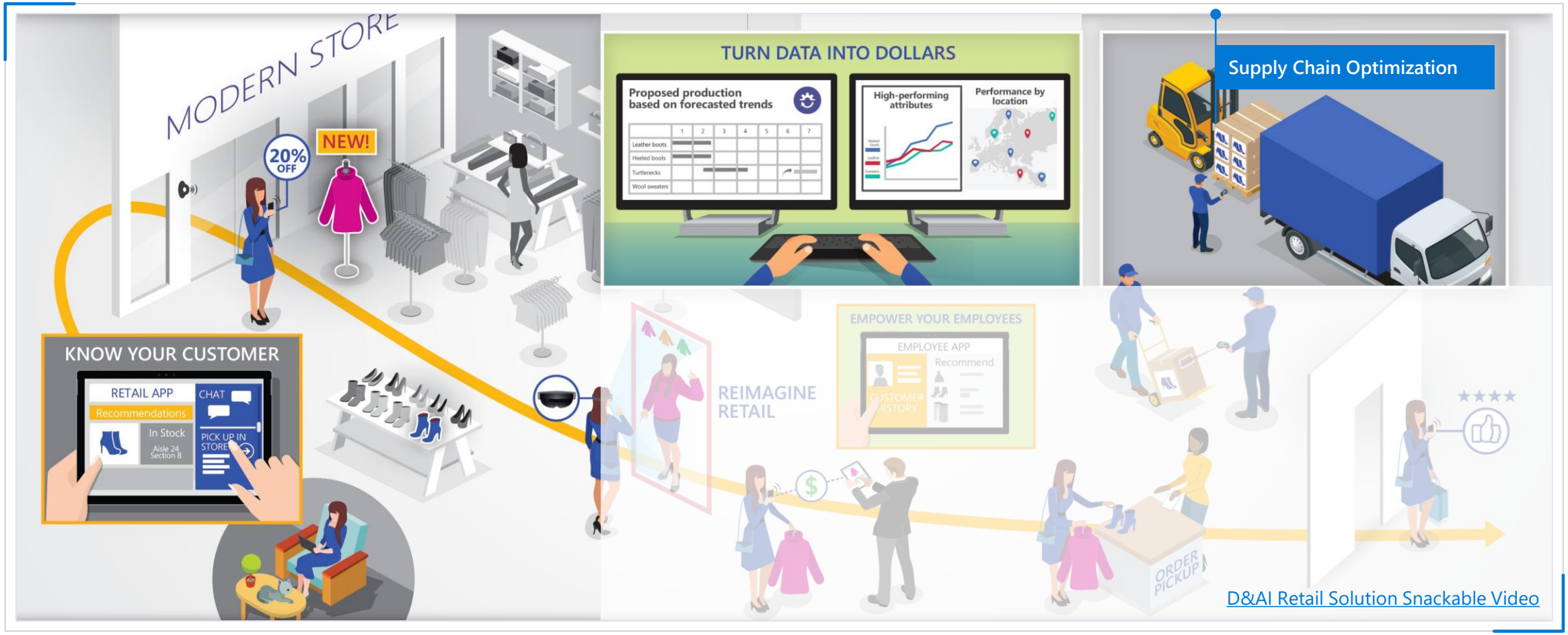
Microsoft Azure

Demand Forecasting Solution Accelerator

POWERED BY: EARLY ACCESS ENGINEERING

Data rules retail–every store, system, and interaction



Evolving customer expectations leading industry shift

Empower your employees

62% of consumers say friendly and/or **knowledgeable employees are most important aspect** of in-store customer service.[1]

Know your customer

78% of consumers are **more likely to shop** at retailers and brands providing a **personalized experience.**[4]

Reimagine retail

650M AI-native shoppers (ages 5-9) are expected to give up product research in favor of **relying on AI to provide best offerings** preselected for them.[2]

Deliver intelligent supply chain

48% of US consumers cite **product availability** as the reason for trying a new brand.[3]

1) The ICSC Customer Service Survey. ICSC, 2019
2) 5 predictions for the future of retail | Retail Dive
3) Shoppers Demand Superior eCommerce Experiences: Consumer Expectations in 2019. Avionos, 2019
4) McKinsey & Company, The Great Consumer Shift

Supply chain challenges we hear from our customers

Inability to meet customer demand anywhere, on any channel, due to disconnected processes

Business has **limited visibility** of key data generated throughout the supply chain, and has almost no feedback loop

Need a **360-degree approach to supply chain** from obtaining the raw materials, through production process, to last-mile delivery to the customers' doorstep

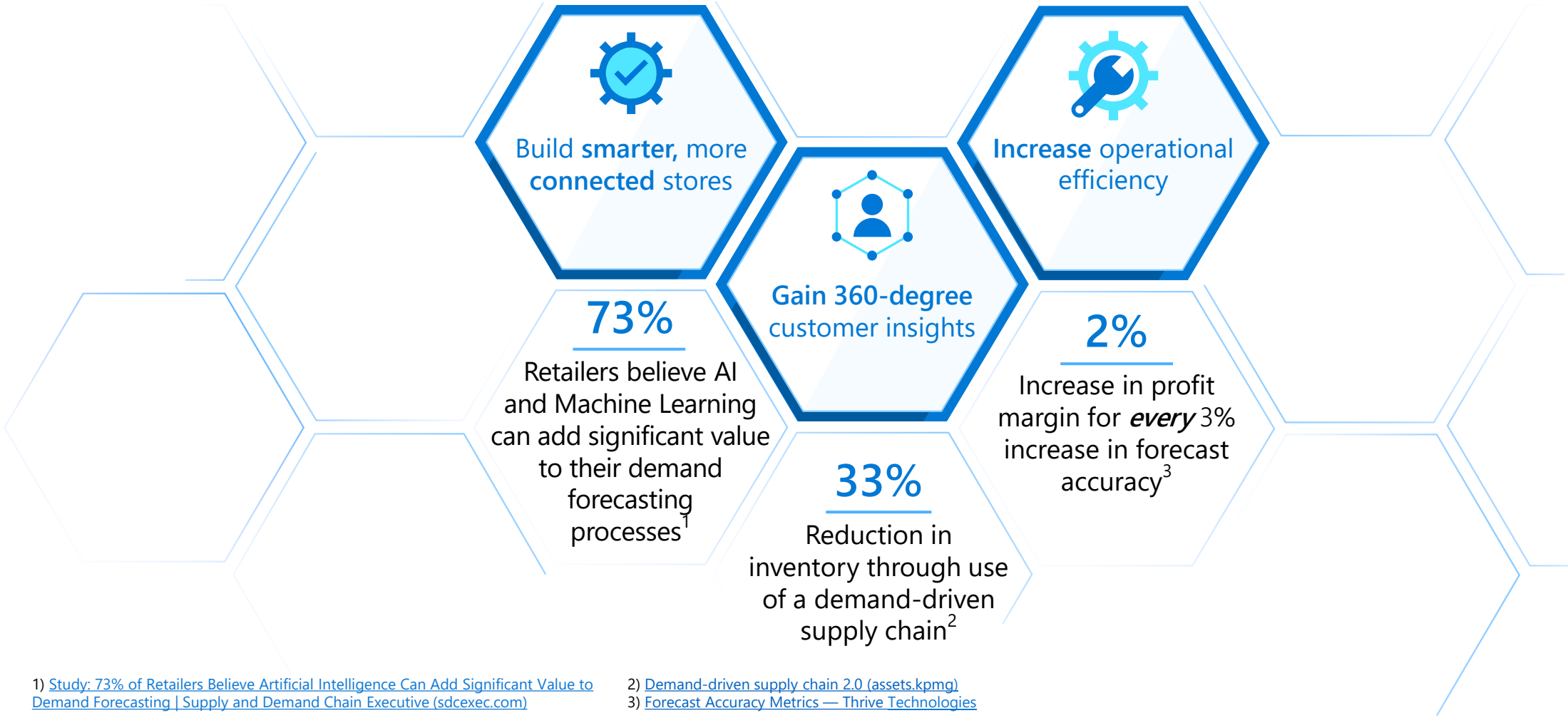
Lack of infrastructure to ensure better inventory management and cost savings

Departments **operating in silos** and restricted data flow among them prevents rapid response to customer demand for fast fulfillment, flexible delivery, and easy returns

Changes to the supply chain take a lot of **time and effort**, as processes are tightly coupled and lack agility

Gaining reliable visibility into data is a game-changer

The ability to accurately forecast demand is the first link in a chain of positive outcomes across your enterprise.



1) Study: 73% of Retailers Believe Artificial Intelligence Can Add Significant Value to Demand Forecasting | Supply and Demand Chain Executive (sdcexec.com)

2) Demand-driven supply chain 2.0 (assets.kpmg)

3) Forecast Accuracy Metrics — Thrive Technologies

Solve forecasting challenges efficiently

Create a dynamic supply chain by using AI to reliably anticipate customer needs

Optimize costs and time across your business by modelling thousands of scenarios to inform comprehensive forecasting

Using a custom-built template, you can deliver actionable results within weeks.

COATS

Gained intelligent view of supply chain and processes

Walgreens

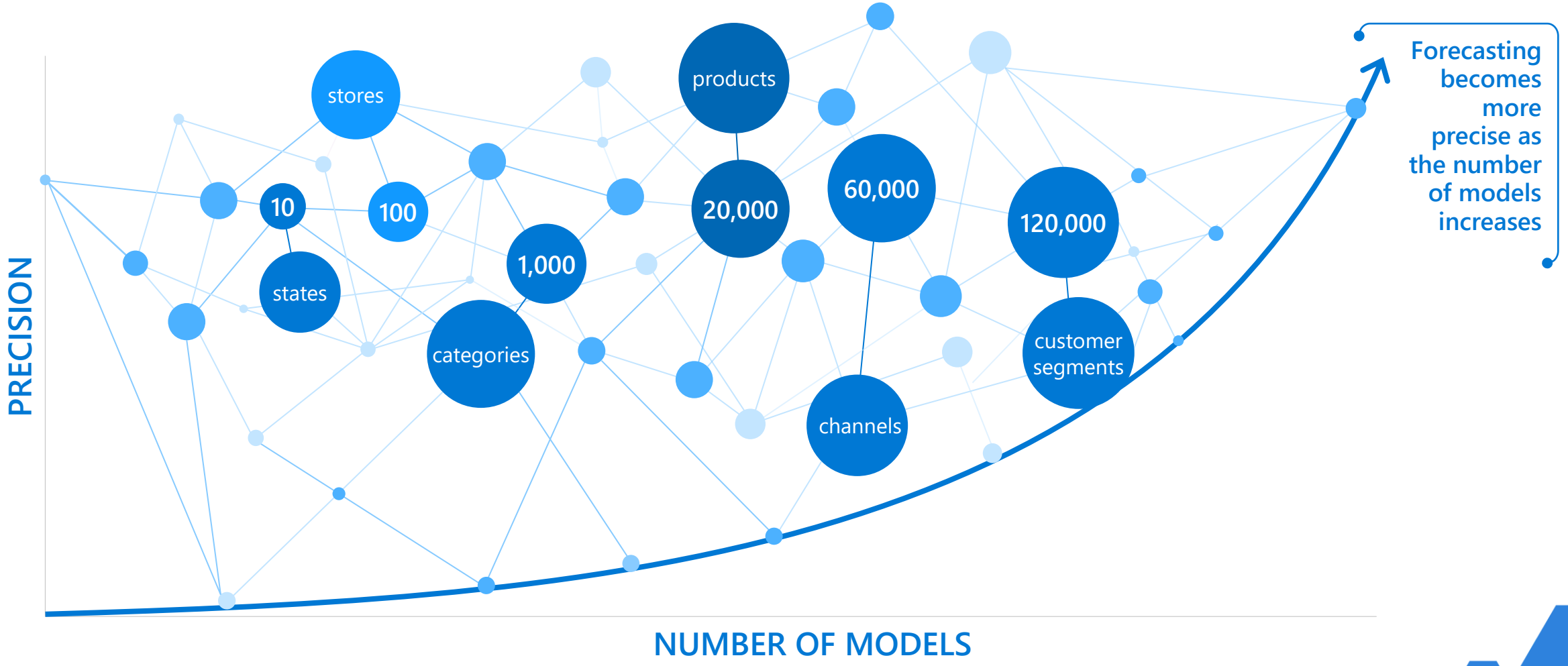
Transactional data from 8M daily customers guides inventory decisions

carhartt

Exceeded revenue plans by 200%

Improve accuracy with “many models” approach

By setting up scalable compute clusters, you can train many models in parallel increasing accuracy of the models you train.



Carhartt's success

Azure Machine Learning helped us choose the three new retail locations we opened in 2019. Those stores ***exceeded their revenue plans by over 200 percent****...and within months of opening were among the best-performing stores in their districts.*

JOLIE VITALE
Director of BI and Analytics

carhartt

Read full story here

SITUATION	Carhartt needed to factor in **macroeconomic variables and other trend data** into its analytical purview **to improve sales forecasts.**
SOLUTION	Carhartt used Azure Machine Learning to **visualize and model more than 100 variables** relevant to predicting product demand.
IMPACT	Carhartt used the new tool to develop a list of new brick-and-mortar locations to help open three new stores. Within months, the **new locations exceeded revenue by over 200%.** The tool is now deployed to **optimize sales with big-box retailers, online, and all physical Carhartt stores.**

Solution Accelerator demo

https://github.com/microsoft/solution-accelerator-many-models

Automated ML

Next steps: Accelerate your journey

Kick-off	Proof of value	MVP & deployment
Learn more about the Demand Forecasting Solution Accelerator and see a demo	Solution code walk-through and prototype creation for customer testing	Minimum Viable Product (MVP) is built and deployed for the customer with support of the technical specialists (CSA) and Partners
30 minutes	3 Hours or less	2-5 weeks

Deliver powerful insights for fast ROI

Azure provides powerful insights secured with the most advanced features in the market.

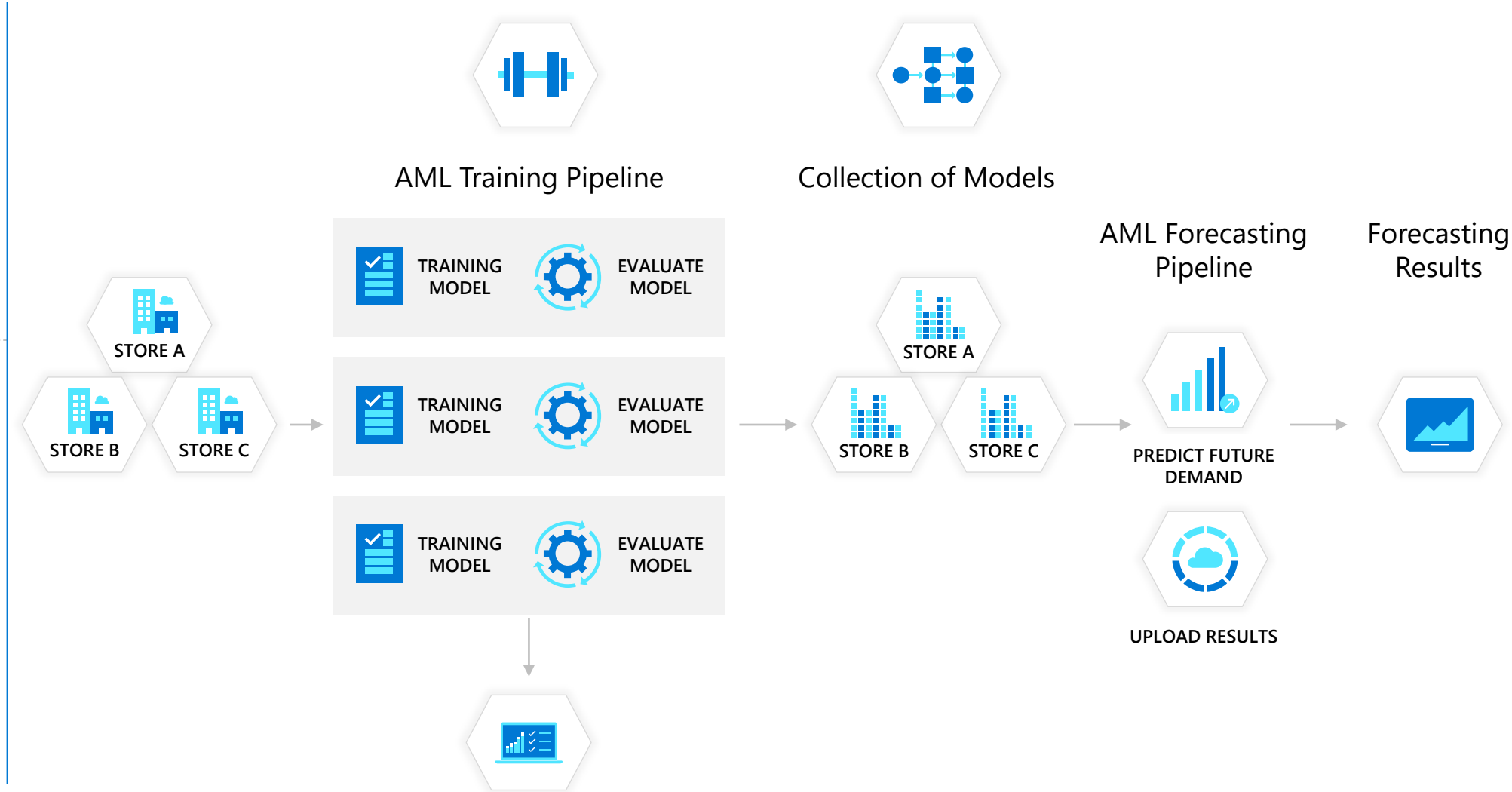
Prebuilt so you can gain quick time to value and focus on other initiatives

Leverages advanced "many models" approach to Machine Learning to **improve accuracy**

Gain insights from all your data across all your data warehouses with blazing speed

Reduce project time with unified, end-to-end analytics

Solution Accelerator MVP process flow



Next steps in your personalized MVP deployment

To begin creation of your MVP, follow these steps:

Deploy resources	Prepare data	Train with custom script
Create a resource group you can use as a container to begin deploying the resources to Azure	Configure your development environment for Azure Machine Learning. Notebook VM is a highly-compatible, preconfigured way to get up and running quickly	The scripting process is outlined in a series of Jupyter Notebooks. Review them sequentially to walk you through training, scoring, and making predictions using Azure Machine Learning

With demo data, create your MVP in less than a day

With your custom data and a prep session, create your MVP in 2-5 weeks

Thank you

Functionality

The functionality is broken into the notebooks folders designed to be run sequentially.

Before training the models

Notebook	Description
`00_Setup_AML_Workspace.ipynb`	Creates and configures the AML Workspace, including deploying a compute cluster for training.
`01_Data_Preparation.ipynb`	Prepares the datasets that will be used during training and forecasting.

Using a custom training script to train the models:

The following notebooks are located under the `Custom_Script/` folder.

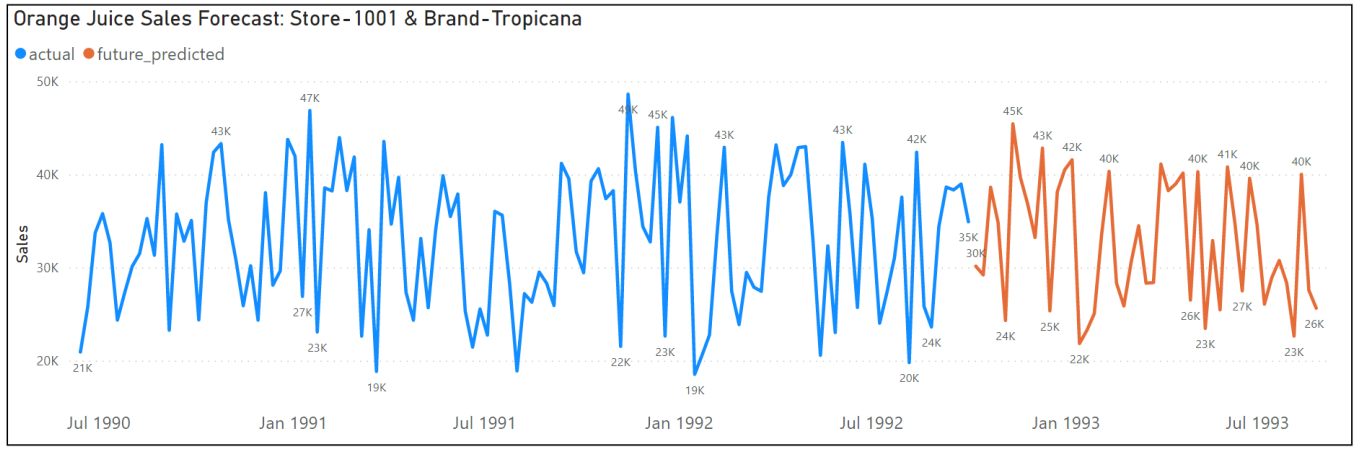
Notebook	Description
`02_CustomScript_Training_Pipeline.ipynb`	Creates a pipeline to train a model for each store and orange juice brand in the dataset using a custom script.
`03_CustomScript_Forecasting_Pipeline.ipynb`	Creates a pipeline to forecast future orange juice sales using the models trained in the previous step.

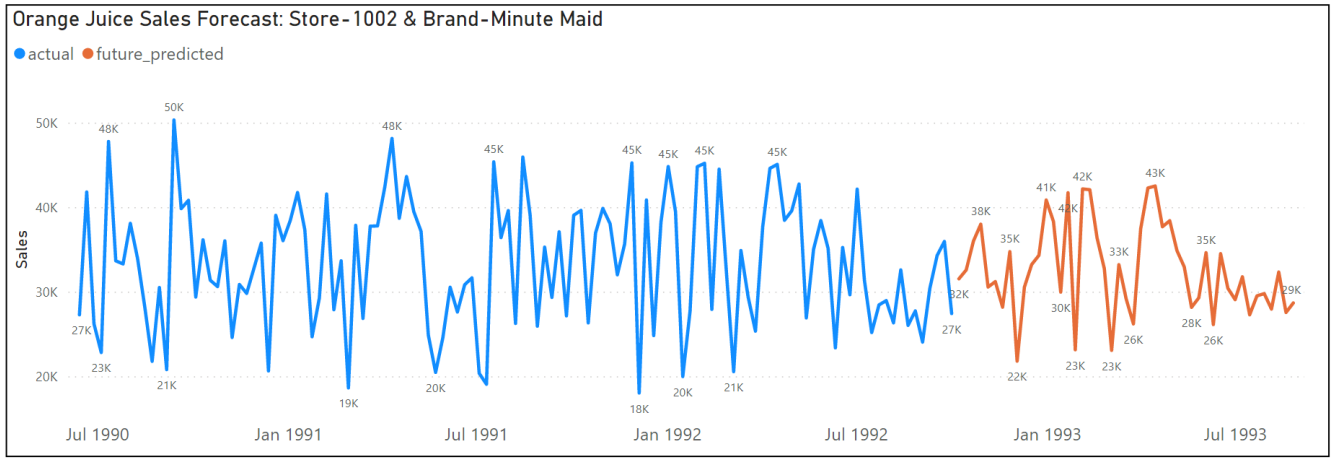
Using Automated ML to train the models:

The following notebooks are located under the `Automated_ML/` folder.

Notebook	Description
`02_AutoML_Training_Pipeline.ipynb`	Creates a pipeline to train a model for each store and orange juice brand in the dataset using Automated ML.
`03_AutoML_Forecasting_Pipeline.ipynb`	Creates a pipeline to forecast future orange juice sales using the models trained in the previous step.

Insights





Demand Forecasting technical overview

Drive product demand using broad & deep datasets