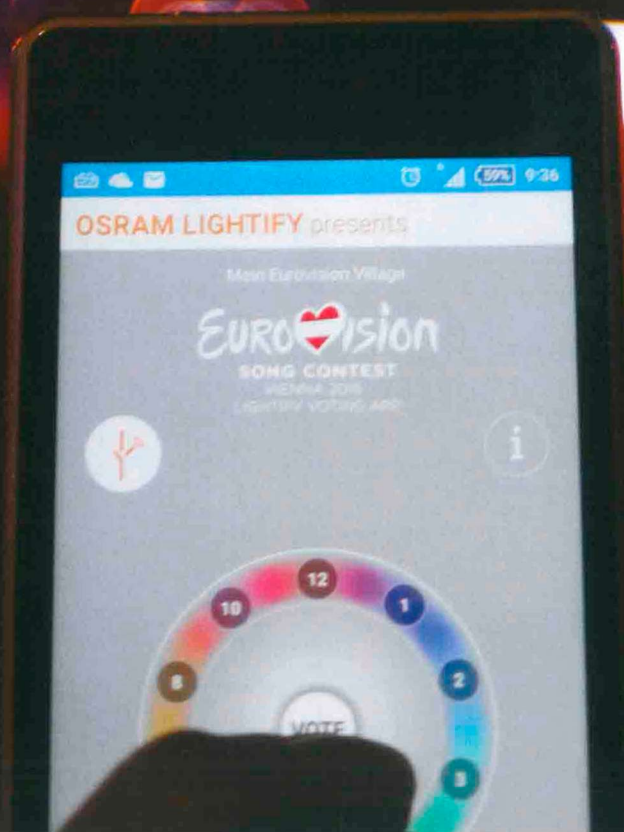


LIGHTING

Light fittings have become the unlikely smart link between consumers, stores, shopping centres and even cities. **Mark Faithfull** looks at how LEDs are changing the retail rules

Shining a light on smart shopping



Osram Lightify is a wireless system to control networked lights via an app, allowing retailers to make instant changes

Not only are retailers racing to trial the data opportunities LED lighting is creating, entire European cities are extolling their smart capabilities. A growing number of people in the lighting industry believe that lighting networks will form the backbone of smart networks because the infrastructure is already in place and the convergence of electricals and information technologies continues to gather pace.

At the infrastructure end, a number of cities have a definite head start, with UK market research firm Juniper identifying Barcelona, New York, London, Nice and Singapore as five leaders, following analysis of each city's smart capabilities. Eindhoven, Manchester and Stavanger also have good cause to be considered for that shortlist.

Such high-end concepts tend to be lumped together within the internet of everything. The most recent retail manifestation of this has been opened by US mass retailer Target, with its Open House experiment in San Francisco. Part retail space, part lab, part meeting venue for the connected home tech community – the 3,500 sq ft 'house' at the Metreon shopping centre demonstrates the sometimes unlikely links between household activities, functions and technology.

VLC allows LED luminaires to pulse invisible binary code to a smartphone to send data

"Putting a house in the space, we felt, was the most relatable and welcoming way to introduce these products," says Todd Waterbury, Target's chief creative officer. "What we're trying to do is humanise and personalise the benefits of these products, as well as show them working in concert. It's really about relevant storytelling and creating a destination for engagement and discovery."

The global lighting industry giants are also throwing their resources behind convergence opportunities and GE Lighting recently announced two collaborations, one directly for retailing. With Qualcomm, GE is ostensibly pushing for better smartphone compatibility in retail spaces, as well as beacon-based indoor positioning, through visible light communications (VLC). This technology allows LED luminaires to pulse an invisible binary code of light to a smartphone to send data.

Retrofitting existing lighting infrastructures with networked luminaire units or building them into new stores, outlets can 'zone' their shopfloors, providing location-specific packages to shoppers' devices.

The potential uses of this technology



Dandy Lab

A concept menswear store packed with sensor technology, the Dandy Lab opened as a beta trial in August, with a view to make it permanent early next year. The store in London's Spitalfields provides interactive information to the customer and gathers data on shopping behaviours. Cisco is among a notable list of partners in the venture, supplying the shop with network solutions.

For the retailer and suppliers, sensors embedded around the shop provide anonymous demographics, footfall figures and analyse data to transform the space in real time, influencing what items to carry at particular times and where to display stock. For the shopper, near field communication (NFC) tagging provides brand data, there's a virtual styling wall and video conference facilities so they can talk directly to manufacturers.

Co-founder Julija Baniaksina says the concept is to "blend technology, independent UK menswear brands and customer

experience and that various innovations will be trialled and evaluated. We want the experience to be seamless for our customers, providing them with useful information through on-shelf screens for example, while we track demographics and footfall to provide useful data for the brands".

Baniaksina adds that Dandy Lab hopes to roll out the concept in Japan, the US and other markets.



Internet of things technology utilised at the start-up store Dandy Lab bridges physical and online retail

Carrefour

In May Philips announced the first major installation of its connected LED lighting system for the newly-refurbished Carrefour hypermarket in Lille, France.

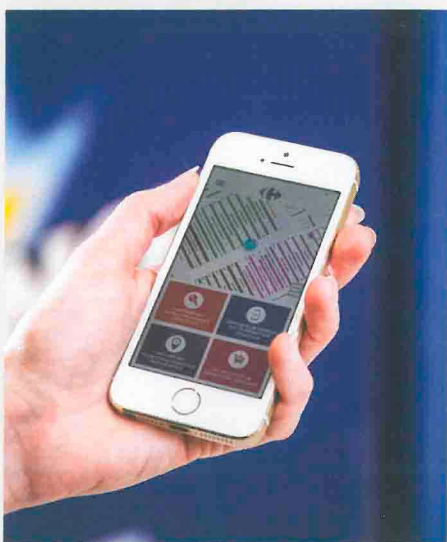
The 2.5km of LED lighting enables Carrefour to provide new services to its customers, such as helping shoppers to navigate the 84,000 sq ft shopfloor and find promotions.

In addition it will reduce lighting energy consumption by 50%.

"We are always on the lookout for innovations to facilitate customer navigation in our stores and meet consumers' expectations," says Céline Martin, director of commercial models and innovation for Carrefour hypermarkets in France.

The system in operation at Lille comprises 800 linear LED fixtures that use Philips VLC technology to transmit a unique code through light detected with a smartphone camera.

Philips software and a cloud-based location database have been integrated into Carrefour's mobile app.



Philips smart LED lighting at Carrefour Lille hypermarket interacts with smartphones to provide navigation and promotional information in real time to customers

includes providing product information or promotions, or even facilitating payment processes.

"The huge shift in these opportunities has been through usable LEDs for retail lighting," says Mike Bennett, general manager lighting product management, EMEA, at GE Lighting. "Retailers are now convinced about the rationale behind installing LEDs simply from a lighting perspective. So that means the data infrastructure has already been established with its own return on investment in place."

There is then the opportunity to piggyback on this to add analytic and communication tools that enable the retailer or shopping centre to interact with customers.

The challenge is to ensure data security is robust so consumers are happy to opt in

"The hardware is pretty straightforward and most of it is available right now," says Bennett. "The opportunity is to understand very accurately how shoppers are behaving and to provide them with relevant offers. The challenge of course is to ensure that data security is very robust so that consumers are happy to opt in and use these services."

This point was evident in a white paper produced by *Retail Week* for GE, which

showed that while many shoppers were enthusiastic about interacting in such ways a significant minority had misgivings.

"Technology is evolving all the time," says Bennett. "Take visual light communication, which interacts with a smartphone camera; in the future it will be pinpoint, as VLC and smartphone camera technology improves. Store operators will have the same level of real-time behavioural information as

INTERIORS LIGHTING



Clockwise from top left: Sainsbury's;
John Lewis; The Shilla Duty Free Shop



ecommerce operators and will be able to act on that.”

Parik Chopra, retail segment lead at Philips Lighting, says the newness of these opportunities to monitor, respond and promote to shoppers means that the approaches taken by retailers in utilising them come with their own challenges, particularly in ensuring that consumers are comfortable about the means of communication and see it as incentive, not intrusion.

“We’re building a business around these opportunities but it is important that the building blocks for these technologies are constructed carefully,” says Chopra.

“Shoppers must have absolute confidence in data security. Our systems do not store data and are blind to users’ identities but it’s vital that other third-party applications cannot be breached. It’s something that the retailers must be aware of and manage.”

Chopra notes that while the US and China are the fastest adopters of the technology, applications differ by territory – in the US it is primarily used for asset tracking of staff, Europe for consumer engagement and in Asia

“Local lighting control allows customers to see how goods look under different lighting conditions”

Jason Vaughan, Osram

the focus is particularly on WeChat, a popular messenger app.

“LEDs have established their own credibility as an effective and efficient lighting technology but we’re looking at a whole bunch of sensors and analytics being built around this infrastructure,” says Chopra.

“LED penetration in retail is less than 10% globally but we believe it will reach 90%. This is a huge opportunity.”

Wireless infrastructure is also being used to enhance lighting solutions, with Osram launching Lightify Pro, a wireless network-

based lighting system that allows stores to scene set and change colour temperatures at the touch of a button.

Next up is Omnipoint, which allows control of beam angle, accent, direction and the shape of one or multiple light fixtures via a mobile phone or tablet. It was unveiled at Light Fair US in May and will be launched in Europe next year.

Jason Vaughan, UK vertical markets manager at lighting firm Osram, says local lighting control for brightness and colour temperature enhances the shopping experience by allowing customers to see how goods look under different lighting conditions they may encounter after purchase.

He adds: “Using location identification technology is also just reaching the market. How widely this will be adopted by customers is currently unclear.”

A lot on the horizon, therefore, and opportunities for retailers and customers alike, although which of these technologies will end up being broadly taken up in store remains a subject for speculation. The road ahead looks bright, or at least brighter.