Effectiveness of Artificial Intelligence–Powered Translation Tools in Developing Medical Publications: An Assessment of Japanese-to-English Translation

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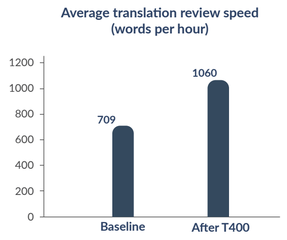
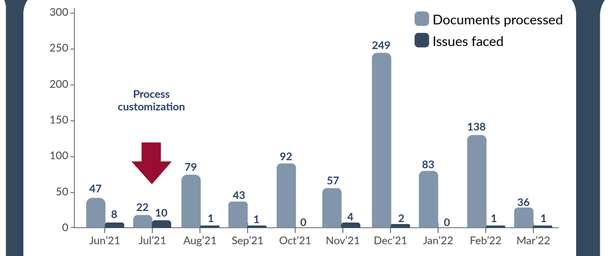
Poster No. 3

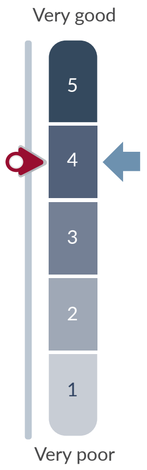
AI-powered translation tools, combined with pre-translation measures and human editing, can increase translation speed compared with pure human translation, with no compromise on translation quality.



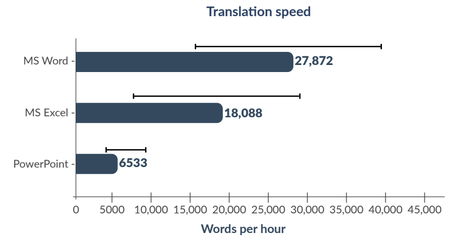
50% increase in translation review speed

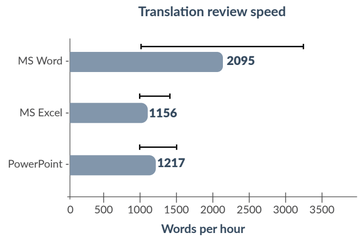


Decreased incident frequency (issues faced) and increased efficiency achieved by **resource training and process customization**



Overall quality score of 4 (ie, good) on a 5-point scale





AI tool translation **works efficiently across different document types**

Objective

- Artificial intelligence (AI)–powered translation tools are gaining attention and acceptance to increase efficiency in medical publication development.
- However, these tools are not mature enough to be used independent, without human review, while maintaining quality and accuracy.[1]
- We assessed the performance of a commercially available, AI-powered translation tool in the Japanese-to-English translation of scientific and clinical documents.

Methods

- After application of the pre-translation measures listed below, 26 documents written in Japanese (eg, clinical study materials, slides, and client comments) were translated into English via an AI-powered translation tool (T400 [Rozetta Corp., Tokyo, Japan]).

Pre-translation measures

Situation	Action
Images in a PDF	Use human translation
Comments in a Word file	Use in-house developed C# script
Tables and figures in a PowerPoint file	Re-create the tables and figures and translate via T400 OR Ask client for the source files
Datasheets as a large-size Excel file containing the same terms repeatedly	Use Excel macros developed in-house to: 1. Create a corresponding table for Japanese and English terms 2. Run macros to find and replace words

- Process was setup for translation to be reviewed and manually edited by a bilingual medical writing expert.
- The translation processing speed and review times were compared between this process and that with pure human translation using a similar set of 17 documents from previous projects, normalizing for document length and type.
- Quality of AI-powered translation was assessed using a qualitative 5-point scale by the same expert who had handled human- and machine-translated documents on these projects.

Results

- The processing speed increased by >500-fold with the AI tool versus human translation, which was within the expected parameters.
- Human review and editing were required for all materials before their further use in medical publications.
- Translation was not successful in specific types of documents, for which pre-translation measures had to be developed.
- The major challenges in translation quality remained in language-specific issues and technical terminologies, for which personnel training and human review were unavoidable to maintain the quality of subsequent documents.

Challenges in AI translation	Examples
Proper nouns	Human names and company or university names
Japanese medical terms that have specific English counterparts	Tumor response coded with the Response Evaluation Criteria in Solid Tumors
Japanese language nature	Lengthy sentences with a complicated structure Sentences without a subject Typographic errors (eg, Kanji conversion)
Document format and style	Phrases including parentheses, brackets, or superscripts Sentences spanning across two columns or two PDF pages

Summary

- AI-powered translation has increased efficiency and decreased the workload for translation and human review.
- Personnel training and process improvement based on case-specific incident logs have enhanced the integration of AI tools into workflows traditionally dominated by pure human translation.

Conflicts of interest

All authors are full-time employees of Cactus Life Sciences (part of Cactus Communications).

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Reference

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