UDC 81'255.2:316.77:[334.025:005.511 doi: 10.20998/2220-4784.2021.02.10

S. I. BUKHKALO, A. O. AGEICHEVA, Z. H. DERKUNSKA, N. PSHYCHKINA, A. VYPOVSKA

STARTUP PROJECTS MACHINE TRANSLATION STRATEGY IN EXAMPLES AND PROBLEMS

The importance of ICT usage implementation in the startup project machine translation is analyzed. It has been studied that translation is of great importance for any startup project for establishing relationships with potential clients around the world. The role of the translator in the startup project is studied. Translation has been proved to be important for any startup project to build relationships with potential clients around the world. A comprehensive analysis of the translation of startup projects from Ukrainian into English using the latest information and communication technologies in this process. Peculiarities of using modern ICT in translating the description of startup projects from Ukrainian into English are obvious. Exploring the use of information and computer technology in the translation process. It is determined that it is important for a translator of a startup project to understand all the features of using the software, choose the appropriate programs or online tools and develop a strategy for the translation process in the project. The results of this work are very important and necessary for further study of the features of the use of ICT in the translation of startup projects. Startup projects machine translation strategy is given in examples and problems for better understanding

Key words: ICT, Information and Communications Technology, translation, startup projects, strategy

Introduction. Worldwide demand of translation services has dramatically accelerated in the last decades, as an effect of the market globalization and the growth of the Information Society. Machine translation (MT) is fast and cheap but far from publication quality. Computer assisted translation tools are currently the dominant technology in the translation and localization market, and those including machine translation engines are on the increase. The importance of developing the state in an innovative direction has been discussed in Ukraine: the necessary laws are adopted, programs are approved, technology transfer centers and business incubators are developed, trainings, forums and competitions of innovative ideas are constantly held.

Computer assisted translation tools are currently the dominant technology in the translation and localization market, and those including MT engines are on the increase. A startup is a creative work with a new idea, it is a search for a business model for an innovative idea that did not exist before, and which will be able to bring real income in the future – is a creative environment in which inventors learn, communicate and work on their projects; is planning a strategy, in correct management for entering various markets technology. The startup path is different from the standard business path. According to Bert Esserlink, author of one of the first localization manuals, the project translation includes such types of work as project management; translation of web content; translation and computer typesetting of documentation; translation and arrangement of multimedia elements; checking the functionality of localized software or web applications [1]: it can be concluded that the translator is actively involved in the following stages of project preparation 1) translation of business strategies, documentation and certificates, 2) website localization and its testing, 3) technical support, 4) project promotion on the market [2].

Identification of previously unsettled parts of the general problem. Computer-assisted translation is a broad term, which identifies specific tools and software used by language professionals to increase the productivity and improve the quality of their work.

This definition covers software as diverse as specialised text editors, spell checkers, grammar checkers, terminology databases, dictionaries, translation memories, electronic dictionaries, etc. Main components of any tool are the editor where users read the source text and input their comtranslations and the translation memory, a database used to store translated texts. Texts are generally broken down into minimal units, called segments, which usually consist of sentences or paragraphs. The professional translators requirements for the machine translation quality are much higher than those of non-professionals. These figures indicate that some translators are really interested in using automatic translation tools to increase labor productivity and reduce time costs. At the present time, new programs are constantly appearing, the already known ones are being updated or radically revised.

The main components of modern information technology in the translation business should primarily include: information and reference; accumulation, archiving, search and restoration tools of fragmented translations; formatting and conversion means of text data; translation texts localization means; tools for translation quality control. The segments found in the text which match the source text exactly, are called exact matches or 100% matches and usually do not require any intervention from the translator. Fuzzy matches are those that only partially match the source text and are assigned a different score expressing the percentage of similarity. Machine translation is nowadays dominated by the so-called statistical approach, in which the translation process is expressed as a search problem that computes an optimal sequence of rule to apply.

The main part.

Translation rules are automatically extracted from a large parallel corpus and a probabilistic model over the translation rules that is build and optimised to best fit the data. According to the employed probabilistic model, the sequence of rules may generate linear or hierarchical structures.

Progress in MT research has quickly found a way to the marketplace. Most prominently, perhaps, is the large-scale effort by Google to make translation for many language pairs available online, which uses standard statistical MT methods paired with massive computer clusters. Google's MT targets the problem of Web page translation, while commercial offerings of companies such as Language Weaver in the United States and Systran in Europe offer specialized statistical and hybrid systems to individual clients. Note that the academic research community is at the forefront of extending the state of the art in the field.

1) To make the analysis of implementation ICT usage translation in Startup projects: «As estimated by the World Bank report (Hoornweg and Bhada-Tata, 2012) about 1.3 x 109 t of Municipal Solid Waste (MSW) was generated worldwide in 2012, with a projection to increase to 2.2 x 109 t in 2025. Generally, over 10 % of this amount is polymer plastics. Current waste-to-energy technologies are well suitable for sustainable waste management and mitigation of environmental effects (Fodor and Klemeš, 2012) by increasing energy efficiency in the area (Touš et al., 2014). However, incineration of plastic solid waste (PSW) is a major source of air pollution by toxic gases like Dioxins, Furans, Mercury, Polychlorinated Biphenyls, Halogens, and other hazardous substances that are posing a threat to the environment and human health (Verma et al., 2016). Besides, the initial production of new plastics requires 4 % of the world's crude oil production that is equivalent to 1.3 109 barrels a year (Kreiger et al., 2014) and recycling of plastic solid waste is contributing to limiting of crude oil consumption. Sustainable recycling of PSW enables reduction of crude oil usage, while reducing environmentally hazardous carbon dioxide, other toxic emissions and landfill waste disposal. It gives opportunities to manufacture new products without consumption of new materials in this way contributing to sustainable development (Mwanza and Mbohwa, 2017). The economically and environmentally beneficial utilization of PSW requires a synergetic approach combining different methods of its treatment to obtain the optimal solution » [B]

2) To define the role of a translator for a Start up project «The results of experiments on polyethylene recycling with analysis of obtained polyethylene foams, their properties and effects of different recycling process parameters are presented. The main attention is paid to PSW with reduced to a critical minimum physical-mechanical, physical-chemical, rheological, molecular, structure and other characteristics. It concerns polymer waste that lost some of its quality for various reasons of exploitation or being a mixture of different grades and compositions of polymers and other materials. The research is aimed at studying such issues as the development of modern high-performance models of synergistic recycling-modification of polyolefin polymeric solids in order to produce innovative secondary polymers.» [B].

3) To identify main aspects of ICT startup projects translation «The study of the process of auto-oxidation of polyolefin during the operation is performed accounting for three stages: the period of induction, which accompanies the stage of nucleation of the molecular chains; acceleration period, which corresponds to the growth stages of the chains; the deceleration period corresponding to the stage of the chain breaks. The analysis of all these processes chemical mechanisms is performed. The development of all oxidative processes starts from the polymer surface and the introduction of oxygen deep into the material is determined by the rate of diffusion of oxygen into polymers. Therefore, film materials, according to this research, are most prone to photoconductive degradation. The synergy of inhibitors for the oxidation of polyolefin in our studies is associated with chain free radical fat oxidation processes (possible end products) schematically expressed by the sequence of reactions. The synergy of inhibitors for the oxidation of polyolefin in our studies is associated with chain free radical fat oxidation processes (possible end products) schematically expressed by the sequence of reactions:

$$R \xrightarrow{O2} RO_2 \xrightarrow{RH} ROOH \xrightarrow{RH} R^*$$

To achieve synergistic effects, information is used on the types of interactions of the components.» [3, 4]. It was established a general increase in technological properties (P – productivity, %) with the introduction of a modifier (C–0 – 5 %), which leads to an increase in productivity during the granulation process (Fig. 1), as well as to improving the quality of products.

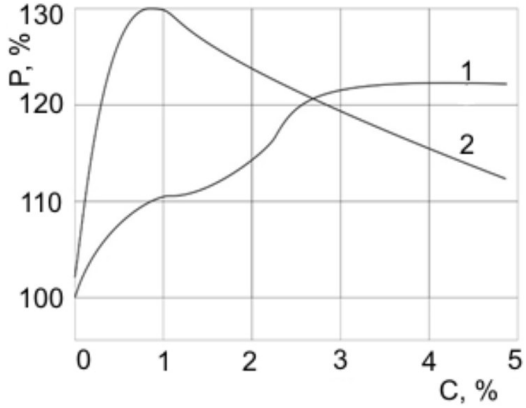

Figure 1 – The productivity of the granulation process of compositions: 1 – SPE + SB; 2 – SPE + polyethylhydrosiloxane

4) To determine the ICT usage implementation in startup project translation process «This research has been supported by the EU project «Sustainable Process Integration Laboratory – SPIL», project No. CZ.02.1.01/0.0/0.0/15_003/0000456 funded by EU «CZ Operational Programme Research, Development and Education», Priority 1: Strengthening capacity for quality research in a collaboration agreement with National Technical University «Kharkiv Polytechnic Institute» [4].

Translation competence includes linguistic, communicative, text-forming, technical competence, as well as the personal characteristics of the translator. A translator in a startup project team needs not only to be well oriented and understand the thematic vocabulary, but he is also required to apply other important work skills in practice (Figure 2). [2]

Possession of information technologies and automated translation tools is an important component of translation competence, including linguistic, communicative, extralinguistic, text-forming and other competencies.

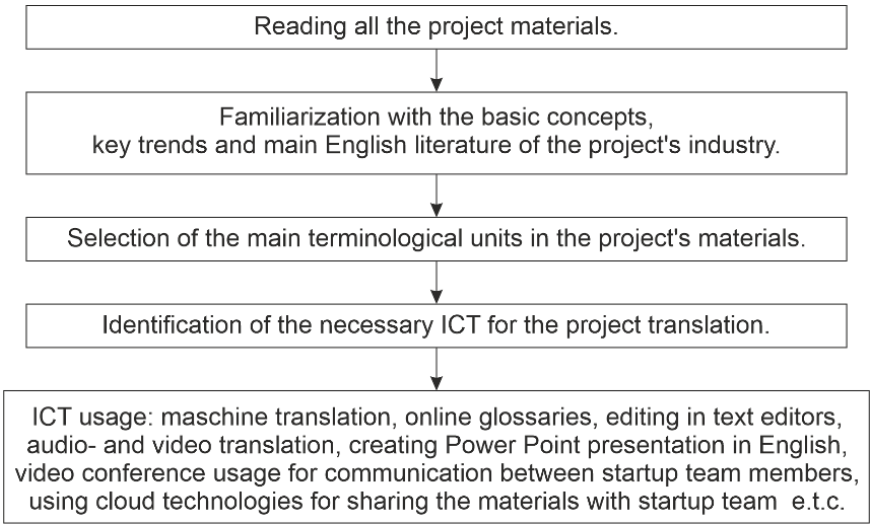

Figure 2 – Startup projects translation strategy. Source: author's development

The use of Internet technologies greatly facilitates the work of the translator and saves time, allows to speed up the process of exchanging information, and quickly resolve emerging problems in the translated text. However, none of the existing electronic programs is capable of providing high-quality translation without the participation of a human translator, which makes it relevant to training in translation for representatives of various professional fields.

Today, computer technology helps to facilitate human life in many areas of its activities. It optimizes our work, helping to reduce both physical and intellectual costs.

There are software products and online services that belong to the field of so-called machine translation. These are all kinds of programs or websites that to some extent provide machine translation services. "Machine translation is an action performed on a computer to convert text in one language into equivalent content in another language, as well as the result of such action"[4].

At machine translation the following forms of computer and the human-translator interaction are possible:

- with post-editing (the source text is translated by the machine, and the human-translator edits the received result);
- with pre-editing (first, the person formatting the text for further processing by the machine. At the same time, it simplifies the text as much as possible, replacing complex words with synonyms and eliminating possible ambiguous readings);
- with interrediting (the source text is translated by the machine, but at the same time the human-translator interferes in its work and solves difficult cases);
- mixed systems.

In general, the machine translation scheme includes the following stages [5]:

1. source language text input into the computer;
2. its morphological analysis, the speech parts definitions and each word morphological characteristics;
3. syntactic analysis of each sentence in the source text (search for the main sentence members and determining syntactic connections types between them, expressed in the form of a tree of dependencies or a tree of direct components);
4. semantic analysis of each sentence, as a result of which a semantic representation of this sentence is created;
5. syntactic synthesis of sentences (sentences creation with the correct syntactic structure, corresponding to the source language rules and the type of syntactic sentence structure in translation language;
6. morphological synthesis of each word as part of individual sentences of the text (setting the words of the TL in the desired morphological forms);
7. the text output on the TL.

Machine translation has both obvious advantages and disadvantages [6].

The first advantage is the high translation speed. In just a few seconds, machine translation is ready. One do not have to spend hours flipping through dictionaries to translate each word or wasting time waiting for a translation from a professional translator.

The next advantage of machine translation is its relative low cost. There are many online translators who

provide their services for free. While the professional translator services cost money.

Another machine translation advantage is accessibility. Anyone who has the Internet access or installs an offline machine translator's version can use it at any time from anywhere and receive a translation.

The fourth machine translation advantage is its versatility. Machine translators can usually translate text from almost any language into any other language. While professional translators most often specialize in one or more languages.

The main disadvantage of machine translation is its poor quality. Automatic translation services mostly translate text verbatim, without understanding the information and taking into account the context. They can convey the general essence of the text, however, they make lexical and grammatical errors. In some cases, the meaning of a single sentence or even the entire text may be completely distorted after translation [9].

Machine translation cannot consider context and decide how to deal with uncertain situations. While a professional translator can analyze the context and use his experience.

The word «automatic» is often used instead of the word «machine», which does not distort the meaning. However, the term «automated translation» has a different meaning. It is a programs complex that helps to translate texts, but does not perform the complete translation process instead of a human.

There are following automated translation and human interaction forms:

- partially automated translation (for example, a person uses computer dictionaries when translating);
- systems with labor division (the computer is programmed to translate phrases only of a rigid structure. Everything that does not correspond to this structure is returned to human for translation).

It is important to draw attention to the following important fact. It is often enough for an ordinary user who is not a professional translator to understand for himself the essence of the translated document, so such a user will not place high demands on the quality of machine translation. On the contrary, professional translators who strive to ensure that the quality of their translated text is high, as a result of cooperation with machine translation, they prefer to obtain a text that would contain as few inaccuracies, semantic, grammatical and stylistic errors as possible, since this would allow translators to reduce effort amount, time and post-edit costs.

According to translation industry experts, if a translation contains a large number of errors, it may take as much time to finalize it as to translate a text from scratch, that is, without the help of appropriate computer programs. In this regard, the professional translators requirements for the quality of machine translation are much higher than those of non-professionals. These figures indicate that some translators are really interested in using automatic translation tools to increase labor productivity and reduce time costs.

Since machine translation requires subsequent editing by the translator, some researchers suggest optimizing this process. A close examination of the corrections made by the translators during editing shows that these are mainly stylistic changes.

And if, indeed, it is assumed that professional translators should translate so that their translation does not contain stylistic errors, then it is unreasonable to expect the same high quality from machine translation results, including machine translation that has undergone "machine" editing. Texts such as user manuals may well contain some literal translation, provided that the information they contain is conveyed in clear, accurate, grammatically correct language.

In the translation business, as in any other business industry, the basis of information technology is the computer technology and software usage. Like any other, the translation business can gain or suffer greatly from the computerization of its technology. The task of each participant in the translation business is to correctly assess the state of affairs in their area and rationally use powerful information technologies (or determine the need for their use). New information technologies in translation presuppose the use of a computer only as a means of implementing the most complex specialized software. A complete inventory of the linguistic process software would be quite difficult. At the present time, new programs are constantly appearing, the already known ones are being updated or radically revised. The main components of modern information technology in the translation business should primarily include:

- information and reference base (electronic dictionaries, reference books, encyclopedias, normative and terminological sources);
- accumulation, archiving, search and restoration tools of fragmented translations ("translation memory" systems);
- formatting and conversion means of text data;
- translation texts localization means;
- means to ensure translation quality control, etc.

On the Internet there are a huge amount of dictionaries, reference and other information, for example, the National Corpus of Texts, encyclopedias, electronic libraries, archives of newspapers, etc. The language is constantly changing, new terms and dictionaries appear, especially printed ones, it is simply not manage to reflect these changes. This applies to both spoken language and professional terms. And if, when translating spoken language, the translator can choose any suitable phrase based on the general context, then unfamiliar terms become a serious problem. Firstly, it is needed to use online dictionaries – maybe the term (word) a translator is looking for will be found there. One should not neglect explanatory dictionaries. Perhaps, after reading the interpretation of this word, the translator will have some ideas on how to convey its meaning in his native language. In addition to the large number of online dictionaries, there are professional forums. Colleagues on the translators' forums will not refuse help and will suggest the best translation option. Visiting professional

forums on a specific topic, be it cellular or venture capital, is another good way to get familiar with the vocabulary, especially if the translator is tackling a topic in which he is not a specialist himself.

When working with special and unfamiliar terminology, a translator should resort to checking the correctness of the translation using search engines. For example, a translator has found a translation in a dictionary, but he is not sure if it is appropriate in this context. There is a need to check himself through a search engine, for example, Google, or any other and see the results. If such a term/expression occurs in a language, the search engine will return many pages with similar phrases. In the same way, a translator can choose the most suitable from several options, comparing them according to the degree of "occurrence" on the Internet [49].

It should be noted that electronic resources are used in practice in a differentiated manner, depending on the translation type, text complexity, and the specific tasks that the translator faces.

Google-Translate or Google-Translator is a Google service designed to automatically translate a piece of text or a web page into another language. Google uses its own software and offers translation from any supported language to any supported language. The quality of translation depends on the subject matter and style of the source text, as well as on its grammatical, syntactic and lexical structure. The best translation quality can be achieved when the English language is the target language and the source language belongs to one of the countries of the European Union.

There are currently 103 languages available in Translator. About 100 trillion documents have been recognized and translated into various languages by Google, which provides a large base for working with source material.

The work of this translator is based on statistical analysis: the system selects the equivalent of the translation based on the frequency of use, and ultimately substitutes the option that has the highest percentage of matches. However, in most cases, the translation is performed using English, which acts as a metalanguage.

Algorithm of online translator:

1) selection of language units from the text (words, phrases, sentences);

2) similar language units search in databases;

3) checking the found unit for full compliance;

4) if the compliance is not complete, then return to the initial point;

5) submission of a finished translation;

6) entering the result in the database.

The developers are constantly working on the quality of translation through neural networks, as it is self-learning algorithms. In addition, translations into other languages are being developed.

It should be remembered that Google-Translate was originally created not to replace live translators, but to help modern participants in intercultural communication and multilingual information exchange to overcome language barriers caused by ignorance of foreign languages.

Post-editing of machine translation is a new type of translator's activity that has taken a certain place in the modern translation process over the last five years.

There is an opinion that soon the profession of translator will go into the distant past "thanks" to MT. However, despite all the progress and success of MT today, many experts consider its mistakes inevitable: despite the emergence and rapid development of MT systems in recent years, as well as the emergence of neural machine translation, the developers promise as close as possible to "human translation" quality in the near future [7].

Association TAUS (Translation Automation User Society) is the association of players in the translation services market and translation automation provides the following definition of post-editing: "post-editing of machine translation is a process of improving the result of machine translation with minimal effort" [7].. An important component of the cited definition is refinement "with minimal effort", which is key to this activity and can even be called the basic skill of a post-editor.

The TAUS Association also highlights the purpose of post-editing and the task of the post-editor. The goal is to make the text clear to the recipient. The task is to improve the result of the MT with a minimum amount of effort in a minimum amount of time. This is the second important distinguishing feature of post-editing as a special type of activity – post-editing should be done "in the minimum possible amount of time", otherwise the efficiency of machine translation is significantly reduced and the question arises whether it should be used at all [8]. The following requirements are set for candidates:

- higher technical and/or linguistic education;
- at least one year experience in translation/ texts editing on similar topics;
- experience in machine translation editing.

Specialists from the world's leading translation agencies have rather optimistic forecasts. They believe that by 2029 technology will be able to handle translations as well as humans. At the same time, they immediately add that such technical breakthroughs do not cancel the need to learn a foreign language. Even the best translation software cannot 100 percent preserve all the nuances and small details when working with works of art, and some moments cannot be translated at all.

Due to the fact that every dialect in the world is special, reading original literature will always remain preferred [9].

Also, professionals in this field pay attention to the fact that most people are often limited to knowledge of two or three languages. And through the use of the latest technological tools that will stimulate the increase in human mental abilities, it will be much easier to master them.

The creation of fully automated translation systems that meets the requirements of professionals, specialists from a wide range of fields, is difficult for technical, cybernetic, and linguistic reasons.

Until now, the transfer of the functions of a translator to an automated device was possible only if precise translation rules were drawn up, that is, compilation of dictionaries and grammars for specific translation needs and tasks, therefore, the only translator at a quality level that satisfies the market is still a person.

During the translation work with the startup projects catalog, it was taken a decision to develop a translation strategy. It consisted of specific steps in the work:

1) carefully read the texts of the startup projects one by one;

2) highlight the main directions for our translation: Energetics, IT, Materials and Technologies;

3) acquaintance with projects, their main innovative ideas;

4) highlight special vocabulary, terminology, complex grammatical structures;

5) analysis of existing ICT for translation;

6) choosing the most suitable tool for the best result;

7) translation of the startup projects catalog using ICT (online dictionaries, online translators, other necessary software);

8) creation of presentations of some projects for the final defense of the project. When translating the catalog of final Challenge start-up projects, it was reviewed 98 projects from 7 directions: ecology, IT, energetics, agriculture, medicine, materials and technologies, another direction[10].

A startup is always about new and innovative things. It is about the desire to solve a certain problem of society or to simplify some aspect of life. The text of the project, presentation and all types of documentation will always contain industry terminology. In some cases, the terms will be created by the startup team members themselves [11–17].

During startup projects translation, in our opinion, the main difficulties include:

- translation of complex terminological groups;
- logical connections explication hidden behind the ornate syntactic sentence structure;
- verbosity or tautology elimination present in the original text;
- mental editing of grammatical errors during the oral translation that can make it difficult to understand the original text.

Does a startup need a translator? An average knowledge of English may be enough to communicate with international partners, but this will not be enough, for example, to bring the project to world markets.

Every month there are a lot of startups competitions in the world, which will help the project not only to get a cash prize, but also to find mentors, to get into a business incubator. However, most standing competitions require to fill out an application in English. In this case, the startup team must not only provide general information about the project, but also tell about the financial part, business models, market prospects and the team.

Filling out an application in English is only a small part of the iceberg, but you need to approach it responsibly. It is important not just to tell about the project, the main goal is to interest the right people, and this is often a difficult task even in the native language. Even if the startup team members are confident in their English knowledge, it will be useful to entrust professionals with at least editing.

In case the team has prepared its pitch and there is no doubt that in Ukrainian they can convince anyone to invest the right amount in the project. However, does it sound convincing in English as well? It is not enough to have an idea that will shoot. It is important to be able to convey it in a form that may be of interest to potential investors and mentors. Only a native speaker, who, in addition to his native English, is fluent in Ukrainian, will be able to make the pitch emotional and interesting.

The success of a startup is ensured if it solves global problems and can be scaled not within the country, but around the world. In order to find out about the project, the team needs to translate presentations, promotional materials and the site into English.

It is also important to entrust localization to professionals, because poor translation is not only a waste of money and damage to the project image, but also a waste of time, which among startups has a great value.

Teams of startups that develop innovative products sooner or later face the need to patent the technology for protection. The purpose of patenting is to secure exclusive rights to manufacture and sell products containing inventions in a certain geographical area.

Different patent offices have different requirements for the language in which an application should be filed. Today, a very popular system of patenting inventions, provided by the Patent Cooperation Treaty (PCT), in which the application can be filed in one of the established 8 languages, including English. However, some of the procedures in the application process will require the submission of documentation in Russian or French.

The European Patent Office shall apply only in English, French or German. When translating such documentation, accuracy in the description of the invention is important, as any distortion of information here can have serious consequences[18].

A full-fledged translation can only be performed by a qualified specialist in the field of science or technology with translation competence, with which the source text is thematically related. This means that, orienting himself in his narrow professional sphere and owning the terminology, such a specialist need to:

- have knowledge of-grammar and vocabulary of two languages;
- know sufficiently the culture of both peoples;
- take into account the extralinguistic aspects of the translated text;
- solve complex problems of transferring not

only information, but also imagery, understatement, many different linguistic signs shades of the original, which makes it possible to consider translation competence as a complex concept.

A competent translator, unlike a machine-translator, is guided by a large number of criteria when choosing a foreign language equivalent. These include not only the meaning of each word and the meaning of the grammatical constructions used, but also the concept of the value, novelty of the information offered, the possibility of compressing information, using standard formulas, clichés. A professional translator can, depending on the audience of listeners or readers to whom the translation is intended, make corrections, clarifications, substitutions in the translation text, and also maintains a style of presentation defined for a particular genre, builds equivalents of terms that are not in dictionaries [19].

After the first acquaintance with the startup projects catalog, it was decided to develop a translation strategy. It consisted of specific steps in our work:

Step 1. We carefully read the texts of the startup projects one by one. Highlighted the main directions for our translation: Energetics, IT, Materials and Technologies.

Step 2. Detailed acquaintance with projects, their main innovative ideas.

Step 3. Highlighting special vocabulary, terminology, complex grammatical structures. Translation of several projects without the ICT use.

Step 4. Analysis of existing ICT for translation. Choosing the most suitable tool for the best result.

Step 5. Translation of the startup projects catalog using ICT (online dictionaries, online translators, other necessary software). Creation of presentations of some projects for the final defense of the project [20, 21].

Conclusions and ideas for further investigation.

Translation competence includes linguistic, communicative, text-forming, technical competence, as well as the personal characteristics of the translator. The present article is an outline of the most significant studies in the field of startup strategy machine translation problems. Classification and analysis of difficulties arising in the process of translation are presented, their basic reasons are explained. Ways of solving the problems of machine translatioin strategy are suggested A translator in a startup project team needs not only to be well oriented and understand the thematic vocabulary, but he is also required to apply other important work skills in practice

During our translation work with the startup projects catalog, a translation strategy was developed. The research purpose was to identify the ICT usage peculiariities during translating the startup projects and review the strategy aspects.

The practical results of the study are considered, including an analysis of the main features of the startup projects texts translation from Ukrainian into English and the ICT usage in startup projects translation.

As the study result, its main purposes were achieved, all tasks were solved, a strategy for startup projects translation and the ICT usage in this process was proposed.

Further research may focus on a detailed study of startup projects translation and other ICT translation tools.

Список літератури

1. Бухкало С.І. Деякі концепції сталого розвитку України Інформаційні технології: наука, техніка, технологія, освіта, здоров'я: тези доповідей XXVIII міжнародної науково-практичної конференції MicroCAD-2020, 28-30 жовтня 2020 р.: Ч. ІІ./за ред. проф. Сокола Є.І. – Харків: НТУ «ХПІ», с. 172.
2. Бухкало С.І. Основні властивості плівкового полімерного покриття геліоколекторів. Інформаційні технології: наука, техніка, технологія, освіта, здоров'я: тези доповідей XXVIII міжнародної науково-практичної конференції MicroCAD-2020, 28-30 жовтня 2020 р.: Ч. ІІ./за ред. проф. Сокола Є.І. – Харків: НТУ «ХПІ», с. 173.
3. Бухкало С.І. Синергетичні моделі утилізації-модифікації полімерної частки ТПВ. Вісник НТУ «ХПІ». – Х.: НТУ «ХПІ», 2017. – № 41 (1263), С. 17–27.
4. Bukhkalo S.I J.J. Klemeš, L.L. Tovazhnyanskyy, O.P. Arsenyeva, P.O. Kapustenko, O.Yu. Perevertaylenko. Eco-friendly synergetic processes of municipal solid waste polymer utilization. CHEMICAL ENGINEERING TRANSACTIONS. VOL. 70, 2018, pp. 2047–2052
5. Говоров П.П., Бухкало С.І., Кіндінова А.К., Говорова К.В. Загальні закономірності системи бактерицидних установок знезараження води. Інформаційні технології: наука, техніка, технологія, освіта, здоров'я: тези доповідей XXVIII міжнародної науково-практичної конференції MicroCAD-2020, 28-30 жовтня 2020 р.: Ч. ІІ./за ред. проф. Сокола Є.І. – Х: НТУ «ХПІ», с. 181.
6. Калініченко Д.В., Бухкало С.І., Мірошниченко Н.М. та ін. Описовий алгоритм процесів кристалізації цукру. Інформаційні технології: наука, техніка, технологія, освіта, здоров'я: тези доповідей XXVIII міжнародної науково-практичної конференції MicroCAD-2020, 28-30 жовтня 2020 р.: Ч. ІІ./за ред. проф. Сокола Є.І. – Харків: НТУ «ХПІ», с. 207.
7. Мальцева А.О., Бухкало С.І., Іглін С.П., та ін. Загальні умови процесів кристалізації цукру. Інформаційні технології: наука, техніка, технологія, освіта, здоров'я: тези доповідей XXVIII міжнародної науково-практичної конференції MicroCAD-2020, 28-30 жовтня 2020 р. Ч. ІІ./за ред. Сокола Є.І. – Х: НТУ «ХПІ», с. 233.
8. Ольховська В.О., Кравченко О.С., Бухкало С.І. Складові алгоритму пошуку раціональних закономірностей роботи обладнання. Інформаційні технології: наука, техніка, технологія, освіта, здоров'я: тези доповідей XXVIII міжнародної науково-практичної конференції MicroCAD-2020, 28-30 жовтня 2020 р. Ч. ІІ./за ред. Сокола Є.І. – Х: НТУ «ХПІ», с. 249.
9. Агейчева А.О., Агейчева О.О. Можливі причини зниження фільтраційних характеристик привибійної зони пласта. Інформаційні технології: наука, техніка, технологія, освіта, здоров'я: тези доповідей XXVIII міжнародної науково-практичної конференції MicroCAD-2020, 28-30 жовтня 2020 р.: Ч. ІІ./за ред. проф. Сокола Є.І. – Харків: НТУ «ХПІ», с. 150.
10. Kapustenko P., Klemeš J.J., Arsenyeva O., Fedorenko O., Kusakov S., Bukhkalo S. The Utilisation of Waste Heat from Exhaust Gases after Drying Process in Plate Heat

Exchanger. Chemical Engineering Transactions, 81, 589-594. DOI:10.3303/CET2081099

11. Бухкало С.І., Агейчева А. О., Агейчева О. О., Бабаш Л. В., Пшичкіна Н. Г. Методичні аспекти реформування дистанційного навчання в системі вищої освіти. Вісник НТУ «ХПІ». – Х.: НТУ «ХПІ», 2020. – № 5(1359). – С. 3–10. DOI: 10.20998/2220-4784.2020.05.01
12. DePalma D. Business without Borders. A Strategic Guide to Global Marketing / A. Donald DePalma. New York : John Wiley & Sons, Inc., 2002. 267 p.
13. Esselink B. A Practical Guide to Localization / Bert Esselink. Amsterdam/Philadelphia: John Benjamins Publishing Company, 2000. 488 p.
14. Esselink B. A Practical Guide to Software Localization / Bert Esselink. Amsterdam/Philadelphia: John Benjamins Publishing Company, 1998. 309 p.
15. Hutchins J. y H. Somers: An Introduction to Machine Translation. London : Academic Press, 1992.
16. Lagoudaki E. The Value of Machine Translation for the Pro-fessional Translator. AMTA-2008. MT at work: Proceedings of the Eighth Conference of the Association for Machine Translation in the Americas, Waikiki, Hawaii, 21–25 October, p. 262–269.
17. Martin Kay. The Proper Place of Men and Machines in Language Translation. Machine Translation 12: 3–23, 1997. 9. Proceedings of the Eighth Conference of the Association for Machine Translation in the Americas, Waikiki.
18. S. Bukhkalo. The system and models of complex treatment of industrial effluents. Інформаційні технології: наука, техніка, технологія, освіта, здоров'я: тези доповідей XXVIII міжнародної науково-практичної конференції MicroCAD-2020, 28-30 жовтня 2020 р.: у 5 ч. Ч. II./за ред. проф. Сокола Є.І. – Харків: НТУ «ХПІ», с. 170.
19. Yunker J. Beyond Borders. Web Globalization Strategies / John Yunker. Boston ; Indianapolis; London; New York; San Francisco : New Riders, 2003. 552 p.
20. Zetzsche J. Machine Translation Revisited. Translation Journal. Volume 11, No. 1, January, 2007.
21. Бухкало С.І., Іглін С.П., Ольховська О.І., Ольховська В.О. та ін. Приклад постановки задачі експерименту Інформаційні технології: наука, техніка, технологія, освіта, здоров'я: тези доповідей XXVIII міжнародної науково-практичної конференції MicroCAD-2020, 28-30 жовтня 2020 р.: у 5 ч. Ч. II./за ред. проф. Сокола Є.І. – Харків: НТУ «ХПІ», с. 171.

Bibliography (transliterated)

1. Bukhkalo S.I. Deyaki koncepciyi stalogo rozvy`tku ukrayiny` Informacijni texnologiyi: nauka, texnika, texnologiya, osvita, zdorov'ya: tezy` dopovidej XXVIII mizhnarodnoyi naukovo-prakty`chnoyi konferenciyi MicroCAD-2020, 28-30 zhovtnya 2020 r.: Ch. II./za red. prof. Sokola Ye.I. – Xarkiv: NTU KhPI», p. 172.
2. Bukhkalo S.I. Osnovni vlasty`vosti plivkovogo polimernogo pokry`ttya geliokolektoriv. Informacijni texnologiyi: nauka, texnika, texnologiya, osvita, zdorov'ya: tezy` dopovidej XXVIII mizhnarodnoyi naukovo-prakty`chnoyi konferenciyi MicroCAD-2020, 28-30 zhovtnya 2020 r.: Ch. II./za red. prof. Sokola Ye.I. – Kharkiv: NTU «KhPI», p. 173.
3. Bukhkalo S.I. Synergetic processes of utilization-modification for polymer part of municipal solid waste. Bulletin of NTU KhPI, Kharkiv, 2017, 41 (1263), 17 – 27.
4. Bukhkalo S.I J.J. Klemeš, L.L. Tovazhnyanskyy, O.P. Arsenyeva, P.O. Kapustenko, O.Yu. Perevertaylenko. Eco-friendly synergetic processes of municipal solid waste polymer utilization. CHEMICAL ENGINEERING TRANSACTIONS. VOL. 70, 2018, pp. 2047–2052.
5. Govorov P.P., Bukhkalo S.I., Kindinova A.K., Govorova K.V. Zagal`ni zakonomirnosti sy`stemy` baktery`cy`dny`x ustanovok znezarazhennya vody`. Informacijni texnologiyi: nauka, texnika, texnologiya, osvita, zdorov'ya: tezy` dopovidej XXVIII mizhnarodnoyi naukovo-prakty`chnoyi konferenciyi MicroCAD-2020, 28-30 zhovtnya 2020 r.: Ch. II./za red. prof. Sokola Ye.I. – Kh.: NTU «KhPI», p. 181.
6. Kalinichenko D.V., Bukhkalo S.I., Miroshny`chenko N.M. ta in. Opy`sovy`j algory`tm procesiv kry`stalizaciyi czukru. Informacijni texnologiyi: nauka, texnika, texnologiya, osvita, zdorov'ya: tezy` dopovidej XXVIII mizhnarodnoyi naukovo-prakty`chnoyi konferenciyi MicroCAD-2020, 28-30 zhovtnya 2020 r.: Ch. II./za red. prof. Sokola Ye.I. – Kharkiv: NTU «KhPI», p. 207.
7. Mal`ceva A.O., Bukhkalo S.I., Iglin S.P., ta in. Zagal`ni umovy` procesiv kry`stalizaciyi czukru. Informacijni texnologiyi: nauka, texnika, texnologiya, osvita, zdorov'ya: tezy` dopovidej XXVIII mizhnarodnoyi naukovo-prakty`chnoyi konferenciyi MicroCAD-2020, 28-30 zhovtnya 2020 r.: Ch. II./za red. prof. Sokola Ye.I. – Xarkiv: NTU «KhPI», p. 233.
8. Ol`xovs`ka V.O., Kravchenko O.S., Bukhkalo S.I. Skladovi algory`tmu poshuku racional`ny`x zakonomirnostej roboty` obladnannya. Informacijni texnologiyi: nauka, texnika, texnologiya, osvita, zdorov'ya: tezy` dopovidej XXVIII mizhnarodnoyi naukovo-prakty`chnoyi konferenciyi MicroCAD-2020, 28-30 zhovtnya 2020 r.: Ch. II./za red. prof. Sokola Ye.I. – Kharkiv: NTU «KhPI», p. 249.
9. Agejcheva A.O., Agejcheva O.O. Mozhly`vi pry`chy`ny` zny`zhennya fil`tracijny`x xaraktery`sty`k pry`vy`bijnoyi zony` plasta. Informacijni texnologiyi: nauka, texnika, texnologiya, osvita, zdorov'ya: tezy` dopovidej XXVIII mizhnarodnoyi naukovo-prakty`chnoyi konferenciyi MicroCAD-2020, 28-30 zhovtnya 2020 r.: Ch. II./za red. prof. Sokola Ye.I. – Xarkiv: NTU «KhPI», p. 150.
10. Kapustenko P., Klemeš J.J., Arsenyeva O., Fedorenko O., Kusakov S., Bukhkalo S. The Utilisation of Waste Heat from Exhaust Gases after Drying Process in Plate Heat Exchanger. Chemical Engineering Transactions, 81, 589-594. DOI:10.3303/CET2081099
11. Bukhkalo S.I., Agejcheva A. O., Agejcheva O. O., Babash L. V., Pshy`chkina N. G. Metody`chni aspekty` reformuvannya dy`stancijnogo navchannya v sy`stemi vy`shhoyi osvity`. Visny`k NTU «KhPI». – Kh.: NTU «KhPI», 2020. – No. 5(1359). – pp. 3–10. DOI: 10.20998/2220-4784.2020.05.01
12. DePalma D. Business without Borders. A Strategic Guide to Global Marketing / A. Donald DePalma. New York : John Wiley & Sons, Inc., 2002. 267 p.
13. Esselink B. A Practical Guide to Localization / Bert Esselink. Amsterdam/Philadelphia: John Benjamins Publishing Company, 2000. 488 p.
14. Esselink B. A Practical Guide to Software Localization / Bert Esselink. Amsterdam/Philadelphia: John Benjamins Publishing Company, 1998. 309 p.
15. Hutchins J. y H. Somers: An Introduction to Machine Translation. London : Academic Press, 1992.
16. Lagoudaki E. The Value of Machine Translation for the Pro-fessional Translator. AMTA-2008. MT at work: Proceedings of the Eighth Conference of the Association for Machine Translation in the Americas, Waikiki, Hawaii, 21–25 October, p. 262–269.
17. Martin Kay. The Proper Place of Men and Machines in Language Translation. Machine Translation 12: 3–23, 1997. Proceedings of the Eighth Conference of the Association for Machine Translation in the Americas, Waikiki.
18. S. Bukhkalo. The system and models of complex treatment of industrial effluents. Інформаційні технології: наука, техніка, технологія, освіта, здоров'я: тези доповідей XXVIII міжнародної науково-практичної

конференції MicroCAD-2020, Ч. II./ Ch. II./za red. prof. Sokola Ye.I. – Kh: NTU «KhPI», p.170.
19. Yunker J. Beyond Borders. Web Globalization Strategies / John Yunker. Boston ; Indianapolis; London; New York; San Francisco : New Riders, 2003. 552 p.
20. Zetzsche J. Machine Translation Revisited. Translation Journal. Volume 11, No. 1, January, 2007.
21. Bukhkalo S.I., Iglin S.P., Ol`xovs`ka O.I., Ol`xovs`ka V.O. ta in. Pry`klad postanovky` zadachi ekspery`mentu Informacijni texnologiyi: nauka, texnika, texnologiya, osvita, zdorov'ya: tezy` dopovidej XXVIII mizhnarodnoyi naukovo-prakty`chnoyi konferenciyi MicroCAD-2020, 28-30 zhovtnya 2020 r.: u 5 ch. Ch. II./za red. prof. Sokola Ye.I. – Kharkiv: NTU «KhPI», p. 171.

Надійшла (received) 19.11.2021

Відомості про авторів / Сведения об авторах / About the Authors

Бухкало Світлана Іванівна (Бухкало Светлана Ивановна, Bukhkalo Svetlana Ivanovna) – кандидат технічних наук, професор кафедри інтегрованих технологій, процесів та апаратів, Національний технічний університет «Харківський політехнічний інститут», м. Харків, Україна;

ORCID: http://orcid.org/0000-0002-1389-6921; e-mail: bis.khr@gmail.com

Агейчева Анна Олександрівна (Агейчева Анна Александровна, Ageicheva Anna Oleksandrivna) – кандидат педагогічних наук, доцент кафедри загального мовознавства та іноземних мов, Національний університет «Полтавська політехніка імені Юрія Кондратюка», м. Полтава, Україна;

ORCID: http://orcid.org/0000-0003-2184-8820; e-mail: ageicheva@ukr.net

Виповська Анастасія Євгеніївна (Выповская Анастасия Евгеньевна, Vypovska Anastasiia Yevheniivna) – магістрантка кафедри германської філології та перекладу, Національний університет «Полтавська політехніка ім. Ю.Кондратюка»

ORCID: https://orcid.org/0000-0002-8541-0767; e-mail: nvipovska@gmail.com

Деркунська Жанна Вікторівна (Деркунская Жанна Викторовна, Derkunska Zhanna) – викладач коледжу нафти і газу, Національний університет «Полтавська політехніка імені Юрія Кондратюка», м. Полтава, Україна

e-mail derkunska@ukr,net

Пшичкіна Наталія Георгіївна (Пшичкина Наталья Гергиевна, Pshychkina Nataliia) - викладач коледжу нафти і газу, Національний університет «Полтавська політехніка імені Юрія Кондратюка», м. Полтава, Україна

e-mail pshychkina@ukr,net

С. И. БУХКАЛО, А. А. АГЕЙЧЕВА, А. Е. ВЫПОВСКАЯ, Ж. В. ДЕРКУНСКАЯ, Н. Г. ПШИЧКИНА

СТРАТЕГІЯ МАШИННОГО ПЕРЕКЛАДУ СТАРТАП ПРОЄКТІВ В ПРИКЛАДАХ І ЗАДАЧАХ

Проаналізовано важливість впровадження ІКТ у стартап проекті з машинним перекладом. Доведено, що переклад має велике значення для будь-якого стартап-проекту для налагодження стосунків з потенційними клієнтами по всьому світу. Досліджена роль перекладача в стартап-проєкті. Доведено, що переклад є важливим для будь-якого стартап проекту для налагодження відносин з потенційними клієнтами по всьому світу. Виконано комплексний аналіз перекладу стартап проєктів з української мови на англійську із застосуванням новітніх інформаційно-комунікаційних технологій у цьому процесі. Виявлено особливості використання сучасних ІКТ при перекладі опису стартап проєктів з української мови на англійську. Дослідженню використання інформаційних та комп'ютерних технологій у процесі перекладу. Визначено, що перекладачу стартап проекту важливо розуміти всі особливості використання програмного забезпечення, вибрати належні програми чи онлайн-інструменти та розробити стратегію перекладацького процесу. Результати даної роботи є дуже важливими та необхідними для подальшого дослідження особливостей використання ІКТ у перекладі стартап-проєктів.

Ключові слова: ІКТ, Інформаційно-комунікаційні технології, переклад, стартап-проєктів, стратегія

С. І. БУХКАЛО, А. О. АГЕЙЧЕВА, А. Є. ВИПОВСЬКА, Ж. В. ДЕРКУНСЬКА, Н. Г. ПШИЧКІНА

СТРАТЕГИЯ МАШИННОГО ПЕРЕВОДА СТАРТАП ПРОЕКТОВ В ПРИМЕРАХ І ЗАДАЧАХ

Проанализированы важность внедрения ИКТ в стартап проекте с элементами машинного перевода. Доказано, что перевод имеет большое значение для любого стартап-проекта для налаживания отношений с потенциальными клиентами по всему миру. Исследована роль переводчика в стартап-проекты. Доказано, что перевод является важным для любого стартап проекта для налаживания отношений с потенциальными клиентами по всему миру. Выполнен комплексный анализ перевода стартап проектов с украинского языка на английский с применением новейших информационно-коммуникационных технологий в этом процессе. Выявлены особенности использования современных ИКТ при переводе описания стартап проектов с украинского языка на английский. Исследованию использования информационных и компьютерных технологий в процессе перевода. Определено, что переводчику стартап проекта важно понимать все особенности использования программного обеспечения, выбрать соответствующие программы или онлайн-инструменты и разработать стратегию переводческого процесса в проект. Результаты данной работы очень важны и необходимы для дальнейшего исследования особенностей использования ИКТ в переводе стартап-проектов

Ключевые слова: ИКТ, Информационно-коммуникационные технологии, перевод, стартап-проектов, стратегия