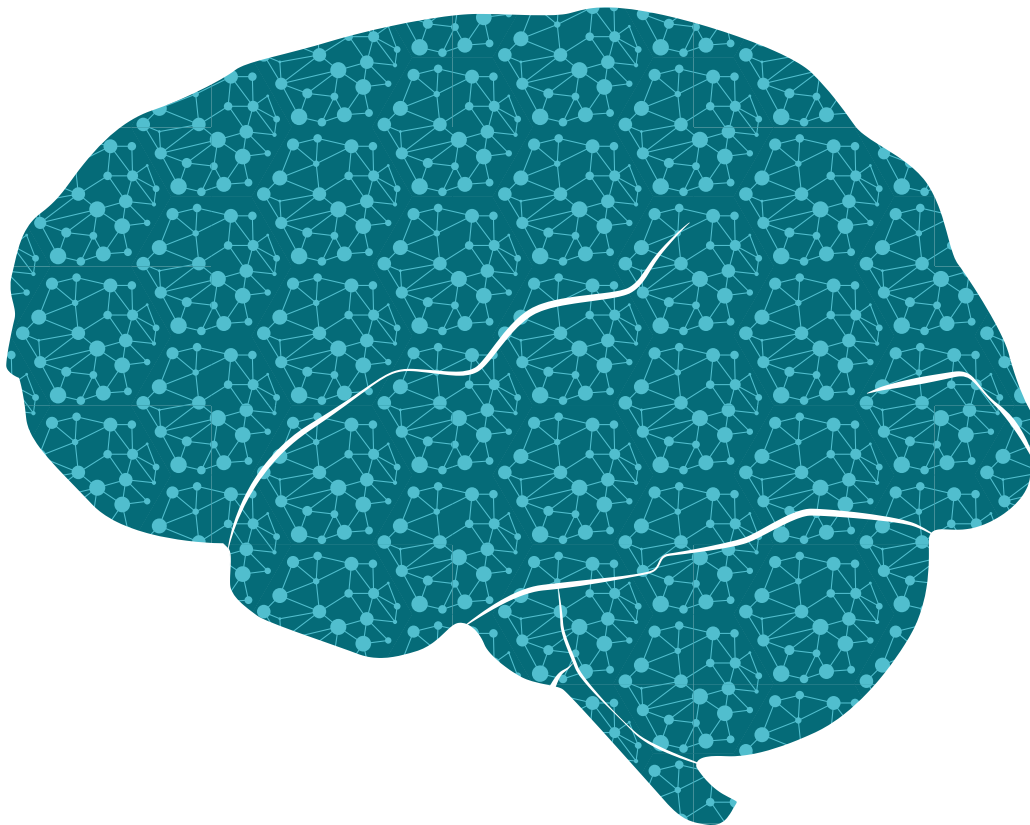




in association with



Intelligent Systems in Action

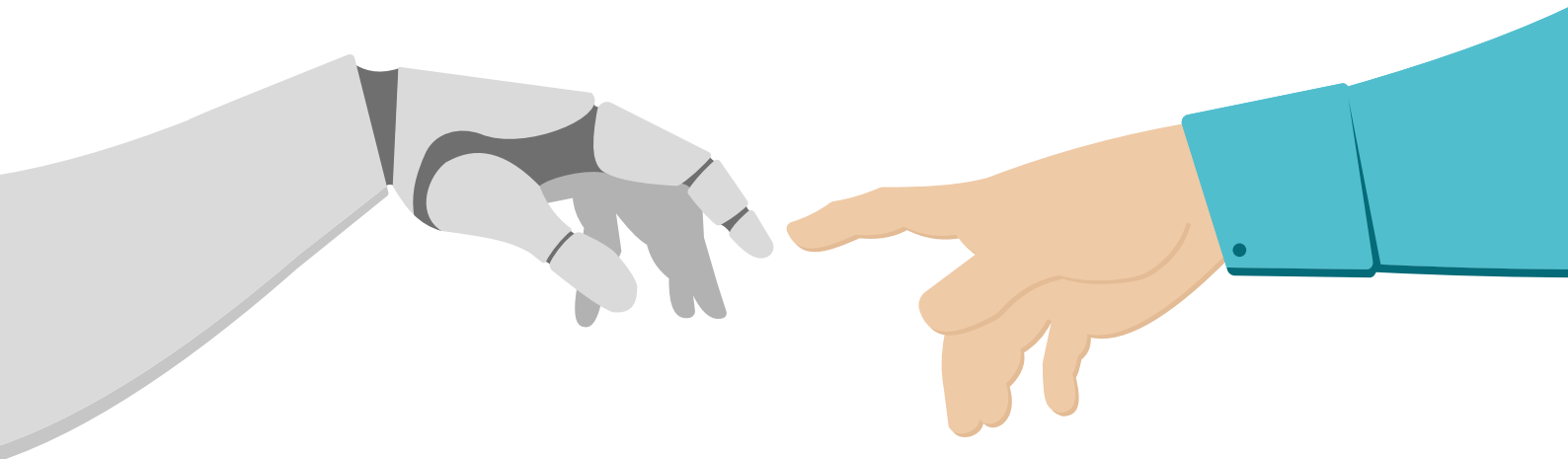
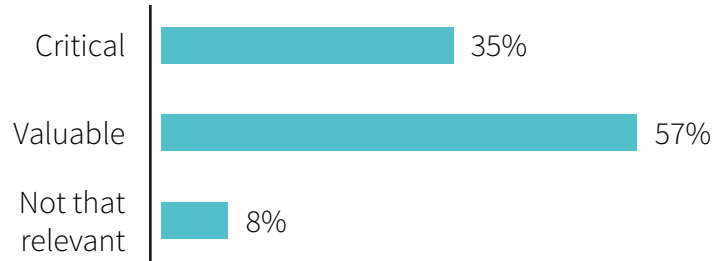
The rise of the machines has already begun

Freeform Dynamics 2016

The intelligent systems imperative

As technology becomes smarter, more and more opportunities arise for businesses to exploit intelligent systems to drive efficiency and transformation. Solutions range from advanced operational planning and optimisation, through marketing automation driven by machine learning techniques, to full-blown AI-style expert systems. During a recent survey of 521 senior IT pros, the competitive imperative associated with intelligent systems came through very strongly.

How important is it for your business to exploit intelligent systems to compete effectively in your market(s) over the coming three years?

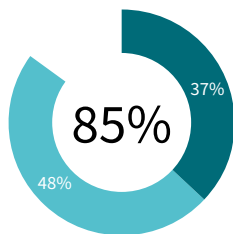


A new reality: Automation, speed and complexity

Reinforcing the imperative, the overwhelming majority of research participants acknowledged the pace and complexity of today's business environment. Manual processes and even traditional prescriptive automation cannot keep up. We are entering an era in which intelligent and often autonomous systems are becoming essential to success.

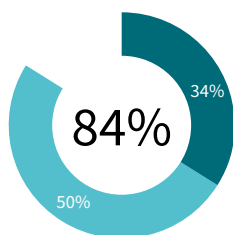
Agree or disagree

Business and IT operations are becoming more complex and fast moving



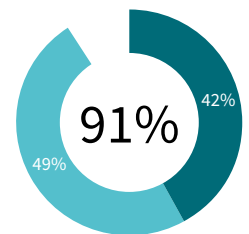
Agree or disagree

Automating complex and fast-moving environments requires a degree of systems 'intelligence'



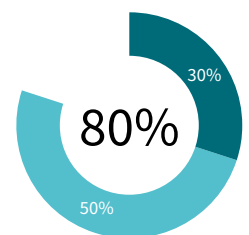
Agree or disagree

Technology advances increasingly enable more aspects of IT operations to be automated



Agree or disagree

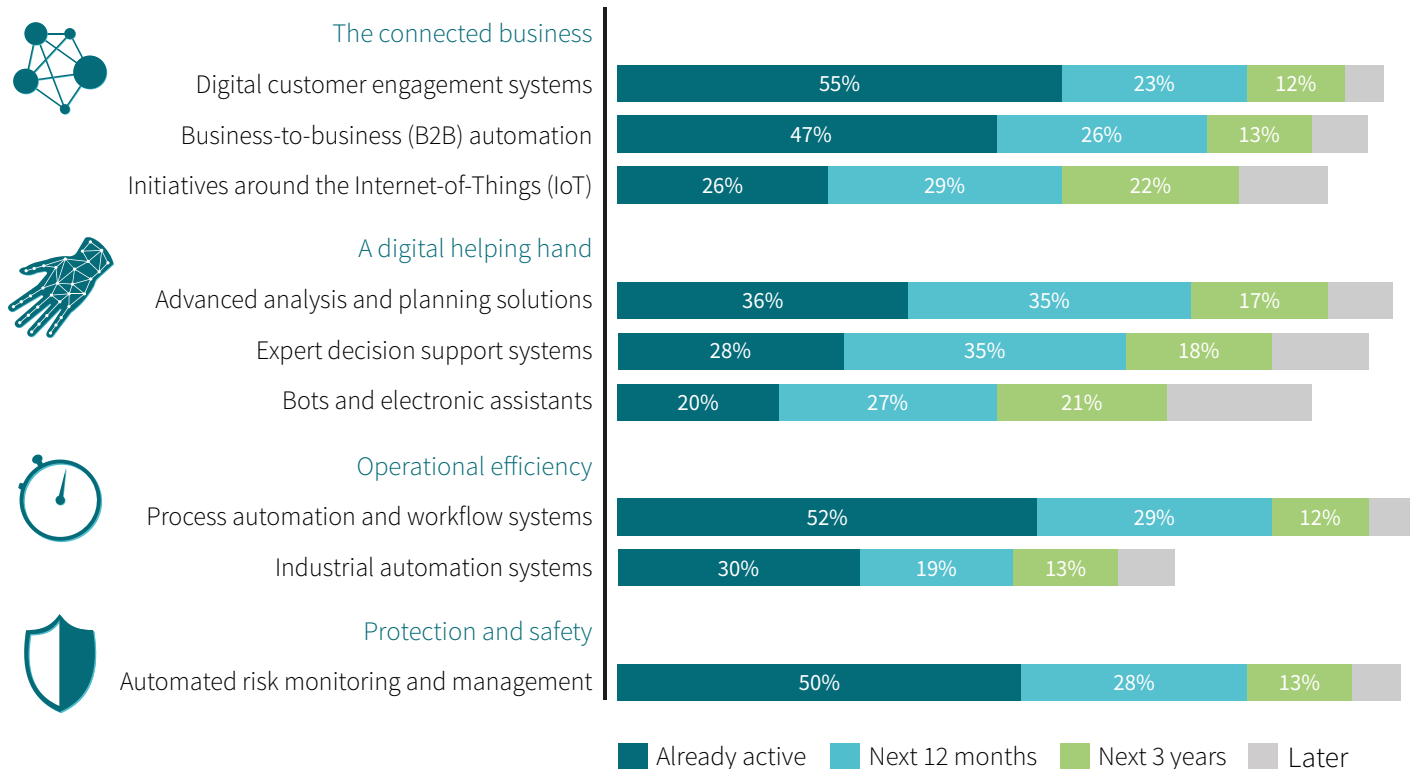
Intelligent systems and automation create opportunity



■ Strongly agree
 ■ Agree

The game has already begun

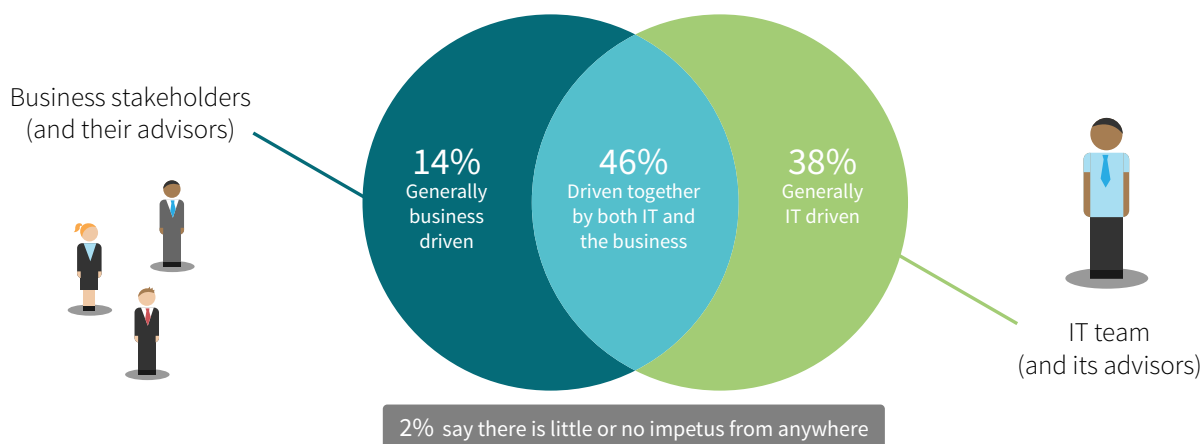
Many ideas around artificial intelligence stem from science fiction, so it's natural to think of them in the future context. However, sophisticated algorithms, hyper-scale computing, and access to huge data sets have now made high-end AI a mainstream reality. The inclusion of advanced processing and machine learning capability into more familiar applications is then driving progress from the other direction. Intelligent systems are thus very much with us today.



A great opportunity for IT teams to contribute value

Some intelligent systems capability is already entering the organisation embedded in third-party applications and services. The latest ERP, CRM and marketing automation solutions, for example, often exploit machine learning to enhance analytics and other key functions. But this is just scratching the surface. In such a fast-moving technology-centric area, IT teams are already exploring the broader potential and working proactively to harness it.

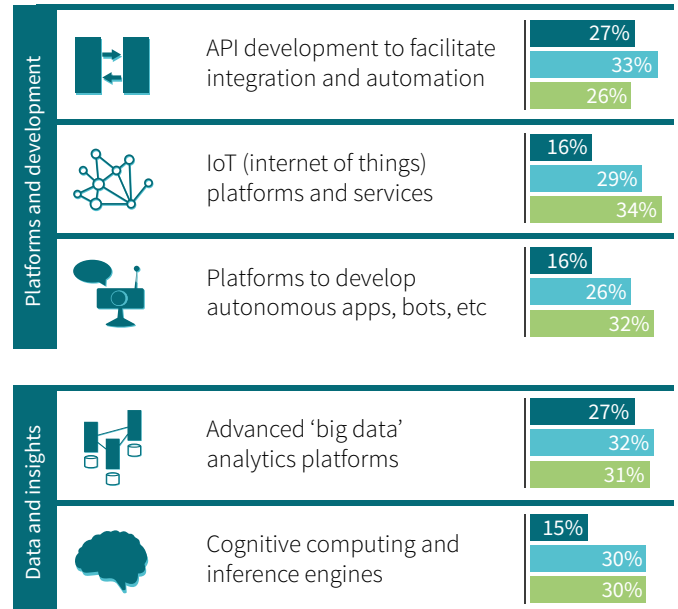
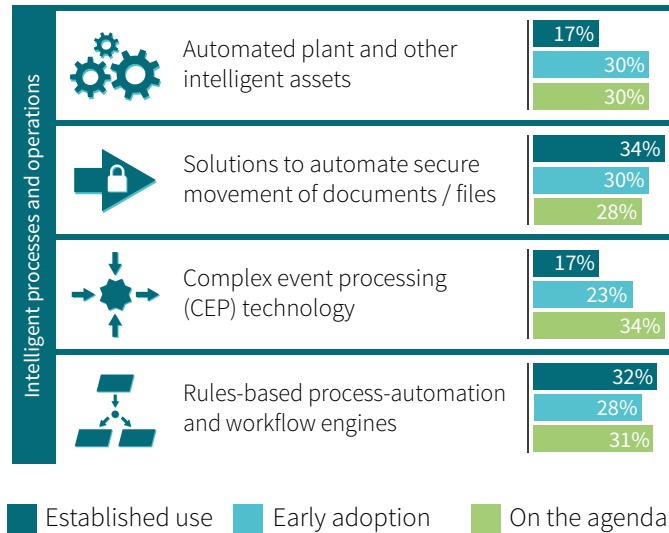
Where does the impetus generally come from for investment in intelligent systems?



Key technologies are gathering momentum

Implementation of the enabling technologies that underpin intelligent business systems is already underway in many areas. Though much of the activity is still at the early adoption or planning stage, the broad relevance of intelligent systems technology is clear in each category. Whether associated with intelligent operations, data and insights, or solution development, investment in relevant platforms, engines, tools and skills is a question of 'when' rather than 'if'.






How much have you adopted the following?



But intelligent systems come with their challenges

Intelligent systems often take a complex range of inputs then either instigate or recommend appropriate action. But what happens if they get it wrong or go 'rogue'? The risks are obvious, and can be compounded if humans just leave the machines to get on with it, especially if people become too dependent and lose relevant knowledge and skills over time.

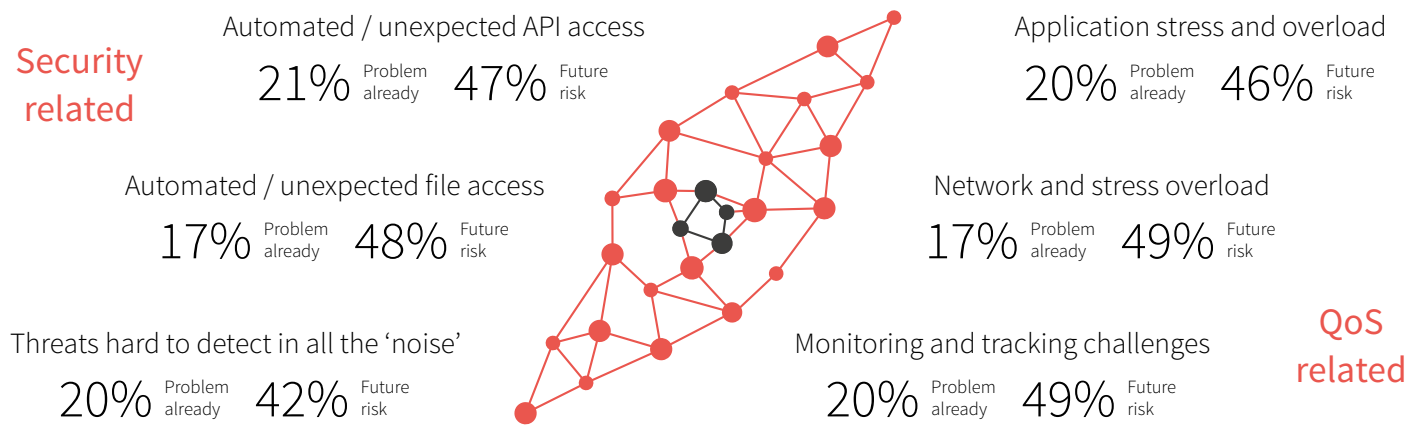
Are any of the following a concern or future issue from a business perspective?

| | |  Problem already |  Future risk |
|--|---|---|---|
|  Direct commercial damage | Commercial damage as a result of the operational failure / breakdown of intelligent systems | 18% | 48% |
| | Commercial damage due to poor actions, decisions or recommendations made by intelligent systems | 16% | 44% |
|  Too much reliance on machines | Increasing use of intelligent systems leading to complacency and lack of human oversight | 19% | 48% |
| | De-skilling to the point where no one is left that understands the logic/processes underpinning systems | 21% | 45% |
|  General uncertainty and fear | Unintended consequences of intelligent automation leading to new and different risks | 15% | 54% |
| | Intelligent systems going totally rogue and wreaking havoc | 7% | 35% |

Additional headaches for the IT team

So far we have focused on the use of intelligent systems within the business, but what about competitors and others operating in your market or industry? In addition to internally-driven activity, IT teams will increasingly need to deal with the consequences of new forms of automated traffic and requests hitting the organisation from the outside world.

Are you seeing or anticipating the following issues in relation to third party bots, agents, and internet-connected 'things' accessing your systems, especially in an automated manner?



Many are not fully prepared

Security and access measures already in place may not have been designed to deal with the new and different types of automated activity that will rapidly become the norm, let alone the likely increase in traffic and events that will need to be handled. Not surprisingly, the majority therefore say that current capability will need strengthening in key areas.

How would you rate your current capability in the following areas to deal with the increasing use of intelligent systems both internally and externally?



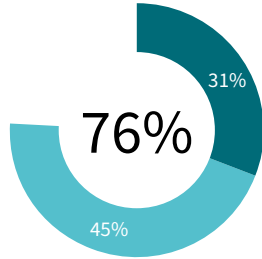
| | | | | | |
|--|---|-----|-----|-----|----|
| | Network level security and access management | 31% | 55% | 13% | 0% |
| | Web and API level security and access management | 22% | 59% | 17% | 2% |
| | Managing the identities of internet-connected 'things' | 18% | 51% | 22% | 8% |
| | File / document level security and access management | 28% | 59% | 13% | 0% |
| | Secure data / file transfer management and automation | 27% | 60% | 12% | 1% |
| | Systems to assure effective data governance and privacy | 26% | 56% | 15% | 2% |

Use of intelligent systems by IT to gain visibility

The prospect of simply keeping track of what intelligent systems are up to can be quite daunting, especially when it's already a challenge making sense of all the logs and event data generated. The good news is that intelligent systems can be part of the solution as well as the problem for IT teams. The tools for capturing, analysing, visualising and even predicting activity are a lot smarter nowadays, and many are starting to recognise their value.

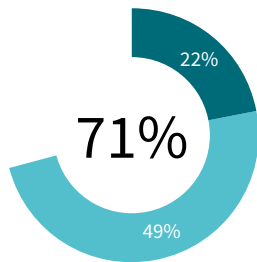
Agree or disagree

We have a great deal of complexity in our network and IT systems infrastructure



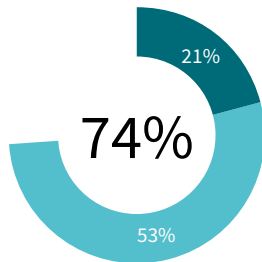
Agree or disagree

Making sense of all the logs and other event data generated is extremely challenging

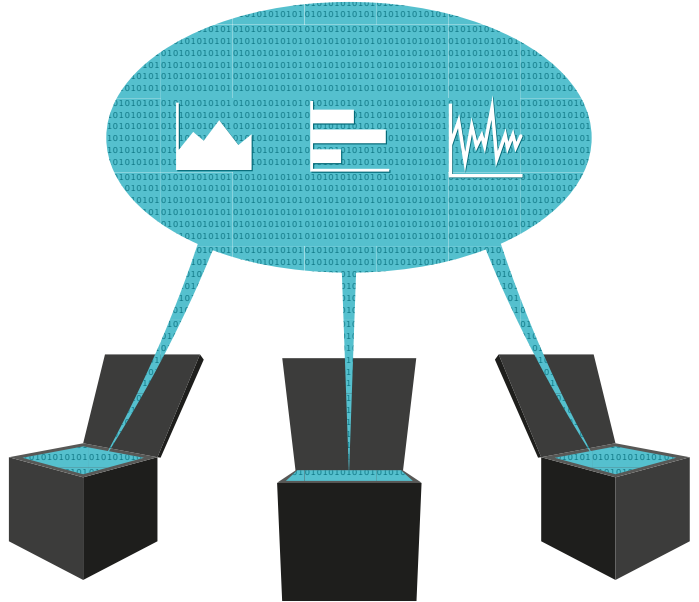


Agree or disagree

Intelligent systems to analyse and visualise complex event and performance data have a key role to play



■ Strongly agree ■ Agree



Intelligent predictive analytics tools
e.g. to help identify and resolve IT problems before they impact users

| | | |
|-----------------|----------------|---------------|
| 18% | 31% | (39%) |
| established use | early adoption | on the agenda |

Intelligent data / activity visualisation tools
e.g. in the context of networking, data movement, security monitoring and forensics

| | | |
|-----------------|----------------|---------------|
| 23% | 33% | (36%) |
| established use | early adoption | on the agenda |

Intelligent systems to enhance security

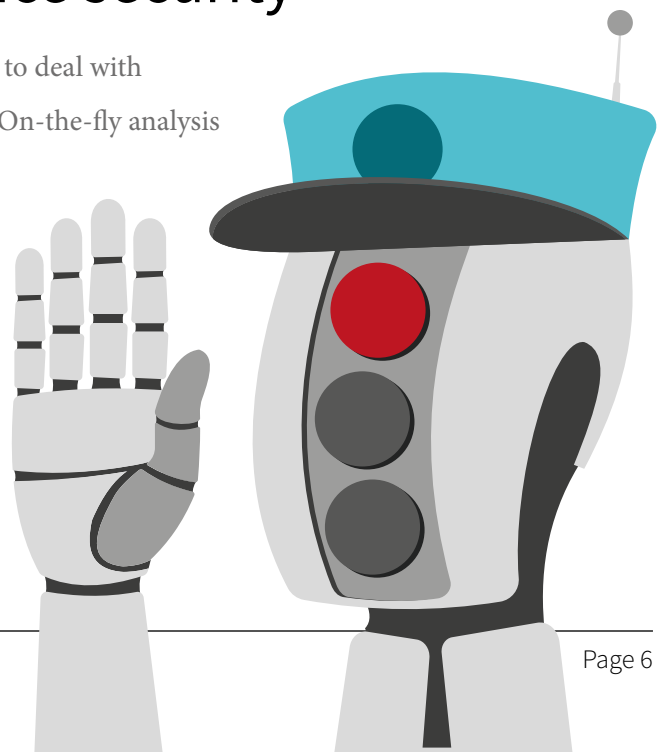
Beyond providing visibility, intelligent systems can be deployed to deal with various aspects of security in an active and automated manner. On-the-fly analysis together with appropriate policies can be used to identify and block inappropriate activity or requests in real time.

Policy-based security and access management
e.g. to dynamically determine who / what should have access to resources based on context

| | | |
|-----------------|----------------|---------------|
| 31% | 30% | (30%) |
| established use | early adoption | on the agenda |

Managed file and document transfer
e.g. to automate the secure movement of system and user files both internally and externally

| | | |
|-----------------|----------------|---------------|
| 31% | 33% | (26%) |
| established use | early adoption | on the agenda |



A digital helping hand for IT in other areas

Intelligent systems potential within the IT function is actually very broad. Smart automation can be used to reduce operational overheads and create a much more dynamic and responsive IT environment. With the right mix of intelligent infrastructure and tools, IT professionals are freed from much of the systems administration drudgery. They can then focus on overall service delivery management and activities that create incremental business value.

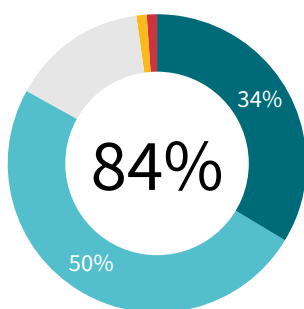


Net positive impact on IT professionals overall

A question often raised is whether IT staff are concerned about the risk of intelligent automation putting them out of a job. About a third of study respondents feel this way, and if your current role revolves around routine administration tasks, this is understandable. Most, however, focus on the opportunity to enjoy an easier and more interesting life.

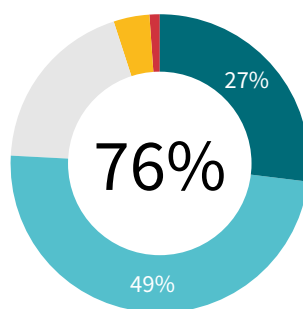
Agree or disagree

Intelligent systems create some great opportunities for IT professionals to do new and interesting things



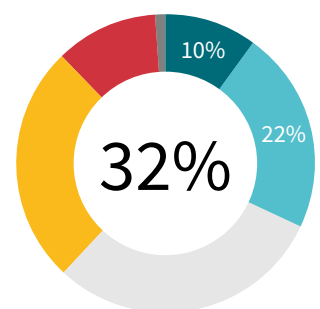
Agree or disagree

Intelligent systems have the potential to remove a lot of the drudgery from IT operations



Agree or disagree

Intelligent systems are likely to eventually put me out of a job



■ Strongly agree
 ■ Agree
 ■ Neutral
 ■ Disagree
 ■ Strongly disagree
 ■ Unsure

Adoption related challenges

While intelligent systems of various kinds are clearly acknowledged as having a big role to play in optimising and transforming both the business and IT, it's not just a case of implementing solutions opportunistically. Just like any other aspect of technology, uncoordinated piecemeal adoption will almost certainly come back to bite you in the form of longer term costs, risks and constraints. At this early stage in our intelligent systems journey, however, most tell us that it's difficult to assess the full extent of the opportunity, challenges and threats, and formulate a relevant strategy. Even getting the business and IT teams on the same page can be hard. Other hurdles on the path to progress include acquiring the necessary tools, technology and skills, defining appropriate policies and procedures, and, not least, putting the necessary security measures in place. None of this is surprising given the rapid pace of technology and market evolution, that we can expect to continue for some time to come.

Would you regard any of these steps to success as hard or challenging?



Path to progress

People and politics can also impede progress

Beyond the practical challenges, stakeholders clearly need reassurance in relation to security and risks. There's then the familiar challenge of working around funding and time constraints, and the general resistance to change. Perhaps most significant is seeing so many highlight trust issues and a lack of imagination as obstacles or impediments to progress.

Thinking of business stakeholders and the workforce in general, how much of a problem are the following to the adoption and use of intelligent systems?



Major obstacle



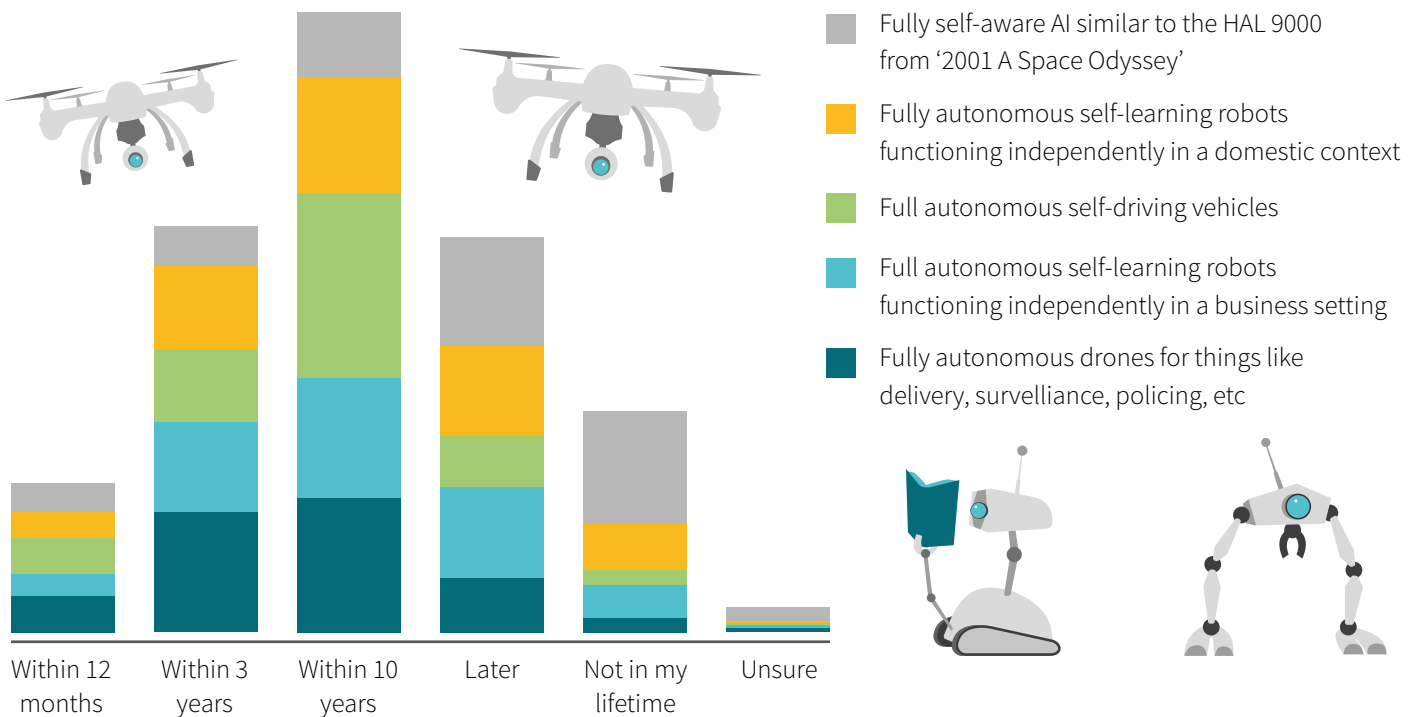
Impediment to progress

| Challenge | Major obstacle | Impediment to progress |
|----------------------------------|----------------|------------------------|
| Security and other risk concerns | 33% | 43% |
| Funding constraints | 30% | 36% |
| Lack of knowledge | 24% | 46% |
| Time constraints | 21% | 44% |
| General resistance to change | 18% | 50% |
| Lack of imagination | 17% | 43% |
| Lack of trust in automation | 18% | 46% |
| Fear of jobs being devalued | 16% | 40% |

Looking to the future

Our discussion so far has been concerned with technologies that are already available to the mainstream businesses, at least in their initial form. Such solutions will continue to evolve, and we can expect them to do so very rapidly. But what about the future and the prospect of taking things to the next level again? With this in mind, it's interesting to look at views of how quickly more advanced incarnations of AI are likely to be with us.

How long do you think it will be before the following are considered 'normal'?



Parting thoughts

Artificial intelligence is a very hot topic in the technology industry at the moment, with a lot of excitement among those in both the media and investment communities. In particular, there's a huge conversation going on around the way in which companies like Amazon, Google, Microsoft, Facebook and a myriad of other players are investing in AI to transform consumer products and services. At the time of writing, some investors are even questioning the future performance of Apple based on the perception that it is behind in the AI race, and will find it hard to catch up because of its heavy focus on privacy and reluctance to exploit customer data.

Such discussions highlight the competitive imperative and hint at some of the threats and challenges when considering the use of intelligent systems in a mainstream business environment. While the battle of the hyper-scale juggernauts mentioned above plays out in a very high profile way, similar dynamics are already evident in other industries. Retailers that have invested in marketing solutions underpinned by machine learning are gaining significant advantage over their competitors. Logistics companies using intelligent planning and optimisation systems are similarly benefiting, and so on in other sectors. Meanwhile, forward thinking IT teams are transforming the way they work and delivering greater value to the business. Looking forward, investment in intelligent systems will be increasingly important to success.

About the research

The research upon which this report is based was independently designed, analysed and reported by Freeform Dynamics. 521 responses from IT manager/directors, IT security specialists and IT professionals were collected via an online survey. The respondents were from organisations ranging in size from 100 employees to 5,000 plus employees and from a wide variety of industry sectors (Financial Services, Manufacturing, Telecoms, High Tech, Retail, Transport & Logistics, Healthcare, Pharmaceuticals, Research & Education and Public Services). The study was sponsored by Ipswitch.

Definition of intelligent systems: When introducing the topic of ‘intelligent systems’ to study respondents, we referred to the use of intelligent machines, applications and services that help to transform, optimise and automate various aspects of business and IT. Examples given up front included: Digital customer self-service systems, smart workflow solutions, natural language bots, electronic assistants, expert decision support systems, and IT automation technology, with further examples provided subsequently at various points in the survey.

About Freeform Dynamics

Freeform Dynamics is an IT industry analyst firm. Through our research and insights, we aim to help busy IT and business professionals get up to speed on the latest technology developments, and make better-informed investment decisions.

For more information, and access to our library of free research, visit www.freeformdynamics.com

About Ipswitch

Today’s hard-working IT teams are relied upon to manage increasing complexity and deliver near-zero downtime. Ipswitch IT management software helps them succeed by enabling secure control of business transactions, applications and infrastructure. Ipswitch software is powerful, flexible and easy to try, buy and use. The company’s software helps teams shine by delivering 24/7 performance and security across cloud, virtual and network environments. Ipswitch Unified Infrastructure and Applications Monitoring software provides end-to-end insight, is extremely flexible and simple to deploy. The company’s Information Security and Managed File Transfer solutions enable secure, automated and compliant business transactions and file transfers for millions of users. Ipswitch powers more than 150,000 networks spanning 168 countries, and is based in Lexington, Mass., with offices throughout the U.S., Europe, Asia and Latin America.

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