RACONTEUR

ENTERPRISE AGILITY

30% 31% 38% 34% 40% 25% 44% 50%

45% 76% 23% 29%

10% 5% 30% 25%

"WE ARE TURNING THIS OIL TANKER AROUND WITH JCURV'S SUPPORT"
– FTSE 100 BOARD DIRECTOR

AGILITY DELIVERED

JCURV's mission is to increase the UK's agility by helping the largest organisations thrive in an increasingly changing world

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AGILE ENTERPRISE

Identify threats and strike before they flourish

A truly agile business reads the market, makes pre-emptive
strikes and celebrates an overriding purpose

CHARLES ORTON-JONES

Who doesn't love Lego? It's the toy that never goes out of fashion. A survey by Royal Mail shows Lego is the number-one toy on children's Christmas lists this year, ahead of bikes and video-game consoles. New sets include a *Star Wars* tie-in for *The Last Jedi* movie and *Lego Women of Nasa*.

And how does Lego do it, year after year? The secret is a form of pre-emptive thinking. Lego observes trends in the offing and takes action well before necessary.

When Lego sensed that smartphone-addicted young teens might be losing interest in plastic bricks, it launched *The Lego Movie*, which pulled in half a billion dollars at the box office, and put the product front and centre for a new generation. A conveyor belt of movies continues to rake in cash and pump out the marketing message to the target audience.

To combat the lethal threat of video games, Lego created its own. Since 1995 there have been 68 Lego video games, each guiding players towards the world of plastic bricks.

And now Lego is entering augmented reality (AR). Brickheadz is a new AR app for Google's Daydream platform. And there's a new AR app for iPhones running on Apple ARKit, which adds animations such as dragons around Lego models. Now smartphones help promote Lego.

Lego identifies threats and kills them before they flourish. This early-warning system is a golden quality in companies. It's one of the components of a truly agile enterprise. Many companies call themselves agile, but only elite performers move pre-emptively like this.

Sometimes this philosophy requires repositioning the enterprise from a shrinking sector to a growing one. Another Scandinavian company, Volvo, offers an exemplar. It announced in July that every car it launches from 2019 will be electric or hybrid. Fossil fuel only is out.

Like Lego, Volvo is moving early, before it needs to. A new brand Polestar will take on Tesla head to head in the electric supercar market. It aims to beat Tesla into China; a near certainty since Volvo is Chinese owned and already runs production plants there. In the next half decade, electric cars will throw the car market into turmoil. Volvo aims to be a disrupter, not a sitting duck.

Will it succeed? Who knows? Another hallmark of agility is a willingness to fail. The kings of failure are, of course, the world's second largest tech company. Google employs the brightest stars of tech, on astonishing salaries, yet clocks up high-profile flops with endless enthusiasm.

Remember these? It's a long list which includes Google Answers, iGoogle, Google Buzz, Google Bookmarks, Google Catalogs, Google Notebook, Google Code Search, Google Gears, Google Related, Google Directory, Google Sets, Google Health, Google Labs, Google Accelerator, Google Video and Google Wave.

Lego House, the brand's newly opened experience centre in Billund, Denmark

Google Glass was a set of eyeglasses which delivered information to the user's eyeballs. A front camera offered the chance to record your entire life as you viewed it. Tech journalist Robert Scoble gushed about the glasses in 2013: "I just wore Google's Glasses for two weeks and I'm never taking them off." Alas, the product was soon axed. This summer Google had a change of heart and Glass will be back with us.

There's another lesson. Agile is not smooth. Agile is chaotic. This list of experiments is what makes Google agile.

The messy nature of agile means there may never be an agreed definition. Plenty have tried. Accountancy firm KMPG has an *Agility Index*, and Forrester has *The 10 Dimensions of Business Agility*. But there's always an indefinable quality to the idea.

One frequent factor found in companies with a track record of agility is an overriding purpose. This North Star offers a way to navigate through the chaos. Google started out with the slogan, "To organise the world's information and make it universally accessible and useful." All efforts supported that goal, no matter what direction the company took.

Amazon is the best example today. The company is now a vast ecosystem of divisions from robotics to data storage, truly living up to founder Jeff Bezos's idea of a company as exotic as the Amazon River and rainforest. But all divisions are united around a clear ethos. Mr Bezos's mission statement is: "We seek to become Earth's most customer-centric company." He elucidates: "This is bigger than Amazon.com. What we want to do is uplift the worldwide standards for customer service and customer centricity. Sony, born after WWII, if you look at their early mission statement, was not to be known for quality. It was for Japan to be known for quality. Not Sony, Japan. That is what we want to do. It would be that we set a new example for customer service and customer centricity, that other companies look at, admire and want to emulate. And that is a mission that people can get excited about."

The Amazon boss can invent and axe, restructure and re-engineer, knowing all staff are still orientated on that single goal.

As a footnote, being agile is demanding. It involves constant challenging of tradition. At Lego, a decade of constant growth is now being followed by yet another shake-up. Chairman Jørgen Vig Knudstorp announced in September that around 8 per cent of the global workforce would be lost as sales showed a mild dip. He blamed ten years of success, saying: "In the process, we have added complexity into the organisation which now in turn makes it harder for us to grow further. As a result, we have now pressed the reset button for the entire group."

Wait until a slowdown becomes a malaise? You don't get to the top of Santa's list with that attitude. ●

WHY BUSINESSES SHOULD IMPROVE AGILITY
Management-level executives rated the top reasons for improving agility

84%
believe the capability to respond more quickly to new opportunities will give them a distinct advantage

65%
expect higher customer satisfaction and retention

58%
expect higher employee productivity and retention

CA Technologies 2017

Learn to let go and give staff power

Introducing agile thinking into an organisation needs to start at the top or it will fail to win the backing of key employees

CATH EVERETT

Agile thinking, while not commonplace in UK boardrooms today, is expected to become the basis of the management practice of tomorrow.

The approach is already being taught on a number of management training courses. But outside academic spheres, it is also referred to under various other monikers ranging from customer centricity to faster, smarter and leaner.

This is about responding in a swift and imaginative way to the accelerating business change being brought about by technology and digitisation. But to do so frequently involves behaving in counter-intuitive and counter-cultural ways.

For example, in a fast-moving world, agile thinking means abandoning the traditional annual plan, with its reassuring key performance indicators, to create small, quick-and-dirty projects that deliver often imperfect products instead. These products can be killed if they do not work, but also have the potential to deliver rapid benefits.

At the heart of this approach, however, is what Simon Hayward, chief executive of leadership development consultancy Cirrus, describes as the "agile leadership paradox".

"Being able to respond to change is vital, but the paradox is that you have to be willing to be a disruptor and almost undermine your own thinking by challenging it and looking at how it could be knocked sideways," he says. "The point is you're either going to be on the front foot changing the way your industry operates and creating competitive advantage or you're going to be responding to that."

Some pioneering organisations beyond the rarefied world of technology startups have already embraced agile thinking and applied this philosophy across the enterprise. But the majority are still either in the process of working out how to do it or have introduced the approach into their IT and digital departments only, which is simply not enough.

Vikram Jain, managing director of agile management consultancy JCURV, explains: "The problem is you end up with a two-speed business. So an internal customer will say they want something; IT designs, develops and tests it in an agile way and other departments, like marketing and legal, use a traditional waterfall approach to launch the solution, which means it gets stuck in a bottleneck."

What is required instead are cross-functional teams that are "co-located and empowered to solve problems and 'fail fast' without hierarchies getting in the way", he says. Failing fast is about cutting your losses when something is not working and quickly trying something else.

But the challenge involved in going down this route is that most large organisations still operate under a command-and-control style of management, which is based on a "fundamental belief that you can't trust people to do the right thing", says Mr Jain.

Other barriers to agile ways of working include company silos that inhibit collaboration, deferential and bureaucratic processes, and an inability to prioritise, all of which slow change down.

"At the heart of all this is control," Mr Hayward points out. "One of the central principles of agile is that teams get on with it and self-manage. Most senior leaders find it difficult to cede control to others, especially if they're trying to drive change, but if they can devolve decision-making to the lowest level, it's very empowering."

A key challenge here though is the majority of senior leaders employ management techniques that have proved successful in the past, but are largely unsuitable for addressing today's problems. But because they do not know how to change, they end up focusing too much time and effort on the wrong things.

"The biggest barriers to agile are cultural and behavioural, and it starts from the top," Mr Jain says. "If you don't appreciate that ways of working need to change, you'll put up barriers to others doing it too."

Put another way, to adopt agile thinking, it is vital that senior executives change their own belief system and attitudes. Mr Hayward explains: "It's about rethinking your beliefs and developing 'learning agility' to create a climate where people can operate effectively. This means not blaming them if things go wrong, but encouraging them to learn from their mistakes and take responsibility for their actions."

> 66
> One of the central principles of agile is that teams get on with it and self-manage

CASE STUDY
VISTAPRINT

Vistaprint

The chief executive of Vistaprint first became aware of agile thinking four years ago after being approached by one of the company's technology leaders who was keen to introduce her to the methodology.

Although the software development team had already started using agile techniques when writing code, Vistaprint's boss Trynka Shineman spotted its wider potential in leadership terms immediately.

"When I think about the reality of command-and-control in today's environment, I just don't believe it works any more," she says. "I felt there must be a better way."

The enterprise-wide transformation began with encouraging the development team to share stories about their agile experiences, and by making it clear to others that training was available if they wished to learn and follow suit. To this end, a senior consultant and experienced agile coaches were brought in to help.

"I also ensured my leadership team were going through training so they changed our processes and started living it," Ms Shineman says. "It was what you might call a 'facilitated viral effect' as you do need to put resources behind it and have the support of the teams to make it work."

The multinational organisation, which has 7,000 employees and prints corporate business cards and marketing material, is currently focusing on optimising the role of its managers and how best to create cross-functional teams that come together to focus on outcomes before disbanding again.

"It's about defining what shared success looks like, how you frame outcomes and how you provide the right support," Ms Shineman says. "So the leadership role fundamentally changes from delegating tasks to enabling outcomes, and empowering individuals and teams to make their own decisions."

In fact, agile brings about a huge shift in "all aspects of how you lead a business and how you work, but it's not like there's a playbook you can adopt – instead it's a mindset and a journey", Ms Shineman concludes.

Gary Burchell/Getty Images

peers at companies that have already gone down this route, or even with members of their own IT department, to see for themselves what this new way of working looks and feels like.

As Nicolas Minvielle, head of Masters in marketing, design and creation at the Audencia Nantes School of Management, says: "You need to spend time with people who know about it. Otherwise it's just a story and won't mean much; you certainly won't change your behaviour as a result. So you need to go out into the field and live it to truly understand it."

But this change in behaviour from the top is crucial if agile thinking is to become embedded throughout the organisation. On the one hand, it is up to leaders to create a safe environment that enables team members to work in an agile fashion despite pushback from elsewhere.

On the other, says Mr Jain: "Leaders need to start leading again, which means two things in practice: defining the vision and shouting about it, and then, as their teams become more empowered, stepping back and spending time removing any impediments to their success and effectiveness."

Although it is widely acknowledged that changing attitudes is one of the hardest things to do, there are various possible options that can help. Management training organisations and tertiary education institutions, such as the University of Central Lancashire, offer a range of programmes, for instance, and there are also plenty of books on the subject.

But another useful approach is for senior leaders to spend time with

While small benefits should make themselves felt quickly, embedding agile thinking into how the organisation operates is likely to be a 12 to 24-month process.
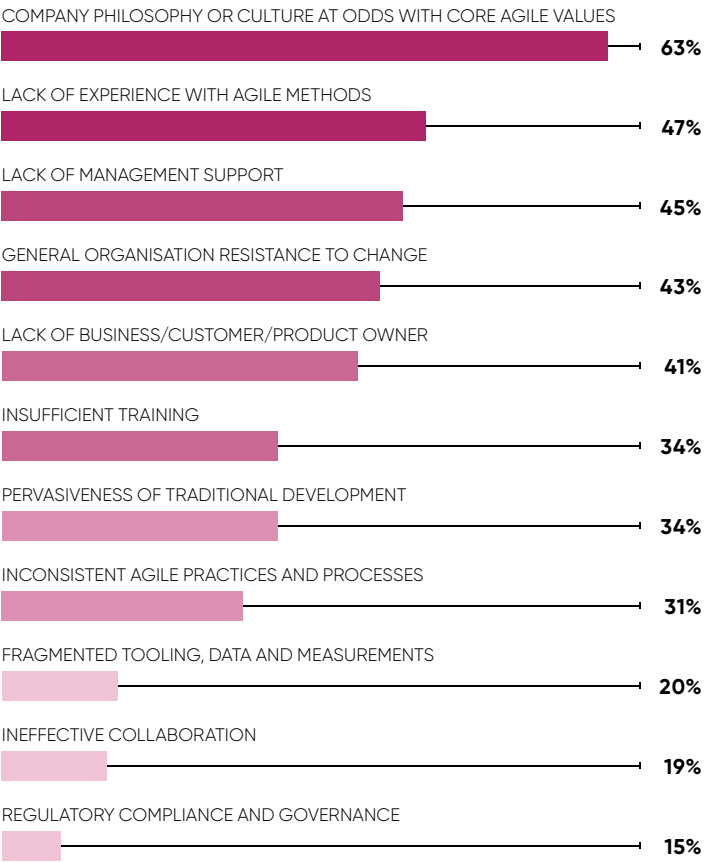
"It's not a short-term fix," Mr Hayward concludes. "The thing with agile is that it takes time; it's such a different way of working and requires such a different mindset because it flies in the face of much traditional management practice and culture." ●

TOP CHALLENGES EXPERIENCED ADOPTING AND SCALING AGILE

GLOBAL CROSS-INDUSTRY SURVEY OF SOFTWARE DEVELOPERS

COMPANY PHILOSOPHY OR CULTURE AT ODDS WITH CORE AGILE VALUES
63%

LACK OF EXPERIENCE WITH AGILE METHODS
47%

LACK OF MANAGEMENT SUPPORT
45%

GENERAL ORGANISATION RESISTANCE TO CHANGE
43%

LACK OF BUSINESS/CUSTOMER/PRODUCT OWNER
41%

INSUFFICIENT TRAINING
34%

PERVASIVENESS OF TRADITIONAL DEVELOPMENT
34%

INCONSISTENT AGILE PRACTICES AND PROCESSES
31%

FRAGMENTED TOOLING, DATA AND MEASUREMENTS
20%

INEFFECTIVE COLLABORATION
19%

REGULATORY COMPLIANCE AND GOVERNANCE
15%

VersionOne 2017

Harnessing the power of an agile culture

Businesses seeking to compete in today's world need to have agile culture and leadership at their heart, says **Agile Business Consortium**

Against a backdrop of rapid political, economic and digital change, the need for businesses to be able to adapt and respond has never been greater. To succeed in fast-moving markets, businesses must demonstrate agility and a deep-rooted commitment to improving the overall customer experience.

For businesses to achieve this change, the focus needs to shift from the traditional model of command and control to a people-centric approach that permeates through every inch of the organisation.

According to Ed Holt, founder of the of the Agile Business Consortium, this transformation will be driven by leadership and culture, which he describes as the cornerstone of a truly agile business.

He says: "In unprecedented times of uncertainty and change, it comes as little surprise that there is growing interest among businesses to be more nimble. However, for an organisation to really deliver value, any changes made need to be powered by effective leadership and autonomously

collaborative teams. It really is about harnessing the power of people."

For Mr Holt, successful businesses will be those that take time to understand what a completely agile business structure looks like, and be prepared to live and breathe it. Businesses must create an environment underpinned by shared values, behaviours and practices that allow and encourage employees to be more flexible, innovative and, importantly, to feel listened to. Not surprisingly, creating a culture founded upon a collective purpose and passion is crucial.

Katie Taylor, the Consortium's lead on agile culture and leadership, explains: "If employees of a company aren't pointed at the same goal and do not share the same sense of purpose, any move to change the business won't work. The overriding aim must be to create a people-centric organisation and the most successful companies are those with a shared sense of purpose that doesn't simply revolve around making money."

Who can ignore the phenomenal rise of US giant Google and the UK house-

hold name Timpson, whose success is arguably down to their focus on their people who provide exceptional customer experience? It is this approach that drives success and keeps businesses ahead of the curve.

With this in mind, successful leadership needs to centre on transparent, honest communication, says Ms Taylor. This in turn leads to greater collaboration and loyalty within teams.

Agile leadership is not a role of control, but one of facilitation, help and support, with guidance if needed. By encouraging greater communication, leaders will learn what's really important to the business and its success. Leadership should not be limited to those in very senior positions either; an agile leader should have the foresight to develop the organisation's overall leadership by realising the potential of each team to lead.

"Mentoring today's leaders in the principles and practices of 'servant leadership' sows the seeds for the agile culture to thrive," says Ms Taylor. "If you want genuine agility, it involves having the right mentality. If the mindset of the leadership doesn't change, there is no point in delayering a business or changing team structures as it won't create lasting, effective change."

Mr Holt points out, moving with the times requires people to be more nimble, progressive and open to positive change. The Consortium has identified three core pillars it believes underpin successful leadership – communication, commitment and collaboration.

"Agile leadership feels very different to traditional leadership," says Mr Holt. "It's not just about driving and promoting change, but about being the change. Those who lead by example and actively engage in their own development inspire people. They have a meaningful vision of change and a passion to align those values into inspired action."

Regardless of size or sector, businesses that will prosper in today's world will be those which recognise, value and harness the power of their people.

7 ELEMENTS OF AGILE CULTURE DNA

AGILE LEADERSHIP
Supportive leadership over directive, command-and-control style

WELLBEING AND FULFILMENT
Happy and positive over fear based, stress, fatigue and burn-out. Providing a deep sense and feeling of achievement to individuals

UNLEASHED PURPOSE AND MEANINGFUL RESULTS
A clear, compelling and inspiring purpose which focuses on results that matter to all stakeholders

ADAPTABILITY TO CHANGE
A strong core that provides stability with flexibility to adapt and change

TRUST AND TRANSPARENCY
Loyalty, integrity and commitment to transparency, openness and honesty on day-to-day working

COLLABORATIVE COMMUNITIES AND DISTRIBUTED AUTHORITY
A network of collaborative teams with more autonomy for decision-making as appropriate

INNOVATION, LEARNING AND PERSONAL MASTERY
Psychological safety, thoughtful experimentation, learning and reflective practice moving towards personal strengths and mastery

Get the agile culture and leadership executive summary at www.agilebusiness.org/agileculture

Join our webinar, Harnessing the Power of People to Build an Agile Culture, at 11am on Wednesday January 17, 2018 agilebusiness.org/culturewebinar

COMMERCIAL FEATURE

The future of agile

Organisations need to change their approach to cope with the threat of new entrants if they wish to survive, warns **Cameron Stewart**, head of project portfolio management (PPM) product development at Axelos

INFLUENCE OF TECHNOLOGY IN ORGANISATIONS AND SOCIETY

TIME

Distributed ledger (blockchain) proof of asset provenance

TECH CENTRIC

Capturing data via a web form into a database for automated processing and response

TECH ENABLED

Manually entering data into a database for future reference

TECH SUPPORTED

AXELOS
GLOBAL BEST PRACTICE

Large organisations face a dual-pronged existential threat, from both tech-centric new market entrants and existing competitors that are moving from tech enabled to tech centric.

A simple example is in the automotive sector; if one car has updatable software and another doesn't, the one with updatable software will be modified in line with users' needs throughout its life. This means customers gain from future innovations through updating software rather than having to replace the whole vehicle.

If incumbent operators don't recognise that they need to produce a car that works this way, competitors and new entrants will. Just take a look at Tesla's impact on the market – it's now eclipsed GM and Ford to become the most valuable US carmaker.

That's a very specific case, but there are plenty of historic examples of where businesses have failed to see emerging trends or uses of technology, such as Kodak in the photography space, Woolworths on the high street and Blockbuster in the entertainment market. In the current environment, any transformation will almost certainly be built around digital, but the dangers posed to organisations are the same as those facing these familiar but now-departed or seriously damaged names.

Incumbent organisations need to transform and central to this is the need to adopt an agile mentality across their whole organisation. This will allow them to harness their current advantages – their reputations, size, finances and staff – while moving from single ways of working to a way that is relevant to each bit of work they do. It means adopting a Kaizen mindset, with each individual taking ownership and responsibility for his or her work, and being empowered to develop and improve their part of the organisation, so the organisation itself improves in a series of marginal gains.

At its core, being agile is a mindset. It's almost a will to survive in a changing environment that is enabled by different working practices. These could include the use of techniques such as scrum, scaled agile framework or disciplined agile delivery, but these are not solutions on their own. These specific measures tend to be created for the delivery part of the organisation, generally IT or product functions.

But it's important the whole organisation is involved, including functions such as human resources, finance, procurement and marketing. Otherwise the risk is they default to what they have always known, which has served them well in protecting them against change in the past, but will no longer do so. That's why a mindset change is vital.
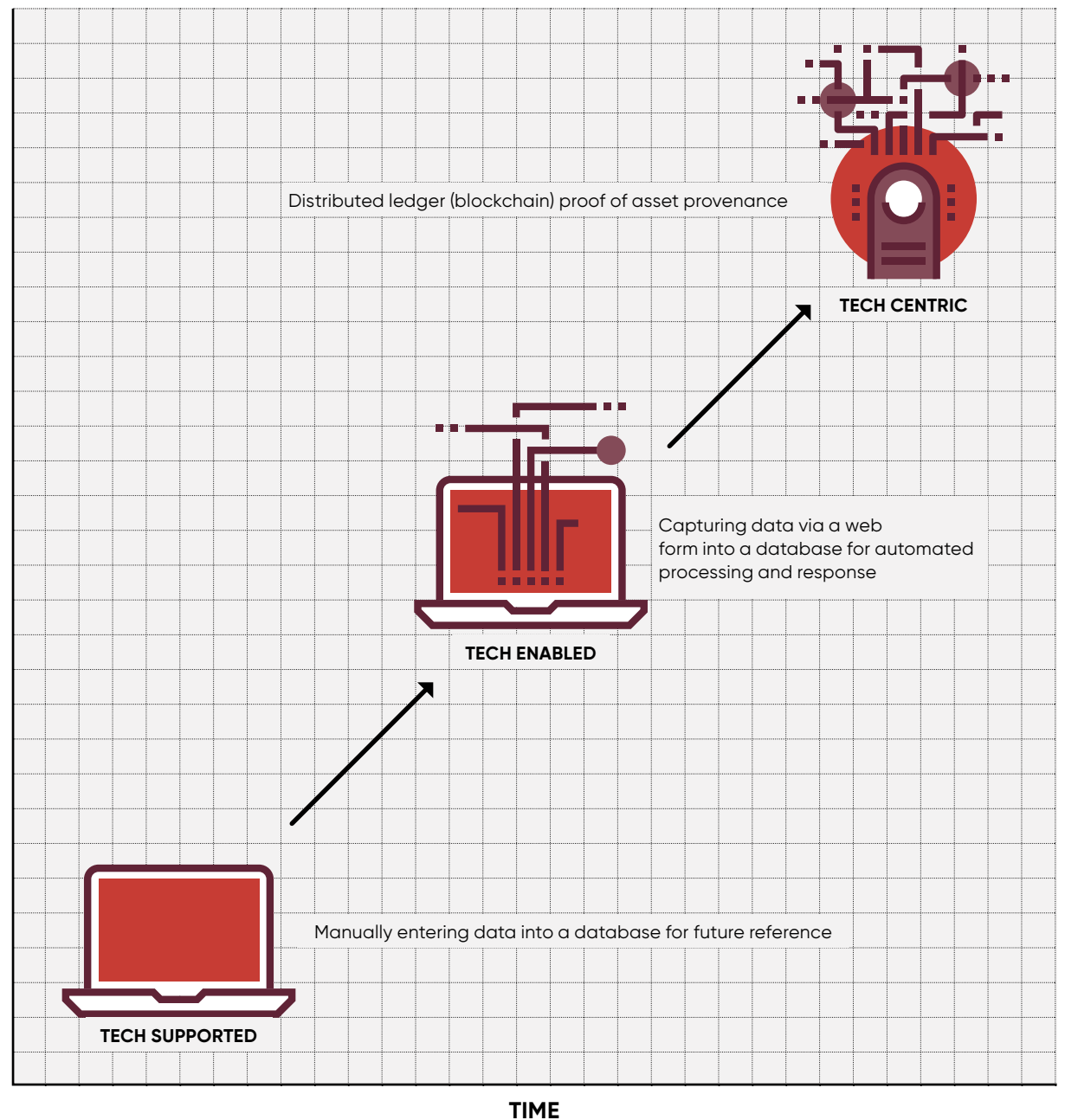
Business leaders, in both the public and private sectors, need to understand that they're about to undergo a transformational change to help them remain competitive, and ultimately stay in business for the next 15 or 20 years. Enlightened organisations already understand that a holistic transformation is required and that close to 100 per cent of the organisation will need to be on board, because the competitors that are coming in are built around this mentality. Those that attempt to undertake a light-touch or narrow, delivery-oriented version of agile implementation will fail, and that will lead to the failure of brands and businesses.

The starting point for any agile initiative is to change the mindset of senior leaders, and then to make contact with every member of the organisation and explain to them the urgency of the situation, and how they will be the drivers of change. Leaders must make it clear that if there are inefficiencies they will be exploited by new entrants and competitors, and that if somebody spots a degree of inefficiency or something that could be done better then they need to flag it up and help to resolve it. After the mindset has changed, it's a case of looking at processes and new ways of working, and only then how software and other tools can help enable that.

Organisations serious about adopting an agile mindset, which will help them overcome the challenges they face from new entrants and more established competitors, can now take advantage of help from government-backed business Axelos. The joint venture between the government and Capita owns the intellectual property around best-practice ways of working in service management, projects and programme management, agile management and cybersecurity, and has now developed a new initiative targeting those looking to become agile businesses and safeguard their future.

The first part currently being developed is a two-day training course which starts with mindset and transformational change, outlining why businesses need to adapt. Change is achieved with the buy-in of all levels of management and this course is recommended for everyone in the organisation, from C-suite to delivery teams. Everyone should feel they are involved in defining the future of their organisation.

Essentially it's aimed at making people aware that the world around them is changing and the people working for the organisation are the only ones who can enact change. Courses will be delivered globally through a network of partner companies and consultancies, and there are also plans to offer online modules, which people can complete at their own pace.

The risk for organisations that fail to act now is that by the time they feel the pain and realise they have to do something, it will probably be too late. Now is the time to start the journey of empowering teams and establishing the right way to work, whether that's in a purely agile way or in a more traditional way, with some agile project management also featured.

What is important, though, is that organisations enable ways of working that are fit for the work they do, which break down bureaucracy and ensure everyone in those businesses understands the processes that kept them safe for decades may well no longer be fit for purpose. Only by embracing change, while drawing on existing advantages, such as money, great people, reputation and brand, can organisations hope to continue to thrive in such a competitive environment.

To find out more about how Axelos can help your business please visit www.axelos.com

CAMERON STEWART
HEAD OF PROJECT PORTFOLIO MANAGEMENT (PPM) PRODUCT DEVELOPMENT, AXELOS

> ❝ Business leaders, in both the public and private sectors, need to understand that they're about to undergo a transformational change to help them remain competitive

METHODOLOGIES

EschCollection/Getty Images

'Take the best of each to suit your business'

Businesses can pick and mix from the various agile methodologies to best suit their purpose

MOST COMMON AGILE METHODS AND PRACTICES
GLOBAL CROSS-INDUSTRY SURVEY OF SOFTWARE DEVELOPERS

- SCRUM — 58%
- SCRUM/XP HYBRID — 10%
- CUSTOM HYBRID (MULTIPLE METHODOLOGIES) — 8%
- SCRUMBAN — 8%
- KANBAN — 8%
- ITERATIVE DEVELOPMENT — 5%
- LEAN DEVELOPMENT — 2%
- OTHER — 8% / 1%

VersionOne 2017

ADRIAN BRIDGWATER

In the new age of digital business, it is widely acknowledged that software runs the world. From cottage industry cake bakeries to oil rigs, software intelligence underpins and controls the flow of daily operations in every vertical.

If we accept this core truth, then can we now extend the methodologies used to construct software programs and apply them to business workflows? Specifically, can agile in code translate to agile in business?
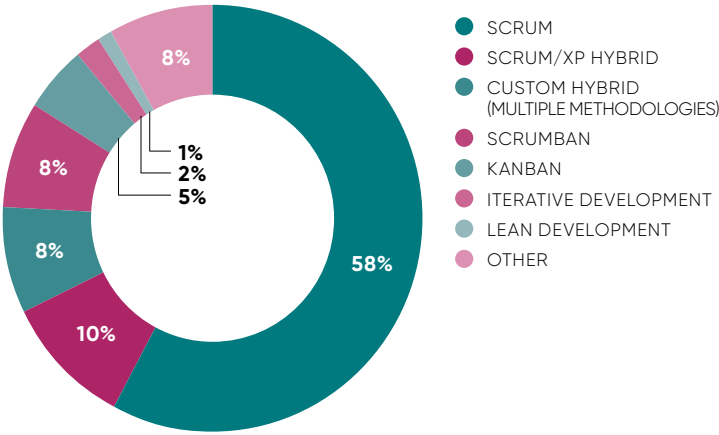
In basic terms, the agile approach and methodology embodies the notion of being able to fail fast and recover even faster in a world that accepts continuous change as standard. Agile places value on individuals and interactions over processes and tools. It is a mindset that is open to a potentially unlimited number of practices. Agile accepts that what works today may not work, as effectively at least, tomorrow.

Wider subsets and close relatives of agile also exist. Kanban derives from a supply chain inventory approach designed for what we can call lean or just-in-time manufacturing. Kanban originated on automotive assembly lines at Toyota, but it can be applied in a cake bakery or on an oil rig, to use the above deliberatively random and incongruent examples.

Also sharing agile DNA, scrum is a management and complexity control process where smaller chunks of work can be approached in fixed duration sprints. Scrum sprints are driven by scrum masters who organise daily team member huddles called, somewhat unsurprisingly, scrums. Wider still across the agile spectrum, there's the people and roles-focused crystal. There's also eXtreme programming, which champions peer reviews across pairs. All form part of the agile universe in some way.

"Agile is a solution to the completely flawed way of working that we currently use in most projects. The so-called waterfall methodology, where we work towards a massive pre-specified goal, awaiting lots of dependencies along the way and only review if we've got it right or wrong at the end, is broken at best and was maybe always a bad idea," says Daniel Rowles, chief executive of TargetInternet.com, a firm that specialises in digital marketing and e-learning techniques.

Mr Rowles explains that the great thing about agile is that it is a set of principles rather than a strict set of procedures. It can be implemented in a whole range of ways, depending on the challenge at hand and the level of formal processes required. At its heart is a way of getting stuff done that is suited to the fast pace of change we have to deal with in business today.

> ❝
> We can extend agile principles that were initially targeted at software product development to strategy, human resources, finance and marketing or any business function

But as disciplines in their own right, software development and business management are of course different. The inconvenient truth is you can't just stick agile on to business. Software development can be experimental, segmented away from live business opera-tions and carried out in so-called sandbox environments. Business doesn't get this luxury quite as often. Perhaps the answer lies in getting business managers and lower-hanging executives to think and act like agile developers.

The issue centres on the fact that, in general, software development can be more strictly codified and compartmentalised than any essentially connected business department or function can be. So how can the specific different elements of agile be applied to a combination of workflow practices that address different value streams and areas of the business? To "get agile", business needs to blend a variety of these methodologies and come up with a new agility mix.

Matt Candy, vice president and European lead for IBM's business design division iX, says the main benefits of creating an agile enterprise are broader-based skills and increased engagement across all departments.

"In an agile workplace, employees have more autonomy and purpose, which drives engagement. Collective intelligence is highly valued, as it will always outweigh individual insights. Agile is a fundamental step in creating a high-performing culture because it means people learn from each other," says Mr Candy.

Chair at the Agile Business Consortium Geof Ellingham agrees that we can extend agile principles that were initially targeted at software product development to strategy, human resources, finance and marketing or any business function. What's really needed now is agile thinking across all subsets of agile in all applied business scenarios, he says.

"Organisations will get the best out of any aspect of these methodologies once they've embedded an agile culture deep in their DNA, then they will tend to draw out the most relevant aspects from any methodology and make it their own," he says.

The answer, it seems, was staring us in the face all along. As Mr Ellingham suggests, why not tap into the pragmatic attitude at the core of agile and take the best of each? A more agile world awaits, so start limbering up now. ●

PERCENTAGE OF TEAMS USING AGILE
GLOBAL CROSS-INDUSTRY SOFTWARE DEVELOPERS WERE ASKED ABOUT THE PROPORTION OF TEAMS IN THEIR ORGANISATION USING AGILE PRACTICES

8%
All of our teams are agile

32%
More than half of our teams are agile

58%
Less than half of our teams are agile

2%
None of our teams are agile

VersionOne 2017

Advocacy in a digital age goes online

Building awareness, winning members and raising funds can be more effective online for third-sector organisations

JIM McCLELLAND

The traditional idea of a charity spreading the word conjures up images of a volunteer warmly and earnestly buttonholing passers-by, collection box in hand, leaflets and lapel badges at the ready. In the digital and mobile world of 2017, however, NGOs can find themselves more in the business of global communications than community door-stepping.

Supporters harnessing interpersonal skills and passion face to face, or over the phone, remain hugely valuable. Online, though, is where the 21st-century audience can be found for awareness-building, membership growth and fundraising.

At least, that is the theory. In reality, third-sector and voluntary organisations appear slow to adapt. The *Charity Digital Skills Report 2017* found barely a quarter had aligned their digital and organisational skills; half had no digital strategy at all.

The *2016 Charitable Giving Report* by Blackbaud also revealed that, while total UK giving rose 2.8 per cent, merely 7.2 per cent came via online contributions, up just 2.2 per cent.

In general, charities seem to be struggling to reach the prime Generation Y audience of tablet and smartphone-led millennials.

For advocacy and campaigning organisations, digital combines the pressure of a permanently live global environment, with demands for micro-short response times. Agility is therefore critical, says head of media, public relations and supporter

communications at Amnesty International UK, Niall Couper.

"Now it's 24-hour rolling news; we need to be able to react quickly, so we have looked at clearance and process. We have had to streamline as much as possible. All of that is caveated, though, with the utmost regard for our reputation – we will never go out with anything we are not sure about," he says.

Human rights organisations, such as Amnesty, often deal with material that is highly sensitive or of legal significance. This information may relate directly to the safety and security of individuals at risk or communities under threat. There can be no compromise on protocols for the sake of speed.

Getting stories and comments authorised for release is key, says Mr Couper. "When it comes to sign-off, the number-one thing is an educational process around realising the importance of media," he says. "If you have a CEO or a director who doesn't understand the significance, then you are fighting a losing battle.

"To be seen as effective and efficient at getting your message across, you have to be accurate, but also fast. So you need the right people available, with the necessary powers."

> " To be seen as effective and efficient at getting your message across, you have to be accurate, but also fast

01

02

At Amnesty, media is in the DNA. Not only does the organisation champion freedom of the press worldwide and foster strong links with journalists, its own history owes a debt to a newspaper. Amnesty was born off the back of an article published in *The Observer*, by founding British lawyer Peter Benenson in 1961.

Fast-forward and Amnesty is now a global movement of more than seven million people. Its operational set-up in the UK mirrors that of mainstream media outlets even more closely with an internal news conference, to discuss breaking stories, held every morning, half an hour ahead of national press schedules.

Regarding Amnesty UK's own output, one million online views of an article constitute a breakthrough story and it's a benchmark hit more than 40 times this year, on issues from landmines in Myanmar to US President Trump. Such long-running high-profile activity brings its own agility challenges, though, in terms of resource allocation.

There is no straight-line correlation evident at present between breakthrough stories and funds raised, but there is a clear link to supporter engagement and public feedback, in phone calls, emails and letters, all of which contribute indirectly over time.

The media market itself is changing, however. A whole new kind of

01
Amnesty campaigners outside the US Embassy in London in April 2017 to mark 100 days of President Donald Trump's administration

02
Amnesty demonstration outside the Malawi High Commission in London in May 2010 to protest against the imprisonment of a Malawian same-sex couple

challenge looms ahead for placement of stories into what we currently call the mainstream, concludes Mr Couper. "It is about how people digest news; how that is evolving and changing," he says. "In future, individuals will increasingly self-select their own custom content. It will be an echo chamber to an extreme degree with a hyper-personalised feed based on their internet search history and digital profile."

As the mainstream fragments and the media go social, people will increasingly get their news from peers rather than platforms. In an ironic twist, therefore, digital might just put the power back in the hands of the individual volunteer to tell the story. ●

Businesses embrace software development principles in the face of disruption

The principles and methodologies that have helped software developers deal with change, uncertainty and speed to market are being adopted in the wider organisation as businesses face up to the consequences of digital disruption

Adaptavist

The internet has wildly disrupted the business world to the extent that in today's economy the flow of information is often the most valuable commodity. At the heart of this information economy is software, which every successful business of significance is employing well in some way, shape or form.

From retail to rockets, car rental to finance, software is king. Every successful business needs to master how it creates software, not just to survive, but to gain competitive advantage in the disruptive business landscape.

To win, businesses must implement tools and processes that allow them to write good software. As a result, the best practices of software development have become critical to dealing with the challenges, and indeed taking advantage of the opportunities, of digital disruption. The agile approach, in particular, has taken centre stage.

Much of the value of agile derives from its iterative approach to software delivery. Building incrementally and fluidly, rather than trying to do everything in one large project that cannot deviate from its original goal, delivers much more successful outcomes. Engrained in this approach is the DevOps movement, a software engineering practice that is based on shorter development and communication cycles. Both agile and DevOps revolve around taking a people-centric and team-centric approach.

"The software world moves very quickly and the shorter iterations associated with agile approaches drive that speed," say Simon Haighton-Williams, chief executive at Adaptavist, a London-head-

quartered business that helps enterprises design, deliver and support their software better. "In the physical world, something like developing a new car might take years before it sees the light of day. In the software world, disruptive competitors are moving rapidly as well so the tools that allow you to move and change quickly are vital."

With the business landscape moving so fast in the face of digital disruption, the opportunities that are identified at the beginning of a project may no longer necessarily be the right opportunities down the line. Agile approaches enshrine the ability to change direction, allowing companies to survive and thrive in today's world.

A pragmatic approach is vital in any business pursuit, particularly one that requires a savvy use of software. Most traditional IT projects fail to meet their goals either on time or on budget, or by failing to live up to expectations. With agile, the business not only accepts that some initiatives might fail, but often embraces a "fail fast" philosophy in pursuit of the right software. By accepting that the original goal might be wrong or have changed, the team can modify its objectives along the way and deliver better outcomes.

"Every journey starts with a single step," says Mr Haighton-Williams, "but by making those smalls steps and embracing the fact that you don't necessarily know your end-goal in fine detail, you're able to navigate to a better outcome. Understanding the environment in which you operate and the resources you can deploy is vital. You'll probably fail without doing that.

"At Adaptavist, we have an internal motto: pragmatism above all else. In some ways, it's at the core of what agile is about. It's about recognising reality and reacting to it. This defends you against the threat of going in the wrong direction, while allowing you to be opportunistic about things that have come up in your market and sector."

Adaptavist provides products, services and solutions to a client base that includes most of the Fortune 500. As a platinum solution partner of Atlassian, Adaptavist helps organisations dealing with the complexities of digital disruption.

Atlassian is at the forefront of the software development industry.

Founded 15 years ago by a pair of software developers with nothing but credit cards to get started, it is now an $11-billion public company offering tools that are used by tens of millions of software developers around the world. Its products, including Jira and Confluence, are designed from the ground up to be intrinsically modular and expandable, making it possible for third parties such as Adaptavist to extend, integrate and automate the Atlassian toolset.

One Adaptavist client, the John Lewis Partnership, has worked with the company to build a comprehensive, scalable and resilient managed services platform for more than 2,000 users of Atlassian software. The 150-year-old retailer, which operates 42 John Lewis shops and 322 Waitrose supermarkets across the UK, looked to Adaptavist to provide better control over the entire development process.

John Lewis knew that Jira and Confluence had the potential to deliver much more, and as Claire Nelson, its methods and tools lead, puts it: "We wanted to establish the maximum value that could be gained from the tools."

Adaptavist supplied and now runs a secure and stable managed

> ❝ It turns out that the things which have worked well for software developers – speed, flexibility, communication, collaboration – work well for most other parts of the business

services platform where John Lewis's users can quickly and easily share information and access the full range of Atlassian plugins. In less than two years, the number of users quadrupled in a succession of closely managed and successful rollouts, with more than 2,000 people now using the platform in Europe and India.

"If you look at the retail sector as a whole, Fortune 500 retailers are spending $1 billion a year on IT, but are competing with competitors such as Amazon and being forced to up their game. We see the same trend across the wide range of sectors we operate in. The enterprise is having to move from deploying new software once a year towards a more continuous delivery model and making teams work seamlessly together," says Mr Haighton-Williams.

Good software developers are seasoned in delivering what the

business needs even when it doesn't know what that is, and often in the midst of uncertainty and change. With this changing landscape now occurring everywhere, businesses are realising that many other areas of the organisation can learn from this approach.

"We will continue to support software development communities and organisations, but also we're seeing another big opportunity happening now and in a very big way. These software development processes and approaches are being adopted into the wider business," says Mr Haighton-Williams.

"It turns out that the things which have worked well for software developers – speed, flexibility, communication, collaboration – work well for most other parts of the business. These agile tools and approaches are being adopted in legal, human resources, marketing, finance and customer service, and this is absolutely where we're going. The more you are agile in the business and the more that you embrace approaches such as DevOps and look at your processes holistically, the higher the return on investment."

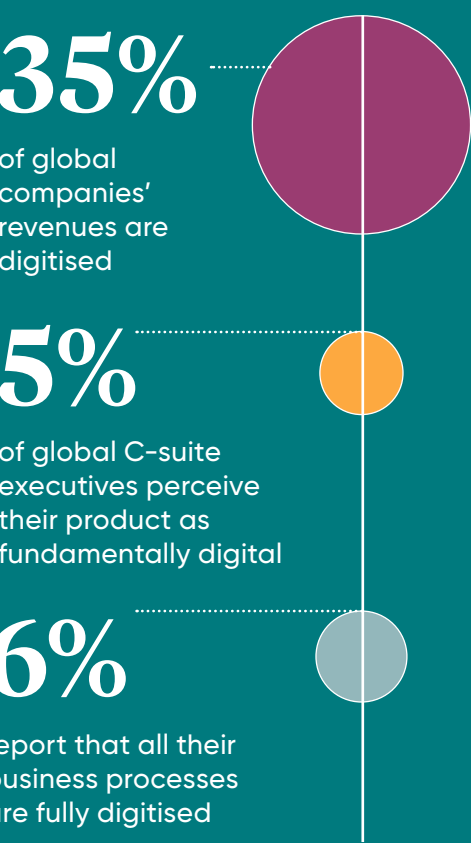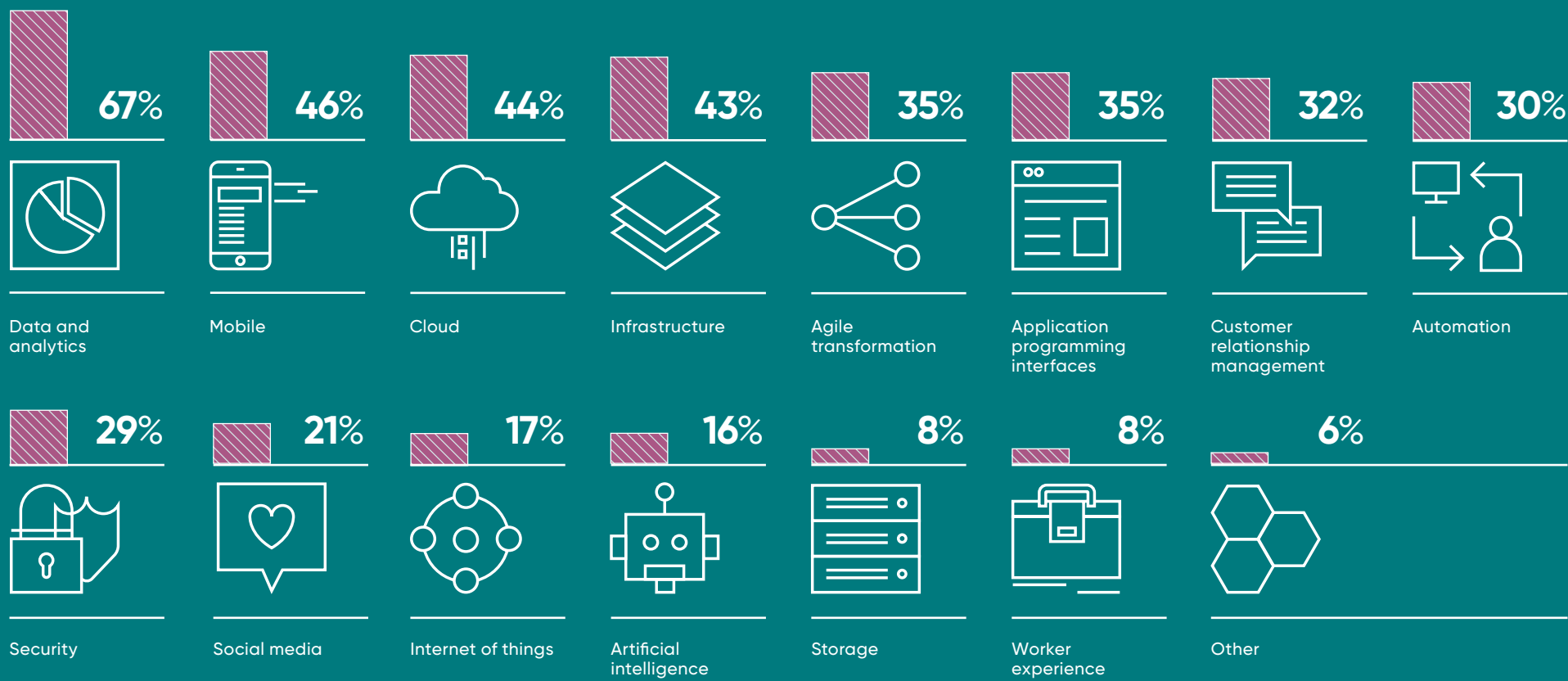**For more information please visit www.adaptavist.com**

SIMON HAIGHTON-WILLIAMS
CHIEF EXECUTIVE
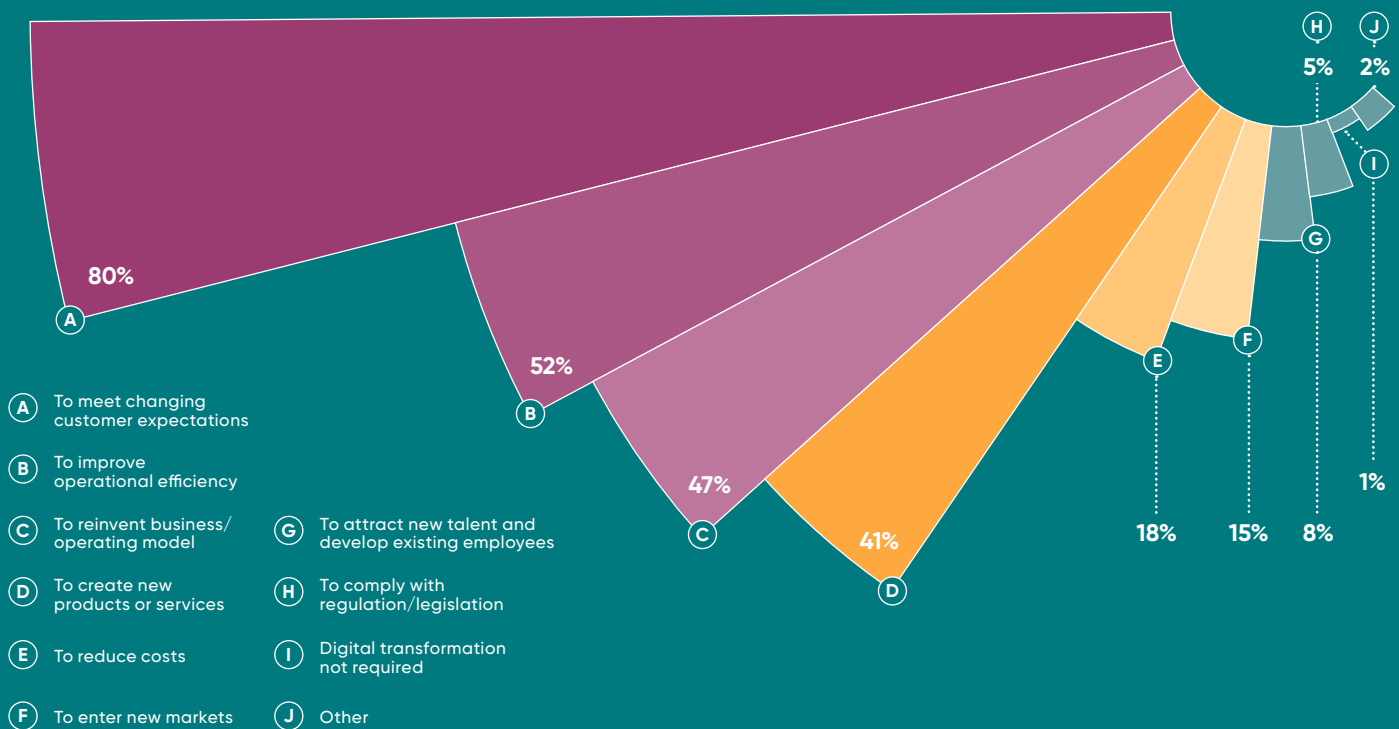ADAPTAVIST

RESPONDING TO CHANGE

How IT departments are dealing with digital disruption

WHERE DIGITAL TECHNOLOGY SPENDING WAS MAINLY FOCUSED IN 2017

PERCENTAGE OF IT LEADERS SPENDING BUDGETS ON THE FOLLOWING FOR DIGITAL TRANSFORMATION INITIATIVES
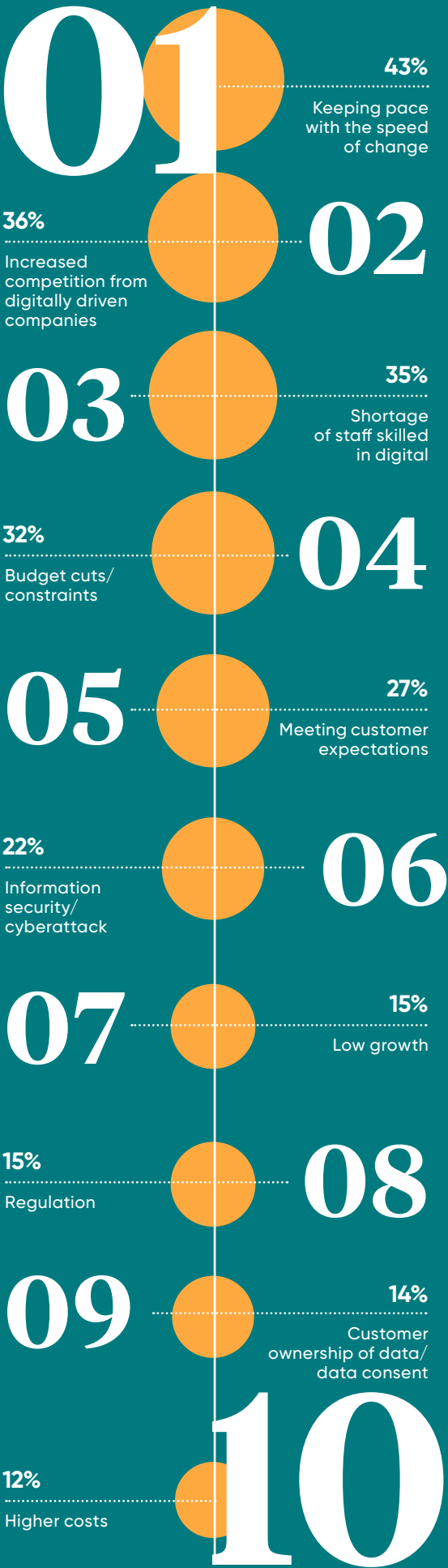
Nimbus Ninety 2017

67% Data and analytics

46% Mobile

44% Cloud

43% Infrastructure

35% Agile transformation

35% Application programming interfaces

32% Customer relationship management

30% Automation

29% Security

21% Social media

17% Internet of things

16% Artificial intelligence

8% Storage

8% Worker experience

6% Other

WHY COMPANIES FEEL THE NEED FOR DIGITAL TRANSFORMATION

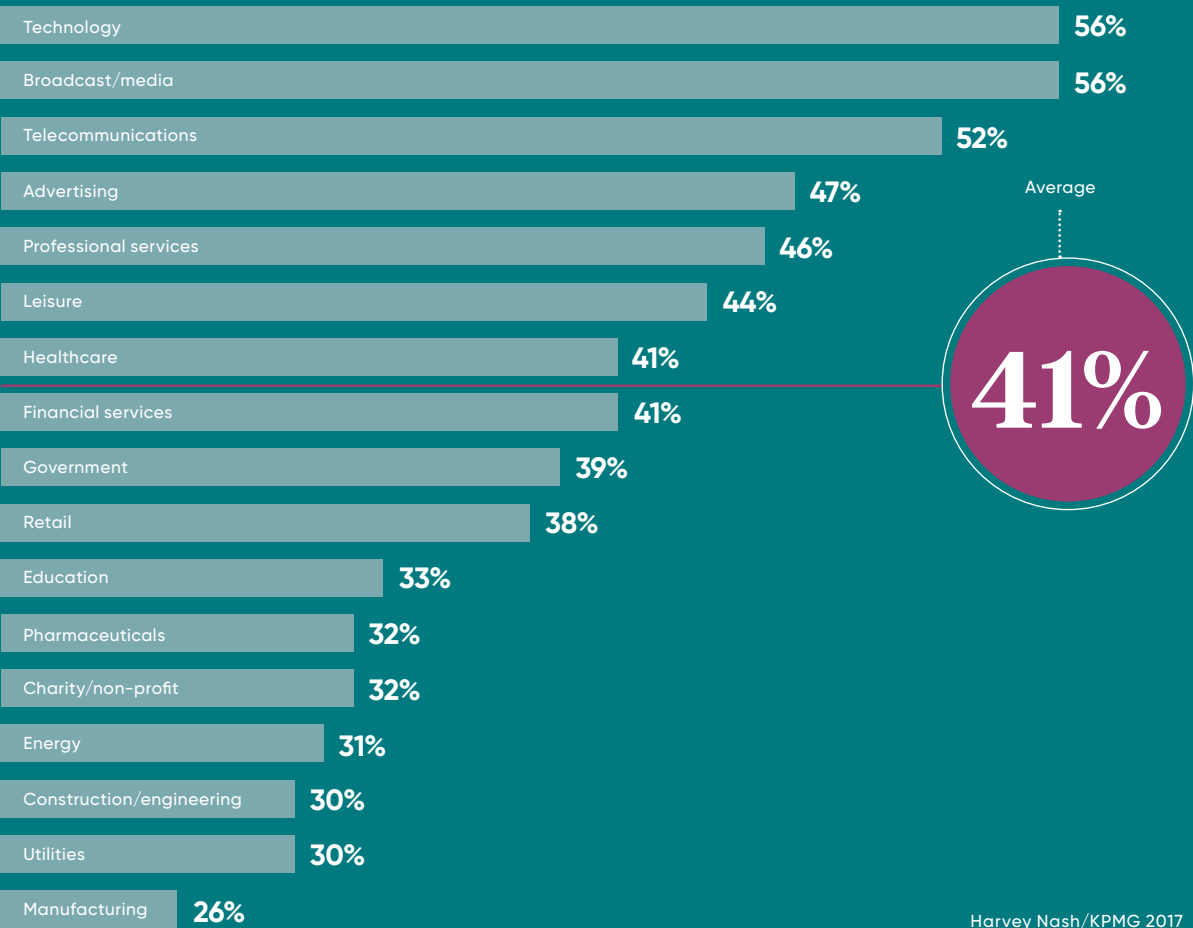SURVEY OF LEADERS RESPONSIBLE FOR DIGITAL TRANSFORMATION INITIATIVES

35% of global companies' revenues are digitised

5% of global C-suite executives perceive their product as fundamentally digital

6% report that all their business processes are fully digitised

A — To meet changing customer expectations — 80%
B — To improve operational efficiency — 52%
C — To reinvent business/operating model — 47%
D — To create new products or services — 41%
E — To reduce costs — 18%
F — To enter new markets — 15%
G — To attract new talent and develop existing employees — 8%
H — To comply with regulation/legislation — 5%
I — Digital transformation not required — 1%
J — Other — 2%

McKinsey 2017

Nimbus Ninety 2017

TOP CHALLENGES

SURVEY OF LEADERS RESPONSIBLE FOR
DIGITAL TRANSFORMATION INITIATIVES

01
43%
Keeping pace
with the speed
of change

36%
Increased
competition from
digitally driven
companies
02

03
35%
Shortage
of staff skilled
in digital

32%
Budget cuts/
constraints
04

05
27%
Meeting customer
expectations

22%
Information
security/
cyberattack
06

07
15%
Low growth

15%
Regulation
08

09
14%
Customer
ownership of data/
data consent

12%
Higher costs
10

McKinsey 2017

DIGITAL MATURITY BY SECTOR

Sector	%
Technology	56%
Broadcast/media	56%
Telecommunications	52%
Advertising	47%
Professional services	46%
Leisure	44%
Healthcare	41%
Financial services	41%
Government	39%
Retail	38%
Education	33%
Pharmaceuticals	32%
Charity/non-profit	32%
Energy	31%
Construction/engineering	30%
Utilities	30%
Manufacturing	26%

Average **41%**

Harvey Nash/KPMG 2017

HOW IT DEPARTMENTS ARE BECOMING MORE AGILE AND RESPONSIVE

MOST IMPORTANT STEPS IT EXECUTIVES ARE TAKING TO BECOME MORE AGILE/RESPONSIVE
IN THE DEVELOPMENT AND DELIVERY OF IT SERVICES

- Implementing agile methodologies
- Buying more solutions rather than building them
- Taking different approaches to developing back-end and customer-facing groups
- Developing strategic partnerships
- Implementing devops
- Contracting more external resources

28% | 16% | 12%
19% | 14% | 8%

Harvey Nash/KPMG 2017
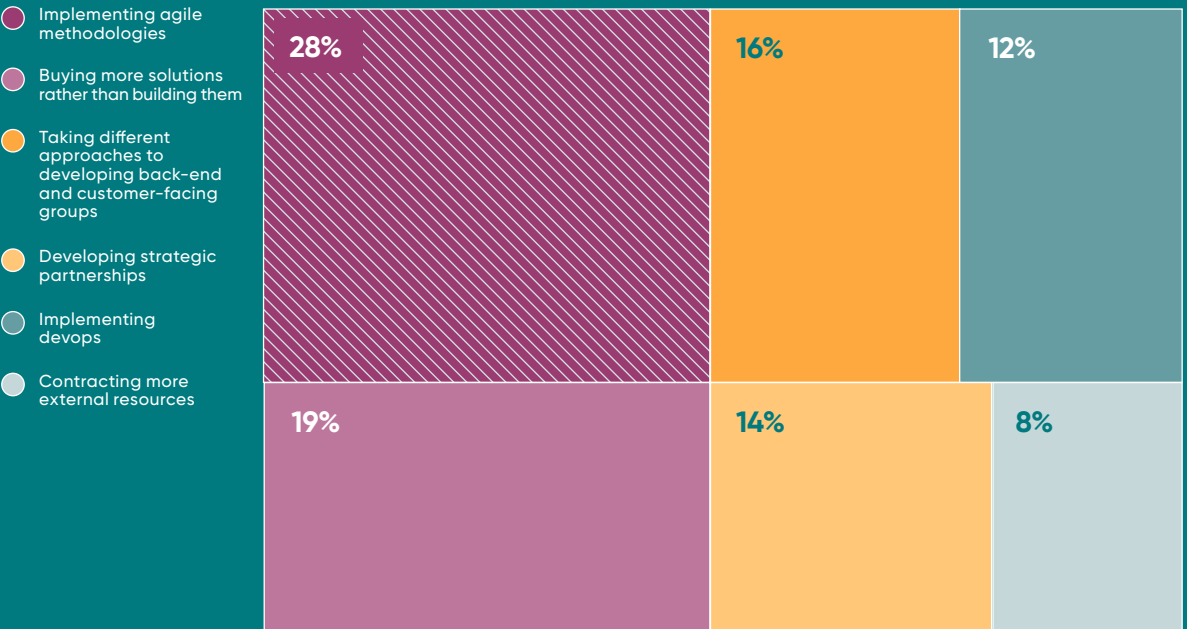
RETAIL

Challenges in store for the big-box retailers

Some established brands must move quickly to keep up with more agile newcomers or face a closing-down sale

01

BURHAN WAZIR

For some of the UK's most established high street retailers, the last decade has seen their traditionally unassailable businesses come under siege from agile companies such as Amazon and H&M. Brands which dig deep into social media trends to offer exclusive products and flash sales have begun to outpace traditional big-box giants.

In the face of technical innovation, retailers including Marks & Spencer and British Home Stores have struggled to match the flexibility of online and mobile shopping. The once impregnable clothing arm of M&S has been eclipsed by the quick turnarounds of companies such as Zara and H&M.

> 66
>
> Agile can help you change your strategy and product to meet the changing demands of your customers

Last year, M&S announced it would close 30 stores as part of a plan to cut floor space dedicated to clothing by 10 per cent. Earlier this month, it reported a 5 per cent fall in profits to £219 million for the six months up to the end of September.

The past 12 months has also seen the closure of a number of high street chains. In April 2016, British Home Stores filed for administration after its debts climbed to £1.3 billion. BHS had lost ground to rivals such as Primark and had failed to make a profit for each of the preceding seven years. In the same month, Austin Reed, which had 100 stores nationwide and employed 1,184 staff, also went into receivership.

A major challenge facing traditional retailers is having to adapt traditional business models to customers who increasingly demand a more dynamic user experience. In a report released this summer entitled *Embrace the Pace*, PCMS that provides retail solutions to companies including Ann Summers, John Lewis, Waitrose and M&S, polled 1,000 customers in an attempt to capture a snapshot of the evolving customer-experience landscape.

The study found an overwhelming shift towards companies that offer a more agile experience. One in three consumers said they no longer have a preferred channel, physical or online, to shop through. The study also found a significant change in how customers rate online and instore customer service. Ecommerce scored a higher average satisfaction score (3.7/5) than traditional instore customer service (3.5/5).

The research demonstrated retailers are clearly being asked to unite their digital and physical services through technology. Some 63 per cent of consumers said, within the next five years, they wanted staff to be able to talk about instore products as well as those available online. In addition, 55 per cent of customers said they want to be able to pay for items in their online cart at the same time as making an instore purchase.

"The pace of traditional retail has changed in the world," says London-based agile coach Amy Wagner of Wagner Ventures, who has worked with the Scottish government, European Commission and Ministry of Justice Digital Services. "It is faster than ever before and we see a really highly competitive retail space where profit margins can sometimes be low. With agile, it helps you to adapt to these changes swiftly. It can help you change your strategy and product to meet the changing demands of your customers."

Ms Wagner says the UK's traditional big-box retailers that rely on seasonal orders to satisfy demand, operate in a manner reminiscent of the construction industry. "I'd advise them to look into Zara, how they use their physical space and how they operate in quite an agile way. They have very short seasons of clothing and they work in small batches. They're very data driven and customer demand drives their strategies," she says.

"The types of things that Amazon does to predict demand are interesting. They do things in a week and they can mobilise a team quickly to try something out."

Perhaps the main lesson traditional brands can take from companies such as Amazon and Zara is they

01
Closing-down sale at the BHS flagship store in London's Oxford Street last August

02
High street stalwart M&S is cutting floor space dedicated to clothing as sales have struggled

02

should analyse and respond to social media data and online conversations, according to Josh Alidina, strategic account director at Brandwatch, a social intelligence group that provides software to Unilever, Whirlpool and British Airways.

"Some of the high street retailers are not listening. They should be listening and watching what some of the smaller brands are doing in this space," he says. "The most intelligent brands are those not just listening to what customers are saying about them, but also monitoring what is being said about their competitors."

Big retailers with large headcounts should also learn to dedicate small internal teams to experiment with user experience and online conversations. Pace also thrives when staff are given more autonomy. "I spend time working in large organisations which have been around for a while," says Emily Webber, an agile coach at Tacit London, who has also taught agile at the Department for Energy, Food and Rural Affairs, and the Department for Work and Pensions.

"This can get tricky when companies get quite large; it can be difficult for them to move quickly," she says. "I think it is important to deploy small teams on experiments and have a lean startup approach. Getting closer to the customer and getting closer to the user is important."

The trade war between high street retailers and online giants isn't solely about products and delivery, daily metrics gauging customer experience and satisfaction are now as important as quarterly sales figures. ●

AREAS FOR IMPROVEMENT FOR UK RETAILERS

CUSTOMERS WERE ASKED WHICH AREAS THEY WOULD MOST LIKE TO SEE RETAILERS IMPROVE OVER THE NEXT FIVE YEARS

● IN-STORE ● ONLINE

	In-store	Online
BETTER STOCK AVAILABILITY	36%	31%
QUICKER SERVICE	34%	29%
BETTER PRODUCT INFORMATION	29%	25%
GREATER CHANNEL CONSISTENCY	25%	25%

PCMS Group 2017

'Cultures of learning are critical to business agility and provide the foundation from which rapid change can occur'

SHANNON EWAN
Managing director
ICAgile

Business agility, or the ability to swiftly and proactively adapt to changing market forces, represents a new imperative in our volatile, uncertain, complex and ambiguous climate. As technological change accelerates and the world becomes increasingly connected, organisations find that optimising for efficiency is no longer adequate in today's knowledge work economy. Instead, the current landscape challenges leaders to optimise for rapid innovation by cultivating cultures of learning.

The idea of cultures of learning as paramount for success is not new, but it has become increasingly relevant given widespread volatility and uncertainty. Peter Senge's 1990s work on learning organisations asserted: "The only sustainable competitive advantage is your organisation's ability to learn faster than the competition."

In today's environment, the structures that enable cultures of learning within organisations are as much baseline indicators of organisational health as they are market differentiators. Leaders must be instrumental in designing organisations with cultures, structures, processes and policies that both support and reward continuous learning. Just as oil and gas fuelled the Industrial Revolution, learning fuels the creation of business value in innovative organisations.

The problem is that the dominant conversation about achieving business agility by implementing lean/agile processes at scale distracts many leaders from the fact that cultures of learning, not processes, are the primary underpinning of business agility.

Too often, I have seen organisations implement agile frameworks and methodologies without addressing underlying cultural shifts necessary to ensure these processes contribute to rapid and continuous delivery of value. This creates friction among departments, strains existing organisational structures, frustrates employees and quickly degenerates into an empty set of rituals. Fundamentally, the power of agility is unleashed through people, not processes.

Organisations engender a culture of learning when they adopt an agile mindset. An agile mindset welcomes uncertainty, embraces challenges, empowers individuals, encourages experimentation and lowers the cost of failure to enable discovery. When accompanied by this shift in mind-set, agile principles and practices prove incredibly compatible with cultures of learning and can help optimise collaboration, discovery and value delivery.

In fact, principles like "build-measure-learn" from the Lean Startup movement apply equally well to the development and evolution of organisational structures and processes as they do to product development. Frequent, targeted experiments and short feedback loops create a cycle of discovery that allows for rapid improvements. When anchored in a shared vision and understanding of desired outcomes, taking this approach to organisational transformation empirically reveals whether you are on the right track, and enables earlier course correction.

To further instil a culture of learning, leaders need to recognise learning as a core value, adopt a holistic view of learning and support structures that remove organisational boundaries to knowledge-sharing. In today's organisations, leaders are not a source of direction and information; they are instead role models for a commitment to personal development towards mastery.

Recognising and articulating the value of learning across organisations sets the tone for individual empowerment and ownership, which in turn helps people proactively build the capabilities necessary to achieve a shared vision.

Formal training programmes are effective insofar as they are tailored, relevant, interactive and practice based. Because learning is best ingrained when it is applied, formal programmes need to set the stage for continuous learning in daily work. Strong individual and team development plans will not only incorporate knowledge acquisition, but also recognise a journey to convert this knowledge into relevant capabilities. Most importantly, leaders must support ubiquitous structures that enable diffuse knowledge-sharing, and build in time for reflection and organisational sense-making.

Cultures of learning are critical to business agility and provide the foundation from which rapid change can occur in today's competitive and uncertain world. The role of leaders in creating and solidifying these cultures is vital not only to organisational success, but to survival.

How to succeed with enterprise agility

To be truly agile, companies need to focus on three dimensions: people, process and technology

endava

Businesses around the world are looking for better ways of managing changing priorities, faster time to market, better delivery predictability and more frequent releases.

Endava, which has been providing agile, digital and automation solutions to some of the world's leading finance, insurance, telecommunications, media, technology and retail companies for the last 16 years, knows that this is not just about software development teams. It's across the entire idea-to-production cycle, where business, technology and operations are collaborating and defining success based on one common language: value delivered to end-users.

Having first emerged around two decades ago, agile is no longer the new kid on the block. It has become a mainstream global movement adopted by organisations of all sizes across all industries. This year's *Annual State of Agile Report* shows that a remarkable 90 per cent of those asked have engaged some form of agile management.

As encouraging as this sounds, research also reveals that 20 per cent are very new to the idea and 60 per cent have not yet reached maturity. In many cases this involves using only some agile techniques and practices or experimenting with agile in small parts of their organisation.

"We see agile adoption proving to be challenging especially in large organisations," says George Anghelache, head of agile transformation at Endava.

Among the most common challenges Endava encounters is a company ethos in large organisations that is at odds with core agile values. "A successful agile implementation will involve changing the delivery culture to focus beyond the agile processes, to change people and how they embody agile principles and values," explains Mr Anghelache.

In other cases agile implementations fall short because they're focused too much on development teams. An optimal implementation needs to look at the entire idea-to-production cycle, introduce agile collaboration techniques across all departments, such as business, technology, operations, finance, human resources, sales and marketing, and in the process must assist with changing the governing model for all these groups.

Endava sees a lot of implementation efforts that over emphasise external training and coaching methods. This often results in poor adoption rates as people and leaders in that organisation feel it's "being done to them", and they cannot bring their own positive experiences and agile strengths to bear on the process. Endava, for instance, creates a joint group of agile champions, drawn from the client and its agile practitioners, to drive the agile implementation from within, ensuring significantly increased adoption rates.

A balance of people, process and technology drives success with agility, Endava has found. True enterprise agility requires a change in the culture of the organisation, rather than simply adopting a new agile process.

The focus should be on people times process, an overarching agile approach that ensures collaboration, a clear decision flow and provides repeatability. Endava argues that it's brought to life by people who truly embody the agile pillars of transparency through short feedback cycles and constant adaptation to foster improvement and innovation.

> 66 A successful agile implementation will involve changing the delivery culture to focus beyond the agile processes, to change people and how they embody agile principles and values

IT development organisations also need to ensure that their core engineering practices are suitable for faster paced delivery, requiring multi-skilled teams who can master techniques such as continuous integration, continuous delivery and devops, Endava has found.

All this needs to be possible at scale and with teams distributed across geographical locations. "Our approach to distributed agile development includes effective engineering techniques based on continuous delivery, devops and a solid tooling foundation, team-level agile practices supported by training and coaching, and a robust enterprise scaling framework to allow effective application when hundreds of people are involved in a project," explains Mr Anghelache. "This is the key to truly successful agility."

GEORGE ANGHELACHE
HEAD OF AGILE TRANSFORMATION

For more information please visit **www.endava.com**

COMMERCIAL FEATURE

Counting the cost of inefficient communication

Inefficient communication and substandard collaboration costs more than £4 million to UK organisations with around 500 employees, the equivalent of £8,000 per person, every year in lost productivity, according to an eye-opening survey

◁▷ Mitel®
Powering connections

The *Opinium Workplace Productivity and Communications Technology Report*, commissioned by Mitel, a global leader in this space and the largest provider of business communications in Europe, found on average workers waste almost an entire day every week because of this issue. In addition, the same amount of time, or 20 per cent of the working week, is taken up by writing and responding to emails.

Further, 91 per cent of the respondents admitted they fail to make use of online chat and collaboration tools while at work, despite utilising instant messaging and similar applications in their leisure time. This low adoption rate is most likely to be a cultural problem, as many companies are finding themselves lagging behind competitors because of a resistance to update long-established methods of communication, says Jeremy Butt, who oversees Mitel's operations in Europe, the Middle East and Africa.

Indeed, while the survey's findings, which offer quantifiable proof that it pays to upgrade communication capabilities and attitudes towards nascent technologies, might be alarming to some C-suiters, Mr Butt is not surprised. "It is possible, just with simple mathematics, to calculate lost productivity time through poor communication and collaboration relative to what it costs," says the company's UK-based senior vice president.

"I don't think most businesses that see these statistics would be overly surprised either. A majority of business leaders are well aware of the deficiencies that exist within their organisation and that their communications aren't as efficient as they could be. Most companies need to look to the future to remain competitive, increase employee satisfaction, and offer an improved customer experience through advanced communication and collaboration services.

"They recognise a digital transformation is required. Luckily, there is an abundance of answers to their problems in the marketplace. However, businesses need to make sure they are able to provide a seamless communications experience to employees and customers.

"Digital transformation is on everyone's lips at the moment, but that means a lot of different things to different people. For some it might be a case of moving customers to online ordering and therefore switching from traditional to electronic-based media. Within the communications space, it's also about how easy it is to collaborate, and connectivity is critical. In this area, digital transformation is about allowing people to connect how they want, via telephony, instant messaging, video conferencing and so on, wherever they want and seamlessly.

"Nowadays people expect to be able to be on a voice call and quickly flip to a video or share something on the screen. For me, digital transformation is about enabling the individual to work how it best suits them in their particular circumstances, wherever they might be working from. Sometimes people are looking for a better work-life balance, at the same time as being more available."

Changing an organisation's communication culture has the power to not only fuel productivity, it can also boost employee satisfaction and, most importantly, improve cus-

tomer engagement. One of the biggest barriers business leaders must overcome is the fallacious fear that digital transformation costs an exorbitant amount.

"There are different ways of doing it," says Mr Butt. "Some organisations just rip out everything they have and replace it with new kit. Others will not do a wholesale switch out. Mitel offers cloud-based applications on top of traditional systems so customers can upgrade to advanced communications and collaboration services without getting rid of the investments they've already made. It's important for us to give our customers the choice so they can ease their way through a transformation, with an end-goal in sight, or go 'full bore' from day one."

Whatever the chosen approach, technologies like artificial intelligence (AI), machine-learning and machine-to-human interaction are likely to play a major part in the evolution of business communication, given the exponential rise in voice technology as well as the zettabytes of data we are collectively amassing.

Another Mitel survey, conducted this summer by Opinium Research, discovered that of the 2,500 information technology decision-makers quizzed across the globe, almost three quarters (73 per cent) are currently in the process of giving machines a voice through tying devices and machines to companies' unified communications and collaboration capabilities. Also 85 per cent of respondents believe machine-to-people interactions will transform positively the customer experience.

"AI will have a key role in helping businesses become smarter in their understanding of what customers want," says Mr Butt. "Across industries, a huge volume of information is collected daily. AI will help businesses to work through it all, analysing it to better anticipate customers' needs and improve proactivity."

> ❝ Changing an organisation's communication culture has the power to not only fuel productivity, it can also boost employee satisfaction and, most importantly, improve customer engagement

On the near horizon, Mr Butt sees other developments in the communications industry, thanks to technology's unstoppable gallop. "The possibilities offered by the interaction between machines and humans are almost infinite," he says. "There are so many sensors now, which combined with internet of things capabilities, can trigger hit-points in a system. For instance, you may have a door sensor at an airport and if it goes off then you know there is a problem at that specific gate. The data from these sensors can trigger a call to the nearest agent, and also determine the most appropriate and quickest response to ensure passenger and employee safety.

"One of the most wonderful things about technology is that there is no reason for any business to be excluded. Digital transformation is rapidly changing business models in every industry and every corner of the globe. Business leaders sometimes think their organisation is not big enough to embrace it, but digital transformation doesn't have to be complicated. Organisations of any and every size can benefit from the greater agility and efficiency current technology offers. You can start small, but you should start,"

To discover more please go to www.mitel.co.uk

£8,000 a year, per employee spent by UK companies on inefficient communications and collaboration costs

94% of UK IT decision-makers recognise the importance of accelerating their organisation's workflow to improve customer experience

1 day a week lost by employees because of inadequate communications capabilities

80% of UK respondents believe machine-to-people interactions will positively transform the customer experience

70% of UK workers' days are spent communicating and collaborating

73% of UK IT decision-makers have a projected timeline to enable machines to interact with people in two years or less

COLLABORATION

Chris Ratcliffe / Bloomberg via Getty Images

Get together and make it work better

Effective communication and collaboration can not only spark creativity and innovation, productivity also increases

MARK FRARY

Collaboration is often dismissed as a nebulous concept and one that does not have many tangible benefits.

Yet an increasing body of research is showing that working together makes companies more productive and drives higher returns for shareholders.

A recent American study of 1,100 companies carried out by the Institute for Corporate Productivity and Professor Rob Cross of Babson College in Massachusetts found those that promoted collaborative working were five times more likely to be high performing.

In 2008, a University of Maryland meta study of 72 different pieces of research highlighted significant benefits from using agile software development, essentially a collaborative approach, to a more traditional waterfall approach. It showed significant improvements in costs, reduced timescales, productivity and return on investment, for example.

In fact, even the perception of collaboration can improve outcomes. A Stanford University study by Priyanka Carr and Gregory Walton found that participants exposed to cues of

working together persisted longer on a challenging task, enjoyed tasks more and performed better.

One of the reasons for this is that the traditional hierarchical structure that has formed the backbone of organisations for centuries is under assault.

Increasing volatility in the world and complex business environments, brought about by technology, geopolitical uncertainty and globalisation, mean chief executives are constantly seeking new and better structures for their businesses.

Organisational silos are almost inevitable, according to Graham Winter, former chief psychologist for the Australian Olympic team and founder of Think One Team, a consultancy which helps companies work as single teams, regardless of traditional boundaries.

"Humans naturally form into small groups (teams) and larger communities (tribes). People will identify with those groups, often more strongly than the wider enterprise in which they work," he says.

It is the job of leaders to connect these people, teams and tribes by promoting a shared purpose, fostering shared values and ways of working, and building relationships between individuals.

Companies that are "born digital" appear to recognise the value of collaboration better than most, perhaps because they start out with flatter structures and also because collaboration tools are helping them work across normal boundaries.

They also have a habit of using less technological tools. Google, for example, designed its Googleplex headquarters to increase the likelihood of chance meetings and offers employees the chance to use seven-seater conference bicycles to have meetings on the move.

Yet there are risks, says Mr Winter. "The trade-off for some is how to do 'deep work' in a high-interruptions environment," he points out.

Mr Winter says that establishing an established rhythm of communication is critical. "Make it two way, and use multiple methods like town halls, video and face to face," he says.

Technology companies are obvious users of collaboration platforms such as Slack. The company's Europe, Middle East and Africa head Johann Butting says 3 per cent of the UK's knowledge workers are now

using Slack on a weekly basis and growth is ticking up at 100 per cent year on year.

Mr Butting says tools such as Slack work because they break through silos. "It is very easy for a person in the marketing team to run a search over Slack and work out what engineering is doing on a product they will have to market in two quarters' time. They don't need to ask for permission."

> ❝
>
> Make it two way, and use multiple methods like town halls, video and face to face

He adds that organisational structures are changing and this is impacting how people work: "We are seeing more millennials in the workplace, and they work and communicate. Successful companies are adapting how they organise themselves. We are seeing hierarchical, top-down structures being replaced by bottom-up ones that are more dynamic."

The benefits of using collaboration tools are real and are recognised in a number of different ways, says Mr Butting. Companies using Slack report and average 49 per cent reduction in email volumes, 25 per cent drop in the number of meetings and, perhaps most importantly, a 32 per cent increase in productivity.

Part of this productivity boost comes from reducing the 800 or so applications he estimates that the average large UK company uses.

Failing to do so can have far more serious consequences than just a poor working environment.

In 2014, US car manufacturer General Motors belatedly started a recall of more than 20 million cars to replace defective ignition switches, which could cause the airbags to stop working while driving, despite knowing about the problem for many years.

GM ended up having to pay compensation to the families of 124 people believed to have died as a result of the fault and also forfeited $900 million to the US government.

A subsequent report into the recall said the company's employees repeatedly "failed to search for, share or gather knowledge" and that "breakdowns in communication between and within groups were a critical part of the failures".
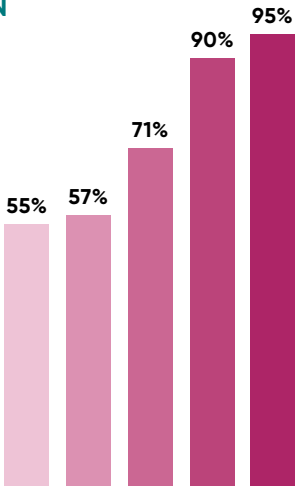
Think that collaboration is something fuzzy? Think again. ●

Slack says 3 per cent of the UK's knowledge workers are now using the platform on a weekly basis

THE VALUE OF COLLABORATION
SURVEY OF 1,000 IT DECISION-MAKERS IN THE UNITED STATES

- My organisation's use of collaboration apps has increased over the past 12 months
- Will increase spend on enterprise collaboration apps over the next 12 months
- My company already has a defined collaboration strategy in place
- Presence of multiple collaboration tools in the workplace has made employees more productive
- Collaboration tools are a high or medium IT investment priority for my organisation in the next 12 months

55%	57%	71%	90%	95%

Smartsheet 2017

MOST COMMON TOOLS FOR UNIFIED COMMUNICATIONS
SURVEY OF IT MANAGERS

| Tool	Percentage
AUDIO CONFERENCING	79%
WEB CONFERENCING	76%
INSTANT MESSENGER	73%
VIDEO CONFERENCING	68%
SCREEN SHARING	67%
SOCIAL COLLABORATION	43%

West Unified Communications Services

TOP TIPS

Why agile fails in some businesses

Achieving agility is difficult and there are lessons to be learnt. Here are five top reasons why agile projects in financial services risk failing

CLARE GASCOIGNE
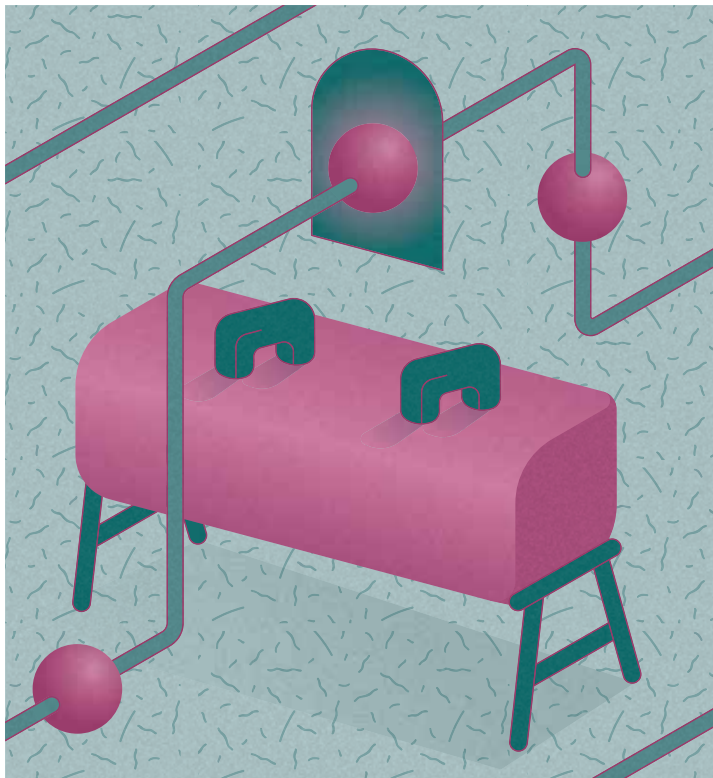
SCOPE

1 ING, a Dutch bank, has been using agile for several years, but found it impossible to get the full benefit without applying the methodology throughout the organisation.

"It's an organisation that has completely broken apart their business model in order to deliver agile services to clients," says Rachel Saunders, programme assurance lead in the financial services technology team at KPMG. "It has taken apart its structure entirely."

ING turned to agile in response to new digital distribution channels, which were changing the way customers approached and bought financial products. But it quickly found that the agile journey went right through the company. According to Bart Schlatmann, who was chief operating officer of ING Netherlands: "Being agile is not just about changing the IT department or any other function on its own."

ING looked outside the industry and took as its model high-tech companies such as Spotify and Uber, which focused on the customer journey and not the product. It now describes itself as a tech company operating in financial services, rather than a bank.

Ms Saunders says: "It's very difficult to be agile in a particular project; it's a culture change and mindset for the whole company. You have to go beyond the project; where people get into trouble is if they only train the project team in agility."

It is a radical rebuilding of the company that can prove daunting to traditional hierarchical cultures, with a legacy of waterfall decision-making. But in the current climate, it may be a case of change completely or die.

TRAINING

2 Multinational insurer Aviva didn't need to be convinced of the benefits of agility, but found that, despite some successful projects, it was only using the agile methodology on a very limited number of projects. However, it was prepared to make the investment to widen the scope.

"We find companies are prepared to stay the course because they need agility in today's market," says Rob Smith, managing director of consultants IndigoBlue. "So even if they don't get it right first time, they are prepared to try again."

For Aviva, it was a case of building expertise in incremental management, with training extending across project managers, senior managers, development teams and business representatives, and making sure agility wasn't viewed as a "magic" solution to all ills.

"Change is difficult, and it takes time to plan this new way of working," says Ali Raza of Deloitte. "If you are asking for new ways of working, you have to give the necessary support."

Agile, which has developed its own language, can seem exclusive to those who feel on the outside and have never heard terms such as scrum or sprint. Those who are on board with agile are often passionate, but can come across as overly evangelical.

Aviva focused on developing champions, who are individuals whose job was not only to identify any problems, but also to become agents for change by disseminating agile knowledge. With regular meetings to pinpoint any issues, the champions were quickly able to embed agile practices, helping to ensure the whole organisation was able to benefit.

FUNDING

3 Agile can mean substantial investment. Lloyds bank, for example, is investing £1 billion over the next three years to "ensure we have a strong technology infrastructure for agile working to be embedded in the business". But agile funding can require a different approach to traditional investment.

"Classic funding models are an annual process," says Aurimas Adomavicius, president of IT development company Devbridge. "Everyone scrambles to build a budget with a business case for the following year; they need to define a problem and a solution, and to cost it. That process is inherently counter-intuitive to agile."

He points to two models for funding agile projects. One is gate funding, which acts very like an investment in a startup: small teams are given seed funding to build and test, but are required to prove value at each stage of the project. The second method provides a block of money assigned to a specific product line that is an active channel of investment, such as mobile banking; it is up to the agile teams to prioritise how the money is spent.

"This delegated authority can be hard for traditional companies to accept," says Mr Adomavicius.

The process requires the C-suite to think more flexibly about budgets, breaking them down into much smaller chunks than might previously have been the case.

"Everything needs to be incremental," says Rob Smith of consultants IndigoBlue. "From the compliance to the governance to the funding, agility needs you to break projects down into smaller batches."

The upside is the ability to flex and pivot, changing with the evidence. If you're going to fail, fail fast.
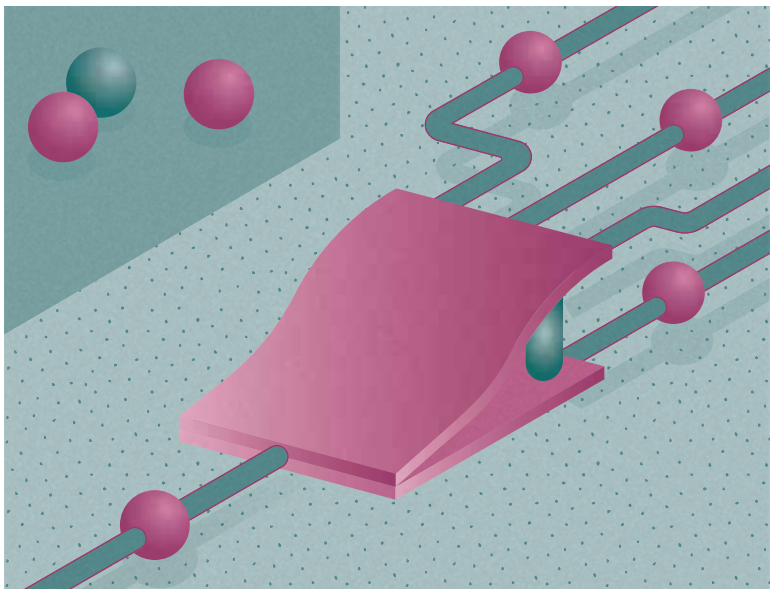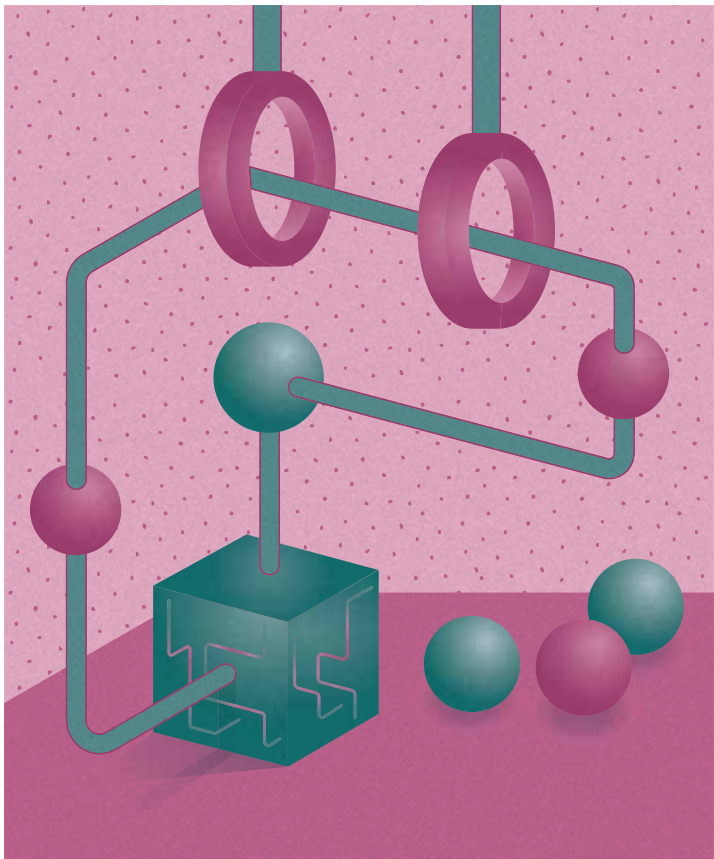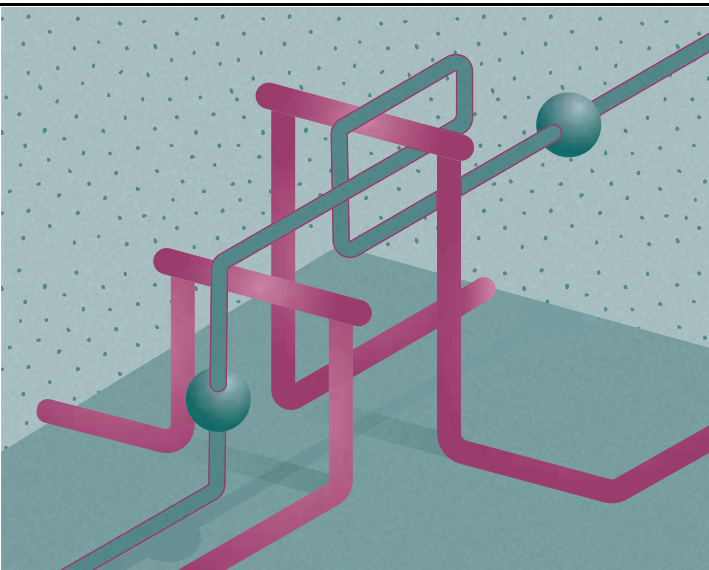
SCALABILITY

It's all very well applying agile methodology to a specific and discrete project, but applying it across a whole organisation can often prove more difficult.

"Scaling often seems to be a problem," says Ali Raza of Deloitte. "Just because a pilot works with one team doesn't mean it will work with another."

US bank Capital One has a short history compared with others in the industry. As a financial services company that started under 30 years ago, it has less in the way of monolithic systems or legacy culture to hamper new ways of working. But that didn't stop it having to re-engineer its working practices.

The company chose the scaled agile framework, known as SAFe, to provide the structure it needed to leverage the benefits of agility. Other frameworks that have developed to help companies with scalability include disciplined agile delivery or NEXUS.

According to Mr Raza: "Small teams need to understand fully the strategy. It's not a top-down approach, but the guidance needs to be there. Agility needs to be underpinned by a vision for the organisation."

Having a strong buy-in from the top of Capital One helped agility to become fully embedded, with devops practices spread throughout the company, and widespread use of cloud to deliver the speed and repeatability required to respond quickly to customer demands. A strong framework gave a solid foundation for teams to interact and for the company to co-ordinate different teams working on the same product.

"Finding a scaled agile model that interlinks with management systems is key," says Rachel Saunders of KPMG.

COMMUNICATION

Establishing cross-functional teams that work well together is no easy task. Financial services is not the only industry where different departments have jostled for position in the past.

"Communication is about changing the culture and the mindset," says KPMG's Rachel Saunders. "Everyone, from the compliance to the internal audit teams, has to understand what agile means."

Critical to agile is the creation of small teams that break down the departmental siloes, ensuring IT is not simply viewed as a cost or marketing as a service provider for other, revenue-producing departments.

Aarti Balakrishnan of Deloitte says: "Communication needs not just to be verbal and written, but visual too. Agile is having transparency about where we stand; too often these days we send an email rather than walking over and talking to someone."

Improving that communication is often a physical matter. Barclaycard chose to bring in architects to redesign its Northampton headquarters and transform it into a space renamed a coLab. Partitions break the space into zones, with whiteboards used as panels; standing desks and mismatched furniture help the space feel more like a startup than the UK's oldest credit card company.

According to Barclaycard's architects, APA: "There is tremendous atmosphere and energy in the coLabs; people clearly enjoy collaborating and have responded in hugely positive ways – self-expression and colleague support have improved."

And if the finance director is worried about the cost? "This is an investment to stay in the game," says Ms Balakrishnan. "If you need to re-engineer the offices so that IT is no longer 20 floors above the design team, that may be the price of being in business." ●
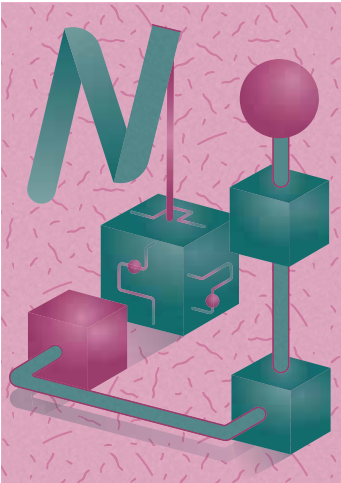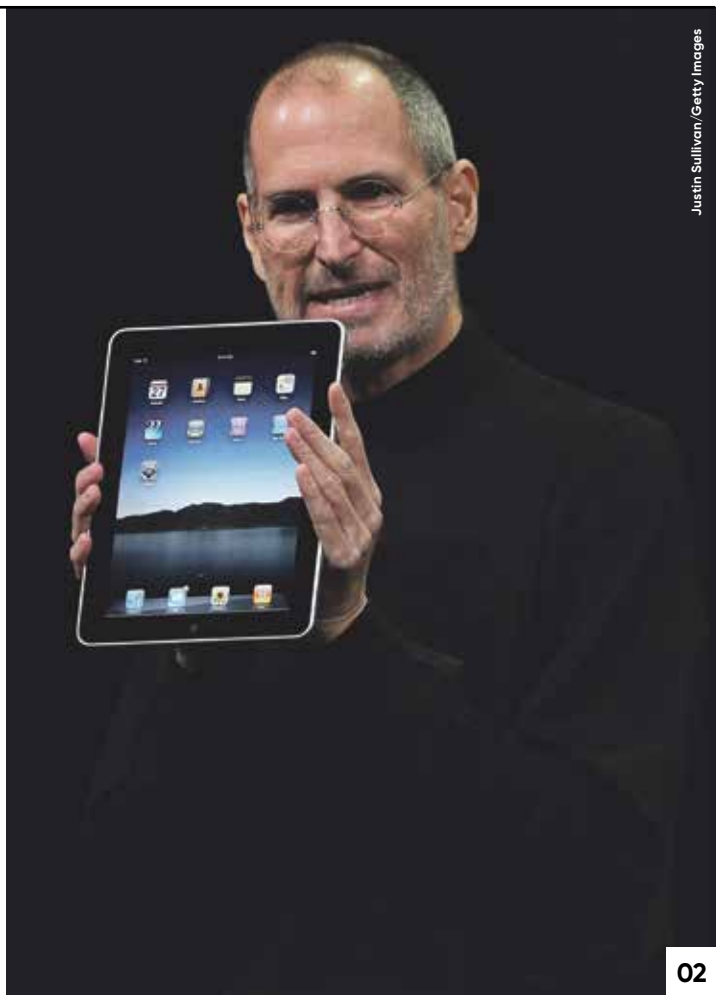
APPLE

Bitten off more than it can chew?

Despite being one of the world's tech giants, Apple stands accused of lacking innovation and relying on iPhone sales

FLEUR MACDONALD

Think Amazon ten years from now with its packages delivered by drones. Think Tesla with its electric vehicles and space travel. But what about Apple? Does yet another iteration of the iPhone count as innovation?

Apple used to be a byword for the future. The 1984 Macintosh, complete with mouse, was one of the first computers designed for the general public. The iPod, the MP3 player which went on sale in 2001, eventually killed off the minidisc.

And though more recent innovations continue to dominate financially, they have failed to capture the public imagination. Charlie Widdows, founder of the idea management platform Solverboard, can't remember a "gasp" moment since the iPad.

Morgan Stanley analysts predict that Apple will manage to ship 262 million iPhones in 2018, but the iPhone X's facial recognition was one of the key features of the Samsung 8 smartphone released more than six months earlier.

However, the delay is not damaging, says Caspar Thykier, founder of the augmented reality app Zappar, which closed a $3.75-million series-A funding deal in February. Apple's huge market share means "they don't need to be the first, only the best", he says.

Innovation at Apple is characterised by poise, grace and thoughtfulness, says Mr Thykier. The iPhone's dual-depth cameras detect changes in appearance and work in total darkness. Innovation is not about "confusing activity with progress", he insists.

Michael Husmann of Kodama thinks Apple is moving backwards. The founder of the sleek 3D

printer Obsidian worked at Apple as a project manager from 2008 to 2013. "Sometimes it feels like Apple is becoming the new IBM, clinging on to safe products and markets instead of seeking the authentic innovation that the company used to have," he says.

On November 28, it emerged that the latest Apple software suffered from a security flaw. Apple's record is not immaculate; remember 2012 when Apple Maps directed you to nowhere.

Mr Husmann says: "There's a certain disconnect between products, something that never existed in the past." He dates the shift to the loss of Steve Jobs and the promotion of former chief operating officer (COO) Tim Cook. "Until Jobs passed away, I was proud working for Apple and wouldn't have even considered leaving," he says. Then Apple was less an innovative business and more a business run by an innovator. Operations require different skills and putting a COO in charge of a company known for making big bold moves is going to change the whole identity, says Mr Husmann.

How should Apple remain innovative? Perhaps the company should call on Elon Musk of PayPal, Tesla Motors and SpaceX fame? Mr Widdows sees some synergy. Apple's innovation resides in systems which allow "people to work with technology in a more intuitive way". Likewise, Tesla has "created a beautiful way of producing energy delivered by products you want to own", he says.

But flashy, risky innovation isn't Apple's style. Their innovation lies, Mr Widdows says, "in the way they protect and manage brand value". Musk might be too big a shock to the system.

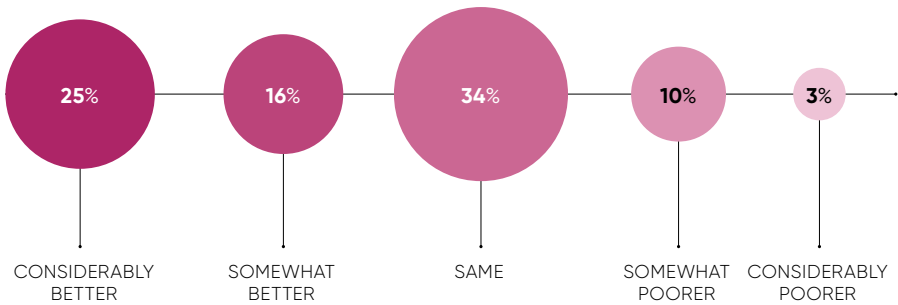Jobs was a leader as well as an innovator. Managing and recruit-

ing talented people in a big organisation presents a different challenge, says Mr Husmann. You don't need a blue-sky thinker, you simply need a creative chief who prioritises, encourages and enables innovation. The new Apple headquarters in Cupertino, California was designed by Jobs to foster this type of communication and collaboration.

Apple's traditional secrecy and their huge cash reserves mean their capacity for innovation is both unpredictable and limitless. At the Apple Worldwide Developers Conference in June, two major products were announced.

Mixed reviews for HomePod, their smart speakers, show Apple's real Achilles' heel, says Mr Thykier. "There's so much hype, you exist in a constant state of disappointment." Tellingly, a statement from Apple pushed back the HomePod release: "We need a little more time before it's ready for our customers," Apple said.

The augmented reality platform ARKit was better received than Google's ARCore. The fragment-

ed Android market makes it difficult for Google to disseminate their product – it's only available on Samsung Galaxy S8 and Pixel phones – while the closed Apple ecosystem means ARKit works on most hardware. The ready-made market incentivises developers to create augmented reality content; its take-up will shape the technology on which it runs, keeping Apple innovating.

Apple needs to play to its strengths in new sectors to remain innovative, Mr Husmann concludes. "If the company manages to show their old boldness without clinging on to old products, they have the scale to generate massive adoption, fast." ●

> Innovation at Apple is characterised by poise, grace and thoughtfulness

PUBLIC PERCEPTION OF APPLE
UK ADULTS WERE ASKED HOW THEIR PERCEPTION OF APPLE SMARTPHONES HAS CHANGED OVER THE LAST FIVE YEARS

CONSIDERABLY BETTER	SOMEWHAT BETTER	SAME	SOMEWHAT POORER	CONSIDERABLY POORER
25%	16%	34%	10%	3%

Statista 2017

Catapulting British innovation to success

The UK is a leader in scientific research, inventiveness and great ideas, but manufacturers must do better when it comes to turning these innovations into marketable products

01

02

01
National Composites Centre

02
Centre for Process Innovation

B ritish inventions are often monetised overseas and the benefits accrue elsewhere. From the world wide web to the electric car, this is the land of missed opportunity.

But that is changing thanks to the Catapult initiative, a nationwide network of technology centres, which are bringing British inventiveness back home. Catapults offer support, advice and technical know-how to businesses to help them bridge the gap between early-stage innovation and full-scale commercial production.

As the UK stands on the brink of a fourth industrial revolution, Catapults are playing a key role in advising innovators on how to profit from transformative new technologies.

Established by government-funded development body Innovate UK, there are 13 Catapults dedicated to different areas of innovation. To back specialised manufacturing, the High-Value Manufacturing Catapult is helping innovators make the most of a range of emerging technologies.

Businesses with a great idea or piece of research they want to turn into a market-leading product can work with one of seven specialised HVM Catapult Centres nationwide.

Nigel Perry, chief executive of the Centre for Process Innovation, an HVM Catapult Centre based in Darlington, says the centres offer unrivalled assistance to innovative businesses and can help them transform their prospects. "HVM Catapult Centres help companies reduce risk in the adoption of new technologies. Whether they are looking at a specific manufacturing operation or the entire supply chain logistics, the HVM Catapult Centres can substantially derisk the process.

"Companies work faster and quicker with the Catapult than they would on their own. They might be reluctant to progress or unable to deploy the resources that they need and find that they struggle to

progress without the sort of advice we can offer them."

Mr Perry says the HVM Catapult Centres have in-depth expertise, which can help businesses improve productivity and boost profitability. "There is a practice and art the Catapults can bring to help companies explore how new technology can be introduced to improve their manufacturing process. This is vital for bringing great new products to market," he says.

HVM Catapult Centres work with manufacturers from the biggest giants such as Rolls-Royce, Jaguar Land Rover and Boeing down to small businesses and charities. In one project, the HVM Catapult helped Pashley Cycles, Britain's longest-established bicycle manufacturer, develop a new bike, which was selected as the next-generation bicycle for the London cycle-hire scheme sponsored by Santander.

> ❝ Catapults are playing a key role in advising innovators on how to profit from transformative new technologies

Pashley worked with the WMG Catapult Centre based at Warwick University. They jointly used 3D printing, laser scanning and measurement technology to create prototypes of the new bike's components. As part of the development, WMG encouraged Pashley to move away from leather and steel and to try out plastic and aluminium, helping them to develop lightweight materials.

For the UK to fulfil its industrial promise, more manufacturers need to consider the benefits of working with the HVM Catapults. A company that is looking to trans-

late an early-stage innovation into a market leading product will sit down to discuss their strategy with business development staff from an HVM Catapult Centre. The staff can advise on where to invest funds to get the best return and how to leverage technology for success.

The business advisers have a deep understanding of manufacturing and are skilled in translating academic research into real-world production. The HMV Catapult offers businesses world-class manufacturing equipment for testing new production processes along with the industrial expertise needed to turn nascent ideas and research into marketing leading successes.

They employ top engineers, manufacturing experts and industrial consultants, and put their knowledge at the service of businesses. There is a charge, although as the Catapults are non-profit making, they charge reasonable rates and companies can also tap into the grant funding also available through Innovate UK.

With exciting new technologies and processes coming on stream all the time, businesses need help integrating these into their production processes.

The fourth industrial revolution is transforming the way products and services are delivered. While the first industrial revolution boosted manufacturing with the steam engine, the second used electricity to create mass-production lines and the third introduced computers into the manufacturing process. Each stage has greatly improved productivity and raised living standards. Industry 4.0 is about to revolutionise production again.

The latest industrial revolution offers a suite of mainly digital tech-

nologies, which are set to make manufacturing more efficient, profitable and far more productive. These digital technologies are unleashing the power of big data. The growth of data from a wide variety of sources helps businesses predict demand more accurately and learn more about the precise needs of customers. Sensors in the production process emit data on the workings of machinery, which stands to make manufacturing far more accurate.

An example of this is improved quality-testing, which can be carried out on a continuous basis by offering data on the exact weights, measures used, and the state of components and ingredients.

Sensors will also enable advanced diagnostics of machinery, so producers will be able to see the first signs of something going wrong in the production line and take steps to remedy it. This will forestall glitches in the production process leading to less downtime and hiking productivity.

Meanwhile, automation is bringing

a raft of new robotic machinery into the production process, taking over many of the mundane tasks previously carried out by humans. Workers are increasingly working alongside robots to increase efficiency.

Industry 4.0 techniques are already being used in the automotive and aerospace sectors. But there are concerns among some of the UK's leading manufacturers that companies in their supply chain are failing to adopt fourth industrial revolution techniques, impairing their suitability to work with forward-looking manufacturers. This could leave the biggest producers looking overseas to find suppliers that have modernised production.

UK innovators need to grasp the opportunities offered by new technology and transform their production processes. The HVM Catapult offers the support that British inventors need to turn fresh ideas into gold.

For more information please visit hvm.catapult.org.uk

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