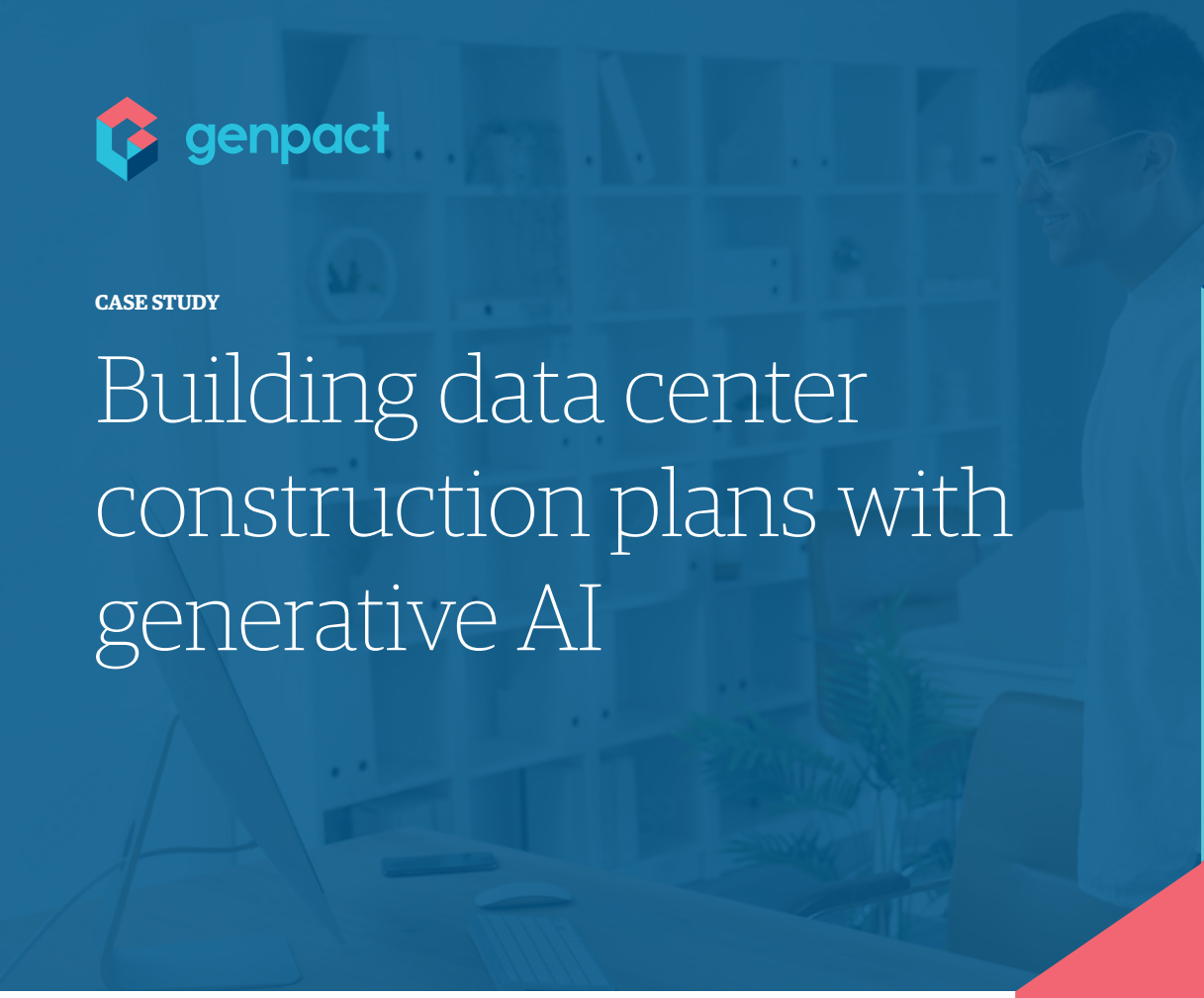
genpact

CASE STUDY

Building data center construction plans with generative AI



WHO WE WORKED WITH

A multinational technology company best known for its software products and digital storage solutions, with data centers worldwide.

WHAT THE COMPANY NEEDED

- Support to launch 50-100 new data centers each year
- A faster way to extract and identify the component part numbers needed for construction of new data centers
- A scalable, accessible, and centralized solution that extracts, cleanses, and enriches data for data center constructions worldwide

HOW WE HELPED

- Implemented tools to quickly extract part numbers of components used in data center construction from multiple source documents
- Developed a generative AI solution to fetch and validate the part numbers and generate an accurate bill of material needed to order the parts
- Improved data validity to increase trust in the automated system and reduce the time previously spent checking for errors or inaccuracies

WHAT THE COMPANY GOT

- A scalable solution to achieving its data center growth goal and future builds
- Dependable and up-to-date information for placing new part orders
- Increased efficiency and lower costs with the help of generative AI

CHALLENGE

Scattered information limits growth

For this tech company, data centers provide the necessary infrastructure to centralize and secure client data effectively. To meet rising demand, the company plans to build between 50 to 100 new data centers each year.

Each data center requires a server farm with multiple servers, data storage drives, cables, and network equipment. These components need power sources and chilling plants to cool down the power supplies. To order any of these parts, operations teams need a bill of materials (BOM), where each part number has 10-15 components.

Unfortunately, information for each part exists across purchase orders, engineering drawings, and contracts in various formats. So, company employees must manually cleanse data and feed it into the BOM. While achievable for one or two data centers, this slow process wouldn't support the company's ambitious growth plans. And there's no room for error - the part catalog is vast, so even a tiny error in the part number could order a different cable length or the wrong-sized machine part.

This is why the tech giant approached Genpact - for help building a scalable and flexible solution to efficiently extract, cleanse, and enrich data for a BOM.

SOLUTION

Using gen AI to cleanse and validate data

We knew generative AI could achieve the speed and scale required for this herculean task.

Our two main goals were to:

1. **Centralize the data**: We wanted to compile the data from all document types into one accessible area in an understandable format
2. **Protect data integrity**: We had to guide the AI algorithms to eliminate false information

First, we extracted data from contracts and purchase orders with the help of advanced algorithms and natural language processing. Next, we used optical character recognition and machine learning models to extract location information from engineering drawings. Then, we created a system to feed this data into a master document called the material master. But we soon realized the material master had some data gaps.

So, we set up a large language model (LLM) using GPT-4 to fill these gaps. We even used it to scan supplier websites to check stock and availability of parts to make sure data from previous center builds was still usable.

But because LLMs are powerful enough to generate their own content, we did not want AI creating fake part numbers - a concept known as hallucination. And so, we built accountability and traceability techniques into the system.

Once our gen AI tool was up and running, it began grabbing and cross-checking data faster than ever. And after some robust checks, we could confirm the validity parameters were functioning correctly.

IMPACT

Scaling expansion plans with ease

Our gen AI system took part number data collection down from months to weeks.

Without gen AI, the company would not be able to fulfill its ambitious growth plans. But thanks to its openness to new technology, we delivered a futureproof solution that supports:

- **Faster speed to market**: With generative AI doing the heavy lifting, our client can enjoy a faster turnaround time on data center builds
- **Improved decision-making**: Clean and enriched data allows our client to more accurately plan timelines for data center construction

- **Improved spend and inventory optimization**: With a reliable and quickly generated BOM, the company can order the right materials at the right time, improving operational efficiency, lowering the total cost of ownership, and optimizing working capital
- **Flexibility for future demands**: The flexibility of gen AI allows the solution to seamlessly adjust to any changes in parts due to supply chains, location requirements, or customer needs

Most importantly, all this information is now centralized - so everyone is on the same page. For this company, it's plain to see that visible and verified data, delivered by gen AI, is the future of data center construction.