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# Real-world AI-driven Applications are Signaling a New Frontier in MT

BY STEFAN HUYGHE





## Localization Today

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Most of us working in the language industry have probably heard — and will continue to hear — about the importance of educating the C-suite on the return-on-investment (ROI) of localization. Few have championed this task better than Talia Baruch and John Hayato Branderhorst, co-founders of GlobalSaké, and the company’s CEO and COO respectively.

The duo has illustrated this time and time again. At GlobalSaké’s Q3 Interactive Virtual Event on Sept 1. More than 85% of attendees at GlobalSaké’s events are cross-functional client-side executives and buyers of multilingual solutions. The company’s presentations are bountiful with applied-learning industry insights and the latest case studies of things that are commonly presented as dry theory elsewhere.

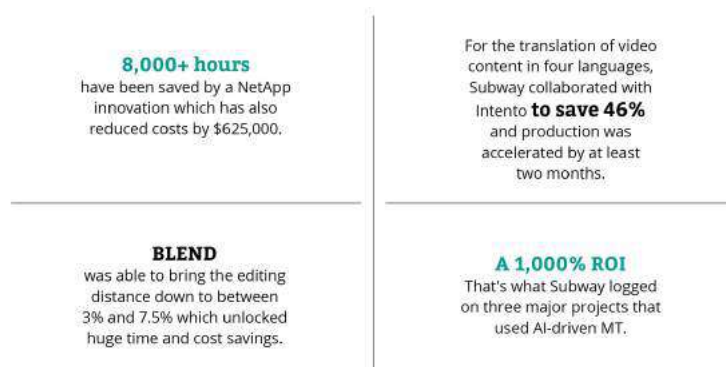
At the September event, which Baruch developed to focus on “future-ready new technologies in multilingual solutions,” presenters showcased new AI neural machine translation (NMT) applications and Voice AI implementations from some of the world’s most innovative companies. Here’s a quick recap of some of the TED Talks presented at this event.

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Recently, NetApp developed an internal AI source code internationalization tool to optimize internationalization efforts upfront. The software learns about common coding issues and the associated fixes with machine learning (ML) mechanisms and automatically fixes upfront coding internationalization issues, removing the need for developers to perform manual fixes on the tail-end. According to Saurabh Kavathekar, director of product and support globalization at NetApp, the technology was born out of a need for more efficient software internationalization processes and technologies. Making global-ready products with old tech was costly and inefficient. Static code analysis would produce lots of false positive error codes, and in turn, this inconsistent, compromised quality would create push-back from engineers who would put in a lot of manual work to catch errors.

NetApp's solution is AI-based. Dr. Global's most revolutionary tool is a self-healing technology that allows engineers to no longer spend copious amounts of time fixing coding issues. The solution allows for automated remediation and AI-enabled recommendations. Localization output speed has been improved by 98%. According to Kavathekar, to date over 8,000 hours have been saved by this innovation which has also reduced costs by \$625,000.

According to Gary Lefman, senior localization architect at Cisco, monolithic applications have gone the way of dinosaurs. Cisco is now able to deliver unlimited scalability with elastic processors, memory, and storage by implementing and bundling a series of microservices. A microservice is a little piece of functional code that performs a single task and is destroyed in the process. They are extremely fast and cheap.



Supported by ContentQuo, Electronic Arts (EA) has implemented a new AI-driven translation quality management system. The solution is vendor-agnostic and can be integrated with all leading TMS solutions and works within any quality framework for both human and machine translation (MT). EA's MT program research began in 2012, and the company implemented production in 2019 for over 50 language pairs.

Cristina Anselmi, the company's MT lead, told audience members that the game design company's ultimate goal is to allow for real-time localization so players could communicate with each other in different languages while playing online. For

company's approach is MT followed by post-editing. AI has been instrumental in automating some of EA's quality metrics and counterbalancing "Red Pen Syndrome;" that is, the human tendency to over-edit machine-translated content often brought on by a counter-productive desire to be of value.

One of the most cutting-edge developments in multilingual AI applications currently taking place is around vector spaces, which explore word similarities across languages. Leveraging word-level embedding alignment, the process is based on the automatic matching of word correlations. For a pair of phrases, an algorithm first must decide which words from the source and target phrases correlate. The end goal is to predict word choices in the target language. To develop efficient AI that can exploit the vector space between two languages, a lot of heavy data lifting is necessary. Companies like Meta, which can analyze huge amounts of content, were ideally positioned to take on the assignment.

In 2016, Facebook Research published its first findings based on a crawl of the entire internet in 157 languages. In 2017, Babylon Health produced a paper showing a possible way of "normalizing" the vector space between two languages. According to Rafal Jaworski, linguistic AI expert at XTM International, the company has now applied for a US Patent on its technology that normalizes the vector space for 50 languages onto the same plane. Calculating similarities and applying them to fuzzy matches is a completely new direction for linguistic AI.

Procore is currently implementing an AI-driven content management system to help with the localization of a content base that retains more than 3,500 articles and 5 million words per language across 10 languages. According to Jon Ritzdorf, senior globalization architect, AI can now identify errors in poor source content and predict "at-risk" content. It helps unmask content written by non-native authors or created by technical specialists for a non-technical audience, as well as dated content that is not adhering to Procore's brand tone and voice. Based on its findings, the company can then decide whether to rewrite the source text before translation.

The technology is also used to evaluate target suitability: Its quality is analyzed automatically to determine whether further linguistic QA is warranted. The final data is then used to retrain MT engines. This new approach has enabled Procore to apply limited SME resources in a much more targeted focus on what is the most complex, highly adapted content that must be rewritten.

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Subway's manager of globalization services, Carrie Livermore Fischer's turn to MT was in part brought about by the huge uptick in worldwide eLearning content volume brought on by the pandemic. It resulted in huge cost savings for the company. For the translation of video content in four languages, Subway collaborated with Intento to save 46%, and production was accelerated by at least two months. The AI-generated text-to-speech component was completed with 41% cost savings, and that does not consider the time and effort that would have gone into recruiting and qualifying human voice talents. In just one year, taking into account the three major projects in which Subway used AI-driven MT, they saw more than a 1,000% ROI, not counting how many additional restaurants they were able to keep open because they could now train franchisees virtually.

FLSmith, a Danish company with offices worldwide from India to Salt Lake City, provides innovative engineering, equipment, and service solutions to the global mining and cement industries. With more than 10,000 employees in over 60 countries, they have an ongoing translation need of between nine and 10 million words each year in more than 120 languages.

Content that is primarily used in digital solutions is more than 70% made up of technical documentation. The savings once provided by legacy TMs were no longer enough to satisfy the ongoing need for faster, easier, and cheaper localization. Yaron Kaufman, co-founder and CCO at **BLEND Localization**, explained that after using 1-2 million words of this legacy data, per language pair, to train MT engines, BLEND was able to bring the editing distance down to between 3% and 7.5% which unlocked huge time and cost savings.

Spacetoon, the largest children's TV Station in the Arabic-speaking world, partnered with aiXplain Inc., to implement AI-driven technology for voice prosody localization. Hassan Sawaf, founder and CEO of aiXplain, noted that while speech recognition and MT have been adopted as good tools to automate and increase efficiency, humans still remain at the center of his operation.

Spacetoon was looking for a reliable process to prolong the lifespan of some of the company's legacy characters. The network wanted to **preserve the actors' voices** behind characters like the UFO robot "Grendizer," along with its quality for future productions. Some of the shows have been running since the 80s and the original voice actors were getting quite old. An important decision in how to replace them needed to be made. Rather than recruit new actors, Spacetoon decided to use aiXplain's voice technology to replicate the original sound of the characters. The aim is to provide a tool that artists and directors who are not necessarily technically inclined can use to render artificial voice recordings that can be adapted to different cultural expectations and express the appropriate emotions of the target audience as well.

Spacetoon was able to accelerate production time of dubbed programming from two months with voice actors to an astounding two hours with the synthetic voice recordings. The video solution comes with speech recognition, as well as cultural cue and emotion detection features. The result is a voice that can be utilized for other use cases, further reducing production cost by eliminating recording and studio fees.

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