Creating a cloud-based translator training environment using Memsource

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Abstract. The paper deals with the possibilities of using the Memsource system as the main component of a cloud-based learning environment for training translators. The main advantages of Memsource in the educational process are identified: accessibility through the offer of a demo and an academic programme, easy for mastering, the user-friendly interface, a wide functional range. Experimental training of students in groups for translation projects with mastery of the tasks of team members of different statuses was carried out. Students' evaluation of the functionality of the Memsource system was analysed in terms of learning effectiveness and application in their future professional life. It is proved that the cloud environment formed through the Memsource platform helps future translators to master the tools and resources needed to systematically carry out the full range of translation project operations. The feasibility of basing a cloud-based learning environment for translators on the Memsource system has been established. It has been experimentally proven that the creation of a cloud environment will optimise the structure and components of translation projects in the training process of higher education institutions that train translators.

Keywords: cloud-based learning, translation project, Memsource, translators

1. Introduction

Today, the arsenal of tools that translators use in their professional work is quite diverse. It includes not only automated and machine translation systems, terminology management systems and translation memory systems, but also a range of service programmes and translation support information sources. There is a clear tendency to focus not only on the use of information support predominantly from Internet resources, but also on the use of cloud services that duplicate traditional desktop systems and are accessed via network resources. This leads to the view that today it is not advisable to concentrate on mastering a single software product or

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information resource, but rather to form a cloud-oriented environment as a system of necessary tools and resources to carry out the full range of operations for translation projects.

The aim of this paper is to explore the possibilities of creating a cloud-based environment for translator training using the Memsource system.

2. Literature review

The popularity of cloud technologies is growing rapidly in all fields of application. The translation industry is no exception. Researchers in the field of language technology attribute the increasing use of cloud systems to their greater independence from operating systems and locations, easier conditions for collaboration, savings through operation without installation, and the offer of flexible licensing models [7].

The last two decades have seen a dynamic of scholarly attitudes that correlate with the development of information technologies. In particular, whereas previously only the main benefits of information technology learning for translators were considered, with suggestions for rethinking the teaching of translation [1], the translation process as a whole is now understood as an interaction between translator and computer [2, 3, 9–11]. The proliferation of information technologies in the translation industry, in particular cloud-based technologies, is illustrated, for example, by data from TAUS, a think tank whose mission is to automate and innovate in the translation industry [4].

According to Gambín [6], one of the most important changes over the last ten years has been the proliferation of solutions with a clear trend towards cloud solutions. The use of cloud technologies in translation, according to the scholar, promotes competition, which in turn means lower and more flexible prices. This is particularly relevant for the activities of small groups of translators who do not have the infrastructure and finances that large corporations do, but thanks to cloud platforms, they will be able to compete with them in some way. At the same time, Gambín [6] notes that the level of technologies on offer today is very different, but that high-quality solutions are becoming more affordable over time than they used to be. DePalma and Sargent [5] holds the same view and argues that the field of translation services will undoubtedly move to cloud-based solutions in the near future. Practitioners say the most popular translation management systems (TMS) on the market include SDL WorldServer, Memsource, GlobalLink, Across [4, 11, 12]. The availability of a choice of cloud offerings is emphasised by Muegge [8], noting their wide range, e.g. Wordfast Anywhere, Lionbridge Translation Workspace, Memsource Cloud, Wordbee, XMT Cloud. Based on the experience of teaching a master's course for translators, Muegge [8] concludes that cloud-based systems are easy to use, because all a translator needs is an Internet connection and a login. Since the "heavy" processes (segmentation, TM and glossary search, etc.) in all cloud-based systems take place on the server, there are no multi-step installation procedures required as for desktop systems.

3. Results and discussion

3.1. Rationale for selecting Memsource as the core element of a cloud-based environment for translator training

Before the actual training, it was advisable to determine the direction of the training in order to develop the specific skills needed by an interpreter for simultaneous interpreting.

The Memsource cloud-based system for mastering the principles of translation projects is a good choice as the basic component of a cloud-based training environment for translators. The following arguments can support this decision:

- although this CAT system offers proprietary software, Memsource provides the opportunity to take advantage of free software demos for 30 days, subject to registration and compliance with the relevant conditions,
- the software interface is clear and easy to master,
- the demo versions are functional on all the main operations of translation projects,
- ability to integrate with other cloud-based translation tools,
- there is a wide choice of interface languages during the registration process,
- the possibility of supplementing the functionality of the system by connecting terminology resources via terminology and translation memory databases.

An equally important argument in favour of using Memsource as the base element of a cloud-based system is its widespread use and study in the world's leading universities training translators (figure 1).

Figure 1: Geography of university use of the Memsource cloud system.

3.2. Using Memsource in translator training to create a cloud-based environment

The official Memsource website offers different versions of the programme, structured according to need and the level of work to be performed. In particular, offers are presented in different packages: for freelancers, small translation structures and powerful translation structures in four separate packages: Team Start, Team, Ultimate, and Enterprise.

Each of these packages can be used to form a cloud-based environment for translator training. However, we have chosen Team to model, as closely as possible, the organisation of the workflow and the automation of its stages with a multi-level management structure and control of the conditions of translation services according to the ISO 17100:2015 standard. Another important condition for using this package was that we received an annual licence to use it under the academic programme (figure 2).
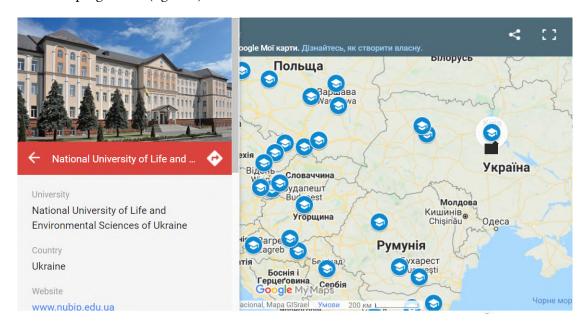

Figure 2: Marking on the Memsource cloud system website that the licence has been granted.

This is necessary, given that building a cloud-based environment based on this Memsource package is a painstaking and time-consuming job, and its use should provide training for students throughout the academic year, which unfortunately cannot be fully realised using the demo.

3.3. Features of using Team for translation projects in a cloud-based environment

As mentioned earlier, the Team package is best suited to meet the needs of translation structures operating under a defined management hierarchy and practising a team approach to delivering translation projects. Mastering the Team suite will enable students to acquire skills

in the administration of translation projects, management of human resources, terminology management, automated task preparation and distribution, analytical evaluation of project tasks, and performance evaluation of each individual participant in project implementation.

As the Team package allows the organisation of a hierarchical management system, a cadre of performers was formed from the students and given different statuses. In particular, the system provides four different statuses that can be given to enrolled performers, namely: "Administrator", "Project Manager", "Linguist" and "Guest". Depending on their status, each performer had different opportunities and rights of access to carry out certain actions.

The administrator provided by far the highest level of functionality. In particular, he or she could create translation projects; enroll new performers; set and change performer statuses; assign tasks to performers within a project; monitor the status of each individual performer and the whole project team; and create, edit and populate translation memories and terminology databases.

In order to master other roles as participants in a translation project, students could be given the statuses of "Project Manager" and "Linguist", which changed over the course of their work on different projects.

Students with Project Manager status mastered management skills. The range of functionality of the system manager depended largely on the settings set by the administrator. One of the main functions of the manager was to work out the distribution of tasks between the projects implementers (figure 3).

Figure 3: Allocating tasks between project implementers in the Memsource system.

The settings established for this status also allowed for the creation and maintenance of terminology and translation memory bases within a single project, the management of its executing team, and the monitoring of the project's progress status (figure 4).

The vast majority of the students in each individual project had the status of "Linguist". They were engaged directly to carry out the translation by performing a specific task. Students who acted as editors also held this status.

Before the translation started, the manager ensured that a specially created terminology and translation memory database was connected to the project. This was done with the aim of having students with Linguist status practise the overwhelming number of possible features implemented in the Memsource system. In particular, provided the original segmented text

Figure 4: Monitoring the status of projects and tasks in the Memsource system.

was presented in a special window, the student was able to fill in variants of the target text in different ways (figure 5). These included: writing the target text manually from the keyboard; substituting a suggested translation variant based on the translation results in the selected machine translation system; substituting a suggested translation variant based on the results of a match with a segment in the connected translation memory, selecting the corresponding individual term suggested from the terminology database.
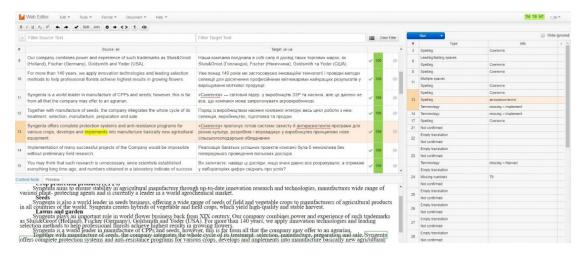

Figure 5: Example of translation in the Memsource system.

3.4. The importance of translation quality management and related capabilities in a cloud-oriented environment with Memsource

The large volume of material cannot be translated by using even highly qualified translators without the latest information technology-based tools. Experience has shown that the traditional approach to translating large volumes of documentation in the education sector by a team of translators has a number of negative consequences:

- low productivity due to the need for each translator to translate the same terminology several times in isolation,
- lack of uniform terminology used by each translator in a particular academic and scientific field, which leads to difficulty in understanding the content of the translated text by users,
- the difficulty of coordinating the activities of a group of translators,
- a high degree of dependence of the successful completion of a translation on the individual translator as the individual owner of the terminology resource.

With this in mind, it is advisable to train translators with the understanding that their future professional activities will involve them mainly in teamwork in translation projects with the obligatory use of the latest information technologies. Cloud-based systems are promising in this regard and have a number of advantages, as already mentioned in this paper.

The execution of translation projects enables a team of translators to coordinate their work, distribute tasks and get results, thus achieving the goal of translating a large volume of textual material.

At the same time, however, there is also the issue of ensuring the quality of the translated material, since losses in translation quality can be due to various types of errors, ranging from minor ones that do not make the target text difficult to understand to important ones that can lead to future misunderstandings or even losses due to incorrect or inaccurate translation. Particular attention is required to ensure that translators working on the same project use consistent terminology in order to avoid disagreements when translating parts of the same text.

In this aspect, it is valuable for training future translators to learn to apply the QA (Quality Assurance) management processes built into Memsource after the translation has been completed, or even in the intermediate stages of completion. This gives the translator a powerful tool to see what spelling mistakes have been made, identify missing elements in the translated segment in relation to the source segment, and ensure terminology consistency based on a connected terminology database, and so on (figures 6, 7, 8).

In order to successfully master the QA processes, students learned a sequence of actions, namely:

- activate the tab of the same name in the window, which, by default, displays the suggested translation options. In this case, a list of errors detected by the system will be displayed with the number of the segment in which they occurred,
- make the necessary changes to the target text in those segments where the system has detected errors.
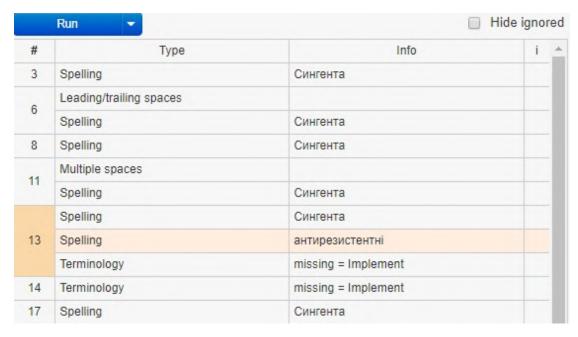
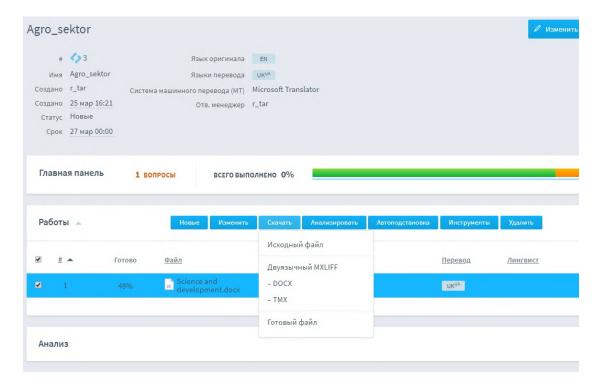**Figure 6:** Checking spelling in Memsource.

Figure 7: Operations for obtaining translation results.

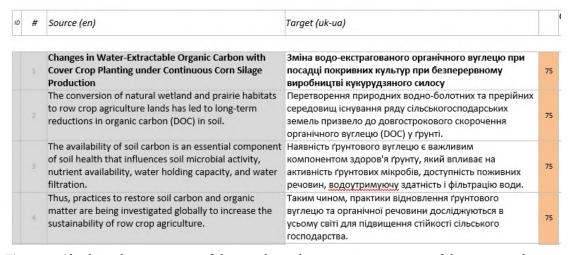| ID	#	Source (en)	Target (uk-ua)	
	1	**Changes in Water-Extractable Organic Carbon with Cover Crop Planting under Continuous Corn Silage Production**	Зміна водо-екстрагованого органічного вуглецю при посадці покривних культур при безперервному виробництві кукурудзяного силосу	75
	2	The conversion of natural wetland and prairie habitats to row crop agriculture lands has led to long-term reductions in organic carbon (DOC) in soil.	Перетворення природних водно-болотних та прерійних середовищ існування ряду сільськогосподарських земель призвело до довгострокового скорочення органічного вуглецю (DOC) у ґрунті.	75
	3	The availability of soil carbon is an essential component of soil health that influences soil microbial activity, nutrient availability, water holding capacity, and water filtration.	Наявність ґрунтового вуглецю є важливим компонентом здоров'я ґрунту, який впливає на активність ґрунтових мікробів, доступність поживних речовин, водоутримуючу здатність і фільтрацію води.	75
	4	Thus, practices to restore soil carbon and organic matter are being investigated globally to increase the sustainability of row crop agriculture.	Таким чином, практики відновлення ґрунтового вуглецю та органічної речовини досліджуються в усьому світі для підвищення стійкості сільського господарства.	75

Figure 8: Checking the correctness of the translation by comparing segments of the source and target texts.

Once the translation of the file had been completed, the students' next steps were to receive the translation results as a file in the format in which the original file was also posted, or to submit the results to the editor for review.

In the first case, they activated the browser tab with the translation project window, high-lighted the task whose translation results were to be received as a file and selected the finished file for downloading via the context menu. As a result of these actions, the student received on their own computer a downloaded file with the target text, created based on the results of the translation and quality assurance activities.

In the second case, when editing is necessary before uploading the final translation results, students are reminded to select the DOCX option in the context menu. This will allow uploading the translation results by means of a bilingual text whose segments are placed in a table.

This option is useful if the person editing the translated text prefers to work with a text file in a text editor. It is also possible to check spelling when working with such a file, using the appropriate features of a text editor.

In general, in terms of translation quality assurance, a cloud-based translation memory system is better suited to cooperation between distributed teams of translators. By storing the linguistic resources (TM, TB, and bilingual MXLIFF) on one central server, translators can easily access the resources together and simultaneously. This allows already translated segments and created terms to be shared during the translation process. In addition, the workflow feature allows different project participants, such as translators, editors and proofreaders, to work on a document simultaneously, which can significantly reduce the turnaround time of a translation project.

4. Analysis of the feasibility of using Memsource in interpreter training as a core component of a cloud-based environment

In order to determine the feasibility of using Memsource in translator training as the main component of a cloud-based environment, we proposed to the students who had gained experience with this cloud-based automated translation system while studying the course "Information Technologies in Translation Projects" (67 students) to evaluate the usefulness of the individual functions of the system using a 5-point scale.

The list of functions include: source text review during translation, display of full matches, display of fuzzy matches, integration with the MT system, merge/divide segments, use of repetitions, spell check on input, automated search for terms in the database, confirmation and saving of a segment, formal criteria check with error message, spell check of all translation units, export of target text, editing of source text, comments, automatic completion of the target segment based on MT translation results, copying a segment of source text into a segment of target text.

The results obtained (number of responses with a score to each function) are presented in table 1.

Table 1
Results of students' evaluation of Memsource system functions.

Function	Evaluation				
	1	2	3	4	5
Source text review during translation	0	0	4	18	45
Display of full matches	0	0	0	26	41
Display of fuzzy matches	0	0	0	30	37
Integration with the MT system	0	0	0	8	59
Editing of source text	3	6	7	48	3
Automatic completion of the target segment based on MT translation results	0	0	12	38	17
Copying a segment of source text into a segment of target text	0	0	17	35	15
Merge/divide segments	0	0	18	27	22
Use of repetitions	0	0	0	23	44
Spell check on input	0	0	0	11	56
Comments	5	7	35	9	11
Automated search for terms in the database	0	0	0	26	41
Confirmation and saving of a segment	0	0	0	18	49
Spell check of all translation units	0	0	0	13	54
Formal criteria check with error message	0	0	8	29	30
Export of target text	0	0	0	21	46

The responses received indicate that the following Memsource features received a 100% positive rating (a positive rating was taken to mean a score of 4 and 5):

- display of full matches (26+41),
- display of fuzzy matches (30+37),
- integration with the MT system (8+59),

- use of repetitions (23+44),
- spell check on input (11+56),
- automated search for terms in the database (26+41),
- confirmation and saving of a segment (18+49),
- spell check of all translation units (13+54),
- export of target text (21+46).

This high score for a significant number of functions indicates that the students have understood their benefits and usability, have mastered their skills and realised their effectiveness.

At the same time, several functions received a lower proportion of positive ratings, in particular:

- source text review during translation (94%),
- formal criteria check with error message (88%),
- automatic completion of the target segment based on MT translation results (82%),
- copying a segment of source text into a segment of target text (75%),
- merge/divide segments (73%).

This is, in our opinion, primarily because these functions are not quite typical in the translation process and the students have not fully understood their meaning and necessity.

The two functions that received the most varied evaluations were editing of the source text and comments. It is likely that some students did not appreciate their role in the translation process.

Overall, the vast majority of students who participated in the experiential learning, positively evaluating most features of the system, confirmed our assumption about the use of Memsource as a core component of a cloud-based environment.

5. Conclusions

The use of the Memsource system as the main component for creating a cloud-based environment for training translators has shown that it can be used in the educational process due to a number of significant advantages, which include:

- accessibility through the offer of a demo and an academic programme,
- easy for students to master, especially in cases where they have already studied one of the desktop translation systems,
- the user-friendly interface, which greatly simplifies working with the system,
- a wide functional range, allowing prospective translators to practise the different roles of participants in a translation project with relevant skills and abilities,
- the prospect of applying the experience gained with the system to future professional activities.

The cloud-based environment formed using the Memsource platform helps to ensure that prospective translators learn the tools and resources they need to carry out a full range of translation project operations in a systematic way.

The creation of a cloud-based environment will also optimise the structure and components of translation projects in the educational process of higher education institutions that train translators. This involves the justification, selection and enhancement of translation project tools, the basis of which will be cloud-based automated translation systems integrated with translation memory systems and systems for the creation and maintenance of educational and scientific terminology databases.

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