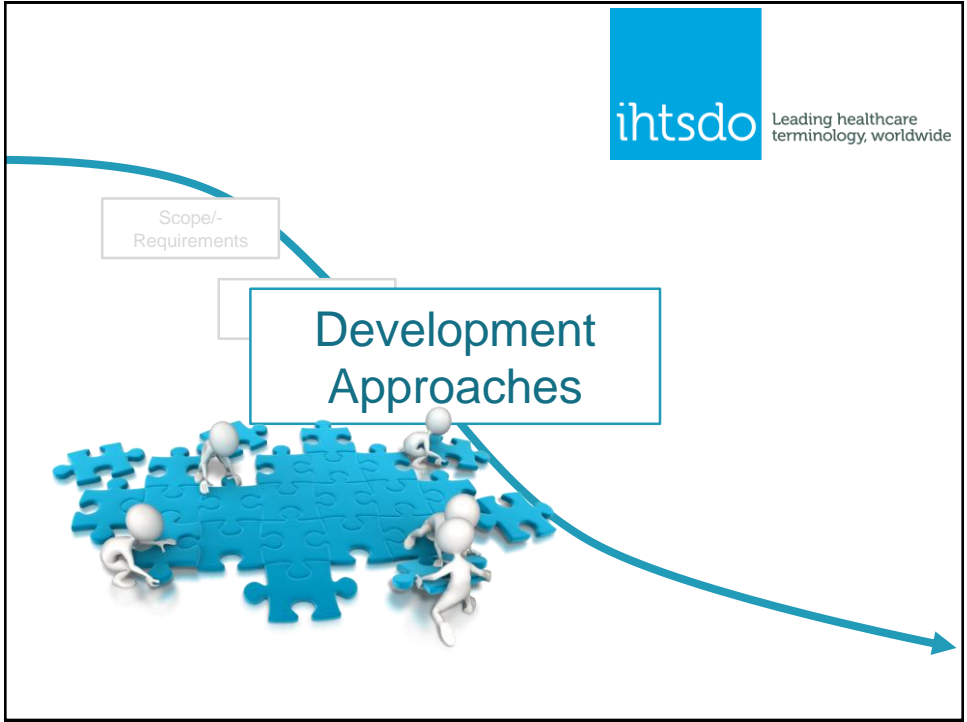
Reference Set Lifecycle




Reference Set Lifecycle







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Development Approaches: Create New Reference Set

IHTSDO

International Edition of
SNOMED CT


Dependent on ↑


SNOMED CT Extension

Reference Set

National/Local SNOMED CT Edition

Refset
Producer
and
Consumer




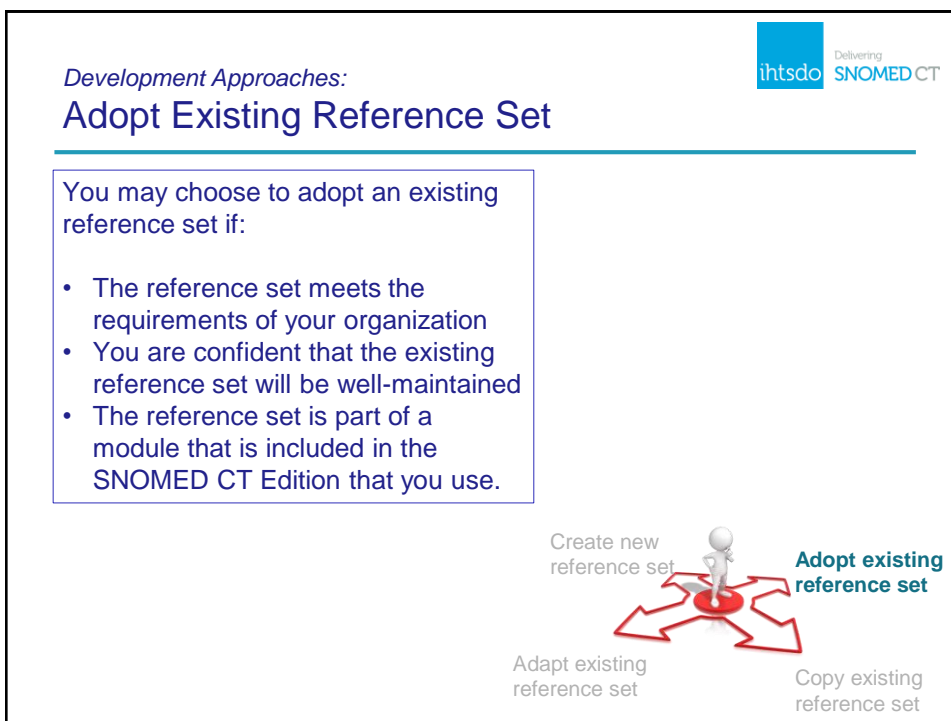
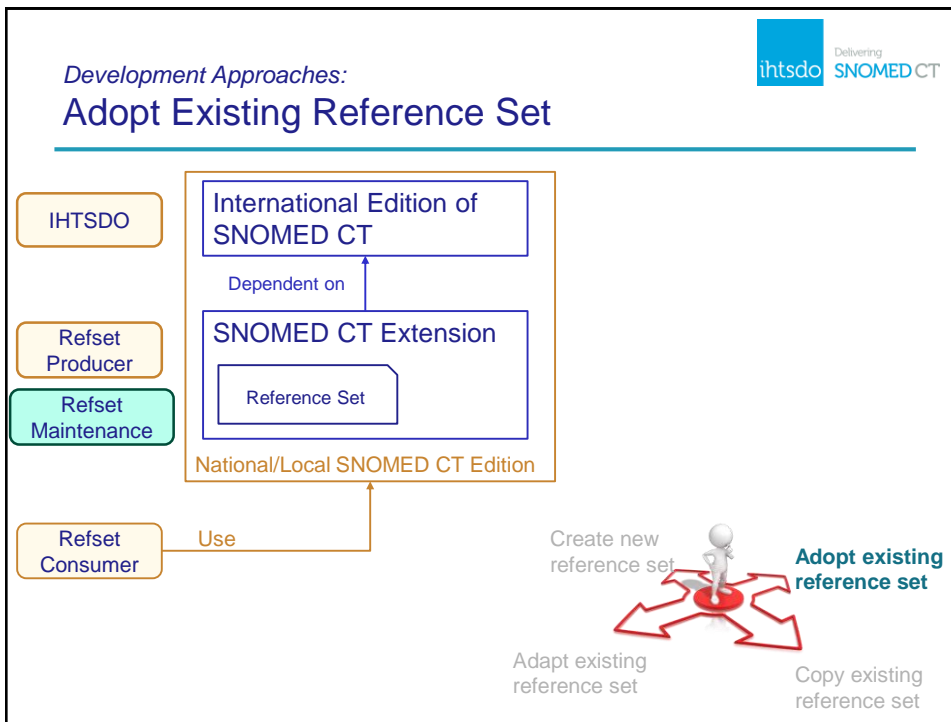
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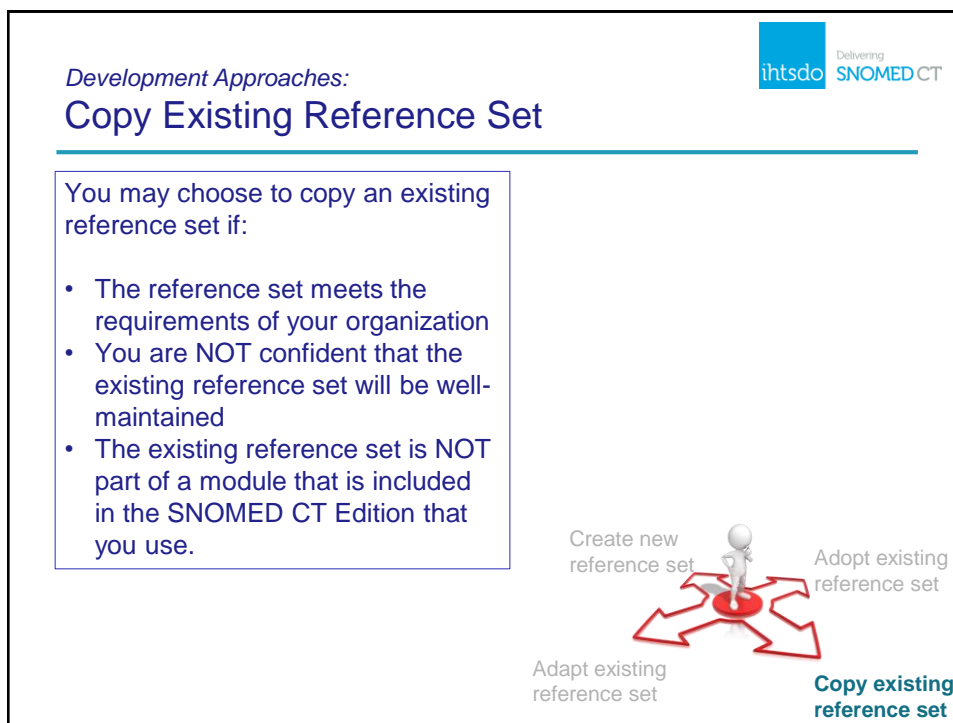
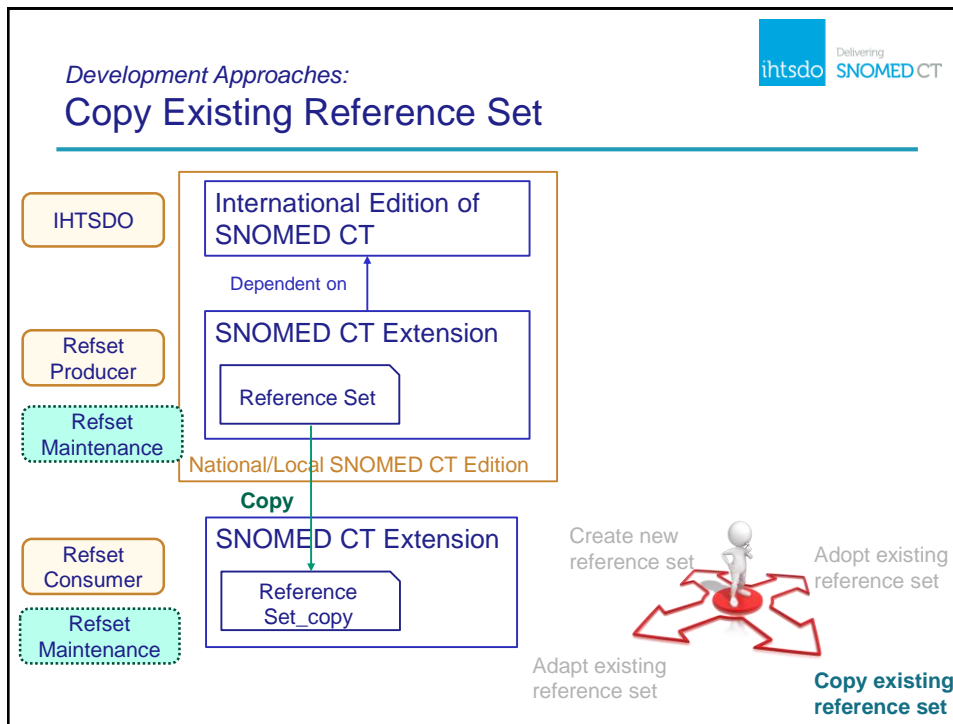
Development Approaches: Create New Reference Set

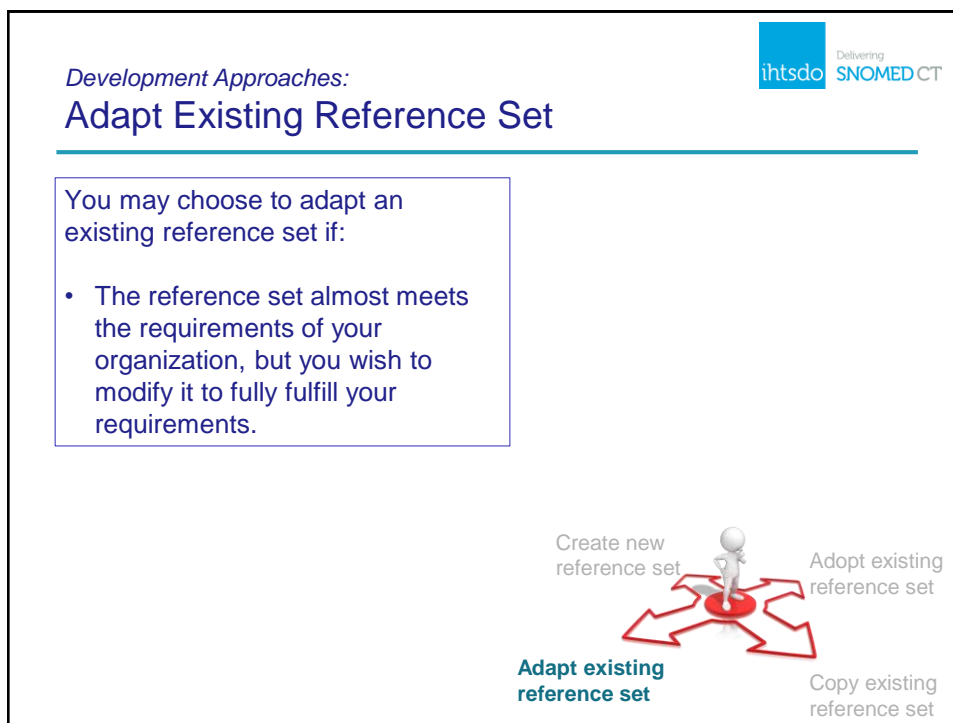
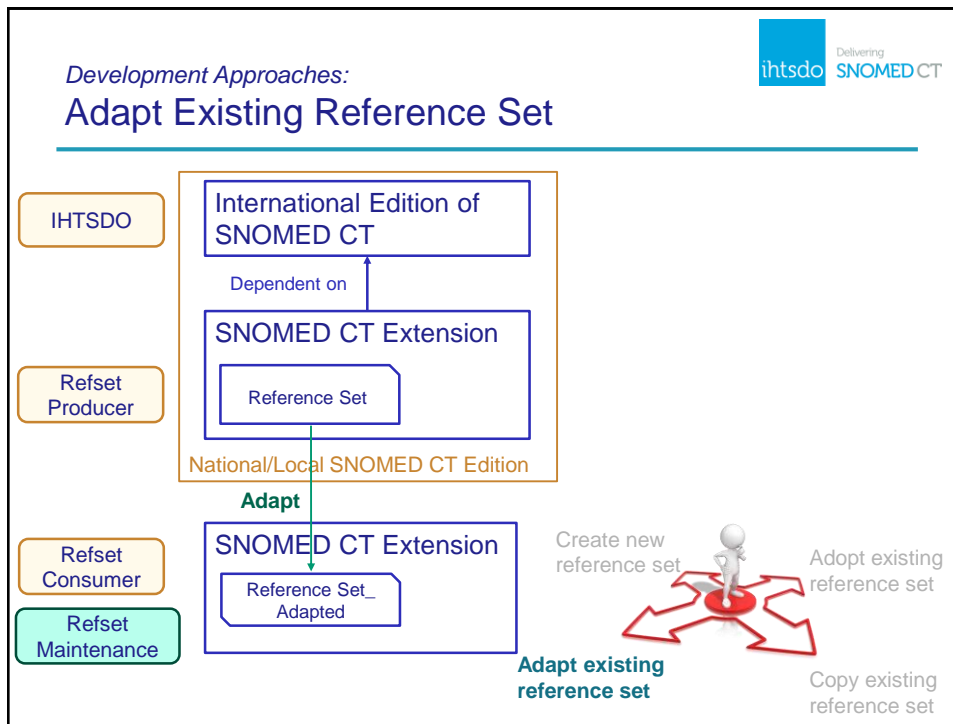
You may choose to develop a new reference set if:

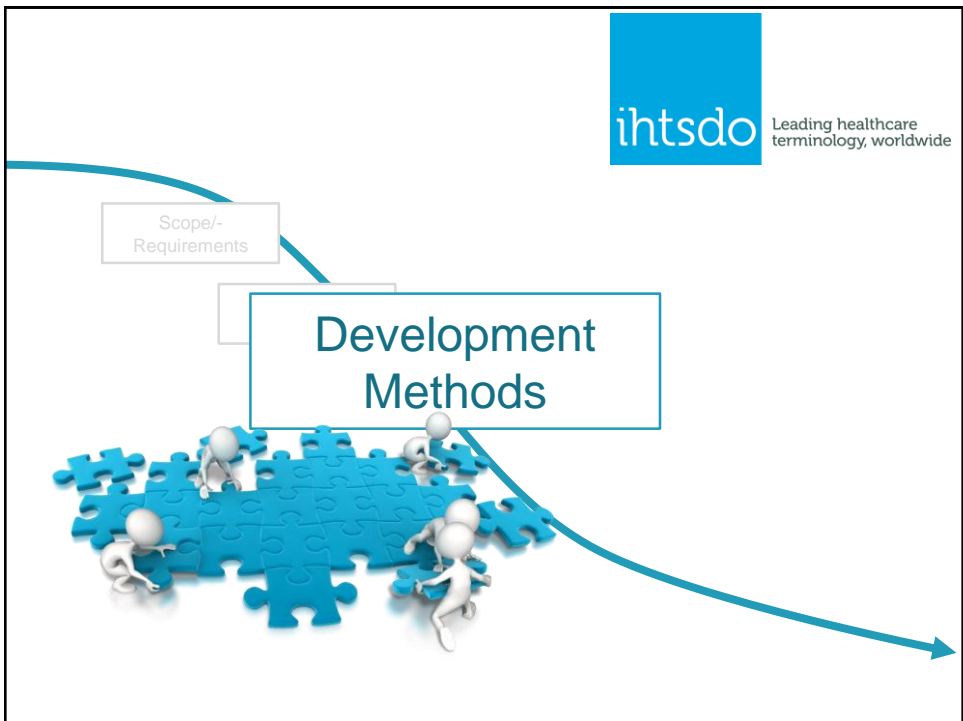
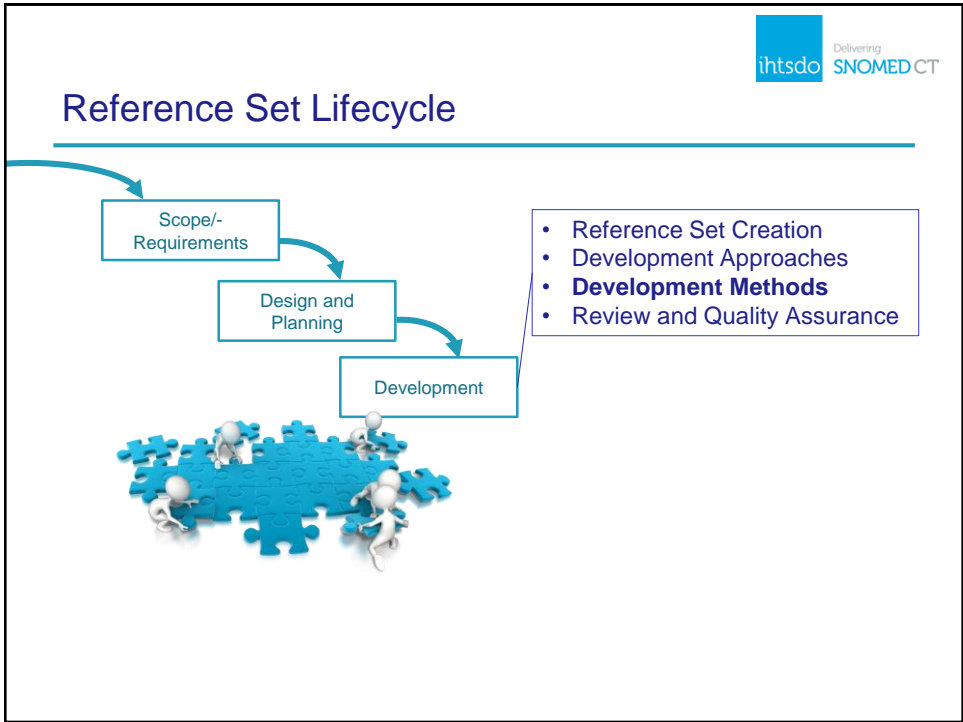
- No existing reference set meets you requirements
- The scope of the reference set is limited and clearly specified












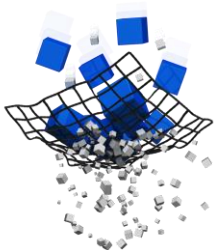
ihtsdo Delivering
SNOMED CT

Development Methods

EXTENSIONAL
DEFINITION



INTENSIONAL
DEFINITION




ihtsdo Delivering
SNOMED CT

Development Methods:

Extensional Definition

- **Membership is defined by enumeration**
 - Identifying each of the members individually



- ▲ General finding of observation of patient (finding)
- ▼ Finding of general observation of appearance (finding)
 - Beautiful appearance (finding)
 - Bizarre personal appearance (finding)
 - Blue bloater (finding)
 - Comfortable appearance (finding)
 - ▶ Finding of appearance relating to age (finding)
 - ▶ Finding of general form of body (finding)
 - General appearance of patient (finding)
 - ▼ Generally clean appearance (finding)
 - On examination - clean and tidy (finding)
 - ▼ Neglected appearance (finding)
 - On examination - care poor (finding)
 - No injuries apparent (finding)
 - Normal appearance (finding)
 - Normal extension (finding)
 - Normal flexion (finding)
 - ▶ On examination - appearance (finding)
 - Parkinsonian features (finding)
 - ▶ Personal appearance about reported age (finding)
 - ▼ Personal appearance dirty (finding)
 - Clothing dirty (finding)
 - Hands dirty (finding)
 - On examination - unclean (finding)
 - Pink puffer (finding)
 - ▼ State of dress finding (finding)
 - Clothing dirty (finding)
 - ▶ Dressed - appearance (finding)
 - Undressed (finding)
 - ▼ Well cared for appearance (finding)
 - Adequately dressed (finding)
 - On examination - care good (finding)
 - Smartly dressed (finding)

Example:

- 80670004 | Bizarre personal appearance (finding) |
- 398168006 | Generally clean appearance (finding) |
- 102892007 | Neglected appearance (finding) |
- 386549008 | Normal appearance (finding) |
- 78158007 | Personal appearance dirty (finding) |
- 397749000 | Well cared for appearance (finding) |

Development Methods:

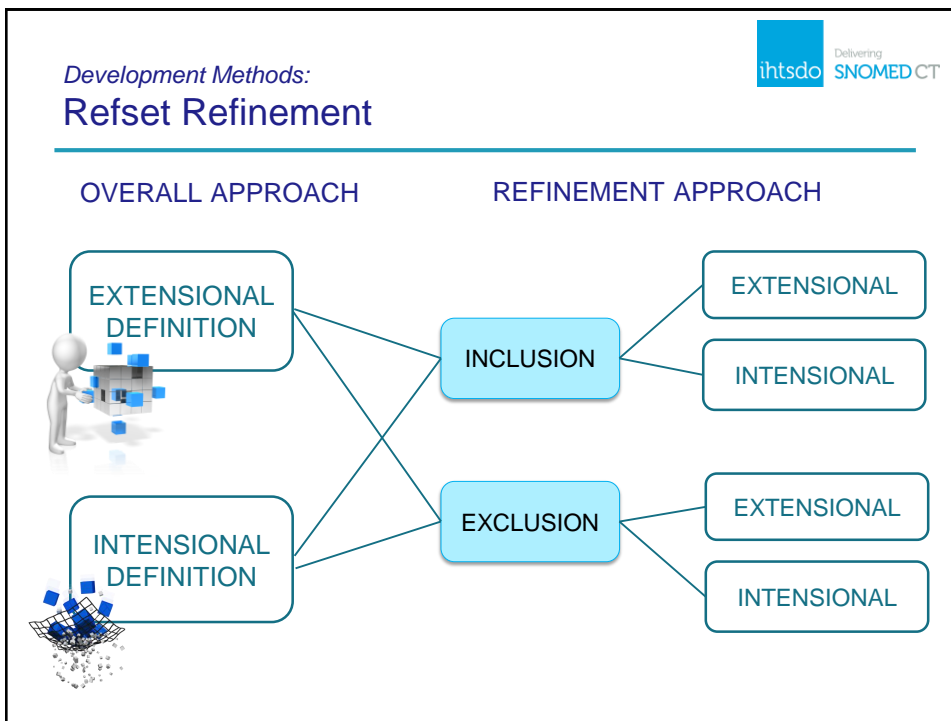
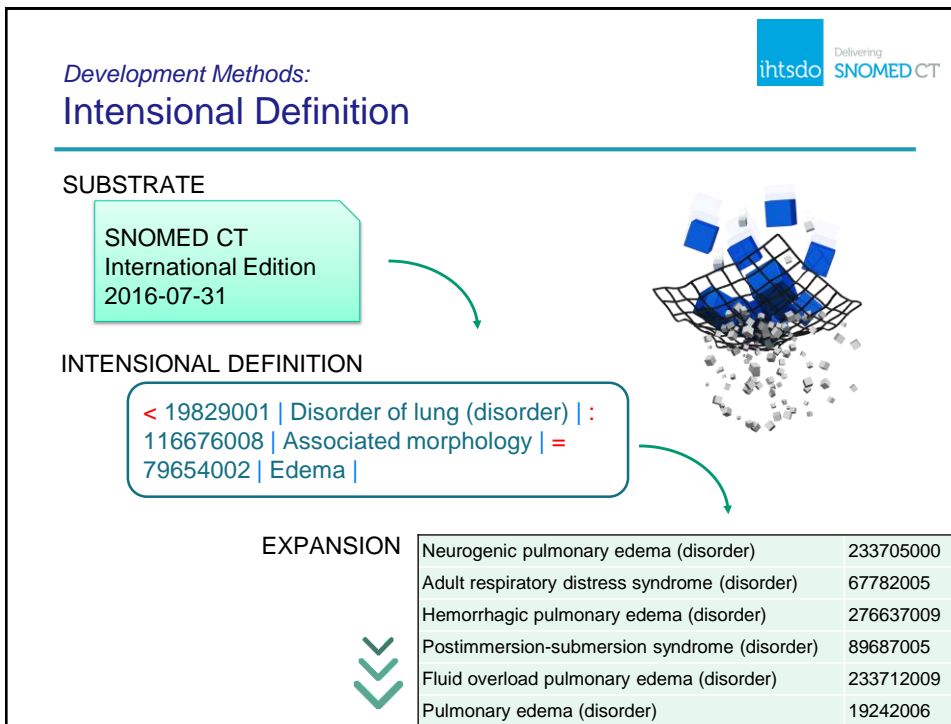
Intensional Definition

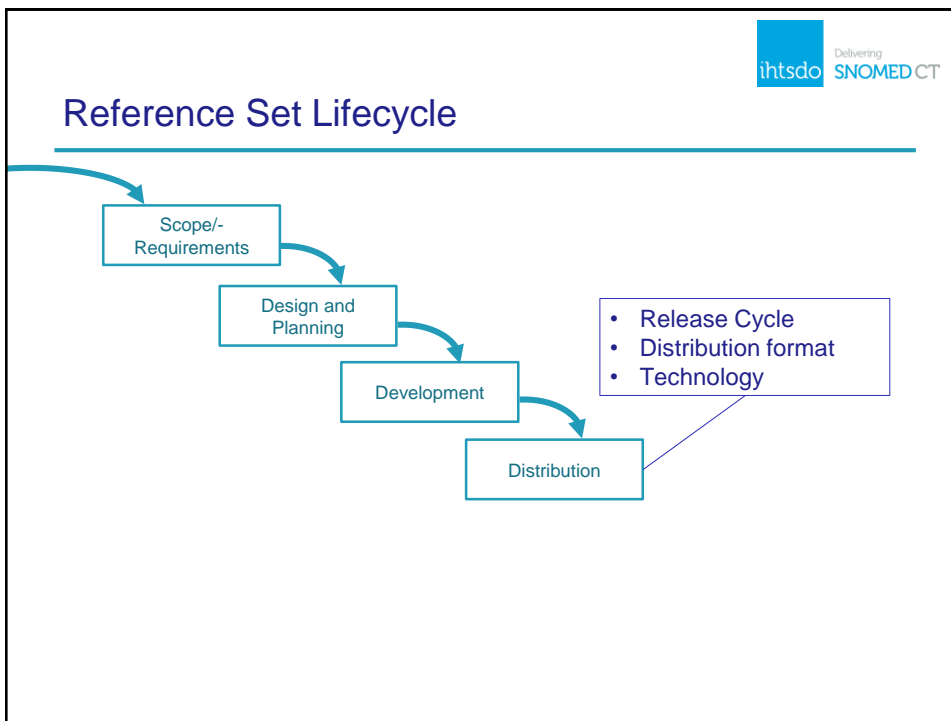
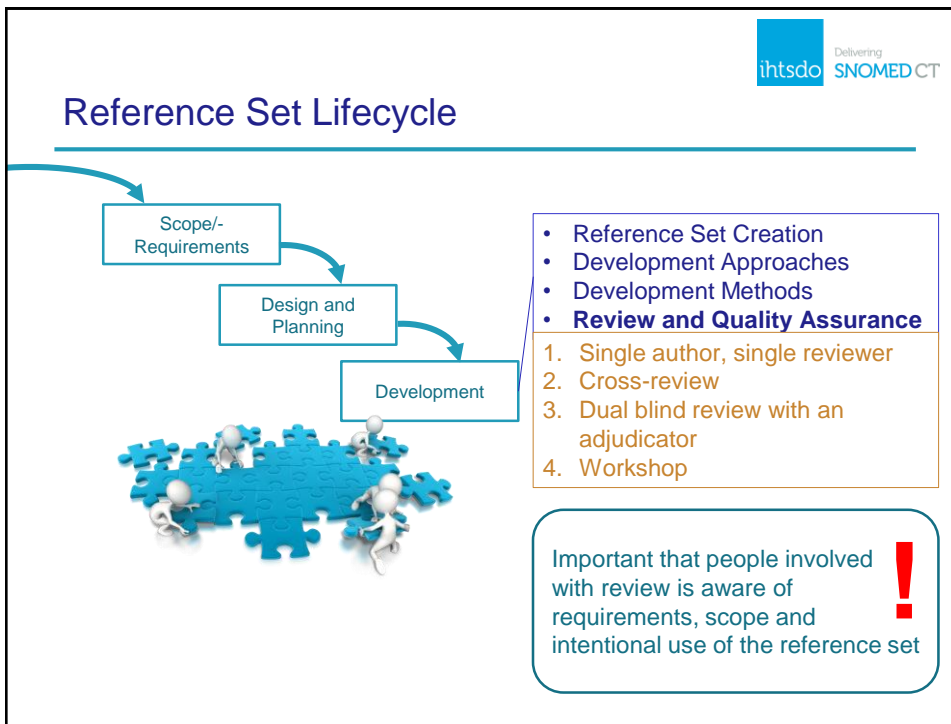
- **Membership is defined by a set of rules**
 - The rules are expressed as a query that computes the refset members

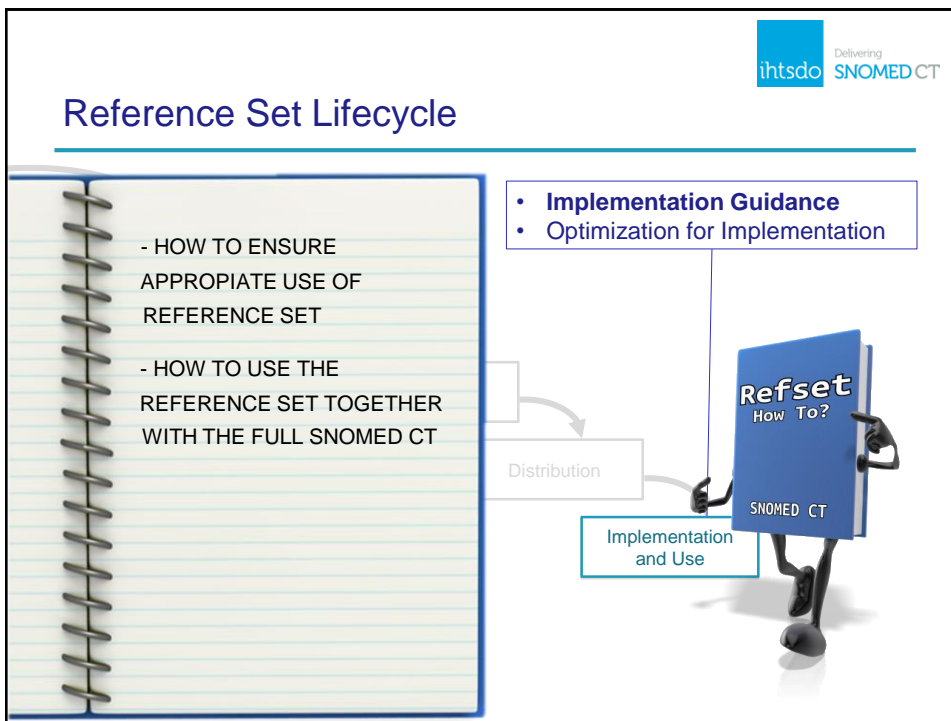
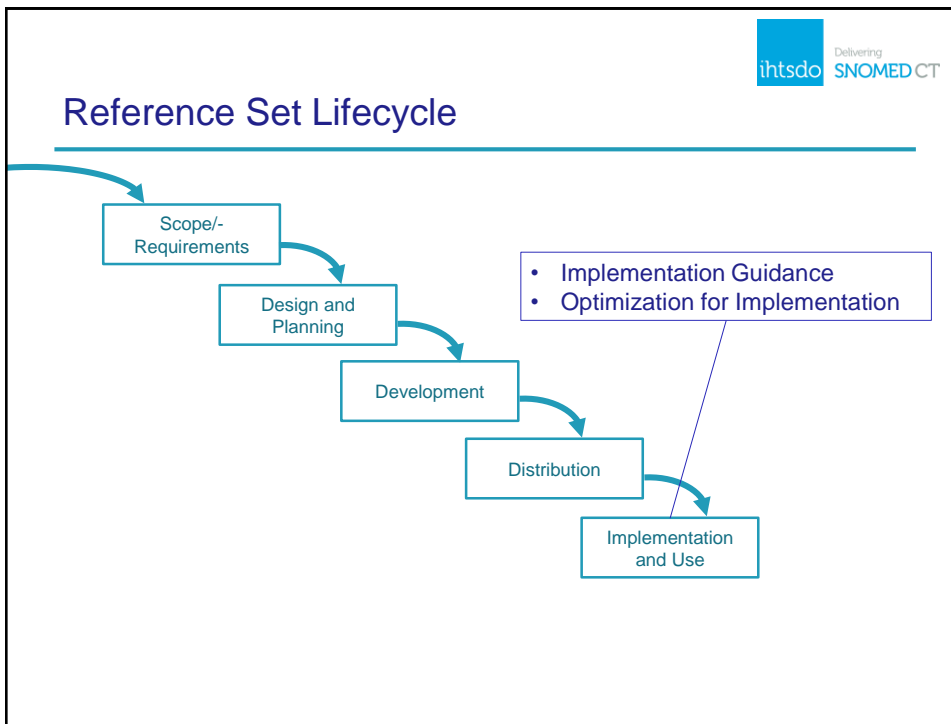
Examples:

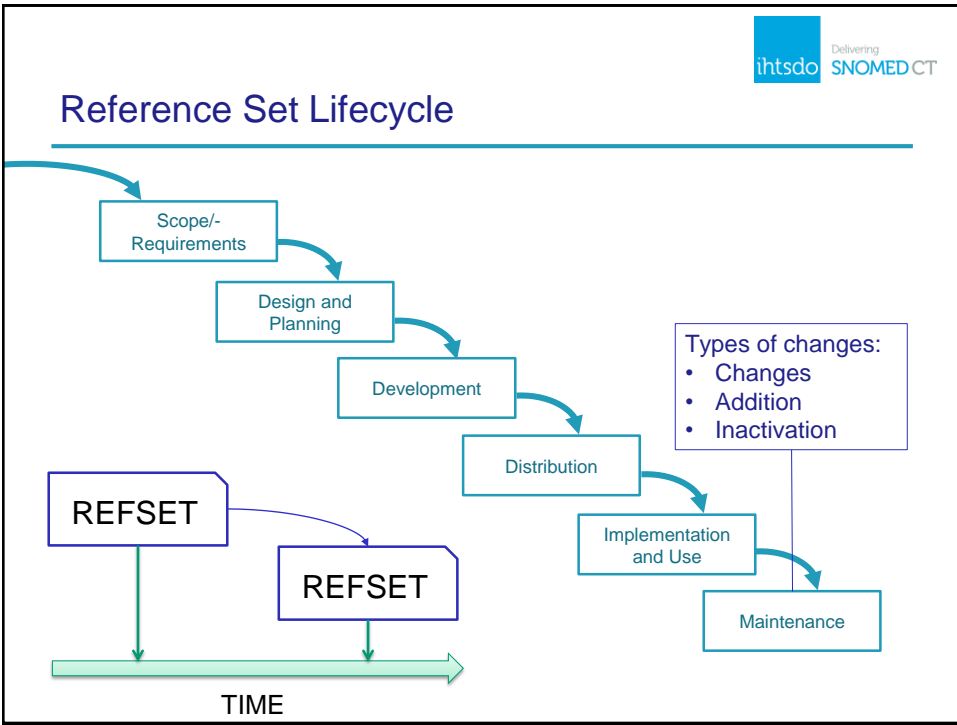
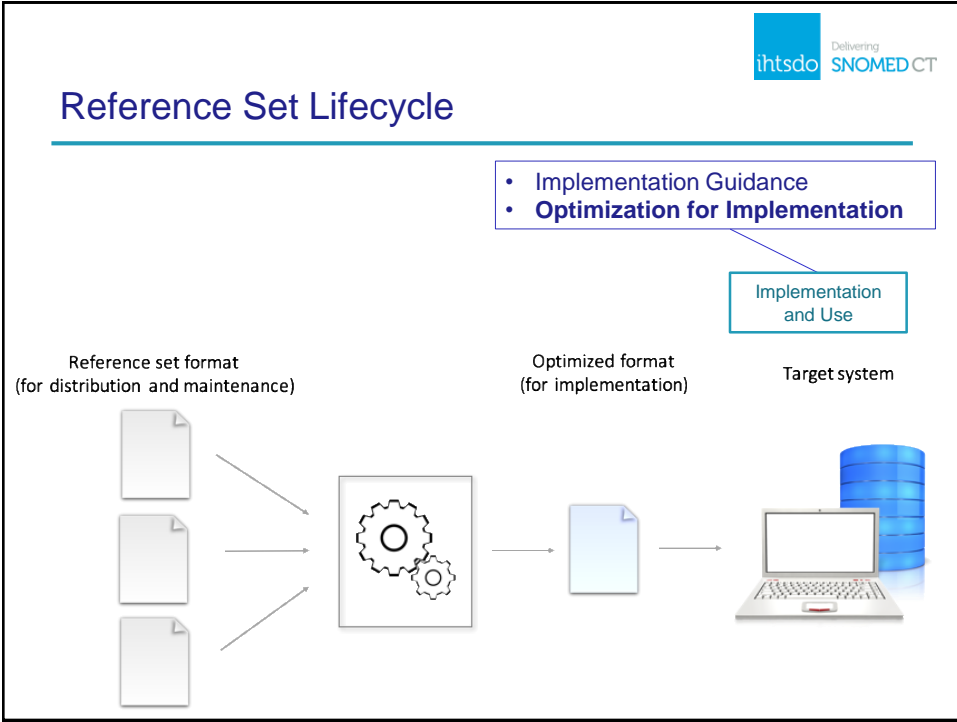
<< 387714009 | Operation on lung (procedure) |

< 19829001 | Disorder of lung (disorder) | : 116676008 | associated morphology | = 79654002 | edema |











Reference Set Lifecycle

- One way of determine refset changes is by creating and comparing **two views** of the refset:
- **SNAPSHOT view** (of previous version)
 - Contains one version of every member released up to the time of the snapshot.
 - Each member contained in a snapshot is the most recent version of that member at the time of the snapshot.
- **DELTA view** (of new version)
 - Contains only reference set member versions created since the previous reference set release.
 - Each reference set member version in the DELTA view represents either a new reference set member or a change to an existing member.



Reference Set Lifecycle

		Value of active column in the new release of the reference set (<i>DELTA view</i>)		
		0	1	NOT PRESENT
Value of active column in previous release of the reference set (<i>SNAPSHOT view</i>)	0	Inactive member changed (not significant)	member REACTIVATED	NO CHANGE
	1	member INACTIVATED	CHANGED member	NO CHANGE
	NOT PRE-SENT	n/a	NEW member	n/a



Reference Set Lifecycle

JANUARY 2016

id	effectiveTime	active	Referenced ComponentId	Referenced ComponentTerm
A	20160131	1	82272006	Common cold
B	20160131	1	6142004	Influenza
C	20160131	1	55604004	Avian influenza

JULY 2016

id	effectiveTime	active	Referenced ComponentId	Referenced ComponentTerm
A	20160131	1	82272006	Common cold
B	20160131	1	6142004	Influenza
C	20160131	1	55604004	Avian influenza
C	20160731	0	55604004	Avian influenza
D	20160731	1	3928002	Zika fever




Reference Set Lifecycle

SNAPSHOT VIEW_20160131

id	effectiveTime	active	Referenced ComponentId	Referenced ComponentTerm
A	20160131	1	82272006	Common cold
B	20160131	1	6142004	Influenza
C	20160131	1	55604004	Avian influenza


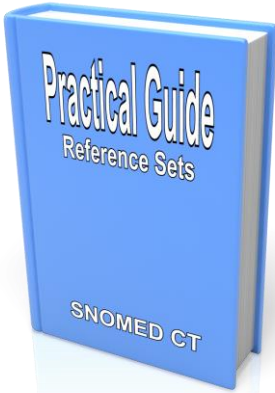

DELTA VIEW_20160731

id	effectiveTime	active	Referenced ComponentId	Referenced ComponentTerm
C	20160731	0	55604004	Avian influenza
D	20160731	1	3928002	Zika fever




Overview

- Part 1. Introduction to Reference Sets
 - Purpose of refsets
 - Subsets, value set and reference sets
 - Requirements design
 - Requirements, types
- Part 2. Reference Sets
 - Overview of development process
 - Practical example
 - Questions

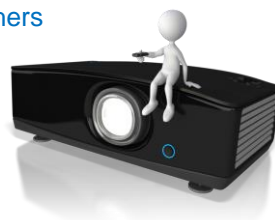
Leading healthcare terminology, worldwide

Practical Example



Demonstration

- IHTSDO Refset Management & Translation Tool
 - <http://snomed.org/tools>
 - <https://confluence.ihtsdotools.org/display/REFSET>
- Refset Management Tool
 - Enables the management & creation of reference sets against the International Edition of SNOMED CT and Member extensions.
 - Provide a directory of existing reference sets that can be searched and downloaded to be used by others



Demonstration

- Extensional Refset Example:
 - Rare Diseases concepts
 7199000, 9014002, 13213009, 16631009, 22053006, 23238000, 24700007, 30188007, 31323000, 44785005, 51615001, 58606001, 62067003, 63702009, 65389002, 65880007, 74911008, 75053002, 76670001, 77128003, 80651009, 82275008, 86044005, 128241005, 190794006, 195353004, 230418006, 230791000, 234542004, 236403004, 239928004, 252246005, 387732009, 387759001, 396338004, 410795001, 417357006, 423590009, 699310000, 716997004
 - Concept to add
 190905008 | Cystic fibrosis (disorder) |
- Intensional Refset Example
 - Lung Procedure Refset
 << 387714009 | Operation on lung (procedure) |
 - Refset of lung disorders with an associated morphology equal to descendantsOrSelf of inflammation.
 < 19829001 : 116676008 = << 23583003

Overview

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Questions?