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Insights

Automation with intelligence

In its seventh year, Deloitte's Global Intelligent Automation survey explores how organisations are delivering higher ambitions through broader toolkits to scale their automation programmes

ROBOTIC & INTELLIGENT AUTOMATION

The robotic process automation (RPA) market has been growing rapidly over the past few years. RPA in its purest form, however, is just the beginning, as cognitive capabilities are also being integrated with RPA, enabling machines to perform tasks normally reserved for human intelligence. Read more on Deloitte.com.

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Foreword

Welcome to *Automation with intelligence*, the seventh edition of Deloitte's intelligent automation series. This edition builds on the findings from our previous research to explore the evolution of intelligent automation technologies and their impact on organisations and workforces.

INTELLIGENT AUTOMATION REMAINS firmly on the agenda of the C-suite. Once again, our Global Intelligent Automation survey found that the C-suite is, together with functional leadership, a staunch supporter of their organisations' intelligent automation strategy – and, by some margin, the group most likely to be highly supportive.

This is for a good reason. Intelligent automation has proved itself and is now firmly in the mainstream. Organisations realise a broad set of benefits: improved accuracy, increased productivity, enhanced customer and employee experience, and, of course, cost reduction. Significant opportunities exist for organisations that can integrate enterprise-wide automation with process improvement, process intelligence, and other complementary capabilities from across the organisation to bring value to end customers holistically. We expect that this holistic approach to enterprise-wide automation will, in the coming years, become an imperative that enables organisations to deliver on rising expectations from automation programmes and business leaders.

This approach drives a true digital transformation agenda but is novel and sometimes challenging to operationalise as it relies on the leaders' ability to foster followership and instigate change with their fellow executives. The first indicator of this shift, which we expect to continue, is automation leaders re-inventing their operating models to take a customer-centric approach where process outcomes and customer value take ultimate precedence over functional distinctions and departmental boundaries.

A more transformational approach to delivering more significant benefits also requires larger investment. This year's survey showed that the estimated average payback increased from 16 months in our last survey to 22 months this year, as organisations invest more to deliver more. Some of this investment is into new tools. Organisations are using a wider range of intelligent automation technologies, such as AI and low code, to realise their ambitions. We also see greater use of process intelligence data to inform business cases and to monitor and drive benefits realisation.

We want to thank all the executives who participated in our survey and interviews. We hope you find our insights thought-provoking and practical, and we look forward to your feedback.

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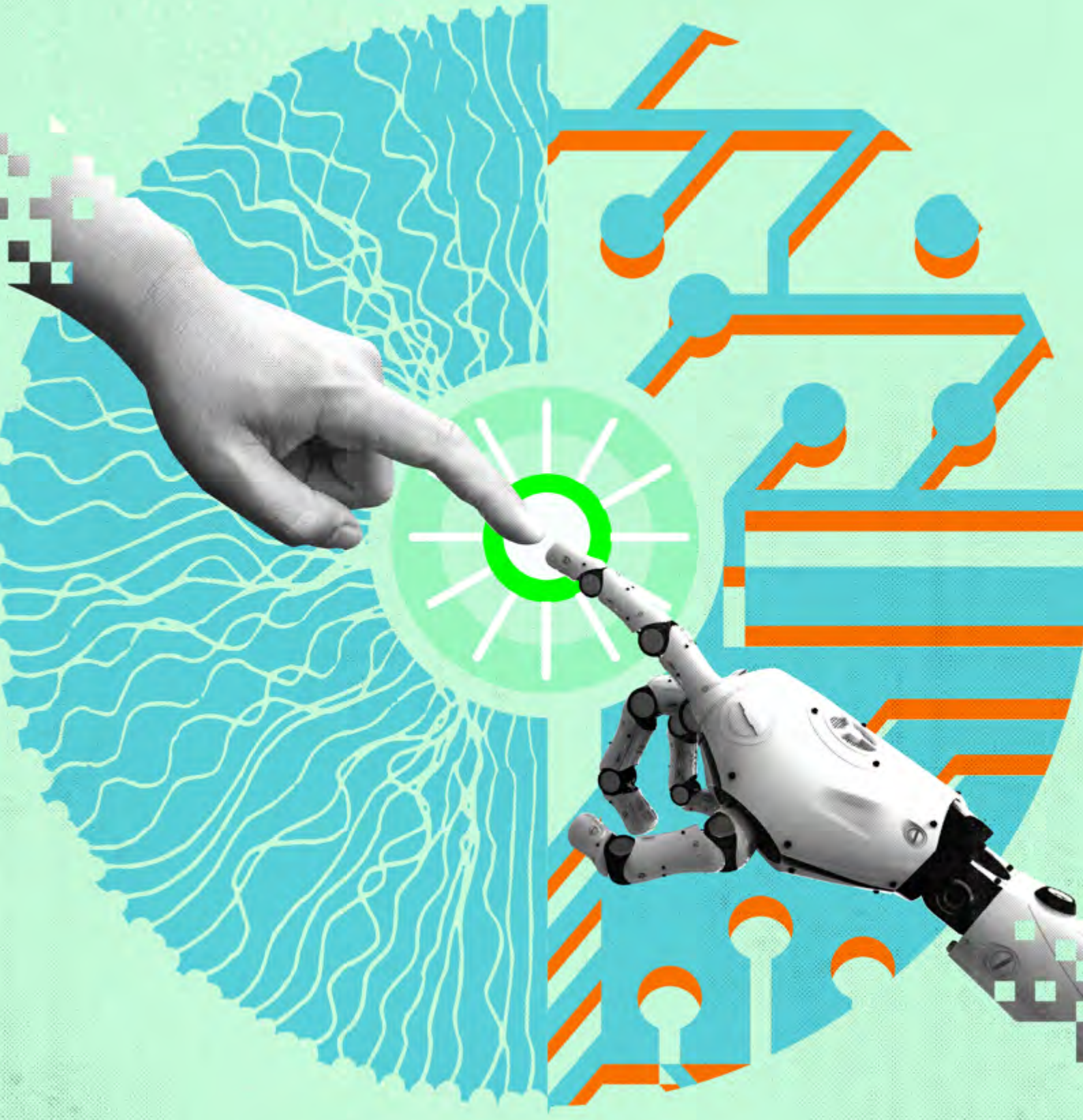


DEFINITIONS

Artificial intelligence (AI): AI technologies can perform tasks that previously required human intelligence, such as extracting meaning from images, text or speech, detecting patterns and anomalies, and making recommendations, predictions or decisions. They include machine learning, deep learning, natural language processing and generation technologies. AI enables the processing of unstructured data and the automation of specific tasks that traditionally require human judgment or tacit knowledge.

Robotic process automation (RPA): RPA is business process automation in which software performs tasks that can be codified in computer code. It is often referred to as 'robotics' or 'robots'.
It is defined as the automation of rule-based processes with software that utilises the user interface. It can run on any software, including web-based applications, enterprise resource planning (ERP) systems and mainframe systems.

Automation-as-a-Service: Automation is provided as a service rather than a one-off build by a third party. Typically, the third party builds and hosts automation services on its own platform on behalf of an organisation. This includes research and analysis, design, development, and ongoing support and maintenance of automated processes.

Private cloud: A private cloud consists of cloud computing resources deployed exclusively for one business or organisation. The private cloud can be physically located at an organisation's on-site data centre, or a third-party service provider can host it. But in a private cloud, the services and infrastructure are always explicitly configured for one organisation.

Public cloud: The cloud resources are developed and operated by a third-party cloud service provider at scale for many organisations. With a public cloud, computing infrastructure, a range of platform components and advanced services are made available by the cloud service provider and consumed by organisations who configure these services for their use in subscriptions (or similar). Microsoft Azure is an example of a public cloud.

Low-code: In the context of automation, low-code refers to refers to automation tools with a graphical interface that enable a broader population of nontechnical users (rather than trained software technicians) to build automations.

Orchestration: In the context of automation, orchestration refers to how automations are managed and scheduled to optimise workflow. Orchestration can be manual or scheduled, or it can leverage data and algorithms to understand when the best time would be to perform tasks.

OCR/ICR: Optical character recognition (OCR) is a technology that enables the conversion of noneditable documents, such as scanned paper or PDF files, into digital text. Intelligent character recognition (ICR) is the next generation of this technology which uses AI to enhance the quality of data extracted from documents using context and machine learning.

Process intelligence: Process intelligence refers to digitalised process diagnostic and execution management tools that enable an organisation to mine data. The results can provide better decisions that will allow the organisation to transform. It includes process mining, task mining, simulation and execution management tools with the capability to re-engineer and automate processes to realise rapid process optimisation and deliver end-to-end cost, revenue, and risk efficiencies.

Process mining: Process mining uses specialised data mining algorithms to identify trends, patterns and details in event logs recorded by an information system to define and understand the underlying business process.

Task mining: Task mining uses data captured by recording the interactions of users to capture process actions at the desktop level, including actions performed on non-core systems such as spreadsheets and emails, to define and understand the underlying processes.

Process monitoring: Process monitoring refers to using tools, including process mining in a connected 'always on' state, to monitor process performance in real-time. The insights generated can be used to execute processes better or transform them (sometimes called process management).

End-to-end automation: End-to-end automation is a methodology that enables the delivery of automation solutions across an entire process/value chain, which may involve using multiple tools.

Citizen-led development: Citizen-led development is a framework that encourages non-IT employees to use IT-sanctioned low-code/no-code platforms to develop low-complexity, attended automations within their function. This framework empowers business users to create new task-based automations for their own use, and it helps with increasing automation awareness throughout the organisation.

METHODOLOGY

To obtain a global view of how organisations implement and scale intelligent automation technologies, Deloitte surveyed 479 executives from 35 countries and a wide range of industries. Of the respondents, 48 per cent were from Europe and Africa, 47 per cent from the Americas and five per cent from the Asia Pacific region. The range of participating executives included heads of automation (19 per cent), operations directors (13 per cent), shared service leaders (six per cent), CHROs (three per cent) and customer centre heads (one per cent). Deloitte also conducted in-depth telephone interviews with clients and automation experts to gather their automation stories for case studies.

Organisations are getting closer to their digital ideal

In the past few years, we have observed organisations moving gradually along the automation maturity curve.

THIS YEAR, WHEN we asked executives to self-assess their transformation, our analysis revealed an acceleration of the automation transformation. The executives were asked to 'imagine an ideal organisation transformed by intelligent automation' and compare their organisations to that ideal by rating them on a scale of one to ten (one indicating 'not close at all' and ten indicating 'very close'). This year's results showed a more significant leap in automation transformation than in 2020 compared to 2019. The organisation self-assessment score rose from 4.41 out of 10 in 2020 to an average rating of 5.04 out of 10 in 2021–2022. Our survey results in 2019 showed an average rating of 4.24.[1]

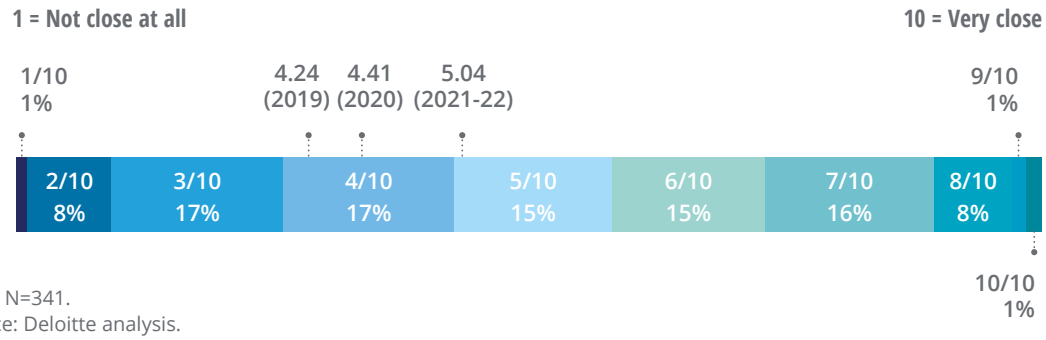
While the average organisation has finally passed the mid-point of five, it is still far from being the ideal organisation transformed by automation.

When we remove organisations piloting intelligent automation (defined as those with less than ten live automations), we see implementers (11–50 automations) and scalers (51+ automations) rating themselves on average at 5.96. The organisations that are further along in their automation journey see themselves as much closer to the ideal. The number of organisations deploying at scale has doubled compared to our 2018 findings.

The progress organisations have made is impressive considering how quickly intelligent automation technologies evolve. While the perception of the ideal might be changing over time, organisations that are not afraid to embrace digital disruption are more likely to survive and thrive in the world of perpetual technological change.

FIGURE 1

Proximity to an ideal organisation, transformed by intelligent automation, self-assessment by the companies we surveyed



Note: N=341.
Source: Deloitte analysis.

Greater use of a range of intelligent automation tools appears to help transformation

In our first publication in the series, T*he robots are coming*, back in 2015, only 13 per cent of organisations reported plans to increase automation in the coming months by investing in RPA.[2]

This year's survey shows that, six years later, RPA and OCR technologies have finally hit the mainstream. Seventy-four per cent of survey respondents are already implementing RPA, and 50 per cent are already implementing OCR. Organisations are building on the successes of the early adopters, and we see them using the full suite of intelligent automation tools. Followed by RPA and OCR, our respondents reported that AI, process mining and process monitoring are the next most desirable emerging technologies, with 46 per cent planning to implement AI in the next three years, followed by 43 per cent for process mining and monitoring.

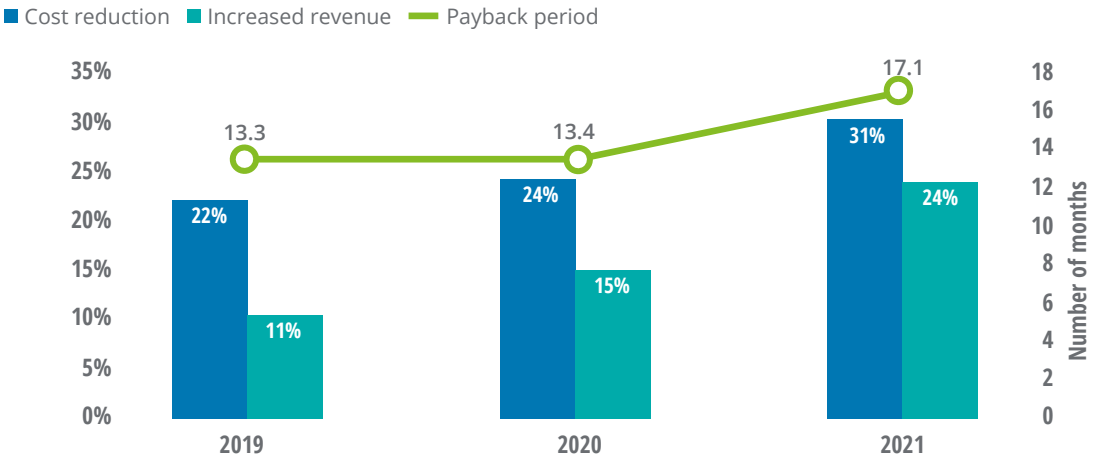
Our survey showed that low-code technologies are on the rise too. In 2020, 24 per cent of respondents had already implemented low-code. This year, the figure has risen to 40 per cent. The number of organisations with no plans to implement low-code has dropped from 47 per cent in 2020 to only 30 per cent this year. The rise in these technologies open the door for better human-machine integration, which we discuss in further detail in the citizen-led development chapter.

Greater benefits, higher investment

Tapping into a wide range of intelligent automation technologies comes with many benefits. This year's survey shows that organisations are adopting intelligent automation solutions to benefit from increased productivity, cost reduction, improved accuracy and better customer experience.

FIGURE 2

Increased revenue, cost reduction, and payback period



Notes: 2019: N=302; 2020: N=320; 2021-22: N=341.
Source: Deloitte analysis.

Cost reduction remains one of the top priorities of many organisations. Intelligent automation is a proven way to achieve this. By adopting intelligent automation, organisations expect to achieve an average cost reduction of 31 per cent over the next three years, up from 24 per cent in 2020. Organisations that moved beyond piloting intelligent automation tell us they have achieved an average cost reduction of 32 per cent, up from 24 per cent in 2020. One financial services executive we spoke to during our research reported that radically re-engineering processes and using multiple intelligent automation tools resulted in the organisation achieving cost reduction of over 70 per cent in a targeted area.

As organisations move along the automation maturity curve, they learn to set achievable expectations. For organisations more experienced with automation, the survey showed no gap between the expectations and reality of cost reduction.

Increased benefits from automation have had an impact on the investment required to deliver these benefits. Our data shows that the average payback period for those piloting intelligent automation increased from 16 months in 2020 to 22 months in 2021–2022. While the payback period may be longer, it is still under 18 months and the overall benefit to the organisation is greater.

PAYBACK STILL UNKNOWN

Similar to our findings in previous years, over half of survey respondents have not calculated cost reduction, and 70 per cent have not calculated the increase in revenue expected as a result of intelligent automation implementation.

Many organisations miss out on communicating the good news of what their automation programmes have achieved. By calculating and communicating the achievements of automation, organisations can also unlock further investment and increase their impact.

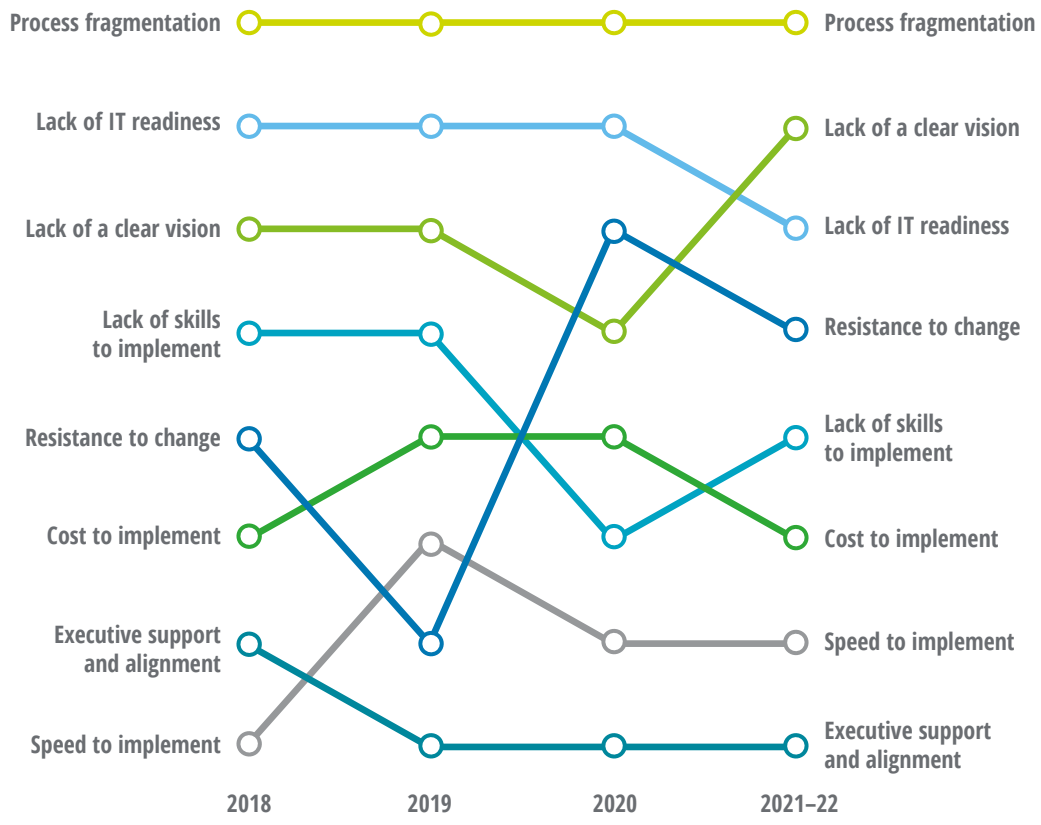
Overcoming barriers to scaling

Every year, organisations adopting intelligent automation face barriers holding them back from unlocking their full automation potential. The top barriers in this year's survey are process fragmentation, lack of a clear vision, lack of IT readiness and resistance to change. This is consistent with previous years. While there is no 'quick fix' to overcome these significant barriers, practical solutions exist.

The top barriers in this year's survey are process fragmentation, lack of a clear vision, lack of IT readiness and resistance to change.

FIGURE 3

Barriers to scaling intelligent automation



Notes: 2018: N=478; 2019: N=302; 2020: N=320; 2021–22: N=341.
Source: Deloitte analysis.

PROCESS FRAGMENTATION: Immature and fragmented processes that are difficult to manage with a unified flow have been cited in our past four surveys as the top barrier to automation. We expect that process fragmentation will remain at the top of the barriers list for the next five or more years, but there are things organisations can do to address this.

- To cut down on fragmentation of processes, organisations should take an end-to-end automation approach. Combining new thinking and capabilities (human, native and emerging technologies) can help create more powerful processes that deliver unprecedented value for stakeholders (see chapter on end-to-end automation).

- To help break down process fragmentation and drive standardisation across processes, organisations should consider using process mining and process monitoring (see chapter on process intelligence).

CLEAR VISION: With so many existing and emerging technologies available at their fingertips, organisations need to have a vision and strategy for intelligent automation to succeed. One in five organisations (22 per cent) do not have a clear and accepted vision for intelligent automation, and four in ten (41 per cent) do not have an enterprise-wide intelligent automation strategy.

- Automation leads need to work alongside the C-suite to develop a clear vision and enterprise-wide strategy. While the C-suite are one of automation's most supportive stakeholder groups, strategy remains the missing link to successful scaling. A robust roadmap that sets bold ambitions informed by existing automation experience and learnings from the leading adopters can help seize automation opportunities and mitigate risks and mistakes.

- Having a laser focus on where organisations are realising value from intelligent automation and being able to cascade that vision from the top down is vital. Without quantifying the opportunities brought by intelligent automation, it's a challenge to get all the stakeholders on board.

IT READINESS: Organisations still rely heavily on their IT functions to enable various technologies. While our survey shows that IT functions are less supportive of their organisations' intelligent automation strategy than some other groups, 72 per cent are either supportive or highly supportive.

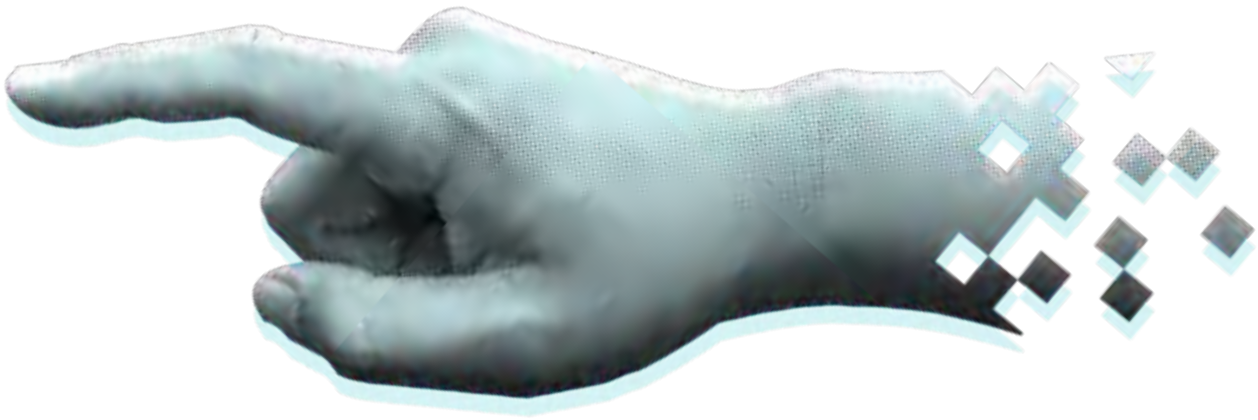
- Having IT representation in conversations about intelligent automation from early on can bridge the gap that often exists between business and IT. IT needs to learn to adapt to the new technological landscape and understand what is required to implement intelligent automation effectively.

- Automation leaders also need to understand the IT perspective. Everything from IT capacity and skills to infrastructure and multiple enterprise-wide technology initiatives can be impacted when new technologies are onboarded, and these issues must be considered.

RESISTANCE TO CHANGE: Our survey showed that the risk function and the workforce remain the least supportive stakeholder groups for intelligent automation. However, the workforce at organisations that are implementing and scaling automation are more supportive than their counterparts at piloting organisations (52 per cent versus 34 per cent), which suggests that education and positive experiences with automation make a real difference.

- Co-creating intelligent automation and getting workforce buy-in becomes easier every year. The rise of low-code and citizen-led intelligent automation development can help organisations engage and empower their workforce (see chapter on citizen-led development).

- Leadership, communication and training have always been critical to the success of any change programme. Before onboarding to the intelligent automation journey, potentially impacted stakeholders must understand automation's 'what,' 'why' and 'how.' Our survey showed that more than half (54 per cent) of implementing and scaling organisations have not calculated the proportion of their workforce impacted by intelligent automation. Proactively communicating the changes, well-defined benefits and reskilling opportunities can and should be articulated through various channels.



The ‘direction of travel’ is end-to-end automation

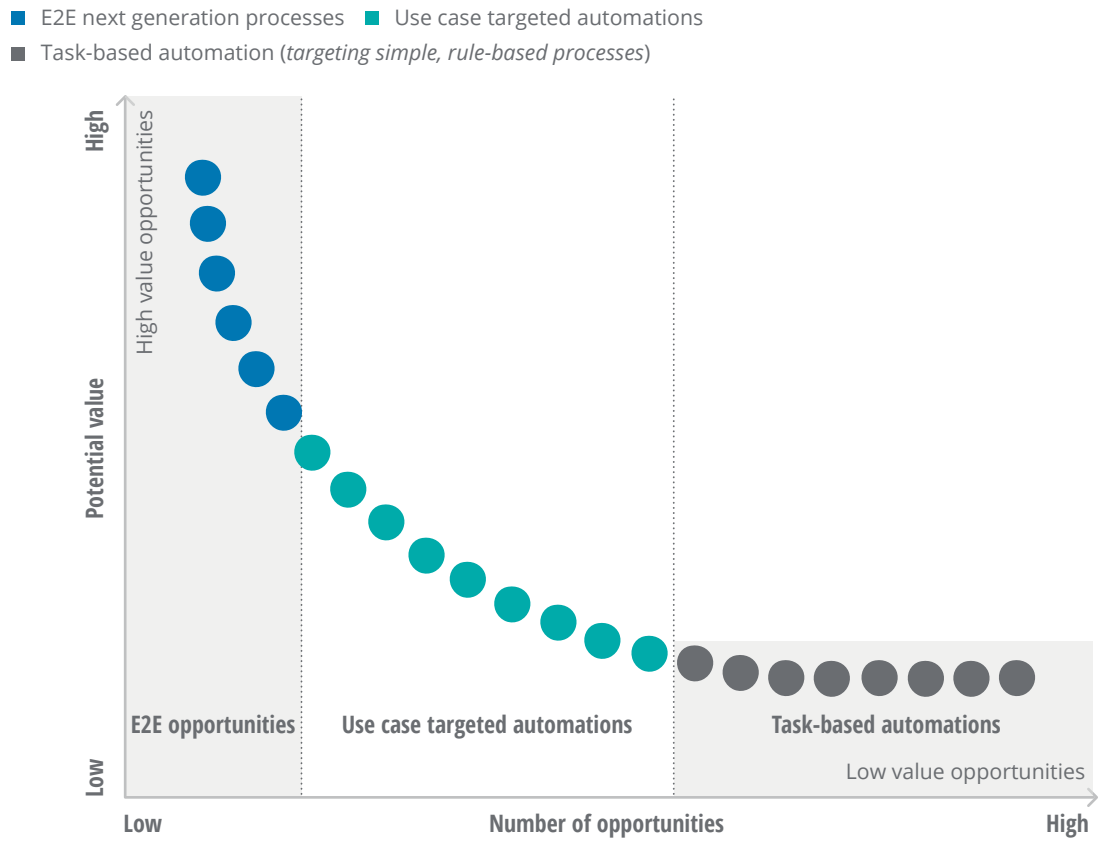
End-to-end automation, in our view, is a methodology that focuses on the delivery of an automation solution across an entire process, which may involve the use of multiple tools. This method of delivering automation allows organisations to achieve more significant benefits across the whole value chain. At the other extreme, task automation seeks to automate discrete tasks – typically fragments of an end-to-end process.

The most advanced adopters of intelligent automation have steadily moved from task-based automation toward end-to-end automation. Our survey findings showed that, while recovering from COVID-19, over 85 per cent of organisations are rethinking how work is done. And this year, we found that 92 per cent of implementers and scalers are either already implementing end-to-end automation as part of their intelligent automation strategy (44 per cent) or are planning to implement it in the next three years (48 per cent).

Many organisations started their automation journey with basic tools, such as OCR and RPA, to automate tasks in targeted areas, such as finance processes. These initiatives typically delivered value, but the limitations of using one or two tools to automate existing processes soon became apparent. Additional software tools were then added to the toolkit, and process redesign was often also brought into scope.

FIGURE 4

Difference between task-based automation and end-to-end automation



Source: Deloitte analysis.

Our survey data shows a clear difference between those piloting automation and the more mature organisations implementing and scaling their automation efforts. Compared to piloting organisations, the latter is three times more likely to reimagine what they do and focus on end-to-end process change and customer-centricity.

Organisations face many barriers in their journey towards end-to-end automation. Our survey showed that the most challenging barriers are difficulties in integrating various solutions (62 per cent), lack of skills and experience (55 per cent) and inability to change business processes or ways of working (52 per cent).

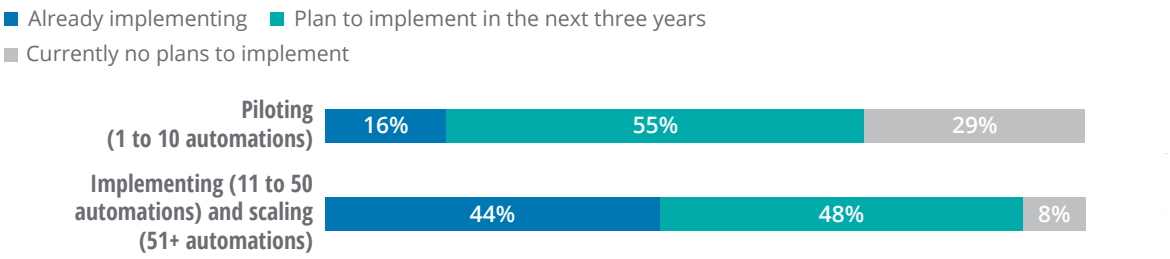
FOCUS ON FUNDING

Nearly one in five organisations cited lack of funding as their number one barrier in implementing a wide range of intelligent automation technologies.

By calculating potential benefits and payback periods, organisations better understand the value automation brings. This can boost the chances of attaining the required funding. Educate stakeholders: let them know what others are achieving. Think big: what is the value case for the whole automation programme? But start small: deliver a single initiative and tell everyone about it.

FIGURE 5

End-to-end automation as a part of intelligent automation strategy



Notes: Piloting N=179, Implementing N=162.
Source: Deloitte analysis.

End-to-end automation as a remedy for process fragmentation

Fragmented processes exist in siloes; a mantra often accompanies this situation: 'This is just how we do things.' Reimagination is a radical approach to process improvement that calls for the end-to-end rewiring of processes aligned to the organisation's objectives. It can also help organisations realise more significant benefits through designing automatable workflows across the entire process. Our survey respondents say that by using the end-to-end automation approach, they can benefit from simplified business processes, an increased number of processes that could be automated end-to-end and an improved range of potential use cases.

Reimagination forces business units to step out of their siloes to understand and redefine how processes interact with each other. Instead of pushing the bottlenecks upstream or downstream, reimagination requires taking a step back and reviewing the whole chain of processes: remove all the duplication, waste and complexity, and take advantage of the digital tools available to do things in a better way. By deploying multidisciplinary teams – drawn from each part of the organisation where the process puzzle sections sit – and addressing beliefs and practices about 'how we do things around here,' organisations can look at the end-to-end process with a fresh view.

Integrating different solutions

Leaders should be aware that while new technologies offer new possibilities, it is not the case that the more technologies, the better. Each technology needs to be connected. IT needs to be on board to ensure the new technology can be integrated and is appropriate for the overall architecture.

TOP TIPS

- To leverage the power of the whole automation toolkit, organisations should not stop at process redesign. To maximise value, end-to-end automation and process reimagination should be components of the vision of becoming a truly transformed organisation.
- As well as closely aligning business and IT teams, organisations should consider co-locating their intelligent automation teams with existing teams that carry out process improvement and transformation work.
- Intelligent automation teams should be plugged into the business, work closely with transformation teams and be aligned on the process improvement initiatives taking place in each department.

Business functions should lead in setting the ambition and defining what represents value. Part of this involves educating themselves on what tools are available and what is possible.
IT should be scanning the technology environment to bring innovative products to the attention of business stakeholders. IT should also assess the fit of potential new tools and the experience required to implement specific intelligent automation technologies.

Leaders should be aware that while new technologies offer new possibilities, it is not the case that the more technologies, the better.

FROM AUTOMATION AT SCALE TO AUTOMATING END-TO-END

In January 2020, Telkomsel, the largest telecommunications provider in Indonesia, embarked on its intelligent automation journey. Since then, it has successfully scaled its intelligent automation programme to around 100 processes using RPA and intelligent document processing (IDP) toolkits, delivering savings of over 110,000 hours per month in 2021.

One of the key benefits of scaling the intelligent automation programme was how it positively impacted the digital mindset of employees. As Telkomsel moved along the maturity curve, employees grew their knowledge of new technologies and mastered process improvement and process simplification methodologies. This knowledge empowered them to identify potential automations in their own areas. The introduction of citizen developer roles further assisted in the democratisation of automation capabilities outside of the centre of excellence, which is aligned with the company's long-term targets.

While pursuing end-to-end automation, Telkomsel leaders realised that the approach to business case development needed to change. The move from an RPA only approach to using a combination of intelligent automation tools required a horizontal view across the end-to-end process. It became increasingly important to include a more comprehensive set of factors in the business case, for example, improved customer satisfaction score, enhanced accuracy of campaign promotion and increase in customer transactions served.

Moving from automating only back-end processes to automating the front-end too allowed highly productive employees of Telkomsel to shift time from clerical work to more high-value-added tasks.

By leveraging the full potential of intelligent automation technologies, while automating end-to-end, Telkomsel aspires to achieve:

- improved customer experience through various customer service channels, be it for sales, promotions enquiry or complaint handling
- real-time customer insights for marketing and sales department through internal and external data sources
- reduced outsourcing operational costs by automating processes across the entire value chain.

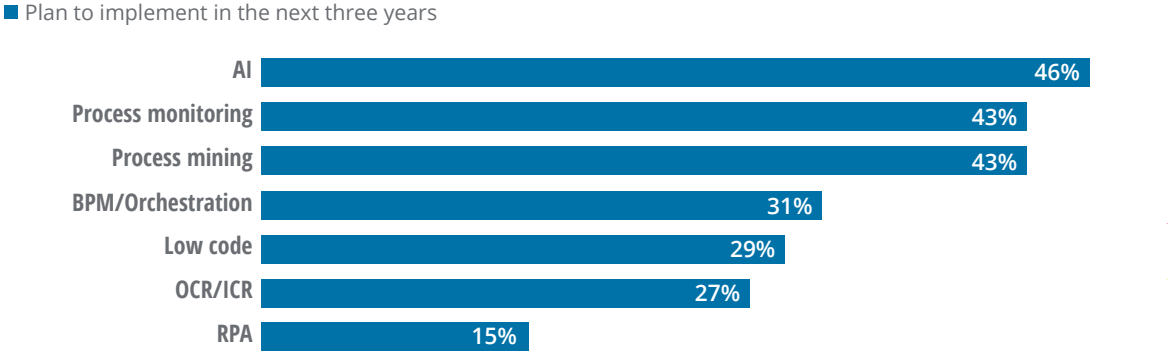
Insight-driven transformation

Process intelligence refers to digitalised process diagnostic and execution management tools that enable an organisation to mine data to make better decisions to transform. It includes process mining, task mining, and simulation and execution management tools with the capability to re-engineer and automate processes to realise rapid process optimisation and deliver end-to-end cost, revenue and risk efficiencies.

PROCESS MINING AND monitoring capabilities continue to be recognised for delivering value while becoming the next most desirable emerging technologies. When we asked the executives which intelligent automation technologies they plan to implement in the next three years, AI, process monitoring and process mining topped the list. According to Gartner, a technology research and advisory firm, the process mining market is expected to keep growing at between 40 and 50 per cent annually and will pass $1 billion in 2022.[3]

FIGURE 6

Emerging intelligent automation technologies



Note: N=341.
Source: Deloitte analysis.

What makes process intelligence essential for organisations to achieve business objectives? Our survey showed that by using process intelligence, organisations are improving productivity, generating data about existing processes and improving decision-making.

Process intelligence has also proved itself as a tool that amplifies the value brought by automation by helping to select high-value processes and establish a clear data-to-value strategy. Our survey showed that 80 per cent of respondents agree that process intelligence enables the identification and qualification of more high-value processes.

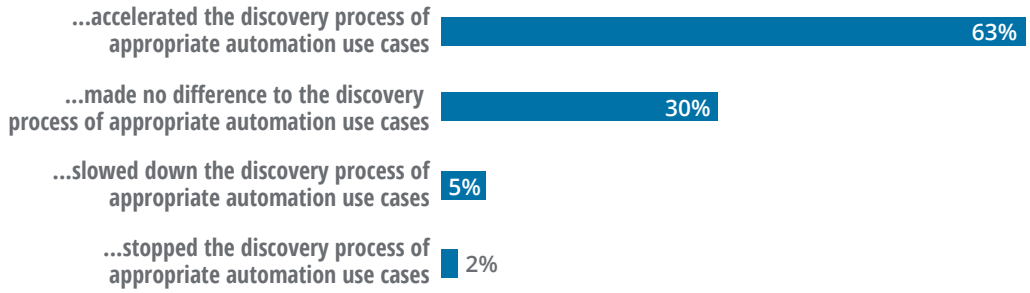
While 82 per cent of all respondents agreed that using process mining drives better outcomes than not using it, only one in five (23 per cent) of organisations surveyed are already using it. To close this adoption gap, organisations need to break the barriers holding them back from tapping into the full potential of process intelligence. According to our survey analysis, lack of a clear vision, IT readiness, lack of skills and lack of understanding of the monitoring capabilities were the key barriers to implementing process intelligence.

Organisations adopting process monitoring can use it as an enabler in their transformation towards becoming an insight-driven organisation. Eighty-seven per cent of organisations agree that process monitoring is key in achieving a data-driven approach to continuous improvement.

Our survey found that 63 per cent of respondents believe that process intelligence accelerated the discovery process and helped to identify automation use cases. Another 30 per cent think that it made no difference, and just seven per cent believe that it slowed down or stopped discovery. For some, the real value is not accelerating the discovery process but having solid data to use in business cases for process improvement and automation. One organisation we spoke to commented that their business cases were significantly larger since using process intelligence. Others rely on process intelligence for its ability to provide visibility into processes and drive standardisation.

FIGURE 7

Use of process intelligence has...



Note: N=288.
Source: Deloitte analysis.

Our survey showed that by using process intelligence, organisations are improving productivity, generating data about existing processes and improving decision-making.

We see many parallels between process intelligence uptake and the early days of automation. Piloting a new technology and discipline in a traditional change landscape or legacy IT architecture can be challenging. To demonstrate value and consider scaling, organisations need to have the right leadership, align change teams with IT and have a clear top-down communication coupled with the right blend of data engineering and business process skills.

Process mining can shine a light on dark data

Many automation leaders face the challenge of fragmented processes, and process mining can play a role in overcoming this. When task mining and process mining are combined, organisations can shine a light on dark data while getting an empirical and accurate view of how work gets done. This can reduce process variations, encourage data-driven thinking and allow leaders to make better investment choices.

Can organisations solve process fragmentation with process intelligence?

Through process mining and task mining, organisations can more accurately achieve an end-to-end view of their processes. This visibility of pain points, exceptions and process loopholes enables leaders to take appropriate actions to drive process standardisation. Process monitoring provides leaders with real-time visibility of what is going on in their processes, allowing them to track progress towards the standard process they desire. We believe this will help provide the data and visibility organisations need to tackle process fragmentation, which will, in turn, lay solid foundations for more digitisation and automation down the line.

Rapid and adaptive processes: The 'art of the possible'

Process monitoring is where data flows in real-time from systems into a centralised platform. The result: business can obtain an immediate and accurate view of the strengths and weaknesses of a process and begin to change towards more rapid and adaptive processes. The latest technologies provide an action engine to implement basic automation to source systems and platforms. Organisations starting to deploy process intelligence platforms in this way see it as an effective way to refocus the business by putting data at the heart of workflows and operations. This enables faster and more effective decision-making and accelerates value realisation.

Connection is everything

To use process intelligence for 'always-on,' real-time process monitoring, organisations should look to connect their digital platforms to process mining platforms – enabling real-time monitoring and transformation. The leading process mining vendors provide prebuilt connectors to accelerate this. It is time to think big now to prepare for tomorrow.

WHAT ABOUT ETHICS?

Our survey showed that a third of organisations do not have a policy to ensure the ethical development of process intelligence tools.

Process intelligence tools, particularly task mining but also process mining, can surface significant amounts of personal information about the performance of individuals. Organisations should consider the ethical and privacy dimensions when implementing these tools.

Through process mining and task mining, organisations can more accurately achieve an end-to-end view of their processes.

APPLYING A DATA-CENTRIC APPROACH TO INFORM DECISIONS

A tier-1 bank wanted to move away from traditional discovery methods, which were estimated to take several months while carrying a risk of being error-prone due to data subjectivity. Instead, the bank's leadership decided to take a data-centric approach to business process analytics. The bank used a cloud-based process mining service to provide a sustainable pipeline of opportunities for transformation.

The solution used process mining and task mining tools to provide an end-to-end forensic picture of process workflows. This approach:

- highlighted process complexities
- provided fact-based insights that removed subjectivity from decision-making
- identified over 80 opportunities for further simplification and automation
- delivered a fully visualised end-to-end process dashboard.

The bank deployed the process mining service across key end-to-end operational processes, including complaints, payments, contact centre, webchat and financial health. The aim was to transform complex, time-consuming and repetitive manual processes hampering important interactions with the bank's customers and colleagues.

Using process mining in financial health

Consider the following scenario: A customer would call, but the agent who answered could not handle the query. The agent would then forward the call on to another agent (or sometimes forward on multiple times) until the customer could get through to the right agent that could help. Process mining was used to identify this issue's root cause and solve it more precisely and quickly. This improved customer experience and shortened the unnecessarily long call times.

The team identified that filling in an income and expenditure form took a long time on calls. Also, not all customers needed to complete the form in the first place. Process mining helped to highlight the issue and flagged the opportunity to prepopulate time-consuming income and expenditure forms while preventing customers from entering arrears in the first place.

Automation-as-a-Service + Cloud

Automation-as-a-Service – scaling intelligent automation through managed service delivery

AUTOMATION-AS-A-SERVICE (AAAS) IS a delivery model where automation is provided as a service, rather than a one-off build of automations, by a third party. Typically, the third party builds and hosts automation services on its own platform on behalf of an organisation.

This includes research and analysis, design, development, and ongoing support and maintenance of automated processes. Our survey showed that 17 per cent of organisations are already implementing AaaS as a part of their intelligent automation strategy, while a third are planning to implement it in the next three years. Moreover, eight in ten respondents (79 per cent) agree that AaaS will become an important way to deliver intelligent automation over the next three years.

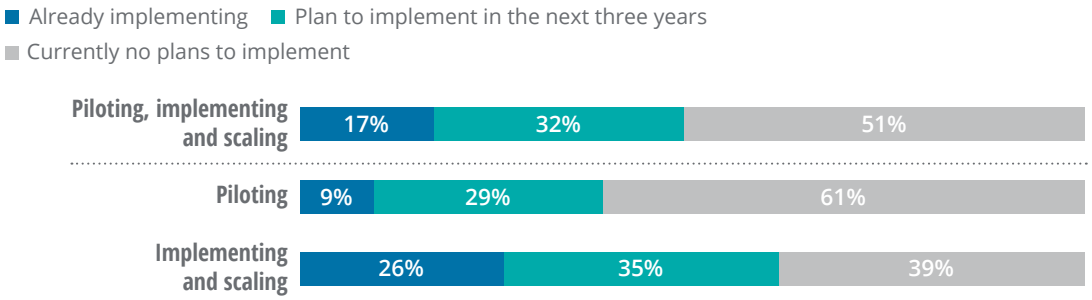
When we asked the executives to describe their current use of AaaS, 34 per cent said they use it for end-to-end development, management and maintenance of automations, followed by 24 per cent using it as a provisioning of platform and for the development of automations (22 per cent). Future adopters are planning to enhance their operations by leveraging AaaS capabilities for end-to-end development, management and maintenance (39 per cent), followed by the development of automations (27 per cent) and provision of a platform (20 per cent).

Scalability, faster deployment and lower cost are the three main reasons respondents use AaaS in their organisations. The pandemic showed that the ability of business to meet unexpected demands for certain services could be critical for a sustainable business. AaaS provides this agility and resilience, particularly at times of unexpected demand.

It is a challenge to keep up with the ever-changing technological landscape. The market can have already shifted by the time organisations adopt and scale new technologies and tools. AaaS can be used as an accelerator to buy intelligent automation capability to move along the maturity curve faster.

FIGURE 8

Automation-as-a-Service as a part of intelligent automation strategy



Notes: Piloting, implementing and scaling N=341, Piloting N=179, Implementing and scaling N=162.
Totals may not add to 100 per cent due to rounding.
Source: Deloitte analysis.

Some will do this until the organisation develops internal capabilities. Still, others choose to maintain the service, relying on the third party to keep the technology updated and buying additional technologies and capabilities as needed.

Our survey showed that a majority were using a combination of private and public or third-party cloud solutions. Those piloting automations in their organisations are two times more likely to favour third-party cloud solutions than implementers and scalers.

Cloud

The use of AaaS comes hand-in-hand with the cloud. The elasticity of the cloud enables AaaS providers to deal with changing demand and ensure business continuity. Over 87 per cent of organisations surveyed have accelerated their investment in cloud-hosted automation services in the past year.

Cloud services for automation are becoming more common, with 66 per cent of organisations surveyed reporting using the cloud for some or all of their automations.

Data privacy and security used to be the key barriers to cloud adoption. The default was storing data on-premise. Many organisations are now moving away from legacy hardware and shifting to the cloud. The knowledge and experience of early adopters and the evolution of cloud capabilities are helping to deal with the issues of data residence and privacy.

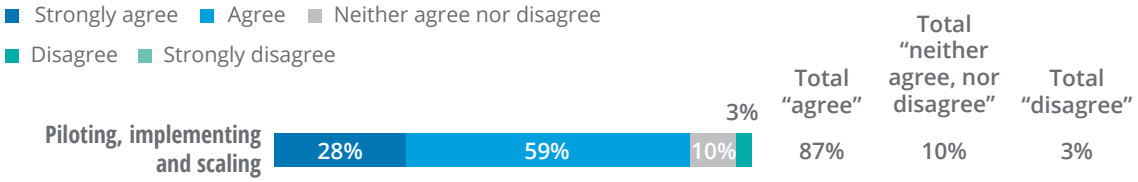
There is a range of approaches to using cloud infrastructure for automation. Organisations can use private, public or third-party cloud solutions or a mix.

TOP TIPS

- **Vendor lock-in.** Organisations risk getting locked into technology vendors in a swiftly changing market. Technology market leaders of today can be overtaken by their competitors tomorrow. Choose an AaaS provider that is constantly scanning the horizon for new technologies and is flexible in expanding its platform to deploy new capabilities.
- **Pay-as-you-go or fixed price?** Business areas go through peaks and troughs in demand, yet many commercial AaaS arrangements do not provide flexibility to match. Find a commercial model that will suit your demand profile and test it with a few different scenarios.
- **Choice of cloud.** Many AaaS providers will allow you the choice of your preferred cloud provider, often from a shortlist of the top three hyperscalers. For some, staying consistent with an enterprise-wide preferred platform will be important. For others, it is sufficient for the platform to comply with the company's IT and privacy standards.

FIGURE 9

In the past year, my organisation has accelerated its investment in cloud-hosted automation services



Note: N=111.
Source: Deloitte analysis.

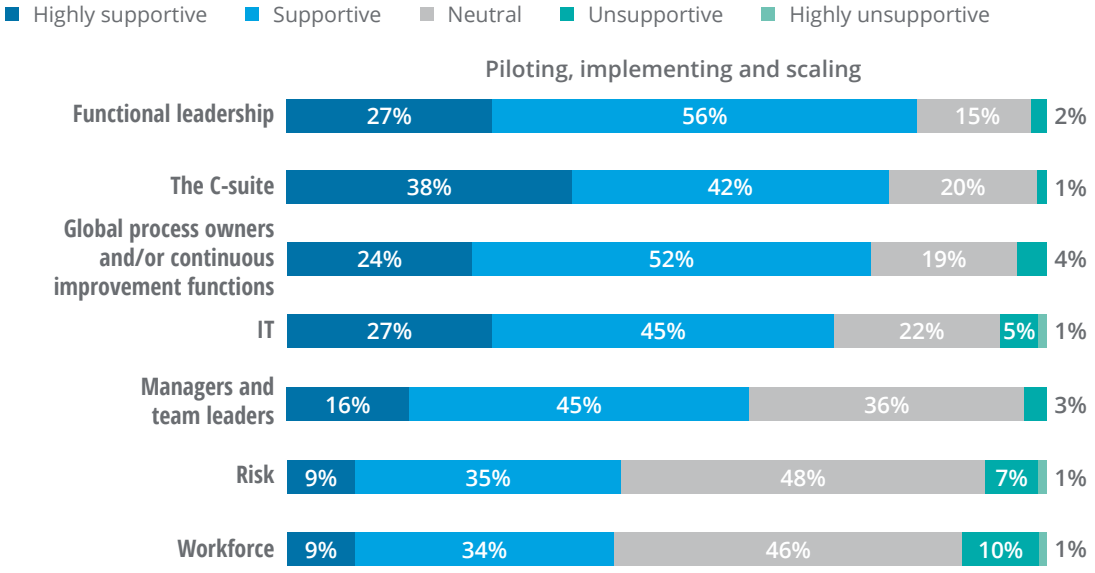
What about the workforce?

Our last report stated that the question is no longer whether automation will impact the workforce but rather how. This report shows that, on average, 34 per cent of workers have seen a change in their roles and ways of working because of the implementation of intelligent automation. This is a steady increase from 20 per cent of workers in 2019 and 23 per cent in 2020.

LIKE PREVIOUS YEARS, workforce and risk remain the least supporting stakeholder groups of organisations' intelligent automation strategies. That said, only 11 per cent are unsupportive or highly unsupportive. It is important to cascade and communicate the vision and ambition for intelligent automation to the workforce – particularly those whose roles will be most impacted. Many fear job losses. While this may be the case in some instances, in many instances it is not, and the goal of automation is to reorient workers' time towards more value-adding tasks. Telling positive stories of how automation has helped reduce the administrative burden and enabled higher-value work to be performed will be vital in bringing the workforce on side.

FIGURE 10

Level of support for intelligent automation strategy, by stakeholder group



Notes: Totals may not add to 100 per cent due to rounding. N=341.
Source: Deloitte analysis.

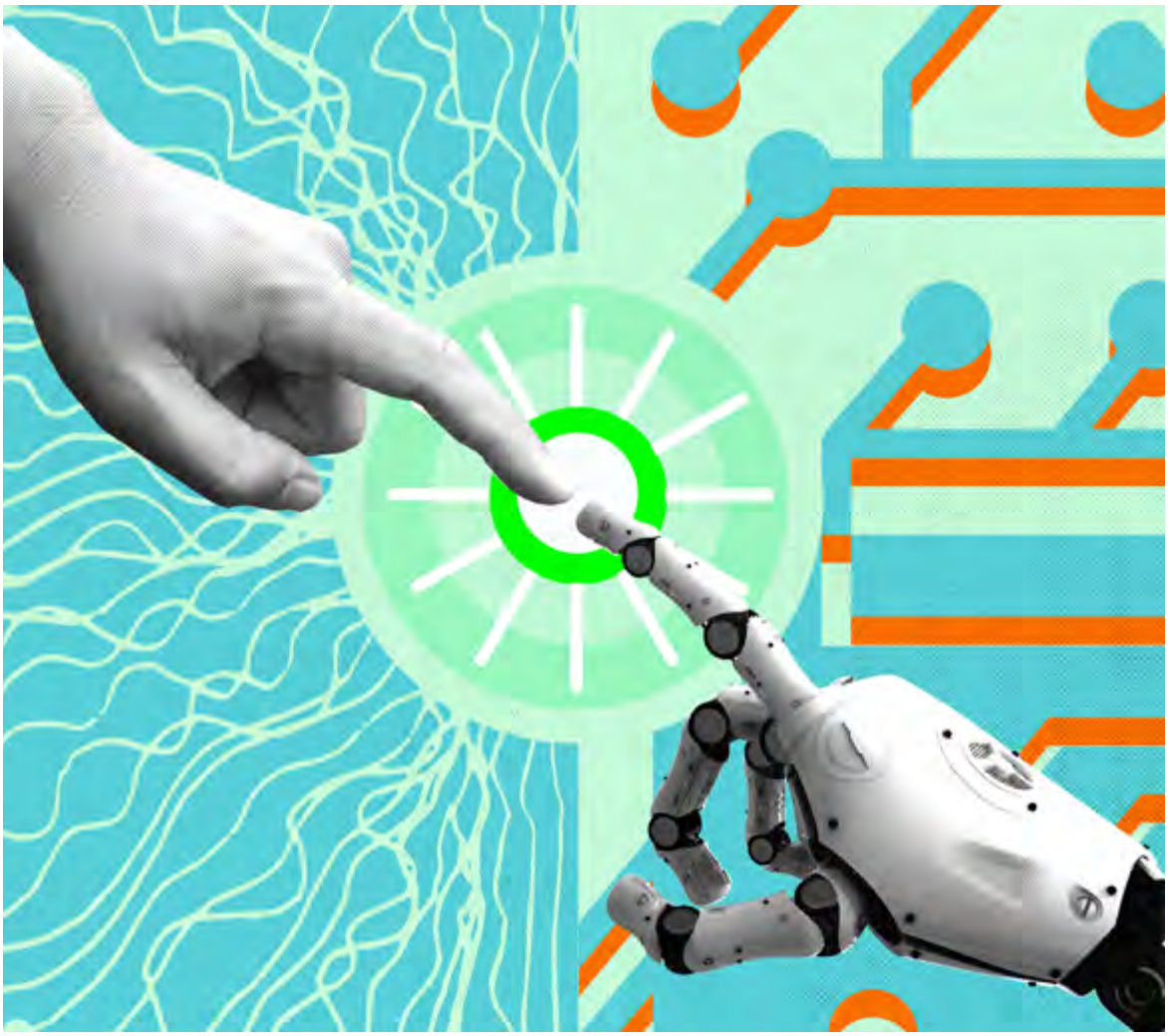
Lack of learning opportunities also remains in the spotlight. Twelve per cent of piloting organisations do not provide learning opportunities and have no plans to do so. Implementing and scaling organisations are more likely to see the value in retraining, with only seven per cent reporting that they do not currently provide such opportunities and four per cent reporting they do not offer them and have no plans to do so. With most intelligent automation implementations changing people's work rather than replacing whole employees, retraining those impacted by automation is vital to success.

How do leading organisations keep their people engaged with intelligent automation enabled transformation? A newly evolving concept of citizen-led development can help reskill and empower tech-savvy employees by creating a true collaboration of 'humans with machines'.

FOR SOME ORGANISATIONS, A FOCUS ON THEIR PEOPLE IS NEEDED:

Fifty-four per cent of implementing and scaling organisations this year reported that **they have not calculated** the proportion of their workforce that has seen changes to their roles, tasks and ways of working due to intelligent automation.

While it is critical to deliver the technology, organisations also need to understand the impact on their people. Without this understanding, it will be difficult to provide people with the support they need to adopt new ways of working successfully.



Humans with machines – low-code and the rise of citizen developers

Citizen-led development (CLD) is a framework that encourages non-IT employees to use IT-sanctioned low-code/no-code platforms to develop low-complexity, attended automations within their function. This framework empowers business users to create new task-based automations for their own use and helps to break the misconception of automation replacing humans.

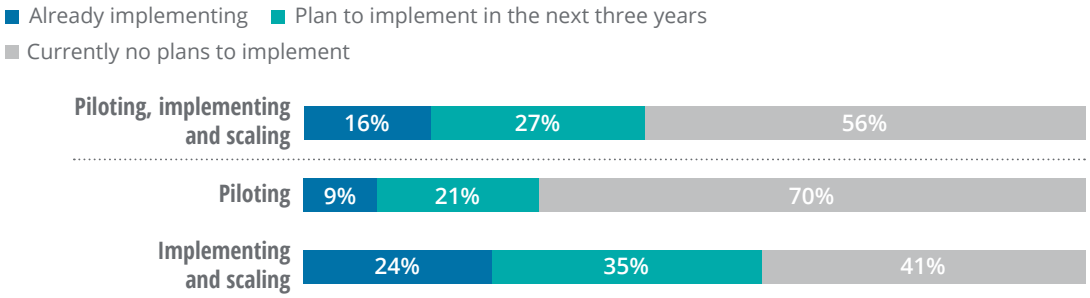
THE CONCEPT OF citizen developers or citizen-led development is relatively new, yet our survey shows a growing market: One in six organisations are already implementing CLD. Implementers and scalers are leading the way, with 59 per cent already implementing CLD or planning to implement it in the next three years, compared to only 30 per cent of those piloting automations.

A CLD model is not a replacement for a traditional automation centre of excellence

Organisations thinking about implementing the CLD model should know that CLD is not a replacement for an automation centre of excellence (CoE). This is not an 'either/or' way of implementing intelligent automation but rather a complementary framework.

FIGURE 11

Citizen-led development as a part of organisation's intelligent automation strategy



Notes: Totals may not add to 100 per cent due to rounding.
Piloting, implementing and scaling N=341, Piloting N=179, Implementing and scaling N=162.
Source: Deloitte analysis.

A classic, traditional CoE should focus on high-value automations and opportunities across the organisation and end-to-end process redesign (see our chapter on end-to-end automation). However, low benefit opportunities in various departments which are not priorities for the CoE could potentially be picked up and solved by citizen developers.

With most of the automation CoE's efforts focused on high-value automations, organisations will quickly face another problem: the extensive list of lower-value, task-based opportunities. CLD without a CoE risks nonhomogenous implementation of automations across the board. Organisations should lean on the CoE to drive governance protocols for departments implementing intelligent automation locally through their citizen developers and IT teams.

Dealing with task-based opportunities and retaining talent

This is precisely where the superpower of the CLD model lies, and the rise of low-code and easy-to-use RPA technologies enables the democratisation of automation. These tools and a CLD model can enable the lower-value opportunities that are important to individuals to be addressed, while not distracting the CoE.[4]

While recovering from the pandemic, labour markets around the globe started facing the Great Resignation. With many employees re-evaluating their life and career objectives, can CLD be one of the answers to the war for talent? We believe that it can, and our survey findings support this assumption. More than half of all organisations (57 per cent) already implementing the CLD model report that it helps them improve talent retention. Two-thirds of those planning to use CLD in the next three years also expect it to help improve retention rates.

The benefits of CLD are not limited to talent retention. Our data shows that the top benefits of implementing CLD are individual productivity gains, scaling up an automation programme and reducing the development team's backlog. We believe organisations implementing CLD in order to achieve productivity gains at the organisation level are less likely to succeed. However, CLD can empower appropriate employees and take care of those low-value automations, rapidly saving time for individual users and reducing the development team's backlog.

Empowerment by breaking traditional hierarchies

Organisations should encourage individuals at all levels to feel comfortable (or better - enthusiastic) about automation. One effective way to overcome resistance to change is to involve your people. CLD enables employees to deliver the automations themselves, enabling process issues to be solved from the bottom-up and by those closest to the tasks.

TOP TIPS

- **Complementary –** consider piloting CLD as a complementary model to your automation CoE and under the CoE's governance.
- **Not a silver bullet –** while CLD can deliver value, recognise that this is most likely to be for the individual and perhaps their immediate team.
- **Invest –** in communication, appropriate tools and training. Identify those who are keen and able. Provide the time for them to work on opportunities.
- **Communicate –** celebrate wins, both internally (as part of their immediate team) and through the automation CoE's communication channels.

Endnotes

1. Richard Horton et al., *Automation with Intelligence: Pursuing organisation-wide reimagination*, Deloitte Insights, 25 November 2020. https://www2.deloitte.com/us/en/insights/focus/technology-and-the-future-of-work/intelligent-automation-2020-survey-results.html

2. Richard Horton, *The robots are coming*, Deloitte Insights, February 2015. https://www2.deloitte.com/uk/en/pages/finance/articles/robots-coming-global-business-services.html

3. Marc Kerremans, Tushar Srivastava and Farhan Choudhary, *2021 Gartner® Market guide for process mining*, November 11, 2021. https://www.celonis.com/analyst-reports/gartner-market-guide-2021/?utm_source=bambu&utm_medium=social_organic&utm_campaign=process_mining&utm_content=gartner_guide&blaid=2354775

4. Horton et al., *Automation with Intelligence: Pursuing organisation-wide reimagination.*

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David Wright has over 20 years of consulting experience and a history of helping clients to identify, structure and deliver large intelligent automation enabled transformation programmes. He enjoys the creativity of projects that set an organisation's Intelligent Automation strategy and define their operating model. He also enjoys the challenge of delivering on that strategy and releasing significant value for his clients through automation and wider operating model and technology changes. David works across multiple industries including consumer, retail, telecommunications, life sciences and utilities.

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