

# SNOMED CT July 2018 International Edition - SNOMED International Release notes

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## Page At A Glance

- 
- [Table Of Contents](#)
- [1 Introduction](#)
  - [1.1 Background](#)
  - [1.2 Purpose](#)
  - [1.3 Scope](#)
  - [1.4 Audience](#)
- [2 Content Development Activity](#)
  - [2.1 Summary](#)
  - [2.2 Content Quality Improvement](#)
    - [2.2.1 Anatomy](#)
    - [2.2.2 Clinical finding](#)
    - [2.2.3 Convergent Medical Terminologies \(CMT\)](#)
    - [2.2.4 Procedure Hierarchy](#)
    - [2.2.5 Collaboration /Harmonization Projects](#)
      - [2.2.5.1 Orphanet](#)
      - [2.2.5.2 Global Medical Device Nomenclature Agency \(GMDNA\)](#)
    - [2.2.6 Event](#)
    - [2.2.7 Qualifier Value](#)
    - [2.2.8 Organism](#)
    - [2.2.9 Pharmaceutical / biologic product](#)
    - [2.2.10 Veterinary Extension](#)
    - [2.2.11 Situation with Explicit Context](#)
    - [2.2.12 Social Context](#)
    - [2.2.13 Assessment Scale](#)
    - [2.2.14 Substances](#)
- [2.3. Internal Quality Improvement](#)
  - [2.3.1 Logic Profile Enhancements](#)
  - [2.3.2 Machine Readable Concept Model \(MRCM\)](#)

- 2.4 SNOMED CT derived products
  - 2.4.1 ICD-10 map
    - 2.4.1.1 Content development activity summary
    - 2.4.1.2 Mapped content for July 2018
    - 2.4.1.3 Technical Guide Exemplars
  - 2.4.2 ICD-O Map
  - 2.4.3 SNOMED CT to OWL conversion and classification
- 3 Technical notes
  - 3.1 Known Issues
  - 3.2 Resolved Issues
  - 3.3 Technical updates
    - 3.3.1 RF2 package format
    - 3.3.2 Introduction of two new refsets - OWLAxiom and OWLOntology
    - 3.3.3 Replacement of OWL conversion script with a link to the open source directory
    - 3.3.4 Deprecation of the Technical Guide Exemplars document from the International Edition release package
    - 3.3.5 Early visibility of impending change in the January 2019 International edition
    - 3.3.6 IMPORTANT CHANGE in the January 2019 International Edition
    - 3.3.7 Document links

## Table Of Contents

- 
- Table Of Contents
- 1 Introduction
  - 1.1 Background
  - 1.2 Purpose
  - 1.3 Scope
  - 1.4 Audience
- 2 Content Development Activity
  - 2.1 Summary
  - 2.2 Content Quality Improvement
    - 2.2.1 Anatomy
    - 2.2.2 Clinical finding
    - 2.2.3 Convergent Medical Terminologies (CMT)
    - 2.2.4 Procedure Hierarchy
    - 2.2.5 Collaboration/Harmonization Projects
      - 2.2.5.1 Orphanet

- 2.2.5.2 Global Medical Device Nomenclature Agency (GMDNA)
      - 2.2.6 Event
      - 2.2.7 Qualifier Value
      - 2.2.8 Organism
      - 2.2.9 Pharmaceutical / biologic product
      - 2.2.10 Veterinary Extension
      - 2.2.11 Situation with Explicit Context
      - 2.2.12 Social Context
      - 2.2.13 Assessment Scale
      - 2.2.14 Substances
    - 2.3. Internal Quality Improvement
      - 2.3.1 Logic Profile Enhancements
      - 2.3.2 Machine Readable Concept Model (MRCM)
    - 2.4 SNOMED CT derived products
      - 2.4.1 ICD-10 map
        - 2.4.1.1 Content development activity summary
        - 2.4.1.2 Mapped content for July 2018
        - 2.4.1.3 Technical Guide Exemplars
      - 2.4.2 ICD-O Map
      - 2.4.3 SNOMED CT to OWL conversion and classification
  - 3 Technical notes
    - 3.1 Known Issues
    - 3.2 Resolved Issues
    - 3.3 Technical updates
      - 3.3.1 RF2 package format
      - 3.3.2 Introduction of two new refsets - OWLAxiom and OWLOntology
      - 3.3.3 Replacement of OWL conversion script with a link to the open source directory
      - 3.3.4 Deprecation of the Technical Guide Exemplars document from the International Edition release package
      - 3.3.5 Early visibility of impending change in the January 2019 International edition
      - 3.3.6 IMPORTANT CHANGE in the January 2019 International Edition
      - 3.3.7 Document links
- 

# 1 Introduction

## 1.1 Background

SNOMED CT terminology provides a common language that enables a consistent way of indexing, storing, retrieving, and aggregating clinical data across specialties and sites of care.

SNOMED International maintains the SNOMED CT technical design, the content architecture, the SNOMED CT content (includes the concepts table, the descriptions table, the relationships table, a history table, and ICD mappings), and related technical documentation.

## 1.2 Purpose

This document provides a summarized description of the content changes included in the July 2018 release of SNOMED Clinical Terms® (SCT) International Release.

It also includes technical notes detailing the known issues which have been identified. These are content or technical issues where the root cause is understood, and the fix has been discussed and agreed, but has yet to be implemented.

This document is available alongside the July 2018 International Edition release.

## 1.3 Scope

This document is written for the purpose described above and is not intended to provide details of the technical specifications for SNOMED CT or encompass every change made during the release.

## 1.4 Audience

The audience includes National Release Centers, WHO-FIC release centers, vendors of electronic health records, terminology developers and managers who wish to have an understanding of changes that have been incorporated into the July 2018 International Edition release.

## 2 Content Development Activity

### 2.1 Summary

Continuous quality improvement and enhancement of existing content is ongoing based on requests received via the Content Request System (CRS). A review of pre-coordination patterns has been undertaken to assist with the progression of CRS tickets that had been placed on hold. 35 patterns have had final decisions made and the corresponding CRS tickets progressed accordingly. Information on the pattern decisions may be found in the [SNOMED CT Editorial Guide](#)

The July 2018 International Release has seen a continuation of the work driven by contributions from: Kaiser Permanente Convergent Medical Terminology (CMT), Global Medical Device Nomenclature Agency (GMDNA) and Orphanet to add new content to SNOMED CT.

Additionally a process of Quality Improvement and project-driven changes have resulted in new content additions and enhancements to existing content detailed below.

#### **Reminder**

**Inactivation reason of LIMITED/WAS A will no longer be allowed for any content after the July 2018 release. The WAS A association refset will not be updated thereafter.**

#### **Background**

**In 2015, a proposal was made to inactivate 159083000 [WAS A (attribute)] relationship and stop updating the 900000000000528000 [WAS A association reference set (foundation metadata concept)] at the Editorial Advisory Group.**

**Since these recommendations were made, a formal proposal for the technical approach to batch updating the terminology was created and a notice of the proposed inactivation sent to the Community of Practice.**

**The implementation of changes was postponed following feedback on utility for implementation and the potential impact to customers who were still using RF1.**

**The matter was discussed again at the meeting of the Editorial Advisory Group in Bratislava in October 2017. Since the requirements and potential issues can be addressed by deriving such information from the RF2 release format, the recommendation is to proceed the decision after the July 2018 release.**

### 2.2 Content Quality Improvement

**A total of 6494 new concepts were added**

SCT Statistics	New concept additions
SNOMED CT Concept (SNOMED RT+CTV3)	6494
Body structure (body structure)	357
Clinical finding (finding)	1203
Event (event)	2
Observable entity (observable entity)	60
Organism (organism)	182
Pharmaceutical / biologic product (product)	3053
Physical object (physical object)	88
Procedure (procedure)	659
Qualifier value (qualifier value)	224
Record artifact (record artifact)	5
SNOMED CT Model Component (metadata)	10
Situation with explicit context (situation)	64

Social context (social concept)	27
Specimen (specimen)	2
Staging and scales (staging scale)	21
Substance (substance)	537

#### **A total of 32889 changes were made to existing content**

<b>SCT Improvement Statistics to Existing Concepts</b>	<b>Number</b>
Total number of changes	32889
Change to stated concept definition	20126
Change to inferred concept definition	27970
Change in concept definition status from Primitive to Sufficiently Defined	7997
Description change	10691
Inactivated concepts	6955
Inactivated descriptions	9256
Reactivated concepts	16

## **2.2.1 Anatomy**

### **Advance Notice**

#### **Planned inactivation of 123005000 |Part of (attribute)| attribute and relationships in the January 2019 release**

|Part of| relationships have only been included in the inferred relationship file. They are not actively maintained because they are additional relationships rather than defining relationships. The new anatomy concept model has introduced different kinds of 'part of' relationships, e.g. |All or part of|, |Constitutional part of|, |Lateral half of|, |Regional part of|, and |Systemic part of|. The modeling Advisory Group has recommended inactivation of 123005000 |Part of (attribute)| attribute and relationships in the January 2019 release. It will be replaced by a new attribute |Proper part of| to represent defining relationships where 'part is not equal to whole'. The new anatomy model will be implemented in future releases when the required description logic enhancements are implemented.

New anatomy concepts: 357

- 333 new body structure concepts.
- 24 new morphologic abnormality concepts.
- 276 new lateralized body structure concepts.
- There are now over 5,600 lateralized concepts in SNOMED CT and over 300 concepts are new lateralized findings, disorders and procedures.

Updates have been made to 109 concepts to conform with the new editorial guidance on the naming convention for digits of hand and foot.

- Added 196 new descriptions.
- Inactivated 174 descriptions.

Updates have been made to concepts for skin and/or subcutaneous tissue to conform to the editorial guidance on the naming convention for conjunction and disjunction.

- Added 84 new descriptions.
- Inactivated 30 descriptions.

## 2.2.2 Clinical finding

New concepts for clinical findings and disorders: 1203

Work **completed** on the following Content Projects:

- IHTSDO-451 - Has definitional manifestation.
- IHTSDO-592 and IHTSDO-381 - Inactivate 91138005|Mental retardation (disorder)| and replace with 110359009|Intellectual disability (disorder)| with change to 281 descendant concepts.
- IHTSDO-955 - Remodel Talipes Valgus.

Work **commenced** on the following Content Projects:

- IHTSDO-703 - Inactivation of 'unilateral' concepts. Work on the inactivation of unilateral concepts and the creation of left and right replacement concepts continued this release. The focus areas were: Cleft lip, Femoral hernia, Inguinal hernia, Kidney disorder/procedure, Orchidectomy, Orchiectomy, Lymphangiography, Vascular imaging procedures. In the areas of cleft lip and hernia additional modelling improvements were also made. Further work is still required to complete the inactivation of unilateral concepts.
- IHTSDO-614 - Rework hierarchy 441457006|Cyst (disorder)| work on this project continues.
- IHTSDO-393 Diabetes Complications - Work has begun on updating and modeling content relating to the diagnosis and management of patients with diabetes mellitus. Initial work relates to diabetic complications where the editorial guidance on combined disorders and complications is being applied. A small task and finish group consisting of representatives of the multidisciplinary care team will be reviewing existing content and advising on new content to ensure that SNOMED CT is fit for the purposes of supporting the electronic health care record for this group of patients.
- IHTSDO-114 - 183 out of 585 descendants of 128294001 |Chronic inflammatory disorder (disorder)| have been remodeled with stated relationship changed from Associated Morphology = Chronic inflammation (morphologic abnormality) to Associated morphology (attribute) = Chronic inflammatory morphology (morphologic abnormality), made Fully Defined, modeled to primitive parent, addition of Clinical course (attribute) = Chronic (qualifier value) and other relationships added or grouped as necessary. Stated children of inferred subtypes of 128294001 |Chronic inflammatory disorder (disorder)| have started to be addressed following the pattern above, and the remainder are now part of the QI work for inclusion in a future release. 249 inferred concepts require a stated relationship change from Associated Morphology = Chronic inflammation (morphologic abnormality) to Associated morphology (attribute) = Chronic inflammatory morphology (morphologic abnormality).

Other content quality improvements:

- For the January 2018 release the synonym of "occlusion" was inactivated from 26036001|Obstruction (morphologic abnormality) and added to 50173008|Complete obstruction (morphologic abnormality). 415582006|Stenosis (morphologic abnormality)| became a descendant of 25659002|Narrowed structure (morphologic abnormality). These changes resulted in a further 133 released concepts being reviewed and /or changed for the July 2018 release.
- Added a new sufficiently defined concept of 763597000|Hereditary ataxia (disorder)| resulting in changes to 40 concepts.
- Hierarchy review/remodel descendants of 248595008|Sputum (finding)| with changes to 59 concepts.
- Review/remodel "Progressive" disorders with changes to approximately 200 concepts. A new clinical course qualifier value has been created: 255314001|Progressive (qualifier value)| as a subtype of 90734009|Chronic (qualifier value)|. Can be used to fully define progressive disorders using 246454002|Occurrence (attribute)| = progressive (qualifier value)
- Review/remodel of "Acquired" disorders with changes to 697 concepts. A new period of life has been created: 767023003|Period of life beginning after birth and ending before death (qualifier value)|. This allows for a distinction to be made between acquired vs. congenital concepts and also permits existing 'acquired' concepts to be sufficiently defined.
- Addition of Bipolar disorder concepts which include the most recent episode information.
- 36 new concepts added for genetic diseases which were not part of the Orphanet project.
- Remodeling and re-terming of 110288007 |Joint tenderness (finding)|. Redefined Joint tenderness as IS\_ A Tenderness (finding) + finding site=joint structure and all of the specific joint tenderness concepts using the same pattern. Renamed all joint tender(ness) concepts as Tenderness of x joint (finding).
- Inactivated 202936005 |Ganglion and cyst of synovium, tendon and bursa (disorder) and used an analogous approach to inactivate the descendants with new replacement concepts.

- Remodel 63491006 [Intermittent claudication (finding)] hierarchy. Added due to 86341008 [Vascular insufficiency (disorder)]. Removed parent of 22253000 [Pain (finding)] and added parents of 427935006 [Pain relief by rest (finding)] and 427341007 [Pain provoked by exertion (finding)].
- Review and remodel 11 viral disorder and related concepts.
- 45 new clinical finding/disorder concepts added for Dentistry.
- Inactivated out of scope [Allergy to X (disorder)] concepts, as identified by the Allergy/Hypersensitivity and Intolerance Clinical Reference Group.
- Review and remodel of 520 fracture of lower limb concepts using a proximal primitive parent and creating stated defining relationships for those which were previously inferred relationships.
- Intussusception disorder concepts were remodeled using the proximal primitive parent modeling approach with two relationship groups capturing the invagination and obstruction morphologic abnormalities of this disorder. The concept Intussusception (morphologic abnormality) was inactivated as a duplicate of Invagination (morphologic abnormality).

## 2.2.3 Convergent Medical Terminologies (CMT)

New CMT concepts: 215

These were added across 3 domains:

- CMT Cardiology
- CMT Hematology oncology
- CMT Musculoskeletal

## 2.2.4 Procedure Hierarchy

New concepts for procedure hierarchy: 659

Diagnostic imaging - 32 requests were received for new imaging procedure concepts with various imaging modalities.

Work **completed** on the following Content Projects:

- IHTSDO-688 - Improvement in the modelling of the Brachytherapy sub-hierarchy.

Other content quality improvements:

- Implemented changes related to 208 client requests mainly in the area of laboratory procedure and microbiology reporting. Changes are implemented in the following hierarchies: Organism (including creation of 133 new organism concepts), Specimen, Evaluation procedure, Finding, Substance, and Technique.
- Updated naming for *Streptococcus pneumoniae* serotypes by specifying the nomenclature system (Danish vs. American) which resulted in changes for 214 concepts (including addition, inactivation or change in description) in the following hierarchies: Organism, Substance, and Evaluation procedure.

## 2.2.5 Collaboration/Harmonization Projects

### 2.2.5.1 Orphanet

As a result of collaboration with Orphanet (<http://www.orpha.net/consor/cgi-bin/index.php>) 473 new SNOMED CT concepts have been created to represent rare diseases in the disorder hierarchy.

### 2.2.5.2 Global Medical Device Nomenclature Agency (GMDNA)

64 new SNOMED CT concepts created and mapped in the Physical object hierarchy to support the GMDN collaboration agreement.

## 2.2.6 Event

New concepts added: 2

Work **commenced** on the following Content Projects:

- IHTSDO-1071 - Vehicle accident (event) - Inactivation of over 200 transport accidents from Event hierarchy.

## 2.2.7 Qualifier Value

New concepts added: 224

Content quality improvements:

- Several new concepts have been added for Pathological process (qualifier value) to support the upcoming revisions to the allergy model.
- Replaced existing ambiguous top-level concept 258666001 [Unit (qualifier value)] with new 767524001 [Unit of measure (qualifier value)] concept. To support modeling of clinical drug concepts in the 763158003 [Medicinal product (product)] hierarchy, created new 767525000 [Unit (qualifier value)] concept as descendant of 259026009 [Miscellaneous unit (qualifier value)].
- 308912000 [Agencies and organizations (qualifier value)] and subtypes moved to a National extension, 66 concepts inactivated from the International release.

## 2.2.8 Organism

New organism concepts added: 182

Work **commenced** on the following Content Projects:



- IHTSDO-455 - Organism Life Cycles - The project was undertaken to clarify the meaning of organism concepts that are likely values for laboratory reports related to parasitic and certain other infections. Concept descriptions and definitions were edited for concepts such as 609326000 | Strongyloides stercoralis larval form (organism) |, previously placed as subtypes of both 421727006 | Phylum Nemata (organism) and 278306005 | Life-cycle form (organism) |, so that their status as organisms was made clear. This project altered 320 concepts representing various taxonomic groups including phylum Nemata, class Cestoda, class Trematoda, protozoa, Fungi, yeasts and viruses. A limited number of concepts that could not be related to a specific organism (e.g. 278306005 | Life-cycle form |) were inactivated. In cases where a diagnosis is made by identifying an organism structure (e.g. 284688000 | Fungal hyphae |), the organism concept was inactivated and referred to a finding concept "404507002 | Hyphae of Kingdom Fungi detected (finding).

Other content quality improvements:

- Updated naming for Streptococcus pneumoniae serotypes by specifying the nomenclature system (Danish vs. American) which resulted in changes for 214 concepts (including addition, inactivation or change in description) in the following hierarchies: Organism, Substance, and Evaluation procedure.

## 2.2.9 Pharmaceutical / biologic product



### Drug model project

For further details on the planned changes in this area, please refer to the Drug Model Working Group Directory section.

*Please note, you may have to register for Confluence user account in order to access this project and the relevant links below.*

The following changes will be included in the 2018-July International Release.

<b>New hierarchies</b>	<ul style="list-style-type: none"> <li>• 766940004   Role (role) and subhierarchy 766941000   Therapeutic role (role) created with additional subtypes to be added in future releases</li> </ul>
<b>New semantic tags</b>	<ul style="list-style-type: none"> <li>• (role)</li> </ul>
<b>New attribute types</b>	<ul style="list-style-type: none"> <li>• 766953001  Count of active ingredient (attribute) </li> <li>• 766954007  Count of base and modification pair (attribute) </li> <li>• 766952006  Count of base of active ingredient (attribute) </li> <li>• 763032000  Has unit of presentation (attribute) </li> <li>• 766939001  Plays role (attribute) </li> </ul>
<b>Grouper concepts representing disposition, intended site, and /or structure</b>	<ul style="list-style-type: none"> <li>• Grouper concepts representing disposition, intended site, and/or structure sufficiently defined by modeling to proximal primitive concept, adding defining attributes, and updating descriptions per editorial guidelines (n550).</li> </ul> <p>New high level grouper concepts created as an incremental improvement with additional subtypes to be added in future releases:</p> <ul style="list-style-type: none"> <li>• 766779001  Medicinal product categorized by disposition (product) </li> <li>• 763760008  Medicinal product categorized by structure (product) </li> <li>• 767102007  Medicinal product categorized by chemical element (product) </li> </ul>
<b>Product role concepts</b>	

	<ul style="list-style-type: none"> <li>• Concepts representing product role relocated as stated descendants of 763087004   Medicinal product categorized by role (product) with definition status = primitive and attributes inactivated (n 400)</li> <li>• For further details see <a href="#">Briefing Note Use of Additional Axiom Functionality and Remodeling Product Role</a></li> </ul>
<b>Medicinal product (MP) concepts</b>	<ul style="list-style-type: none"> <li>• <b>MP-containing</b> concepts sufficiently defined by modeling to proximal primitive concept, adding defining attributes, and updating descriptions per editorial guidelines (n 3750). Includes the following attributes:</li> <li>• Has active ingredient (n4650)</li> </ul>
<b>Medicinal product form (MPF) concepts</b>	<ul style="list-style-type: none"> <li>• <b>MPF-containing</b> concepts sufficiently defined by modeling to proximal primitive concept, adding defining attributes, and updating descriptions per editorial guidelines (n2100). Includes the following attributes:</li> <li>• Has active ingredient (n2400)</li> <li>• Has manufactured dose form (n2150)</li> </ul>
<b>Clinical drug (CD) concepts</b>	<p><b>CD-containing precisely</b> concepts sufficiently defined by modeling to proximal primitive concept, adding defining attributes, and updating descriptions per editorial guidelines (n 4850). Includes the following attributes:</p> <ul style="list-style-type: none"> <li>• Count of base of active ingredient (n4850)</li> <li>• Has basis of strength substance (n5600)</li> <li>• Has concentration strength denominator unit (n1450)</li> <li>• Has concentration strength denominator value (n1450)</li> <li>• Has concentration strength numerator unit (n1450)</li> <li>• Has concentration strength numerator value (n1450)</li> <li>• Has manufactured dose form (n4850)</li> <li>• Has precise active ingredient (n5550)</li> <li>• Has presentation strength denominator unit (n4750)</li> <li>• Has presentation strength denominator value (n4750)</li> <li>• Has presentation strength numerator unit (n4750)</li> <li>• Has presentation strength numerator value (n4750)</li> </ul>
<b>Documentation</b>	<ul style="list-style-type: none"> <li>• Notification for Briefing Notes, Editorial Guidelines, and other documentation updates are posted on the project group website as they become available; see <a href="#">Drug Model Working Group - Directory</a> for details</li> </ul>

## 2.2.10 Veterinary Extension

15 concepts were moved to the Veterinary Extension.

## 2.2.11 Situation with Explicit Context

New concepts added : 64

143 concepts using the pattern 'OFFERED' or 'NOT OFFERED' were inactivated.

Addition of new concepts for transplant donor and recipient Epstein Barr virus status.

Work **continuing** on the following Content Projects:

- IHTSDO-703 - Inactivation of 'unilateral' concepts. Work on the inactivation of unilateral concepts and the creation of left and right replacement concepts continued this release.

## 2.2.12 Social Context

26 new concepts were added as a subtype of 14679004[Occupation (occupation)].

## 2.2.13 Assessment Scale

Review of 11 of assessment scale concepts for duplicates or correctness.

Addition of 96 assessment scale, observable entity and procedure concepts to support use of assessment scales.

## 2.2.14 Substances

The following changes will be included in the 2018-July International Release.

<b>Disposition groupers</b>	<ul style="list-style-type: none"> <li>• Disposition Groupers had been updated, modeled and fully defined in Jan2018 release. Just under 50 additional Disposition concepts have been created in the July 2018 data.</li> <li>• Existing Disposition groupers for substances have been remodeled in the July 2018 data.</li> <li>• Additional Disposition Groupers for substances have been created. A total of approx. 300 Disposition grouper substances.</li> <li>• A new substance top level concept of "Substance categorized by disposition (substance)" has been created to allow substances with dispositions to be modeled as proximal primitive.</li> <li>Disposition (disposition)</li> <li>• New concepts created (n 250)</li> </ul>
<b>Structural groupers</b>	<ul style="list-style-type: none"> <li>• Structural Groupers have been retained as primitive concepts.</li> <li>• Additional Structural Groupers have been created. Approximately 20</li> </ul>
<b>Chemical element groupers</b>	<ul style="list-style-type: none"> <li>• Inactivated and recreated to avoid the use of <b>AND/OR</b> and provide consistent modeling.</li> </ul>
<b>Combined groupers</b>	<ul style="list-style-type: none"> <li>• Combined Groupers ( Structure + Disposition) be have been remodeled in the July 2018 data</li> </ul>
<b>Is modification of attribute</b>	<ul style="list-style-type: none"> <li>• The "Is modification" attribute has been implemented resulting in a to flattening of the substances hierarchy.</li> </ul>
<b>Role groupers</b>	<ul style="list-style-type: none"> <li>• Role Groupers in the substances hierarchy have been reviewed. In the region of 100 substance Role grouper concepts have been inactivated and others replaced. This work is ongoing. The retention of some role based groupers in the substances hierarchy means that some substances are not classifying correctly.</li> </ul>

<b>General content updates</b>	<ul style="list-style-type: none"> <li>• Radiopharmaceutical concepts have been remodelled and the terms updated to provide consistent representation of these concepts.</li> <li>• Dietary subhierarchy. To remove context of use from the substance concepts 80 substances inactivated. In some instances replacement concepts have been created without " – dietary" tag. The concept "Dietary substance (substance)" has been inactivated and replaced with a new concept "Edible substance (substance)"</li> <li>• Overall 447 new concepts added to the substances hierarchy. Just over 460 substance concepts have been inactivated in the release.</li> </ul>
<b>Documentation</b>	<ul style="list-style-type: none"> <li>• Notification for Briefing Notes, Editorial Guidelines, and other documentation updates are posted on the project group website as they become available; see <a href="#">Project Status Substance Hierarchy</a> for details</li> </ul>

Other content quality improvements:

Inactivation of 417881006|Radiopharmaceutical agent (substance)| which was a primitive concept with three stated subtypes and not a substance but a role of a substance. After the inactivation, there was a hierarchy review starting at 33638001|Isotope (substance)| involving approximately 850 concepts.

Creation of new terming document, use of INN terming where possible. Alignment of content with new terming

Removal of caret "^" for superscript

For example:

Before = 24511001|Technetium Tc<sup>99m</sup> succimer (substance)

After = 24511001|Technetium (99m-Tc) succimer (substance)

Substances were moved under more specific supertypes where possible. Removal of formatting carets

Identified nuclear medicine procedures using a "substance grouper" as an attribute value but refer to a specific substance in the FSN. Remodeled with a specific substance approximately 93 concepts

Concept 371572003|Nuclear medicine procedure (procedure)| has been sufficiently defined. A hierarchy review has been started to review terming, use of correct radioisotopes, and inactivation of concepts containing additional context outside of the actual procedure.



#### Release plans, Substance hierarchy

For further details on the planned changes in this area, please refer to the Substances project.

*Please note, you may have to register for Confluence user account in order to access this project and the relevant links above.*

## 2.3. Internal Quality Improvement

### 2.3.1 Logic Profile Enhancements

#### The first release of the OWL reference sets

As an essential part of SNOMED CT Logic Profile Enhancements, two OWL refsets have been developed to represent logic definitions following the international standard of OWL 2 Web Ontology Language.

The OWL Ontology reference set includes essential metadata information about an ontology, such as, namespaces, ontology URI and ontology version URI.

The OWL Axiom reference set includes only property axioms, such as property chains, transitive properties, and reflexive properties, that cannot be fully represented by the RF2 stated and inferred relationship files. The limited scope of the first release is a response to the Community of Practice Consultation happened early this year, which allows sufficient time for users to develop and update their tooling and systems.

The content from the OWL reference sets must be included for all applications that utilise the description logic (DL) reasoning services to ensure correct inferences. These property axioms are required for classification by DL reasoners to support the drug, substance, and anatomy projects and other clinical content depend on them. Extensions can update the refsets by following the OWL reference sets specification.

Following the recommendation from the Modeling Advisory Group, the full representation of all logical definitions and other key DL features, such as additional axioms and GCIs (General Concept Inclusion), will be included in the OWL axiom refset in the January 2019 release. A reference implementation by SNOMED International was demonstrated at the April business meeting. All software systems implemented DL reasoning services need to be updated to use the OWL axiom refset that is the only source of truth for logic definitions from 2019.

#### Updates to the RF2 relationship files

There are no changes to the stated relationship file for the July 2018 release. However, the stated relationship file must be used in conjunction with the OWL refsets for the DL reasoning services.

In the January 2019 release, the stated relationship file will be replaced by the OWL axiom refset that includes all logical definitions and other features specified in the SNOMED CT logic profile specification. The stated relationship file will NOT be included in the international release; however, it may still be available on request to support migration to the OWL axiom refset.

The inferred relationship file will maintain the same format and structure, though it is no longer containing all necessary and sufficient conditions. The inferred relationship file is represented in Necessary Normal Form for distribution of relationships. It is a collection of all the necessary conditions and represents a subset of the full semantics from the 2018 July release and onwards. Most users will benefit from the improvements in the inferred relationships without requiring changes to their existing systems.

A set of documentations has been developed to support the Logic Profile Enhancements.

- SNOMED DL Profile Enhancements - <https://docs.google.com/document/d/1tqNEA6S4fEF4fgj15OPabYA2E0VTz8epxvRRwczKizQ/edit?usp=sharing>
- SNOMED CT Logic Profile Specification - <http://snomed.org/lps>
- SNOMED CT OWL Guide (OWL Refsets specification) - <http://snomed.org/owl>
- Necessary Normal Form for Inferred Relationships - [https://docs.google.com/document/d/1dt0r0aetwpmwHOfiT9wt0EVukVLRvVjXYUn\\_vq-QhIM/edit?usp=sharing](https://docs.google.com/document/d/1dt0r0aetwpmwHOfiT9wt0EVukVLRvVjXYUn_vq-QhIM/edit?usp=sharing)
- Snomed OWL Toolkit - <https://github.com/IHTSDO/snomed-owl-toolkit>
- Classifying SNOMED CT using the Snomed OWL Toolkit - <https://youtu.be/-91egY9mJqA>
- Creating an OWL file containing SNOMED CT - [https://youtu.be/sfFbMMioA\\_4](https://youtu.be/sfFbMMioA_4)

## 2.3.2 Machine Readable Concept Model (MRCM)

14 new MRCM rules and 10 updates to the existing MRCM in the MRCM refsets and authoring platform.

- New MRCM for new attribute 738774007 |Is modification of|
- New MRCM for new attribute 762951001 |Has ingredient|
- New MRCM for new attribute 762949000 |Has precise active ingredient|
- New MRCM for new attribute 411116001 |Has manufactured dose form|
- New MRCM for new attribute 763032000 |Has unit of presentation|
- New MRCM for new attribute 733928003 |All or part of|
- New MRCM for new attribute 733931002 |Constitutional part of|
- New MRCM for new attribute 733933004 |Lateral half of|
- New MRCM for new attribute 733930001 |Regional part of|
- New MRCM for new attribute 733932009 |Systemic part of|
- New MRCM for new attribute 766952006 |Count of base of active ingredient|
- New MRCM for new attribute 766954007 |Count of base and modification pair|
- New MRCM for new attribute 766953001 |Count of active ingredient|
- New MRCM for new attribute 766939001 |Plays role|
- Change the range for attribute 246514001 |Units| from |Unit| to |Unit of measure|
- Change the range for attribute 733722007 |Has concentration strength denominator unit| from |Unit| to |Unit of measure|
- Change the range for attribute 733725009 |Has concentration strength numerator unit| from |Unit| to |Unit of measure|
- Change the range for attribute 732947008 |Has presentation strength denominator unit| from |Unit| to |Unit of measure|
- Change the range for attribute 732945000 |Has presentation strength numerator unit| from |Unit| to |Unit of measure|
- Expand the range of 726542003 |Has disposition| to include 726711005 |Disposition|
- Expand the range of 704319004 |Inheres in| to include << 125676002 |Person (person)|
- Expand the range of 118170007 |Specimen source identity| to include << 260787004 |Physical object|
- Expand the range of 704321009 |Characterizes| to include << 71388002 |Procedure|

## 2.4 SNOMED CT derived products

### 2.4.1 ICD-10 map

The SNOMED CT to the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (© World Health Organisation 1994) 2016 Version map (SNOMED CT to ICD-10 Map) is included in the SNOMED CT International release as a Baseline. The SNOMED CT to ICD-10 Map was created to support the epidemiological, statistical and administrative reporting needs of SNOMED International member countries and WHO Collaborating Centres.

The SNOMED CT to ICD-10 Map is released in Release Format 2 (RF2) only. It is located in the file `der2_iisssccRefset_ExtendedMapFull_INT_20180731.txt`, which is in the Map folder under Refset, in each of the three RF2 Release Type folders.

The SNOMED CT to ICD-10 Map is released as Refset 447562003 |ICD-10 complex map reference set (foundation metadata concept)|.

#### 2.4.1.1 Content development activity summary

The map is a directed set of relationships from SNOMED CT source concepts to ICD-10 target classification codes. The SNOMED CT source domains for the MAP are limited to subtypes of 404684003 |clinical finding|, 272379006 |event| and 243796009 |situation with explicit context|. The target classification codes are ICD-10 2016 release.

#### 2.4.1.2 Mapped content for July 2018

The map provided for the July 2018 release has been updated, and now represents a complete map from SNOMED CT International release to ICD-10 2016 version.

- 1278 new concepts added

We would welcome feedback on any issues that users of the map may detect when using the map. Issues should be submitted via [mapping@snomed.org](mailto:mapping@snomed.org)

#### 2.4.1.3 Technical Guide Exemplars

The Technical Guide Exemplars document has now been moved from the International Edition release package to a Confluence page. This page can be found as part of the ICD-10 Mapping Technical Guide (see Appendix B), which is hosted here: <http://snomed.org/icd10map>

### 2.4.2 ICD-O Map

There are 5 updates for the ICD-O Morphological abnormality map in July 2018 release.

## 2.4.3 SNOMED CT to OWL conversion and classification

The repository containing the toolkit enabling simple SNOMED CT to OWL conversion and classification can be found here, including documentation on its use:

<https://github.com/IHTSDO/snomed-owl-toolkit>

Please contact SNOMED International at [support@snomed.org](mailto:support@snomed.org) if you would like to provide any feedback on ways to extend and improve the new toolkit.

## 3 Technical notes

### 3.1 Known Issues

Known Issues are content or technical issues where the root cause is understood, and the resolution has been discussed and agreed but has yet to be implemented. This can be due to a number of reasons, from lack of capacity within the current editing cycle, to the risk of impact to the stability of SNOMED CT if the fix were to be deployed at that stage in the Product lifecycle.

For the Snomed CT July 2018 International edition, the following Known Issues were identified, and agreed to be resolved in the next editing cycle (to be published in July 2018):

Key	Summary	Description
ISRS-323	<a href="#">CaseSignificance changes to be implemented for July 2018 International Edition</a>	<p>A small percentage of the records updated for the caseSignificance changes have been identified as not having yet been resolved. Due to their relatively low impact we are proposing to retain these as Known Issues for the current release, and resolve them as part of future editing cycles.</p> <p>KNOWN ISSUE: The SNOMED International Content Team have confirmed that deferring these fixes to later editing cycles is the correct approach. Some of the issues have now been fixed, but others will therefore be fixed in future editing cycles.</p>
ISRS-391	<a href="#">Descriptions in unexpected modules</a>	<p>The following description is in the core module, whilst the related components are in the model component module:</p> <p>3636048013    EDQM simple map reference set module</p> <p>(stated relationship is also on core, inferred is on model component...)</p> <p>There are also 155 inactive descriptions that may be in the wrong module.</p> <p>KNOWN ISSUE: As these are historical issues, the SNOMED International Content Team have confirmed that the safest course of action is to resolve them in the next editing cycle, ready for release in the January 2019 International release.</p>

[2 issues](#)

### 3.2 Resolved Issues

Resolved issues are Known Issues which were not fixed as part of the previous release lifecycle, but which have now been resolved in the latest release - in this case the July 2018 International Edition. They can also be issues found during the Alpha and Beta testing of the current release, which were resolved before the final deployment of the associated Member release. Finally they can be issues which were reported or found during the testing phase, but which have been closed without any action taken.

The Resolved Issues for the Snomed CT July 2018 International edition can be found here:

Key	Summary	Description	Resolved
ISRS-316	<a href="#">Track changes for ISRS-302</a>	<p>Ticket opened to track the merge of the changes for <a href="#">ISRS-302</a> back into Main...</p> <p>RESOLUTION: Case significance changed for all relevant records. Rules to be continually refined going forward to prevent future issues of a similar nature.</p>	2018-May-02
ISRS-321	<a href="#">July 2018 release - check and /or inactivate duplicate preferred terms on release</a>	<p>A query was run using the following criteria: Duplicate descriptions which are active, have an active concept, are preferred in the US and where the concepts have the same semantic tag in the FSN.</p>	2018-May-31

content

41 instances of duplicate preferred terms were found.

<https://docs.google.com/spreadsheets/d/1J6IN5CyoIkdu68iUuOeBZ9tvfS7qnc1Ne2z2pDaXlqA/edit#gid=0>

RESOLUTION: SNOMED CT Content Team found and fixed several PT issues as a result for the report. Alpha release spot checked and no new issues found, so ticket can be closed.

ISRS-324	Clinical finding 404684003 only approved defining attributes used - planned for July 2018 International Edition	<p>There are 3308 instance of 363705008 Has definitional manifestation  being used. ---ATF-4463--- indicates this attribute was deprecated. 90 new instances have been added for this release. There are 6 relationships using 726633004 Temporally related to . It may be valid, but I can't find any information about this attribute.</p> <p>RESOLUTION: All concepts modelled with 363705008 Has definitional manifestation (attribute)  had this attribute inactivated for the July 2018 release</p>	2018-Jul-31																				
ISRS-327	Minor issues in the MRCM Domain file - planned for resolution in July 2018 International Edition	<p>Minor issues have been identified in the MRCM Domain file, as follows:</p> <ul style="list-style-type: none"><li>• 4c97efc0-bfb8-4afc-b3f1-d60862074973 (Administration of substance via specific route) + 7ca9ec15-74ce-488d-a250-2a3c71278268 (Anatomical structure) - The parentDomain was omitted.</li><li>• f1136b12-f2bd-46db-b9fb-be484129e40c (Clinical finding) + 3f013ed8-b9bd-4938-9b80-0873ee329304 (Disease) + 529e4ef1-4e07-4866-89a7-072bfba20461 (Event) - The attribute  During AND/OR after  was mistakenly included in the domainTemplateForPrecoordination and domainTemplateForPostcoordination.</li></ul> <p>RESOLUTION: The July 2018 International Edition includes updates to the MRCM Domain reference set file to resolve the above issues. SNOMED International content team has therefore confirmed no further action required.</p>	2018-Jun-06																				
ISRS-362	Association Reference records	<p>UKTC logged the following potential issue:</p> <p>900000000000527005   SAME AS association reference set (foundation metadata concept)</p> <p>der2_cRefset_AssociationFull_INT_20180131.txt - contains the following active rows (added in July 2017) where the referencedComponentId is a descriptionId and the target is a conceptId:</p> <table><tr><td>8b46ba55-944d-41d4-b730-b5b7e11f3dd4</td><td>20170731</td><td>1</td><td>900000000000207008</td><td>900000000000</td></tr><tr><td>0527005</td><td>505551013</td><td>83330001</td><td></td><td></td></tr><tr><td>0969184a-d05f-4224-b0ae-1df6639b14af</td><td>20170731</td><td>1</td><td>900000000000207008</td><td>900000000000</td></tr><tr><td>00527005</td><td>138210017</td><td>83330001</td><td></td><td></td></tr></table> <p>The referenced component and the target should be the same class of component for all but the REFERS TO refset.</p> <p>RESOLUTION: AttributeValue records updated in time for the July 2018 International Edition</p>	8b46ba55-944d-41d4-b730-b5b7e11f3dd4	20170731	1	900000000000207008	900000000000	0527005	505551013	83330001			0969184a-d05f-4224-b0ae-1df6639b14af	20170731	1	900000000000207008	900000000000	00527005	138210017	83330001			2018-Jul-31
8b46ba55-944d-41d4-b730-b5b7e11f3dd4	20170731	1	900000000000207008	900000000000																			
0527005	505551013	83330001																					
0969184a-d05f-4224-b0ae-1df6639b14af	20170731	1	900000000000207008	900000000000																			
00527005	138210017	83330001																					
ISRS-368	July 2018 tracker for ISRS-298	<p>July 2018 tracker for <b>ISRS-298</b>, so that we can track it without losing the logging of the Known Issue in January 2018 Release Notes.</p> <p>RESOLUTION: All attribute value pairs in question have been inactivated.</p>	2018-Jul-31																				
ISRS-369	July 2018 tracker for ISRS-319	<p>July 2018 tracker for <b>ISRS-319</b>, so that we can track it without losing the logging of the Known Issue in January 2018 Release Notes.</p> <p>RESOLUTION: All MRCM Domain issues have been corrected for the July 2018 release</p>	2018-Jul-31																				
ISRS-370	RVF Assertion failure: 89ceaf00-79b9-11e1-b0c4-0800200c9a66	<p>testCategory: "release-type-validation" assertionUuid: "89ceaf00-79b9-11e1-b0c4-0800200c9a66", assertionText: "All stated relationships inactivated in current release must have been active in the previous release.", failureCount: 121,</p> <p>RESOLUTION: Resolved in time for the July 2018 International Edition.</p>	2018-Jul-31																				
ISRS-371	RVF Assertion failure: 9f84d9a0-79b9-11e1-b0c4-0800200c9a66	<p>testCategory: "file-centric-validation" assertionUuid: "9f84d9a0-79b9-11e1-b0c4-0800200c9a66", assertionText: "All source ids found in the Stated Relationship snapshot file exist in the Concept snapshot file.", failureCount: 1,</p> <p>RESOLUTION: Resolved in time for July 2018 Alpha release.</p>	2018-May-04																				
ISRS-	RVF Assertion failure:		2018-May-																				



372	<a href="#">c3249e80-84f0-11e1-b0c4-0800200c9a66</a>	testCategory: "component-centric-validation" assertionUuid: "c3249e80-84f0-11e1-b0c4-0800200c9a66", assertionText: "Terms that contain en-us specific words are in the en-us language refset.", failureCount: 23,  RESOLUTION: SNOMED International Content team confirmed that this is a warning only (that has been whitelisted), and so no further action is required.	02
ISRS-373	RVF Assertion failure: <a href="#">cab60a2f-4239-4933-91d6-dc910a8ac08b</a>	testCategory: "release-type-validation" assertionUuid: "cab60a2f-4239-4933-91d6-dc910a8ac08b", assertionText: "There must be actual changes made to previously published stated relationships in order for them to appear in the current delta.", failureCount: 1,  RESOLUTION: SNOMED International Content team confirmed that this is a warning only (that has been whitelisted), and so no further action is required.	2018-May-02
ISRS-374	RVF Assertion failure: <a href="#">cc9c5340-84f0-11e1-b0c4-0800200c9a66</a>	testCategory: "component-centric-validation,INT" assertionUuid: "cc9c5340-84f0-11e1-b0c4-0800200c9a66", assertionText: "Terms that contain en-gb specific words are in the en-gb language refset.", failureCount: 26,  RESOLUTION: SNOMED International Content team confirmed that this is a warning only (that has been whitelisted), and so no further action is required.	2018-May-02
ISRS-375	RVF Assertion failure: <a href="#">dd0d0406-7481-444a-9f04-b6fc7db49039</a>	testCategory: "component-centric-validation" assertionUuid: "dd0d0406-7481-444a-9f04-b6fc7db49039", assertionText: "The first letter of the FSN should be capitalized." failureCount: 23,  RESOLUTION: SNOMED International Content team confirmed that this is a warning only (that has been whitelisted for all historical records as approved by the TMO), and so no further action is required.	2018-May-02
ISRS-376	RVF Assertion failure: <a href="#">eb940ee0-7cd6-11e1-b0c4-0800200c9a66</a>	testCategory: "component-centric-validation" assertionUuid: "eb940ee0-7cd6-11e1-b0c4-0800200c9a66", assertionText: "Active historical association refset members have active concepts as targets.", queryInMilliseconds: 6322, failureCount: 167,  RESOLUTION: Resolved in time for the July 2018 International Edition.	2018-Jul-31
ISRS-377	RVF Assertion failure: <a href="#">eff30fb0-7856-11e1-b0c4-0800200c9a60</a>	testCategory: "file-centric-validation" assertionUuid: "eff30fb0-7856-11e1-b0c4-0800200c9a60", assertionText: "Reference componentId and valueId pair is unique in the ATTRIBUTE VALUE snapshot.", failureCount: 68,  RESOLUTION: Resolved in time for the July 2018 International Edition.	2018-Jul-31
ISRS-378	RVF Assertion failure: <a href="#">1852b9d6-38cf-11e7-8b36-3c15c2c6e32e</a>	testCategory: "release-type-validation" assertionUuid: "1852b9d6-38cf-11e7-8b36-3c15c2c6e32e", assertionText: "Previously published historical association components should not be modified.", failureCount: 386,  RESOLUTION: Resolved in time for the July 2018 International Edition.	2018-Jul-31
ISRS-379	RVF Assertion failure: <a href="#">2aa0bea1-b1fa-4543-b277-b4392a6f864d</a>	testCategory: "release-type-validation" assertionUuid: "2aa0bea1-b1fa-4543-b277-b4392a6f864d", assertionText: "New inactive states follow active states in the ATTRIBUTEVALUE snapshot.", failureCount: 1,  RESOLUTION: SNOMED International Content team confirmed that this is a warning only (that has been whitelisted), and so no further action is required.	2018-May-02
ISRS-380	RVF Assertion failure: <a href="#">2ddc9a28-150d-47a4-9b0e-7dbff2efdd72</a>	testCategory: "file-centric-validation" assertionUuid: "2ddc9a28-150d-47a4-9b0e-7dbff2efdd72", assertionText: "There is a 1:1 relationship between the id and the key values in the ASSOCIATION REFSET snapshot file.", failureCount: 2,  RESOLUTION: Resolved in time for the July 2018 International Edition.	2018-Jul-31
ISRS-381	RVF Assertion failure: <a href="#">5f1a51a3-6200-4463-8799-d75998165278</a>	testCategory: "release-type-validation" assertionUuid: "5f1a51a3-6200-4463-8799-d75998165278", assertionText: "New inactive states follow active states in the CONCEPT snapshot.", failureCount: 51,	2018-May-04

RESOLUTION: Fixed in time for the July 2018 Alpha Release.

ISRS-382 Complete the traceability analysis for the TermServer export

The traceability analysis for the TermServer export needs to be completed, to ensure that everything is being exported as expected with no data missing.

2018-May-10

RESOLUTION: analysis complete and successful, no changes required.

ISRS-384 DROOLS assertion failure: Active concept parents should not belong to more than one top-level hierarchy.

2018-Jul-31

conceptId	componentId	message	severity	ignorePublishedCheck
126162007	126162007	Active concept parents should not belong to more than one top-level hierarchy.	ERROR	TRUE

126162007 |Substance with androgen receptor agonist mechanism of action (substance)|

conceptId	componentId	message	severity	ignorePublishedCheck
767549002	767549002	Active concept parents should not belong to more than one top-level hierarchy.	ERROR	TRUE

767549002 |Traumatic volar dislocation (morphologic abnormality)|

RESOLUTION: Concepts remodelled in time for the July 2018 International Edition.

ISRS-385 DROOLS assertion failure: An active concept must not have two relationships with the same type, target and group. The duplicate can be an inactive relationship that should be reactivated, or an unreleased new relationship that should be deleted.

2018-Jul-31

The following records failed with the message "An active concept must not have two relationships with the same type, target and group. The duplicate can be an inactive relationship that should be reactivated, or an unreleased new relationship that should be deleted. Please review the following relationship:"

conceptId	componentId	relationship	Notes
238703005	9373510024	4298611021.	Confirmed issue
414662006	9373489025	4329018028.	Confirmed issue
314780006	9373478021	4332122028.	Confirmed issue
208008	9373475024	4346285023.	Confirmed issue
24285001	9373511023	4358219021.	Confirmed issue
89478006	9373501027	4376036026.	The rest need checking
404159002	9373495029	4421114025.	
45795007	9373494025	4435797028.	
78631004	9373498027	4441345029.	
91268007	9373503029	4442482024.	
64268004	4450498025	4450497024.	
51174006	9373473028	4480377021.	
239089006	9373506021	4488311026.	
246928001	9373508022	4496708022.	
11256005	9373509025	4500065027.	
428876001	9373500026	4515268025.	
403515007	9373493020	4520971028.	
108446009	6979918024	4568368026.	
108452005	6979919027	4570444024.	
74074008	6979917025	4570659023.	
108458009	6979920022	4572040026.	
84627005	4370820021	4576608029.	
413827009	6976014022	4577529023.	
412381008	6979799023	4577636025.	
412121000	6975998028	4578056027.	
412497004	6976007020	4579413021.	
422227009	6976017026	4579731021.	
425114007	6976020023	4579972025.	
412365003	6976002025	4580786023.	

412500005	6976010029	4580831029.	
398826009	6979790022	4581093021.	
424102008	6979809023	4581482025.	
398794008	6979789029	4581519028.	
422887003	6976018020	4581565025.	
412499001	6976009023	4582548020.	
412501009	6976011025	4582549028.	
412359003	6976001021	4582650022.	
420915007	6976016024	4582909028.	
413396001	6979807020	4583787029.	
412381008	6976003024	4583960020.	
412498009	6979801021	4584019020.	
412493000	6976006027	4584221022.	
398918002	6979791021	4584675020.	
416772001	6976015023	4584748022.	
412399000	6976004029	4585541020.	
412539001	6979803024	4586102024.	
412559002	6979804029	4586195027.	
412498009	6976008026	4587047026.	
412493000	6979800022	4587146021.	
412286001	6976000022	4587307028.	
412170001	6975999020	4587502024.	
412122007	6979796027	4587698022.	
423037001	6979808026	4587775024.	
398785002	6979788021	4587862028.	
412365003	6979798026	4588661024.	
412499001	6979802025	4588676027.	
412407005	6976005028	4588914020.	
412346006	6979797020	4588923023.	
412539001	6976012021	4589196025.	
398663003	6979784023	4589437027.	
699225003	9373485020	4775022023.	
707135008	5951632029	5283497020.	
707135008	5283497020	5951632029.	
5661000124106	9373483029	6049730023.	
721656007	6752174029	6752172025.	
721656007	6752172025	6752174029.	
724847001	9373502023	6894492022.	
734031008	9389910028	7104590020.	
51174006	4480377021	9373473028.	
208008	4346285023	9373475024.	
314780006	4332122028	9373478021.	
5661000124106	6049730023	9373483029.	
699225003	4775022023	9373485020.	
414662006	4329018028	9373489025.	
403515007	4520971028	9373493020.	

45795007	4435797028	9373494025.	
404159002	4421114025	9373495029.	
78631004	4441345029	9373498027.	
428876001	4515268025	9373500026.	
89478006	4376036026	9373501027.	
724847001	6894492022	9373502023.	
91268007	4442482024	9373503029.	
239089006	4488311026	9373506021.	
246928001	4496708022	9373508022.	
11256005	4500065027	9373509025.	
238703005	4298611021	9373510024.	
24285001	4358219021	9373511023.	
734031008	7104590020	9389910028.	

Also see the spreadsheet here: [https://docs.google.com/spreadsheets/d/1IVRHnSuY\\_JnhyNc2HpDZeN66gsRZ6U1ikTdl-7g9YCI/edit#gid=0](https://docs.google.com/spreadsheets/d/1IVRHnSuY_JnhyNc2HpDZeN66gsRZ6U1ikTdl-7g9YCI/edit#gid=0)

RESOLUTION: All issues fixed in time for the first Alpha release being published, and so all issues resolved in time for the July 2018 International Edition.

ISRS-390	Concepts in an unexpected module	<p>Concepts on core module (only with descriptions+relationships). Should be on 90000000000012004 [model component]</p> <p>719715003      Relative to part of (attribute)</p> <p>719722006      Has realization (attribute)</p> <p>RESOLUTION: Reporting body confirmed via email that these potential errors were based on the old Jan 2018 version, and the latest version looked fine. This ticket can therefore be closed down with no action required.</p>	2018-May-31
ISRS-395	RVF Assertion failure: 44916964-5b78-4842-81d8-e8293ee93bea	<p>assertionUuid: "44916964-5b78-4842-81d8-e8293ee93bea"</p> <p>assertionText: "There must be actual changes made to previously published inferred relationships in order for them to appear in the current delta.",</p> <p>failureCount: 3,</p> <p>firstNInstances:</p> <p>{conceptId: "425630003", detail: "Inferred relationship: id=3187444026 is in the delta file, but no actual changes made since the previous release."},</p> <p>{conceptId: "425630003", detail: "Inferred relationship: id=3192499027 is in the delta file, but no actual changes made since the previous release."},</p> <p>{conceptId: "425630003", detail: "Inferred relationship: id=3574321020 is in the delta file, but no actual changes made since the previous release."}</p> <p>RESOLUTION: SNOMED International Content Team confirmed that these are warnings only, and can therefore be closed down with no action required.</p>	2018-Jun-01
ISRS-396	RVF Assertion failure: c82246b1-a137-40c5-8653-554c9ce82c6b	<p>assertionUuid: "c82246b1-a137-40c5-8653-554c9ce82c6b"</p> <p>assertionText: "Active preferred terms for active concepts are unique in the same hierarchy",</p> <p>failureCount: 10,</p> <p>firstNInstances:</p> <p>{conceptId: "26239002", detail: "Preferred term=Football is duplicated in hierarchy (physical object)" },</p> <p>{conceptId: "413494002", detail: "Preferred term=Football is duplicated in hierarchy (physical object)"},</p> <p>{conceptId: "46625003", detail: "Preferred term=Suppository is duplicated in hierarchy (physical object)"},</p> <p>{conceptId: "706493001", detail: "Preferred term=Suppository is duplicated in hierarchy (physical object)"},</p> <p>{conceptId: "228181005", detail: "Preferred term=Suspenders is duplicated in hierarchy (physical object)"},</p>	2018-May-22

{conceptId: "415686002", detail: "Preferred term=Suspenders is duplicated in hierarchy (physical object)"},

{conceptId: "258682000", detail: "Preferred term=g is duplicated in hierarchy (qualifier value)" },

{conceptId: "422112002", detail: "Preferred term=g is duplicated in hierarchy (qualifier value)"},

{conceptId: "282120005", detail: "Preferred term=gal is duplicated in hierarchy (qualifier value)"},

{conceptId: "422049005", detail: "Preferred term=gal is duplicated in hierarchy (qualifier value)"}

RESOLUTION: The SNOMED International Content team have investigated these potential duplicates and confirmed that they are all valid terms. These potential issues have therefore been whitelisted, and can be safely ignored with no action currently required.

ISRS-398	Inferred relationship missing from the SRS release package (but available on MAIN in the termServer)	<p>One new inferred relationship is being returned when classifying locally, but is missing from the Release files:</p> <pre>```id effectiveTime active moduleId sourceId destinationId relationshipGroup typeId characteristicTypeId modifierId 1 253305008 255399007 2 246454002 9000000000000011006 9000000000000451002```</pre> <p>That relationship is present in the authoring platform browser on MAIN but missing from the dailybuild browser.</p> <p>RESOLUTION: Relationship now present in the inferred file for the July 2018 Member Release:</p> <pre>4988530021 20150131 1 9000000000000207008 253305008 255399007 2 246454002 900000000000011006 9000000000000451002</pre>	2018-Jul-31
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ISRS-399	Failure to Publish International release package	<p>This issue is related to the new Owl refsets. Part of the code is looking for SCT files to publish sctids, and the SNOMED International technical team have confirmed that an update to the SRS is required in order to resolve this issue.</p> <p>error msg Request '<a href="https://release.ihtsdotools.org/api/v1/centers/international/products/snomed_ct_international_edition_july_2018_alpha_release/builds/2018-05-22T16:24:58/publish">https://release.ihtsdotools.org/api/v1/centers/international/products/snomed_ct_international_edition_july_2018_alpha_release/builds/2018-05-22T16:24:58/publish</a>' raised: For input string: "8164a2fc-cac3-4b54-9d9e-f9c597a115ea"</p> <p>SNOMED International technical team to fix in <del>SRS-575</del></p> <p>RESOLUTION: Fixed and deployed to Production, and verified successfully using July 2018 Member Release package on 29th June 2018</p>	2018-Jun-29
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ISRS-400	Synonyms created as TextDefinitions	id	conceptId	term	2018-Jul-31
		3656246013	437411000124102	Increase in sodium content of the diet compared to the assessed baseline intake of sodium for the individual.	
		3656247016	437291000124108	Increase in copper content of the diet compared to the assessed baseline intake of copper for the individual.	
		3656248014	437391000124102	Increase in potassium content of the diet compared to the assessed baseline intake of potassium for the individual.	
		3671678013	417704008	Any cranial somatic dysfunction resulting in abnormal dural membrane tensions.	
		3689172017	769170009	An arch formed by the medial margin of the cartilages of false ribs and one true rib (seventh rib to the tenth rib).	
		638731000124115	435741000124103	Foods and liquids that are transparent and liquid at body temperature. (Source: Nutrition Care Manual, Academy of Nutrition and Dietetics 2013).	
		645551000124113	438001000124106	Increase or decrease in biotin content of the diet.Treatment for conditions resulting from inadequate or excessive biotin intake. (Source: Dietary Reference Intakes: Vitamins; USDA Food and Nutrition Center).	
		645611000124113	438021000124101	Increase or decrease in niacin content of the diet. Treatment for prevention of pellagra. (Source: Dietary Reference Intakes: Vitamins; USDA Food and Nutrition Center).	

645641000124112      438031000124103      Increase or decrease in pantothenic acid content of the diet. (Source: Dietary Reference Intakes: Vitamins; USDA Food and Nutrition Center).

645671000124116      438041000124108      Increase or decrease in riboflavin content of the diet. (Source: Dietary Reference Intakes: Vitamins; USDA Food and Nutrition Center).

648631000124113      439121000124106      Replace normal consistency foods with those that are blended, whipped or mashed to a "pudding-like" texture. Treatment for chewing and swallowing problems. (Source: Nutrition Care Manual, Academy of Nutrition and Dietetics 2013).

RESOLUTION: Synonyms inactivated with a status of erroneous and replaced with a new definition.

ISRS-401	Descriptions with unexpected Case Sensitivity	<p>The descriptions (attached) were found to have unexpected case sensitivity. Most aren't sentence case, but tagged as case insensitive.</p> <p>The last three descriptions are case insensitive, but include an uppercase character mid term. The first two, could be argued to be sentence case:</p> <p>1,2-Dimethoxybenzene</p> <p>5-Hydroxytryptamine-3-receptor antagonist product</p> <p>But "Dopamine receptor D2 antagonist product" – seems more significant...</p> <p>RESOLUTION: SNOMED International content team confirmed only one change required: 766793008  Product containing dopamine receptor D2 antagonist (product)  Description 3662648017 changed from ci to cl.</p>	2018-Jul-31
ISRS-403	RVF Assertion failure: eff30fb0-7856-11e1-b0c4-0800200c9a66	<p>assertionUuid: "eff30fb0-7856-11e1-b0c4-0800200c9a66", assertionText: "All language refset members inactivated in current snapshot must have been active in the previous release.", failureCount: 22,</p> <p>RESOLUTION: SNOMED International Content team confirmed that these are just warnings, and therefore no action is required.</p>	2018-Jun-06
ISRS-404	RVF Assertion failure: 2b193a88-8dab-4d19-b995-b556ed59398d	<p>assertionUuid: "2b193a88-8dab-4d19-b995-b556ed59398d", assertionText: "New inactive states follow active states in the DESCRIPTION snapshot.", failureCount: 11 firstNInstances:</p> <p>{conceptId: "437411000124102", detail: "DESCRIPTION: id=3656246013 is inactive but no active state found in the previous snapshot."}, {conceptId: "437291000124108", detail: "DESCRIPTION: id=3656247016 is inactive but no active state found in the previous snapshot."}, {conceptId: "437391000124102", detail: "DESCRIPTION: id=3656248014 is inactive but no active state found in the previous snapshot."}, {conceptId: "417704008", detail: "DESCRIPTION: id=3671678013 is inactive but no active state found in the previous snapshot."}, {conceptId: "769170009", detail: "DESCRIPTION: id=3689172017 is inactive but no active state found in the previous snapshot."}, {conceptId: "435741000124103", detail: "DESCRIPTION: id=638731000124115 is inactive but no active state found in the previous snapshot."}, {conceptId: "438001000124106", detail: "DESCRIPTION: id=645551000124113 is inactive but no active state found in the previous snapshot."}, {conceptId: "438021000124101", detail: "DESCRIPTION: id=645611000124113 is inactive but no active state found in the previous snapshot."}, {conceptId: "438031000124103", detail: "DESCRIPTION: id=645641000124112 is inactive but no active state found in the previous snapshot."}, {conceptId: "438041000124108", detail: "DESCRIPTION: id=645671000124116 is inactive but no active state found in the previous snapshot."},</p>	2018-Jun-06

{conceptId: "439121000124106",  
detail: "DESCRIPTION: id=648631000124113 is inactive but no active state found in the  
previous snapshot."}

RESOLUTION: SNOMED International Content team confirmed that these are just warnings, and therefore no action is required.

ISRS-406	Born inactive records created as a result of Alpha feedback fixes	<p>There are 11 born inactive synonyms, plus 22 related born inactive language refsets records. (see attached files for details)</p> <p>RESOLUTION: All born inactive records removed in time for the July 2018 International Edition</p>	2018-Jun-29
ISRS-407	MRCM Validation report results	<p>The MRCM validation report was run against the final version of the July 2018 Beta release - for both Stated only + Stated and Inferred reports. The former was clean, the latter highlighted a couple of potential issues.</p> <p>Unable to embed resource: stated-inferred.zip of type application/zip Unable to embed resource: stated.zip of type application/zip</p> <p>RESOLUTION: The SNOMED International content team confirmed that the decision made back in November 2017 (whereby only new inferred issues will be resolved immediately, with historical issues such as these being fixed asap in future release cycles) still stands, and therefore no action is required for the July 2018 International Edition.</p>	2018-Jun-13
ISRS-408	Unexpected ICD-10 Map records in Delta file	<p>13 concepts were deleted (rather than inactivated) during the last editing cycle, as they had only been created within the same cycle. This action was correct as otherwise the inactivations would have caused unwanted born inactive records. The map files therefore need to be updated accordingly in order to remove the records from the ICD-10 map files:</p> <ul style="list-style-type: none"><li>• 763757001</li><li>• 763756005</li><li>• 763732006</li><li>• 763731004</li><li>• 763730003</li><li>• 763729008</li><li>• 763496006</li><li>• 763497002</li><li>• 763495005</li><li>• 763494009</li><li>• 763107000</li><li>• 763060003</li><li>• 765003000</li></ul> <p>RESOLUTION: 19 records were actually removed from the updated ICD-10 map Delta, post-Beta release. This includes the 13 expected removals (above), plus 6 additional removals as a results of other issues found in the validation of the files. This means that the final Member and Production release packages will not contain the following 19 records that existed in the Alpha/Beta release packages:</p> <p>id effectiveTime active moduleId refsetId referencedComponentId mapGroup mapPriority mapRule mapAdvice mapTarget correlationId mapCategoryId 7922c7f9-41e7-5625-9078-a53240616ded 20180731 1 449080006 447562003 763495005 1 1 TRUE ALWAYS Q37.9 Q37.9 447561005 447637006 a0358150-9775-5c54-97dc-3d50ac69b290 20180731 1 449080006 447562003 765003000 1 1 TRUE MAP SOURCE CONCEPT CANNOT BE CLASSIFIED WITH AVAILABLE DATA 447561005 447638001 d1fdb3f0-8f4e-5eaa-a0eb-db02436fca26 20180731 1 449080006 447562003 763497002 1 1 TRUE ALWAYS Q35.9 Q35.9 447561005 447637006 97ec3e0f-865a-5aba-8c76-12fdb725c77f 20180731 1 449080006 447562003 763731004 1 1 TRUE ALWAYS Q35.9 Q35.9 447561005 447637006 a63c02e3-5663-5bdb-9cb0-7ae0a432d907 20180731 1 449080006 447562003 763732006 1 1 TRUE ALWAYS Q35.9 Q35.9 447561005 447637006 441306b3-d5b0-545c-8499-aea027c65283 20180731 1 449080006 447562003 763756005 1 1 TRUE ALWAYS Q35.9 Q35.9 447561005 447637006 5b9e979b-b8b2-5d8f-b463-3736f9b9cb67 20180731 1 449080006 447562003 763496006 1 1 TRUE ALWAYS Q35.9 Q35.9 447561005 447637006 cc9196d1-f1f7-5594-ab42-531ae6615dfd 20180731 1 449080006 447562003 763757001 1 1 TRUE ALWAYS Q35.9 Q35.9 447561005 447637006 3112f09b-9eae-5964-a0fc-8dcf5b4d4cb2 20180731 1 449080006 447562003 763729008 1 1 TRUE ALWAYS Q37.9 Q37.9 447561005 447637006 a457c57a-3976-51a0-a096-f1adad6be485 20180731 1 449080006 447562003 763107000 1 1 TRUE ALWAYS Q37.1 Q37.1 447561005 447637006 5d447432-91e5-51da-b3d1-28dfd1ff344a 20180731 1 449080006 447562003 763060003 1 1 TRUE ALWAYS Q37.1 Q37.1 447561005 447637006 f9b54bd1-ad21-58fc-b704-3f99e7cb1e86 20180731 1 449080006 447562003 763730003 1 1 TRUE ALWAYS Q37.9 Q37.9 447561005 447637006 bb594f4d-a560-57aa-90d5-3164c8fec28a 20180731 1 449080006 447562003 763494009 1 1 TRUE ALWAYS Q37.9 Q37.9 447561005 447637006</p>	2018-Jul-31



912c00f1-571d-5e1a-9610-1e9bd5de4364 20180731 1 449080006 447562003  
 267634006 1 1 TRUE ALWAYS H16.2 H16.2 447561005 447637006  
 0fd8418e-b9e4-5e65-895f-c7d32557b848 20180731 0 449080006 447562003  
 293689001 1 1 TRUE ALWAYS Z88.8 Z88.8 447561005 447637006  
 a908c13e-9ccc-5cea-9a42-308a914fc681 20180731 0 449080006 447562003  
 237620003 1 1 TRUE ALWAYS E14.6 E14.6 447561005 447637006  
 1c5d7bf4-c9af-50fb-8ed5-78db81a0359a 20180731 0 449080006 447562003  
 11861000122107 1 1 TRUE ALWAYS Z88.8 Z88.8 447561005 447637006  
 e27c7010-85a8-5b4a-ba8b-42fa7615f1c4 20180731 0 449080006 447562003 238749001  
 1 1 TRUE ALWAYS L72.0 L72.0 447561005 447637006  
 ae0e3f99-a179-50b0-a6e0-a3d55bbcdf8 20180731 0 449080006 447562003 294075000  
 1 1 TRUE ALWAYS Z88.8 Z88.8 447561005 447637006

ISRS-411	Trailing spaces in MRCM file records	<p>In the course of reviewing some reports of trailing spaces in Descriptions (which turned out to be non-issues), we found a couple of examples in the MRCMAttributeRange snapshot file, where trailing spaces are evident in the attributeRule field (though the second record is dubious as the spaces are between the parentheses):</p> <ul style="list-style-type: none"> <li>d6c20749-3934-4097-b5b2-a1b9a9cf89f4 20170731 1 900000000000012004 723562003 726542003 &lt; 726711005  Disposition (disposition)  &lt;&lt; 105590001  Substance (substance) : [0..*] 726542003  Has disposition  = &lt; 726711005  Disposition (disposition)  723597001 723596005</li> <li>e8ec5f5c-a9e0-4241-912d-8ea9331cce91 20170731 1 900000000000012004 723562003 370135005 263680009  Autoimmune (qualifier value)  OR &lt;&lt; 441862004  Infectious process (qualifier value)  OR &lt;&lt; 472963003  Hypersensitivity process (qualifier value)  OR &lt;&lt; 308490002  Pathological developmental process (qualifier value)  &lt;&lt; 404684003  Clinical finding (finding) : [0..*] { [0..1] 370135005  Pathological process  = (263680009  Autoimmune (qualifier value)  OR &lt;&lt; 441862004  Infectious process (qualifier value)  OR &lt;&lt; 472963003  Hypersensitivity process (qualifier value)  OR &lt;&lt; 308490002  Pathological developmental process (qualifier value)  ) } 723597001 723596005</li> </ul> <p>RESOLUTION: The first record (d6c20749-3934-4097-b5b2-a1b9a9cf89f4) has been fixed, by removing the trailing spaces from both RangeConstraint and AttributeRule fields. The second record (e8ec5f5c-a9e0-4241-912d-8ea9331cce91) has spaces between the parenthesis and not at the end of the record, and are therefore there intentionally in order to make it easier to read. The SNOMED International EPS team therefore confirmed that no action is required for this record.</p>	2018-Jul-31
ISRS-412	Classification service update	<p>The classification service needs to be updated to read the refined naming convention of the new OWL Axiom file, in order to correctly create the inferred relationships.</p> <p>RESOLUTION: The Classification service was updated twice, once to include the new OWL Axiom file, and once to resolve an issue found in the course of this ticket with the underlying Java code. The final Member Release build for July 2018 had the expected inferred relationship results, matching those in the termServer.</p>	2018-Jun-29
ISRS-413	MRCM constraint issues	<p>As part of discussions with the community, the following issue was identified with the Lateralizable body structure MRCM domain constraint:</p> <p>"Its domain is given as &lt;&lt; ^ 723264001  Lateralizable body structure reference set (foundation metadata concept)  throughout the constraint, i.e. identify all the members of 723264001 (^), and then add in all the subtypes (&lt;&lt;)). So, whilst the refset distinguishes between 85562004   Hand structure (genuinely lateralizable) and, for example, 78791008   Structure of right hand (already lateralized and therefore no longer actually lateralizable), the domain template for post-coordination would suggest otherwise."</p> <p>RESOLUTION: The SNOMED International EPS team updated the MRCM Domain Reference Set file as follows:</p> <ul style="list-style-type: none"> <li>Record 'eb0bebd1-991a-4f69-97ab-e1c5bf64dd27'</li> <li>Changed the domainConstraint and proximalPrimitiveConstraint from "&lt;&lt; ^ 723264001  Lateralizable body structure reference set (foundation metadata concept) " to "^ 723264001  Lateralizable body structure reference set (foundation metadata concept) ".</li> <li>This also automatically updates the domainTemplateForPrecoordination and domainTemplateForPostcoordination in the same row.</li> <li>Record '19d3f679-5369-42fb-9543-8795fdee5dce' updated to remove trailing blank spaces</li> </ul> <p>They also amended the MRCM Attribute Range Reference Set as follows:</p> <ul style="list-style-type: none"> <li>Record 'd6c20749-3934-4097-b5b2-a1b9a9cf89f4'</li> <li>Removed a trailing blank space from the range constraint "&lt;&lt; 726711005  Disposition (disposition) " to "&lt;&lt; 726711005  Disposition (disposition) "</li> </ul>	2018-Jun-29
ISRS-415	Potential unusual activity within the content authoring cycle	<p>During the Member release period, Australia noticed the following changes which they weren't necessarily expecting - SNOMED International Content Team to confirm that these were valid and intentional changes:</p>	2020-Mar-26



1. ...resurrected 264325000 [Valproate] which has been inactive since 20020131 and retired 372812003 [Valproate] which had been active since 20020731. This seems strange.
  2. It also swaps the direction of the IS A with 387080000 [Valproic acid], which is not the first time that has been done.
- 

[38 issues](#)

## 3.3 Technical updates

### 3.3.1 RF2 package format

For future reference, the RF2 package convention dictates that it contains all relevant files, regardless of whether or not there is content to be included in each particular release. Therefore, the package contains a mixture of files which contain both header rows and content data, and also files that are intentionally left blank (including only a header record). The reason that these files are not removed from the package is to draw a clear distinction between

1. ...files that have been deprecated (and therefore removed from the package completely), due to the content no longer being relevant to RF2 in this or future releases, and
2. ...files that just happen to contain no data in this particular release (and are therefore included in the package but left blank, with only a header record), but are still relevant to RF2, and could therefore potentially contain data in future releases.

This allows users to easily distinguish between files that have purposefully been removed or not, as otherwise if files in option 2 above were left out of the package it could be interpreted as an error, rather than an intentional lack of content in that release.

### 3.3.2 Introduction of two new refsets - OWLAxiom and OWLOntology

Please see section "2.3.1 Logic Profile Enhancements" above for full details of the reason behind the introduction of these new refsets. The technical implication is that two new files will be included in each section of the International Release package (Full, Snapshot and Delta):

- `sct2_sRefset_OWLOntologyFull_INT_20180731.txt`
- `sct2_sRefset_OWLAxiomFull_INT_20180731.txt`
- `sct2_sRefset_OWLOntologySnapshot_INT_20180731.txt`
- `sct2_sRefset_OWLAxiomSnapshot_INT_20180731.txt`
- `sct2_sRefset_OWLOntologyDelta_INT_20180731.txt`
- `sct2_sRefset_OWLAxiomDelta_INT_20180731.txt`

The naming convention was decided upon in order to best describe the content of each refset file. It was thought to be misleading to include 'stated' at the start of the file names because the OWL Ontology Refset contains only metadata for an ontology, which is always the same no matter whether the ontology contains axioms before or after classification. In addition, the word 'stated' is redundant to 'axiom'. Finally, the 'sct2' filetype is utilised to indicate that the axioms are not a derivative product.

The decision was taken to place the files in the "Terminology" folder in the release package (as opposed to the "Refset" folder), because these files are designed to eventually replace the Stated relationship files, and therefore contain core content which needs to be included in the Terminology folder.

### 3.3.3 Replacement of OWL conversion script with a link to the open source directory

In January 2017 the original OWL conversion script (a.k.a. the "Spackman OWL script") was removed from the International Edition package, and has since been published as a separate artefact alongside each Release.

Because this script does not recognize the two new OWL refsets (see section 3.3.2 of these Release Notes), the Terminology Release Advisory Group has determined that the script should no longer be distributed.

Going forward, Release Notes will now include a link to the new open source OWL conversion toolkit that can be found in the following repository (including documentation on its use):

<https://github.com/IHTSDO/snomed-owl-toolkit>

Please contact SNOMED International at [support@snomed.org](mailto:support@snomed.org) if you would like to provide any feedback on ways to extend and improve the new toolkit.

### 3.3.4 Deprecation of the Technical Guide Exemplars document from the International Edition release package

The Terminology Release Advisory Group has confirmed that there should be no impact from removing this almost entirely static document from the International Edition release package, and hosting it instead in a Confluence Page. From the July 2018 International release then, we will deprecate this file (doc\_lcd10MapTechnicalGuideExemplars\_[date].xlsx) from the Release package, and instead provide a link in the Release Notes to the new Confluence Page. Please see section 2.4.1.3 above for the relevant link.

### 3.3.5 Early visibility of impending change in the January 2019 International edition

Please see the following page for details of all upcoming changes planned for January 2019 and beyond: [Early Visibility - Planned changes to upcoming SNOMED International Release packages](#)

## 3.3.6 IMPORTANT CHANGE in the January 2019 International Edition

### Replacement of the Stated Relationship files with the new OWL Axiom refset files

*In the January 2019 release, the stated relationship file will be replaced by the OWL Axiom refset files, that will include all logical definitions and other features specified in the SNOMED CT logic profile specification. The stated relationship file will NOT be included in the international release; however, it may still be available on request to support migration to the OWL Axiom refset.*



#### IMPORTANT NOTE FOR USERS

*Users should carefully analyse any potential impact to their systems (upload routines, etc) and make provisions for these changes urgently (if not already done), in order to prevent any issues when these changes come into effect in January 2019. Please contact SNOMED International at [support@snomed.org](mailto:support@snomed.org) with "OWL Axiom refset files implementation question" in the subject line.*

The inferred relationship file will maintain the same format and structure, though it will no longer contain all necessary and sufficient conditions. The inferred relationship file is represented in Necessary Normal Form for distribution of relationships. It is a collection of all the necessary conditions and represents a subset of the full semantics from the 2018 July release and onwards. Most users will benefit from the improvements in the inferred relationships without requiring changes to their existing systems.

A set of documentations has been developed to support the Logic Profile Enhancements.

- SNOMED DL Profile Enhancements - <https://docs.google.com/document/d/1tqNEA6S4fEF4fgj15OPabYA2E0VTz8epxvRRwczKizQ/edit?usp=sharing>
- SNOMED CT Logic Profile Specification - <http://snomed.org/lps>
- SNOMED CT OWL Guide (OWL Refsets specification) - <http://snomed.org/owl>
- Necessary Normal Form for Inferred Relationships - [https://docs.google.com/document/d/1dt0r0aetwpmwHOfi9wt0EVukVLRvVjXYUn\\_vq-QhIM/edit?usp=sharing](https://docs.google.com/document/d/1dt0r0aetwpmwHOfi9wt0EVukVLRvVjXYUn_vq-QhIM/edit?usp=sharing)
- Snomed OWL Toolkit - <https://github.com/IHTSDO/snomed-owl-toolkit>
- Classifying SNOMED CT using the Snomed OWL Toolkit - <https://youtu.be/-91egY9mJqA>
- Creating an OWL file containing SNOMED CT - [https://youtu.be/sfFbMMioA\\_4](https://youtu.be/sfFbMMioA_4)

## 3.3.7 Document links

All links provide information that is correct and current at the time of this Release. Updated versions may be available at a later date, but if so these will need to be requested from the relevant SNOMED International teams.

**NOTE:** To access any of the links in the pdf document, please visit the Release Notes online here:

<https://confluence.ihtsdotools.org/display/RMT/SNOMED+CT+July+2018+International+Edition+-+SNOMED+International+Release+notes>

#### Approvals

Final Version	Date	Approver	Comments
0.1	June 5, 2018	Lesley MacNeil	Approved
0.1	June 5, 2018	Maria Braithwaite	Approved
0.1	June 5, 2018	Donna Morgan	Approved
0.1	June 5, 2018	Jim Case/Paul Amos	Approved
1.0	July 31, 2018	Rory Davidson	Approved

#### Draft Amendment History

Version	Date	Editor	Comments
0.1	20180502	Andrew Atkinson	First draft for review and comment
1.0	20180619	Maria Braithwaite / Andrew Atkinson	Final updates, including map record count update

1.0	July 3, 2018	Maria Braithwaite	Approved
1.0	July 3, 2018	Lesley MacNeil	Approved