

# ARTIFICIAL INTELLIGENCE: WHAT YOU NEED TO KNOW

For many of us, artificial intelligence calls to mind android robots from science fiction movies. In reality, AI is far less human in form, but every bit as transformative in application. From digital assistants like Apple's Siri® and Amazon's Alexa® to self-driving cars and delivery drones, we have truly entered the age of AI, which will change both the financial services industry and our daily lives. Northern Trust is committed to leveraging these trends to enhance the way we serve our clients.

## WHAT IS AI?

AI is a broad term for machines that perform human-like functions. It covers a wide range of activities ranging from robotic process automation (RPA) to machines that can "learn" on their own and operate using human languages.

Automation has long been a part of the financial services industry: mainframe banking systems, SWIFT inter-bank communications, and auto-matching in reconciliations each represent decades-old initiatives to automate manual work. Today, AI is the biggest disruptive trend and a hot topic with the World Economic Forum calling it "the Fourth Industrial Revolution". Financial services firms are forecast to spend US \$1.5 billion on AI initiatives in 2017, and that figure is projected to rise to \$2.8 billion by 2021.<sup>1</sup>

## WHAT VALUE DOES IT DELIVER?

Because it covers such a broad array of disciplines, there are countless ways that various AI technologies can help financial services institutions provide better, more efficient and more insightful services. At Northern Trust, some of the avenues we're exploring include:

- **Robotic Process Automation (RPA)** helps automate manual, redundant tasks to improve functions like reconciliations and event processing, providing clients with greater accuracy and shorter turnaround times. At Northern Trust, we completed a proof of value (POV) exercise for robotics in 2016 – identifying more than 50 types of reconciliation exceptions that were automated - and we have since developed an Automation Competency Center, charged with facilitating the practical deployment of robotics across the enterprise.

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## The Context

Computers can now electronically mimic and even exceed the capacity of human cognition. Artificial intelligence is rapidly altering both our professional and personal lives. AI has already changed our world: many of us are accustomed to "users who bought this item also bought..." on Amazon or asking Siri® or Alexa® a question.

## The Challenge

New paradigms are the norm for next-generation applications, setting a high bar for digital experiences. As these experiences become ingrained in clients' personal lives, how will financial services firms meet those expectations? AI presents great opportunity – for efficiency, speed and insight – but also brings disruption and potentially major changes to market practice.

## Our Take

Firms that seize the opportunities will reap substantial benefits and have a strong voice in shaping how AI is used and regulated in the industry. We've already implemented certain basic AI disciplines and are actively exploring how more sophisticated AI can benefit our clients.

<sup>1</sup>Source: Opimas Research, "Artificial Intelligence in Capital Markets: The Next Operational Revolution," 2017, <http://www.opimas.com/research/210/detail/>

- **Natural Language Processing (NLP)** involves building machines that can ingest large amounts of unstructured (i.e., written text) data and understand it to extract insights. NLP can be used to expedite processes and improve accuracy related to document interpretation.
- **Machine Learning** allows machines to adapt their processes as they take in new information. It may be applied to large data sets to identify patterns and trends that help clients gain new insights through improved analytics, performance or risk capabilities; it also has applications for fraud prevention and detecting cyber threats.
- **Chatbots** provide accurate, 24/7 support for client and partner service requests and inquiries. Besides being efficient and always available, they can handle simple queries that free up time for employees to focus on more complex client needs that require personal attention.
- **Conversational User Interfaces** like Siri® and Alexa® are increasingly part of our daily lives. Financial firms are exploring this technology as well. While some way off, the time is approaching where users will be able to call up, manage, transact and visualize their financial data through voice commands.

Like other financial services institutions, Northern Trust is at various stages of exploring these and other technologies. While the specifics are still being researched, there is one certainty: these new technologies will continue to change both market practices and how people and financial services companies interact.

#### HOW IS NORTHERN TRUST RESPONDING TO AI DEVELOPMENTS?

From a technological standpoint we are keeping pace with our peers: we're currently deploying RPA and working on POV exercises with "Smart AI" initiatives such as document analysis and interpretation, investment analytics and virtual assistants. We're also actively involved in exploring new opportunities, increasing our industry and technology partnerships, and researching promising Fintech start-ups.

As with all things at Northern Trust, our approach is client-driven. In addition to efforts focused on improving efficiency, we're actively exploring how these innovations can add value to our clients, in the form of better data, faster turnaround, new insights and better client experiences.

We're also managing Fintech in a holistic, globally integrated way. All our businesses around the world are supported by global research teams who are exploring promising new technologies and then helping integrate those technologies in ways that benefit the broadest possible cross-section of our client base.

We have already launched several new prototyping and POV projects focused on higher-complexity machine learning and advanced AI techniques, such as tools trained to detect and react to data patterns and generate a sample data repository for learning. We're also in the early phases of exploring concepts like conversational chatbots and predictive analytics. Some of the specific applications we're contemplating include:

- Developing virtual assistants to help our Wealth Advisors better manage their client relationships
- Leveraging natural language processing for such functions as:
  - Document ingestion and interpretation
  - Compliance surveillance
  - Document interpretation for post-trade compliance services
- Advanced AI/cognitive capabilities to enhance portfolio management capabilities and performance and risk analytics

Some or all of these capabilities may become a reality within the next three to five years; the one certainty is that advances in artificial intelligence will continue to evolve and present both opportunities and challenges to the financial services industry as well as our personal lives.

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**KEY TERMS**

**Artificial intelligence (AI):**

An umbrella term for computer systems that can perform tasks normally requiring human-like intelligence, such as speech recognition, analysis, and decision making.

**Cognitive computing (also, Cognition):**

An advanced AI approach that simulates human thought with self-learning systems that combine data mining, pattern recognition and natural language processing to mimic the way the human brain works.

**Machine learning:**

Computer algorithms employed to create models based on sample training data versus being explicitly programmed by developers.

**Natural language processing (NLP):**

A subfield of AI that focuses on the analysis, meaning and intent of words, sentences and paragraphs of text and spoken language.

**Predictive analytics:**

The practice of using AI based machine learning and big data to identify insights and trends that can help predict the likelihood of future outcomes.

**Robotic process automation:**

The development of automated machines that can perform specific, repetitive tasks that are today managed with human analysis and input.

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NOTE: This document outlines Northern Trust's views on market trends and emerging technologies in the financial services industry. It is not intended to represent a specific product offering, nor does it constitute a guarantee that Northern Trust will implement a particular technology or develop a particular service offering. Northern Trust continuously works with peers, industry groups, regulators, and FinTech firms to evaluate the potential of emerging technologies to deliver value for clients.

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