Implementing the SCCI Standard: SNOMED CT
Document Management

Revision History

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<tr>
<td>EHR</td>
<td>Electronic Health Record</td>
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<tr>
<td>GPES</td>
<td>The <strong>General Practice Extraction Service</strong>; collects information from general practice (GP) clinical systems in England and forms part of HSCIC’s GP Collections service.</td>
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<td>GPSoC</td>
<td><strong>GP Systems of Choice.</strong></td>
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<td>ICD-10</td>
<td><strong>International Classification of Diseases Version 10</strong></td>
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<td>IHTSDO</td>
<td><strong>International Health Terminology Standards Development Organization</strong></td>
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<tr>
<td><strong>Clinical Classifications Service</strong></td>
<td>The <strong>national service</strong> within the HSCIC that manages, maintains and provides national guidance on OPCS-4 and the version of ICD-10 implemented in the UK.</td>
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<tr>
<td>OPCS-4</td>
<td><strong>The Classification of Interventions and Procedures</strong>, formerly from the Office of Population Censuses and Surveys. Version 4</td>
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<td>QOF</td>
<td><strong>Quality Outcomes Framework</strong>, the annual reward and incentive programme detailing GP practice achievement results</td>
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<td>SCCI</td>
<td><strong>Standardisation Committee for Care Information</strong>, SCCI replaced the previous Information Standards Board ISB and issues ISNs (information standard notices)</td>
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<tr>
<td>TRUD</td>
<td><strong>Technology Reference data Update Distribution site</strong>; this distribution site provides the SNOMED CT release files as well as SNOMED CT derivative products and tools.</td>
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<tr>
<td>UKTC</td>
<td><strong>The UK Terminology Centre</strong> within the HSCIC that manages, maintains and provides guidance on the use of terminology within the UK.</td>
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1 Introduction

SNOMED CT is the fundamental standard for healthcare terminology. SNOMED CT provides the vocabulary for recording structured data in relation to the health and care of an individual in electronic records; as such its use in systems is wide ranging. SNOMED CT also provides features that enable powerful analytics and a high level of expressivity of information about the health and care of the individual.

As a fundamental standard, SNOMED CT will be required in other standards that are approved by SCCI. New standards that are developed such as data collections, message specifications, and information standards will have to use SNOMED CT as the source of data items that relate to the health and care of an individual. These items include such information as diagnosis, symptoms and interventions; further details are included in Sections 3 and 5. Implementation of SNOMED CT is part of the national requirement for electronic patient records.

It should be noted that implementation dates are for adoption across the NHS and that individual standards and/or collections may require the use of SNOMED CT before this date. The ISB ISN published in 2011 informed the NHS that standards could be approved that required SNOMED CT from April 2015 onwards.

The UK is at the early stages of its approach to the use of the terminology. This document therefore outlines How to Start to implement SNOMED CT, but it is expected that use in systems will increase in sophistication over the next few years as its use becomes intrinsic to all electronic health and care systems. System providers should develop their own product roadmap and maturity in relation to the utilisation of SNOMED CT, with incremental development of more advanced features as electronic record solutions become mature.

1.1 Purpose of Document

This document aims to provide a general understanding of SNOMED CT and the requirements in relation to its effective implementation in systems in the UK. It is provided to support the SCCI\(^1\) Information Standards Notice for SNOMED CT as the mandated standard for healthcare terminology within the NHS in England.

While its prime role is to support those with responsibility to meet the SCCI ISN (procurement, roll-out and systems suppliers), it has been written to provide a general overview of SNOMED CT and its use in supporting the electronic recording of information that is pertinent to the health and care of the individual; and thus also its use within data collections, reporting, data interchange and data extractions.

This document alone will not provide all the information required; its aim is to give an overview and to signpost additional materials providing greater detail. This will ensure that individuals can access the most up to date information.

SNOMED CT is an international standard and hence significant documentation by the international organisation that owns and manages SNOMED CT also exists; this document

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\(^1\) Standardisation Committee for Care Information: http://www.hscic.gov.uk/isce
aims to augment the international documents with specific UK requirements as well as signpost key areas that need to be addressed.

1.2 Scope

This document applies to the fundamental standard of SNOMED CT and its general implementation as well as requirements under the national standard.

This document addresses the use of the UK Edition of SNOMED CT within the NHS in England. The UK Edition includes the UK Clinical Edition and the UK Drug Extension. While we refer to the UK Clinical Edition, the content is designed to support both the health and care of an individual. For convenience the document refers to the electronic health record (EHR), but increasingly SNOMED CT covers care in its widest sense.

The UK Drug Extension is partly derived from the dictionary of medicines and devices (dm+d). dm+d is a separate standard with its own implementation guidance; anyone requiring the specific details in relation to medicines and devices should also consult the dm+d information.

1.3 Audience

The document aims to address the needs of those with responsibility for ensuring the effective adoption of the fundamental standard SNOMED CT, as well as for those who will subsequently utilise the standard. Specific details on applicability of the standard can be found in the Information Standards Notice. As such this document includes information for those responsible for policy, procurement, commissioners of care, audit, development of software solutions, analysis and training; whether they are receiving, sending, processing data or producing specifications in relation to the direct management of care of an individual.

It applies to all NHS organisations, arm’s length bodies, commissioners of care for the NHS, and to all providers of care for the NHS. Private patient care in private organisations may use the standard, but where the flow of information for the direct management of patient care comes into the NHS then they must use this standard. Its use in social care is also under active consideration.

It is planned that specific sections of this document will be of interest to a range of individuals including clinicians, developers, information analysts, business analysts and those procuring solutions that state requirements in relation to SNOMED CT.

It is not expected that everyone reads every Chapter and so each is written to stand alone with its own references to relevant further information.

1.4 Background

It is widely acknowledged that an electronic health record (EHR) is an essential ingredient to meeting the increased challenges for healthcare professionals to provide effective care. Examples of improved resource management and improved decision making when electronic records are available are already in evidence. When clinically relevant data can also be processed by the computer, additional gains such as drug alerts, graphing of test results, triggering completion of an assessment form, pre-populating a clinical letter are also achieved. To attain such processing of data requires that clinically relevant data is captured.
in a nationally consistent way through the use of a single national vocabulary within an electronic record system.

The vocabulary that is the national standard within the NHS in England is known as SNOMED CT. This vocabulary provides clinical phrases for capturing relevant aspects of health and care by all clinical and care professionals across all specialties. SNOMED CT is much more than just a vocabulary of clinical phrases; it provides additional information and features that support more sophisticated reporting, electronic decision making and incorporation of business rules and process management within systems. SNOMED CT is known as a **terminology** and is currently the only international terminology available with the capability to support the requirements of all our health and care professions for electronic health records (EHRs).

SNOMED CT is owned and managed by the International Health Terminology Standards Development Organisation (the IHTSDO\(^2\)). The UK is one of the founder members of the organisation and continues to work collaboratively as a member to support the international maintenance and adoption of SNOMED CT. The IHTSDO currently (June 2016) has 28 member countries who contribute to its development and use within their own health environments; this number is increasing year on year.

SNOMED CT was first stated as the national standard for use in England in 1999, and has been re-enforced as the national standard in all subsequent strategies and policy documents. It is one of the 5 priority standards\(^3\) highlighted to be implemented as part of the electronic health record by NHS England and is documented as an action within the policy document: ‘Personalised Health and Care 2020: a framework for action\(^4\)' published by the National Information Board\(^5\). The ability to meet requirements in future national information standards, interoperability programmes and data collections will require systems to have adopted SNOMED CT.

### 1.5 The UK Terminology Centre

The UK Terminology Centre (known as the UKTC), represents the UK within the IHTSDO and manages the UK Edition of SNOMED CT. It authors content on behalf of the UK as well as providing the releases that constitute the data files of the terminology.

The UKTC provide a number of resources to support organisations who wish to use SNOMED CT within their organisation or wish to incorporate the terminology within their product. If after reading this guide you need further advice please contact the UKTC helpdesk by emailing information.standards@hscic.gov.uk.

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\(^2\) [www.ihtsdo.org](http://www.ihtsdo.org)


2 Implementing the standard

Implementation of the standard should be undertaken alongside the requirement for *paperless at the point of care*. The national drive for structured records that support the health and care of an individual **must** be implemented by using this fundamental standard within such electronic systems. As such the standard is required in a wide range of applications, not restricted to but including:

- The electronic patient record system
- Electronic health records
- Electronic care plans
- Specialist systems such as Cancer MDT systems
- Decision support tools
- Clinical Knowledge Resources
- Clinical Guidance
- Care Pathways
- Messages between care solutions

To achieve implementation, health care providers **must** specify in the solutions they procure or develop in-house the requirement for the clinical vocabulary within that system to be provided by SNOMED CT. Development of a local dictionary is both wasteful of resource but requires new staff to learn alternative terms and structure while preventing electronic records being communicated outside the enterprise without some process of mapping which inevitably introduces a level of clinical risk. The requirement for such interoperability is part of national policy.

As well as requiring SNOMED CT in all systems within the organisation that relate to the health and care of an individual, it will also require that reporting and analysis tools can also deal with the features provided by SNOMED CT, so that benefits over and above straight lexical matching can be utilised for data extraction and reporting.

The adoption of SNOMED CT at a high level means:

- The end user can enter data using terms from within SNOMED CT;
- Data can be communicated outside the organisation with appropriate data items coded in SNOMED CT codes;
- National query specifications written using SNOMED CT can be processed by the system.

The implementation approach within systems, design of the user interface and utilisation of the features of SNOMED CT are all dependant on the specific application. The requirements section in this document provides aspects to consider when developing or procuring solutions that utilise SNOMED CT and Section 8 aims to provide information for those developing systems to consider. Section 7 provides a useful look at different solutions that incorporate SNOMED CT.

It is therefore not possible to provide a detailed step-by-step guide on implementation; this document therefore highlights aspects for consideration by those procuring solutions or those developing solutions that must incorporate this standard.
3 An Overview of SNOMED CT

3.1 Why do we need a common national terminology

Most electronic systems provide a pre-existing list for data entry for particular data items the system requires, for example Title, County of residence, their product catalogue. Such lists are provided for many reasons: for example they can speed up data entry, they can eliminate typographical errors, and for something like product to order they ensure consistency and ensure it is clear which product is being ordered.

For similar reasons, in an electronic health record where the system requires say the diagnosis, if that were left as completely free text it is questionable whether the computer could interpret and thus process the response with a high degree of confidence. While clinical language is more predictable, any interpretation by a computer would still need confirmation by the user if just free text is allowed; much like web searching gives you a list of alternatives or asks if you meant ‘xyz’ if it cannot interpret what you mean. In clinical systems we require a very high level of confidence that the computer can interpret correctly what we have written. It is therefore necessary that clinical content for data items such as diagnosis, procedure, allergies, medications, family history etc we select from a pre-defined vocabulary. If we also want to exchange that data with other systems and move data in real time between different health care professionals using different EHRs; it is essential that vocabulary is the same across our health and care estate.

Electronic health records will only be able to meet our expectations nationally in terms of data exchange and supporting the end user in their care of the patient (for example through decision support and access to knowledge resources) if all systems use a common single national terminology. It has been determined for the NHS in England that this should be the terminology known as SNOMED CT. SNOMED CT is available under license to all system suppliers free of charge for use within the UK. While only mandated in England, its use is encouraged in all the UK countries.

3.2 What does the terminology provide

The clinical phrases (generally known as clinical terms) that a health care professional would want to record in a patient record in relation to various aspects of their care are provided within the terminology. This covers a wide range of data including diagnoses, clinical findings and observations, anatomy, procedures, medicines and devices, causes of disease as well as administrative terms such as ‘Did not attend’. All terms authored within the terminology have to have evidence of use in clinical care and they tend to represent a single clinical thought. They have to have national relevance and in many cases they are internationally relevant; the UK has the ability to add clinical terms that are relevant to the UK only such as some of the national screening programmes.

Terms within the SNOMED CT terminology range from things like left and right, leg, leg ulcer, blood pressure, appendicitis, appendicectomy to very specific diseases such as von Recklinghausen's bone disease and cochlear Ménière syndrome. These illustrate just a few of the terms within SNOMED CT but hopefully illustrate the depth and breadth of the terminology. In the UK Edition of SNOMED CT there are currently (April 2016) over 650,000 clinical phrases.
In the previous section we highlighted that a terminology was more than just a dictionary of clinical phrases. As well as the clinical terms, SNOMED CT contains relationships between those terms: for example toe is-a foot structure, Ménière's disease is-a peripheral vertigo which is-a labyrinthine disorder. These relationships enable systems to provide users with a powerful mechanism to select patients according to the criteria they are looking for, for example when searching for all stroke patients, a patient with a diagnosis of infarction of basal ganglia will be matched as the terminology ‘knows’ this is a type of stroke.

In addition to these relationships, the terminology also holds other information: for example that appendicitis has a finding-site of appendix structure and that the associated morphology is inflammation; and that carpal tunnel syndrome has a finding site of ‘median nerve at wrist’ and an associated morphology of entrapment with compression. These are known as attribute relationships or defining relations. This information source in addition to the clinical terms enables sophisticated processing by software that can support decision support as well as reporting. As systems become more mature, the terminology also enables the expression of complex health scenario’s by combining the different clinical phrases: for example the first episode of a severe myocardial infarction.

So the terminology provides software systems with a comprehensive vocabulary for use in the application (for example the EHR), in addition relationships within the terminology support how that vocabulary may be made visible to the user (eg. all procedures) and also provides a powerful mechanism for identifying patients for a particular requirement (eg. all stroke patients). To the end user, the terminology may be just a long list of data but there are applications available called browsers that enable a user to search through the terminology and examine the relationships that link the clinical phrases. Some systems also use these relationships to help the end user ensure they have the right term(s) for the activity they are undertaking (eg. entering data, or searching for patients).

In healthcare, different clinicians may use a different clinical phrase to another, yet mean the same thing. SNOMED CT supports this by allowing more than one clinical term for the same clinical ‘thought’ or concept. There is one preferred term for each concept and optionally one or more synonyms. It also contains nationally common abbreviations such as COPD, though never without being also expanded in full (this means when data is transferred it is still interpreted correctly). These all assist data entry for selecting the correct term say for the procedure undertaken within the discharge summary.

So a terminology at its simplest provides a dictionary of clinical terms for use in clinical applications, but contains many features that enable sophisticated management of patient data.

3.3 What content does SNOMED CT provide

SNOMED CT evolved from the legacy terminologies: the Read codes and was combined with the SNOMED RT in the USA; the work undertaken in the 1990’s as part of the national clinical terms project was brought into SNOMED CT when it was first developed. As such, the content within SNOMED CT has been under development and actively maintained for over 30 years. Since then efforts both nationally and internationally have expanded and kept current that content. As interest has increased significantly over the last few years a number of volunteers representing their professional body have worked with the IHTSDO and the UK Terminology Centre (UKTC) to develop the content to support their requirements. The work being undertaken by the World Health Organisation (WHO) to develop ICD-11, which will utilise SNOMED CT, has also resulted in enhancing the terminology. This means that for
most clinical specialties SNOMED CT provides the required clinical terms, and work is
ongoing to ensure the content remains current and relevant. Currently, at the time of writing,
there are 28 countries committed to using SNOMED CT and contribute financially to its
maintenance as well as having this as the national standard for use in their health and care
solutions.

SNOMED CT provides content to support all health and care professions, and all clinical
specialties. A number of clinical specialties in the UK have created subsets (terms identified
from within SNOMED CT that are relevant to the specialty) of the clinical terms to highlight to
their members terms to be used. Some systems also enable these subsets to be available
as part of the approach for data entry into the EHR. The number of these is growing as the
professions develop their strategy for standard record keeping. To illustrate the diversity here
are just some clinical specialties that have engaged with the terminology to ensure it meets
their needs: renal, rheumatology, thoracic, paediatrics, gastroenterology, dietetics, speech
and language, orthopaedics, occupational therapy, physiotherapy, ophthalmology, cosmetic
surgery, pathology, urology, cardiology, radiology, dentistry, oncology, …

For further information on which subsets of clinical terms are available nationally please refer
to the Data Dictionary for Care which provides a searchable repository of all the national
subsets: https://dd4c.hscic.gov.uk/dd4c/.

The data items that can be captured using SNOMED CT currently varies from system to
system. The required provision of free text to enable clinicians to capture content that they
feel does not need to be reported on is sometimes, in our view inappropriately, used when
really that data should be entered using national clinical terms. Those items currently
prioritised by the Transfer of Care programme for example include diagnosis,
procedures/interventions (including therapeutic), allergies and medications. The UKTC would
suggest these are the minimum and that organisations and clinicians should also consider to
record symptoms, current problems (comorbidities), test requests, test results, family history,
body site, observables/clinical findings (for example blood pressure). In addition, where
organisations are implementing care planning records then goals/outcomes should also be
considered.

3.4 Browsing the terminology

SNOMED CT is provided simply as a set of data files; to be able to view and search the
clinical terms available one needs to use either the clinical application or to use a generic
browser that allows you to simply navigate around the terminology. There are a number of
free to use browsers available. These are either on-line or can be downloaded onto your
computer. The advantage of an on-line browser is that the organisation that hosts this
applies the new updates when a new release is available. If this is on your computer, you will
have to do this yourself using features in the application and downloading the appropriate
data files.

Details of browsers that provide the UK Edition of SNOMED CT can be found on the UKTC
3.5 Requesting Content Changes

SNOMED is dynamic and designed to accommodate the constantly evolving needs of care so that it can be updated to reflect those changes. Content must be nationally relevant rather than only having meaning to a region or locality. The UKTC authors new content or makes changes to existing content in response to requests either from individuals, solution providers, professional bodies or national organisations such as NICE, Public Health England and NHS England. New requests are assessed against ‘editorial principles’ that are applied internationally and nationally.

If you wish to request changes to existing content please use the Request portal which can be found at: https://isd.hscic.gov.uk/rsp-snomed/user/guest/home.jsf

3.6 Licensing

SNOMED CT is issued under licence but is free to deploy within the UK. Organisations deploying SNOMED CT within their product need to register for a licence; but individual users do not. For further details see the licensing information on the UK⁶ and the IHTSDO⁷ websites.

3.7 Further information

The above provides a brief overview of SNOMED CT, if you would like more information⁸ and/or the ability to ask questions you may find the following of interest:

- The UKTC Training and Resources
- The IHTSDO Starter Guide⁹
- Live Webex (available monthly) providing an ‘Introduction to SNOMED CT’ (Note. A recorded version of this is also available)
- To help find clinical terms within SNOMED CT attend the Live Webex ‘Finding Content in SNOMED CT’ (Note. A recorded version of this is also available)
- FAQ’s on the adoption of SNOMED CT in primary care: http://systems.hscic.gov.uk/gpsoc/snomedct
- Raising questions or requesting other training information: snomed@hscic.gov.uk
- The IHTSDO learning resources

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⁶ http://systems.hscic.gov.uk/data/uktc/snomed/licensing
⁷ http://www.ihtsdo.org/snomed-ct/get-snomed-ct
⁸ The UK Terminology Centre training and resources: http://systems.hscic.gov.uk/data/uktc/training
⁹ The IHTSDO learning resources: http://www.ihtsdo.org/snomed-ct/learn-more
4 A single national terminology

4.1 Benefits of a single national terminology

Many benefits can be accrued simply from having an electronic health record, for example being able to review the information in multiple places at the same time, records not going missing, speed of electronic communication vs paper and being able to find information quickly. Implementing an EHR without a national standard vocabulary would mean that important data such as current health issues, allergies and procedures undertaken cannot be exchanged in a way that enables systems to reliably process that data. This would then severely restrict the expected benefits we have of an EHR in providing decision support, clinical alerts and supporting business processes.

The use of terminology within a patient record can also be utilised to support the allocation of classification codes to a completed episode of care. With the current approach where the business rules are captured within text, cross-maps provided by the National Classifications Service can be incorporated within encoder software to improve the efficiency of code allocation. When the NHS has one terminology, resource utilisation is greatly improved as just one set of cross-maps need to be maintained. It should also be noted that use of a single international terminology is in line with WHO plans to develop their next generation of ICD (see Section 5).

The benefits from using SNOMED CT itself over any of the other terminology coding schemes available can be summarised as follows:

- **It provides a single clinical language for direct care across all care settings, all professionals and all clinical and care specialties:** Clinicians often use multiple systems; a single language ensures that clinical information is recorded in the same way across all systems thus providing consistency and ease of use. A single language enables specifications for clinical tools, data extracts, clinical audit etc to be written once; having multiple terminologies introduces clinical risk, increased cost from managing multiple specifications and it is not always possible to produce equivalent specifications across different terminologies.

- **An enabler for Interoperability:** The use of SNOMED CT across all systems ensures that data can be transferred between systems without the need for mapping and can be reliably processed and interpreted by both systems. Without a single terminology then systems will need to map between the different terminologies which introduces clinical risk, additional resource and thus costs.

- **Extensive Analytics capability:** SNOMED CT is more than just a vocabulary; it contains additional features and data that enable extensive analytics of clinical data using a wide range of analysis techniques to support clinical audit and research work.

- **International:** SNOMED CT is an international terminology; this gives the potential to support cross-border data communications and overcome language barriers; but also provides a more efficient market for vendors developing systems. As an international terminology many countries contribute to the development of content enabling development in relation to rare diseases and genetics to be a shared effort, thus reducing the overall cost compared with maintaining a national terminology.
• **Building for the future:** SNOMED CT has been developed to ensure it can support current and future requirements. Its design has addressed challenges experienced in earlier terminologies such as running out of actual codes in the right place (as experienced with postcodes, number plates and telephone STD codes previously), the inability to deal with out of date content, the ability to categorise a clinical term in more than one way (e.g. It’s an infection and respiratory).

### 4.2 Risks from multiple terminologies

There are three terminologies in active use currently within the NHS: Read v2, Read v3 (also known as CTV3) and SNOMED CT. The Read codes are both deprecated standards and on schedule for retirement and final withdrawal; SNOMED CT is the only current standard. SNOMED CT has evolved through developments initiated through the use of the Read codes, with the intention that the legacy terminologies were superseded with SNOMED CT.

Currently the NHS has to implement methods at the interfaces between data exchanges to deal with the scenarios where different systems use the different terminologies. This incurs additional products such as mapping tables as well as requiring clinical assurance. Inevitably it is not possible to eliminate all clinical risk from translating between different coding schemes. As well as clinical risk, there is additional resource burden on those processing such data as generally query specifications and code cluster specifications have to be developed for each terminology. In the situations where it is not possible to map, then these have to be manually addressed, for example in GP2GP, a member of staff has to resolve all items that could not be mapped.

SNOMED CT has evolved to address shortfalls identified with the Read codes as their use has become wide-spread but also technology improvements have facilitated. There are a number of reasons why it is not viable to use the Read codes across the whole NHS estate for all clinical specialities; it is for these reasons that the decision was made to migrate all systems to use SNOMED CT. Continuing to use multiple terminologies across the health and care system brings with it clinical risk, additional resource costs but also prevents some of the technology improvements in development to facilitate an interoperable electronic NHS.

Further information on why we need to adopt SNOMED CT in place of the Read codes is provided in the FAQs on the GPSoC webpages.
5 Requirements

SNOMED CT is a fundamental standard; as the source of the national vocabulary for electronic systems in relation to direct management of care and related functionality, its long term required use is widespread. New or updated national information standards approved by SCCI will be required to address SNOMED CT for relevant data items; such standards will therefore also provide requirements for the use of SNOMED CT.

It is therefore important that the general principles for adoption are adhered to and that those with responsibility for implementation of clinical systems and/or adoption of standards do not wait for requirements from future standards. As SNOMED CT is integral to an electronic system, it is critical that all future procurements and system developments take account of the high level requirements detailed in Section 5.1 and require that SNOMED CT is used within such systems.

It is not planned to develop instantiations of the standard; these requirements must be addressed in any system that is within scope.

5.1 High Level Requirements

In short, the requirement is that the clinical system must use SNOMED CT to provide clinical phrases utilised within the software solution. Where a clinical application simply uses a vocabulary or dictionary rather than the full set of features provided by the terminology (for example completion of an asthma review), those terms provided (along with the relevant codes) must be valid terms from within the SNOMED CT terminology.

The national requirements in order to achieve the Five Year Forward View are that:

- SNOMED CT to be the terminology utilised for clinical terms within all electronic communications. National message specifications will require data relevant to the health and care of the individual to be captured using the SNOMED CT terminology when transmitted between systems.
- staff to be able to enter data into the clinical system using the terms from within SNOMED CT. National guidance and national recording requirements will increasingly specify requirements utilising the terms within SNOMED CT. For example NICE guidelines in relation to medical technologies; national screening programmes; national guidelines in relation to frailty; and national consent models – all contain requirements expressed using the terms within SNOMED CT.
- data extractions (including reports) from the system to be specified using SNOMED CT for clinical and care related content, for example all stroke patients would be all patients containing the concept ‘cerebrovascular accident’ and any children of that concept. National dataset reporting; national extractions to organisations such as national registries; national data returns (for example QOF - Quality Outcomes Framework) or GPEC (General Practice Extraction Service) in primary care, will be specified using SNOMED CT clinical terms and thus systems must provide reporting functionality that can incorporate queries written using clinical terms from SNOMED CT.

This must be done in such a way that both the text and the code of the concept within SNOMED CT are available for processing and onward communication.
5.2 Timelines

The use of SNOMED CT across solutions within the health and care environment is a key action highlighted in the ‘Personalised Health and Care 2020: Framework for Action’ to enable interoperability.

As such the SCCI standard requires:

- Systems used by primary care service providers **must** adopt SNOMED CT as the healthcare terminology within the system before the 1 April 2018. SNOMED CT **must** be utilised in systems in place of the Read codes before 1 April 2018.
- Secondary Care, Acute Care, Mental Health, Community systems and other systems used in the direct management of care of an individual **must** use SNOMED CT as the healthcare terminology before 1 April 2020 as the healthcare terminology within all electronic patient level communications within the health and care environment.
- Other providers of health related services where the flow of information for the direct management of patient care comes into the NHS **must** use this standard.

SNOMED CT within social care is under active discussion and may be used by systems in this environment as the terminology for health and care related terms; this is not currently within scope of the standard.

5.3 Published Requirements

The requirement is that SNOMED CT **must** be used as the healthcare terminology within all electronic patient level communications within the healthcare environment. Using SNOMED CT in this way will support safe and consistent system to system sharing of information, and with the appropriate safeguards, between local and national systems.

The **NHS Data Model and Dictionary**\(^{10}\) provides details of information standards and any data items within those standards that are required to be provided coded using SNOMED CT. Where subsets are also required to be used, that for example restrict the data that can be provided as part of that standard, these will be detailed within the NHS Data Model and Dictionary.

SNOMED CT **must** be implemented in software applications to represent clinically relevant information reliably and reproducibly. Through the use of this information, SNOMED CT enabled applications can support effective delivery of high quality healthcare to individual people and populations.

The standard **must** be used to support clinical management of the patient in the following, but not restricted to, ways within electronic systems:

- In messages that are used to transfer patient related data from one system to another.
- Patient Summaries including Discharge summaries.
- Problem lists.
- Allergy Lists and Allergy Management.
- Clinical Documentation.
- Care Plans; in particular for clinical content that will be transferred between systems.

\(^{10}\) [http://www.datadictionary.nhs.uk/index.asp](http://www.datadictionary.nhs.uk/index.asp)
• Keyword lists for metadata in care pathways, research documents, evidence based content.

However, SNOMED CT is a fundamental standard, and as such can be utilised in many different ways in different systems and use cases. The specific requirements for adoption of SNOMED CT in systems would need to be set by the particular use case. To aid those responsible for providing SNOMED CT compliant systems, as list of requirements has been created and is published on the UKTC Documentation webpage within Training and Resources. This will be actively maintained and we would welcome feedback from anyone using these requirements via emailing snomed@hscic.gov.uk.

The requirements for solutions operating within GP Practices have been specified within the GPSoC framework and are published on the GPSoC webpages for the SNOMED CT in primary care programme. Those producing GP solutions must meet the requirements provided here. To access the full range of specifications contact the GPSoC helpdesk for access via gpsoc.requirements@nhs.net; specifications are then available at: https://www.portal.nss.cfh.nhs.uk/sites/gpsoc/sup/default.aspx.

5.4 Detailed Requirements

This section provides information pertaining to the specific requirements for those deploying solutions in the UK.

5.4.1 UK Edition of SNOMED CT

Within the UK, the requirement is that systems must use the UK Edition of SNOMED CT to provide the terminology. To ensure that UK descriptions are provided (as opposed to the default US English descriptions in the international edition), then suppliers should utilise the Realm Description reference set (provided as part of the release; see the Technical Implementation Guide for more details) to filter the full set of descriptions available within SNOMED CT. It is left with individual organisations as to whether they wish to also provide descriptions from for example the US.

Technical details on how to make use of the UK Realm Description Refset is provided on the UKTC Documentation webpage.

The UK Edition is updated every 6 months; a new release being valid for use from 1st April and 1st October each year. Systems should ideally be updated within 3 months of a release; but depending on the specific use case this may differ. Those procuring solutions should specify the update timeframe required and those using SNOMED CT within a standard eg. a dataset, should also specify any update requirements. It should be noted that without this requirement being made explicit, systems may not have some terms available to end users for data entry.

Suppliers must not update the subsets in a system without updating the release of SNOMED CT in use in a system.

The national dictionary for medicines and devices, often known as dm+d\textsuperscript{11}, is the required standard for medicines and devices. This is a standard in its own right and further information should be sought from the implementation guidance provided on the dm+d

\textsuperscript{11} http://www.nhsbsa.nhs.uk/1121.aspx
website. It is worth noting that dm+d content is provided in two formats: an xml format and as part of the UK Edition within the UK Drug Extension. However, there are some differences in the data items provided (e.g. prices are in dm+d but not UK Drug Extension); further details are in the documentation.

5.4.2 Data Entry

End users **must** be able to enter clinical terms direct into the electronic patient record. How those terms are made available is part of the user interface design of the solution, and may vary considerably depending on the application. Techniques such as:

- searching using the beginning of words in the clinical term, for example ‘fract femur’ for ‘fracture of femur’ (in any order),
- subsets to provide just procedures or just paediatric terms,
- shortcodes, abbreviations, equivalent terms etc

can be used in order to provide a good user experience for data entry. For more information see the IHTSDO Search and Data Entry Guide in the IHTSDO document library.

Users **must** be able to search on the FSN or any of the synonyms. It **must** be possible for the user to select and enter any of the SNOMED CT descriptions, although it is generally advised that systems should not utilise the FSN in a patient record. It is useful to see the FSN on say a hover over of a synonym as that provides the hierarchy information to help ensure an end user selects the correct term. The UK Edition does provide preferred terms for each concept which represent the most commonly used description; however it is not desirable that users are only allowed to select and thus record the preferred term.

Systems **should** wherever possible, restrict the terms available based on the context of the data item, for example only allow procedures in a procedure field. Care should be taken with diagnosis that this isn’t too restrictive as often symptoms may be entered if a diagnosis has not been possible.

5.4.3 Data Items

As a minimum, systems that incorporate any of the following data items should be using SNOMED CT to capture their content:

- Symptoms
- Diagnosis
- Procedures
- Assessment Scales
- Family History
- Medications
- Allergies
- Blood pressure
- Documentation Type and documentation care setting
- Laterality
- Body Site

Note. There is an increase in the use of Data Archetypes for particular data objects such as blood pressure and allergies. Suppliers should check via the HSCIC interoperability
webpages\textsuperscript{12} or HSCIC help desk enquiries@hscic.gov.uk with a request to the messaging team for any such specifications.

5.4.4 Subsets

Subsets are a useful method for helping to restrict the content in SNOMED CT made available for some function in the EHR; for example only providing ‘left, right and bilateral’ for a field for laterality. Where subsets are required as part of a national data collection, the details of the subsets will be provided in the NHS Data Model and Dictionary.

Subsets can be developed locally for example as part of the configuration of a system to provide the procedures undertaken by a particular clinic. There are a number of national subsets provided as part of the UK Edition of SNOMED CT. These can be used as a starting point for developing subsets locally or as provided. Subsets can be used to order the results of searches (e.g. anything returned that is in the subset comes towards the top of the search results), or can be used to restrict data entry (i.e. only data from that subset can be entered).

Requirements may specify the ability to use subsets and import these as part of system configuration. It should be remembered that subsets may be dynamic as they can be specified by a query on the terminology (e.g. the concept ‘stroke’ and all types of stroke). Provision needs to be made to update these when a new release is incorporated into the product.

Further information is available on subsets on the UKTC webpages\textsuperscript{13}, of interest may be the report from the Professional Bodies subset project.

5.4.5 Reporting and data extraction

As discussed earlier, the terminology provides a number of features to assist in information retrieval; both the ‘is-a’ relationships and the attribute relationships can be used to retrieve data from within the EHR repository. This means that solutions need to provide functionality to enable queries to be written utilising both these types of relationships. The top priority should be to use ‘is-a’ relationships, but developers should plan for querying on attribute relationships as well.

Developers should refer to the IHTSDO document ‘SNOMED CT Expression Constraint Language Specification and Guide v1.00’ which will give an indication of the types of operators (for example this concept and all its children) to use for writing reports and data extractions as well as the internationally agreed symbols for such operators.

5.4.6 Inactive Content

SNOMED CT is a dynamic terminology; as well as adding new terms it is possible to also make concepts, terms and relationships inactive. There are various reasons why this is necessary including changes that occur in medicine.

For those specifying requirements it is important to ensure that systems can take account of inactive content (especially in data retrieval).

For those developing systems you will find more information in the IHTSDO Technical Implementation Guide, in addition a UKTC Technical Report covering this topic is on the UKTC Training and Resources Documentation webpage. For systems deployed in the UK,

\textsuperscript{12} \url{http://systems.hscic.gov.uk/interop}
\textsuperscript{13} \url{http://systems.hscic.gov.uk/data/uktc/snomed/subsets}
the UK History Substitution Table and the Query Table (available to download on the Technology Reference data Update Distribution site (TRUD\textsuperscript{14})) assist in the processing of inactive data. Full documentation is provided within the download pack.

5.4.7 Pre and Post Coordination

It is undesirable for every single possible clinical phrase to be authored within the terminology as this increases the results of data entry searches significantly making finding the required term more difficult. For example, if every possible area of anatomy was provided with versions for left, right and bilateral, this would increase the number of terms within the terminology almost three-fold. This would make the terminology inordinately large. Many systems therefore provide laterality as a separate field to be added when appropriate.

Clinical concepts provided within the SNOMED CT release are known as pre-coordinated concepts, for example ‘fracture of the femur’ is a pre-coordinated concept. SNOMED CT provides the ability to express detailed clinical information in a structured manner without having to create a pre-coordinated concept for every detailed clinical phrase. This approach is called ‘post-coordination’. The grammar defined as part of SNOMED CT defines how clinical phrases can be expressed by combining two or more concepts together to create a post coordinated expression.

So in our fracture of femur example, the expression for ‘fracture of left femur’ would be ‘fracture of femur'; laterality=left. These can be more complex such as the example, "third degree burn of left index finger caused by hot water". Using the grammar (or compositional syntax) of SNOMED CT it can be represented as: burn of skin; morphology = third degree burn injury; laterality = left ; causative agent = hot water; finding site = index finger structure.

We would not expect a clinician to write such an expression, but software can be designed to facilitate the creation of such expressions. Such expressions held within a data warehouse can significantly increase the ability for sophisticated analysis.

Further illustrations are provided within the IHTSDO Technical Implementation Guide.

Currently within the UK our national requirements are for pre-coordinated concepts only. This approach, combined with message specifications that indicate specific fields for commonly used data items (for example procedure and laterality required as separate data items), enables systems to provide more usable user interfaces while taking advantage of the terminology.

To facilitate the changeover to SNOMED CT the UKTC have pre-coordinated a number of expressions within SNOMED CT to enable content in the Read codes to be mapped to SNOMED CT. It is planned that as systems mature and users are more proficient in the use of the terminology, the use of post coordination will become more prevalent. Developers should review post coordination approaches and consider how this may impact their system so they have a development roadmap for post coordination, it may be desirable to use aspects of post coordination in data warehouses for improved retrieval.

It should be noted that this approach can be used to modify a clinical concept as well as to further qualify a concept. For example a procedure concept can be modified with ‘planned’ or a diagnosis can be ‘definitely not present’. Developers should consider how the solution will address these while ensuring that anyone writing a query for a particular disorder does not retrieve those with a finding context or ‘confirmed field’ of ‘definitely not present’. Note. Great

\textsuperscript{14} https://isd.hscic.gov.uk/trud3/user/guest/group/2/home
care should be taken in the EHR if the ability to modify the meaning of another data item is provided. In SNOMED CT this form of post-coordination is called context modification.

5.5 Further information

The document Requirements of Systems (PDF, 189.3kB) - includes sample statements for use in procurement of systems that incorporate SNOMED CT, this is also useful for those developing systems to understand expected functionality.

For details on requirements to include in procurement and system specification documents, as well as techniques for developers, the following may also be of interest:

- GP Systems of Choice Principle Systems Requirements
- UK Terminology Website; Training and Resources (Documentation)
- IHTSDO Document library
- User Interface Guidance: provides guidance in relation to terminology
6 Terminology and Classifications

The NHS has a long history of using the classifications ICD-10\(^{15}\) and OPCS-4\(^{16}\) to enable it to monitor the health of the UK population as well as undertaking business processes such as payment. The classifications have evolved to what they are today from as early as the 17\(^{th}\) Century. They were primarily designed to meet requirements when patient records were paper based and a sophisticated approach has been developed to get accurate categorisation of episodes of in-patient and day case care. They were not designed to provide the clinical phrases used by clinical staff for capturing care related information in the EHR at the point of care.

Current classifications are used to categorise a completed episode of care according to predetermined classification codes; the classifications support indirect care related activities such as epidemiology, payment and population monitoring. They do not however provide the vocabulary a clinician wishes to use for recording activity related to the specific care of a patient within the electronic patient record. Terminology and Classifications are therefore designed for very different purposes and thus are structured differently. It is inevitable there are some similarities between the two as they are both designed to relate to clinically relevant content. However there are fundamental differences, some of which are highlighted below:

- Every code within the classification sits in one chapter and one chapter only; this ensures that an episode of care will only be counted once when reporting. However, in a terminology like SNOMED CT, a single concept can be in more than one hierarchy; this ensures that when searching for patients according to specific criteria all instances are found.
- In the classifications, because these represent areas of interest to monitor populations, the category can incorporate data that is elsewhere within the record, for example there may be a different code for a particular disorder depending on the age of the patient. In terminology the term for the disorder would be the same for all ages and the age would be held elsewhere on the record.
- A statistical classification must be confined to a limited number of mutually exclusive categories and each category is structured to ensure all instances have been included, for example, to report on all types of skin cancer. This results in codes with descriptions such as NOS (Not Otherwise Specified) and NEC (Not Elsewhere Classified) which have a specific meaning within the classifications; however these do not and should not exist in the terminology in relation to the direct care of the patient.
- Terminologies need to be dynamic and updated frequently (every 6 months) to cope with the changing needs of clinical care as they provide the dictionary for data entry. The classifications need to remain stable over time to enable consistent trend reporting. In order to strike a balance with the need to update clinical knowledge updates to the classifications are planned to be every three years (though this may vary if there is a particular requirement).

Some use cases are therefore best suited to classifications and others to terminology; one needs to examine what is required and then decide which is the most appropriate to use (or possibly both). Cross-maps (see section 5.1) can also be used to aid the efficient allocation

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\(^{15}\) International Statistical Classification of Diseases and Related Health Problems 10th Revision: http://www.who.int/classifications/icd/en/

\(^{16}\) OPCS Classification of Interventions and Procedures http://systems.hscic.gov.uk/data/clinicalcoding/codingstandards/opcs4
of classifications codes to an episode of care captured in SNOMED CT in for example the discharge letter. Currently, because of the way payments are calculated for hospitals there is no intention to change this approach from the classifications although terminology is being considered to refine payment where the costs vary considerable within one HRG. In primary care, elements of payment are already made based on terminology and these will start to use SNOMED CT from 1st April 2018.

6.1 Mapping from terminology to classifications

As outlined, terminology is designed to capture the detailed clinical information for the direct care of the patient and it is required to be recorded at a particular moment in time. Classifications are allocated at the end of an episode of care, based on information abstracted from the medical record. Mapping tables from SNOMED CT to the classifications ICD-10 and OPCS-4 are provided nationally and these can assist deriving the classification codes based on the terminology. These mappings are semi-automated allowing capture of additional information from within the EHR that may need to be considered before the final assignment of classification codes for the aggregated record.

These maps are known as cross-maps and are provided as a map refset within the RF2 release of the UK Clinical Edition. A number of suppliers provide products that use these maps to help improve the efficiencies of clinical coding; either within their own product or as an additional module that can be integrated into the business processes. Documentation on the structure and use of the cross-maps is provided as part of the download pack.

6.2 ICD-11

ICD-11 is being designed for use in electronic health information systems which contain content captured using terminology. Following a collaborative agreement between the WHO and the IHTSDO, work has been ongoing to ensure harmonisation between ICD-11 and SNOMED CT.

Within the UK we are keeping abreast of the ICD-11 developments. As part of the WHO-FIC collaborating centre network we will be co-ordinating the UK involvement in the field trials of ICD-11; this is a key activity to test the fitness for purpose within the UK of this new classification. Further information can be found on the NHS Classifications web pages.
7 Use Cases

SNOMED CT essentially provides the healthcare terminology for use within electronic systems to support the direct management of the care of an individual. This section illustrates some of the scenario’s in which SNOMED CT has been used.

The UKTC provide a number of case studies\(^\text{17}\) on their website of successful use of SNOMED CT within different organisations; in addition the IHTSDO provide illustrators of SNOMED CT in Action\(^\text{18}\).

7.1 Summary Care Record

SCRs provide healthcare professionals treating patients in different care settings with faster access to key clinical information. The data is derived from the GP system; however currently GP solutions use one of two different coding schemes: the Read codes, whereas secondary care is more likely to use SNOMED CT. To enable data to be viewed in a consistent manner by healthcare professionals, the data from the respective GP system is mapped to SNOMED CT before it is sent to Summary Care Record (SCR). This also enables anyone using the SCR API to be able to use the national agreed terminology.

7.2 e-Referral System (eRS)

The NHS e-Referral Service (eRS, aka Choose and Book) combines electronic booking with a choice of place, date and time for first hospital or clinic appointments. Patients can choose their initial hospital or clinic appointment; book it in the GP surgery at the point of referral, or later at home on the phone or online.

Searching for the appropriate hospital or clinic can be undertaken by using the clinical terms within SNOMED CT. Each hospital and clinic within eRS identifies from the provided set of SNOMED CT terms which apply to their facility.

The following screen shot from the eRS illustrates the terms in SNOMED CT that have been identified following a search on weight. Selecting the appropriate required intervention will then enable appropriate hospitals and clinics that provide that to be identified according to the criteria set on for example distance.

\(^\text{17}\) http://systems.hsic.gov.uk/data/uktc/training/casestudies
\(^\text{18}\) http://www.snomedinaction.org/
Electronic Patient Records

The main use of terminology is within current hospital electronic patient record systems (EPRs). Many of the solutions now available use the SNOMED CT terminology. This will be required in all systems by 1st April 2020 at the latest. The terms the healthcare profession enters to indicate the patient’s diagnosis, symptoms, family history etc. all must come from within SNOMED CT.
In addition to facilitating consistent data entry, the terminology is also used to support business processing, decision support, drug alerts, triggering of business rules such as the requirement of a particular assessment if particular symptoms are recorded, part completion of clinical notes from entries in the record such as the Discharge Summary, highlighting patient current problem lists and representing data into particular view (e.g. family history summaries).

7.4 Guidance and links to knowledge resources

Increasingly clinical guidance indicates the SNOMED CT terms to use in best practice guidelines. For example the NICE interventional procedures guidance and the Medical technologies guidelines indicate the appropriate SNOMED CT terms to use when recording such procedures and devices in the patient records. Further information can be found at: https://www.nice.org.uk/about/what-we-do/our-programmes/nice-guidance/nice-interventional-procedures-guidance/coding-recommendations.

A variety of NHS England guidance, for example in relation to frailty, also indicates the appropriate terms to use when recording information in relation to the guidance.

This reference to terminology will start to bring about much more consistency in the content within electronic records which will ultimately enable better research and data analysis. The
Academy of Medical Royal Colleges structured record keeping guidance also indicates the required use of SNOMED CT for detailed content.

As SNOMED CT provides a finite set of clinical terms, it is also useful for tagging knowledge resources and some EPR solutions use this to link directly to medical publications.

7.5 Quality Outcomes Framework (QOF)

The Quality and Outcomes Framework (QOF) is a voluntary annual reward and incentive programme for all GP surgeries in England, detailing practice achievement results. It is not about performance management, but resourcing and then rewarding good practice. Currently QOF uses the Read codes but is currently being translated to SNOMED CT. From 1st April 2018 the QOF business rules will be provided in SNOMED CT only; for 16/17 onwards business rules will also be published in SNOMED CT as well as the Read codes.

7.6 Clinical Vocabulary for clinical word-processing applications

SNOMED CT can be used to derive a clinical lexicon that can be used as the dictionary within clinical word processing solutions. A version of the lexicon is also provided as part of the release within the UK Clinical Edition.
8 Information for Solution Providers

This section aims to highlight aspects that developers need to take account of when developing their solution. It is strongly recommended that everyone developing solutions use the additional information provided in section 5.7.

8.1 Distribution and Release Formats

Depending on the solution provided, a system may need to utilise all of the content within the terminology or just a subset. You may wish to consider whether you require:

- All of SNOMED CT
- Just a list of terms for a speciality solution
- A subset of SNOMED CT that includes the terms required with their associated relationships

As the variety of applications across healthcare is significant, it is not possible for the UKTC to meet the requirements of every supplier and for example provide a set of database files. The terminology is therefore distributed as a set of comma delimited data files; it is inevitable that you will need to process these in some way to import the data into the specific tables needed within your application. It should be emphasised that the distribution format is not anticipated to be a suitable data model for any clinical application, but is provided in this way to support pre-processing for upload into the application.

There are currently two release formats available: RF1 (Release Format 1) and RF2 (Release Format 2). RF1 was the first format provided and is the simplest to initially process, but lacks some of the features many would expect in current day solutions; it is also scheduled for retirement and is planned to be withdrawn in the UK after the April 2018 release. RF2 is self-defining and contains audit information indicating when concepts for example were active and when they were made inactive. The UKTC provide a recorded presentation that describes the different release formats and the different files provided within RF2 as well as some tips on processing (‘SNOMED CT Recorded Webinar - An Introduction to the release files in Release Format 2 (Technical)’).

8.2 Obtaining SNOMED CT

The datafiles that constitute the Release are provided twice yearly: 1st April and 1st October. Wherever possible the files are provided approximately two weeks prior to these dates to enable inspection and testing before the official release date; this enables issues to be fed back to the UKTC and addressed before the active dates for that release. The Release should not be implemented in a live system prior to the publicised dates, and ideally should be implemented within 3 months of the release date. Specific contracts may have stated requirements in relation to when a release has to be incorporated.

The release files are obtained via the Technology Reference data Update Distribution site (known as TRUD); individuals need to ascertain which type they require (Full, Delta and/or

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19 https://isd.hscic.gov.uk/trud3/user/guest/group/2/pack/14
Snapshot) and then register for the appropriate pack. Further details on the file types are provided by the recorded webinar details in Section 8.1: (‘SNOMED CT Recorded Webinar - An Introduction to the release files in Release Format 2 (Technical)’).

The Release Files are provided under licence; this is free to use for deployment in the UK. Details are available in Section 2.6.

It should be noted that the International Edition of SNOMED CT is published prior to the dates for the UK Edition (31st January and 31st July) but must not be adopted in the UK until the UK release dates of 1st April and 1st October.

8.3 Namespace

SNOMED CT provides a mechanism for suppliers to develop their own terms that are specific to their application but using the SNOMED CT code scheme; this is referred to as having a namespace. Applications for a namespace need to be made through the IHTSDO. This also provides a mechanism for such codes to be uplifted to the UK Edition or the International Edition without the need to change the concept id. This is useful if there is a requirement for a code before the next release is due. Any supplier may wish to investigate if this is a useful option to them. For further information on namespaces see the IHTSDO Technical Implementation Guide.

8.4 Maps to SNOMED CT from the Read codes

The Read codes, both Read v2 and CTV3, are now deprecated standards and are on schedule for retirement. Read v2 is now no longer updated (as of April 1st 2016) and the last scheduled release of CTV3 is 1st April 2018. To aid organisations who wish to adopt SNOMED CT in their product instead of the Read codes and have historical data they wish to manage, the UKTC provide mapping tables from Read to SNOMED CT. These are available along with technical documentation to support their use on the TRUD site within the derivative products download area. It would also be useful to read the document ‘SNOMED CT in primary care: Recommendations from the sub-group of the Joint GP IT Committee’ which is available on the UKTC Training and Resources webpage and provides advice and guidance for those adopting SNOMED CT from the Read codes. Requirements for systems migrating from the use of Read to SNOMED CT are provided on the GPSoC website.

8.5 Prior versions of SNOMED CT

Antecedent versions of SNOMED include SNOMED II, SNOMED 3, SNOMED 3.5 and SNOMED RT. All these versions are no longer maintained and are out of license for use (other than for historical data) from April 2017. To aid suppliers who wish to migrate their product to SNOMED CT, mapping tables are provided for the antecedent versions to

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20 http://www.ihtsdo.org/snomed-ct/change-or-add-snomed-ct
21 http://systems.hscic.gov.uk/data/uktc/training/recommendsct.pdf
22 http://systems.hscic.gov.uk/gpsoct/ct/mappedct
SNOMED CT. These are available from TRUD with the appropriate documentation within the derivative products download area.

8.6 Maps to SNOMED CT from PBCL

Maps also exist for the content within the Pathology Bounded Code List (PBCL) to SNOMED CT. As PBCL is based on the Read codes, the same maps exist within the Terminology maps; however if your solution only uses PBCL you may find these maps easier to use as they only contain PBCL and not all the Read codes. These are available from TRUD with the appropriate documentation within the derivative products download area.

8.7 Useful Sources for UK information

8.7.1 Implementation Forum

The UKTC run a forum for those involved in the implementation of SNOMED CT. Further details including how to register for this can be found on the UKTC Training and Resources webpage. In addition, the SNOMED community on NHS Networks can be used to ask questions and view additional resources.

8.7.2 Product Distribution Site (TRUD)

The UK Edition of SNOMED CT as well as a number of supporting products such as mapping tables and cross-maps to the classifications are available from the distribution website known as TRUD. You need to register to download the various products, and subscribe to each pack you require. Emails are sent when a new release is made available. For a description of the various products available see the Release page on the UKTC website.

How to use TRUD can be found in our Quick Guide or Step-by-step Guide to using TRUD.

8.7.3 Code4Health

NHS England has developed a community for those developing applications. This provides a useful resource for discussions and advice on terminology.

There are a number of companies who do provide terminology services; these can be found using web searches or by asking this community for advice.

8.7.4 Interoperability Portal

NHS England is currently developing a portal to support those undertaking development and wishing to deliver interoperability as part of their solution. Once this is available there are plans to support those utilising terminology within this community.

24 http://systems.hscic.gov.uk/data/uktc/training
25 https://isd.hscic.gov.uk/trud3/user/guest/group/2/home
26 http://systems.hscic.gov.uk/data/uktc/snomed/release
27 https://code-4-health.org/
8.8 IHTSDO Resources

The IHTSDO provide a number of resources and forums for those involved in development. Specifically these are:

- A vendor forum: this is supported using their collaborative platform; this provides space for discussion as well as meeting to discuss issues. For further information email info@ihtsdo.org
- Documentation\(^{28}\): the IHTSDO provide a number of documents to support those undertaking development using terminology.
- Open Tools Framework\(^{29}\): this is an open source repository containing various tools; for example the IHTSDO browser is available as open source.
- eLearning\(^{30}\): currently there are three eLearning courses:
  - A Foundation Course which needs to be successfully completed before applying for either of the other two courses; this is eLearning only.
  - An Implementation Course: this is a combination of eLearning and on-line workshops. It covers the full breadth of SNOMED CT including illustrating the description logic behind the terminology.
  - A Content Developers Course for those authoring their own terms or wishing to understand more about content.

8.9 Further Information

Technical information on the terminology is provided in the IHTSDO Technical Implementation Guide\(^{31}\). In addition the collaborative site holds a variety of documents and discussions that may be of interest. Contact info@ihtsdo.org for access to the IHTSDO collaborative site or information.standards@hscic.gov.uk for more information on implementation in the UK.

\(^{28}\) [http://www.ihtsdo.org/snomed-ct/learn-more](http://www.ihtsdo.org/snomed-ct/learn-more)
\(^{29}\) [http://ihtsdo.github.io/](http://ihtsdo.github.io/)
\(^{30}\) [http://www.ihtsdo.org/snomed-ct/learn-more/elearning-overview](http://www.ihtsdo.org/snomed-ct/learn-more/elearning-overview)