# Developing a methodology and toolkit for evaluating SNOMED CT® Translation Quality - Background

This document provides background information used for the development of the IHTSDO methodology and toolkit for evaluating SNOMED CT® translation quality

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Version 1.00

Amendment History

Version	Date	Editor	Comments
0.01	20100901	Knut Bernstein	First draft of the toolkit
0.02	20100901	Knut Bernstein Asta Høy	Second draft of the toolkit. SMART rating included.
0.03	20100902	Knut Bernstein Asta Høy	Updates after teleconference and comments
0.04	20100904	Knut Bernstein Asta Høy	Updates after teleconference and comments
0.05	20100909	Knut Bernstein Asta Høy Birthe Toft	Updates after teleconference, comments and review
0.06	20101206	Alejandro Lopez Osornio	Update after IHTSDO conference, October 2010
0.07	20110131	Jane Millar	Previous document split into 2 – i. background document and ii. methodology and toolkit
0.10	20110824	Nicolette de Keizer, Alejandro Lopez Osornio	Feedback
0.11	20111012	Nicolette de Keizer, Karin Ahlzén, Jane Howarth, Alejandro Lopez Osornio, Artur Novek	Review, and minor edits
0.12	20111214	Karin Ahlzén, Alejandro Lopez Osornio	Review, and minor edits Reorganization of the order and grouping of metrics to align with the methodology document
0.13	20120227	Jane Howarth	Comprehensive review and additional edits
0.14	20120730	Jane Howarth	Additional edits required due to alignment work with Methodology and Toolkit document and maintenance cycle work required for Translation Guidelines documents
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0.16	20121113	Alejandro Lopez Osornio	Minor amendments after consultation
1.00	20121211		Approved for publication by IHTSDO Management
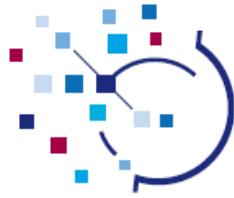
Review Timetable

This is the review date of the Guidelines as agreed by IHTSDO Management Board

Review date	Responsible owner	Comments
January 2015	IHTSDO	Undertake review of all IHTSDO Translation guideline documents
		(remove or add rows if necessary)

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1 Introduction

Several countries are in the process of translating, or, intend to translate SNOMED CT® into their national language(s), in order to use the terminology effectively in health records. Correct translation based on each concept's meaning is essential to support evidence-based decision-making and is critical for patient safety. Additionally, the data may potentially be re-used for administrative and statistical purposes such as health delivery planning, health promotion and chronic disease management. Furthermore, the global use of SNOMED CT® allows for the transmission of consistent, universally understandable clinical information without language barriers. That is vitally important to a victim of disease or accident to enhance the patient's chances of speedy, efficient and correct treatment, regardless of where he or she may be.

This ideal situation can only be achieved if semantic interoperability is ensured. Any translated version of the terminology must comply with the principles on which SNOMED CT® was originally based, (i.e. comprehensibility, reproducibility, and usefulness) and the information contained in the translated concepts must be equivalent to that contained in the core terminology (i.e. international release / original source language). In order to ensure compliance with these requirements, a set of standard quality assessment measurement tools is needed for translation projects.

This background document takes into consideration the relevant information gleaned from two (2) deliverables:

- Results of the literature scan;
- Candidate quality characteristics from which a "short-list" of nine (9) quality characteristics was derived.

Salient information from the background document was then used to develop a separate, companion document entitled "A methodology and toolkit for evaluating SNOMED CT® translation quality". It includes these key components:

- The "short-list" of selected quality characteristics with quality metrics and targets defined for each characteristic;
- Sample questionnaires for use when applying the metrics.

While the literature scan identified a few useful quality characteristics and some potential quality metrics, several of the quality characteristics identified were based on the collective ideas and insight of subject matter experts gained through practical experience during translation projects.

The creation of the "short-list" of nine (9) candidate quality characteristics was primarily guided by IHTSDO source documentation and clinicians' preferences. Section 2.3.4 of this background document and section 3.3 of the companion document include the initial set of nine (9) quality characteristics containing three (3) **structure**, three (3) **process** and three (3) **outcome-related** characteristics.

The determination of the appropriate measurement metrics and targets (found in the methodology and toolkit document) that should be used to assess translation quality, while undertaking a translation project, was primarily guided by the IHTSDO Quality Framework and Toolkit.

It is the intention that the IHTSDO Quality Framework should cover all identifiable aspects of IHTSDO activity, including:

- Organisational processes and support
- Data products (terminology reference data, mappings, translations, subsets)
- Documentation
- IHTSDO-responsible services and tooling provision.

It is expected that localisation activities (subset development, content extensions) could adopt a similar and comparable framework, but specific targets, metrics and methodologies may vary between settings. It cannot be assumed that all quality processes will be automatically appropriate for all settings, however where differences occur these should be clearly stated, and, where relevant, any necessary remedial steps to move towards more stringent standards should be indicated.

According to the IHTSDO Quality Framework, **components** are described as the structural, process or product/service outcomes that can be quantified or measured (and can be modified), in order to improve the quality of IHTSDO activities. They might be people, technical infrastructure/tooling artefacts, documented processes and procedures, as well as the product and service outputs of the IHTSDO. Following from that, **quality metrics** are the agreed methods and means for measuring the quality characteristics of components, and, **quality targets** are agreed levels of achievement, performance or conformance of a component for any given quality characteristic.

Where targets are identified and the ability to demonstrate target achievement does not yet exist; products and processes will need to be revised and augmented to allow such measures to be made. Where achievement and performance fall short of targets, the components or the targets themselves can then be appropriately revised and the target/measurement processes repeated.

The sample questionnaires (included in the methodology and toolkit document) were designed to be used during a translation project for qualifying and/or quantifying the metrics and targets for the quality characteristics and to help identify any appropriate corrective actions.

This document was reviewed by the IHTSDO Translation Special Interest Group (SIG) and the IHTSDO Translation Quality Assessment Project Group (TQAPG). The content and recommendations were consolidated into the current version of the methodology and toolkit document. Additionally, reference is made to translation quality assessment and the mandatory quality metrics in the current versions of the IHTSDO Translation Guideline(s).

2 Environmental scan

2.1 Scope of environmental literature scan

An environmental "scan" of literature and relevant material in internationally recognised white papers and grey literature was performed. This work is not intended to represent a complete survey of all available subject matter material.

The scan was based on these three major sources:

- Intellectual capital: Familiar material commonly referenced by terminologists, terminology consultants and researchers;
- Websites: Material from recognised, accredited or acknowledged Standards Development Organisations (SDOs) (i.e. www.ihtsdo.org);
- Supplementary internet searches: Based on the material noted above and from reference publications on hand.

A Reference List is included in Section 3 of this document.

2.2 Approach, comparators and evaluation of usefulness

2.2.1 Literature categories

The literature from the scan was grouped into six (6) categories:

A) Standards and recommendations
B) Survey articles
C) Textbooks
D) Academic literature
E) IHTSDO documentation
F) Documentation created by a National Release Centre

The results of the scan are shown in the table following. Where relevant, the table includes a short description of the approach and comparators, and, a brief assessment of usefulness for developing the methodology and toolkit document.

Group A - Standards and recommendations. This section comprises the standards that were either available for review (A 1. and A 2.), or, whose contents are described in,

Group B - Survey articles (B 1. and B 2.).

Group C – Textbooks. This section contains a selection of popular but somewhat "dated" English textbooks, all of which draw heavily on recommendations found in standard works of terminological theory.

Group D - Academic literature. This group could have included a much larger number of publications. For example, in connection with the Norwegian petroleum terminology language planning and nationalization project in the 1990s, a large number of insightful articles were produced from which knowledge could have been drawn, especially considering that the two domains had equal national importance and required comparable investments in both Norway and Denmark. [See D 5.]. Also, a good deal of french literature on neology exists written by European or French-Canadian authors. These sources were also excluded although they would probably be relevant from an outcome perspective.

Group E and F – From an IHTSDO perspective, the documents in these sections are very important since they are largely based on practical (empirical) experience from within the SNOMED CT® domain and the Community of Practice. The publications in Group F are particularly important because they contain national guidelines which have proven their worth in practice for translation projects in Denmark, Sweden, and, in other countries.

2.2.2 Results of the literature scan

A) Standards and recommendations		
Title	Approach and Comparators	Evaluation of usefulness
1. ISO/R 704: 1968 - Naming Principles	Guidelines for term quality suggested: – systematically created with respect to morphological, syntactic, semantic, and pragmatic characteristics – conforms to morphology, spelling and pronunciation conventions of the language for which it is intended – terms having gained acceptance should not be changed	Regarded as obsolete by some, but still of some relevance. See B) 2, C) 1.

2.	DIN 2330: Begriffe und Benennungen	Formal requirements for term formation mentioned (p.10-14): – appropriately brief – catchy/memorable – easy to pronounce – ease of forming derivations	Limited usefulness.
3.	EN 15038: 2006	A CEN ([European Committee for Standardization](#)) quality standard developed for translation services providers. Standard is designed to ensure consistent quality of the service. Contents cited / referenced in Pastor's document (see B) 1.).	Seems promising, especially in the area of process quality assessment.

B) Survey articles		
Title	Approach and Comparators	Evaluation of usefulness
1. Gloria C. Pastor: Translation Quality Standards in Europe: An Overview	Provides a comprehensive overview of and description of individual European translation quality standards.	Very useful, especially in the area of terminology process quality assessment.
2. S.E. Wright: Standards for the Language Industry. In: P.T. Hacken (ed.): Terminology, Computing and Translation. Gunter Narr 2006	Gives a comprehensive overview and thorough evaluation of standards relevant to translators and terminologists.	Useful because it evaluates some recent standards. Main focus on data categories and data modelling.

C) Textbooks		
Title	Approach and Comparators	Evaluation of usefulness
1. J.C. Sager: A Practical Course in Terminology Processing. Benjamins 1990	Cites list of 12 highly idealised requirements which can only be realised in a strictly controlled environment (p. 89).	This is one of three textbooks that are all useful reference tools. They contain principles taught at universities and colleges for many years; based on standard works of terminological science (i.e. E. Wüster's general introduction to terminology theory, 1974).
2. Sager, Dungworth, McDonald: English Special Languages. 1980.	Section on 'the functional efficacy of terms' (p. 105)	See comment above.
3. Picht, Heribert & Jennifer Draskau: Terminology: An introduction. University of Surrey 1985.	Section on term formation requirements: the ideal term (p.114). Concludes that pragmatic and realistic decisions on term formation should be reached, taking account of: – Sociolinguistic factors determining possible rebuff for the user – Difficulties and advantages connected with the revision of a terminology which, though defective, is well established – The degree of "internationalness"	See comment above.

D) Academic literature		
Title	Approach and Comparators	Evaluation of usefulness
1. Charles T. Gilreath: Onometrics; the Formal Evaluation of Terms. In: Sue Ellen Wright, Richard Alan Strehlow (eds): Standardizing Terminology for better Communication; practice, applied theory. 1993	Outlines a formal approach to term evaluation, creating a new term, Onometrics, which is compared to metrics in general. Describes in considerable detail a battery of 17 term-evaluating criteria and suggested grading scales and methods for each criterion.	Extremely useful regarding criteria for evaluation of term quality
2. Charles T. Gilreath: Resolving Term Disputes with Weighted Onometrics. In: Sue Ellen Wright, Richard Alan Strehlow (eds): Standardizing and Harmonizing Terminology; Theory and Practice. ASTM 1995	Re-emphasises onometric approach described in D) 1., focusing on the choice among term candidates in cases of disagreement about what to call a given concept.	Considerable overlap with D) 1, focus is less relevant.
3. Van den Bogaert, J. (2008): Terminology and Translation Quality Assurance. In: no. 6, Terminologia I traducció, Dec. 2008 (). ISSN 1578-7559	Describes some practical methodologies for quality assurance in Translation Service Providers, integrated with terminology management in general. Main focus on technical tools for translation quality assurance.	Provides insight into the area of translation process quality assessment.
4. Høy, A. (1998): Det medicinske fagsprog: en patient med behov for behandling? Ph.D. thesis defended at the University of Southern Denmark.	Translated title: "Medical LSP: a Patient in Need of Treatment?" Analyses the state of Danish medical language in the mid 1990s, recommending measures for improvement of medical terminology to be implemented at national level in Denmark. Forms the main theoretical basis for the Linguistic Guidelines established by the Danish SUNDTERM Editorial Board. See Group F).	Useful to an extent. Outlines the theoretical background and rationale needed for creating national guidelines. See Group F).
5. Myking, J. (2008): Motivasjon som termdanningsprincipp. Ein teoretisk diskusjon på grunnlag af norsk oljeterminologi. Universitas Wasaensis: Acta Wasaensia 191.	Doctoral thesis in Norwegian, translated title: "Motivation as a principle of term-formation. A theoretical discussion based on Norwegian oil terminology". Gives a theoretical account of the concept of motivation and its normative status within terminology, and discusses whether degree of motivation can be equated with transparency and be self-explanatory.	Highly theoretical with a novel approach to motivation, yet soundly based on a substantial corpus of American/Norwegian petroleum terminology, compiled during 20 years of terminology nationalization and state-level planning in Norway.
6. S.V. Grinev, J.S. Jermakov, B.V. Morozov, A.S. Grinev: The Problems of Medical Terminology. In: Proceedings of the 3rd Infoterm Symposium 'Terminology work in subject fields'. M. Krommer-Benz (ed.). TermNet 1991	Provides a theoretical overview of general problems in medical terminology.	Of basic theoretical interest.

7. Reynoso, G.A., March, A.D., Berra, C.M., Strobietto R.T, Barani M, Lubatti M et al (2000). Development of the Spanish Version of the Systematized Nomenclature of medicine: Methodology and Main Issues, Prc AMIA Symp; 694-8.	Experiences from the Spanish translation of SNOMED CT[®]	Useful, in the area of terminology structure and process quality assessment.

E) IHTSDO documentation	
Title	Evaluation of usefulness
1. IHTSDO Quality Framework Toolkit 20100517, ver.2.0	The foundation on which the methodology and toolkit are based.
2. A review and options appraisal for the development of Quality Improvement Metrics related to SNOMED CT[®] content; Summary Report, February 05, 2010	Section 4.3 on internal consistency and uniformity are useful, particularly paragraph(s) 4.3.3 on cross maps and translations, and section 4.5.2 on consistency of use.
3. SNOMED Clinical Terms[®] User Guide, July 2009 release	Useful as a source for definitions (e.g. FSN and PT)
4. Guidelines for Translation of SNOMED CT[®] 20100407, ver. 2.00	Section 4 is highly relevant.
5. Guidelines for Management of Translation of SNOMED CT[®] 20100326, ver. 2.00	The most important source relating to the process aspects of terminology quality assessment.
6. SNOMED Clinical Terms® Editorial Guidelines. WORKING DRAFT Version 1.01 (2008-01-02).	Will gain increased importance
7. Dolin, B., Alschuler, L., A review and options appraisal for the development of Quality Improvement metrics related to SNOMED CT® content. Summary Report February 05, 2010	Useful in the area of terminology structure, process and outcome quality assessment.
8. Policy on IHTSDO's Role in Translation, approved by IHTSDO Management Board, April 26 2010.	Important policy applicable to any person or organisation undertaking translation of the SNOMED CT[®] terminology.

F) Documentation created by a National Release Centre		
Title	Approach and Comparators	Evaluation of usefulness
1. Sproglige retningslinjer, edited by the Danish SUNDTERM Editorial Board, 20090826 release	Translated title: Linguistic Guidelines of the Danish SUNDTERM Editorial Board. To a large extent, these guidelines are based on recommendations proposed in Høy 1998 (see D) 4.) and are consistent with the IHTSDO Guidelines for Translation of SNOMED CT[®] (see E 4.).	Although language-specific, the linguistic guidelines established by the Danish Translation Project Editorial Board contain a number of general principles and standards of quality assessment applicable to outcome.

2.	Principbeslutninger taget af SUNDTERM-redaktionsgruppen (2005-2009), 20100804 release	Translated title: "Decisions of principle taken by the Danish SUNDTERM Editorials Board (2005-2009")"	As in 1. above, this source is language-specific and many decisions concern individual term choices. However, some of the most general principles agreed on after extensive consultation by the Danish Translation Project's Editorial Board corroborate and/or supplement international guidelines.
3.	Snomedspråket. Språkliga riktlinjer för översättningen av Snomed CT® till svenska. Version 10, 2009-07-03	Translated title: "Linguistic Guidelines for Translation of SNOMED CT® to Swedish".	Useful language-specific guidelines. Have been shared with other countries and formed the basis of other language-specific versions.

3 Candidate quality characteristics

Based on advice and the results from the environmental literature scan, it was decided that the following three (3) preliminary list(s) of quality characteristics are good indicators related to **structure**, **process** and **outcome.**

All the candidate quality characteristics that were considered are included in this document for completeness and their value describing the selection process. If and when it becomes important to implement future quality improvements, any not included in the initial set may be re-evaluated.

It was subsequently agreed that the lists should be constrained and that appropriate metrics and targets be developed for the characteristics remaining under consideration for inclusion in the initial set.

The definitive list (first set) of quality characteristics is found in section 2.3.4 of this document and in section 3.1 of the companion document "A methodology and toolkit for evaluating SNOMED CT® translation quality".

3.1 Structure quality characteristics

The *structure-related* quality characteristics that were initially considered are shown below:

Characteristic	Comments	Reference
Participants knowledge of terminology and terminology translation processes	Translation Service Providers' (TSP) knowledge and Translation Project Owners' (TPO) knowledge of SNOMED CT® and of the translation process	IHTSDO Guidelines for Translation of SNOMED CT® and Guidelines for Management of Translation of SNOMED CT®. Reynoso GA et al: Development of the Spanish Version of the Systematized Nomenclature of medicine: Methodology and Main Issues
Translators and reviewers competencies **Note:** It was agreed by	Educational background and professional experience of translators (i.e. skills in medical translation and/or clinical practice domains)	Standards according to Gloria C. Pastor: Translation Quality Standards in Europe: An Overview

Characteristic	Comments	Reference
the TQAPG that this characteristic will be merged with the characteristic above.		
Content of style guides and reference materials in target language	Existence of style guides, dictionaries and reference materials with relevant content (i.e. linguistic guidelines) in target language.	IHTSDO Guidelines for Translation of SNOMED CT®, section 4.2 and 4.3.
Access to translation software	Tooling capable of supporting concept-based translation and offering features such as translation memory, direct access to electronic text books, medical dictionaries, etc. Requires explicit specifications and tested software.	IHTSDO Guidelines for Management of Translation of SNOMED CT® The European Union of Associations of Translation Companies (EUTAC) Quality Standard for Translation Companies according to Gloria C. Pastor: Translation Quality Standards in Europe: An Overview.
Editorial board	Existence of, and composition of, an editorial board	IHTSDO Guidelines for Management of Translation of SNOMED CT®, section 4.

3.2 Process quality characteristics

The *process-related* quality characteristics that were initially considered are shown below:

Characteristic	Comments	Reference
Concept-based translation principle	Refers to semantic adequacy (see definition below)	IHTSDO Guidelines for Translation of SNOMED CT® section 4.1.1, including process for translation workflow steps (Figure 8). Reynoso GA et al: Development of the Spanish Version of the Systematized Nomenclature of Medicine: Methodology and Main Issues. IHTSDO Pre-Conference Workshop: "Experience of the Danish, Swedish and Canadian Release Centres Translating SNOMED CT® - Approaches, Challenges and Lessons Learned" (March 31, 2009). http://www.ihtsdo.org/publications/
Translation reviews	Two-level, or, two-stage review process necessary	IHTSDO Guidelines for Management of Translation of SNOMED CT®, section 4. Reynoso GA et al: Development of the Spanish Version of the Systematized Nomenclature of Medicine: Methodology and Main Issues IHTSDO Pre-Conference Workshop: "Experience of the Danish, Swedish and Canadian Release Centres Translating SNOMED CT® - Approaches, Challenges and Lessons Learned" (March 31, 2009). http://www.ihtsdo.org/publications/
Ongoing communication, co-operation and process	Refers to the existence of mechanisms that allow a fluent communications between the two main actors of the	

adjustments between TPO and TSP	translation process.	
Rejection rates within the translation workflow **Note:** It was agreed by the TQAPG that this characteristic is also a tangible example of the characteristic above – i.e. the need for ongoing communication, co-operation and process adjustments between parties undertaking a translation project	High rejection rates from the Translation Project Owner (TPO) should result in process adjustments/changes, i.e. Translator education, or, change in Translator Service Provider (TSP)	Presentation by Linda Parisien, IHTSDO Translation SIG meeting, October 2009.
Flexible tooling workflow functionality for translation process	e.g. Selection and directed allocation of specific groups of concepts for attention / action by Subject Matter Experts (SMEs)	Experience drawn from other translation projects e.g. IHTSDO Pre-Conference Workshop: **"**Experience of the Danish, Swedish and Canadian Release Centres Translating SNOMED CT® - Approaches, Challenges and Lessons Learned" (March 31, 2009). http://www.ihtsdo.org/publications/

3.3 Outcome quality characteristics

According to the IHTSDO Guidelines for Management of Translation of SNOMED CT® (Source E 5.), the basic approach of a terminology translation project is pragmatic-functionalist. A concerted effort is required to produce terms which:

- reflect the underlying concepts and are understandable, and;
- are psychologically acceptable to the clinician.

The IHTSDO Guidelines for Translation of SNOMED CT® (Source E 4.) focus on specific linguistic principles and terminological conventions important to consider when producing an acceptable translation of clinical terms, summarised as follows:

- unambiguous
- linguistic correctness (national syntactical and orthographic rules must be complied with)
- transparency/motivation (a term should be immediately understandable and self-explanatory, i.e. it should reflect the characteristics of the underlying concept)
- psychologically acceptable (clinicians' preferences and practice should be taken into account whenever possible)
- systematic and consistent (similar morphological and syntactical solutions should be sought for terms covering semantically similar concepts).
- international recognisability (terms based on Latin and Greek word elements should be preferred, e.g. universal scientific terms)

After consultation with the TQAPG at the April 2010 IHTSDO conference, it was realised that more attention needed to be given to clinicians' preferences. Aside from the "international recognisability" convention, the lists of main "Groups" of *outcome* quality indicators and of *outcome-related* quality characteristics included below reflect that.

The individual indicators listed in order of priority within the groups, are based on the work of Gilreath 1993: Onometrics (Source D 1.). While it was Gilreath who first noted language economy as a potential quality indicator, this was affirmed through practical experience gained by Editorial Board members during the Danish nationalisation project (2005-09). They noted that language economy becomes of prime importance at the medium level of SNOMED CT[®] hierarchies. If terms comprising an excessive amount of morphemes are chosen at this level, terms at lower levels will either become too long (comprised of too many morphemes), or, fail with respect to parameters relating to pragmatic adequacy such as precedent and series uniformity.

Gilreath Group (listed in order of priority)	Indicator and definitions (listed in order of priority within each group)
1. Semantic adequacy	Precision: degree to which term clearly delineates the designated concept
2. Pragmatic adequacy	Clinical acceptability: Term rejection by end-users. If so, how often? Precedent: The degree to which the term is in harmony with established terms Series uniformity: The degree of consistency with the series of terms to which it belongs
3. Form correctness	Linguistic correctness (at all levels): morphology, inflexion, syntax
4. Language economy	Appropriate simplicity: The degree to which the number of morphemes in the preferred term is appropriate for the level of importance of the designated concept. i.e. the more important the concept, the simpler the term should be in order to enhance efficiency of communication

The additional *outcome-related* quality characteristics that were initially considered are shown below:

Characteristic	Description of characteristic / indicator	References
Term equivalence	Refers to semantic adequacy (see table above)	IHTSDO Guidelines for Translation of SNOMED CT[®] Reynoso GA et al: Development of the Spanish Version of the Systematized Nomenclature of Medicine: Methodology and Main Issues.
Compliance with Translation Guidelines and Standards	IHTSDO Translation Guidelines, SDO Standards and national language-specific guidelines/decisions of principle developed for local project use	IHTSDO Guidelines for Translation of SNOMED CT[®] IHTSDO Guidelines for Management of Translation of SNOMED CT[®] DIN 2345, ÖNORM D 1200 and 1201, cited by Gloria C. Pastor in: Translation Quality Standards in Europe: An Overview "Decisions of principle taken by the Danish SUNDTERM Editorials Board (2005-2009") "Linguistic Guidelines for Translation of SNOMED CT[®] to Swedish"
Compliance with other	When fully specified names (FSNs) are	SNOMED Clinical Terms[®] Editorial Guidelines

Characteristic	Description of characteristic / indicator	References
IHTSDO Editorial Guidelines and Policies	translated into a target language or target language dialect, the target language FSN should comply with the specifications for FSNs as defined in the IHTSDO Editorial Guidelines relating to the underlying core terminology (international release / original source language).	WORKING DRAFT, Version 1.01 (2008-01-02) Policy on IHTSDO's Role in Translation, approved by IHTSDO Management Board, April 26 2010
Number of concepts translated	This indicates the completeness of the translation	**Note:** Not strictly about translation quality - will not be included in the initial "short-list"
Users' requests for change of translated terms	Accepted requests for change to translated terms not related to changes in the core terminology	**Note:** Not strictly about translation quality - will not be included in the initial "short-list"
Number of changes in translated terms over a series of releases	• Not related to changes in the core terminology • Lower number expresses stability in the translated terminology • Greater stability over time	**Note:** Suggested by the TQAPG but will not be included in the initial "short-list"

3.4 Initial set of selected structure, process and outcome quality characteristics

The creation of an initial set of candidate quality characteristics was primarily guided by IHTSDO source documentation and clinicians' preferences. The following "short-list" of nine (9) **structure**, **process** and **outcome**-related *quality characteristics* were selected:

Component	Characteristic	Description of characteristic/indicator	Gilreath Group
Structure	Participants knowledge of terminology and terminology translation processes (characteristic also includes translators and reviewers competencies)	Translation Service Providers' (TSP) knowledge and Translation Project Owners' (TPO) knowledge of SNOMED CT, and, of the translation process. Includes educational background and professional experience of translators (i.e. skills in medical translation and/or clinical practice domains)	
Structure	Content of style guides and reference materials in target language	Existence of style guides, dictionaries and reference materials with relevant content (i.e. linguistic guidelines) in target language.	
Structure	Access to translation software	Tooling capable of supporting concept-based translation and offering features such as translation memory, direct access to electronic text books, medical dictionaries, etc. Tooling requires explicit specifications and tested software.	
Process	Concept-based translation principle	Relates to "semantic adequacy". Check that all translation process participants are well aware	Semantic adequacy

Component	Characteristic	Description of characteristic/indicator	Gilreath Group
		of the importance of this principle	
Process	Translation reviews	Two-level, or, two-stage review process necessary	
Process	Ongoing communication, co-operation and translation project process adjustments between Translation Project Owner (TPO) and Translation Service Provider (TSP)	Existence of an agreement establishing "ways of working" including regularly scheduled project meetings and exceptional meetings, and, evidence of compliance (documented meeting minutes and actions) with the agreed ways of working. Another example could relate to rejection rates within the translation workflow. High (or unacceptable) rejection rates from the Translation Project Owner (TPO) should result in process adjustments/changes, i.e. Translator education, and/or, a change in the Translator Service Provider (TSP). The challenge with this example is to qualify and/or quantify what "High" (or unacceptable) rejection rates" means.	
Outcome	Term equivalence	Relates to "semantic adequacy" and "precision" – the degree to which the term clearly delineates the designated concept. Target language terms must semantically correspond to source language terms. One way this may be measured is via the use of back translation.	Semantic adequacy
Outcome	Clinical acceptability	Related primarily to term rejection by end-users (i.e. if so, how often?) but also to "precedent" which is the degree to which the term is in harmony with established terms and to "series uniformity" which is the degree of consistency with the series of terms to which it belongs.	Pragmatic adequacy
Outcome	Compliance with Translation Guidelines and Standards **Note:** Attention should also be paid to other IHTSDO Editorial Guidelines and Policies. When fully specified names (FSNs) are translated into a target language or target language dialect, the target language FSN should comply with the specifications for FSNs defined in the IHTSDO Editorial Guidelines relating to the underlying core terminology (international release / original source language).	Translation of the FSN and Preferred Term (PT) respectively, must comply with IHTSDO Translation Guidelines, SDO Standards and national language-specific guidelines/decisions of principle developed for local project use.	Form correctness

The determination of the appropriate measurement metrics and targets that should be used to assess translation quality while undertaking a translation project was primarily guided by the IHTSDO Quality Framework and Toolkit and is described in the companion document "A methodology and toolkit for evaluating SNOMED CT® translation quality".

4 Bibliography

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