



# **The New Physics of Financial Services**

Understanding how artificial intelligence is transforming the financial ecosystem



Market infrastructure sector summary

# AI is changing the physics of financial services

As artificial intelligence (AI) significantly changes the traditional operating models of financial institutions, Deloitte and the World Economic Forum's latest report in their 'Future of Financial Services' series explores how financial services firms can better embrace AI. The report is comprehensive, so here we have explored the sector-specific findings relating to market infrastructure.

## A quick look at the impact of AI on market infrastructure



**AI can bolster the resilience and efficiency of market infrastructure while allowing providers to augment their value proposition through new services. Potential strategies include:**

- Streamline post-trade processes and increase cost efficiency. For example, using image recognition and robotic process automation to reconcile trade data.
- Offer advanced compliance and risk management "as a service". For example, using machine learning to develop services that track down potentially fraudulent trading activity and filter out false positive flags.
- Develop value-added data and analytics services. For example, using AI to compute economic indicators and swiftly compile marketable trading data reports.
- Introduce new order and settlement types. For example, using predictive analytics to optimise order execution in unstable market conditions.



**AI allows institutions to automate reporting and better integrate workflows, reducing manual labour and improving straight-through processing. New capabilities include:**

- Data normalisation can detect input and output type, facilitating interoperability across different systems with different data standards, headers and reporting frequencies.
- Robotic process automation allows institutions to automate systems integration with external workflows with limited reprogramming, simplifying the development of automated multi-vendor platforms.
- Automation of review and reconciliation of trades can reduce manual efforts in workflows and optimise cycle times, generating greater efficiencies and minimising operational costs.
- Analysis of process failure using machine learning allows firms to search for patterns in incident data to predict future incidents and prepare advanced incident and exception management.



**AI is creating new opportunities to develop software 'as a service' solutions that address the regulatory and compliance pressures faced by clients. New capabilities include:**

- Advanced surveillance systems using machine learning can bring together providers' "whole-market" order data and other unstructured data (e.g. traders' messages) to increase accuracy and reduce false positive rates.
- Modularised and digital systems with straight-through processing can be deployed as market surveillance "as a service" for clients, reducing their infrastructure and implementation requirements while increasing surveillance accuracy.
- Score alerts based on severity and potential exposure of the client or the institution to risk. Institutions can use this scoring to ensure analysts prioritise the most pressing investigations.
- Automated report drafting can allow draft reports to be issued upon signal of an alert, reducing the processing time from when each alert is generated through to completion of a report and action, if required.



**AI is allowing infrastructure providers to introduce new insights by experimenting with their unique access to trade data. New capabilities include:**

- Macroeconomic forecasting using machine learning, and the depth of price and order data within infrastructure providers, can allow the provision of new analytics services that can predict market performance in real-time.
- Real-time transaction cost and analytics can be calculated using machine learning to understand how certain trades or trading strategies will affect a variety of indicators (e.g. liquidity, bid/ask spreads). Participants (e.g. high-frequency traders) could use these analytics to plan their trading strategies.
- Flexible data integration can generate unique and customised insights using internal data, third-party data sources and data from clients.
- Advanced analytics engines and proprietary tools capable of interpreting raw data can offer unique insight into the behaviour of different classes of traders.



**AI allows institutions to deploy new order types and settlement methods that protect long-term and risk-averse investors. New capabilities include:**

- Predictive market-surveillance models using machine learning can anticipate adverse impacts from predatory, high-frequency trading strategies and protect orders from retail or long-term investors.
- Trade-optimisation engines can be used to execute trades in market auctions with the goal of optimising certain metrics (e.g. volume, price or speed).
- Real-time price-impact modelling can apply machine learning to predict the price impact of a given order, and the resulting transaction costs.
- Trade fragmentation using AI can divide a large order into smaller orders placed over a longer time horizon to best mitigate price movements and execute at the best price.



**Download the full report at [Deloitte.co.uk/AIFSfuture](https://www.deloitte.co.uk/AIFSfuture)**



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This report forms part of the 'Future of Financial Services' report series by Deloitte and the World Economic Forum. Access the report library at **[Deloitte.co.uk/WEF](https://www.deloitte.co.uk/WEF)**

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