

ARTICLE

How AI-enabled machine translation is **AMPLIFYING** the life sciences' global reach



In scientific research and discovery, language is both a bridge and a barrier.

It connects minds across the globe, but also presents hurdles in the form of linguistic diversity. In life sciences—a fast-paced industry where every breakthrough holds the potential to save lives, and where misunderstandings can hold the severest of consequences—the importance of clear communication is brought into sharp focus at every step.

This is felt particularly keenly due to the wide array of disciplines encompassed under the umbrella term that is 'life sciences'. From molecular biology to epidemiology and beyond, each discipline brims with specific terminology, nuances, and conceptual intricacies which are increasing in quantity almost daily, all of which must be properly captured if their linguistic information is to be correctly conveyed.



Global business needs global linguistics

Throw in the commercial imperative of rapid organizational expansion across different geographic regions, and suddenly managing multilingual content becomes more than just a matter of translation. It becomes central to ensuring accuracy and consistency, and staying apace of continually evolving regulatory compliance across jurisdictions and markets.

Not only must all your organization's scientific output be clear and accurate in every language, but so too your in-house departments—HR, finance, IT, and the like—if they are to deliver a truly global organization.

It has the potential to feel like something of a wrestling match, with a constant push and pull tension between maintaining the highest standards of linguistic integrity throughout the business, and ensuring it is a profitable one where translation costs, though necessary, are firmly kept in check.

Fortunately, the rise of machine translation is easing the burden on life sciences organizations. We'll explore next how the technology is evolving to help firms like yours accelerate even further.

The current state of machine translation in life sciences

Machine translation (MT) is becoming an established tool within the life sciences to help overcome the 'language conundrum' set out above. AI-enabled, MT provides instant text translations without the need for human intervention, and thanks to its embedded machine learning capabilities, it builds upon its knowledge from previous translations, meaning it refines and improves its capability the more it is used.

With higher volumes of accurate translations produced faster than traditional, human-based translators, machine translation is playing a significant role in giving healthcare professionals access to cutting-edge research, clinical guidelines, and medical literature from around the world much sooner than previously possible. That gives those professionals, in effect, a head start on where they would have otherwise been, accelerating them toward generating meaningful impacts through their work.

Where next?

The evolution of MT into NMT

Taking this one stage further is neural machine translation (NMT), which has the potential to be a true game-changer in the life sciences domain. At the heart of NMT lies deep learning—a subset of artificial intelligence that mimics the human brain's neural networks—which it uses to generate translations with unprecedented speed and accuracy.

In short, it maps the meaning of source language sentences into target languages, producing not only accurate translations but also natural-sounding ones – all in real-time.

In addition to greater translation quality, NMT also further raises the value of embedded MT within a translation production workflow. Its speed and capability hold the potential to significantly reduce translation costs within a life sciences organization by lessening the need for human translator oversight and proofing, with shortened turnaround times as a result.

Of particular significance also for firms looking to go global and, indeed, stay global, is NMT's robust security measures—at least with certain providers—that help keep companies compliant with international regulations such as Regulation 2017/745 (EU MDR) and Regulation 2017/746 (IVDR).

What are the potential risks of NMT?

While NMT does provide substantial benefits, it also holds potential risks for organizations if implemented incorrectly. Avoiding these risks is essential in such a sensitive and highly legislated industry as life sciences, so it is worth listing the three key ones to watch out for:

1. ACCURACY:

While open-source tools utilizing NMT are available, they do not always provide the level of accuracy needed for sensitive content and important documents, particularly when technical language is involved. A central feature of NMT tools is the use of AI, but that AI still requires training on relevant and accurate data, which may or may not have ever been shown to the open-source tool you happen to be using. At best, you will be able to 'teach' the tool with your documents, at worst you will be starting from scratch on every single document that requires translating, which could somewhat defeat the purpose of engaging with NMT in the first place.

2. CONFIDENTIALITY:

This is a huge concern with open-source tools, because as they say, if a service is free, then it is you—i.e., your data—that is the product. When entering your sensitive/confidential documents into an open-source translation tool, there is simply no way of knowing where your data may end up, or who may be able to see it. These tools can therefore pose a potentially very serious regulatory risk, no matter their actual capabilities when it comes to fast, accurate translations.

3. IP LOSS:

Using free online translation tools to translate content has the potential to expose life sciences organizations' intellectual property, which can be a significant risk for any company looking to introduce a new drug into the market, for example. The financial risk of such a loss of IP hardly needs to be stated, but important too would be the reputational risk and loss of face in a cutthroat industry.

Making AI-enabled translations comprehensive

When the risks are avoided through use of a trusted provider, NMT offers a myriad of benefits across numerous use cases and should never be thought of as simply a tool for translating reports for researchers, for example, far from it. Instead, any successful deployment of NMT should see it be easily accessed and used by all within a life sciences organization, for example:

- **Pharmaceutical researchers performing systematic reviews**
- **HR vetting international candidates' CVs and bodies of work**
- **Staff in contact centers communicating in multiple languages in real-time**
- **The legal team working towards regulations in new, non-native markets**
- **And more.**

As an AI-enabled tool, we mentioned earlier that NMT can learn. And, as with any student, it learns best from high-quality source material—in the case of translations, that means the linguistic inputs. Fortunately for the life sciences, it is estimated that around 80% of the content from the likes of a pharmaceutical company can be used successfully with NMT.

But wait, the machines haven't fully taken over just yet!

The key to fully unlocking the benefits of NMT and obtaining outputs of the very highest quality is using NMT in conjunction with human linguists. They serve as gatekeepers of the NMT output, and ensure its continued accuracy as well as a grasp of the material it is being fed.

In this way, humans help to continually refine the NMT on top of its own learnings through what is known as 'post-editing'. Detecting, reporting, and adjusting NMT outputs like this then accelerate its understanding of technical terminology, nuance, and conceptual intricacies.

The power of trust

NMT has immense power for the speed, accuracy, and scalability of translations throughout a life sciences organization when implemented correctly—that is, securely, and not through open-source tools for the reasons listed above.

Having a secure solution builds the necessary trust in your organization that you take your obligations towards regulatory compliance, patient

confidentiality, intellectual property, and more, seriously. It will encourage your staff to use the NMT for every translation they need, and reassure potential investors, partners, and external auditors, for example, that yours is a firm they can safely, securely, and globally work with. And it is this that will help you accelerate your ROI on your chosen NMT solution.

What to look for in NMT for your organization

With the right NMT solution, you're shortening the delivery time for high quality translations to individuals across your organization. Doing so will help accelerate their ability to synthesize the information and create meaningful impact through their work sooner—exactly why they joined the life sciences in the first place.

Selecting the right NMT provider for your firm, then, is crucial if you are to realize its full potential and see the results you would expect it to make in every area.

Foremost in your mind when considering providers should be:

- **IT intelligence** – As you look to scale your business, does your potential NMT solution have the ability to grow with you and continually match your needs wherever you look to operate?
- **Flexibility** – How adaptable is the solution to your existing environments and workflows? Or will you need to rip and replace to deploy it?
- **Continual learning capabilities** – Does their solution adapt to understand the technicalities and nuances of the language you're feeding it?
- **Cross-functional experience** – Is the solution applicable to and usable by the majority of your organization, and potentially even external partners?
- **Regulatory compliance** – Is your chosen solution ISO-certified? Does it ensure your regulatory compliance both now and in the future?



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Language Weaver

As a provider with a proven track record of delivering the latest in NMT to leading brands globally, Language Weaver stands out for its unmatched proficiency across these critical features, offering a comprehensive suite of NMT solutions tailored to the unique needs of the life sciences industry.

Our continuous innovation in generative AI technologies including NMT sees us work with many of the world's top pharmaceutical companies and patent filers worldwide across our 65+ global locations. To learn more about the difference partnering with Language Weaver can make to your translation workflows, visit our dedicated life sciences site.



Language Weaver provides real-time, instant translation enabling enterprises and government organizations to seamlessly manage multilingual content and data. Language Weaver's breakthrough linguistic AI capabilities powered by technologies that are secure by design, fully scalable and infinitely adaptive help global organizations to access new markets, uncover insights and deliver superior customer experiences.

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