The Connected Business

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Shaping up for 'always on' world

Telecoms groups may need help to make the most of opportunities.
Daniel Thomas previews Barcelona

The traditional telephony business that had long been the raison d'être of the vast Mobile World Congress in Barcelona has now become a sideshow.

The week-long event, which begins today, now majors on connected technology in all its guises. Any mention of traditional voice calls and texts will be an afterthought – as it is in the services of many of the larger groups in the sector.

Instead, the telecoms industry hopes to make the next step into a connected world that will transform how people live, work and play, with the 75,000 people attending set to see the next generation of services and devices that are designed for an "always on" internet world.

As always, there will also be advances shown at the event that will help make networks increasingly ubiquitous – and so practically invisible with seamless access to mobile data – but these will, most importantly, further underpin the shift in connecting everyday life.

Many of these innovations will feature in the Connected City exhibition, which will bring together practical applications in cars, homes and offices, as well as improvements in health, education and city management. A basketball team will even be wearing connected T-shirts that will monitor their health and fitness.

Rapid data networks, and the services that will run over them, will also facilitate the latest innovations in the large number of smartphones that will be displayed, including Samsung's latest Galaxy S5 but also the final range to be shipped by Nokia before the sale of its devices business to Microsoft.

Anne Bouverot, director-general of the GSMA, which organises the congress, says this year's emphasis will be on positioning the mobile industry as the platform for innovation.

"This is about partnerships," she says, pointing to the attendance of large internet groups such as Facebook and WhatsApp, the chat app company which last week agreed to a $19bn purchase by the social media giant. In the past, such groups have been regarded by many telecoms executives as competitors that ride for nothing over their costly networks.

Ms Bouverot says these companies have a similar aim in trying to con-

> The telecoms sector has long been trying to position itself as part of the digital 'ecosystem'

nect the unconnected – a major talking point at the event. "People rightly point to the almost 7bn Sims [subscriber identity modules] in the world but forget that most people have two. That means there will be 3.4bn people without a mobile phone today."

While this clearly represents a large market for mobile operators, she says, it is equally exciting for the companies that can access these customers, such as banks and retailers, and social media groups such as Facebook.

This means greater levels of partnership, she says, pointing to a recent deal between Spain's Telefónica, Mozilla, which has created a mobile operating system, and Line, the Japanese instant messaging service.

With the focus on access to customers, and the greater depth of relationship with those customers by making phones central to paying for goods, monitoring health or educating children, the darker side of the debate will be around privacy and use of data.

"Digital identity is a big concern [for consumers]," says Ms Bouverot.

One solution at the show will be a service that allows mobile operators to use part of the Sim card in each phone as storage for secure information, which can be used to access websites for banking and social media.

However, telecoms groups have long been trying, and most often failing, to redefine themselves as high-growth technology groups – and position themselves as part of the digital "ecosystem" – rather than sluggish infrastructure businesses.

Even with innovative products and the underlying sense of a rebranding, there is still a feeling of unease – the world's telecoms executives will descend on their biggest and loudest industry conference ever at a time of uncertainty.

As the market moves from offering telephony to TV and broadband connections, it is likely that content and internet services will be central to the future of the industry, although companies are shifting themselves only gradually to address this new market.

How telecoms groups will develop is still a question that will only partly be answered by this year's Mobile World Congress.

It is also not clear if they can really build new businesses in the internet age themselves, or whether partnering with already successful internet groups that have made the leap up from basic services to much-loved consumer brands will be the key.

Only connect: visitors at last year's Mobile World Congress in Barcelona — Lluis Gene/AFP/Getty Images

Developers fill gaps to enhance iPad's appeal for business users

Paul Taylor

When Apple launched the iPad in April 2010, it was positioned as a consumer device. There was little or no expectation among Apple's senior executives, including the late Steve Jobs, that it would prove to be a big hit with corporate executives and senior managers.

As a result, the iPad initially lacked many of the features and productivity tools that business users might reasonably expect, including file management, access to Microsoft's near-ubiquitous Office suite and electronic pen input.

Since then, however, Apple and third party app developers have filled in many of the missing pieces.

For example, I use an app called Documents by Readdle, which includes a file manager, media player, photo album and document viewer and is arguably the best free file manager available for the iPad.

The app features a clean icon-based user-interface that allows you to navigate through its various sections, and includes a PDF reader that enables users to annotate and highlight text.

It connects easily to the most popular cloud-based storage services including Dropbox, Google Drive, SugarSync, Box, Office 365, and Microsoft's OneDrive (formerly SkyDrive) and supports a variety of file types.

Users can upload documents to any of the supported cloud services and manage them from within the app, and sync documents via Apple's iCloud.

I am also a big fan of Parallels Access ($49 a year), designed to enable iPad users to run the full desktop versions of Office (Word, Excel, PowerPoint and Outlook), Intuit's Quicken money management software, Adobe's Photoshop and Apple's own iTunes.

Access is not the first or only app to provide remote access to desktops: there are a few others, some free, that are mostly used by IT support staff and techies. But it is much easier to set up and use than any of the alternatives I have tried and, unlike other apps, it lets you run Mac and Windows applications as if they were made for your iPad.

The software also allows iPad users to harness the much greater processing power and storage capacity of most desktops rather than rely on the iPad's relatively limited hardware.

This is important if, for example, you need to work on a complex Excel spreadsheet or manipulate large content files.

To start using Access, you need to download it from Apple's App Store, set up an online account with Parallels and install the small client app on any desktop machines you plan to access.

The Livescribe 3 smartpen

The client app runs on Macs running OS X 10.8 or later, and any Windows-based machine running Windows 7 or later.

Provided you have a reasonably fast Ethernet or wireless connection, and the remote desktops are online, the Access homepage displays a list of your remote PCs.

Once you choose the desktop that you want to access, the software establishes an encrypted connection and displays an iPad-style page of icons denoting the software installed on the desktop.

Click on one of the icons and the desktop software fires up almost instantly.

I mainly use Parallels Access with my iPad to access Office documents on my home PC while travelling and have found it to be pretty reliable – provided I remember to leave my PCs powered up and online.

My last recommendation is to pair the iPad with a $150 Livescribe 3 smartpen. The Livescribe 3, which was launched late last year, instantly turns handwritten notes, drawings and doodles drawn on special paper into their digital equivalents.

These are displayed on an iPad screen via a Bluetooth LE (low energy) wireless connection.

That means I can sit in a meeting and use my Livescribe notebook to make notes, a virtual copy of which is stored in my iPad using the free Livescribe 3+ app.

This has other features, including optical character recognition, which turns handwritten notes into digital text files.

Sensibly, Livescribe has also decided to provide third party app developers with a software development kit (SDK), so they can add natural pen and paper note-taking to their own apps.

The first apps to implement the SDK are from Gorillized – Outline (free for up to 30 documents) and Outline+, costing $15. These work with Microsoft OneNote to store, organise, edit and annotate notes and were launched this month.

Outline users can create notes with pen and paper alongside content created using Outline's iPad-based tools, while Outline+ adds the ability to use Microsoft OneDrive, Microsoft SharePoint Server, Box and Dropbox.

Interestingly, the Mac version of Outline is the only app that currently supports OneNote notebooks on Mac OS X.

This allows users to sync their notebooks from iPad to Mac and to OneNote on a Windows PC.

This is the first in a new, regular column by the FT's US business technology and telecoms correspondent.

The Connected Business

Rapid growth fuels rash of competing solutions

Payment systems

No winner has yet emerged in a highly fragmented market, says *Daniel Thomas*

With mobile commerce growing so quickly, banks know it is vital to enable customers to pay for goods with their smartphones.

Many technology and telecoms groups are hoping to help banks with their digital strategy.

Meanwhile retailers, too, are having to adapt to the blurring of online and high street as shoppers use their phones to find and purchase goods.

"This is a shift to a world beyond plastic where the smartphone becomes the platform," says Marion King, president for UK and Ireland at MasterCard. "The infrastructure is different around the world, [but] people just want convenience."

However, the rapidity of growth of mobile payments has also caused the market to fragment, as the various groups that own different parts of the technology, banking or retail elements have looked to grab a share of the market.

"It's a mess, isn't it," says David Sear, managing director of Weve, a company set up to develop mobile commerce and advertising initiatives on behalf of Vodafone, O₂ and EE in the UK.

"It is confusing for people and for banks, as well as being costly all round," he observes. "Payment is the utility bit – you need scale to make it work. It's questionable right now if it adds revenues for banks, but they will need to make it work in the future."

For many mature markets, cards and cash are so well embedded with consumers that digital wallets are seeing only gradual acceptance.

However, the rollout of contactless payment pads in shops shows that the infrastructure is becoming established.

Emerging markets are sometimes more open to mobile payments, in part because there are places where banking is at a basic level and where mobile payments can be used as a secure way to trade. Vodafone's M-Pesa payment scheme in Africa is a notable success.

Jean Lassignardie, at Capgemini Global Financial Services, has identified 12 success factors, all of which are needed for a successful mobile payments platform.

"And, to date, no leading successful solution has come to the forefront except in the emerging countries in Africa with M-Pesa, where no alternatives besides cash are available," he says.

The options for mobile payments are "many and fragmented", according to Alistair Newton, research vice-president for banking and investment services at Gartner.

He blames differences in approach based on technology, local supplier and operator structures and the regulatory environment.

A number of services allow the phone to act as a means of payment using contactless NFC (near field communication) technology, although again the market is fragmented.

Most require separate digital wallets, and not necessarily linked to a bank account. In the UK, EE and MasterCard, for example,

> 'It's a mess, isn't it? It is confusing for people and banks, as well as being costly all around'

offer a service where customers can load up cash on to their phones.

But MasterCard has also struck a deal with Weve in the UK that offers banks the means to launch mobile contactless payment services in an effort to build a more unified platform.

Groups such as Google, Amazon and PayPal already offer payment schemes online, and are now making a push into the real world with services such as Google's Wallet that puts cash on a phone.

Technology experts predict that Apple could also become active in this market given the popularity of its iPhones, extensive data, fingerprint scanners and other technology that could support a payments system.

Eden Zoller, analyst at Ovum, expects further mobile payments developments from Amazon, Facebook, Google, and Apple.

"Facebook in particular needs to revise its lacklustre mobile payments strategy, which stands in stark contrast with its successful mobile advertising play."

In the US, Square, the company set up by Twitter co-founder Jack Dorsey, provides technology at the other end, with a device that allows a mobile phone to take payments.

However, shops using Square can also take payments directly from the app on a phone. PayPal and iZettle also allow shops to use a phone to take credit card payments through a chip and pin reader.

Pierre Combelles, mobile commerce business lead for the GSMA, which represents the mobile industry, says the priority is greater integration.

Mobile operators, retailers, banks, commercial organisations and industry associations need to work together to define a "consistent transactional journey", he says, where customers do not have to adapt to multiple processes.

Gartner's Mr Newton says that the power lies with the user, "not the operator, banks or brands".

Ultimately, he says, the latter need to make mobile payments easier or safer, or offer incentives such as loyalty rewards, to persuade consumers to change their habits.

"Way too many payment 'innovations' ignore these very basic principles, and as a result are doomed to failure."

Stores caught by surprise as shoppers take their tablets

Mobile commerce Retailers need to act fast – and get their apps right – to benefit from a multichannel world, writes *Duncan Robinson*

Smartphones and other mobile devices such as tablets are changing the ways people shop, and purchases made from these devices are growing fast.

In the run-up to Christmas 2013, shopping via mobile devices jumped 140 per cent in the UK, according to IMRG, the industry association for online retailers.

This trend is set to continue. Shop Direct, the group behind Littlewoods and very.co.uk, says that from next year all its transactions will involve a mobile device – with customers either researching an item or making the entire purchase on the device.

"We have been taken by surprise at how fast this is growing," says Alex Baldock, chief executive of Shop Direct. "We are investing heavily in optimising our site for mobile devices.

M-commerce – people shopping on mobile devices such as smartphones and tablets – could be revolutionary for retailers.

Online shopping allowed customers to buy any time they liked, so long as they were near a computer. With shopping hours still heavily controlled in many countries, not least as a result of Sunday trading restrictions, this was a huge change.

But mobile goes beyond this, giving retailers access to shoppers 24 hours a day, wherever they are.

Retailers need to act quickly if they are to benefit from the rise of mobile ecommerce. In the UK, sales via tablets will quadruple over the next four years, reaching £17.9bn in 2017, according to eMarketer, the research group.

In emerging markets, mobile has proven even more vital. Smartphone usage is growing rapidly in countries such as China, enabling consumers to leapfrog straight into mobile-only ecommerce. Mobile users overtook those using PCs in China in 2012 – and that gap is growing.

Alibaba, China's largest ecommerce company, has scrambled to get more of a foothold in the mobile market.

"Mobile has a lot of power," says Penny Gillespie, an analyst at Gartner, the research group. "For the first time, customers carry around a device constantly."

But this proximity brings problems. Shoppers have much higher expectations from mobile services than from a standard website. There is a built-in belief on the part of consumers that mobile will be more efficient, says Ms Gillespie.

A slow-loading app or a clunky interface will kill sales more quickly than a sloppy experience on a desktop. Customers often find it tricky to buy from a mobile. Tablet computers – with their large screens – lend themselves well to shopping. Smartphones, however, with their smaller screens, make doing things such as inputting credit card numbers fiddly. Accordingly, tablets account for four-fifths of UK mobile sales.

Companies such as Mopowered, a British start-up, help retailers including Next optimise their websites for smaller devices. By using a phone's GPS, Mopowered can assist in finding out a customer's address, without them having to punch it in on a tiny screen.

Mobile wallets will go some way to turning smartphone browsers into buyers. The rise of the mobile wallet

> A slow app or clunky interface will kill sales quicker than a sloppy experience on a desktop

has been forecast regularly, but has so far failed to catch on in developed markets *(see article above)*.

"Customers say they are really not interested; they have enough payment methods," says Ms Gillespie at Gartner. "If you want to change behaviour, you have to give people a reason to change."

The incentives to sign up for mobile wallets have not been there so far, but will be soon, she suggests. "What will drive mobile payments and wallets will be the corresponding reward schemes."

In total, however, mobile devices account for only about a quarter of online sales, according to IMRG. The bulk of ecommerce sales is still done on websites via computers. But this will not last. IMRG also notes that the proportion of sales coming from mobile devices in the UK doubled year-on-year over Christmas 2013.

For retailers, it should not matter whether customers prefer to complete transactions on their mobiles or their laptops – or even in store, says Jacob Aqraou, eBay's European head.

If customers are using their phones to browse – or, as retailers like to say, "snack" – on items throughout the day, before actually buying them on a desktop computer, that is fine. "The devices are meant for different things," says Mr Aqraou. "Combined, you will get a better sale."

Retailers have to stop separating online, mobile and the high street, he says. "The discussion is more about multichannel – of being online and mobile and thinking of the two as complementary," he adds.

Nearly half of UK shoppers have used their smartphone in store to check whether they can get an item cheaper online, according to research by IMRG. Typically, they photograph an item or its barcode and then do further research later, maybe on a laptop or desktop PC.

"Consumers increasingly want to, and expect to be able to, use their mobile when out shopping, and not just to purchase from competitors," says Derek Eccleston, commercial director at eDigitalResearch, a research group.

Shoppers are not only comparing price, but reading reviews and comparing warranties. The future of ecommerce could be in store. "The lines between online and offline [are] blurring," says Mr Aqraou.

Champagne moment: a shopper at a Metro store in Germany scans the price of a bottle of bubbly into her mobile phone *Alamy*

Puns are write out when users switch to apps

Media and advertising

Newspapers need to adapt to demands of digital audiences, writes *Henry Mance*

The Sun loves punning headlines such as Mad Müller – when an Islamic extremist went shopping for yoghurt – and Celebrity Big Blubber – when a whale washed up on the banks of the Thames.

But as the UK tabloid newspaper shifts to digital, there is a problem. It seems readers of its smartphone app do not have time for puns: they want to know what a story is about instantly.

"There's a bit of a learning process about what works on smartphones and what doesn't," says Derek Brown, the newspaper's head of strategy. "I wish the headlines did work, but they don't always."

Along with other media organisations, The Sun – owned by Rupert Murdoch's News Corp – is trying to catch up with its audience, which has shifted to mobile devices faster than many media executives thought probable.

"That mobile tipping point has definitely been reached," says Robin Pembrooke, head of product at BBC News Online, one of the UK's most popular news sites.

January was the first month when at least half the BBC website's unique visitors came from tablets and mobile devices. "In places such as Nigeria, more than 90 per cent of our traffic comes from mobile devices," says Mr Pembrooke.

The first step for many media organisations has been to try to shift users to apps. Downloading an app makes users likely to read more articles and watch more videos.

App users made up just one in 10 unique browsers to the BBC News mobile site in January, but accounted for nearly 40 per cent of the content viewed.

This means competing to some extent with services such as Twitter and Flipboard, which allow readers to view news content within their own apps.

Last month, Facebook launched Paper, an app that packages stories from news outlets with social media posts. "How each story is told is as important as the story itself," said the promotional video.

Some publishers argue that stories can be told on mobile and desktop in broadly the same way. "The differences are not as striking as one might imagine," says the BBC's Mr Pembrooke.

So-called responsive design means that websites and web apps can adjust to the device on which they are being viewed.

Some companies are therefore working towards "omnipresence", whereby consumers have a similar experience on desktop, mobile and tablets, says Paul Armstrong of Digital Orange Consulting.

Others, however, are engaged in a larger rethink.

On The Sun's mobile app, stories are ranked by time since publication, rather than by importance, so visitors to the app are constantly confronted by new information. The newspaper measures success by how often readers return to its site throughout the day.

Along with more straightforward headlines, the Sun also tries to deliver bite-sized content, including videos that are just 20-seconds long.

"When everyone sets out to make a news video, they think three minutes," says Mr Brown. "But, if you're standing in a queue, you're going to be at the front of the queue in 30 seconds."

On mobile, the line between newspapers and television channels quickly becomes blurred: The Sun also offers readers football videos through its Goals app. The Times, another News Corp publication, is offering subscribers a free premium subscription to Spotify, the music streaming service.

For advertisers, the transition to mobile is also throwing up new questions – along with opportunities to know more about their target audience.

Even knowing a user's device can be revealing. Apple users tend to be more willing to pay than those

> 'In places such as Nigeria, more than 90 per cent of our traffic comes from mobile devices'

using Android devices, which helps explain why The Guardian newspaper charges for its iPhone app, but not for its Android equivalent.

But brands can also go much further. "The Holy Grail for advertisers is location," says Chris Dobson, chairman of the Exchange Lab, a programmatic advertising company.

If advertisers can know when a consumer is near a shop or restaurant, they can send an offer relating to that outlet.

However, accessing location data raises privacy concerns, and bombarding users with offers could become intrusive.

"Publishers, marketers and consumers care about user experience," says Mr Dobson. "We don't want to get to a point where we're being annoying."

For now, the shift to mobile is at the forefront of many media companies' strategies.

But some are already pointing to a fresh wave of gadgets, including Google Glass and other wearable devices. Such innovations may mean media organisations need to use an even smaller screen to keep the audience's attention.

"It could all change again," says Mr Armstrong at Digital Orange.

In January, in a possible sign of things to come, CNN launched an app for Samsung's Galaxy Gear Smartwatch, which displays up to 10 headlines and links via Bluetooth to a mobile phone.

MDM or MAM? Businesses seek answers in new world of BYOD

Security

Staff like to use their own devices at work but employers must not ignore the risks, writes *Paul Solman*

Mobile devices such as smartphones and tablets offer unprecedented freedom and flexibility. While consumers can access personal data and keep in touch on the move, companies and organisations have come to rely on mobile working.

Little wonder that worldwide shipments of mobile phones and tablets are expected to reach almost 2.2bn units this year, according to Gartner, the research group.

Yet a big concern for all users of computer technology remains security, and IT managers face special challenges when employees use their own devices for work.

Forty per cent of organisations with pro-BYOD (bring your-own device) policies report increased employee productivity, according to Samsung.

A survey carried out in Europe last year for the electronics group found that BYOD polices were saving 17 per cent on the average annual communications bill.

However, the survey also highlighted the security risks from mobile devices.

In the past two years, a third of organisations reported lost customer data because of security breaches resulting from the use of personal mobile devices for work. Only 8 per cent said they had not had a security scare related to employees' use of their own devices.

There are also signs that malware – already the scourge of PC users – is increasingly threatening mobile devices. Mobile malware infections rose 20 per cent in 2013, according to Alcatel-Lucent, the French telecoms group.

Gary Newe, technical director for UK, Ireland and sub-Saharan Africa at F5 Networks, the computer networking group, says: "Whether the data are held on the device or on central servers, security presents a difficult challenge for companies. In assessing the risk it is important to look at the information itself – what employees are doing with it and where they are accessing it."

Whereas mobile working was once often limited to accessing emails and reading simple documents, organisations are now asking employees to carry out increasingly complex tasks on mobile devices, using bespoke applications and handling sensitive data.

One approach to security has been mobile device management (MDM). These systems allow an organisation full control over the device, which can be tracked and, if need be, wiped remotely.

But the BYOD trend brings complications. The mobile device may not be directly controlled by the employer and the owner's personal data need to be kept private and separate.

"MDM is good in theory, but a very blunt instrument," says Dave Spence, a director in the cyber security practice of Deloitte, the consultancy.

He adds: "There are problems around privacy and control of the device. What happens, for example, when employees leave? Would they be happy for the whole device to be wiped, taking their personal data with it?"

Many organisations see the answer in mobile application management (MAM). This allows an application to be installed on an employee's device to act as a secure container, separate from personal applications.

Phil Barnett, vice-

Deloitte's Dave Spence: MDM is 'a blunt instrument'

president of global accounts at Good Technology, a mobile device services group, says: "In the past, a lot of players have worked on securing the mobile device, but now there is increasing emphasis on protecting the data themselves using a secure container. If the device is lost or stolen, the information can be wiped remotely. And the data are encrypted just in case they fall into the wrong hands."

Such systems need to be flexible enough to work on the wide range of devices that employees are likely to use. "Many people prefer their own devices, but you have to remember that not all devices are created equal," says Mr Barnett.

Part of the security solution, however, is not so much technical as procedural. IT departments can struggle to persuade employees to stick to security procedures.

"Mobile devices such as tablets have become a boon to people," says Mr Spence. "But if IT departments think people are using only what they are told they can use, they are wrong."

He adds: "IT departments need to be proactive. Many organisations have become slow about doing anything formally, but they need to be prepared to make a stand and block access for non-approved devices."

Mr Newe at F5 Networks says IT departments are in a difficult position. "On the one hand, they are being asked to allow people to use their own devices to save costs. But they are also being asked to provide more security.

"Organisations are constantly looking for innovative ways to solve the problem, but there is no silver bullet."

The Connected Business

Space – the final frontier for offices

Work Mobility within a company building is the new priority, says *Jessica Twentyman*

In a world where mobile and cloud technologies allow employees to work from almost anywhere, vast swathes of costly office space stand empty. The employees that once filled them are elsewhere. They are busy getting work done from customer sites, airport lounges, conference centres, coffee bars or their own homes.

These remote workers stay productive in the time they spend away from the office, because they are equipped with an arsenal of mobile devices, often purchased at their own expense. They use these to access an ever-growing portfolio of corporate applications via the internet.
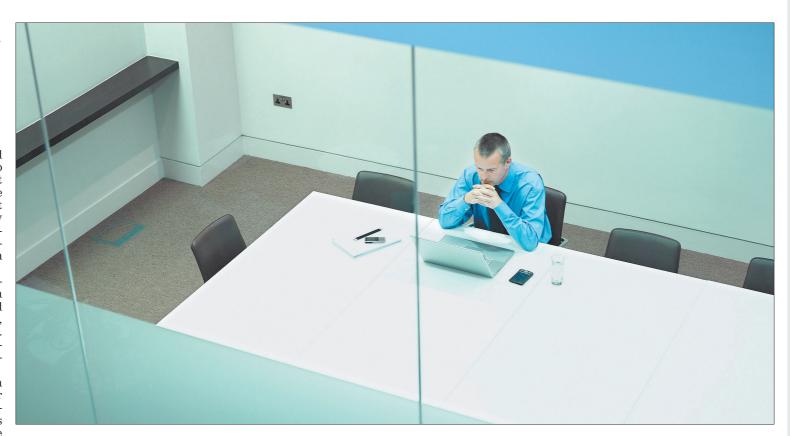
According to a report written in 2013 by Ted Schadler, a Forrester Research analyst the number of "any-time, anywhere" information workers – those who use three or more devices, work from multiple locations and use many apps – rose from 23 per cent of the global workforce in 2011 to 29 per cent in 2012.

"The anytime, anywhere work trend is just getting started," he writes.

For some employees, remote working is a necessity, because their day-to-day work takes place away from company premises.

An example is Coca-Cola Enterprises (CCE), the subsidiary of the soft drinks group that manufactures, bottles and distributes its products in western Europe. Sales staff and service technicians spend most of their time on the road, visiting retailers that stock the company's products, signing up new ones, and installing and maintaining a network of 600,000 display fridges in shops and supermarkets.

All their work is managed and recorded using mobile devices that access cloud-based customer relationship management (CRM) applications from Salesforce.com, says Kevin Flowers, CCE's chief technology officer.

For other employees, remote working is a choice – and, in some cases, it is one they make, because they do not find the office environment conducive to productivity, according to Jeremy

'Feeling lonely: swathes of costly office space stand empty in era of remote working
OJO Images/Alamy

'Without a company "home", employees are cut off from the culture and the mother ship'

Myerson, a professor at the Royal College of Art and author of the 2010 book, *New Demographics, New Workspace: Office Design for the Changing Workforce.*

"While working practices have moved into the information age, office design is still in the industrial age," he says. "People used to have to go to a physical workplace, in order to access the tools they needed to do the job. New technologies have untethered them."

In the process, he says, new ways of working have highlighted all the shortcomings of day-to-day office life, with its distractions and interruptions. "If you're sitting in an open-plan office, you can't get anything done. If you're stuck in a cubicle, you might as well be working from home," he says.

That is forcing a rethink at organisations with large populations of mobile and remote workers. Office utilisation rates may be shrinking, but the costs continue to rise: a single workstation in a central London office costs companies $23,500 a year, $14,050 in New York, and $11,350 in Singapore, according to 2013 figures from DTZ, the property consultancy.

But corporate offices still provide an

important physical anchor for organisational culture, says Diane Hoskins, executive director at Gensler, the international architecture and design firm.

"Without a company 'home', employees are disconnected from that culture. They're cut loose from the mother ship. They become more like an independent consultant to the company that employs them," she says.

That is not good for them or their employer, says Ms Hoskins: it results in low employee retention rates and missed opportunities for career development. Moreover, face-to-face meetings are still a vital part of many peoples' work.

As a result, several of Gensler's clients are starting to look at mobile working more broadly, to include mobility "within the four walls of a company building", she says.

In other words, they are looking to create different areas in the office that employees can move between, according to the type of work they are engaged on at any given time.

In addition to the mobile devices and applications they use outside the office, this model also calls for a robust, on-premise wireless network and plenty of electricity points where

employees can charge their smartphones, tablets and laptops.

In Prof Myerson's book, three types of zone are suggested: areas for concentration, collaboration, and contemplation. An employee might use the first zone for getting a report finished in the morning, the second for meeting with colleagues or customers in the afternoon, and the third for unwinding after that meeting.

This thinking inspired the redesign of several European offices of the global headset manufacturer Plantronics, including its award-winning UK headquarters at Royal Wootton Bassett, says Philip Vanhoutte, senior vice-president and managing director for Europe and Africa.

Over time, smart building technologies, based on sensors that detect when different areas are in use, will enable companies to optimise the use of the office space they rent or own, according to Nathalie Leboucher, head of smart cities at Orange Business Services.

"Mobile employees won't need to spend their time hunting for available meeting rooms or desk space on those occasions when they're in the office, because they'll be able to identify and book them online," she says.

Stephen Brobst, chief technology officer at Teradata, the data warehousing company, spends almost his whole life on the move.

In an average year, he clocks up some 500,000 miles, visiting customers all over the world and the company's research and development labs in North America, India and China.

He has never owned a home, nor does he rent one. The last bed he slept in for more than five consecutive nights, he reckons, was in his student dormitory at the Massachusetts Institute of Technology, some 20 years ago.

His passions are music and books, which he keeps on his laptop. He communicates with colleagues and customers by email, or face-to-face.

"When you're not tied to a permanent residence, every day is a travel day," he says. "As long as I have clothes for a week and can do laundry at the weekend, I'm happy."

Few employees would willingly embrace a lifestyle like Mr Brobst's, but most are more mobile than ever been before. Almost half the 26,000-plus business executives polled in a global survey last year by Regus, the office space provider, said they worked remotely for at least half the working week.

While the benefits of technology-enabled mobile working are well documented, the downsides receive less attention.

Disconnected from the workplace, mobile employees can feel isolated. If the boss plagues them for updates, they may feel that they are not trusted, but if that does not happen, employees can feel abandoned. Either way, opportunities for sharing insights and ideas can get lost in the endless shuttle between hotels, airports and conference centres.

These are areas of risk where managers need to be vigilant, says Prithvi Shergill,

chief human resources officer at HCL Technologies, an Indian IT service company.

His company's business model, he says, relies on consultants working at client sites to deliver projects, "but it's vital to us that we get employees together, face-to-face, on a regular basis for both work-related and social occasions".

When this is not possible, HCL's answer is to give employees the same kind of online social networking opportunities that they get from using Facebook, for example, to keep up with remote friends and family.

In HCL's case, the platform is Meme, where colleagues can submit ideas and client leads, access human resources and IT help desk services, or simply come together to share news, views and information.

Launched in April 2011, Meme attracted 60,000 users within HCL during its first year of life and today is used by 75,000 employees.

"We see employees from different age groups, nationalities, functions and locations really connect and bond with each other on Meme," says Mr Shergill.

Other companies take a similar approach, often using enterprise social networking products such as Microsoft's Yammer, Salesforce.com's Chatter, Tibco's Tibbr or VMware's SocialCast.

At Cathay Pacific, for example, the airline is using Tibbr to give crew members travel updates and company news.

At PSI, a non-profit healthcare organisation, staff working in Myanmar, India and Vietnam, among other locations, use VMware's SocialCast for answers on treatments for patients.

Even in an increasingly mobile world, isolation need not be a fact of life, nor should physical distance be a barrier to colleagues finding, connecting and interacting with each other.

Jessica Twentyman

Business warms to wearables but fresh ideas are needed

Smart devices

Security staff and babies are among target markets, reports *Jane Bird*

From health monitors that raise the alert when your cholesterol level gets too high, to glasses that superimpose a map on your vision, wearable computers are billed as the next big thing.

Their potential lies in using data about where people are and what they are doing, and keeping them digitally connected via the internet.

"Wearables are going to make the world of computing bigger than ever," says Genevieve Bell, director of Intel's interaction and experience research. "We're at an early stage, mostly producing enhanced versions of existing devices, such as watches, glasses and pedometers."

But in five to 10 years' time, wearable devices will be very different, she says, just as mobiles no longer resemble the first models of the 1980s. "Smartphones are used more for checking weather reports, train timetables and maps than for voice conversations."

Accenture, the management consultancy, forecasts the wearable technology market, currently worth $1bn-$3bn a year, will rise to $18bn by 2018. The main products at present are wristbands from companies

such as Fitbit and Nike, and "smart" watches, such as the Galaxy Gear from Samsung, which incorporates a camera and can link with a mobile phone to show text messages and incoming calls.

Andy Griffiths, president of Samsung UK and Ireland, says 2014 will be a big year for wearables "as they become more mainstream".

But Ms Bell says that to maximise the potential, companies will need to come up with fresh ideas.

One such is the Mimo baby onesie from Boston-based Rest Devices, which has washable interwoven sensors that monitor a baby's breathing, skin temperature, body position and activity level.

Sensors are also incorporated in a jacket developed by Motorola Solutions to provide "situational awareness", for use by security staff and the police.

For fitness enthusiasts, Intel has developed earbuds that as well as playing music tracks heart rate and pulse. They can select tunes from your playlist that encourage running faster or slower.

Meanwhile Google is inviting consumers in the US to experiment with its $1,500 Glass headset, which incorporates a tiny camera, microphone, display and internet access.

But wearable technology is likely to be used increas-

ingly in a business environment, Mr Griffiths says. Curt Croley, managing director of innovation and design at Motorola Solutions, agrees, citing efficiency gains in specialist markets such as the military and field service engineering.

Motorola Solutions produces a wearable computer for use in warehouses and distribution centres that helps companies streamline operations, reducing inventory and "shrinkage" in the supply chain.

It responds to voice commands, leaving the user's hands free, and has a barcode scanner worn as a ring that identifies items as they are being handled.

The company is taking hands-free operation further, Mr Croley says, with its HC1 headset, designed for harsh environments or remote locations where access to complex graphical data or text is needed and using a laptop or handheld device is impractical. It has a display at the bottom of the user's vision, and can be controlled by a gesture such as a tilt of the head.

Using headsets to video what the user is looking at and stream it via the internet allows relatively inexperienced field workers to be guided by a remote expert.

Accenture and Philips, meanwhile, have collaborated on a Google Glass headset that lets surgeons monitor vital signs without having to turn away.

For wearable technology to take off, wireless networks need to be faster and more reliable, says Mr Croley. Batteries also need to improve. At present they are heavy, get hot and do not last long enough.

There are also aesthetic considerations. Once a piece of technology is strapped to the body it becomes part of the wearer's self image, says Mr Croley. "I've seen burly warehouse workers go straight to the mirror to check they don't look goofy."

Creating wearable technology for the workplace is more demanding than for consumers, because it may need to be worn all day. If the device is going to be shared between workers, which seems likely with headsets priced at $1,500-$5,400, there are also hygiene issues.

And there are safety concerns. Headsets currently display information on a screen at the periphery of vision. Reading them is like glancing at a dashboard or watch. But in future, images will be superimposed on lenses worn like spectacles, so the images will appear to float before the eye, which could be more distracting.

Another concern is security, says Eric Baize, senior director at EMC's product security office. Cameras on headsets or smartphones are easily seen, but they are less visible when worn on an armband under a sleeve, increasing the risk of data theft.

Tiny market: the Mimo baby onesie

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The Connected Business

Øivind Hovland

US revelations put heat on business

Privacy The NSA leaks and new EU rules will push data protection up the agenda, says *Stephen Pritchard*

Keeping personal data private is an issue that continues to vex corporations and governments alike.

In the past month alone, retailers Target in the US and UK-based Tesco have suffered data breaches, while Barclays, the UK-based bank, revealed that details of thousands of its investor customers were stolen and sold on.

Meanwhile Edward Snowden's revelations about data collection by the US National Security Agency and other security bodies continue to cast a shadow over the whole question of privacy online.

But then privacy – at least when it comes to the sharing of personal data online – is not a static concept. Attitudes to personal privacy and to data sharing vary widely around the world.

In the US and the UK, citizens are considered to be relatively relaxed about data sharing, although they are perhaps less so post-Snowden.

Germans tend to take a much stricter view on what government and businesses can do with personal data, a fact reflected both in Germany's strict data protection and its employment law.

France, for its part, has a strong legal defence of personal privacy. But there, as elsewhere, the legal framework is coming under pressure from the much more rapid evolution of privacy online.

"Attitudes have changed," says Ronald Koorn, a partner and data privacy expert at KPMG, based in the Netherlands.

"Initially, the NSA incident was primarily a media event, but that discussion is now reaching multinational companies. They realise that privacy requires increased attention.

"It was not previously among their top 10 concerns. In the US, there has been more strict compliance, but in Europe it has been more relaxed – or more lax. That has changed because of the NSA, but also what is happening in Brussels."

As Mr Koorn points out, the EU planned to update its data protection framework well before Mr Snowden's revelations put the matter on the front pages. The existing EU data protection directive – a set of legal principles that are used as the basis of national laws – is due to be replaced by a more binding regulation that will apply across the EU.

The timescale for implementing the new laws has slipped several times; late 2014, or even early 2015, now seems the earliest for a final draft of the new law. When it comes, the regulation will bring far greater consistency across Europe on data privacy and data protection.

But it will impose some strict new standards, in areas such as the disclosure of data breaches, as well as far greater penalties for organisations that transgress. One particularly controversial proposal will give data protection authorities the ability to fine companies up to 5 per cent of their worldwide turnover if they suffer a breach.

Although business leaders might not welcome such moves, experts say it is a necessary response to today's very different climate around personal data.

"We are dealing with a world that has changed so much since the early 1990s, before we even get on to issues such as the cloud or social media," says Vinod Bange, a partner at law firm Taylor Wessing.

"All [those changes] have taken place since the current regime came into force. The current laws, around data processors and data controllers, have not worked. They may have been relevant to the computer bureaux of the 1990s, but no longer."

And, Mr Bange adds, it is right for lawmakers and businesses alike to debate whether the current legal and regulatory framework is effective. "Do we have the balance right? That depends on changing attitudes," he says. "There are rights and obligations around data, but also only to collect data if there are lawful grounds."

But what constitute those lawful grounds is by no means fixed. Individuals have become much more open to sharing some personal information, through social media, but by no means all information.

There are questions, too, of legitimacy and proportion when it comes to collecting data. The Snowden revelations aside, most citizens will accept a

Brussels plans a more binding regulation that will apply across members

greater level of data gathering and even covert data surveillance by law enforcement or security agencies than by local government and health providers. These in turn will have more latitude than private companies.

Some protection specialists see that awareness as a positive development, even if it may bring short-term inconvenience to companies.

"The political climate has resulted in a situation where people have become more aware that data are collected, not just by government but also by business," suggests Harvey Lewis, analytics research director at professional services firm Deloitte. "The concerns are around increasing transparency, and making sure customers are aware of the data that are held on them."

But if opinions about data sharing and data collection are far from static, so is the way those data are being used by governments and companies, and how they should be protected.

The trend for organisations to use more and more sophisticated analysis of huge amounts of data – so called "big data" – is also changing the way they look at information.

From a privacy point of view, being able to combine vast data sets from different sources in close to real time raises some serious issues. Anonymous or innocuous data sets can be combined to become both sensitive and identifiable.

Javvad Malik, a security researcher at analysts The 451 Group, says: "A challenge for legislation is that it is very, very difficult to quantify and contain, or [to judge] when legitimate use of data becomes malicious. It is like chemistry: some elements are stable, but put together they become explosive." Regulators, he says, have to balance ensuring privacy with the need to avoid controls that prevent the legitimate use of data by governments or companies.

Then there is a further challenge: whether the current generation of data protection tools are adequate to protect growing stores of valuable

Whistleblower: revelations by Edward Snowden have raised broader questions about online privacy

data, against an increasingly hostile cyberspace environment.

"Mobile and the cloud have turned the idea of a perimeter around data on its head," says John Mancini, president and chief executive of AIIM, the information management trade body. "A sound perimeter is no longer enough . . . You have to look at information governance in a holistic way. You cannot just take a 'Maginot Line' approach, as information is scattered across the organisation."

Instead, Mr Mancini says organisations need to be looking at the "big picture risk": reputational and financial damage, as well as the regulatory consequences of a data breach.

This could cause companies to be more cautious about the data they collect, and more open about the consent they seek for collecting it, he says. There could be a shift from legalistic terms and conditions to plain language, but also more consideration about data disposal. Data degrade over time, and the more data an organisation holds, the greater the risk of damage if there is a breach.

Organisations, though, may not be doing enough to protect their data, despite a succession of privacy-related headlines.

"Companies are not doing enough to prevent breaches. Security only gets attention after a breach," says Seth Berman, managing director at risk consultants Stroz Friedberg. "Companies should start by looking at where their data are and how they are protecting them. Do they need so much information, and is there a policy regarding data destruction?"

This point is echoed by John Skipper, a privacy expert at PA Consulting. "We have seen a marked increase in interest in privacy recently, partially triggered by the large amounts of publicity, but also because the EU regulations are on the drawing board," he says. And this will mean a change in management attitudes to data privacy.

"It was rarely a board level responsibility, but more often the responsibility of the chief information officer or the head of IT security," he says. "But it [data privacy] is now recognised as an important part of the relationship with customers. So it is more likely to lie with the chief operating officer, or a business director."

Senators seek new rules for data brokers

Consumer issues

Privacy advocates are worried about the booming industry, writes *Emily Steel*

A consumer stands in a pharmacy, trying to decide which medicine would be best for her child's cough. All the while, her mobile phone is sending a signal to the store, indicating where she is.

The system alerts a pharmacist to assist the shopper after noticing that she has been standing in the same place for four minutes.

At the same time, the location of the phone is transmitted to a so-called data broker company that has tracked, analysed and sold thousands of details about her life.

By tapping into this database, the retailer knows this woman has not bought bath soap for six weeks and sends an instant coupon to her phone, along with a special offer for the chocolate bar she typically buys only once a month.

That is the vision outlined by some of world's leading mobile phone tracking and analytics companies. There are more than 1.5bn smartphones in the world, each possessing the GPS, WiFi or other technologies that track and transmit a user's precise location as they go about their day.

Accessing then deploying the location information is a potential boon for bricks-and-mortar retailers, trying to compete with online rivals such as Amazon.

For consumers, that data collection can translate into more precisely targeted coupons and better customer service.

But there is also the potential for data brokers to add location data to the vast dossiers they keep on individuals, often without their knowledge that such information is being tracked, scored and sold.

These details can include everything from an individual's income and religious affiliation to whether a person smokes cigarettes or suffers from depression.

"The collection is invisible, passive," noted Ashkan Soltani, an independent privacy and security researcher, at a workshop last week at the US Federal Trade Commission on how retailers and other businesses use mobile phone signals to track consumers.

Seth Schoen, a senior staff technologist at the Electronic Frontier Foundation privacy watchdog, argued that consumers should have to opt in to such tracking.

There are potentially dire consequences should a person's location be tracked long-term, he warned, comparing a data trail to pollution.

"You can't necessarily see it, and you aren't necessarily harmed by it in the short term," he said. "That is much more significant over time."

Mobile device tracking is the latest digital privacy issue to face increased scrutiny, particularly in the US.

Another FTC workshop this spring will investigate how data brokers score

consumers to predict trends and how health-related information is being collected and used.

The investigations come as lawmakers and regulators are trying to rein in the largely unregulated data broker industry.

A US Senate commerce committee hearing in December revealed that data brokers were selling increasingly sensitive information, including lists of rape victims sold for 7.9 cents per name, and those with genetic diseases.

Companies can use those details to change what offers they make and adjust the prices they charge.

Consumer privacy advocates fear the data could be used to affect whether a person gets a job, health insurance or a loan, among other things.

Senator John Rockefeller, chairman of the commerce committee, has launched an investigation into six data brokers that sell products identifying people based on their financial or health problems.

In the US, no overarching federal privacy laws regulate the tracking and sale of personal information. Specific regulations govern the use of information collected about children or information that could be used to make decisions regarding credit, employment, insurance or housing.

Consumers, meanwhile, do not have the right to know what information is

The data could be used to affect whether a person gets a job, health insurance or a loan

collected about them. They often cannot opt out of the tracking or use of those details.

This month, Senators Rockefeller and Edward Markey, also of the commerce committee, introduced the Data Broker Accountability and Transparency Act, which would require data brokers to be more transparent and accountable for the consumer information that they track and sell.

If passed, the bill would also allow consumers to view what data brokers hold about them, correct it or opt out of the collection.

"This booming shadow industry that generated more than $150bn in 2012 and operates with very little scrutiny and oversight, is making tremendous profits off practices that can be disturbing and totally unfair to consumers," Mr Rockefeller says.

But industry lobbyists have been quick to respond.

Peggy Hudson, senior vice-president of government affairs at the New York-based Direct Marketing Association, says: "Imposing an access and correction regime on marketing data is not necessary to protect consumer privacy and doing so would make it harder for companies to keep data secure at a time when consumers are more concerned about identity theft than ever before."

Stores mine rich seam of data on shoppers – but is it kept safe?

Retailing

Detailed customer profiles are valuable to criminals, too, says *Andrea Felsted*

Ever since Tesco, the UK supermarket group, developed its Clubcard customer loyalty scheme in the mid-1990s, retailers have amassed huge amounts of data about shoppers.

The sort of data collected by Tesco and Sainsbury in the UK, and supermarkets in the US such as Kroger, help the retailers to target promotions, such as money-off coupons, at customers who actually want them.

Supermarket executives say these can be much more effective than generic offers advertised in newspapers, for example.

But as the consumer environment has become more difficult, and the use of big data more prevalent, retailers have taken things one step further, building detailed profiles of customers.

Store groups have "collected a lot of data, both offline and online, in relation to shoppers' purchasing habits, which can boil down to where somebody shopped, what was in their basket and how much they spent", says Kenny Mullen, a partner in the technology team at law firm Withers' London office.

"As it builds up over time, it can give owners and operators of shops a very good insight in relation to a person's habits."

Mr Mullen says retailers are increasingly analysing these data to build detailed pictures of their customers.

"The more information you collect, the more profile is built up of the person," he says, adding that information is not much use unless it is not analysed.

Such detailed analysis raises issues for consumers.

Mr Mullen points out that the online sector is very sophisticated in analysing data. One outcome of this is product recommendations, based on the customer's purchasing history.

"[Online retailers] are analysing what they have gathered about you in an attempt to point you in the direction of things, trying to encourage you to impulse-buy," he says.

Amazon is taking this one step further, by planning to send packages to shoppers before they have ordered them. It will use predictive demand analytics and has filed a patent for the system in the US.

The online retailer will use its customer database to predict which geographical areas it thinks will order certain products. It will send them to a local warehouse before the orders are received. During transit it expects to receive a specific address.

Then there is the issue of online privacy. The more detailed a picture that is built up, the more valuable the data are to criminals.

"Clearly, if you are engaging in more sophisticated analysis, you are raising the stakes, and increasing the attractiveness of those data . . . to a potential fraudster," says Mr Mullen.

Concerns about the safety of data held by retailers have been highlighted by a number of cases.

One of the most recent involved Target the US discount retailer. In December, at the height of the holiday

The more detailed a picture that is built up, the more valuable the data are to criminals

shopping season, thieves stole credit card data from up to 40m Target shoppers in a huge security breach.

Neiman Marcus, the upmarket US department store, also said it may have been struck by hackers as far back as July.

The Target theft was one of the biggest breaches of data security in the retail sector since 2007, when TJX Companies – a discount chain that owns TJ Maxx in the US and TK Maxx in the UK – said it had fallen victim to criminals.

Brian Dunefsky, of counsel in Withers' New York office, says the Target breach involved the retailer's bricks and mortar stores, rather than its website.

This shows that in the era

of online shopping, physical stores remain vulnerable.

"The Target attack was considered a point of sale attack," says Mr Dunefsky.

Online shopping, meanwhile, has its own issues. One is whether retailers are using online searches to target special offers, or set prices, based on browsing history.

While Mr Dunefsky says this happens in the US, and within the scope of the law, in the UK, the Office of Fair Trading has been investigating the practice.

The OFT says: "Prices online do vary, depending on factors such as time of purchase, the location of the consumer and the route into the website."

The watchdog adds that where personalised pricing

did take place, it was less likely to be harmful if consumers knew it was happening, understood how it worked, and could make effective choices.

However, says the OFT, it could be harmful in a number of circumstances, including where it was not transparent to the consumer that price discrimination was occurring.

Lawyers say the practice could be detrimental to retailers' relationships with their customers.

Quentin Archer, a consultant at law firm Hogan Lovells, says consumers would need to be told that personalised pricing was taking place. If they are not, it would hardly endear the retailer to its customers, he says.