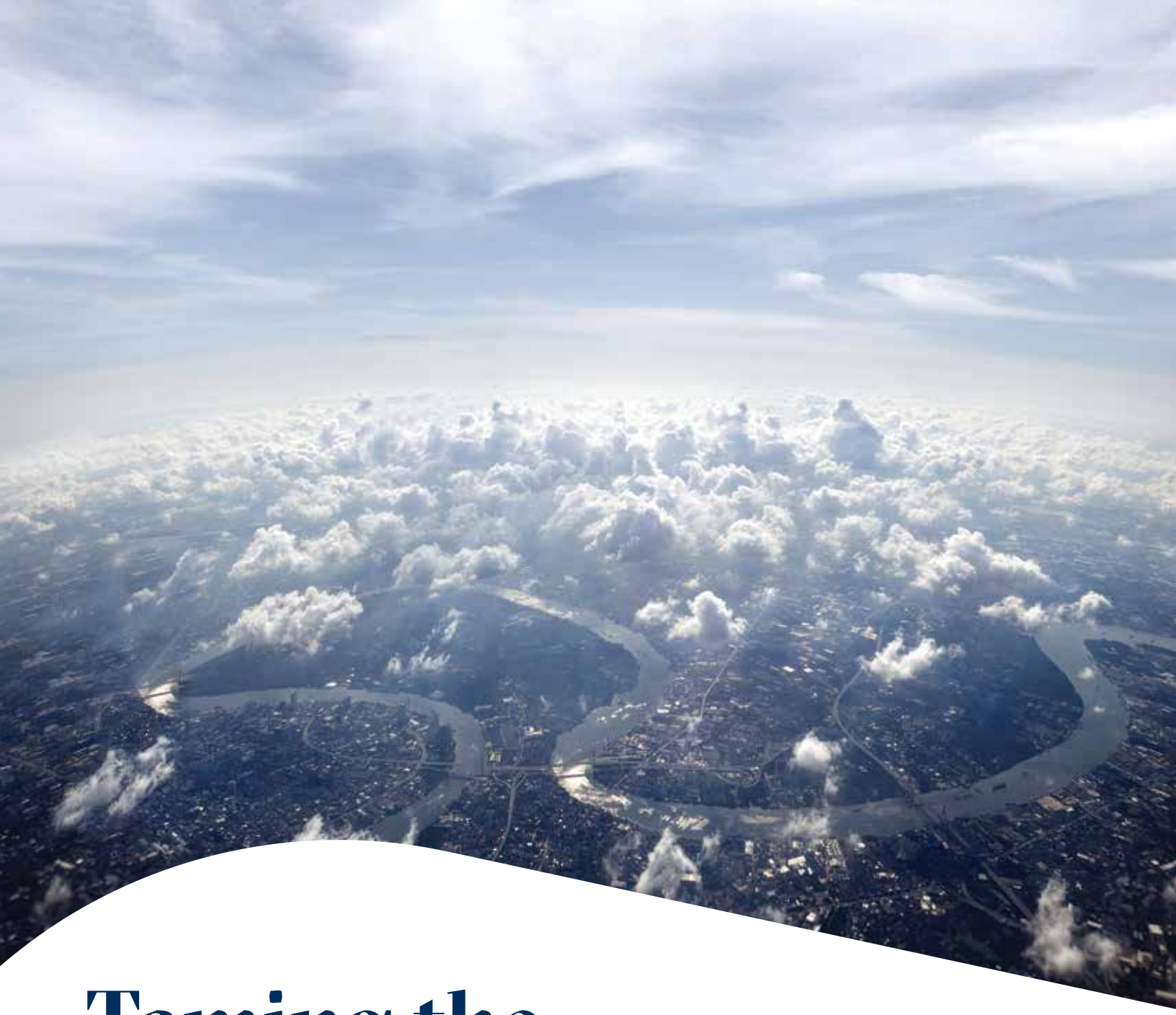

Taming the Unpredictable with Digital Control Tower Technology

BlueYonder
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This is the era of digital transformation. Consumers' needs are changing rapidly, and how well a company can sense and respond intelligently to those needs has become a key differentiator for survival and success. Yet, adopting a more consumer-centric supply chain approach is often more challenging than expected.

To succeed in this new environment, companies must be able to proactively manage the predictable and unpredictable portions of their businesses. In addition to employing high-level planning strategies, companies must get better at proactively managing the unpredictable, which can come from social media, news, events and weather (SNEW), competitor promotions, mergers and acquisitions, and more.

Many leading companies with global supply chains, and smaller, innovative organizations, have started tackling this challenge, and they are realizing that they cannot:

- Manage what they don't see
- Plan for what they don't know
- Execute efficiently if they are not aligned around "one version of truth"

Overcoming these barriers requires visibility across the internal and extended supply chain, and all the other factors that can influence a company's supply chain operations. Organizations need real-time visibility into information from traditional partners such as suppliers, manufacturing partners, logistics and transportation providers, distributors and retailers, as well as real-time visibility into the volumes of digital data that's now available. This will require new partnerships that aggregate and analyze real-time inputs from SNEW information and digital signals emerging from the Internet of Things (IoT) and other edge devices.

The growing need for digital control tower technology

Different versions of control towers have been around for more than 15 years, and while there has been moderate adoption of control tower technology, many companies have been able to run efficient supply chains without them. However, as the volume of IoT-generated and consumer-related digital signals continues to grow, along with rising customer expectations, this will change.

It is becoming increasingly important for companies to be able to see, analyze and act on information across supply chains in real time, and then learn from those experiences to become better at sensing and responding to supply chain risks and opportunities.

When incorporating new information and digital signals into the supply chain planning and execution processes, companies must be able to:

- **See it.** Companies need real-time, end-to-end supply chain transparency and visibility that enables visualization of the flow of goods across suppliers, factories, distribution centers (DCs), customers, distributors and retailers, and correlate any events or exceptions impacting supply and demand. In many cases, companies have several siloed systems in place that prevent all participants to view, understand and act upon "one version of truth." This needs to be addressed.
- **Process it.** Companies need to understand and leverage signals from the digital edge. Signals can be used to predict the estimated time of arrival (ETA) for deliveries based on transportation delays (impacts resulting from weather, traffic, etc.), inventory positions based on those delivery ETAs, and more. They need to be able to process consumer sentiment, insights and any correlations to demand fluctuation.

- **Act on it.** Companies need exception management capabilities and an intelligent response framework. These capabilities will allow organizations to prioritize responses to current and predicted disruptions based on severity and impact, as well as run what-if scenario analysis using real-time insights to better understand trade-offs. An intelligent response framework will also enable real-time collaboration with networked partners to resolve exceptions and execute decisions across the supply chain and extended network.

- **Learn from it.** Companies must continuously learn to become better at sensing and responding to risk and opportunities. Because of advancements in artificial intelligence and machine-learning, it's now possible to analyze data at scale, as well as spot trends and anomalies. These technologies enable companies to use these insights to predict events, analyze variables and understand the ramifications of different response options, and provide recommendations. By including consumer insights, past behavior and the ability to adjust supply parameters, companies can be armed with better decision support.

Digital control tower technology enables all of these capabilities and is more relevant now than ever before. It brings together the three different platforms for visibility, technology and communication to help companies enable a more consumer-centric, demand-responsive supply chain. BlueYonder is leading the way in developing these real-time visibility, collaboration and intelligent response capabilities for more intelligent scenario planning and profitable responses that will ultimately lead to improved customer service and lower costs.

Establishing real-time, end-to-end visibility with a Digital Control Tower

BlueYonder's digital ecosystem vision (see Figure 1) is to provide connected, intelligent and autonomous cloud-based supply chain solutions that enable companies to digitize their end-to-end supply chains across manufacturing, fulfillment, wholesale, distribution, warehousing and retail. The digital control tower plays a central role in that vision as it will enable companies to continuously collect data and digital signals from the entire ecosystem, integrate seamlessly with enterprise planning and execution systems and connect all partners across the supply chain.

To readily provide real-time, end-to-end visibility across the extended supply chain and generate alerts for current and predicted disruptions, digital control tower technology needs to be developed as a Software-as-a-Service offering. Predictive and prescriptive analytics enable rapid what-if analysis and scenario exploration based on up-to date insights, allowing planners to most effectively monitor issues and proactively execute their supply chain plans. The technology, supported by an intelligent decision-support framework, also generates actionable insights, enabling companies to minimize risk and capitalize on opportunities.

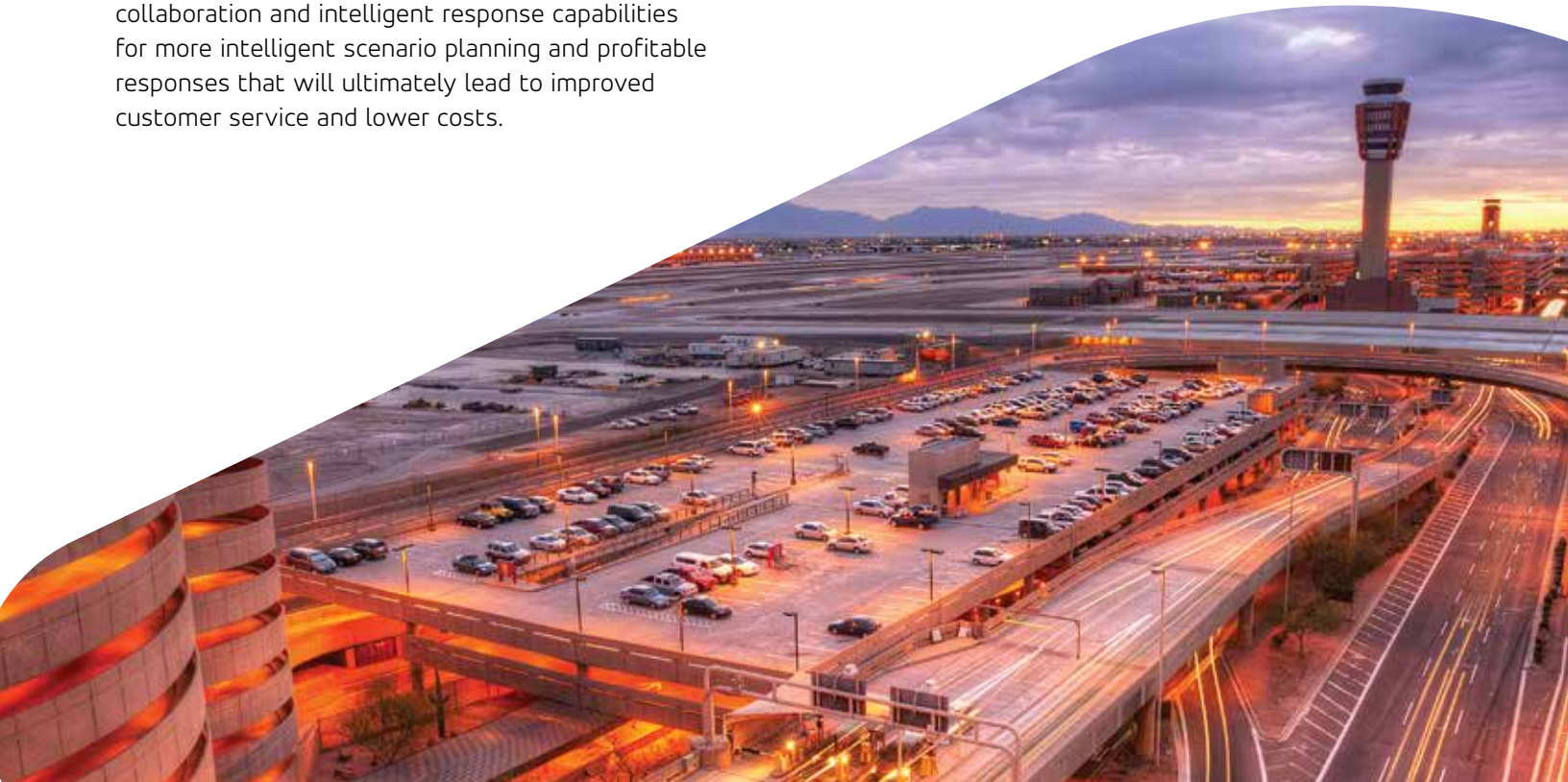
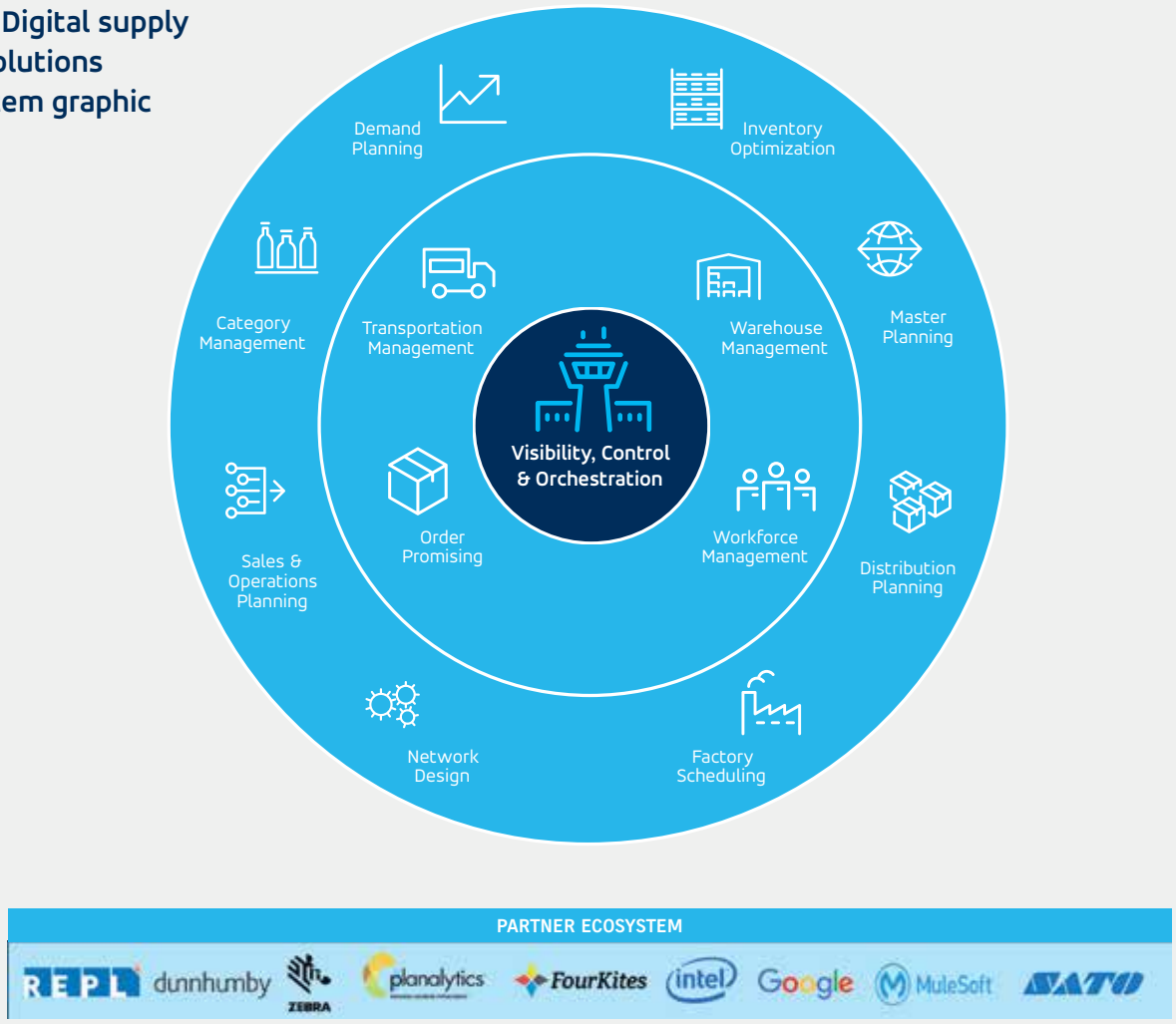


figure1. Digital supply chain solutions ecosystem graphic



Additionally, a cloud-native digital control tower serves as a seamless collaboration platform that allows upstream and downstream partners to collaborate in real time on one version of the truth and resolve exceptions. With advanced industry-relevant, machine-learning algorithms that continuously learn from rapidly changing transactional data and digital signals, the technology correlates events and associated responses to spot anomalies and trends, and then generates actionable insights, recommendations and predicts future events. Insights are then fed into the decision-support framework, allowing companies to intelligently respond and maximize assets within the execution window and shape supply to better align with changing demand outside the execution window.

Because organizations increasingly need greater breadth and depth of supply chain insights to support better decision-making, the technology must be customizable to the end user's business needs and processes, leveraging the same data source. By centralizing insight awareness and decision-making through a digital control tower, responses to internal and external disruptions are coordinated across the supply chain rather than managed within individual business units in what is likely a suboptimal fashion.

Leading cloud-based digital control tower technology should include the following features:

- Dashboard with real-time visibility into in-transits and inventory positions at various supply chain nodes
- Aggregate view of product demand by region/site, as well as supply required to satisfy that demand (orders inside lead time and forecast-commits outside lead time), across the entire supply chain
- Ability to manage by exception via proactive alerts that are triggered when predefined rules and thresholds are breached concerning shipments, inventory, orders, demand and supply
- Dashboard drill-downs that allow users to view underlying transactions and associated impact for more effective monitoring and KPI tracking
- Ability to generate data-driven insights and predictions based on data feeds from external partners
- Modern, intuitive and personalized user experience
- Ability to seamlessly extract master and transactional data from enterprise resource planning, supply chain planning, warehouse management and transportation management systems
- Ability to correlate data, events, exceptions and responses and provide fact-based recommendations

A cloud-based digital control tower with these robust capabilities will be foundational for companies undergoing digital transformations and that need the ability to access real-time digital signals from across their networks. Being able to proactively manage the unpredictable will require companies to adopt this type of data-driven decision-making as they build autonomous, resilient and differentiated supply chains.

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