

## TRANSLATION FEATURES OF MODERN IT TERMINOLOGY FROM ENGLISH INTO UKRAINIAN

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**Abstract.** *The article considers the features and basic techniques of translating modern IT terminology from English into Ukrainian. We have found out that the IT terminology of the English language is currently actively developing and plays an essential role as a part of the scientific and technical discourse of the English language. Other languages often borrow English IT terms. Therefore, they are international in their nature. The translation of such terminology is associated with specific difficulties, including requirements for accuracy and adequacy of scientific and technical translation, difficulties in choosing the correct translation equivalent depending on the context and traditions of translation of such terms, and a large number of abbreviations and acronyms in IT terminology.*

*The article analyses the features of the translation of IT terms from English into Ukrainian through the use of dictionary definitions of English terms and their equivalents, translation analysis, as well as quantitative analysis of the obtained results. As a result, we have established that the value of the scientific and technical text depends on the accuracy of terms translation. The article examines the main approaches to the modern English IT terminology translation, as well as the peculiarities of the use of these techniques depending on their structural and semantic properties. We have found that the most frequent methods of translating IT terms into Ukrainian are equivalent and analogue translation, transliteration, and loan translation. Such language and translation transformations as preservation of the Latin spelling of the IT term, modulation, grammatical substitutions are also often used.*

**Keywords:** *term, terminology, translation of terms, IT terminology, borrowing, translation transformations.*

### **Introduction**

Modern science and technology are developing at a tremendous pace, which contributes to the growth of scientific and technical information. Accordingly, the practical significance and relevance of scientific and technical translation are growing. It should facilitate the rapid and high-quality exchange of information in the latest scientific and technological discoveries and achievements among scientists and specialists worldwide.

Due to the spread of information technology in English-speaking countries, Ukrainian terminology in this area of IT has a strong influence from the English language: English terms are actively borrowed into Ukrainian (Sydor, Nanivskyy: 2018, p. 179). The main ways of transferring English terminology into the Ukrainian language are transliteration, transcription, loan translation, etc. (Kalnik: 2019, p. 188). However, a significant proportion

of terms in the IT field are multi-component terms or phrases that require appropriate translation techniques and strategies.

Such researchers as O. O. Volkova, V. I. Karaban, T. R. Kyiak, A. Ya. Kovalenko, S. E. Maksimov, M. Kochan, I. M. Kuchman, I. V. Sokolova, S. Halverson and others studied the translation of scientific and technical literature. However, since this process is fast, information accumulates faster than it has time to be processed. Thus, scientists do not have time to consider all existing terminology and its aspects, which explains the lack of studies on the peculiarities of the translation of terms. The study of the translation of IT terminology becomes an urgent task for the theory and practice of translation.

Thus, **the relevance of the research** is due to the importance and, at the same time, understudied translation of scientific and technical literature in the IT field as a means of comprehensive understanding of science and technology at the present stage of scientific and technological progress.

**The goal of this article** is to explore the features and difficulties of translating modern IT terminology from English into Ukrainian and identify the most common ways to translate such English terms into Ukrainian.

#### **Materials and methods of research**

The study is based on 100 units of IT terms selected from English-Ukrainian dictionaries of the computer field (English-Ukrainian IT Dictionary: 2011; English-Ukrainian Dictionary of Computer Terms: 2011; Dictionary of Information Technology Terms: 2021). The analysis of dictionary definitions allows to investigate the term units' contents plan, to specify their semantic structure for the establishment of similarities and differences.

The subject of research and its purpose led to the integrated use of general scientific and translation methods. Among the general scientific methods, a systematic approach is used to interpret the terminology system as a complex, holistic, self-organized, dynamic, structured system of terminological units that are interconnected, interact and develop according to the laws of language and under the influence of extralinguistic factors.

Induction and deduction are used in the article to generalize partial cases of use of terms to establish patterns of development of terminological systems, as well as to analyse the term and terminological system from its general features to specific ones.

The main method of research in the work is translation analysis. Translation analysis of a text is a pragmatically determined activity aimed at a deep understanding of the text being translated at the levels of meaning and content, and the definition of the invariant and translation strategy. Translation analysis is the activity of a translator aimed at an accurate understanding of the material to be translated, as well as to clarify its communicative task and determine the appropriate translation strategy (Maksimov: 2017, p. 125).

Translation analysis of the text involves three stages: pre-translation analysis of the text, the process of translation itself, and post-translation analysis of the result of translation. The part of translation analysis is the choice of those translation transformations that are appropriate to use in the translation of terms or text. Classical typology of translation transformations (Selivanova: 2011, p. 545) provides the following types: a) lexical transformations: formal lexical transformations (practical or conditional-sound transcription, transliteration, reproduction according to the established tradition, loan translation); b) lexical-semantic transformations (generalization, differentiation, modulation); c) grammatical transformations (transposition, grammatical or syntactic replacement, addition, omission); d) lexical and grammatical transformations (antonymous or synonymous translation, compensation, transformations of idiomatic expressions in translation).

Quantitative analysis is used to establish the relationship between different methods of translating English IT terminology into Ukrainian. The component analysis contributes to the study of the semantic structure of terms and the identification of lexical-semantic relations between them. The etymological analysis is used to connect the forms and words of different languages.

## Discussion

The sharp leap in the development of science and technology is the result of the fact that the base layer of all new words that appear in different languages every day is specialized vocabulary. Scientific and technical terminology is a complex and essential component of science and technology as a group of terms that operate in a particular field. The value of scientific and technical translation depends on the term accuracy and its translation into another language (Kyrychenko: 2010, p. 52).

O. M. Bilous defines a term as a word or phrase with a specialized, clear meaning in a particular field of science and technology. Each term has an exact concept, and the term itself strives for unambiguity (Bilous: 2013, p. 35). A term is an emotionally neutral word or phrase used to pinpoint the concept or name of objects. The term is always precise, stylistically neutral, and it implies a clear meaning revealed by logical definition (Kozlovska: 2003, p. 19).

Terminology is one of the leading difficulties of translation because it requires accurate and correct reproduction. Technical terms translation in different fields requires a high level of professionalism from the translator, and often even special knowledge in the area where the translation performs (Kalnik: 2019, p. 188).

Technical translation as a subspecies of specialized translation has specific characteristics and requires a specialized translator's approach. While the end product of literary translation is a text that preserves the elegance, style, and "readability" of the original, for a translator of technical terms, the priority is the accuracy and clarity of the translated text because the consequences of lexical mistakes may be much more significant (Diakov: 2000, p. 43). The purpose of technical translation should be to communicate new technical information to a new audience so that the recipient can continue to use it readily (Oxford Dictionaries Online: 2021). As a result, when translating technical texts, the personality and creativity of the translator should be limited or eliminated.

According to several researchers, the translated technical text should be identical to the texts written by professional authors in the language in which the translation is performed (Sukhenko: 2000, p. 87). Non-compliance with the conventions of the technical text may undermine the credibility of both the text as a whole, its author, and the information it contains. Thus, translated technical texts should become an integral part of the general discourse (Schiffman: 2011, p. 61).

Recent research has shown that Ukrainian-language IT terms borrowed from English are translated into Ukrainian mainly through transliteration (Sydor, Nanivskyy: 2019, p. 48). The following most popular borrowing mechanisms are loan translation and transcription. Translators also widely use modulation when the original word or phrase replaces another one for logical reasons. Here, the selection of a contextual synonym takes place. Grammatical substitutions are also often used in technical translation (Kochan: 2009, p. 4).

## Research results

Various translation techniques can be used to translate IT terms. The main techniques are equivalent translation, descriptive translation, transliteration, loan translation, transcription, omission of the term, and keeping the English term in the translated text. The choice of translation of IT terms depends on their structural and semantic features, as well as on the presence of an equivalent in the Ukrainian language.

For example, the English term *management server* (*керуючий сервер*) consists of two components and is formed on the model N + N. When referring to similar terms in the dictionary, there is a choice between two versions of the translation of the term into Ukrainian: the model N + N or the model A + N. The decision in favour of the A + N model was made after referring to analogue texts on the websites of computer companies. At the same time, there is a grammatical substitution, because one of the elements of the phrase changes part of speech while translating.

In the example of *SAN management* (*управління мережею зберігання даних*), the English term is a two-word combination. The acronym *SAN* stands for *Storage Area Network* and the task of its translation is complicated by the presence in the Ukrainian language of five

equivalents: *внутрішньосистемна мережа; мала локальна мережа; мережа запам'ятовуючого приладу; мережа зберігання; мережа зберігання даних*. Given the specifics and background knowledge, the most adequate in terms of translation is the following equivalent – *мережа зберігання даних*. Thus, the translated term takes the form of a terminological combination of four elements formed by the model N + N + N + N. This method of translation uses the extension of the original form of the term by interpreting the abbreviation. It is needed to note that the translator can also save the abbreviation (*SAN управління*).

The polysemantic nature of some of the terms is another problem of translating IT terminology, as in the following example: *metadata mapping – відображення метаданих*. Here, the English term *mapping* has six equivalents in the Ukrainian language: *відображення; відповідність; перетворення; управління пам'яттю; нанесення на карту, топографічна зйомка; процес позначки буквами мережевих дисків в локальних мережах*. The first option was chosen as the most adequate for translation. This type of translation transformation is called logical synonymy. The term *metadata* has one equivalent – *метадані*, formed using loan translation and morpheme translation.

The English term *information workers – фахівці, що працюють з інформацією* is two-words, formed on the model N + N. When translating into Ukrainian, this term must be explained, which can be done in different ways. The translation decision in favour of the option *фахівці, що працюють з інформацією* was made due to the synonymy of the concepts of *information worker* and *knowledge worker* and the definition of the *knowledge worker* as *фахівець, який працює з інформацією*. As a result, the terminological combination acquires a structure of four elements with the model N + A + prep + N.

The English term *end-to-end security – наскрізний захист* is a complex terminological combination created according to the A + N model. In the Ukrainian language this term corresponds to two equivalents: *комплексне забезпечення безпеки, наскрізний захист* (Kuchman: 2005, p. 74). Taking into account the context, the second option is used for translation. Thus, when translated into Ukrainian, the term remains two-word and retains the structure of the original.

The English term *hypervisor-level firewall – антивірусний захист на рівні гіпервізора* is two-syllable, formed according to the A + N model. When translating this terminological combination into Ukrainian, the greatest difficulty is the term *firewall*, which has numerous equivalents and broad semantics. It can be translated as *міжмережевий екран, брандмауер, захисна система* (Kuchman: 2005, p. 61). However, this term is used to describe a system to protect devices and applications from network threats and can not describe the security system itself, but only its individual characteristics. Thus, it was decided to specify the meaning to a narrower one – *антивірусний захист*. To translate the term *hypervisor*, the correspondence created by transliteration was used – *гіпервізор* (Kuchman: 2005, p. 76). Thus, the Ukrainian term consists of five components and is formed according to the model A + N + prep + N + N.

Special attention should be paid to the techniques and features of the translation of abbreviations, which are a significant part of the terms of the IT field. One of the many ways to translate English-language IT abbreviations when translated into Ukrainian is to borrow a foreign abbreviation, for example:

*To install a 64-bit OS on a 64-bit PC, your processor needs to support CMPXCHG16b, PrefetchW, and LAHF / SAHF* (Microsoft: 2021). – *Для установки 64-розрядної операційної системи на 64-розрядний комп'ютер процесор повинен підтримувати CMPXCHG16b, PrefetchW і LAHF / SAHF.*

Often English abbreviations are borrowed without translation and changes, thus, they remain without translation in Latin spelling in the translated text. This is since English is the main source of IT terms for most languages of the world and many names that have no equivalents in other languages are borrowed in their English version.

An approximate translation of IT terms can also be used. For example, in the following example, the abbreviation *FAQ* has no strict analogue in translation. This term can be translated as *сторінка запитань і відповідей*, and as *питання, які часто задаються*:

*To find out more about the changes, visit the FAQ page* (Microsoft: 2021). – *Щоб дізнатися більше про ці зміни, відвідайте сторінку запитань і відповідей.*

In some cases, when the meaning of the sentence is not violated by this, the abbreviation or shortening may be omitted when translating the technical text, for example:

*If you shared your calendar with an individual email address, they'll see your calendar in their "Other calendars" list* (Microsoft: 2021). – *Якщо ви надали доступ окремому користувачеві, він побачить ваш календар у списку «Інші календарі».*

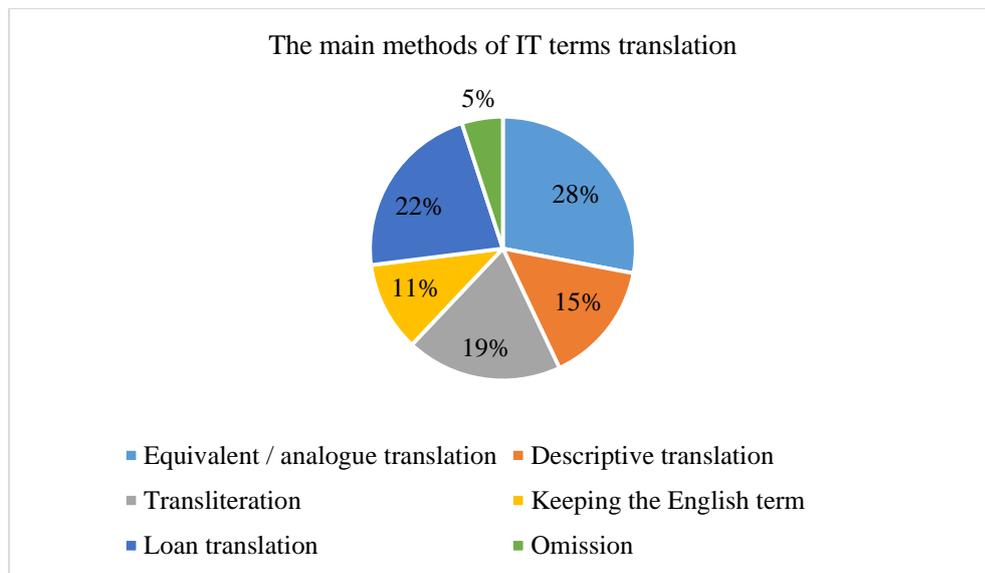
In this example, the abbreviation *email* is omitted, as well as the whole phrase – *an individual email address*. The omission of this element of the text does not change the general meaning of the sentence. Omitting some elements of the text becomes especially expedient in cases when the value of the omitted elements is easily compensated by the context.

If the IT term has an analogue in the language of translation, it is translated by the full word-equivalent, which is the most desirable way to translate such vocabulary. Equivalent translation provides one of the most accurate translation options, as, for example, in the following sentence:

*App availability and experience varies by device and market* (Microsoft: 2021). – *Доступність і функції програми відрізняються в залежності від типу пристрою і країни його реалізації.*

In this example, the abbreviation *app* (from the English *application*) is translated using the equivalent *програма*. Although the abbreviation is not preserved, it does not have a significant impact on the meaning of the statement, so it is a permissible transformation.

The quantitative analysis allowed to determine the most frequent methods of translating English IT terms into Ukrainian:



Pic. 1. The main methods of IT term translation

Quantitative analysis has shown that the most frequent method of translating IT terms into English is equivalent and analogue translation. We have combined these two types of translation, because the equivalent is a complete semantic coincidence of terms in the original language and the target language, while the analogue is a partial equivalent. This method of translating IT terms is 28% of the total number of examples.

The research results show that 22% of the examples is loan translation. Transliteration is 19% of the total number of examples. It is also quite common to translate IT terminology using descriptive translation (15% of the total number of examples). In 11% of examples, the term is not translated but is preserved in its original form in the translated text. This method is most often used when translating IT abbreviations, especially those that are international in nature and are used in their English form in most languages.

Omission of the term when its translating is used only in 5% of examples and is the least frequent method of translating IT terms. This is since the terms are an important element of the scientific and technical text and their omission can lead to a violation of the content of the text. Omissions are allowed only in some cases, for example –in case of redundancy of some terms in the text.

### **Conclusions and prospects**

To sum up, the most commonly used methods of translating English IT terminology into Ukrainian are equivalent or analogue translation, loan translation, transliteration. One of the predominant language transformations in the translation of abbreviations and acronyms of IT terminology is borrowing with the preservation of Latin writing. It can be explained by the unreasonableness of deciphering the abbreviation in Ukrainian and creating an abbreviation equivalent due to the cumbersomeness or coincidence of the new abbreviation with other already existing abbreviations. In addition, most abbreviations should be clear to programmers. So, for their convenience, it is not always advisable to translate or create new abbreviations because English is the international language of IT and most documentation, textbooks, correspondence in this area are in English. Ukrainian-language IT terms, borrowed from English, are transferred to the Ukrainian language mainly through transliteration, loan translation and transcription, modulation, and grammatical substitutions.

Prospects for further research are the study of grammatical features of IT texts, terminological phrases, studies of terminological shortenings translation, acronyms, and abbreviations of English into Ukrainian.

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