



AI-POWERED MACHINE TRANSLATION (MT)

Your Guide to the Basics



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Considering machine translation (MT) for your organization? If you want to translate more efficiently by using a [computer-assisted translation tool](#) but first want to learn the basics of machine translation, you're in the right place.

Perhaps you want to gather more information about translating with software before you take the plunge. For instance, you might ask yourself, "When should I use machine translation, and when should I [hire a human translator](#) instead?" In this article, we answer this question and more.

Find out everything you need to know about machine translation below.

Looking for AI-powered translation software that offers machine translation? Try [Pairaphrase](#), the enterprise translation software for organizations.

WHAT IS MACHINE TRANSLATION?

Machine translation is the automated translation of text or speech from one language to another using software. Today, translation systems may use neural machine translation, generative AI and large language models (LLMs) to produce increasingly fluent, context-aware translations.

HOW DOES MACHINE TRANSLATION WORK?

Machine translation ([MT](#)) uses software to convert text or speech from one language (source language) to another language (target language). It is computer-generated, meaning it's the automated translation of text without human involvement. **Today, translation technology includes both neural machine translation and generative AI models. These systems learn language patterns from large datasets, while modern enterprise platforms can also use organization-specific resources such as Translation Memory, glossaries, style guidance and reference content to improve consistency and relevance.**

THE EVOLUTION OF MACHINE TRANSLATION

Traditional machine translation uses probability to guess the best translation for a given text. There are actually several ways to do this, all developed from Natural Language Processing (NLP).

NLP is a branch of Artificial Intelligence (AI). It focuses on teaching computers to understand text and spoken words the same way humans do. NLP has many applications including spam detection, virtual chatbots, automatic grammar checks — and of course, translation.

Here are the types of machine translation in NLP:

1



Rule-based machine translation (RBMT): 1970-1990

Rule-based machine translation starts with language experts who develop grammar and language rules for the machine to follow. It also uses dictionaries that can be customized to a particular topic or industry. This type of machine translation looks at individual words.

2



Statistical machine translation (SMT): 1990-2010

Statistical machine translation takes huge amounts of text translated by humans and uses that to learn the best translation for a given input. This type of machine translation uses longer sequences of words or phrases as units.

3



Adaptive machine translation (AMT): 2010-Present

Adaptive machine translation allows a machine translation application to learn from corrections made by a human and improve its accuracy over time. It uses large amounts of translation assets like translation memories and term bases to produce better translations.



4 Neural machine translation (NMT): 2014-Present

Neural machine translation (NMT) is a form of [AI-based machine translation](#) that uses neural networks to model relationships between words and sentences. Unlike earlier rule-based and statistical methods, NMT can consider broader linguistic context when generating a translation.

Put simply, NMT tools use neural networks similar to the neurons of the human brain. This allows the tool to categorize data into groups and layers. As a result, it can incorporate the context of sentences and paragraphs rather than individual words or short phrases.



5 AI-powered translation: Today

AI-powered translation now combines established machine translation engines with generative AI and LLM-based tools. These technologies can help users translate, refine phrasing, adjust tone, address language-growth issues and generate multilingual content. In Pairaphrase, users can choose among multiple translation engines and combine AI with Translation Memory, glossaries and human review.

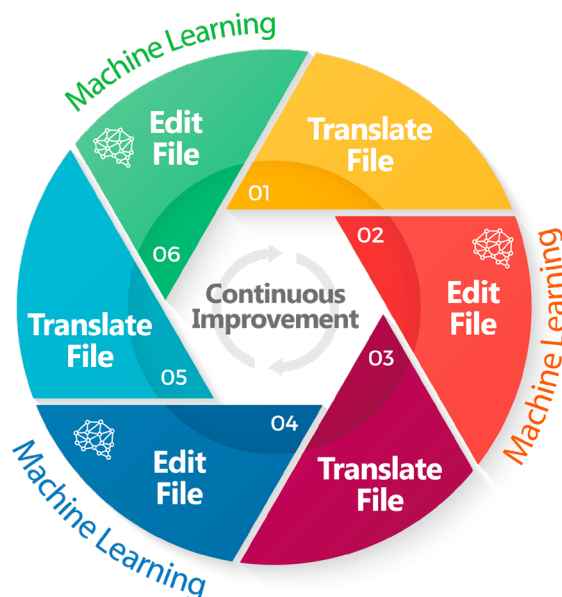
Modern translation platforms often combine several of these approaches, including neural MT, adaptive learning, Translation Memory, glossaries, and generative AI.



THE FUTURE OF MACHINE TRANSLATION

The next stage of AI translation is increasingly personalized and context-aware. Organizations can now guide generative AI using glossaries, Translation Memory, style guidance, previous translations and other reference content. This gives teams greater control over terminology, tone and translation quality while keeping human reviewers in the workflow where needed.

More about [the future of machine translation](#).



MACHINE TRANSLATION ENGINES

Organizations now have more translation engine choices than ever. Google, Microsoft, and DeepL provide established Machine Translation options, while ChatGPT brings generative AI capabilities to translation. The best engine can vary by language pair, content type, terminology requirements, speed, and desired level of customization.

Pairaphrase gives users access to multiple translation technologies, including Google, Microsoft, DeepL, ChatGPT, and PairaphraseGPT, so teams can select an engine based on the needs of each project.



Microsoft



DeepL



ChatGPT

pairaphrase



Generative AI options such as ChatGPT can be useful when context, tone, phrasing, or linguistic nuance is important. Traditional Machine Translation engines may be preferable when speed, specific language support, or established terminology workflows are the priority.

Because translation performance varies by language pair, content type, and workflow, organizations should test engines against their own content before choosing a default approach.

PairaphraseGPT

PairaphraseGPT is Pairaphrase's translation-focused generative AI option. It combines the capabilities of large language models with translation resources such as Translation Memory, glossaries and organization-specific guidance. This allows teams to generate translations informed by their preferred terminology, previous translations and other reference content—all within their Pairaphrase workflow.

BENEFITS OF MACHINE TRANSLATION

Machine translation can greatly help your organization.

Here are the 3 most impactful machine translation benefits:

1



Saves your organization lots of time - produce translations in seconds and minutes

AI-powered translation can dramatically reduce the time required to produce multilingual content. [In one large public-school implementation](#), 90% of translations required no post-editing, eliminating a previous 4-7 business day translation wait.

2



Reduces translation-related costs significantly

Organizations that translate recurring business documents can reduce costs and manual review time by combining secure translation software with internal proofreading. [Nexteer Automotive used Pairaphrase for Word and PowerPoint translation workflows](#), saving \$112,000 per year, reducing translation costs by 69%, and saving more than 400 hours annually while supporting Chinese and French communication.

3



Improves translation quality

Machine translation software can integrate with glossaries (see: [Terminology Management](#)) and memorize key terms as it translates. It can then reuse these term translations in context whenever needed to maintain greater consistency and accuracy (see: [Translation Memory](#)). For recurring projects, Translation Memory, glossaries, and AI guidance can help teams avoid starting from scratch each time. Reviewed edits can be reused, approved terms can stay consistent, and AI tools can help refine tone, clarity, and phrasing.



MACHINE TRANSLATION VS HUMAN TRANSLATION

It's clear that there are many machine translation advantages. So does it even make sense to have human translators anymore? Let's look at the options and when it makes sense to use each one.



Generic machine translation tools

Common machine translation options include Google Translate, Microsoft Translator and DeepL. Generative AI systems such as ChatGPT have also become an important option for translation and multilingual content workflows.

In many cases, these out-of-the-box translation systems perform well. They're great at gisting and producing respectable "first draft" translations of more complex content. When paired with translation memory, users can get even better quality and even more productivity gains as they spend less time revising their machine translations.

Generic machine translation tools can be useful for quickly understanding the general meaning of a text or producing a fast first draft. For sensitive documents, such as [IEP-related communications](#), teams should use secure workflows and human review before sharing translated content.



Customizable machine translation tools

Customizable machine translation tools can produce more relevant and consistent translations than generic tools because they can be guided by your organization's terminology, previous translations, style preferences, and subject-matter context.

These tools are often used by organizations that translate recurring content and want more control over terminology and tone. Instead of starting from scratch each time, teams can use approved language resources to help the system produce output that better fits their field, audience, and communication style.

As a result, customizable tools can reduce post-editing and improve consistency over time. However, they still require some upfront setup, and human review remains important when accuracy, risk, or brand voice matters.



Human translators

With all these great tools at our disposal, human translators find themselves using computer-assisted translation tools for nearly every project, including machine translation software.

After all, it's much faster to post-edit than to translate everything from scratch — and when you have a terminology management software and translation memory as well, the work process becomes much faster and easier.

However, there are still some projects where it might be better to avoid machine translation alone without human input:

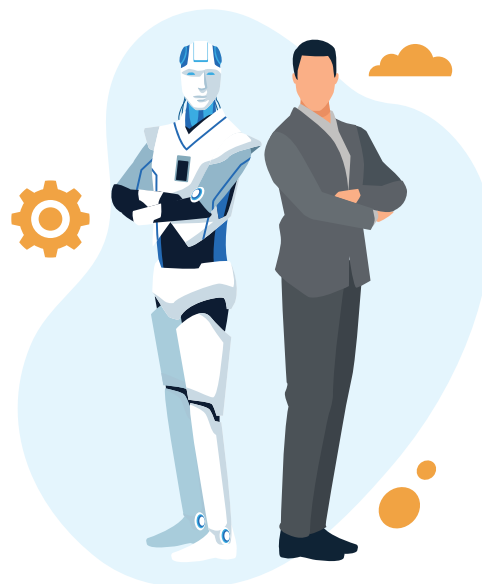
- **Creative texts:** Creative content often benefits from human review because style, cultural context, brand voice and wordplay can require judgment. Generative AI has become significantly better at handling tone, nuance and alternative phrasing, but organizations should still review high-visibility creative content before publication.
- **Texts with complicated language:** Complex syntax, ambiguous wording and specialized terminology can still challenge AI translation systems. Generative AI is increasingly capable of working with broader context, but clear source writing, terminology resources and human review can improve reliability.
- **Texts with high stakes:** in fields like law, medicine, or finances, errors produced by machine translation software alone can have disastrous consequences.

WHAT'S BETTER: MACHINE TRANSLATION OR HUMAN TRANSLATION?

Choosing between machine translation and human translation depends on the type of content, the level of risk, and your organization's translation goals. Machine translation can produce a fast first draft and help teams translate more content in less time. Human translators, bilingual staff, and subject-matter experts can add judgment, context, and review when accuracy or nuance matters.

In most cases, it's not an "either/or" decision. For many organizations, the strongest approach is a hybrid workflow: AI produces the first draft, while bilingual staff or professional translators review the content according to its purpose and risk level.

Translation Memory, glossaries, and AI-assisted editing can then help preserve approved decisions for future projects. This allows teams to reuse reviewed translations, maintain consistent terminology, and scale multilingual work without starting from scratch each time.



BEST PRACTICES FOR MACHINE TRANSLATION POST-EDITING

Machine translation tools can perform a large portion of translation work without human help. However, in some cases you'll still need someone to post-edit the translation to check the translation for accuracy and correct any mistakes.

This will still take much less time and money than a human translator working on the whole text. Use these best practices for machine translation post-editing to maximize efficiency.

1. Start with the source text

Optimizing machine translation post-editing actually starts before the software ever sets eyes on the text.

When it's possible, it's a good idea to optimize the source text for machine translation. Ambiguous language, inconsistencies and overlooked errors can snowball and create big problems when you're translating into multiple languages. This is even more important for machine translation. Machine translation still has limitations and works best with content that is clear and concise.

Follow these guidelines to improve machine translation output quality:

- Correct any spelling or grammatical errors
- Use consistent formatting and terminology
- Prefer clear, concise sentences and avoid unnecessary complexity.
- Use extra care with humor, sarcasm, metaphors and culturally specific language. Generative AI can often suggest culturally appropriate alternatives, but these should be reviewed when tone or meaning is important.
- Write dates in non-numeric format (is 01/05 May 1st or January 5th?)
- Don't mix active and passive voices
- Watch out for words with multiple meanings
- Create a Glossary to be used as a term base for MT

Learn more about [how to improve machine translation quality](#).

2. Choose the best machine translation tool

There are many machine translation tools and platforms to choose from, and new options continue to emerge. The best choice depends on your organization's content, security requirements, language needs, collaboration process, and review workflow.

For example, some platforms are designed primarily for software localization, while others are better suited for document translation, cross-department workflows, or secure review of sensitive content. Pairaphrase supports documents, spreadsheets, presentations, scanned PDFs, subtitle files, and 30+ other file types, with workflows for tools such as Google Workspace.

Choosing the right platform can save your organization time, money, and effort. Before making a decision, test each option with real content from your organization so you can see how well it supports your day-to-day translation workflow.

3. Decide on light post-editing (LPE) or full post-editing (FPE)

You can post-edit by simply skimming, or by pouring over the text for hours or days. How much post-editing you need depends on the project, time, cost, and quality needed.

- **Light post-editing (LPE):** You modify the machine translation only where it's absolutely necessary to make sure the text is legible and accurate. You make as few edits as possible, focusing on those that could lead to misunderstandings or hinder the text's purpose. This approach is the fastest and most cost-effective.
- **Full post-editing (FPE):** You thoroughly review and modify the text to make sure there are no errors of any type. This includes style and tone consistency, all grammatical errors, and appropriate cultural adjustments (such as idiomatic expressions). A fully post-edited machine translation should sound completely natural, like it was originally written in the target language.

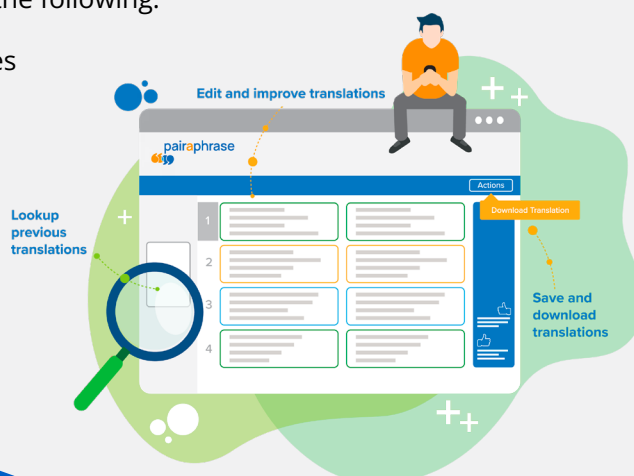
This approach is much slower and more expensive, but you'll have very high-quality output.

4. Use CAT tools

Machine translation post-editing can be performed by a translator or a bilingual colleague. Today they can (and should) get some help from software. Computer-assisted translation (CAT) tools are a great choice. They offer a wide array of post-editing features to help with the post-editing process.

The most efficient post-editors make full use of [CAT tools](#) to maximize productivity. Features to look for in a CAT tool include, but are not limited to, the following:

- Multiple AI and Machine Translation engines
- Translation Memory
- Terminology management and glossaries
- Generative AI tools
- Organization-specific AI guidance
- AI + human review workflows
- Secure collaboration
- Automatic file formatting
- Support for scanned documents
- Enterprise-grade security



Put AI-Powered Machine Translation to Work for Your Organization

Want to incorporate machine translation into your language translation workflow? **Try Pairaphrase.** It's AI-powered enterprise translation management software for organizations who value safer, smarter and faster translation.

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