



The science

How digital innovations are shaping the future of retail.

By **Laura Hopperton.**

The way we shop has evolved rapidly over the past two decades. Click and collect, location based apps that send special offers to your smartphone, augmented reality that shows you what a sofa would look like in your living room – these are just some examples of a new kind of retail experience which merges social, digital and physical shopping.

“Technology means that people are shopping whenever they want, wherever they want, across different devices,” says Richard Braham, an advisor for digital retail and payment at the British Retail Consortium. “Consumers today demand a seamless, convenient and personalised experience – and retailers are investing hundreds of millions of pounds in order to give them that.”

So will technology be the salvation of the high street? Or will ‘multi-channel retail’, with its reliance on screens, apps and social media, be the death of it?

Beacons beckon

For many years, Near Field Communication (NFC) was considered to be the technology of choice for enhancing the shopping experience. However, with NFC having reached certain limits, beacons are now poised to be the next step in delivering on this valuable promise.

The way we shop is expected to change more in the next two to three years than it has in the past two decades

Essentially, beacons are a type of low cost, micro-location based technology that use Bluetooth Low Energy (BLE 4.0) for communicating with beacon enabled devices, such as smartphones and tablets. In order for them to work effectively, smartphone users must have Bluetooth switched on and must allow for location tracking. They also need to have the store’s app on their device.

If a customer walks past a beacon placed near a store’s entrance, for example, the beacon can transmit a short, semi personal message, such as ‘Hi there! Here’s 15% off just for you’. Alternatively, they can be placed in mannequins – something House of Fraser is set to trial in its Aberdeen store in the coming months. When a customer with an enabled smartphone app is within 50m of the mannequin, the beacon sends a signal providing them with details about the clothes and accessories the mannequin is wearing, the price and where the items can be found within the store. It can also provide them with





of shopping

links to purchase the items directly from the retailer's website.

"The beacon market is in a very early stage of its evolution and is developing at a rapid pace," says Braham. "It's unclear what the future holds for the technology, but it's certainly attracting an enormous amount of attention and innovation."

One of the main advantages of beacon technology is that Bluetooth signals work effectively indoors and out, unlike mobile phone coverage or even Wi-Fi, which tend to leave you high and dry just when you need them the most. As more mobile devices begin reading BLE signals and people become comfortable leaving their Bluetooth on, many believe beacon technology will remake how we shop and how retailers sell.

Unsurprisingly, one of the first retailers to bring beacons into its stores was Apple. Its iBeacon infrastructure makes use of the same technology, but requires some additional data formatting. It was first implemented by Apple in its 254 US stores and has since been trialled by high end retailers, such as Burberry and Hamleys, as part of a £1 billion plan to modernise London's Regent Street area and better engage with shoppers.

'There's an app for that'

Nobody wants to spend more time in the supermarket than they have to. As

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part of its mission to help reduce the time it takes to do our grocery shopping, Sainsbury's has created an app that lets shoppers scan items at the shelf and pay for them via their smartphone.

Users will be able to create a shopping list prior to visiting their local store. Once there, the app will direct them to each of the items on their list. They can then scan the barcode of the items and place them straight into a shopping bag.

When the customer has completed their shopping, they simply pay using their smartphone, eliminating the need to visit a checkout. Sainsbury's digital and technology director Jon Rudoe says the technology will not only speed the process, but also allow users to browse for good deals and offers more easily. "We're putting digital firmly at the forefront of our agenda, and putting technology in the hands of our customers," he continued.

Elsewhere in the app space, companies like Capito Systems are pioneering the use of intelligent voice control for mobile e-commerce apps. The London based firm was recently commissioned to create an app for bookmaker Paddy Power ahead of the World Cup, which allowed punters to 'talk to Paddy' to place a bet.

In the future, says Capito's commercial director Mark Loosemore, the software could help simplify online shopping, particularly for those who find inputting bank card details on their phone fiddly and frustrating.

"A lot of people struggle to find what they want quickly and easily on an app and often don't complete a transaction," he says. "For people who don't like or struggle to input information, we think speaking to an app is an awful lot easier."



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Dan Wagner

Another British start up looking to take on the app world is Powa Technologies, which in March 2014 took the wraps off part mobile wallet, part e-commerce plug in: PowaTag. Nine years and £60million in the making, the aim of the technology is to reduce ‘checkout attrition’, boost basket sizes and increase customer engagement.

An audio watermark on a TV advert or YouTube clip takes the user to an m-commerce store through the app, while a QR code reader enables shoppers to skip the delivery and payment information stages and buy an item on their smartphone in just one touch. Lastly, the app is connected to in-store Bluetooth beacons, which allows retailers to send information and promotions to browsing shoppers.

Speaking at the official launch of PowaTag in New York, company CEO Dan Wagner said: “Our hybrid combination of technologies enable retailers to have a richer engagement with their customers so they can cater for them in a more focused way. Consumers also benefit from having a vastly improved shopping experience.”

Whether PowaTag will win the hearts of consumers remains to be seen, but the company has, so far, racked up partnerships with more than 240 heavyweight brands, including Reebok, Adidas and Universal Music.

The digital changing room

Digital signage solutions and virtual reality technologies are making a big splash among retailers. The former is proving particularly popular among fast food restaurants, which are starting to replace static signs with digital menu boards and use displays for point of sale (POS) data integration. In the fashion world, firms such as Magic Mirror are developing virtual mirrors that allow people to try on clothes via a projected image of themselves on screen. Body sensors map their shape and virtual clothes can be added via a touchscreen.

When it comes to augmented reality, the technology is less established than digital signage, but is expected to

make a much bigger impact. The notion of a virtual store has long been a technology promise and companies like Lego are experimenting with kiosks that, when a shopper holds up a box, would display the completed model as if it were in their hands.

“The beauty of augmented reality is that it helps customers conceptualise something in a virtual space,” says Braham. “In order for it to really take off though, it has to be seamless and intuitive to work. If it’s clunky and realistic, people won’t want to use it.”

Cost is also a factor. “Retailers are happy to invest in new technologies, but only if the demand is there and only if it actually helps to boost sales,” Braham asserts. “Likewise, customers want it, but not at the expense of a fair price.”

So how will our high streets fare in the next decade? And will we still be going there to browse on a Saturday afternoon? “People often talk about technology being the ‘death of the high street’, but that is a dangerous and quite frankly foolish assertion to make,” Braham concludes. “People like shopping online, but they also like going to the local high street. It’s the combination of the two that offers the best shopping experience. Retail is a simple thing; it’s about selling. Digital is just another way of doing that.”

Ones to watch

- **3D printing**

While consumer use of 3D printing is still sparse, a handful of services have emerged that offer to print customers’ designs and then send them the finished product. Once 3D printers become affordable enough for consumers to buy, experts believe the technology could fundamentally change the way retailers sell products to consumers.

- **Smart labels**

Norwegian firm Thinfilm is creating temperature sensing smart labels that can tell customers whether their pint of milk is fresh. The labels combine memory, real time sensing capability, NFC functionality and logic. Thinfilm says they will soon be available at a comparable price to colour changing chemical labels.

- **Image recognition**

Tesco recently trialled a facial scanning app to target ads to customers in queues based on their age and gender, but this proved highly controversial. Elsewhere, a start up based in San Diego has developed a system that uses facial expression recognition software to gauge customers’ moods as they go in and out of shops, in order to track their reactions to different packaging and brands.

- **Wearables**

In the near future, predictive algorithms and advanced image recognition technology could give Google Glass wearers a ‘buy it now’ button on products they are looking at, removing a retail interface completely. Businesses have already started using Glass internally as well – Virgin Atlantic announced in February that its staff would start wearing Glass to help speed the check in process and to improve communications with passengers who speak different languages.

- **Big data analytics**

As customers become more connected, the mountain of data retailers have on their shopping habits will only get bigger. As such, experts believe analytics will become more important, helping retailers sharpen their pricing strategies and to create personalised offers for specific groups of customers.