



ComputerWeekly

THE TECHNOLOGY INDUSTRY 2016
BY MORTIMER SPINKS AND COMPUTERWEEKLY



ABOUT MORTIMER SPINKS

Mortimer Spinks are the leading innovators in technology recruitment. Our business consultants, organised into agile technology and digital teams, are genuine experts in what they do.

Being part of the Harvey Nash Group, we offer the stability, infrastructure and quality of a major plc. Our clients benefit from access to our unique portfolio of services, including technology skills in Vietnam, recruitment solutions from managed service provision, contractor payrolling, and business process outsourcing.

We work with some of the most innovative companies in the world. The majority of our customers are defined as entrepreneurial technology organisations, where technology is core to the growth of their businesses.

www.mortimerspinks.com

ABOUT COMPUTERWEEKLY

ComputerWeekly.com is the leading provider of news, analysis, opinion, information and services for the UK IT community.

As well as being an advocate for UK IT professionals, we also champion the role of technology in improving organisations in all sectors of business and public life. On the web, on mobile and through face-to-face events, ComputerWeekly aims to help senior IT professionals to:

- make better IT strategy and technology purchasing decisions
- improve their knowledge and skills, and develop their careers
- connect with the people and information they need to be successful in their jobs.

www.computerweekly.com

OUR SPONSORS, SKILLS MATTER

Skills Matter was founded in 2003, with a mission to help drive innovation in technology by bringing software engineers together to discover emerging technologies, learn and share new skills, and evolve practices and ideas.

With an inherent belief in the brain power and creativity of community, Skills Matter has grown to 60,000 members and is now Europe's largest community of software engineers regularly coming together. Skills Matter produces more than 1,000 technology conferences, talks, meet-ups, hackathons and workshops every year and curates many online videos, tutorials and articles on www.skillsmatter.com

ABOUT THE SURVEY AND PARTICIPANTS

The Mortimer Spinks and ComputerWeekly Technology Industry Survey 2016 collected data between 03 09 2015 and 16 11 2015 and represents the views of 5,262 technology professionals. Due to the anonymous nature of our survey, we have provided names of individuals only when they have expressly allowed it.

HELLO,



Welcome to the fifth year of our annual Technology Industry Survey, produced as always with our friends at ComputerWeekly.com, and this year sponsored by our friends at Skills Matter.

Each year we've produced this survey we have talked about how delighted we are with the response rate, however, this year feels special. This year we've captured the views and opinions of more than 5,200 technology professionals, making this one of the largest studies of its kind. Key highlights from my perspective include:

PROCEED WITH CAUTION - ENCRYPTED OPTIONS AVAILABLE

In 2014 46% of participants were either concerned about or had altered their online behaviours due to the release of information on PRISM; in 2015 that number was 57% and now, in 2016 it's 64%. Three years of data now shows us there is a clear trend of people starting to step up the security measures they use personally and commercially. A quarter of people working in tech use encrypted email in their personal lives in 2016 and since release on PRISM more than half of businesses have become more cautious with how they manage their data.

SKILLS (REALLY DO) MATTER - ESPECIALLY WHEN THERE'S A DROUGHT

'Culture eats strategy for breakfast' – perhaps never more accurate or relevant than it is today. Technology skills in the UK market are in such demand and the supply of them so short that attracting and retaining them has become critical not just to success but to survival. As our friends and sponsors at Skills Matter will tell you, companies are having to think about how to drive innovation in technology teams to keep them efficient and productive, but also simply, to keep them.

TECHNOLOGY ONCE SOLVED PROBLEMS, NOW IT CREATES THEM

We're in a world of genuine uncertainty. A world where 'GCHQ/NSA' and 'Hacking organisations like Anonymous' score virtually the same in the section 'Are they good for the world?' Is regulation of the internet a good thing? If you're not sure, don't worry, the majority of us aren't. There was a time when the technological evolution seemed to answer questions and solve problems. The technology revolution now seems to pose society's most challenging questions and most perplexing problems. Whether we want it or are ready for it, technology has and will continue to alter the way we work.

THE NEXT BIG THING: JOBS, TECH, DISRUPTION

There's always a next big thing in tech and this year Bio Tech, AI and the Internet of Everything top the list. Unsurprisingly as the next big things become today's reality, brand new jobs to build or support them are created. This year 'Artificial Intelligence Engineer', 'IoT Architect' and 'Chief Cloud Officer' stand out as brand new jobs that as little as five years ago you'd have been forgiven for mistaking as punchlines. Unsurprisingly there is broadly a consensus that the next sector most likely to be disrupted is healthcare, an area you can easily imagine technology offering brand new alternatives. Whatever happens, there will be another next big thing, job title and area for disruption next year; there always is.

I hope you enjoy this year's survey and it helps you gain further insight into this unique industry of ours.

James Hallahan, *Managing Director, Mortimer Spinks*

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THOUGHTS FROM OUR FRIENDS AT COMPUTERWEEKLY

BY BILL GOODWIN



When we asked IT technologists to rate the organisations that do the most good in the world, we didn't expect hacking groups like Anonymous to feature highly in the list.

But technology professionals now see it on a par with the electronic signals

intelligence agencies, GCHQ in the UK and the National Security Agency (NSA) in the US.

This was one of the odder findings in the Mortimer Spinks/ComputerWeekly Technology Industry Survey 2016.

More than 5,000 technology professionals took part in this year's survey – now in its fifth year – which provides a unique snapshot of life and work in technology.

GOOD NEWS ON SALARIES

On the whole, the technology industry looks in good shape. Most permanent IT professionals have seen their salaries rise over the past four years, and this year too, and 15% are reporting pay rises of more than 10%.

Technology is increasingly a boardroom issue, but it's the IT professionals who are working on the technology coalface, rather than the CIOs or managers, that have seen the biggest pay rises – experts in user experience, developers, testers and software engineers.

Industries such as advertising and PR, retail and travel – which are investing heavily in social media, mobile apps, analytics and ecommerce – have offered the biggest pay rises.

There are signs that things are picking up for contractors too. Over the past four years,

the majority have reported that their rates have stayed the same. This year, over 40% of contractors have seen their rates go up, and 20% by more than 10%.

HOLDING ON TO YOUR STAFF

One thing that is clear from the survey is that people do not stay with their organisations for their salary. The way companies treat their employees is far more important. There is a clear correlation: the more frequently employees feel treated in a positive way by their employers, the more likely they are to stay.

For the majority of IT professionals, being surrounded by good people and having interesting and challenging projects are the things that keep them happy and productive at work. Open and honest communication between colleagues is also high up the list of priorities.

This is something companies will need to act on as the employment market picks up. Nearly a quarter of IT professionals are actively looking and applying for jobs, and nearly 30% are keeping an eye on the market.

This year, 65% of employees say that they will be looking for a job outside their current organisation to progress their career.

Over the past year, there has been a change in where IT professionals most want to work. Working for a tech-based start-up is still top of the list. But this survey reveals that more people are looking to work for technology suppliers this year than in the IT departments of non-tech companies – a first for the survey.

As organisations move more of their in-house technology to cloud services companies and innovative start-up companies, it's a good bet that this trend will continue.

WHERE ARE THE WOMEN?

There is still much to do to attract more women into the IT profession; the average percentage of women in technology teams today is about 14%. The numbers have fallen over the last decade despite a plethora of industry and government initiatives, including an industry-wide initiative in schools, Computer Clubs for Girls, which aimed to enthuse youngsters about the possibilities of technology.

TECHNOLOGY – A FORCE FOR GOOD

Linux still tops the list of the technologies that participants feel are doing the most good in the world, reflecting most technologists' feeling that open-source software is not only more democratic, but also more secure and more reliable than proprietary software.

Google comes in second place, but surprisingly its parent company, Alphabet, ranks low down the list. Perhaps people simply haven't got to grips with Alphabet's focus on driverless cars, robotic dogs and delivery drones.

The anarchist hacking group Anonymous appears to have won some sympathy when it declared war on ISIS and closed down and published details of 800 email and social media accounts linked to the terrorist organisation.

The group has also threatened cyber-attacks against North Korea, in an operation calling for democratic rule, an end to its nuclear programme and uncensored internet access.

While the popularity of anarchist hackers has risen, the intelligence agencies meanwhile have seen their popularity decline over the

last three years, as the fall-out over Snowden and the uncertainty over the future of 'safe harbour' continue.

Perhaps it's not surprising then that GCHQ recently stepped up its own profile-raising exercises, by chalking recruitment advertisements on the streets of Hoxton in London.

Over the last three years, companies have become more cautious about how they store their data, in the light of growing awareness of surveillance capabilities of all governments.

The number of IT professionals who say they are concerned about, or have changed their behaviour online as a result of, government surveillance has increased each year and now represents nearly two-thirds of our sample.

Almost half of technology professionals use data encryption of some sort, and a quarter use encrypted email. A small number also use secure operating systems and secure internet browsing services such as TOR.

Despite all the strategising, many companies are only just beginning to get to grips with big data. When it comes to next year, cloud, enterprise software, security and mobile technology are higher priorities for investment.

Faith in technology knows no bounds, however. Most of the technologists in our survey believe that one day computers could learn how to be better artists than people, perhaps eventually exceeding painters like Monet and Picasso.

A quarter would go as far as having their smartphones embedded into their body. Now there's another odd thought.

THOUGHTS FROM OUR FRIENDS AND SPONSORS AT SKILLS MATTER

BY WENDY DEVOLDER



The UK is a nation powered by a fast-paced tech industry and the amazing growth we've seen across the sector in recent years has been driven by incredibly talented and valuable software engineers. There are a staggering 12,000 more digital

technology businesses in London alone since 2010¹ and many emerging enterprises are springing up across the UK to challenge London as the front-running hub of the digital industry. There's never been a more critical time to understand the opinions and insights of the engineers who power these small and large enterprises in order to maintain and expand on this growth for years to come.

Having been at the centre of the London tech scene since 2003, we've seen at first hand how the tech scene has evolved. We've grown from a small group of passionate engineers in London to a 60,000-strong community of developers from across the UK and the globe. Our members represent the full spectrum of technical roles and industries and we've certainly learnt a lot about top tech talent over the years thanks to the valuable insights we've gained from our members.

It's no surprise to us to see that permanent salaries for technical roles have increased for more than 50% of respondents for the

fourth year in a row. In our community a good salary is assumed and an annual bump almost guaranteed, so attracting top talent now requires more than good old-fashioned pay cheques. It's a matter of creating an attractive work culture. Our members chose to join companies with smart teams and agile practices. Innovation must be encouraged within engineering teams and training opportunities offered to help employees crack complex engineering challenges.

But attracting top talent is just half the challenge: retention can be just as much of a hurdle. According to research by Oxford Economics, the costs associated with hiring and training new staff versus that of retaining existing talent amounted to more than £1.8 million sector-wide in 2014.² We're pleased to see this year's survey results show a direct correlation between those who feel 'positively surprised' by their employers and those who aim to progress their career by climbing the ladder within their current company structure. It's clear therefore that creating and maintaining a good culture and encouraging the learning and sharing of skills is key to achieving both short- and long-term innovation.

For us, innovation in software engineering has always relied on two fundamental principles: a supportive community and constant opportunities to learn and share with others. With three-quarters of respondents citing 'good people' and 'interesting and challenging projects' as the most important ways to keep them happy and productive at work, it's time for employers to start thinking this way too.

1. FT.com, Barney Thompson, London tech hubs evolve to challenge Silicon Roundabout. June 16, 2015

2. Oxford Economics, HR Review. Available at: <http://www.hrreview.co.uk/hr-news/recruitment/it-costs-over-30k-to-replace-a-staff-member/50677>

SNAPSHOT



21%

of current CTOs
didn't go to
university

54%

of **permanent** employees and

42%

of **contractors** saw an

increase in their pay in the last 12 months.

People working in **Design/UX** saw the **biggest**

increase in pay, with **67%** seeing a
pay rise in the last 12 months.

CEOs saw the **least increase** in remuneration,

with only **35%** saying they'd received
an increase in the last 12 months.



35

The **average number of people**
in a technology department



14%

of the average technology
department are **women**.



Construction/engineering is the
sector with the **lowest percentage**
(**9%**) of **women** in the technology
department.

14%

is the average amount of time
employers **allow their technology**
teams to innovate.

47%

of technology professionals believe
they should be **collaborating with**
the marketing team.

65%

of technology professionals believe they need to **leave their current role** in order to **progress their careers**.

55%

of technology professionals say **'tech-based start-ups'** are their **destination of choice** if they were to move jobs.

37% of businesses have a strategy in place for social.

60% have a strategy in place for cloud.

51% will be investing in new software over the next 12 months.

52%

of technology professionals say **GCHQ/NSA** are **good for the world**.

48%

of technology professionals say **hacking organisations like Anonymous** are **good for the world**.

41%

say they **don't know** if **institutional/governmental regulation** of the internet is a **good thing**.

26%

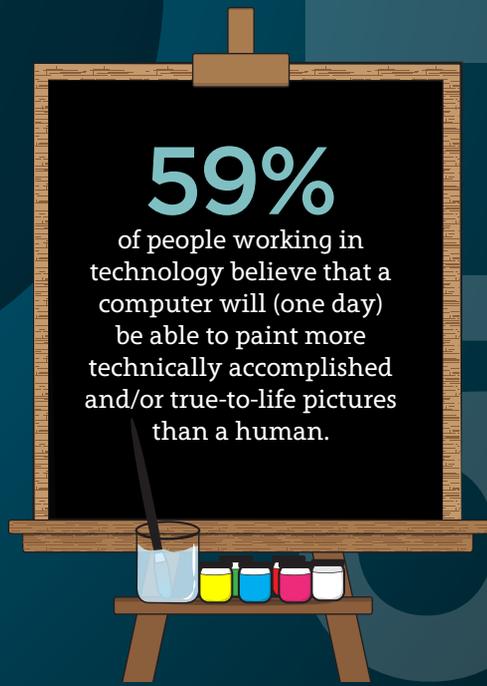
of people working in technology use **encrypted email**.

73%

of participants believe that **security is being sidelined** for better **customer experiences**.

59%

of people working in technology believe that a computer will (one day) be able to paint more technically accomplished and/or true-to-life pictures than a human.



THE INDUSTRY

YOUR BACKGROUND

There are industries where a person's education can prohibit them from progressing in or even entering employment. There are disciplines that can really only be taught by a trained, experienced and licensed teacher. Technology is not one of those industries. Two people's routes into technology rarely look the same; because of the industry's relative youth, communal learning and variation, there are an infinite number of ways to find yourself sitting next to someone else doing the same job as you.

But how does your education affect where you are today?

Figure 1. Percentage of people that didn't go to university

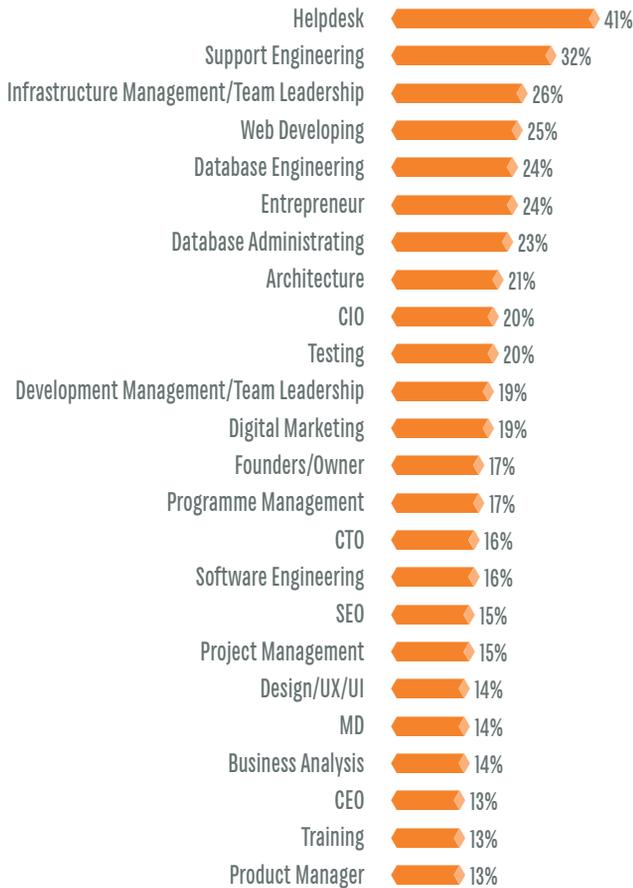


Figure 1 shows us the percentage of people who did not go to university, broken down by job roles. You can see that there is not a clear correlation between whether you went to university and what level of seniority you are at right now. The only trends that do appear to be worth mentioning are that two of the more people-focused disciplines in the technology industry – support engineering and helpdesk work – have the highest proportion of people who didn't go to university. The next observation is that more than 20% of architects and CIOs didn't go to university, both above the industry average of 20%.

YOUR PAY

As the world becomes more dependent on technology, the number of roles for technology professionals is increasing. The demand is increasing at such a rate that the number of skilled, trained and experienced people to do these new jobs is less than the number of opportunities. This has had a profound effect on your pay over the last few years.

Let's start with the basics...

Figure 2

Permanent salary change



Contract day rate change



From Figure 2 you can see that there has been an unrelenting increase in permanent salaries and contract day rates over the last four years. This year, 54% of permanent technology professionals and 42% of contractors saw their remuneration increase. Fifteen per cent of permanent staff and 19% of contractors saw it increase by more than 10%. This is impressive in and of itself, but perhaps more impressive is that this has been happening for four years in a row.

Figure 3. Salary change by job role

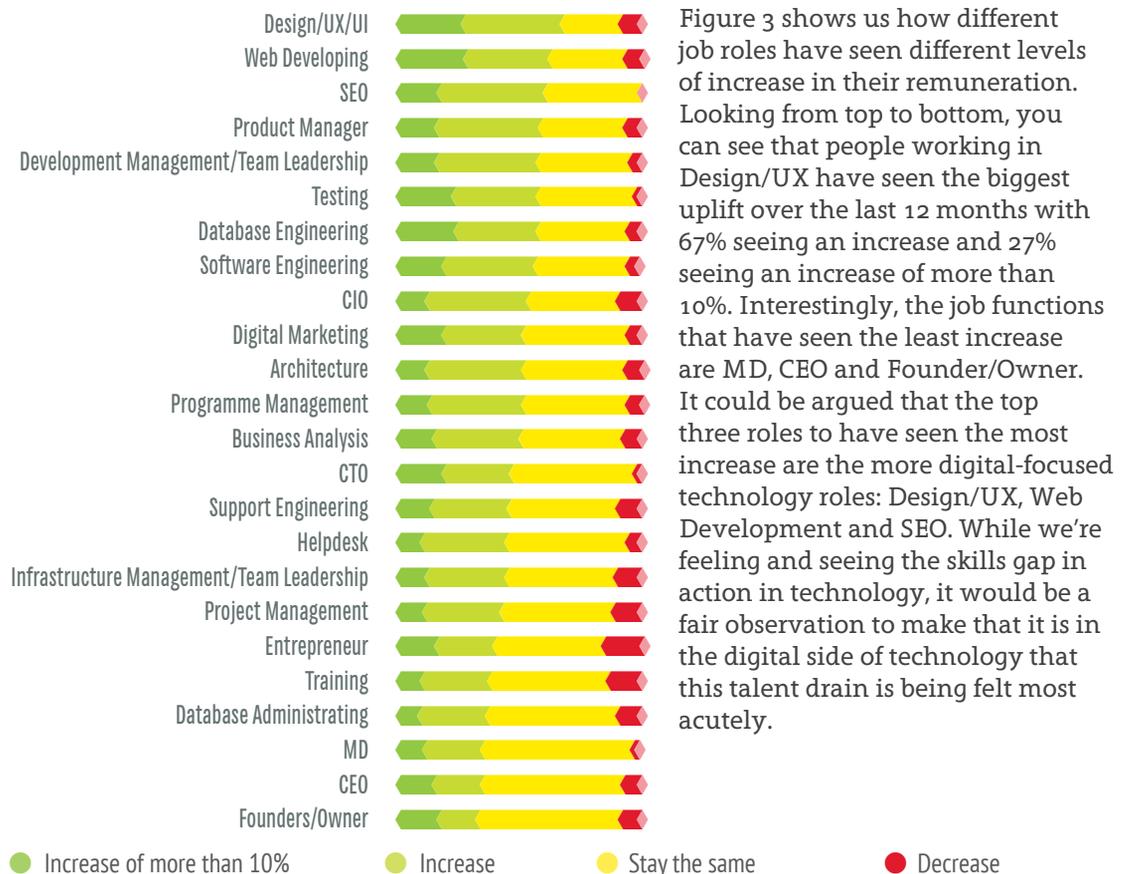


Figure 3 shows us how different job roles have seen different levels of increase in their remuneration. Looking from top to bottom, you can see that people working in Design/UX have seen the biggest uplift over the last 12 months with 67% seeing an increase and 27% seeing an increase of more than 10%. Interestingly, the job functions that have seen the least increase are MD, CEO and Founder/Owner. It could be argued that the top three roles to have seen the most increase are the more digital-focused technology roles: Design/UX, Web Developing and SEO. While we're feeling and seeing the skills gap in action in technology, it would be a fair observation to make that it is in the digital side of technology that this talent drain is being felt most acutely.

Figure 4. Salary change by sector

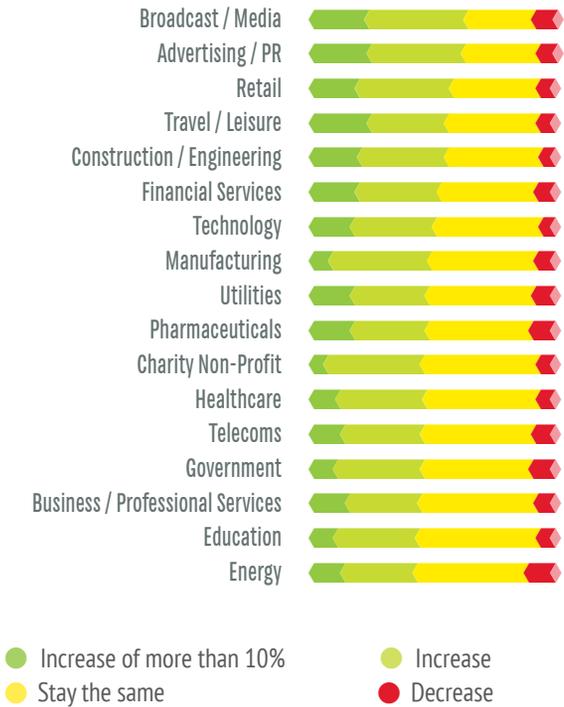


Figure 4 shows us which sectors are seeing the biggest increases in remuneration. You can see that Broadcast/Media, Advertising/PR and Retail have seen the biggest increases in remuneration in technology. At the other end of the spectrum you can see that Energy, Education and Business/Professional Services have seen the least. It could be argued that as you read from left to right, from the biggest increases in spend on technology talent to the least, the sectors become less dependent on technology. Could it be that the sectors on the right-hand side are the sectors that are ready to be disrupted?

Regardless of what job you do or what sector you work in, if you work in technology then the likelihood is you've seen an increase in your remuneration in the last 12 months. The same could have been said in 2014 and 2013 for that matter. Even if you're not a designer working in the Broadcast/Media sector, you're still working in the right industry and as technology continues to grow so will your value.

CASE STUDY



Name: **Louise Elliott**
Job title: **Development Manager**
Company: **Leeds Building Society**

If you could have your smartphone permanently and discreetly attached to your body, would you?
Absolutely not!

Do you believe a computer will ever be able to paint more technically accomplished and/or true-to-life pictures than a human?

Yes. Technically accomplished and true to life are probably things computers could be good at. Creativity and subtly conveying a message in a new and meaningful way seems far less likely. I'm not sure why we want to make computers be good at things which humans are good at. I think we should celebrate the differences and work to enable computers to excel in ways which humans never could.

What's the next big thing in tech?

Whatever I put here will be proved to be wrong within the next 12 months so I'm not even going to go there!

In the next 12 months what is the number 1 priority for your business?

The ability for our members to interact with us through whichever channel they prefer and for an integrated experience as they shift between channels. This involves a large number of changes within our area to move us forward in the IT Strategy.

How have you found hiring into your teams?

We have been very successful with our hiring over the last year - we've filled all of our vacancies and have some really high-calibre new colleagues. In addition to this, we have an excellent team in place and I've been very pleased to have been able to promote internally for a number of key roles recently.

Have you had any issues with retaining your staff?

No. Many people within the IT department have been with the organisation for a long time and those who join don't tend to leave. In the last 18 months only one person has left my team. Engagement is particularly high in our department and the Society recently received Best Companies accreditation for the first time. Having said that there are lots of areas where we could improve and it is definitely a work in progress.

Do you have any top tips for developing a hyper productive team?

The minute you start to believe you are a hyper productive team you start to lose your productivity. The job is never done. Continuous improvement is essential; we are always looking for small changes we can make which will improve the way we work and what we achieve. It's very important to put time aside to allow these improvements to be made. Combining this approach with empowerment and high engagement is essential.

What in your experience are the most important factors to keeping your staff happy and productive?

I'm a great believer in treating people as adults. The best people to decide how to approach a problem or what tools will make a difference to their productivity are the people who do the work day to day. My job is to enable them to do that and to ensure that they have time to consider how to improve our current ways of working.

YOUR TEAM

What about your teams?

Figure 5. How would you describe your seniority?

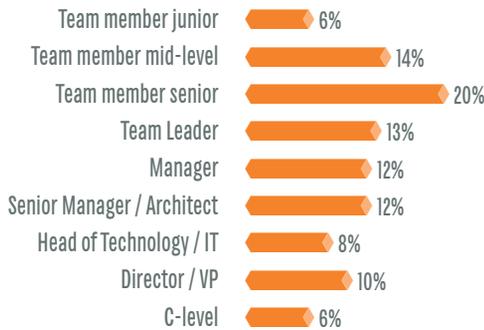
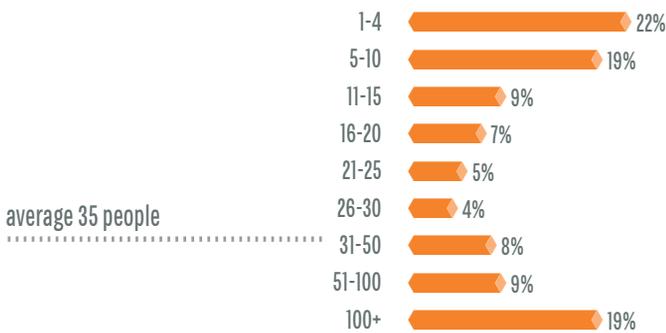


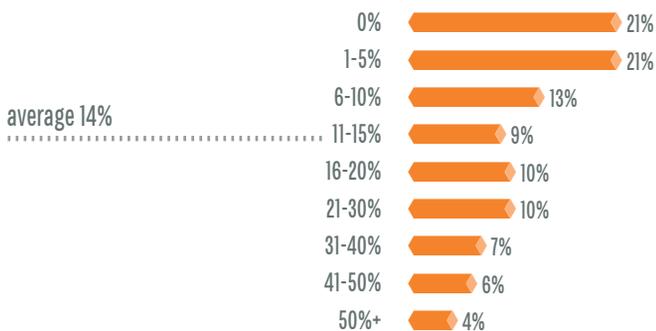
Figure 5 shows us the answers to the question ‘How would you describe your level of seniority?’ but it also helps us to get a picture of what the average technology team looks like. Around 40% consider themselves to be team members of differing seniority, 13% as Team Leaders and 5% C-level. But what is the average size of a technology team? Have a look at Figure 6.

Figure 6. How many people make up your technology department?



You can see from Figure 6 that the average size of the technology team is 35 people. However, more than 20% of participants said their team was between one and four people.

Figure 7. Approximately what percentage of your technology department is female?



You can see from Figure 7 that the average technology team is made up of 14% women. It doesn’t matter what piece of research you read, you will find that the percentage of women in technology teams is cited as between 12% and 18%. We’ve been conducting research on the subject of women in technology and over the last five years we’ve discovered it to average at about 13.5%. Have a look at Figure 8.

Name: **Andrew Daniels**
 Job title: **Managing Director**
 Company: **Degree 53**



If you could have your smartphone permanently and discreetly attached to your body, would you?

No.

Do you believe a computer will ever be able to paint more technically accomplished and/or true-to-life pictures than a human?

No.

What's the next big thing in tech?

With the work that Tesla, Google and Apple are doing, I think the next big thing in tech is going to be cars.

In the next 12 months what is the number one priority for your business?

Next year, Degree 53 will be three years old so our start-up days will be behind us. As a start-up you make mistakes that teach you how not to do things in the future. With all we've learnt, my number one priority for 2016 will be driving efficiency in our business processes. Whether that's in our sales, project or account management, design, development or anywhere else, fine-tuning the business will lead to our growth in 2016.

How have you found hiring into your teams?

It's common knowledge there is a digital skills shortage. As a 50-person digital and creative agency we're a people business so finding someone who is the right fit for our team and culture is very important to us. This means we're very selective on who we bring in and this can make hiring challenging, because you can find someone who potentially might have the right skills but if they don't fit we won't hire them. This year has been particularly difficult finding developers with the right skills, attitude and team fit.

Have you had any issues with retaining your staff?

Historically we've had no problem whatsoever but this year we've seen salaries being pushed up by big companies in our area, who are paying over the odds to bring people in quickly. This has led to people getting salary offers that they can't refuse. I don't like to counter people who hand their notice in as I feel like they've already made their mind up, but even if I did as a small business we just can't compete with big companies' wallets. To counter this, what we have to work hard on is having a culture and environment that these big companies can't offer, which makes our staff not want to leave.

Do you have any top tips for developing a hyper-productive team?

An engaged team is a productive team so you should always look for new ways to make that happen. An online tool that has done wonders for us is 15Five. How this works is every Friday each team member fills in a quick questionnaire about the week. This then gets reviewed by their line manager and me. The questionnaire should take no more than 15 minutes to complete and no more than five minutes for the line manager to review, hence the name 15Five. This system allows the employee to raise any questions or concerns they might have and management to act on them straight away, meaning all potential issues are resolved almost immediately.

What in your experience are the most important factors to keeping your staff happy and productive?

The most important thing is to realise that everyone is an individual and that their drivers to make them happy and productive can be different. For example, some people like to have close input from their manager, they crave reassurance they're doing the right job and praise to keep them motivated. But to other people this might feel like you were micromanaging them and didn't let them get on with their job. If you can find out the drivers that make each individual staff member happy and productive, and then use these to get the best out of them, you're sure to have a great team that will walk through walls for you.

Figure 8. Approximately what percentage of your technology department is female broken down by sectors?

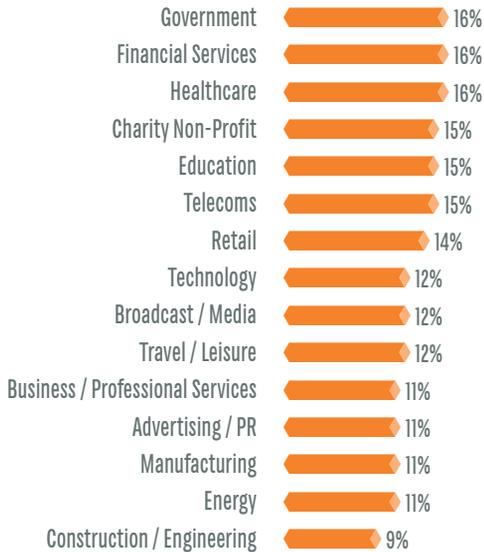


Figure 8 shows us the average number of women in technology teams across the different sectors. You can see that while there may be pockets that are doing slightly better at bringing gender diversity into their technology teams, across the board there are huge strides to be made to balance the teams.

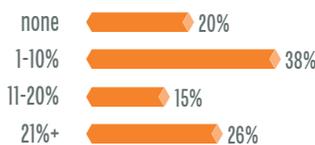
We know now, and have known for many years, that businesses with a more diverse workforce outperform those without. Clearly we still have a long way to go to get our technology departments in a healthier place for high performance. From our five years working in this area we believe businesses need to take a short-, medium- and long-term view on this issue. In the short term there is a huge appetite for cross-training from one department to another and there are some

great success stories of where this has worked brilliantly. In the medium term we've witnessed great success from initiatives such as apprenticeships, and in the long term we, as a collective, have to work with schools and universities to make sure they are engaging their students with the vast array of opportunities technology presents them with.

YOUR EMPLOYER

Earlier on in this report we talked about how the lack of technology professionals in the UK has meant that there are drastic increases in salaries across job roles in this industry. So how are some employers retaining the staff they've got, and growing at impressive rates? In this section of the report we've identified some key factors that appear to have a major impact on how long you plan on staying at your current employer, and even your mood!

Figure 9. Average amount of time allowed for innovation is 14% of working week



Let's start with a headline theme of every piece of research we've produced: innovation. Looking at Figure 9, you can see that the average amount of time allowed for innovation in the technology industry is 14%. Last year we concluded the section on innovation by saying 'even if you only get half the returns shown in this survey, trusting, or even better encouraging, your technology teams to take 20% (or more) of their time to innovate will be more than worth it – it will potentially revolutionise your business.' In 2016 it's no different: people who are allowed time to innovate are happier at work, more likely to stay, more likely to believe there are career opportunities for them within the business, and happier.

Figure 10

When was the last time you felt let down by your current employer? *Within the last:*



When was the last time you heard of something in your business that surprised you for the better? *Within the last:*



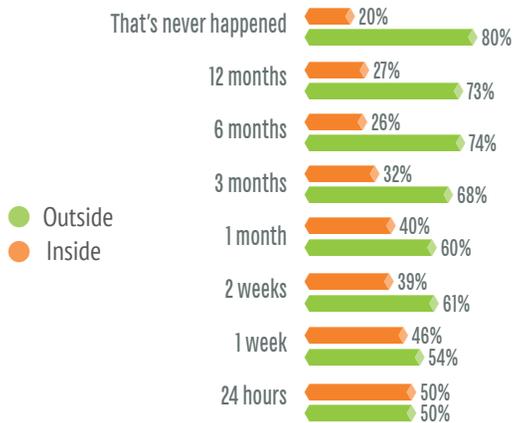
Figure 10 shows us that there is a relative balance between how often people working in technology feel let down by their current employer and how often they feel positively surprised by them. It is not completely even and there are positives for employers to take away – for example, almost a third (30%) say they have never felt let down by their current employer compared with almost half that number (16%) saying they've never felt surprised for the better by them.

Figure 11

'When was the last time you felt let down by your current employer?' shown alongside 'In order to progress your career is your next job likely to be inside or outside your current company?'



'When was the last time you felt positively surprised by your current employer?' shown alongside 'In order to progress your career is your next job likely to be inside or outside your current company?'



But have a look at Figure 11 and you can see that how often people feel surprised or let down has a major bearing on whether they feel they have the opportunity to progress inside their current company.

You can see that 77% of people who felt let down by their current employer within the last week and 84% of people who felt let down in the last 24 hours believe they need to leave in order to progress their careers. When you look at all the people who say they've never felt let down by their current employer, it's exactly 50/50 who believe they can progress where they are.

It's the same story when you look at the effect that being surprised by their current employer has on whether or not people believe they can progress their careers inside their current organisation. Eighty per cent of people who say they've never felt positively surprised by their current employer believe they need to leave in order to progress. That number drops to 50% for people who have felt positively surprised in the last 24 hours and 46% for those who felt this way in the last week.

The correlation here is so clear that it's difficult to ignore. For those of you who run technology teams or departments where you're struggling to retain your staff, it may well be worth having a think about when was the last time you positively surprised your team. The good news on this point is that the surprises don't, in our experience, have to be big, costly things. It could be as simple as ice creams on a hot day or hot drinks on a cold day. The point is that it appears to create or add to a culture of support, and crucially progression.

Figure 12

In your organisation, which department(s) does your technology team currently collaborate with?

Which business department(s) do you believe your technology team should collaborate with?



Figure 12 shows us which departments technology teams currently collaborate with most and which departments technology professionals believe they should be collaborating with. There are some unsurprising findings – for example, it makes complete sense that Project Management is the department most collaborated with. It is, perhaps, equally as unremarkable that people believe it should be, as the PMO function is integral to delivery. Perhaps more surprising is that only 37% of technology teams feel they currently collaborate with the 'strategy and change' teams, but when it comes to who they feel they should be working with, just under half (47%) believe this is a key team for collaboration. Interestingly, the story is very similar with R&D: just a third of technology teams feel they collaborate with their business's R&D team, but when it comes to who they should be working with 47% cited them.

Figure 13

Please select which, if any, of the below your company has a strategy in place for



In the next 12 months, what areas of technology will your business be investing in?

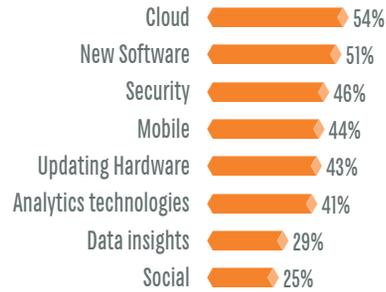


Figure 13 gives us some insights into what's on the agenda of the technology leadership community. You can see that more than 62% of technology teams have a strategy in place for security in their businesses and 60% have a strategy in place for cloud. However, only a third (33%) have a strategy in place for data insights and only marginally more (37%) have a social strategy in place.

When you look at the neighbouring graph you can see that over the next 12 months more than half of technology businesses will be continuing to invest in the cloud and also in new software. Again, social and data insights are bottom of the agenda with 25% and 29% respectively.

An interesting observation about Figure 13 in general is that in many ways you would expect data insights and social to be much higher up the list. If you could run a similar study using the same eight areas of technology and measure the number of pieces of content created about each subject, you might well find the list to be reversed.

Some fundamentals have run through the data we have captured every year: people want to be surprised for the better by their employer; people want a culture that demands autonomy, that fosters – or better still encourages – innovation, that mandates collaboration and (obviously) only uses the latest software.

But is there more to it than this?

CASE STUDY

wellcometrust



Name: **Lorna Jones**
Job title: **IT Procurement & Contracts Manager**
Company: **The Wellcome Trust**

In the next 12 months what is the number one priority for your business?

We have recently reviewed our strategic vision and developed a framework that sets out how we plan to improve health, through three complementary approaches across science, research and engagement with society. We support great ideas and inspired thinking, we bring ideas together to make a difference and we change ways of working so more ideas can flourish. The success of our investments, which we manage ourselves and which fund all the work we do, means we intend to spend up to £5 billion over the five years to 2020.

How will that affect your role?

With IT being one of the biggest operational spends in any business (outside employment costs), my role is critical in ensuring that we obtain value for money across our IT budget. This is not always measured in achieving lowest-cost spend, but we must always ensure that the IT products and services, together with the suppliers we engage with, demonstrate that they are aligned with the Trust's values and strategic approach. Contract management and the effective management of procurement process play a key role in this.

Speaking of which, how did you end up where you are?

After many years in the private sector within various IT operational roles, I decided to diversify and move into procurement. Initially within the public sector, I took some time to find a role that would allow me to continue to use my skills developed in the field of IT, as well as looking to work for an organisation that supported my ethical goals. Finding myself at the Wellcome Trust and being part of an organisation that provides such extensive and important funding into areas that are close to my heart, such as cancer research, is a dream come true.

Do you have any top tips for people thinking of starting a career in technology?

A career in technology isn't just for geeks and programmers. There are many diverse work areas – project management, operational management, support, purchasing, as well as programming and highly technical roles. Technology is exciting and many organisations are now recognising that IT is not just a 'support' function, but an area that provides innovation and inspiration across the business.

If you could have your smartphone permanently and discreetly attached to your body, would you?

Absolutely! My children are constantly nagging me that I am 'too old' for social media – all the more reason to continue to use it! However, I have continued to embrace developments in technology and while we all need downtime and should remember that smartphones have an 'off' button, I'm keen to see how smartphones will continue to evolve and would love to be a human guinea pig for any advancement!

Do you believe a computer will ever be able to paint more technically accomplished and/or true-to-life pictures than a human?

I believe a computer could technically do this – arguably, with mass-produced artwork, this is already being done. However, it's the originality, the emotion, the human error that bring a picture to life. I'm not sure that, even with multiple algorithms to try to randomise a picture and its development, a computer could produce anything other than something that is technically perfect.

What's the next big thing in tech?

I'd like to say that the next big thing will be an equalisation of women and men in technology – the gender balance has decreased over the past few years, and continues to do so. While there are arguments as to why more men than women are drawn towards careers in IT, and a 50/50 split is unlikely, I would like to see more role models out there, encouraging a new generation of Women in Technology who themselves can be a part of the next big thing.

YOUR JOB

We've captured five years' worth of data on this. What truly keeps you happy and motivated at work? Is it working with new, innovative technologies? Free food at work? Have a look at Figure 14 and see what really matters.

Figure 14. What keeps you happy and productive at work?

	Position change since last year	2016	2015	2014	2013	2012
Being surrounded by good people	—	75%	78%	75%	72	74
Interesting / challenging projects	—	75%	75%	77%	74	81
Open, honest and regular internal communications within the IT department	—	71%	63%	64%	65	71
Being part of a company that has an interesting product or service	↑	58%	54%	52%	42	39
Excellent pay and rewards	↓	56%	60%	56%	51	60
Up to date software and hardware	—	53%	51%	49%	52	50
A career development programme with good career prospects	↑	52%	45%	48%	49	51
Flexible working time	↓	51%	51%	48%	41	50
Ability to work from home	↑	40%	37%	34%	30	36
An inspirational C-level technology leader with a strong, positive 'personal brand'	↑	40%	33%	30%	34	38
A fun environment	↓	38%	45%	42%	43	37
Working with Agile Methodologies	NEW	30%	-	-	-	-
Having time set aside on a regular basis to pursue personal technology projects	↓	27%	23%	22%	16	16
Strong role models elsewhere in the IT team from which people can learn	↓	27%	47%	44%	47	49
Strong emphasis on formal training	↓	26%	18%	22%	27	28
Relaxed dress code	↓	25%	24%	19%	19	22
Regular team building activities / away days	↓	19%	16%	13%	15	12
Aesthetically pleasing office interior	↓	16%	16%	14%	11	10
Free food at work	NEW	7%	-	-	-	-

For four years in a row, the top three most important factors for keeping technology professionals happy and productive at work have been the same. For four years in a row, 'excellent pay and rewards' hasn't made the top three; and this year it's dropped a position and doesn't make the top four. Is that because people in the technology industry have seen pay rises so consistently for so long that remuneration has become assumed?

Unequivocally, the most important things for keeping technology professionals happy and productive at work are: being surrounded by good people; interesting and challenging projects; and open, honest and regular internal communication within the technology department. From a technology leadership point of view, there is great comfort to be drawn from the fact that the top three factors could be categorised as cultural.

It is notable that being part of a company that has an interesting product or service has risen up the league table and overtaken excellent pay and rewards. Could this be because of the number of job opportunities open to technology professionals in this market? Is that a product of this time? Is it possible that technology professionals have such a range of opportunities open to them that other factors, like this one, are starting to figure more prominently in their decision-making process?

We mentioned earlier that the top three factors – year in, year out – have been cultural. What this means to people leading teams is that they need to think seriously about how they're communicating with their teams, how often they are switching around the teams to encourage people to work with different people and continue to keep the projects they are working on cycling. All of these things may well take more effort but they are, essentially, cost free and by getting them right you will find yourself leading a happy productive team.

CASE STUDY



infinity works
CONSULTING

Name: **Mat Barrow**
Job title: **Director, Head of London**
Company: **Infinity Works Consulting**

If you could have your smartphone permanently and discreetly attached to your body, would you?

I hadn't realised that it was an option not to be permanently attached to my smartphone! I would definitely like a more discreet attachment though, particularly in the evenings after my wife asks me to put the laptop down and stop working.



Do you believe a computer will ever be able to paint more technically accomplished and/or true-to-life pictures than a human?

Yes, I believe computers are already entirely capable of this; in fact while watching Disney Pixar's *The Good Dinosaur* with the kids last weekend it was very hard to tell whether the opening scenes were CGI or real film recordings. That said, while computers can/will be able to paint more technically accurate and true-to-life pictures than humans, I don't believe a computer will ever be able to paint as well as a human, as the greatest and most famous paintings leave an element to the viewer's interpretation and imagination. Perhaps this should form part of the Turing test.

What's the next big thing in tech?

Unquestionably robotics; bringing together the ongoing proliferation of tech, the Internet of Things and personal access to 3D printing will mean that many more people will be able to innovate with robots in the same way that people did with apps over the last decade. How long until we can say 'there's a bot for that'?! This increased comfort with autonomy will allow for use of robotics in high-risk applications like aircraft engine maintenance or advanced surgery, but also low-risk manual labour, anything from nanobots clearing drains to disposable bots clearing leaves from train tracks.

In the next 12 months what is the number one priority for your business?

Our priority is to grow in a sustainable way while maintaining the great culture and reputation that we have. This is a fine balance between fast growth at the cost of quality and relationships between the team, and growing too slowly for the business to be feasible.

How have you found hiring into your teams?

Hard, though this is as much self-imposed as it is driven by the market! Finding great people who share our passion but also like to enjoy themselves is a tough challenge. Add to the mix that these are also the people most highly valued by their current organisations and we need to have something extra. We've found that referral from existing team members helps a lot; it gives us confidence in the people we're recruiting, but it's also easy for our team to tell their old friends and colleagues about the work they do and the things we do outside work – not just coffee, drinks, lunch and dinner, but also events like 'Tough Mudder', 'It's a Knockout' days, 'Crystal Maze' evenings, tech talks and other special events. We find that the recruiters that know us best do the best job of helping us recruit as they know the sort of people as well as the sort of skills that we look for.

Have you had any issues with retaining your staff?

No, as far as I know, we've only had one person leave out of 70+ who have joined. He left to relocate for personal reasons, but we've managed to arrange remote working for him, so he's just about to join us again. We pride ourselves on offering our people a great place to work and learn, and we still have the buzz of a small and young company despite also having some of the benefits of being a medium-sized company.

Do you have any top tips for developing a hyper-productive team?

Unquestionably it's about trust between the team members; not just the delivery lead trusting that an engineer will do a good job delivering a story, but the engineer trusting that the BA has got the story right, that the product owner has been appropriately challenged, that the scrum master and delivery lead will support the team and that the tools will work as you need them to. Of course you can't just 'get' trust, it has to be built through the relationships and culture that we foster, and by hiring great people who take pride in their work. Growing while maintaining this goes back to our number one priority for the business.

This trust allows much more flexibility and where possible we allow people to work how they prefer; if we're offsite and an engineer wants to work 40 hours in four days then have Friday off, then we try to accommodate this. If people want to work remotely, we put the tools in place to support this and make it happen, trusting that they will complete the required work.

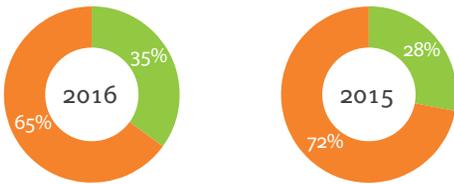
What in your experience are the most important factors to keeping your staff happy and productive?

Challenging and empowering staff is a big factor for us; making people responsible for something that stretches them but also gives them the opportunity to influence something tangible – not just team velocity, but end-user experience or customer perception or even business development. Another big factor is community; despite being geographically spread, we still hold cross-site events and even stream events from one site to another. We're still well within Dunbar's magical number of 150 personal relationships, so everyone within each office knows each other on first name terms, and even across offices most of us know each other well enough to chat about wives, partners, kids and interests. The final, and most important, factor is enjoyment; it's a tired cliché, but we do really enjoy the work that we do and the people that we work with. There is an element of humour to everything that we do, and the directors are the first to indulge in a little self-deprecation to lighten the mood.

YOUR CAREER

In the technology industry there is a sense that the grass is always greener somewhere else: that there is a start-up in California doing things you wish you could be doing, or that your competitor has just migrated to Drupal 8 and how much better it would be if you could use that. There is a sense in the industry of people building their CVs, more so than in other industries, so it's not uncommon to have a conversation with a technology professional who will say 'I need to go and get experience working in a highly transactional web environment'. This, coupled with the huge number of opportunities available to people working in technology, means that building a career you're proud of is no mean feat.

Figure 15. To progress your career, is your next job more likely to be inside or outside your current company?



As mentioned earlier, and as has been the case year on year, the majority of people working in technology believe they need to leave their current company in order to progress in their career. However, 65% is a decrease from the year before when 72% of participants said so.

Figure 16. How active are you in looking for a new role at the moment?

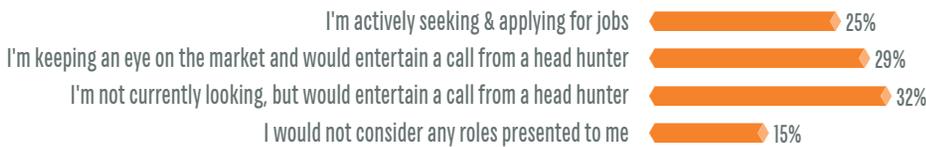
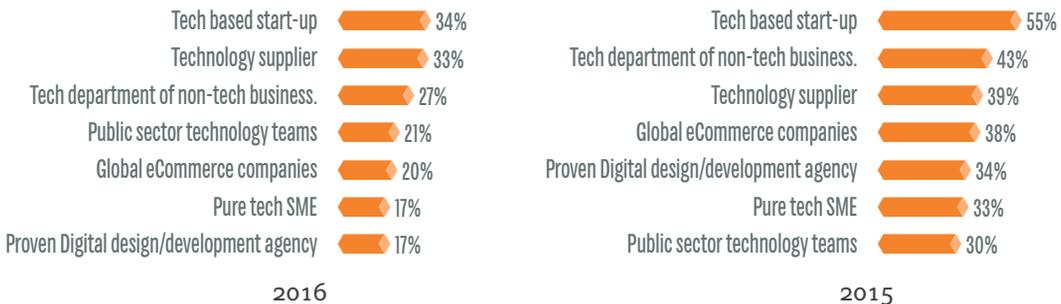


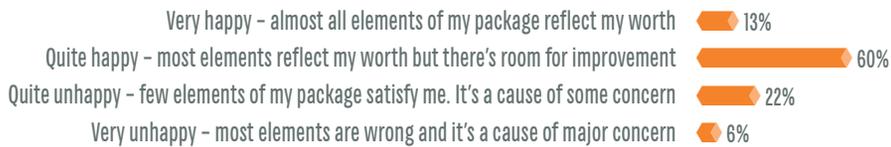
Figure 16 shows us how actively technology professionals are looking for work now. For the first time in five years, the majority have selected 'I'm not currently looking'. It could be argued that because of the supply and demand issue we have discussed earlier in the survey, people no longer specifically need to go and actively look for jobs. With the war for talent raging, it's much more usual for technology professionals at all levels to receive headhunting calls. In the past this was an activity reserved only for the most senior professionals. Figure 16, perhaps more than anything else in this report, shows us the extent to which the candidates in the recruitment market are the ones with all the power. Until a solution exists to the skills gap, it will get harder and harder to hire.

Figure 17. If you were to move jobs, which type of business would you prefer to work in?



You can see from Figure 17 that, for the second year running, the destination of choice for technology professionals in their careers is to work for a tech-based start-up. When we started doing this survey in 2012, working in start-ups was the least popular response to 'Where do you most want to work?'. For the last two years it has been the most popular. Over the last five years the majority of people working in the technology industry have had pay rises, so has this continued financial backing left the industry feeling secure enough to invest some of their time in businesses with no track record?

Figure 18. How satisfied are you with your current remuneration package?



Sixty per cent of people working in technology are quite happy with their current remuneration package. Twelve per cent are very happy with what they are paid. Building your career in technology in this market is difficult because of the number of opportunities you are presented with. Two years ago we wrote about the culture of dissatisfaction that was growing among technology professionals – from the data in 2014 a real sense of the grass always being greener came through. This year it feels that there is still a sense of dissatisfaction but that it is more passive than active. It's a good time to be building a career in technology; people doing so realise that, but it's not without its challenges.

THE TECHNOLOGY

GOOD FOR THE WORLD

For five years, we've collected data on how the technology industry views some of the biggest technology organisations/movements in the world. A look back at this information shows that there really hasn't been a huge amount of change in the last half-decade; this is surprising considering how much has changed in these organisations over that time – new CEOs, products, visions, etc. Do people's views of certain brands ever truly change?

Figure 19. In your opinion, are these organisations/movements good for the world?

		2016	2015	2014	2013	2012
Linux	—	92%	89%	92%	88%	92%
Google	—	88%	88%	87%	88%	93%
LinkedIn	—	87%	86%	86%	85%	85%
Tesla	NEW	81%	-	-	-	-
Microsoft	↓	81%	75%	76%	78%	80%
Samsung	↓	73%	74%	77%		
Apple	↓	74%	74%	74%	73%	77%
WikiLeaks	—	70%	64%	60%	61%	59%
Twitter	↓	68%	68%	60%	67%	59%
Alphabet	NEW	66%	-	-	-	-
GCHQ / NSA	↓	52%	54%	59%	-	-
Facebook	↓	58%	52%	52%	55%	53%
Hacking organisations like Anonymous	↓	48%	45%	41%	41%	30%

Interestingly, there are a couple of additions to this year's list: Tesla and Alphabet. You can see that Tesla has entered the league with 81% of participants saying 'yes, this organisation is good for the world', scoring the same number as Microsoft. However, Alphabet – the holding company for Google and its sister companies – scores significantly lower than this, with just 66% of participants saying it is good for the world.

Interestingly, the addition of Alphabet this year enables us to compare it with Google. Google scored 88%, as it has done (give or take) for the last five years. So why would what is essentially the parent company score so much lower on whether or not they are good for the world? Does this perhaps mean that the technology industry is sceptical about the motivation behind the creation of Alphabet? Is this movement, from Google to Alphabet, suspicious?

One movement that is truly on the move is WikiLeaks who, if it hadn't been for the new additions to the table, would have been the only one to climb above Twitter, with 70% of people working in technology saying it is good for the world.

There appears to be a trend: if you look at the data on WikiLeaks over the five years, you can see it has climbed in popularity by 11%. Although they are bottom of the table and always have been, hacking organisations like Anonymous have actually climbed in popularity by 18% over the five years. While we've only been tracking opinions on them for three years, you can see that over this period the popularity of GCHQ/NSA has dropped by 7%.

CASE STUDY

Name: **Sue Welland**
Job title: **Founder**
Company: **Flendr**



What do you believe is the most important factor to the success of a tech start-up?

I wish there were a single factor – it would be easier to create big/successful businesses. There's more alchemy than that. It's the catalytic mix of people and circumstance that creates the magic:

Great team. Starting and building new business is a tremendous high and massively satisfying – no two ways about it. But it's also a hard slog, massively risky and full of stress. What's new with competition, where's the audience, will the money keep you going, does the product work... and on. Sounds obvious. But I've met way, way too many people 'desperate' to join a start-up, yet completely unprepared for 'doing' without being set an agenda by someone else, for taking a pay cut in return for shares, for uncertainty. So by 'great team', I mean people who work well together, who are determined, committed and skilled and who – as a group – are hungry and energetic enough to power through the seemingly insurmountable challenges they'll be faced with.

Good product. I fundamentally believe that a fantastic product in the wrong hands will be a flop. But a poor product in great hands won't be any more successful. Unless of course it can be transformed – because the customer will find you out, and reputation is all in our online, social world. You need a good product idea. There's symmetry between the puff valuations of some Fintech businesses now and the .com boom I lived through (a century ago!) – all very exciting, but I don't believe in developing anything which doesn't have an authentic, sustainable value.

Funding. You need some level of funding to get an idea going. Doesn't have to be huge, but no money ever is another stress and how do you make anything happen? I've started every business with no funding other than resting on savings/a loan to cover living expenses. We didn't look for VC funding until year two for my first business. With the second, we had big funding after nine months when we had a good business plan and strategic big brand partners. My current businesses have had angel funding for product development from day one, though no-one with shares receives salary.

Luck. There's a truth that you create your own luck. Put in the hours, make the connections, do the research. But I've always felt that one or two big things have happened to propel what I've been working on. Joe Strummer, for example, meeting my Future Forests co-founder around a campfire at Glastonbury and getting excited about how we were tackling climate change. It led to the music industry adopting us and helping to build the (now named) CarbonNeutral Company into an international big action business.

Our findings show that tech start-ups are the most sought-out place to work for technology professionals. Why do you think this is?

To be honest, I think there is a level of false expectation: a sense that the focus is on creativity; there's a pot of gold in sight; there's more freedom to be broad. It can be all of those things of course. But – just to mention it again – it's also about everyone pulling hard together. What a start-up offers is an environment to deploy your skills without spending half your time on inter-company politics, to make something better by working with others, to do stuff 'out of the box' rather than just talk about it. You will find yourself compromising because the commercial reality means you have to; you won't have loads of people to delegate to. But – of course – that's the thrill of it. It's literally you that can move the dial, you that can bring about revolution.

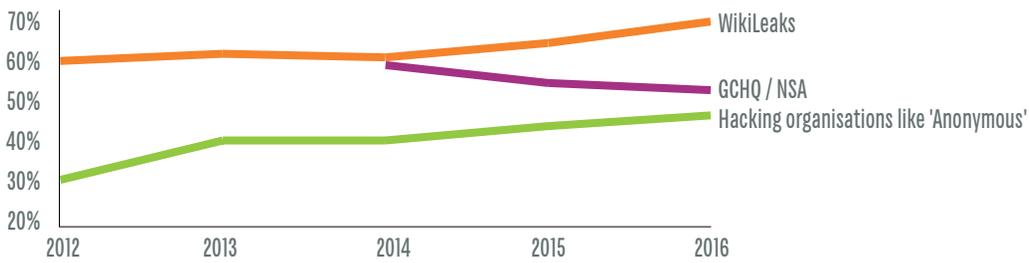
There are numerous examples of successful tech start-ups over the past five years, yet the reality is that the majority tech start-ups fail. Why do you think this is?

They didn't get the alchemy right: team/product/funding/luck.

What do you think is the next sector/type of business to be 'disrupted'?

We're working on two propositions right now actually which are disruptive in completely different sectors. But I can't let the cats out of those bags yet. Something we've looked at before in significant detail is insurance. Research done, website created, algorithms built – but decided timing wasn't right. I've seen some propositions bubbling up, with groups getting together and pooling premiums. I like the concept of democratising insurance but I haven't seen anything (yet) which feels like a winner. The other area I'd like to see something happen in is solar storage and some sort of domestic trading system. Good for the planet but complex and not an immediately obvious commercial case. Potentially good territory for smart entrepreneurs.

Figure 20. Are WikiLeaks, GCHQ and hacking organisations like Anonymous good for the world?



Have a look at Figure 20. If the trend over the last three years continues, there will be a point in 2017 when more people think hacking organisations like Anonymous are better for the world than GCHQ/NSA. There have been numerous leaks over the last three years giving us some more insights into the level of monitoring of our personal information by GCHQ/NSA. It could be argued that this has caused a drop in popularity in the tech community.

START-UPS

There's something mystical about start-ups: it may be simply that they get a disproportionate amount of coverage in the press when raising funds, or it may be that they are the chief disrupters of traditional industries and when you take market share from big traditional businesses people tend to notice. It could be argued that there is more at play here than just these factors. It may be that because the technology industry has given birth to some of the most exciting businesses/products the world has ever seen (and in a relatively short space of time) everyone in this industry is searching for the next 'big' thing.

We know from three years' worth of previous data that on average about half of the technology industry has been involved in a start-up at one point in their career. So, given that half the industry has got experience in these environments, what insights can they share on why they succeed or not?

Figure 21

What do you believe is the most important factor to the success of a start-up? Why do you believe most unsuccessful start-ups fail?

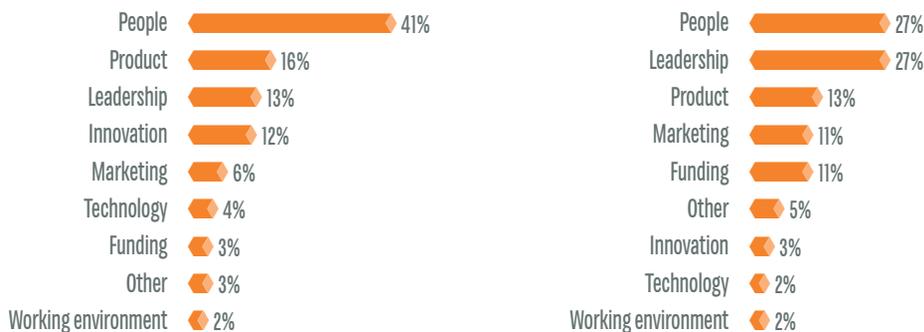


Figure 21 shows us that technology professionals believe the top three most important factors influencing the success or failure of a start-up are the people, the product and the leadership. It also shows that 41% of people working in technology believe the most important factor influencing the success or failure of a start-up is people.

Interestingly, Figure 21 shows us that while 13% of participants believe leadership is the most important factor to the success of a start-up, more than a quarter (27%) believe that it is the reason most unsuccessful start-ups fail.

It is also interesting to note that only 4% of participants believe technology is the most important factor influencing the success of a start-up and even less (2%) believe it's the reason most start-ups fail.

Surprisingly, considering this is a survey of more than 5,000 people who live and breathe technology every day in their personal and professional lives, it seems that the story to come from their insights on start-ups is that no matter what, you have to have the right people on board. Without the right people, technology is just code.

CASE STUDY



Name: **Matt Ballantine**
Job title: **Angel of Disruption**
Company: **stamp London**



What do you believe is the most important factor to the success of a tech start-up?

Being in the right place at the right time. Half a good idea is better than none at all, but people shouldn't get hung up on the idea that the best idea is what's needed. Far better to be able to be adaptable to the world (and your customers) while holding on to a vision of some sorts. Facebook developed its purpose in life over many years. As did most successful companies.

Why do you believe most tech start-ups fail?

Because that's how the start-up ecosystem works. It's a relatively low-risk way for capital to be deployed to test a bunch of ideas, from the outlandish to the sensible, and to see which will fly. The failure rates are enormous, and that's why any big corporate who plays at being a start-up in any way other than late-stage acquisition is being disingenuous. Most start-ups fail. That's a good thing.

Why do you think start-ups have become the number one 'most sought-out place to work' for technology professionals?

I'd question that assertion, I'm afraid. Most of the technology professionals I know wouldn't be seen dead in the world of start-up, and it would probably kill them anyway. As for those who do want to be in that world – for some it's for the thrill of it or the sense of personal control or purpose, some because the corporate world doesn't suit them, and some because they are on a mission. Any who are doing it because they think they are going to get rich have such a poor grasp of statistics and risk analysis that it's probably best they are somewhere where they can't and won't do any real damage.

What do you think is the next sector/type of business to be disrupted?

Any sectors where there is an opportunity for data brokers to replace incumbents as lower-margin matchmakers of need to (human) resource. Uber and Airbnb have platforms that can and probably will move sideways. If I was working in recruitment I'd be feeling fairly scared at the moment.

If you could have your smartphone permanently and discreetly attached to your body, would you?

My wife tells me I do already.

Do you believe a computer will ever be able to paint more technically accomplished and/or true-to-life pictures than a human?

Yes. They probably do already. But can they or will they create art? No, because – despite the whifflings of the 'Singularity brigade' – computers won't achieve sentience in my lifetime. I'm increasingly wondering if we are actually missing that technology development, far from speeding up, is actually plateauing.

THE NEXT BIG THING

There's more to 'what's next?' than searching for the start-up that's going to become the next Apple/Facebook/Twitter/Google.

Every year we ask participants in the survey 'What's the next big thing in tech?' and Figure 22 shows some of the trends people have been talking about. For some specific examples, turn to the end of this survey!

Figure 22

2016	both 2016 + 2015	2015	both 2015 + 2014	2014	both 2014 + 2013	2013
Internet of Everything	Cloud Computing	Quantum Computing	Wearables	Internet of Things	Mobile	Node.JS
Artificial Intelligence	Robotics	Robotics	Internet of Things	Near Field Comms	Augmented Reality	HTML 5
Bio Tech	Virtual Reality	Drones	3D Printing	Convergence	Cloud	Connected TV
Connected Homes	Wearables	Driverless Cars	Big Data	3D Printing	Wearables	Software as a Service
Social Data Analytics	Cyber Security	Cyber Security	Augmented Reality	Bio Tech	Big Data	Raspberry Pi

Something that stands out from Figure 22 is that if you look back you can see that augmented reality, wearables and connected TV were big trends in 2013. Now, just three years later, all of these are in full swing, whether it's IKEA's augmented catalogue in 2014, the launch of the first Apple Watch in 2015 or the plethora of smart TVs now available on the market.

This year it's no surprise that security is a key trend once more. Combine the fact that our lives are becoming ever more online with the increasing threat from hacking organisations, at both business and consumer levels, and you can understand why we will all be looking to make sure our data is safe.

One of the most notable trends we've seen this year is that of 'social' working hand in hand with 'big data'. We are in an age where geolocation services working with social platform logins communicate with our favourite ecommerce sites, and apps track our buying behaviours and create business advertising models for that same ecommerce site to advertise directly back to us through that social platform. It's a new world and social platforms like Facebook and Twitter are fast becoming 'the' key players in big data, in part because they are now becoming a key channel for consumer advertising.

All of the trends are inevitably a part of the continued integration of technology and the internet into our everyday lives.

THE NEXT JOB TITLE

No matter which way you look, you'll find statistics and videos saying that the next generation to enter the workforce will be doing jobs that don't exist yet – for example, '50% of occupations will be redundant by 2025' was a headline in the *Daily Mail*.

With the speed at which technology is evolving and new technologies are being invented, the last five years have seen the creation of many new jobs. Have a look at Figure 23.

Figure 23

Chief Data Officer	Cloud Administrator	Digital Transformation Architect
Chief Security Officer	Data Collector	Digital Architect
Chief Innovation Officer	Metadata Generator	Anti Hacking Engineer
Chief Marketing Officer	Big Data Architect	Robotics Engineer
Chief Digital Officer	Big Data Engineer	Robotics Developer
Chief Cloud Officer	IoT Architect	3D Printing Engineer
Cloud Service Managers	IoT Engineer	Artificial Intelligence Developer
Cloud Content Manager	IoT Developer	Chief Collaboration Officer

Figure 23 shows us the most common answers to the question 'As the technology industry evolves, what new roles do you think will be created in the next few years?'. You can see immediately that there are many to choose from.

The tech industry is always evolving and a – seemingly constant – stream of new technologies is emerging.

We can see from Figure 23 that some of these new roles fit into three key technical areas: data is the first significant trend, the Internet of Things following a close second, and the world of digital being the third most common response. All of these make sense as they are certainly the three areas that have received a significant amount of coverage. However, these three responses do not tie up with Figure 13 from earlier in the survey when we learned that 'data insights' and 'social' were the two areas that were expected to receive the least investment over the coming 12 months.

Will it be Chief Data Officer, Chief Internet of Things Officer or Chief Digital Officer? The truth could be that as different businesses adopt different pieces of the latest technology into their organisation, it's likely that all three of these jobs will be relatively common in the future. Chief Digital Officer certainly seems to be already. One thing is for certain: if we continue to go down this route we're likely to need more than letters to distinguish our Chief Data Officers from our Chief Digital Officers!

CASE STUDY



Name: **Georgina Lindsey**
Job title: **Product Manager**
Company: **Hometrack**

If you could have your smartphone permanently and discreetly attached to your body, would you?

My smartphone is fantastic and I can't imagine life without it. However, I don't like to feel that I'm reliant on it, and it's important to be able to disconnect regularly (though in reality I'm as bad as everyone else with checking it every five minutes).

Do you believe a computer will ever be able to paint more technically accomplished and/or true-to-life pictures than a human?

Technically accomplished and true-to-life, yes, but it's a human being's artistic interpretation of the world around them that really moves us. No one gazes up in awe at the Sistine Chapel because the ceiling looks just like a photograph. As technically accomplished as they are and are likely to become, computer renderings can't match human artistry.

What's the next big thing in tech?

If the BBC and Mark Zuckerberg are to be believed: personal robots.

What do you believe is the most important factor to the success of a tech start-up?

The right mix of great people. No idea is good enough without that.

Why do you believe most tech start-ups fail?

Not having the right people working together as a team to see an idea through to a commercial reality. A tech start-up needs to successfully combine a great idea and great tech minds with excellent communicators and commercial savvy. A bit of good luck and good timing doesn't hurt either.

Why do you think start-ups have become the number one most sought-out place to work for technology professionals?

The creative freedom, a flexible and fast-paced environment, and the satisfaction of seeing your successes directly reflected in the successes of the business.

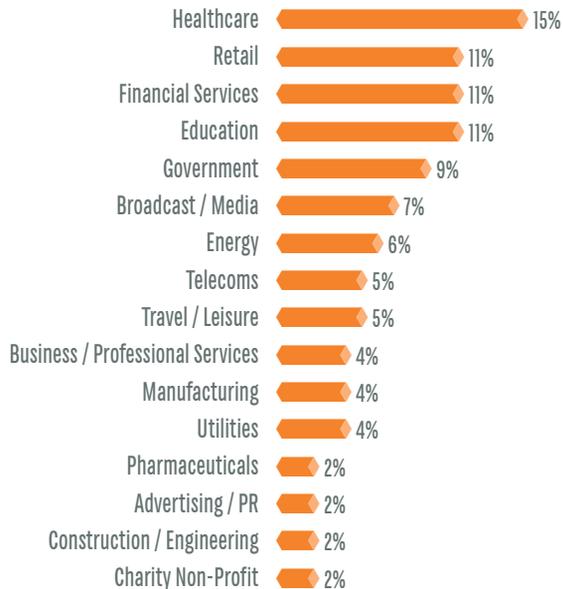
What do you think is the next sector/type of business to be disrupted?

I'm not sure about this one! I suspect that the automotive industry could see significant disruption with the scaling up of self-drive and more safety automation, but equally I don't think the application of drones has yet reached its potential and could make headway into disrupting freight transport.

THE NEXT SECTOR FOR DISRUPTION

It has felt over the last decade that technology has been the catalyst for systematically disrupting industry sectors such as Travel, Retail, Banking, Music, etc. – but what's next? Which will be the next sector to undergo significant change?

Figure 24. Which is the next sector to be disrupted?



You can see from Figure 24 that, according to technology professionals, the top four industries next in line for disruption are Healthcare, Retail, Financial Services and Education. Interestingly, two of these sit, predominantly, in the public sector.

Retail and Financial Services are industries that are widely considered to have undergone some level of disruption, fuelled by technological advances. So is it surprising that these industries are so high up the list? Maybe this is an indication of things to come – it's certainly the case that Retail is undergoing massive change, in part due to some of the social analytics and geolocation technology we've seen.

The traditional Financial Services sector is changing, fuelled by the rise of the fintech

start-ups. The fact that Financial Services features so high up the list could be down to the fact that people working in technology believe that the disruption is not finished, and that there is much further to go.

THE NEXT SEARCH ENGINE

The technology we use is becoming increasingly integrated into our lives and increasingly optimised to what we do. Our browsers have become search engines, as have our social media sites, our shops and, in some cases, our TVs.

But how much do we use anything other than Google to search? We've asked participants to rank a number of search engines in order of how much they used them to search – see Figure 25 for the results.

Figure 25. Other than Google, please position the following search options in priority of use

1. Bing
2. Yahoo
3. Facebook
4. YouTube
5. Twitter
6. Ask.com
7. Aol
8. Amazon
9. Pinterest
10. Yelp
11. Instagram
12. Mahalo

Online content is changing, and the rise of user-driven content websites like TripAdvisor appears to be a trend that is here to stay. The traditional social media platforms have become content platforms; Twitter is the 'go to' place for news as it is immediate and comes direct from the source; and Facebook is looking to have a more 'in the moment' content-focused approach in 2016. More consumers are taking part in, and being influenced by, other consumers' online reviews, which means it might be fair to say 'the user is now king'.

With thousands of GBs of data produced each day, the quality of search results must remain high in the lists of both the users and the platforms. As you can see from Figure 25, the top two results are both non-traditional search channels, YouTube and Facebook. It's been discussed widely that the future of platforms like YouTube, Facebook, Instagram and Twitter is to introduce 'buy buttons'. This will, inevitably, have a massive impact, but none more so than in the world of search. The days of traditional content marketing are behind us; there is a new era of content marketing and purchasing upon us, and it will, as it always does, start with 'search'.

SECURITY

Arguably, one of the biggest and most interesting subjects in technology is that of security. It's interesting because it feels that we're unable to understand what is happening or what should be happening. It's impossible to have a conversation about online security without ending up having a very expansive conversation about global legal systems, governmental regulation, policing, etc.

But what do people who work in technology think about some of the issues we're all facing at the moment?

Figure 26. Has the release of information on PRISM and the extent of internet monitoring by governments made you more cautious about what you say or do online?

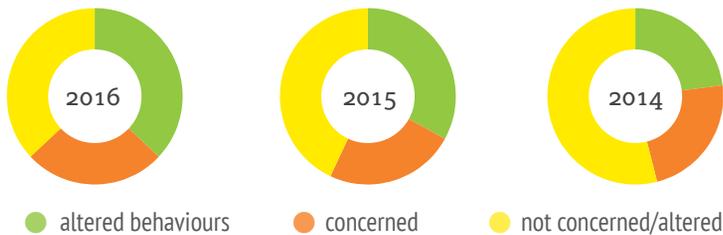
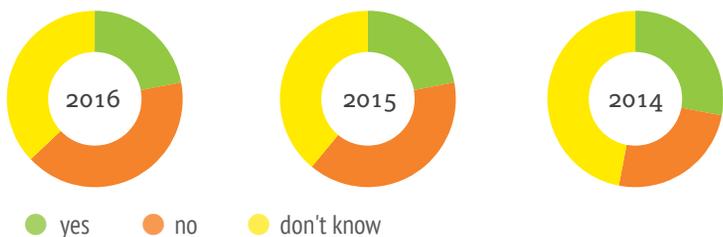


Figure 26 shows us the last three years' answers to the question 'Has the release of information on PRISM and the extent of internet monitoring by governments made you more cautious about what you say or do online?'. You can see a definite trend. People have, over the last three years, become more cautious about what they say and do online. As a direct result of the release of information about PRISM, 38% of people working in technology have altered their online behaviours. Earlier in this section we talked about how the number of people who believe that GCHQ and the NSA are good for the world has been steadily declining. Could it be that the release of information on PRISM, and the extent of internet monitoring by governments, has caused this vote of no confidence?

Figure 27. Do you think government/institutional regulation of the internet is a good thing?



Last year when we asked 'Is government/institutional regulation of the internet a good thing?' we commented how the trend appeared to be that people were becoming less certain as to what they thought. More people were selecting the 'don't know' option. Figure 27 shows that

trend continues this year, but only by a small percentage. Of all the questions we ask people, you could argue that this is the least answerable with multiple choice. It's almost impossible to say if the internet should be monitored without being incredibly clear on what the answer to every single complexity of all of the world's legal systems would be.

It's no surprise then that people are truly divided and the only trend we're really able to see is that people are, broadly, becoming less certain either way on this one.

Figure 26 showed us how more and more people working in tech are altering their behaviours online following the release of information on PRISM. But what do we really mean by altered behaviours? Is it just a case of changing passwords twice a year or are people encrypting phone calls? Have a look at Figure 28.

Figure 28. Which of the following security measures do you use?

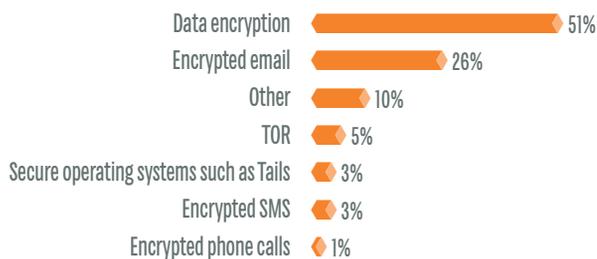
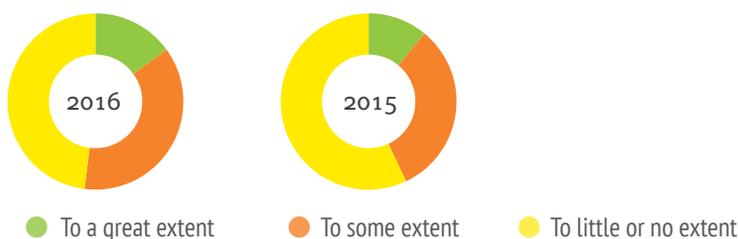


Figure 28 shows us that more than half (51%) of the people working in the technology industry use data encryption and more than a quarter (26%) use encrypted email. The third most popular answer here was 'other'. The most popular answers to this are posted as comment boxes on this page.

This was a new question for 2015 and it is going to be fascinating to watch it develop over the coming years. At the risk of guessing what the future holds, it would be fair to assume that the number of people using security measures online is increasing.

Figure 29. In the light of released information about government surveillance, to what extent have you noticed your employer becoming more cautious with how they manage their data?



In Figure 29 you can see that it is not just people who are changing their behaviours. We asked participants 'In the light of released information about government surveillance, to what extent have you noticed your employer becoming more cautious with how they manage their data?'. You can see from Figure 25 that we have reached a point where more than half of the industry has noticed some kind of move towards being more cautious.

Again, as trends go, it would be fair to say that over the next 12 months more and more businesses will proceed with more caution when it comes to how they manage their data.

Figure 30. Do you agree that security is being side-lined for better customer experiences?

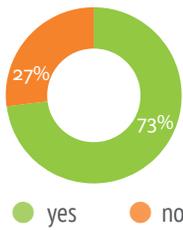


Figure 30 shows us a potential cause of the new-found desire to be more cautious with our data on both personal and commercial levels. The question was 'Do you agree that security is being sidelined for better customer experiences?'. You can see that the overwhelming majority (73%) said 'yes'.

Is it the case that in a world more integrated than ever before – a world where everyone is online all the time and the success or failure of a business hinges on being able to optimise its site to provide a more seamless user experience than its competitors – organisations might compromise (consciously or not) their security measures? It used to be innovate or die; is it now 'compromise or die'?

One thing is for sure: the issue of security and privacy isn't going away. It seems we have a long way to go before having an answer to some of the big questions, but for now the right thing to do is to keep talking about them.

ONE MORE THING

What does the future look like? We have no way of knowing. Is it closer to a Philip K Dick novel than we know? Possibly. But what do you think about some questions that, even five years ago when we started running this survey, would have seemed a bit too sci-fi to include? Enjoy.

Figure 31. Do you believe a computer will ever be able to paint more technically accomplished and/or true-to-life pictures than a human?

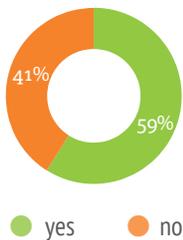
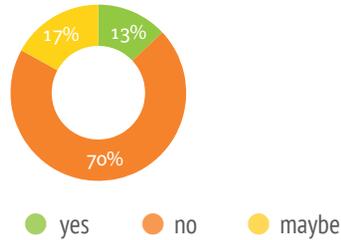


Figure 32. If you could have your smartphone permanently and discreetly attached to your body, would you?



CASE STUDY



Name: **Lizzie Dyson**
Job title: **UX Designer**
Company: **BBC/Ladies that UX**

If you could have your smartphone permanently and discreetly attached to your body, would you?
No, working in the tech sector I appreciate a bit of downtime.

Do you believe a computer will ever be able to paint more technically accomplished and/or true-to-life pictures than a human?

Most likely, cameras already capture moments in a much better way than I could ever paint them.



What's the next big thing in tech?

Batteries! An odd one but I'm constantly hearing people complaining about their phone dying. As customers we're buying more and more amazing technology but the fancier the phone the more energy it needs. Solid state batteries have been said to be 50% better than a lithium-ion battery. Without the limitations of our batteries constantly dying on use, imagine what could be possible.

How high is privacy/security on your personal agenda? Do you use encrypted email?

I'm not on Facebook because my privacy is something I consider important but I wouldn't say it's something I'm obsessed about. Every now and again something privacy related is mentioned in the press and everyone is in uproar. A week later and it is all forgotten about and it slowly becomes a part of our lives, and that frustrates me.

Do you think security is being sidelined for better customer experiences?

I think it depends on the nature of the company. I don't think it's necessarily being sidelined but more compromised. Some companies require login data and some extra information to provide a more personalised service. On the other hand, though, some companies are gathering information with the sole purpose of selling it on – this I do not agree with.

Has the release of information on PRISM made you more cautious about what you say and do online?

Not really as I have nothing to hide but that doesn't mean I'm happy for people to go through my personal data.

What about from a business perspective?

I am conscious of what tools I use when storing data, especially making sure that if I'm to upload data to a service I don't give away rights or access to the information.

Do you feel that people who don't work in tech understand the implications of sharing content online (privacy, inability to delete, etc.)?

I think we probably have more of an understanding than those who aren't in the industry, but that's not to say those outside the industry are naive to the issue. My grandma won't open a photo on an email attachment if the email client says it 'may contain a virus' and is incredibly cautious. On the other hand, I have friends who will happily share their location, what films they like and whatever else comes to mind when writing 140 characters. I think it differs from person to person. However, it appears that younger generations are becoming more and more willing to hand over personal data in return for access to a service. If it is becoming more normal then they will naturally be less precious about handing over their personal information in the future.

Playing that situation forward, does that mean that people who do work in tech have an advantage? Is the future in the hands of the coders?

Working in the industry I think we have to ask ourselves what information do we really need? When creating a service we should be considering what is the minimal amount of information that you require to provide a service to your customers. If we are designing for good, then we should not be asking for people's life stories. Can we provide the same personalised service with just one or two bits of information? If you need to ask for more details then justify why that is the case. We are responsible for customers' personal information and if you were to be hacked and the information was leaked, could you justify why it is now in the wrong hands? If TalkTalk and Playstation can be hacked, what's to stop them from hacking your databases?

THE PEOPLE

So who is a typical technology professional? Well, with more than 5,000 of them taking part in this piece of research, we're able to build up a pretty good picture of them.

FIRSTLY, YOU'RE LIKELY TO BE A MAN

Figure 33. How many years have you been working in tech?

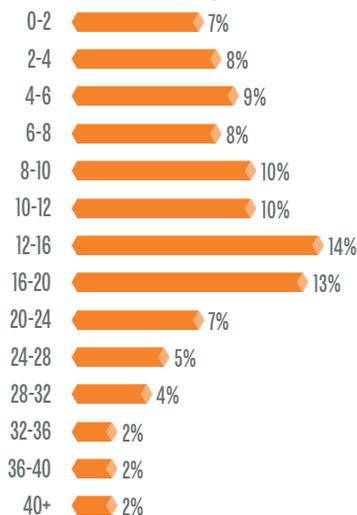


Figure 34. Permanent or contract?



Figure 35. Average technology team



You can see from Figure 33 that about a third (33%) of people have worked in technology for eight years or less, a similar figure (34%) have worked in technology for between 10 and 20 years, and the final approximate third (31%) have worked in technology for 20 years or more. We were slightly surprised by the number of people who had worked in technology for more than 20 years. However, later in the survey we talk about how many people who work in technology went straight into the sector, which could explain the relatively high number of years' experience in our industry.

Figure 34 shows us that 69% of the industry works in permanent roles and 31% in contract positions.

Figure 35 shows us that the average percentage of women in technology teams is 14%, up from 12% last year. It doesn't matter what study you read, or where you read it – the number of women in technology teams in the UK is somewhere between 12% and 16%. It's hard to know how much we should read into the increase from 12% to 14% in the last 12 months. Our average this year was almost identical to that of the 2013 edition of our Women in Technology Survey (14.6%). We feel that until we have more than ten years' worth of data we're probably looking at minor fluctuations that can be explained by differing participants each year. Figure 36 shows the answers to 'Are you happy you have a career in technology?', which have been almost the same for four years in a row. Women are enjoying their tech careers just as much as men and, in both cases, job satisfaction is extremely high. When we first saw this statistic we felt this could be a rallying call for more women to join the industry. Four years on, we still believe this to be the case; we need to think collectively about how we promote careers in technology to prospective future employees.



Name: **Ben Sturgess**
 Job title: **Creative Technology Director**
 Company: **Bigdog Agency**

How much time does your business allow for innovation during the working week?

We push for a fresh approach at all times. There's always a better way, but if we're talking about proactive innovation then this depends on a couple of things: A) Do we have something cool or challenging we want to look at? and B) Are we currently sweating spinal fluid on client work? If it's yes and no respectively then we have a pooled time budget of 25 days a month to experiment with new tech and MVP launches. Ideas for these experiments can come from anywhere: clients, Creative, Dev, Planning, Client Service, the cleaners, anywhere. We also have a rolling budget for buying tools, toys and tandoori hot pizzas.

Has there been any tangible ROI for the business from this?

Certainly, for both us and our clients. Internally the ROI is split between financial returns from bigdog products, such as our indoor navigation and asset tracking solution, Pathfindr.co.uk, and intellectual ROI delivering new skillsets, experience and real-world testing of bleeding-edge tech. Our lovely clients have had some great numbers from our innovation too, with Mazda seeing a 6:1 increase in pre-orders with immersive Virtual Reality product experiences. This stuff has to have benefit, and not just be a self-indulgent exercise; I'll take client ROI over a case study film every day of the week.

What about intangible results? Do you feel that this affects the company culture?

I'm never happier than when I'm surrounded by hacked circuit boards with a soldering iron in my hand. This used to raise some eyebrows (especially from Health and Safety!), but people are used to it now, and as an agency we all know that unless we innovate we die. A fresh, leftfield approach to business challenges is exactly what creative technology is about and we mirror that mentality, which in my opinion makes us internally better, even when it comes to business-as-usual work.

Do you have any top tips for developing a productive company culture?

Simple, less time for meetings, more time for doing!

In your opinion what is most important to keeping technology professionals happy/productive at work?

We tend to be an odd bunch as a whole, normally satisfied by our own achievements and less so by external praise. In some ways this makes life easier, but it also means that we are easily bored and need to be kept engaged and challenged on an almost daily basis. This can be tricky to manage, but is hugely important for both team retention and quality of output.

If you could have your smartphone permanently and discreetly attached to your body, would you?

Hell no! Upgrading my phone is painful enough as it is.

Do you believe a computer will ever be able to paint more technically accomplished and/or true-to-life pictures than a human?

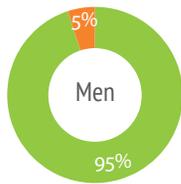
Yep, next stop SkyNet.

What's the next big thing in tech and why?

The Physical Web. It's a big deal because it sits at the heart of three trends: 1) the rise of the Internet of Things, 2) the drive for more relevant, contextual information, and 3) the increasing consumption of content via mobile devices. Combine these trends with the availability of low-energy processing and improved connectivity and you get a rapidly expanding ecosystem of convenient, connected and useful tools, empowering us more than ever (or just something that turns on the kettle when you open the front door).

Figure 36

Are you happy you have a career in technology?



Are you happy you have a career in technology?

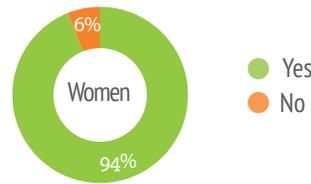


Figure 37. How would you describe your level of seniority?

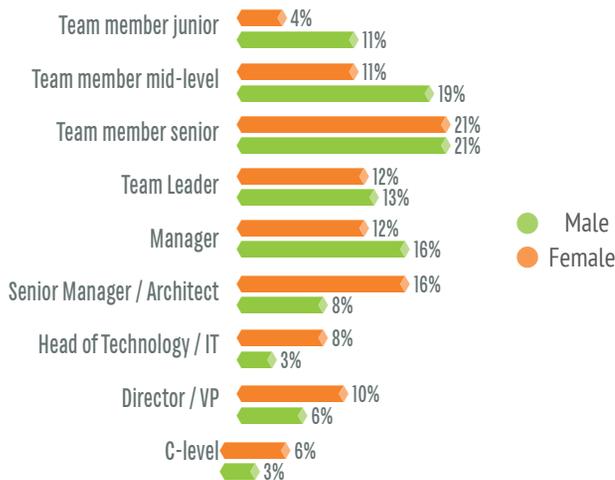


Figure 37 shows us the responses to 'How would you describe your level of seniority?'. You can see that there are few standout similarities and differences between the two sets of responses. In the first instance, a higher percentage of women describe themselves as 'team member junior' or 'team member mid-level' than men do. This point could be reflective of men and women viewing their own levels of seniority differently. Are men less likely to describe their seniority as 'junior' or 'mid-level' than women, even if they're doing the same

role? The wording of the question could well have given us an insight into how men and women perceive themselves. It could be argued that this is particularly relevant as it is in the categories that are perhaps not clearly defined by job titles.

As we progress up the levels of seniority, you can see that in the 'team leader' and 'manager' options the responses are relatively balanced, with 16% of women describing themselves as managers against 12% of men. However, it is as we move beyond the level of manager that you see there is a significant difference between men and women.

Figure 37 shows that 40% of men in the industry describe themselves as 'senior manager' or above, which is double the number of women (20%). In these four job categories you can see that there are consistently almost double the proportion of men to women in roles of senior manager or above in our industry.

So what can we draw from this snapshot of the industry as it is? Well, there are real positives to take: the fact that the vast majority of people in the industry are happy to be there is reassuring. It would be fair to assume that if we could get this message to people considering career options, we may see a greater (and maybe more balanced) number of people entering the industry. However, the fact that there seems to be such a difference between men and women and their progression is worrying and shows there is still work to be done.

The fact that the industry is maturing shows its solidity and that there is an established level of experience in the industry. However, there is one fact that we can't get away from and it's the one that stands out in any report on the industry: we work in a deeply gender-imbalanced industry.

SECONDLY, YOU'RE LIKELY TO BE WORKING HARD

Figure 38. How many hours per week do you work above or below your contractual hours?



One-fifth of the industry work ten hours or more than their contractual hours and a quarter work 5–10 hours more. In total just under three-quarters (74%) of the industry work more than their contractual hours. Is the technology industry one of the most demanding there is?

THIRDLY, YOU'RE LIKELY TO BE PERMANENT AND YOU PROBABLY EARN...

Figure 39. Are you permanent or contract?



You can see from Figure 39 that 77% of the technology industry is employed on a permanent basis and 23% contract. The average contract daily rate is £445 per day and the average permanent salary is £41,289 per annum.

PERMANENT EMPLOYEE - £41,289 P.A.
CONTRACTOR - £445 PER DAY

FINALLY, YOU'RE PROBABLY HANDS-ON

Figure 40. What category does your job fall into?



Figure 40 shows us the spread of different jobs that participants in this survey do. You can see that the top two are Software Engineers and Web Developers. In fact of the top five there are four 'hands-on' jobs.

WHAT DO YOU THINK?

Want to share your views? Please do get in touch – www.mortimerspink.com

WHAT'S THE NEXT

Internet of Things (IoT). The connected world is about to get very interesting, particularly in areas such as healthcare, household white goods and automotive industry.

Semantics and Uber. Big multimodal data, density of communications and diversification of 'technology push' and 'market pull' require that.

Generators Rossi (E-CATs) everywhere; these will supply cheap energy, machines without need of charge, quantum engine for spacecrafts, etc.

Holographic interface technology, because it will facilitate interactions with technology.

The intersection of audio and video into and around the home with IoT, which includes smart home and wearable tech, because IoT is a flipping mess and needs standardisation and centralisation; using set-top boxes, home gateways/routers, etc. as a central point, rather than ending up with 15 boxes with different protocols and horrid interfaces for configuration, would be beneficial for the end consumer.

3D printed Arduino robot systems with an AR overlay for interaction – basically being able to piece together a pre-made kit into a moving robot. When a smartphone or AR-enabled glass passes over it a HUD will show, allowing users to see key bits of information.

Cyber-security has to improve a lot to keep the confidence of general users.

Machine to machine, e.g. intelligent cars communicating to manufacturers, real-time analytics driving big data creating new markets and products.

Personal data vault and peer-to-peer payment. A business model substantially reliant on advertising revenue will always be constrained.

Cloud-based, mobile-accessed, location-based systems. User's ability to be anywhere, anytime.

Security is the next big thing because we have to devise better and more practical ways of accessing accounts ensuring the security levels are always at the edge.

Cognitive. After big data and analytics capabilities will be consolidated the world will work over a global layer of cognitive.

An ever shorter development cycle. The market expects to be able to use new technologies/adopt new trends (almost) the moment they become available on the sites they use.

Police state, 1984-style total control, cashless society.

Security. As the cloud grows, threats also increase so it is necessary that the technology industry should be ready to meet the challenges.

BioSecurity. Moving from logins and passwords to 100% perfection in recognising the person who operates software or hardware to not allow any non-validated access.

BIG THING IN TECH?

Remote control over internet-connected things (appliances, transportation vehicles and telco devices).

People.

DevOps is the future.

Robotics and Internet of Things.

Why? We experience impressive divides in social and tech development, and it is our (human) responsibility to 'govern' tech development, and not to adapt to tech. We are becoming a nation of 'followers', and not the ones who have to be empowered by tech as a progressive tool for communication, collaboration, social innovation.

Data at your service. After understanding how to analyse big data we will understand how to present tailored data for usage.

In the healthcare industry, minimal invasive surgery and robotic surgery will become widespread. 3D printing is starting to see some use in healthcare.

Personalisation of products and services. Everyone knows that it holds great benefits and, as the consumer expects it, more and more companies will be forced to embrace the concept and the technologies.

Virtual Reality Environments and advanced 3D printing innovations.

An example of the first would be Home Theatre where the viewer would also be a participant in a show/play. I believe that this will revolutionise the way people watch TV today. An example of the second would be such a technological advance that it would allow for the reproduction of complex structures to be economically viable/affordable for the ordinary lay person.

Total independence of Sw from Hw.

24 hour 7 days a week every square km web connection – so that everybody can work anywhere and everywhere all the time.

The complete immersive gaming experience. We already have the technology to create this. It just needs to be combined to create a completely virtual environment. The suits, 3D headsets and the internet, combined with games such as World of Warcraft or Sims: this technology could be combined cheaply enough to make it available to the mass public. Master Data Management combined with current business process: this will increase business performance and increase cybersecurity.

User interface should change, especially people-to-machine interaction for faster and more precise results in search and analysis. Also visual representation should be more intuitive.

Seamless multi-platform Big Data Analytics.

VR will be the buzz word for the next 12 months. But until a practical application is truly developed, it will remain just a buzz word.

I hope it will be flying cars to boost the economy with a technological breakthrough.

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