The *Connected* Business

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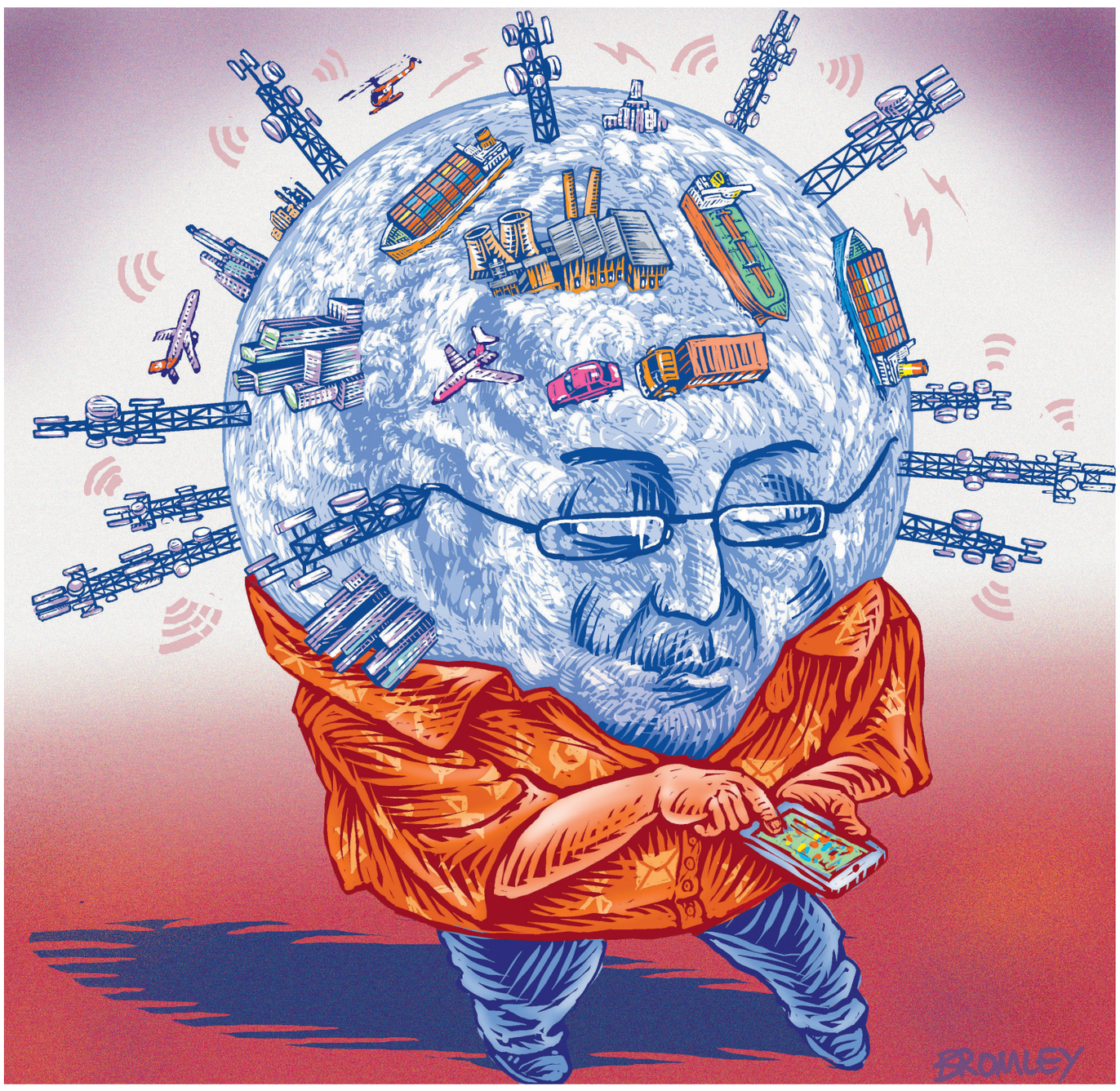
Mobility ushers in a brave new world



From better systems for remote workers to customer service, companies have fresh options for pursuing growth, reports **Paul Taylor**

In less than a decade, mobile communications – particularly in the form of smartphones, tablets and the applications that power them – have moved from the sidelines to the centre of many business growth strategies.

From extending corporate systems to remote and off-site employees, to expanding the range of services they provide to their customers, companies are embracing mobile communications to spur growth and differentiate themselves.

Fernando Alvarez, who is in charge of Capgemini's mobile solutions global services unit, says: "Organisations are increasingly recognising that with mobile users in the hundreds of millions, and mobile apps downloads in the tens of billions, today's reality is that customers and employees expect to interact with them immediately, wherever they may be.

"As a result, the market for mobility services is one of the fastest growing in IT services."

He adds: "Smartphones, tablets and apps have embedded mobile technology in our lives and this revolution is transforming the way we work and interact. Organisations everywhere must respond or risk being left behind."

"We have been moving all our online business to a new multi-channel platform over the past year-and-a-half," explains Julian Burnett, chief technology officer at J Sainsbury, the UK supermarket chain, "and there is a big mobility element to that . . .

"It will give our customers not just the ability to shop, but also to access services and return products."

Mr Alvarez points out that mobility is not just about creating mobile applications. "We're seeing an explosion in demand for end-to-end mobility expertise, from strategy through to implementation."

In developed and developing countries, mobile network operators have become important strategic partners for companies as they implement mobile operations and move to take advantage of the fast growing field of mobile machine-to-machine (M2M) communications and telematics, to improve customer service and efficiency.

The UK's Kwik Fit, for example, in addition to its motor repair and service centres, has a fleet of more than 200 vehicles that provide a call-out service for tyre fitting, replacement and wheel balancing.

To improve operational efficiency the company decided to implement telematics technology, which provides Kwik Fit with real-time information on where its vehicles are, to help plan routes and allocate jobs.

The software also allows Kwik Fit to monitor duty-of-care responsibilities such as hours worked, driving hours, speeds and mileage.

As a result, more jobs can be scheduled, as the company can easily see where the nearest service vehicle is. Fuel costs have also been cut and customer service levels have improved.

Golden Flake Snack Foods, a Birmingham, Alabama-based company that employs about 900 people and is a corporate customer of AT&T, the US telecommunications group, is using handheld wireless-enabled computers to improve efficiency.

Under its old system, field sales reps sent orders to headquarters. These took two weeks to process. The company needed a way to get its products to retailers more quickly, but without placing extra burdens on its small IT department.

So Golden Flake equipped its sales force with handheld computers that work via AT&T's wireless network. Orders are now placed in real time, making it easier to schedule deliveries to meet demand.

More precise ordering also allows the company to buy the appropriate amounts of potatoes and other ingredients to keep retailer shelves stocked. As a

Continued on Page 2

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Inside this issue

M2M Communications Falls in the cost of hardware open a range of fresh applications **Page 2**

Retail Devices that check product availability are handy for stores with high staff turnover **Page 2**

Mobile payment Security worries remain a barrier to use **Page 2**

Tablets Corporate market is still up for grabs **Page 3**

Healthcare Concerns about patient privacy impede the use of mobile technology **Page 3**

Devices at work People, not technology are the weakest link **Page 4**

Policies to protect Persuading your employees you need control **Page 4**

Intelligence iPad tips balance in favour of giving more data to workers **Page 4**

Software distribution the prospects for corporate app stores **Page 4**

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The Connected Business

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A mobile revolution in doing business

Continued from Page 1

result, productivity has improved and thousands of dollars in paper and postage saved.

"If a customer needed some information, it used to take a while to look through the sales rep's papers, find what was needed, make a copy, and fax or mail it to them," says Doug Dean, a Golden Flake programmer. "We can do that now in just a few seconds."

Mobile communications – particularly wireless M2M monitoring systems – are also having a big impact on other sectors, including electric and water utilities, which are trying to improve their distribution and management systems.

In the UK for example, Veolia Water has managed to reduce leakage by more than 1.5m litres a day – nearly enough to fill an Olympic swimming pool every day and adding up to £100,000 a year in savings – and improve customer service, by rolling out an integrated network monitoring system across 31 sites.

The system consists of a series of computers and monitoring units in the water network, which communicate via GSM – global system for mobile communication.

They are centrally managed and software and historic data are used to monitor and predict water pressure fluctuations and make adjustments across the network.

> Comms networks can streamline services and extend them to people who might otherwise be out of reach

Elsewhere, mobile communications are being used by healthcare providers to improve the delivery of services to the elderly and sick.

In the US, for example, Sprint Nextel, a mobile network, and Reflection Solutions, an M2M provider, are collaborating with Acadian Monitoring Services' health centre to observe patient data, for example their location, physical activity levels, medical alerts or if they have a fall.

In Brazil, Vivo – a mobile company controlled by Spain's Telefónica – and Ericsson, the telecoms equipment maker, teamed up with a non-governmental organisation called Saúde & Alegria to provide mobile voice and internet access, as well as ehealth and education services to 30,000 people in 175 villages in the Amazon forest.

The basis of the project, called Conexão Belterra, was the installation of a 3G network in this area of the Amazon. As a result, a hospital boat is able to help 15,000 patients a year and transmit test results and other data to one of the country's main hospitals.

The network is also used to deliver mobile and distance learning courses, including a daily English class via SMS text messaging.

These examples highlight the potential of mobile communications and networks to streamline services and extend them to people that might otherwise be out of reach.

Contributors

Paul Taylor
The Connected Business Editor

Chris Nuttall
Technology Correspondent

Charles Batchelor
FT Contributor

Jane Bird
FT Contributor

Alan Cane
FT Contributor

Sarah Murray
FT Contributor

Jessica Twentyman
FT Contributor

Ursula Milton
Commissioning Editor

Steven Bird
Designer

Andy Mears
Picture Editor

For advertising details, contact:
James Aylott:
tel: +44 (0)207 873 3392
email: james.aylott@ft.com
or your usual representative

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'Internet of things' breaks through $10 barrier

M2M communications

Continuing falls in the cost of hardware are opening a range of fresh applications, reports **Jane Bird**

Just as mobile phones enable people to keep in contact on the move, so machines are using the same underlying technology to communicate.

They are equipped with modules comprising a sensor, SIM card and wireless electronics that allow them to send and receive data over existing mobile networks.

So-called machine-to-machine (M2M) communication, or "the internet of things", has many uses – recycling bins can ask to be emptied, vending machines order refills, and health monitors send an alert when a patient develops dangerous symptoms.

The modules need to be resilient, because, unlike mobile phones, they may be subject to extreme temperatures, noise, vibration, and have to last for years embedded in machinery.

M2M has been around since the early 2000s, but is taking off now because the unit cost of modules has fallen below $10 – low enough to make it viable for a whole new range of applications, says David Stansell, a mobile expert at PA Consulting.

"The market is expected to be worth $1.2tn within 15 years, and will provide a substantial source of new revenues for mobile telecoms companies and M2M specialists in vertical markets," Mr Stansell says.

A big attraction for network providers is that, whereas mobile phones have high churn rates, M2M contracts tend to be long-term.

One of the main drivers is smart meters for electricity, which the EU wants introduced in 80 per cent of households by 2020. These energy consumption monitoring devices will be able to link to mobile phones, enabling owners to reset heating, or activate appliances at cheap tariff times, says Patrick Razavet, director of smart utilities, Cable & Wireless Worldwide.

"You could also have gas or water detectors in your home that would alert you via your handset if there was a leak," he adds.

The automotive industry is pioneering M2M, says Mark Foster, UK and Ireland country manager at France-based Cinterion, a Gemalto company. "Placed in vehicles, the modules can check the exact location and current temperature of goods in transit, any damage suffered, and the speed they are travelling."

The M2M modules can request maintenance automatically, warn when components are in danger of failure, and even call the emergency services direct when a vehicle is involved in an accident. The EU wants all vehicles to have them by 2015.

Insurance companies are looking at using M2M to track driving style, speed and typical routes, to tailor insurance for individual customers and carry out dynamic risk assessment, says PA's Mr Stansell. "They might have a curfew policy for teenagers, which offered a reduced premium for not driving between 11pm and 6am."

> 'In vehicles, the modules can check the location and current temperature of goods in transit, any damage suffered and the speed they are travelling'

Using the technology to provide information about where and how a vehicle is being driven can help minimise fuel consumption. Romec, a UK-based facilities management company, cut fuel bills by 20 per cent when it fitted M2M modules to 1,000 vehicles, while unplanned maintenance fell by 25 per cent.

Drivers who do a lot of harsh braking, accelerating or speeding can be encouraged to behave in a safer and more fuel-efficient way, says Bill Henry, chief executive of Yorkshire-based Masternaut, which supplies the Romec system. "This is one of the best ways to reduce carbon footprints."

Oxford-based Amey has installed Masternaut's M2M modules in 2,000 of its vehicles, which provide incident support for the Highways Agency, mobile facilities management for local authorities, and bridge inspections for Network Rail. The system's real-time monitoring has helped optimise route planning, speed response times and improve efficiency.

"We spotted that by the time teams had loaded vehicles at the depot in the mornings, it was rush hour when they hit the road," says Keith Sexton, Amey's director of health, safety, environment and assurance. So teams were incentivised to load vehicles the night before.

Amey also uses M2M for fleet optimisation. "We can see which vehicles are underused and which are run ragged," says Mr Sexton. "We probably already had a gut feel; now we have data."

By comparing the fuel economy of vehicles, Amey can identify which are cheaper to run in the real world, based on actual routes, as opposed to the manufacturers' published information.

It has fitted the M2M modules to its gritting fleet and connected them to a public website. "Local residents can watch gritters in real time, so they know which roads will be treated," says Mr Sexton. Meanwhile, drivers are protected against insurance claims from people saying they skidded on ice because there is evidence of where gritters have been.

Ameys' drivers also have key fobs that identify them to the system, so it knows who is at the wheel. This means it can spot speeding, improve driver behaviour, and reduce accidents. Similarly, Romec has cut speeding by 82 per cent, accidents by 28 per cent and fines by 26 per cent,

M2M also helps lower the risks of lone working.

Amey sends out engineers to remote and hazardous locations checking bridge structures.

The company is piloting wristwatch devices such as the "electronic watchman" with a button the wearer presses at regular intervals.

If this fails to happen, the device triggers an alarm via the vehicle's M2M module. It is a potential lifesaver.

Knowing your stock is the key to a busy shop

Retail

Devices that check product availability are handy for stores with high staff turnover, says **Charles Batchelor**

What do shoppers hate? A long search for the item they came in for followed by a lengthy queue at the till.

Mobile technologies mean that retailers can tackle these problems, in the hope of increasing sales and making the shopper more likely to return.

Handheld devices have long been used to ensure that warehouses and distribution centres can handle large volumes of incoming and outgoing stock.

More recently, they have made inroads into inventory management in shops themselves. The arrival of the iPad and other tablet devices has given a boost to their use by store staff to communicate directly with customers.

"The customer wants to navigate the store and complete the transaction quickly, while the retailer needs to take unnecessary cost out of the process," explains Ian Snadden, European vice-president at Intermec, which supplies wired and wireless data collection systems.

While other sectors have cut spending in the recession, retailers have continued to invest in customer-facing technology, he notes.

"The biggest single problem facing retailers is the accuracy of their stock file," says Alan Braithwaite, chairman of LCP Consulting and a visiting professor at Cranfield School of Management.

"You might think you have got something, but in fact someone has stolen it or it is not in the right place. It is all about giving the customer accurate feedback." For every extra percentage point of product availability, a store will increase sales by 0.2 to 0.6 per cent, he says.

The range of products in many stores and rapid staff turnover, which means assistants often lack detailed product knowledge, puts a premium on mobile devices that can be used to see what is in stock.

What customers should increasingly notice when they enter a shop, is a sales assistant with a handheld device who intercepts them before they reach the counter to take and process their order. Retailers such as Apple and the Starbucks coffee chain have roaming sales staff who act as "queue busters."

To help it cope with the pre-Christmas rush, Hamleys, the UK toy shop, issued staff in its main London store with an iPad, a handheld Bluetooth scanner, a wireless Pin entry device and a wireless printer.

Worn in a belt round the assistant's waist, these devices allowed staff to move through the store, handling transactions at the display where the customer had seen what they wanted.

As well as helping the sales assistant locate what the customer is looking for, handheld devices allow them to show similar items, possibly prompting a more expensive or multiple purchase in additional styles or colours.

Retailers and distribution centres have long used rugged handheld devices made by manufacturers such as Psion and Motorola, but the launch of the iPad and other tablets has created a device that is both fashionable and familiar to many shoppers.

Unfortunately, these tablets do not connect with the Windows operating system used in back office enterprise resource planning (ERP) systems.

"All kinds of devices that work with Windows integrate with the back office," says Peter Chadha, chief executive of DrPete, a technology consultancy. "But iPads have been an issue. They don't run on Windows, so how do they integrate? This has held us back from using these devices, although that will change."

Windows 8, the next version of Microsoft's operating system, will support the ARM low-energy microprocessors used in many mobile devices, as well as Intel. Windows 8 is also expected to have such features as a touch screen facility.

> 'The iPad is very attractive to use in retail. It is sexy, has a long battery life and is reasonably robust'

Enabling tablets to talk to in-store inventory systems is expected to give a big boost to their use. "People love Apple, says Mr Chadha. "The iPad is very attractive to use in retail. It is sexy, has a long battery life and is reasonably robust. The customer and the sales person can work on it together."

Tablets are expected to prove popular in upmarket retailing, including clothes and footwear, says Mim Burt, research director in the retail team at Gartner, the IT consultancy. But they are expensive and not rugged enough for all settings. "In a high-volume grocery environment, you would have bog-standard, simple stock management hand-helds," she says.

But whether retailers opt for a basic handheld device or an upmarket tablet, they should not allow themselves to be mesmerised by technology.

Offered a choice of dealing with a sales assistant, using their own mobile or an in-store screen to answer a query, even young people preferred to deal with a "real person", found a recent Gartner survey.

"It is a fallacy to say young people want to do everything on their mobile," says Ms Burt.

Customer facing: while other sectors have cut spending in the recession, retailers have continued to invest in in-store technology Getty

Paying by phone Concerns about security remain a barrier to use

Checking you have your wallet, along with your keys and phone when going out, will soon be unnecessary – your smartphone will allow you to pay for anything from a bus ticket to a bed.

It will also store loyalty points, discount vouchers, and even alert you to "personalised" offers when you walk past a shop or restaurant.

This has been the vision of the mobile payment industry for the past three years, and a number of embryonic systems are in use worldwide. They are based on a range of technologies, from text messaging and cloud services to radio frequency systems such as Bluetooth and near field communication (NFC).

There is still uncertainty about which, if any, will dominate – but banks, mobile operators, handset manufacturers and internet companies, are forming consortiums and launching rival services. Their target is a global mobile commerce market expected to reach $670bn by 2015, according to Juniper Research, an IT consultancy.

"In 2012, mobile payment is finally going to happen," says Sandra Alzetta, senior vice-president, innovation, new product and channel development at Visa Europe.

"By the end of the year, 50m handsets will be in circulation with built-in NFC in Europe, enabling them to be used for contactless payment," she says.

In the UK, NFC-equipped handsets can be used to pay at more than 85,000 terminals, soon to include 8,000 London buses, 2,500 taxis and all 3,000 terminals at the Olympic Games.

The contactless Cityzi Pass payment scheme, trialled in Nice last year by Orange and BNP Paribas, is now in use elsewhere in France. In the US, the Android-based Google Wallet was launched last May in partnership with Citi MasterCard and the Sprint mobile network.

Concerns about security are a barrier to uptake, and a potential weak link in Google Wallet has been identified. Daniel Wiegand, mobile analyst at Corporate Insight, a consultancy, says: "The jury is still out on whether Google Wallet will be continued in its current form or will have to go back to the workshop to be changed."

However, mobile payment is popular with those who have tried it, says Ms Alzetta. "You would expect it to appeal to the youth market, but elderly people also like it because it is more convenient than cash."

It is also helpful for tracking spending and checking budgets, because an electronic receipt is produced for every transaction.

It is especially useful to see where your money goes, she says. "You might take cash out of an ATM and have no idea where it went, but with mobile payment you can see exactly what you spent it on."

Mobile payment is also popular with retail staff, who dislike handling cash, and it significantly speeds up queues.

Text messaging can also be used to make payments and transfer funds – as with the M-Pesa service (from the Swahili for money, pesa), managed by Safaricom, a Kenyan mobile operator. It has been adopted by 80 per cent of the population in Kenya, and is taking off in Tanzania, Bangladesh, Pakistan, and South America.

M-Pesa, and GCash, a similar system available in the Philippines, have succeeded because they are more secure than cash, overcome the scarcity of banks, and are simple to use. This is crucial if mobile payment is to become widespread.

A good "consumer experience" is the key, says Andrew Bud, founder and chief strategy officer of mBlox, a mobile payment software and services company. He adds: "It has to be simple, comprehensible and trustworthy."

Every extra action people have to take reduces the likelihood of the transaction being completed. "Having to read pages of instructions or input lots of data will annoy customers and stop them in their tracks," Mr Bud says.

But along with simplicity, the highest levels of security are essential, he says. For maximum protection, key data need to be encoded in a microprocessor on the phone's SIM or stored behind firewalls on the cloud.

Because of security worries, some US institutions are focusing on enabling people to transfer funds to each other via dedicated mobile phone apps. These have been introduced by Chase, Citi and Bank of America.

Banks and credit card companies do not necessarily have the infrastructure that will cause cash and credit cards to disappear from use at the point of sale, says Mr Wiegand.

"But they are beginning to introduce apps that let people transfer funds; for example; if they are splitting a restaurant bill or paying a debt."

Incremental introduction of mobile payment is a good way to build trust, says Chris Hylen, vice-president and general manager of Intuit Payment Solutions. Intuit's GoPayment service allows retailers to accept credit card payments on mobile phones by bolting on a "swiper" that reads credit cards.

Joyce Wan, chief executive of New York-based Wanart, uses GoPayment to sell her cards, gifts, novelties and children's books at street festivals, craft fairs, book signings and fundraising events.

"People walking through do spend more when they can use their credit card," she says. "It's so much easier for impulse purchases."

At first, they were curious and wary of allowing her to swipe their card into her mobile phone, but they are gradually becoming familiar with the idea.

"They love me being able to email or text them a receipt," says Ms Wan. "Half our customers buying goods at public events pay this way."

Jane Bird

Tablets Corporate market still up for grabs

The iPad may have carried all before it in the consumer tablet market, but the corporate market seems still to be up for grabs, with companies more cautious in their commitments.

Apple has first-mover advantage. On its quarterly earnings call in January, the Silicon Valley company said nearly all the US top companies were using the iPad to some degree "to improve work flows, business processes and customer engagements".

"Generally, our clients are telling us: 'We are deploying the iPad or allowing the iPad into the workplace as a bring-your-own-device [BYOD]; we are looking at Android, but are not ready yet to commit to it; and we are waiting for Microsoft'," says Carolina Milanesi, consumer technologies and markets analyst at Gartner, the research company.

Google's Android operating system leads Apple's iOS and the iPhone in smartphones, but has not had the same success in tablets, while Microsoft surrendered an early lead with Windows-based tablets, as businesses take a wait-and-see approach. The more touch- and app-friendly Windows 8 is due this year.

Ms Milanesi says Android tablets' problems are related to the Android market, where a lack of control over apps is raising security concerns.

"You can't count on users not downloading apps, because that's what they want the tablet for. So, for enterprises, it means they have to deploy something on top of Android from a security and device management perspective and that entails higher costs."

For Android tablet manufacturers, of which Lenovo and Samsung are favoured by companies, says Gartner, concerns about security represent an opportunity.

"When we designed our Thinkpad tablets, we thought about the challenges for the IT department in securing devices that are instant-on, portable and easily forgotten – people just leave them lying around," says Stephen Miller, Lenovo product ambassador.

Lenovo's security features include "geostamping" devices, so that they are locked and become unusable if taken out of the office or a defined area. They can also be wiped of all data remotely.

Another feature is custom imaging – allowing a standard set-up for company-issued tablets, with defined and approved apps on specified screens. Additional apps can be delivered over the air and Lenovo offers control over custom app stores.

Research In Motion is offering a more flexible approach by introducing BlackBerry Balance with its PlayBook tablet – a safe "sandboxing" of part of the tablet for personal use.

"This allows users to have their own space on the device, so they can load games, browse, play music – do what they want, rather than the old days of locking it down," says David Heit, director of product strategy for RIM.

BlackBerry Balance is part of a 2.0 version of the Playbook's software being introduced. The tablet has been a disappointment for RIM – in December 2011, it announced a $485m charge for unsold PlayBooks.

The device originally relied on bridging software for email and calendar to be accessed on the tablet through a companion BlackBerry smartphone – a criticised modus operandi no longer needed with 2.0.

"The idea of the bridge was that this leveraged the security already on the BlackBerry smartphone, the big benefit being it allowed a lot of organisations a bit more time to figure out their strategy for tablets," explains Mr Heit.

Non-iPad tablet makers have also sought an advantage in a feature Apple turned its back on many years ago with the failure of its Newton personal digital assistant – pen-based input, with a number of manufacturers integrating a stylus and pen-specific software in their devices.

The digital paper company Anoto is working on the concept of a folder with a tablet and special writing pad next to it. Using the digital pen on the pad streams the writing in real time to the screen of the tablet.

"More than 80 per cent of all daily capture in the enterprise is with paper still," says Stein Revelsby, Anoto chief executive.

"Unless it wants to lose market share to Samsung [whose new Galaxy Note tablet features a pen], I think Apple needs to do something with pens as well."

While a recent NPD In-Stat survey found 68 per cent of tablets provided by companies to staff were iPads, Frank Dickson, its vice-president of mobile research, says there is still not the same brand loyalty as in the consumer world. "People are not wedded to a platform or device; they are trying to figure out what they can do with a tablet," he says.

"Email is by far the number one thing people want to use an iPad or tablet for, but there are many niche apps that are popular as well, such as IT monitoring, and it's really about how whichever tablet can solve such unique problems."

Chris Nuttall

Remote care vital to reduce costs

Healthcare

Sarah Murray says concerns about patient privacy and accuracy impede the use of mobile technology for now

Public pressure: many are keen on being given new ways to access their medical records Dreamstime

By some estimates, one-eighth of the global population will be aged 65 or more by 2030. As the population ages and healthcare continues to improve, it is likely that more and more people will live longer, with such chronic illnesses, as diabetes or cardiovascular disease, which can be expensive to manage.

Mobile devices linked to monitoring equipment could transform treatment and reduce the cost of care. Yet the prospect of the transmission of vast volumes of health data brings challenges.

The healthcare industry has been relatively slow to adopt mobile technology.

While consumers can do many things on their phone, from booking flights to finding restaurants, few have the option to do something as simple as emailing their health centre to make an appointment.

"We've had tremendous innovation in healthcare, but much of it has been siloed in the information systems of hospitals and doctors' offices," says Harry Greenspun, an adviser in healthcare transformation and technology at the Deloitte Centre for Health Solutions. "There's been very little innovation in information sharing among providers or between providers and patients."

This is despite high demand among consumers, according to research by Deloitte.

The consultancy found keen interest among respondents in using medical devices to monitor their conditions – from 46 per cent in Belgium to 61 per cent in the US and 79 per cent in Mexico.

In the US, as the emphasis for doctors' pay moves from the volume of care they provide to keeping patients healthier, more remote management of long-term illnesses has come into focus.

And as part of the UK Department of Health's 3millionlives initiative, the government plans to use telehealth and telecare to improve life for those with chronic conditions and social care needs.

Trials have produced striking results: a 45 per cent reduction in mortality rates, as well as a 15 per cent fall in accident and emergency visits, 20 per cent fewer emergency admissions and a 14 per cent drop in elective admissions.

Consumers want to use their mobile devices to manage and improve their health, as demonstrated by the popularity of an app – designed by Peter Bentley, a University College London researcher, and downloaded by millions of users – that turns an iPhone into a stethoscope.

More than half (52 per cent) of US consumers in the Deloitte survey said they would use a smart phone or personal digital assistant to monitor their health if they were able to access their medical records and download information.

> 'Your cell phone can monitor a lot of things. But if it has turned into a medical device, is it subject to regulation?'

Yet the prospect of millions of users monitoring their vital signs will change the job of healthcare workers that look after them.

"When you train as a doctor or nurse, a lot of what you learn is about visual cues and talking to people," says Ivan McConnell, a healthcare expert at PA Consulting. "If you don't have that, you have to use different skills."

Another challenge will be processing the mass of health data generated by consumers.

"The bottleneck is not in accumulating information but processing it," says John Guttag, a professor at the Massachusetts Institute of Technology.

"If you are a cardiologist with 500 patients and you're getting ECG data from those patients 24 hours a day, you're not going to look at it all," says Prof Guttag, who co-heads the networks and mobile systems group of MIT's Computer Science and Artificial Intelligence Lab.

"So, first, we need better tools for analysing the information."

Moreover, data generated by mobile devices would inevitably include a high volume of "false positives" – false alarms – resulting from incorrect use of the devices, dead batteries or lost signals.

The question for healthcare providers will be how to respond.

"If you have 1,000 patients, you might get 100 alerts, but you might need to respond to only 50," says Mr McConnell.

Prof Guttag predicts the rise of sophisticated algorithms to analyse data generated by mobile devices.

Another change, as the stethoscope app indicates, could be the collection of more data, not by specialised healthcare industry equipment but by commercially available smart phones, tablets and other devices.

This also raises questions. "Your cell phone can monitor a lot of things," says Mr Greenspun. "But if it has turned itself into a medical device, is it therefore subject to regulation?"

Such questions – as well as data management challenges – mean the widespread use of the mobile device as a mainstream healthcare tool may be some way off. Yet many believe they could play a significant role in improving care and reducing costs.

First, tapping into commercial computing power could reduce spending on expensive specialised medical equipment. While, as the NHS telehealth trials demonstrate, remote monitoring could reduce costs through fewer hospital and doctor visits.

As pressure increases to reduce costs, making patients more involved in their own care may become a necessity.

"It's inevitable that it [happens]," says Prof Guttag. "As our population ages, we'll have to get better at dealing with our own needs rather than running to a doctor all the time – because the resources are just not going to be there."

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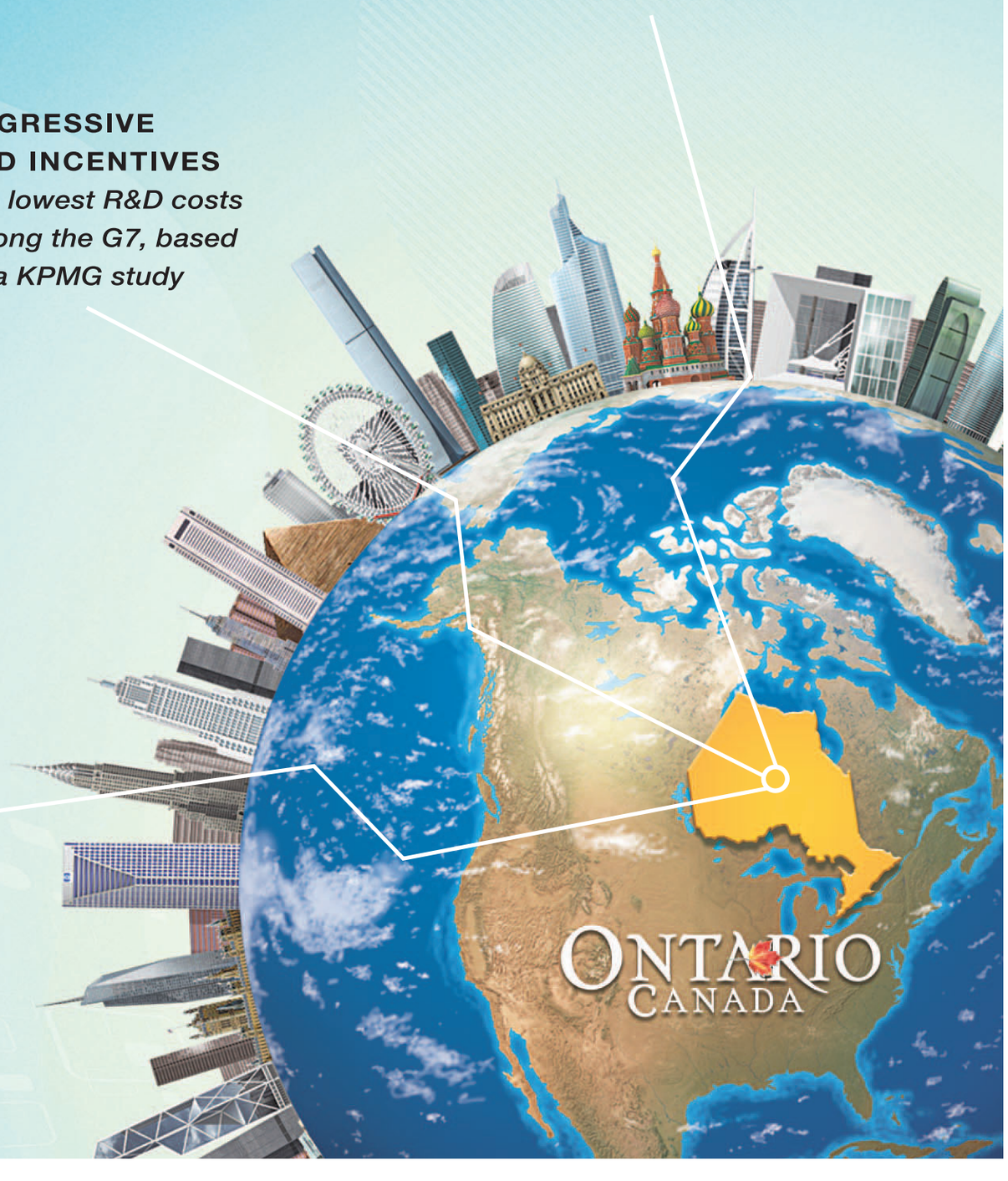

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People, not technology, are the weakest link

Devices at work

Charles Batchelor weighs up the benefits and risks for employers that come with IT 'consumerisation'

Time was when advanced technologies were developed first for business use and only later trickled down to the consumer.

But recent years have seen the "consumerisation" of IT, with sophisticated software applications available to the mobile and smart phone user as soon as – if not sooner than – they are available for business.

Research In Motion's BlackBerry was long the preferred device for corporate IT departments but the Apple iPhone and iPad, and Google's Android operating system have put considerable power to access sophisticated applications in the hands of the consumer.

"The technology has been around for many years, but over the past 18 months we have seen the true consumerisation of mobiles," says Carolina Milanesi, research vice-president for consumer devices at Gartner, an IT market research company.

'The question is; how do you get value from these trends rather than just cracking down'

She adds: "A few years ago, innovation was in the workplace because it was expensive, but these products have become commoditised and the consumer has been at the forefront."

Some companies promote their willingness to allow employees to use their personal smart phone for business use when they recruit staff. Modern devices are easy to use, offer a wealth of features and allow users to access social media sites such a Facebook and Twitter.

The barriers between work and leisure have also been blurred by the fact that mobile devices that are constantly on. Employers gain from having staff who may be willing to check work emails or interrogate a database while standing in the supermarket queue or commuting to the office.

At a time of constrained corporate budgets, employers can also see the advantage of staff being willing to pay as much as £400 for a personal smart phone that is then also put to business use – though some companies reimburse employees in part or in full for the device and network charges.

But there are also huge potential downsides which make it crucial that companies think through their approach to the world of "bring your own device" – BYOD.

"You find the business is dependent on a whole tier of shadow IT," says Chris Rixon, a manager at BMC, a business software vendor.

"Can your IT infrastructure support these mobile devices when things go wrong? What you don't want is for your IT department to become aware only when there is some kind of failure or your software vendor says you are out of capacity.

"You don't want to depend on an application that has become critical in terms of a department's ability to operate but which the IT professionals don't know anything about. It is absolutely vital that the IT department maintains control of devices that are a business asset but at the same time a business risk."

The security of corporate data and networks is a prime concern of managers. With BYOD, members of staff could connect to the company network, view and download corporate data, accidentally introduce a virus; or even hack into the system.

So companies need rules of engagement, setting out minimum security standards or even requiring the use of company-sanctioned security software as a condition of allowing personal devices that connect to company systems.

IBM, for example, makes employees use eight-digit alphanumeric passwords. Possible developments include tools that recognise facial features, fingerprints or voice.

There are devices that allow users to view information on a corporate network, but prevent its downloading, says Martin Lunt, principal adviser in the mobile special interest group at KPMG, the consultancy.

Companies can also insist that employees install a tool that splits personal and business applications on their mobile, with no provision for the movement of data between the two.

Features that reduce flexibility tend to be unpopular with users, however.

Businesses may insist that mobile devices conform to their standards and are designed so the company can clean and encrypt them. They can install a facility to wipe data from the device if it is lost.

Unless corporate and personal data have been kept apart, wiping a device can lead to the loss of personal information such as telephone numbers and photographs.

The popularity of the cloud, the outsourcing of computer services to third-party providers, can also compromise the security of data on a mobile. Blogs and tweeting can lure users into revealing sensitive corporate information. People who would think twice about revealing company secrets over the phone often do not realise how much they have given away in an online message.

According to David Elton, an IT expert at PA Consulting, "The question is: How do you get value from these trends rather than just cracking down? Managements should realise that it not the devices that are a security problem, it is the people. It is usually people, not the technology that are the weakest link."

Big picture: employers gain from having staff who can check work emails when they are almost anywhere Alamy

Policies to protect Persuading your employees you need control

Smart phones and tablet computers are already in widespread use in business. For example, some 14,000 employees of SAP, the software group, are using Apple iPads resulting in, the company says, improved efficiency.

Often, the devices are the employee's own. While the BlackBerry is still popular with IT departments because it is inherently secure, many employees are turning to Apple- and Android-powered phones.

Research by Gartner, an IT market research company, suggests that in two years, nine out of 10 organisations will support corporate applications on personal devices.

The arrival of intelligent mobile devices on this grand scale splits the business community.

On one side are companies with good mobile device policies. On the other, all the rest are trying to work out the best thing to do.

The advantages of mobile computing are clear, but there are serious and well founded anxieties about how to manage this plethora of new devices and what to do if they are lost or stolen.

A "device management" strategy is, therefore, all-important. But what does the term imply?

Neil Campbell, general manager of security, for Dimension Data, an IT services group says: "We mean control. We mean control of how and when mobile devices connect to the corporate network and what they are able to do when connected, typically based on who is using them at the time."

He says organisations cannot afford to ignore device management. Equally, they cannot afford to ignore the potential benefits of a mobile workforce with intelligent devices – those who do so will surely be left behind, both in business performance and in staff satisfaction levels.

Device management software includes Ajaria from Sybase, IronPort from Cisco and Good Technology. However, many companies may find it more economical to use a services company to provide security via the Cloud.

Dan Rossner of PA Consulting suggests six principles for IT directors anxious to establish a device management programme.

First: be proactive in putting forward a policy but listen to your staff. Second, look at actual rather than imagined risks. Third, develop a mobile policy as part of your IT strategy and ensure it is aligned with business strategy.

Fourth, accept that decisions must be based on a sound business case.

Fifth, consider establishing an enterprise app store – people are familiar with downloading apps for their personal use and IT departments could encourage staff to do so for business use. Six, establish a clear policy for employees who bring their own phones or tablets to work.

This last point is crucial. Tim Patrick-Smith, chief technology officer at Getronics, an IT group, points out that employees have to agree to the company having the right, in circumstances such as loss or theft, to wipe data.

"The two key [points] are registration and encryption" he says, pointing out that technology can easily automate the business of establishing what devices can connect to the network and security measures.

Why must the procedure be automated? "You would need to create a whole new IT department if you had to check everybody's device, and what software version was installed, manually," Mr Patrick-Smith says.

'Certainly, focus on the security of devices. But also focus on security of your email infrastructure'

While the ability to wipe devices remotely can help address the dangers of data going astray if an employee and their device part company, Mr Patrick-Smith insists that all data on a device, or sent to and from it, must be encrypted.

Many agree that smart devices in business are in their infancy and that IT departments should take a lead in promoting innovative uses. Today, most are being used for email.

Andrés Kohn, vice-president for technology at Proofpoint, an IT security company, emphasises the importance of ensuring incoming data are clean and that outgoing information does not inadvertently leak confidential information: "Certainly focus on the security of your physical devices. But also focus on the security of your email infrastructure" he urges.

Alan Cane

iPad tips the balance in favour of giving more data to workers

Intelligence

Greater access to information on the move could help employees do a better job, says **Jessica Twentyman**

For more than a decade, suppliers of business intelligence (BI) have been trying to sell their corporate customers a vision of "BI for the masses", where tools for analysing data are widely used across the workforce.

But their efforts have had a limited success, with BI tools largely confined to a few skilled "power users", mostly business analysts.

Often, it falls to them to run queries and prepare reports for senior executives and colleagues who lack the skills to do so themselves.

Mobile BI could change that situation, making it much easier for employees who need the information in order to do their jobs to access data about sales, products, customers or logistics – via a smartphone or tablet computer.

In fact, it is the tablet computer – and in particular the Apple iPad – that is starting to tip the balance in favour of company-wide BI, according to Joao Tapadinhas, an analyst at Gartner, an IT market research company.

"From my experience, when chief executives see a BI dashboard on the iPad for the first time, they want it, and they want all their executive team to have it, too. It's a very rich, compelling experience," he says.

"From there, they start to see the potential of mobile BI for line-of-business managers and team leaders, and soon, they are experimenting with mobile BI for other staff: field engineers, sales executives, and retail staff interacting with shoppers, for example."

In a recent Gartner survey of 1,364 companies that already use BI tools, only 8 per cent said their company had mobile BI today, but one-third planned to implement it in 2012 and a further 13 per cent would run pilot projects.

"BI is all about unlocking information and the iPad is all about consuming information. The two are a natural fit,"

'Mobile business intelligence is about consumption. To call this "analytics" would be an exaggeration'

says Dan Kerzner, senior vice-president of mobile at Microstrategy, a BI company.

"We did not realise how quickly companies would embrace that combination," he says.

Among the businesses already using Microstrategy's products are Guess, a fashion retailer, MetLife, an insurance company and the Whole Foods Market supermarket chain.

There are, however, limitations that prospective customers should consider.

For a start, explains Mr Tapadinhas, most products available today give users the ability to view, but not to manipulate, data.

"Mobile BI is about consumption. To call this 'analytics' would be an exaggeration," he says.

At best, some software allows the user to "drill down", so that they can see revenues by region, for example, or by product. In general, however, interactive, capabilities are less common than a simple ability to look at information.

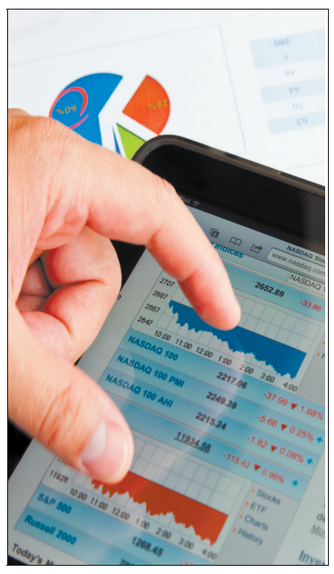
Another potential hurdle is the fact that most companies have more than one BI platform.

Since mobile intelligence is typically sold as an add-on module to a specific platform, some customers will find they need to buy and implement a module for each of the platforms they have – a costly undertaking with huge potential to confuse users.

To try to tackle this problem, a company called Roambi has developed mobile data "visualisation" tools. These connect to a range of BI platforms, including those from SAS, Microsoft, IBM, SAP and Sybase, to present data in visual formats on iPhones and iPads.

In this way, customers can build graphs and charts built on data from different platforms, says Santiago Becerra, the chief executive of Roambi. The main focus for his company, he says, is to make data understandable for people that have not used business intelligence before.

"It's not our goal to reinvent BI. The technology to extract and organise data is widely available and largely commoditised," he says. "What we think companies need if they're going to make BI available to everyone is a better way of presenting information."



Power to the users

But perhaps the biggest challenge for organisations will be integrating mobile BI with their other "bring your own device" policies for employees.

The iPad – with its 9.7 inch screen – has fast emerged as the "device of choice" for mobile BI, says Stephen Gallagher, a BI specialist at PA Consulting.

At the recent Gartner BI Summit in London, he observes, almost every stand in the exhibition area had an iPad.

But not every employee will want or need an iPad, and while BI is available for iPhones, Android handsets and Black Berrys, these tools lag behind the iPad in their maturity and usability, says Mr Tapadinhas.

More effort and investment is needed from BI suppliers, so their mobile products can take advantage of the touchscreen and geo-positioning capabilities smartphones offer.

But the fact remains that smaller screen sizes, which allow just two or three "key performance indicators" to be displayed to the viewer at a time, may also be a significant barrier to the dream of delivering BI to all employees that could make good use of it.

Have you checked the app store for your work tools?

Software distribution

Jessica Twentyman considers the prospects for corporate versions of Android Market

For smartphone owners who want to learn Portuguese, count calories, look up train times or play Angry Birds in their leisure time, it is easy to download the software they need from an online app store.

At work, however, it is a different story. While employees are increasingly encouraged to bring in their own smartphones or tablet computers, IT departments struggle to distribute the work-related tools they need, especially because the workforce inevitably has a variety of devices running different mobile operating systems.

A self-service approach, based on the Apple or Google app store model, is the obvious answer, says Bob Tinker, chief executive of MobileIron, a specialist in mobile device management (MDM) software.

The company's portfolio of software to make mobile devices secure and help manage them includes the Enterprise App Storefront, which employees can visit to download both company-developed and third-party applications.

This platform performs three main functions: it provides a "library" of apps for employees to select the tool they need; it applies rules governing who has access to specific applications; and it gives the IT team an inventory of apps in use by the workforce, enabling them to gauge the popularity of particular apps and identify "rogue" ones.

"The same explosion of apps we saw in the consumer world is now happening in companies," says Mr Tinker.

Smart companies, he says, "treat users like adults and learn from the consumer world", by giving them easy ways to find and download mobile apps, at the same time ensuring company rules on security and access are observed.

MobileIron is not the only company promoting this concept.

A recent survey of the market, by Michael King of Gartner, the IT research company, lists a number of others that offer enterprise app store platforms: AppCentral, Nukona and Partnerpedia are all specialists in this area.

'More and more employees are bringing in their own devices and it makes sense to me to offer them tools from a single place'

But, he adds, "vendors in this market are relatively small, with few employees or customers. Enterprises looking to make investments here should keep that in mind and insulate themselves against probable turmoil in the market, with one- to two-year contracts and contingency plans."

At KPMG CIO Advisory, part of the management consultancy firm, Mac Scott, an associate director is not convinced the investment and effort needed to set up an enterprise app store will be justified by demand at many companies.

To succeed, he says, the stores will need to fulfil various criteria. "They'll need to offer sufficient volume and diversity of applications – enough to interest all of the relevant communities in an organisation.

The user experience – of both the store itself and of the apps on offer – will need to be of high quality. The organisation will need to empower users to select and use what they think they need," he says.

But above all, he says, the volume of traffic and the number of apps downloaded will need to offer the organisation true economies of scale in light of the investment required.

These factors have not been obstacles for MobileIron customers such as Barclays and Mercedes-Benz, says Mr Tinker.

Some customers already have more than 100 apps in their corporate stores; many have dozens. And in mature installations, users rate and recommend tools to their colleagues, in the same way consumers do on Android Market.

At Thames River Capital, an asset management company, IT director Robert Cockerill is giving the idea serious consideration.

"More and more employees are bringing in their own devices and it makes sense to me to offer them tools from a single place," he says.

This might be via remote access – the applications would run on Thames River Capital's servers – or as downloadable apps, he says, but it is most likely to be a combination of the two through a storefront platform where their release can be managed and controlled.

"We're still some way off making any decision, but I'm pretty clear on our ultimate goal: it's to be able to offer any employee, using any device, exactly the tool they need, when they need it," he says.