

# Double the Number of New Application Discoveries by Utilizing Generative AI

## DX Initiative through Combining Generative AI/GPT and IBM Watson

Mitsui Chemicals, Inc. (Head Office: Chuo-ku, Tokyo, President & CEO: HASHIMOTO Osamu) and IBM Japan, Ltd. (Head Office: Chuo-ku, Tokyo, General Manager and President: YAMAGUCHI Akio) have achieved three outcomes of higher agility and accuracy for new application discovery by combining Generative Pre-trained Transformer (GPT) of Microsoft Azure OpenAI and IBM Watson. Specifically, the volume of a unique dictionary for Mitsui Chemicals products has increased by approximately ten times, the efficiency of extracting new applications has been improved by three times, and thereby the number of new applications discovered has been expanded by approximately two times.

New application discovery is a digital transformation (DX) initiative to discover new applications for Mitsui Chemicals products from keywords related to the products' functionalities by efficiently analyzing various big data such as news, social media posts, and patents. With this initiative, they aim to expand the top line (sales) and the market share of Mitsui Chemicals products by advancing DX in the business domain.

### ■ The role of GPT and IBM Watson

With regard to the role of the GPT and IBM Watson, IBM Watson is positioned as an enterprise AI platform that analyzes big data such as patents, news, and social media posts after creating a unique dictionary for Mitsui Chemicals products. On the other hand, the GPT is used to improve IBM Watson's ability in analyzing new application discovery by adding the GPT's functions such as generation, response, extraction, and summarization, as well as high-speed search and interactive prompt.

### ■ The three outcomes

As the first of the three outcomes, in the dictionary creation process of new application discovery, the volume of the dictionary created in four months by utilizing the GPT has increased by about ten times compared to the conventional. This is because that the GPT enables to formulate the drafts of the dictionary with its chatbot capability, which was conventionally done by analysts by collecting information from technical documents, research papers or website and to do sophisticate, context-aware translations for creating the English version of the dictionary in a short period of time.

As the second outcome, in the keyword extraction process of new application discovery, the GPT's extraction function enables to automatically extract approximately 70% of data with the keyword "application". This contributed to drastically reducing the workload of checking the huge number of keywords to effectively discover new keywords for applications, and thereby the efficiency of extracting new applications from the keywords has been improved by three times.

As a result, based on these two improvements of agility and accuracy, we have achieved to double the number of new applications discovered. This enables us to expand new applications for Mitsui Chemicals products more efficiently and quickly.

Mitsui Chemicals will accelerate the process from market development to product development for the chemical industry by utilizing generative AI, which will realize the future innovations in the world. IBM Japan will continue to support Japanese companies to improve productivity by utilizing IBM Consulting's extensive experience and knowledge of AI, its forward-looking knowledge in the data science field, and its implementation know-how and technological capabilities.

< SAMBE Masao, CDO, Mitsui Chemicals, Inc. >

By combining Generative AI/GPT with IBM Watson, over the past four months, we have achieved three key results: We have increased our own dictionary contents ten-fold; improved the accuracy of new application extraction three-fold; and doubled the number of new applications discovered. New application discovery is a DX initiative that seeks to accelerate portfolio transformation in Mitsui Chemicals' long-term business plan, VISION 2030, by harnessing GPT/AI to boost the top line and increase our market share. We will work toward building Mitsui Chemicals' unique interactive AI platform enhanced by generative AI's multimodal capabilities.

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