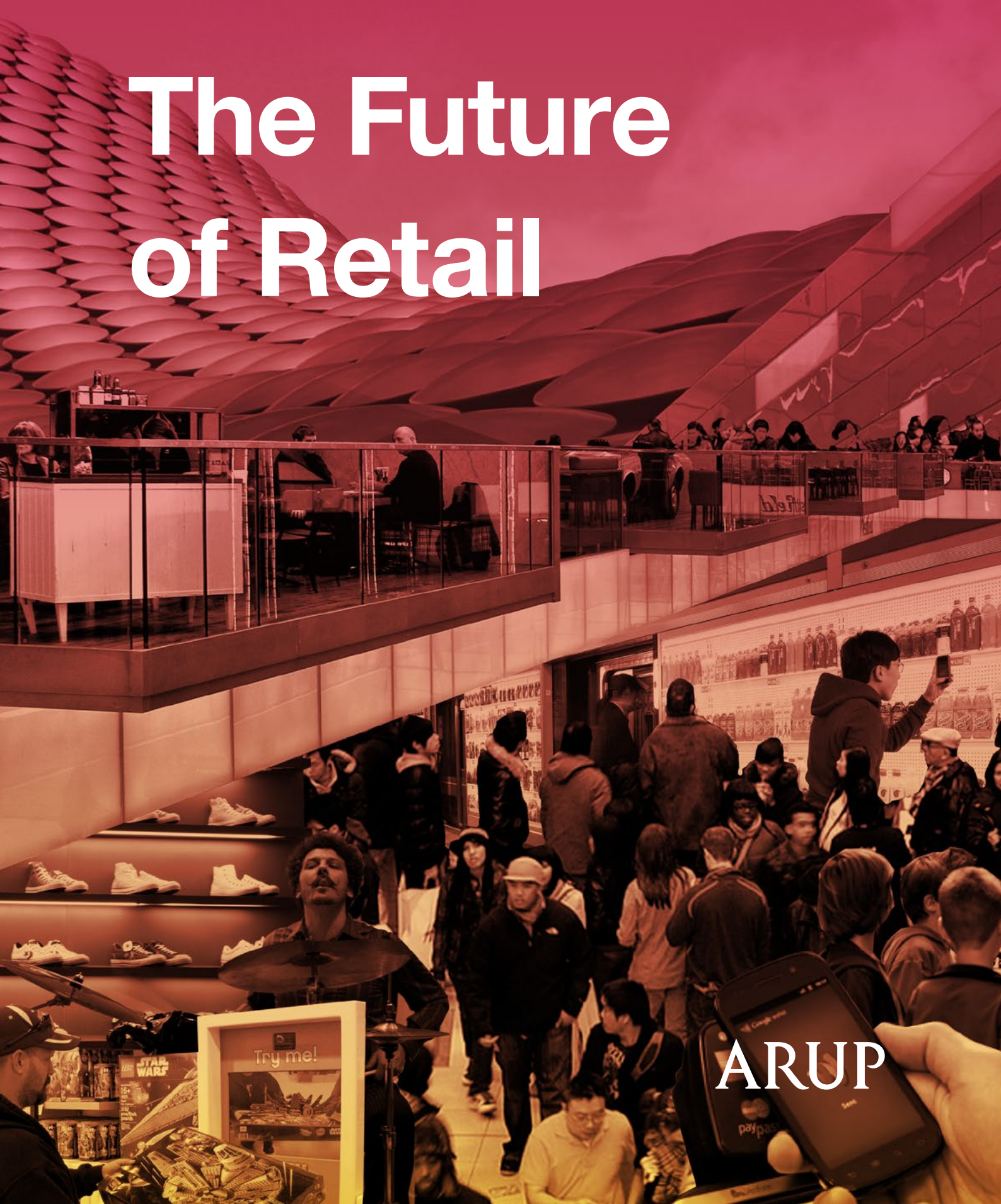


foresight

The Future of Retail



ARUP

This report is a product of Arup Foresight + Research + Innovation. The Arup Foresight + Research + Innovation is Arup's internal think-tank and consultancy which deals with the future of the built environment and society at large. We serve Arup's global business as well as external clients from a broad range of regions and sectors. We help our organisations understand trends, explore new ideas, and radically rethink the future of their businesses. We developed the concept of 'foresight by design', which uses innovative design tools and techniques to bring new ideas to life and engage clients and stakeholders in meaningful conversations about change.

About Arup

Arup is the creative force at the heart of many of the world's most prominent projects in the built environment and across industry. From 90 offices in 38 countries our 11,000 planners, designers, engineers and consultants deliver innovative projects across the world with creativity and passion.

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EXECUTIVE SUMMARY

This report explores the drivers of change that are shaping the future of the retail sector. It reveals important trends that are causing new consumer behaviours and examines some of the likely impacts that these developments will have on future retail environments and service offerings.

We have identified six key insights with significant implications for the future of the retail sector:

In this report we explore several themes that have emerged from our ongoing conversations with stakeholders, including retailers, developers, designers, architects, futurists, retail trends analysts and behavioural scientists.

We believe that our insights will be of value to all entities operating in the global retail sector.

1 The online and mobile revolution is positive and should be fully embraced.

By 2015 most new mobile phones will be smart and contactless-enabled. As customers become empowered by this technology, their needs and expectations for retail interactions will change.

2 Brands will increasingly focus on seamless multichannel customer experiences.

The customer will be the focus in future, not the channel. Consumers will expect an integrated and seamless experience online, on the go and in-store. Retail businesses can no longer afford to think in terms of channel silos.

3 Physical stores are evolving into experience-based destinations that will drive brand loyalty and engage customers at a more emotional level.

The value of global e-commerce was estimated at US\$680 billion in 2011 and is likely to reach US\$963 billion in 2013.¹ The physical store is responding to online growth by developing new experiential concepts that engage the consumer physically and emotionally.

4 Technology is a catalyst that can help reinvent the store.

Smartphone applications, contactless technology, augmented reality, motion sensors and face recognition software can be integrated into stores, both to deliver a better customer experience, and to capture useful data for the retailer.

5 Shop floor staff will need to become retail experts.

Customers will be more informed about services and products in future, aided by the smartphone and associated specialised applications. In response, staff will need to become even more knowledgeable about the products and services they sell.

6 Progressive environmental legislation will require improvements in operations and supply chain sustainability.

Although a retailer's green credentials may not sway customers in the current macroeconomic environment, sustainability will play a significant role in driving retail's future. As new legislation is written, retailers will seek to further lessen environmental impacts in the design and operations of their physical assets and across the full life cycle of their products.

¹ According to research conducted by JP Morgan



THE FUTURE OF RETAIL

Retail is a highly dynamic sector that exists at a complex nexus amid property, design, technology, logistics and, of course, fashion and popular culture. The current context of retail is extremely challenging. Most retailers are facing market saturation and increased commoditisation. Many are also wrestling with new multichannel strategies to drive sales in a challenging period of negative or stagnant economic growth. At the same time, retailers are under increased pressure to consider the environmental and social impacts of their operations.

The future of retail is being influenced by a myriad of factors, variables and trends. Sudden shifts or step changes can dramatically affect the sector. Contactless payment could become the next game changer, impacting the point-of-sale experience and with it in-store layout and shop floor design.

In this report we have highlighted a number of key trends that we believe will continue to change the retail landscape.

Social and mobile

Retailers are well aware that social media has had a profound impact on business over the last few years. This revolution in social and mobile technology is far from over. The consumers of tomorrow will have grown up in a world dominated by communications technology and social media. By the time they enter university they will already have owned an assorted array of PCs, laptops, smartphones and other devices. They will have spent their teenage years managing multiple online profiles, and a plethora of social media sites will have enabled much of their social interaction.

This new generation of shoppers will want to see retailers embrace the latest technologies both online and in-store, and will be attracted to those retailers and retail environments that can keep up with the rapid pace of technological change.



© springwise.com

Brayola

is an Israeli start-up that is harnessing social media in a way that adds value to the retail experience. They have launched a free platform where women can recommend their favourite bras to others anonymously. In return, contributors receive recommendations based on their details and preferences.

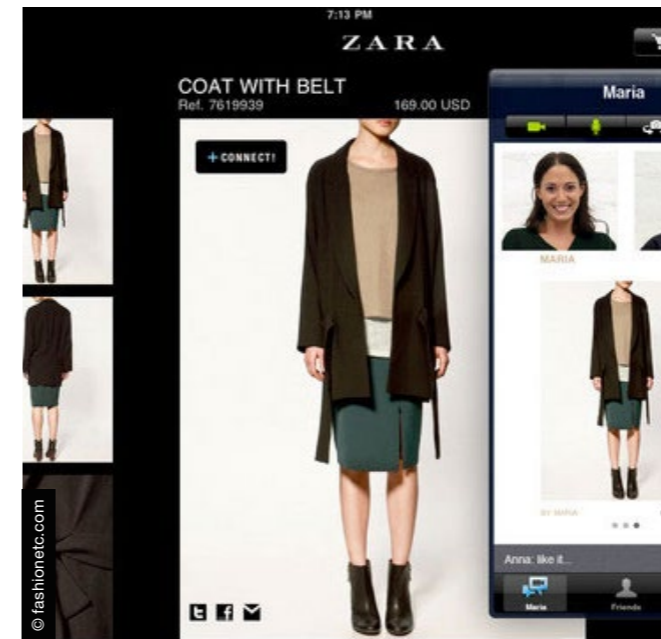


© Ed Yourdon, Flickr

Armed with the latest generation of web-enabled smartphones, consumers will expect reliable access to the web on the go and in-store in future. An estimated 40% of all Google searches are already being made from mobile phones. In addition to this demand for ubiquitous connectivity, new smartphone applications such as in-store navigation will fundamentally reshape the way that shoppers experience and explore retail spaces. Such technology will allow shoppers to have personalised experiences based on their preferences, purchase history and social network activity.

In response, retailers will need to better understand which devices their target customer base uses, where and when, and for what reason. Retailers will need to cater to all platforms effectively to ensure that the customer enjoys a seamless, coherent experience across all channels.

By 2015 most new mobile devices will be smart, thanks in part to the emergence of budget models like the Motorola Fire and Orange Monte Carlo. However, a significant number of big retailers still do not have mobile-ready websites.



Inditex's innovative mobile application

+Connect, is one of the first to combine mobile commerce (m-commerce) with social networking (s-commerce). The app, developed by the mobile technology company Oonair, allows customers to have a FaceTime-like experience with friends and family that is structured around the Zara catalogue. The app demonstrates the evolution of e-commerce to include m-commerce and s-commerce simultaneously. Although many major brands already have apps, few have yet to embrace s-commerce in this way.

In 2011 Domino's Pizza launched a month-long campaign publicising Twitter comments from customers on a billboard in New York's Times Square. Although they found that on occasion customers would post a negative comment, Domino's decided to openly experiment with social media. The campaign ultimately allowed the company to gauge opinion in a bold and transparent manner, and to quickly address any shortcomings in product and service quality.

Retailers will continue to devise diverse strategies to embrace Web 2.0. Some will work well, while others may fail. This is likely to lead to increased experimentation with s-commerce and m-commerce.



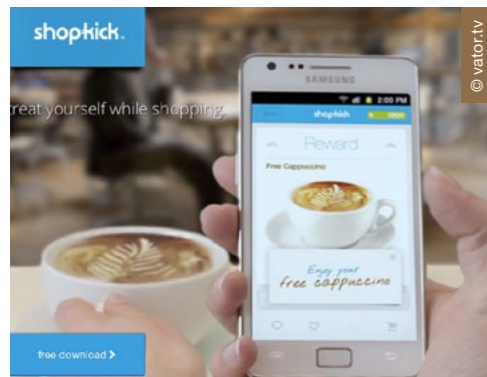
Phil Winterhalder @pwinterhalder
Had pizza from Domino's last night, when did they get so bad?

Omnichannel delivery

Over the decades we have seen retailers expand their sales channels beyond branded retail stores and discount retail outlets to make products available over the web. However, many retailers are still too segmented when thinking about engaging the customer through these different channels. There are even cases of online and in-store staff competing against each other for business or purposefully withholding information from the customer about something that might be of interest via an alternative platform. **Retailers of the future will have to think more about the customer than the channel.**

Whether retailers like it or not, the customer has begun to move with much greater fluidity between physical, mobile and PC-based interfaces. For this reason, it is critical that brands maintain consistency between online and off-line channels in terms of products, campaigns, promotions and pricing. The consumer's journey will become complex, and his or her cross-platform demands may become harder to service or fulfil. For instance, a customer might research and pay for something online for in-store collection, exchange it for something else in-store and request that it is delivered to his or her home or office. **Despite the inherent challenges, the retailer will need to provide a seamless service across all channels.**

In an effort to embrace mobile commerce, retailers are developing branded smartphone apps that can be used by their customers in their shops. Such apps bridge the gap between the physical and online retail spaces. They can be used to scan codes to access product information, browse catalogues, seek compatibility advice, look up independent reviews or compare prices. Additionally, they can be used to promote loyalty through the use of e-coupons.



Shopkick

In August 2010, Shopkick launched the first mobile application that gives consumers rewards and exclusive deals in return for simply walking into a store. Shopkick's location technology allows the app to verify the user's presence inside any retail partner's store. Beacons fixed to the store's ceiling emit an inaudible ultrasound signal at a frequency that can be picked up by a cell phone's microphone. The Shopkick app decodes the signal and contacts Shopkick's database to work out where the user is within the store and whether they are eligible for a reward.





© Quinn Dombrowski, Flickr

“Showrooming” is a term that describes the act of comparing prices of displayed items with the same items available online. This phenomenon represents a major threat for retailers as retail stores can turn into spaces for customers to touch and try things, while the point of purchase moves to price-driven online environments. Retailers that do not adapt to this new paradigm are likely to suffer.

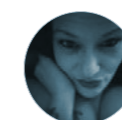
On account of the near-ubiquity of online access, customers are as well informed, and often even better informed, than many shop floor assistants. **In the future, staff will need to be as well informed as the smartphone-carrying customer.** Some retailers are giving their staff tablets so that they are able to access product and service information from the shop floor. Staff will also need to be given the appropriate training and incentives to help customers go online to complete their purchase if and when appropriate. Processes and operational protocols will need to be established to ensure that staff are recognized for their help in enabling online purchases.



Paige Delfino @PaigeBxxxx
Shopping is actually my worst nightmare ever. Cannot deal. Online shopping is easier, lessstressful and more fun.



Zoe Margolis @girlonetrack
Dear Twitter-people-who-enjoy-shopping-for-clothes: where can I get nice/smart outfits online/where I don't have to talk to other humans?



PINK™ @PinKkDiamond
Zzthe main reason I love twitter is because I always get the good online shopping boutiques retweeted onto my TL....

In-store experience

In recent years, there has been a strong trend towards big retail brands selling consumers an “experience.” This involves inviting the customer to test a product or service in-store, or to interact with an exclusive, curated environment. Apple and Nike are well-known retailers that have taken a lead in this area, with the rationale that a positive in-store experience can help establish a stronger relationship between the customer and the brand. Others that have developed unique brand experiences include Converse, Topshop, Louis Vuitton, Lego and Prada.

Stores are no longer being seen as transactional places alone. In the future, e-commerce will take an even bigger share of total retail sales and the physical shop will become an experience-based destination that engages customers on a physical and emotional level.

Retail centres are also emulating this experiential model. Larger complexes are beginning to allocate a much greater proportion of interior real estate to entertainment, food and beverage, which are key elements that enhance the customer’s experience.

The store will increasingly serve to build brand presence, generating customer interest and loyalty by showcasing new products, services and concepts. Retailers are seeing the store as an opportunity to provide their public with an enduring and enriching experience that reflects brand messaging and values.



TaKaven Griffin :) @Taeekayy12
Hollister >> The Sexiest Smelling Store
There Ever Was.....oohmygshh(;



Lara Bingle @MsLaraBingle Thank you for the
amazing personal shopping experience in @
topshop_au I am obsessed with my new leopard
pant [http:// instagr.am/ p/ Mw3pbvHa5j/](http://instagr.am/p/Mw3pbvHa5j/)



Sevil Ozer Crespo @sevilozzer
Seems like Burberry’s new Regent street
shop is the real Minority Report shop :)



Jenna Butler @jenna_butler
LOVE this kinetic window display by Drawing
and Manual at the Ginza Issey Miyake store..



Tog & Porter @TogandPorter
Virtual dressing rooms at @bloomingdales,
pretty cool

Online engagement

In May 2011, Diesel promoted a series of events to celebrate the inauguration of a fictional island called Diesel. Customers could enter any store (or “embassy”) to obtain a “passport” and win stamps, which could be redeemed for concerts, parties, holidays, workshops and merchandise. The campaign successfully integrated social media platforms like Facebook into its events, which in turn helped increase footfall into stores.



Retailers will need to find new ways to offer customers something unique or special in order to encourage traffic to physical stores. People like to touch, feel, smell, taste, inspect, test and try on. Merchandise that is kept in boxes or behind glass restricts such interaction. Furthermore, a retail experience that appeals to the senses differentiates the shop floor from the online platform. Listening to live music or watching craftspeople at work making clothes, chocolates or artisan breads can be an enjoyable, stimulating experience, and one that the consumer cannot fully experience over the web.

This is an important differentiator for retail outlets, especially when targeting younger consumers who typically spend a substantial amount of time online. For example, brands like Lego give kids a chance to have a multisensory experience in stores— something that children cannot enjoy online. Lego has adopted the “pick and mix” idea, allowing children to select different bricks or body parts to create their own product.

Pop-up shops are a cost-effective way to test a new experience (eg contactless payment), a product (eg the result of a collaboration) or service (eg home delivery). Rather than spend money on market research, a pop-up more quickly and at a fraction of the cost. Due to the low capital outlay and smaller scale, the risk to the retailer is greatly reduced.

Pop-ups are likely to continue as a trend as rental agencies look for ways to generate short-term profit from unused retail spaces. Companies like BrandHub in the UK are helping increase the number of pop-ups by providing very short leases for vacant city-centre locations. BrandHub claims that it is more beneficial for retailers to trial a concept in 12 cities for one month each, as opposed to one city over a year.

People enjoy being exposed to chance encounters, new ideas and inspiration. Pop-ups can deliver this cost-effectively, and the concept can be scaled up if it catches on.



Safiya B @s_bhabha

Only 3 more days until Topshop pop-up-shop opens @ UnknownUnion in Cape Town!!! Can't wait!!!)

Tracked and monitored

Shopping is not always a rational experience. Customers make impulse decisions, which are influenced by stimuli like lighting, product positioning, imagery, sound and smell. Consequently, it is hard for a retailer to understand what truly goes through a customer's mind as he or she walks through a retail space or makes a purchasing decision.

While tracking and monitoring the online behaviour of consumers is a well-established practice, technologies are now being developed for retail operators to track in-store behaviour. Systems such as radio-frequency identification (RFID) are turning stores into living laboratories.²

Vanquish RFID

In Japan, the clothes retailer Vanquish hangs its products from RFID-embedded clothes hangers, which have been developed by Tokyo tech firm teamLab. When a product is lifted off the racks by a customer, the RFID triggers a plasma screen on the wall above the racks which then displays a sequence of information, imagery and video content related to the product selected to help customers with their shopping decisions. The RFID tag can be programmed to change the background music and lighting, or trigger other multimedia devices around the store. The innovation allows retailers to engage customers with the products and the in-store environment. RFID technology is also providing a mechanism to track and monitor customer behaviour, allowing retailers to gather more specific information about in-store decision-making and patterns of attraction.



Adidas NEO apparel stores use RFID to track the combinations of clothes that people try on and, more importantly, what is left behind on the changing room floor.

² RFID is a noncontact system that uses radio-frequency electromagnetic fields to transfer data from a tag attached to an object for the purposes of identification and tracking.



Smart and contactless

Advances in near field communication (NFC) technology and RFID-based self-checkout systems will eventually lead to the elimination of the queue.

This technology shift will help streamline the in-store purchase process and reduce operational costs.³ It will also free up staff to help customers around the shop floor.

It is very likely that new solutions for indoor navigation will also become an important component of large retail spaces, positively impacting the way in which customers navigate and experience the physical environment.

Contactless payment systems are credit and debit cards, key fobs, smartcards, smartphones or other devices that use NFC for making secure payments via a reader at the point of sale. Shoppers can pay for purchases by waving their card, fob or smartphone near a reader, rather than using an actual credit or debit card. **The contactless payment system is quick and easy, and will revolutionise the checkout process by eliminating queues. Such technology will also provide the retailer with new opportunities to advertise promotions and to customise couponing and loyalty schemes.**

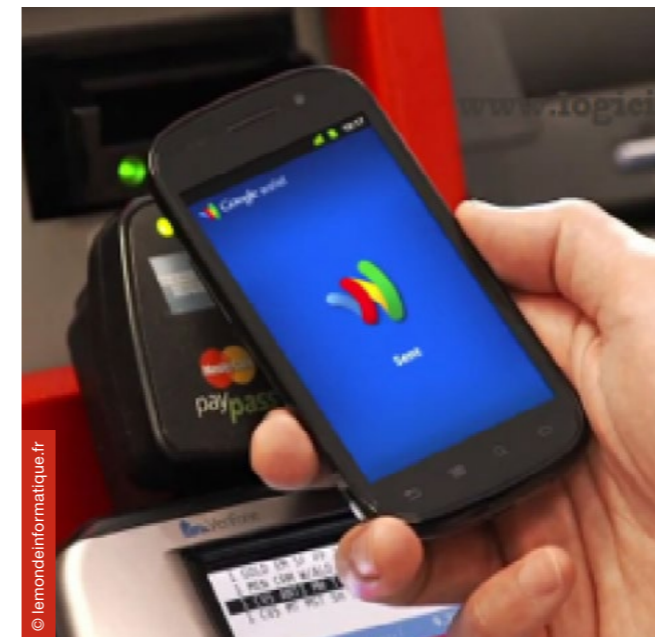
NFC usage has been standard in South Korea since 2004. The technology is expanding elsewhere, but it is largely constrained by the gradual release of NFC-enabled bank cards and mobile phones. The next generation of mobile phones will be NFC-enabled, and it is estimated that half of all mobile phone users will have access to NFC technology on their phones by 2014.

Whole Foods shopping cart

Whole Foods is testing out the prototype of a new shopping cart outfitted with the motion sensor from Microsoft's Xbox 360. The motorized carts can follow the individual around the store without having to be pushed and guide them to the items they want. The cart can also scan items as they are placed inside the cart, mark items off a shopping list and even scan items for checkout.



³ Near Field Communication (NFC) allows for encrypted data exchange between two devices in close proximity to each other.



Google Wallet

Google Wallet is an NFC-enabled mobile payment system that operates on MasterCard's PayPass technology. Shoppers simply tap their mobile device on special readers at points of sale to pay instantly. They can also use the NFC technology to redeem special vouchers or coupons, participate in sales promotions or gain loyalty points



Tesco Homeplus

The smartphone enables retailers to use nonconventional retail spaces to generate revenue, like this virtual storefront in a subway station in Seoul. Smartphone users can download the Tesco Homeplus app, which allows them to scan barcodes to order products via a two-dimensional wall on their way to work. These items are then delivered to their home.

In-store augmented reality displays such as Tesco's will become more common as retailers seek to blend the digital and physical experience. Topshop has created a virtual fitting area for their Dress Up collection. Using Microsoft's Kinect motion-sensing software, this interface allows users to "try on" garments from the store. Related merchandise, including alternative sizes and colours, can be explored by pressing gesture-controlled virtual buttons.

One of the most effective uses of augmented reality to date can be found in Lego flagship stores. By picking up any box of Legos and holding it in front of a screen, a child can see an augmented reality overlay of the built Lego product. From the point of view of the child, the interaction is magical and is likely to leave a lasting memory of a positive brand experience.

Topshop, Moscow



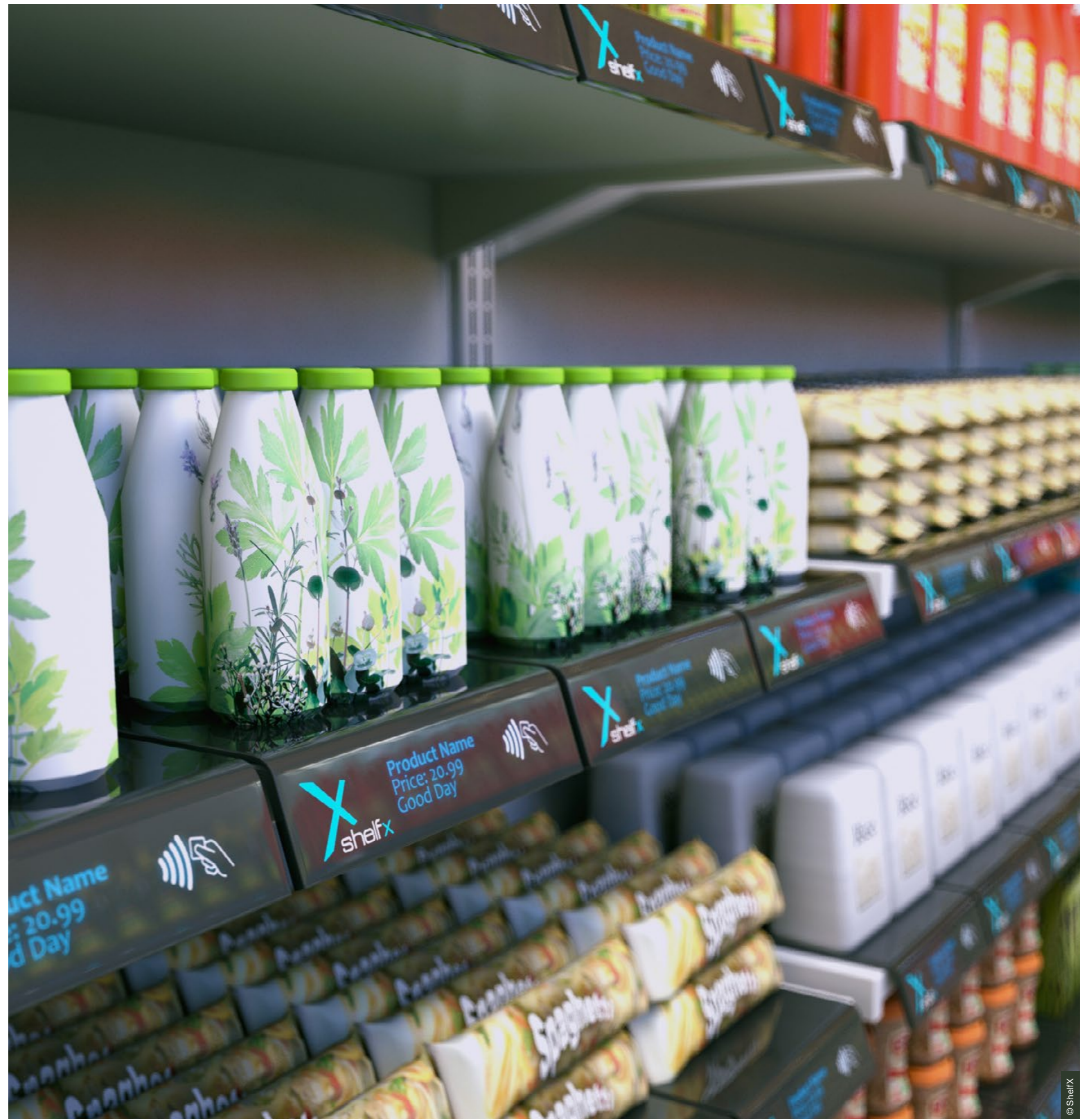
A touchscreen concept created by Frog Design for Intel



Lego's augmented reality kiosk, Schaumburg, Illinois



A well-known high street brand of jeans is developing in-store smart tables. Shoppers will be able to place a pair of jeans on an area of the table that will read its RFID code. An embedded screen will then display relevant product information.



ShelfX

Traditional fittings such as shelving are also being reimagined. ShelfX, based out of Boulder, Colorado, has launched a new “in-aisle information display solution.” This new shelving technology contains embedded scales that can sense the exact type and quantity of products that are stocked on the shelves. Additionally, built-in RFID technology allows the shelf to detect a customer’s store card and offer suggestions or promotions based on the customer’s previous purchase history.



Resource efficient

For most retailers, the second-largest operating cost is energy, following closely behind staff salaries. **The price of energy is projected to increase by 30 to 50% over the next four years in the UK and elsewhere, which will require retailers and property developers to look for ways to further reduce energy consumption and increase efficiency across the supply chain.**⁴ However, retrofitting assets like stores and warehouses can be costly. Many businesses are finding it a challenge to justify additional investment given the associated risks.

In the UK, retail businesses are cutting costs, delaying refurbishments, curbing training programmes and reducing stock. In such an environment it is very difficult to build a business case to make green retrofit work. However, it is becoming apparent that the business case is increasingly viable, because investors are being rewarded with lower operating costs.

Developing greener assets from scratch is an easier prospect. New build allows developers and retailers to “design in” efficiencies and use materials and technologies that can greatly reduce operational costs over the asset’s life. **Developers exploring new build opportunities will look to reduce construction costs and increase the speed of construction. They will also require more flexibility, so that new retail formats can be accommodated at minimal cost.**

Zara’s eco-store

in Portal de l’Àngel, Barcelona uses recycled greywater and low energy lighting to lessen the store’s environmental impact. The building’s enormous classical arches are screened with perforated metal panels, which allow the store to take advantage of natural daylight. It has been fitted with a monitoring system that automatically adjusts the temperature, humidity and light levels based on environmental conditions. Additionally, motion detectors turn the lights off when the shop floor is quiet. The store consumes 30% less energy than the average for conventional shops, saves up to 50% in water usage and reduces CO₂ emissions by more than 150 tons each year.

While labour is a relatively fixed cost, we can expect the cost of material inputs to increase over time. We will begin to see the emergence of alternative materials, which will replace more water-intensive materials like cotton. The challenge, however, is that consumer values are not all the same. Research indicates that the middle classes are more willing to alter consumption patterns based on concern for environmental impacts, whereas less well-off consumers are generally less flexible.

Nevertheless, retailers will be exploring ways to minimise pre- and postconsumer waste. They will be looking for design solutions that encourage recycling and upcycling, limit chemical and resource inputs, and reduce scope 3 emissions.⁵

⁴ Deutsche Bank, “UK Energy Bills: Back to the 1970s”, corporate report October 2011

⁵ Scope 3 emissions are indirect emissions that organisations produce through their activities but that occur from sources not owned or controlled by the organisation.

Flexible pick-up and delivery

There is increasing economic and environmental pressure on cities to deliver goods and merchandise more efficiently. As a result, new delivery processes are being trialled to promote sustainable product transport and logistics.

In terms of delivering stock to the store, we may see many more out-of-town consolidation centres, where goods are delivered in bulk and then sorted for local delivery by the most appropriate and resource-efficient means. An example of this approach is London's Regent Street retail delivery consolidation scheme. The Regent Street consolidation centre, located in Enfield, acts as a first destination for deliveries from across the UK and continental Europe. The centre sends out electric trucks that collectively deliver all goods requested by Regent Street retailers on a specific day.

The process has a number of advantages. It is more environmentally friendly due to the reduction in the number of vehicles required for delivery, it eliminates the need for store-based storage and stock management, and it limits freight-related traffic on the road. Since its introduction, the consolidation centre has helped realise a reduction in average deliveries from 650 to 75 each month. Arup is now working on a similar concept for the entire city of London, developing a network of consolidation centres and delivery vans to serve businesses across the city.

With regards to home delivery, delivery times have shortened radically over the years from what was once a standard 28 days to just a few days. Now that a reasonably quick period of delivery is widely available (typically 1 to 3 business days), retail customers are expressing a desire for greater choice as to the exact time that a delivery takes place. Because large items often require recipients to be at home at the time of delivery, customers want items delivered at convenient times. Some delivery companies have started to text customers 60 minutes before the product is due to be delivered to give the recipient time to come home for the delivery.

These trends point to the fact that customers want delivery to be quick, convenient and reliable.



CitySprint

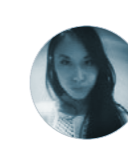
CitySprint offers one-hour delivery to over 80% of mainland UK. Many companies have tried to replicate this model but have failed for a number of reasons. CitySprint has succeeded in large part due to its network of 31 service centres, which are strategically placed in order to maximise the combined coverage area. CitySprint also runs its delivery service seven days a week, including bank holidays.



© Arfel Zambelish / Wired

Drop-off stations may also become more common, such as the Amazon Locker. Amazon Locker is an automated, self-serve pick-up and delivery kiosk that customers may choose as an alternative to having packages delivered to their home or place of work. The carrier delivers to the locker, and the customer subsequently retrieves their shipment by entering a pick-up code via the locker's touchscreen. The business case for such a service is clearly more compelling in dense urban areas.

Collect+ in the UK is an example of reverse supply-chain collection. This scheme enables customers to return unwanted products to the retailer via a network of newsagents.



Jojo @jkc_
My iPhone 5 got delivered today but no one was home so I have to pick it up from the post office WAHHH! #firstworldpains#firstworldproblems



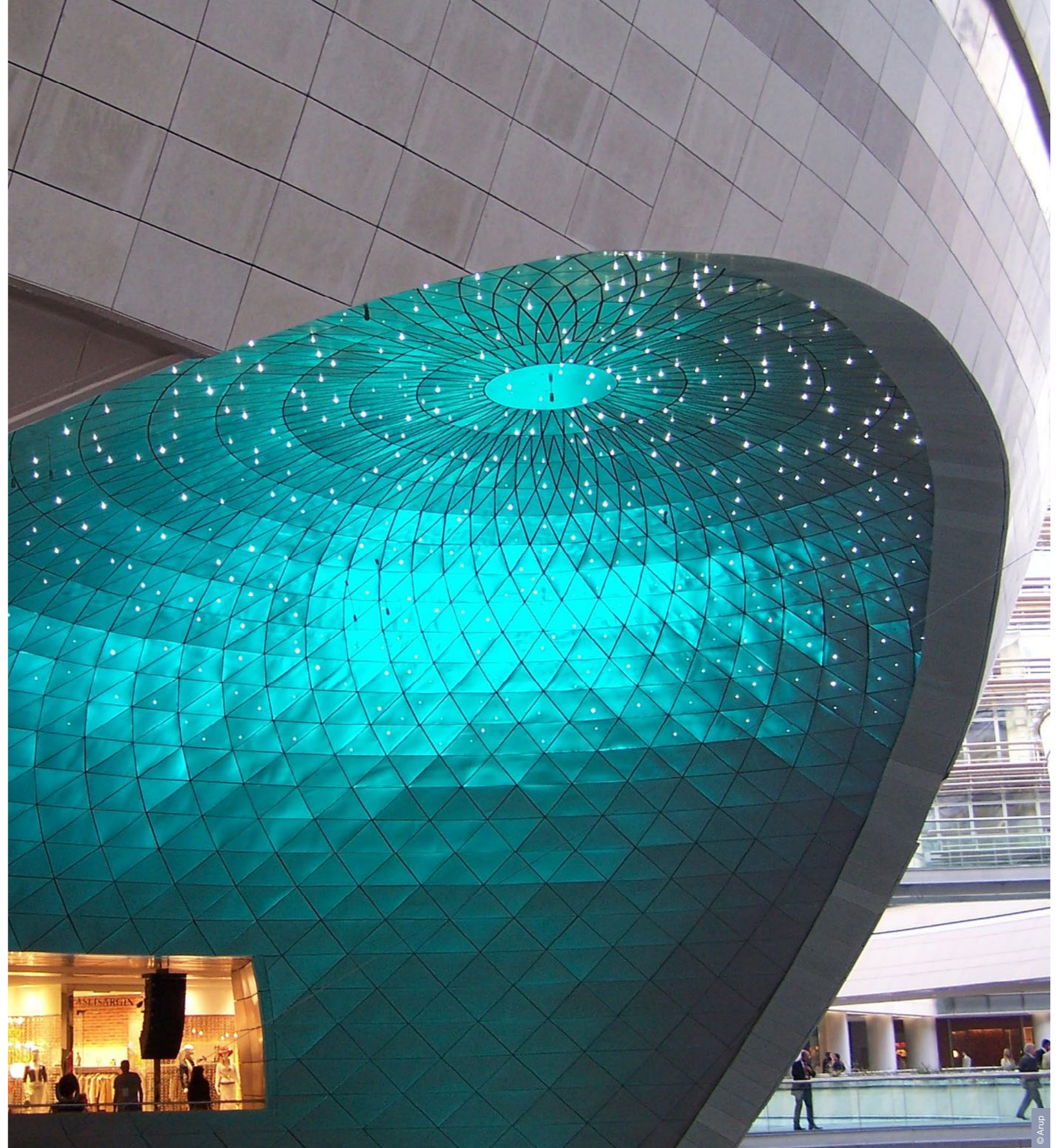
leathellin @leathellin
Anyone near One New Change who could collect an Amazon parcel I got delivered to the handy lockers near work... (oops) Can reward with pie :-)

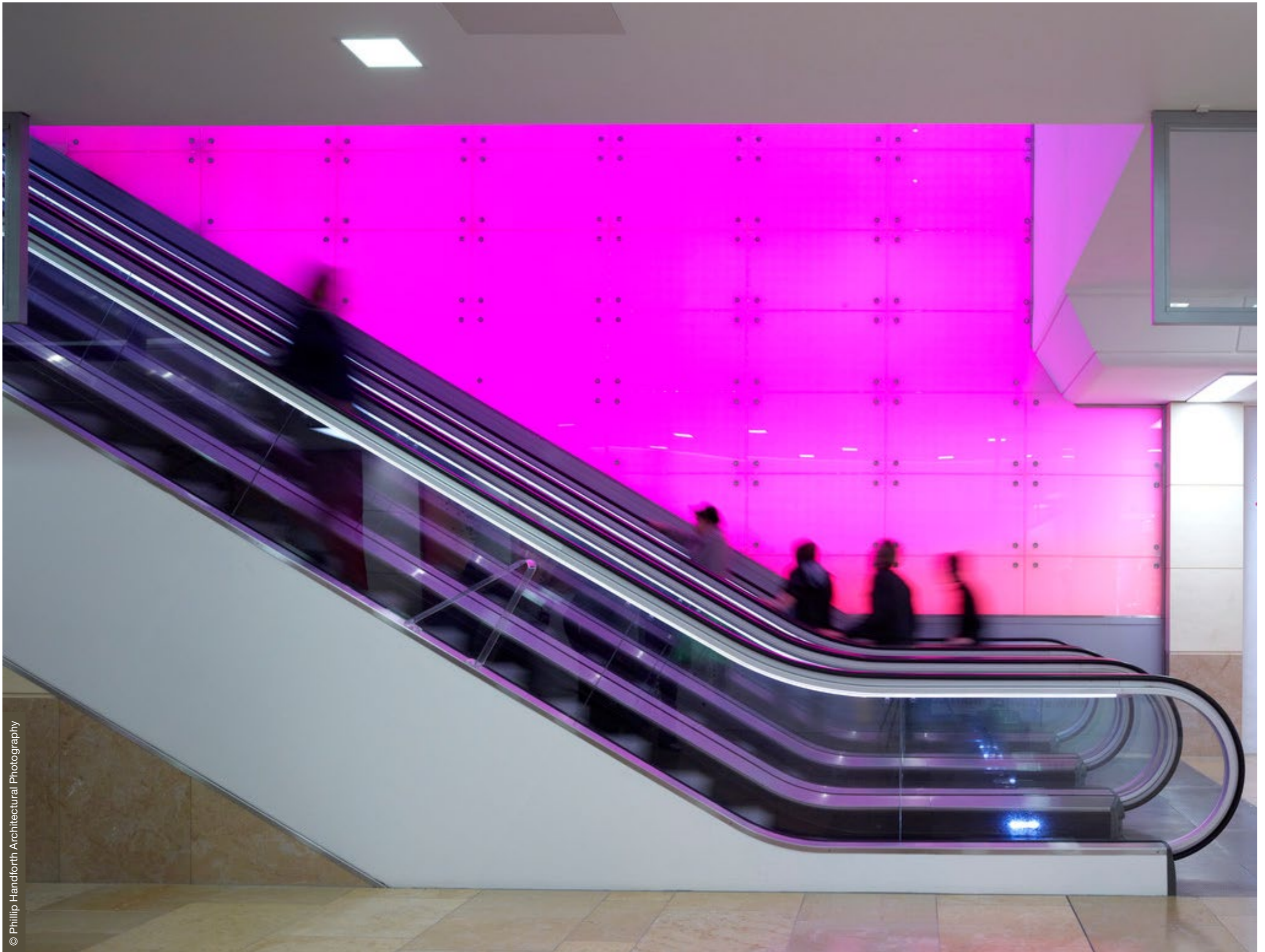
Conclusion

The future of retail is being driven by a broad array of influencing factors, ranging from environmental legislation to pressures to cut costs and maximise efficiency gains.

Technology stands out as the most impactful factor in shaping the sector's future. Smartphones and associated applications are unlocking new consumer behaviours, which are causing retailers to rethink the way they sell goods and services. Contactless payment, RFID and augmented reality are creating opportunities for retailers to redesign their physical stores and curate new customer experiences that fuse the physical and digital worlds. Flexibility will be key to success as retailers continue to experiment with these and other technologies across all channels.

Retailers will also need to continually assess the implications of these and a host of other trends, and be willing to adapt as new challenges and opportunities emerge.





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Publications



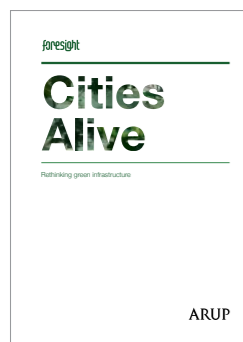
Campus of the Future highlights Arup Foresight + Research + Innovation group's opinion on the future of the campus. It summarises some of the key Drivers of Change and gives examples of innovative campus environments, both physical and digital, that are leading the way around the world.



Living Workplace focuses on the future of the workplace. It investigates the impact of growing cultural and generational diversity, the role of new technologies and working patterns and the importance of creativity and collaboration for organisational success.



Moving beyond static objects in glass cases, *Museums in the Digital Age* outlines how future museums will see personalised content, new levels of sustainability and a visitor experience extended beyond present expectations of time and space.



The ideas being developed in *Cities Alive* seek to capture not only the beauty of nature but also the sustainability of balanced ecosystems. These are challenges for landscape designers creating new cities that meet our increased expectations for access to clean water, cheap and plentiful supply of food, and fast and effective transport systems, with the need to reduce the impact on natural resources.



The Future of Rail 2050 focuses on the passenger experience and sets out a forward-looking, inspiring vision for rail. The user journeys imagined here are intended to generate a conversation about the future and provide the big-picture context for future planning and decision making by governments and the rail industry.

Acknowledgements

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The future of retail is being influenced by a myriad of factors, variables and trends. Sudden shifts or step changes can dramatically affect the sector. The proliferation of the smartphone and the channel migration to e-commerce and m-commerce are two examples of such disruptive factors. Looking forward, contactless payment could become the next game changer, impacting the point of sale experience and with it in-store layout and shop floor design.

The Future of Retail explores how drivers of change are shaping the future of retail. It reveals important trends shaping new consumer behaviours and looks at some of the likely impacts that these will have on future retail environments and services.

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