SNOMED CT URI Standard

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Table of Contents

The SNOMED CT URI standard defines a standard format of URIs for identifying various SNOMED CT artefacts including components and RF2-based releases. This includes standard URIs for formally identifying the SNOMED CT international edition, national editions, and any specific *versions* thereof. It does not cover URIs for non-SNOMED CT code systems. Nor does it cover RF1-specific artefacts.

This document provides guidance on using the SNOMED CT URI standard in the context of key motivating use cases, including resolvability of the URIs.

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1 Introduction

Background

SNOMED CT is a clinical terminology with global scope and a wide range of clinical specialties and requirements. As a result, SNOMED CT artefacts (including concepts, editions and versioned editions) are often referenced by clinical documents, health information standards, health record implementations, and a range of technical artefacts. To support unambiguous references to SNOMED CT resources, a standard approach to the identification of these resources is needed.

The existing SCTID specification allows SNOMED CT components to be identified across time. However, there are other views of a component that are also useful to identify, such as a concept within a specific SNOMED CT edition at a given point in time. Furthermore, there are other SNOMED CT artefacts, such a SNOMED CT extension module with all its dependent modules, that do not have an SCTID but also need a consistent identification mechanism. This includes specific national editions, such as the Australian release, or the Swedish translation.

A number of groups have emphasised the need to come up with an approach that addresses the broad needs of implementers and offers the opportunities for use of a ubiquitous range of services, using the URI (Uniform Resource Identifier) as a common factor in the interfaces. This document describes a URI space that is intended to meet these requirements, to avoid the proliferation of alternative conflicting schemes, and to evolve to meet additional requirements as they emerge.

The URI space defined in this document uses the syntax defined in _IETF RFC6570 URI Templates[1] . In addition, principals of good URI design were drawn from the W3C document _Cool URIs for the Semantic Web[2] , and _Designing URI Sets for the UK Public Sector[3] .

It should be further noted that, consistent with the advice of Tim Berners-Lee[4], the http scheme is used for these URIs. Furthermore, to be consistent with the W3C's TAG resolution of *ISSUE-14*[5] *, since the URIs defined in this document identify _real-world objects* and not *information resources*, resolving these URIs should **not** result in an HTTP response code of 200 ("OK") but rather, if anything at all, result in an HTTP response code of 303 ("See Other") to redirect to another URI that identifies a representation of the identified component. The intuition here is that it is not possible to return a real-world object (e.g. "The Eiffel Tower"), but only a representation of it (a picture, a geo-location, a Wikipedia page, etc.). In the same manner, it is only possible to return a representation of the identified SNOMED CT component, and not the component itself. Further discussion around this issue can be found in Section 4.4 *Choosing between 202 and Hash*[6] *of the aforementioned W3C document _Cool URIs for the Semantic Web*.

Purpose

This document defines a standard format of URIs for identifying various SNOMED CT artefacts, including components and RF2 releases. This includes URIs for formally identifying the SNOMED CT international edition, national editions, and any specific versions thereof. It does not cover mechanisms or URIs for non-SNOMED CT code systems. Nor does it cover RF1-specific artefacts.

This document provides guidance on using the SNOMED CT URI standard in the context of key motivating use cases, including resolvability of the URIs.

Scope

This document provides a specification for the format and usage of SNOMED CT URIs. Such a URI might identify "A clinical idea to which a unique Concept Identifier has been assigned"[7] . However, it does not specify or standardise any aspect of the representation of these things. Appropriate representations may vary greatly depending on use-case requirements and services utilising the URIs specified here are free to make their own choices. Sub-sections 1.1.4 and 3.1 have additional references and advice on this matter.

This specification relies on the semantics of SNOMED CT modules as defined in the Release Format 2 specification. Please see Section _5.4 Release Format 2 – Core Component Guide[8] in the separate document "SNOMED CT® Technical Implementation Guide" for additional information on this subject.

Audience

The intended audience of this document includes:

- Technical professionals who are involved in the development or implementation of terminology systems or healthcare information systems that use SNOMED CT, and
- Academics, researchers, and others who are using SNOMED CT in the context of OWL and other Semantic Web technologies.

This standard should be used when it is required to uniquely identify SNOMED CT concepts and other components in contexts where URIs are expected, or where the interpretation of a code as an SCTID may be ambiguous. It should also be used when an unambiguous interoperable (machine-readable) identifier for an edition (or a versioned edition) is required.

Use Cases

The following use cases have guided the specification detailed in this document:

1. The OWL representation of the stated form of SNOMED CT requires URIs to identify concepts and object properties (i.e. attributes),
2. The CTS2 specification requires all resources to be identified using URIs,
3. Within the HL7 community there is a need for a consistent mechanism to identify the SNOMED CT code system and versions of SNOMED CT.

While a register of canonical names for each edition could be compiled and maintained, the module system developed for Release Format 2 already provides the required machinery to support unique naming of editions and, in conjunction with a timestamp, specific versions of an edition. Section 3.1.6 Module Identification from the Release File Specification says:

> *A moduleId field, assigned to each component, helps identify the origin of content and dependencies in a release. This enables Release Centres to compose a unified release from a number of different modules, yet still identify the origin of content within the release. For example, module ids may be used to differentiate SNOMED CT International content, Australian Medicines terminology and Pathology content within the Australian national release.*

The module dependency reference set is used to track dependencies between versioned modules. Thus, by tracing the set of module dependencies from a specified versioned module, one is able to identify all the content relevant to that versioned module. Hence, a versioned module can be used to uniquely identify a versioned edition.[9]

Releases, Editions and Versions

In this document we use the terms *Release*, *Edition, and Version* with the following specific meanings:

Release

A **release** is a concrete set of files that is published by a release centre (including SNOMED International). This may include any combination of RF2 files, be they full, snapshot or delta, as well as documentation, cross-map files, alternate identifiers, and so forth. It may even be just the content that is additional to the SNOMED CT International Edition.

Edition

An **edition** is the complete logical or conceptual set of terminology components, independent of any specific version. Examples include the SNOMED CT International Edition and the SNOMED CT-AU Edition.

Version

A **version** (also known as **versioned edition**) is the content of an extension's modules and all the modules upon which they depend, on a specific release date. That is, the SNOMED CT content that is conceptually managed within the versioning scheme of RF2 that is based on the moduleId and effectiveTime fields of the release files. In particular, this includes content that pertains specifically to the meaning of concepts and the contents of reference sets. Examples include the 20130731 version of the SNOMED CT International Edition and the 20130531 version of the SNOMED CT-AU Edition.

Additional Notes

This standard builds upon a number of other elements of the SNOMED CT ecosystem. In particular its semantics are dependent on those of RF2 and the module and versioning mechanisms.

This document defines a standard set of identifiers in the form of URIs. In order to maintain the integrity of the associated URI space, it is highly desirable for SNOMED International to maintain ownership of the **snomed.info** DNS domain. While not a requirement of this specification, URIs defined by this specification, with respect to SNOMED CT core, are resolvable through services provided by SNOMED International.

It is important to understand that the URIs in this specification do not identify the representation of an entity, but rather identify the entity itself. Section 3.1 Resolving SNOMED CT URIs covers this issue in more detail.

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[1] http://tools.ietf.org/html/rfc6570
[2] Specifically the section *URIs for Real-World Objects* http://www.w3.org/TR/cooluris/#semweb
[3] http://www.cabinetoffice.gov.uk/sites/default/files/resources/designing-URI-sets-uk-public-sector.pdf
[4] Linked Data http://www.w3.org/DesignIssues/LinkedData.html
[5] ISSUE-14 http://www.w3.org/2001/tag/group/track/issues/14
[6] Choosing between 303 and Hash www.w3.org/TR/cooluris#choosing
[7] www.snomed.org/tig?t=glsct_ss_Concept
[8] http://www.snomed.org/tig?t=trg2main_title Section number relative to July 2012 version.
[9] In the case where a release centre has not organized an edition such that it correspond to the transitive contents of a single module, an additional module can be created that depends on all the modules in the edition. This additional module can then be used to identify that edition. Note that it is non-conformant to release only part of a module.

2 SNOMED CT URI Space

2.1 URIs for Editions and Versions

Background

A SNOMED CT edition logically consists of the complete set of members of one or more modules.[1] Since the module dependency reference set (MDRS) tracks the explicit dependencies between a version of a module and all the versioned modules it depends on, a module identifier[2] is a natural identifier for an edition. When combined with a timestamp corresponding to a sourceEffectiveTime appearing in the MDRS, the module identifier can unambiguously identify a version of an edition.

Form

The URIs that identify unversioned editions (i.e. editions) and versioned editions (i.e. versions) take the following respective forms:

http://snomed.info/sct/{sctid}

http://snomed.info/sct/{sctid}/version/{timestamp}

Note, while it would be possible to extend this pattern to support multiple root modules, each with their own sourceEffectiveTime, this would introduce non-trivial complexities. For example, the modules they each depend upon may themselves overlap but have different versions (targetEffectiveTime) in which case the implied content would be inconsistent.

Examples

The following table shows some examples of URIs for editions and versions.

Table 2.1-1: Examples

Resource	URI
SNOMED CT International Edition	http://snomed.info/sct/900000000000207008
SNOMED CT International Edition, 20130731	http://snomed.info/sct/900000000000207008/version/20130731
SNOMED CT-AU	http://snomed.info/sct/32506021000036107
SNOMED CT-AU, 31 May 2013	http://snomed.info/sct/32506021000036107/version/20130531
SNOMED CT-AU, 30 Nov 2012	http://snomed.info/sct/32506021000036107/version/20121130
SNOMED CT-SE	http://snomed.info/sct/45991000052106

For a more extensive list of SNOMED CT edition URI examples, please refer to 4.4.2 Edition URI Examples

[1] While there may be additional files associated with a release, it is only the module content which affects the computable meaning of a concept (i.e. the inferable relationships and subsumption between post coordinated expressions).

[2] This is the identifier of the module concept, as would be used in the module dependency reference set.

2.2 URIs for Components and Reference Set Members

Background

A SNOMED CT component is a concept, description or relationship that conforms with the SNOMED CT logical model. All SNOMED CT components are identified by an SCTID. [1] .

A SNOMED CT reference set member is a uniquely identified row of a reference set. All reference set members are identified by a UUID (rather than an SCTID).

Form

URIs for components, based on the corresponding SCTID, take the following form:

http://snomed.info/id/{sctid}

URIs for members of a Reference Set, based on the corresponding UUID, take the following form:

http://snomed.info/id/{uuid}

For simplicity this document refers to either of the above forms as a *component URI*.

Examples

The following table shows some examples of URIs for components and reference set members.

Table 2.2-1: Examples

Resource	URI
The concept 74400008 |Appendicitis|	http://snomed.info/id/74400008
The description "Appendicitis" with id=123558018	http://snomed.info/id/123558018
The relationship 74400008 |Appendicitis| 363698007 |Finding site| 66754008 |Appendix structure|	http://snomed.info/id/859910029
The reference set member that defines "Appendicitis" as preferred in the en-US language reference set	http://snomed.info/id/7c0d7d61-c571-5bf9-9329-fdbfee8747d0

[1] 3.1.4.2. Component features - Identifiers

2.3 Edition and Version-Relative Component URIs

Background

Edition and version-relative URIs are useful to identify characteristics of components and reference set members that are specific to an edition or version. Conceptually, they build on the idea of what one resource (e.g. the version) says about another (e.g. a component).

Form

Edition-relative URIs for components take the following form:

http://snomed.info/sct/{moduleid}/id/{sctid}

Version-relative URIs for components take the following form:

http://snomed.info/sct/{moduleid}/version/{time}/id/{sctid}

Edition-relative URIs for reference set members take the following form:

http://snomed.info/sct/{moduleid}/id/{uuid}

Version-relative URIs for reference set members take the following form:

http://snomed.info/sct/{moduleid}/version/{time}/id/{uuid}

Examples

The following table shows some examples of URIs for components in a specific SNOMED CT versioned edition.

Table 2.3-1: Examples

Resource	URI
The concept 74400008 |Appendicitis| in SNOMED CT international edition, 31 January 2013	http://snomed.info/sct/900000000000207008/version/20130131/id/74400008
The concept 2771000032106 |Open reduction of fracture of ankle (procedure)| from the 20160930 Australian edition	http://snomed.info/sct/32506021000036107/version/20160930/id/2771000032106
The November 30th 2012 version of the Australian '*Emergency department findings in presenting problem reference set*'	http://snomed.info/sct/32506021000036107/version/20121130/id/32570501000036104
The reference set member that defines "Appendicitis" as preferred in the international en-US language reference set, 31 January 2017	http://snomed.info/sct/900000000000207008/version/20170131/id/7c0d7d61-c571-5bf9-9329-fdbfee8747d0

2.4 URIs for Modules

Background

Section 2.1 defined URIs for editions and versioned editions. These URIs identify the contents of a Module plus all of the Modules it depends on (based on the module version dependencies). However, it is sometimes necessary to simply identify the contents of a single specified module only.

Form

URIs for modules come in two forms. To identify the contents of a module, independent of any particular point in time, the following form is used:

> http://snomed.info/module/{sctid}

To identify the contents of a module at a particular point in time, the following form is used:

> http://snomed.info/module/{sctid}/time/{timestamp}

Note that the timestamp used above is merely referencing a point in time, and does not need to coincide with a version release date.

Examples

The following table shows some examples of URIs for modules.

Table 2.4-1: Examples

Resource	URI
The SNOMED International core module	http://snomed.info/module/900000000000207008
The SNOMED International core module at March 15 2017	http://snomed.info/module/900000000000207008/time/20170315

2.5 URIs for Properties

Background

There are a number of additional features of SNOMED CT that do not have SCTIDs or UUIDs, but which still need to be identified. URIs are required to identify these additional features to support use cases such as representing SNOMED CT in OWL (e.g. to identify certain annotations) and referring to SNOMED CT properties (e.g. characteristicTypeId) from other standards (e.g. CTS2). To address these requirements we define a general set of URIs identifying the RF2-based properties of components.

Form

The URI space for these properties follows the pattern:

> http://snomed.info/field/{tableName}.{fieldName}

Valid table names include those described as possible values for the content type element in the File Naming Conventions ⬚ for RF2. Note, these URIs identify the property itself, not the value or values that may be associated with the property.

Examples

The following table shows some examples of URIs for SNOMED CT RF2 properties.

Table 2.5-1: Examples

Resource	URI
The definitionSatusId property in the RF2 concept file	http://snomed.info/field/concept.definitionStatusId
The characteristicTypeId property in the RF2 relationship file	http://snomed.info/field/relationship.characteristicTypeId
The referencedComponentId property in a RF2 simple reference set file	http://snomed.info/field/refset.referencedComponentId
The mapTarget property in a RF2 simple map reference set file	http://snomed.info/field/sRefset.mapTarget

⬚ Release File Specification - section 2.1. SNOMED CT - File Naming Conventions

2.6 URIs for Modelling Resources

Background

SNOMED CT can be combined with complementary eHealth standards to create a SNOMED-specific modelling resource. When these modelling resources are owned by SNOMED International, they may require a URI. For example, the HL7 FHIR Specification uses URIs for various entities, including FHIR resources, profiles and implementation guides. FHIR profiles, which define recommended SNOMED CT bindings, and FHIR implementation guides, which document best practice for implementing a FHIR system using SNOMED CT, require unique SNOMED CT URIs. Similarly, SNOMED-specific modelling resources using other eHealth standards may also require unique SNOMED CT URIs.

Form

The specific URI format used to identify a SNOMED-specific modelling resource will depend on the requirements of the relevant eHealth standard. However, they will all follow the general format:

http://snomed.info/{eHealthStandard}/{eHealthStandardSpecificURIFormat}}

For example, HL7 FHIR modelling resources will use the format:

http://snomed.info/fhir/{resourceType}/{resourceName}

with resource types including:

- StructureDefinition
- ImplementationGuide

Other standard-specific formats will be defined as required.

Examples

The following table shows some examples of URIs for FHIR modelling resources.

Table 2.6-1: Examples

Resource Instance	URI
FHIR Profile	http://snomed.info/fhir/StructureDefinition/condition-with-snomed
FHIR Implementation Guide	http//snomed.info/fhir/ImplementationGuide/snomed-ig

2.7 Comparing URIs for Equality of Reference

Any two URIs from the http://snomed.info/ URI space identify the same thing if, after syntax-based normalisation as described in section 6.2.2 of IETF RFC3986 Uniform Resource Identifier (URI): Generic Syntax[1] , they are equal when treated as character strings. The syntax-based normalisation includes case normalization, percent-encoding normalization, and removal of dot-segments. Scheme-based and protocol-based normalisation should not be required since any URIs that would be affected by them (e.g. by including explicit port numbers or trailing slashes) fall outside of the URI space defined by the standard.

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[1] Uniform Resource Identifier (URI): Generic Syntax http://tools.ietf.org/html/rfc3986#section-6

2.8 URIs for Unpublished Content

Background

The URI formats, defined in the previous sections of this document, can be used to identify SNOMED CT content that has been officially published, and may therefore be stored in an Electronic Health Record and exchanged between clinical systems. However, during the process of creating a SNOMED CT release, concepts may exist in a pre-published state. These concepts are considered to be "work in progress" and subject to change or removal, prior to their official publication. For a variety of reasons (including testing, early adoption etc), users may require a way to identify this unpublished content.[1] Note that the terminology or code system for SNOMED CT will always be specified as http://snomed.info/sct, even when the version of this terminology is an unpublished version, e.g. http://snomed.info/xsct/900000000000207008

SNOMED International already uses the X (eXperimental) indicator for alpha & beta releases of International and national editions of SNOMED CT, eg xSnomedCT_BelgiumExtensionRF2_PREPRODUCTION_20210315T120000Z/ Snapshot/Terminology/xsct2_Concept_Snapshot_BE1000172_20210315.txt. This additional 'x' is added to make it clear that the contents have not been "officially" published.

Form

Unpublished Editions and Versions

The URIs that identify unpublished editions (i.e. the current build) and unpublished versioned editions (i.e. versions) take the following respective forms:

http://snomed.info/xsct/{moduleId}

http://snomed.info/xsct/{moduleId}/version/{timestamp}

Unpublished SNOMED CT Components

The URIs that identify components relative to an unpublished edition or version take the following respective forms:

http://snomed.info/xsct/{moduleId}/id/{sctId}

http://snomed.info/xsct/{moduleId}/version/{timestamp}/id/{sctId}

Examples

The following table shows some examples of URIs for unpublished artifacts.

Table 2.8-1: Examples

Resource	URI
SNOMED CT International Edition, current build	http://snomed.info/xsct/900000000000207008
SNOMED CT International Edition, 20220131 beta release	http://snomed.info/xsct/900000000000207008/version/20220131
The concept 1163215007 |Pressure injury| in the current build of the SNOMED CT International Edition	http://snomed.info/xsct/900000000000207008/id/1163215007
The concept 1163215007 |Pressure injury| in the 20220131 beta release of the SNOMED CT International Edition	http://snomed.info/xsct/900000000000207008/version/20220131/id/1163215007

For a more extensive list of SNOMED CT edition URI examples, please refer to 4.4.2 Edition URI Examples

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ℹ️ This topic was first raised in the context using SNOMED with the HL7 FHIR specifications, and further detail on the use case is given here URI Proposal: Addition of xsct. This use case only requires the 'version' format of an unpublished substrate to specify the 'version' of the code system - e.g. http://snomed.info/xsct/900000000000207008/version/20220131.

3 SNOMED CT URIs in Use

3.1 Resolving SNOMED CT URIs

Overview

Section 2 defines a set of URI spaces that are used to **identify** a variety of SNOMED CT resources, but it does not discuss **resolving** these URIs. The URIs in the standard use the http scheme and the domain name snomed.info, which is owned by SNOMED International. This means that SNOMED International is in control of whether or not these URIs, when treated as URLs and resolved, will result in a document being available, a 404 ("Not Found") error, or something else.

URIs Resolved by SNOMED International

SNOMED International resolves URIs for concepts from the SNOMED CT International Edition (of the form http://snomed.info/id/{SCTID}) to the public SNOMED CT browser.

URIs for modelling resources (as described in 2.6 URIs for Modelling Resources) will, by default, be resolved to a HTML representation of the identified entity. To support machine-readability, the HTTP Accept header will be used to perform content negotiation. For example, the value "application/fhir+json" may be supplied to request a FHIR representation in JSON syntax. Following FHIR conventions, a suffix of "?_format=json" will be interpreted as equivalent to providing an Accept header of "application/fhir+json" with maximum priority. This is to facilitate access via web browsers where access to HTTP headers is not normally available.

URIs Resolved by Others

A Release Centre or other service providers may also want to support the resolution of other URIs (e.g. those that identify resources that they maintain). A general approach to this involves deploying a resolving service with an endpoint URL such as

- http://myservice.example.com/

which is configured to resolve URLs that embed SNOMED CT URIs. Continuing the example, a URL of the following form

- (1) http://myservice.example.com/?uri=http://snomed.info/{...}

might be redirected with an HTTP response code of 303 to

- (2) http://myservice.example.com/snomed/{...}

which in turn resolves and returns an appropriate document. Conceptually, we can think of the original URL (1) as identifying what the *MyService* endpoint knows about the identified SNOMED CT resource, and the returned document, identified by the second URL (2), as being a representation of that knowledge.

What might such a document look like? Let us consider the example URL

- http://myservice.example.com/?uri=http://snomed.info/id/900000000000498005

The document ultimately returned by the service might be in JSON or XML or HTML or plain text format and contain information indicating that the SCTID is valid, and refers to a non-extension Concept[1] . It might also indicate that the service knows about one or more Editions or Versions in which this Concept is defined. It might further supply the Fully Specified Name for the Concept as given in the Version with the most recent effectiveTime. Note that the exact nature of what the service says about the Concept is up to the service itself. One service may offer a RESTful API that allows detailed querying down to the primitive/fully defined status of a versioned Concept, while another may return a representation of properties of a versioned Concept that then needs to be parsed to determine its primitive/fully defined status.

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[1] This information is directly discernable from the SCTID itself.

3.2 URI Use-Cases

The Owl Representation of SNOMED CT

The OWL representation of SNOMED CT makes use of URIs for identifying Concepts, the previously-implicit grouping role, and the ontology itself (i.e. the set of axioms).

The old pattern used for Concepts was

> http://www.snomed.org/SCT_{sctid}

which is now replaced by

> http://snomed.info/id/{sctid}

The grouping role URI was

> http://www.snomed.org/RoleGroup

and is now

> http://snomed.info/id/609096000

For the OWL XML representation, the URI was unspecified (the empty string), while for the OWL Functional Syntax representation the URI was (via RDF:about)

> http://www.snomed.org/sct.owl

and now includes explicit version information

> http://snomed.info/sct/{sctid}/version/{timestamp}

When representing SNOMED CT ontologies using OWL 2, both an ontologyURI and a versionURI should be included using the following forms respectively[1]:

> http://snomed.info/sct/{sctid}

> http://snomed.info/sct/{sctid}/version/{timestamp}

The CTS2 Specification

The CTS2 specification requires that all resources be identified using URIs. This section lists, where such a thing exists, SNOMED International standard URIs for the resources that require URIs in the CTS2 implementation. This omits URIs for things such as External Code Systems and Value Sets since they are outside the scope of the SNOMED CT URI Standard. Note, however, that a Reference Set is the SNOMED CT mechanism for identifying an arbitrary set of Concepts, which is analogous to a Value Set. Thus the Reference Set URI would be the appropriate thing to use as the Value Set identifier.

Resource	URI	Example
SNOMED CT Edition	http://snomed.info/sct/{moduleId}	http://snomed.info/sct/900000000000207008 SNOMED CT International Edition
SNOMED CT Version	http://snomed.info/sct/{moduleId}/version/{effectiveTime}	http://snomed.info/sct/900000000000207008/version/20120131 SNOMED CT International January 2012 Version

Resource	URI	Example
Module	http://snomed.info/module/{moduleId}	http://snomed.info/module/900000000000207008 SNOMED CT Core Module (only)
A specific release of a Module	http://snomed.info/module/{moduleId}/time/{timestamp}	http://snomed.info/module/900000000000207008/time/20120131 SNOMED CT Core Module (only) with respect to the timestamp 20120131
SCTID	http://snomed.info/id/{sctid}	http://snomed.info/id/449650002
UUID	http://snomed.info/id/{uuid}	http://snomed.info/id/00000692-31c5-81a8-2e54b488c824
Table Field	http://snomed.info/field/{table name}.{field name}	http://snomed.info/field/Relationship.characteristicTypeId
Map	http://snomed.info/id/{map sctid}	http://snomed.info/id/900000000000498005 A map is just a reference set in a specific format
Map version	http://snomed.info/sct/{moduleId}/version/{effectiveTime}/id/{map sctid}	http://snomed.info/sct/900000000000207008/version/2012013/id/900000000000498005
Refset	http://snomed.info/id/{refset sctid}	http://snomed.info/id/900000000000498005
Refset version	http://snomed.info/sct/{moduleId}/version/{effectiveTime}/id/{refset sctid}	http://snomed.info/sct/900000000000207008/version/2012013/id/900000000000498005
Role Group	http://snomed.info/id/609096000	http://snomed.info/id/609096000

Identifying SNOMED CT Versions in HL7

Traditionally, HL7 has used OIDs to identify Code Systems. The OID for SNOMED CT is 2.16.840.1.113883.6.96. This is the OID that should be used for all versions of SNOMED CT and related terminologies (such as the Australian Medicines Terminology) because it identifies the **system**, i.e. the set of rules for interpreting SCTIDs. Under these rules, any specific SCTID is either defined with respect to a particular SNOMED CT Version, or it is undefined (i.e. not included/mentioned in that version). Furthermore, any given SCTID always identifies the *same thing* in all versions in which it is defined.

The HL7 specification says: *the interpretation of version strings is defined by the Code System* (and not by HL7). This means we can use the URI for a Version (versioned Edition) as the version code:

http://snomed.info/sct/{sctid}/version/{timestamp}

For example, here is how an element of Data Type CD might appear in a CDA document with:

<xyz code="78835011000036104" codeSystem="2.16.840.1.113883.6.96" codeSystemName="Australian Medicines Terminology (AMT)" codeSystemVersion= "http://snomed.info/sct/900062011000036108/version/20121231" displayName="GANFORT 0.03% / 0.5% eye drops: solution, 3 mL"/> </xyz>

Identifying SNOMED CT Versions in HL7 FHIR

Fast Healthcare Interoperability Resources (FHIR™) [2] defines a set of 'resources' to represent health and healthcare administration-related information. Rather than OIDs, FHIR uses URIs to identify code systems, usually along with an associated version string. The code system is intended to characterise the set of valid codes, hence the recommended URI to use for this is:

http://snomed.info/sct

and the recommended string template to use for the associated version, substituting in the appropriate module sctid and effective time, is:

http://snomed.info/sct/{sctid}/version/{timestamp}

---

[1] See OWL 2 Web Ontology Language Structural Specification and Functional-Style Syntaxhttp://www.w3.org/TR/owl2-syntax/#Ontology_IRI_and_Version_IRI

[2] See http://hl7.org/fhir

Draft pages - DO NOT PUBLISH

2.6 URIs for Language Syntaxes - DO NOT PUBLISH

Background

A family of computer processable language syntaxes have been developed to support a range of SNOMED CT use cases. These language syntaxes include:

- Compositional Grammar - used to represent a SNOMED CT expression, which defines a single clinical meaning
- Expression Constraint Language - used to represent an expression constraint, which defines a bounded set of clinical meanings
  - used to express computable queries over SNOMED CT RF2 content; and
- Template Syntax - designed to allow slots to be added to expressions, expression constraints or queries to create expression templates, expression constraint templates and query templates respectively.
- Expression Template Language - used to represent an expression with one or more slots (i.e. an expression template)

When using these computable languages, it may be necessary to identify both the language syntax and the version of this syntax as a URI. This enables an implementation to select the correct language parser, and to subsequently interpret the language strings in an appropriate manner.

Form

The URIs that identify SNOMED CT language syntaxes, and versioned language syntaxes, take the following respective forms:

http://snomed.info/syntax/{syntaxCode}

http://snomed.info/syntax/{syntaxCode}/syntaxVersion/{syntaxVersionNumber}

In each of the forms above, the following replacements must be made:

- {syntaxCode} is replaced with the codes defined for a URI for language syntax (e.g. scg, ecl, etl)
- {syntaxVersionNumber} is replaced with the version number of the language syntax (e.g. 2.3, 1.0)

The table below shows the valid syntax codes and their respective version numbers. Version numbers use semantic versioning, and can be specified to any level of detail (e.g. "2" or "2.2" or "2.3.1"). However, 2 level version numbers are recommended (e.g. "2.3" or "1.0").

SNOMED CT Syntax	syntaxCode	versionNumbers		
Compositional Grammar	scg	1	1.0	1.0.0
		2	2.0	2.0.0
			2.1	2.1.0
			2.2	2.2.0
			2.3	2.3.0
				2.3.1
			2.4	2.4.0
Expression Constraint Language	ecl	1	1.1	1.1.0
				1.1.1
			1.2	1.2.0
			1.3	1.3.0
			1.4	1.4.0
Template Syntax	sts	1	1.0	1.0.0

SNOMED CT Syntax	syntaxCode	versionNumbers		
			1.1	1.1.0
Expression Template Language	etl	1	1.0	1.0.0
			1.1	1.1.0
Expression Constraint Template Language	ctl	1	1.0	1.0.0

Examples

The following table shows some examples of URIs for SNOMED CT language syntax and versioned language syntaxes.

Table 2.6-1: Examples

Resource	URI
Compositional Grammar	http://snomed.info/syntax/scg
Compositional Grammar, version 2.4	http://snomed.info/syntax/scg/syntaxVersion/2.4
Expression Constraint Language	http://snomed.info/syntax/ecl
Expression Constraint Language, version 1.4	http://snomed.info/syntax/ecl/syntaxVersion/1.4
Expression Template Language	http://snomed.info/syntax/etl
Expression Template Language, version 1.1	http://snomed.info/syntax/etl/syntaxVersion/1.1

2.7 URIs for Language Instances - DO NOT PUBLISH

Background

When using computable language instances (e.g. SNOMED CT expressions) in electronic health records or other implementations, it may be necessary to identify the literal language string as a URI. This format for SNOMED CT language instances supports these use cases.

Form

A URI that identifies a literal computable language instance, such as a SNOMED CT expression, expression constraint or template, takes the following form:

http://snomed.info/{syntaxCode}/{syntaxInstance}

To identify a language instance based on a specific version of a language syntax, the following form is used:

http://snomed.info/{syntaxCode}/syntaxVersion/{syntaxVersionNumber}/{syntaxInstance}

To identify a language instance based on a specific SNOMED CT edition or version, the following forms are used:

http://snomed.info/sct/{sctId}/{syntaxCode}/{syntaxInstance}

http://snomed.info/sct/{sctId}/version/{timeStamp}/{syntaxCode}/{syntaxInstance}

And to identify a language instance based on a specific SNOMED CT edition or version, **and** a specific version of a language syntax, the following forms are used:

http://snomed.info/sct/{sctId}/{syntaxCode}/version/{versionNumber}/{syntaxInstance}

http://snomed.info/sct/{sctId}/version/{timeStamp}/{syntaxCode}/syntaxVersion/{syntaxVersionNumber}/{syntaxInstance}

In each of the forms above, the following replacements must be made:

- {sctId} is replaced with the identifier of the most dependent module in the relevant SNOMED CT edition,
- {timeStamp} is replaced with the effectiveTime of the relevant SNOMED CT version,
- {syntaxCode} is replaced with the codes defined for a URI for language syntax (e.g. scg)
- {syntaxVersionNumber} is replaced with the version number of the language syntax (e.g. 2.4)
- {syntaxInstance} is replaced with the specific language string (e.g. an expression).

Please note that URIs using the forms described above identify a literal computable language string. It is therefore possible that two different URIs, which identify *semantically* equivalent strings, but are not equivalent because they identify different *literal* strings.

Percent Encoding

URIs must be converted by the server to replace any unsafe ASCII characters with a "%" followed by the corresponding two hexadecimal digits. This is called percent encoding. Due to the special characters that may appear in computable language strings, there are a number of such characters that require percent encoding. These are listed in the table below. For more information please refer to the Uniform Resource Identifier (URI) Generic Syntax.

Character	Encoding
SPACE	%20
!	%21
"	%22
#	%23
$	%24
%	%25
&	%26
'	%27
(	%28
)	%29
*	%2A
+	%2B
,	%2C
/	%2F
:	%3A
;	%3B
<	%3C
=	%3D
>	%3E
?	%3F
@	%40

Character	Encoding
[	%5B
\	%5C
]	%5D
^	%5E
`	%60
{	%7B
|	%7C
}	%7D

Examples

The following table shows some examples of URIs for SNOMED CT expressions, constraints and templates. In this table, we include both the human readable and standard (percent encoded) URIs.

Table 2.7-1: Examples

Resource	URI
The SNOMED CT Expression 404684003 |Clinical finding| : 47429007 |Associated with| = 267038008 |Edema|	Human readable URI • http://snomed.info/scg/404684003|Clinical finding|:47429007|Associated with|=267038008 |Edema| Standard URI (percent encoded) • http://snomed.info/scg/ 404684003%7CClinical%20finding%7C%3A47429007%7CAssociated%20with%7C%3D267038008%20%7CEdema%7C
The SNOMED CT Expression Constraint < 404684003 |Clinical finding| :< 47429007 |Associated with| =< 267038008 |Edema|	Human readable URI • http://snomed.info/ecl/<404684003 |Clinical finding|:<47429007|Associated with|<267038008|Edema| Standard URI (percent encoded) • http://snomed.info/ecl/ %3C404684003%20%7CClinical%20finding%7C%3A%3C47429007%7CAssociated%20with%7C%3D%3C267038008%7CEdema%7C
The SNOMED CT Expression Constraint < 404684003 |Clinical finding| :< 47429007 |Associated with| =< 267038008 |Edema| using ECL v 2.3	Human readable URI • http://snomed.info/ecl/syntaxVersion/2.3/<404684003 |Clinical finding|:<47429007|Associated with|=<267038008|Edema| Standard URI (percent encoded) • http://snomed.info/ecl/syntaxVersion/ 2.3/%3C404684003%20%7CClinical%20finding%7C%3A%3C47429007%7CAssociated%20with%7C%3D%3C267038008%7CEdema%7C

The SNOMED CT Expression Template [[+id(< 404684003 |Clinical finding|)]]: 47429007 |Associated with| = 267038008 |Edema|	Human readable URI • http://snomed.info/etl/[[+id(<404684003|Clinical finding|)]]:47429007|Associated with|=267038008|Edema| Standard URI (percent encoded) • http://snomed.info/etl/ %5B%5B%2Bid(%3C404684003%7CClinical%20finding%7C) %5D%5D%3A47429007%7CAssociated%20with%7C%3D267038 008%7CEdema%7C
The expression " The expression 404684003 |Clinical finding| : 47429007 |Associated with| = 267038008 |Edema| using v2.0 of SNOMED CT Compositional Grammar. " using v2.0 of SCG	Human readable URI • http://snomed.info/scg/syntaxVersion/2.0/404684003|Clinical finding|:47429007|Associated with|=267038008|Edema| Standard URI (percent encoded) • http://snomed.info/scg/syntaxVersion/ 2.0/404684003%7CClinical%20finding%7C%3A47429007%7CAssociated%20with%7C%3D267038008%7CEdema%7C
The expression 404684003 |Clinical finding| : 47429007 |Associated with| = 267038008 |Edema| based on the 20180131 international release.	Human readable URI • http://snomed.info/sct/900000000000207008/version/20180131/ scg/404684003|Clinical finding|:47429007|Associated with| =267038008|Edema| Standard URI (percent encoded) • http://snomed.info/sct/900000000000207008/version/20180131/ scg/ 404684003%7CClinical%20finding%7C%3A47429007%7CAssociated%20with%7C%3D267038008%7CEdema%7C
The expression " The expression constraint < 404684003 |Clinical finding| :<< 47429007 |Associated with| =<< 267038008 |Edema| based on the 20190731 Australian Edition, using v2.0 of the SNOMED CT Expression Constraint Language. " based on the 20160731 international release and using v2.0 of SNOMED CT Compositional Grammar.	Human readable URI • http://snomed.info/sct/32506021000036107/version/20190731/ ecl/syntaxVersion/2.0/<404684003|Clinical finding|:<<47429007| Associated with|=<<267038008|Edema| Standard URI (percent encoded) • http://snomed.info/sct/32506021000036107/version/20190731/ ecl/syntaxVersion/ 2.0/%3C404684003%7CClinical%20finding%7C: %3C%3C47429007%7CAssociated%20with%7C=%3C267038008 %7CEdema%7C

2.9 Comparing URIs for Equality of Reference - DO NOT PUBLISH

Any two URIs from the http://snomed.info/ URI space identify the same thing if, after syntax-based normalisation as described in section 6.2.2 of IETF RFC3986 Uniform Resource Identifier (URI): Generic Syntax[1] , they are equal when treated as character strings. The syntax-based normalisation includes case normalization, percent-encoding normalization, and removal of dot-segments. Scheme-based and protocol-based normalisation should not be required since any URIs that would be affected by them (e.g. by including explicit port numbers or trailing slashes) fall outside of the URI space defined by the standard.

Note that computable language strings identified using the http://snomed.info/{syntaxCode} URI spaces represent literal strings of a specific language and version (if specified). Therefore:

- URIs that identify different literal expressions are *not* equivalent, even if those expressions are semantically equivalent. For example:
    - http://snomed.info/scg/125605004, http://snomed.info/scg/125605004|Fracture of bone| and http://snomed.info/scg/76069003:{363698007=272673000,116676008=72704001} are *not* equivalent
- URIs that represent the same precoordinated code in different languages are *not* equivalent. For example:
    - http://snomed.info/id/125605004, http://snomed.info/scg/125605004 and http://snomed.info/ecl/125605004 are *not* equivalent
- URIs that represent the same literal expression in different syntax versions are *not* equivalent (unless the syntax versions are considered to be equivalent)[2] . For example:
    - http://snomed.info/scg/version/2.1/76069003:{363698007:272673000} and http://snomed.info/scg/version/2.4/76069003:{363698007:272673000} are *not* equivalent.

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[1] Uniform Resource Identifier (URI): Generic Syntax http://tools.ietf.org/html/rfc3986#section-6

[2] Computable language versions are considered to be equivalent when all additional components are set to "0". For example "1" is equivalent to "1.0" and "1.0.0"; and "2.3" is equivalent to "2.3.0"