

# Technology Innovations that will Drive Increased Supply Chain Performance

How new disruptive technologies will impact  
tomorrow's supply chain operations



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## Business backdrop

Today's supply chain leaders have access to a wealth of technologies to help improve their supply chain operations, accelerate performance and increase customer satisfaction. However, to exploit these benefits, every supply chain leader should be looking to digitize their end-to-end supply chain operations if they are to take advantage of today's and tomorrow's disruptive technologies. Companies will struggle to adopt new technologies such as AI if for example documents being exchanged across the supply chain are manual and paper in nature. If you can fully digitize information flows across a supply chain then it makes it easier to ingest into an AI environment. We will discuss the benefits of an AI driven supply chain later in this paper.

Supply chains are truly global in nature and cloud-based technologies have helped companies to not only improve how they collaborate with trading partners anywhere in the world, but they contribute towards the creation of a digital backbone that seamlessly connects the internal business systems such as ERP to the external trading partner community.

A cloud-based business network not only offers companies the ability to establish a digital backbone but companies can realize significant benefits such as being able to scale the infrastructure to support the needs of the business or market. Most importantly it provides a foundation on to which companies can embrace new digital technologies and drive innovation across their end-to-end supply chain.



## Driving innovation across today's supply chains

Supply chain leaders face a continued set of challenges relating to their operations, how do they minimize disruptions, how do they improve end-to-end visibility, how do they embrace an increasing number of regional compliance mandates and how do they secure supply chains in order to prevent potential cyber-attacks.

Supply chains have flourished over the years as new technologies have been embraced, from EDI technologies and standards being introduced in the 1970s to help automate and digitize information flows, the introduction of marketplaces in 2000s and then cloud, mobile and big data technologies appearing in 2010. Now we are entering a new period of supply chain innovation, a period that will completely transform supply chains into intelligent and more autonomous operations.

New technology adoption is not an option in today's dynamic market environment, it is essential. New technologies allow companies to obtain actionable insights that allows them to optimize and drive greater efficiencies across their business operations. For example, in 2018 when blockchain entered the market, every CIO spun up pilot projects to see how the technology could be adopted across their business. Within a few years the adoption and interest levels in this technology dropped considerably but now we have Generative AI, the new shiny toy in the toy box. The significant interest in this technology has really been driven by the fact that through ChatGPT, the AI technology was accessible to almost anyone. So, consumer driven interest helped to fuel business interest in Generative AI based technologies.

We can see autonomous capabilities entering various market segments, from self-driving vehicles to self-aware industrial robots. From a supply chain point of view, autonomous capabilities will emerge through a combination of different technologies such as IoT and AI, but to drive maximum value from these technologies and establish a truly autonomous supply chain network, companies will need that all important digital backbone in place first.

## Which disruptive technologies will power tomorrow's supply chains?

For the purposes of this paper we will focus on five technologies that will transform tomorrow's supply chain operations. These technologies can either operate independently or in some cases together to drive even greater operational efficiencies. Key to the successful deployment of these technologies is to ensure that you have all information flows digitized and you can seamlessly connect to all people, systems and things. After all, how will sensor data enter an AI environment or how will a Command Center ingest information from data silos across a business? The digital backbone is an enabler for supply chain innovation.





## 1. Digital product passports will drive broader supply chain transparency

The rise in the number of counterfeit goods entering the market has led many companies to explore ways to build greater resilience across their supply chain operations. Consumer confidence has been significantly damaged over the years as even the smallest product such as a printer ink cartridge have been found in some cases to be counterfeit. To counteract the counterfeit goods market, across different industry sectors, many companies have worked together through various industry standards bodies to establish 'Digital Product Passports' that can prove the provenance of almost any product manufactured around the world. So, what is the technology behind this somewhat miraculous Digital Product Passport?, the humble QR code! A QR code is applied to a product at the point of manufacture and during its journey through the supply chain, the QR code is scanned and information relating to its location is automatically uploaded to a central database hosted in the cloud. The QR code is essentially linked with a URL code that could in turn be connected to any related information about the product being shipped. The beauty of this solution is that a consumer can scan the QR code before purchase and check on the history of how the product reached the retail store. Many famous retail brands have introduced this QR code-based traceability solution, it is very low cost, can archive an almost unlimited number of data points and it offers brand protection in an increasingly unsecure world. As many countries around the world start to introduce product provenance related traceability mandates, the QR code based Digital Product Passport is likely to see accelerated adoption over the next 12 to 24 months.

**Research by [GS1 US](#) revealed that 77% of consumers consider it important to have access to detailed product information at the time of purchase.**

## 2. Conversational AI will transform supply chain application user experience

Generative Artificial Intelligence, Gen AI, has been on quite a ride since exploding onto the corporate scene about 2 years ago. But the unusual thing about this technology is that it was really seeded into the market by the consumer interest in ChatGPT. The ability for anyone to type in a prompt to obtain an answer to a question or to create an AI generated image has changed forever how we interact with not only information but any type of software application. ChatGPT allows users to create new content through a simple prompt and prompt 'engineering' has now become a key skill required to create new content. It has also changed the way we interact with software applications, being able to have conversations with business applications and even your supply chain operations. Being able to have a conversation with your supply chain allows you to get an almost instant response to important questions. The important aspect to the success of Gen AI adoption is ensuring you have clean and accurate data hosted within your database so that the Large Language Model can build a more accurate response to a question. The key challenge that supply chain leaders face today is obtaining actionable insights from data being exchanged or archived across the supply chain.

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Gen AI is going to transform how supply chain leaders engage with demand planning, inventory management and forecasting solutions. It will also allow users to interact more seamlessly with underlying IT infrastructures such as B2B networks. Extending 'conversations' with B2B integration environments and the people, systems and things that are connected to these platforms will help optimize the associated processes such as procure to pay, order to cash and even invoice compliance.

**[HFS Research found that 85% of enterprises believe that GenAI will play a crucial role in their supply chain strategies by 2030.](#)**

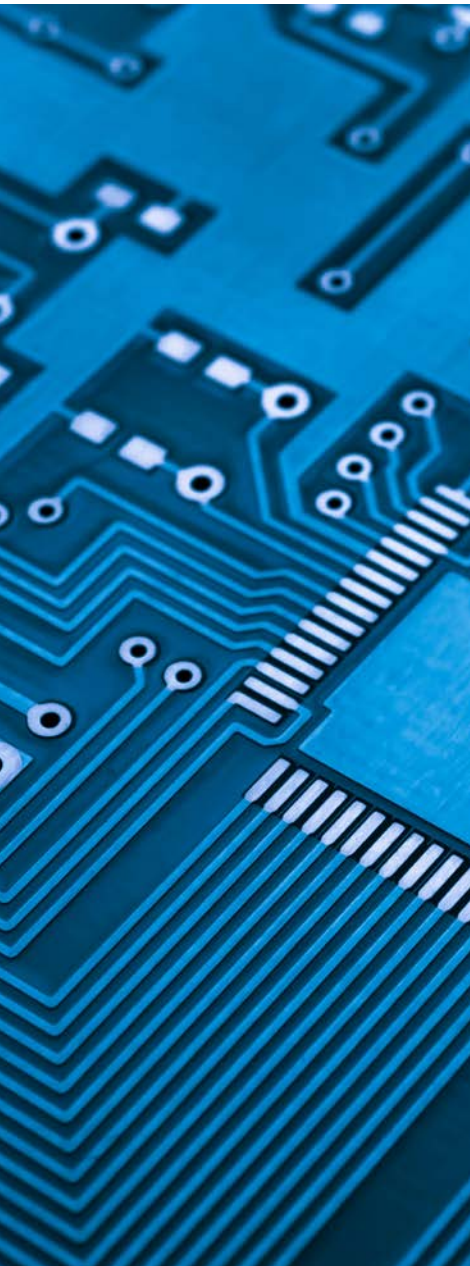
### **3. Command centers will enable better cross-functional collaboration**

Supply chain visibility, especially during periods of disruption, has become the key business challenge facing supply chain leaders around the world. The ability to simply obtain shipment information to drive optimized supply chain performance is a challenge for any size company, especially the large global corporations with supply chains that are truly global in nature. Just over ten years ago, Supply Chain Control Towers started to be introduced to provide visibility into end-to-end shipments and provide a means to obtain a pulse into how supply chain operations were performing. However, these early control towers merely allowed you to 'read the news'. Now, supply chain leaders need to find ways to quickly act on this news so that supply chain disruptions do not impact business operations. We are now seeing more comprehensive Command Centers enter the market that can leverage AI tools to make better predictions and model outcomes more accurately than ever before. From monitoring supply chain risk, tracking shipments, monitoring disruptions and evaluating the performance of your integration environment and trading partner connections, Command Centers stand to transform the management of supply chain operations and associated integration infrastructures. Their ability to embrace almost any disruptive technology such as IoT and AI means that they offer a future proof way to improve collaboration across internal and external users across the extended business ecosystem. Command Centers are essentially data aggregators that can help companies get more from the data being exchanged or archived across their business ecosystem.

**[According to Forbes Manufacturing Industry Trends in 2024 report, 54% of companies say that improving supply chain visibility tops the list of their business priorities.](#)**

### **4. AI Infused IoT will power next generation digital supply chain twins**

In 2010, cloud, mobile and big data entered the vocabulary of the CIO but another technology was also grabbing headlines at that time, the Internet of Things (IoT). IoT relies on a network of sensors to capture data about a real-world environment. Whether you want to track a shipment with a GPS sensor, monitor the temperature of fresh goods or track an asset anywhere across your factory or retail store, IoT has the ability to provide powerful insights.



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An IoT platform allows you to build an intricate network of interconnected sensors that capture information from a real world environment or piece of equipment. This sensor data would then be archived in a data lake but what if you could overlay this data lake with AI tools that allow you to derive powerful and actionable insights? Combining or integrating AI with IoT can help transform the day-to-day activities of a supply chain or operations director that is reliant on such information to help optimize their respective operations. Predictive maintenance and knowing when a piece of equipment is about to fail is really the biggest beneficiary of AI infused IoT technology. But applying AI to sensors capturing the status of an inventory management system in a warehouse or leveraging AI based IoT capabilities to provide a window into your supply chain network is an equally compelling reason for integrating these technologies together. Let's call these predictive maintenance, proactive replenishment and pervasive visibility, three strong use cases for this combined use of these technologies. These technologies are key enablers of 'intelligent digital twin' environments that will transform how supply chains and logistics networks are managed in the future.

**According to [Inetum's report on Top IoT trends to watch for in 2024 and beyond, by 2027 nearly 50% of IoT solutions will have an Artificial Intelligence component.](#)**

## **5. Extended Reality will take supply chain visibility to the next level**

Improving supply chain visibility has been a challenge for many businesses around the world. Visibility is not just a word to use when trying to understand where a shipment is or an asset located within a factory, visibility can also refer to how we view and interpret information. We can visualize information in many different ways and there have been many futuristic interpretations of this in Sci-Fi films such as Star Trek. For example the Star Trek Holodeck is a 3D Virtual environment that can represent a physical space. Now what if you could apply this technology to improve how supply chains are managed? This could be an extension of the Command Center mentioned previously, but what if you had a 3D representation of a supply chain that you could use to model new logistics flows or highlight potential impacts of supply chain disruptions such as a major weather event. We are already digitizing paper-based information and transmitting in electronic format across a business network. So why not enhance this by showing a 3D representation of these transaction flows that you can interact with and query. What about if you could interact with a 3D model of a truck carrying a shipment and by interacting with the truck you can find out the temperature or humidity of the goods being shipped. What if you wanted to add a handful of suppliers into your supply chain but you wanted to run a 3D simulation of the new transaction flows or see the impact on your logistics network. Extended Reality environments could potentially allow you to observe such visualizations and they will help companies to literally get 'inside' their supply chain operations.

**According to research from [ABI](#), 32% of discrete manufacturers are starting to implement XR (extended reality) based technologies into their operations.**





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## Why OpenText

OpenText has been a leading provider of information management solutions for more than thirty years and also operates one of the world's largest business networks. Connecting over 1 million trading partners who collectively exchange more than 31 billion transactions which are the equivalent of 11 trillion in global network commerce. Digitizing information is in OpenText's DNA and this DNA fuels the digital backbone that underpins many of the world's largest supply chain operations. Whether you are looking to implement a simple QR code-based traceability solution, interrogate data through GenAI, obtain actionable insights through a Command Center, track IoT enabled devices or you want to conceptualize what a future supply chain operation could look like, OpenText Business Network can help.

We help companies rein in their digital chaos by connecting once to our network and allowing them to reach anything across their digital ecosystem, whether people, systems or things. For more information on how OpenText can help you digitize your business operations, please visit this [website](#).

