On the surface, Coats could be mistaken for a traditional manufacturing company. It was founded during the Industrial Revolution and still has factories filled with large-scale thread-making, dyeing, and winding machinery. But you don’t survive for more than 260 years without keeping up with the times. And Coats has proved adept at looking beyond spinning spindles and seeing that its business is about far more than making thread. It’s about using information to solve customer problems.

“Being able to crunch massive amounts of data across dozens of variables requires monstrous processing power, and Azure gives us high-performance virtual machines customized for HANA.”

Harold Groothedde, Technology Solutions Director, Coats
How to stay relevant for more than 260 years

Coats makes thread. Lots of thread. Every week, 1 billion tea bags are brewed using Coats thread. Every month, Coats produces enough thread to stretch all the way to the sun. Each year, Coats makes enough thread to go into 8 billion pairs of jeans—a pair for every person on the planet. Making that much thread, from a diverse range of materials in every conceivable color, is a huge manufacturing challenge.

Coats can trace its origins back to the 1750s and is proud of its rich heritage, including, for example, the fact that in 1879, Thomas Edison used Coats thread in his experiments to invent the light bulb. The company has grown over the centuries and is today the world’s leading industrial thread manufacturer. It also provides complementary, value-added products and services to the apparel and footwear industries. In addition, it applies innovative techniques to develop high-tech performance-materials threads and yarns in areas such as automotive and fibre optics products.

When it comes to technology, Coats has traditionally focused on keeping its manufacturing equipment and processes up-to-date because, after all, manufacturing was its core business. About five years ago, however, with the rise of big data, a new reality began to set in: Coats was really in the information business. “We realized that our future lay in the smart use of data, to create more-intelligent manufacturing processes, to reduce manufacturing costs, and to provide more innovative ways to meet customer needs,” says Richard Cammish, Chief Information Officer at Coats. “We needed to transform our information intelligence to create customer solutions faster, cheaper, and better than ever.”

Adds Harold Groothedde, Technology Solutions Director at Coats, “We’ve always been very advanced in manufacturing technology but slower moving in IT operations. In 2013, we still used Lotus Notes for email and had a fragmented desktop environment. With 7,000 of our wired employees spread across multiple locations on six continents and some 60 manufacturing facilities, we sorely needed more empowering communications and collaboration technology. We wanted our employees to share ideas and improvements more frequently and very easily.”

The company’s information technology mantra became “invisible technology, visible performance,” meaning, technology that allows people to work more efficiently without getting in the way.

Coats had state-of-the-art factories around the world, but manufacturing was siloed geographically; products that were manufactured in one country were sold in that country. Coats wanted a more unified view and flexible use of its global manufacturing capacity. Although the company used SAP software to manage manufacturing across some 60
manufacturing sites, it could not easily produce reports across factories, which deprived management of a holistic view of the business. Plus, those SAP reports took hours to generate, which created delays of up to 48 hours in business decisions.

Additionally, the company’s datacenter infrastructure was not agile enough to serve the dynamics of modern markets. Coats needed to spin up customer demonstration environments in hours and to launch test environments so that software developers could play with a new application. But it took weeks to order and provision servers, and it was impossible to scale infrastructure selectively in various locations.

For example, the company was experiencing dynamic growth in China but couldn’t deliver enough web performance for web visitors in China to play online product demonstration videos. Expanding in China also meant offering secure e-commerce services, which was difficult to do.

Ally strategically with Microsoft

Coats made a strategic decision to embrace cloud computing so it could gain the infrastructure elasticity and resilience it needed to run a global business and minimize the time its staff spent on datacenter tasks. “Deploying servers and managing email are not our core competencies,” says Groothedde. “Let someone else take care of that.”

Coats evaluated all the major cloud providers—Amazon, Google, and Microsoft—and felt that Microsoft was the best partner to complement its existing service portfolio and strategic technology direction. “The breadth and scale of the Microsoft cloud was impressive,” says Cammish. “It had Office 365 on the desktop productivity side and Azure on the datacenter side. We could use Azure Active Directory Premium to provide single sign-on for all applications, from email to SAP, which would support our ‘invisible technology’ objective.”

On the datacenter side, Coats has a mixed environment, with applications based on both Windows and the Linux operating system. “We wanted a datacenter provider that could support all our systems,” Groothedde says.

Microsoft committed comprehensive support in getting critical Coats applications such as SAP running in Azure. “The support we’ve received from Microsoft has been phenomenal,” says Cammish. “When you move your technology to a third-party datacenter, it is absolutely critical that you have attentive support in the event that something goes wrong. We got that from Microsoft. For me, as the person accountable for all the technology at Coats, this was very reassuring. Microsoft really cared about our success; this is a fundamental ingredient in any effective partnership and something which the technology industry needs more of.”

Cammish and Groothedde also felt that Azure security was superior to anything they could set up themselves. “From the Office 365 perspective, we knew that Microsoft was best qualified to secure its own products,” Groothedde says. “But on the Azure side, we would be running e-commerce transactions in the cloud, and we had to have ironclad security. We felt that Azure had all the security bases covered.”

Pool ideas, help one another

The company’s first step into the Microsoft cloud was its deployment of Microsoft Office 365 for all 7,000 wired employees. Coats gave these employees cloud-based email (Microsoft Exchange Online) and Internet-based telephony, instant messaging, and video conferencing through Skype for Business Online.

It migrated its 400-plus Lotus Notes applications into Microsoft SharePoint Online, which also became the foundation of the company’s intranet. Employees save files in the cloud, in Microsoft OneDrive for Business, rather than on personal hard drives, and can get to them from any location and device.
“With Office 365, employees can communicate with one another instantly, in any way that suits the need,” Groothedde says. “We’ve been able to connect a workforce fragmented across many sites and time zones in a seamless way. It’s fundamentally changed the way our office workers do business.”

Employees can see from the presence icon whether a colleague is available for contact, send that person an instant message, escalate the conversation to a voice call or video call, and share spreadsheets or manufacturing processes by sharing screens. Having a common, rich communications fabric encourages employees to reach out, ask questions, share ideas, and help one another. Employees in one factory can help colleagues in another factory to set up equipment correctly using “show and tell” video calls. By eliminating waits and miscommunications throughout the day, the whole business speeds up.

Plus, “All these capabilities are standard stuff for millennials, who expect capabilities such as chat and video conferencing at work,” Groothedde adds. “Office 365 has opened up more flexible work options such as home working, which is a hiring and retention advantage.”

Create a skinny infrastructure

The next step was to move nearly its entire datacenter footprint out of third-party datacenters into Microsoft Azure. The company is after what Cammish calls “skinny infrastructure”—with as few moving parts on-site as possible.

“We don’t want to be in the datacenter business; we’re in the thread business,” Cammish says. “We plan to move 90 percent of our global datacenter infrastructure into Azure, and we’re at about 75 percent now. The only things we’ll leave on-site are a few domain controllers and file/print servers.”

Coats gets tremendous economies of scale in Azure, which means significantly lower capital and operating costs and unprecedented levels of agility. Software developers, marketing teams, and customer support teams can spin up compute and storage resources as needed. “With Azure, we get storage and processing capacity on demand, something we didn’t have access to previously, and which now gives us much more operational flexibility and responsiveness,” Cammish says.

The company is moving into the services business, advising customers on their manufacturing processes and helping them predict how much thread they’ll need to manufacture particular garments. Crunching massive amounts of data becomes very complex very fast, and the ability to scale Azure resources lets Coats meet more customer needs. “Azure lets us pour on performance for short periods of time, while we’re giving demos or setting up temporary training and test environments, and then release those resources when we’re done,” Groothedde says. “It’s a very efficient way to operate.”

Great performance, on-demand capacity, and security are all important in supporting the company’s global e-commerce engine, which runs in Azure. Coats can tune e-commerce performance selectively in different Azure datacenters around the world, which has been critical in global expansion, especially in China. “We get consistent levels of infrastructure security with Azure, because we can leverage a wealth of security technologies that Microsoft is constantly improving,” says Groothedde. “We also have fewer endpoints to manage. We use Azure Security Center to monitor our environment, and with it we can be much more responsive when threats are identified.”

SAP HANA on Azure: Speeding up the whole business

For years, Coats used the Oracle database with its SAP applications. However, to improve SAP performance, it decided to switch to the SAP HANA database. Coats consulted with Microsoft about running SAP HANA on Azure, because HANA requires a very specialized server. The company was pleased to find out that Microsoft was just putting the finishing touches on a solution called, appropriately enough, SAP HANA on Azure.
SAP HANA on Azure relies on robust (G-Series) Azure Virtual Machines, Azure Storage, Azure Network and, in Coats’s case, Azure ExpressRoute for even higher-performance connectivity between Coats and global Azure datacenters.

Working with two prime consulting partners—Axians, which helped configure SAP HANA, and Brillio, which configured Coats’s SAP HANA on Azure estate—Coats moved its complex Oracle environment to HANA on Azure. “Moving SAP anywhere is difficult,” says Groothedde. “It’s complex software, and we have more than 180 servers in our environment. But the Microsoft SAP Center of Excellence provided exceptional support, both strategically and tactically, as we worked through various hurdles.”

Microsoft took care of problem escalation with SAP, and Coats had peace of mind in knowing that all of Microsoft’s architectural decisions were vetted by SAP.

With its move of SAP HANA to Azure, Coats racked up another distinction: it was the first organization in the world to run its production SAP HANA software in Azure. That includes four separate instances of the SAP ECC for North America, South America, Europe, and Asia, and a consolidated instance of the enterprise resource planning suite.

The performance boosts from running SAP on HANA in Azure have been remarkable. Transactions times have been reduced considerably in many cases. Reports that previously took 6 hours to produce now take 6 minutes. “By moving SAP HANA to Azure, we have been able to speed up planning cycles and accelerate delivery of finished goods to our customers,” Cammish says. “We are now in a position to do same-day factory production planning versus having to run scheduling jobs overnight. We have the ability to insert rush orders into the production schedule the same day versus waiting 24 to 48 hours. Our whole production engine can now speed up and improve customer service and delivery performance.”

See the business in real time

The reporting speedup has been particularly impactful. Managers can push a button on a tablet computer and use Microsoft Power BI and SAP Business Objects to instantly see data from multiple sources as graphical dashboard-style reports. For example, at a glance they can see current sales order lead times and shipment status across all the company’s factories and deliver the service that customers expect.

Crunching data at Coats involves taking into account hundreds of thread materials, more than 150,000 colors, some 60 manufacturing sites, diverse customer requirements, and many other variables. “Being able to crunch massive amounts of data across dozens of variables requires monstrous processing power, and Azure gives us high-performance virtual machines customized for HANA,” Groothedde says.

Protect mobile data

To keep data safe as it travels from the Azure cloud to Office 365, SAP, and other applications on mobile devices, Coats uses the Microsoft Enterprise Mobility + Security Suite. The suite’s Azure Active Directory Premium service provides single sign-on for some of the company’s applications, to simplify and speed work throughout the day. And Microsoft Intune provides a cloud-based console that will ultimately be used to manage the company’s 7,000 desktop computers, 2,500 mobile devices, and the applications running on them.

“We wouldn’t feel good about displaying SAP data on mobile devices without Intune protecting our data,” Groothedde says. “Our users can access reports on Windows-based devices, iPads, iPhones, or any other device without complicated procedures for signing in to a virtual private network and with complete security. Intune opens up a whole new world in how we manage applications in diverse device environments.”

Coats has also created virtual desktops in Azure to give employees personalized desktops on tap from any device,

Software

- Microsoft Azure
  - Azure Active Directory Premium
  - Azure ExpressRoute
  - Azure Security Center
- Azure Storage
- Azure Virtual Machines
- Azure Virtual Network
- SAP HANA on Azure
- Microsoft Enterprise Mobility + Security
  - Microsoft Azure Active Directory
  - Microsoft Intune
which is especially useful in factory environments where PCs are shared by multiple employees. “Virtual desktops give us an easy, secure way to give factory floor workers, mobile employees, and contractors access to needed applications without deploying dedicated devices to each person,” says Groothedde.

**Looking to the future**

As it looks ahead, Coats is excited about the many new Microsoft cloud services it can use to transform its business. It’s experimenting with Microsoft Cortana Intelligence Suite to add predictive analytics. For example, based on past manufacturing histories, weather around the world, and other factors, Coats can predict inventory costs, demand for various types of thread, manufacturing volumes, and more.

“If we can better predict all these factors, we can better order the right inventory, manufacture the correct volumes, and deliver exactly what our customers want, even before they know they need it,” says Groothedde.

Coats is running a pilot project focused on operator and machine efficiency in the final winding thread production process. The company has applied sensors to the final winding equipment and made use of a control and feedback system to monitor and control this process. Coats pushes this data into the Azure IoT Hub for reporting with Power BI and then into the Azure SQL Data Warehouse and Azure Hadoop for processing by Azure Machine Learning.

“The potential for using data in smarter ways to operate more efficiently, save money, and satisfy customers is immense,” Groothedde says. “Azure gives us integrated tools that let us fully integrate and exploit our data.”

Adds Cammish, “By using the Microsoft cloud, we’re transforming for a digital age, where information is king. We are excited about using data to power our business into its next 260 years.”

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**Software**

- Microsoft Office 365
  - Microsoft Exchange Online
  - Microsoft OneDrive for Business
  - Microsoft SharePoint Online
- Skype for Business Online
- Yammer
- Microsoft Operations Management Suite
- Microsoft Power BI
- Microsoft Azure IoT Suite
- Cortana Intelligence Suite

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