
**Translation services — Post-editing
of machine translation output —
Requirements**

*Services de traduction — Post-édition d'un texte résultant d'une
traduction automatique — Exigences*

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Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative References	1
3 Terms and definitions	1
3.1 Concepts related to machine translation.....	1
3.2 Concepts related to language and content.....	2
3.3 Concepts related to people or organizations.....	3
3.4 Concepts related to translation.....	4
4 Post-editing process	5
4.1 General.....	5
4.2 Pre-production processes.....	5
4.3 Production processes.....	6
4.3.1 Objectives in the post-editing process.....	6
4.3.2 Requirements of post-editing MT output.....	6
4.3.3 Post-editor's tasks.....	7
4.4 Post-production processes.....	7
4.4.1 Final verification and delivery.....	7
4.4.2 Feedback.....	7
5 Competences and qualifications of post-editors	7
5.1 Competences.....	7
5.2 Qualifications.....	8
5.3 Professionalism.....	8
6 Requirements of full post-editing	8
Annex A (informative) Post-editor training	9
Annex B (informative) Light post-editing	10
Annex C (informative) Pre-editing	11
Annex D (informative) Client-TSP agreements and project specifications	12
Annex E (informative) Automatic post-editing	14
Bibliography	15

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 37, *Terminology and other language and content resources*, Subcommittee SC 5, *Translation, interpreting and related technology*.

Introduction

The use of machine translation (MT) systems to meet the needs of an increasingly demanding translation and localization industry has been gaining ground. Many translation service providers (TSPs) and clients have come to realize that the use of such systems is a viable solution for translating projects that need to be completed within a very tight time frame and/or with a reduced budget. When an MT system is used, clients can have material translated that can otherwise not be translated; translation costs can be decreased and the launch of products on specific markets, as well as the flow of information, can be accelerated. On the other hand, TSPs are able to:

- a) improve translation productivity;
- b) improve turn-around times;
- c) remain competitive in an environment where clients show an increasing demand for using MT in translation.

However, there is no MT system with an output which can be qualified as equal to the output of human translation and, therefore, the final quality of the translation output still depends on human translators and, for this purpose, their competence in post-editing.

The rate at which MT systems are changing renders it impractical to produce an overarching International Standard on these systems, which could stifle innovation or be ignored by the translation technology development industry.

This document therefore restricts its provisions to that part of the process that begins upon the delivery of the MT output and the beginning of the human process that is known as post-editing.

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Translation services — Post-editing of machine translation output — Requirements

1 Scope

This document provides requirements for the process of full, human post-editing of machine translation output and post-editors' competences.

This document is intended to be used by TSPs, their clients, and post-editors.

It is only applicable to content processed by MT systems.

NOTE For translation services in general, see ISO 17100.

2 Normative References

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 Concepts related to machine translation

3.1.1

machine translation

MT

automatic *translation* (3.4.2) of *text* (3.2.6) from one natural language to another using a computer application

[SOURCE: ISO 17100:2015, 2.2.2, modified – reference to translation of speech has been deleted as it is not relevant to this document; also “automated” has been replaced by “automatic” in order to avoid confusion with translation memory tools]

3.1.2

machine translation output

MT output

result of *machine translation* (3.1.1)

[SOURCE: ISO 17100:2015, 2.2.3, modified – “outcome” has been changed to “result”]

3.1.3

machine translation system

technology used to perform *machine translation* (3.1.1)

3.1.4

post-edit

edit and correct *machine translation output* (3.1.2)

[SOURCE: ISO 17100:2015, 2.2.4, modified – the note has been deleted]

3.1.5

full post-editing

process of *post-editing* (3.1.4) to obtain a product comparable to a product obtained by *human translation* (3.4.3)

3.1.6

light post-editing

process of *post-editing* (3.1.4) to obtain a merely comprehensible text without any attempt to produce a product comparable to a product obtained by *human translation* (3.4.3)

3.2 Concepts related to language and content

3.2.1

content

information in any form

EXAMPLE Text, audio, video, etc.

3.2.2

source language

language of the *content* (3.2.1) to be *translated* (3.4.1)

3.2.3

source language content

language *content* (3.2.1) to be *translated* (3.4.1)

[SOURCE: ISO 17100:2015, 2.2.3]

3.2.4

target language

language into which *source language content* (3.2.3) is *translated* (3.4.1)

[SOURCE: ISO 17100:2015, 2.3.6]

3.2.5

target language content

language *content* (3.2.1) *translated* (3.4.1) from *source language content* (3.2.3)

[SOURCE: ISO 17100:2015, 2.3.3]

3.2.6

text

content (3.2.1) in written form

[SOURCE: ISO 17100:2015, 2.3.4]

3.2.7

natural language

NL

language with its origin unknown, but continuously developing sometimes in idiosyncratic ways as is used conventionally for human communication

[SOURCE: ISO/TS 24620, 2.12]

3.2.8**controlled natural language**

controlled language

CNL

subset of *natural languages* (3.2.7) whose grammars and dictionaries have been restricted in order to reduce or eliminate both ambiguity and complexity

Note 1 to entry: As a generic, CNL is an uncountable noun that refers to the abstract properties of all controlled natural languages and not to a particular natural language or application for a specific purpose. It is engineered (i.e. constructed) with a view to reducing or eliminating ambiguity and complexity and aims both to make it easier for human readers (particularly non-native users, non-experts and people with limited comprehension) to read a *text* (3.2.6), and to improve the computational processing of a text.

Note 2 to entry: CNL is an engineered (i.e. constructed) language that is based on a particular natural language, but is more restrictive as regards lexicon, syntax, or semantics, while at the same time preserving most of its natural properties. Here, CNL is a countable noun.

[SOURCE: ISO/TS 24620, 2.6]

3.2.9**segment**

unit of *text* (3.2.6) produced for a computer application to facilitate translation

Note 1 to entry: A segment can be a sentence, heading or other unit of text, such as phrase, word or a single character.

3.2.10**locale**

set of characteristics, information or conventions specific to the linguistic, cultural, technical and geographical conventions of a target audience

3.2.11**language register**

variety of language used for a particular purpose or in a particular social or industrial domain

3.3 Concepts related to people or organizations**3.3.1****client**

customer

person or organization that commissions a service from a *TSP* (3.3.5) by formal agreement

Note 1 to entry: The client can be the person or organization requesting or purchasing the service and can be external or internal to the *TSP*'s (3.3.5) organization.

[SOURCE: ISO 17100:2015, 2.4.3]

3.3.2**translator**

person who *translates* (3.4.1)

[SOURCE: ISO 17100:2015, 2.4.4]

3.3.3**reviser**

person who revises *translation output* (3.4.4)

[SOURCE: ISO 17100:2015, 2.4.5, modified – no need to specify that it is against source language content as it is explained in the definition of “revision”]

3.3.4

post-editor

person who *post-edits* (3.1.4)

3.3.5

translation service provider

TSP

language service provider that delivers *translation services* (3.4.5)

Note 1 to entry: A TSP can be a translation company, a translation agency, a translation organization (profit, non-profit or governmental), a single freelance translator or post-editor, or an in-house translation department.

[SOURCE: of definition: ISO 17100:2015, 2.4.2, modified]

3.3.6

project manager

PM

person who manages specified aspects of a translation or post-editing project and is responsible for the process

[SOURCE: ISO 17100:2015, 2.4.8, modified – “post-editing” added to make it relevant to this document]

3.4 Concepts related to translation

3.4.1

translate

render *source language content* (3.2.3) into *target language content* (3.2.5) in written form

[SOURCE: ISO 17100:2015, 2.1.1]

3.4.2

translation

set of processes to render *source language content* (3.2.3) into *target language content* (3.2.5)

[SOURCE: ISO 17100:2015, 2.1.2, modified – no need to mention that it is in “written form”. Also, the note is deleted in order to avoid confusion with the definition of translation output.]

3.4.3

human translation

translation (3.4.2) performed by a *translator* (3.3.2)

3.4.4

translation output

result of *translation* (3.4.2)

3.4.5

translation service

intangible product that is the result of interaction between *client* (3.3.1) and *TSP* (3.3.5)

[SOURCE: ISO 17100:2015, 2.1.6]

3.4.6

translation memory

TM

electronic collection of *source language* (3.2.2) and *target language* (3.2.4) *segment* (3.2.9) pairs

Note 1 to entry: The purpose of a translation memory is to facilitate the retrieval and use of previously translated content.

3.4.7 revision

bilingual examination of *target language content* (3.2.5) against *source language content* (3.2.3) for its suitability for the agreed purpose

Note 1 to entry: The term “bilingual editing” is sometimes used as a synonym for revision.

[SOURCE: ISO 17100:2015, 2.2.6]

3.4.8 verification

confirmation by the TSP's (3.3.5) *project manager* (3.3.6) that specifications have been fulfilled

[SOURCE: ISO 17100:2015, 2.5.1, modified – TSP added for the sake of clarity]

4 Post-editing process

4.1 General

Post-editing is performed on MT output for the purpose of checking its accuracy and comprehensibility, improving the text, making the text more readable, and correcting errors. Post-editing differs from translation as it involves three texts: the source text, the MT output and the final target text.

There are two main levels of post-editing, light and full; their use depends on the purpose of the translation output and the client's requirements. This document deals with full post-editing. Light post-editing is described in [Annex B](#).

The post-editing process can be automatic or human. Automatic post-editing is described in [Annex E](#). Human post-editing refers to the MT output post-editing process performed by a human post-editor.

The post-editing process can take place in an environment where all the text to be processed has been machine translated or in an integrated environment, where MT and TM, along with consistent terminology management, are fully integrated to produce a multi-modal translation work environment.

Post-edited MT output can or cannot be fed into a translation memory (automatically or partially), depending on the organization's processes and its clients' quality assurance requirements.

4.2 Pre-production processes

The TSP shall have a process in place to determine, in consultation with the client when necessary, whether the source language content is suitable for MT and subsequent post-editing or not since combined MT/post-editing efficiency depends on the MT system, language combination, domain and style of the source language content.

The source language content can be pre-edited before machine translation to facilitate machine processing, improve raw MT output quality, and therefore reduce the post-editing workload. Pre-editing is described in [Annex C](#).

The TSP shall finalize an agreement with the client and retain a record of that agreement. If an agreement is made verbally or by telephone, the TSP shall confirm the agreement and its terms in writing (e.g. by letter, fax or email). The agreement, whether contractual or non-contractual, shall include or reference the commercial terms and the project specifications. The agreement may also call for conformity to this document. [Annex D](#) contains a list of the items which can be included in the agreement.

Any deviation from the original agreement shall be agreed upon by all parties before any action is taken that deviates from the original agreement, and the agreed amendment shall be recorded and stored with the original agreement documentation.

The TSP shall ensure that requirements for the post-editing project are identified, documented and accessible to the post-editor. The TSP shall also ensure that the relevant specifications (e.g. quality

level, target audience, etc.) are communicated with appropriate examples to the post-editor and are observed.

NOTE 1 Requirements can be those stated by the client or those forming part of the TSP's procedures or a mixture of both.

The TSP shall ensure that the source language content and the text to be post-edited are available in appropriate format for use by the post-editor. Normally, this refers to files produced in standard software applications for editing texts (in the case of the text to be edited) or for reading texts (in the case of the reference source language content).

The TSP shall ensure that the post-editor has access to all reference material and any resources for post-editing as negotiated with the client.

The TSP shall inform the post-editor of the level of estimated usefulness of the MT output.

The TSP shall ensure that output to be post-edited includes indications/marks to correctly distinguish between MT output and output from other translation sources (e.g. TM output).

NOTE 2 The text to be post-edited can be the output of an MT system or the output of a combination of different sources (e.g. TM and MT).

4.3 Production processes

4.3.1 Objectives in the post-editing process

The TSP shall ensure that post-editors always meet the following objectives in the post-editing process:

- a) comprehensibility of the post-edited MT output;
- b) correspondence of source language content and target language content;
- c) compliance with post-editing requirements and specifications defined by the TSP.

4.3.2 Requirements of post-editing MT output

The TSP shall ensure that the following requirements are met:

- a) terminological/lexical consistency, as well as compliance with domain terminology;
- b) use of standard syntax, spelling, punctuation, diacritics, special symbols and abbreviations and other orthographical conventions of the target language;
- c) compliance with any applicable standards;
- d) correct formatting;
- e) suitability for the target audience and for the purpose of the target language content;
- f) compliance with client-TSP agreements.

Additionally, if the client-TSP agreement and project specifications include any of the following, the TSP shall ensure that these requirements are met:

- compliance with client terminology and/or any other reference material provided;
- compliance with any proprietary and/or client style guidelines (including register and locale);
- compliance with post-editing guidelines.

NOTE Client-TSP agreements are described in detail in [Annex D](#).

4.3.3 Post-editor's tasks

The TSP shall ensure that the following tasks are performed by the post-editor:

- a) reading the MT output and evaluating whether a reformulation of the target language content is necessary;
- b) using the source language content as reference in order to understand and, if necessary, correct the target language content;
- c) producing target language content either from existing elements in the MT output or providing a new translation.

4.4 Post-production processes

4.4.1 Final verification and delivery

The TSP shall have a process in place for verification of the final product against specifications before the release of the post-editing output for delivery to the client.

4.4.2 Feedback

The TSP shall have a process in place to obtain feedback from post-editors on the performance of the MT system which can, when appropriate, provide input towards the improvement of the MT system used and process followed.

5 Competences and qualifications of post-editors

The TSP shall ensure that post-editors have the following competences and qualifications:

5.1 Competences

- a) Translation competence: the ability to translate content, including the ability to address the problems of language content comprehension and language content production, and the ability to render the target language content in accordance with the client-TSP agreement, TSP-post-editor agreement and other project specifications;
- b) Linguistic and textual competence in the source language and the target language: the ability to understand the source language, fluency in the target language, and general or specialized knowledge of text-type conventions, as appropriate. This linguistic and textual competence includes the ability to apply this knowledge when producing texts or other target language content;
- c) Competence in research, information acquisition and processing: the ability to efficiently acquire the additional linguistic and specialized knowledge necessary to understand the source language content and to produce the target language content. Research competence also requires experience in the use of research tools and the ability to develop suitable strategies for the efficient use of the information sources available;
- d) Cultural competence: the knowledge of, and ability to make use of, information on the behavioural standards, value systems and locale that characterize both source and target language cultures;
- e) Technical competence: the knowledge, abilities and skills required to perform the technical tasks in the translation process by employing technical resources including the tools and IT systems that support the whole translation process;
- f) Domain competence: the ability to understand and master the domain content produced in the source language and to render it in the target language.

5.2 Qualifications

The TSP shall determine the post-editor's qualifications to provide a service conforming to this document by obtaining documented evidence that the post-editor can meet at least one of the following criteria:

- a) has obtained a degree in translation, linguistics or language studies or an equivalent degree that includes significant translation training, from a recognized institution of higher education;
- b) has obtained a degree in any other field from a recognized institution of higher education and has the equivalent of two years of full-time professional experience in translating or post-editing;
- c) has the equivalent of five years of full-time professional experience in translating or post-editing.

5.3 Professionalism

Post-editors shall apply a professional approach towards the post-editing task and have:

- a) a general knowledge of MT technology and a basic understanding of common errors that an MT system makes;
- b) a general knowledge of computer-aided translation tools;
- c) the knowledge and ability to establish whether editing MT output makes sense, in terms of time and effort estimation;
- d) the ability to follow the instructions received and the ability to focus on specific issues and make specific corrections as given.

Post-editors should have the ability to provide structured feedback on frequently recurring errors in the MT output, contributing to improvement of the MT system over time.

Post-editors should have a general understanding of how terminology management systems interact with MT systems.

NOTE For a list of what post-editors' training can include, see [Annex A](#).

6 Requirements of full post-editing

On this level of post-editing, the output shall be accurate, comprehensible and stylistically adequate, with correct syntax, grammar and punctuation. The aim of this level of post-editing is to produce an output which is indistinguishable from human translation output. Nevertheless, it is recommended that post-editors use as much of the MT output as possible.

On this level of post-editing, post-editors shall focus on:

- a) ensuring that no information has been added or omitted;
- b) editing any inappropriate content;
- c) restructuring sentences in the case of incorrect or unclear meaning;
- d) producing grammatically, syntactically and semantically correct target language content;
- e) adhering to client and/or domain terminology;
- f) applying spelling, punctuation and hyphenation rules;
- g) ensuring that the style appropriate for the text type is used and that stylistic guidelines provided by the client are observed;
- h) applying formatting rules.

Annex A (informative)

Post-editor training

Training language professionals in the knowledge and skills required for post-editing can:

- a) help meet the increasing demand for translation and result in faster turn-around times;
- b) provide language professionals with the required post-editing skills that are different from translation skills;
- c) improve language professionals' perceptions of MT and its capabilities, adapting them better to performing post-editing projects within an MT environment;
- d) enhance the development of and innovation in MT technology production.

Post-editor training can include:

- advanced use of TM and MT technology – in order to be able to handle post-editing scenarios with output coming from both TM and MT systems. This should include information on the typical MT errors, such as stylistic problems, literal translations, grammar mistakes (e.g. negations, verb translation), translation of names which should not be translated, etc.;
- advanced terminology work – including how to manage terminological databases, e.g. having knowledge of various terminology management systems and terminology exchange formats such as TermBase eXchange (TBX);
- advanced text processing skills in order to be able to use macros and search and replace functions;
- practice in light and full post-editing;
- use of quality tools to perform quality checks at the end of the project.

Annex B (informative)

Light post-editing

Apart from the full post-editing level, there is another level which is not covered by this document and that is normally used when the final text is not intended for publication and is mainly needed for information gisting, i.e. for rendering the main idea or point of the text. In this level of post-editing, the output shall be comprehensible and accurate but need not be stylistically adequate.

At this post-editing output level, post-editors should focus on:

- a) using as much of the raw MT output as possible;
- b) ensuring that no information has been added or omitted;
- c) editing any inappropriate content;
- d) restructuring sentences in the case of incorrect or unclear meaning.

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Annex C (informative)

Pre-editing

Pre-editing refers to modifying the source language content before machine translation (MT) to facilitate the process, improve raw translation output quality, and therefore reduce the post-editing workload, especially if one document is to be machine translated into several languages.

Pre-editing can cover either a broad or a fairly narrow range of preparatory activities. In its very widest sense, it can merge with controlled natural language input, whereby the source language content is authored according to fixed rules to make it easier to translate automatically. This is called linguistic pre-editing. For example, using relatively short sentences, avoiding certain complex or ambiguous syntactic structures or ensuring that the same term is used consistently, without synonyms.

In its narrowest sense, pre-editing often means cleaning up the source language content by spell-checking, format checking and tagging texts such as addresses and proper names to prevent translation. Tools to facilitate pre-editing can be used, for example, by automatically breaking each sentence into brief natural phrases, which can then be manually translated where necessary. This human contribution can improve the accuracy of MT and therefore reduce the post-editing workload later.

Pre-editing is highly recommended if a document is to be translated into more than three languages, as it is more cost-effective to invest time in extensive linguistic pre-editing to ensure the best possible MT output, and hence lesser post-editing expenditure in each target language. Pre-editing is also critical if the document is to be translated into a language serving as source language for a second translation into another language pair.

The conversion of a source language content into controlled natural language can be regarded as a special case of pre-editing, if done in preparation of MT. This conversion can largely be carried out automatically by means of specialized controlled natural language tools which, however, could be adapted for this purpose, if necessary.