

The Software Localization Process

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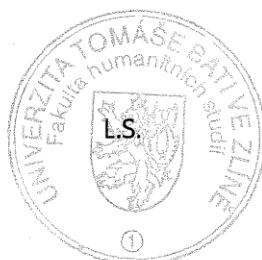
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ABSTRAKT

Táto bakalárska práca sa zaoberá stručnou históriou rýchlo rozvíjajúceho sa odvetvia trhu - softvérovej lokalizácie a vysvetľuje terminológiu používanú v procese lokalizácie. Teoretická časť práce sa zameriava na prácu s odbornou literatúrou a odôvodnením prečo spoločnosti vstupujú na medzinárodné trhy, aké procesy sú s týmto vstupom spojené a ako vyzerá proces lokalizácie na základe odbornej literatúry. Praktická časť zostavuje proces softvérovej lokalizácie na základe praxe a názorov odborníkov pracujúcich v tomto priemysle.

Kľúčové slová: lokalizácia, globalizácia, internacionalizácia, lokál, počítačom podporovaný preklad, outsourcing, prekladateľstvo

ABSTRACT

This bachelor's thesis describes the brief history of the quickly emerging field of software localization and explains the key terminology concerning the process of localization. Theoretical part focuses on the literature and the reasoning why companies tend to enter international or local markets, which processes are involved in expansion, and how does the process of localization look like according to the theory. The practical part assembles the process of software localization based on the practice and opinions of specialist working in this field.

Keywords: localization, globalization, internationalization, locale, computer aided translation, outsourcing, translation

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INTRODUCTION

Localization is often mistaken with translation. Opinions about the difference between translation and localization differ from person to person. Some consider translation to be a part of localization, some consider localization to be a more distinct area. Localization is widely recognized as a process of omitting cultural specific features of the product that might be inappropriate for the target locale and customizing the product to be the most suitable for the target customers.

Part of this process is translation, however localization is more complex than just a simple translation. Depending on the product that is being localized, several stages of localization might be required in order to successfully localize the product. When the product has gone through the process of internationalization, localization is easier to perform whereas on the other hand, product that is not intended to enter other markets from the beginning has to be internationalized.

This paper focuses on the brief history of localization, approaches that have been developing since the early years of localization and how a modern localization of software is done currently. Besides analyzing the literature on the topics of globalization, internationalization and localization, which are often closely related to the topic of localization, this thesis is being written in cooperation with specialists from the field of software localization.

The literature concerning software localization or just the localization itself is very limited up to this day and most of the literature has been written in the previous century therefore it might be considered to be outdated. The cooperation with the respondents from the field of software localization therefore expects to assemble a list of inevitable tasks in the modern process of software localization.

I. THEORY

1 THE BEGININGS OF LOCALIZATION

Anthony Pym (2010, 120-121) hints that the term localization is not widely recognized by public as it is a fairly new term that came into use in the last thirty years. Localization is often mistaken for translation as some consider localization a part of translation and the others vice versa, that the translation is a part of localization. Not much of a research has been done about localization so far, meaning that the localization is still new to date its history and as such is still developing based on requirements of customers and possibilities of the service providers.

1.1 Localization and Microsoft – the Beginning

Microsoft can be considered to be the first company that started performing localization as we know it today, even though the term was not invented yet (Pym 2010, 121). The initial term localization came into usage around the year 1980, when the now well established company Microsoft started developing a software for their target customers in North America. Microsoft was the first US-based company that had set up a sales office in Tokyo in 1978 and just a year later in Europe (Pym 2010, 121). Computers and software were mostly used only in companies, not a lot of individuals owned a computer in 1980s, however that started to change as it become more common for people to own a computer, therefore some kind of software. Microsoft took the opportunity of maximizing their profits and started expanding to other markets, mainly in Europe and Asia. The expansion created the need for customizing the already created software and adapting it to the local market, and adapting it to the end-user needs in the region of Western Europe and Asia. However, Microsoft was not the only US-based company to start expanding their sales to another markets. Sun Microsystems is another company developing hardware, software and computer components and began its expansion to Europe in 1983 and to Asia and Australia in 1986 (Pym 2010, 121). According to Bert Esselink the shift from corporate and academic computing to “normal” users, had correspondingly gave them access to software (Esselink 2006, 22). The software had to adapt to local standards of the local target customers, because it did not meet users’ requirements.

As Microsoft and Sun Microsystems were already global in terms of language and their products, they did not face the struggle of going global as other smaller companies from non-English speaking countries do. Once a business manages to establish itself in a

certain country, the best way to raise the turnover and income is to expand to another market (Shang and Lin. 2010, 57-77). This is where globalization process comes in the way. The companies initially operate in their local markets, so they start developing a product that is globally friendly, and ready to enter different markets. Localization, according to Pym is then a part of globalization as the companies are starting to create products that can access a global market. However the goal of localization is not just to be able to localize products from English language to the selected target language. It begins even sooner, as the developed software or product needs to be built in a way, so that software is easily localizable (2010, 122).

1.2 New Market Expansion

Companies tend to reach limits in terms of expanding their business. Localization of a product in general is closely related to marketing and market research, as these are most likely the key fragments of expanding to a new area or country. Thanks to marketing research the company knows which aspect of the localized product are the key ones or which market to expand to. Marketing then tries to find a best way to attract customers (Pym 2010, 122).

2 GLOBALIZATION

Before describing the localization, it is vital to firstly mention globalization as it is in a way connected to the localization, because the globalization of the company is done through localization and internationalization of its products. Localization is mostly the process that comes after globalization (Pym 2010, 122). In today's world, the society tends to omit all types of barriers created a long time ago. These barriers are mostly cultural differences between nations, their religions, state constitutions, general beliefs, or just a difference between habits and opinions of different countries. Economically, the globalized model of the world is trying to unify the systems around the globe, mostly the capital markets and the ways to improve international trades between the biggest exporters around the world (Collins 2015). Collins furthermore states that free trade is one of the biggest benefits globalized market offers because the value added taxes or tariffs are removed or at least cut to a minimum, therefore the developing countries can afford to export their goods to developed countries. The free trade correspondingly rises the global economic growth. Because the developing companies can afford to export their goods, more job opportunities are created in these countries, furthermore, it creates a competitive environment in which the companies try to attract their customers and finally, the most beneficiary are the customers themselves as the price of the products offered are lower, all thanks to free trade of globalization (Collins 2015). Free trade should also establish a more competitive environment between countries, however the countries tend to intervene on the foreign exchange markets to affect their currency and create a better position for themselves in the foreign markets. Good example of such an intervention is the Czech Republic as since 2013, the Czech National Bank intervenes on the foreign exchange market depreciating their Czech Crown's exchange rate with Euro in order to get a better position in their biggest exporting country, Germany. The Czech National Bank claims that it will intervene and depreciate the Czech Crown on a rate of circa 27 Crowns per Euro until further notice, but not sooner than 2017. (ČNB 2016)

2.1 Initial Globalization

Localization for the smaller companies from relatively small countries and markets is considerably harder to perform as they often have to develop their products into the global benchmark. The process of entering a new market, just as making the product globalized is fairly expensive, therefore the companies carefully consider whether to go global or just

safely stick to their initial markets. The option to stick to the initial market however carries the threat of a competing company overtaking the former customers or improving the already established product and weaken the position of the firstly mentioned company. The process of going global on the other hand carries the threat of not successfully penetrating the market meaning the globalization was not performed in a right way and in the worst case scenario might end up catastrophically even in the initial market with the costs being skyrocketed from the unsuccessful expansion. The first step while entering the international market is to analyze the target country. It is essential to understand the mentality, culture and the habits of its citizens. Secondly, it is essential to understand the country legal system to avoid undesirable problems (Cyr and Lew 2003, 337-358). Furthermore the company should establish a plan and forecast of its activities in the international market to be able to evaluate the progress. It is also vital to pay attention to the global economic cycle and the country's economic cycle. If the company hesitates or struggles to find a way to penetrate the new market, one of the ways of entering is to analyze the established competition within the market (Collins 1991, 49-68).

2.2 The Process of Globalization

Preceding the process of localization, it is essential to assemble a plan which will be used while expanding to foreign markets. In this case, the globalization is the first step of localization as the company develops a strategy to approach all the target markets in a same way (Pym 2010, 125). This can be demonstrated on an example of a company located in United States that realized that they have a vast number of customers from foreign countries – China, France, Spain and Iraq, and wants to localize its website for all these countries. The process of localizing every single one of these websites would be fairly expensive to perform, therefore it is firstly advised to internationalize the website, so that it omits all kinds of cultural and language differences or other small details like the inappropriate colors or pictures on the website. Omitting these cultural and language differences is often described as the process of internationalization (Pym 2010, 123). Once the unified type of website has been developed, the next step is the translation of the content on the website. Once the translation has been done, the company can begin the detailed localization of the website for each respective country as some of them would probably require small changes according to what is expected from the target locale.

The globalization then can be illustrated on the following scheme:

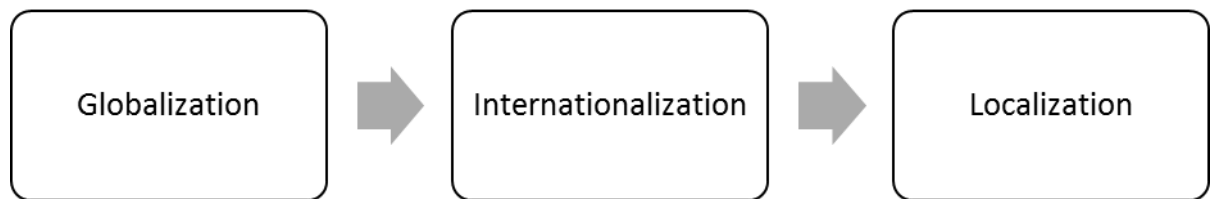


Figure 1. Process of Localization with preceding Internationalization

2.2.1 Internationalization and Translation

Internationalization is a vital part of both the globalization and localization process. As mentioned before, a unified standard of the product has to be created in order to further localize or globalize the product. Once the standardized product has been created, for example a software, the process of translation can begin (Pym 2010, 125; Esselink 2006). Translation focuses on the textual part of the localized software such as grammatical, lexical and linguistic features (Munday, 2009).

3 LOCALIZATION

Localization is most often described as a process, in which the product is being adapted to a particular region or country. It is not just the simple translation of text as localization pays a close attention to non-textual components of the products such as different units of measures. Localization also pays attention to the cultural differences between the globalized product and the target locale (Pym 2010, 120; Esselink, 2000). Even though one of the processes of localization is translation, some do not consider localization equal to the level of real translation of texts. As Pym (2010, 120) states: “The ideas and practices increasingly brought together under the label of “localization” do not constitute a translation theory in any strong academic sense; they are perhaps just a set of names-for-things developed within certain sectors of the language industry.” This is partly true because localization is mostly used within the business and industries, therefore we can expect them to use the same language and jargon however the translation cannot be omitted from the process of localization. Concluding, as localization is in a certain way translation and the translation is included in the process of localization, localization should be at least partly thought of as a translation, even though the process of localization is more complex.

Pym (2010, 121) thinks that localization is not needed while the companies are expanding only to a few countries, as the strategy of one language-to-language translation should be sufficient. But with the company expanding to more foreign markets, this strategy would become rather costly. Pym (2010, 122) also describes localization not being just a simple language-to-language translation of pieces of the software like the menus, boxes, dialogues, etc., but that localization is paying attention to minor details within the software just as time and date formats, punctuation, special letters, measures and hotkeys for example.

Important fact to realize is that localization at first might sound as one time task. The website or software had been localized so there is nothing more to do. However, that is not true because the developers and companies do not stagnate, they tend to develop just as they develop their software and release updates. All of these updates have to also be localized. Therefore localization is a cyclical process, not just a one time task. Usually teams of people are created to localize certain products or websites, software and these teams stick to the projects they localized together before as it could be harder to a completely new team to perform the localization of the updates (Pym 2010, 126).

3.1 Localization According to LISA

LISA is an acronym for Localization Industry Standards Association. It was a Swiss based organization setting the standards for localization and translation of computer software. LISA was established in 1990, however it shut down its operations in February 2011 and European Telecommunications Standards Institute took over their duties. (Telecompaper, 2011).

LISA (2007) and Pym (2010) described the key terms localization, globalization and internationalization as following:

Globalization also referred to as g11n (which stands for the eleven letters between the initial letter G and the last letter N) concerns the issues connected to taking a product global. Globalization consist of two inevitable parts which are localization and internationalization (Pym 2010, 122).

Localization also referred to as L10n concerns creating linguistically and culturally appropriate product for the desired target locale (Pym 2010, 122).

Internationalization also referred to as i18n concerns generalizing the product into the global standard so it can be used in different countries without breaching any cultural conventions and without the need to redesign the branding of the product (Pym 2010, 122).

3.2 The Term Localization

The term localization comes from the Latin word “locus” which means “place” in English and the English term “locale”, which stands for “a place where something happens or is set, or that has particular events associated with it” (Oxford Dictionary 2016). Localization was probably not thought of as localization when companies started adapting their software for other locales. The term localization was coined by the DEC (Digital Equipment Corporation) in 1980 (W3C 2016).

3.3 A Locale

According to Pym (2010), a locale is a set of linguistic and cultural parameters from the selected target market. This term replaces the phrase target market, target culture or target language. In the field of computing a locale means a set of certain parameters that describes the end-user’s language and region, and any other preferences of the user interface. (Pym 2010, 121). However the most common perspective perceives locale as a target market or a country.

3.3.1 Internationalization

Due to the planning and the company's forecast of expansion, the company can avoid using any of the locale specific features of the software and create a so called internationalized version of its software (Pym 2010, 123). This software is at first ready to be translated and right after localized to the locale desired according to the initial plan. It is necessary to emphasize the need for planning, because the process of internationalization is a time and money saver as every particular localization for the selected locale is rather costly to perform. Combined with internationalization from both globalization and localization point of view, it is a product omitted of cultural and locale specific features (Pym 2010, 123).

3.3.2 Different locale specific features

- Different formats expressing time, the US region uses month-day-year format whereas the rest of world where English is used prefers day-month-year format. The Chinese English on contrary puts the year in the front. (Pym 2010, 122)
- Different number formats. English number 2,200.02 would be 2.200,02 in Spanish. (Esselink 2003, 28-35)
- Different phone number formats.
- Different punctuation, for example the Slovak letters š, č, ľ, á, é, ä, etc. Capitalization of certain letters in different languages is also important.
- Language specific grammatical rules (Munday, 2009)
- The standard when writing a currency is to use the currency sign before the amount.
- Some languages are writing and reading right to left.
- Different allocation of hotkeys as English is using the keys ctrl + O to open a new document whereas for example in Spain the standard hotkey to open a document is ctrl + A as "abrir" means open in English (Pym 2010, 122).
- The color or layout of user interface.
- Specific legislation and environmental laws that have to be obeyed.
- Local customs and conventions, taboo pictures, words and topics (Pym 2010, 122; Esselink 2003, 28-35).

3.4 Localization team

Localization itself is costly and employing a whole localization team is probably expensive (Shang and Lin 2010, 57-77). Some companies opt to employ their own localization team and some actually prefer to outsource different localization teams or at least parts of it. Let's focus on the localization of software. If the company performs localization independently there is a need for at least one or two translators depending on the length of textual part of the selected software (Shang and Lin. 2010, 57-77). For example a software that carries out accounting probably does not require to have a lot of translators as the textual part of the software is not necessarily lengthy (the user's manual could be the longest text to translate). However there is also an industry which possibly requires a lot of translators. Video games have lengthy texts which require a lot of translations, depending on how long the game is. In that case, the localization would not just include the user interface, however the whole story to be translated. Let's focus on specific games and genres. For example the World of Warcraft MMORPG (Massive Multiplayer Online Role Playing Game) series has its own unique story and a series of books, therefore such a "software" requires a lot of translation. Video games often release patches, require fixing bugs and add new options in the game, all of which need to be localized too.

After the translators translate the textual part, and fix all the linguistic and grammatical errors, developers of the software may start replacing the parts of the software and if needed, adjust the software if the translation somehow disturbs the software, e.g. when the translated text extends from the original position in the software.

3.4.1 Outsourcing in Localization

Smaller companies should logically prefer outsourcing the localization as it is easier to outsource a localization team than to look after and assemble own dedicated team. With the rise of the localization since 1980 (Pym 2010, 121) a market opportunity arose and companies focusing on localization started to be established (Moravia 2015). These companies often offered the whole localization process of a software and other products like websites. However sometimes the company that wishes to enter a new locale has the professionals in the field of software development and marketing, and only seeks the translator to translate the textual part of their software, or the company carries out the

translation on its own and only outsources proofreading, which might be cheaper than the whole translation.

3.5 Tasks in Localization According to Pym

Pym (2010, 135) and Esselink (2006, 17) described the processes in software localization as following:

- Analysis of the received material
- Scheduling and budgeting
- Glossary translation or terminology setup
- Preparation of the material for translators
- Translation of software
- Translation of accompanying documents
- Processing updates
- Testing a software
- Testing of the accompanying documents
- Product QA and delivery
- Post-mortem with client

Translation is in fact only in two of the steps in the localization process. Most of the processes do not actually include translation. Before the translation, precise planning is required and a correct allocation of capital needs to be raised. The costs of translation in the whole process of localization is just a one-third according to Pym (2010, 135). The rest of the costs is spent in the product engineering and project management. Planning is even more important if a company like Microsoft plans on launching a new software in several countries at the same time. As mentioned before, the pure process of translation might be outsourced by an external company, however, the material has to be prepared in advance for the translators. After the translation of the textual part of the text has been done, the translated text can be implemented in the software. Testing is inevitable to ensure the software works properly in terms of usage and also in terms of correct translations and language. Proofreading has to be done, since the human factor is not one hundred percent accurate. Proofreading is even more important if the translation was carried out by a computer. So called computer translation is often referred to as CAT (computer-aided translation). CAT software saves up time for translators by saving previous translations to translation memory. The software then translates future text according to the saved

translation memory. What translator would normally find inappropriate, for example an incorrect translation from the translation memory since some of the words are the same and mean completely different things (*bank* as a financial institution and *bank* as an area near the river), computer cannot recognize (Oxford Dictionary 2016). Therefore after proofreading has been done the utility test can begin. Testing cannot be omitted from the process as the software might not work properly e.g. the software is not able to read or display a certain letter or sign like the Slovak “ä” which causes the software to omit this sign or replace it with an unreadable sign. In some cases, depending on the software, the inability to recognize some of the target locale special signs, the software might even crash. The proofreading and testing also includes the accompanying documents too (Pym 2010, 135), like the user’s manual. The company also needs to be able to go through this process with their updates. As Pym mentions, the so called “Post-mortem with client,” a discussion, is necessary as the feedback is an invaluable part of improving the software (Pym 2010, 135).

3.6 Generalized Process of Software Localization

Referring to Pym’s (2010) tasks involved in localization, a generalized process of localization can be assembled. Depending on the software that is being localized and the level of resemblance to the source locale, a standardized version of the software needs to be developed. This process is called internationalization. If possible, before developing the software for the source locale, company should in advance think of the markets it wants to expand to. Otherwise the process of internationalization might be costly just as much the initial development of the software. Therefore internationalization might follow before or after the initial planning.

Once the strategy has been assembled the company should start preparing the material for translations. Textual parts of the software should be translated, just as all the accompanying documents affiliated with the software, for example the user’s manual. After all the textual parts of the software had been gathered, depending on the length of the texts a translator or a group of translators proceed to translate the text. The translation however does not have to be carried out by the company itself, it is fairly common to have the translation process having outsourced by and external company as it is often cheaper. Once the translations had been finished, testing of the product can begin. The first test involves proofreading of all the translations. After looking for any kinds of language related errors

like grammatical mistakes or inappropriate translations from computer-aided translating, the software undergoes utility testing to find out whether the software works as intended and no translation is causing an error or a bug. The post-translation and post-editing process could be considered a quality assurance for the company (Pym 2010, 135). Once the software had been tested, the company should test it with a wider audience or to release the software and wait for the feedback from clients.

Even though localization sounds like a one-time process, it is a rather cyclical process. If any kinds of patches or bug fixes are being released, or the software is just being updated to a newer version, the company needs to be able to translate all of the new content that has shipped in the latest update.

II. PRACTICAL PART

4 METHODOLOGY

The practical part of this thesis consist of data collected from the semi-constructed interviews with two experts from the field of localization. The interviewees were asked the same questions and considering their answers, additional questions were asked to further develop their ideas and opinions. Interviewees expressed had expressed a desire to remain anonymous in this thesis because of the non-disclosure agreements signed to their respective employees. The interviewees are therefore labeled as **interviewee A** and **interviewee B**.

Both interviewees were asked the same questions as stated further below. Depending on their answers further explanations were asked to fully understand the point of their ideas. The interviews were oral and the author of the thesis expressed their answers in the practical part of this thesis. The practical part works with opinions of the specialists and then concludes with a general idea assembled from both opinions on every part of the process of software localization, eventually adding a possible improvement of their ideas. The questions used in the interviews were following:

- What is localization?
- How would you describe the process of localization?
- What is essential in the process of localization?
- Localization is often mistaken with translation. What is the difference between localization and translation?
- Which partial processes does the process of software localization include?
- To which part of the software localization do you assign the biggest importance?
- How many members does a localization team require?
- What are their roles within the team?
- Is outsourcing common in localization?
- Which processes are being outsourced the most?
- Do companies try to internationalize their software to make the localization easier?
- What are the most common problems faced during localizing a product?
- How important is marketing in the process of software localization?

4.1 Interviewees

Interviewed experts from the field of localization were **interviewee A** from the Slovak ESET s.r.o. and **interviewee B** from the Czech Moravia IT s.r.o. Both of them have four years of successful localization practice in the respective companies. This thesis was written in cooperation with these experts because both companies perform localization in a different way. ESET tends to perform localization itself, whereas Moravia IT is a company that performs localization for other companies.

4.1.1 ESET s.r.o.

ESET s.r.o. is a Slovak based company established in 1992, focusing on developing a protecting software for computers against threats like viruses, spywares, malwares and other infiltrations that are threatening computers. ESET saw a quick rise in the international market as it was the first company to start distributing its security software abroad other than Czechoslovakia. In 1999 the first office was setup in North America, San Diego and ESET LLC was established. ESET became extremely successful in the American region and just five years later after establishing a company in San Diego, ESET expanded to Latin America in 2004. Since then, ESET expanded to the Asian region and received numerous awards regarding their security software, being one of the most successful company among the providers of security systems. Up to day, ESET employs roughly around one thousand employees and has set up a new technological center in Montreal, Canada (ESET, 2016).

Since ESET has succeeded in expanding to other markets and maintained to keep the leading position in the market with several products being rated as one of the best choices, conducting a research with localization specialist from ESET expects to bring a lot of ideas and opinions on the process of software localization, since ESET's products are mostly software and they have successfully localized to their intended target locales.

4.1.2 Moravia s.r.o.

Moravia s.r.o. on the other hand is a company that focuses solely on translation and localization. Moravia carries out translations, product localizations, web localization services in up to over 170 languages, testing and engineering services, international releases, internationalization testing, functionality testing, planning and development, and overall assurance of quality development (Moravia 2016).

Moravia s.r.o. is a Czech based company founded in 1990 by Tomas Kratochvil. Its headquarters is situated in Brno, however throughout its life, Moravia has expanded and is now a well established international company ranked 20th biggest language service provider since 2004 (Moravia 2016) in the world with a lot of awards and international achievements like “*Best Company According to the Globally Recognized D&B Standards*” award in 2005, “Microsoft’s Quality Excellence Award” in 2012 or “Microsoft’s Cost Management Award.” Up to day Moravia employs around 1100 employees worldwide with offices being set up in United States, Ireland, Japan, China, Argentina and Hungary (Moravia 2016). Moravia works in the field of localization for more than twenty years, therefore the interview with their employee from the field of localization should be able to help assemble the process, by which the software are localized and give their opinions and ideas about the process itself.

5 THE PROCESS OF SOFTWARE LOCALIZATION

Interviewee A defines the process of localization as a complex task of successfully penetrating the target locale. The process itself is defined by **interviewee A** as delivering the right product at the right time, with proper features common for the selected locale. However the localization does not end just with the localization of the product, but with the ability to deliver a proper quality assurance and testing while the product is being localized. The success of localization can be measured by the amount of sales and profits from the target locale.

Interviewee B describes the software localization process as omitting all the culture specific features of the initial locale, or successfully customizing these features to fit for the target locale. As an IT engineer, he believes that companies should develop their software internationalized to prevent costly re-development of the software interface and the software itself.

5.1 Translation versus Localization

For **interviewee A**, translation is a partial process of the overall process of localization. As stated in the theoretical part, translation is a minor process, a task that is being outsourced the most among all the other processes. **Interviewee A** believes that translation should not be mistaken with localization as localization requires much more than just a simple textual translation. He claims that translation is just a work with a text, whereas the localization, additionally to the translation of the textual parts, is also about customizing the non-textual parts of the software including colors, navigation menus, how the text is read in the selected locale (left-to-right or right-to-left). In such cases, the software has to be often rebuilt again, what requires IT engineers and is again really costly and time consuming. He also believes that localization specialists do not have to be translators as he is not a translator. He thinks that localization specialist are often people who are just supervising the process, deciding about the budgeting and about allocation of human capital. Translator on the other hand has to be a professional in term of understanding the language. Therefore localization is a much more complex task than just a simple text translation.

Interviewee B mostly agrees with **interviewee A** on the part that translation is often just a minor process of localization, however states, that it depends on the length of the textual part of the software. **Interviewee B** also does not consider translation to be equal to

localization and puts localization as superordinate to translation. Just like **interviewee A**, he states that the process of localization is much more complex and carries much more task to be done than just a simple translation of text for example for newspapers. Localizations of software are conditional to the interface requirements, whereas the translation of a book mostly does not take into consideration the overall length of the book. In software localization it is essential to come up with a proper translation that fits to the software. If it does not, it is inevitable to adjust the software or the translation.

Concluding the opinions, both interviewees agree that localization is superordinate to translation as translation is just a minor part of the overall process of localization, however they both admit that proper translations are inevitable. Translation and localization are closely connected but should not be mistaken with each other.

5.2 Planning is the Initial Process of Software Localization

Upon being asked, which of the processes in the process of software localization is the most important, **interviewee A** answered that it is not possible to omit any of the partial processes from the overall process of software localization, however, he admits that planning is the essential part, that has to be done in advance before launching a certain product or before localizing the product. The company has to firstly decide about their business plan, model and target customers, because a decision to go global in the later stages might come at a high cost because of re-development of the already established product. He states that a modern companies nowadays often develop their software internationalized, because they carefully consider expanding to other areas. He mentions two types of planning: the initial planning when establishing a company and a product, and the particular plan on localizing the product. The initial planning when launching a new product is rather easy to understand as the software is already being developed internationalized, therefore the localization should be easier. The plan of localizing a particular software involves research of the target locale, budgeting and proper allocation of human capital. Only after assembling a plan the company should decide to initiate the localization, as **interviewee A** mentions that a lot of companies he knew, had failed to localize their product, because they did not planned the localization properly or underestimated its costs.

Interviewee B mentions that planning is inevitable part of the localization team. The leader assigns tasks to the member of the localization team and they depend on each other.

He mentions that their localization team works as a unit and translators are in direct contact with the IT engineers. Deadlines are important because the IT engineers need to have the translations available so they can start customizing the software. Every part of the process has its own due date so that the software can go through a proper testing before being sent for approval to the customer.

5.3 Assembling and Analysis of the Material

Once the planning has been done, **interviewee B** mentions that the material for localization has to be properly analyzed. The materials often include user's manual and other guides for the customers. Therefore, not just the software is being translated, but all the accompanying materials. Once the localization team received the textual parts of the software, it is essential to analyze them in advance before the translations can start, to see where the translations belong to. **Interviewee B** claims that the source language terms and texts are often divided into groups according to where the source term is being situated, whether it is within the software, user's manual or on another accompanying material. This often saves work for example for translator to know, when they have to use a smallest space consuming translation possible, because they know in advance that this translation has to fit within a certain tab in the interface. Depending whether the company does the localization itself or the localization is being outsourced, the process differs a little bit. Once the company outsources the localization, they gather the materials and send them to the company that does the localization for them and the analysis is done by the company that perform the localization. On the other hand, when the company performs the localizations themselves the assembling and analysis of materials is up to them.

Interviewee A mentions that there are two types of companies. Companies that prefer to do localization themselves and the ones that outsource the process. In both cases it is inevitable to provide all the important parts of the software to perform a proper localization, so that some part of the software had not been omitted. Localization within the company is easier in the sense that the company and the employees are familiar with the product, therefore the part of gathering and analyzing the materials is less time consuming.

The gathering and the analysis of the data is another essential part of the software localization process and depending on the preference of the company, whether to outsource or perform the localization themselves, the analysis and gathering of data might take different amounts of time. However, both questioned agree, that the assembling of

materials and the analysis is not a lengthy process. Depending on the localized software, the analysis can be done even within one working day.

5.4 Translations

According to **interviewee B**, translating is the first process that follows after the analysis of the material. Once again, depending on what kind of software is being localized the translations have a different schedule and are carried out by a different number of translators. A localization team can possibly work with just one translator, however **interviewee B** does not advise having just one translator in a team, because when the translation can be done just by one translator, the localization process might be of a more cost (talking about outsourced localization). In such case, the localization could be done, saving resources, by the company itself. **Interviewee B** mentions that a localization teams should have at least two translators at a time because of the division of the work, and then perform a proof reading of each other's translations.

Interviewee A says that companies like to outsource the translation of textual parts of the software because it is costly for companies to employ its own translators, therefore outsourcing translators is economical. In practice, a company focusing on distributing different types of gardening tools should surely outsource translating, rather than do the translation itself as they are [mostly] not good at translations, as **interviewee A** gives an example. **Interviewee A** adds that almost everyone speaks English up to this date and translating to English is not an obstacle for most of the companies. They are often sufficient in translating to English, but that the concept of translating should be connected to another language, that is not commonly spoken and the need for a proper translation can be understood better. He also further elaborates that a proper translation done by a professional translator is inevitable in certain areas like biochemistry, high-tech engineering or pharmaceuticals or any other terminology specific field. Therefore it is better to have a professional translation because a misleading translation does not guarantee high quality services and thus the company might lose customers.

Considering that an external company outsources localization for other companies and has several teams that focus on different clients, resources could be saved by performing proof reading within the whole localization teams, not just between the translators of one localization team. One localization team proofreads the translation of the other team. Such case would however require a great synchronization and synergy between the teams as they

might not be assigned work that has the same deadline. That would mean just an additional task for the translator and might slow them down on their own project.

Even though both interviewed mention translation to be a minor process in the process of software localization, proper translations should be emphasized by the supervising managers as the companies highly appreciate customer satisfaction and do not want to lose customers because of unprofessional translations.

5.5 Software Engineering, Customization and CAT

Interviewee B mentions that depending on the target languages and the software that is being localized, different approaches can be used in implementing the translated text into the software. It is not so common to be provided with the software's source code, but sometimes it is inevitable to adjust the software in order to fix a translation that does not fit into its tab or the software does not recognize a certain locale specific character. In such cases it is inevitable to adjust the interface as finding a different appropriate translation might not be possible.

More common than manually adjusting the software, **interviewee B** answers to use different software intended for localization or software that helps translators translating faster- CAT. Such software creates a memory of previous translations and terminology and once the software finds a match, the translator does not have to translate the text manually again, because they had translated it already in a different text. The translator just proofreads and eventually confirms the translation.

Furthermore, more specialized software had been developed on the bases of CAT. Such software is for example Babylon.NET which greatly enhances the process of localization. This software reads the resource files from the original software and offers columns to translate and replace the original text from the file and therefore immediately replace the text in the software. It has almost the same looking interface as CAT software such as Trados or MemoQ, with the path to the file displayed, translation status column and a quality status column. The remaining columns are the original text from the resource file and then columns for different language translations. The interface of the Babylon.NET software is portrayed on the *Picture 1* below. This software works as a good outsourcing solution for freelancer translators as it is possible to include the original file in the software and send it to the translator. The translator just opens the software, enters the translation for their target language and send the file back to the sender. Once all the translations have

been collected, the responsible person can merge all the translation into a language folder. Once an option to change the language is implemented in the software, it uses the path to the file with the target translation and the language of the software changes (Redpin, 2016).

Name	Filename	Translation status	Quality status	(Custom) (Blanks) (Non blanks)	(Invariant country)	German [de]	French [fr]
gridColumn1.Caption	TranslationMemory\...	Do not transl...				gridColumn1	gridColumn1
gridColumn2.Caption	TranslationMemory\...	Do not transl...				gridColumn2	gridColumn2
gridColumn3.Caption	TranslationMemory\...	Do not transl...				gridColumn3	gridColumn3
helpBarButtonItem.Ca...	Common UI\MainFor...	Partially tran...			Hilfe	Hilfe	Aide
horizontalScrollBarChe...	Common UI\MainFor...	Partially tran...	To review		Horizontales Scrollen	Horizontales Scrollen	Défilement horizontal
toolTipTitleItem1.Text	Common UI\MainFor...	Translated	Approved		Import	Import	Importation
importBarButtonItem...	Common UI\MainFor...	Translated	Approved		Import [Ctrl+I]	Import [STRG + I]	Importation [Ctrl + I]
toolTipTitleItem18.Text	Common UI\MainFor...	Partially tran...			Import resource strings	Importieren von Ressourcenzeichenfolgen	Importer des chaînes de ressource
\$this.Text	Common UI\ImportDL...	Partially tran...			Import resources from another project	Importieren von Ressourcen aus einem anderen Projekt	Importer des ressources d'un autre projet
toolTipItem18.Text	Common UI\MainFor...	Partially tran...			Inconsistency wiewewth translation memory. The translation memory translates this text to '{0}'!	Inkonsistenz Wiewewth Translation Memory. Das Translation Memory übersetzt diesen Text '{0}'!	Mémoire de traduction wiewewth incohérence. La mémoire de traduction ce texte à « {0} »!
btxt_vfy_TMConsistenc...	Properties\Resource...	Partially tran...	Error		Inconsistent translation. The invariant text for this locale has been translated to different locale versions.	Inkonsistente Übersetzungen. Der invariante Text für dieses Gebietschema wurde in unterschiedlicher Gebietschemaversionen übersetzt.	Traduction incompatible. Le texte invariant pour cet endroit a été aux versions des paramètres différents.
btxt_vfy_ConsistencyE...	Properties\Resource...	Partially tran...	Auto translated		Increase	Erhöhung	Augmentation
increaseFontBarButton...	Common UI\MainFor...	Partially tran...	To review		Increase or decrease the font size of the main grid view	Erhöhen Sie oder verringern Sie den Schriftgrad des der wichtigsten Grid-Ansicht	Augmenter ou diminuer la taille de police de l'affichage de la grille principale
toolTipItem25.Text	Common UI\MainFor...	Partially tran...	To review		Indicates if the cursor should move to the next row or the next column when pressing.	Gibt an, ob der Cursor beim Drücken auf die nächste Zeile oder die nächste Spalte verschoben werden soll.	Indique si le curseur doit passer sur la prochaine ligne ou la colonne suivante lorsque vous appuyez sur.
toolTipItem2.Text	Common UI\Settings...	Partially tran...	Auto translated				

Picture 1. Babylon.NET user interface (Redpin, 2016)

Babylon.NET software and other CAT software provide an option to inform the translators whether the supervisor considers the translation to be proper. The supervisor marks which parts need to be translated and can see the progress of translator in the translation status column. The quality status column indicates whether the translations have been approved by the supervisor or whether they possess any errors. This column also includes information for supervisor to see which parts of the translations are ready to be reviewed or which translations have been done by the translation memory. The translation from the memory have to be also reviewed because the software might happen to use a word which is not appropriate in the particular translation.

Interviewee A confirms that adjusting of the software is often inevitable in order to achieve a properly working version, but that differs with different types of software. When outsourcing the localization, it is more suitable to use methods that do not interfere with the source code of the software. He also mentions that modern companies tend to omit the process of translating by giving it to an external company and then work only with the translated part of the text.

5.5.1 Internationalization in the Software Developing Process

Interviewee A mentions that the most effective way to localize a software is to begin in the early development for the initial market by omitting all the cultural and locale specific features of the software so that it is easier to translate this software for example in the Babylon.NET software. The modern approach is to internationalize the software from its beginning and to logically build up the files in order to make the translation as easy as possible.

Interviewee B agrees that internationalized software are much easier to localize as the software had been prepared to be translated in advance and greatly eases the work of both translators and software engineers. He mentions that internationalization of a software that has not been developed to enter international market and was not prepared to be localized, is not effective in all cases. It depends on the company's plan of expansion. **Interviewee B** further develops the idea that certain companies do not actually wish to expand to different target markets and focus on localizing just to one target locale. In such case the sole localization is more economical as the company only outsources the translation process and thus does not need to rebuild their software to be internationalized.

Considering both opinions, the overall work with the software should be omitted to a minimum and interfering to the source of the software is just a last resort when there is no other option available. The use of software greatly helps translators to save time as CAT software like Trados, MemoQ or Babylon.NET save the previous translations into the translation memory. The translations from the memory are then offered as a translations for similar texts in the future.

5.6 Outsourcing in Localization

Speaking about outsourcing in the previous steps, both interviewed agree that outsourcing is common in the process of software localization. According to **interviewee A**, the most common task that is being outsourced is the translation itself. The company does not have the capacity to employ translators, especially when localizing to multiple areas, outsourcing comes as an economical solution. The problem **interviewee A** mentions regarding outsourcing is that a company has to often reveal its know-how to an external firm. Therefore the selection of external localization services is carefully considered by the management.

Interviewee B, working in a company that does outsourcing for other firms, agrees and adds that with such approach, it is easier for the initial company to focus on other important tasks or just the usual operations. Some companies tend to outsource just the translations, other cooperate with the external firms in the long run. The size of the company also affect the decision making whether to outsource localization or build up a localization team. **Interviewee A** mentions Microsoft or Google as examples. Both Microsoft and Google have thousands of employees and one of the highest profits among the IT companies. Such companies can or rather should, as **interviewee A** emphasizes, create localization teams as it is more beneficial for them to have a dedicated amount of people to take care of the localization planning and processes. Smaller companies should carefully consider creating their localization team, he adds.

Outsourcing can be considered common, mostly regarding the translations because companies do not want to share their know-how with external firms. The decision whether to outsource localization is also affected by the size of the company as **interviewee A** says that smaller companies should opt to outsource and larger companies should consider creating own localization teams.

5.7 Testing and Quality Assurance

Before releasing the localized software, it has to be properly tested for errors and other undesired faults. Testing differs from the types of software as **interviewee B** points out. As mentioned before, video games are often difficult to localize not just because of the textual parts, but the testing itself. It is hard to test every single part of a complex game and it is common that some parts of the software are unintentionally overlooked.

In practice, there are different types of faults. **Interviewee B** mentions the most common ones to be crashing of software, faulty translations or translations that the software cannot process (mostly with locale specific characters). In such cases it is essential to identify the problem and either notify the developer about it or fix it by changing the translation. A common way to fix an unreadable character is to implement a Unicode character reader.

From the marketing point of view, **interviewee A** mentions the quality assurance as an inevitable part of localization. After testing the software and the final release of the localized version, it is essential to listen to feedback from the customers to further adjust the software. If the customers are satisfied, there is a potential to attract new customers.

Therefore the localization team needs to be ready to deliver updates and patches for the software. Fixing faulty parts of the software might often require further development because the original software does not support the desired functions.

5.8 Localization Team

Interviewee A's opinion on how many members the localization team requires differs from **interviewee B**'s. **Interviewee A** thinks that localization can be performed by three people, the supervisor, translation and marketing specialist, and software engineer. The supervisor assigns tasks to the translation specialists and the software engineer. Then it is up to the translation and marketing specialist to decide whether to carry out translation themselves or outsource the translation process. He mentions the same for the software developer. The outsourcing however depends on the budget available.

Interviewee B on the other hand thinks that a localization team should have a supervisor, at least two translator, marketing specialist, two software engineers and a project manager. The number of members in the team should be flexible in cases of large localizations, for example hiring more translators or software engineers.

5.9 The Final Software Localization Process

According to the data gathered from the interviews with specialist in the field of localization the following software localization process can be created:

- Planning and budgeting of the localization
- Gathering of the data required for localization
- Gathering and distributing textual material for translators
- Translating the textual parts of the software
- Proofreading and testing of the software
- Release of the localized software
- Quality assurance, delivering updates.

CONCLUSION

This paper focused on assembling a process of software localization from two perspectives. The theoretical part of the thesis dealt with the reasons and different approaches among companies that wish to expand, operate internationally or penetrate target markets. Depending on in which way their software was developed and the size of the companies, they have to consider the most effective way to attract the customers in target locale. Modern companies tend to develop their software already internationalized, what makes the localization easier. Internationalization is the process of omitting all culture and locale specific features of the software. The goal of localization is to internationalize and localize the software and create a global brand for the company. The practical part consists of research done among with the specialists from the field of localization. Together, a modern process of software localization has been assembled with their opinions on the current trends, like using CAT software which saves time for the translators or even special software like Babylon.NET developed especially for software localization. Besides assembling a modern process of software localization, this paper also considers the possibilities of outsourcing and enhancing certain tasks of the process.

Even though the literature regarding localization might be considered outdated, the process of software localization remains almost the same as Anthony Pym and Bert Esselink described it in their works. The technology develops quickly, but had not developed so far yet to change the process of software localization described by Pym and Esselink.

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LIST OF ABBREVIATIONS

CAT	computer-aided translation
ČNB	Czech National Bank
DEC	Digital Equipment Corporation
g11n	globalization
GILT	globalization, internationalization, localization, translation
i18n	internationalization
L10n	localization
LISA	Localization Industry Standards Association
LLC	Limited Liability Company
MMORPG	Massively Multiplayer Online Role-Playing Game
NPC	Non-player character
s.r.o.	Limited Liability Company
US	United States
W3C	World Wide Web Consortium

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