

New horizons and the human touch



NatWest
Markets

When NatWest Markets lifts its eyes to the horizon, what does it see? It sees emerging, disruptive technologies in the distance. Some of them are closer than others; some are coming at us faster than the rest; but all of them are heading our way. We have decided to take steps – and strides – towards a number of these growing technologies, including Artificial Intelligence (AI).

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The view that thinking is both mechanical and computational has been around for centuries – there was an entire school of thought based around the natural world as matter and motion. Thomas Hobbes, a philosopher from the 16th century, believed “reasoning is nothing but reckoning” - that intelligence comes from calculation. It’s not a huge leap then, that if intelligence can be accrued in machine-like ways, then machines can accrue intelligence. [John McCarthy](#), computer scientist, inventor, and pioneer, believed, “every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it”.

From the 1950s onwards ‘artificial intelligence’ became a reality, with computer programmes playing draughts and doing algebra, but its most advanced uses were mostly in the pages of academic or sci-fi literature. Today, advances in microprocessors, Graphics Processing Unit design, and cloud technology makes AI truly viable. The latter in particular accelerates the adoption of AI, something we are looking into intensely at NatWest Markets, as we begin to migrate our applications and data into the cloud this year.

AI should enable us to transform automated decision-making using vast amounts of data about the market and the economy - much of which we have been collecting for years but only now really scratching the surface of what sorts of insights we can draw from it. Cross enterprise AI, for example, helps to bring data together from across a business, adds in external data such as customer segments, their locations, and so on, and then deeply analyses this information. New insights, rich in value, are uncovered as well as a set of predictions and targeted recommendations. Because it learns continuously, it can quickly sense changes in conditions and adapt its predictions.

NP hard problems = no problem

AI is also great at optimisation problems including the toughest computational problems, known as ‘[NP-Hard problems](#)’ to computer scientists - a problem type for which the effectiveness of a solution is usually trivial to compute (often just adding some numbers together, for example) but for which there are infinite possible solutions. So while we can prove we have an optimised solution, we cannot prove it is the optimal solution. AI enables us to spot patterns in data, such that we can create ongoing self-optimising solutions in areas such as risk management and the balance sheet by learning from patterns in the data, impossible to see with the human eye.

From e-Trading to a-Trading

Computing has already transformed trading by injecting the power to make huge numbers of calculations in a split second – at NatWest Markets we already electronically trade Bonds, Swaps, FX, and Credit. And AI will allow us to analyse huge amounts of data coming through our bank on a daily basis, plus harness years of historical data to continue to make predictive models for market behaviour.

Perhaps extensive use of AI will result in more efficient and less volatile markets because human bias and subjectivity will be minimised. However, this same subjectivity requires rigorous controls around ‘intent’, i.e. the difficulty to prove how and why our AI reached the decision it did. With tight safeguards and controls, traditional algorithmic behaviour is easy to explain even to the layman in plain English - the ability to do the same rationalisation of intent with AI is an interesting topic of research. This is likely to

lead to a greater emphasis on transparency – a theme gathering pace in financial services, which will be sped up even more by other technologies, for example [distributed ledgers](#) such as blockchain. The introduction of the General Data Protection Regulation (GDPR) in 2018 means we must be even more vigilant with customer data and how it is used – by humans or machines. The growth of this technology will likely continue the quest for ever greater transparency in how financial services firms operate from both customers and regulators.

Billion pound deals and dealing with humans

Maybe the greatest opportunities for these new technologies lie not in the highly liquid flow business we have been automating using traditional algorithms for the past 30 years, but in the rich content and insight our non-flow and banking business demands. We won't (for now) automate highly complex, multi-billion pound deals. What we will do, however, is use the tech to unlock insights drawn from data by AI not possible until now, to enrich the advice we give to our clients – there are some things technology cannot replace, such as real conversations, relationships, and trust between people.

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358_0319NWM | March 2019