

# Digital Retail Innovations 2022

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#### Glynn Davis Retail Insider

Retailers have certainly had to deal with an onslaught of challenges over the past 12 months from Covid-19, supply chain shortages, and the cost-of-living crisis that

are all contributing to falling consumer confidence. But thankfully against that tough backdrop retailers have retained their own confidence to continue to innovate.

They have focused on improving their financial positions through operational efficiency and reducing waste through environmental initiatives and also engendering greater loyalty through enriching their customers' journeys.

Innovations around these key themes very much run through this year's Digital Retail Innovations report that we have pleasure in bringing to you with a new sponsor, Trust Systems. What has not changed this year though is the report's long-term underlying mission of highlighting the most interesting and potentially impactful digitally-driven innovations in the retail industry.

The content of the 2022 report highlights the level of innovation we have seen through the year and the concentration companies have had on key areas like back-end logistics in order to boost efficiency, personalisation solutions to better tailor their offers to individual customers, and in-store digital solutions that are helping create the store of the future.

Innovations around the latter are particularly well represented this year as there has been a realisation that after the boost Covid-19 gave to online sales there is still plenty of life left in good old physical retail space – as long as it is infused with digital technology. In the top 20 we have the likes of ieye Optic kiosks, Envision glasses, Aldi Shop & Go, Tesco GetGo, Asda/Goodmaps, and Amazon Smart Dash Carts all bent on improving the real-life experience for shoppers.

But it is the environmental solution TooGoodToGo that tops this year's list having moved up from fourth spot in 2021, which highlights how it continues to build-out its model and work with a growing number of retailers and food companies to reduce waste. Also appearing in the top 20 is another food waste app OLIO, which again featured prominently last year.

There was also a fair smattering of cutting-edge robotics and automation innovations in evidence this year, undoubtedly driven by the ongoing chronic shortage of employees in retail and hospitality, but there was a distinct failure of solutions around the metaverse to feature this year.

The innovations in the report have been ranked by an impressive Advisory Panel, with experience drawn from across all fields of retail and technology. This gives the report a robust methodology that provides it with the credibility to ensure it is hopefully viewed as a valuable resource.

Each of the Panel independently scored the 60 innovations in the report across four different criteria – how innovative, how potentially commercial, potential influence across the sector, and potential benefit to consumers – with the results shown in separate ranked tables as well as the main table based on the grand totals.

Each member of the Advisory Panel played a vital part in the production of the report and I would like to thank them for the time they gave up during the scoring process. I would also very much like to thank, and to welcome, Trust Systems to this first year of its sponsorship of the report. It has been a great pleasure for Retail Insider to work with them to create what is a much valued publication within the industry.

#### **Glynn Davis**

Retail Insider / @GlynnDavis



#### Mike Dowson Trust Systems

If the past couple of years has taught us anything it's that the balance can be swung in an instance - retailers need to be in a position to meet the unexpected

and ensure they build businesses that can sustain and flex against uncertainty and an ever changing landscape. Retailers who are thriving are those that have taken positive steps and innovated in order to stay relevant. This report acknowledges how digital innovation is leading the retail sector into the future.

Over our extensive years working with retailers we still see the important role of physical stores, but this needs to be closely aligned with their online presence. Consumers want a blended experience, your instore colleagues need the tools and knowledge to add value to the physical experience and ensure fundamentally your operations are streamlined to ensure you have the right stock and provide relevant messages. I don't want to see a product advertised at the store entrance to find it is not in stock at that store or 'Sold out.'

Retailers need a multi-faceted approach as I explain above, they need to invest in an effective operation, an amazing customer experience, and their people. A technology strategy that can be flexible, robust, work in real-time, harness data/intel and deliver longevity. By building on this and combining digital assets with operational tools the level of integration and consistency delivered will provide consumers with 'One Ultimate Experience' the Eden of retail. At the core of what we do is to deliver our customers technology solutions to drive business benefit. Crucial to this is the ability to listen, understand, challenge, collaborate in order to innovate.

Our passion is to use the best technology to make a difference. That is why we are proud to sponsor the Digital Innovation report as we believe in using Digital, Cloud and Mobile technology to reinvigorate, reinvent and refocus retail.

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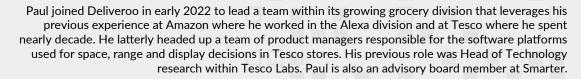
### **Advisory Panel**



Dr. Nadia Shouraboura Board Member at Ocado Group and Blue Yonder

Nadia is co-founder of QuantyCat and also sits on the boards of retailers and technology firms including Ocado Group, Blue Yonder, MTS Group, Ferguson and Formlabs. She is also an advisor to New Mountain Capital and Tosca. Prior to this she founded Hointer in 2012, which became part of Wesfarmers. This followed an eight year stint at Amazon where she had an influential role as Technology Vice President of its global supply chain and fulfilment platform where she worked closely with founder Jeff Bezos.

# Paul Wilkinson Group Product Manager for Grocery Partners at Deliveroo







Andrew Fox Sales Director at Trust Systems

Andrew is Sales Director at Trust Systems, where he is on the leadership team tasked with helping customers and prospects utilise technology to enable business strategic goals. Andrew's experience and expertise is in the role of technology and how it supports customers and business outcomes. Before joining Trust Systems Andrew was at Timico, a managed network solution provider, as Unit Director. Prior to that he was at Vodafone for seven years as a Corporate Account Manager.

Jamie Crummie Co-Founder at Too Good To Go

Jamie co-founded Too Good To Go in 2016 and it has become the world's largest marketplace for surplus food. He has helped build out its activity around the globe and acquired 45 million users. He was named a Trailblazing Activist in the 50 Next class of 2021, One Young World's Entrepreneur of the Year in August 2020, one of Forbes 30 Under 30 in Europe in February 2019 and was shortlisted for the Entrepreneur For Good Award at the Natwest Great British Entrepreneur Awards 2019.





Jacqueline de Rojas CBE President at Digital Leaders

As well as being president of Digital Leaders Jacqueline holds non-executive roles at Rightmove, Costain, FDM Group, IFS AB, and Metapraxis. She was previously also president of techUK. The various awards she has received include a CBE for Services to International Trade in Technology. She also holds an advisory position at Merryck and is chair at the Institute of Coding.

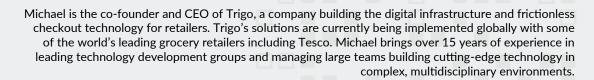
### **Advisory Panel**



Barney Wragg Founder & CEO at Karakuri

Barney founded Karakuri in late 2017 with the objective of building automated solutions for the foodservice industry and the company has to date developed two types of device of which one is currently in use within an Ocado facility. Previous roles include CEO of Really Useful Group, Global Head of Digital at EMI Music and a stint in business development at ARM. He is also co-founder of Bandnamevault.com and is an advisor to The Narrative Digital Studios and Stufish Limited.

#### Michael Gabay Co-Founder & CEO at Trigo



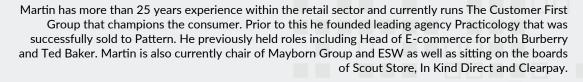




Sarah McVittie Co-Founder at Dressipi

Sarah is co-founder of fashion prediction platform Dressipi that has built up a roster of leading retail clients. She has been a leading force in the tech industry for over 15 years, which began with her building her first award-winning business SMS Q&A service Texperts. This was inspired by her first job working as an analyst at investment bank UBS. Texperts was sold in 2008 in a multi-million-pound deal.

# Martin Newman Founder at The Customer First Group







Miya Knights Author and Publisher

Miya undertakes a variety of roles including Director and Publisher of Retail Technology Magazine as well as undertaking speaking engagements and consulting. She was previously Global Content Strategist at Poq, which followed a near-three-year spell at Eagle Eye where she worked directly with the CEO to build the business across the retail and leisure sectors. Earlier experience included senior analyst roles at Planet Retail and IDC Retail Insights. Miya is the co-author of two business books.

### **Advisory Panel**



### Steve Robinson Founder & CEO at Omnicommerce

Steve founded Omnicommerce 11 years ago to help retailers with their strategies across channels and he works with many organisations. He also holds a number of other positions including founder of We Sell Sleep and Channel Mum and is a Venture Partner at Downing. Prior to this he held a variety of senior retail roles that have given him extensive digital experience including CEO of Achica, Customer Director at B&Q, CEO at M and M Direct, and Finance Director at Argos.

#### Daniel Lucht Global Research Director at Research Farm

Daniel leads a team of analysts and consultants at Research Farm 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 the latest industry trends, working with major FMCG companies and retailers. He previously worked at Verdict Research and Euromonitor International.



# Methodology

Consultation was undertaken with many individuals over the course of the past 12 months from all areas of the retail industry including analysts, consultants, advisors, investors, senior executives, and technologists.

From this rich well of knowledge was sourced a variety of digitally-driven innovations that helped build an initial long list of potential constituents of the final report. This was reduced down to 60 innovations from around the world and each one was scored independently by members of the Advisory Panel on four different criteria.

Collation of these scores across the criteria helped produce a ranked list of the 60 innovations. The report contains this list along with a Top 20 list of innovations for each of the individual criteria.

The Advisory Panel did not score any innovations with which they have a direct involvement.

#### 1. How 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. How Potentially Commercial?

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

#### 3. What Potential Benefits?

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

#### 4. What Potential Influence?

What is the level of impact the innovation is having, or could potentially have, on the retailers 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?

### **Innovation Rankings**

# Top 60 Global Innovations



#### TooGoodToGo / Greggs

Food waste app TooGoodToGo continues its quest to work with major retailers to divert food away from bins. The tie-up with Greggs was eagerly anticipated by customers given the bakers' iconic status and to date more than one million of the so-called 'magic bags' (essentially mystery bags purchased for a fixed price filled with unsold food) have been sold. This equates

to 6,000 tons of food since its launch last year. And in a departure from its usual food partnerships TooGoodToGo also launched the 'magic pint' in 2022 with Greene King. The scheme allows users to buy a re-usable bag for £5.75 and then fill it up with up to four pints of excess cask ale – it had a very successful trial period and is now due to be rolled out to 650 Greene King pubs in 2022. TooGoodToGo reported growth of over 100% for each month in the first half of 2022.



#### **Walmart Logistics**

Walmart continues to boost its logistics capability with a number of initiatives undertaken during the past year. The US-based retailer expanded its partnership with warehouse automation specialist Symbiotic with the purchase of a 62.2% stake in the company and the decision to roll-out the Al-powered robotics tech and automation

platform to all 42 of Walmart's regional distribution centres. It has also begun deliveries to some of its Sam's Club outlets in Texas using autonomous trucks from Gatik. The self-driving trucks initially have a safety driver aboard but the plan is to eventually remove them. In addition, Walmart is to roll out a drone delivery service to six US states, with 100,000 of its products available for delivery using the service that will cost \$3.99 per delivery.



#### **Envision Glasses**

Smart glasses from Envision enable blind and visually impaired people to better understand the space around them, which can include shops. The solution is built on the enterprise edition of Google Glass, and uses the camera and Al capability to scan objects, people and text, before then relaying that information via a small built-in speaker. Envision can also tell if

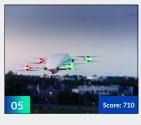
someone is approaching and describe what is in a room. Another features lets the user start a video call with friends and family who can then describe the environment around them and help them navigate around the space. The solution requires the Envision app to be open and linked to the glasses via Bluetooth as well as connecting them to Wi-Fi.



#### ieye Optics Kiosks / Sony Digital Imaging

A tech company from Sweden, ieye, has leveraged technology from Sony Digital Imaging in its quest to shake-up the world of eye testing. Using kiosks that are located conveniently in shopping centres, supermarkets and pharmacies, the new digitised eye tests take only five minutes instead of the usual half an hour or more for a traditional optician-based

test. Glasses are delivered 10 days later and costs on average are 80% cheaper. Data collected through the test is always passed to a licensed optician who will then make the final prescription but the new algorithmic vision test along with the virtual try on provided by Sony's facial tracking technology is a perfect modern marriage of fashion and health.



#### Manna Drone Deliveries

Ireland-based drone specialists Manna began delivering groceries to customers in its trial Irish areas several years ago and has now completed over 100,000 drop offs. Tesco, Just Eat and medical supplies and coffee are just some of the products that Manna now delivers to its customers with an average delivery time of two to three minutes once the drone is packed. In

2021 the company secured \$25 million in funding from investors who believe in its US and European expansion roll-out plan. Manna founder tech entrepreneur Bobby Healy predicts 50,000 drones will be needed to supply around 10% of the UK market as it expands. Samsung and Ben & Jerry's are among other big names to have signed up.



#### **Amazon Logistics**

Amazon continues to commit serious investment to its logistics and fulfilment divisions that includes the release of robotic solutions developed by Kiva Systems that it acquired in 2012. The Proteus autonomous mobile robot sits underneath carts full of packages and powers them around the company's fulfilment centres. It will be working

alongside Cardinal the mechanical arm that uses various grippers, which are controlled by Al and computer vision, to pick up packages, read their labels, and place them on a cart. Amazon is also rolling out the first Rivian electric vans and expects to have 10,000 on the road by year-end. It also continues to build out its drone delivery programme with plans to drop packages to 1.300 customers this year who will have selected from around 3,000 items that weigh under five pounds.



#### Aldi Shop & Go

Discount supermarket Aldi opened its first checkout-free store within the UK in Greenwich using technology from AiFi that specialises in Al for retail. Using Al-powered cameras located throughout the store it has been possible to monitor every item a shopper picks up and puts down. The technology has been sufficiently robust to work across the full

Aldi range in a store that measures 5,000 sq ft. The accuracy levels have been around 99% and through the Al capability this continues to improve. The company intends to learn as much as possible from this first outlet before it makes any decisions on rolling the concept out to further stores.



#### Tesco GetGo

Following a trial at its head office Tesco has opened its first public GetGo checkout-free store in central London that it has developed with tech firm Trigo. From within the Tesco.com app customers can check into the store and then as they place goods in their shopping basket a combination of cameras and weight sensors on shelves determines what

they are purchasing. When they leave the store their account is automatically deducted by the relevant amount. The first store is deemed to be a trial and plans for further frictionless outlets will be determined by the results of the pilot.



### Amazon Made for You and Virtual Try-On Technology

Amazon has been using technology to boost its clothing and accessories experience for shoppers with its Made for You service that enables customers to create clothing designed for their exact body measurements. Once they have supplied the relevant metrics and photos to the Amazon app – that uses 3D scan technology to determine body sizing - they can

customise shorts and t-shirts across length, colours, necklines and other fit options. The fit can also be visualised on an avatar that uses the Made for You virtual try-on technology. This has recently been extended to the sneaker category with shoppers simply selecting the Virtual Try On button that uses their phone's camera and AR technology to visualise the shoe on the customer. Initial brands involved include New Balance, Adidas, Puma and Lacoste.



#### **Raylo Tech Subscriptions**

Raylo is doing its bit to encourage green behaviour in consumers by adding a mobile phone subscription model designed to wean customers off upgrading to new technology each year. Users can choose their leasing period, whether to lease new or refurbished tech, and at the end of the term whether to upgrade, keep going or return the device.

Retailers who add Raylo Pay to their checkout can offer consumers another way to access their products on flexible monthly subscriptions, and Raylo Pay's zero fees mean retailers are paid in full upfront, risk-free. The green focus continues with plant-based packaging, electric vehicles and support for eco-charities.



#### **IKEA Kreativ**

Every year sees a new step on the technological path that IKEA is taking and in July 2022 the Swedish homeware brand unveiled its latest Al development - IKEA Kreativ, which can be accessed in-app or online. The company claims it is the industry's first mixed reality, self-service design experience. Customers can use their own imagery or IKEA photos to place

items within the AR room. The features are specially designed to offload the complex spatial calculations to the cloud meaning that cheaper and less powerful mobiles can also access IKEA Kreativ. The feature will turn room photographs into 3D digital playrooms with wide-angle views, which allow items to be removed or added with realistic size and perspective. Placing an item in the foreground, for example, will lead to the digital image factoring in the loss of light or visual intrusion. The new feature harnesses the most up-to-date scene perception technology.



#### Samsøe Samsøe Resell Tag

Scandinavian clothing company Samsøe
Samsøe has come up with a novel way to
motivate and encourage the resale of its
clothing. The simple solution involves
embedding a QR code into a tag that is sewn
into the lining of the clothing. When the owner
has finished with the garment they simply have
to scan the code and a pre-paid resale advert

will automatically be generated on the marketplaces of both Facebook and Instagram.



#### Asda / GoodMaps

At a trial in its tech-led Stevenage store Asda is piloting an app that is specifically built for blind and partially sighted customers. Developed by GoodMaps, shoppers can search for key places in-store such as toilets, tills and exits or can type in specific products. The user is then given a series of directions which can take the form of audio, enhanced visual, or touch commands

via the GoodMaps app. The technology can accurately place the user to within a metre and GoodMaps will also create the accurate digital maps and indoor positioning technology for the retailer.



#### Ziscuit Grocery Search Engine

During a cost-of-living crisis US-based Ziscuit has added value through it grocery search engine that identifies supermarkets close to the user that offer the lowest prices for goods on their shopping list. Shoppers simply input the items they are looking to buy, the distance they are willing to travel, and it then calculates the cheapest trip. This is based on the basket price

as well as the fuel costs to drive to and from the stores. Ziscuit includes the product prices of the major US grocery chains including Walmart, Kroger, Publix and Food Lion. The search engine is free to use and there are subscription options to be made available in the future.



#### Walmart InHome Delivery

Having successfully launched its InHome delivery service in 2019 Walmart has rapidly rolled out the proposition to 30 million households and hired 3,000 people to deliver these InHome orders. For \$148 per year the company will deliver groceries straight into customer's fridges along with general merchandise products too. It is also possible for

goods due for return to be collected by the delivery person. Customers who subscribe to the service simply select InHome when placing their order online. They will need to have a smart lock into which the delivery person can enter a unique code to gain entry. These individuals are fitted with cameras so shoppers can watch the process live from their phones.



#### Wayfair / Waymo Self-Driving Trucks

Wayfair is harnessing the fleet of Waymo autonomous trailer trucks for its deliveries. The six-week Wayfair trial taking place in Texas during the summer of 2022 will test out certain warehouse shipping routes between Houston and Dallas. Two Waymo employees will supervise the journeys on-board but will not drive the truck. The Google spin-off does not

want to build its own trucks but is instead working with existing companies to integrate its technology into their freight businesses. For the Wayfair tie-up this will mean working with JB Hunt's fleet of vehicles.



#### OLIO Food Waste App / Iceland

Food waste app OLIO has certainly made major strides in its core business of redistributing food that might otherwise get thrown away. A big partnership was struck with Iceland to use OLIO's food waste heroes, who pick up food nearing its sell by and share it via the app to any interested local users. A pilot with Iceland and sub-brand Food Warehouse proved

successful enough for Iceland MD Richard Walker to extend the scheme UK-wide. Other recent developments include a feature which allows users to lend/borrow items from neighbours. Less popular was its 'made' section, which allowed artisan cooks and makers to sell their goods to other people, which was fairly short-lived before being dropped.



#### Albertsons / Veeve Smart Shopping Trolleys

One of the latest in a line of new smart shopping carts comes from a partnership between US grocer Albertsons and Veeve, which was started by two former Amazon employees. After a successful pilot in California and Idaho Albertsons has now given the go-ahead for the roll-out to many more of its 2,000 stores. The trolleys, which use sensors

and cameras in conjunction with users' phones to store the orders and tally the shopping bill as the consumers move through the store, allow customers to checkout without queuing and can also help tackle the chronic shortage of staff by removing the need for cashiers on tills.



#### Ocado / Jones Food Company

The growth in the potential of vertical farming in the UK has not been quite matched by retailers' rush to invest in this new branch of fast agriculture – with the honourable exception among the big players of Ocado. The online grocery firm has invested in the Lincolnshire-based company Jones Food Company (JFC) before and last year announced

a larger second stake to help JFC - Europe's largest vertical farm - to build a second site outside Bristol. Vertical farms use hydroponics and renewable energy to grow herbs and leafy greens using a fraction of traditional water and energy costs but require a large amount of capital expenditure to provide the renewable energy and robotics required.



#### Starship Technologies / Co-op

In March the Co-op announced it was expanding its delivery trial with Starship Technologies into a further five outlets in the Northampton area, adding a further 20,000 customers to the delivery base. Orders are picked locally in-store and sent to customers within a fairly limited geographical range. Starship has been gradually building out its

footprint and proving the robustness of its pioneering model, with more than 1,000 robot delivery vehicles working in the US, UK and Estonia with demand having rapidly accelerated during the pandemic.



#### **Amazon Smart Dash Carts**

For shoppers daunted by the Just Walkout Stores of Amazon the company has an alternative checkout-free option with the smart Dash Cart that was originally launched in 2020 but has been updated this past year. The carts use Al-powered cameras and barcode scanners to identify what shoppers place in the trolley. The newer versions have greater capacity and

their ability to better locate themselves in-store enable the cart's touchscreen to be used to direct shoppers to required products and to display information on nearby items and to highlight deals. The carts are due to be rolled out to Amazon Fresh and Whole Foods outlets across the US.



#### Selfly Store

Finland-based sustainable-focused company Stora Enso has introduced another three iterations of its smart vending machines via its subsidiary Selfly. Available to clients such as sports centres/hotels/hospitals and workplaces as a canteen addition, the new models are Selfly Fresh, for ambient products, Selfly Cool for chilled items, and Selfly Frozen. The

unmanned and fully digitalised cabinets allow contactless on-the-go purchasing and users can also buy multiple items in one transaction instead of having to buy one item at a time. Selfly uses RFID technology to keep track of fresh food use-by dates, thereby significantly reducing food waste, as well as sensors and IoT technology.



#### InFarm / IKEA New Growing Centre

Infarm specialises in cloud-connected farming units, which use vastly less energy and water, in which can be grown 75 different salad, herb and fruit items within retail stores. It has this year partnered with three German IKEA stores to place their vertical farming units in the restaurants where guests can choose to top their meals with the fresh salads. In addition,

InFarm has invested in a new Growing Centre in Bedford, which will offer 5,500 sq m of growing space and cultivate 18 million plants per annum. This vertical farm will generate crops for the equivalent of 360,000 sq m of physical farmland.



#### Albertson's and Kraft Heinz / Snowflake

Albertsons and Kraft Heinz have struck up an arrangement with their mutual specialist cloud provider Snowflake that enables the sharing of data in real-time. Both companies have been established customers of the technology firm and the link-up of their data in the cloud means an update to Heinz product information leads to a real-time refresh across Albertsons stores

and systems. The data sharing initiative also enables Heinz to react to changes in the inventory levels within the grocer's outlets. The FMCG firm can swiftly act upon the data by moving goods into the relevant warehouses ahead of pushing them out to the required stores.



#### Co-op / Vynamic Age Verification

The Co-op has extended its trial of technology which initiates automatic age estimation when an age-restricted product is bought and enables an algorithm to estimate the consumer's age via a checkout photo without requiring a staff member to validate the transaction. The technology does not retain images and is not facial recognition but does aim to lessen the

abuse that store staff can face if they need to ask customers for identification. The time to checkout for purchasers is also reduced. The system is voluntary and customers can chose not to use it if they wish, meaning a staff member will need to be called. Diebold Nixon used technology from Yoti to develop the idea and the trial has been expanded into five of Co-op's Manchester-based shops. The Yoti technology was also being trialled by Morrison's, Tesco, Asda and Aldi during the first half of 2022



#### Pizza Hut / Hyper-Robotics Restaurant-in-a-box

Pizza Hut has been operating a restaurant-in-abox concept in the Israeli city of Bnei Dror based on technology from Hyper-Robotics that specialises in containerised restaurants. It includes two robotic dispensing arms, dispensers for up to 12 toppings, and 30 warming cabinets. Customers initiate their order from a touchscreen kiosk on the

restaurant's exterior or through the Pizza Hut app, which triggers the unmanned creation of the pizza. The cooked pizza is handed to the customer by an employee but this is to be automated in future versions of the technology. The restaurant's initial capability is for 50 pizzas per hour.



#### InCube / Great Portland Estates

InCube has developed a solution that connects myriad building technologies together including lighting, ventilation systems, heating and door access to more intelligently manage resources. The solution is also being developed to use AI to predict future use of buildings based on previous activities within the property that will enable the more efficient use of space and

utilities. InCube is working with companies including Great Portland Estates to create more sustainable buildings for tenants. To date its activities have involved office space but this will grow to also include shopping centres.



#### Sainsbury's / Lollipop Meal Planning

Sainsbury's is the first major food retailer to partner with Lollipop whose app enables people to plan meals according to their dietary requirements. Customers choose from thousands of recipes and ingredients that can be ordered directly from Sainsbury's as the app connects into the grocer's e-commerce platform. The service is free-to-use for

consumers, with Lollipop taking a cut of the order value. When other grocers are added the user will be able to select their preferred retailer who will then deliver the order once a slot has been chosen.



#### Carhartt / DXM Customisable Clothing

US workwear brand Carhartt has responded to the changing nature of the workplace by introducing customisable clothing. Historically the company produced very few sizes in its clothing but after responding to feedback from the Carhartt Crew (a voluntary focus group who road-test the company's clothing) Carhartt partnered with DXM to offer a localised

on-demand manufacturing option. The DXM software is embedded within the brand's website and enables, for example, canvas weights and fit to be altered or pockets to change side and style. Users view their products on a 3D model that reflects real-time changes. DXM, which organises production, says the turnaround time is around four-to-seven days.



#### Marks & Spencer AR Wayfinding App

For anyone ever confronted by a new superstore, with no idea of where to find their products, M&S has the answer. Trialled in December 2021 in its large Westfield outlet it has introduced a Wayfinder solution powered by tech from Dent Reality. After downloading the tool users can hold their phone up to view a detailed path to the item, or down to see a

compass route. Staff have been piloting the new tech, which if considered successful will be added to the main M&S app. The AR also allows customers to enter a full shopping list and from this it can calculate the optimum route for all the items. The location of the shopper is pinpointed using the store's existing Wi-Fi network and the app will automatically update when changes of location take place in store.



#### JD.com Ochama Robotic Shops

In January Chinese retailer JD.com opened two cashierless, robot-driven stores in the Netherlands (Rotterdam and Leiden) called Ochama – a mix of the words omni-channel and amazing. Customers order food and non-food from an app remotely before visiting the store and scanning a QR code, which activates the order picking process by robots,

before they check out and pick up the finished order from a conveyor belt. Next day home delivery is also an option. The retailer already plans to expand the number of stores into Amsterdam and Utrecht and expects prices to be around 10% cheaper because of logistics cost savings.



#### Karakuri Fryr

Karakuri is building out its portfolio of robotic solutions for restaurant kitchens with its release of the frying robot Fryr that is to be implemented in the first commercial kitchen in late-2022. It has the capability to fry foods in a much smarter way than has typically been the case in restaurants because it can control portioning from the freezer more accurately

due to its better forecasting and demand management capabilities. Fryr follows the initial Karakuri robot, Semblr, which assembles dishes from both hot and cold ingredients. The initial implementation is located within the staff canteen of Ocado.



#### Circle K / Mashgin Self-Checkout

US retailer Circle K is rolling out next-generation self-checkout machines from Mashgin to 7,000 locations following a successful trial period in 500 outlets. The units do not require items to be scanned, instead the countertop system uses AI to identify and ring-up items automatically. The technology has enabled customer checkout in as little as 10

seconds and the accuracy levels have been recorded as 99.9%. The company suggests a retailer could purchase just one of the machines rather than two or three traditional terminals for the same output.



#### Aldi / Trust Systems Digital Content

Aldi is delivering dynamic content throughout its 1,000 UK store estate to shoppers who view a programme of material including price promotions, advertising and seasonal content. Through the cloud-based network from Trust Systems, which links to the Samsung screens and content management system, it has been possible to push out real-time, highly relevant

content. This has driven uplifts of over 1,000% compared with previous static advertising. Aldi is experimenting with a variety of digital screen formats at its Shop & Go store in Greenwich as it seeks to further expand its digital content capabilities with Trust Systems.



#### Flying Tiger Copenhagen / MishiPay

Flying Tiger Copenhagen has introduced self-checkout technology from MishiPay into a growing number of its London stores. By using QR codes the Scan, Pay & Go solution allows shoppers to scan and pay for items without having to download an app. Once the QR code has been scanned on entry to a store the customers simply uses their phones to scan

product barcodes and then pay with the tap of a button before leaving the store. The solution has helped increase average basket size values by 35% compared with the traditional checkouts.



#### Nikeland with Roblox / RTFKT

Mighty sports brand Nike bought the virtual fashion/token platform RTFKT (best known for its virtual sneakers) in late 2021 as the latest move in the ongoing merging of culture and gaming. RTFKT creates limited- edition collections, which are highly prized by users. This acquisition complemented Nike's new metaverse store Nikeland, a free-to-play virtual

world featuring games like Floor-is-Lava and dodgeball, which it launched on the Roblox platform in November 2021. Nikeland was based on its actual headquarters in Oregon and featured fields and arenas for sports events while a virtual dressing room allowed users to dress their avatar's in Nike's digital products including Air Force 1 classics. Nike has been at the forefront of pushing the idea that virtual goods can have value parity with physical goods.



#### Coca-Cola Smart Drinks Dispenser

As part of The Coca-Cola Company's ongoing quest to innovate around its drinks-on-the-go offering, it has launched a new vending unit – the New Compact Freestyle machine – that lets users customise their own drinks from a variety of 40 different options including choosing the carbonisation levels and the liquids temperature. Crucially customers can

also fill their own vessels/reusable bottles, which adds to the company's claims that the drinks dispensed from this Freestyle machine have a much lower carbon footprint. Initial trials began in France and Belgium and will extend to the UK and other European countries through 2022.



#### TruRating

While the problems over fake reviews and ratings continues to plague many businesses the solution from TruRating has continued to provide a solution to a growing number of global retailers who value its verified customer feedback. Its credibility is based on its model of ensuring every rating is tied to a real and genuine payment for goods or services. The

solution simply asks the customer a single question when paying, which has enabled it to garner feedback at great scale. The feedback loop simultaneously fuels a trusted online recommendations platform that is proving valuable to an increasing number of retail organisations.



#### Bandi Circular Fashion App

The Bandi app bills itself as a sustainable way to freshen up a wardrobe. Essentially it tries to connect people of the same size and with similar clothing tastes so they can swap clothes. Customers purchase a Bandi bag that is used for posting and returning swaps, which is done through Hermes using drop-off points for posting while delivery is to the shoppers' door.

Users can connect with, and then view, other members' wardrobe items and then request a swap. There is no subscription and no fee for swapping but postage costs are paid by end users through a QR code system.



#### Checker & Rally's / Presto Al Voice Assistant

Checkers & Rallys' chain of drive-thru restaurants has teamed up with tablet maker Presto to pilot the use of voice-ordering bots to eliminate human error and release staff from shifts in serving hatches amid ongoing staff shortages. The chain plans to install the technology in its 260-plus US restaurants as Presto claims its Al-tech has 98% accuracy in

order taking and can even recognise and understand regional accents. The system greets drivers, takes the whole order, and transfers the tally over to the Point of Sale. Drive-thru lanes currently generate between 60-70% of its sales and the company is the first to order a full roll-out of the technology across its estate.



#### WeShop

WeShop is a community-owned, shoppable social network that aims to reward its users by giving them a share in WeShop every time a purchase or referral is made. Its launch in July 2022 was preceded by multiple major retailer sign-ups including Selfridges, Nike, ASOS, eBay and B&Q. The company calculates that for an average yearly online spend of £150 a WeShop

user would gain £30 worth of shares in the group, which can act as a savings nest egg. The group will be 90% owned by its customers over time. Chairman Richard Griffiths says that initially 20% of the price will be given back to the purchaser meaning that buying a £100 pair of trainers through WeShop instead of Amazon will earn £20 worth of shares. Shares can also be earned for recommendations and new user referrals.



#### Walmart Choose My Model

By selecting Choose My Model on the Walmart website or app the customer can pick a person that resembles their height, shape and skin tone to see how certain clothing looks on a similar body using the power of computer vision and AI. This is the first implementation of Zeekit that Walmart bought earlier this year. Additional model types and clothing items are

being constantly added to the Choose My Model option. The idea is that it will provide greater confidence to shoppers buying more expensive items and also reduce the level of returns. The next development to be added is the virtual try-on feature that will allow customers to upload their own photos to see how the clothing fits and to share this image with friends.



#### Pinterest Try On for Home Décor

Digital pinboard Pinterest released a new feature called Try On For Home Décor, which uses AR to allow the user to superimpose a virtual image onto the real world scene of their room using their phone camera that aids the visualisation. Multiple retailers already use aspects of AR on their own individual sites but the Pinterest feature allows customers to see

products from various retailers all in one place. All items that can be positioned have a cube icon next to them, if users click on that pin then the option to 'try in your space' is presented. The feature is available on more than 80,000 items and also includes a link direct to the retailers' websites. Brands such as Walmart, Target and West Elm are all part of the tie-up.



#### Shiseido / Revieve Al Makeup Advisor

Beauty brand Shiseido has teamed up with Revieve to create an Al Makeup Advisor that pushes forward the initial collaboration that developed a Skincare Advisor. Customers access the Makeup Advisor through the Shiseido website where they are prompted to upload a selfie and answer questions based on their desired beauty goals. The Reveive

Al-powered analysis delivers various recommended products. The solution also includes try-before-you-buy true-to-life virtual try-on technology that can help customers decide on the optimum product for their specific requirements.



#### Puma / Snap AR

Snapchat continued its push to be retailers' choice of AR partner with the launch of its Shopping Kit. A range of new AR capabilities are part of the kit including shoppable product catalogues, allowing customers to place orders directly in the Snapchat app, and the possibility of adding their own AR filters. In May 2022 the company also introduced an AR Shopping Lens

that lets customers try on clothes and buy them with one tap. The launch partner for the Shopping Kit was Puma but many others have since signed up. The major benefit of the system is that it allows the purchaser to use the Snapchat technology directly on the Puma site without having to download Snapchat.



#### Yum! Brands / Agot Al Food Order Accuracy

Fast food business Yum! Brands, which operates brands including KFC and Pizza Hut, has been working with Agot AI to improve the accuracy of the food orders assembled in its kitchens. The technology involves machine learning developing computer vision capabilities to spot errors in food orders. In real-time it can notify employees if an order

needs correcting, for example if they forgot to include the ketchup. The solution can help overcome the headache of incorrect orders but Agot Al is also looking to take its Al capabilities beyond the fast food industry.



#### Dyson VR Store

Home appliances brand Dyson developed Dyson Demo VR at the beginning of 2022 - it draws heavily on the simulation technologies that the company's engineers use when developing products and is accessed by customers in their own home wearing VR headsets. This is the latest move in Dyson's fast-growing direct-to-consumer operations,

which involves product demonstrations with users who are able to look inside the devices to see exactly how they work. The customer base for this new innovation will also be able to talk to a Dyson expert from their homes via the virtual store and, the company hopes, will be able to better understand the product range from within this immersive, online environment.



#### Roboburger

The development of kitchen robotics takes another step forward with the opening of a 'Robot in a Box' vending machine in New York. RoboBurger is the work of nearly 20 years of development by its founders. The machine takes six minutes to make a classic customisable burger for \$7. Installed in a shopping mall in Jersey City it functions 24

hours a day and accepts digital payments. The machine contains its own self-cleaning system and shuts down automatically if any faults (like a power outage) are detected. Its founders hope its reliability, convenience, and constant operating times will lead to many other locations where it can be an option for fresh, hot food.



#### **Robomart Stores**

One of the newest iterations of the traditional bricks and mortar shop is the 'shop in a van' concept from Robomart, which involves renting the vans to different retailers and the use of a Robomart store hailing app that enables customers to call the relevant store on wheels to their house for a fee of between \$2-5 and to then check-out. Robomart now wants to scale

the pilot scheme in West Hollywood up to a LA-wide service for both retailers and consumers. Robomark provides the vehicle, back-end transaction tech, along with the driver, while the retailers are responsible for stocking the van. The pilot involved a Reef Global dark kitchen brand that used the snack model, however Robomart also has other food category models offering cooling and shelving alterations.



#### Deliveroo Advertising and Rapid Grocery Service / Criteo

Deliveroo continues to build out its business model and revenue streams with the launch of an advertising platform that enables brands to advertise on its site and also get samples and marketing materials into the hands of customers through its Editions kitchens and rapid grocery HOP stores. The company is working with Criteo, which supplies the

advertising technology and media sales service. This comes alongside the launch by Deliveroo of its rapid grocery-as-a-service model that enables grocery retailers to buy-in the inventory management, picking technology and forecasting capability from Deliveroo in order to be able to offer rapid delivery in-house.



#### Target / Clockwork Nail Painting Robot

US-based Target has been rolling out an on-the-go beauty service involving nail painting from solution provider Clockwork. For \$10 the nail painting service is undertaken by a robot in around 10 minutes after the customer makes the booking online ahead of their visit. The solution uses cameras to take 100 pictures that are used to create a 3D point cloud showing

the shape of the nail, which helps determine the edge of the nail when the customer's finger is placed within the box-like machine. The system adds the customers' nail pictures to its dataset in order that it can constantly improve the nail-painting software.



#### Asda Delivery-as-a-service

Asda became the only grocer to offer a one-hour delivery service for its full range of products with the launch of its Delivery-as-aservice, which has been rolled out to a large proportion of its store estate – numbering 300, before it considers implementing it at smaller outlets that do not have their own picking operation. Customers order via Asda.com and

select Express slots between one and four hours away. The goods, which are at regular price levels, are picked by Asda employees in the relevant store before being delivered by third-party couriers.



#### Panera Bread / Miso Robotics Coffee System

Panera Bread has successfully launched a coffee subscription programme and in order to handle the increased demand it is testing a new automated coffee brewing system from Miso Robotics. The CookRight system uses AI to monitor coffee volume and temperature as well as providing predictive analytics that can tell a restaurant detailed information what kinds of

coffee its customers prefer and during which times. Such a solution is also a boon during times of chronic staff shortages and it enables employees to focus on other customer-facing tasks.



#### Fashionphile Resale Showroom

Formerly online-only resale site Fashionphile has opened a large brick and mortar store alongside an authentication centre in New York. The centrepiece of the operation is a vast tech-enabled carousel, which acts as an automated produce selector for the 15,000+ handbags held on-site. When a customer, who has previously picked out items of interest on

their phones, arrives at the showroom and logs in to a sales booth the carousel is alerted to the order and the selected bags arrive on the showroom floor for inspection. The technology saves a significant amount of time for both staff and customers while also creating some retail theatre.



#### Glossier / YouTube Shoppable Shorts

Makeup and beauty brand Glossier has turned to a new You Tube shoppable feature for its marketing campaigns. YouTube shorts launched in June 2022 and allows consumers to buy products that they see on videos – in Glossier's case the No1 Eye Pencil. Any video that uses the hashtage #WrittenInGlossier will include a shoppable banner. This also means

anyone using that hashtag has the ability to display a shoppable product on their YouTube channel – and tap into the huge virality of hashtag challenges.



#### Wahlburgers / Raydiant Al Kiosks

Burger chain Wahlburgers has developed its kiosks to use AI technology to help recommend specific options on its menu to customers ordering on the terminals. The Sightcorp software from digital signage provider Raydiant sits within its self-ordering kiosks and uses cameras to detect the age, attention level and mood of customers and then uses AI to match

them with corresponding menu selections. As a female diner the options put forward could be very different to those recommended to a male customer. The idea is to help narrow down the choices so that a visit to a Wahlburgers restaurant feels more personalised.



#### **Twitter Shopping / Shopify**

Shopify has launched its social commerce strategy with Twitter in the US, involving Twitter Shopping that features two different sections. Firstly, Shop Spotlight gives retailers the chance to highlight up to five of their products on their Twitter profile that users will see as a rolling carousel. Secondly, Twitter Shops is a new shopping tab where 50 products

can be showcased creating effectively a brand new social storefront. Shopify describes the launch as a way of turning conversations into commerce and labels it C2C (connect-to-consumer). Features being trialled include notifications on upcoming product launches, which consumers can opt in to receive from their favourite brands.



#### **Mastercard Biometric Payments**

The payments company Masterard is launching a biometric payments programme that will enable customers to pay in-store with a gesture such as a smile or a wave. Such solutions have proved problematic in the past but Mastercard suggests it could act as an enabler of the ecosystem whereby it sets unified privacy and security standards in order to overcome the

privacy concerns that have held back adoption of recognition-related technology. The programme uses recognition software from a number of providers and the first pilots involved five Brazil-based supermarkets.



#### Nisa / Jisp Rewards Store-Specific Loyalty

Convenience store chain Nisa is providing its members with a store-specific loyalty programme, Jisp Rewards, which uses the Scan & Save solution from Jisp to enable in-app vouchers and promotions to be targeted at shoppers when in-store. Each store will be able to select which offers it gives to its customers from a list created at head office - who will be

able to accept the offers by scanning the barcode on the product. This puts the relevant discount code into their app wallet that can then be scanned at the till and the relevant discount deducted from their final bill. The next development will be for the stores themselves to create their own bespoke offers.



#### **COS Digital Stores**

An H&M-owned COS store in the US has recently begun piloting the introduction of new smart tech innovations including the use of smart mirrors in changing rooms, which can recognise the products being brought in to try and can offer styling and personal recommendations. Smart mirrors are also installed on the main shopping floors where

they enable virtual try-ons for customers not able to get into a fitting room. The store also features seamless payments and more sustainable delivery and return options in a bid to see what works best for the consumer. If successful the technology will be rolled out throughout the US.

### Ranked by Criteria

# Top 20: Innovative

01	Envision Glasses
02	ieye Optics Kiosks / Sony Digital Imaging
03	Amazon Logistics
04	Walmart Logistics
05	Manna Drone Deliveries
06	Starship Technologies / Co-op
07	TooGoodToGo / Greggs
08	IKEA Kreativ
09	Pizza Hut / Hyper-Robotics Restaurant-in-a-box
10	Wayfair / Waymo Self-Driving Trucks

11	Asda / GoodMaps
12	Albertsons / Veeve Smart Shopping Trolleys
13	Ocado / Jones Food Company
14	Co-op / Vynamic Age Verification
15	InFarm / IKEA New Growing Centre
16	Samsøe Samsøe Resell Tag
17	JD.com Ochama Robotic Shops
18	Aldi Shop & Go
19	Sainsbury's / Lollipop Meal Planning
20	Amazon Made for You and Virtual Try-On Technology

# Top 20: Potentially Commercial

01	Walmart Logistics
02	TooGoodToGo / Greggs
03	Aldi Shop & Go
04	Amazon Logistics
05	Manna Drone Deliveries
06	Tesco GetGo
07	ieye Optics Kiosks / Sony Digital Imaging
08	Wayfair / Waymo Self-Driving Trucks
09	Albertson's and Kraft Heinz / Snowflake
10	Aldi / Trust Systems Digital Content
11	Amazon Made for You and Virtual Try-On Technology
12	Raylo Tech Subscriptions
13	Walmart InHome Delivery
14	JD.com Ochama Robotic Shops
15	Amazon Smart Dash Carts
16	Carhartt / DXM Customisable Clothing
17	Albertsons / Veeve Smart Shopping Trolleys
18	Ocado / Jones Food Company
19	Circle K / Mashgin Self-Checkout
20	Envision Glasses

# Top 20: Potential Influence

01	TooGoodToGo / Greggs
02	Amazon Logistics
03	Walmart Logistics
04	Albertson's and Kraft Heinz / Snowflake
05	Aldi Shop & Go
06	Wayfair / Waymo Self-Driving Trucks
07	Manna Drone Deliveries
08	ieye Optics Kiosks / Sony Digital Imaging
09	Amazon Smart Dash Carts
10	Tesco GetGo
11	OLIO Food Waste App / Iceland
12	Amazon Made for You and Virtual Try-On Technology
13	Co-op / Vynamic Age Verification
14	Aldi / Trust Systems Digital Content
15	Envision Glasses
16	Walmart InHome Delivery
17	InFarm / IKEA New Growing Centre
18	Coca-Cola Smart Drinks Dispenser
19	IKEA Kreativ
20	Samsøe Samsøe Resell Tag

# Top 20: Potential

### Benefit

01	Envision Glasses
02	TooGoodToGo / Greggs
03	ieye Optics Kiosks / Sony Digital Imaging
04	Asda / GoodMaps
05	Ziscuit Grocery Search Engine
06	Raylo Tech Subscriptions
07	Manna Drone Deliveries
08	Walmart InHome Delivery
09	Aldi Shop & Go
10	OLIO Food Waste App / Iceland

11	IKEA Kreativ
12	Samsøe Samsøe Resell Tag
13	Selfly Store
14	Amazon Made for You and Virtual Try-On Technology
15	Marks & Spencer AR Wayfinding App
16	Carhartt / DXM Customisable Clothing
17	Walmart Logistics
18	Pinterest Try On for Home Décor
19	Sainsbury's / Lollipop Meal Planning
20	Tesco GetGo



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## **Trust Systems**

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