# AI @ BNY MELLON

June 2023

**BNY MELLON**

# ADVANCED SOLUTIONS & INNOVATION

# OUR MISSION

To deliver tangible **commercial value** by solving complex business challenges using **AI, agile approaches** and other **emerging technologies**.

Build **robust capabilities, attract & develop talent**, demonstrate the art of the possible - promote **a learning culture** with purpose.

To **empower** innovators across BNY Mellon by allowing all to **explore** the creativity, thought leadership, and diverse capabilities of the enterprise.

# ADVANCED SOLUTIONS & INNOVATION

# WHO WE ARE

**A diverse team of innovators, with a global presence and 3 innovation centers based in New York, London and Singapore, applying AI and agile approaches to solve problems that matter for our clients and the enterprise.**

- **Business engagement leads**
- **Data scientists**
- **Product experts**
- **UX/UI/CX/Designers**
- **Solutions architects and engineers**

## The **solutions** we provide

| | | |
|---|---|---|
| User Persona Profiling | Design Thinking Workshops | Rapid Prototyping |
| Predictive Analytics | Anomaly Detection & Risk Management | Natural Language Processing |
| Automation | Document Understanding | Research & Experimentation |

## The **impact** we have made[1]

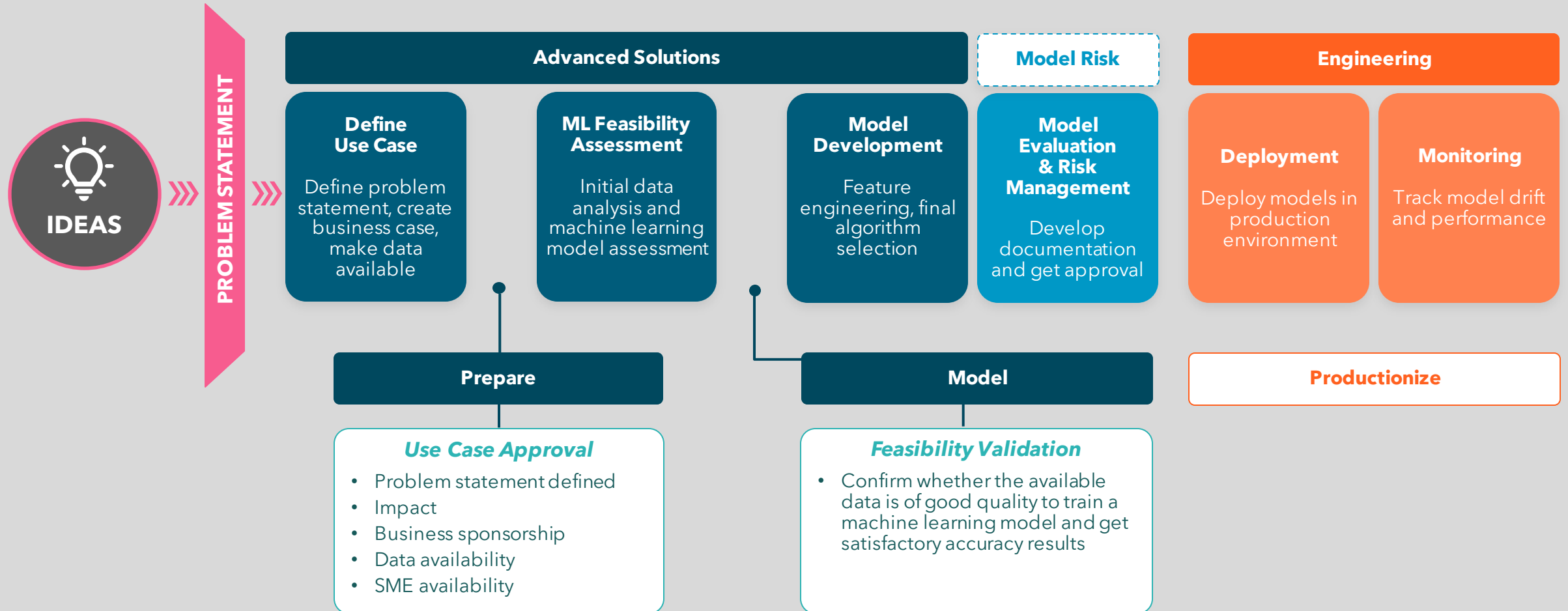| **30+** | **10** | **6** |
|---|---|---|
| AI/ML solutions implemented | Patents filed | Innovation Awards & Industry Recognition |

## Academic Collaborations

With top universities, e.g., MIT, NYU, Carnegie Mellon

[1] Figures as of September 2022

# We Build the AI Solutions

*Advanced Solutions Team build AI solutions that solve high value problems for lines of business and corporate functions.*

**IDEAS**

**PROBLEM STATEMENT**

**Advanced Solutions**

**Model Risk**

**Engineering**

**Define Use Case**

Define problem statement, create business case, make data available

**ML Feasibility Assessment**

Initial data analysis and machine learning model assessment

**Model Development**

Feature engineering, final algorithm selection

**Model Evaluation & Risk Management**

Develop documentation and get approval

**Deployment**

Deploy models in production environment

**Monitoring**

Track model drift and performance

**Prepare**

**Model**

**Productionize**

### *Use Case Approval*

- Problem statement defined
- Impact
- Business sponsorship
- Data availability
- SME availability

### *Feasibility Validation*

- Confirm whether the available data is of good quality to train a machine learning model and get satisfactory accuracy results

# DIFFERENT WAYS WE LEVERAGE AI AT BNY MELLON

**1**

### PREDICTIVE ANALYTICS
Analyze historical data, identify patterns, and forecast future outcomes, enabling **data-driven decisions**, **optimized resource allocation**, and rapid response to market trends.

**2**

### ANOMALY DETECTION & RISK MGMT
**Minimize risks** by monitoring complex systems and **identifying unusual behavior** or data patterns, enabling teams to prevent negative outcomes.

**3**

### AUTOMATION
**Streamline repetitive and time-consuming tasks**, allowing to achieve greater **operational efficiency**, **reduce human error**, and free up valuable human resources for higher-level strategic / creative endeavors.
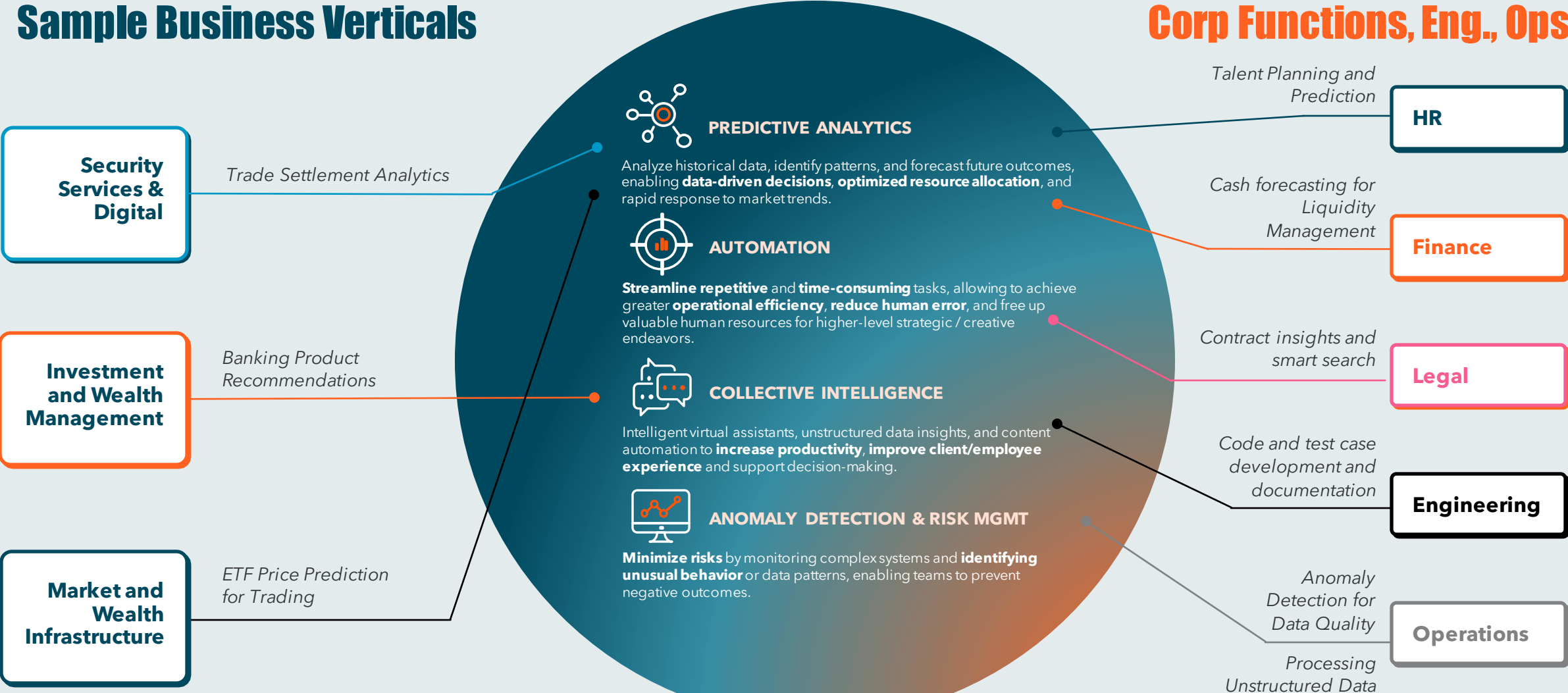
**4**

### COLLECTIVE INTELLIGENCE
Intelligent virtual assistants, unstructured data insights, and content automation to **increase productivity**, **improve client/employee experience** and support decision-making.

# Advanced Solutions Team works enterprise wide with every business and function

## Sample Business Verticals

## Corp Functions, Eng., Ops

**Security Services & Digital**

*Trade Settlement Analytics*

**Investment and Wealth Management**

*Banking Product Recommendations*

**Market and Wealth Infrastructure**

*ETF Price Prediction for Trading*

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### COLLECTIVE INTELLIGENCE

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### ANOMALY DETECTION & RISK MGMT

**Minimize risks** by monitoring complex systems and **identifying unusual behavior** or data patterns, enabling teams to prevent negative outcomes.

*Talent Planning and Prediction*

**HR**

*Cash forecasting for Liquidity Management*

**Finance**

*Contract insights and smart search*

**Legal**

*Code and test case development and documentation*

**Engineering**

*Anomaly Detection for Data Quality*

**Operations**

*Processing Unstructured Data*

· · ·

6   *Information Classification: CONFIDENTIAL*

# AI SOLUTIONS

Sample use cases

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# TRADE SETTLEMENT ANALYTICS

**Monitoring** and **optimizing** the trade settlement processes.

## ACTIONABLE INSIGHTS

Identifying bottlenecks, inefficiencies, high-risk trades, and monitoring settlement timelines.

## PREDICTIVE TRADE SETTLEMENT

Forecasting potential settlement failures before they occur, allowing for proactive resolution and reduced risk.

*"This is great, we have not seen anything like this out there"* Investment Management Firm

*"This will help us manage high value trades in CSDR markets and buy in markets"* Asset Management Firm

*"You are helping us prioritize and improve risk management"* Hedge Fund

*"This will help our teams across the globe analyze data and know what to focus on which will deliver tremendous value and save time"* Investment Management Firm

**Training Dataset =**

**>200 MILLION TRADES**

**> 92% ACCURACY**

24 hours before settlement

# CASH BALANCE FORECASTING

A **dynamic** model that more **accurately forecasts** cash balances and enables more **efficient** use of daily reserves.
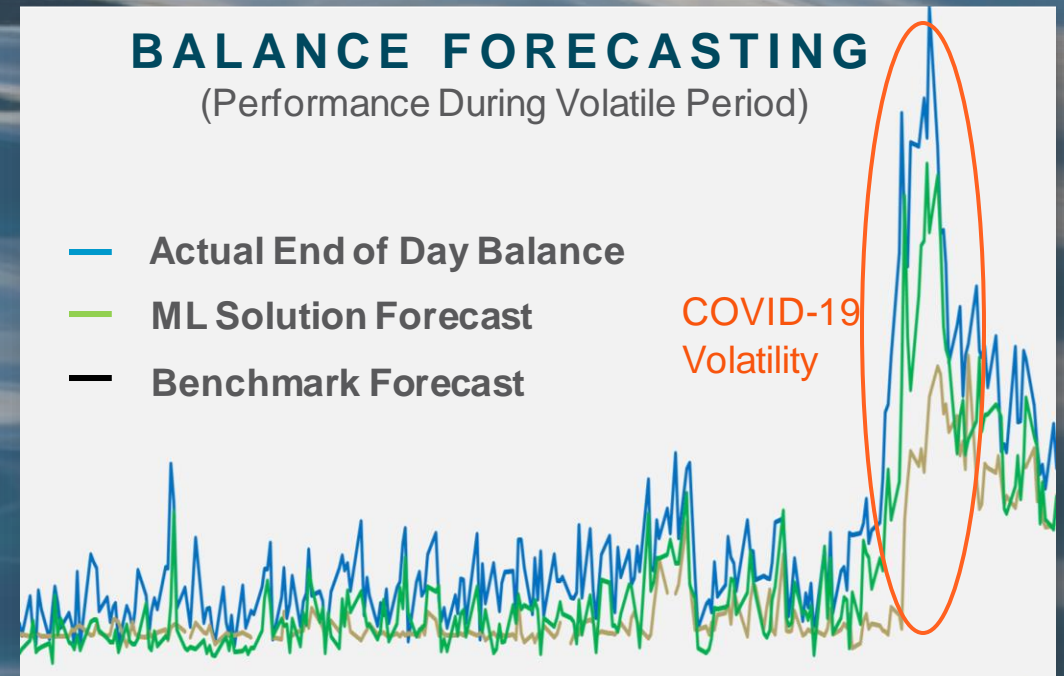
Responds dynamically to unexpected events

34% more accurate than internal benchmark, without overestimation

Fully automated, refreshing regularly through model training

Solution helped free-up cash from daily reserves and handled unexpected volatility from COVID-19

**BALANCE FORECASTING**
(Performance During Volatile Period)

— **Actual End of Day Balance**

— **ML Solution Forecast**

— **Benchmark Forecast**

COVID-19 Volatility

# SECURITIES LENDING RATE PREDICTION

- Developed machine learning models that can **predict the lending fee movement** for U.S. securities.

- Delivers opportunities to **price loans more competitively** and **capture missed revenue opportunities** for clients

| **ACTIONABLE INSIGHTS** | **ENHANCED EXPERIENCE** | **SCALABLE AND EFFICIENT** |
|---|---|---|
| Predicts the likelihood of a security's lending rate increasing/decreasing and the magnitude of the direction | More competitive pricing increases the utilization and duration of the loans, resulting in increased revenue potential for clients | Innovative deep neural network scalable to thousands of financial time series |

# DOCUMENT PROCESSING AUTOMATION

**Intelligent document processing to convert unstructured information into structured instructions.**

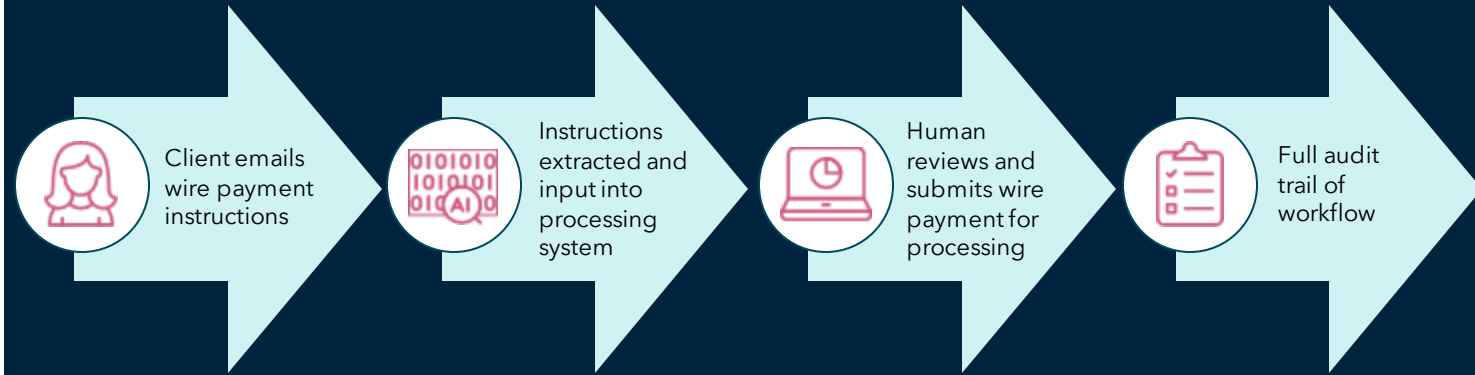## EFFICIENCY & AUTOMATION

Automated the processing of unstructured wire instructions

## GLOBAL SOLUTION

Solution available in U.S., Australia and EMEA

## AUTOMATED WIRE PROCESSING

Client emails wire payment instructions

Instructions extracted and input into processing system

Human reviews and submits wire payment for processing

Full audit trail of workflow

# 80%
**Times Faster Processing**

# >98%
**Model Accuracy**

# GENERATIVE AI

A type of AI that uses **deep learning algorithms** to create new and original content, such as images, videos, music, and even text.

Generative AI offers a **promising avenue for improvement**, poised to enrich numerous functions of our Bank, and strengthen the value we provide to our stakeholders.

## CORE CONSIDERATIONS

We are actively exploring responsible uses of this technology in order to gain a more comprehensive understanding of its range of capabilities, potential applications and to identify any inherent limitations.

We are identifying potential risks associated with this technology and its uses, developing the necessary mitigation strategies, and implementing robust safeguards to address these concerns.

## AREAS UNDER EXPLORATION

- Content Summarization
- Enterprise Knowledge Management
- Conversational Q&A
- Business Insights
- Technology/Coding Assistant

# THANK YOU

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