Microsoft Dynamics 365
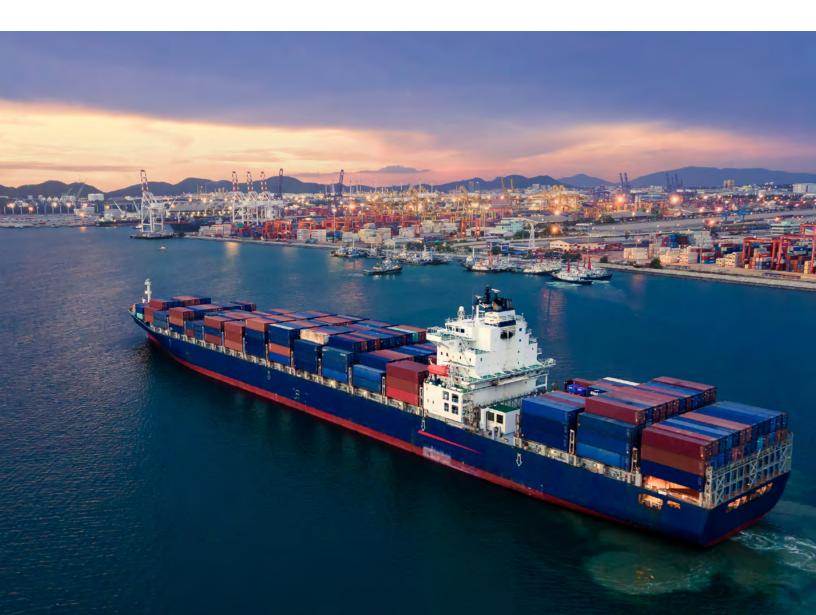
Four Pillars of the Digital Supply Chain

Who this is for

Microsoft created this guide for manufacturing and supply chain leaders who want:

- Better visibility into their upstream and downstream data.

- Better analysis so they can discover issues before they become problems.

- To know how a supply chain control tower can help them improve efficiency, reduce costs, and better serve their customers.

Estimated reading time: 14 minutes

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Introduction

According to research in the publication Supply Chain Quarterly, companies whose supply chain performance ranks in the top 25 percent have market capitalizations between 1.7 and 3 times higher than the industry average.[1] Leaders can increase revenue and margins, reduce operating expenses, adapt more quickly to changing markets, and meet customer needs more precisely than others.

As the COVID-19 pandemic has shown, companies need the ability to quickly identify shortages, demand spikes, and supplier disruptions to win and keep customers as conditions change.

But how do you achieve and sustain an intelligent and responsive supply chain as connections grow more intricate and disruption becomes the norm?

[1] "**What type of supply chain strategy drives market cap leadership?**," CSCMP's Supply Chain Quarterly, 2021.

The supply chain digital twin

In a Deloitte study, 76 percent of supply chain leaders say that developing digital and analytics capabilities is very important to their strategy.[2]

But simply being able to analyze and report on supply chain characteristics is only the beginning. Organizations can achieve significant competitive advantage by adopting the model of the digital twin.

In its ideal form, a digital twin is an accurate, real-time virtual model of a real-world object or system. Originally, digital twins were developed for product design and simulation using accurate 3D models. Today, modern data approaches and advanced analytics delivered from the cloud have led to digital twin technology that can do more than simply mirror key processes within physical assets.

Now, a digital twin strategy can be used to model complex processes that combine physical, digital, and process components—which makes it ideal for modernizing supply chain management and providing a new level of control tower functionality to the business.

[2] **2019 Supply Chain Digital Analytics Survey**, Deloitte, 2019.

This will allow you to have complete visibility across all levels of supply chain, from granular inventory to large-scale shifts in demand. Combined with IoT, machine learning, and AI, the digital twin can proactively offer predictions and recommendations, enabling further efficiency and resilience.
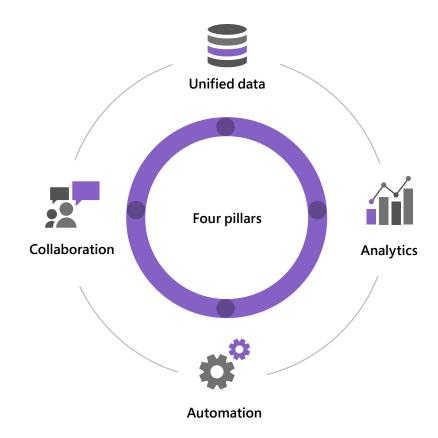
Ultimately, a digital twin is not just about what happened yesterday, or what's happening today. It allows you to model scenarios to optimize for tomorrow, whether it's changing manufacturing lines, ensuring the right people and assets are available when and where they are needed, or reducing risk by creating redundancy in critical areas. Using big and small data in combination with automation enables the supply chain to increase agility where it is most needed, such as optimizing production schedules.

The four pillars of the supply chain digital twin

While developing these capabilities may seem daunting, in reality, modern cloud technology makes it possible to start the journey using data you already have. You're not building a new supply chain—just making the one you have more intelligent.

There are four key elements necessary to creating a true supply chain digital twin. In the following sections, we'll look at each one and provide details on how they are accomplished.

Unified data

Unifying data across silos is foundational to the value of the supply chain digital twin. It brings together data from ERP, finance, specialized supply chain management tools, and supplier databases to provide end-to-end visibility through modern visualization and reporting tools.

Using Dynamics 365 Supply Chain Management simplifies data unification. It is a cloud-based solution built on secure Azure infrastructure, serving as a natural connection point for other systems. The connectivity with Azure opens up a wide range of data scenarios, such as the ability to push data into an Azure Data Lake for advanced AI and analytics.

A modern data model designed for extensibility

Dynamics 365 uses the Common Data Model and Microsoft Dataverse—
solutions that provide easy extensibility of your data-driven analytics and
apps across Microsoft and third-party solutions.

The Common Data Model simplifies the process of unifying different data
sources by providing a shared data language and services for business and
analytical applications to use.

Dataverse provides a globally available SaaS data service that is easy
to use and manage, compliant, secure, and scalable. It empowers your
organization to expand its supply chain digital twin with any type of data or
app and use the data within it to gain insights and drive business action.

**Dataverse is designed to incorporate all the
major categories of data technologies that your
organization needs—relational, non-relational, file,
image, search, and data lake.**

Build your control tower from the ground up

In terms of Microsoft architecture for a supply chain control tower, Dynamics 365 is designed for what Forrester calls the "execution focused" segment of the market to deliver end-to-end visibility, intelligent order management, and autonomous supply chain self-correction.[3]

The control tower is vertically calibrated, connecting to other systems of engagement and systems of record via dozens of standard connectors that Microsoft has built. This foundation provides advanced analytics, adaptive agents, as well as modeling for industry and supply chain data, and directly supports the next level of the tower, i.e., the supply chain digital twin.

The supply chain digital twin incorporates process orchestration, visualization, and collaboration in one platform. It goes beyond visibility, providing direct integration with the control layer via action signals sent back to systems of record. It also enables stakeholders to communicate and collaborate in the same digital space where they perform other supply chain management tasks.
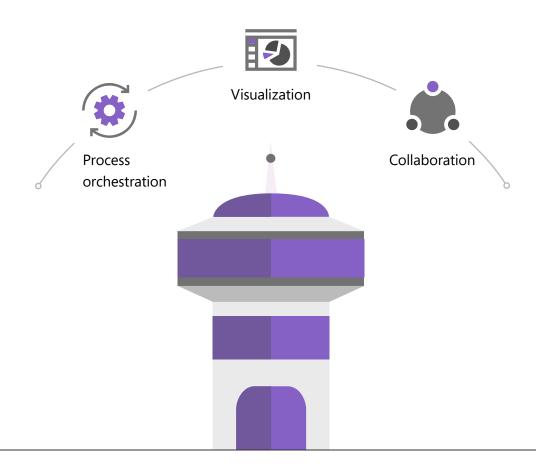
[3] "**Now Tech: Digital Supply Chain Control Tower Solutions, Q4 2020**," Forrester, 2020.

The top level of the control tower architecture is the command center. This is where you can manage process orchestration, visualization, and collaboration across the entire multi-enterprise network.

It enables supply chain stakeholders to collaboratively sense and predict anomalies in their supply chains, analyze the upstream or downstream impact of disruptions and trends, create multiple plans to determine the best course of action, and reach an agreement in an orchestrated manner to respond directly without having to leave the control tower.

By deliberately blurring the lines between planning and execution, a control tower creates a continuous digital feedback loop across processes and layers so that your supply chain can adapt to dynamic changes quickly.

Visualization

Process orchestration

Collaboration

Working in tandem with existing sources

Applying these technologies, you can create a digital twin that functions as a separate layer working alongside your existing technology to enable analytics and automation. Your investments in physical assets, along with legacy ERP and other applications, constitute the physical supply chain, while Supply Chain Management serves as the intelligent hub.

With this system in place, you can realize the full potential of the modern supply chain control tower. Traditional control towers focus on analytics, key performance indicators (KPIs), and alerts within the organization—but a digital twin brings together data from the entire network and includes new capabilities beyond visibility. This enables enhanced collaboration through effective partnership and helps employees, partners, and vendors manage demand and supply signals across the extended network.

Key benefits of unified data

Visualize customer orders and resources across the supply chain digital twin.

Share key data with vendors and suppliers and collaborate on solutions inside the control tower solution.

View goods in transit among suppliers, factories, warehouses, docks, and in-transit goods between suppliers, factories, warehouses, docks, and third-party logistics.

Use case:

Centralizing supply chain management with an intelligent view of resources across the entire business

Even with automation and AI, human beings are at the heart of supply chain effectiveness. However, keeping track of the important information can be challenging with so many KPIs and a vast amount of ever-changing information.

A control-tower dashboard powered by a digital twin enables individuals to quickly configure and access the information they need. Using a contemporary business intelligence solution such as Microsoft Power BI (seamlessly interoperable with Dynamics 365), anyone can identify the data they need, configure it into a format that highlights the most important insights, and ensure they always have access to the latest information. This empowers your business workers while also reducing the burden on IT and data teams.
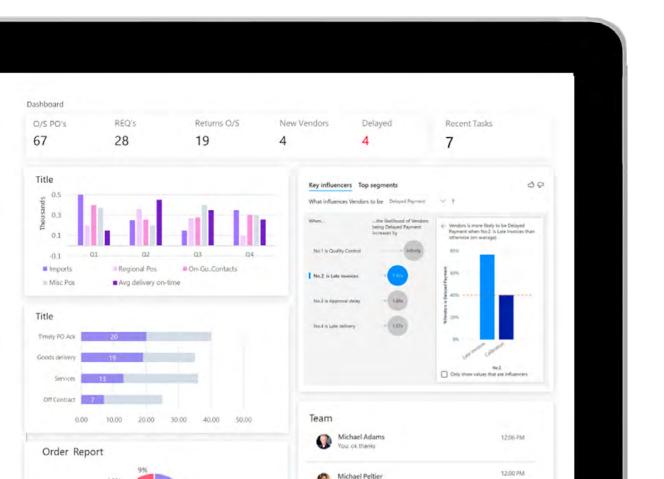
It also reduces the need to rely on scheduled or ad-hoc reporting, which is often a traditional but slow and cumbersome approach to gathering data.
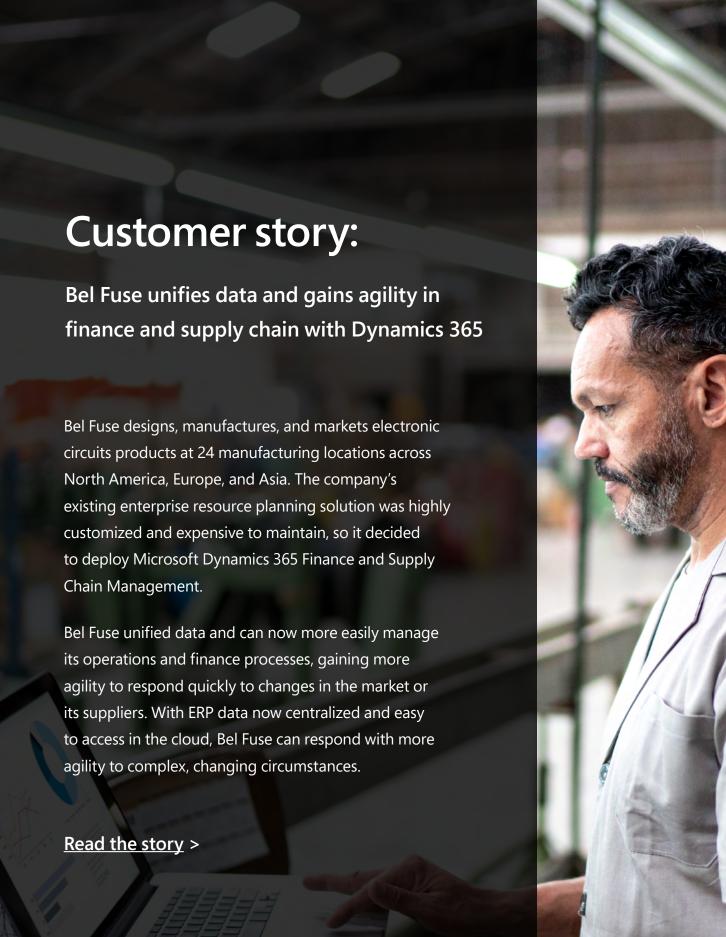
In this example of a Power BI dashboard integrated with Dynamics 365 you'll notice a number of distinctive features. Note the ability to analyze contributors to factors such as delayed payment, which helps the user make proactive decisions about how to improve operations. This can make it easier to accelerate innovation and respond quickly to quality issues, revised customer specifications, and obsolete parts to ensure compliance and reduce delays.

Additionally, it provides insights beyond traditional control tower capabilities, such as messages from the team to help drive rapid collaboration. This is all made possible by the data aggregation capabilities behind the scenes, as well as the built-in analytics of the digital twin platform, which we'll discuss in the next section.

Customer story:

Bel Fuse unifies data and gains agility in finance and supply chain with Dynamics 365

Bel Fuse designs, manufactures, and markets electronic circuits products at 24 manufacturing locations across North America, Europe, and Asia. The company's existing enterprise resource planning solution was highly customized and expensive to maintain, so it decided to deploy Microsoft Dynamics 365 Finance and Supply Chain Management.

Bel Fuse unified data and can now more easily manage its operations and finance processes, gaining more agility to respond quickly to changes in the market or its suppliers. With ERP data now centralized and easy to access in the cloud, Bel Fuse can respond with more agility to complex, changing circumstances.

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From decision-makers to factory floor managers, everyone is working in Dynamics 365, staying connected and accessing valuable data."

Stefan Naude
General Manager
Bel Fuse, Slovakia

Analytics

Knowing what happened in your supply chain yesterday is useful. Knowing what's happening right now is even better. But best of all is the ability to predict what will happen next, whether it's forecasting an out-of-stock item or planning your long-range moves.

A digital twin should feature built-in analytics, including the ability to use predictive models that become more accurate over time and help you stay one step ahead of the competition. Using AI-enriched demand forecasting and streamlined sales and operations planning helps ensure on-time delivery to customers without overstocking inventory. It also helps you predict the impact of supply-and-demand imbalances and market disruptions.

Key benefits of built-in analytics

Run what-if scenarios rapidly to identify the impact of decisions.

Predict stock-outs and overstocks and mitigate before they happen.

Understand shifts in machine, labor, and logistics constraints.

Visualize and compare results across scenarios to determine the best strategy.

Foresee delays driven by external events such as weather or incidents reported on social media.

Plan demand with AI-enriched demand forecasts—in near-real-time using in-memory capabilities.

Identify anomalies and variances using visualization tools.

Prioritize production and distribution with accurate change requests.

Use case:

Forecasting and planning

Supply chain managers often need to look into the future to plan procurement, logistics, and inventory based on potential demand. Demand forecasting is used to predict independent demand from sales orders and dependent demand at any decoupling point for customer orders. The enhanced demand forecast reduction rules provide an ideal solution for mass customization.
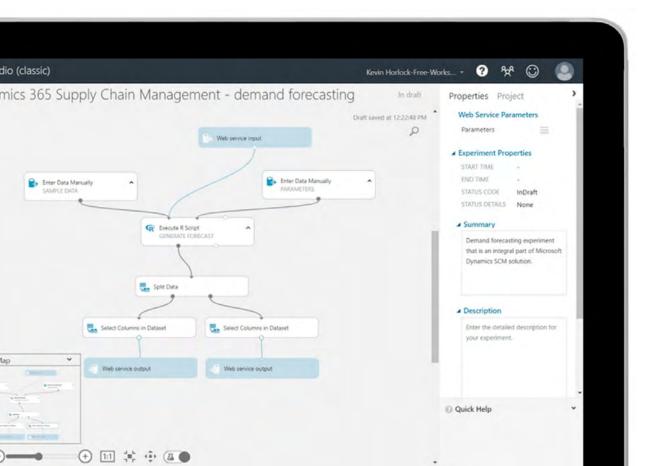
In the above example, Azure Machine Learning Studio can consume data from Supply Chain Management to create demand forecasts. To generate the baseline forecast, a summary of historical transactions is passed to Microsoft Azure Machine Learning hosted on Azure. This service can easily be customized to meet industry-specific requirements. You can use the system to visualize and adjust the forecast and view KPIs about forecast accuracy.

For the user, Supply Chain Management makes complex scenario analysis straightforward. For example, the control tower dashboard can be configured to provide one-click access to a range of scenarios. These scenarios integrate the latest data from a wide range of sources and can be run quickly thanks to the processing power of Azure underlying the solution. Powerful mathematical models are made available in a consumable format for the average user.

Traditionally, replanning supply and distribution takes hours or days, and by the time an organization reacts based on the new plan and updates its strategy, demand has shifted again. A digital twin means you can perform planning updates in minutes and respond to change effectively.

Customer story:

Twilfit optimizes planning with Dynamics 365 to reduce costs, save time, and get the right stock in stores

Twilfit, one of Sweden's leading lingerie chains, is using the Planning Optimization add-in for Supply Chain Management to speed up master planning and reduce performance loads. The company can now respond to customer demand faster, running orders in a few minutes that used to take up to nine hours far more frequently, and during business hours.

With lead times a day or two shorter, Twilfit is smarter about the inventory its stores keep on hand. It has reduced unnecessary overstocks while adding more variety and more of its high-demand items, making both its employees and its customers happy.
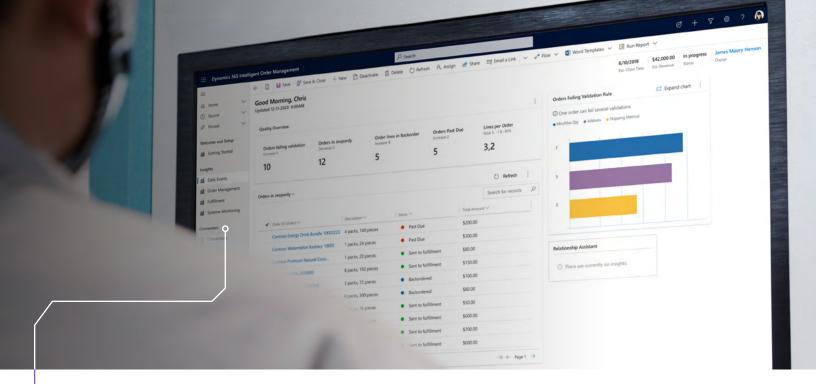
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With Planning Optimization, we can catch the wave of consumer demand more quickly, creating orders in less than half an hour. If we need to do another delivery after the first morning order, we can run it in the afternoon and send it over to inventory. And if a store runs out of a product, the employees don't have to wait a day to receive what their customers need."

Michael Pokorny IT
Technician and Logistics Coordinator
Twilfit

Automation

Traditional control towers often involve many manual processes and large teams of people to operate. There can be lags of days or more between detecting an issue and mitigating it.

With a modern control tower, supported by a supply chain digital twin, people can act using built-in tools that connect to existing systems and stakeholders. Digital twin integration enables deeper levels of hands-off automation across processes to drive further efficiencies. Over time, the system requires less and less human intervention to manage everyday processes while ensuring human oversight and effective risk management through rules-based controls.

The next level of efficiency and responsiveness is driven by intelligent agents that can act on data. These can augment decision-making, provide proactive alerts, and even place orders or communicate with stakeholders autonomously within the parameters set by the organization.

Key benefits of built-in automation

Update pegging and routing to compensate for disruptions using cognitive agents.

Automate transaction, sourcing, shipment, and transfer updates in from modern to legacy systems using robotic process automation (RPA).

Set triggers to notify customers, partners, and internal stakeholders to speed decisions.

Update purchase and sales order updates across vendors without repetitive manual work.

Use case:

Order fulfillment

Managing orders from a variety of sources, such as e-commerce, marketplace, mobile apps, or physical stores, and a variety of fulfillment options—including your own warehouse, third-party logistics partner, or drop-shipping with vendors—can present new challenges. With a modern, intelligent order management system, you can orchestrate fulfillment with a rule-based system using real-time inventory, AI, and machine learning. You can also model and automate responses to supply disruptions and modify order journeys. Solutions that readily integrate with existing systems will help break down silos and provide a single view of the entire lifecycle of an order, including returns.

Customer story:

Dr. Martens uses virtual warehouses to respond to changes in demand

Digitizing the supply chain using Microsoft Dynamics 365 has enabled iconic footwear manufacturer Dr. Martens the ability to support omnichannel purchase and returns, including click and collect distribution models, while empowering decision makers across the business to respond to changes in real time.

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We've implemented virtual warehouses, giving us visibility of stock as a whole, but also stock per channel. This, combined with our new automated overnight store replenishment capability, means we're able to get the right products to the right stores in a very short lead time. This is directly contributing to our growth and helping all teams to meet business targets."

Jackie Reid
Program Lead
Dr. Martens

Collaboration

Working together in changing conditions is challenging when people are working from different sources of data. Additionally, ensuring that information is efficiently transmitted is critical to enabling decisions to be made in a timely fashion.

In fast-changing circumstances, organizations need ways to speed decision-making. Traditional processes depend on individuals to identify anomalies and communicate via traditional channels such as email, which can be a slow and cumbersome process.

With a digital twin and automation capabilities driven by the modern control tower, everyone in the process gets the information they need with action-oriented prompts that speed time to action.

Key benefits of supply chain collaboration

Offer self-service capabilities for vendors to simplify purchase order and invoicing processes.

Use alerts and automation to prompt interactions at the right moment, with the right information.

Quickly onboard new suppliers and share information to ensure mutually beneficial outcomes.
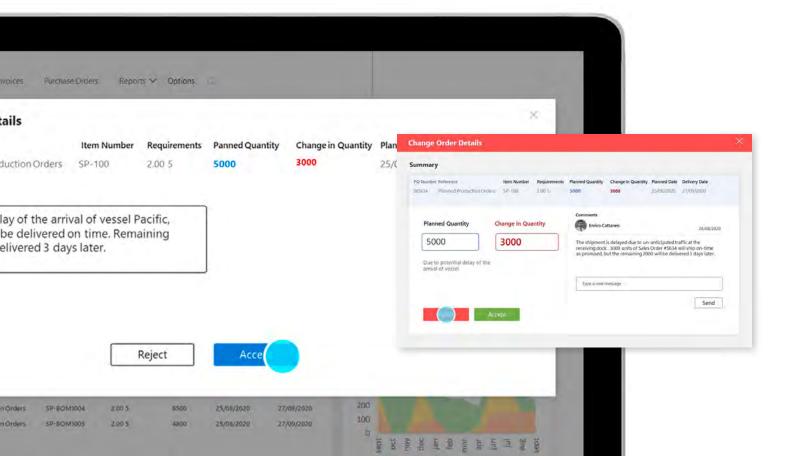
Use case:

Speeding decisions with seamless collaboration

In this example, a sales manager is informed of a proposed change in a purchase order driven by disruption upstream.

Simply by clicking on the change order, the sales manager can accept or reject the suggested change. Accepting it triggers a notification to a partner at one of the company's retail customers.

The partner can easily review the change and decide whether to accept or reject it. This seamless collaboration ensures the customer can make decisions based on timely information, helping to cement the relationship and drive effective response to changing demand.

Customer story:

Invitalia manages hundreds of suppliers with self-service collaboration using Supply Chain Management

Invitalia supervises economic development in Italy, and it took on additional responsibilities during the COVID-19 crisis when the nation's prime minister asked the agency to coordinate the purchase of vital medical equipment on the international market. Using Supply Chain Management, Invitalia easily tracked and managed hundreds of suppliers. It quickly identified suppliers with available personal protective equipment and coordinated transportation into the country and then out to the more than 1,000 hospitals that needed supplies.

Using the Supply Chain Management vendor collaboration features, vendors interact directly with requests for supplies and with purchase orders. Once vendors are approved, they use the system to provide delivery schedules and other details directly to the agency office, giving Invitalia a central source of truth to efficiently manage procurement. This streamlines and expedites the procurement process, helping Invitalia optimize equipment distribution.

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We think it will be straightforward to expand our use of Dynamics 365 into other areas of public administration. It connects easily with other Microsoft products, giving us the opportunity to create end-to-end solutions for enterprise resource planning."

Fabrizio Bellezza
Chief Information Officer
Invitalia

Conclusion

Microsoft Dynamics 365 Supply Chain Management is an ideal foundation for unifying data, analytics, automation, and collaboration. It's a flexible, cloud-based solution that connects with existing investments. Combined with the rapid, low-code automation, apps, and analytics provided by Microsoft Power Platform, Dynamics 365 empowers organizations to quickly create powerful solutions aligned to business and industry needs.

As organizations seek new ways to maintain business competitiveness and continuity in an ever-more-uncertain world, Dynamics 365 can offer dramatic improvements in efficiency, agility, and visibility. Quickly get value and solve immediate challenges while gaining a foundation you can build on to achieve your supply-chain vision.

Get started with Supply Chain Management

Take a guided tour

Microsoft Dynamics 365