Risk Classification and Loan Modeling Accelerator

Financial Services and Insurance industries

Small business loan applications are at an all-time high

COVID-19 and recovery increased loan supply and demand, intensifying pressure on lenders

The Small Business Administration's (SBA) traditional 7a, 504, and microloan programs collectively reached a **record high loan volume in Fiscal Year 2021.**[1]

41% growth in the SBA's 504 flexible, low-interest loan program in FY21.[1]

0.96% drop-in interest rates between 2020 and 2021 spurred a surge in loan applications.[2]

30% increase in applications to start small businesses in FY21, compared to before the pandemic.[3]

$450 million delivered by the American Rescue Plan to over 6 million small businesses and nonprofits in FY21.[4]

1 SBA Administer Guzman Announces…. | U.S. Small Business Administration, October 2021
2 2022 SBA Loan Trends | Guidant, November 2021

3 Fact Sheet: The New Small Business Boom Under the Biden-Harris Administration | The White House, January 2022
4 One Year Later: Biden-Harris Administration…. | U.S. Small Business Administration, January 2022

Microsoft Azure

Lenders struggle to keep pace with application volume

Inefficient processes create delays, limit informed decision making, and can increase risk

Reliance on **labor-intensive, manual, and low-tech loan application processing** creates backlogs and errors.	**High volumes of loan applications** lead to further bottlenecks and delays.	**Delayed loan distribution** can cause applicants to lose critical business opportunities and impact their risk profiles.	**Inability to regularly run and re-run risk classification** limits the accuracy of assessments.	**Lack of efficient, precise loan modeling** makes it difficult to determine exactly what the SBA will approve.

Automate loan application processing and SBA compliance

Increase efficiency and gain data-driven insights for faster, more informed loan decisions

Create a **structured, automated methodology** for ensuring SBA compliance.

Ensure **timely delivery** of approved loans to minimize risk.

Reduce defaults by loaning the right amounts with the right terms.

Improve the borrower experience and help protect customer supply chains.

Enable smarter and faster decisions for small business loans

Leverage machine learning and predictive modeling to process, analyze, and rule on SBA loans

The Risk Classification and Loan Modeling Accelerator uses big data analytics and predictive modeling to **quickly make increasingly accurate lending decisions** in compliance with SBA guidelines, delivering the **right loan amount to the right borrowers at the right time**.

Get built-in compliance with SBA guidelines to determine optimal loan size.

Process applications faster to reduce backlog and deliver funds quickly.

Get more complete and timely loan repayments by right-sizing loans.

Easily launch the accelerator using pre-configured IP from Microsoft.

Drive faster, more accurate SBA loan approvals and rejections

Predictive modeling and machine learning power insights for data-driven decision making
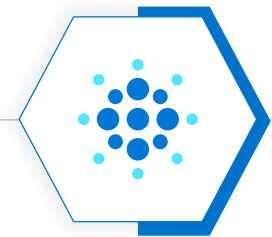
Ingest and transform

Loan application data and SBA criteria are aggregated and prepared for ML model.

Analyze and predict

Model predicts the SBA loan amount the applicant will most likely be approved for.

Visualize and decide

View holistic analytics reports for one or multiple borrowers in SQL, Power BI, or custom dashboards.

Financial company empowered by predictive modeling

Company leverages Azure Synapse Analytics and Machine Learning for faster loan decisions

Situation
A capital markets financial services company needed to process loan applications more efficiently, make approval or denial decisions, and determine loan sizes for those they approved.

Solution
The lender leveraged Azure Synapse Analytics and Azure Machine Learning to customize a big data analytics and predictive modeling accelerator to streamline and accelerate its loan underwriting operations.
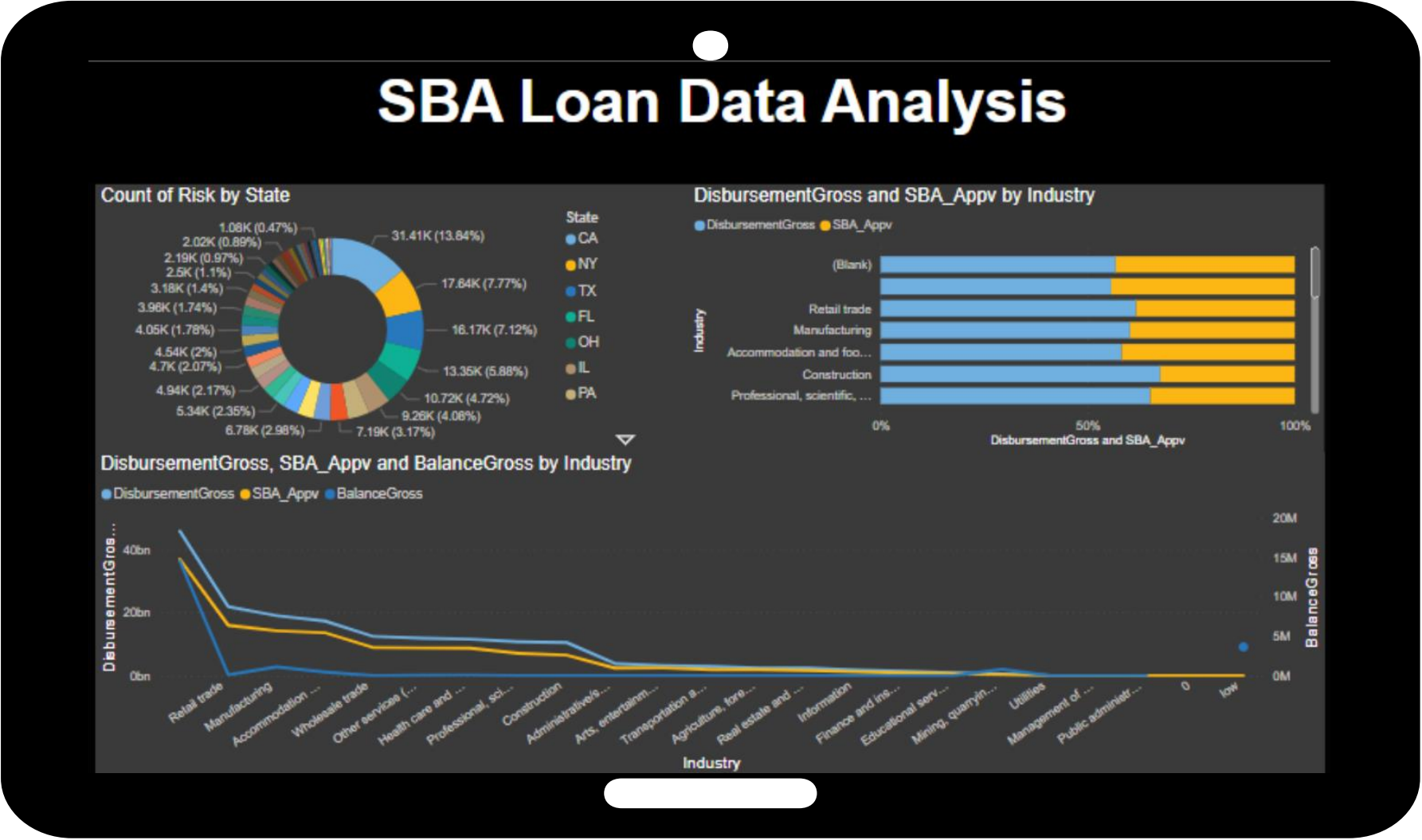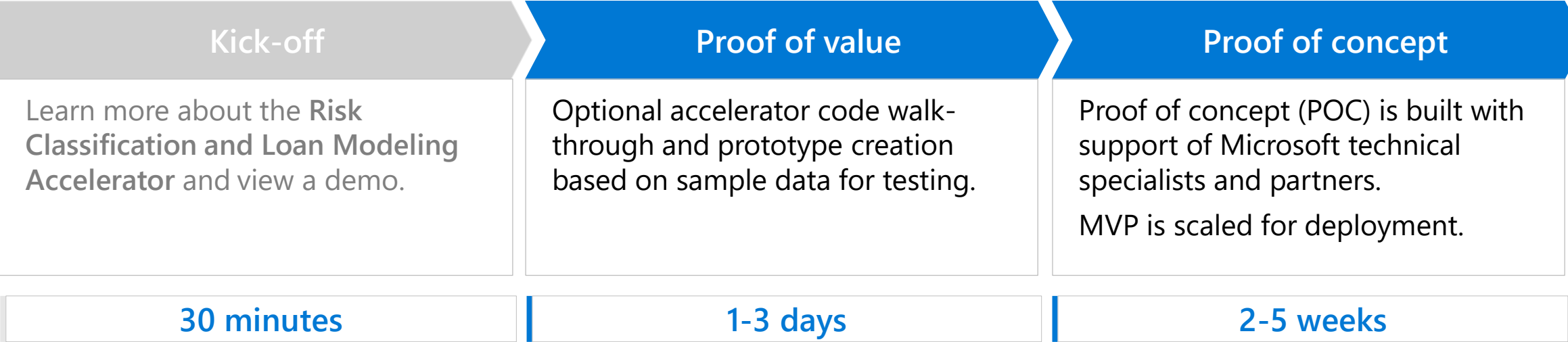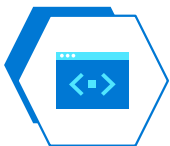
Outcome
The accelerator significantly improved the accuracy of the organization's loan modeling, increased loan underwriting operational efficiencies, reduced borrower defaults, and decreased risk to the organization.

Microsoft Azure

Dashboard displays analytics for faster decision making

View business location, type, and risk factors in a graphic interface

Expedite SBA loan processing in a few weeks

Kick-off	Proof of value	Proof of concept
Learn more about the **Risk Classification and Loan Modeling Accelerator** and view a demo.	Optional accelerator code walk-through and prototype creation based on sample data for testing.	Proof of concept (POC) is built with support of Microsoft technical specialists and partners. MVP is scaled for deployment.
30 minutes	**1-3 days**	**2-5 weeks**

Microsoft Azure

View instructional demos and documents

View [video demos](#)
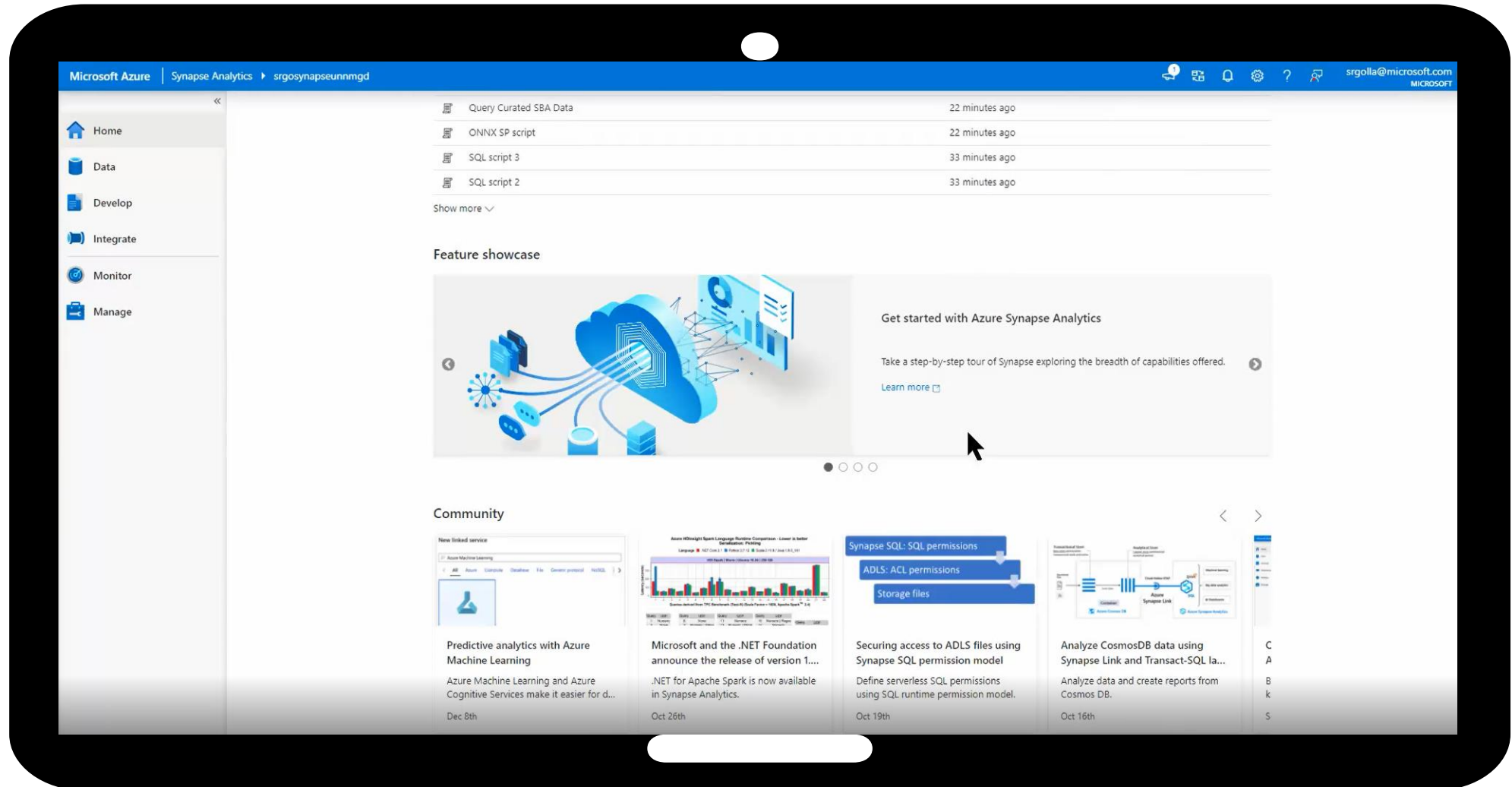
For detailed instructions, [read the lab guide](#).

Microsoft Azure

Expedite SBA loan processing with machine learning

Risk Classification and Loan Modeling Accelerator enables fast, accurate evaluation

Automate loan application data ingestion, compliance criteria from the SBA, storage, data cleansing and enrichment.

Apply massively parallel processing (MPP) and high-performance analytics to petabytes of data at scale.

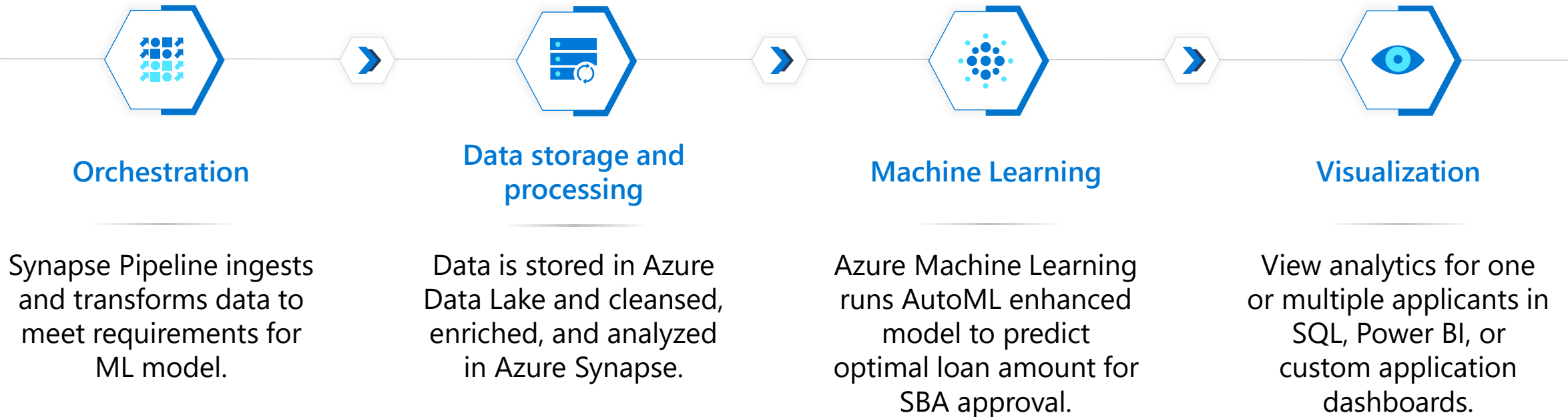Optimize machine learning model with AutoML, using fewer resources and accelerating time to machine learning.

Quickly provide accurate analytics and insights for data-driven business decisions.

Reduce deployment time with pre-configured accelerator.

Microsoft Azure

Drive faster, more accurate SBA loan approvals and rejections

Predictive modeling and machine learning power insights for data-driven decision making

Orchestration

Synapse Pipeline ingests and transforms data to meet requirements for ML model.

Data storage and processing

Data is stored in Azure Data Lake and cleansed, enriched, and analyzed in Azure Synapse.

Machine Learning

Azure Machine Learning runs AutoML enhanced model to predict optimal loan amount for SBA approval.

Visualization

View analytics for one or multiple applicants in SQL, Power BI, or custom application dashboards.
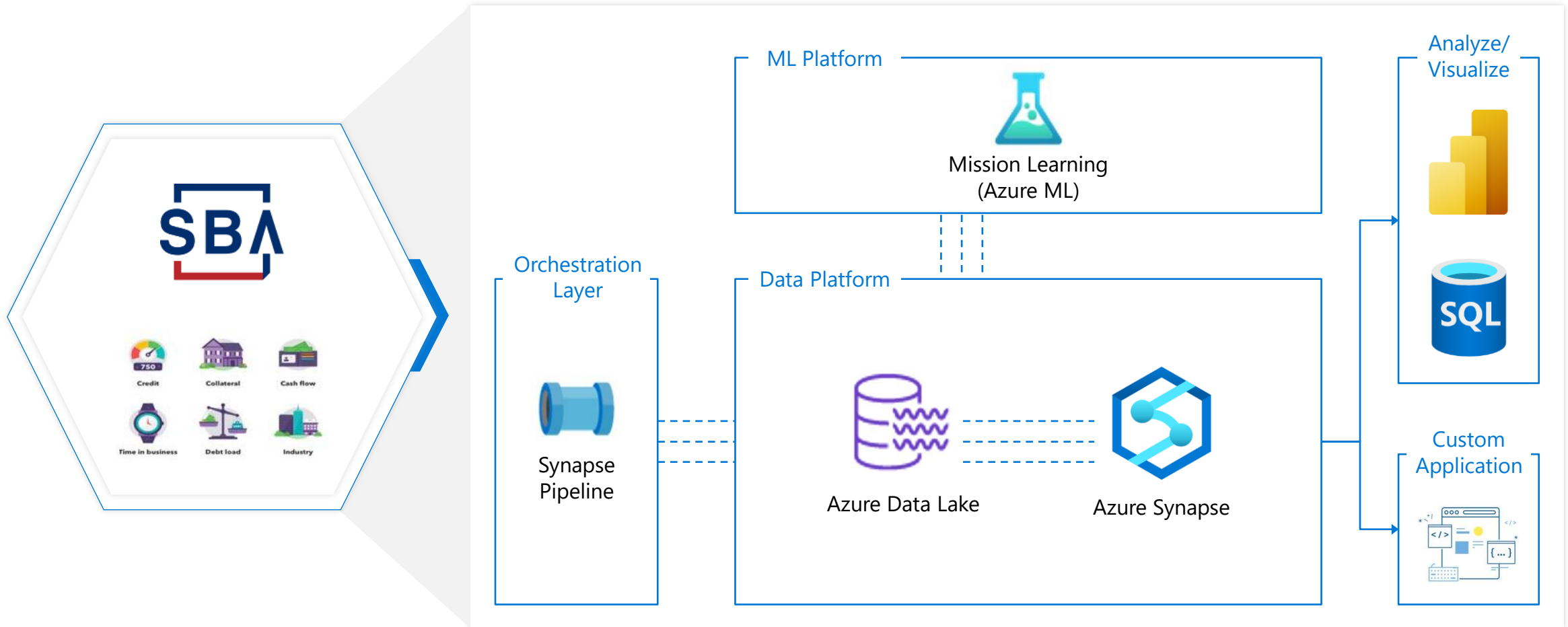
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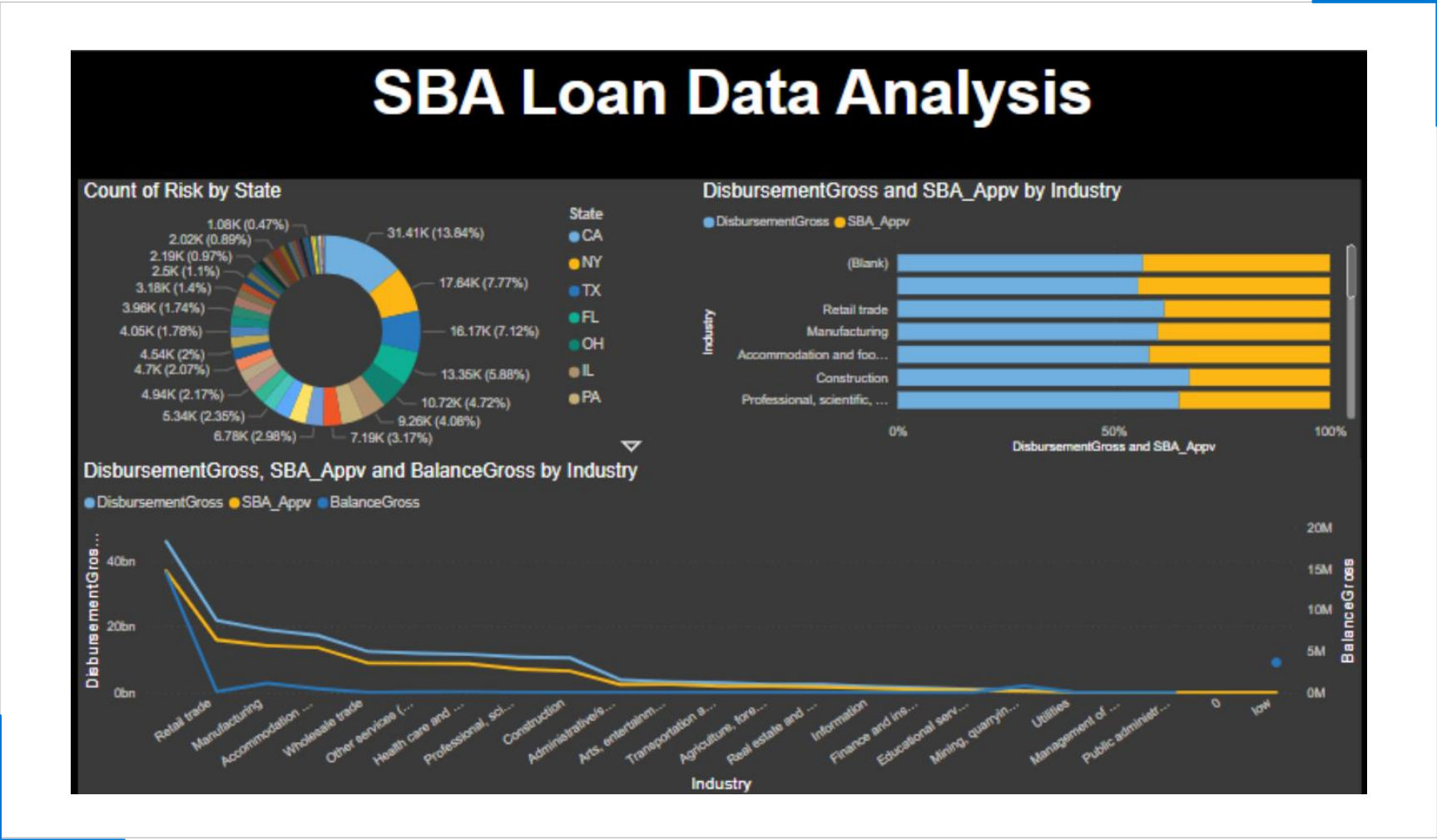
Reference architecture

Inputs from the SBA and applicant criteria are integrated quickly and easily

Take the next step to fast, easy SBA loan assessments

| Deploy resources	Prepare data	Train model
Create a resource group you can use as a container to begin deploying PaaS resources to Azure.	Build your data pipeline and implement data cleansing, transformation, enriching, and governance using PaaS services.	Use AutoML to determine the best ML model for your underlying data and train your optimized ML model to improve prediction accuracy.

With demo data create a POV in 1-3 days.

With your customer data and a prep session, create your POC in 2-5 weeks.

Thank you
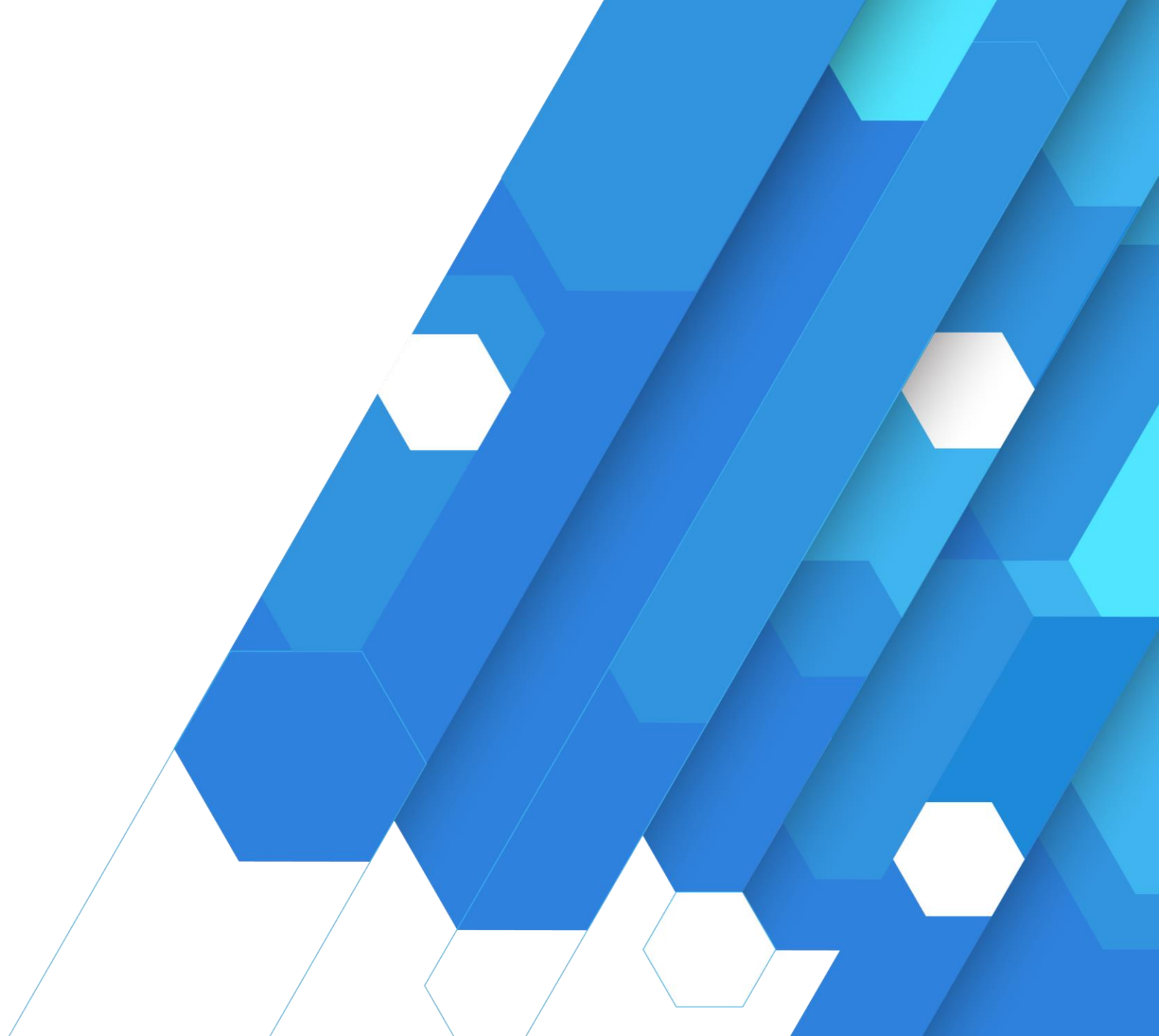
Additional use cases

The Risk Classification and Loan Modeling Accelerator has a range of applications

Customer screening

Vet customers for financial liability and regulatory compliance.

Portfolio management

Evaluate, predict, and manage portfolio health.

Financial crime detection

Use predictive analytics to detect fraud, prevent money laundering, and more.

Digital advisor

Manage and automate customer trading strategies with predictive modeling.