INCREASING EFFICIENCY AND INTRODUCING NEW RISKS – AI AND ML CONDUCT FOR ASSET MANAGERS

What do commuting, your email accounts, banking and personal finance, social networking, on-line shopping and smart personal assistants have in common? They all utilise artificial intelligence (AI) and machine learning (ML) to some extent.

Since the term AI was coined in 1956, advances in computing power, the availability of enormous quantities of data and new algorithms have led to major breakthroughs, particularly in the past two decades as the use of mobile computing and communication has increased exponentially.

In financial services the use of AI and ML may benefit market intermediaries, asset managers and investors by increasing the efficiency of existing processes, reducing the cost of investment services and freeing up resources for other activities.

In response to the growth in the use of AI and ML by market intermediaries and asset managers, the Board of the International Organization of Securities Commissions (IOSCO) has published guidance to help its members regulate and supervise its use. The guidance report entitled 'The use of artificial intelligence and machine learning by market intermediaries and asset managers' (the final report)[1] was published on 7 September 2021.

In the final report IOSCO describes how market intermediaries and asset managers use AI and ML to reduce costs and increase efficiency, noting that the rise in the use of electronic trading platforms and the increasing availability of data have led firms to progressively use AI and ML in their trading and advisory activities, risk management and compliance functions.

IOSCO focus

IOSCO's focus is on the use and control of AI and ML in financial markets to mitigate the potential risks and prevent consumer harm. The final report consists of six measures that seek to ensure that market intermediaries and asset managers have the expected standards of conduct.

At a high-level these include:

Appropriate governance, controls and oversight frameworks over the development, testing, use and performance monitoring of AI and ML;

Staff with adequate knowledge, skills and experience to implement, oversee, and challenge the outcomes of the AI and ML;

Robust, consistent and clearly defined development and testing processes to enable firms to identify potential issues prior to full deployment of AI and ML; and

Appropriate transparency and disclosures to their investors, regulators and other relevant stakeholders.

Details on the six measures

Measure 1: Senior management responsibility

IOSCO suggests that regulators should consider a requirement for firms to have designated senior management responsible for the oversight of the development, testing, deployment, monitoring and controls of AI and ML.

This requirement should include a documented internal governance framework with clear lines of accountability.

Senior management should designate an appropriately senior individual (or groups of individuals), with the relevant skill set and knowledge to sign off on initial deployment and substantial updates of the technology.

Measure 2: Testing and monitoring

IOSCO says that regulators should require firms to adequately test and monitor the algorithms used to validate the results of AI and ML technique on a regular basis.

This testing should be done in an environment that is segregated from the live environment (i.e. a virtual test environment) prior to any deployment, ensuring that AI and ML:

• Behave in an expected way in both stressed and unstressed market conditions; and

• Operate in a way that complies with regulatory expectations.

Measure 3: Skills, expertise and experience

IOSCO suggests that firms must have the adequate skills, expertise and experience required to be able to develop, test, deploy, monitor and oversee the controls around the use of AI and ML.

Compliance and risk management functions should be able to understand and challenge any algorithms that are produced and conduct due diligence on any third-party provider, including on the level of knowledge, expertise and experience present.

Measure 4: Third party providers

IOSCO specifies that firms need to understand their reliance on, and manage their relationship with, third party providers. This should include monitoring their performance and conducting oversight.

To ensure adequate accountability, firms should have a clear service level agreement and contract in place clarifying the scope of the outsourced functions and the responsibility of the service provider.

The agreement should contain clear performance indicators and should also clearly determine rights and remedies for poor performance.

Measure 5: Disclosure

IOSCO says that regulators need to decide what level of disclosure of the use of AI and ML is required by firms, including:

• Consideration of the requirement for firms to disclose meaningful information to customers and clients around their use of AI and ML that have an impact on client outcomes; and

• Consideration of what type of information regulators may require from firms using AI and ML to ensure that regulators can appropriately oversee those firms.

Measure 6: Sufficient quality controls

IOSCO advises regulators to consider a requirement for firms to have appropriate controls in place to ensure that the data that the performance of the AI and ML is dependent on, is of sufficient quality to prevent biases and sufficiently broad for a well-founded application of AI and ML.
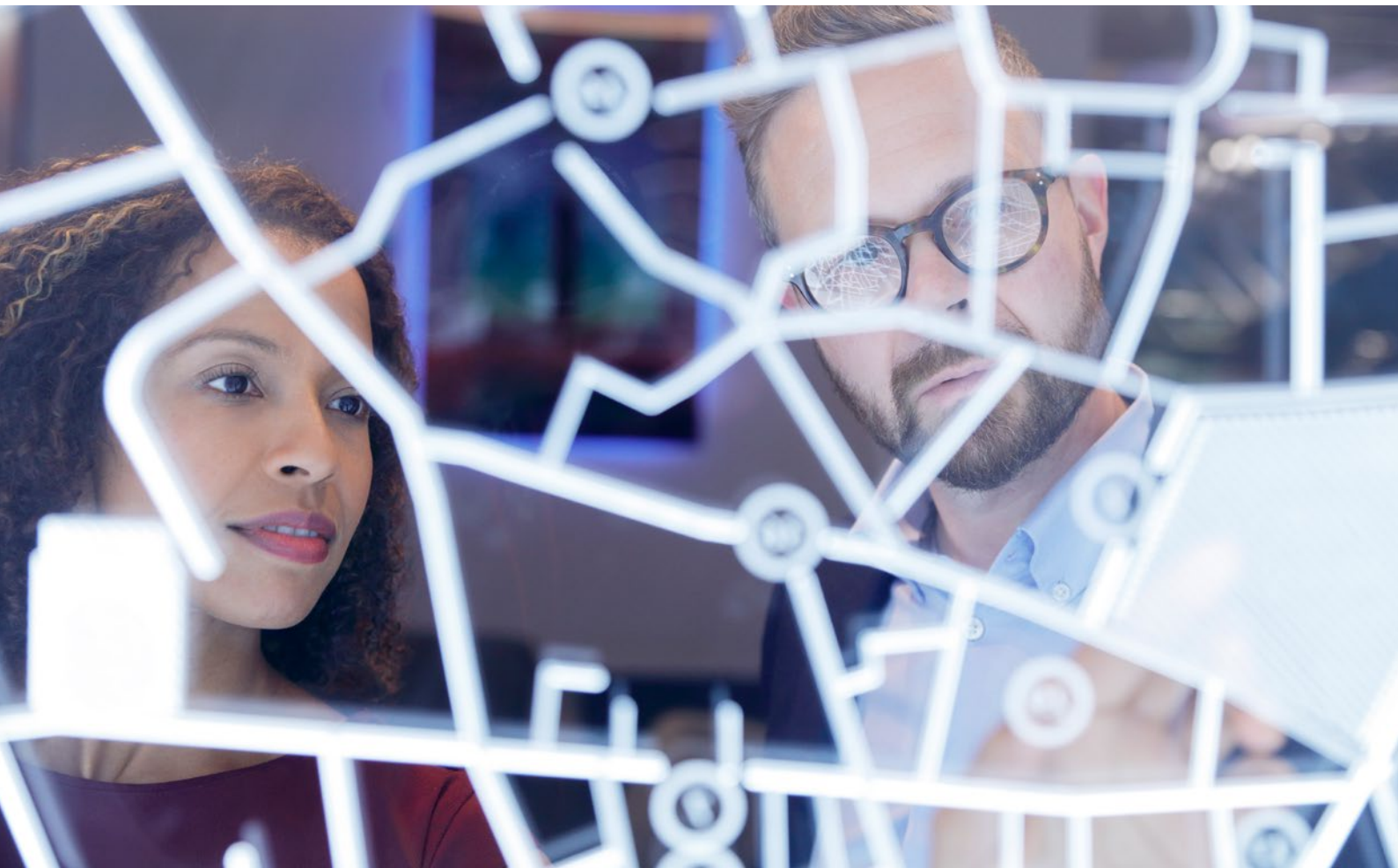
Defining AI and ML
In the final report IOSCO provide defined terms for both AI and ML:

Artificial Intelligence (AI)
Put simply, IOSCO describes this as "the study of methods for making computers mimic human decisions to solve problems".

Machine Learning (ML)
The term Machine Learning is a subset and application of AI, which focuses on the development of computer programs – designed to learn from experience without being explicitly programmed to do so.

There are three categories of ML algorithms – supervised learning,[2] unsupervised learning [3] and reinforcement learning.[4]

How are firms currently using AI and ML techniques?
IOSCO's engagement with firms has revealed that within financial markets, AI and ML are being adopted to augment existing processes and activities.

AI and ML are freeing up resources to focus on more cognitive aspects, such as strategy, portfolio selection and generating investment ideas.

Such technology is being deployed by market intermediaries in the areas of:

• Advisory and support services;

• Risk management;

• Client identification and monitoring;

• Selection of trading algorithm; and

• Asset management/Portfolio management.

According to IOSCO, the use of AI and ML by asset managers is still in its relative infancy and is mainly used to support human decision making.

Here AI and ML technologies are being used to:

• Optimise portfolio management;

• Complement human investment decision-making processes by suggesting investment recommendations; and

• Improving internal research capabilities, as well as back office functions.

There is also development in the use of AI and ML for the purposes of: order execution, broker selection and order routing.

Further details on each of these areas can be found in the final report (see pages 7 – 8).

Potential risks and harms posed by the use of AI and ML

Potential mitigations

IOSCO's industry engagement has revealed that the evolution and increasing adoption of AI and ML may raise a number of conduct concerns for market intermediaries and asset managers, regarding:

- Governance and oversight;
- Algorithm development, testing and ongoing monitoring;
- Data quality and bias;
- Transparency and explainability;
- Outsourcing; and
- Ethical concerns.

Alongside those potential risks and harms, IOSCO also mention in the final report some potential mitigations, such as:

- Culture;
- Accountability;
- Knowledge/expertise/skills;
- Operational resilience; and
- Client disclosures.

When reading the final report you can see that these factors have been incorporated into the guidance provided to regulators, and by association the firms that they regulate.

How are other regulators and supranational bodies dealing with AI and ML?

IOSCO's final report provides two sections (Annex 1 and Annex 2) which looks at what other regulators and supranational bodies are already doing in the area of supervising the use of AI and ML.

It provides a snapshot of the approaches adopted by:

- The Financial Services Regulatory Authority (FSRA) in Abu Dhabi;
- The Financial Conduct Authority (FCA) in the United Kingdom;
- The Investment Industry Regulatory Organization of Canada (IIROC);
- The Federal Financial Supervisory Authority (BaFIN) in Germany;
- The China Securities Regulatory Commission (CSRC);
- The Autorité des Marchés Financiers (AMF) in France;
- The Monetary Authority of Singapore (MAS);
- The Dutch Authority for the Financial Markets (AFM) in the Netherlands;

- Securities and Exchange Commission (SEC) and the Financial Industry Regulatory Authority (FINRA), both in the United States;
- The Commission de Surveillance du Secteur Financier (CSSF) in Luxembourg;
- The Financial Stability Board (FSB);
- The International Monetary Fund (IMF);
- The Institute of Internal Auditors (IIA);
- Information Systems Audit and Controls Association (ISACA);
- The European Commission;
- The International Technology Law Association (ITechLaw); and
- The Organisation for Economic Co-operation and Development (OECD) and the G20.

It's all about perspective

IOSCO say that proportionality should underpin both the consideration, and the implementation, of the guidance contained in its final report.

When determining an appropriate approach to proportionality IOSCO suggests that firms should give consideration to the activity that is being undertaken, the complexity of the activity, risk profiles, the degree of autonomy of the AI and ML applications, as well as the potential impact that the technology has on client outcomes and market integrity.

High on the agenda

As global regulators and supranational bodies have realised, the use of AI and ML can bring its own benefits, but also create the potential to introduce new risks.

Digital transformation is leading to ever increasingly complex environments, environments in which organisations may still be learning how best to use their data to foster growth and stay ahead of the competition.

As IOSCO's industry engagement has shown, people are no longer able to deal with all of the information that is now available.

As a result, smart technology will continue to evolve and develop to enhance both people and organisations' ability to use the increased abundance of data to find the insights they need to be successful.

This is clearly an evolving area which warrants attention from the top down. Understanding the competitive strategy implications of AI and ML for business, but also being aware of the required conduct in managing such change.

---

[1] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD684.pdf.

[2] Supervised learning: the algorithm is fed an initial set of data that has been labelled. Based on this training set, the algorithm will learn classification rules and predict the labels for the remaining observations in the data set.

[3] Unsupervised learning: the algorithm detects patterns in the data by identifying clusters of observations underpinned by similar characteristics – it uncovers the structure of the data on its own.

[4] Reinforcement learning: the algorithm is fed an initial set of data that has not been labelled and is asked to identify clusters of observations underpinned by similar characteristics. As it chooses an action for the data points, it receives feedback that helps it learn.

Permission for use of source information received from IOSCO, in line with its copyright and permissions policy. See IOSCO website for further details. See https://www.iosco.org/.
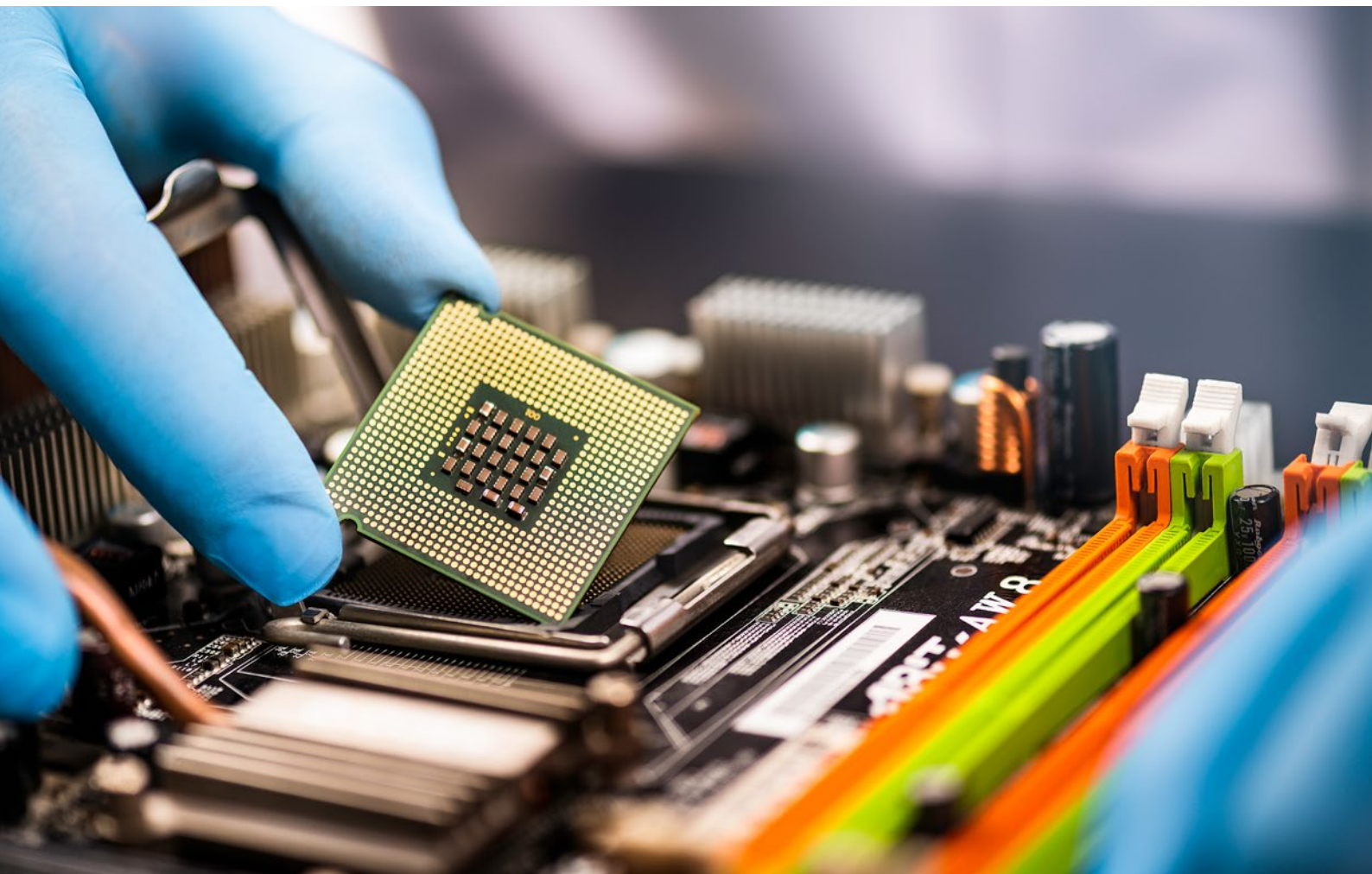
Please contact for further details:

David Morrison
Global Head of Trustee and Fiduciary Services
david.m.morrison@citi.com
+44 (0) 20 7500 8021

Ann-Marie Roddie
Head of Product Development Fiduciary Services
annmarie.roddie@citi.com
+44 (1534) 60-8201

Amanda Hale
Head of Regulatory Services
amanda.jayne.hale@citi.com
+44 (0)20 7508 0178

Caroline Chan
APAC Head of Fiduciary Business
caroline.mary.chan@citi.com
+852 5181 2602

Shane Baily
EMEA Head of Trustee and Fiduciary Services
UK, Ireland and Luxembourg
shane.baily@citi.com
+353 (1) 622 6297

Jan-Olov Nord
EMEA Head of Fiduciary Services
Netherlands and Sweden
janolov.nord@citi.com
+31 20 651 4313