

# “How long will it take to deploy and how much will it cost?” These Usage Scenarios Will Answer Your Questions about Deploying AI

“What can AI do?” and “How long will it take to deploy and how much will it cost?” Despite growing interest in artificial intelligence (AI), many companies and organizations still harbor concerns. Fujitsu has extensive experience in this area, so to answer such questions, it developed a series of usage scenarios designed to provide concrete examples of use for specific businesses and tasks. In addition to explaining the benefits, the scenarios offer estimates for deployment timeframes and costs to enable quick decision-making by users.



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Almost every day, news outlets carry reports on companies using artificial intelligence. The majority of those cases are proofs of concept though, and still in the trial stage. Applications are also biased toward specific areas such as customer reception, so the actual scope of use is limited.

One reason that use of AI is not growing is that companies and organizations find it difficult to understand where they should be applying AI technologies, and which ones they should use. They are hesitant to proceed because they struggle to envisage the resulting benefits and to understand how long it will take to deploy and how much it will cost. This leads many potential users to put off deployment.

One local government, which did delay the implementation of AI, wanted to improve the efficiency of its foreign-resident help desk operations because it was experiencing an increase in the number of non-Japanese people moving to the area. With many different inquiries, ranging from whether international students can take part-time jobs to how to enroll children in the local elementary school, they found that consulting regulations and manuals made it difficult to provide appropriate responses. Such references contain a lot of specialized terminology as well, so simple keyword searches were not effective. In addition, local government employees are often relocated every few years, so it is difficult to develop expert knowledge

and acquire the experience as an organization to immediately understand the specialized terminology needed to answer a customer's inquiry.

This particular local government wanted to build a new system to help its staff respond to inquiries like experienced professionals, even if they had little experience. The system would apply AI to a database of inquiries and experienced staff responses to enable help desk staff to appropriately answer inquiries and process applications from local residents.

Unfortunately, the local government kept few records of past inquiries, so it had no training data to enable AI to work. This meant that building the system would take a long time if they were to start collecting the records needed for an AI solution. As a result, they put off AI deployment and leaned instead toward implementing a conventional manual search system.

### 'Unexpected' AI technology presents a solution

It was at this time that an IT vendor proposed an unexpected AI technology approach to this local government. The vendor was Fujitsu. They proposed a system that would apply AI technology to the analysis of relevant regulations and manuals and automatically search for similar keywords. It would enable the users to search reference materials without needing a record of past inquiries. As a result, the AI technology addressed the customer's concerns about the extensive specialized terminology in regulations and manuals, which make simple keyword searches ineffective.

The technology was evaluated very highly and Fujitsu received an order from the local government. They appreciated the fact that available AI technology was able to perfectly mesh with their particular challenge.

For this project, Fujitsu applied one of its own AI techniques, called Domain Specific Semantic Search. This technology automatically analyzes existing documents and lists them in order of relevance to the keywords used in a search.

Fujitsu provides this offering as one of the APIs in its Zinrai Platform Service. According to Naoki Kazagoshi, Manager of the AI Integration Business Division, AI Service Business Unit at Fujitsu, "Provision of this technology as an API enables use via the web, and therefore easy incorporation into systems."



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Fujitsu actually built an easy-to-use interface into the Domain Specific Semantic Search API, and provided it as a search system service. "Fujitsu has been providing local governments with systems for many years, so they were also impressed with our knowledge of their work practices and details," comments Naoki Kazagoshi.

**Cost and lead time estimates**

As the local government case shows, AI technologies can often have unimaginable uses. Commenting that, "AI is a tool. Without a full understanding of what tool to use and where to use it, you will never get anywhere," Naoki Kazagoshi continues, "but from a technical perspective, there are many different types of AI, and the technology you use depends on the application. The key to expanding the use of AI is finding appropriate combinations of the challenges you face and the AI technologies you need to use."

In November 2017, Fujitsu released a series of Zinrai Usage Scenarios designed to help users easily understand which AI technologies are suited to the specific issues they face. The company arranged the scenarios to show how FUJITSU Human Centric AI Zinrai (or Zinrai, the company's framework of AI solutions) can be used and which challenges it can be applied to. Yusuke Takeshima, Manager of the Zinrai Strategy Department, Marketing Strategy Unit at Fujitsu, talks about the company's aim, "We developed the scenarios to fill the gap between the challenges that customers face and the elemental AI technologies that each of our divisions has developed."

Fujitsu developed its first series of usage scenarios for the 17 tasks most frequently requested by customers. Yusuke Takeshima says, "From approximately 600 AI-related customer projects, we identified seven common areas of AI utilization which we then used to develop the 17 usage scenarios." Those seven usage areas are Knowledge Utilization, Call Center/Inquiries, Work/Life, Social Infrastructure, Maintenance, Manufacturing, and Digital Marketing. The local government's question-and-answer system detailed above appears under Knowledge Utilization as the usage scenario labeled "Search answers for customer service questions".

Fujitsu has created simple one-page summaries of each usage scenario. They include comments about which challenge each scenario applies to, the benefits of using AI, which AI technology to use and where to use it.

These summary sheets also include initial investment costs and deployment lead times for the majority of the scenarios. Yusuke Takeshima elaborates on the aim of the sheets. "Customers ask for information on AI deployment costs and time, so Fujitsu put these rough estimates together as a guide. When this is their first attempt at AI, they cannot even guess how much it will cost or how long it will take. If we can sort out this inability to even guess, we are on the way to expanding use of AI." It is certainly true that guidelines make it easier to take that first step.

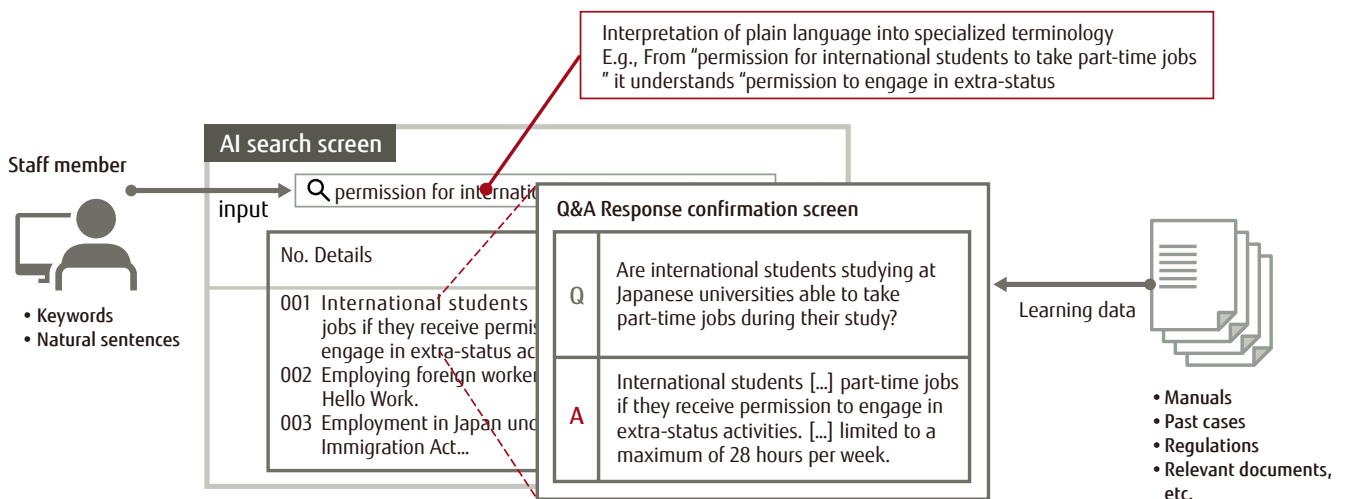


Figure: Overview of search system utilizing AI technologies

Fujitsu’s strength lies in its broad customer base, which extends across all business and industry types. Obviously, the company will continue collecting examples of the AI systems it builds. Fujitsu intends to use its experience to develop a second and third series of usage scenarios that show how AI can be used to solve a whole range of challenges for customers.

Yusuke Takeshima says, “We want customers who are hesitant to use AI, maybe because they cannot envisage the return on investment, to use these usage scenarios and find the potential of AI in their businesses.” We look forward to seeing Fujitsu’s further initiatives to expand the use of artificial intelligence and change the way we do business.

Usage Area	Usage Scenario		Zinrai Technology
Knowledge Utilization	Search answers for customer service questions	Searches through expert knowledge using simple words; Reduces time and effort spent on researching	Domain Specific Semantic Search
	Search for relevant literature in R&D	Performs batch searches of relevant literature; Prevents the overlooking of necessary information	Domain Specific Semantic Search
	Search customer information in sales activities	Automates management of customer or regional data; Reduces time spent on trying to understand customers	Company information search
Call Center/Inquiries	Operator support	Supports call center operators using AI	FAQ search
	Operator support	Zinrai visualizes degree of customer satisfaction; Supports improvements in quality of responses	Emotion recognition
	Making customer interaction more sophisticated	Raises sophistication level of customer interactions through automated response support using AI and customer interaction assistance	Chatbot Machine learning
	Automated categorization of the voice of customers(VOC)	Automatically categorizes individual VOC, reducing work times while improving the analysis accuracy	Natural language analysis
	Creates verbal customer guidance for phone inquiries	Zinrai records the verbal guidance; Can quickly adjust when guidance changes	Speech synthesis
Work/Life	Brings efficiency to daycare placement selections	Supports optimal placement assignments based on applicant preferences, reducing workloads and maximizing the satisfaction level of applicants	Matching
	Supports recommendations that match underlying preferences	AI predicts user preferences to enable matching	Matching
Social Infrastructure	Reduces workloads and optimizes monitoring work	Smart city monitoring using AI technology	Image recognition Deep learning
	Supports visual inspection by experts	Supports inspections of social infrastructure; Automates imaging studies that require expert knowledge	Image recognition Deep learning
Maintenance	Detects warning signs of anomalies in facilities	Temperature measurement and advance detection of anomalies in facilities using optical fibers	Advance detection Anomaly analysis
	Supports worker safety management	Supports the creation of safe workplaces with remote worker monitoring	Heat stress estimation algorithm Machine learning
Manufacturing	Product anomaly detection	Detects anomalous products using deep learning	Image recognition Deep learning
Digital Marketing	Subtitle creation support	Creates subtitles for presentations and speeches, reduces text creation time	Speech-to-text
	Effective use of video and audio data	Improves voice recognition rate by eliminating noise using deep learning	Deep learning

Table: First series of usage scenarios

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