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**K&L GATES**

2019 WASHINGTON D.C. INVESTMENT MANAGEMENT  
CONFERENCE – November 13, 2019

# Tech Innovation in Asset Management: Artificial Intelligence and Blockchain

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# PRESENTATION OUTLINE

- Introduction
- Artificial Intelligence (AI):
  - What is AI really??
  - Subcategories of AI
  - Use cases in the asset management industry
  - Legal implications to consider
- Blockchain:
  - What is blockchain really??
  - Potential headwinds to its implementation in the asset management industry
  - Use cases in the asset management industry
  - Legal implications to consider



# INTRODUCTION

- Asset managers are facing new challenges every day
- Asset managers are transforming their operating models
- Emerging technologies are serving as the foundation for many of the transformations and have the potential to significantly impact (“disrupt”) the asset management industry



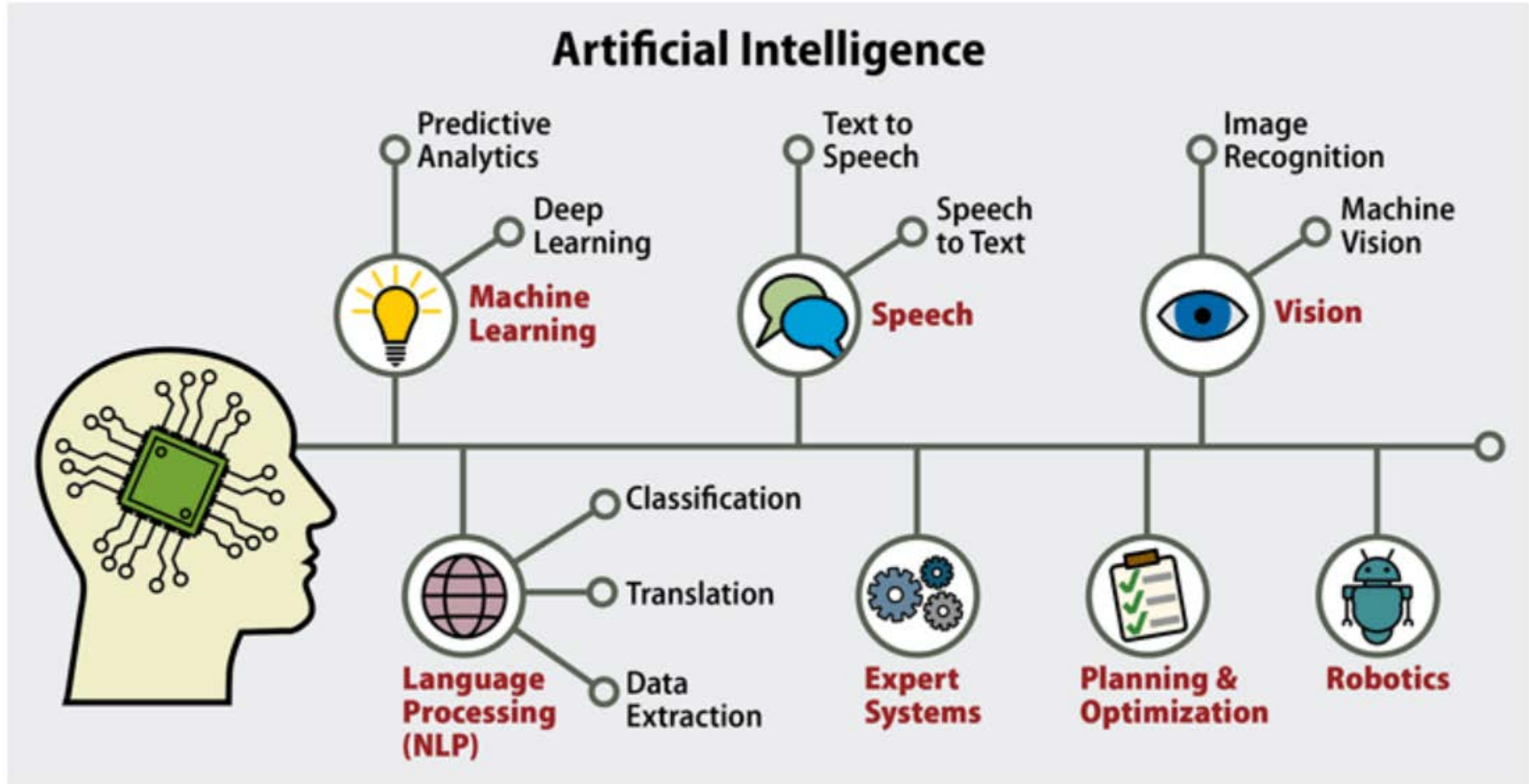
# ARTIFICIAL INTELLIGENCE

## What is AI really??

- AI is the theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.  
- Oxford Dictionary



# ARTIFICIAL INTELLIGENCE SUBCATEGORIES



Datamation.com



# CURRENT AND ANTICIPATED USE CASES

## Machine Learning

- Vanguard ADV
- Investment selection
- Disclosure requirements
- Best execution
- Failed trades identification and remediation
- Data security to identify bad actors
- Training
- Hiring and human resources



# CURRENT AND ANTICIPATED USE CASES

## Natural Language Processing

- Sentiment analysis
- Fraud examinations
- Voice prints
- Risk modeling



## AI: LEGAL IMPLICATIONS TO CONSIDER

- Fitting into the existing regulatory regime
- Potential for bias
- Suitability
- Regulator understanding and buy-in
- Recordkeeping and data storage





## AUDIENCE POLL

What do you already know about blockchain?

1. Nothing, are there Legos involved?
2. I think it has something to do with Bitcoin.
3. I'm looking into some ICO investments.
4. I am Satoshi Nakamoto.



# BLOCKCHAIN

## What is blockchain really??

- A blockchain is a distributed computing architecture where every network node executes and records the same transactions, which are grouped into blocks. Only one block can be added at a time, and every block contains a mathematical proof that verifies that it follows in sequence from the previous block. In this way, the blockchain's 'distributed database' is kept in consensus across the whole network. – <http://www.ethereum.org>



# BLOCKCHAIN EXPLAINED

## The Core Components

### 1. Peer to Peer (P2P) Network

- The architecture of the network nodes

### 2. Consensus Mechanism

- How decisions and transactions on the network are made and verified

### 3. Shared Ledger/Database

- How information is stored





# NEAR- TO MEDIUM-TERM BLOCKCHAIN BENEFITS:

- Business Opportunities
- Operational Efficiencies
- Risk Reduction



# POTENTIAL HEADWINDS

- Blockchain technology is still relatively new
- The asset management industry has in place significant existing technology systems (that were very expensive to create)
- Initially, Blockchain solutions would need to run in parallel to existing systems, which may result in short term cost increases
- Creation of new business and governance models will require industry-wide coordination
- Immutability creates challenges in an environment that uses exception processing to maintain continuity in service or has errors that need to be unwound from time to time



# CURRENT AND POTENTIAL USE CASES

## Current

- Broadridge (acquired from Northern Trust): private equity management solution
- Vanguard: data source for mutual fund indexes
- Vanguard: peer-to-peer currency trading

## Potential

- Open unique asset classes
- Payment mechanisms



# BLOCKCHAIN: LEGAL IMPLICATIONS TO CONSIDER

- Fitting into the existing regulatory regime
- Recordkeeping and data storage
- Liability in the event of malfunction
- Data privacy
- Legal status of decentralized autonomous organizations
- Managing errors with immutability







# Questions??



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