Boldness in Business

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Triumph of tech

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The FT ArcelorMittal Boldness in Business awards this year celebrate their ninth anniversary. Launched in the heat of the global financial crisis in 2008, the awards have lived up to their name in every respect.

In 2016, the world is still suffering from the aftershocks of the crisis. Central banks are entering unchartered waters as they experiment with negative interest rates and other unconventional monetary measures designed to restore growth and stability.

At the same time, technological innovation and computing power are driving change across all business sectors at a speed which is difficult to comprehend. The auto industry, financial services, media and retail are all experiencing disruption and upheaval, opening up opportunities for insurgents and outsiders.

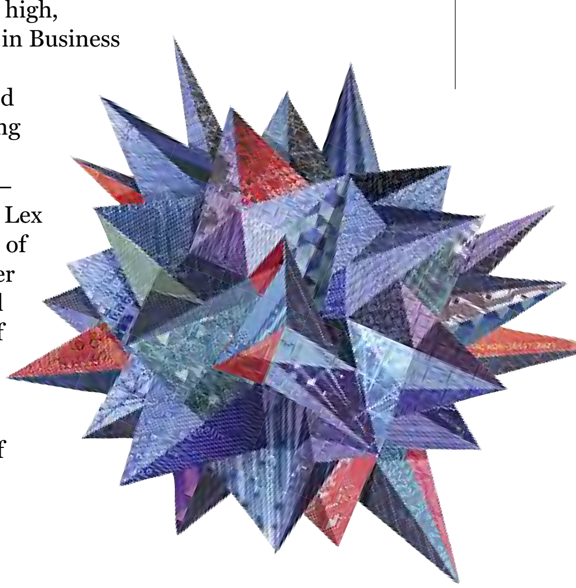
These forces are reflected in the choice of candidates and winners from all corners of the globe. Call it the triumph of technology. In several instances the common theme is that technology is less a disruptive force and more an "enabler" for people to be bold in their businesses.

What is also striking is how this year's winners combine established companies such as Toyota of Japan (winner of the Corporate Responsibility and Environment category) with relatively youthful but immensely powerful digital champions such as Tencent of China and Amazon Web Services of the US.

The quality of submissions this year has been high, underlining how the FT ArcelorMittal Boldness in Business awards rank as best in category. In almost every case, companies were seen to be making bold and imaginative decisions in exceptionally challenging circumstances.

It remains for me to thank my fellow judges — Robert Armstrong, head of the Financial Times' Lex column, Edward Bonham Carter, vice-chairman of Jupiter Fund Management, Leo Johnson, partner at PwC, Luke Johnson, chairman of Risk Capital Partners, Anne Méaux, president and founder of Image Sept, Peter Tufano, professor of finance as well as the Peter Moores dean at Saïd Business School, and, of course, my co-chair Lakshmi Mittal, chairman and chief executive of ArcelorMittal.

Lionel Barber, *FT Editor*



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Better together

Technology is making collaboration easier than ever, with free-thinking entrepreneurs among those able to benefit, says **Andrew Hill**

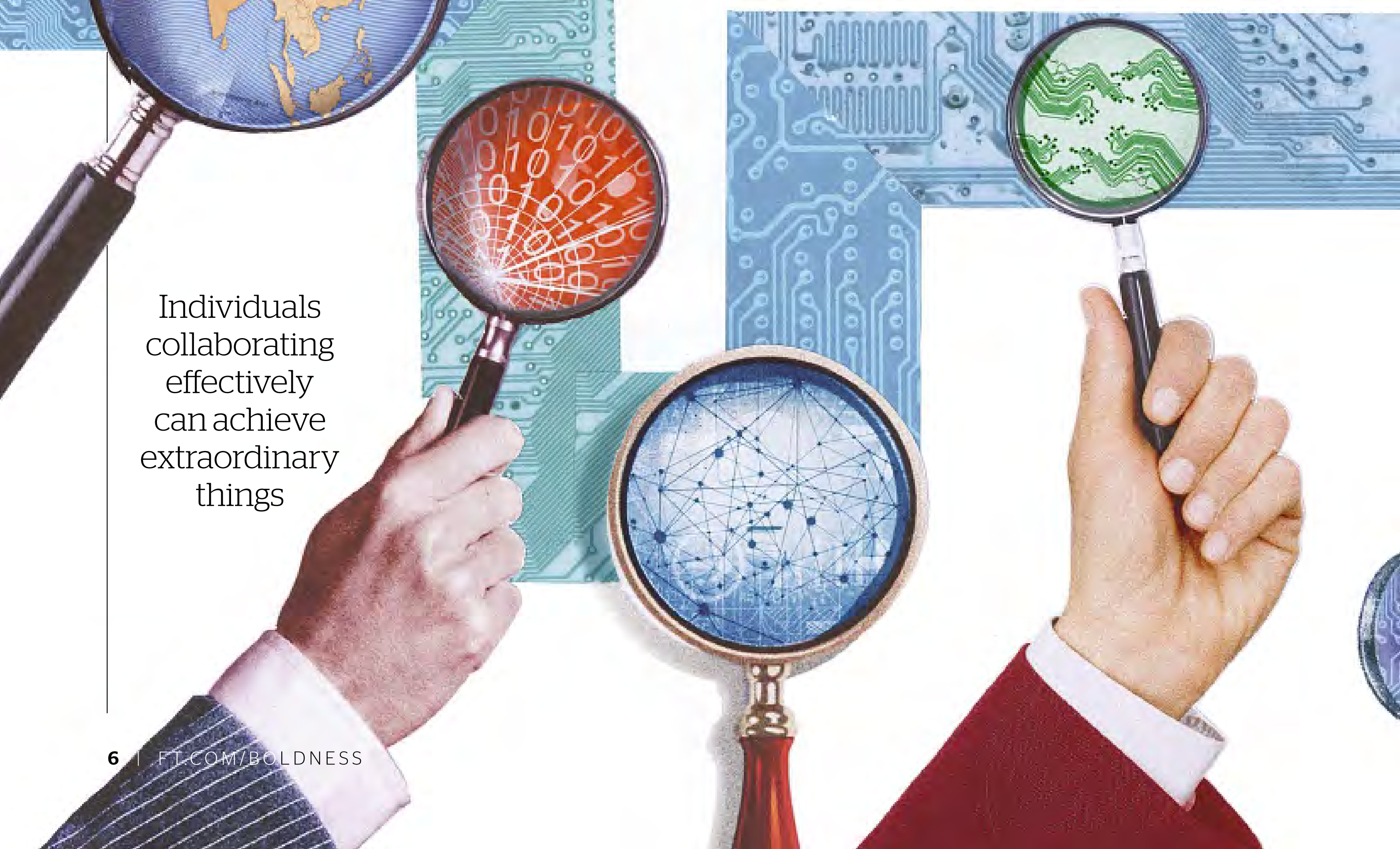
'Don't sweat the small stuff" is not exactly a management theory but it has become one of those modern proverbs that guides how business leaders think they should behave. Chief executives boast about their ability to "see the big picture" or take "the 35,000ft view", while delegating lower priority tasks to their minions.

But if the past few years of technological advance have taught businesses anything, it is that the small stuff, added together, can attain huge importance. The long tail of rarely bought but cumulatively valuable goods is recognised as a critical element of the ecommerce business model, from Amazon to Alibaba.

Increased computing power and more open access to dynamic databases have highlighted the importance of billions of small points of information — such as consumers' apparently random tweets or cities' traffic patterns — when analysed as a whole. Crucially, it has become obvious that individuals, collaborating effectively at scale, can achieve extraordinary things.

Of course, blockbuster products, world-shaping deals and radical innovations continue to count for much. But sometimes, it is equally brave to see beyond those high-profile targets and dare to become the enabler of others' bold ideas.

Take Amazon Web Services, whose leader Andy Jassy is the latest Boldness in Business person of the year. AWS has grown to rival companies such



Individuals collaborating effectively can achieve extraordinary things as Microsoft and IBM in the provision of cloud services. But Jassy told Brad Stone, author of *The Everything Store*, that when he first wrote the vision statement for the new operation, "we tried to imagine a student in a dorm room who would have at his or her disposal the same infrastructure as the largest companies in the world." The service was intended to be, in Jassy's words, "a great playing-field leveller" for start-ups and smaller companies.

It is, of course, easy to overstate the altruism of aggressive, fast-expanding companies. But, to put it in balder terms, there is a vast market opportunity in harnessing and facilitating the collaborative instincts of ordinary workers and the entrepreneurial spirit of those who decide to break free from organisations. Easy online experimentation, 3D printing and global supply chains and communications make it cheaper, if not safer, to go it alone than it has ever been. This year's Boldness in Business laureates are, in different ways, companies that recognised this was an opportunity.

WeWork has successfully repurposed the concept of shared workspaces for smaller businesses. A little like AWS, but on the ground rather than in the cloud, it aims to level the virtual terrain for smaller ventures. "As a company, it makes us feel bigger than we are," one WeWork user told the FT last year.

FarFetch, winner in the Smaller Company category, provides an online sales platform for independent fashion boutiques. Tencent's online-only WeBank is squarely aimed at China's many small- and medium-sized business borrowers, neglected by the mainstream financial system, while WeChat is carving out a space in messaging, increasingly the communication medium of choice for entrepreneurs.

While technology is one theme linking and fuelling such winners' success, these companies are also betting on latent human potential. It is no coincidence that M-Kopa is this year's winner in the Developing Markets category. Its bold

BOLDNESS IN BUSINESS
INTRODUCTION

mission, to bring electricity to remote areas of Africa using an innovative pay-as-you-go solar power system, makes possible a basic advance in the quality of life in poor countries. But it does more than that. Among the vital household items that are powered by M-Kopa equipment is the family mobile phone, which has itself become the foundation for growth in small-scale trade, enterprise, innovation and collaboration in those developing economies.

Plenty of obstacles lie in the way of smaller businesses, even when they have access to the technological tools now available. As they grow, they will also encounter the perils of bureaucracy.

Collaboration can have a negative side. Within large organisations, as a recent article in Harvard Business Review pointed out, "the time spent by managers and employees in collaborative activities has ballooned by 50 per cent or more," with consequent negative impact on the productivity of employees.

At the same time, one solution to inefficiency — increased automation and use of artificial intelligence — has provoked fears about the unintended consequences for jobs and skills.

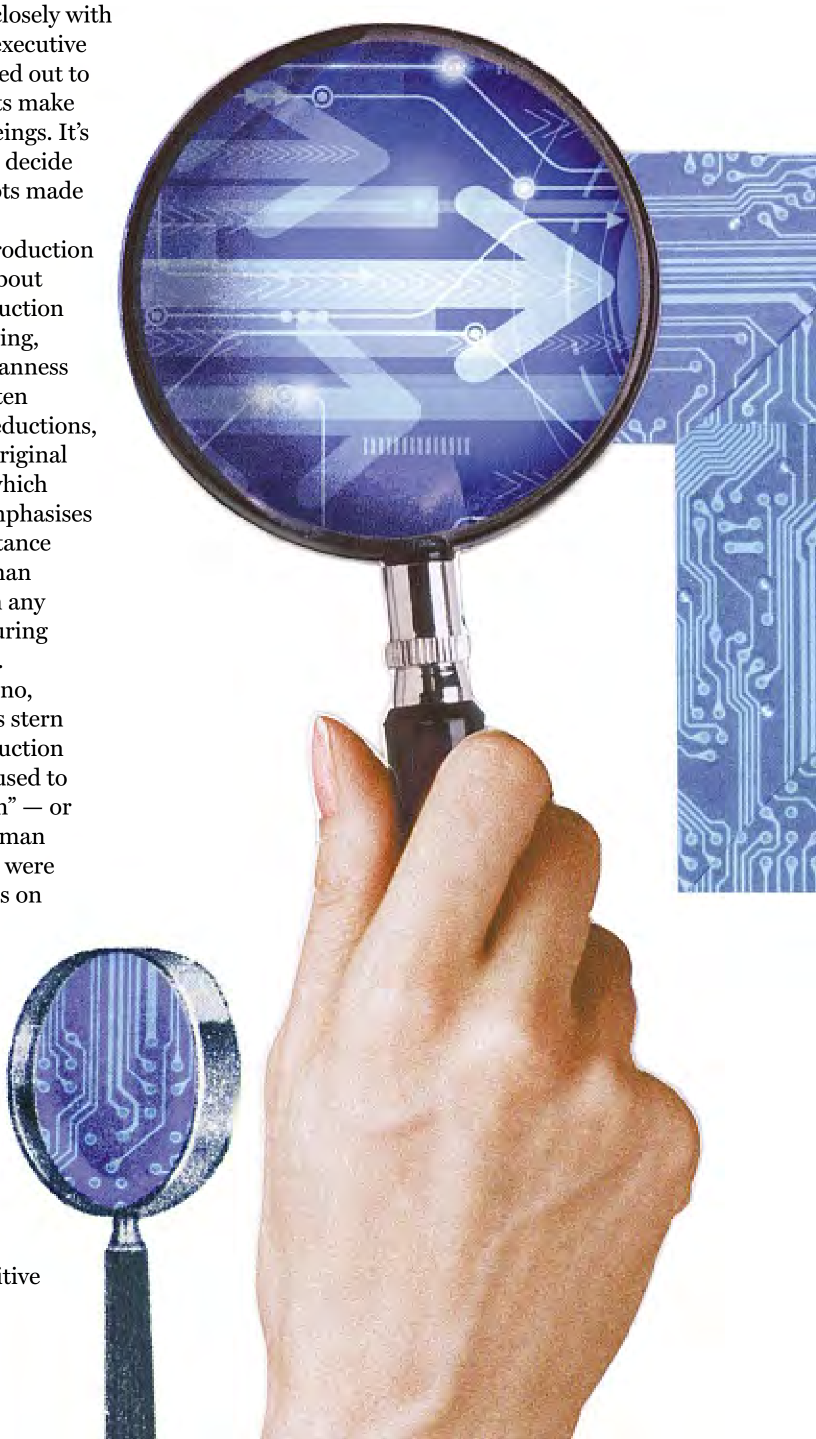
In this respect, Fanuc, winner of the Drivers of Change category, and Toyota, which takes this year's Corporate Responsibility and Environment award for its fledgling fuel-cell vehicle, may look the odd ones out in a list of winners. Both are large industrial companies, one best known for its bright yellow robots, the other for the lean production methods that Eiji Toyoda championed in the 1970s and 1980s and which have since been adopted by manufacturers around the world.

Techno-pessimists may see Fanuc's automata as the vanguard in a machine-army marching towards a dystopian future. Yet the group is also introducing new "collaborative robots" to work more closely with humans and, as chief executive Yoshiharu Inaba pointed out to the FT last year, "robots make products for human beings. It's up to human beings to decide whether what the robots made are good or not."

As for the Toyota production system, it is not only about supply chain and production line efficiency. If anything, the assumption that leanness equals cost-cutting, often realised through job reductions, is a perversion of the original concept, which instead emphasises the importance of the human element in any manufacturing enterprise. Taiichi Ohno, the group's stern chief production engineer, used to call this "autonomation" — or "automation with a human touch". He and Toyoda were adamant that problems on the line should be sorted out by the people building the cars. Their insights cleared the way for further innovations at Toyota and beyond.

> 'It's up to human beings to decide whether what robots made are good or not'

The combination of human collaboration and enabling technology should have a vast positive impact on future business and economic growth. It is also worth bearing in mind that if someone, somewhere, is assembling the next bold business concept and preparing to shake the world, it is because someone else, somewhere else, sweated the small stuff to make the breakthrough possible. ■



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COLUMN
ROBERT ARMSTRONG

Big bold business

All the big businesses of the future will have to be as bold or bolder than their smaller peers

It is intimidating, even this year on my second go-round, for a mere analyst-turned-columnist to be on the Boldness in Business judging panel. Look one way, and there is the leader of the largest steel producer in the world, and the editor of the FT. Turn to the other and find a renowned money manager, three highly successful entrepreneurs and a distinguished professor and dean at Oxford's business school. If anybody needs a pithy sentence written, or a quick cash flow model bashed out, I'm right here, guys. Otherwise, I'll just keep the coffee cups full...

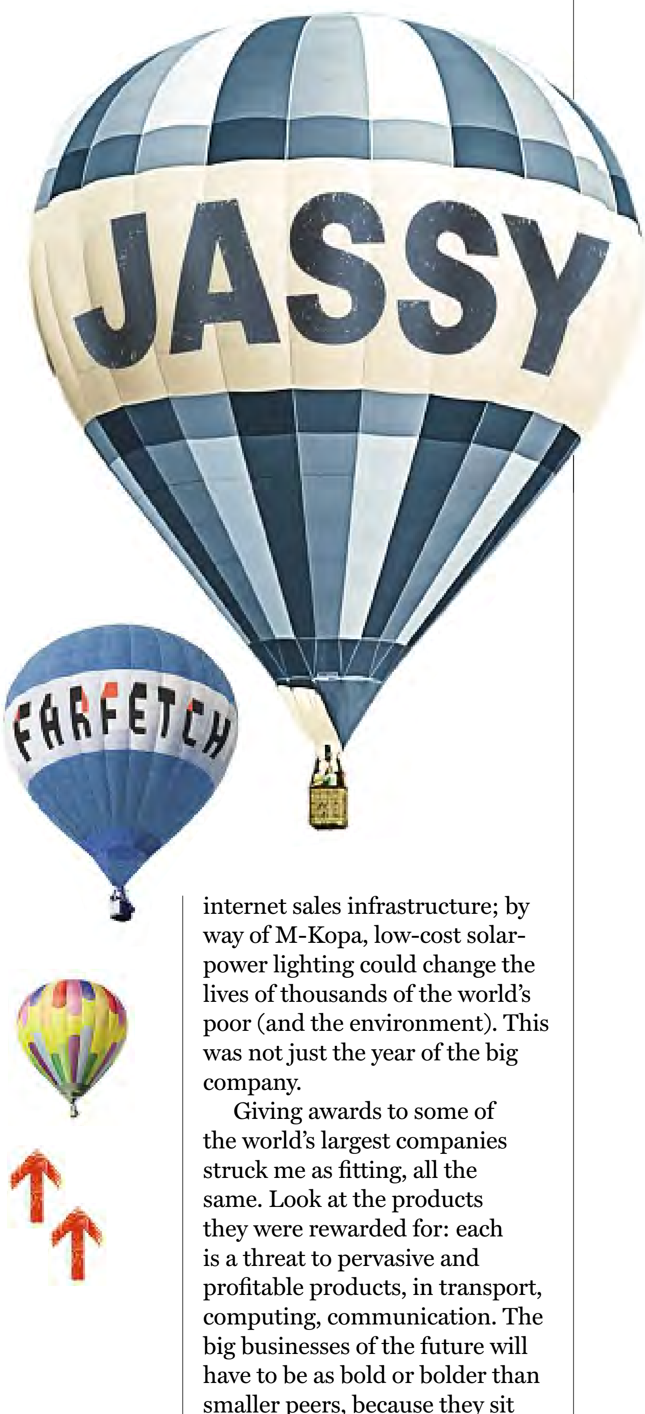
Still, what an opportunity for someone interested in business. To discuss awards for boldness with this group is a chance to talk about the core idea that animates the FT's Lex column. Note that the awards are not for the best businesses, or even achievement in business. The subject of boldness makes them explicitly about risk: how to take it, how to manage it and (most importantly) what is worth taking risk for.

In this context it might seem strange that four of this year's seven awards, including person of the year, went to big companies. By popular conception, such companies are conservative beasts, content to milk their competitive advantages and political clout for all they are worth, while avoiding anything that could threaten the profitable status quo. The judges this year repudiated this view completely. The strong support for Andy Jassy of Amazon Web Services as person of year is the prime example. AWS itself was nominated for the Drivers of Change category, but the judges' enthusiasm was such that Jassy — who founded this crucial division of Amazon — landed the biggest award. AWS and its parent went all in with a low-cost strategy against other big, well-financed competitors such as Microsoft and IBM. The result has been a business that is (as one judge put it) "everywhere", supplying computing infrastructure to companies of all sizes. There was a distinct feeling that what AWS is doing to change the way computer power is bought, sold and delivered may be a revolution that is only beginning.

> 'Automation is one of the biggest stories in the world of business'

The other internet company on the list of winners, Tencent, is even bigger, with $15bn in sales. There was some debate about whether the company technology was as cutting-edge as that of some of the other nominees in areas such as encryption and biotechnology. Every judge, however, agreed that the company had done a better job at turning consumer internet apps, in areas such as chat — with WeChat — into hard profits than any other company; and that the internet portal's WeBank division was applying technological innovation to a badly underserved segment of China's economy, namely small and medium-sized businesses.

If Toyota, the world's largest car manufacturer, is not a big, conservative company, what is? Yet it was precisely Toyota's size that swayed the panel in its favour against some very tough competition in the Corporate Responsibility and Environment category — including Tesla, also nominated for making low-emission vehicles.



Kering's decision to publish an "environmental profit and loss account," totting up the luxury brand group's externalised costs, was "absolutely huge", argued a judge who pushed passionately for it to win, and who came close to carrying the day. But it is the ubiquity of Toyota's Prius hybrid car, and its further commitment to the fuel-cell powered Mirai model, that won it for Toyota: the company made a low-emissions car that thanks to Uber, (honoured last year) everybody has now ridden in. Big company, big bet on a new technology, big impact.

It is perhaps natural, after the FT awarded its Business Book of the Year to Martin Ford's semi-dystopian *Rise of the Robots*, that the judges' attention in the Drivers of Change category was drawn to Fanuc, a robot maker and (with a market capitalisation of $30bn) another very large company. "Do we want to give an award to a company that takes away people's jobs?" one judge asked. Others bristled a bit at the idea that the relationship between jobs and technology could be simplified in that way; another noted that the awards are for business, not job creation, which are two different things. There was no resolution on this theoretical set of questions. On another, however, there was robust agreement: that automation is, as FT editor Lionel Barber said, "absolutely one of the biggest stories in the world of business" and that the panel would do well to acknowledge the enormity of the changes involved. That would have not been enough, but Fanuc was driving change in more ways than one. As a long-established, wildly successful and admired company it could have stayed with the Japanese tradition of limited deference to minority investors, but in the last year it has taken the path toward openness, creating an investor relations department, promising cash returns, and higher transparency. The company took a decision that was anything but robotic, and could prove to be a leader for public Japanese companies across industries.

None of this is to diminish or minimise the achievements of the smaller companies on this year's list. WeWork is developing a real estate model for a sharing economy that looks set to become more and more pervasive; Farfetch is helping small companies in the fashion industry compete with the big players by providing first-rate internet sales infrastructure; by way of M-Kopa, low-cost solar-power lighting could change the lives of thousands of the world's poor (and the environment). This was not just the year of the big company.

Giving awards to some of the world's largest companies struck me as fitting, all the same. Look at the products they were rewarded for: each is a threat to pervasive and profitable products, in transport, computing, communication. The big businesses of the future will have to be as bold or bolder than smaller peers, because they sit on the profits that innovators, entrepreneurs, and investors will use all their energy and ingenuity to steal away. Noting the boldness that the best big companies are displaying is, in that sense, a warning to lumbering incumbents everywhere. ■

Ahead in the clouds

Though lacking a technical background, he has led Amazon Web Services to become the world's biggest technology infrastructure provider. By **Leslie Hook**

It started at an off-site meeting at Jeff Bezos's house on Lake Washington in 2003, the first year Amazon reported a profit. The online bookseller was expanding its online store to include more items. Annual revenues had passed $4bn and were growing fast.

The off-site's purpose was to identify Amazon's strengths and discussion turned to its ability to run technology infrastructure, which it had developed to operate its website and those of other retailers. The germ of Amazon Web Services was formed.

One person championing the idea was Andy Jassy, a business school graduate working as a "shadow" to Bezos, a role somewhere between technical assistant and chief of staff. He saw that AWS could help solve a problem for Amazon's software engineers, who were spending too much time figuring out the computing infrastructure for each new project. They felt "they were all reinventing the wheel on the infrastructure pieces and nothing they were building scaled beyond their own projects," Jassy recalls. AWS, which provides on-demand computing power in the cloud, could fix that.

Today Jassy heads AWS and one of his tasks is to maintain the open-mindedness that enabled Amazon to say yes to AWS those years ago. "A lot of companies really will only pursue businesses that are adjacent or look like an extension of their current business — which by the way is a completely rational strategy." Amazon is different, he explains: it considers the size of the opportunity, whether it is underserved and whether Amazon can do something new. "When we like the answers to all those questions, we pursue the business even if it has hardly anything to do with the other businesses that Amazon is in."

When AWS first got off the ground, it was not obvious it would be a hit. It proposed the radical idea of allowing any programmer with an Amazon account the ability to rent computing power whenever needed, whereas previously most companies bought and ran their own servers.

"Ten years ago, the idea that you would run critical applications in the cloud, and that 'Amazon' was a word that would even be associated with that, would have seemed like an impossibility," says Rich Wong, a software investor at Accel Partners.

After launching its first service 10 years ago, AWS grew up alongside many of today's most prominent start-ups — and its existence enabled these companies to operate cheaply and scale quickly, because they no longer had to buy expensive servers. From Airbnb to Yelp to Slack — even Netflix's online video collection — all run on AWS. Over time more mature businesses started using AWS too, and a turning point came in 2012 when AWS won a contract with the CIA (beating incumbent IBM in the process).

> A turning point came when AWS won a contract with the CIA

AWS has become the biggest technology infrastructure provider in the world — and it is also the fastest growing and most profitable part of Amazon. Its annual sales, at $8bn, are less than a tenth of Amazon's retail revenues but some Wall Street analysts calculate that it will become more valuable than Amazon's retail business as soon as next year.

All this was gestating behind a veil of secrecy until last year when Amazon began disclosing financial results for AWS. As it stepped out of the ➤

PHOTO: JOSE MANDOJANA

shadows, so did Jassy. He might seem an unlikely leader for the business, in that he lacks a technical background — he is not a programmer.

A native of New York, he attended Harvard College in Massachusetts and his first job after graduation was project manager for a collectibles company, MBI. It was a great business training, he says, even if he was less than interested in the figurines the company was selling. He went on to Harvard Business School and joined Amazon in 1997, the year that it went public. It had just a few hundred employees and had reported $15m in sales the previous year. Jassy says he joined because Amazon clearly had ambitions to be more than a bookseller.

‘There is no compression algorithm for experience’

Today Jassy comes across as a dyed-in-the-wool Amazonian and often reaches for a company slogan to illustrate a point. Some of these might sound odd at first to an outsider, such as the principle of “being right a lot”. He explains this simply means having good judgment. Another favourite saying is that “there is no compression algorithm for experience.” This turns out to be a personal slogan and his way of explaining why AWS has such an advantage over later competitors such as Microsoft and Google. As a first mover, AWS has gained experience for which there can be no substitute.

He is a firm believer in the Amazon principle of "having backbone" and says it is important for employees to respectfully challenge each other.

One of his top lieutenants confirms that he runs meetings this way. "Andy is totally comfortable with contention," says James Hamilton, a vice-president and senior engineer who joined AWS from Microsoft eight years ago. "It is respectful contention and eventually we reach a decision based on the data, but meetings are hotly debated. There is never an opportunity when you can just sit back and observe."

He recalls one meeting where Jassy proposed slashing the price of a service by 80 per cent, while everyone else on the team felt that it was impossible. "The fact that he is the only one arguing the point, and everyone else has a different perspective, doesn't bother Andy one bit." After hours of discussion, the team agreed on the price cut.

'You can't feel 30 per cent smarter when the stock is up 30 per cent'

Hamilton says such debates do not prevent the company from being nimble. "It's getting to be the size of a business where it seems impossible it could keep running like a start-up. But to me it seems like the world's largest start-up."

Amazon takes maintaining that culture very seriously, even when now with over 200,000 employees it continues to grow. Jassy says certain practices help codify a start-up culture. One is hiring people who are "builders" and like to tinker. Another is avoiding long roadmaps and rigid project schedules; those of AWS are "changing constantly".

A third is organising people into small, autonomous teams that combine technical and non-technical people.

Yet another is the near-mythical status of Amazon's six-page planning documents, also known as "working backwards" documents. These are the set pieces around which any decision on a new initiative is taken; they begin with a press release about the proposed idea, and include an FAQ and appendices.

"We often will go through several versions of those 'working backwards' documents before we write the code," Jassy says. When he was writing the six-page plan for AWS, he went through 31 drafts.

On Wall Street, it is hard to overstate the enthusiasm for AWS. Amazon's share price almost doubled in 2015, largely because of tremendous investor response after the first financial details of AWS were revealed.

Yet the risks to AWS are widening. Microsoft and Google, are investing heavily in their cloud offerings. In February, Google poached one of AWS's marquee clients, Spotify.

In Silicon Valley, some are starting to grumble that AWS is becoming "too big to fail", and they worry about systemic risks in the event of an outage. Analysts fear that AWS could lose revenue as Apple starts building its own data centres; Morgan Stanley estimates this could affect around a tenth of AWS revenues. Neither AWS nor Apple would confirm that Apple services are hosted on AWS.

These concerns have not prevented several Wall Street analysts from building colossal growth projections into their financial models; several predict that AWS will soon be as valuable, or more valuable, than Amazon itself.

PHOTO: DAVID GIESBRECHT/NETFLIX

AWS hosts Netflix's library which includes *House of Cards* starring Kevin Spacey

Jassy says he tries to ignore all this. The public perception of Amazon is often out of sync with what is happening inside the company, he argues, pointing to the obituaries that were being written about Amazon during the dotcom bust as an example. "You can't feel 30 per cent smarter when the stock is up 30 per cent, because then it means you have to feel 30 per cent dopier when the stock is down 30 per cent, and usually neither is true," he says.

He refers back to the shareholder letter that Bezos wrote in 1997, the year that Jassy joined the company. It tells Wall Street that Amazon would not be trying to please the financial analysts and would instead focus on long-term growth. Jassy says this is why he can ignore the stock market gyrations.

"We're trying to build a business that outlasts all of us," he adds, again quoting an Amazon slogan.

The task ahead is to make sure AWS does that. ■

Hi, Robot

Previously secretive robot maker Fanuc has improved transparency for investors and the public alike, says **Kana Inagaki**

Since Fanuc's founder Seiuemon Inaba built its corporate HQ at the foot of Mount Fuji in the 1980s, the world's biggest robot company has been used to guarding its secrets with military precision.

Employees work inside the "Fanuc forest", an isolated world where almost everything from robots, factory buildings to workwear are coloured in bright yellow. Today the company is busily expanding a gym and constructing a soccer field as well as a tennis court to ensure its workers are happy inside the confines of its reclusive corporate home.

"The market we are competing in is similar to combat," Yoshiharu Inaba, Fanuc's chief executive and the 67-year-old son of the company's founder, told the FT last year. In the global market for industrial robots, Fanuc competes with three other big players: Japan's Yaskawa Electric, Switzerland's ABB and Germany's Kuka.

Wearing his bright yellow jacket, Inaba added: "When we are at war, information such as what kinds of products are sold in which markets and how profitable they are, or how we produce them inside our factories, is the same as military secrets."

Shareholders have dealt with Fanuc's secretive culture by consulting suppliers, clients and rivals to compensate for curt quarterly updates and lack of access to senior management. In 2010, in the aftermath of the global financial crisis, the company shocked investors by terminating earnings briefings at its headquarters. It told investors it needed to focus on its business.

So when Third Point — the US hedge fund run by Daniel Loeb — disclosed in February last year that it had bought a stake in Fanuc, most observers of Fanuc affairs braced for an epic clash of cultures across the Pacific. Few anticipated any Fanuc response as the activist investor sent a letter to the company, urging it to make better use of its massive cash pile by buying back shares.

> Fanuc's change came during a revolution of business practices

"Fanuc is an incredibly focused company operationally, but the company trades at a low valuation because they have not moved forward with the society in respecting shareholders and in implementing better capital allocation," Loeb told the FT.

Yet in a matter of two months, the most unlikely change took place. Fanuc established a division for investor relations to improve dialogue and announced the appointment of two outside directors.

Long-term investors were given plant tours and one-on-one meetings with senior management. Topping it all, the robot maker promised to double its dividend payout ratio and carry out "flexible" share buybacks.

Shareholders responded by giving a 43 per cent boost to Fanuc's stock price during the first four months of 2015. "When a big Japanese company like Fanuc, which is known for being less communicative, announced the change, it was very good news for the stock market since it showed that corporate Japan is changing," said Steve Glod, a fund manager at Banque de Luxembourg Investments, which has been an investor in Fanuc since 2011.

Fanuc's change of heart came in the midst of a mini-revolution in Japanese business practices. Last year, the country established new corporate governance and stewardship codes, which were strongly advocated by prime minister Shinzo Abe. Companies were encouraged to disburse cash and be more receptive to shareholder demands for better returns.

Abe's push has had mixed success. Leading companies on the Tokyo stock exchange bought back a record Y4.8tn ($42bn) in shares in 2015, topping the previous peak of Y4.2tn in 2007, according to Goldman Sachs. But for all the talk of returns on equity, average ROEs for Japanese companies remain below 8 per cent, compared with 16 per cent for US companies.

"I think Abenomics definitely helped Fanuc to open up," says Keita Kubota, Tokyo-based investment manager at Aberdeen Investment Management, referring ➤

to Abe's economic programme to lift Japan out of deflation. "But as we can see from past reforms, these changes won't happen overnight. You have to be patient. This is Japan."

Even as some foreign investors enthusiastically view Fanuc's move as a cue to invest in Japanese equities, Inaba says the company has been fighting a completely different battle. In opening itself up, it wanted to alter the widespread perception that it was a mysterious organisation hidden inside what some people called a "yellow kingdom".

"We are not a yellow cult group or a reclusive, secretive society," Inaba says. "That kind of an image is extremely negative to Fanuc."

Yet as reporters these days are taken inside Fanuc's vast campus-like property in central Japan's Yamanashi prefecture, it is hard to ignore the oddities.

Beyond the entrance guarded by two statues of Japanese Shinto gods, staff move around in yellow buses and cars. Receptionists are dressed in yellow, the calendars on the walls are yellow and the hand towels that are handed out are yellow, too.

The colour has been a powerful marketing tool for Fanuc, which spun out of Japanese electronics maker Fujitsu in 1972. Nearly 40 years ago, Inaba's father — his favourite colour is actually blue — adopted yellow because of its bright stand-out qualities. True enough, people worldwide immediately recognise Fanuc's robot armies without needing to check labels.

> Inaba's management meant Fanuc churned out operating profits of 35%

Present-day chief executive Inaba has insisted that the company's new shareholder-friendly policies are not related to pressures from Loeb.

When asked if he feels compelled to communicate with investors, a disgruntled look flashes across his face. "I feel uncomfortable when you put it that way. I don't have an obligation," he says.

He still prefers to devote his time to meeting clients ranging from Apple, to Samsung to Tesla. But in his dialogue with shareholders, he has also found that their thinking as investors is not far apart from the company's stance.

To his surprise, few of them have made what he might regard as unreasonable demands in terms of capital allocation. Many have understood the need for Fanuc to maintain investment in new businesses and plants, even though, for example, its cash pile of $8.9bn last year seemed more than enough for that.

"Currently there has been a lot of attention in Japan on delivering higher returns to shareholders through dividends and share buybacks," says Glod. "But Fanuc has always excelled in the past even when its payout ratio was low because it creates value for shareholders by ensuring profitable growth and doing many things right in its business."

Fund managers such as Glod and Kubota have been investing in Fanuc since long before its new disclosure policy. Even with limited access to information, Inaba's ultra-focused management meant the

PHOTO: LI BIN/XINHUA PRESS/CORBIS

Fanuc's yellow robot armies stand out without a need to check labels

company churned out operating profits of 35 per cent. In the 2014/15 fiscal year, its net profit rose 87 per cent to Y208bn.

But its stellar performance will not last forever. Shares in Fanuc have fallen 40 per cent from their peak last April as investors worry about a slowdown in the Chinese economy and declining sales of its Robodrill machine tools, which are used to make metal cases for iPhones and other smartphones. The company, valued at $31bn, expects a 24 per cent fall in net profit for the current financial year through to March.

Inaba appears unfazed. The company has overcome problems in the past by adapting to market changes. As a new endeavour, Fanuc recently acquired a small stake in Preferred Networks, a Tokyo-based machine learning company that is working to apply artificial intelligence to robots and autonomous driving systems.

Perhaps one of its biggest changes last year was the appearance of Fanuc's first robot that is not yellow. Its "collaborative" industrial robot, the green CR-35iA, is installed with sensors and other safety technologies that allow it to stop immediately when it comes in contact with a human being.

"I made it wear a green jacket so people can immediately recognise it as safe," Inaba says with a chuckle. "Inside, it is still a yellow robot."

Despite his criticisms of Fanuc's cash pile, Loeb also does not hide his fascination for the company's innovative spirit.

"Fanuc can be inward-looking and not communicative," he says. "But I do think embedded somewhere in their culture is a willingness to look forward." ■

Emission control

The world's most successful car manufacturer is shrinking its carbon footprint and backing hydrogen to replace petroleum. By **Kana Inagaki**

Only nine months after the earthquake and tsunami of March 2011 struck Japan, Toyota engineer Yoshikazu Tanaka was told by his bosses to develop a fuel-cell vehicle. For Toyota, the project represented a big hydrogen gamble and its timing was far from ideal.

The Japanese car group had seen its net profit halved as it grappled with disrupted supply chains, higher electricity costs and the yen's surge to record highs. General Motors and Volkswagen had overtaken it in cars sold.

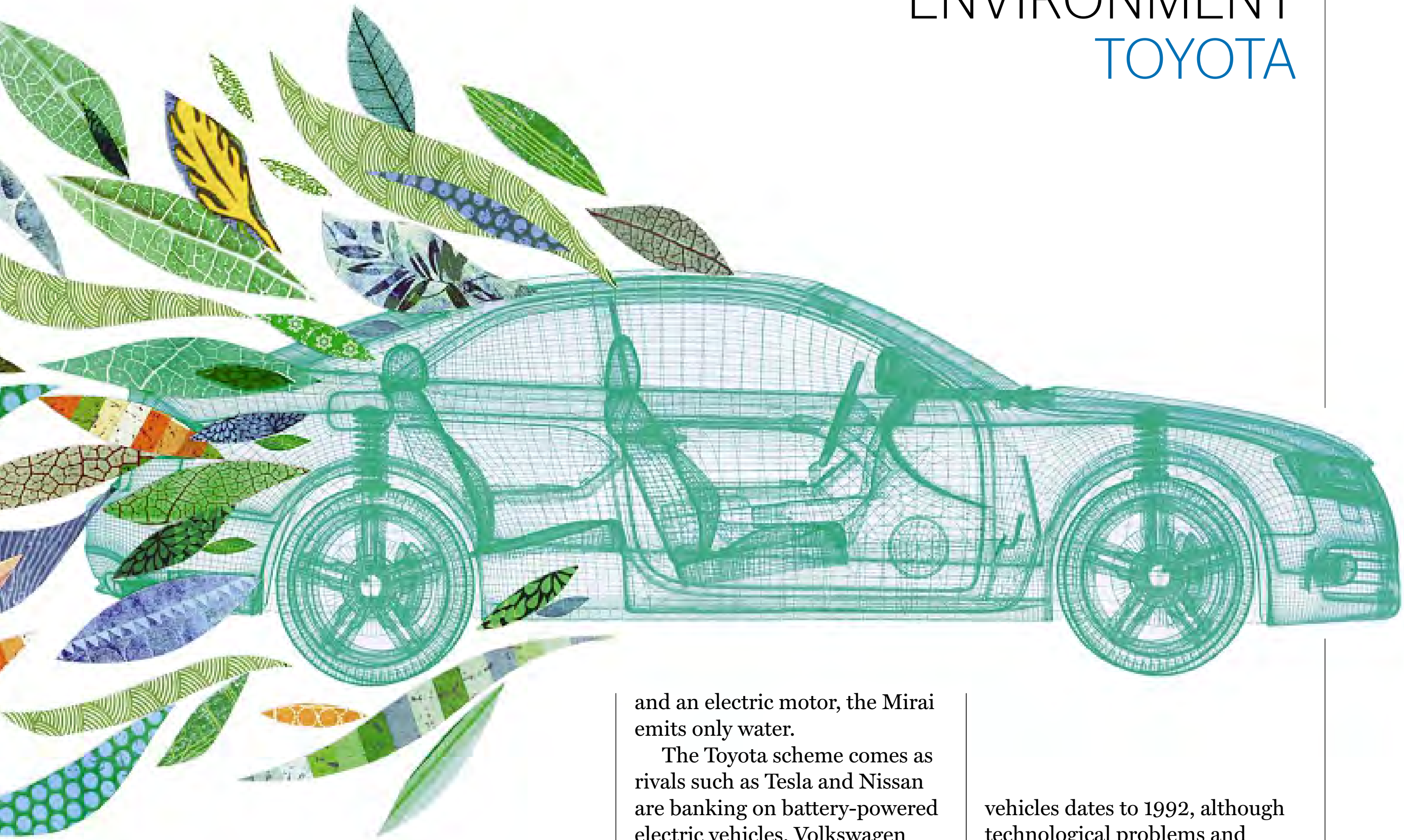
Tanaka, who was in charge of the Prius plug-in hybrid at the time, also questioned whether it made sense for the company to take on an enormous risk in such an unfavourable environment. Soon afterwards, though, he reached a different conclusion.

"Dinosaurs became extinct because they could not adapt to the environment," Tanaka says. "I realised not taking the risk would be a bigger risk for us. There is only extinction ahead if no action is taken."

The apocalyptic forecast from Tanaka echoes a general sense of crisis shared by the global auto industry as it wrestles to build cars that do not harm the environment. Auto executives say the race to develop greener and safer vehicles is likely to generate the biggest technological revolution in the industry since the birth of gasoline-powered cars more than a century ago.

"We have no time to lose," says Takeshi Uchiyamada, chairman of Toyota and also known as the father of the Prius hybrid car. "With the existing pace of transformation, we will not be able to keep up with the speed of destruction of this beautiful and diverse planet."

To stem the damage from



global warming, Toyota is making a significant bet on vehicles powered by hydrogen rather than petroleum. With some two decades of research into fuel-cell vehicles, costs to the company are hard to estimate, say analysts, but are likely to top Y1tn ($8.8bn).

Such commitment is at the heart of Toyota's plan, unveiled in October, virtually to erase the carbon footprint of its vehicles and factories by 2050. That would mean petrol and diesel engines being nearly eliminated from its fleet by then.

To achieve that vision, the automaker last year launched its fuel-cell vehicle, the Mirai — meaning "future" in Japanese — in the European and US markets. Powered by two high-pressure hydrogen tanks and an electric motor, the Mirai emits only water.

The Toyota scheme comes as rivals such as Tesla and Nissan are banking on battery-powered electric vehicles. Volkswagen had placed a heavy bet on clean diesels, which now face a backlash after the German manufacturer admitted to cheating in US emissions tests of its diesel vehicles.

The Mirai has brought fuel-cell vehicles to the forefront of Toyota's efforts to achieve what it calls "sustainable mobility". But even at the Japanese company, fuel-cell vehicles had long been regarded as low priority compared with the Prius gasoline-electric hybrid, which established Toyota's image as a pioneer in fuel-saving technology.

> 'Not taking the risk would be a bigger risk. Extinction lies ahead if no action is taken'

Since the first Prius debuted in 1997, the group has sold more than 8m hybrid cars and the model has reached its fourth generation. The Prius, including plug-in hybrids, accounts for nearly half of the company's sales at home.

Toyota's research into fuel-cell vehicles dates to 1992, although technological problems and production costs long impeded their commercial launch. Despite being developed in the same building as the Prius, the hydrogen cars rarely sparked the same excitement within the company as the hybrids.

So when Tanaka was assigned in 2012 to develop the Mirai as chief engineer, the decision prompted scepticism inside Toyota. With the company's financial conditions tight, the message from his bosses was also clear: the spending budget should be kept as small as possible.

"The hurdle was already very high to commercially launch a fuel-cell vehicle," Tanaka says. "But we had to beat our brains to achieve that as efficiently and with as little money as possible." To deal with the stress of the situation, Tanaka maintained a disciplined regime of running 5km each day before having his lunch in the cafeteria.

Looking back, the Mirai's chief engineer now says the challenge actually helped ➤

to draw the company together. He asked for help from a wide range of departments to make sure his team could produce results using as few prototypes as possible to keep the costs down. From research that began with about three engineers in the 1990s, the Mirai project has expanded to include about 800 employees at Toyota.

"By raising the hurdle, everyone inevitably got pulled into the project," he recalls. "In that sense, it really became a company-wide project."

Toyota executives concede that sales of the $57,500 Mirai are just one part of the way towards the company's goal of building a "hydrogen society". Mass market penetration of fuel-cell vehicles cannot be achieved with the efforts of the company alone. To expand the market, Toyota released its fuel-cell patents last year, echoing a similar move by Tesla on electric vehicle patents.

One of the biggest problems is the lack of refuelling stations. The infrastructure has been slow to develop because hydrogen stations are far more expensive than petrol stations to build.

Toyota hopes the pace of infrastructure construction will pick up as more rivals enter the market. Honda, which has been collaborating with General Motors, plans to release its fuel-cell car later this year while a Nissan vehicle, jointly developed with Daimler and Ford, is expected in 2017.

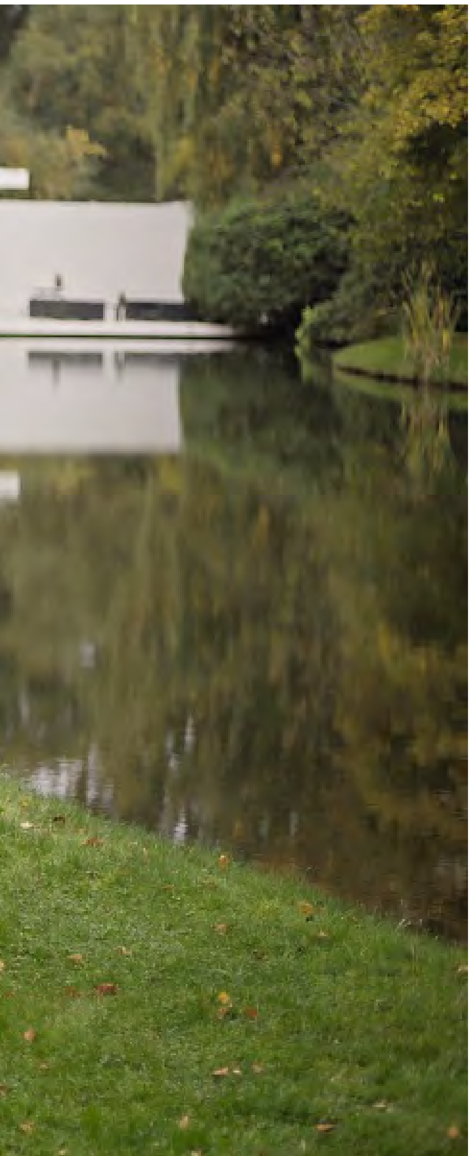
For all the advanced technology packed into the Mirai, the vehicles were initially hand-assembled by a small team of 13 workers at the Motomachi factory in central Japan — the same plant that built the first-generation Prius. Now, Toyota assembles about 10 Mirai cars a day, triple its daily capacity of three cars in the initial phase.

By 2020, the company has a bold target to sell more than 30,000 hydrogen-powered vehicles annually worldwide, 10

times its 2017 production target.

But Toyota's vision does not end there. The world's biggest carmaker is targeting a 90 per cent cut in average carbon dioxide emissions from its vehicles between 2010 and 2050. In a further challenge that will test the resolve of its suppliers and parts manufacturers, Toyota is aiming to make all of its factories carbon free in the same period.

As a first step, it wants to deliver zero-emission Mirai cars in the full sense — that is to say, including its production in the factory, where at present the manufacturing process is not carbon free. To rectify that,



Takeshi Uchiyamada (right), chairman of Toyota is known as the 'father' of the Prius hybrid; the Toyota Mirai fuel-cell car (left)

Toyota will look to produce hydrogen from renewable sources, such as wind and solar. Its plants in Brazil already generate electricity using locally produced wind, biomass and hydroelectric power.

The unveiling of such ambitious environmental goals is unusual especially at Toyota, where its chief executive, Akio Toyoda, rejects the use of numerical targets to drive its employees. Toyoda's caution lies in his belief that a pursuit of breakneck expansion in previous years led to quality lapses.

"Once I give a numerical target, everyone will chase after it and they will become very short-sighted," Toyoda says.

In the case of Toyota's environmental targets, though, officials say an outward message was necessary not only for employees, but also to involve other players such as parts manufacturers and the government in the effort. That consensus was reached only after a gruelling debate that lasted for more than a decade on whether or not the commitments should be publicised.

"There was significant internal struggle," one person familiar with the debate said. Proponents inside Toyota said an external target would encourage wider participation of players, while sceptics worried about the consequences of failing to meet the targets.

The environmental blueprint by the Japanese group underlines the urgency with which the global auto industry is moving to tackle greenhouse gas emissions. Missing those targets is increasingly unfeasible and rising costs to build low-carbon technology have bounded the industry closer than ever.

The climate question is also uppermost as Toyota and other carmakers worldwide are grappling with an industry shift towards automation and self-driving vehicles. That transition has pitted traditional car manufacturers against software giants such as Google and defied conventional notions of what a car is all about.

'Once I give a numerical target, everyone will become very short-sighted'

Four years since Tanaka was put in charge of the Mirai, Toyota has regained its crown as the world's top-selling carmaker and is heading towards its third straight year of record profit.

Yet Toyoda reminds employees that the Mirai is only "a small first step" to achieve Toyota's long-term vision and the challenge has just begun.

"For the last hundred years, gasoline engines have occupied the mainstream, but if you look forward a hundred years it will not just be gasoline, but diesel, electrics, plug-in hybrids and fuel cell vehicles," says Toyoda. "We don't yet know which will be chosen." ■

PHOTOS: PA; GETTY IMAGES

Steel, the fabric of life

During the London 2012 Olympic and Paralympic Games, the ArcelorMittal Orbit landmark tower was seen around the world on TV, and in person by the huge crowds that attended. It has since become not just a memory of a great Olympic games but also a symbol for the ongoing regeneration of East London.

Key to that regeneration is to encourage people to come and see for themselves what's happening, and to take part in it. And part of that is the addition to the ArcelorMittal Orbit of the world's longest tunnel slide, designed by Belgian artist Carsten Höller at the invitation of Sir Anish Kapoor. Made from steel donated by ArcelorMittal, the slide is 178m long and will thrill visitors as they reach speeds of up to 15 miles per hour.

Image shown is a CGI image. Slide is currently being constructed and will open in late Spring.

BOLDNESS IN BUSINESS
WINNERS

Cloud power

PERSON OF THE YEAR
Andy Jassy

Amazon Web Services has become the most closely watched division of Amazon after it was broken out as its own business segment last year. The idea for AWS came from Andy Jassy and the division was founded in 2006, when AWS began providing web hosting services to start-ups. AWS has grown to become one of the leading providers of cloud computing services and, with its low-cost strategy, rivals huge, well-financed competitors such as Microsoft and IBM. Given AWS's $8bn revenues in the last year and healthy profits, Jassy thoroughly merits the person of the year award.

DRIVERS OF CHANGE
Fanuc

The Japanese company, founded in 1950s, is the world's largest producer of industrial robots. Last summer, it announced it was developing machines that will be able to clean and repair themselves. Long-admired but with a tradition for secrecy, Fanuc has taken the path toward openness during the past year, creating an investor relations department and promising higher transparency. This decision could prove to be a leader for public Japanese companies across industries. The group is introducing new "collaborative robots" to work more closely with humans.

CORPORATE RESPONSIBILITY/ ENVIRONMENT
Toyota

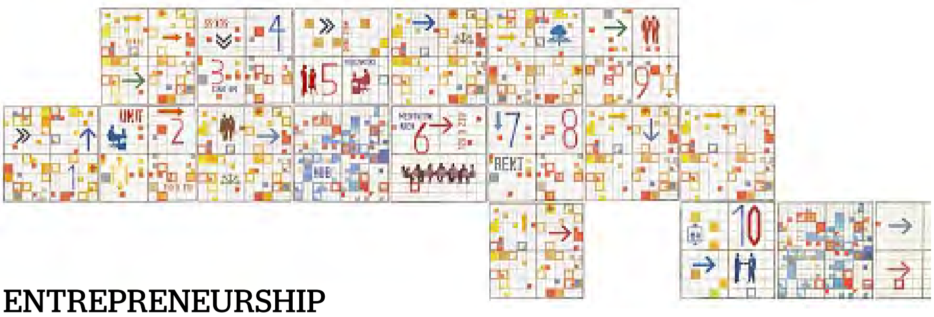
In 1997, Toyota became the first to mass-produce a hybrid electric vehicle, the Prius. In 2011, Toyota announced a concept fuel-cell vehicle, which was developed into a commercial product in 2014 when it launched in Japan. The car uses hydrogen as fuel, which reacts with oxygen in the fuel cell to develop electricity. The Mirai, meaning “future”, was launched in Europe late last year with the aim of bringing fuel-cell technology into the mainstream. In October, the company laid out its goal of virtually eliminating petrol and diesel engines from its fleet by 2050.

TECHNOLOGY
Tencent

One of China’s most-used internet service portals, Tencent provides a wide range of online offerings, including social networks, ecommerce and games. It led last year’s launch of WeBank, China’s first online-only bank, which offers loans to small and medium-sized private companies that struggle to borrow from mainstream banks. Tencent’s WeChat service has grown to the extent that the product has become practically synonymous with the smartphone, with 650m monthly users. It also provides Tencent with a gateway into China’s huge service economy.

SMALLER COMPANY
Farfetch

Farfetch is an ecommerce website providing a platform for bricks-and-mortar fashion boutiques across the world to sell their luxury goods. In 2008, Portuguese entrepreneur José Neves founded the company in London to provide a solution for independent fashion shops that struggle to bring customers through the door, but also do not want to invest heavily in moving online. Farfetch now ships garments to 190 countries and, while its clients include many leading labels, a lot of the 400 boutiques and 1,600 luxury designers paying for its services are small independents.



ENTREPRENEURSHIP
WeWork

WeWork is a leading US exponent of the fast developing gig economy and provides shared workspaces and office services for start-ups and small businesses. Transforming mundane offices into industrial chic workplaces, it grew rapidly with the rising numbers of freelance workers after the 2008 financial crisis and opened 78 locations in 23 cities in the US, Europe and Israel. London is anticipated to compete with New York as a WeWork hub, with 14 locations expected by the end of 2016. Valuation of the company early this year had risen to $15bn.

DEVELOPING MARKETS
M-Kopa

This Kenyan company uses mobile money platforms to deliver affordable solar power to people who are not on the grid and are using expensive kerosene for lighting. In 2010 Jesse Moore, Nick Hughes and Chad Larson founded the Nairobi start-up that became M-Kopa the following year. The goal was to sell 1,000 solar power units a week. Sales are now up to four times that. Customers pay for electricity using mobile phone credit, with the company’s cloud platform tracking payments. M-Kopa has more than 300,000 customers in Kenya, Uganda and Tanzania.

Chat booms

A platform that slickly embraces social media and commerce is dominating China's lucrative messaging app market. By **Charles Clover**

The room was sombre as Pony Ma, Tencent chairman, addressed the assembled group of engineers. It was sometime in 2010, according to the recollection of people who were there, and he was talking about Tencent's latest bet on social media. The company was losing the microblogging wars. Its flagship product, a platform called Tencent Weibo, which was intended to mimic Twitter, was losing ground to competitor Sina and its highly successful Sina Weibo.

But Ma was strangely optimistic. He said Tencent had a new product, which he did not name, that would be a "game changer" — a chat service for smartphone users that was designed to track the Chinese boom in smartphones.

Five years later, WeChat, the product that was a glint in Ma's eye at the time, has surged to become practically synonymous with the smartphone in China, with 650m monthly active users. Overall, China has 668m internet users, 88 per cent of whom use 3G or 4G phones to go online.

WeChat's measure is not just its user statistics, but its ubiquity in Chinese social life and commerce. Meet a new acquaintance in China and you will likely as not be asked to scan your WeChat QR code. Buy a roasted sweet potato on the street and you will probably be able to pay with WeChat's wallet, used by a vast number of small sellers. WeChat rather than email is the way people increasingly connect.

Mark Natkin, managing director at Marbridge Consulting, which focuses on east Asia telecoms and IT, says the app hit China's public at just the right moment: "It seemed fresh and very well designed. All the functions you use on a daily basis are there, but none of the clutter. It is versatile without being complicated."

> 'All of the functions you use on a daily basis are there, but none of the clutter'

Zhang Xiaolong, creator of WeChat, said in an online lecture in January that Tencent's priority with the app was protecting the simple smoothness and seeing off pressure to add functions or features.

"The greatest challenge for Weixin [the Chinese name for WeChat] is not how much more we can do, but how many things we can screen and block. Weixin has been cautiously protecting your user experience. You won't receive a bunch of system messages."

The smoothness is no easy feat. While its closest competitor, Facebook's WhatsApp, strives to be a pure messaging app, WeChat is an all-in-one Swiss army knife of the smartphone era. It can send cash to a friend in a digital form of the "red envelope" — the traditional way to present a gift in China — hail a taxi, deliver a pizza or book a doctor's appointment.

A report by venture capital firm Andreessen Horowitz says: "WeChat is actually more a portal, a platform, and even a mobile operating system depending on how you look at it." Its open platform allows programmers to embed official accounts — something akin to individual apps — for hospitals, football clubs and even local restaurants, millions of mini apps in all. This has meant WeChat "is more like a browser for mobile websites, or arguably, a mobile operating system complete with its own proprietary app store", Andreessen Horowitz adds.

Jerry Wang, founder of TechTemple, a Beijing based start-up incubator, notes that many of his clients develop ➤

QR codes are a feature of WeChat (left) Chinese women using smartphones (right)

PHOTOS: CHINAFOTOPRESS/GETTY IMAGES; BLOOMBERG

apps for WeChat as a way to test them before they become fully fledged. Because the HTML web programming language is simple, he says, "you need five or six engineers to make iOS or Android apps but just two to make WeChat apps."

The arrival of the mobile internet in China happened faster than most people expected. Tencent competitors such as Alibaba and Baidu have had to innovate furiously to keep smartphone users interested in their PC-era offerings and both have seen share prices hit during their efforts to adapt. Tencent is the only leading Chinese internet company whose share price is worth more, by some 3 per cent, than it was a year ago.

'A gateway is more valuable than the content which goes through it'

Many analysts and executives at the company credit WeChat for this. "Tencent's days would be over," were it not for the app, Ma said at an entrepreneur's club salon gathering in 2013. "Frankly speaking, if this product were to have been developed by some other company, and not us, we would have no way to weather the competition." (No Tencent employees agreed to be interviewed for this article.)

Created in 1998, Tencent makes most of its money from computer gaming, but attracts internet user traffic mainly with social media, including WeChat and QQ, an older chat software aimed at PC users. A relentlessly hierarchical, engineer-driven company which nurtures fierce competition among employees, Tencent set three teams competing to develop WeChat. Zhang Xiaolong led the Guangzhou-based team that won.

Analysts attribute WeChat's fast adoption by the public not only to the addictive ease with which it can be used, but also to Tencent's commanding lead in PC-based social media — QQ users outranked all other services — at the time of launch. When WeChat began, Tencent funnelled QQ users directly to it. Other mobile messaging apps had to "start from a user base of zero", notes Zong Ning, a Beijing-based technology blogger.

Meanwhile, the government launched a crackdown on Weibo, the microblog site, in 2013, accusing many users of "rumour mongering" and being critical of the Communist Party. The upshot was that suddenly WeChat seemed like the safer, less politically risky alternative and users shifted to it as it offered more privacy in social messaging.

Tencent's real goal is not just to facilitate chatting, but also to make WeChat a gateway into China's booming service economy, where everything from food delivery to manicures and car washes are sold online. Smartphones have become the entry point to what is known in China as "O2O", or online-to-offline sellers.

Chi Tsang, HSBC's head of internet research for Asia, estimates in a report published in November that O2O is an addressable market of Rmb10tn ($1.5tn), of which only 4 per cent is currently online. "Owning a gateway is more valuable than owning the content which goes through it," a senior Tencent executive reportedly said.

One WeChat customer is Wang Yanchun, a Beijing woman who sells *jianbing*, a crêpe-like breakfast pancake, from a kiosk every morning to students. A year ago her son advised her to accept WeChat's wallet function and take online payments. "It's more for convenience," she says. "You do not need to hunt for change and students all use WeChat wallet. They can order in advance and I have their *jianbing* ready when they arrive."

On a larger scale, Tencent has sought to build around WeChat with stakes in such ventures as Didi Kuaidi, the car hailing app which is the local rival to San Fransisco-based Uber, food

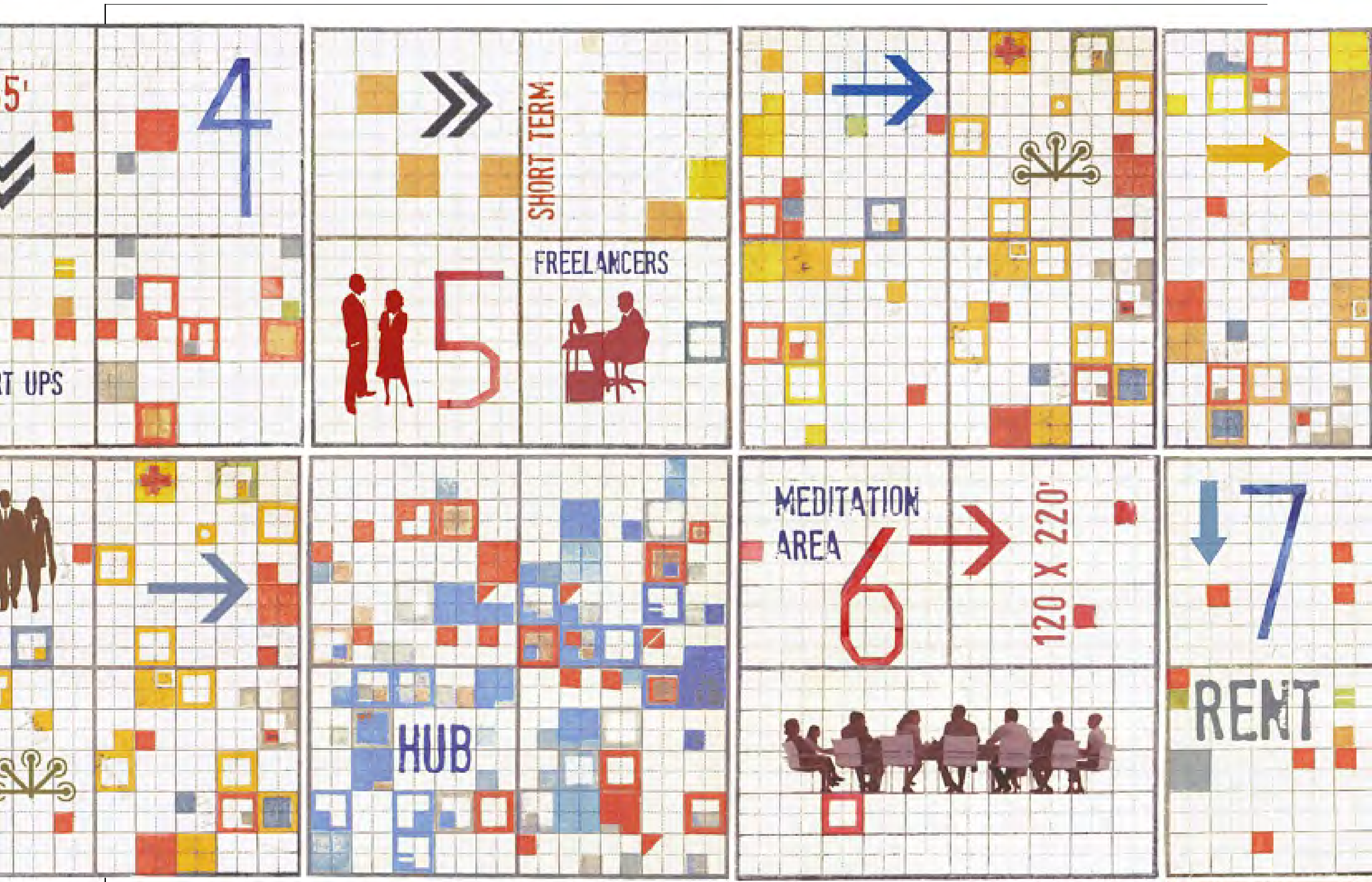
deliverer Ele.me and group deals platform Dianping.

Other companies have tried to imitate WeChat's success — Alibaba's chairman, Jack Ma, declared war on Tencent in 2013 encouraging Alibaba's employees to form a "South Pole Marching Army" and "kill Penguins". The penguin is Tencent's mascot. Alibaba was trying, unsuccessfully it turns out, to challenge WeChat with its own Laiwang messenger.

Just as WeChat is claiming victory, some analysts say it must be watchful of another threat, as it looks to monetise WeChat with advertising. Earlier this month, the company was planning to introduce a 0.1 per cent service charge on transferring funds from WeChat accounts to bank accounts, which will encourage merchants to keep funds in WeChat's own digital wallet.

Zhang Yi, of iMedia, says that despite its war against clutter, WeChat runs the same risk as rival Weibo of becoming too commercialised and deluging users with advertising and information. "When I open my WeChat app, I'm flooded with messages. I never get to read all of them", he says. "WeChat's future depends on how well it deals with the explosion of information on the app. If it doesn't do anything, in about a year, we may see that WeChat hit its peak right around now." ■

Additional reporting by Ma Fangjing



Social work

WeWork re-lets low-rent city buildings to individuals and start-ups seeking office spaces with a hip vibe, says **Anna Nicolaou**

It is February, a few days or so after WeWork's valuation has jumped to $15bn, and Adam Neumann, chief executive of the office space start-up, is fussing over what kind of tea to serve me. "Not the lime one," he says to an assistant in WeWork's new headquarters in Manhattan's Chelsea district. "It had a triangular bag. You know, the really yummy one you made."

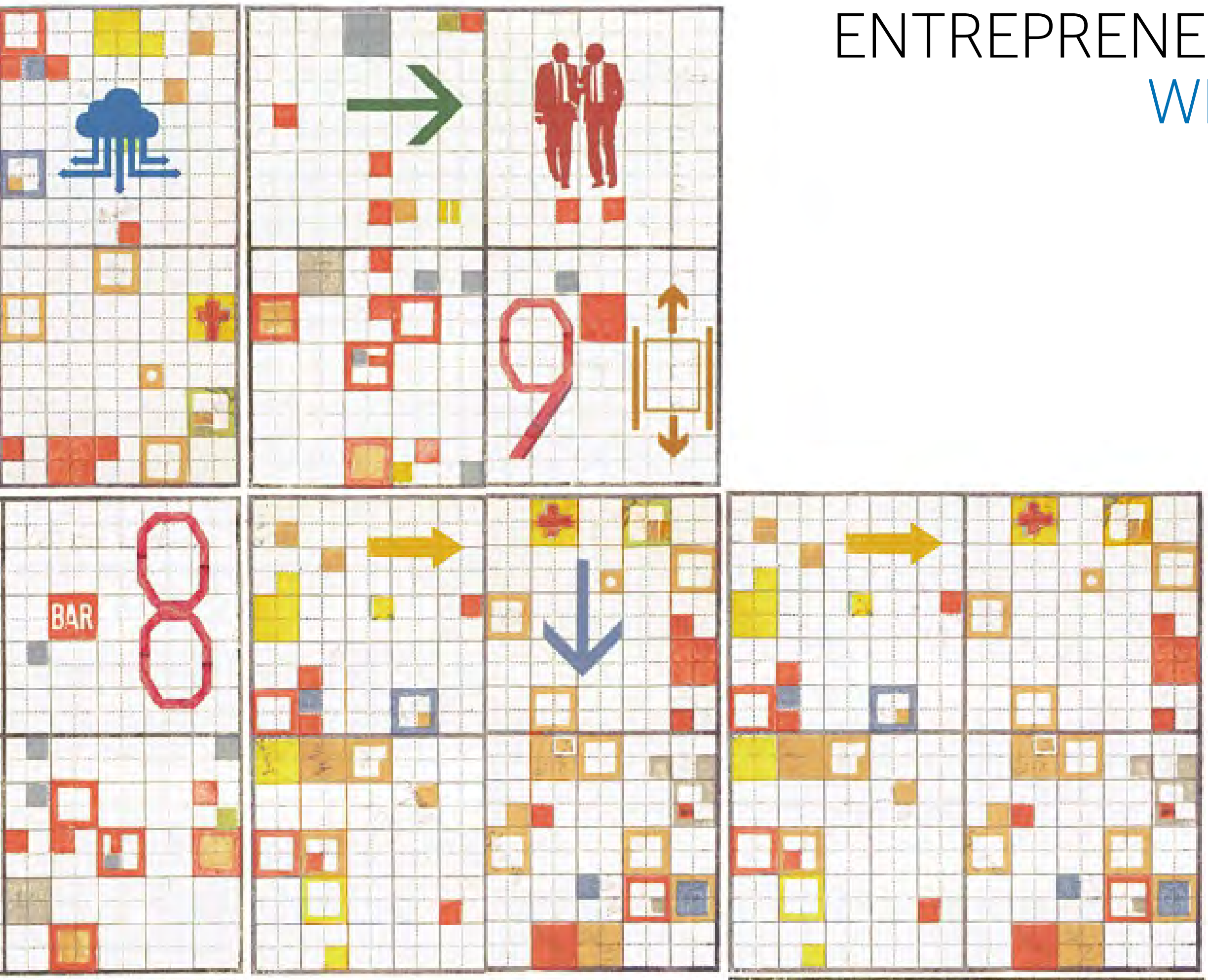
Near his office, WeWork employees buzz through a food hall, sipping lemon water and eating organic snacks. Ellie Goulding plays in the background.

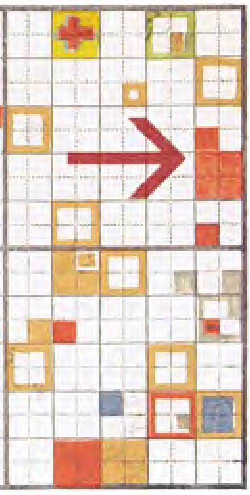
Neumann, a 6ft 5in former Israeli navy captain, co-founded WeWork with Miguel McKelvey in 2010 to transform normal offices into what he describes as "the future of work".

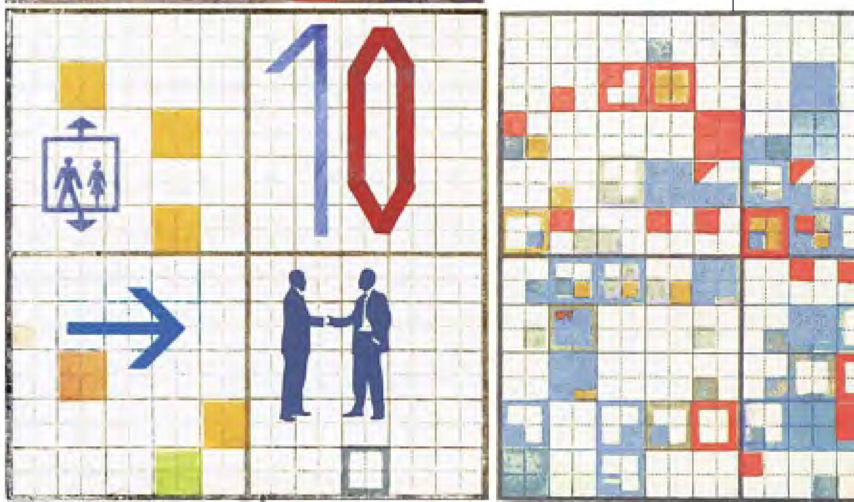
The result is industrial chic workspaces with neon signs, free craft beer on tap and taco party nights. WeWork creates a youngish vibe, especially appealing to millennial workers.

WeWork says it has 50,000 "members" — or customers — spanning 78 locations in 23 cities in the US, Europe and Israel. It expects the number of members to more than double by the end of the year.

At its core WeWork is a property company, but has branded itself as a sharing economy start-up, attracting investors — such as Goldman Sachs and JPMorgan — that have pumped nearly $800m into







the enterprise in the past year and a half. Fidelity Investments raised its valuation of its $190m in WeWork shares by a half in December, boosting the six-year-old company's valuation to $15bn, higher than those, for example, of Elon Musk's rocket enterprise SpaceX and web and mobile application company Pinterest.

This implies that WeWork's office space of some 5m sq ft in total is worth $3,000 per square foot, more than even the highest-class towers in New York, such as the GM building, which commands $2,400 per square foot.

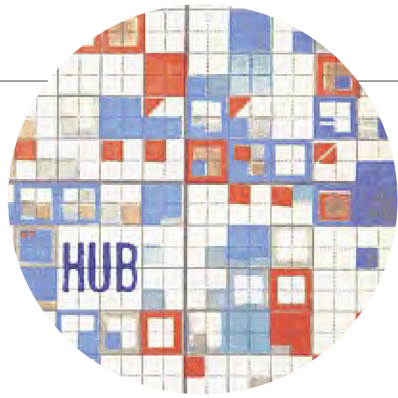
WeWork's business model was born out of the financial crisis. In 2007 Neumann owned a baby clothing company that he describes as "not a great success". He ran the business from a building in Brooklyn, where he noticed chunks of empty space and convinced his landlord to let him sublet cubicles on the classified advertisement website Craigslist for extra cash.

This morphed into Green Desk, a sustainably-focused co-working space company, which he founded with McKelvey, an architect who also worked in the building.

A few years later, with the US unemployment rate still hovering around 9 per cent, WeWork was born. In a shaky jobs market, more workers were freelancing or working from home. An opportunity was spotted to draw the post-recession labour force into offices with exposed brick walls and happy hours, an alternative to drab cubicles or Starbucks couches.

WeWork's tenants say the community atmosphere makes the life of small start-ups and freelancers less lonely.

In the wake of the recession, freelancing is no longer niche. A third of US workers are now freelancers, according to research by software company Intuit, and this is expected to grow to more than 40 per cent by 2020. Neumann sees ➤



the so-called gig economy as a permanent shift in the nature of work.

"An entire generation saw this downturn" and noticed "that the old rules are broken", he says. "The sharing economy is around in so many different aspects of their lives. Kids today, they don't need to buy a car, they can drive around in Uber. They don't have to buy an office, we can rent an office for them."

WeWork now has 26 locations in New York City, where it has leased more than 700,000 sq ft of property in central Manhattan, according to Downtown Alliance, a Manhattan research company. Neumann, who grew up on a kibbutz, practices the Jewish mystical tradition of Kabbalah, and combines his beliefs with the shrewd deal making that has been so successful on the New York property market. When asked about competition, he says "happiness comes from within". On the subject of the economic slowdown in China, he says companies should seek "social value" rather than pursue growth.

'For an entire generation the old rules are broken. Sharing is around in so many aspects of their lives'

Some in the property industry are mystified by WeWork's rise, given a comparison between the more traditional high-end office market in New York City and the assets WeWork deals in. "It's hard to quite understand," says a New York real estate lawyer. "These buildings don't have great air conditioning or good light. The windows leak. It's quirky and for some reason quirky has become not only a plus, but a requirement."

Neumann says that beyond the aesthetic, WeWork connects companies with each other, cultivating a "physical social network". Members post jobs and events on the company app and WeWork offices hold start-up pitch nights.

"The pitch seems to be: come

Adam Neumann, right, co-founded WeWork with Miguel McKelvey work here and you'll be with all these really good-looking young people that will help you do deals," says John Lutzius, a managing director at real estate investment researchers Green Street Advisors.

WeWork is betting that its model will find success in more and more high-tech cities globally. The company has big plans for Europe, where it has already opened locations in London in the past year. Berlin and Paris are on its horizon.

Neumann says London will soon compete with New York as a prime WeWork hub, with 14 locations expected by the end of the year. "We know New York is our biggest city now. We don't know that London is not our biggest city two years down the road," he says.

WeWork's London Moorgate location, with more than 150,000 sq ft, is now one of the largest co-working spaces in the UK, added to which, says Neumann, a fan of north African and Middle Eastern cooking, it is the kind of cosmopolitan area where you can get a "really awesome shakshuka".

WeWork has also expanded its customer base beyond small start-ups, to large companies including American Express, GE and Blablacar. It is moving into the residential market with WeLive and its community-oriented "co-living" apartments. The first WeLive apartment complex opened in New York this year.

The world has changed dramatically since WeWork first opened its doors. Although a fresh round of market turmoil and the crash in the oil price has raised the spectre of another global recession, property prices have recovered from the effects of 2008 and in many cities exceeded the subprime peak level. Hence it is not easy to find the more affordable older buildings that WeWork leased in its early days.

PHOTO: PASCAL PERICH

WeWork combats rising rents by securing preferential terms from landlords

WeWork has combated rising rents by securing preferential lease terms from landlords as an anchor tenant in buildings that it occupies. Adding WeWork to a building brings "above market energy incentives", says Neumann, which is to say its presence attracts other tenants to the location.

Even so, WeWork's structure is intrinsically risky. It takes out long leases of at least 10 years, but its own customers are on monthly contracts. Regus, its main rival in office space rentals, grew rapidly during the last dotcom boom, but filed for Chapter 11 bankruptcy in 2003 after the bubble popped and its tech clients pulled out.

'I promise you that whatever landlords are willing to give us today, they will give us a lot more'

Neumann admits that some of WeWork's customers "will have issues" if the economy sours, but adds that property prices are likely to fall in a downturn, which cuts WeWork's costs: "I promise you that whatever landlords are willing to give us today, they will give us a lot more." He says he has already seen lease prices dive in the past six months, as the Federal Reserve raised interest rates and stock markets faltered.

Some market observers have questioned whether WeWork's rapid rise is another sign of a tech bubble brewing around hyped young companies with soaring valuations. Internal documents obtained by The Information, a news site, showed WeWork had $4m in profits on $75m in sales in 2014. WeWork projected profits to grow to more than $900m on sales of $3bn by 2018, the documents showed.

Despite these lofty expectations, Neumann says he does not take uncalculated risks. The company does its research, he insists. "We know the demand is there." ■

SMALLER COMPANY
FARFETCH

Fashion forward

The online retail platform allows boutique clothing businesses with physical premises to embrace the internet, says **Jonathan Moules**

José Neves, the Portuguese-born founder and chief executive of luxury fashion technology business Farfetch, sits in a private room at one corner of his company's vast new open plan office on Old Street roundabout, the fulcrum for London's tech start-ups, reeling off the material advantages of living in the digital age.

When he arrives at the joys of hailing taxis from smartphone apps, however, his relaxed demeanour transforms into a stern seriousness. "I don't like Uber in London," he says. His beef is that one of the world's most well-funded tech start-ups is taking trade from small business people maintaining a level of service admired globally.

"The black cab is an institution that we need to preserve," he says. "That may cost a little bit more, but if you go to a Michelin Star restaurant it will cost a bit more than if you go to McDonald's."

There is a logical thread between this and his pitch for Farfetch. The company helps luxury fashion brands and boutiques sell their clothing globally while dramatically improving the efficiency of their back office operations through clever data use. Although Farfetch's client list includes many leading labels, a lot of the 400 boutiques and more than 1,600 luxury designers that pay for the company's services are small independent traders.

Farfetch, whose website gets over 10m hits a month and ships garments to more than 190 countries, is redressing the power balance in clothes retailing in favour of the little guys by enabling them to have the economies of scale enjoyed by multinationals, states Neves.

Pointing to his crisp white shirt and casual black trousers, he notes that similar garments could easily be obtained by generalist clothing manufacturers but he says that his have a special quality because they are made and sourced by people with a passion for high quality tailoring.

"We work with a fantastic store in Newport Beach [California] called A'maree's," he says. "It's one of the most beautiful stores in the world. It's just mind-blowing, stunning; the building, the architecture, the way it is laid out, but it's in Newport Beach, which is a small town south of LA."

His point is that without the kind of support that Farfetch provides, the store "will be open only 10 hours a day, six days a week and it will be constrained to a geography".

Technology entrepreneurship does not have to be a winner-takes-all battle between multinational behemoths, Neves argues, but can be a way of creating companies that nurture the qualities of small business service.

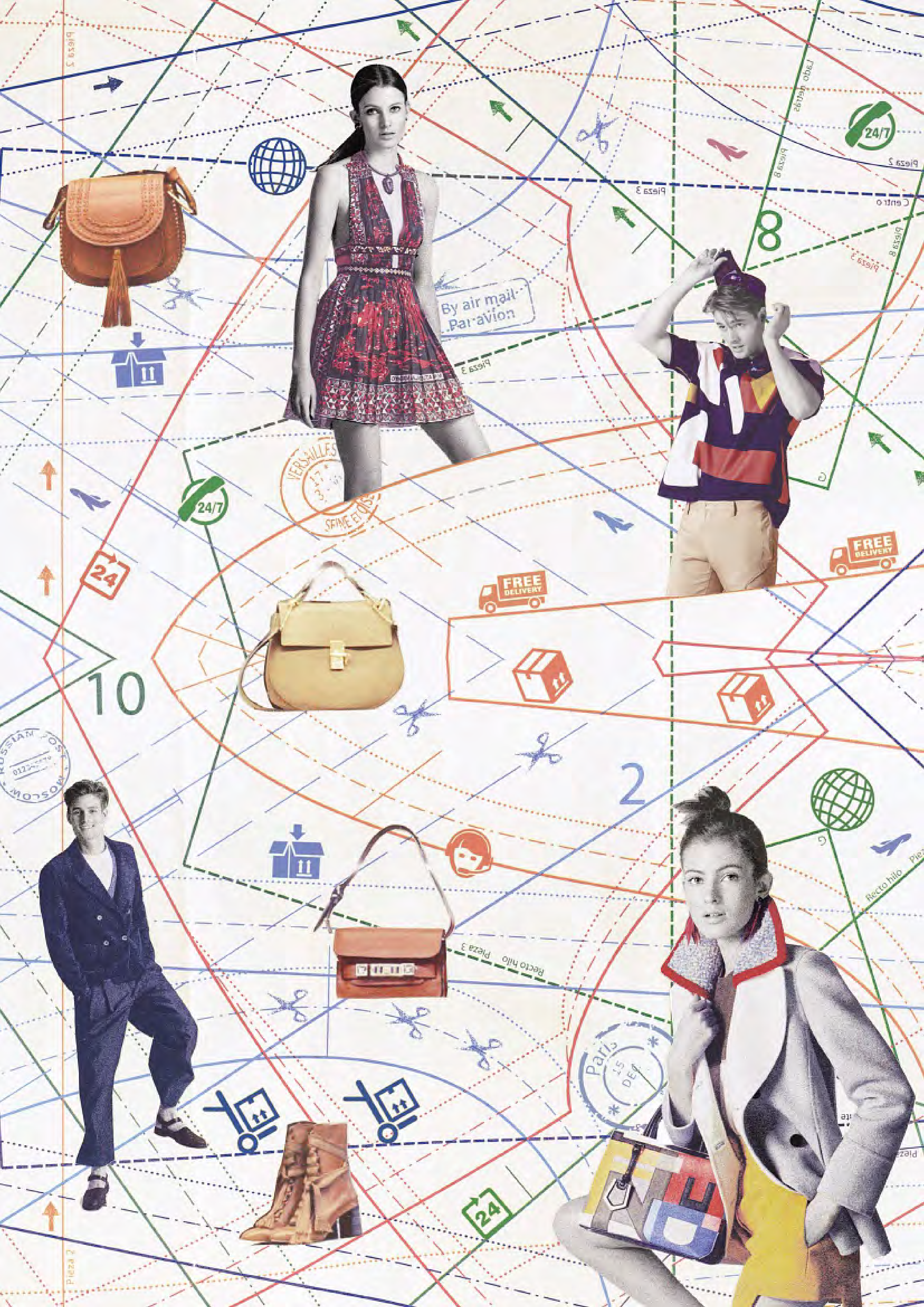
> 'Farfetch is saving the traditions and the industries that we operate in'

"When you look at the companies in the first wave of the internet — the eBays and the Amazons in retail and to a certain extent what the Yahoos did with newspapers and media — these first companies threatened to kill individuality and they threatened to kill creation.

"What is very interesting, if you look at the second wave of companies, and I include Farfetch in these, is that we are saving these traditions and the industries we operate in."

One of Farfetch's recent innovations has been to offer same day delivery in 10 top cities around the world, including Los Angeles, Miami and London.

This is only possible, says ➤



By air mail
Par avion
FREE DELIVERY
24/7
24
10
8
2
Pieza 3
Recto hilo
Paris

PHOTO: ANNA GORDON

Neves, because his company has a critical mass of client shops in these locations. This guarantees a wide enough choice, he adds, for demanding customers and faster reaction times than are possible under the traditional ecommerce model of shipping stock from a few large warehouse hubs.

It is easier to gain a foothold in the fashion industry than the market for books or music, he notes, because by its nature it is fragmented between thousands of companies.

"Fashion cannot be downloaded so it needs to be touched, it needs to be tried on and there is an element of experience and retail experience which people love. The physical store is not going to go away."

Last May, Farfetch became a boutique owner itself when it acquired Browns, a London boutique known for pioneering bridal and menswear in the sixties and nurturing British designers such as Alexander McQueen and John Galliano.

José Neves wants to tilt the power balance in clothes retailing in favour of the smaller companies

Neves admits he had admired the shop from a distance when he tried his hand at shoe design after moving from Portugal to London in 1996, opening a shop in London's Covent Garden under the brand Swear. This was followed in 2001 by B-Store, for which he received a British Fashion Award.

The business logic of the purchase of Browns is to give Farfetch a physical space to pilot innovations created by its store design team, which can then be used to the benefit of client boutiques around the world.

"Browns has this DNA of being a revolutionary company," he says. "It pushes the boundaries and really reinvents fashion time and time again and that is very aligned with Farfetch. We do it on a more tech, digital side of things. They do it on a traditional physical store retail side of things."

Last year, Farfetch's sales grew by 70 per cent to more than $500m, says Neves. This remains a drop in the ocean in the global luxury fashion industry, which generates sales of $250bn each year, according to consultants McKinsey. Only 7 per cent of clothing purchases are made online, Neves says, so companies like Farfetch will continue to serve only a thin slice of the market even after years of high double digit growth. Nonetheless, online sales, he adds, are growing by 30 per cent a year.

"This industry will never be a winner takes all," he insists, adding that the fashion business is only at the dawn of a dramatic improvement in efficiency and selling capabilities created by online technologies. "There are multiple tectonic plates shifting," he adds. "Our focus is on the movement of consumption from offline to online because if you ride that wave, growing as fast as it is, you have no need to worry about competition."

Although Farfetch started trading barely eight years ago, it is now a global operation employing about 1,000 staff spread across 10 offices, from Shanghai to New York and São Paulo to Oporto. Among its various business divisions, processes and administrative teams, it calls its human resources department "people and talent" in an effort to show different thinking about the way people are managed.

A'maree's boutique in Newport Beach sells clothes online using Farfetch

Neves tries to develop his own and his managers' leadership skills by hiring external coaches. A key part of everyone's development in the business, he adds, is sharing knowledge. His unpretentious work clothes seem designed to reflect a collegiate mentality, although he claims this is not conscious. "I do not try to create a persona in terms of styles," he says. "I just wear whatever I want and it is actually quite basic. Recently it's more monochrome, and on the baggy side of things, but it changes."

He attributes at least some of his entrepreneurial genes to his grandfather, who ran a shoe factory in his native Portugal. But he began his entrepreneurial career in 1994 with a technology business founded whilst he was studying economics at university in Oporto. This set him on a road towards digitising the fashion business.

Although Neves traces a logical progression from his previous ventures to Farfetch he has achieved immensely more with this venture than his first start-ups. Last year Farfetch acquired the moniker "unicorn" after gaining a valuation based on its equity fundraising of more than $1bn.

Like Uber, this is a U-word which causes him to bristle. "We don't get hung up on it," he says. The key metrics for Farfetch are the lifetime value of a customer, a combination of the cost to acquire a customer and the cost of retaining them, not the price investors put on the business at any one point, he insists.

"The fact that we reached that valuation, I think, is a collateral result of us living our values and fulfilling our vision. For us, we get a kick out of being revolutionary, being brilliant, amazing [our] customers. This is what matters." ■

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Lightbulb moment

In countries such as Kenya where mains power is uncommon a business that uses mobile payment technology is fostering Africa's appetite for renting solar-powered goods, writes **John Aglionby**

When Jesse Moore and Nick Hughes decided in 2009 to leave their telecoms jobs and set up a company, they had three criteria for their venture: it would have to take advantage of mobile phone technology in emerging markets, particularly mobile payments systems; it would need to transform people's lives; and it would need to show potential to become a $1bn company within a decade.

"We didn't see any trade-off in the pursuit of building a really strong commercial business and making lives better," says Moore. "What you had to do was focus on neglected customers and solve a really massive pain point for them — offer them something that's phenomenally better." The pain they chose to address was the relatively large sums that Kenyan households without access to the electricity grid were paying for what Moore describes as "really crappy energy" — kerosene to light their homes, batteries to power their torches and radios and a long trek to someone with power to charge their mobile phones.

The solution was M-Kopa, a solar-powered system that can charge two lights, a torch and a radio (all of which are provided by the company) and a mobile phone. It is run using a control box, which contains a mobile data chip, through which customers can buy credit for their power using mobile money transfers. The company can process payments, monitor the system's functionality and tackle problems through its proprietary, patented technology platform called M-Kopanet.

Moore and Hughes, with banker and micro-finance expert Chad Larson, in 2010 founded the start-up in Nairobi that became M-Kopa the following year. The initial goal was to sell 1,000 units a week within three years. That milestone was reached within 12 months and now the 1,200-strong sales team, who work on commission and incentives, are selling up to 4,000 units a week.

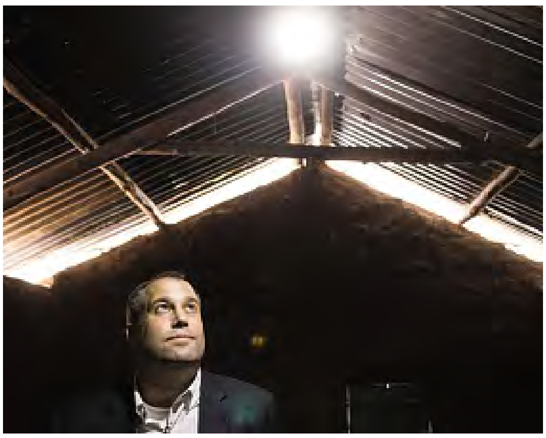
'We're using the money we save to buy school supplies for our four children'

For a down payment of 3,500 Kenyan shillings ($34) and daily instalments of Ks50 for a year customers are guaranteed power every day because the solar panels are much larger than the appliances need.

Peter Muinde and his wife Winifred — M-Kopa customers in Machakos County, 40km south-east of Nairobi — estimate they are saving about Ks20 per day on power. This is almost a third of what they were spending, plus they are spared the hassle of having to buy batteries and kerosene, or clean sooty residue off the house walls and ceiling.

"We're using the money we save to buy books and school supplies for our four children," Winifred says over the sound of voices chatting away on the radio in the background.

Mobile money technology combined with the latest solar systems have fuelled the ➤



Co-founder Chad Larson inside a hut powered by a solar panel in Nairobi

PHOTO: BLOOMBERG

DEVELOPING MARKETS
M-KOPA

rapid expansion and enabled the company to leapfrog east Africa's poor infrastructure. "Whether it's our business or other businesses, the conventional thing to say about Africa is it's cursed by a lack of infrastructure," says Moore, M-Kopa's chief executive and a Canadian with an MBA from the University of Oxford.

"I really believe that if you've got an optimistic view of technology trends and the way they're going both in off-grid energy, and data connectivity and financial services", he says, "we can see Africa in general [and] east Africa in particular as a great hotbed for leapfrogging."

M-Kopa has more than 300,000 customers, 80 per cent of whom are in Kenya, with the rest in Uganda and Tanzania. Moore says the goal is to reach 1m by the end of 2017 — or 4,500 new customers a week between now and then. The company is looking beyond its three current markets, having taken on a licensing partner in Ghana that is helping it assess whether a model of selling through other agents works.

High-quality customer service is also a key feature of M-Kopa's success. This is achieved not only through employing scores of young, articulate people to answer queries but also by using the technology in the system.

"A customer called to say their lights were shutting off early in the evening and when we looked in the system we found that somebody was charging a bunch of mobile phones in the middle of the day when the owner of the system was out of the shop," Moore says. "So he was able to conclude 'I've got to lock up my system during the day or that person needs to be locked out of the store so they're not draining my battery.'"

One potential weakness in M-Kopa's business model is the dependence on M-Pesa, the mobile money system developed by Kenya's dominant telecommunications company, Safaricom, to collect customer payments. But Moore describes it as a "pretty safe bet" considering that "it's such an important product for the whole [Kenyan] economy."

"The reason I moved here and the reason we started M-Kopa here is because of the reliability of the platform," he says. "In other markets, such as Tanzania and Uganda, we have a decent platform but it is more of a struggle for us to collect, for people to understand how they can pay for their M-Kopa system." But while the potential market for off-grid solar is 20m households in east Africa alone, selling solar panels for charging lights and radios is unlikely to create a $1bn company within a decade. The clue to how Moore, Hughes and Larson intend to fulfil their third goal is in the company's name: "kopa" is Swahili for borrow.

> 'The potential market for off-grid solar is 20m households in east Africa'

Once customers have paid off their solar systems and thus demonstrated they are dependable clients they are offered the chance to remortgage their system in exchange for further products.

Fuel-efficient stoves and smart phones have been on offer for some time but it is the latest addition to the catalogue, an M-Kopa-powered television, that the company hopes will provide a huge boost to business.

If Peter Muinde, a motorcycle taxi driver, is anything to go by, they are correct. He became an M-Kopa customer in December and is desperate to get a television. "When can I get one, why not now?" he kept asking M-Kopa staff recently.

Moore refused to divulge what the next product would be. But Hughes, one of the brains behind M-Pesa, is now heading M-Kopa Labs, the company's new research unit. "One thing we are not concerned about is that they don't have ideas and ways to move," Moore says. "It depends where we execute best."

Investors appear excited about M-Kopa. The company has raised about $30m in equity and $25m in committed debt. The latest round of $19m of equity funding was completed in November. The lead investor is London-based Generation Investment Management, founded by former US vice-president Al Gore. Other investors include Sir Richard Branson, Virgin Group founder, and Steve Case, AOL co-founder.

Locating the company's headquarters in Nairobi has been crucial to attracting investors, Moore believes. "To be able to design the stuff and think about it in Silicon Valley or London is one thing but then

At a 2015 innovation fair, M-Kopa attracted the attention of Barack Obama

PHOTOS: AFP/GETTY IMAGES; BLOOMBERG

the actual application of the technology in the field involves a lot of rolling up your sleeves and getting a feel for the market and distribution."

But winning that "ground game" is not easy, or cheap, Moore notes, when it comes to investing in technology in Africa. "Assume you have enough money to make your technology good," he says. "Then you have to invest five to 10 'x' over again if you're going to implement it."

Solar is more convenient than kerosene and can power mobile devices

Analysts are largely bullish about M-Kopa. Aly-Khan Satchu, a Nairobi-based investment analyst, says the company is "the first example of serious beef" among the hundreds of tech start-ups that have led Kenya to being nicknamed Silicon Savannah.

'Kenya has earned the nickname Silicon Savannah'

"A lot of people have been drinking the start-up Kool-aid and there hadn't been traction till now," he says.

"M-Kopa is one of those that is leading the charge. It has shown that you can take nickels and dimes from the bottom of the pyramid and build a substantial business."

Some analysts have queried whether the founders are the right people to lead the company on its hoped-for path of growth and the chief executive recognises this is a valid concern.

"I haven't started a company before so I don't know if I'm best at what happened for the last five years or what will happen for the next five years," says Moore. "I certainly understand my role and all the senior roles at the company are transitioning from a founder-driven smaller start-up into very much a growth business with a lot of dimensions."

Moore has hired a new chief operations officer, Carl Thielk, from Motorola, and a new sales director, Yesse Oenga, who ran telecoms services company Airtel's operations in Uganda. They intend to expand the sales team to 3,000 people and increase production, most of which is done in China, to 10,000 units a week.

"I would characterise our priorities as breadth and depth," Moore says. "We want to get a bigger breadth of customers on board as fast as possible. We also want to get a deeper relationship with those customers over time so they upgrade to other products." ■

Judging panel

Lionel Barber
Editor of the Financial Times

Lakshmi Mittal
Chairman and chief executive of ArcelorMittal, the world's largest steelmaker

Anne Méaux
Founder and president of Image Sept, a Paris-based public affairs and media relations consultancy

Robert Armstrong
Head of the Lex column at the Financial Times

Nominees

DRIVERS OF CHANGE

AMAZON WEB SERVICES, US web services provider
BLUED, Chinese online dating service
CITYMAPPER, UK live public transport data adviser
FANUC, Japanese industrial robots maker
GRAVITY PAYMENTS, US credit card payment processor
STRIPE, US online payments specialist

CORPORATE RESPONSIBILITY/ ENVIRONMENT

COMPAGNIE DE SAINT-GOBAIN, French building materials supplier
IKEA, Swedish home furnishings retailer
KERING, French luxury goods group
OCI, South Korean chemical and clean energy engineer
TESLA MOTORS, US electric cars manufacturer
TOYOTA, Japanese automotive group

TECHNOLOGY

BIOCARTIS, Belgian life sciences experts
CELLECTIS, French biotechnology specialist
DJI, Chinese drone manufacturer
EVERLEDGER, UK diamond database services
SILENT CIRCLE, Swiss data encryption provider
TENCENT, Chinese internet services group
ZMP, Japanese domestic and educational robots producer

ENTREPRENEURSHIP

BLABLACAR, French car-sharing service
COUPANG, South Korean ecommerce specialists
HELLO ALFRED, US home services provider
SOFI, US peer-to-peer lender
TEELING WHISKEY COMPANY, Irish spirits producer
WEWORK, US workspace and office services provider

The FT ArcelorMittal Boldness in Business awards this year celebrate their ninth anniversary

Edward Bonham Carter
Vice-chairman of Jupiter Fund Management

Leo Johnson
PwC partner and co-presenter of BBC Radio 4 series *FutureProofing*

Luke Johnson
Chairman of private equity group Risk Capital Partners

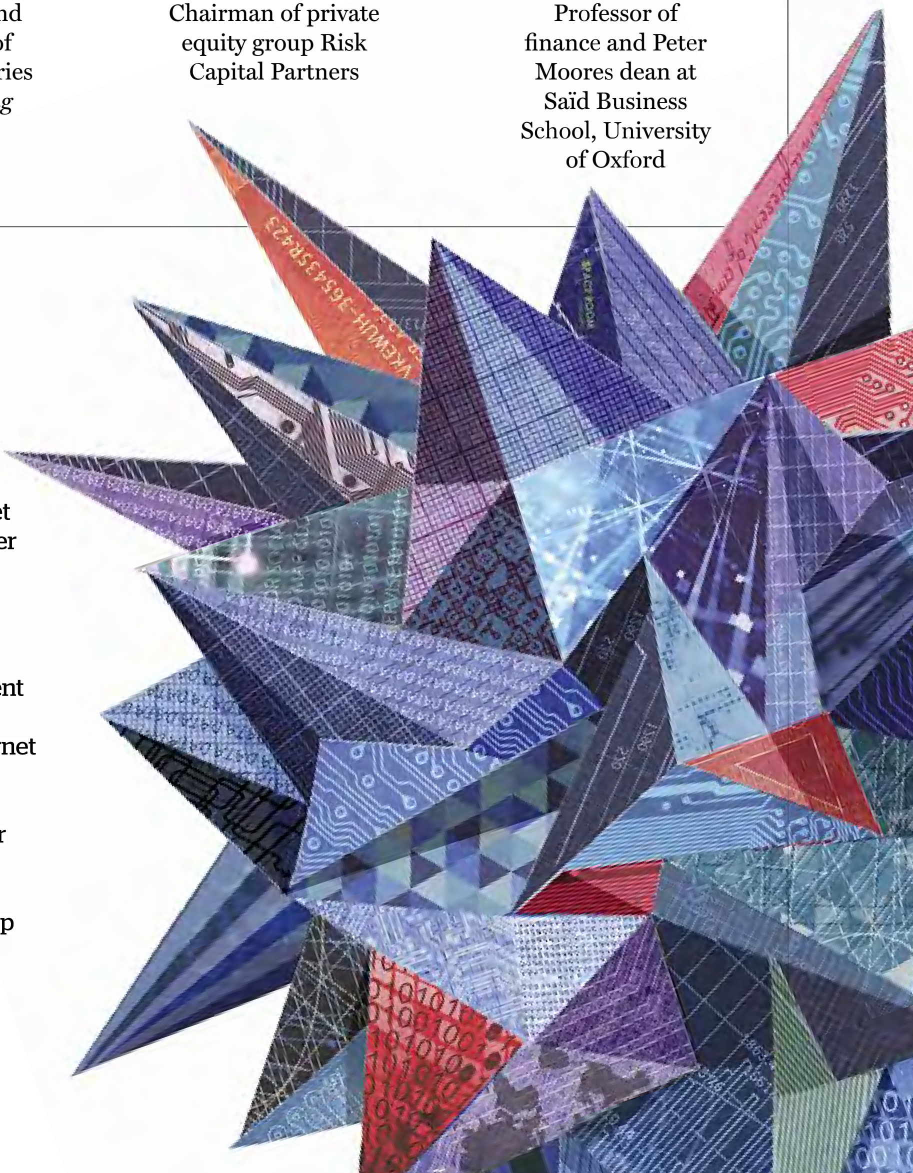
Peter Tufano
Professor of finance and Peter Moores dean at Saïd Business School, University of Oxford

SMALLER COMPANY

BREWDOG, Scottish craft brewer
CD PROJEKT RED, Polish video games developer
FARFETCH, UK fashion ecommerce platform
JAMES CROPPER, UK high-quality paper manufacturer
SPIBER, Japanese biomaterials producer
ZEROLIGHT, UK automotive computer graphics specialists

DEVELOPING MARKETS

BRCK, Kenyan internet connectivity developer
CLIP, US-based, Latin America-focused payment processor
EDUTEL, Indian education management specialist
JANA, US mobile internet service provider to emerging markets
M-KOPA, Kenyan solar energy provider
TENCENT, Chinese internet services group



COLUMN
LEO JOHNSON

In it for the many

At daybreak on July 11 1804, on a mist-shrouded ledge over the Hudson river — now the ramp-way to the Lincoln Tunnel — a duel was fought for the soul of the capitalist corporation. That duel came about because of quite contrasting approaches to our understanding of boldness in business.

On one side, wielding a borrowed hair-trigger pistol, stood Alexander Hamilton, former US Treasury secretary and aide to George Washington. Facing him was Aaron Burr, US vice-president and founder of the five year-old Manhattan Company.

A cocktail of politics, family history and commercial rivalry had brought them to this point but at the root of it was the menace of the *Aedes aegypti* mosquito. With Manhattan's population exploding to 60,000 as the industrial revolution dawned, New York lay on "a latitude of pestilence", said one doctor. For the previous six years, yellow fever had stalked the city, wiping out 3,000 people in one summer alone.

Apparently to address the crisis, Burr had approached Hamilton with a bold idea. He proposed setting up a company to pipe in fresh water from the pristine Bronx River, rid the city of its ponds of stagnant water and curb the epidemic at its source. Hamilton, a "yellowjack" survivor himself, had joined Burr's board and persuaded the city legislature to pass an act of incorporation. The Manhattan Company was born, its charter to supply New York with "pure and wholesome water".

Hamilton, however, missed one detail. In the articles of incorporation, Burr slipped in a clause allowing the company to invest "in any other monied transactions or operations not inconsistent" with law and "for the sole benefit of the company". To Hamilton's fury, of the $2m raised by virtue of the charter, only $100,000 went on water and the rest on setting up a bank. Instead of a canal diverting the Bronx River, the company just dug a well at Spring Street and Broadway and laid out a few pipes of hollowed-out pine logs. Not until 1842, and under a different water company, did New York get its clean water.

> The purpose of business is not growth for the sake of it. It is to solve a problem that matters

At stake on the ledge over the Hudson was the very DNA of the corporation. Tracing the ancient origins of corporations — from the 13th century Bazacle Mills in Toulouse and the Stora Kopparberg mine in Sweden, on to the 18th century toll-roads, the canals and the railways — reveals a consistent pattern. Companies have enjoyed the full benefits of incorporation, from limited legal liability, to tax breaks and the ability to raise capital. In exchange, they are expected to solve a problem that matters to society. This is the historic mandate of the corporation.

Hamilton's shot landed in a cedar tree. Burr hit the target and Hamilton died the next day.

Two centuries later the *Aedes aegypti* mosquito is wreaking havoc again. In Brazil, the Zika virus that the mosquito carries may have infected as many as 1.5m people and the colliding megatrends of urbanisation and climate change risk increasing not only the disease's breeding grounds, but also the number of people exposed.

So what is the role of business as we confront today's threats and challenges? "Technology is not the answer," comments Kentaro Toyama, the former Microsoft research director. "It is the amplifier of intent."

The real revolution, the one that will galvanise the passions and talents of a millennial generation, is not technological but a revolution of intent. It is about returning to the centuries old idea that the purpose of business — and its licence to operate — is not growth for the sake of growth. It is to solve a problem that matters.

What does that look like?

Well, it looks like a number of the nominees for this year's Boldness in Business awards — from M-Kopa, delivering SIM-enabled solar powered lights to those with limited access to power, to Cellectis using gene-editing enzymes to provide low cost cancer treatment, to Everledger's Blockchain-certified conflict-free diamonds.

These companies grow by delivering solutions to the pressing economic, social and environmental problems and crises that we face.

They are the stuff that Hamilton, the guy on the US $10 note, would want any bank to lend to. ■

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Photo credit : viaggiare

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