AI/ML POV

AI for Digital Commerce: Why getting your inventory availability and order data right is hard

And why it's a problem worth fixing.

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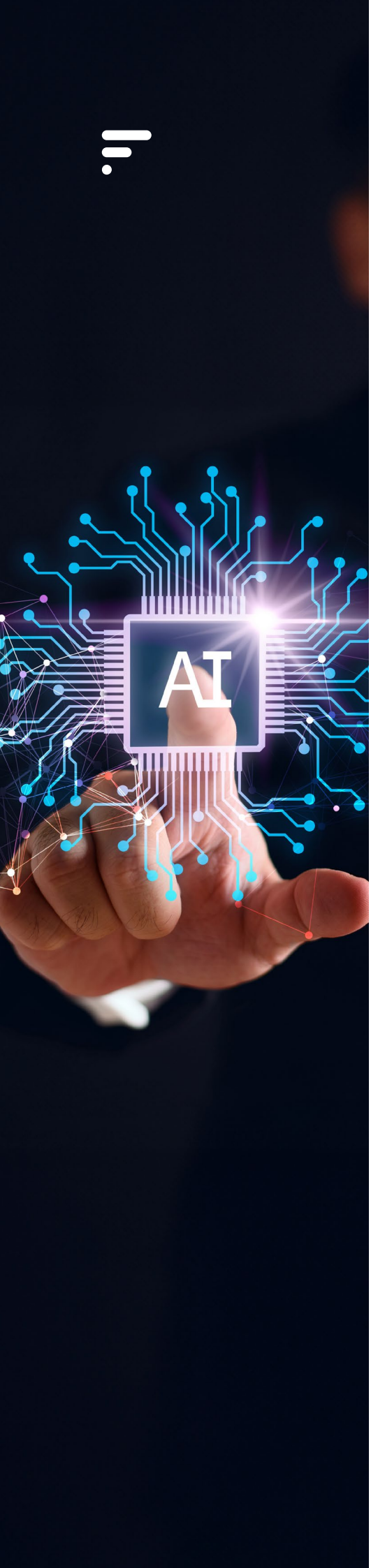
order management. accelerated.



In 2023, Chat GPT amassed 100 million users in just 2 months. Crazy growth. Then the growth appeared to decline. But it didn't really. It's just that enterprises, like yours, started to adopt it. So there were more people using enterprise accounts. Corporate interest in generative Artificial Intelligence (AI) and Machine Learning (ML) reached a level never seen before. Why? Because the promise was big.

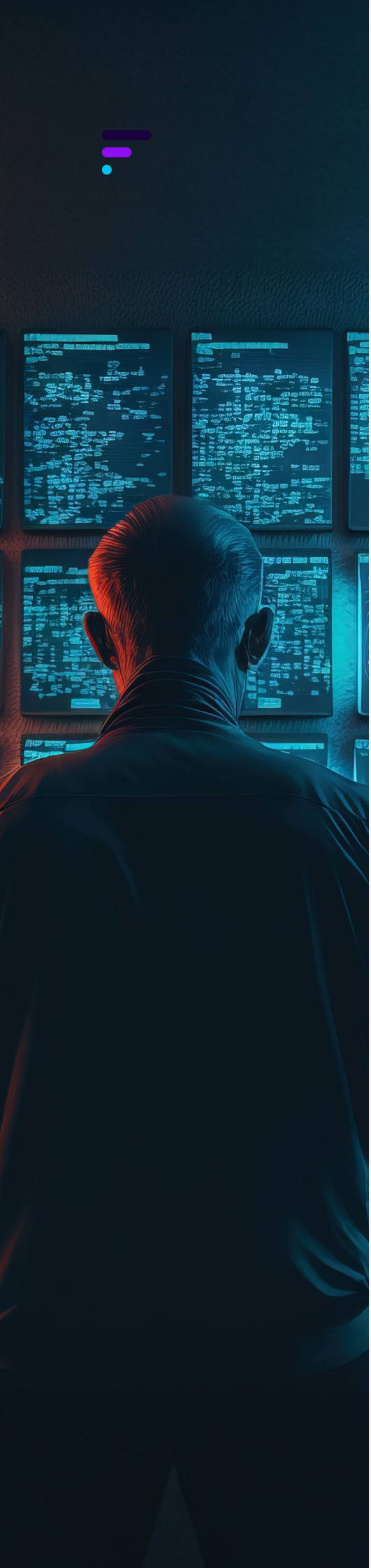
Need to write better emails? Generate cool images? Optimize images? Write code snippets?

It's amazing! Humans + generative AI can do so much. And for the enterprise, that can mean huge productivity gains. In fact, Harvard Business School research found that consultants using ChatGPT-4 finished 12.2% more tasks, completed them 25.1% faster, and achieved results that were 40% higher quality than those who did not use the tool.

But generative AI on its own can't solve all use cases. If you're working with structured data, the first step is a more traditional AI model to provide insights, then layer generative AI over the top to enable natural language queries against the data.

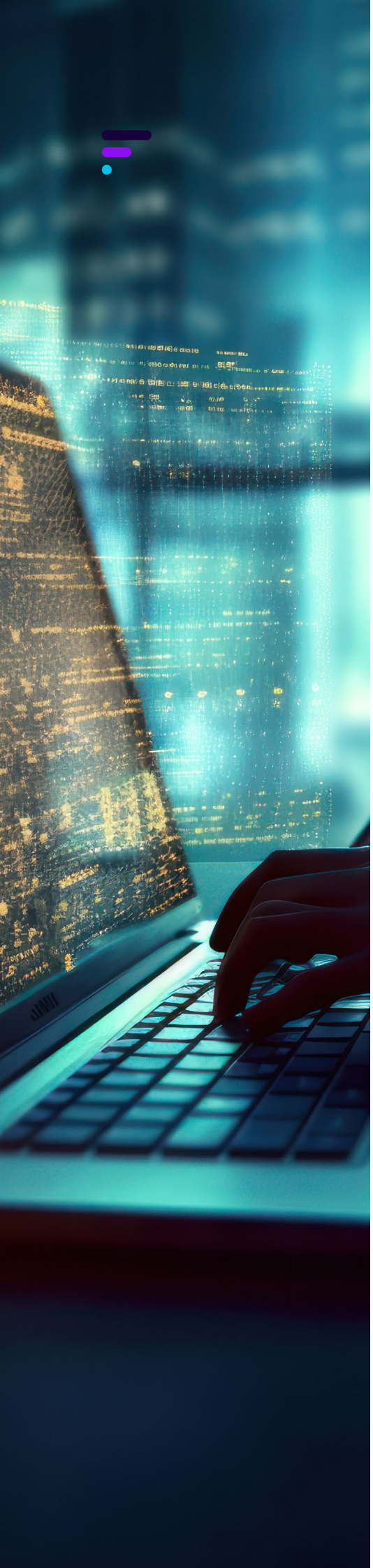
In the inventory availability and order management space, there are several problems that we're working with customers to solve using AI/ML, including:

- Increasing inventory turns
- Reducing delivery costs
- Delivering faster
- Reducing inefficiencies in fulfillment operation



Key use cases include:

	Predictive AI	Generative AI
Demand sensing	Use short term historical demand data to generate short term demand predictions so you can alert team members to potential out of stock situations or shifts in demand and proactively take action, or adjust labor plans to ensure you have enough capacity in the right locations to fulfill demand spikes.	Enable natural language queries against the data to generate a human readable response.
Dynamic safety stock	Use short term demand data to provide safety stock recommendations (or automate safety stock updates) at the SKU-Location level, so you can expose more inventory to digital channels to maximize inventory turns without overselling.	
Optimal sourcing	Analyze historical demand and order data so you can optimize how orders are routed to increase inventory turns, improve fill rates (orders delivered on time, in full, on the first attempt), etc.	



The challenge is, while it's very easy for organizations to get started with AI—to dabble with a few use cases with 'off the shelf' tools—it's much harder to solve big problems. And one of the biggest barriers to getting going is not having clean data.

The 'Dirty Data' problem: Enterprise software

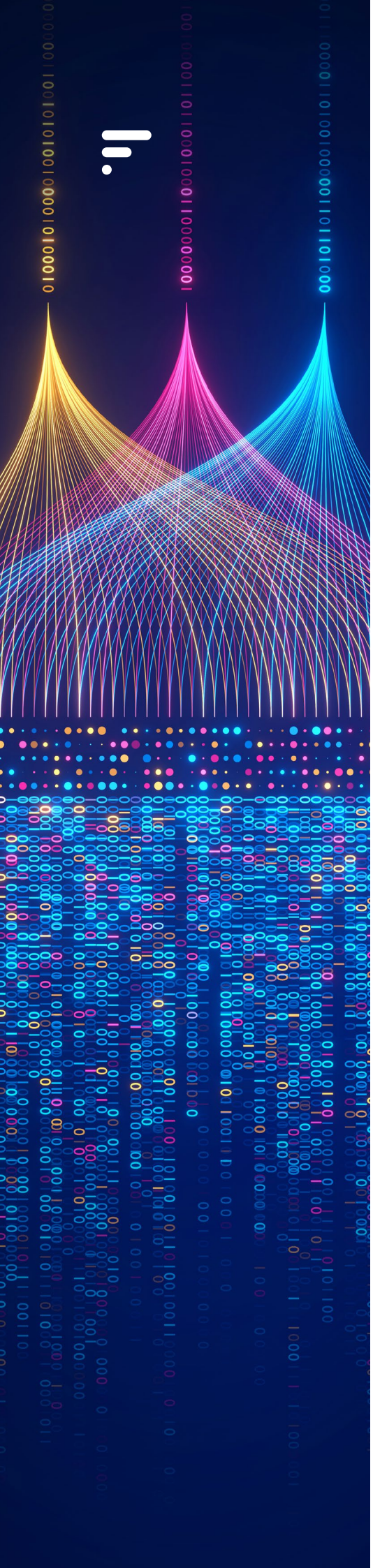
Want to use order and inventory data to optimize your ecommerce fulfillment operations?

To successfully use AI/ML, you need two things:

- Good questions you want answered
- Clean data that contains signals that are relevant to your questions

Unfortunately, when it comes to inventory availability and order data, that's often difficult. Why?

- Data sits in multiple systems, in different formats
- Lots of data is 'dirty' or incomplete
- Poorly structured data
- It's hard to extract the valuable data (that contains signals) from the noise
- You need enough data to both train and test the model
- You often don't have all the right data to be able to recreate the exact conditions in which an order was sourced. E.g., At the time the order was placed:
    - What locations were in stock/out of stock?
    - What was the safety stock level at each location?
    - Could the order have been fulfilled from a



different location if safety stock levels were different?

- What was the labor capacity at each location that day?
- What was the average order processing time at each location?

Therefore, it's not surprising that in any AI project, approximately 80% of the cost is getting your data right. And in many cases, even after a lot of effort, organizations find they don't have the right data. So the project fails before it's launched.

The data you'll need will depend on the question you want to ask and the problem you want to solve. Then you'll want to make sure you have the right solution in place to capture and make that data accessible to an AI/ML model.

Next gen OMS. The AI/ML enabler you need to drive growth and reduce risk

A modern, event-based OMS, like Fluent Order Management provides the good clean data you need as the input for your AI/ML models. This is essential if you want to reduce the risk of project failure, beat out competition for customers, and ultimately drive growth. How is the data different?

Fluent Order Management captures both time series data on your demand, and other contextual data, such as:

- General order history
- All the inventory positions at specific point in time

- All of the fulfillment rules (sourcing logic) used for a given order
- Safety stock controls and configuration
- Location attributes (e.g., status, capacity, opening hours, time to process an order)
- Order attributes (e.g., order date/time, order processing time, carrier, delivery date/time, etc.)
- Product attributes (e.g., bulky, fragile, must ship alone, etc.)
- Customer attributes (e.g., loyalty/tier, credit status, return rate, etc.)

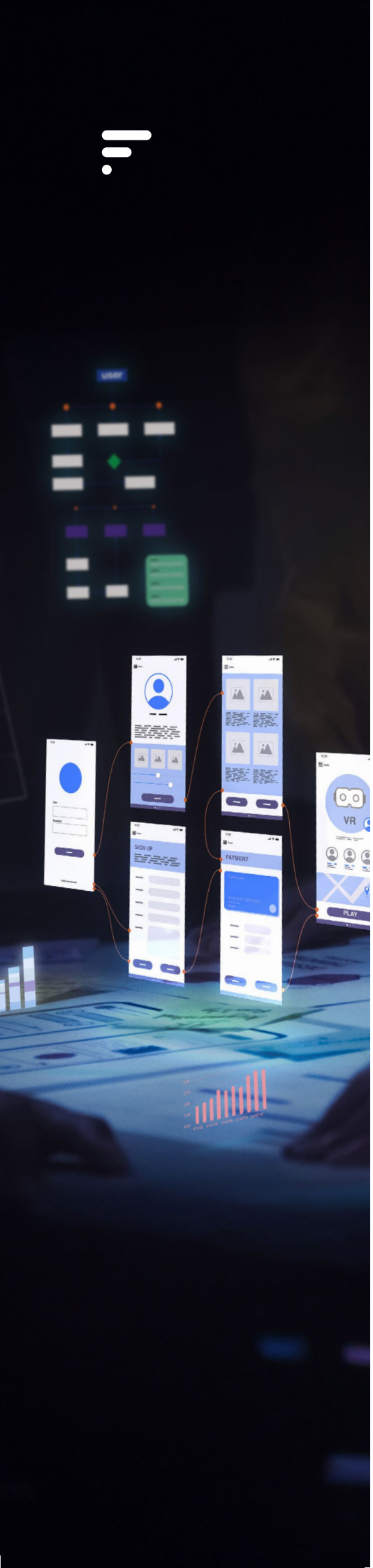
And what's more, all that contextual data is stored, not purged or condensed, so it's always available for future analysis.

Flexibility and composability are essential for success

In addition, Fluent Order Management is highly flexible and composable. Why is that important?

Data flexibility gives you better inputs to your model
Because it lets you extend the data model, you can capture and tag any additional data you need as an input to your model. For example:

- Tag the data that contains signals you want to use to train an ML model so it's easy to extract
- Add relevant ML enabling data by adding custom attributes to orders, returns, locations, products, shipments, inventory positions, etc.



- Capture POS transactions so it has a full picture of offline demand, not just a net value from the ERP (+ replenishment orders - sales) which is critical to support AI/ML use cases in the future.

Model flexibility gives you digital agility

Using a composable architecture provides model flexibility. AI models are evolving rapidly. What works today may not be the best choice in the future, so you want to keep your options open—be able to switch models. That way you can continue to improve your business operations in the future. Digital agility is essential.

Workflow and UI flexibility lets you utilize different types of model outputs

Do you know how you want to use a model's output to increase operational efficiency and productivity?

- Use a model to provide recommendations to employees
- Trigger notifications and alerts
- Automatically apply model recommendations

Will it change over time? Fluent Order Management lets you configure and extend the rules and workflows that manage your sourcing logic, how orders are processed, and how inventory updates are applied. This includes firing events that allow for real-time integration with external APIs at any point in a workflow. Fluent Order Management also provides a flexible UI that can be extended to show additional data. This flexibility means you can easily:

- Use model outputs in your business processes to improve operational efficiency

- Configure and extend the user interfaces to highlight key model features and/or recommendations to improve productivity and business outcomes
- Automatically send alerts to team members so they can take action

With the right data in place, and a flexibility in your model, and how its output can be applied, you'll be prepared to take full advantage of future AI/ML capabilities, and augment the power of your people. This is the power of next generation supply chain execution tech.

The future starts now

In the future, what if you could:

- Understand what would have been the ideal fulfillment location for each order (if it had been in stock for all items in the order and had enough capacity) so you could optimize replenishment
- Have a better view of short term demand so you can better manage labor
- Optimize inventory placement / assortment based on common demand trends (for example, ensuring two products have a high probability to be sold together, are in stock at the same location)
- Dynamically optimize safety stock at the SKU-location level so you can increase inventory turns at the same time as reducing inventory carrying costs.
- Use demand sensing to alert your team so they can proactively address potential stock shortages

How much would that help you drive sales? Improve employee productivity? How much would it help you save in operational and delivery costs? And stay ahead of the competition?

And what if in the future you could combine model outputs with other information, like weather data? Use models that can generate outputs with zero latency? Or ask natural language queries about the effectiveness of different sourcing strategies? Or what about generating multimodal outputs (e.g., text and an image) in response to your queries? For example, rather than just text based recommendations to improve the effectiveness of your sourcing strategy, a visualization as well?

The potential for business optimization using AI/ML models for inventory availability and order data is immense. But the first step is getting your data right based on the problem you're trying to solve. And it's important to start now. Why? Because your 'data tech debt' is growing every day. Think about how much data you generate in a year. The later you start, the bigger the data problem to solve.

To learn more about how Fluent Order Management can help power your AI/ML ambitions, schedule an AI/ML data readiness assessment today.

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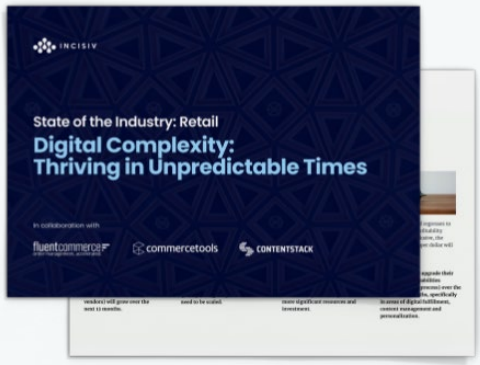

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