DIGITAL RETAIL INNOVATIONS REPORT











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DIGITAL RETAILINNOVATIONS REPORT

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Welcome to the annual 'Retail Insider Digital Retail Innovations' report for 2017 that takes on the tough challenge of finding the most interesting digitally-fuelled technology developments in the retail sector.

This year's report contains the Top 50 UK innovations as well as a Top 15 drawn from overseas, which highlight the current crop of top technology initiatives within the retail industry globally.

In previous reports Amazon has featured particularly strongly and this year is no different. In fact, the company has increased its presence this year as it takes the top three places in the Top 50 and has a fourth innovation in the top 10.

Atop the table for the second year running is Amazon's Echo device that is not only redefining the way consumers interact (through voice) with technology but is also an example of how Artificial Intelligence and machine learning are increasingly powering solutions in the retail sphere.

Another interesting aspect of this year's report is the importance of innovations in payments, with Starbucks, MasterCard and Jaguar all featured in the top 10 for their new payment initiatives.

The value accorded payment innovations this year is maybe symbolic of how the 2017 report contains fewer whizzy technologies and instead has more examples of solutions that are based on the here-and-now and are delivering ROI (returns on investment).

As we have warned in previous reports, the nature of technology is that it continues to evolve at a rapid pace and so compiling such a list is always going to be a hard job. In contrast to many other similar ranked lists we have applied a robust methodology to the process that hopefully gives it the credibility that we've worked hard to achieve.

This report would not be what it is without the specially selected Advisory Panel who have helped compile the list and also ranked the innovations in order. This is no mean task and I would like to thank each one of them for giving up their time so generously.

Finally, I would like to thank Webloyalty for their continued sponsorship of this report and for their general ongoing support. We very much hope you find inspiration from the 65 interesting innovations that we have brought together and that they just might help with your decision making in the future.

Even though the ink has only just dried on this report we shall now begin the hunt for next year's cutting edge innovations because as we all know the advance of technology never slows.

Glynn DavisRetail Insider | @GlynnDavis

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Digital innovations have been transforming the retail industry and the pace of change is getting faster by the day. Here in this year's list, we're excited to be celebrating some of the brightest ideas from some of the bravest brands that aren't content with resting on their laurels.

Not only are these inventions improving the customer experience, they're helping retailers run a leaner, more efficient operation that uses teams' skills in a smart way. Artificial Intelligence and robotics are transforming the industry and applications for the technology are becoming limitless – from customer service and chatbots, through to warehousing and fulfilment.

This year, we've also seen innovations bring seemingly disparate industries together and blend to make hybrid solutions that improve consumers' day to day lives. These synergies can be seen throughout the report, with Google's partnership with Ivy Rebel, BMW's work with Ted Baker, and IBM Watson's collaborations with Shop Direct and Staples. Perhaps the best example is Amazon's Alexa, which already topped last year's list and appears three times in 2017's report – once on its own merit with Amazon Echo but also through collaborations with Toyota and Starbucks.

What has been both positive and encouraging to see is retail technology being used as a force for good. Two eco-friendly initiatives have ranked highly in the report; TooGoodToGo and Sainsburys' partnership with Olio, which both aim to cut food waste by listing left-over meals on apps. Not only does this help to foster sustainability but also reduces the amount of rubbish sent to landfill.

Also of note is how much the fashion industry dominates this year's list. Following an impressive representation in the 2016 report, this year almost a third of all innovations come from forward-thinking fashion retailers, including ASOS and Diesel.

Despite it being a challenging year for retailers, with the value of the pound hitting profitability hard, it's heartening that innovation is still considered a priority for many businesses. They're realising that investing in technology that can drive up revenues and ease the pressure of squeezed margins at a time when customer expectations are higher than ever. Whether the leaps are coming from smaller businesses such as Made.com or retail giants like Amazon, Starbucks or Mastercard, it's a real credit to the industry that innovation continues to flourish in tricky times.

We feel passionately that this should be celebrated and would like to thank Glynn Davies and the team at Retail Insider for the opportunity to be part of the creation of this compelling report for a fourth year. It's been a pleasure to provide our support for yet another impressive and interesting year.

GUY CHISWICK

Managing Director, Webloyalty, Northern Europe | @Webloyalty Guy

THE ADVISORY PANEL



PAUL WILKINSON
Head of Technology Research,
Tesco Labs

Paul has the job of finding the best technology in the market to make life easier – both for Tesco customers and colleagues. His remit is to help people experience the future today as technology changes the way they shop. This involves dealing with the likes of Microsoft and Google as well as start-ups and then bringing back ideas to Tesco and figuring out how to make them work for the company.



JOHN BOVILL Group Executive for Digital, David Jones

John took up the role of head of digital at David Jones in Australia in 2016 having previously worked at Monsoon Accessorize since July 2013 as a member of the operational board, with responsibility for the full e-commerce P&L as well as the digital and technology strategy. Previously worked at Jacques Vert Group as Commercial Director and prior to that he spent a number of years at Aurora Fashions in various roles.



DR NADIA SHOURABOURA CEO, Hointer

As US-based CEO of Hointer she continues to work on reinventing the shopping experience through the creation of a new way of discovering, trying-on and buying clothing. She joined Amazon.com in March of 2004 as technology vice president of its worldwide operations, with ownership of the technology that powered Amazon's global supply chain and fulfilment. She also served on Jeff Bezos' senior leadership team responsible for overall direction and operations of Amazon.



ADELE COOPER
UK & Ireland Country Manager,
Pinterest

Adele is responsible for growing Pinterest in the UK and Ireland by building and supporting relationships with brands and publishers across categories such as fashion, food, and home. Previously she spent over five years at Facebook including a period as a director in the global accounts team. Prior to joining Facebook, Adele spent six years at Google.



DANIEL HEAF SVP Digital Commerce, Burberry

Daniel joined Burberry as SVP
Digital Commerce in 2014 following
a four-year stint at BBC Worldwide
where he worked as chief digital officer.
Prior to that he worked for several
years at Channel 4 where he joined
its investment arm 4iP and specialised
in leading early stage investments in
UK digital start-ups.



MARTIN NEWMAN CEO, Practicology

Martin has been involved with multi-channel retail for more than 25 years – presently at strategic consultancy Practicology, which he founded. This followed a variety of roles that included head of e-commerce for both Burberry and Ted Baker, interim director of e-commerce for Pentland Brands, and head of marketing for Harrods' home shopping division. He is also a non-executive director of Conviviality Retail and White Stuff.

THE ADVISORY PANEL



SIMON HARROW CEO, Elevaate

Presently CEO of technology platform Elevaate as well as being an investor at digital investment and business incubator Haatch. Prior to this he was chief operating officer at Kiddicare and held senior digital roles within Morrison's after they acquired Kiddicare in 2011. He has also sat on global, European and UK advisory boards for a number of companies including IBM Coremetrics, and Oracle Endeca.



ALEX ANPILOGOV
Senior Creative Technologist, Fitch

Alex is responsible for driving initiatives combining traditional design with new digital technologies in support of Fitch's wider omni-channel offering. More recently, he has been implementing various client and labs projects in the field of virtual reality, as well as innovative digital installations and touch-points. Previously, Alex ran a start-up digital studio and a specialised investment consultancy for UK-based technology start-ups.



JAMES BILEFIELD
Non-Executive Director
and Investor

Bilefield has a varied portfolio of interests including board positions at Stagecoach and The Cambridge Satchel Company, senior advisor at McKinsey & Company and Advent International, and is also chairman at Cruise. He is also an investor in a number of technology and digitally-driven businesses.



DANIEL LUCHT Global Research Director, Research Farm

Daniel leads a team of analysts and consultants, with a remit that includes developing strategic content and new revenue streams, as well as corporate planning. He has over a decade of experience analysing the sector and identifying latest industry trends, working with FMCG companies and retailers such as Tesco, Nestle and Disney.



BAZ SAIDIEH, CEO, TrueStart

Baz's present role involves overseeing all investment decisions, as well as business operations at TrueStart, while actively supporting the portfolio companies once an investment has been made. He is currently an active adviser and board member of a variety of start-ups and young companies with a particular interest in fashion disruption, retail innovation, and consumer.



MIYA KNIGHTS Head of Global Retail Technology, Planet Retail

Prior to joining Planet Retail she was a senior research analyst with IDC Retail Insights, having previously edited Retail Technology magazine for 10 years. She has over 15 years' experience as an analyst, journalist and editor specialising in enterprise technology use in retail. She has spent this time reporting on the demands and challenges faced by retailers and which technologies can best support their needs in addressing ever-more complex consumer expectations and behaviours.



JONATHAN WALL Group E-commerce Director, Shop Direct

Prior to joining Shop Direct in 2010 to head up its e-commerce function, Jonathan held the CEO position at Flowersdirect.co.uk and before that he was Marketing Director at Dabs.com, which he joined during the dotcom boom in 1999.



Consultation was undertaken with a broad range of individuals from across the retail, technology and start-up arena – encompassing analysts, senior retailers, researchers, IT specialists and investors.

From this process a long list of digitally-driven innovations was drawn up, helped by deliberations with some of the individuals on the specially selected Advisory Panel.

This extended list was reduced down to 50 innovations from the UK and an additional 15 from overseas. Each innovation on the list was then scored privately by members of the Advisory Panel on four criteria – how innovative, how potentially commercial, potential influence across the sector, and potential benefit to consumers?

I. INNOVATIVE

What level of innovation is being demonstrated in the solution? The score will be determined to some extent by whether it is truly out there on its own leading the pack or whether there is competition from other similar innovations.

2. POTENTIALLY COMMERCIAL?

What commercial value has the innovation delivered to retailers using the solution to date and what value could it potentially create for retailers in the future if widely adopted.

3. POTENTIAL BENEFIT?

What is the level of benefit the innovation is delivering within the retailers' organisation(s)? Is it having a material impact that could also potentially increase over time.

4. POTENTIAL INFLUENCE?

What is the level of impact the innovation is having, or could potentially have, on the retailer(s) using it and possibly on the broader retail sector? What impact could the innovation have as the proposition is built-out and it is possibly adopted more widely in the marketplace.

Collation of these scores helped create four tables, based on each of the criteria, as well as a table for the all-important overall score. The final report contains a separate Top 20 table for each of these four criteria as well as Top 50 for the overall score. In addition there is a Top 15 table for the overall score attributed to the overseas innovations.

INNOVATION RANKINGS

TOP 50 UK AND IRELAND INNOVATIONS





1 915

AMAZON ECHO

Since Amazon's voice-driven Echo device became widely available in 2015 it has become better known as Alexa and myriad additional 'skills' have been added that enable it to do much more than answer questions and order goods from Amazon. Its integration into cars and other retailers' eco-systems makes it a far-reaching tool. Its capabilities are being stretched even further with the recent introduction of a video camera. The new Echo Look device takes pictures and video when requested and has the potential to process this in order to provide feedback to people on say their fashion outfits.





AMAZON GO

Retailers talk about frictionless shopping and it is Amazon that is being most progressive in this area with the launch of its Amazon Go format that is initially being tested by the company's employees. The store uses many sensors - linked to the customer through the Amazon app - that monitor the items they have taken off the shelves and placed in their baskets. When they leave the store the relevant amount is charged to their account. The technology takes into account past purchasing histories if there is uncertainty over what has been picked up. The shelves are restocked using an automated retrieval system.





AMAZON LOGISTICS

The fact that Amazon has filed patents for unmanned airships that would serve as flying warehouses is indicative of how forward looking the company is with its plans to revolutionise logistics. It is also investigating the idea of underwater warehouses and has been experimenting with drone deliveries in the UK. These initiatives come alongside its implementation of a fleet of 40 wide-bodied Boeing 767 planes that are operated with two airline leasing companies. This heavy lifting element of the Amazon delivery eco-system is complemented by its increasingly robot-filled warehouse infrastructure.





DELIVEROO ROOBOX

Food delivery company Deliveroo has expanded its model to include the creation of delivery-only kitchens that will produce food for brands that do not have a presence in specific areas. The plan is to open around 30 such kitchens that are expected to house six or seven different brands that will each have their own facilities. Deliveroo will handle the online acceptance of orders and deal with the fulfilment. There is also an opportunity to consolidate orders across brands in a single customer's order and for multiple-branded deliveries to be undertaken at the same time by a single delivery person.



STARBUCKS MOBILE ORDER & PAY

Starbucks continues to develop its extremely popular mobile Order & Pay app with My Starbucks Barista being added to enable customers to order and pay for their food and drink just by speaking in a conversational exchange. Starbucks has also been added as a reorder 'skill' on Amazon's Alexa whereby customers can simply ask for their usual preferred item and it is then ordered. The success of the ordering ahead capability, which accounts for 7% of all transactions in the US, has led Starbucks to open a mobile order and pay store at its Seattle headquarters.



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MASTERCARD – SELFIE PAYMENT VERIFICATION

Aware consumers have an increasing number of passwords to remember MasterCard has developed a tool that allows purchasing verification to be done by fingerprint or face recognition. Following trials in the US, Canada and the Netherlands, the scheme has been rolled out to more countries including the UK and Germany where it is now ready for banks to pass on to their customers. Shoppers can access the tool via a biometric mobile app Identity Check Mobile.



OCADO WAREHOUSE ROBOTICS

At Ocado's latest warehouse it has developed a robotics capability that involves autonomous robots moving around above a grid, storing and retrieving crates stacked within the grid. They move in collaborative fashion with each other in order to collect groceries stored beneath them and then bring them to a human picker. The technology, developed with Cambridge Consultants, enables Ocado to control 1,000 robots from a single base station, communicating with them 10 times a second. In addition, Ocado is also working on a robotic hand that is sensitive enough to pick up a piece of fruit without damaging it, which could ultimately replace human pickers one day.



MERCEDES DRONES DELIVERY VAN

Mercedes Benz has revealed plans for a last-mile delivery solution that involves its 'Vision Van', which houses a number of drones along with items that need to be delivered within a certain radius. The van drives to the relevant location and then acts as a launching pad for the drones, which are loaded with items that are housed in a fully automated cargo space management system that is loaded into the back of the van at the warehouse. Mercedes estimates that the vehicle would increase productivity by up to 50% for the last-mile.



JAGUAR – IN-CAR PAYMENTS SYSTEM

Following the trend for ever more convenient ways to pay, Jaguar drivers can now pay for petrol at Shell stations using a cashless payment app. Trials are taking place in the UK that will mean a customer can use the in-vehicle touch-screen to select how much fuel they need and then pay using Apple Pay or PayPal. Plans to extend this to Android Pay are also underway. Jaguar hopes that the development will make visits to petrol stations easier and quicker with no more queuing. Additionally, receipts will be sent electronically making them less easy to lose.



10 711

AMAZON DASH

When the Dash button was introduced in 2015 there was some scepticism about its potential impact and although sales through the Wi-Fi-connected automated ordering buttons are relatively modest it is among Amazon's fastest growing services. In 2016 there was a 650% year-on-year increase in orders. For some brands Dash sales represent more than half of their total Amazon orders. A new driver of Dash sales will be the introduction of one-click Virtual Dash Buttons that can sit on Amazon's online marketplace or in its app.



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OTTO / BLUE YONDER

Forecasting sales has largely been an art but with artificial intelligence and machine learning there is the ability to use science. Online retailer Otto is using technology from Blue Yonder (that builds on research undertaken at the CERN laboratory in Geneva) to crunch billions of transactions and 200 variables including past sales, web searches, and things like weather information to predict what customers will buy in the near future. It has proved to be 90% accurate in predicting what will be sold within 30 days, which has led to it now automatically purchasing 200,000 items a month. The surplus stock Otto holds has been reduced by 20%. Morrison's is also using Blue Yonder technology for its forecasting.



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NET-A-PORTER / WHATSAPP

Net-a-Porter personal stylists engage with customers on the WhatsApp platform in what has proven to be a valuable one-to-one relationship builder, which the company says has led to some of its biggest sales. The seamless customer experience on mobile when moving from the Net-a-Porter site to having conversations with stylists on WhatsApp has led the luxury fashion company to work on developing a conversational commerce capability that enables actual purchases to be made directly through WhatsApp. It is another sign of the value of the mobile in retail.



PINTEREST LENS

Pinterest has made discovering goods much easier with the launch of its Lens solution. Using the camera in the app enables users to discover ideas inspired by objects they see out in the real world. With fashion goods, related styles and ideas for what else to wear with the item can be found. With furniture, similar designs can be found as well as other items from the same era. Lens can also be used with food, whereby pointing the camera at an ingredient will result in a variety of recipes coming up. With Shop the Look (currently available in the US) the next step for Pinterest users will be to buy the goods they discover direct from retailers.

16

FARFETCH – STORE OF THE FUTURE

Fashion retailer Farfetch has built a modular solution that uses data to bring together retailers' online stores with their physical outlets and is making it available to the hundreds of fashion boutiques and brands that it works with. Using the Farfetch app customers will log-in when shopping with a brand both online and in their stores whereby data on the individual's shopping history and preferences can be connected across the channels. Farfetch is also using RFID and ultrasound for connected clothing rails, which recognise the items picked up and can then place them in the shoppers' wish list in the app. In the changing rooms the products on this list are displayed on the mirror and can be requested for trying on and purchases made.



TESCO / BLACK SWAN

UK-based predictive analytics provider Black Swan is supplying its expertise to many leading FMCG brands as well as retailers including Tesco. Using complex algorithms the firm's technology takes onboard myriad data sources to accurately predict demand. Predicting the weather far enough in advance in order that retailers have time to respond via their supply chains, and make sure that the appropriate amounts of products like burgers and ice are on the shelves in preparation for people using their barbecues is massively valuable. The solution allows retailers to utilise both public data from beyond their own firewall and their own secure data. There is also no requirement for retailers to reengineer their legacy platforms.



TOOGOODTOGO

An app designed to reduce food waste and generate extra revenue for cafes and restaurants has moved beyond its initial market of Denmark and has been made available in a number of UK locations. Restaurants and cafes list how many left-over meals an agreed time at the end of the day. The London launch in latehas been growing. Talks have also taken place with large brands for them to participate.



they have at the end of the day and how much they will cost. Users select their chosen meal from the app and the price they are willing to pay and if successful they then collect the meal as a take-away at 2016 had almost 100 restaurants signed-up initially and the number





MCDONALD'S MOBILE ORDERING

Burger company McDonald's is looking to mirror the success Starbucks has enjoyed with its mobile order and pay functionality on its app as it launches a similar capability around the world. This is just one of a number of digital initiatives the company is involved with. Its self-ordering kiosks are working well — with the company reporting that they add between 4% and 8% to sales at sites where they are introduced. McDonald's is also considering kerbside service whereby customers order from the app and when they park in a designated bay at the restaurant the food is then brought to their car.





PIZZA HUT CHATBOT

Social media ordering has been made possible from Pizza Hut following its introduction of chatbots within Facebook Messenger and on Twitter. Hungry customers can place orders through these platforms, which take into account the person's location whereby they only see local menu options. The chatbot can also answer basic questions about orders and provide full details of any promotions and special offers that might be available.





FACEBOOK MESSENGER PAYMENTS

Just when you thought Facebook couldn't get any more pervasive – along comes a Facebook Messenger payment solution. Developed in 2016 and now trialling in the US the tool can prompt users to send or request money transfers by noticing when a payment is being discussed on Facebook. The Al-driven tool responds to the user with the M logo and suggests how to complete the payment. The Messenger function can also make other suggestions based on noticing what is being discussed online – including ordering a taxi, sharing their location, or starting an opinion poll. Currently available on iOS and Android the service will be rolled out to other countries.





PANASONIC - ROBOTIC CHECK OUT

Panasonic has developed a system for bagging and scanning groceries that dispenses with the need for a human cashier. Although everyone knows how to use self-checkout tills, the process of bagging the products has remained in the hands of the customer, however with the new Panasonic product a computerised basket automatically detects what has been purchased and calculates the price before the bottom of the basket slides away dropping all the products into a waiting shopping bag.



SHOP DIRECT CONVERSATIONAL TECHNOLOGY

Shop Direct continues to push ahead with developing ever more intelligent conversational user interfaces for its Very brand that more recently involves it working with the IBM Watson solution to incorporate natural language into the interaction. This moves it on from its first Very Assistant iteration that has relied on multiple action options. The more obvious uses for conversational interfaces are tracking orders, placing orders and general queries but eventually there is the potential that they could handle all interactions as the solution learns from its previous experiences.



BODYLAB 3D BODY MODELLING

Now working with cutting edge designers like Chromat, the team at US-based BodyLab have developed an embeddable web interface that uses AI and algorithms to extract 3D body data from 2D pictures. Just one photo is enough to generate the 19 highly-accurate measurements that can then be used to size clothes. The increased accuracy means that customers should be able to predict with much greater certainty if a garment will fit ensuring that the inconvenience and cost to retailers of dealing with returned items is minimised. It also means that a customer could potentially seek out a fashion blogger, for example, with a near 'body match' and then shop that wardrobe knowing that all the clothes will fit.



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TOYOTA / ZEROLIGHT

Toyota is among a number of car manufacturers that are working with visualisation platform ZeroLight, which enables potential car buyers to put on a headset in say an office, shopping centre or small city centre dealership and be transported into the car. The car can be examined closely and the configurations determined by the user. ZeroLight has been integrated into Amazon Alexa whereby car buyers can explore, interact and make changes to the model being viewed by simple voice commands.



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TALLY ROBOT

Robots are starting to be used for stock-checking and ensuring prices are accurate on products as well as making sure they are correctly placed on the shelves. Simbe Robotics has developed the Tally robot that is being piloted by a number of major retailers. It uses both sensor technology (from Intel) as well as high quality cameras that enable it to take detailed images of the products in-store and compare this data with the expected situation based on planograms and stored product details. Such technologies are massively quicker than humans at undertaking these tasks and unlike other automated solutions the new visual-based robots do not rely on RFID tags on products.





NIKE / SMARTPIXELS

Nike is trialling Smartpixels technology that enables any object to be transformed into a screen. The retailer is able to create an immersive and rich experience in-store through the solution combining augmented reality and video-mapping techniques. Interaction can take place through a tablet, smart-phone, PC or even gestures. Initially on trial at its flagship store on the Champs-Elysees in Paris customers can place a running shoe onto a stand and a projector on the device will recognise the model and configure itself accordingly to then enable the shopper to choose colour or texture combinations on a tablet. The results are then projected onto the shoe, mimicking the final result.



SAINSBURY'S / OLIO

After a successful six-week trial in two stores, Sainsbury's widened its initiative with Olio. The initial trial saw 10,000 items of food shared out, which would otherwise have been wasted. Local residents download the Olio app, which informs them when surplus food is available from local branches of Sainsbury's. Volunteers upload pictures of the food items onto the app, which users can then select before picking up from one of the participating local branches. Olio works independently in some large UK cities but the Sainsbury's tie-up is the first of its kind with a major retailer.



SEPHORA TIP STORE

Beauty retailer Sephora continues to introduce technology initiatives into its stores and the latest iteration involves its new store called 'Beauty TIP Workshop' that promotes 'Teach, Inspire and Play'. It is rolling out the concept, which includes a workshop with iPad stations where customers can take group beauty classes, experiment with products and share looks online. The store also has InstaScent that gives customers a whiff of 18 scent families and narrows down their preferences to develop a tailored perfume. Customers who book a makeover receive an emailed interactive record of their experience and details the products they tried.



STAPLES / IBM WATSON 'EASY BUTTON'

An 'Easy Button' service has been made available for Staples' trade customers across its business, including on its website and app, which uses the cognitive technology capability of IBM's Watson software to enable customers to verbally make orders, as well as ask questions on various areas such as the tracking of items, and requesting product recommendations. It takes their unstructured speech and works out the 'intent' of their question and from this determines how best to service them. Through machine learning the technology builds on its knowledge over time so its capabilities increase as it gains experience of dealing with customers' interactions. At this early stage it is simply taking "low class" tasks away from people but it will likely do a lot more for the Staples business in the future.



DOMINO'S IFTTT (IF THIS, THEN THAT)

Pizza producer Domino's has tied up with the IFTTT platform that can connect smart devices in people's homes with their pizza delivery when undertaken on the customer's smart-phone. IFTTT enables the creation of conditional interactions between apps and connected devices so the delivery of the pizza could trigger actions in various devices in the home such as turning on the porch lights ahead of the delivery arriving and unlocking automated garden gates to let the delivery person in.



WISESHELF

This solution has been developed to overcome the pain point of out-of-stocks and involves smart light sensors being fitted to standard shelves in-store that effectively enables them as Internet-of-Things stock monitors. The sensors on the shelf track the movement of each unit from a row of products in order to determine when the shelf is nearly empty and can then prompt a re-stocking of the item. The ability to retro-fit the solution onto existing shelves provides economic appeal to retailers.



MADE.COM / HULLABALOOK

Acting on the theory that finding products on retail websites is much harder than it needs to be, Made.com worked with technology firm Hullabalook to create a search engine unofficially called the 'sofa-sizer'. The tool aims to greatly speed up the selection process by reducing the need for customers to look through hundreds of items in product catalogues before going to look at the preferred ones in-store to then measure them to make sure they fit in the customers' home. The facility allows users to put measurements in as a search term via a measurement infographic or to choose an exact shade of colour from a colour spectrum which then brings up any correctly sized or coloured furniture.



IVYREVEL / GOOGLE

IvyRevel, the online brand owned by H&M, worked in conjunction with Google to develop a new mobile app that leverages the data it holds on customers to design them a bespoke dress. Entitled 'Coded Couture' the app uses Google's Snapshot API technology to monitor a consumer's personal lifestyle over a week before using it to design the perfect dress suited to the life they lead. Consumers enter basic preferences in advance to facilitate the design and can then buy their individually designed lvyRevel dress.



PIXONEYE PHOTO-SCANNING

London-based Israeli tech firm Pixoneye has developed unique technology using AI that allows the creation of a personalised customer profile through photos stored on individual's smart-phones. The company has developed an SDK (Software Development Kit) that clients can add to their apps, which analyses privately-held photos, and draws out data points to gain an understanding of who they are to build a profile. Only relevant content from third-parties is then passed to the consumer. Pixoneye claims that security concerns do not come into play because although the photos are examined for details, the apps never actually "see the photo," helping to therefore maintain privacy. The company also claims to be far less intrusive than Facebook and says that it has a 92% accuracy rate in basket prediction.



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JUST EAT / STARSHIP DELIVERY ROBOTS

Last-mile delivery solution Starship Technologies undertook its first commercial pilot with Just Eat in Greenwich that involved the fulfilment of take-away food orders to customers' homes from specific food providers. This has been followed up with a low key trial with a UK grocery retailer that is testing local deliveries within time-frames of five to 30 minutes. The four-mile an hour speed, limited carrying capacity and finite battery charge are limiting but the solution is arguably gaining more traction than legislation-bound drones at this early stage of developments.



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COCA COLA – DIGITAL SIGNAGE SYSTEMS

Working with Google-powered cloud technologies, Coca Cola has attempted to upgrade its heritage of striking marketing design for the digital age. The result is a system of digital signage that can be used on any HDMI-ready display, for example the ends of aisles, restaurant boards and cinematic posters, and which tailors videos, e-coupons and similar content messaging to shoppers approaching the displays based on the data on their smart-phones. Initially piloted in 250 stores within the US-based Albertson's grocery chain, the new system received a very positive response including a one-month return on investment.



36 580

WESTFIELD – CUSTOMIZED ADVERTISING SCREENS

Described by Westfield as a concept that brick and mortar retailers could once only have dreamed about the six foot tall, high definition screens located in their shopping centres scan consumers as they pass by and access their smart-phone data and facial imaging. With this data the individuals are categorised by demographic and are then presented with a personalised advertising offering from brands in that particular Westfield centre.



LEGO DIGITAL STORE

The new London flagship Lego store has a number of digital components including the 'mosaic maker' that enables customers to enter a booth, have their face scanned electronically, and in a little over 10 minutes they receive a set of Lego bricks with which to construct their own portrait. The store windows are also filled with digital screens and in-store customers can browse a digital catalogue of all Lego goods and then message the store assistants who receive the alert on their smart watches.



BENETTON / MERCAUX

Benetton is among the retailers using the Mercaux in-store technology solution for fashion businesses that can increase in-store sales by as much as 11%. The simple architecture underpinning the solution enables it to be seamlessly integrated with existing product databases, inventory, and e-commerce systems. It supports sales employees by providing the necessary merchandise information via their tablets including inventory levels, cross-sell suggestions, alternative product recommendations, and highlight complete outfits. Mercaux also allows head office managers to control and affect in-store selling and merchandising in real-time, and undertake customer analytics.



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THREAD STUDIO VIRTUAL REALITY

Using the HTC Vive VR headset customers can purchase clothing from Thread Studio in a new, interactive way. The technology helps customers to design their own t-shirts with the ability to flip through colour swatches, lay out their designs, and model their creations on virtual mannequins. Images of the final creation can be shared on social media before being printed and delivered. The design can also be sold online via Shopify.



40 553

MARRIOTT - EXPERIMENTAL LAB HOTEL

The Marriott Hotel chain has transformed one of its hotels into an experimental lab aimed at Millennials and Generation Z visitors who can give any innovations the thumbs-up or thumbs-down. Buttons and screens are located around the hotel allowing for guests to constantly vote on the success of new ideas. Among the innovations looking for approval are lofty common spaces, where guests can congregate, independent coffee shops replacing large chains in the lobby, boutique gym classes taught at the gym by local teachers, and wooden floors rather than carpets. Reactions at the laboratory hotel will result in changes being made across the chain if approval ratings are high enough.





ASOS / W

ASOS/WISHROUND

Through its accelerator programme ASOS is working with Wishround that applies crowd-sourcing to the act of giving gifts. Individuals create wish lists and their friends then make selections from this and can contribute funds to pay for the items. The solution takes advantage of social media platforms to facilitate the sharing of links between friends. Retailers can work with Wishround by adding it as a payment method online.



42

BMW / GOOGLE AR SHOPPING

Car manufacturer BMW has been working with Google to help it offset declining footfall in its physical dealerships. Using Google's 3D scanning project Tango customers can use an app to display certain BMW models on their smart-phone screens, which they can then walk around. The app enables the virtual cars to be placed in specific locations in order to replicate a real-life experience. The colours, trims and wheels can all be changed to reflect customer's preferences. Customers can also step inside the vehicle and turn on the lights and the radio to add to the overall experience.



43

B&Q – AVATAR CUSTOMER ADVICE CHANNEL

Responding to statistics that suggest British people are too shy to ask for help from a real person and would rather ask online, B&Q has combined the two in the form of an avatar. Each avatar – known as an iB&Q – is actually twinned with a real life member of staff, appears with an orange apron and a name tag and will deliver advice in real time online straight into the customers' home as they are undertaking the DIY activity or purchasing products online. Trialled at B&Q Wallasey over a Bank Holiday weekend in 2016, employees took over the customer call centre and social media to facilitate the trial and provide the advice that the avatar then presents to the customer.



44 536

ESPRIT / FOKO

Fashion business Esprit has been using merchandising tool Foko to give it a clear view of what exactly is happening at each of it outlets in order to boost merchandising compliance and in turn improve the in-store experience for customers. The beauty of Foko is its design as an Instagram-like photo messaging app that gives it a recognisable interface, which engenders its usage among store employees. Customers such as Esprit have reported 75% less time spent on merchandising validation and 40% reduced wastage on email communications.



CLOVERLEAF

The ability to gain real-time feedback, and to react immediately to this knowledge in-store, is becoming a reality through the emergence of technology solutions that involve 'Emotional Intelligence' capabilities. Cloverleaf has created an intelligent digital signage solution that can be retro-fitted onto existing store shelves. It is able to tailor content to specific individuals based on their facial expressions and their demographics. If they behave in a certain way to a particular type of content displayed then this can drive other actions and selected content. Cloverleaf holds a record of different facial expressions and demographic information, which it utilises within its algorithms.



EBAY – FACIAL CODING TECHNOLOGY

Ebay has tested an 'emotionally-powered' store in London that was set up in conjunction with American technology firm Lightwave. Customers were asked to enter a booth in the store, sign up with an email address, and then think of the person that they wished to buy a present for. They were then shown a series of 12 different items – while cameras inside the booth scanned the facial expressions on viewing the items. After five minutes the option was given to look through the items again and this time the cameras recorded how long users looked at each item. After the visit, the booth generated an email to the customer with a list of preferred presents.



TED BAKER INTERACTIVE WINDOWS

Ted Baker has been using interactive windows in a variety of ways to engage with passers-by. For its Spring/Summer collection a number of its European stores had technology installed to enable photographs to be taken of people's faces that were then used in the window's set. The entire windows also converted into speakers to play music into the streets. For the Autumn/Winter collection the company partnered with Google to gamify an interaction between specially selected store windows and the Ted Baker app. Geo-location technology and Google App's voice search tool were used to link together the digital experience and the group's physical stores.



CHARLOTTE TILBURY /
HOLITION MAGIC MIRRORS

Mixing physical and virtual is being successfully undertaken at the Westfield White City store of Charlotte Tilbury where the installation of two 'magic mirrors' is enhancing the in-store experience of customers. The mirrors are used in conjunction with the brand's expert make-up artists who are able to virtually apply make-up onto the customer's faces. Developer Holition has ensured that social is at the heart of the experience by enabling photos of the made-up shopper to be shared on various platforms.



DIESEL - NEW CONCEPT STORE

Diesel has showcased a new form of augmented reality shopping at its new Knightsbridge concept Diesel outlet, which features multi-media reality content developed by retail marketing agency Savvy. Customers can use virtual reality headsets along with enjoying various other immersive technology-led experiences curated around the seasonal Diesel theme of 'Fur Me, Fur You'. Customer feedback reveals how they felt the feeling of the wind in their hair and the smell of candyfloss as they entered the fantasy world of 'Furland'.



50452

PIZZA HUT / NOVALIA DJ PIZZA BOX

In the very competitive pizza delivery market, Pizza Hut has upped the ante by teaming up with electronics firm Novalia to develop a battery-powered box which connects to a customer's device via Bluetooth and is compatible with DJ software allowing customers to scratch, rewind, cross fade and other DJ-ing techniques when it flattens out to a turntable. The pizza box is an ordinary box in every way except that it is also set up with a mixer, touch-sensitive deck, and control buttons. The box features music from Grime stars and celebrity DJ's.



INNOVATION RANKINGS

TOP 15 INTERNATIONAL INNOVATIONS



ALIBABA BUY+ VIRTUAL MALL

Within one hour of the virtual mall debuting from Alibaba in November 2016, 30,000 people had already tried it, and three days after that a total of eight million shoppers had used it. Part of the inexorable shift from 2D to 3D VR shopping, according to Alibaba, the company made 150,000 cardboard VR headsets for the launch, which allows customers to view 3D versions of products before buying them via their smart-phones. The phones slot into the back of the headset. Instead of clicking on a product to select it, users simply stare at it through the goggles till the Buy Now button pops up. For customers that had already downloaded and purchased via Alibaba's Taobao app the shipping address had been saved and they were ready to go. After entering the password on Alipay the purchase was completed.



JD.COM - DELIVERIES BY DRONE

Chinese company JD.com has begun to do what other rivals can only talk about – actually use drones for remote rural deliveries. Trialling near the founder's home in East China, the drones are initially taking parcels from central warehouses to rural depots and still require existing delivery solutions for the final journey. However, they are proving valuable as they take 20 minutes to make a journey, which takes hours by van and can carry 33lbs of weight at a time travelling 34 mph. It is reported that the delivery cost of using the drones has halved, which means other retailers will no doubt be taking notice of JD.com's progress.



MEDIAMARKT / PHILIPS LIGHTING STORE GUIDE APP

The major shopper bugbear of not being able to locate products in-store has been solved at the MediaMarkt flagship outlet in the Netherlands where a 'Store Guide' app has been developed to help shoppers find goods. Rather than having to kit out the store with Beacons the outlet instead utilises Philips LED lighting that acts as an indoor positioning system by transmitting light (that is imperceptible to the human eye) to the camera on customers' smart-phones. This helps guide them to the relevant products in the store.



ALOFT HOTELS - VOICE ACTIVATED ROOMS

Boutique hotel chain Aloft Hotels has launched an app — initially in two US properties - to run in conjunction with Apple's Siri voice interface on iPads that are given to each guest at check-in. The app allows the guest to personalise conditions in the room including lighting and heating through voice command, for example four lighting settings can be accessed such as Re:Lax and Re:Vive. Any security concerns over guest data are allayed because the app recognises when a guest checks-out and wipes all user data ready for the next person.



MACY'S 'ON CALL'

Trialled at 10 US-based locations, Macy's On Call is a mobile web tool, which enables shoppers to interact with an Al-powered platform via their smart-phone. Customers can ask 'natural language' questions about the store's layout and product assortment and then receive instant information about where the brand items are that they require or where say children's shoes are located. This is important for stores like Macy's where each unit has a completely different layout. The tool learns from every question — and will in time be able to predict the most popular questions as they are typed with default answers provided immediately. Although in English currently, Spanish language features will be added to the Miami-based outlets. At five of the 10 trialling stores consumers can also request immediate face-to-face help from an assistant via Macy's On Call.





ICA SUPERMARKETS – REPLACING PRODUCT STICKERS WITH LASERS

In an effort to reduce the environmental impact of using plastic stickers and plastic packaging on food stuffs, Swedish giant ICA Supermarkets has trialled laser marking on selected products such as avocados and sweet potatoes – chosen because their skin is not eaten but discarded. The laser marking details the country of origin, name and barcode number, and is only visible as a slight tattoo effect on the product, which does not permeate the skin. Initial trials have been extended for a longer period when it will be applied to more controversial items such as apples where the skin is eaten and consumers will need to be convinced that the slight mark does not affect the product.





LOWE'S / FELLOW ROBOTS

Joining the growing list of retailers making use of robotic assistance, I I of Lowe's DIY stores in California are introducing retail service robots. Fellow Robots has worked with Lowe's to design the LoweBot – standing at five foot tall it is able to navigate around the store's aisles on its own. Like a human employee, it greets shoppers, asks them if they require assistance, and shows them to the correct product aisle. They contain a 3D scanner that allows them to recognise the human frame, they utilise speech recognition, and have incorporated a screen showing product information. In the future a possible 25 different languages could be understood by the LoweBot.





RENT THE RUNWAY DIGITAL STORE CONCEPT

Dress rentals company Rent the Runway recently re-designed its New York store with Samsung to appeal to its core customer - the full-time working woman. Customers check-in to the shop by tablet and receive a text notification to alert them when the first fitting room is free. Throughout the store there are immersive displays including four huge virtual closets, which allow customers to look through dresses not on display. An even bigger video wall carries editorial content on the brand and its community. Changing rooms are fitted with Samsung mirror displays, which allow immediate interaction with sales assistants.



CALIFORNIA FRESH MARKET / FUTUREPROOF RETAIL

Recently opened grocery shop, California Fresh Market, is offering customers a way of avoiding time wasting queues, which involves scanning barcodes on a mobile app to add real time purchases digitally before they check-out. Developed by mobile developer FutureProof Retail, shoppers can keep a running tally on the cost of the shop while the app also informs them about special offers and any other relevant information. On check-out, users scan a QR code at the front of the store, which then allows payment by credit card or Apple Pay.



BEST BUY ROBOTIC ARM

A New York outlet of Best Buy has installed a large mechanical arm – nicknamed Chloe - which can fulfil orders without the need for staff intervention, undertake a stock-take and also serve customers out of hours when the shop is closed. Best Buy says its customers enjoy the interaction with the machine, which works in exactly the same way as a vending machine, and is even preferable for some people with niche tastes who are often shy of being judged by human employees. The robotic arm is housed behind a glass-fronted wall and purchasers access the products through a touch-screen in-store. For the out of hours service there are also touch-screens located outside the entrance of the shop allowing for instant consumer wish fulfilment in the middle of the night.



NORDSTROM 'RESERVE AND TRY IN STORE'

Adding another level of customer service between digital and physical shopping, US-based Nordstrom has developed a facility whereby customers can reserve an item at their nearest store, go and try it on, and then make a decision on purchasing. Trialled originally in Nordstrom stores in Washington State, the company plans to roll-out the idea to many more stores. The system allows shoppers to see which items are available at a nearby store and to set aside any items of interest, within two hours a text will be sent that items are ready for inspection and the customer then heads over to try on their selections.



SHOES OF PREY / NORDSTROM

The rise of on-demand and mass customisation could be the ultimate solution for retailers as it effectively enables them to have an infinite number of products available to buy online even though the goods do not physically exist. Rather than having products sitting in a warehouse they are instead produced on-demand following a purchase by the customer. Shoes of Prey has an arrangement with US-based department store Nordstrom that involves the shoe retailer populating Nordstrom's website with proposed (but unmade) designs for shoes. Only when they are bought does the manufacture actually take place at Shoes of Prey's own production facility.

13 555

NEIMAN MARCUS MEMORY MAKE-OVER MIRRORS

Every Neiman Marcus store is individually designed but its new Fort Worth iteration is especially technology-focused. In the cosmetics department the company has done away with traditional glass cases in favour of self-service counters and has introduced eight Memory Makeover mirrors. Customers are filmed having make-up applied by the sales assistants and these videos are then sent to the user's phone for future reference. Twenty brands are pre-loaded in the mirrors so customers can purchase these products straight away when they view the playback video. Two dressing rooms also have the Memory Mirrors to enable customers to share outfits with friends while a special sunglass-focused mirror allows videotaping of multiple looks to enable purchasing decisions to be made later at leisure.



14 544

CO-OP ITALIA / AVANADE DIGITAL STORE CONCEPT

Opened in late-2016, the futuristic Co-op Italia store in Milan is the result of a collaboration with the Accenture and Microsoft joint-venture company Avanade. The new design has reinvented the customer experience through the likes of interactive tables full of products that allow the customer to see augmented information about any of the items simply by waving their hand over a monitor, which then displays nutritional and provenance details. Traditional shelving has also been changed to a vertical system involving an augmented label, again associated with a touch-system, which allows shoppers to navigate through product categories, and filter their product searches. Large data screens through the store show content including special offers, social media information, highlight the top-selling products and display cooking suggestions.



15 527

THE CONTAINER STORE / THEATRO

Italian-based technology firm Theatro has developed a Siri-like app that is being used by retailers including The Container Store in the US to improve customer service. Using voice-controlled wearables the in-store employees across the retailer's estate can be easily connected in order that their expertise and specialisms can be called upon to help any employee when addressing specific customer queries.



TOP 20: INNOVATIVE

CRITERIA

The level of innovation demonstrated in the solution. The score was determined by whether it is truly out there on its own leading the pack or whether there is competition from other similar innovations.

- AMAZON GO
- 2 AMAZON ECHO
- 3 AMAZON LOGISTICS
- MERCEDES DRONES DELIVERY VAN
- 5 DELIVEROO ROOBOX
- 6 MASTERCARD SELFIE PAYMENT VERIFICATION
- OCADO WAREHOUSE ROBOTICS
- 8 PINTEREST LENS
- 9 JUST EAT / STARSHIP DELIVERY ROBOTS
- 10 TOOGOODTOGO
- DOMINO'S IFTTT (IF THIS, THEN THAT)
- 12 PANASONIC ROBOTIC CHECK OUT
- 13 AMAZON DASH
- 14 NIKE / SMARTPIXELS
- 15 IVYREVEL / GOOGLE
- 16 FARFETCH 'STORE OF THE FUTURE'
- 17 JAGUAR IN-CAR PAYMENTS SYSTEM
- 18 CLOVERLEAF
- PIXONEYE PHOTO-SCANNING
- 20 TALLY ROBOT





TOP 20: POTENTIALLY COMMERCIAL

CRITERIA

The commercial value the innovation has delivered to retailers using the solution to date and what value could it potentially create for retailers in the future if widely adopted.

- AMAZON ECHO
- STARBUCKS MOBILE ORDER & PAY
- 3 AMAZON LOGISTICS
- 4 OCADO WAREHOUSE ROBOTICS
- 5 DELIVEROO ROOBOX
- 6 OTTO / BLUE YONDER
- 7 AMAZON GO
- 8 TESCO / BLACK SWAN
- 9 AMAZON DASH
- 10 MERCEDES DRONES DELIVERY VAN
- MCDONALD'S MOBILE ORDERING
- 12 NET-A-PORTER / WHATSAPP
- **MASTERCARD SELFIE PAYMENT VERIFICATION**
- 14 JAGUAR IN-CAR PAYMENTS SYSTEM
- 15 FACEBOOK MESSENGER PAYMENTS
- 16 PIZZA HUT CHATBOT
- 17 TALLY ROBOT
- 18 COCA COLA DIGITAL SIGNAGE SYSTEMS
- 19 FARFETCH 'STORE OF THE FUTURE'
- 20 BENETTON / MERCAUX





TOP 20: POTENTIAL BENEFIT

CRITERIA

The level of benefit the innovation is delivering within the retailers' organisation(s). The innovation has a material impact that could also potentially increase over time.

- AMAZON ECHO
- 2 AMAZON GO
- JAGUAR IN-CAR PAYMENTS SYSTEM
- STARBUCKS MOBILE ORDER & PAY
- 5 DELIVEROO ROOBOX
- 6 NET-A-PORTER / WHATSAPP
- MASTERCARD SELFIE PAYMENT VERIFICATION
- 8 MCDONALD'S MOBILE ORDERING
- 9 TOOGOODTOGO
- 10 PINTEREST LENS
- PIZZA HUT CHATBOT
- 12 SAINSBURY'S / OLIO
- 13 AMAZON DASH
- 14 FACEBOOK MESSENGER PAYMENTS
- 15 AMAZON LOGISTICS
- 16 SHOP DIRECT CONVERSATIONAL TECHNOLOGY
- BODYLAB 3D BODY MODELLING
- 18 SEPHORA TIP STORE
- 19 MADE.COM / HULLABALOOK
- 20 FARFETCH 'STORE OF THE FUTURE'





TOP 20: POTENTIAL INFLUENCE

CRITERIA

The level of impact the innovation has, or could potentially have, on the retailer(s) using it and possibly on the broader retail sector. The impact the innovation could have as the proposition is built-out and is possibly adopted more widely in the marketplace.

- AMAZON ECHO
- 2 AMAZON GO
- 3 AMAZON LOGISTICS
- 4 STARBUCKS MOBILE ORDER & PAY
- OCADO WAREHOUSE ROBOTICS
- 6 OTTO / BLUE YONDER
- 7 TESCO / BLACK SWAN
- 8 NET-A-PORTER / WHATSAPP
- 9 MASTERCARD SELFIE PAYMENT VERIFICATION
- 10 MERCEDES DRONES DELIVERY VAN
- **III** DELIVEROO ROOBOX
- 12 AMAZON DASH
- **I3** FARFETCH 'STORE OF THE FUTURE'
- 14 FACEBOOK MESSENGER PAYMENTS
- 15 JAGUAR IN-CAR PAYMENTS SYSTEM
- 16 COCA COLA DIGITAL SIGNAGE SYSTEMS
- 17 TALLY ROBOT
- 18 MCDONALD'S MOBILE ORDERING
- 19 PIZZA HUT CHATBOT
- 20 MADE.COM / HULLABALOOK







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