Computer-aided translations with the help of translation memory technology deliver numerous advantages. Nevertheless, many enterprises have not yet or only partially come in touch with such systems. For this reason, they are often still unaware of the functions and actual savings potential. This white paper explains the basic functionality and modes of operation as well as the central modules of a translation management system.
Table of Contents

The Basic Mode of Operation of a TMS .................................................. Page 2

Central Modules of a TMS ................................................................. Page 3
The Principle of Translation Management Systems

Nowadays, machine translation (MT) systems and translation management systems are often confused or equated with each other. Though it is basically possible to interconnect the functionality of the two technologies via interfaces, their underlying principle differs considerably.

For a machine translation system to work, it must first be filled with data for predefined language pairs. How this is done depends on the underlying principle of the MT system. Subsequently, the actual translation takes place automatically, i.e. without any human interaction. The result can be post-edited by a reviewer or translator. However, the changes are not entered in the system directly, but are only entered after some time, if at all. This means that the learning process of an MT system is intermittent, not simultaneous.

By contrast, a translation system with translation memory technology can be used immediately for any language combination. The system’s data repository grows with every translation that is prepared with the help of the system. Accordingly, the learning effect in translation management systems takes place concurrently as the translation proceeds, as every new sentence is saved immediately during the translation together with the corresponding sentence in the target language. In the ideal case, a translator can thus benefit from his previous translation right away when he starts translating the next sentence. Translation management systems are to be deployed as effectively and supportively as possible, i.e. they display existing translations to the users, but do not automatically produce translations on the basis of a text repository. The actual translation is still prepared by the translator and is thus of a higher quality.

Basic Mode of Operation of a Translation Management System

For the data in a translation management system to be displayed in a meaningful way and be reusable, the systems must have certain basic functions. First, the text to be translated is imported. This is done within the scope of a simple project setup, in which settings such as the original file format and the language direction(s) are determined. During the import, the editable text is extracted from the document for translation in the internal editor. To facilitate the editing, the text is automatically divided into segments, which are identified on the basis of segment end delimiters. This sounds more complicated than it actually is. In most cases, a segment corresponds to a sentence that is detected from the punctuation mark at the end of the sentence (e.g. period, exclamation point, or question mark). To structure elements such as headings, bullet points, or text in tables in meaningful groups, a hard line break (¶) is also interpreted as the end of a segment.

This text segmentation forms the basis for the meaningful storage of the segment in the source language and in the target language as a translation unit. The translation unit always consists of a language pair (source language and target language) and is stored in the translation memory for later reuse. When a new translation project is set up, any existing translation memory containing translations is automatically used as the basis for a project analysis. This means that even before the actual translation begins, the project manager or translator can directly see if any parts of the new text have already been translated in the same way or in a similar way in a previous translation. For every new translation, the translation units in the translation
memory form the basis for possible time and cost savings due to existing translations. An automatic analysis reveals how much text still needs to be translated, thereby facilitating the time and budget planning. If the customer and the translator collaborate on the basis of a translation management system, the billing method usually changes as well. The line and word prices are graded by match categories.

The normal match categories of an analysis are divided as follows:

» **No match:** Segments in this category have not yet been translated or do not match any previously saved segment to the minimum extent. The minimum match rate is usually somewhere between 50 to 75% and can be set individually.

» **Fuzzy match:** A previously translated segment that is similar to the segment to be translated. The match rate can be set and usually ranges from 75 to 99%.

» **100% matches:** If a segment is classified as a 100% match, an translation segment (including the formatting) already exists from another text and can usually be used as it is.

» **Repetitions:** Repetitions are identical segments that occur at least twice in the same text. If such a segment is translated for the first time, the next occurrence of the same passage will automatically be a 100% match.

» **Context match:** Context matches are also 100% matches. In addition to the content of the segment itself, the preceding and subsequent segments also correspond to those of the previous translation. Thus, these 100% matches are even more reliable than the pure 100% matches, as the latter are stored in the translation memory without the context.

While translators still receive the full line or word rate for newly translated text, fuzzy matches are usually only billed at about half the price, and 100% matches and repetitions at about one quarter of the original price. Often, context matches are not paid for at all. Of course, these figures are for orientation only and must be negotiated between the translator and his customer from case to case. Before a translation starts, both parties (translator and customer) are thus clearly aware of the costs that arise for a translation.

---

**Central Modules of a Translation Management System**

Nowadays, all translation management systems have the same core modules, which are needed for meaningful and effective use of a computer-aided translation environment. Of course, the functionality can vary depending on the vendor.

**Translation Memory**

All translation units that are created in a certain language pair are saved to the translation memory. The advantage of this approach is that these units are transferred to the translation memory automatically during translation, without delay. In the ideal case, the translator can immediately benefit from his previously completed translation. It is to be noted that the units in the translation memory are stored in the form of segments (usually sentences), and the matching against a new text always takes place at segment level, i.e. the similarity is analyzed on the basis of segments, not words. This principle is one of the main differences from the terminology database.

**Terminology Database**

The terminology database is the "dictionary" component in a translation environment. This database, too, is filled by the user. Unlike the translation memory, the data are not stored automatically, as the system cannot select any terms from sentences and allocate the respective translation without language intelligence or linguistic support. To ensure high
quality of the database, the knowledge of the terminology manager is therefore important. Initially, however, terminology databases can easily be filled with existing glossaries. For example, Excel files can easily be imported within a short time and be used immediately for translations. Apart from this, new terminology entries need to be created manually by a user. Unlike a commercial dictionary, a terminology database usually only contains specialized terms or corporate terminology whose consistent use is relevant to the text understanding. General terms are usually known to a translator and do not need to be included. If too much information is entered, the list of displayed terms becomes too extensive, making it more difficult for the translator to find relevant results.

**Project Management**

The various systems contain more or less comprehensive project management components. What all of them have in common is the creation of a translation project. In this step, the framework conditions for the translation are determined, such as the language combination(s), delivery date, selection of project-specific settings on the basis of templates, etc. Some systems also integrate a user administration in the actual system and are therefore able to assign the various tasks (e.g. translation, terminology work, or text review) directly via the project management. In this way, the project manager always has an overview of which projects are currently active, when they need to be delivered, and what the progress of the individual parties is.

**Translation Editor**

Nowadays, almost all translation management systems offer an integrated editor that must be used for the creation of translations. The translator works in a format-independent environment, i.e. he can translate all file formats supported by the system without being familiar with the actual formats or applications and without being able to use these. With respect to the translation of InDesign documents, for example, it used to be impossible for translators to accept such jobs without purchasing a version of the program. Today, translators gain more independence by deploying translation management systems, thereby automatically expanding their service portfolio. On the other side, customers can again select translators on the
basis of their subject and language competence instead of having to concentrate on technicalities. The use of translation management systems also eliminates the need for workarounds that involve the use of Microsoft Word and the subsequent time-consuming insertion of text passages in the original format. In addition to saving time and costs, this also prevents errors that inevitably occur when copying and pasting foreign-language texts. And finally, translators do not have to deal with unknown formatting issues while translating, as only the text to be translated is extracted and only internal styles (e.g. bold type) are displayed during the translation. External formats such as tables, headings, and similar elements remain hidden in the background during the translation and are only applied to the target text at the end.

Alignment
Using the alignment functionality, the translation memory can also be filled with translation units from previous translations. Accordingly, if previous translations not created with a translation memory system exist in electronic form, the texts can be segmented in individual sentences and be auto-aligned as source and target-language pairs. The result is then saved directly to the translation memory. Many prefer to perform the alignment at the outset in order to import data to the empty system even before the first translation.

Quality Assurance
To support all who are involved in the project, all translation management systems meanwhile provide extensive quality assurance criteria on the basis of which the text can be checked automatically during or after the translation. These are purely formal criteria, such as the review of correctly used inline formatting (e.g. italics or underlined) or of the use of numbers and their adjustment to the target-language conventions. Consistent use of terminology from the terminology database may be another aspect that needs to be checked.
<table>
<thead>
<tr>
<th>Working with a translation management system</th>
<th>Working without a translation management system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time and cost savings: Identical sentences no longer need to be translated redundantly. The incurred translation costs can be planned more effectively in advance.</td>
<td>Identical sentences need to be translated over and over again.</td>
</tr>
<tr>
<td>Consistent translation: Identical sentences are always translated in the same way.</td>
<td>Without a translation system, the translator will not always be able to remember whether a sentence already occurred in exactly the same form in the past. Therefore, he will inevitably translate it slightly differently, especially if several translators work on a project.</td>
</tr>
<tr>
<td>Consistent use of terminology: As terms are automatically identified and displayed during the translation, they can always be used consistently in accordance with the corporate language.</td>
<td>Without a terminology database, the translator needs to look up his glossaries manually.</td>
</tr>
<tr>
<td>Processing of different file formats: The uniform translation editor allows every translator to be integrated easily, regardless of his level of knowledge of the particular program.</td>
<td>The translator must be selected under consideration of his technical &quot;equipment&quot;. Often, a translator cannot be expected to be familiar with the various programs.</td>
</tr>
<tr>
<td>All tasks at a glance: The task and project overview in the same system saves time and costs. The project manager immediately sees which projects are due or what their progress status is.</td>
<td>Independent project management software merely offers a project overview, but is not linked to the actual translation.</td>
</tr>
<tr>
<td>Quality check: Automatic review of user-defined criteria that assist the parties involved in the project in their work.</td>
<td>Except for conventional spell-checking, all reviews need to be conducted manually. For example, the task of matching terminology against an existing glossary is very time-consuming.</td>
</tr>
</tbody>
</table>

Fig. 1: Typical procedure of a translation project with a computer-aided translation system