Beacons – a digital revolution in the making?
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When Apple released iOS 7 in September 2013, the world’s media focused on its strikingly colourful new interface. Most of the coverage overlooked a new feature called iBeacon, yet this micro-location technology could revolutionise how people interact digitally with their physical environment, whether they are out shopping, at a football match, visiting a museum or even relaxing at home. Beacons are starting to generate serious interest among retailers, leisure companies, restaurant chains and many others. Are Beacons set to change the world, or will they join the long list of technologies where the reality fell a long way short of the promise?
what are Beacons?

Beacons are a new class of short-range, low-powered transmitters that can push notifications to mobile devices when they come within 70 metres of the Beacon. They use Bluetooth Low Energy (BLE), an open standard which enables short-range wireless communication using a fraction of the power of standard Bluetooth. Thanks to the low power usage, small beacon transmitters can run for up to two years on a single cell battery. At around £20 per Beacon, they are also incredibly cheap.

Beacon technology relies on specific software running on the receiving device, so your phone needs to have a relevant app installed – this could be a retailer’s app, for example – and when you move within range of a Beacon, your app receives a notification.

Beacons use signal strength to calculate how far away the phone is from the Beacon, with proximity data logged in the app as Immediate (under 0.5 metres away), Near (0.5m-4m) or Far (over 4m away) or as a precise distance reading. Apps can also triangulate multiple Beacons to determine your position more accurately. And they can do more than simply beam a location signal – some Beacons include accelerometers and temperature sensors too.

Apple’s version of Beacon technology, trademarked as iBeacon, is the best-known, but Samsung has filed a trademark for a similar-sounding solution known as Flybell, and Paypal has launched its own Paypal Beacon, which integrates with the Paypal app. While full details of Samsung’s solution are yet to emerge, it is likely that all of these variations are based on the same Bluetooth LE standard, differing only in how they approach implementation. So, despite a host of trademarks emerging, it is possible that most Beacons will be detectable by most Beacon-compatible devices, whether they be Apple or Android.

Apple has yet to make its own Beacon transmitters, but nimble companies such as Radius Networks, Estimote, Qualcomm and Roximity have already brought Beacons to the market. Most of these are in the form of small, lightweight battery-powered devices which can be fixed to a wall, but recent iPhones and iPads can also be set up as transmitters. The receiver can be any device which is Bluetooth LE-enabled and is running a compatible OS, and this includes all iOS 7 iPhones and iPads, as well as any Android device running Android 4.3 or above.

Beacons are the latest in a long line of mobile technologies used for location-based services, so what makes them different? To date, geo-fencing (where you specify a virtually boundaried area) has relied on a combination of WiFi, cellular network and GPS signals. This works well outdoor, but it is less effective for precise indoor positioning where signal quality is often poor or, in the case of GPS, non-existent.

The advantage of Beacons is that they can pinpoint exactly where someone is in an area where Beacons are present – in a store or museum, say. Using triangulation of multiple Beacons, the app can work out the phone’s location to within a few centimetres and, crucially, all of this can happen seamlessly in the background with no user input.
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An additional plus point is that thanks to low power usage, Beacons avoid the battery issues that plague GPS and WiFi.

NFC (Near Field Communication) is another proximity technology, but the key difference here is its range. NFC only works in very close proximity (around 10 cm), whereas Beacons have a range of around 70 metres. So, while NFC is good for contactless payments at a point of sale, it is not as useful as a way to interact with shoppers wandering around a store.

In short, Beacons offer far greater location precision than other solutions, and it is cheap to build an infrastructure thanks to the low cost of the transmitters.

**Beacons in the real world**

The ability for your phone to work out its micro-location may sound like an incremental improvement but it is potentially revolutionary, because the more precisely a location is known, the more relevant the digital experience can be. Beacons at last provide an efficient, cost-effective way to join up the digital world with the physical environment.

**retail**

The area where Beacons are generating the most initial interest is in retail, and there are many ways in which Beacons could transform the in-store experience. Several major retailers have started trialling Beacons, from Macy’s, Safeway and Apple in the US, to Tesco in the UK. Macy’s, for example, has partnered with the shopping app developer Shopkick to offer customers location-specific deals, loyalty points, discounts and recommendations. When the customer walks into the store, the Shopkick app greets them and offers specific deals and recommendations.

Since retailers can put any number of Beacons in
a store, they can be as specific and targeted as they wish when it comes to offers. A retailer could choose to serve up only store-wide offers, or could be much more specific: as you walk past the cashmere sweaters, your phone alerts you to the 20% discount that day. Retailers can also introduce much more dynamic pricing, notifying in-store customers about short-lived flash sales (“£10 off all ladies’ shoes until 3pm!”) via their apps.

Although features such as offers, discounts and product information are well-established in retailer apps, it is the ability of Beacon technology to surface this information automatically and in the background that makes it a step change from existing solutions. What used to be a cumbersome approach to integrating digital information with the physical world, demanding lots of interaction from customers, becomes a seamless, passive user experience. You can glance at your phone whenever you want and will see the most relevant information depending on where you are. This could become a powerful counter to showrooming, where consumers view physical products in-store but then choose to buy them elsewhere online. By presenting the customer with product information and in-store offers, the retailer has more chance of persuading the customer to buy there and then.

While Beacons are ideal for targeted offers, they are not just about push messaging. Beacons can improve the customer experience by providing help and assistance. Take in-store navigation for example: large stores with hundreds of product lines can be confusing for shoppers, but, with Beacons, it is possible to guide customers very precisely to any part of the store via the app. Customers could also potentially use the app to call for assistance from staff who would know exactly

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Qualcomm in-store Beacon geo-fences

Google Glass and Beacons could deliver unrivalled customer service (Hybris)
where to find the customer, or conversely, staff could be alerted when a lot of customers are in one part of the store.

Pairing Beacons with Google Glass could take customer service to a new level. The e-commerce specialists Hybris have demonstrated how staff could be alerted in their Google Glass when a valued customer arrives in the store, allowing them to go and help them, while also ensuring they have all the relevant product information to effectively advise the customer.

The bricks-and-mortar checkout process is yet another area which is ripe for a better experience. PayPal has developed a Beacon protocol which integrates with the PayPal app to enable hands-free payments, with no need to use cash or swipe credit cards. By speeding up the checkout process, this could have a major impact on reducing queues, and it also opens up the possibility of informing customers directly about offers at the checkout stage.

The PayPal approach does not completely free the customer from the point of sale area, however. There is still the need to authenticate payment, and PayPal’s approach is to use a photo of the customer. As the customer checks out, they confirm their payment to the salesperson and the salesperson visually checks that the photo on the PayPal system matches the customer. An alternative way to authenticate the sale would be to use the fingerprint systems on newer phones, making the whole checkout process extremely quick and easy.

leisure

It goes without saying that Beacons have huge potential beyond retail. Theme parks, museums, sports stadiums and music arenas could all tap into Beacons’ micro-location capabilities to create

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inspiring new services.

Major League Baseball, for example, is trialling Beacons to improve the stadium experience. When you reach the entrance, your ticket automatically appears on your phone, ready for scanning at the gate. Once in the stadium, you can see contextual information specific to where you are, as well as a map to help you find your seats. You could imagine the same approach working well in airports and railway stations to smooth the traveller’s journey.

Queuing is one of the biggest pain points at large events, and this is another area where Beacons can help. The Miami Dolphins, for example, used Beacon technology to let fans know which fast food counters near them had the shortest queues.

Beacons also open up new opportunities to upsell to fans once they are on site. Pushing messages to event-goers is not new, but Beacons can make the messages more relevant and timely. For example, the Golden State Warriors, an NBA team in California, used Beacons to fill empty premium seats by offering upgrades to fans as they arrive at the stadium.

Many museums already use interactive technology to bring the experience to life, but Beacons make it even easier to combine digital information with the physical museum. At the Rubens museum in Antwerp, a Beacon-based app displays all sorts of information, from quizzes to X-rays of paintings, in exactly the right places as you move around in the museum. The key point here is that Beacons have removed the need to scan QR codes, tap a sign or let the app know which room you are in. They allow the technology to fade into the background, letting visitors focus on the treasures in the museum.

Cafes and restaurants are getting in on the act too. Bar Kick, a football-themed bar in Shoreditch, has partnered with a digital publisher to deliver free digital magazines to customers’ iPhones and iPads within range of their Beacon.

And EAT, the sandwich chain, has started trialling Weve’s mobile loyalty app Pouch, which includes integration with Beacons. In a small number of pilot stores, Beacons push tailored messages to customers running the Pouch app.

what do Beacons mean for customer data?

Beacons will usher in a new era of metrics in the physical world. Websites have long been analysed in microscopic detail, from monthly visitors down to individual button clicks, but in physical environments there are fewer metrics available.

At a basic level, retailers typically track KPIs such as footfall, conversion and average basket spend, but there is little data on how customers flow around the store. With Beacons in place, retailers can start capturing metrics similar to their online sites:
Firstly, there is the question of compatibility. Beacon-compatible phones include all iOS 7 iPhones and any Android phone running Jelly Bean 4.3 or above. At the time of writing, this accounts for nearly 40% of phones in the UK (see chart), while WiFi and GPS are on a far higher proportion of phones (77% and 75% respectively). Penetration of Beacon technology is already well ahead of NFC, however, which is built into only 20% of UK phones. NFC and Beacons are significantly different in terms of their range, but their use cases overlap when it comes to finding product information, accessing offers and making payments. Some analysts believe that Apple have decided against building NFC into their products and see Beacons as the superior solution in this area, so NFC could struggle to ever build up critical mass. And although only 40% of UK mobile users currently have Beacon-compatible phones, this figure is likely to rise rapidly as people upgrade to newer phones. So Beacon compatibility is unlikely to be a long-term issue, and in the short term, the owners of compatible phones (e.g. iPhone 5 owners) could be targeted as a high value segment.

A greater barrier to widespread use comes from customer paths around the store, dwell times in specific areas, repeat visitors, average basket spend depending on which part of the store they visited, and so on. This data could be analysed in real time to produce insights which store managers can act on instantly – moving a promotion to another part of the store, for example, or seeing how conversion varies with the in-store temperature.

Integrating Beacon technology into retail loyalty schemes opens up another new horizon for brands. Most loyalty schemes award points purely for purchases, but Macy’s Beacon trial awards customers points just for walking into the store. So Beacons can support new marketing initiatives to drive footfall while being fun and rewarding for customers.

breaking down the barriers

The use cases for Beacons are hugely compelling, but will they take off? There are still a number of obstacles to overcome before Beacons go mainstream.
where next?

Beacons have incredible potential. They could knock down many of the barriers which exist between the digital and physical worlds, and vastly improve the customer experience in countless situations, from bricks-and-mortar shopping to visiting a museum or catching a flight. By delivering very precise micro-location data, Beacons enable game-changing improvements in how relevant digital experiences can be.

But the technology is still in its infancy, and there are major barriers to overcome before Beacons become part of our daily lives. Finding the sweet spot where the value of the message outweighs the nuisance factor is key to making Beacons a success. Beacons are at the stage where experimentation is needed to determine what makes people’s lives better, and what turns consumers off.

Retailers, brands and other businesses need to rise to the challenge of exploring how this technology can enhance their customers’ lives. The rewards could be huge.

the multiple permissions needed to make Beacons work. Let’s take the example of a retailer which builds an app to connect with its in-store Beacons. For a consumer to use this app, four layers of user permission are required:

1. Download the app
2. Ensure Bluetooth is switched on
3. Accept a request to use Location Services with the app
4. Accept a request to receive Notifications from the app

Only if all four of these steps are completed will the app start showing Beacon messages when the customer walks into the store. To overcome this, any business contemplating a roll-out of Beacon technology needs to put significant effort into educating consumers about the benefits of opting in to its Beacon-based apps, and making it easy to follow the installation steps.

This brings us to what is potentially the biggest stumbling block for Beacons – the nuisance factor. This threat applies less to use cases such as museums, theme parks and stadiums, but is very real for high street retail. In a world where we are already bombarded with hundreds of marketing messages a day, how receptive will people be to another intrusive form of push messaging? You could imagine a scenario where, walking down the high street, your phone bleeps constantly as countless notifications appear on your screen every minute. You would quickly succumb to alert fatigue, and the valuable offers would be lost in the clamour for your attention. Tesco has avoided building marketing messages into a trial of Beacons at their Chelmsford store – instead, the Beacons help shoppers find products around the store.

The open nature of the standard means that consumers could potentially be caught up in Beacon wars between retailers. Imagine that Jim walks into one of Retailer A’s stores. Jim already has Retailer B’s app installed on his phone, and when it detects one of Retailer A’s Beacons, it flashes up a notification on his screen: “Hi, it’s Retailer B here. Just letting you know that we’ve got 20% off all men’s shirts today for valued customers. Here’s your unique code!”. Jim swiftly leaves Retailer A’s store to take up the rival offer.

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Orange Digital is a full service digital agency with offices in London and Leeds.

If you would like to learn more about how Beacons could help your business, please get in touch.

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