



e2open[®]

AI Buyer's Guide: Supply Chain Use Cases

There is a lot of hype around artificial intelligence, especially in the data-rich and risk-laden world of supply chain. Yet, the mission-critical nature of supply chain demands proven technology. Supply chain leaders need solutions that consistently yield good results at scale and under ever-changing conditions. Unlike many hyped solutions that sit outside of the complex workflows, e2open embeds AI capabilities within its functional applications and the natural workflow to help users make the best decision every time, with minimal lag.

However, it's important to note that AI is meaningless if you don't have the right data to make informed decisions. Without a robust supply chain business network like the one offered by e2open, sub-tier ecosystem data is challenging to acquire. Therefore, stakeholders need to understand that AI is a piece of a larger puzzle and not a standalone solution.

E2open has already implemented AI-driven solutions for our clients, saving them millions in reduced costs and productivity. This document details five examples.

USE CASE 1

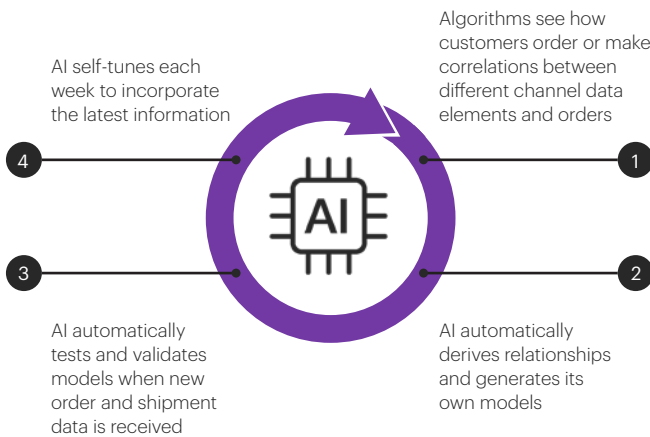
Using real-time demand signals to improve forecasting performance

How does AI combine with real-time data to improve forecast accuracy? In the e2open Demand Sensing application, AI with supervised learning algorithms analyzes real-time demand signals to identify patterns and accurately forecast daily sales for up to 13 weeks into the future. Algorithms receive information from internal and external data sources such as orders and recent shipments from ERP; POS, store inventory, and warehouse withdrawals from downstream channel partners; causal signals like weather or economic indexes; and unstructured data from social media. The algorithms create unique models for each item stored at each stocking location for every day over the next 91 days—each with unique weight factors for every demand signal. As shown in Figure 1, the complexity of self-tuning and the need for precision are significant.

For a company with 12,000 item locations and seven demand signals, this means more than a million forecasts encompassing billions of influence factor combinations — every day of the year. Due to the sheer volume, this must be a fully automated process with daily forecasts published directly to resource planning systems for execution without human review. The algorithms are self-learning, continually tuning each item-location-day combination to provide the most accurate forecast. Using AI and real-time data, e2open Demand Sensing can cut forecast error by roughly 40%.

Each machine learning technique that makes up AI—supervised, unsupervised, and reinforcement learning—is powerful in specific business scenarios. Using them all is transformative.

Self-Tuning Supervised Machine Learning



Systematic Use of Multiple Demand Signals

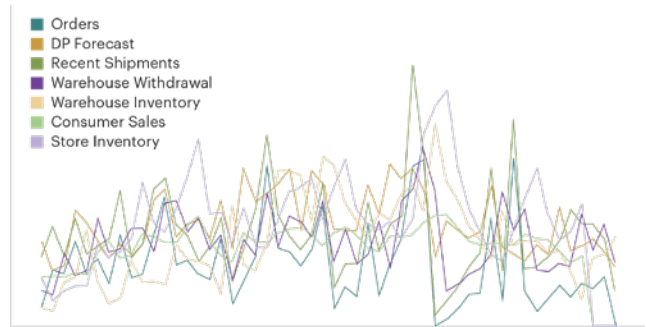


Figure 1: Supervised AI and real-time data create demand forecasts that reflect current market realities.

USE CASE 2

Automated cleansing of data to make it decision-grade

How is AI used to ensure the quality of ecosystem partner data? The quality of the underlying data limits the quality of business decisions. Normalizing and cleansing data can be challenging for information technology (IT) departments managing dozens of internal systems. The challenge grows exponentially for outside-in processes that rely on data from hundreds or thousands of external partner systems. In addition to the sheer scale of multi-enterprise master data management, these systems are outside IT's governance, and therefore, much of the data is inherently noisy.

AI with supervised learning helps automate data normalization by matching company names reported in different formats, such as normalizing *IBM* or *International Business Machines*. AI also cleanses the data with multi-attribute matching to validate company name-location combinations (see Figure 2). As part of a fully-automated process, data is enriched with missing information through multi-attribute validation, such as filling in zip codes based on city and state locations. The use of supervised AI significantly increases the rate of auto-classified matches, cutting manual effort by roughly 98%.

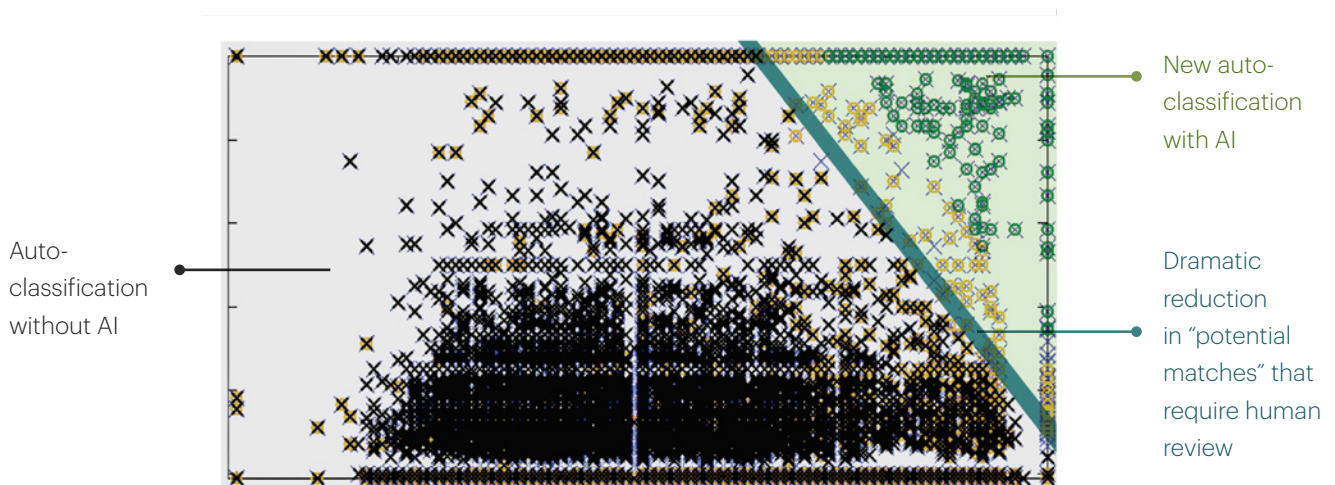


Figure 2: Supervised learning with multi-attribute matching increases data cleansing rate from 70% to 95%.

USE CASE 3

Intelligent item clustering for managing promotions

How does supply chain AI enable successful product launches without excessive or insufficient inventory? During the launch of a new product, no historical data is available upon which to predict demand. Using unsupervised machine learning, the e2open planning and inventory optimization algorithms cluster similar items to create a pseudohistory to better forecast the new product (see Figure 3). AI then tests, validates, and refines the model as new orders come in, dynamically adjusting the groupings to include a different mix of products as the item ages or as factors like seasonality influence demand.

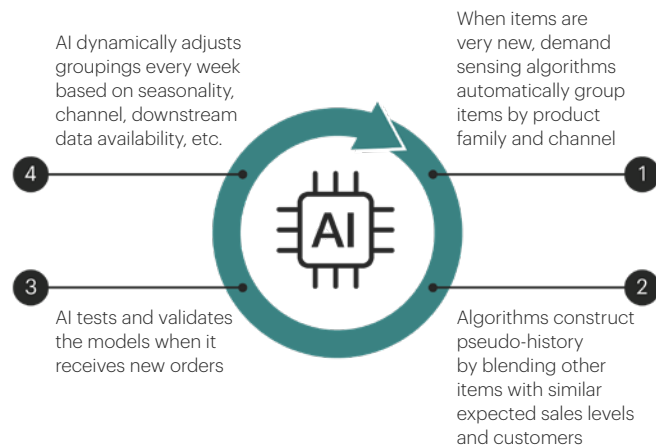
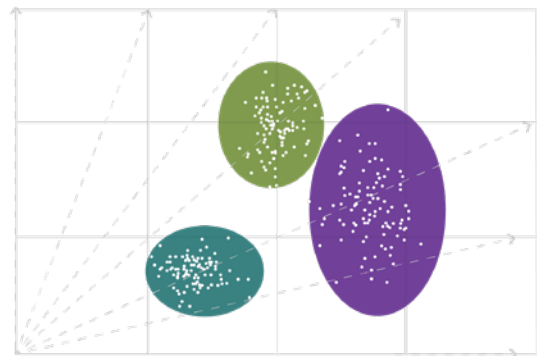
Intelligent Item Clustering for New Product Introduction**Item Clusters in a Multi-Dimensional Hyperspace**

Figure 3: Unsupervised AI uses intelligent clustering to optimize inventory for new product launches.

USE CASE 4

Route clustering for enhanced ETAs of ocean transportation

How is AI used to better predict estimated times of arrival (ETAs) at destination ports? The quality of an ETA on an ocean lane is a function of the quality and quantity of the real-time and historical data available to analyze. Data quantity is significant for trade lanes that are traveled less frequently. E2open logistics applications use unsupervised machine learning to intelligently cluster similar origination and destination port combinations to increase the amount of data available for analysis. This is one of the many methods used to create the best quality ETA for any given lane.

USE CASE 5

Automating cross-functional decision-making

How is AI used to automate complex cross-functional decisions? Digital transformation includes breaking down functional silos that otherwise perpetuate suboptimal business decisions. Potential resolutions often involve a cross-functional response that spans multiple applications when a disruptive event occurs—such as a delay in crucial component availability or a large new order. Automating these complex decision trees is essential for algorithmic planning and execution, but determining the best path for an optimal outcome is challenging without AI.

To accomplish this, e2open is augmenting decision tree automation with reinforcement machine learning to repeatedly simulate thousands of possible actions and measure the outcome of each combination, establishing the best course of action for each scenario. When unexpected events arise, the algorithm either guides users (decision augmentation) or fully automates a response (decision automation).

Unlocking real value from AI

As a part of a larger strategy, AI can be a powerful tool to help businesses optimize and streamline their supply chains. If you're interested in learning more about how e2open can help you realize the power of AI for your business, get in touch with us today by visiting <https://www.e2open.com/contact-us/>.



Want to dig a little deeper? Check out our other AI resources:

AI Buyer's Guide: Setting the Record Straight

AI Buyers Guide: Data is the Currency

About e2open

E2open is the connected supply chain software platform that enables the world's largest companies to transform the way they make, move, and sell goods and services. With the broadest cloud-native global platform purpose-built for modern supply chains, e2open connects more than 400,000 manufacturing, logistics, channel, and distribution partners as one multi-enterprise network tracking over 12 billion transactions annually. Our SaaS platform anticipates disruptions and opportunities to help companies improve efficiency, reduce waste, and operate sustainably. Moving as one.™

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