Caduceus

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LETTER FROM OUR ADMINISTRATOR YASHA SAEBI

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CADUCEUS



Dear Medical Division Members,

Here is the first Caduceus edition of 2022, and my first letter to you this year. My hope for this year is that we may say goodbye to the pandemic and get back to our normal life. I wish every single one

of you a very successful and safe year. My dream at this moment is to be able to meet you all at the ATA's 63rd Annual Conference in Los Angeles and once again have a great and safe time together like in the old days! The great news is that we have come a long way since last January, and I can see the light at the end of this very long tunnel, and I hope you can see it too. Let's see how this year is going to go.

Here is the latest in your division:

- Our first Networking Event is February 24, 2022; mark your calendar and register to join us in a fun, casual and friendly gathering. This is an opportunity to meet new faces, share and hear new ideas and find out the latest news and gossip in our business. Join us with your dinner or drink and let's chat! Bring your questions and suggestions! The Medical Division's Administrators will be there and would love to listen to you and find out how they can help our members. Soon, there will be a twist added to our networking events. We are going to invite speakers to answer your questions. We will have special Q&A events with recruiters and specialists to answer your questions. Stay tuned!
- * The Medical Division Leadership Council is accepting new members for newly created positions. You can join any of our existing teams, such as the Editorial team and the Webinar team, or you can volunteer to serve in any of the new positions, such as the Inter-Divisions

Liaison, the Medical Science Adviser, etc. Please email me at <u>divisionMD@atanet.org</u>. I am open to your suggestions on how to improve our division. Share your ideas, and let me know how you would like to serve the translators and interpreters community through the largest global translators' association.



- We are working on 2022's Medical Division webinars; we will do our best to offer the topics that you requested. If you have a favorite speaker or have a positive experience at a webinar/seminar/conference, send us your speaker suggestion to <u>divisionMD@atanet.org</u>. Also, please check out the "Caduceus Guidelines1" for article submissions on our website and send your articles to the Caduceus team at <u>caduceusnewsletter@gmail.com</u>.
- As always, I encourage you to get involved and stay in touch with us. By joining the Medical Division group message Group.io, you can send your translation questions to your colleagues. You will be surprised at the number of people who will respond and the great resources. Check

¹ https://ata-md.org/caduceus/Caduceus_Guidelines_2021.pdf

our website to learn how you can send a request to the moderator to join the group. The Medical Division social media is the best place to connect with your colleagues and post about the latest in our field. Send a request to join our private group at <u>https://www.facebook.com/</u>groups/ata.med.div/.

Lastly, on behalf of the Medical Division Leadership Council, I want to thank you for choosing to be an ATA member and more specifically a Medical Division member. We are honored to serve you and help the new members to start their freelancing career or to help the experienced members to improve their business and thrive. Let us know how we can help, we are your advocates.

Yasha Saebí



Hannah Brown graduated from New York University (NYU) with an honors degree in Spanish on the pre-med track. For her senior honors thesis, she conducted research on Spanish/English medical interpreters through virtual interviews. Her research culminated in a thesis titled "Pretend I'm Not There, But Remember



<u>That I Am": Medical Interpreters as Members of the</u> <u>Healthcare Team, and the Effects of Covid-19</u>" which was awarded NYU's Department of Spanish and Portuguese Award for Scholarship and Excellence in an Honors Thesis in the Field of Language Studies. Hannah is currently applying to medical school. MEDICAL INTERPRETERS AS MEMBERS OF THE HEALTHCARE TEAM

As a Spanish major preparing for a career in medicine, my interests lay in the promotion of quality healthcare for Latinx communities. It was apparent, especially through reading the literature and past research on the topic, that professional, trained medical interpreters were absolutely crucial. However, their voices were often missing. I wanted to learn more about the experiences and opinions of those people who truly facilitate the medical care of Spanishspeakers. I aimed to understand interpreters' own views on their roles and responsibilities, and I was interested in learning about how Covid-19 altered these views and changed the way medical interpreters are seen in the healthcare field.

For this research, I held individual remote interviews with 21 Spanish/English medical interpreters from across the U.S. including hospital staff interpreters, freelance interpreters and Video Remote Interpreting (VRI) interpreters. While the completed research covered many topics, I will outline here what I believe to be the most significant and important to the field of medical interpreting: modifications to the role of the medical interpreter during Covid-19, medical interpreters as healthcare workers and members of the medical team, and what recognizing medical interpreters as healthcare workers could look like.



Modifications to the Role of the Interpreter, and the Skills that Became Important

When Covid-19 hit, medical interpreters became integral players in communication in different ways than they had before. They needed to be able to communicate emotion, and become part of patients' lives in far more intimate ways. They were standing between severely ill people and their loved ones, which required them to bring a certain level of empathy and compassion to interpretation that had not previously always been necessary. They needed to communicate, even non-verbally, that they were feeling for their patients, and that they were there to support them.

An interpreter from Washington D.C. with nearly 20 years of experience, described a devastating moment during the pandemic when she was put in a completely foreign situation: "We had a patient who was going to be intubated, and the patient was trying desperately to reach their loved one before they got intubated, and they were unable to. And as soon as they finished intubating, the loved one called and the nurse picked up the phone and said [to me]: 'speak to them'. So I had to speak to them and just tell them what the patient had said that they wanted to tell their loved one. I couldn't interpret for anyone, because they were intubated. So it just put me in a completely different situation in which it wasn't "no, that's not my role," it was "this is totally my role." Right now, in this pandemic, my role is slightly different, and this is exactly what I need to do for this family. I have to express exactly what he said right before he was intubated because they may never hear his last words, and I may have been the one who heard those last words." Now, more than ever, patients' stories, feelings, and thoughts are being filtered through the interpreter's responsibility to carry on their memory, and make sure their voices get heard.

Interpreters have been absolutely essential throughout the pandemic in making sure patients who feel alone and misunderstood due to their language receive comfort and care, even when it is at the risk of the interpreter's own health. In the words of a hospital staff interpreter from New York: *"that's when your humanity takes over."* This interpreter emphasized the importance of the emotional and physical connection that was needed between patients and interpreters during Covid, which could only be provided through in-person interpretation. She recounts a time in April 2020 when she was caressing a Covid patient who was being intubated, and as nurses around her looked at her like she was crazy, she was thinking, *"This patient doesn't have family. He was undocumented. We didn't know if this guy's gonna make it. I'm the last person he's gonna see. I'm gonna hold his hand. And I held his hand as he was intubated."*

As more and more patients were put on ventilators or were too sick to speak, and family members were not allowed to visit, interpreters began to become the patient's voice. They were not translating a message, but rather serving as reservoirs for both a patient's and their family's emotions and experiences. In this unique role, they were communicating feelings, wants, and affects more than just words. This required a new level of empathy and connection as they were taking on the responsibility of holding and passing on people's stories, and were sometimes the only person in the room who could connect a severely ill person with their family members. As patients were dying and interpreters were carrying their last words, they were, perhaps even unknowingly, working to preserve a patient's memory, and helping to bring it into the present.

Interpreters as Healthcare Workers: How Medical Interpreters Have Come to be Seen as Members of the Healthcare Team in Response to the Covid-19 Pandemic

Many medical interpreters explained that one silver lining that has emerged from the devastating Covid-19 pandemic is that they and their work are being recognized and that providers are including them, now more than ever, as a true part of the medical team. It was noted that providers are doing more debriefing sessions with interpreters after healthcare encounters, inquiring about how things could be done and communicated differently to have more successful encounters. In addition to these debriefing conversations, interpreters have felt like they are being integrated into the team, as providers have started to give them the context of patients' situations, making sure the interpreter and provider are on the same page. They are pulling interpreters out of the dark more so than before the pandemic, helping to elevate their contextual knowledge so they can be informed members of the team. A hospital staff interpreter from Minnesota simply stated, "I think Covid has helped to make people feel more like we're a *team*", and she believes this change is due partly to the fact that interpreters were willing to expose themselves to Covid alongside the providers by working in-person, which gained the respect and recognition of providers. In describing his experience of increased teamwork, a New York interpreter remembered encountering providers crying throughout the hospital: "I would run into doctors in the elevator...and I could see that they were devastated." In this shared depression and collective crisis, providers have come to appreciate interpreters as part of the team. he said.

An interpreter from Washington D.C. described that interpreters in her hospital really started to get recognition 2-4 months into Covid-19 as they began to be called to different units from those they had worked on before the pandemic. She noted that more people saw how valuable interpreters are, and what assets they can be to healthcare encounters. Other interpreters concurred that, due to the pandemic and the "multidisciplinary" work it required, more units in the hospital have become aware of them and have started to make use of them more. One interpreter saw that when a tighter team of people started to work together, especially on the Covid unit in her hospital, she started to be more integrated into the team. It is wonderful that interpreters are gaining the recognition they deserve as healthcare workers, but it is important that this integration into the clinical environment is sustained. It is necessary that when the pandemic has ended, and hospitals are not dealing with such an extreme crisis, that providers retain the relationships they have formed with interpreters and continue including them as a part of the team.

My Takeaways: Steps Towards Categorizing Interpreters as Healthcare Workers by Acknowledging their Unique Skills and Contributions to Medical Care

A common theme in all of my interviews was that their contributions to the medical care of LEP patients – especially during Covid-19 – make them crucial members of the medical team. However, many feel that their training did not necessarily prepare them for the clinical aspects of the job, and that providers and patients do not always see them as healthcare workers. Based on the opinions of interpreters, and what they believe to be most helpful in making them feel like equal team members, I have devised some recommendations on how the medical interpreting field can be further integrated with the healthcare field, and how medical interpreters can be further integrated into the medical profession.

One actionable way to start acknowledging interpreters as essential figures in a healthcare environment, necessary for adequate care (for LEP patients), is to have staff interpreters on-call around the clock just like doctors and nurses. The majority of the hospital staff interpreters I interviewed said that, at their facility, interpreters do not work overnight (generally classified as 8pm-7am). They mentioned that virtual services can be used if an interpreter is needed during these hours, however most also noted that virtual interpretation is not nearly as effective as inperson interpreting in terms of providing adequate care and personal connection. If we were to begin to view professionally-trained interpreters as a necessary requirement for providing care to LEP patients – as necessary as a doctor or nurse – as I suggest, they could be justified in being staffed 24/7. This constant staffing can, in turn, lead to even more recognition of interpreters as essential members of the team, and lead to an increase in their use, which will benefit the care received by LEP patients.

Further, in order for interpreters to be viewed as healthcare workers and integrated into the team, their training should be updated. From my interviews, it is clear that most medical interpreters are not trained to be healthcare professionals. They are trained in medical terminology and ethics, yes, but are largely not given preparation for what they will experience in a clinical setting, or how specifically to interact with seriously ill people with a range of consciousness and psychological capacity. This has become more evident during COVID-19, which is why it is an apt time to rethink interpreters' roles and how we can better prepare them to become the healthcare workers that the pandemic has revealed they are.

Finally, there needs to be revised training for providers as well, both to help them better work with interpreters, and also become more educated on their essential roles in the medical team. Perhaps such an education could be implemented in medical school, integrated into their training on communicating effectively with patients. Embedding the concept of working with interpreters as teammates so early in future physicians' education could increase medical interpreters' recognition as essential members of the healthcare team. As discussed in this thesis, some interpreters shared that, at their teaching hospitals, medical students are specifically taught about the importance of interpreters and given guidelines on how to successfully work with them. Some students and residents even shadow interpreters throughout the hospital before they work with an interpreter for the first time. According to my interviews, these practices have proven to be extremely helpful in improving the interpreted healthcare encounter – and subsequently the care received by Spanish-speaking patients – as well as in raising awareness among providers of the values of professional interpreters. This type of shadowing does not occur in private doctors' offices, however, which could help explain some of the disparities my interpreters pointed out between the ability of hospital providers to work with interpreters versus that of private practice providers. Perhaps a specific training to help providers better communicate through interpreters could be implemented in these office and clinic settings, or a shadowing program, similar to that in hospitals, could be introduced. I suggest that these types of training should be common practice in an effort to increase awareness of the importance and value of interpreters so that they may begin to gain more recognition as members of the healthcare team.

These are certainly not all of the possible ways in which interpreters can come to be seen as healthcare workers and integrated into the medical team, but they are the most relevant based on themes from my interviews, and therefore what I propose. The Covid-19 pandemic has led to a realization of how much medical interpreters give and sacrifice to bring quality healthcare to their patients, and how integral they are in helping the patient feel safe, heard, and understood. It is crucial that changes be put in place to elevate this recognition of interpreters' unique roles to even more medical providers, and to the greater public, so they may begin to be acknowledged for the essential healthcare workers they are, and treated and compensated as such.

Final Comments

In addition to the topics described above, my thesis also focused on the emotional toll that the pandemic took on medical interpreters, what interpreters would like to see from healthcare providers to improve the healthcare encounter, and the importance and implementation of cultural brokerage. If you would like to read a copy of the full thesis, please do not hesitate to reach out to me! Please also contact me if you want to discuss any of the research presented here, or share your own experiences. My email address is <u>hlb315@nyu.edu</u>. Additionally, there is a short video highlighting main takeaways from this research, which can be found using this link: <u>https://www.youtube.com/watch?v=7ImD6Kspyxc</u>. Please do not hesitate

to reach out with any questions or comments!.

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Melania Cabezas-García holds degrees in Translation and Interpreting from the University Pablo de Olavide (Seville) and the University of Granada, where she teaches undergraduate courses in Translation and Interpreting. In 2020, she was awarded the PhD Prize of the Iberian Association of Translation and Interpreting Studies. She is a member of the LexiCon research group, has international publications on Terminology and Specialized Translation, and serve



Terminology and Specialized Translation, and serves on the scientific boards of international journals and conferences.

The Importance of Terminology Management

How can translators understand and translate expert knowledge into other languages? Thanks to terminology management, which ensures that the correct terms are used consistently throughout a company, an organization, or a translation or terminology project. Its benefits range from improved translations to cost reduction, as well as effective communication, internationalization of companies, and information retrieval, among many others. In contrast, failure to manage terminology could hinder communication, create confusion, lower translator productivity, or even result in legal issues.

This article describes a general framework for managing terminology in specialized translation contexts, such as medical translation. Although a chronological, step-by-step procedure is presented, these techniques may not occur sequentially in the actual workflow. The steps described include methods for: (i) corpus preparation and compilation; (ii) term extraction and conceptual analysis; (iii) identification of equivalents; and (iv) representation and storage in terminology management systems.

Corpus Preparation and Compilation

Corpora are usually employed in linguistic analysis, thanks to their endless possibilities. A corpus is a collection of texts that are selected according to specific criteria and constitutes a language sample. To create a corpus for terminology management, three basic steps must be followed: (i) text selection; (ii) text cleaning and preparation; and (iii) corpus compilation and storage.

First, texts must be selected according to their type, genre, and theme. For example, if we are translating a text on viral diseases, the corpus should contain texts on this subject. The text

format must also be considered. Although corpus analysis tools normally accept different text formats (e.g., .doc, .html, .tmx, .txt, .xml, .pdf, .xls, .xliff, .zip), plain text is favored since it avoids tags or elements that can cut sentences and hinder terminology management. If text types different from plain text need to be included in the corpus, it is advisable to convert them to plain text and clean them prior to compilation to avoid processing errors and to maximize the possibilities of the corpus analysis tool. Once prepared, texts must be stored and compiled in a corpus analysis tool (e.g., Sketch Engine, https://www.sketchengine.eu/) to make the most of them. Corpora can be used for tasks such as term extraction, conceptual analysis, or identification of equivalents.

Term Extraction and Conceptual Analysis

Identifying terms of interest is evidently the first step in terminology management. Corpus analysis tools permit the automatic extraction of keywords, which can be used for documentation. Alternatively, terms can be identified in the text that we are translating. These are not necessarily lexical units conveying specialized knowledge, but they can also be terms that are difficult to find, or terms of particular interest to the translator.

Therefore, terminology cannot be managed without analyzing the underlying conceptual system -which facilitates expert knowledge acquisition and communication. This can be a rather thorough analysis depending on our goals (and time). Conceptual analysis has two major applications: (i) recreation of the underlying conceptual system; and (ii) extraction of data to be included in a termbase, with a view to properly storing and managing terminology.



The extraction of conceptual information usually targets semantic relations (e.g., pathogenic viruses *cause* viral disease), definitions, and synonyms, among other things. Their specification enhances the semantic description of the domain and facilitates other tasks, such as comprehension, communication, and translation. There are various corpus techniques that can be used for this purpose, such as knowledge patterns, which are discursive structures revealing relations (e.g., a

pathogenic virus *causes/produces/leads to*...). Knowledge patterns can be queried by means of CQL searches, which are flexible queries including complex grammatical or lexical patterns -and can be used to obtain more results. For example, the following is a CQL query that searches for *pathogenic virus* and the knowledge patterns *cause* and *produce*. Different

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sentences, which make semantic relations explicit, can be obtained. However, these results could not be retrieved by means of simple queries since they include punctuations marks and different forms of the verbs and the sentences, which are only retrieved by means of CQL language.

CQL [lemma="pathogenic"][lemma="virus"][]{0,5}[lemma="cause produce"]		
Lieberman said had it been a more	pathogenic virus, causing	severe disease in more people, officials li
I molecules for processing, or even	pathogenic viruses which can cause	disease. It is therefore extremely
disease symptoms. Highly	pathogenic viruses often cause	fatalities in domestic poultry. <s> Wh</s>
<s> (15) 4. </s> <s> If HIV is a</s>	pathogenic virus, why does it not produce	the same diseases in the people who are
s? <s> Canine coronavirus is a</s>	pathogenic virus that causes	an infectious disease in dogs, regardless
also be activated by at least some	pathogenic viruses that produce	acute disease. <s> The free-radical g</s>
ific mutation. These highly	pathogenic viruses can cause	great mortality in domestic poultry flocks
nans (9, 12, 13). 4) In contrast to all	pathogenic viruses that cause	degenerative diseases, HIV is not bioche
I intestinal bacteria are replaced by	pathogenic viruses, fungus, and bacteria causing	a mixed infection in the body. <s> Ou</s>
ted to co-factors or variations in the	pathogenic viruses that cause	these cancers; Exploration of the
removal, of parasites, bacteria and	pathogenic viruses that cause	endemic diseases. Ponds for wa
ive neutralizer of the toxic effects of	pathogenic viruses that cause	herpes, hepatitis B, hepatitis C, influenza

Relations can also be codified in different ways that may not be described by knowledge patterns. To find them, a contextual search can be carried out. This is done using the Filter context option in Sketch Engine by inserting the two concepts between which the relation is unknown, without giving any indication of how this relation could be conveyed. Context filter reveals the elements joining these concepts, thus highlighting the relation between them. For example, if we know that pathogenic viruses are somehow related to diseases, but we do not know what this relation is, we can search for *pathogenic virus* and *disease* in the Filter context option. We will thus find contexts describing how both concepts are related (pathogenic viruses *cause* disease).

Once the semantic relations between concepts have been elicited, these will serve to recreate the underlying conceptual system -which is useful for making translation decisions, develop ontologies, and integrate the information into termbases.

Conceptual analysis may also include definition extraction and elaboration. But do translators really need to write definitions? Even though we are not always interested in elaborating definitions (or do not always have the necessary time), storing definitions can be useful for future projects. They can save time when dealing with concepts that do not appear in other resources or with difficult concepts, which can be described by means of clarifying features that facilitate their understanding for future occasions. However, when writing a definition, the basic structure of genus + differentiae should be considered. The genus is the category to which the concept belongs (i.e., a *viral disease* is a type of *disease*) and the differentiae are the characteristics that distinguish this concept from other similar concepts (i.e., it results from a viral infection). A definition of *viral disease* could thus be the following: *disease resulting from a viral infection*.

Conceptual analysis is also essential to identify synonyms. They allow for effective communication and expression according to the client's preferred terms. For this purpose, the client may have a previous list of preferred or not recommended terms and variants. If this is not the case, these variants can be extracted from the corpus. Knowledge patterns (e.g., *also known as, also referred to as*) are again of interest since they can be used to direct the search for synonyms.

Furthermore, the identification of synonyms is necessary because it avoids misunderstandings, which can occur if we understand synonyms as different concepts. Evidently, this could result in translation errors. Similarly, since synonyms are not always interchangeable, the variant that is most appropriate for the translation communication or project should be selected.

Identification of Equivalents

The identification of equivalents must be based on the various terminological tasks discussed so far, which ensure that translation is carried out successfully. Even though terminological resources normally include translations, they do not always describe all the terms and often do not indicate usage preferences. Thus, additional resources, such as corpora, should be mastered.

If we have a parallel corpus (i.e., a collection of texts in one language aligned with their translation in another language), the identification of equivalents is usually simple and fast. Therefore, the use of equivalents already employed in previous similar projects is guaranteed.

We may also have translated documents that are not compiled in the form of a parallel corpus. Ideally, these should be compiled as a parallel corpus in a corpus analysis tool so that translations can be quickly and efficiently reused. Sketch Engine offers several possibilities for this, which vary in complexity. The simplest way is to build a parallel corpus from tabular data. A document in Excel, TMX, XML, XLIFF, or other similar formats is required. Each column in this file will be understood as a language (e.g., if the document has two filled columns, the system understands that there are two languages). Accordingly, every cell in the columns will be understood as a segment (first column) and its translation (second column). Once the corpus has been compiled, queries can be made.

Nevertheless, if we cannot compile a parallel corpus of translations, we can create a comparable corpus from similar domain-specific texts, which have a similar register, and which are written in the target language (e.g., a corpus of English research papers on viral infections). In this corpus, idiomatic translations can be identified since it is assumed that the corpus texts were originally written in the target language (i.e., they are not translations). However, searches are more complex and time-consuming than in parallel corpora.

When searching for translations, different queries can be carried out depending on the term in question. For example, when searching the translation of a multiword term, such as *infectious virus particle*, we can search for the translation of some of the constituents by means of CQL queries that search for *partícula* (Spanish for *particle*) and its possible modifiers. The term, *partícula viral infecciosa (infectious virus particle*), could most likely be found.

Conceptual searches can also be carried out since equivalences in terminology are usually based on meaning coincidence. This conceptual query involves searching for one of the concepts whose translation is known, together with the knowledge patterns that convey the relation with the concept whose translation is unknown. In other words, when translating *enfermedad vírica* (Spanish for *viral disease*), we know after conceptual analysis that this is caused by a virus. Therefore, the following query can be formulated, adapted to CQL language: "virus causes/ produces/leads to...". Hopefully, the translation, *viral disease*, will be found in the contexts retrieved.

In other cases, the relation between the term to be translated and other concepts is not known. A contextual query can then be used by means of the Sketch Engine's Filter Context option. This is a broader search, which therefore provides more noise, and consists of searching if several terms co-occur in the same context without the need to express how they are related. We will illustrate this query by means of the previous example. To find an English translation of the term *enfermedad vírica (viral disease)*, we can search for contexts in which *virus, infection, cell, DNA*, or *RNA* co-occur, because *enfermedad vírica* usually appears together with the Spanish terms for *virus, infection, cell, DNA*, and *RNA*. The translation *viral disease* could thus be found.

Evidently, the search for equivalents will not always be direct or infallible when using these simple techniques. Nevertheless, they are expected to serve as the starting point for finding equivalents, adapted to every translation situation.

Representation and Storage in Terminology Management Systems

The previous sections have described different techniques to obtain the various terminological data that should be integrated into termbases with a view to efficiently managing and reusing terminology. The representation and storage of information in terminology management systems have various benefits. Since computer-assisted translation tools can integrate terminology management systems, they can show term information while translating. Additionally, they often enable pre-translation or automatic terminology replacement before translation, which guarantees term consistency. Moreover, as part of the review process, we must focus on terminology quality assurance. For this purpose, we must often verify that terms have been translated in accordance with the termbase. Furthermore, to foster collaborative work, these personal termbases can be shared with other translators or merged with already existing termbases.

However, representation and storage in a termbase must be consistent and organized to avoid problems related to the display and export of information, data misunderstanding, etc. To this end, the general structure of termbases must be considered. Termbases are concept-oriented, that is, unlike traditional dictionaries, each entry in a termbase corresponds to a concept. Therefore, information that applies to the same concept must appear in the same entry (e.g., definition, synonyms, administrative data, etc.). On the contrary, in traditional dictionaries, which are term-oriented, every entry corresponds to a term. Thus, for example, the entry of a polysemous term (i.e., a term having several meanings, such as *virus*) in a dictionary includes its different meanings, whereas, in a termbase, there is one entry for every meaning or concept.

Accordingly, information in termbases must be organized in levels and, within each level, in data categories. There are three hierarchical levels in a termbase, which are related to concept, language, and term respectively. Within each level, data categories are used, which are compartments where the different data are organized. When defining the structure of a termbase, the characteristics of every data category must be established. This entails deciding whether the information is mandatory or optional, the type of data that will be entered (i.e., free text, picklist, etc.), and the input method that will be used (i.e., manual, system-generated, etc.). The correspondence of each data category to a specific level must also be considered a priori.

The most general level is usually known as the concept level or entry level, and includes information related to the concept, which applies to all languages. Thus, for example, this level includes data categories such as the domain, multimodal information (e.g., image), or administrative information (e.g., author of the entry, date of creation, entry identifier). When termbases allow the inclusion of semantic relations, these should also be conveyed at the concept level.

Then, the language level includes data categories with information related to the concept that varies in each language, such as the definition, which can be written in the different working languages. Other data categories may also be included, such as the source or reference of the definition, or concept usage notes in every language.

The most specific level is the term level, which includes data categories with information, such as the term itself (or terms, if there are synonyms, another term level being created for this purpose), part of speech, gender, context, or term usage notes (where, for example, the preference for a certain synonym can be highlighted). The termbase is therefore the final product resulting from the various tasks of terminology management.

The proposal for terminology management described is mainly based on corpus techniques. This is designed to facilitate the management of different terminological aspects that must be addressed when handling the terminology of specialized texts. The techniques proposed are not intended to be mandatory guidelines, but to open new doors and ideas in terminology management.

Caduceus Team

Andreea Boscor | Luz Miranda Valencia | Yasha Saebi