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thyssenkrupp

CASE STUDY

thyssenkrupp Materials Services uses data to help strike a delicate operational balance

With alfred.simOne, thyssenkrupp is taking a major step toward becoming a more data-driven organization.

Business situation
The challenge of optimization

thyssenkrupp Materials Services (thyssenkrupp) is tackling a common industry challenge in a decidedly innovative way. The major materials distributor – headquartered in Essen, Germany – services its customers from a network of locations spread across the world. With a promise to deliver steel and other materials to its customers on time and in full, the sites in the network are required to keep a high volume of stock on hand at any given time. In addition to the steep price of maintaining stock levels, the importance of cost efficiency in transporting its products has increased significantly in recent years.

"We were looking for a way to optimize our entire delivery network," said Christian Bernsdorf, head of logistics planning/SCM at thyssenkrupp. "If you have a lot of stock, you can deliver it to the customer quickly and save on transportation costs. If you want to reduce stock levels, your materials are traveling further and there are more costs. It's contradictory." The company was also aware that any operational changes it made had to be done while maintaining the quality of service that its customers have come to expect. Finding the right balance could save millions of euros per year and keep customers happy. However, this quickly proved difficult.

"We like to say that the possible combinations of materials and sites are beyond the number of atoms in the universe," Sebastian Smerat, thyssenkrupp's head of Center of Excellence, data analytics and BI, said with a laugh. "This is why we needed a smart solution that can handle the physical realities we have to face."

However, thyssenkrupp understood that this type of solution wasn't possible with its existing on-premises IT infrastructure, which lacked the required analytics capabilities. Instead, the company wanted to think outside the box, so it turned its attention to the possibilities offered by artificial intelligence (AI) in the cloud. "We knew that anything we built needed to have a strong technological basis," explained Mr. Smerat. "We wanted the solution to grow with us."

The idea was simple: build a cloud-based platform that can automatically analyze data and run simulations based on operational hypotheses. For example, what would happen to transportation costs and inventory if a material is added or removed from a site as a standard stock item? What would happen to transportation costs if customers received materials from a different site?

Of course, building this tool was complicated and required the help of a reliable technology partner. thyssenkrupp found that partner in Avanade and together, we set out to build the solution that would come to be known as alfred.simOne.

Solution
Bringing alfred.simOne to life

It was determined early on that a proof-of-concept (PoC) of alfred.simOne would be built on the Microsoft Azure cloud platform using platform as a service (PaaS) components and Microsoft Power BI for visualization. A PoC was an important first step, giving the board of directors at thyssenkrupp confidence that this was both a viable and valuable solution. Azure was the cloud platform of choice, as it had already been used in several successful projects across the entire thyssenkrupp organization. It was Avanade's Azure expertise that made us an ideal fit to help develop alfred.simOne, which is part of thyssenkrupp's larger "alfred" data analytics platform, named after one of the most influential former owners of the company. Using Avanade's minimum viable product method, or "MVP", our joint team realized the PoC in a matter of weeks and successfully convinced the board to move ahead with the full alfred.simOne project.

The power of the tool lies in its ability to run simulations that process large amounts of data and intelligently analyze the results in a matter of hours. "Using alfred.simOne, we can run a simulation based on an inputted network configuration and see the impact on transportation costs and inventory levels," explained Mr. Smerat. "We can even drill down on a detailed level to see what these changes would mean for each site, including the number of items that would have to be commissioned and delivered from each."

In one test simulation during the development phase, it was discovered that centralizing a single product to a smaller group of sites could save thyssenkrupp half a million euros per year without sacrificing service. "It's really exciting," said Mr. Bernsdorf. "We already have people requesting more simulations to see what the outcomes will be."

From a technological perspective, the alfred platform is supported by a robust solution architecture:

- Azure Data Lake Gen2 forms the foundation for future use cases
- Data movement components are fully based on cloud native technology Azure Data Factory, including Azure Data Factory Mapping Data Flows
- An Azure SQL database stores all of the supply chain configurations
- End-user tools are provided by Microsoft Power Platform, which can configure scenarios using a Power App while analyzing scenarios using Power BI
- Users can connect directly to an Azure Analysis Services Cube with Microsoft Excel

The overall deployment was completed based on Azure DevOps, which was implemented with the help of Avanade's global team.

Results
Unlocking the power of data

While alfred.simOne has already begun running the simulations that will lead to operational optimization and cost savings, thyssenkrupp is looking ahead to ways the platform will fundamentally shift the culture of the organization as a whole. "Our mission is to transform thyssenkrupp Materials Services into a data-driven business, which is derived from our company strategy 'Materials as a Service'," said Mr. Smerat. "We now have a growing set of curated data at our disposal and we know what we can do with it."

As the platform continues to evolve, the plan is to further optimize the simulations with the help of Databricks scalability capabilities so they can be done in minutes rather than hours. alfred.simOne will learn to run its own simulations and perform a continuous intelligent analysis to determine good operational changes.

"This is why it was so important to have Avanade lay the technological foundations with Azure now so we can take advantage of more capabilities later that will save time and money," explained Mr. Smerat. "In the future, we'll be able to do additional optimization and generate hundreds of scenarios using master, transaction data and at a later stage, machine data."

thyssenkrupp also knows that this project isn't just about technology. "It's about people," said Mr. Bernsdorf. "Now that alfred.simOne has shown what it's capable of, people are starting to think differently. It will completely transform the way we think and act in the future. Rather than starting with a gut feeling, we'll have data to support our hypotheses."

The alfred.simOne project has showcased how a team of people from different backgrounds can come together to develop innovative solutions that will have a real impact on the way a business operates. It also highlights the importance of true collaboration. "Avanade helped us choose the right technologies, define how we should use those technologies in combination and get the concepts right," said Mr. Smerat. "They helped develop our functional design and have been valuable partners and trusted advisers in so many ways. Together, we're bringing big ideas to life."

We can't wait to see where alfred.simOne goes next.

About thyssenkrupp Materials Services

With around 480 locations – including 271 warehouse sites – in over 40 countries, thyssenkrupp Materials Services is the biggest materials distributor and service provider in the western world. The broad service spectrum offered by the materials experts enables customers to concentrate more on their individual core businesses and spans two strategic areas: global materials distribution as a one-stop shop – from steel, tubes and pipes, nonferrous metals and specialty materials to plastics and raw materials – and tailored services in the areas of materials management and supply chain management. An extensive omnichannel architecture offers 250,000 customers worldwide cross-channel, round-the-clock access to more than 150,000 products and services. A highly efficient logistics system ensures that all requested services are smoothly integrated into customer production processes "just-in-time" or "just-in-sequence".

About Avanade

Avanade is the leading provider of innovative digital and cloud services, business solutions and design-led experiences on the Microsoft ecosystem. With 38,000 professionals in 25 countries, we are the power behind the Accenture Microsoft Business Group, helping companies to engage customers, empower employees, optimize operations and transform products, leveraging the Microsoft platform. Majority owned by Accenture, Avanade was founded in 2000 by Accenture LLP and Microsoft Corporation. Learn more at www.avanade.com

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