

# TRANSFORMATION IS INEVITABLE – AI FOR ASSET MANAGERS

Whilst recent developments in digitalisation are unlikely to represent the end of asset management models as we currently know them, investing in digitalisation is becoming essential to ensuring that your business maintains its market leading position in an industry where digitalisation using artificial intelligence (AI), once a nice to have, may soon be indispensable.

This opening statement sits rather neatly within our series of articles 'Transformation is Inevitable', as nowhere is this truer than around digitalisation, which is increasingly being powered by transformative technologies such as AI.

## Let's first consider what we mean by AI

There is no commonly understood definition of what constitutes AI, but in terms of this article and the use of AI, at a very high-level or in layman terms, we mean *machines that display human cognitive abilities*.

## The use of AI will not slow down anytime soon

The use of AI continues to expand as computers become more powerful and the code governing AI behaviour becomes more complex.

So these developments show no signs of slowing, with other emerging technologies further accelerating the transformative impacts of AI.

For example, quantum computing promises a significant increase in computing power, potentially bringing the possibility of artificial general intelligence (also known as general purpose AI, with the capability of doing everything a human can do or better) even closer.

For asset managers, alongside other firms, AI can ultimately release the hidden value in big data, which is characterised by extremely large data sets that may be analysed computationally to reveal patterns, trends and associations, especially relating to human behaviour and interactions, the utilisation of which should be a key consideration in terms of any financial services' business digital strategy.

## What do we need to know about AI?

According to Professor Stuart Russell, founder of the Center for Human-Compatible Artificial Intelligence at the University of California, Berkeley, there are nine things that we should know about AI.<sup>1</sup>

Of those nine things, in this article we consider two, both of which apply equally to asset management:

- AI is already a big part of your life; and
- AI can harm us.

**Big data powered AI use cases by asset managers**

As Professor Stuart Russell says, AI is already a big part of your life. Some asset managers are already investing heavily in AI and the use of big data to streamline and improve their business models, reduce costs, and give them insights into what their clients really need – sometimes even before the clients themselves realise it.

For example, a sizeable proportion of asset managers are now using AI, in addition to traditional statistical modelling techniques, to run trading and investment platforms. But the potential for the use of AI powered by big data does not stop there.

For those less advanced in their digitalisation journeys, how might AI benefit your asset management businesses?



**Map of AI use cases in the asset management space**

**Future use?**

Responsible AI shadowing aspects of the governance component of: ESG, use of black boxes and data bias.

**ESG challenges:**

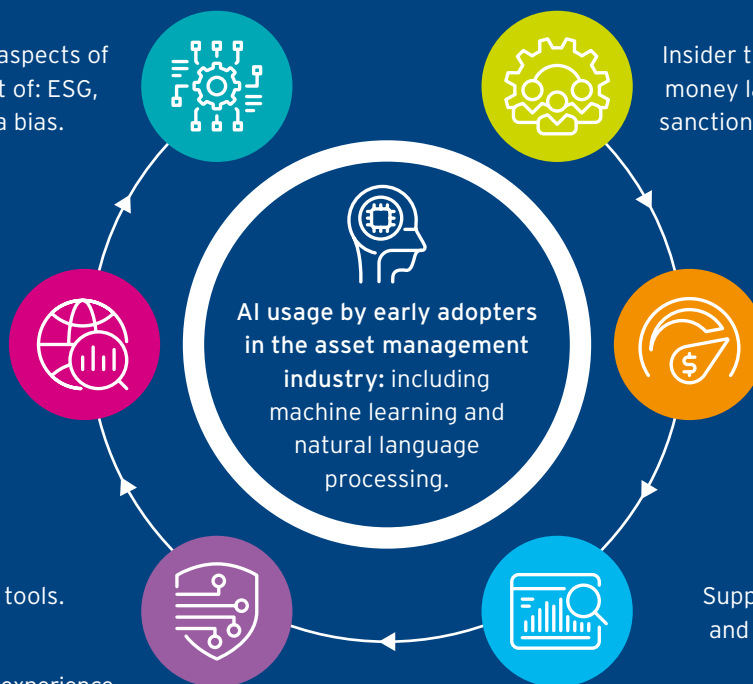
Factor validation and company analysis, stewardship etc., using clustering techniques.

**Risk Management:**

Complex risk and analytics tools.

**Client experience:**

Sales, distribution and client experience such as digital advice for example.




**Compliance and operations:**

Insider trading, market manipulation, money laundering, KYC, violations of sanctions, cyber resilience, employee sentiment etc.

**Improve processing efficiency, volumes and speed:** i.e. use of sentiment analysis or automating manual processes.

**Generating alpha:**

Supporting portfolio performance and creating stronger investment risk analytics such as custom trading strategies.



***“Artificial Intelligence is going to have an outsized impact on our digitalisation efforts in the short term and a profound impact on financial services as a whole in the long term.”***

*Dr. Prag Sharma, Global Head of Artificial Intelligence Centre of Excellence (AI CoE), Citigroup.*

So, at a high-level we can see how useful AI could be. Now let's look at some of these asset management use cases in more detail.

#### Client experience

According to the OECD Business and Finance Outlook 2021: AI in Business and Finance,<sup>2</sup> the adoption of AI systems and techniques in finance has grown substantially, enabled by the abundance of available data and the increase in the affordability of computing capacity. This trend is expected to persist, and some estimates forecast that global spending on AI will double over the period 2020-24, growing from USD50.1bn in 2020 to more than USD110bn in 2024.

In terms of client experience and engagement, while face-to-face meetings will always have a place, digital technologies are playing a greater role in reaching clients and assisting asset management firms in understanding their needs.

As social media increases as a popular channel for client service interactions, this public-facing exposure can have either positive or negative impacts for brand perception. So in acknowledgement of this, asset managers must evaluate how they can mine external data sets hitherto untapped, providing intelligence on client thoughts and behaviour.

Asset management firms have also explored how clients receive and consume information, moving away from a one-size-fits-all approach and catering more to individuals' needs. This AI-based hyper-customisation is likely to lead to significant and prolonged benefits if applied in the right way.

A particular use of AI, 'robo-advising',<sup>3</sup> has really gained in popularity. Most likely stemming from its ability to standardise investment advisory services, making such services cheaper and more accessible to unsophisticated individual investors.<sup>4</sup>

#### Improving processing efficiency

Research published by Autonomous NEXT in 2018 estimated that by 2030, implementing AI has the potential to cut operating costs in the financial services industry by 22%.

AI can, and continues to improve efficiency (e.g., in simplifying onboarding processes, which may include 'one-click buying' and making documentation processes simpler). But for asset management front and middle office processes, AI can also make post-trade processing, trading (i.e., algorithmic trading where algorithms can be trained to automatically perform trades dependent on specific signals), P&L reconciliations, risk management, compliance, and control functions etc., more efficient.<sup>5</sup>

In addition, AI technology can be used to extract information from the mass of unstructured data in documents e.g., for intelligent reading, analysis, and extraction of insights from voluminous and unstructured documents such as investment management agreements, prospectuses, key investor information documents, legal agreements, etc.<sup>6</sup>

"Algo trading" is another area of popular use for AI applications where they have increasingly become an essential part of trading practices. Because AI can

process large amounts of data to generate trading signals, algorithms (the instructions that govern an AI system's decision-making process) can be trained to automatically make trading decisions based on these signals.

Such AI techniques can often provide better estimates of returns and covariances than more conventional methods do. Once these estimates are arrived at, they can be used within traditional portfolio optimisation frameworks. AI may even be used directly for asset allocation decisions to construct portfolios that meet investment policies and strategies.

We can't forget that the use of AI also has its challenges.

While AI serves to make processes quicker and the modelling potentially more accurate, it can also introduce risks, including potential bias in the analysis of data that may exclude certain demographics, lack of transparency and explainability that make it difficult to understand how the AI model's algorithms lead to its outputs; and unclear accountability and responsibility for decisions based on those outputs.

As a result, regulators are increasingly looking at ways to ensure AI manufacturers make their systems 'explainable'. Explainable AI, as defined by IBM, is "a set of processes and methods that allows human users to comprehend and trust the results and output created by machine learning<sup>7</sup> algorithms. Explainable AI is used to describe an AI model, its expected impact and potential biases."<sup>8</sup>

Put simply, using AI can make it difficult to monitor and scrutinise decisions, therefore the decision-making process must be designed to be understandable by humans, as AI models can be complex and improperly trained using insufficient or poor-quality data.

#### How using AI can address ESG challenges

Asset management firms can also benefit from AI technology better enabling them to implement and demonstrate their Environmental, Social and Governance (ESG) strategies and policies. Such as the ability to consume data analytics providing comparisons of a specific portfolio to a relevant or specially constructed benchmark, climate risk profiling which can quantify risks in real financial terms, or data transparency.

The development of a regulatory framework around ESG disclosures and taxonomies has, and will increasingly drive, the need for larger, transparent (explainable) and more reliable data sets. For example, how will you demonstrate that your SFDR Article 8 fund really is an Article 8 fund? The risk that you may be subject to regulatory scrutiny on the potential for greenwashing?

Information flows throughout the entire value chain will, over the next couple of years, become a regulatory necessity and reality. With that volume of data at your fingertips, comes

the potential to analyse and scrutinise more accurately and thoroughly, providing a much better understanding of ESG practices within the companies that you look to invest in.

Regulators, asset management firms and corporates all understand this need for reliable and accurate information, along with the opportunities it can present.

For example, the Monetary Authority of Singapore (MAS) announced at the end of 2021 that it was going to partner with the financial sector to pilot four digital platforms under what it calls Project Greenprint,<sup>9</sup> aiming to address its need for high quality, consistent and granular sustainability data. The common utility platform pilots are expected to be completed in the second half of 2022.

Then in terms of the data and its associated disclosure required by asset management firms on the firms in which they invest, thanks to advances in computing power and big data analytics, it is now possible to draw an accurate picture of companies' social and environmental footprints from an extensive array of public data sources. An example of this would be a ground-breaking methodology developed by Harvard Business School's Impact-Weighted Accounts Initiative, where it's possible to measure companies' operating, employment, and product impacts on people and the planet in monetary terms.<sup>10</sup>

Imagine how useful such AI system measurements or analysis could become over time, especially given the European Commission's (EC) recent proposals on corporate sustainability due diligence in the value chain.<sup>11</sup>

To find out more about these proposals see our e-briefing: [Respect for Human Rights and the Environment](#).



New risks are also emerging for asset managers, such as the potential for greenwashing. AI can help identify greenwashing via Natural Language Processing (NLP), which effectively enables computers to understand and analyse human language in its written or spoken form.

ClimateBert,<sup>12</sup> an AI-powered deep neural language model developed by Swiss and German researchers, is just one example of an NLP tool developed specifically to target corporate reporting and disclosures.

With voluntary disclosures, such as those based on the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)<sup>13</sup>, NLP systems can be trained on thousands of sentences related to climate-risk disclosures aligned with the TCFD recommendations to be able to analyse those disclosures.

#### AI and machine learning used to combat cybersecurity risks

AI could also be a tool used to address increasingly sophisticated cybersecurity risks. However it can also be the source of new threats.

A recent report, 'Cybersecurity Trends: Looking Over the Horizon,' (the Cybersecurity Report)<sup>14</sup> identifies three major cybersecurity trends that cut across multiple technologies.

In addition to the increased use of mobile platforms and remote working, and a resource and talent gap in cybersecurity, the Cybersecurity Report identifies that hackers are using AI, machine learning, and other technologies to launch increasingly sophisticated attacks and cybercrime has become a big business, with its own institutional hierarchies and R&D budgets. So, over the next several years this presents the potential to expedite – from weeks to days or hours – the attack lifecycle, from reconnaissance to exploitation.

This means that to mitigate such advancement in cyber-attacks, cybersecurity infrastructure may also need to employ AI and machine learning tools to analyse changing attack patterns.

We have looked at some potential AI use cases by asset managers but remember earlier on in our article we mentioned that Professor Stuart Russell says, AI can harm us. From an asset management perspective that makes it equally interesting, and important to understand how regulators have reacted to the increasing use of AI.

#### Regulators focus on ethics, protection and risk mitigation

Whilst regulators globally do recognise the benefits that innovation can create, they are also looking to understand any associated risks. Below we look at some of the key messaging from regulators, which if summarised, focus on three main themes: ethics, protection and risk mitigation.

We have already touched on the increasing use of digitalisation by asset managers in the retail distribution space. This is a particular focus for the International Organization of Securities Commissions (IOSCO), who on 18 January 2022 published a consultation report looking at retail distribution and digitalisation (Consultation Report).<sup>15</sup>

The aim of the Consultation Report was to set out a toolkit of proposed policy and enforcement measures with guidance to help IOSCO members mitigate potential risks of retail investor harm posed by online and cross-border marketing and distribution and digital offerings.

According to IOSCO, the rapid growth in digitalisation and the use of social media has changed, and continues to change, the way in which financial products are marketed and distributed. In its view, these changes are accompanied by various new risks for investors and challenges for IOSCO members, particularly in the retail OTC leverage product sector where firms have leveraged social media, online marketing, and internet-based trading platforms to market, sell and distribute products on a cross-border basis.

The Consultation Report analyses the developments in online marketing and distribution of financial products to retail investors in IOSCO member jurisdictions, both domestically and on a cross-border basis.



Regulators have also looked at the introduction of what they refer to as AI principles. As an example, to date, approximately 40 countries have adopted the Organisation for Economic Co-operation and Development's (OECD) five AI principles.<sup>16</sup> These are:



AI should benefit people and the planet by driving inclusive growth, sustainable development and well-being.



AI systems should be designed in a way that respects the rule of law, human rights, democratic values and diversity, and they should include appropriate safeguards – for example, enabling human intervention where necessary – to ensure a fair and just society.



There should be transparency and responsible disclosure around AI systems to ensure that people understand when they are engaging with them and can challenge outcomes.



AI systems must function in a robust, secure and safe way throughout their lifetimes, and potential risks should be continually assessed and managed.



Organisations and individuals developing, deploying or operating AI systems should be held accountable for their proper functioning in line with the above principles.

We can also see similar regulatory trends elsewhere, for example:



August 2021

The Hong Kong Privacy Commissioner issued AI guidance<sup>17</sup> to facilitate the development and use of AI in Hong Kong. When using AI systems and related technology, the guidance encourages the adoption of three Data Stewardship Values consisting of: being respectful, beneficial, and fair to stakeholders.



September 2021

The UK Government's consultation, Data: A New Direction<sup>18</sup> looks in part at how to develop a safe regulatory space for responsible development, testing, and training of AI, building on existing initiatives such as the ICO's regulatory sandbox. It explores how organisations can use data more freely, for example to train and test AI.



February 2022

A MAS-led industry consortium in Singapore published Assessment Methodologies for Responsible Use of AI by Financial Institutions.<sup>19</sup>



February 2022

Verena Ross, Chair of the European Securities and Markets Authority (ESMA), discussed the major challenges facing securities regulators, one of which included digitalisation in financial services.<sup>20</sup>



April 2022

A speech by US SEC Commissioner Hester M. Peirce, 'Is That a Fish behind the Wheel?'<sup>21</sup> addressed the ways in which regulators ought to engage with innovation, suggesting that regulators should embrace both scepticism and wonder, welcoming the role technology can play in meeting important regulatory objectives, and allow and indeed encourage trial and error, rather than insist on check-the-box compliance.



End April 2022

ESMA makes recommendations to improve investor protection.<sup>22</sup> The proposals put forward aim at maintaining a high level of investor protection, while ensuring that retail investors can benefit from digitalisation opportunities.



From the examples provided above, it is clear to see that regulators have the responsible development of digitalisation strategies and tools, including AI, clearly in their sights.

### Regulation fit for AI

At the beginning of our article, we mentioned that there is no single or globally recognised definition of AI. However the EC has moved some way towards creating one.

In its April 2021 proposal for a regulation to set out harmonised rules on AI (the AI Act)<sup>23</sup> the EC put forward a definition of an AI system that is limited but very much in line with the type of narrow-AI<sup>24</sup> that exists today: *'software that is developed with one or more techniques and approaches [listed in Annex I of the AI Act] and can, for a given set of human-defined objectives, generate outputs such as content, predictions, recommendations, or decisions influencing the environments they interact with'*.

The AI Act looks to promote the development of AI in the European Union (EU) and address the potential high risks it poses to safety and fundamental rights equally, so the AI Act further sets out:

- Harmonised rules for the placing on the market, the putting into service and the use of AI systems in the EU;
- Prohibitions of certain AI practices;
- Specific requirements for high-risk AI systems and obligations for operators of such systems;
- Harmonised transparency rules for AI systems intended to interact with natural persons, emotion recognition systems and biometric categorisation systems, and AI systems used to generate or manipulate image, audio or video content; and
- Rules on market monitoring and surveillance.<sup>25</sup>

This will be the EU's first major piece of AI-specific legislation, which takes a risk-based approach defining four levels of risk in AI: unacceptable risk, high-risk, limited risk and minimal or no risk. The heaviest burden falling on high-risk AI systems.<sup>26</sup>

Firms' compliance with the new requirements will be challenging because of the difficulty of determining which software should be categorised as an AI system, and which entities within a financial sector group may be subject to obligations, under the AI Act given that it applies to AI systems which are placed on the EU market, or its use affects people located in the EU, regardless of where in the world the AI system originates.

### The future?

In this article we have focused on the widening use of AI, machine learning and big data in the asset management sector. We have also looked at some of the recent AI-specific regulatory developments and commentary.

For the here and now, asset management firms will likely look to further develop AI tools for the future by utilising links with science research arms,<sup>27</sup> universities<sup>28</sup> or fintech start-ups for example.<sup>29</sup>

A watching brief on fintech firms is particularly important in the asset and wealth management space, because of concerns about sticking with the more traditional methods of doing business, resulting in potential loss to new entrants in the market.

But why stop at the here and now? What about evolution in digitalisation more broadly? What's next?

A recent Citi Global Perspectives & Solutions (Citi GPS) report, [Metaverse & Money](#), explains that the Metaverse as a concept has existed for a few decades, with interest in the virtual world spiking at the end of 2021.

The Report goes on to say that, today, the most popular way to experience the Metaverse is via a video game played on a virtual reality headset but discusses the possibility that the Metaverse is moving towards becoming the next iteration of the internet, or Web3. This “Open Metaverse” would be community-owned, community-governed, and a freely interoperable version that ensures privacy by design.

Users should increasingly be able to access a host of use cases, and a device agnostic Metaverse would be accessible via personal computers, game consoles, and smartphones, resulting in a large ecosystem.

We can only begin to imagine how the Metaverse may ultimately be utilised by the asset management industry – but just around the corner – there is the launch of a metaverse ETF.<sup>30</sup> Direct to customer could become direct to avatar?<sup>31</sup>

As anything can be transformed, or re-thought in the Metaverse, imagination could become the only constraint to innovation, and as our series of articles point out, ‘Transformation is Inevitable’ – so on to the future.

To learn more about other types of digital transformation, not covered in this article, please visit <https://www.citivelocity.com/citiqps/>.



- <sup>1</sup> See “Nine things you should know about AI” – The Reith Lectures: Living With Artificial Intelligence at [bbc.co.uk](http://bbc.co.uk).
- <sup>2</sup> <https://www.oecd-ilibrary.org/sites/39b6299a-en/index.html?itemId=/content/component/39b6299a-en>.
- <sup>3</sup> Robo-advisors are computer programs that provide digital financial advice based on mathematical rules or algorithms tailored to investors’ needs and preferences.
- <sup>4</sup> Young and tech-savvy investors, such as Generation Y (millennials).
- <sup>5</sup> Research source: OECD Business and Finance Outlook 2021: AI in Business and Finance: <https://www.oecd-ilibrary.org/sites/39b6299a-en/index.html?itemId=/content/component/39b6299a-en#section-d1e3120>.
- <sup>6</sup> Extract taken from the Investment Association in collaboration with EY and Clifford Chance: ‘AI and the investment management industry’, November 2021.
- <sup>7</sup> Machine learning is, in simple terms, a set of algorithms designed for computers to learn relationships from training data in order to make predictions or decisions without being explicitly programmed to perform a task.
- <sup>8</sup> [https://www.ibm.com/watson/explainable-ai#:~:text=Explainable%20artificial%20intelligence%20\(XAI\)%20is.expected%20impact%20and%20potential%20biases](https://www.ibm.com/watson/explainable-ai#:~:text=Explainable%20artificial%20intelligence%20(XAI)%20is.expected%20impact%20and%20potential%20biases).
- <sup>9</sup> <https://www.mas.gov.sg/news/media-releases/2021/mas-and-industry-to-pilot-digital-platforms-for-better-data-to-support-green-finance>.
- <sup>10</sup> Citi GPS: Global Perspectives & Solutions April 2022. ‘Investing for Outcomes Why Impact Is relevant Beyond Impact Investing.’
- <sup>11</sup> Proposal for a Directive on corporate sustainability due diligence and annex | European Commission ([europa.eu](http://europa.eu)).
- <sup>12</sup> <https://www.sciencedirect.com/science/article/pii/S1544612322000897>.
- <sup>13</sup> <https://www.fsb.org/wp-content/uploads/P141021-4.pdf>.
- <sup>14</sup> Cybersecurity trends: Looking over the horizon – a report by McKinsey & Company, dated 10 March 2022.
- <sup>15</sup> See <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD695.pdf>.
- <sup>16</sup> <https://oecd.ai/en/ai-principles>.
- <sup>17</sup> [https://www.pcpd.org.hk/english/news\\_events/media\\_statements/press\\_20210818.html](https://www.pcpd.org.hk/english/news_events/media_statements/press_20210818.html).
- <sup>18</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1022315/Data\\_Reform\\_Consultation\\_Document\\_Accessible\\_.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1022315/Data_Reform_Consultation_Document_Accessible_.pdf).
- <sup>19</sup> MAS-led Industry Consortium Publishes Assessment Methodologies for Responsible Use of AI by Financial Institutions.
- <sup>20</sup> ‘The major challenges facing securities regulators’ delivered at Eurofi, Paris on 24 February 2022 ESMA71-99-1581.
- <sup>21</sup> <https://www.sec.gov/news/speech/peirce-remarks-fintech-summit-040122>.
- <sup>22</sup> [esma71-99-1935\\_pr\\_-\\_ta\\_on\\_retail\\_investor\\_protection.pdf](https://esma71-99-1935_pr_-_ta_on_retail_investor_protection.pdf) ([europa.eu](http://europa.eu)).
- <sup>23</sup> <https://digital-strategy.ec.europa.eu/en/policies/european-approach-artificial-intelligence>.
- <sup>24</sup> Narrow-AI is designed and built to complete specific tasks and is incapable of adapting to new situations.
- <sup>25</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021PC0206&from=EN>.
- <sup>26</sup> ‘High risk’ includes medical devices, motor vehicles, systems used in remote biometric identification, and systems used for assessing students. For further details on high-risk AI systems referred to in Article 6(2) please refer to the accompanying Annex III of the proposed AI Act.
- <sup>27</sup> Ignites Article: ‘Fidelity Funding Research into ‘Conversational AI’.
- <sup>28</sup> Ignites Article: ‘Abrdn partners with UK university to create innovation hub’, 6 April 2022.
- <sup>29</sup> International Adviser Article: ‘Global asset manager partners with Asia-based fintech firm’. <https://international-adviser.com/global-asset-manager-partners-with-asia-based-fintech-firm/>
- <sup>30</sup> Ignites Article: ‘Fidelity’s Crypto, Metaverse ETFs to Debut Next Week’, 13 April 2022.
- <sup>31</sup> Innovators@Citi: Into the Metaverse – virtual event, 27 April 2022.



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