

# LOCALIZATION CHALLENGES

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# INTRODUCTION

This document describes the localization process, as well as all the technologies, problems and methodological issues involved with localization. It should be used as a reference guide to the various processes, functions and areas of localization for anyone seeking to expand their knowledge over the subject. It is more of a factual document than that of opinion, and should be used as a study on the topic of localization.

As far as most of the IT industry is concerned, the term “localization” means translation plus “some other things”. In fact, translation is no more than one part of the entire localization jigsaw puzzle, sometimes not even the most important one.

So what is localization? Though the definition varies somewhat throughout the industry, we believe that the following explanation describes localization fairly well. We will try to explain it in further detail later on in the document however, the ‘simplest’ definition of localization is: the full adaptation of content for a local market during the translation process. Localization requires the understanding not only of specific local markets, but the understanding of actual content surrounding a given industry and/or culture. Localization and translation are codependent and because of that, they require much focus and strategy. As such, this document also attempts to familiarize the reader with issues related to the strategy of executing localization projects within IT companies.

Furthermore, this text aims to answer the question that many people in IT frequently ask themselves: What resources and technologies do we need to carry out localization projects?

## WHO NEEDS LOCALIZATION

If a producer wishes to sell a product in a given market, he has to provide relevant product information in the language spoken in that country, regardless of whether his product is a complex ERP system worth \$100,000 or a hair shampoo priced at PLN 3 zł.

Obviously, if a region specific translation is not available, all such products or items will lose consumer interest and encounter market entrance barriers. This can occur because anyone remotely interested in a purchase, would be immediately discouraged from buying the product if he were unable to read the instructions manual or even figure out what the item is. The best that the producer could hope for in such cases would be that the product marketed in English to an Eastern-European region, would find some English speaking residents of the region or English speaking tourists tempted to purchase it.

Although it is true that some items could sell even without English manuals or English labels, it is hardly likely, that revenues would exceed costs incurred in most cases where the product did not have a localized marketing campaign.

Unfortunately decisions as to whether or not to localize a given product tend to be based on the estimated cost of such ventures and the benefits (increased revenues/sales) they would generate, instead of on the assumption that localized products will find a larger target audience.

## WHAT IS LOCALIZATION?

As stated previously, when one localizes a product/service, he adapts it to the requirements and standards applicable in another country.

However, in order to understand the term “localization” fully, we first need to understand all of the parts of the localization process.

### Localization Process:

Translation of all terms, abbreviations, symbols and units (in short, all language specific components) into the language of a given country (for example, when dealing with software, we translate the user interface, online help, messages that may be displayed, and all documentation).

- **Localization of Graphics:**

Any graphics appearing in the project material must be adapted to conform to standards in the target culture and language. All words in graphic files must be translated. The same goes for all cultural symbols (flags, clothes, etc.). This typically involves replacing the existing graphics with new ones, e.g. when the ‘symbols’ sent for translation represent people of different skin color from the target region, flags of a given country, characteristic road signs, or even vegetation characteristic for the climate prevailing in a given country, all of these have to be adapted to fit the target culture.

- **Audio Localization:**

Websites and all kinds of electronically published materials feature an increasing number of audio elements. Audio localization is a process that requires substantially more work compared to standard translation of an html document. Even a simple voice-over with the voice of a single commentator requires a professional recording studio, a commentator, a sound engineer, a director (for more challenging recordings) and digital sound processing after the recording.

- **Cultural Adaptation:**

This is particularly important for website localization. The message addressed to visitors to the site must be translated in the spirit of the culture of the target country. The details of the site’s layout and its composition must appeal to representatives of the relevant culture. If a website is translated without being localized, what is generated is a site in the language of the target country, which will be perceived as artificial by a great number of visitors. Obviously, the importance of cultural adaptation varies from subject to subject, but it is always of at least some significance and should not be underestimated at any cost.

Coincidentally, certain issues are specific to training applications (what is known as e-learning). For example, all case studies must relate to the country’s culture. Jokes and anecdotes contained in the text must also be consistent with the target culture. Questions posed in the material must correspond to the rest of the translated content and be worded in such a way that the degree of difficulty is comparable to that of the questions featured in the original.

Understanding all of these elements allows one to understand both the previously stated definition of localization as well as its importance.

# ASPECTS OF THE PROFESSIONAL LOCALIZATION PROCESS

What should the professional localization process be like to ensure the success of localization projects? The following features make up the localization process:

## Quality Orientation

A native speaker of the target language should check each translation. Following the translation and proofreading, the translated text must be re-read in hard copy to identify errors that are hard to detect without looking at the translation as a whole. It is important to realize that even the best translators and proofreaders can make mistakes.

- Functional testing should be performed thoroughly to identify all shortcomings of the user interface.
- Similarly, there should also be quality control for audio recordings.

## Resources Allocation

- This includes procedures for information exchange within the localization team and among various teams co-operating on the same project, whether relating to specific terminology, reservations about substantive aspects of the project, or project-related inquiries.
- Reporting on the progress of the localization work.
- Application of specific terminology.
- Ensuring that each projects has all the necessary resources devoted to successfully complete it.

## Technology Orientation

If tools and technologies adequate to the specific project or subcontract are used, and used by people familiar with them, then everyone involved will sleep easier and be sure that it will be wrapped up on time.

Some of the tools that facilitate the automation of some parts of the work relate to:

- HTML validation
- UI tests (user interface)
- Tests for help files in .hlp format
- For help files in .chm format

## Optimization of Workflow & Project Procedure Management

- The work should be planned so as to avoid the risk of error propagation. All tasks should be scheduled in such a way as to avoid the risk of being held up by other tasks.
- Objectives will not be achieved unless all resources are allocated rationally.
- The project work should be planned with the aim of distributing the workload equally among the teams involved and making allowances for the contingencies that often arise.

# PROFESSIONAL LOCALIZATION PROCEDURE

What matters in localization is the execution procedure. The right approach to the project is bound to result in the development of a successful product. On the other hand, any attempt to execute the project without careful preparation is likely to have a negative impact on costs, deadlines or product quality, and in a worst-case scenario on all of them. So, strategize, and strategize smart!

Below is a procedure for executing a localization project. Different emphasis should be placed on different stages for different kinds of localization projects. Depending on the specific nature of the projects, some stages will be more complex while other may be less complicated.

## 1. Analysis & Assessment of the Project's Size (Sizing)

This is undoubtedly the most important part of the entire process as it affects all the subsequent stages of the localization process. Mis-analysis of specific issues can jeopardize the whole project, substantially raise the costs involved or prolong the project execution process, not to mention the negative impact that it can have on quality.

The size of the project is determined by drawing up a detailed specification of the amount of text to be translated for all the files. Even at this early stage of the project we have to be aware which files contain components for translation. A thorough assessment of the size of the project is crucial for its subsequent execution as it enables us to plan all the stages for all the components such as audio, graphics or text.

## 2. Project Plan

- The purpose of a project plan is to:
- Allocate tasks and roles to individual teams and team members
- Establish the tools to be used
- Create a project schedule
- Develop escalation procedures (what do we do when faced with additional difficulties)
- Develop procedures for information flow and exchange (between translators, software engineers/ programmers, DTP personnel and audio specialists)
- Develop a communication model within and between the various teams (and firms) co-operating on the same project
- Set deadlines for completing individual project tasks
- Establish standard forms for submitting inquiries and transparent rules for processing them

### 3. Development of Support Materials

Development of stylistic guidelines and instructions for translators (such documents can be prepared on the basis of existing templates for a given type of project or specifically for the project at hand).

Verification procedures (QA): development of adequate procedures for verifying localized material (including instructions for translators) is crucial to the final quality of the project. For example something as obvious as making sure that all hyperlinks in the translated HTML material work properly. If this task is written down as a step in the procedure, we can be sure it won't be forgotten.

### 4. Preparation of Reference Materials

Reference materials are materials available to everyone involved in the localization project, whether translators, proofreaders, engineers or testers. The general principles of preparing such materials are as follows:

The more reference materials are prepared the better. To that end, we can use older versions of documents, help strings or software tests. Obviously, should such materials not be available, where the relevant software is a new product, materials similar in substance can be used (such as similar applications, documents on similar subjects, etc.).

All reference materials should be developed with ease of access and browsing in mind. For example, creating 100 reference files will prove useless, as searching through 100 files to clear up a problem identified in the course of the project is too time-consuming. In this case, relevant documents should be combined into one, with information on source documents/files kept for further reference. For example, HTML files may be pasted into one large file using a tool incorporated in the SDLX software (all versions) or Perl script.

Translation Memory translation and terminology databases are the most important reference materials as they are the easiest for translators to access. Virtually all TM applications feature a translation memory and terminology database integrated with the editing environment for translating. This is the fastest and most convenient way to use this information. We simply block text, and by clicking the relevant key view the search results.

### 5. TM Tool Configuration

The proper way to configure a TM tool is as follows:

- Configure the segmentation rules
- Define words and phrases not to be translated or edited (e.g. proper names)

### 6. Importing into the TM Environment (conversion into the TM application format)

Importing into the TM environment means converting the file we want to translate into the TM application format.

## 7. Pre-translation (Optional)

Pre-translation is performed if we have a translation memory containing the previous version of a document, for example, or help files or software.

Pre-translation brings down the cost of translation, because text that is pre-translated only has to be proofed as part of the project.

## 8. Translation

The translation is executed using the Translation Memory editing environment, in accordance with stylistic guidelines and using all available reference materials for the project. The functionalities of TM tools increase translator output by providing shortcuts and other labor saving features. Use of TM tools also cuts the costs of both translation and proofreading.

## 9. Proofreading

Proofreading also needs to be carried out in the Translation Memory editing environment. During the proofreading process, the format of the target document should be previewed as far as possible (some TM applications have a built-in preview function, while in others files have to be exported to be viewed in the target format).

The proofreader can also view the translated text on paper to see the formatting and layout of the target document on an on-going basis. This is useful when translating documents with complex formatting or HTML pages, for example. When proofreading we use the following functions that are available to support the proofreading process:

- Terminology check (this function uses the project's terminology base to check that the text has been translated consistently with the stored terminology)
- Spell check (this function checks spelling and usually operates in a similar way to spell checks in popular word processors)
- Formatting correctness check (this function checks that the formatting of the source text has been correctly transferred to the translation; it operates at segment level)

## 10. Exporting to the Target Format

This is usually a simple conversion from the working format of the TM application to the target format. In the Trados application and when working with .rtf files, this means simply removing markers inserted for segmentation purposes. In the case of documents saved in a more complex format, this operation may not be error-free, for example when working with FrameMaker files in the Trados application.

## 11. Functional Testing

At the functional testing stage, the end-translated product is checked. The importance and length of this stage of the localization process is determined primarily by the type of the project:

- Software localization projects require compilation and testing, or testing alone in the case of binary files (.exe and .dll),
- Website localization projects, we check that all links function properly, all scripts on the site run correctly following localization, and all elements containing language-specific components have been localized.

## 12. DTP

For professional publications prepared using electronic design software, such as Adobe FrameMaker or QuarkPress, the appearance of the document as a whole is of crucial importance. Attention should be paid to details as fonts, the entire layout (respective location and captions), illustrations, headers and footers. The electronic layout of the text contains all these aspects and many more. There are certain specific issues typical for each file format.

## 13. Updating Translation Memory and Terminology Database

After all changes have been made in the course of functional testing, the translation memory and terminology databases have to be updated. This will ensure that the same mistakes are avoided in similar translations in the future. We can also be sure that the reference materials that can be created from the project will be error-free.



# LOCALIZATION SUPPORT

This chapter describes the tools that support the localization process. These tools can be used for any localization or translation project, from a simple translation of a document to the localization of complex software.

## Translation Memory Tools

These types of tools support translation and proofreading (with the use of TM databases). To learn more about how to use translation memory databases, please consult the definitions at the end of the document.

Translation tools can be used to:

- Translate files in virtually any format
- Do a word count of text to be translated in one or more files
- Create and edit the content of Translation Memory – TM
- Create and edit the content of Terminology Databases – TDB

There is a large number of translation applications available on the market. These include:

- Trados
- SDLX
- DejaVu
- Transit
- WordFast
- TransSuite 2000
- MetaTaxis

## Software Localization Tools

These are applications for translating files containing software components such as the user interface or application messages. Such applications include:

- SDLinsight
- Catalyst
- Passolo

These types of applications are also equipped with functions for validating (checking the correctness of) translated components. In many cases, these functions are sufficient for checking that the translated software does not contain errors such as messages that do not fit in dialog boxes.

## Tools for Testing

These applications are used to carry out tests on the user interface, RTF or HTML help texts, and also contain tools for website testing. They are useful at the functional testing stage. The starting point for functional testing is usually the consultation of error reports generated by these applications. In most cases, all detected problems can be repaired by means of the editor in the application.

Use of these applications does not render manual verification of the localized application redundant.

Such applications include:

- SDL Tool Proof
- SDL Help QA
- SDL HTMLQA

## Graphic Editors

This type of software is used for editing graphic files. The simplest example of graphics localization could be replacing the English caption with a Polish one in the format of the file that contains layers. Localization of complex graphics tends to be extremely time-consuming and requires not only excellent knowledge of graphic editors but also artistic talent.

Such applications currently available on the market include:

- Adobe Illustrator
- Adobe Photoshop
- Corel Draw
- Paint Shop Pro

# SAMPLE PROJECT

Below is an example of a typical localization project, which includes the localization of a program as well as the translation of the documentation and help strings.

The basic steps are as follows:

- 1) File types are obtained and specific related issues are examined
- 2) Selection of project tools
- 3) Project plan identifying the procedures and defining the roles of each member of the project team
- 4) Translation and proofreading
- 5) Export to the target format and functionality tests

## The Project in Brief

The localization project we obtained was as follows:

- 1) The program was created using the Delphi IDE
- 2) The online help is in .chm format (compiled html files)
- 3) The PDF documentation was created in Adobe FrameMaker

*Note: many times in software localization projects the user interface has the lowest word count for translation. Contrastingly, the UI localization is the most demanding task from a technical point of view, as testing the localized interface is usually a labor-intensive process.*

All documentation in addition to being translated will require DTP, while online help, in addition to being translated, will also have to be functionality tested.

## Evaluation of project size and adaptation of tools to be used

Suitable tools must be used to evaluate the size of the project and its subparts:

1. **For software we have the following options:**
  - If the source code of the application is available we can decide whether to translate the software in a TM application or using a localization tool (note: not all TM applications can be used to translate source code files; consult the program manual to check),
  - If the source code is not available and compiled files (.exe, .dll,...) have to be localized, an application must be used that can handle these types of files and will be able to extract translatable text. Applications of this type include SDL Insight, Passolo and Catalyst.

Each of these tools includes a word count functionality, which, after all files have been analyzed, generates the word count of translatable text in the software.

In our project, the total word count of translatable text is 5,400.

## 2. Online help in .chm format

We have a total of 2,128 HTML files that make up the application's online help. If we are using a tool with a built-in functionality for merging all the HTML files in the project into one, we can now import all the files into the TM tool. After importing them into the TM application, the project word count functionality will give a word count of translatable text. Let's assume that we are using the SDLX application: all the small HTML files are merged into one large file, after which the file is imported into the SDLX Edit Tool. The log file provides a word count for all 2,128 HTML files. We also know the number of internal repetitions, i.e. words and phrases that are repeated in all the documents. Thus we know the actual translation word count.

## 3. Documentation in the FrameMaker format

First the .fm files must be saved in .mif format so that they can be imported into the TM application. Then they must be converted to a file format that the application's editor module can handle. Most tools of this type provide a batch import functionality for files of the same type and save the results into a log file, so that even if large numbers of documents are to be translated, we immediately know the actual translation word count and the number of internal repetitions.

### Problems that can arise when evaluating the size of the project:

- If we do not have an application that can fuse all the HTML files into one or more larger files, then we have a serious problem. Translating 2,128 files one by one is feasible, but it is certainly not the optimum solution.

The answer is to create an application ourselves. This can be a PERL script, for example, or a simple executable that can be created using any software development environment or even the visual basic editor (or, more accurately, VBA – Visual Basic for Applications) integrated with the Microsoft Office suite or a DLL library with the applicable procedures.

- Problems can also arise with specific file types if our localization tool does not handle a particular file type within the project. In this case all settings for files of this type must be defined.

## Project Plan

The project plan must include:

- The time frame for each stage of the project (translation, proofreading, testing)
- Specification of reference materials to be used during the project
- All necessary documents needed for the project, such as instructions for translators, proofreaders and engineers, emphasizing issues to which particular attention must be paid
- Procedures to be followed with regard to project terminology
- Contingency procedures in case of problems
- A communication arrangement for project related information

- Standard forms for submitting project related inquiries
- Assignment of roles for each member of the localization team for the specific project at hand

Which of these documents will be required and helpful in a specific project depends, of course, on its size and complexity. For large, complex projects it is worth preparing all the documents listed above in as simple a format as possible, so that they are clear and helpful when the project is underway. Then the time devoted to the preparation of these documents will be time well spent.

If the company does not have an experienced team and is not in a position to analyze the project or prepare a project plan, it can use the consulting services of a localization agency. Localization agencies often provide these services to IT companies free of charge. It is certainly advisable to use them if the project in hand is large and technically complex (both often go together).

Investing into localization expertise will certainly be profitable: lower costs of the translation and avoiding the risk of failing to keep a project deadline.

The following reference materials will be used in our sample project:

- The Microsoft glossary, containing terminology used in Microsoft applications and operating systems
- A TM database aligned from translations of a portal with a functionality very similar to the application we are translating
- Databases of terminology related to asset management and planning
- During the project we will also be using online dictionaries available on the Internet covering related subject areas

## Execution of Project

It is important that the project be carried out in accordance with the plan prepared in advance and on the basis of the instructions developed for the project. During the project the need may, of course, arise to review some of these items, such as the time frame for a particular task.

### Translation of the User Interface:

If an application is developed in Borland Delphi, the optimum solution is to use either a localization tool or a TM tool capable of handling this file format. After translation, the text is proofread in the same environment.

### Translation of Help Strings:

If the SDLX application is used, for example:

- The HTML Utilities option is used to merge all the files into six large HTML files, containing approximately 400 source files each
- These files are imported into the SDLX application (converted from HTML into .ITD, i.e. a file format in which the translations can be carried out using the SDL Edit module)

### Functionality Tests:

Once the application is compiled, the appearance of all the windows in the application must be checked. It is best to begin this stage of the project by using a tool that can automatically detect UI faults, such as strings that are too long or elements that overlap.

Next, the entire application is manually tested by testers with instructions that point to issues specific to a particular application. The results of their work are forwarded in standard report format to the technical teams that rectify any problems.

### Translation of Documentation:

Documentation can be translated with the use of any Translation Memory application; FrameMaker format is sufficiently popular and is supported by all Computer Aided Translation tools. Proofreading, using the same reference materials, is also done in the TM application. The final step of verification of the translation is a review of the whole translation (preferably in hard copy) to spot errors or defects.

### DTP:

The last stage of the project is the final formatting of the documentation. In our example, the FrameMaker application must be used for DTP, as the original documents were developed in this format. Attention must be paid to all details, such as:

- Using fonts that correspond to those used in the source document
- Inserting localized image files
- Maintaining page layout so that the appearance of the document is the same as the original

## Summary of the Sample Project

The sample project described above covers the issues and problems that can be encountered during localization. It is important to point out here that when handling a particular file format for the first time, specific technical problems connected with translating these files are to be expected.

# CONCLUSIONS

The information and examples provided in this document leave no doubt that localization is a complex process that calls for the use of state-of-the-art technologies and a team of experienced and devoted specialists. Localization teams cannot be set up ad hoc, for example for a particular project only, as that will lead to low quality outcomes.

The volume of reference materials that members of localization teams must review is truly huge, resulting often in a very time consuming process. As such, quality localization services are certainly not cheap, but well worth the money spent.

# DEFINITIONS

## Translation Memory (TM) Application:

A TM application is a piece of software that supports the translator in the translation process.

The salient features of these applications are:

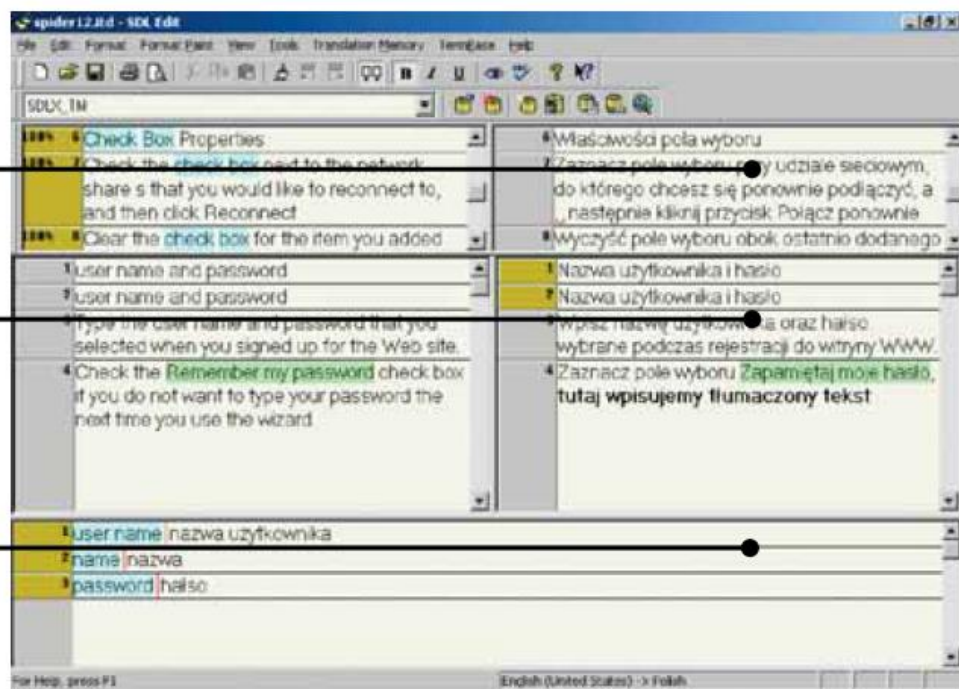
- A built-in editor in which the translated file is retrieved in a clear and easy to translate format, divided into sentences or logical units (in the case of a numbered list these are paragraphs, for example)
- The TM database search capability to find any sentence or even a word that the translator does not know how to translate
- A terminology database search capability

This screenshot of a Translation Memory application shows how easily accessible the databases prepared for the translator are. By pressing a single key the translator can search through the databases created.

Window displaying TM database search results.

Window in which translation is entered.

Window displaying terminology database (dictionary) search results.



## What is a localization tool?

It is an application used to localize elements of the user interface (including application error messages, for example). Applications of this type can be used to work with binary files (e.g. .exe, .dll) or source elements (source files in all programming languages, including C, C++, C# and software development environments, such as Borland C builder, Delphi, Kylix or Microsoft Visual Studio). Applications of this type include:

- SDLinsight
- Corel Catalyst
- Passolo

An example of a software localization environment:

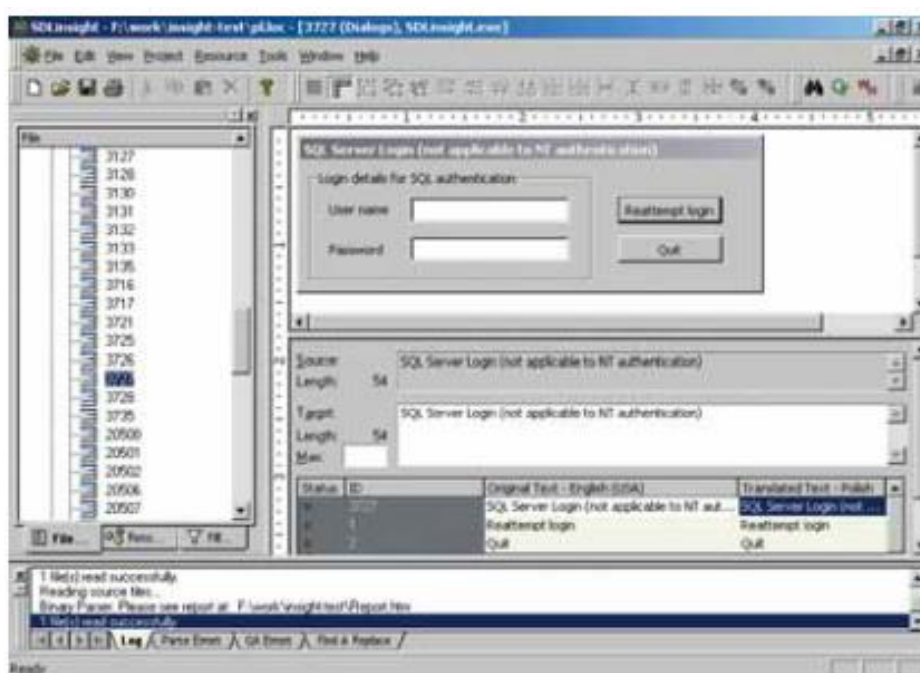


Fig. 2: Main window of a localization tool.

This screenshot shows the translation window. It is clear which component is being translated, where it is located in the dialog box and how much room is available.

Localization tools also usually offer functionalities supporting the translation process:

- A glossary (an equivalent of the TM database and terminology databases in TM applications)
- Auto-propagate functionality, which eliminates the need to retranslate identical sentences, phrases or terms

## Glossary

A glossary is the simplest type of terminology database. It contains only words and phrases and their translations. The most common glossary format is the MS Excel file, with, say, English words and phrases in column A and their Polish equivalents in column B.



## Translation Memory (TM) database:

This is a database containing translations of complete sentences or phrases. The database is created from existing translations – of software, online help (help files) or documentation. Such databases are excellent reference material – the translator can check at any time whether a sentence similar to the one being translated has been translated before.

A window in a Translation Memory editing tool:

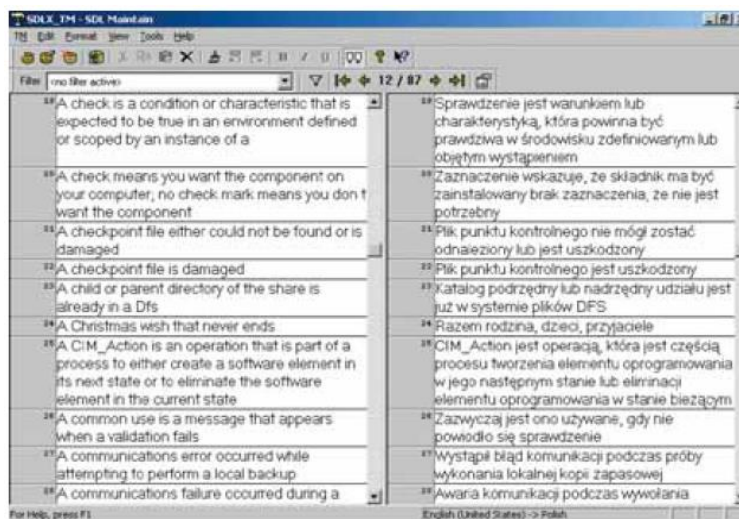


Fig. 3: A window of a Translation Memory editing tool.

The English text is on the left-hand side and the Polish equivalent on the right.

The following file formats can be imported into or exported out of Translation Memory tools:

- Tab separated text files
- MX files (a universal translation memory exchange format)
- Database format files can often be imported, such as Microsoft Access, Excel, etc

## What is localization (L10n)?

Localization, as we have already mentioned, is the conversion of a product (software, website, online help, documentation) from its source language to a target language in which the product will be used – which includes making it linguistically and culturally appropriate to the target locale.

## What is the difference between translation and localization?

Localization is much more than a translation. Translation is just one aspect of the localization process. The localization process continues after the translatable parts of the product (e.g. software) have been translated. The translated text has to be imported back into the software application, graphics have to be localized to suit the needs of the target language audience, changes to the user interface structure might have to be made, the software has to be tested, and a final QA must be performed.

## What is a CAT tool?

CAT stands for Computer Aided Translation. CAT is a technology that automates the translation process and supports translators in translating. CAT tools can be categorized as follows:

- TM tools (e.g. Trados, SDLX, DejaVu)
- Software localization tools (Catalyst, SDLinsight, Passolo)

## What is an MT tool?

MT stands for Machine Translation. This is technology used to automate translations whereby a machine does the translating instead of a translator. The translation is based on the terminology database of the application and the grammar rules of a particular language.

## What is the difference between translation memory and machine translation?

Translation memory (TM) should not be confused with Machine Translation (MT). The major difference is that in machine translation a computer translates the text, while in translation memory systems, the computer only stores translated sentences. An MT system tries to replace the translator, whereas a TM system supports and assists the translator with the translation process.

## What are fuzzy matches?

A method used in translation memory tools to identify text segments that do not match previously translated segments perfectly. This approach allows translations of similar texts to be leveraged. For example, "Click OK to display messages" is a 75% fuzzy match with "Click OK to display changes."

## What are 100% matches?

100% matches are also called full or perfect matches, and describe terms to be translated in a new document that perfectly match phrases in a translation memory database. For example, if the phrase "Click OK to display messages" in a new document for translation can also be found in the database, it is a perfect match.

## What is internal repetition?

It consists of words that are repeated within the same document (100% matches). They only need to be translated once.

## What is DTP?

DTP is formatting the layout of text and images on a computer before they are converted to paper or an online format. It also includes localization of graphics (creation and editing of graphics and diagrams).

## What are functionality tests?

These tests consist of:

- A thorough review of all the components of the GUI (graphic user interface) to ensure that they are properly presented
- Checking the correct operation of all functions available to the user

Functionality tests often require the correct configuration of the application so that all functions and options are available. Otherwise there is no way of reviewing the whole application.

Examples of faults that can appear in a localized UI:

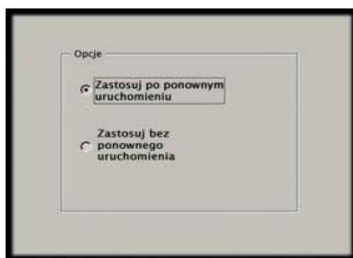


Fig . 4 The whole text is too long for the button.



Fig . 5 The description of the option button is not fully visible.

## How does a networked TM database work?

The following graph shows an example configuration for translators working with a common translation database and terminology database. All the translators are using the same TM database, even though physically they may be in different rooms and even buildings (within the same LAN).

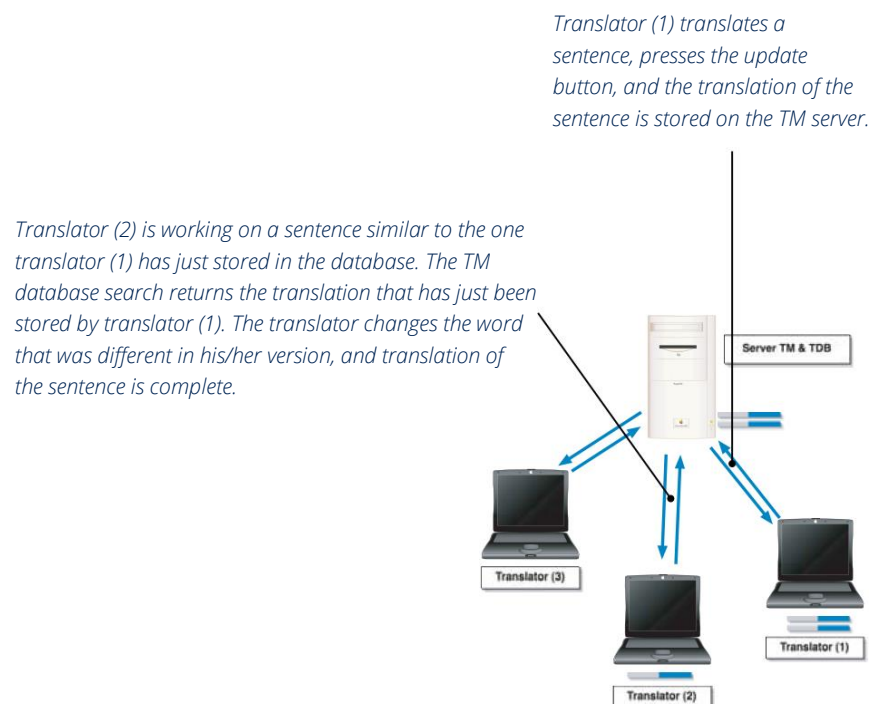


Fig. 6: A view of a window of the TM application used by the translator (1).

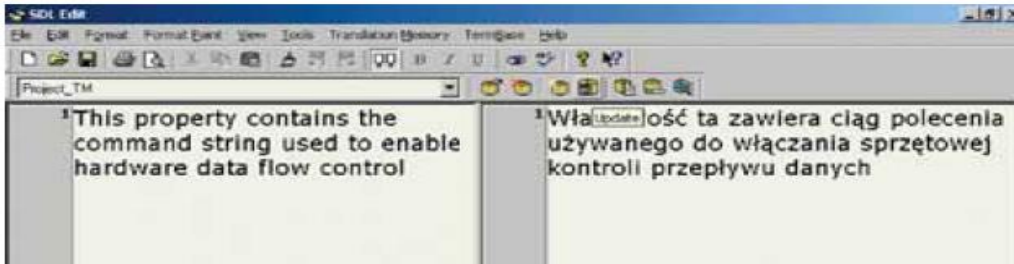
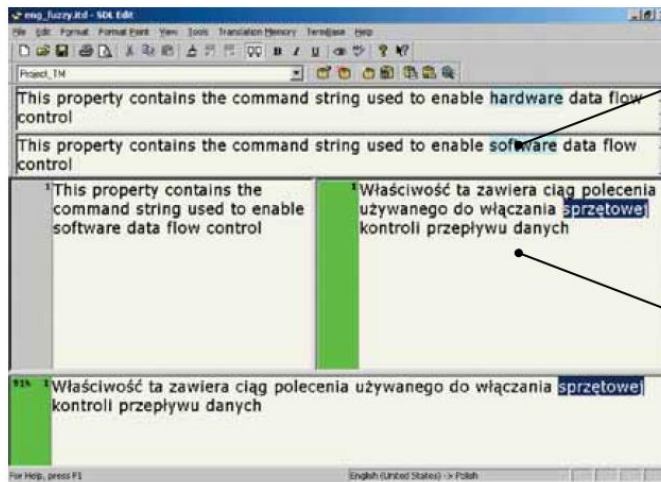


Fig. 7: A view of the window of the SDLX application used by the translator (2).



Differences between the original English sentence and the sentence being translated can be viewed. The difference is only one word, which yields a 91% match against the TM database.

The Polish sentence from the TM database is inserted, and one word is changed: "hardware" to "software", and the whole sentence has been translated. Additionally, a consistent

Fig. 8: A fuzzy match against the TM database.

As can be seen in the example, the benefits of using a TM database are maximized by setting it up in a network environment. However to set up a networked environment, the following items are needed:

- A database server
- A TM application which can be supported by the server
- The system must be correctly set up, so that the databases are updated in real time

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