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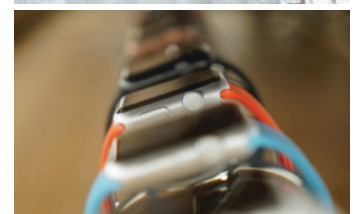
AI, AR and VR

When you think of current trends in the consumer and retail sectors, buzzwords like "artificial intelligence", "augmented reality" and "virtual reality" spring to mind. The retail scene is undergoing fundamental disruption – and these emerging technologies are centre-stage. Traditionally, such technologies were often characterised as mere "hype" and considered better suited for sci-fi movies rather than the real world. However, they are now very much a reality and continue to develop rapidly, causing consumers and retailers alike finally to take them seriously.

Today's consumers have an overwhelmingly large range of products and services to choose from, and are inundated with a constant flow of advertisements wherever they go. The result is that they crave a more personalised experience. Retailers have therefore started to exploit the progress made by tech giants to fulfil this demand. The gradual deployment of artificial intelligence, AR and VR in the consumer sector is enabling retailers to collect a large volume of

data and gain a deep understanding of customer behaviours and preferences, which can translate into long term benefits for the consumer of the future. However, there are legal issues which arise and require consideration.

In this article we explore these technologies, including examples of their use in the retail sector and the associated legal issues.



ARTIFICIAL INTELLIGENCE

If you have recently purchased something, either online or from a shop, you will very likely have interacted with a form of artificial intelligence (AI).

Broadly speaking, AI refers to the concept of machines being able to interact with the world around them by carrying out tasks and reacting like humans. In the consumer sector, the challenging economic environment and increasing competition to retain customers have pushed retailers to innovate to enhance the customer experience and ultimately generate more sales – and AI has the potential to help them achieve this.

What is AI?

For most people, the concept of AI makes them think of intelligent personal assistants, such as Apple's Siri. In fact, this can be better described as "machine learning", which, although often used interchangeably with "AI", is actually a subset of AI. AI is defined by Stanford University as "*the science of getting computers to act without being explicitly programmed*" – it involves machines using complex algorithms to analyse a large volume of data, recognise patterns and make a prediction without the need for someone to program instructions into the machine's software. The system is also able to learn from its mistakes and improve over time, just like a human. One way to look at it is that machine learning is the enabling technology which is helping computers learn about how humans think. Another concept that is often confused with AI is "deep learning", a subset of machine learning, which involves combining vast amounts of data and computing power to simulate the human brain, categorising data and finding patterns which it can then apply to other data sets. The highest, most complex stage is 'true' AI, where a machine can 'think' like humans and create something without human interference. Despite having three seemingly separate concepts, the differences between them are not clear-cut and they are highly interlinked. For now, machine learning is

the fastest growing component of AI but before it can make real headway towards 'true' AI, it still requires significant improvement.

Investor appetite is very strong in this area and there is an ongoing drive to develop the technology with the hope that it will bring much anticipated revolutionary changes to society. According to McKinsey Global Institute, AI drew between US\$26 billion and US\$39 billion in investments in 2016, which is three times more than in 2013. So far, the largest and most active investors in the technology comprise the cash-rich tech giants and digital-native companies, such as Amazon, Baidu and Google. These companies are mostly incurring internal spend on research and development. However, despite the recent investment activity, AI has not yet been widely deployed in practice, in part due to many companies not fully understanding how AI can help them and how to integrate it in their business.

Happy customers and efficient retailers

One of the greatest benefits of using AI in retail is the enhanced customer experience that it can bring with it.

For example, in the home, AI powered commercial assistants such as Amazon's Echo Look device and Alexa, the virtual assistant, can use data gathered from their interaction with a consumer and other sources, such as consumer buying trends, to enable Amazon to make more accurate product suggestions and even make recommendations based on a person's wardrobe and body shape. In the future, virtual assistants could even remind users to purchase a grocery item when they are about to run out.

The use of "chatbots" (messenger-based systems fuelled by AI) is also on the rise. Typically, chatbots answer questions from customers based on key words and can detect customer moods. In the retail sector, chatbots provide twenty-four hour access to customer services, personalising the customer experience and the removal of waiting times in

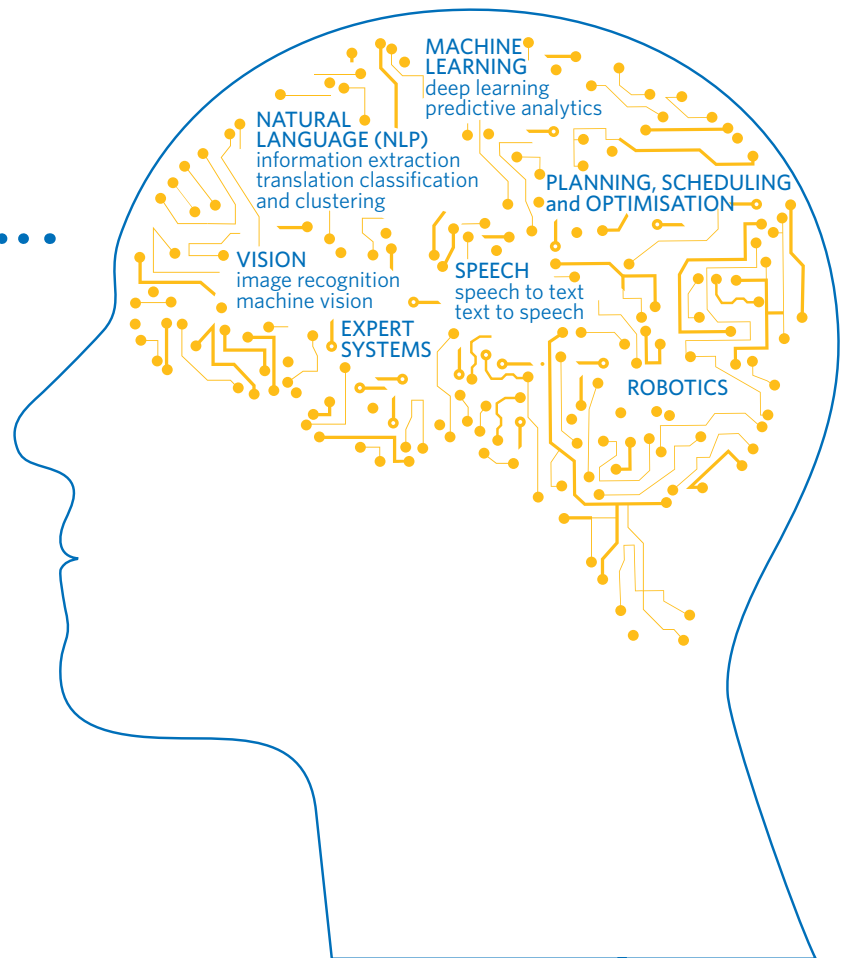
order to speak to an advisor. For example, Audemars Piguet, a luxury watch brand, introduced a bot in 2016 that enables users to obtain information about a boutique's opening hours or location and access product suggestions and information. For now, these functions are quite simple but as AI continues to develop, more skilled platforms can develop. This will be particularly important in certain areas, like the watch and jewellery sector, where a user interacting with a Rolex chatbot, for instance, would expect to receive more detailed answers about the brand, a watch's design and its craftsmanship.

AI is also allowing retailers to refine production selection based on customer responses to a series of questions. For example, North Face is using a cognitive computing platform, Watson, to enable shoppers to have a more personalised shopping experience when visiting the North Face website. A customer is now able to enter details of a location they are visiting, temperature or their gender and the website will recommend an appropriate jacket for specific conditions.

The retailers can also benefit from the use of AI as an internal tool to better understand trends and forecast sales, thereby reducing wasted stock. For instance, German online retailer Otto currently uses an AI application that is 90% accurate in forecasting what the company will sell over the next 30 days. The forecasts are so reliable that Otto now builds an inventory in anticipation of the orders predicted by AI, enabling it to speed deliveries to customers and reduce returns.

Legal gaps resulting from AI: IP rights, tortious liability and privacy

In common with other emerging technologies, AI will bring a number of challenges to the existing intellectual property regime which is struggling to keep up with the fast pace of innovation and will need to evolve and adapt to properly cover the resulting legal issues. For example, AI already has the capability to generate content or data, but it remains to be seen who will be considered the owner of the intellectual property rights that arise and who



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will be entitled to obtain licensing fees and enforce the intellectual property rights. This is especially the case given the potentially large number of parties that could be involved in the design, training and use of the AI system. As AI becomes increasingly autonomous, this also raises the possibility that the AI software or technology might itself be the author and, arguably, the owner of any resulting IP. Until the law catches up with the technology, the solution might be to simply agree such issues in commercial agreements at the start of a project and provide for the position to be revised periodically as the project progresses. Ownership of the intellectual property rights in the AI system itself is also likely to be controversial, particularly since the systems will consist of automatically generated code resulting from the system's training. By comparison, currently, in a regular software development scenario, each line of code can be attributed to a human author. Therefore, this may also need to be addressed by way of contract from the start.

A number of companies are taking advantage of opportunities to license out their proprietary AI systems. Sonos, for example, has recently decided to license-in the technology

underlying Amazon's Alexa voice control assistant for its home speaker systems, rather than developing the required software itself. The possibilities for mass commercialisation of AI systems and the opportunity to license-in, or license-out, AI technology means that any related agreements should make clear which party owns the background and resulting (foreground) intellectual property rights, and any improvements or developments of the same.

Unsurprisingly, given the extensive collection of data by AI systems from a variety of sources, along with the analytics applied, the use of AI also has privacy and data protection implications. For instance, some types of big data analytics used by AI systems, such as profiling, can have intrusive effects on individuals. Also, organisations will need to consider whether the use of personal data is within people's reasonable expectations. Additionally, the complexity of the methods of big data analysis, such as in the context of machine learning, can make it difficult for organisations to show that they are transparent about the processing of personal data. AI is likely to give rise to unique privacy questions and again, it remains to be seen if

the current framework is sufficient or whether regulators will need to fill any legislative gaps.

Finally, it will be interesting to see what the legal implications will be under tort law with respect to the acts and omissions of AI systems. Several countries are seeking to produce legislation which can provide some guidance in this area. For instance, the 2017 report prepared by MEP Mady Delvaux analyses whether robots should have legal rights as an "electronic person" and also whether a robot should be held liable for accidents. Among other things, the report sets out certain proposed principles, including the fact that a robot must not injure a human being or, through inaction, allow a human being to come to harm. Further, the report states that any "future legislative instrument should in no way restrict the type or the extent of the damages which may be recovered, nor should it limit the forms of compensation which may be offered to the aggrieved party, on the sole grounds that damage is caused by a non-human agent". Clearly, this will be a controversial topic and one on which it is very difficult to legislate.



"...intellectual property rights in virtual products may need to be considered separately to their real world equivalents"

AUGMENTED REALITY (AR) & VIRTUAL REALITY (VR)

The future of consumers (and retailers) is also being shaped by two other emerging technologies: Virtual Reality (VR) and Augmented Reality (AR).

There are several key differences between VR and AR. VR is a computer-generated, software-driven representation of real life which is presented to the user. This is achieved by stimulation of the user's senses such as sight and hearing. The aim of VR is to replace completely the real life experience of a user with an artificial version of that real life

experience. In contrast, AR aims to overlay the real life experience of a user with additional information, which is also computer-generated and software-driven. AR does not seek to replace completely the real life experience of the end user, but instead presents the user with additional information which is overlaid on top of their surrounding reality.

For now, both VR and AR are developing technologies with early-stage commercial applications. The Gartner Hype Cycle for 2017 places each of AR and VR at different stages of development. AR sits in the "Trough of Disillusionment" whereas VR is currently positioned on the "Slope of Enlightenment".

This positioning reflects the general industry consensus that both technologies have overcome inflated expectations and are ready to develop into more full-formed technologies in the next few years, albeit with VR technology currently more progressed than AR.

Legal aspects of AR & VR

AR and VR present a number of novel and untested legal issues. In relation to IP rights, the IP rights in real world property are currently unequipped to deal with virtual property. For example, a fashion retailer may upload virtual product equivalents onto its app platform, and will want to assert the usual intellectual property rights over such virtual products, as it



does over its real world products. However, for now, it is unclear whether all real world intellectual property rights are capable of applying to virtual products. Furthermore, the intellectual property law treatment of the metacharacteristics of such virtual products also remains to be determined – for example, a virtual product may be linked to or contain various hashtags, geotags and other virtual characteristics. At present, it is uncertain whether the intellectual property rights attaching to the real world product extend to such hashtags, geotags and other virtual characteristics. This makes it likely that the intellectual property law treatment of virtual products and real world products will be different, and therefore, intellectual property rights in virtual products may need to be considered separately to their real world equivalents. Additionally, a practical problem is that AR and VR users access these systems from all over the world. As a result, the individuals using them can often be difficult to identify and pursue and it may not always be clear which jurisdiction's intellectual property laws should apply.

Another legal point to consider in this context is that so far, the AR/VR community has tended to rely upon forms of self-governance and internal dispute resolution in order to address any issues or disagreements arising from the conduct taking place when using AR and VR, but it is unlikely that such conduct can escape the restrictions of any applicable laws and regulations. These technologies will therefore also test the understanding of where acts of infringement take place pursuant to existing notions of jurisdiction. In the context of AR in particular, various consents may be required in relation to the real world features which are the background to the AR experience. For example, if a company creates an AR app which overlays onto real world buildings or features, various licences and consents may be required to use such buildings or features. The company will need to consider the risk of attracting tortious claims such as nuisance and negligence from the owners and occupiers of such buildings, as well as the health and safety implications of potentially encouraging users to enter a hazardous area.

Use cases: Ikea Place and Gap Dressing Room

One notable early use case of AR in the retail domain is the launch of the AR app Ikea Place in the US. The Ikea Place app is designed to allow users to select items from the Ikea catalogue, which are then overlaid onto a view screen of a smartphone or tablet device. Therefore the user is able to see how a certain Ikea product would look in situ, without having to purchase and install the product in reality. In this way, the Ikea Place app has the potential to transform the consumer catalogue experience and represents a first step down a path of technological transformation for retail companies' catalogue offerings.

As mobile devices continue to develop in both processing power and AR capabilities, such AR product catalogues are likely to grow in popularity. Ikea are one of multiple global brands who have recognised the potential of AR technology. Gap's Dressing Room app, built in collaboration with Google and Avametric, uses AR technology to allow users to build a virtual 3D model of themselves within the app, which can then try on various Gap products listed on the app. Gap is therefore one of the first fashion retailers to build AR technology into its mobile app offering, and is likely to be followed by other fashion retailers in the near future.



CONCLUSION

The continued development of disruptive technologies, combined with increased competition faced by retailers, and a consumer population that has an abundance of choice, will result in fundamental changes to the retail sector. On one hand, consumers will receive more tailored and convenient services, although this is likely to come with a cost to their privacy.

Retailers will have the possibility to gain increasingly insightful information about consumers and the opportunity to achieve higher levels of efficiency and optimisation across the supply chain. However, in order to reap these potential benefits of new technologies, they will also need to continue investing in data gathering, as well as solidify their partnerships with suppliers so as to ensure that the insights obtained can be used effectively across the entire supply chain.

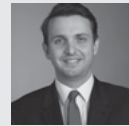
From a legal standpoint, the law is still very much playing catch up with the technological advancements. Therefore, we are likely to see a range of new legislation being adopted in the near future, designed to fill any gaps, not only in areas like data protection and intellectual property, but also specifically in the retail sector in respect of consumer protection.



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This article is part of a **Future of Consumer series** on upcoming issues affecting the Consumer Sector. For other articles in this series see the Consumer pages of our website www.hsf.com or contact Rachel Montagnon



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