

Localizing engineering

In brief



 SPA [Ingeniería de localización](#)

origins

Localization engineering appeared as a specific discipline within the localization process in the 1990s.

other names

Localization engineers can sometimes also be referred to as *technicians*. However, the term *localization engineering* describes more accurately the scope of work that these professionals perform.

abstract

Localization engineering is the field of expertise related to the technological aspects of the cultural adaptation process for content. It involves tasks such as project analysis, content extraction, file preparation, quality control, and integration into the final format.

Companies with a worldwide presence create content for different purposes on a wide variety of platforms and digital media, evolving as rapidly as new technology does. Quite often, translators, reviewers and post-editors lack the tools and the knowledge to identify and extract in a reliable and efficient manner those elements requiring cultural adaptation. That is the main reason why localization engineering knowledge is key. It facilitates the communication between the content creation stage, the language processing, and the integration of the adapted elements, which ultimately delivers the product to the target audience.


This entry describes the most common tasks where the role of the localization engineer adds value to the process. In addition, the different types of projects often requiring localization engineering are

described. A special mention is made regarding the advantages of using specific technology for process optimization, productivity improvement and linguistic quality control. Finally, we will elaborate on the skills and training necessary for a professional from another discipline in the localization industry to acquire the knowledge required for a position as a localization engineer.



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Entry



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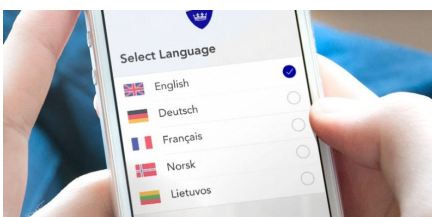
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Introduction

Since the beginning of the 21st century we have seen an unprecedented and exponential growth in the field of content creation and the associated digital distribution channels. The widespread use of the Internet, along with the astonishing development of connected devices, has made it possible for companies to expand into new markets. In this maelstrom of innovation and advancement where some technologies have had a great success, others have appeared only to become obsolete and deprecated after a short period. There is nonetheless a constant which has always grown side-by-side with the technological advancements in the digital communication sphere and that is the need for cultural adaptation.

In a frantically evolving scenario, translation professionals have also been urged to adapt to new technologies used in multilingual content creation, management and delivery. Such is the case of content management and distribution platforms ([CMS](#)), websites and mobile applications.

While [standardization organizations](#) have made significant efforts to create and encourage the use of unified digital formats ([HTML](#), [XML](#), [TMX](#), [JSON](#), [XLIFF](#)) the truth is that content continues to be created on a wide variety of platforms and digital media, as many as new technologies appear. Quite often, translators lack the tools and the knowledge to identify and extract in a reliable and efficient manner those elements requiring cultural adaptation.



Multilingual content is present on a myriad of platforms and

Even the most commonly used formats such as spreadsheets or text files can pose serious challenges in cases where content includes other elements, for example source code or non-translatable blocks. It is in such cases that localization engineering knowledge is key. It facilitates the communication between the content creation stage, the language processing, and the integration of the adapted elements, which ultimately delivers the product to the target audience. A constantly

technologies.

Source: [Techwebspaces](#).

changing environment with frenzy innovation in technology and new formats makes engineering one of the key roles in any localization team.

Since the late 1990s, the technical aspects in content management for the cultural adaptation process has become crucial (Esselink 2003). At that time, large multinational corporations such as IBM or Microsoft were beginning to work closely with translation companies that specialized in adapting computer software applications. It was also then that the first printed publications on this subject appeared and, for much of the next decade, these were a reference for a fast growing sector (Esselink 2000; Somers 2003).

This entry describes the most common tasks where the role of the localization engineer adds value to the process. Also, we will cover the skills and training necessary for a professional from another discipline in the localization industry to acquire the knowledge required for a position as a localization engineer. In addition, the different types of projects often requiring localization engineering are described. A special mention is made regarding the advantages of using specific technology for process optimization, productivity improvement and linguistic [quality](#) control.

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¶ Work placement

While the localization engineering position is most commonly seen in a language services company, there are other industries where this role is also important. Such is the case of the content creation and management, marketing or communication departments of companies that generate a significant volume of content, in particular if a substantial part of that requires adaptation to different markets. In such cases, localization engineers are a key part in the [internationalization](#) and communication strategy. In fact, they facilitate the communication with the language service provider on issues such as content extraction, preparation of translatable files, integration of localized content, linguistic and functional testing, as well as investigation and troubleshooting.

While the engineering position on the client side is not so frequently seen, it is extremely beneficial for the overall process to count on a person who is familiar with the content creation steps and, at the same time, has a deep knowledge about the localization process. This ensures a much smoother planning and execution, and bridges the knowledge gap between the language services provider and the customer's content creation and marketing teams.

On their side, those engineers who work in a translation company get exposure to a wide range of customers. This typically means that they work with multiple file formats, technologies and processes.

Being in that role provides localization professionals with a broad vision on the latest features in well-known platforms and is also an opportunity to get themselves familiarized with the latest content creation environments and their associated file types.



Localization engineering can be part of both multilingual content-generating organizations and language service companies Source: [Pixabay](#).

Those who work for a service provider are often presented with the opportunity to design new processes or improve existing ones, research new tools to optimize manual tasks, participate in the integration with different customers and, ultimately, learn constantly thanks to the diversity of formats and requirements each project involves. In such organizations, localization engineers contribute with their ability to research, stay up-to-date with technology, and apply the experience gathered in previous projects to the new challenges in new customer assignments. On the other hand, the localization engineering position inside translation companies is essential to manage the complexities that stem from the technological aspects so commonly found in localization projects.

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Localization engineering tasks

ID	Spanish	Catalan
3	El presente Aviso Legal regula las condiciones generales de acceso y utilización del sitio web accesible en la dirección URL https://mysite.com (en adelante, el sitio web), del que ACME SL, con domicilio en Calle de la Concordia, 22, 19835, Albacete, es propietario, y que pone a disposición de los usuarios de Internet.	El present Avís Legal regula les condicions generals d'accés i utilització del lloc web accessible en l'adreça URL https://mysite.com (d'ara endavant, el lloc web), del que ACME SL, amb domicili en Calle de la Concordia, 22, 19835, Albacete, és propietari, i que posa a la disposició dels usuaris d'Internet.
4	La utilización del sitio web implica la aceptación plena y sin reservas de todas y cada una de las disposiciones incluidas en este Aviso Legal.	La utilització del lloc web implica l'acceptació plena i sense reserves de totes i cadascuna de les disposicions incloses en aquest Avís Legal.

Translatable text in two-column format.

In an environment where professionals manage digital content adaptation projects, knowledge about technology and a general process overview are essential for an efficient execution. Computer-aided Translation tools have been widely used in the translation industry since the early 21st century and have progressively been including filters for direct conversion of the most common file formats. Such functionality allows translators without a deep technical knowledge or the tools required to perform the conversion. This is also where they can carry out

their work using an editing environment that integrates essential features such as spell checker, leverage of previous translations, automatic detection of terminology or content display in two columns with original and translated text.

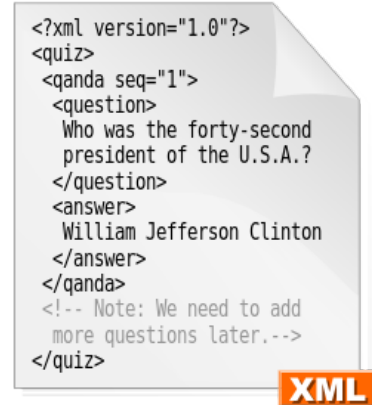
Among the multiple file formats that Computer-aided Translation tools can convert in both directions are spreadsheets, presentations, rich text documents, diagrams, or web files such as HTML. There are however several aspects that frequently reduce the suitability and reliability of such converters.

To start with, the applications that generate these file formats typically make significant changes in their structure every time a new version is released. This usually renders the existing filter for that particular file format no longer compatible. While this may not be a road blocker, it certainly forces translators to frequently spend quite some money in license updates. Reality tells us that not everyone is ready to pay for every license update or, at least, they don't keep up with the changes in a timely manner.

Secondly, and most important, we must take into account the fact that a number of common file formats, such as XML, cannot be parsed with out-of-the-box filters due to the nature of its internal structure. The translatable content of an XML file can be included in structures as diverse as the requirements, structure and features of each of the platforms where these files can be created.

Among the most common tasks in localization engineering we may find:

- Project evaluation: in order to determine the most efficient process and tools, define a budget and a project plan.
- Conversion of source files into translatable format.
- Support for project managers or translators with technical issues or questions.
- Advanced management of technical aspects related to translation memories and glossaries: custom content extraction, maintenance, conversion and optimization.
- Quality assurance of code, variables, encoding and structure of translated files.
- Conversion of translated files to original format for delivery and integration into the source package.



```
<?xml version="1.0"?>
<quiz>
  <qanda seq="1">
    <question>
      Who was the forty-second
      president of the U.S.A.?
    </question>
    <answer>
      William Jefferson Clinton
    </answer>
  </qanda>
  <!-- Note: We need to add
  more questions later.-->
</quiz>
```

The structure of an XML file can include translatable text strings in very different elements, depending on the authoring tool.

Source: [Wikipedia](#).

Localization engineering requires knowledge of a wide variety of formats as well as management of tools for conversion and analysis of translatable content. In this regard, it is also extremely important to be able to perform any conversion or modification of the files [in batches](#), rather than processing files individually.

Localization engineers can automate processing of hundreds or thousands of files following conversion patterns. To this extent, they use either commercial tools or applications they develop themselves. There are three advantages in this approach:

- Faster processing times: the next step in the localization process can start earlier.
- Error reduction: human mistakes caused by manual and individual processing of files are eliminated.
- Productivity enhancement: increased availability of localization engineers who can support other projects.

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Academic and professional profile

As previously described, the professional skills and tasks of the localization engineering position combine knowledge and skills in quite different areas. For those professionals in the industry who wish to specialize in localization engineering it is strongly recommended to first identify the theoretical and practical knowledge required for the position based on the analysis of basic competencies. At the same time, it is strongly recommended to combine this approach with practical tasks in each area. Among the most relevant competencies, and not necessarily in order of importance, we may find:

Interest on research

In their day-to-day, localization engineers often face situations for which known processes cannot be applied to new projects. Constant changes and advances in technology, along with the wide range of industries that generate content requiring adaptation means new formats appear every so often. This can be new file extensions or changed structures in existing ones. At the same time, each

customer and sometimes each project has different requirements in terms of structure or format of the deliverable.

This situation often involves performing manual tasks, for example copying and pasting content from translated files into a single multilingual template containing all languages. For the engineer this means first understanding all requirements and tools, then taking the time to find and test new tools, utilities, even features in known programs, to provide the most appropriate and efficient technical process.



During troubleshooting it is essential to relate the different components and integrate solutions applied in previous similar situations.

Source: [Pixabay](#).

Adapting to new environments

Researching new processes and tools requires getting familiarized with new programs, be a content management system from which the client would be exporting and importing content, or also [applications](#) and utilities used at any point to perform certain tasks in the localization process. Such is the case of XML validators, file comparison tools, renaming or compression utilities. It is essential that the engineer has an interest in learning how to use these new tools and also how these can be integrated with each other.

New challenges and relational learning

It is very rarely that localization projects are executed following the initial plan to the millimeter. Instead, it is very common to find a wide range of unexpected situations, like delays in the delivery of a translator, unforeseen errors in the functionality of the translation management environment or a corrupted translated file where content cannot be recovered.

In such cases, the engineer is the best person to handle thanks to their knowledge and experience in the use of technology. It is a matter of reproducing the steps taken before the error occurred, trying different approaches to understand the causes and, most importantly, to figure out how to fix it. In this regard, the knowledge of different file formats, tools and technologies is key in the research process.

In their years of experience, localization engineers frequently encounter similar errors or process fails. It is however most often the case for such situations to be slightly different from previous ones. Hence the importance of being able to relate past learned lessons with new situations, so that similar concepts, tools or techniques can be applied, but adapted to the problem at hand.

Interest in language and translation technologies

For many years now it is a given that localization projects must be carried out with the help of tools such as computer-aided translation, terminology management, linguistic quality control, spell checker or even machine translation. All of these applications are the bread and butter of professionals in the industry. Most of them, however, only have a basic knowledge at the user level

to interact with applications following step-by-step wizards or assistants, menu options or dialog boxes and often know only the features strictly needed in their day-to-day job.

The localization engineer must be the person in the team with the most in-depth knowledge of all these applications. It is so because their role is to support a wide variety of projects that can potentially use the full range of features. At the same time, quite often the research they do requires an in-depth knowledge of these programs in order to find the best solution for each process.

Understanding of the linguistic process

The biggest difference between a localization engineer and other disciplines is based on the fact that the first ones work in the field of linguistic services and cultural adaptation. During research, process definition and problem solving activities, it is essential to understand the work of professionals behind content adaptation and, above all, the difficulties and limitations that can be imposed on them by the tools or processes used to prepare the content they handle.

Segmentation is a good example. It is defined as the break down of paragraphs contained in a file into strings that are presented to the translator, most frequently matching sentences. This segmentation is mainly carried out for two purposes: presenting the translator with content units that make sense which, in turn, allows them to work with sentences and also to structure the [translation memory](#) so that previous translations of the same sentence can be leveraged at a later stage.

Computer-aided translation tools have a customizable rules system specific for each source language that performs this segmentation mainly using punctuation and paragraph marks. These rules however can result in incorrect segmentation when the original text includes punctuation errors or singularities, such as using paragraph marks to produce the layout of the source document. It may also be the case that two sentences in the source text are merged into one in the translated segment.

Incorrect segmentation that cuts sentences off or includes more than one sentence in each segment has repercussions for translators, from a linguistic perspective, and for project managers, from a budgetary point of view. In such cases, the translator must change these incorrect segments individually during translation, which significantly slows down their work. If they decide not to fix the segmentation in order to save time, leveraging of previous translations contained in the translation

ID	Spanish	Catalan
15	Forma de pago: el cliente puede elegir libremente abonar las compras que realice mediante tarjeta (MasterCard, Visa, Visa Electrón,...) a través de la plataforma Redsys.	Forma de pagament: el client pot triar lliurement abonar les compres que realitzi amb targeta (MasterCard, Visa, Visa Electrón,...) mitjançant la plataforma Redsys.
16	En el caso de que el donante quiera recibir un certificado de donación con efectos legales ante la Agencia Tributaria,	En el cas que el donant vulgui rebre un certificat de donació amb efectes legals davant l'Agència Tributària,
17	tendrá que ponerse en contacto con el administrador del sitio web a través del correo electrónico correo@acme.com.	haurà de posar-se en contacte amb l'administrador del lloc web a través del correu electrònic correo@acme.com.

Segmentation problems such as blocks 16 and 17 cause problems to translators and reduce the number of words that can be leveraged from the translation memory.

memory will certainly be reduced. Besides, there is the possibility that new translations are not consistent with previous ones.

In addition, while these partial segments with parts of sentences will be saved in the translation memory, they will hardly ever be leveraged again in upcoming projects where segmentation is correctly based on sentences. For this reason it is crucial that the localization engineer who reviews the preparation of the translatable files is aware of the translation process, its requirements and the potential difficulties translators may find.

```
Integer sourceValue = issue.getCustomFieldValue(sourceCF);
if(sourceValue!=null){
    if(sourceValue>=6)
        return "High & low";
    else if (sourceValue<=2)
        return "Entry $1 out of $2";
    else
        return "Search &lt;b>results&/b>";
}
return "null";
```

A basic knowledge of programming languages allows localization engineers to understand the extraction logic of translatable strings and to identify potential issues.

Knowledge of programming languages

As we've seen, most localization projects contain files generated in platforms or programming environments. Even in cases where filters in computer-aided translation tools properly process these files and do not require the modification of extraction rules, it is certainly useful to be able to understand the logic of the code that contains the translatable

text. Those labels representing variables or embedded code are part of translatable strings and quite often originate errors while extracting translatable content.

Engineers with some knowledge of one or more programming languages are able to identify and isolate translatable strings in code files in cases where computer-aided translation tools do not process those correctly. Even when the automatic extraction of translatable strings is successful, these often contain variables in different formats (\$1, A, [B]) or HTML code that will provide visual attributes or additional functionality to the text in the platform where it is displayed to the user ().

Effective multilingual communication

In collaborative work environments where most of the work is done as a team, language skills become essential. Specifically, in the field of multinational companies or language service providers, it is frequent to work with individuals or groups from different nationalities speaking different languages. It is therefore important for any team member to be fluent at least in English, which is also used as a common language in the translation industry. Speaking the languages of those regions you work with more often is certainly an advantage that fosters collaboration and contributes to building trust in these relationships.

In addition to the knowledge of English as a *lingua franca* and other languages, having social skills is also an important point. This is useful in speaking, for instance when doing presentations and meetings where strategies are decided, and also in writing, during the exchange of information to define processes or help with troubleshooting. More specifically, the localization engineer usually takes part in such conversations as a technology expert. It is often their role to act as mediator in

conversations about technical issues and to speak to their counterparts in other organizations. This combination of language, communication and technical skills is representative of the interactions of the localization engineer in the workplace.

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Academic training

Localization engineering is taught as a separate module in several postgraduate courses in the field of technology applied to translation or localization. Students in these postgraduate courses mostly come from translation or language studies.

Although it is not essential for a localization engineer to have an academic background in translation, it is very useful to know at least the peculiarities of other languages, as well as being aware of the implications of adapting ideas and products. This understanding certainly helps those seeking a position in localization engineering getting familiarized with processes and their purpose. Such is the case of file preparation, quality control or conversion into final format.

Additionally, having a good understanding of the product that is being localized provides a vision that simplifies the job and it also puts you in a better position when investigating errors, finding solutions or troubleshooting. Something as simple as including an "&" symbol or deleting a tag during translation can cause the translated file to not be correctly processed in the tool.

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Research potential

Localization engineering acts as a bridge between various groups in the process of [cultural adaptation](#) for products and services. Besides, it includes different techniques and competencies, thus offering a wide range of areas for research and improvement. While the relevance of each of these areas will depend on the type of projects or the specific tasks in each organization, two topics stand as the most general and with a wider scope:

- *Project evaluation*: defining a methodology for the process and standardization of productivity estimates in each of the steps.
- *Automation*: Adaptive batch-processing systems for common tasks such as replicating folder and file structures, file renaming, text or code search and replace, quality control, or content transformation to allow for communication between systems.

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Credits



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Aitor Medrano is responsible for a number of support groups in localization engineering, desktop publishing and automation at TransPerfect. He graduated in Translation and Interpreting at the University of Granada in 2001 and completed a master's degree in Software Localization at the University of Limerick. Since 2002 when he started as a localization engineer, he has created and managed teams in this field in Spain and India. In addition, he has collaborated as a trainer and researcher with the University of Granada and taught modules in Localization Engineering at the Caweb Master's Degree at the University of Strasbourg and the Master's Degree in Translation and New Technologies from ISTRAD. His professional interests are in training, people-based resource management and skills development.



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