

1 Executive Summary

SNOMED CT is a multilingual clinical terminology that covers a broad scope. However, some users may need additional [concepts](#), [relationships](#), [descriptions](#) or [reference sets](#) to support national, local or organizational needs. SNOMED CT is designed to allow the [International Edition](#) to be enhanced by creating [extensions](#) that meet national or local requirements. The [extension](#) mechanism allows SNOMED CT to be customized to address the terminology needs of a country or organization that are not met by the [International Edition](#). An [extension](#) may contain [components](#) (i.e. [concepts](#), [descriptions](#) or [relationships](#)) and/or [reference sets](#) used to represent subsets, maps or language preferences.

SNOMED CT extensions can support a variety of use cases, including:

- Translating SNOMED CT, for example
 - Adding terms used in a local language or dialect
 - Adding terms used by a specific user group, such as patient-friendly terms
- Configuring the terminology for specific use cases, for example
 - Specifying pick lists to be used for data entry
 - Specifying groups of components for reporting and analytics
 - Linking components to clinical knowledge resources
- Managing content gaps, for example
 - Adding components that are missing in the [International Edition](#)
 - Adding concepts that are only relevant to a local context
- Mapping between SNOMED CT and other code systems, for example
 - Representing maps between SNOMED CT concepts and codes from other code systems
- Extending the expressivity of SNOMED CT, for example
 - Extending the concept model by introducing new attributes to meet specific data retrieval use cases

The logical design of a [SNOMED CT extension](#) is technically consistent with that of the [International Edition](#). Both represent and version SNOMED CT components and reference sets in release files that conform to the [Release Format 2](#) specification. Every [SNOMED CT extension](#) includes one or more [modules](#), and each [module](#) contains either [SNOMED CT components](#) or [reference sets](#) (or both). A [SNOMED CT extension](#) is published as a [SNOMED CT edition](#), which includes the contents of a focus module from the extension, together with the contents of all the modules on which it depends. This includes the modules in the [International Edition](#) and possibly other modules from a national and/or local extension. National and local [extensions](#) are managed by [SNOMED International Members](#) or [Affiliates](#) who have been issued a [namespace identifier](#) by [SNOMED International](#). A [namespace identifier](#) is used to create globally unique [SNOMED CT identifiers](#) for each [component](#) (i.e. [concept](#), [description](#) and [relationship](#)) and reference set within a [Member](#) or [Affiliate extension](#). This ensures that references to extension [concepts](#) contained in health record data are unambiguous and can be clearly attributed to a specific issuing organization. Once a [namespace identifier](#) has been obtained from [SNOMED International](#), an extension producer must create one or more module concepts, which will be used to organize the extension content. All components and reference set members in an extension must belong to a module created by the responsible organization.

The key steps in producing a SNOMED CT extension are:

1. Planning - To ensure that the requirements can be met by the extension design, resources and processes that will be used.
2. Preparation - To ensure that the technical prerequisites are in place, including the namespace, modules, module dependencies and appropriate tooling.
3. Production - To develop, distribute and maintain the extension, including:
 - a. Assessing requests - Requests for new terminology products or content changes are assessed to determine whether or not they will be accepted into the extension or submitted for national or international consideration.
 - b. Authoring - SNOMED CT components and reference set members are added, modified or inactivated according to the SNOMED CT editorial principles and policies. It should be noted that:
 - It is the responsibility of the extension producer to ensure that the quality and integrity of the extension is maintained, and that all content changes are made in a module that is owned by the *terminology producer* themselves.
 - No changes are permitted to content of the International Release, except for the addition of new versions of this content in a module owned by the *terminology producer*. Any modifications resulting in changes to the classification of international content must be accompanied by a disclaimer notifying users of the differences between the extension edition and the International Edition.
 - Any substantive improvements or corrections to the content in the International Edition that is made in an extension should be forwarded to SNOMED International in a timely fashion to improve the quality of the International Edition for all users.
 - c. Review and validation - SNOMED CT extension content should be validated using automated tests both at the time of authoring and before a release is packaged for distribution. In addition, manual review of the terminology content is also vital to ensure that it meets the quality standards for usability and clinical safety that can not be tested automatically.
 - d. Distribution - This involves classifying the associated SNOMED CT editions, packaging the release files, validating the distribution package, and making the release package available to *terminology consumers*.
 - e. Maintenance - A SNOMED CT edition must be maintained to respond to new change requests, and to ensure that the consistency and integrity with the international edition (and other modules on which it depends) is maintained appropriately.

It is important for extension producers to understand the complexity of authoring and managing an extension, and to prioritize the acquisition of appropriate tools to support the extension management processes. These tools are required to maintain the quality and integrity of SNOMED CT content, and to prevent errors which can easily be identified using automated processes. Extensions and editions should never be handcrafted or managed manually using a file-based approach (e.g. using spreadsheets). While a manual approach may be possible in the short term (given a solid understanding of the principles), version management for an evolving extension can quickly become unsustainable over time. In addition, a lack of automated validation can have serious patient safety implications.