BEYOND THE CLOUD
UK TECHNOLOGY RESEARCH 2018

RESULTS PAPER

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INTRODUCTION

UK businesses in all industries are facing a challenging future. With the GDPR (General Data Protection Regulation) in force since 25th May 2018 and increasing confusion surrounding Brexit it can be hard to plan the future let alone the technological challenges of UK business. In addition, reports of escalation in cyber-security incidents and a prevalent skills shortage creates additional complications for UK organisations.

"A key question is whether the UK will be able to keep up with the global technological race."

The focus of the research is to understand the current technology environment of UK businesses and whether companies are utilising innovative technology to mitigate future challenges facing the UK. The purpose of the research was to understand how emerging technologies are deployed or whether there is a market to implement them in the future. This was with the hope to find UK organisations understanding the benefits of harbouring technology in business.

Serviceteam IT, in partnership with Doogheno, conducted this research to provide an insight into the UK's technology adoption at a time of change. The aim was to continue the 2017 research1 on the most significant challenges facing UK businesses and the trends in the use of the cloud in the UK; yet, include a focus on the competitive advantage from emerging technologies.

"After extensive research Serviceteam IT are unaware of any report that addresses the challenges facing UK businesses and how emerging technologies can support UK business. Given the increasing seriousness and urgency of Brexit to the UK, we believe this research provides an important insight into the challenges facing UK businesses specifically."

Emerging technologies will be key, and not just for the corporate giants. 38% of our respondents are actively using or due to implement emerging technologies including Artificial Intelligence (AI), Blockchain, Edge, Internet of Things (IoT) and Robotic Process Automation (RPA) kickstarting the new digital revolution.

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METHODOLOGY

To obtain data for this research, both in-depth interviews and a questionnaire were used, and the results combined to provide a quantitative and qualitative scope to the analysis. Respondents were located across the UK, making this the second nationwide survey of UK businesses that Serviceteam IT has completed.

The questionnaire, entitled 'Beyond the Cloud: UK Technology Research 2018', was formed through an online survey. This was completed over a three-week period between the 14th June and the 7th July 2018.

The sampled population of over 1000 UK businesses included those responsible for IT decision making in a multitude of sectors including Legal and Government, Construction, Technology, Marketing and Finance. The survey asked about challenges, current infrastructure and services, and plans for the next 36 months. The difference in answers from the various sectors was evident, allowing comparisons to be drawn between different sectors of the economy.

KEY FINDINGS

- IoT is the currently the most used emerging technology with 19.7% of respondents actively using it.

- The main reasons for adopting emerging technologies is reduced cost and expansion.

- 50% of respondents reported an increase in cyber-security incidents.

- 80% of companies have not developed a contingency plan which covers the various outcomes of Brexit negotiations.

- 20% of businesses predict that they will have to report more breaches to the ICO as a result GDPR, although only 10% of businesses have had to report data breaches to the ICO in the last 12 months

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Which external factor has had the greatest impact on your business since 2017?

Legislation, including GDPR had the greatest impact on 36.7% of businesses since 2017 making this the most popular external factor. Cyber-security was second with 24.4% of respondents feeling their business was greatly impacted by this. Interestingly, in the construction sector, 42.8% of respondents labelled cyber-security as the greatest impact on their business since 2017. The less popular answers were skill shortages, chosen by 16.7% of respondents and Brexit listed by 10% of respondents.

An unexpected response in the 'other' category for all respondents was increased competition and government austerity policies. A respondent from the education sector mentioned the rate of funding that further education colleges receive hasn't changed since 2008. The college is not in financial difficulty, but this squeeze of funding means discretionary spending has dried up. For instance, the college used to be able to keep IT kit until they were five years old. Now the college houses more machines over five years old than under.

|	
10	BREXIT
36	LEGISLATION including GDPR
24	CYBER SECURITY
18	SKILLS SHORTAGES
12	OTHER
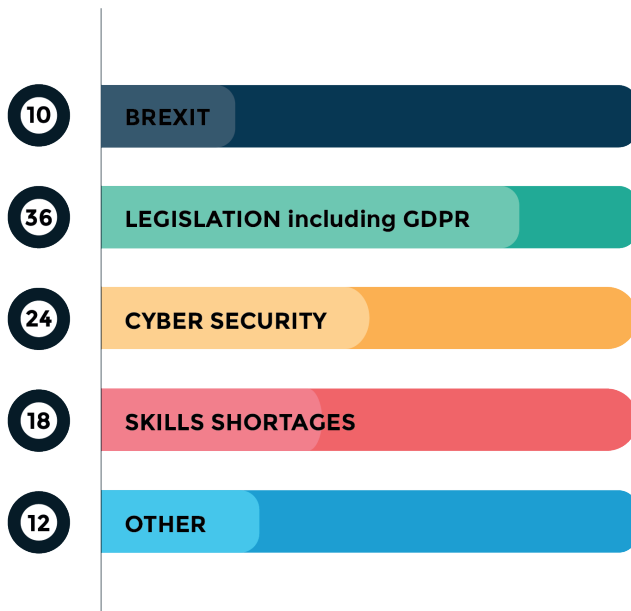
What do you think will have the greatest impact on your business in the next 36 months?

31.1% of respondents listed Brexit as the biggest challenge to their IT plans over the next 3 years, making this the most popular answer amongst respondents to the survey. This response increased by 12% since the 2017 survey. The future impact is clearly seen in the marketing sector where 37.5% of respondents listed Brexit as the biggest challenge to their business plans. In Serviceteam IT's 2017 survey 21.2% of respondents indicated cyber-security incidents had the greatest impact; this year only 16.7% of respondents highlighted cyber-security as their main concern.

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A surprising response was 24.4% of respondents listing a skills shortage being the greatest impact on their business. Colin Jack, Care and Learning, Service Support and Information Manager at the Highland Council commented that in general, the teaching profession need a whole new set of computer skills. Moving to touch screens from chalk and pencils is a new method of teaching. His goal for Scottish Highlands is to have rural classes taught remotely.

A respondent from the education sector mentioned that external IT training is very expensive: a project management course is £2,000, excluding additional money for transport and accommodation. Some private companies can add this expenditure to their budget, but in most cases this money isn't available. Investment is not put into people as 'the easiest thing to cut back on is the training budget'.

In addition, 17.8% listed legislation, including GDPR as having the greatest impact. Respondents also separately noted competition from India and China and, also platforms such as Amazon and similar.

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31	BREXIT
18	LEGISLATION including GDPR
16	CYBER SECURITY
25	SKILLS SHORTAGES
10	OTHER
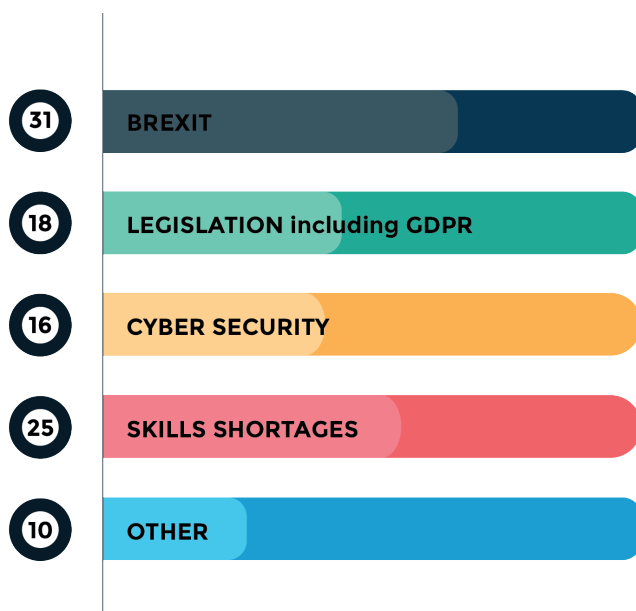
In 2017, 34% of survey respondents reported they had experienced an increase in cyber security incidents. Has your business experienced an increase in cyber security incidents in the last 12 months?

50% of the respondents to the survey experienced an increase in cyber-security breaches in the last 12 months whereas the other 50% had not. As the question presents, in the 2017 survey 34% of respondents reported an increase in cyber-security in the last 12 months. Therefore, cyber-security incidents have increased by around 15% in one year. The professional services industry appeared to be hit the hardest from these attacks with 86% of respondents reporting an increase in cyber-security incidents in the last 12 months.

The Head of Technical Services and Automation at an international Professional services company commented that "… like many other organisations in the UK we are subject to regular attempts to breach our IT systems and need to allocate resources to prevent these being successful.". However, in their opinion the great thing about Amazon and Azure is that they complete additional monitoring, so they too can shut a hacked server.

Alcus Erasmus, Head of Cyber Security Engineering from MAG Airports discussed his plans for cyber-security in the organisation, which included Identity and Privilege Access Management, a project to completely secure and unify identity.

2017   **2018**

34%   **50%**
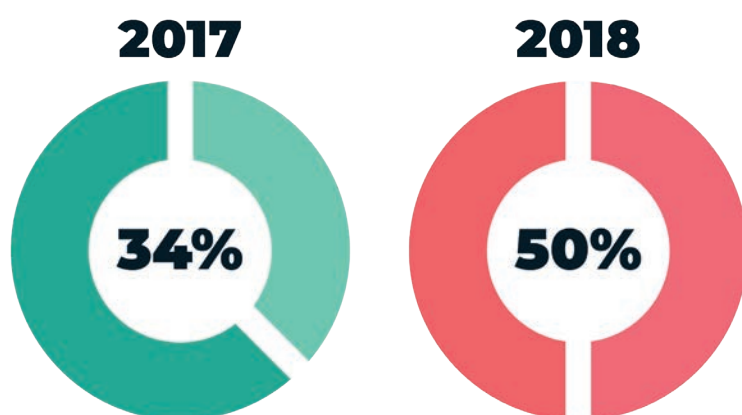
Businesses reporting an increase in cyber security incidents in the last 12 months

Where are the majority of these attacks coming from?

This was left as an open question. Some respondents focused on the location of the source whereas other respondents focused on the type of attack. Russia and China were the main sources of attack; however, there were also sources from South America and South Africa. The technique to hacking seemed to be emails and smart phone messages with fake links.

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Has your company developed a contingency plan which covers the various outcomes of Brexit negotiations?

There was a clear majority of 44.6% of respondents unsure about whether their organisation had developed a contingency plan to cover the various outcomes of Brexit negotiations. 34.9% indicated their business had not. Only 20.5% of respondents did have a Brexit contingency plan. Interestingly, in the Government and Defence sector, 100% of respondents were unsure whether their organisation had developed a contingency plan outlining the various outcomes of Brexit.

80%

NO Contingency plan in place for possible outcomes of Brexit negotiations.

Pete Hulme, Practice Lead at Dimension Data commented that whatever happens in March 2019, the world is not going to change on the day. Whether it is a positive or a negative impact for individuals and companies, in his opinion we won't know for 10-15-20 years.

A view from the Education sector is that although one cannot estimate the true impact of Brexit until it has happened, there has been an immediate impact since the Referendum. A lot of the licences the college buy are American in origin and the Pound has fallen significantly against the Dollar. For a limited IT budget, this is an unwelcome change.

In 2017 69% of respondents hosted cloud services in the UK. Where are your cloud services located?

The number of respondents who hosted cloud services in the UK had increased by around 5% since the 2017 research. 74.7% of respondents hosted cloud services in the UK. This was followed by 35.4% hosting cloud services in Europe, the second most popular answer. Ireland was favoured by 30.4% of respondents, as was North America harbouring a location for 20.3% of respondent's services. North America is also the location for 60% of respondents cloud services in the insurance sector. However, only 1% of respondents listed South America and Asia respectively.

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A respondent from the public sector commented that their organisation's data centres are only located in the UK because of historical security reasons. The respondent observed that Microsoft and Amazon can guarantee that level of security elsewhere, but that there is still nervousness of data centres outside the UK. 'This is probably a perception but would not sit well', she commented. Their opinion was that it is for comfort within government that cloud services are in the UK.

Pete Hulme, Practice Lead at Dimension Data observed that the cloud services trend has surrounded the manageability of the locality. Historically, people stuck data in AWS and would not care where it was. Now, because of laws including GDPR and regulations in the US, Pete is starting to see people wanting to guarantee their data does not leave the UK or Europe. In Pete's opinion, the trend over the last 18 months includes being able to control where data is and where it cannot go.

Alcus Erasmus, Head of Cyber Security Engineering at MAG Airports had a different view. Although MAG Airports try where possible is to keep servers in the European Economic Area, the company have small quantities of data in places like the USA and Canada. Moving data centres back to the UK was not something which MAG Airports have considered or had a requirement to consider. Alcus commented 'we only deal with non-EU companies who have signed up to the privacy shield framework, but we also have our own due diligence on any external environment who holds our data. We have penetration testing and vulnerability scanning so we can be confident that the place holding our data is secure'.

The technology sector had cloud services located globally. 67% of respondents in the tech sector have Cloud services in the UK. However, respondents also hosted their cloud services in North America, Asia, UAE and Australia.

75 UK

31 IRELAND

36 EUROPE

21 NORTH AMERICA

12 OTHER
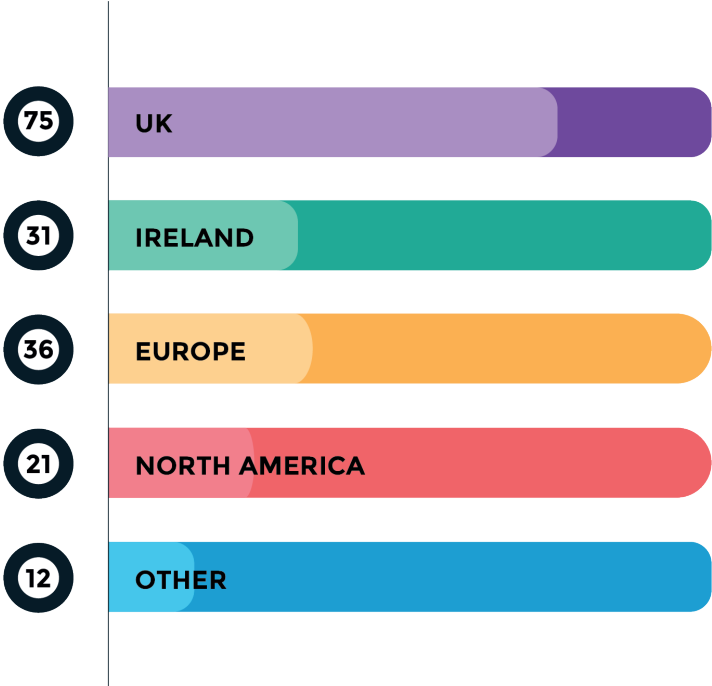
Cloud service hosting locations

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Are there any applications your business has been unable to move to the Cloud?

51.9% of respondents could move all applications of their business to the Cloud. However, this was very close to 48.1% of respondents who had applications which they were unable to move to the Cloud.

48%
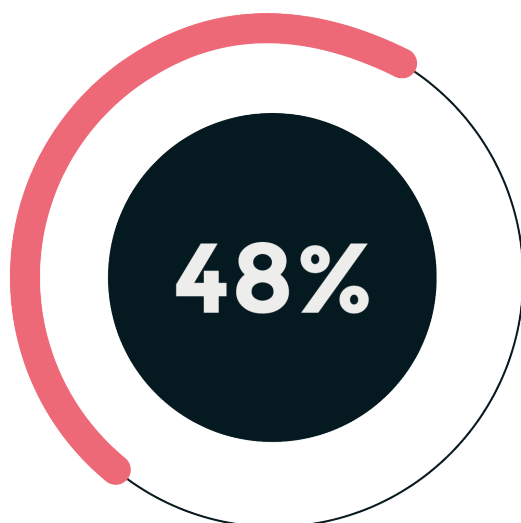
Businesses unable to move some applications to the cloud

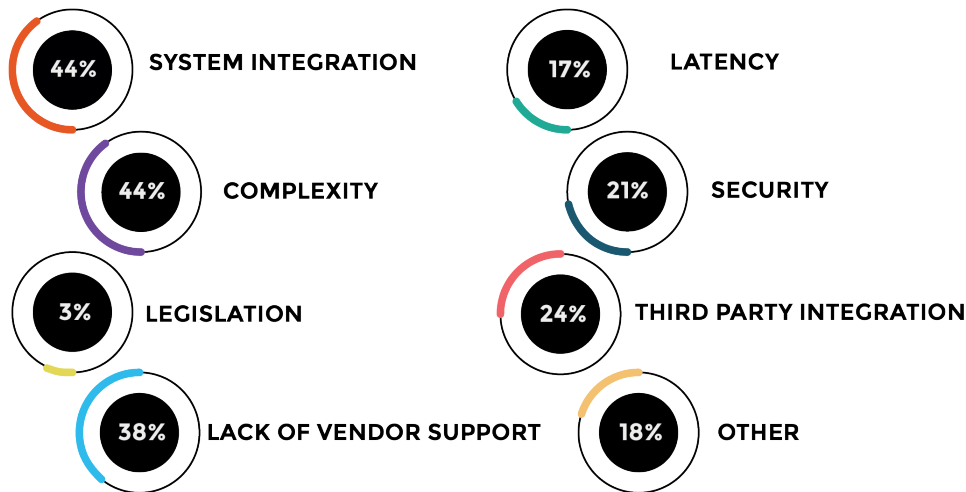# Which applications have you not been able to move to the cloud?

This question was left as an open response. A variety of answers were given to this question including: legacy lines and applications, internal sites and anything which needs to be physically local.

Why have you experienced problems moving these applications to the Cloud?

44.1% of respondents answered complexity and a further 44.1% answered integration with current systems. These were the two most prominent answers; however, 38.2% of respondents answered lack of support from a vender as a barrier to moving all their applications to the Cloud.

Less popular answers included 23.5% of respondents answering integration with third parties, 20.6% commenting security problems, and 2.9% placing legislation as a barrier to integration.
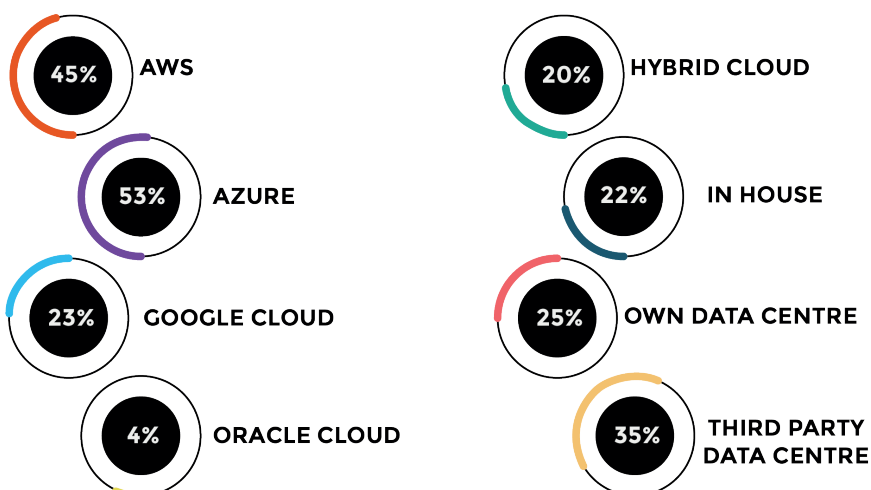
Respondents additionally mentioned cost as a barrier for the cloud application. One respondent commented that they have very large data quantities, and cloud data storage is 5x their on-premise cost.

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44% SYSTEM INTEGRATION

44% COMPLEXITY

3% LEGISLATION

38% LACK OF VENDOR SUPPORT

17% LATENCY

21% SECURITY

24% THIRD PARTY INTEGRATION

18% OTHER

Which cloud service providers are you currently using? (Select all that apply)

Unsurprisingly, the most popular was Azure with 52% of respondents using this provider. This was followed by AWS for 44% of respondents and third-party data centres for 35% of respondents. 25% of respondents had their own data centre, 22% used Google Cloud, 24% used In-House and 17% used the Hybrid Cloud. The least popular cloud service providers were Oracle Cloud with 3% of respondents using it and no respondents used HPE Helion.

Pete Hulme, Practice Lead at Dimension Data had a converse experience. In his opinion we are coming into a post-cloud hype world. Pete has seen people starting to realise that cloud offers a lot of significant benefits and is an important part of strategy, but not for everything: 'people looking at Converge and Hyper-converge infrastructure to build a hybrid cloud'. The current wave of interest he has noted includes Serverless computing, Docker, VMware Cloud Foundation, VX rack and VX rail either directed to AWS or private clouds build in AWS.

45% AWS

53% AZURE

23% GOOGLE CLOUD

4% ORACLE CLOUD

20% HYBRID CLOUD

22% IN HOUSE

25% OWN DATA CENTRE

35% THIRD PARTY DATA CENTRE

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How are these interconnected?

67.1% of respondents interconnect the Cloud is through VPN making this the most popular method. 51.4% chose public internet whereas only 28.6% of respondents chose Cloud Connect to connect their cloud services.

**VPN** 70% **Public Internet** 50% **Cloud Connect** 29%
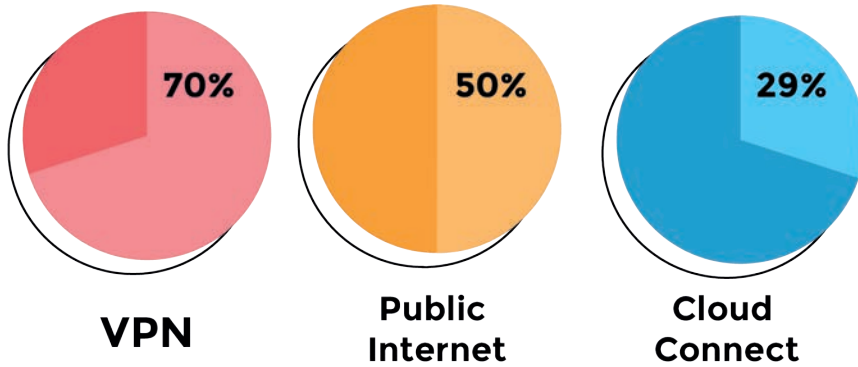
How satisfied were you that you were able to achieve your business objectives by moving applications to the cloud?

Considering how technology has become an integral part of business, it was unsurprising that no respondents were very dissatisfied by moving their business applications to the Cloud. What was reassuring from a business perspective was that 41% of respondents were satisfied and 39% of respondents were very satisfied since moving their applications to the Cloud. 17% were neutral and only 2.8% were dissatisfied concerning achieving their business objectives by moving applications to the cloud.

This remains consistent to last year's survey where 70% of respondents were satisfied that they were able to achieve what they wanted from the cloud.

According to a separate survey 38% say cloud infrastructure has the greatest potential to increase productivity. This supports the satisfied and very satisfied percentages of the 'Beyond the Cloud' questionnaire.

39% VERY SATISFIED

41% SATISFIED

17% NEUTRAL

2% DISSATISFIED
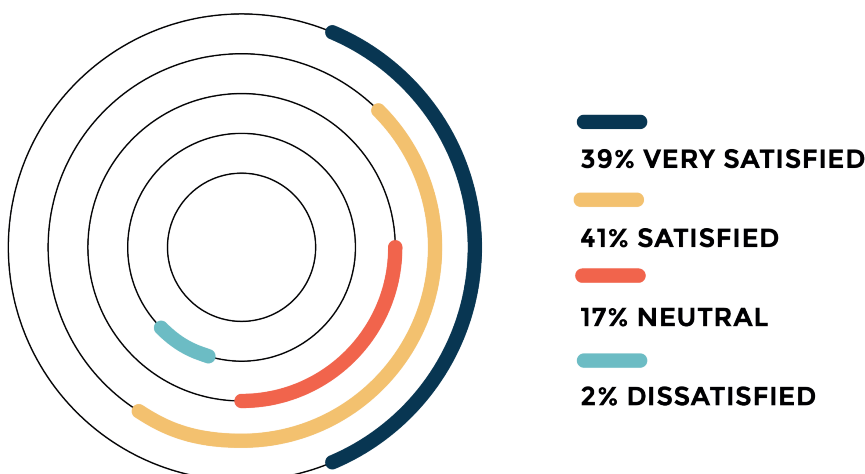
Business objective achievement on moving applications to the cloud

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Outside of the IT department, do you have any concerns with your company's GDPR compliance?

GDPR only came into force on the 25th May 2018, so it was predicted that some businesses would still be experiencing a few bumps in the compliance road. 37.7% of respondents had concerns about their company's GDPR compliance compared to 62.3% who did not.

38%

Non-IT professionals who have concerns with their company's GDPR compliance

GDPR involved mountains of paperwork and Serviceteam IT wondered how companies dealt with GDPR and how they prioritised it within their business.

A view from the public sector is that 'GDPR is taken very very seriously…we have made real efforts on our citizens systems to enforce what it means to them, [reinforcing] the two-way trust link'.

Pete Hulme, Practice Lead from Dimension Data has seen his client's investing heavily in trying to understand GDPR and become compliant. However, there is a lot of hype and panic. Pete indicated that 'since the last calendar year, so from January 2017 to May 2018 when the regulation came in, I can only remember one other time in my career where we had this insane panic and huge uncertainty and doubt. This was the Millennium bug. There was a theory that all the clocks and all the gadgets only had two digits so when you got to the year 2000 everything would reset to 1900 and all the power plants would stop. There was a huge effort to mitigate against this and nothing happened. The GDPR panic was a little bit like that. Everyone was worried that they were going to be fined 4% of their annual turnover the day after it happened and of course it didn't happen. I'm sure there will be tests and where someone is made example of, but fundamentally people did the best that they could'. Pete's opinion is that like most regulations, if you throw out the 99 articles of GDPR and over 400 clauses and look at what it is talking about - the right for the data subjects to have the data properly protected, properly managed, not used for inappropriate purposes and the right to be forgotten - these are fundamentally sensible and good things. Pete's commented that GDPR 'is a good thing as it has made people look at it and adopt what should be best practice'.

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A respondent from the Education sector similarly mentioned that they received a lot of scare emails about impending doom. In their opinion, 'you have to take these things with a pinch of salt, but I was aware and started the conversation within the college more than two years ago'. They mentioned that part of the problem with requesting a larger budget. At the time they were asking for a GDPR budget, and didn't know what to address specifically. Their concluding comments were that GDPR was a journey however their organisation had certainly improved security.

Alcus Erasmus, Head of Cyber Security Engineering at MAG Airports commented that there was a lot was preparation and policies put in place for proper handling of information. In addition, there was education for the workforce on what a Subject Access Request was, as an example. In this opinion, a lot came from the original Data Protection Act so there was not a huge change when GDPR went live. The organisation have been able to prepare over the last 2-3 years and GDPR was not something which was just announced.

Has your company allocated a budget for increased overheads for GDPR, such as access requests and minor data breaches?

52.2% of respondents did have an allocated budget for increased overheads for GDPR whereas 47.8% did not.

48%
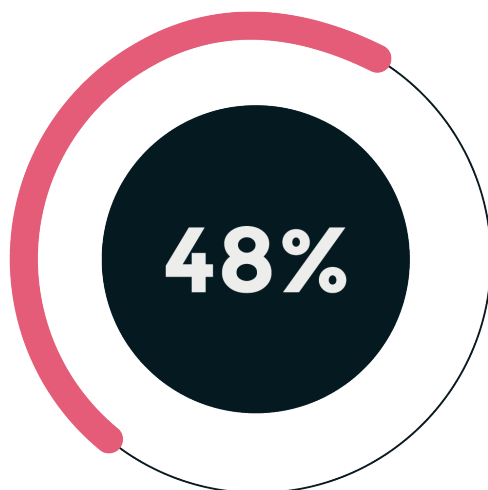
Have NOT allocated budget for increased overheads for GDPR, such as access requests and minor data breaches

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## Has there been an increase or decrease in data breaches in the last 12 months?

69.6% of respondents saw no change in data breaches in the last 12 months. 15.9% were unsure compared to 7.3% of respondents who saw no increase or decrease respectively.

7%
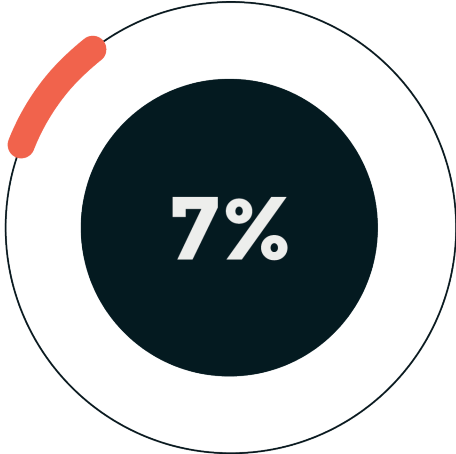
Have reported an increase in data breaches in the last 12 months

In the last 12 months have you had to report any data breaches to the ICO?

69.6% of respondents have not had to report a data breach to the ICO in the last 12 months. 15.9% of respondents were unsure whereas only 14.5% of respondents did have to report a breach to the ICO.

14%
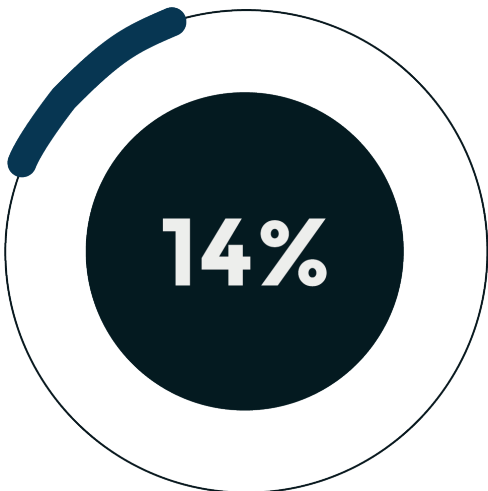
Have reported data breaches to the ICO in the last 12 months

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Do you predict that your company will have to report more data breaches to the ICO because of GDPR?

Although only 14.5% had to report a breach to the ICO in the past 12 months, 20.3% predict that their company will have to report more data breaches to the ICO because of GDPR. 52.2% reported that there will not be an increase in data breaches whereas 27.5% were unsure.

Colin Jack, Care and Learning, Service Support and Information Manager from the Highland Council predicts that reporting will increase because businesses are being encouraged to under GDPR. Colin commented that he does not think it will be a huge escalation, but he is anticipating an increase in freedom of information requests and subject access requests just because of amount of publicity there is around GDPR.

20%

Predict reporting more data breaches to the ICO in the next 12 months

Are you currently using or are you planning to adopt any of the following emerging technologies in the future?

AI appeared to be the most researched and planned emerging technology. Although 15% of respondents are actively using AI compared to 20% of respondents actively using IoT, AI has a 19.1% of respondents planning to deploy the technology in the next 12 months and 42.7% having longer term interest. IoT was a close second in interest with 8% planning to deploy the technology in the next 12 months and 34% having a longer-term interest.

Alcus Erasmus, Head of Cyber Security Engineering from MAG Airports provided a practical application of IoT to operate technologies such as baggage systems in movement of luggage. He is seeing more sensors being deployed at certain areas which tracks the movement of bags. Alcus believes these will become a key part in identifying where a device is overheating or there is an obstruction.

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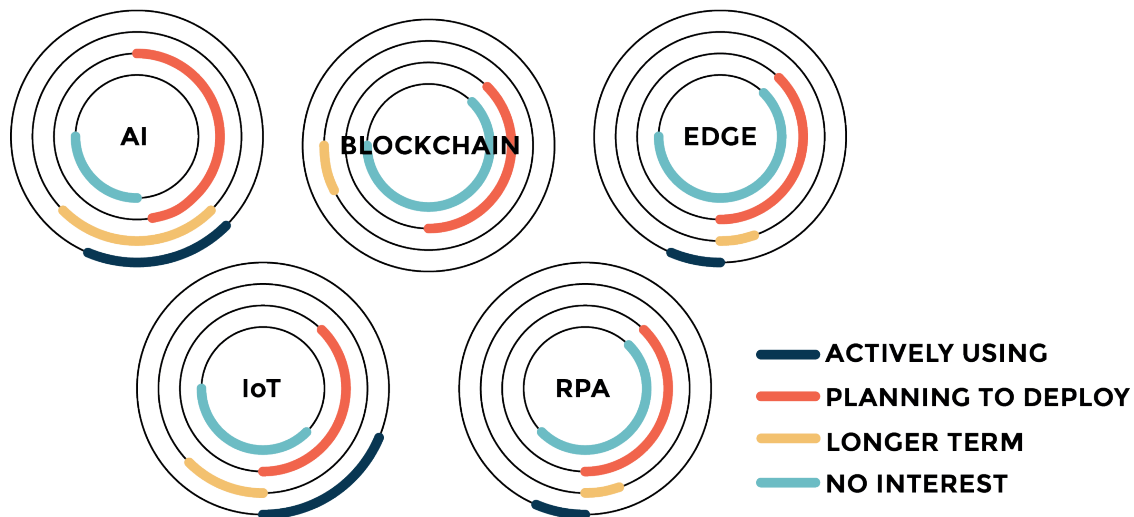
Current use and adoption plans for new technology

A respondent from the Education sector gave a future practical example of AI in an agriculture and sporting college: if an AI model cow can flinch if you incorrectly put the clusters on to milk it then this will help students before they handle the animal.

Robotic Process Automation was third with 10% of respondents actively using the technology, 5% planning deployment in the next 12 months and 32% of respondents having longer-term interest.

The Head of Technical Services and Automation at an international Professional services company mentioned their primary interest in RPA was to "... train graduate consultants as business analysts or developers to use Blue Prism, Automation Anywhere, UIPath or other tools..." and meet need of clients who want smart young people who know how to use these technologies.

Surprisingly, Blockchain was the least popular form of emerging technology. No businesses were actively using the technology, only 5% were planning Blockchain deployment in the next 12 months and 35% had a longer-term interest. 60.6% of respondents had no interest in Blockchain adoption within their organisation.

A view from the public sector commented that the Department of Finance have been looking at Blockchain for several Use cases but haven't had the evidence to support moving forward with a pilot. However, the Department of Finance have low-level RPA are using RPA to figure out how to deflect call traffic going through to the various sectors of internal services, although it has not been deployed in a live environment

Pete Hulme, Practice Lead at Dimension Data commented that he has seen various deployments of emerging technologies in different industries and with different clients. However, he does not frequently see Blockchain adoption. In his opinion, this change is more in financial services industry. In less than 10 years, clearing cheques has virtually disappeared; everything is done online.

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Last month, there were more cashless than cash transactions in the retail sector. It is not blockchain yet, but it is the logical extension of the same model. Pete commented that it will also be interesting to see blockchain outside of finance, for example managing virtual control of contract.

Edge was not a prominent technology either. Only 9.1% of respondents are actively using Edge, 6.1% are planning deployment in 12 months, 28.9% have longer term interest and 56.1% of respondents had no interest in the technology at all.

If you have adopted one or more of these, which department identified the requirement?

Most respondents identified their IT or tech department as identifying the requirement to deploy these emerging technologies, possibly after identifying their competitive advantage both in the UK and overseas. However, Operations and Research and Development departments were also heavily cited as the reason for the adoption of new tech. Engineering, Sales and Management were also mentioned; however, less frequently.

What was the business objective of using these emerging technologies?

52.5% of respondents said reduced cost was the business objective of these technologies, making it the most popular answer. This was followed by 41% citing expansion as an objective and 14.8% mentioned compliance.

Other responses included improving customer service, quality management, improved service quality and improved operational performance.

| 15 | COMPLIANCE |
53	REDUCED COST
41	EXPANSION
31	OTHER

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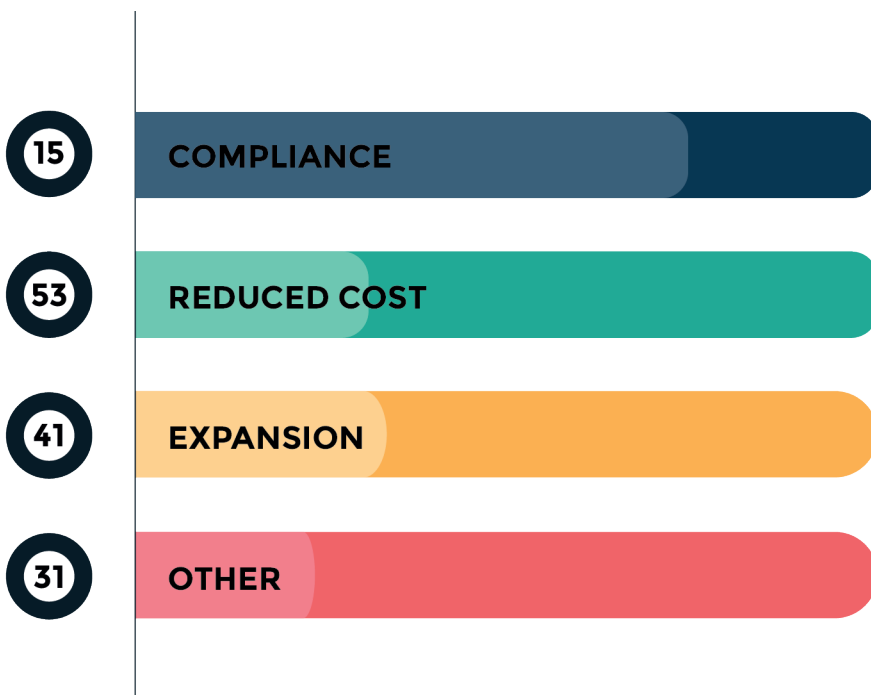
Will your organisation have the skill set to fully capitalise on these technologies in the future?

Interestingly the three answers were relatively equal in popularity. 30.9% of respondents thought that they would have the skill set to capitalise on these emerging technologies, 29.4% were not confident and 39.7% were unsure.

Alcus Erasmus, Head of Cyber Security Engineering at MAG Airports and his department are collaborating with Universities such as Glasgow and Cardiff and are bringing in student resources who have basic qualifications to invest time and effort in training them to meet MAG Airport's requirements. In Alcus' opinion, finding these skills in the general market they felt to be difficult and often very expensive. The last couple of recruits have been under the age of 30 years old.

A respondent from the public sector mentioned that the government environment is not as flexible in terms of salaries. However, the department have managed to increase starting salary for IT graduates as it is very competitive. The public sector is now slightly better than private sector competitors. Yet, now the problem is how to keep these graduates as they are trained very well and the progression in public service is not as flexible. Their aim is to highlight what the public sector can bring rather than the private sector.

Colin Jack, is investing in Microsoft Office 365 and Power B-I platforms. The Council are trying to develop skills to make use of power B-I tools and DAX language. They would like to use DAX language to be more efficient in management of data, but they have found few people have DAX skills.

YES NO

31% **29%**
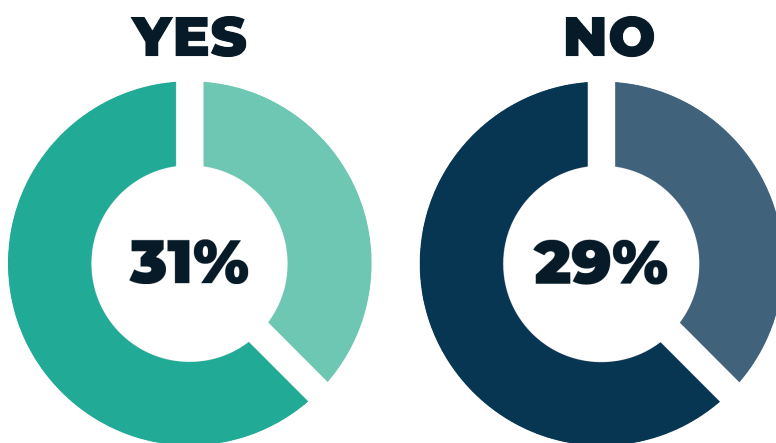
Businesses reporting skillset readyness for new technology adoption

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CONCLUSION

Our findings reveal that although the Cloud is still a central component of UK businesses, the concerns from last year's research still prevail. Most notably, in the next 36 months challenges surrounding Brexit are now more prevalent than GDPR concerns. This seems reasonable considering the outcome of Brexit being increasingly unclear and there is heavy media coverage on the issue.

"Yet, only 20.5% of respondents have developed a contingency plan outlining the various outcomes of Brexit for their business."

However, there is an increase in respondents moving cloud services in the UK, which could be a reaction to Brexit and GDPR concern.

Another key finding is that although a few respondents have had to report a data breach to the ICO in the past 12 months, a greater number of respondents believe that they will have to report more data breaches to the ICO because of GDPR.

Additionally, 38% of respondents are actively using emerging technologies or planning to deploy them in 12 months which may be used to help UK business adapt and survive. What is likely in the next few years is that longer-term interest will develop to increased adoption of these emerging technologies. With the uncertainty surrounding Brexit, being a global technology leader can only be beneficial for the UK economy.

Overall the results of the research show that although cloud adoption is still high, emerging technologies and a digital revolution may be a more effective way of dealing with major business concerns such as Brexit, GDPR and cyber-security. However, there needs to be more training and analysis, especially as each sector highlighted a problem with skills shortages.

IT can be complex. It's an ever changing world, with new technologies, new regulations and new threats. At **Serviceteam IT**, we love it. (This can make us a little boring at parties).

Ask us about the latest cyber-security trends, the challenges of data sovereignty or low latency connectivity, and we'll put the kettle on and open the biscuits.

Every company promises great service, few consistently achieve it.

At Serviceteam IT we strive always to be honest, transparent and personable at a price which is fair. Our professional team will work hard to bring you the benefit of their knowledge and experience, and our flexible, can-do approach means nothing is impossible if your pockets are deep enough. We're not the biggest, but our clients trust us, and believe we are one of the good ones.

0121 468 0101 www.serviceteamit.co.uk info@serviceteamit.co.uk @serviceteamit

49 Frederick Road Edgbaston Birmingham B15 1HN

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