

PUBLIC SECTOR IT TRENDS 2021-22



EUROPEAN VOICES

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European Voices brings together viewpoints from our experts in Europe, working at regional, national and international organization level, on topics that will resonate with public sector leaders across the world.

Evolving legislation and data initiatives. The impact of new technologies on citizen service delivery. Governments' responsibility to enable business and sustainable economic growth in a fair society. Affirming European values in the digital domain. As Europe's digital decade unfolds, diverse points of view across the continent offer valuable insights that can build greater understanding and coherence, while providing a benchmark for the international community.

This series offers comparative perspectives to the global public sector community and a window into the latest thinking shaping local policy, technology choices, and citizen-centric innovation.

ABOUT THIS REPORT

This report shares insights on IT trends in the public sector, based on a survey of public sector IT decision makers across Europe in 2021. Findings specific to Germany can be found in our German [IT Trends](#) report.



CONTENTS

- 1. Foreword | 04
- 2. Executive summary | 05
- 3. Targets and research method | 06
- 4. Dealing with the coronavirus pandemic | 08
- 5. IT requirements | 10
- 6. Intelligent technologies, cloud and data | 12
- 7. Technology trends | 16
- 8. Recommendations | 18



FOREWORD

Public administrations make better decisions when they base them on data, both their own and external data. This might be public data or data shared with other institutions, e. g. in the context of common European data spaces. Data also informs decisions on investments and innovations when information on technology developments and IT budgets is made available or if the decisions can be compared with those made by other administrations and companies.

Capgemini's IT Trends Study has been providing such market data in Germany for 18 years. Due to the high level of participation by executives from the public sector, we created a separate [public sector edition](#) for the first time in 2021. We also broadened the scope of the report by surveying public sector IT leaders from a range of European countries; and comparing selected results with those from companies in German-speaking countries.

The data for this study was collected at a time when Europe was, and still is, on the move: Besides Brexit and the global pandemic, digitalization in the public sector is to be massively expanded in the decade to 2030. Sustainability and the climate crisis have become overriding concerns for policymakers. In the interests of digital sovereignty, the European Union wants to make its data infrastructure less dependent on non-European companies. This poses many challenges for public administrations. The results of the survey both indicate that they are dealing with them in different ways and highlight the areas in which they need to catch up.

We hope that these results will help you to evaluate your strategies, possibly readjust them and better understand today's technology trends. We would be happy to discuss our conclusions with you personally.



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EXECUTIVE SUMMARY

The coronavirus pandemic and its impacts have significantly intensified digitalization of the public sector. During the first lockdown in 2020, mobile and collaborative working increased. In addition, digital offerings such as online education or eHealth and eJustice services were expanded.

The willingness to innovate also increased, but more on the administrative side than on the IT side. The assessment of the factors that make the public sector more resilient varies accordingly: From an administrative perspective we see an emphasis on everything needed to work from home. In contrast, it rates automation, data-driven action and the use of intelligent systems as less important. IT, on the other hand, similarly prioritizes measures to increase resilience, but considers them less important overall than administration's priorities. Both sides underestimate the potential of automation.

Goals: digitalization and greater efficiency

Two requirements are at the top of most participants' priority list this year: expanding digitalization and increasing efficiency. Many also want to improve their communication with target groups but the internal processes linked to this often fall by the wayside. As a consequence, modernization is only superficial, and the public sector misses many opportunities to significantly reduce workload. Lowering costs is low on the priority list – slightly less than one in five business users, and only one in ten among IT managers. This suggests that there is enough budget available for completing the tasks ahead.

IT units suffer from increasing complexity of the IT landscape

While administrative units benefit from increasing digitalization, it causes more and more problems for IT units. This is because it demands better protection of data and increases the complexity of the IT landscape. In fact, during the last 12 months, the complexity of the IT landscape has risen or risen sharply in the eyes of almost 80 percent of our study participants.

Reluctance to use intelligent technologies

The public sector uses intelligent technologies, such as machine learning, predictive analytics, or image recognition, to a relatively small extent compared to the business sector in German-speaking countries. Just one in seven respondents deploys them in daily business. In addition, the spectrum of use is more or less limited to simple scenarios, such as the automation of manual work or deeper data analysis.

Established technologies get highest marks

Of the 34 technologies and methodologies CIOs were asked to rate, DevOps, metadata management, multi-channel architectures, open

APIs and predictive analytics are currently the most important. In fact, these have been available for some time and, with the exception of predictive analytics, are already being used by at least one in five of the public sector CIOs surveyed.

Smart things, digital twins, blockchain technologies, mobile wallets and virtual and augmented reality applications are at the other end of the scale. These technologies are the least important and, with the exception of mobile wallets, are currently rarely found in operational use in the public sector. However, intensive work is being done on the use of intelligent things: Some 12 percent of the participants are currently implementing them and around 24 percent are planning to do so.



TARGETS AND RESEARCH METHOD

The European Public Sector IT Trends survey focuses on the current state of IT within public authorities in Europe. The analysis considers both technological and organizational aspects. This includes, for example, the implementation of laws and reaction to crises, the setup of IT infrastructure, and the future use of technologies.

The results are based on a survey of 53 decision-makers from Austrian, British, Dutch, French, German, Swedish, Swiss, and international public organizations. Those surveyed included CIOs, CDOs, heads of digital strategy, and directors general working mainly in four areas of the public sector: public administration, tax and welfare, defense and security, and healthcare. All participants were asked about:

- IT management targets and budget spending

- The impact of Covid-19
- Use of intelligent technologies
- Cloud and data
- Use and importance of specific IT technologies

Because the sample is relatively small, differences between the results of individual countries must be interpreted with some caution. To enable a comparison between the status of companies and the public sector, some data was compared to the results of Capgemini's IT Trends Study published in February 2021 surveying 109 business and IT decision makers from various industries in Germany, Switzerland and Austria with matching questions.

Survey instrument

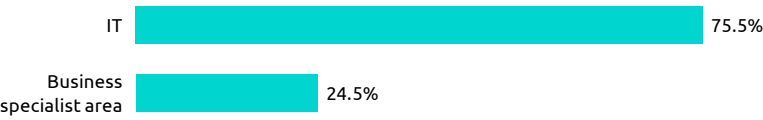
Respondents were invited to participate in the study via e-mail and received a personal access code to the online survey with predominantly closed answer categories.

Capgemini conducted the survey in the period from February to May 2021. The addresses of the contacted organizations were provided by Capgemini.

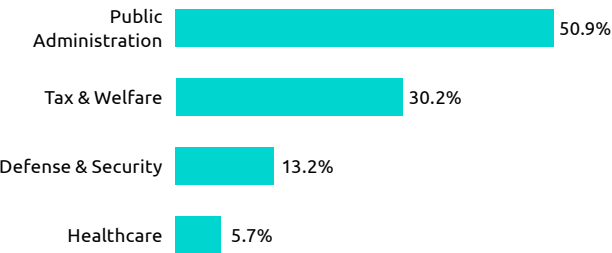


PARTICIPANTS IN THE SURVEY

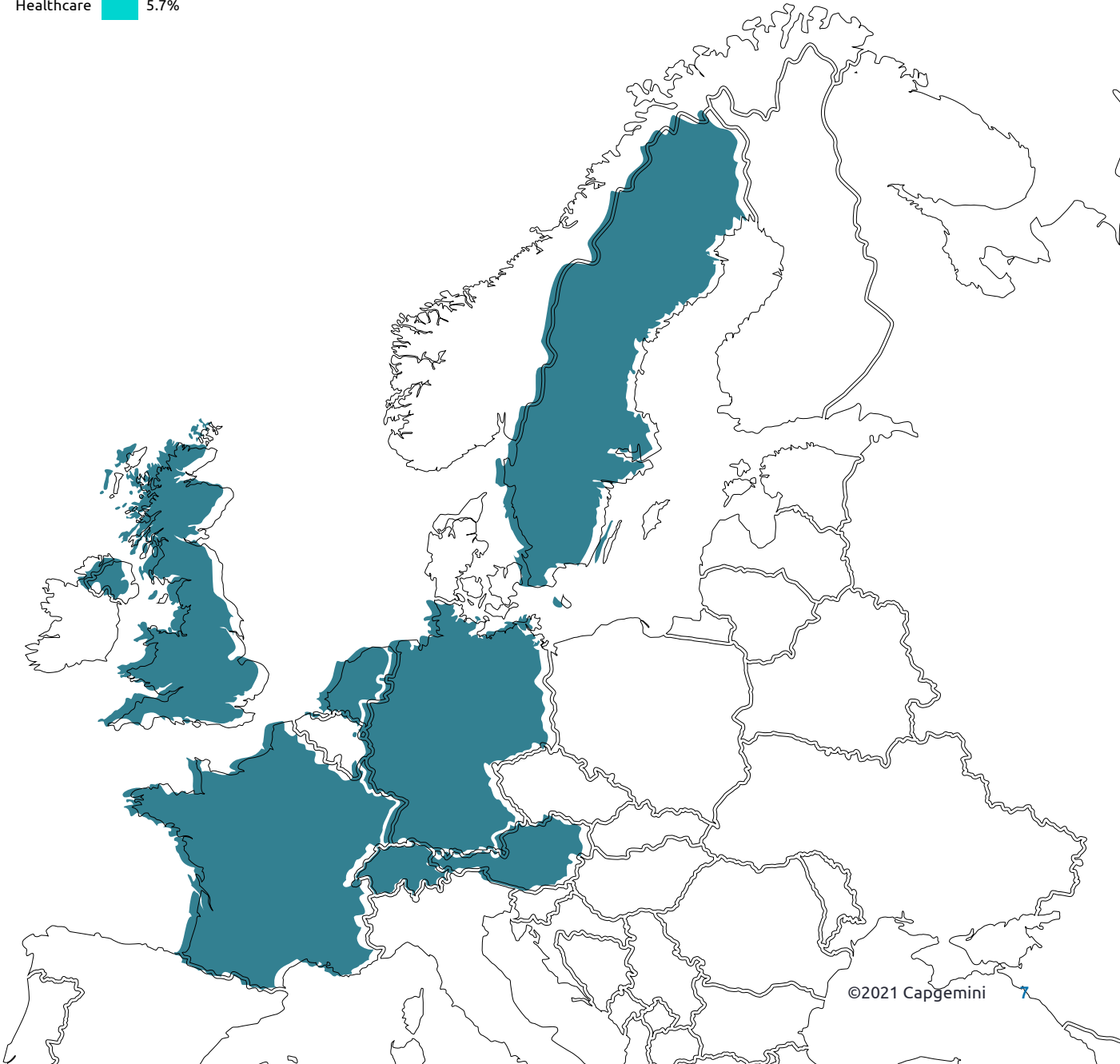
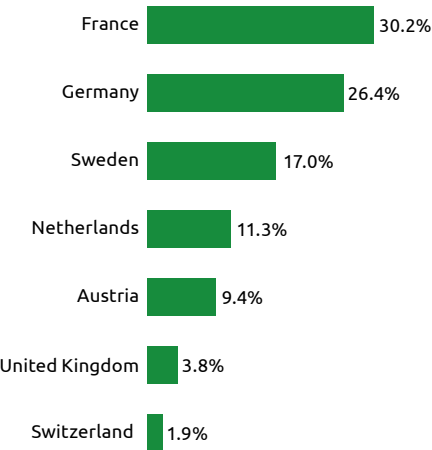
Function n=53



Domain n=53



Country n=53

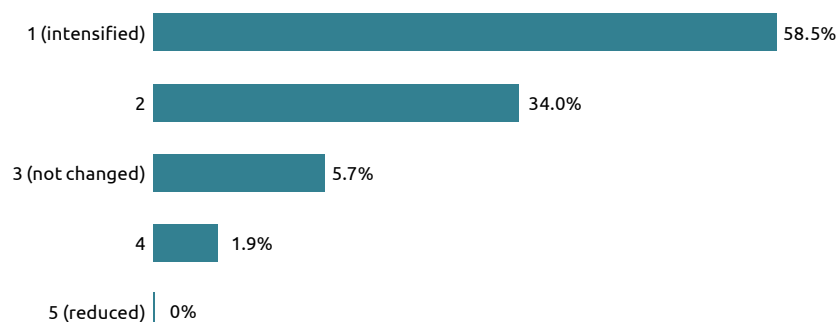


DEALING WITH THE CORONAVIRUS PANDEMIC

All respondents agree that the coronavirus pandemic and its impact has significantly intensified digitalization in their organizations. In particular, mobile and collaborative working increased during the first lockdown in 2020. In addition, digital offerings such as online education and eHealth and eJustice services were expanded. The modernization

of IT infrastructure and the use of cloud solutions were more often accelerated than slowed down. Increased use of cloud solutions was more clearly perceived by the IT organization than by employees on the administrative side. The level of automation was least affected by the impact of the pandemic.

HOW HAS THE PANDEMIC IMPACTED THE DIGITALIZATION OF YOUR ORGANIZATION? n=53



Importance of preventive measures depends on perspective

During the lockdown, the willingness to innovate increased, but more on

the business side than on the IT side. This can possibly be attributed to the fact that administrative staff had to change their working methods to a greater extent than IT staff during this time.

Accordingly, business and IT staff have a somewhat different perspective on what makes public authorities more resilient. The administrative side thinks everything needed for working from home is most important, such

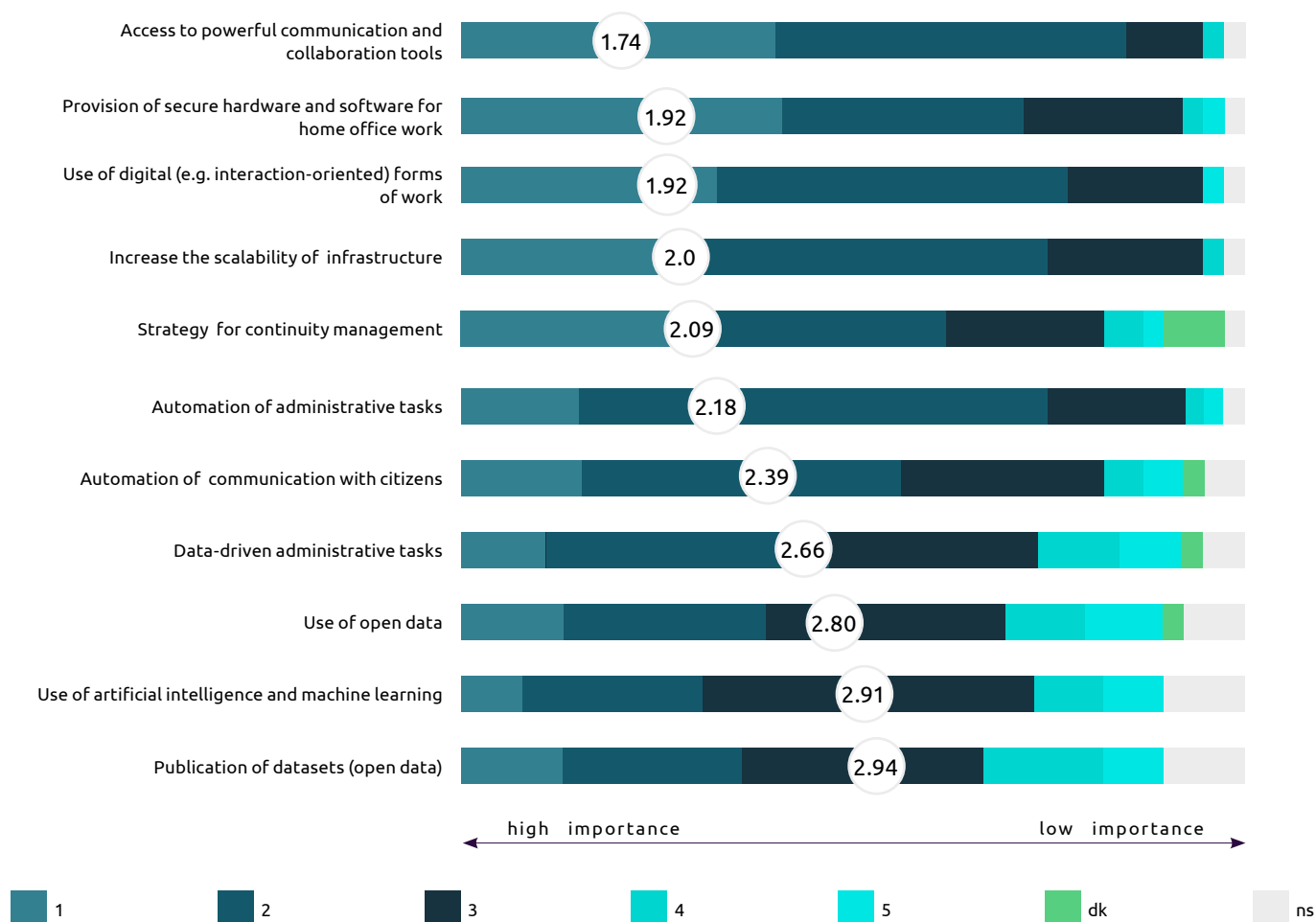
as communication tools, mobile devices, digital processes, a strategy for continuity management and a scalable infrastructure. Automation, data-driven action and the use of intelligent systems are rated as less important. The IT side has a similar view, but considers tools for working from home, and the use of data or artificial intelligence (AI), less important for resilience in general.



HOW IMPORTANT ARE THE FOLLOWING MEASURES TO INCREASE THE RESILIENCE OF YOUR ORGANIZATION?

n=40; 1=high to 5=non existent; dk =don't know; ns=not specified

The figures in the ellipses are the average scores for each measure



In an international comparison, the participants from Germany attach the least importance to the use of intelligent technologies to make their organization more resilient. They also consider data-driven administrative action and the exchange and publication of data to be negligible in this context. The respondents from France have a similar attitude. In contrast, the Swedish participants assess these factors differently: they consider the use and publication of data as well as data-driven administrative action to be important and the use of intelligent systems to be one of the three most important resilience factors.

Potential of automation is often underestimated

The more the work of public authorities becomes digitized, the more opportunities open up to automate tasks and communications with citizens. This frees up capacity for other projects, especially during a crisis. The participants from Sweden, in particular, recognize this potential. They consider automation

both of tasks and communications to be important or very important to maintaining the organization's ability to act in an emergency.

The participants from Germany, however, are more skeptical. While they recognize the potential of automation, they do not consider it crucial to continuing to work in an emergency. Respondents from France sit between these two poles: while automation of tasks is important, the automation of communications has less significance, even though the pandemic has shown the latter to be crucial in times of crisis when its volume usually increases strongly.

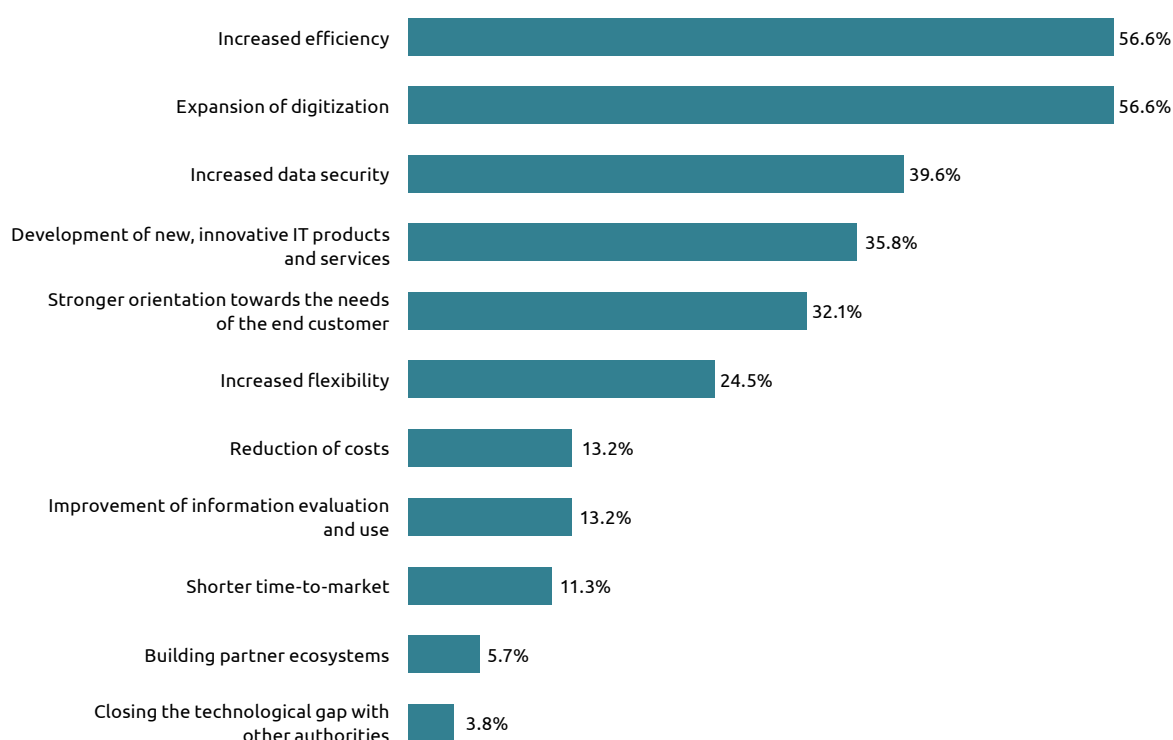
IT REQUIREMENTS

For more than half of the participants (56.6 percent), two requirements are at the top of the priority list this year: the expansion of digitalization and an increase in efficiency. However, administrative and IT departments

have different focus areas. While IT departments concentrate on efficiency and, in addition to digitalization, on the development of innovative products and services, administrative units put digitalization

first. They also want to increase efficiency and data security and better align themselves with the needs of citizens and businesses.

WHAT ARE YOUR MOST IMPORTANT IT MANAGEMENT REQUIREMENTS FOR THE COMING YEAR? n=53`



The aim to focus on the needs of citizens and companies is driven by two factors. Firstly, the pandemic lockdown demonstrated the need for contactless digital services; secondly European standards are pointing in the same direction. As a consequence, slightly more than half of the respondents want to develop automated service offerings over the next 12 months. More than one in three are planning to deploy or expand systems for analyzing the customer journey and just under 29 percent of the respondents

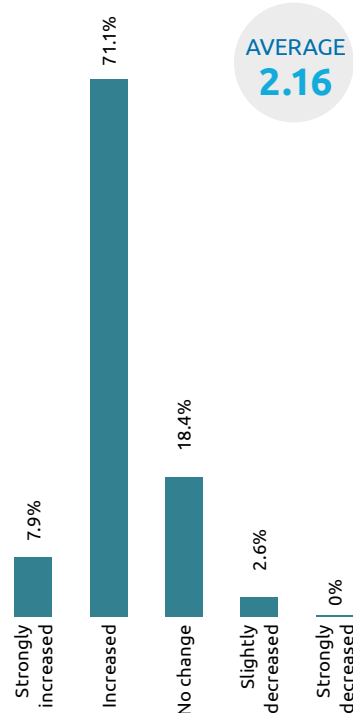
want to implement intelligent advisory systems for employees and customers.

But while a lot is happening around external communications, the same cannot be said for the modernization of internal processes: Only about one in four respondents plan to digitize the payment process, and only just under 27 percent plan to digitize the handling of a specialized process altogether. It is clear from this that modernization remains focused on the interface with the outside world

and the public sector is missing many opportunities to significantly reduce the workload of its staff.



HAS THE COMPLEXITY OF YOUR IT LANDSCAPE INCREASED OR DECREASED DURING THE PAST 12 MONTHS? n=38



Automation boost, but no innovation boost

Automation of processes is the method of choice to master this increasing complexity. Public sector organizations have boosted the rate by an average of almost 40 percent over the last 12 months. This puts the public sector well ahead of companies in German-speaking countries, whose average rate at the end of 2020 was just under 25 percent. But the surge in automation in the public sector could be due to a great need to catch up, since the increasing digitalization during the pandemic has opened up new automation opportunities that businesses may have exploited already.

In addition, most respondents still rely on rule-based automation, followed by the use of software robots. Intelligent solutions are used only by about one in three respondents.

No budget bottlenecks

Slightly less than one in five administrative managers want to reduce costs, and among IT managers it is only one in ten. So there seem to be enough funds available for the tasks ahead. Compared to the business sector in German-speaking countries, the public sector spends slightly less money on maintaining existing IT systems, at just under 43 percent of the total IT budget, and accordingly has more leeway for modernizing IT and implementing new systems.

New laws drive an increase in complexity

While administrative units benefit from increasing digitalization, it causes more and more problems for IT units. On the one hand, digitalization requires data to be better protected. Accordingly, this task is third on this year's agenda. On the other hand, the complexity of the IT landscape has increased over the last 12 months in the eyes of almost 80 percent of the respondents. Legal requirements such as the European Single Digital Gateway (SDG) regulation are the number one cause of this. In addition, demands of citizens and companies, as well as the higher number of home office workplaces, have increased complexity.

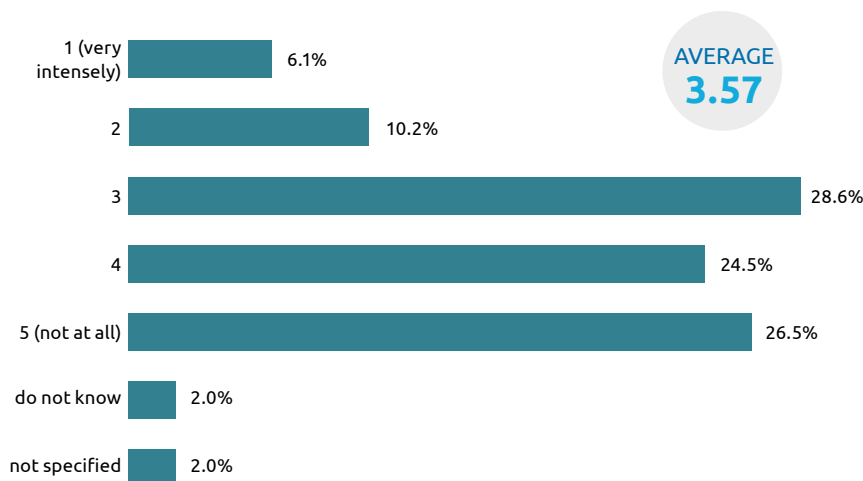
This leads to a higher susceptibility to system errors as well as an increased workload for IT units, which have fewer and fewer specialists at their disposal. More than 33 percent of the respondents observed a rising shortage of IT specialists over the last 12 months and, according to their forecasts, it will increase in the next two years.

INTELLIGENT TECHNOLOGIES, CLOUD AND DATA

The public sector uses intelligent technologies such as machine learning, predictive analytics or image recognition to a lesser extent than the business sector in German-speaking countries. While a few more than a quarter have not yet dealt with them

at all, slightly more than half of the participants have set up pilot projects or projects with a limited scope. Just over one in seven use smart technologies in daily business.

DO YOU USE INTELLIGENT TECHNOLOGIES SUCH AS MACHINE LEARNING, PREDICTIVE ANALYTICS OR IMAGE RECOGNITION?



Overall, participants rate their success with smart technologies as quite high: around six percent are enthusiastic, and slightly more than 30 percent are very satisfied. However, most are still lacking experience at the moment. Previous years' IT Trends studies showed that the euphoria decreases as practical experience increases, and that successes are judged more critically as know-how adds up. But currently, only about 12 percent of the participants are disappointed and consider their projects a failure. The spectrum of use is, however, limited

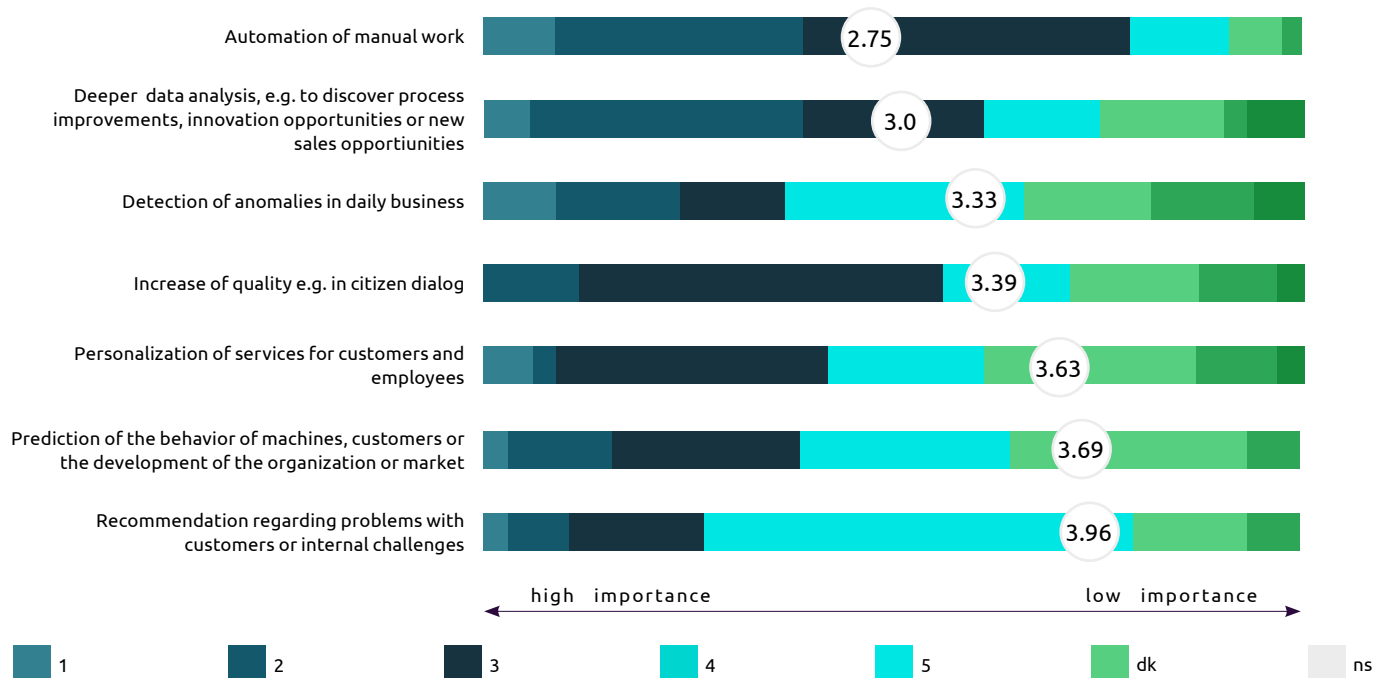
to more or less simple scenarios, such as the automation of manual work or deeper data analysis. These use cases also receive the best marks from users. Rarely applied but also positively rated are intelligent technologies that contribute to increasing quality, such as in citizen and business engagement. For other more difficult application scenarios, such as predicting the behavior of complex systems or virtual assistants that provide tips for next actions, the use in day-to-day business is currently still low.



WHICH BUSINESS PROCESSES DO YOU SUPPORT TODAY WITH INTELLIGENT TECHNOLOGIES?

n=33; 1=very intensive to 5=not at all; dk =don't know; ns=not specified

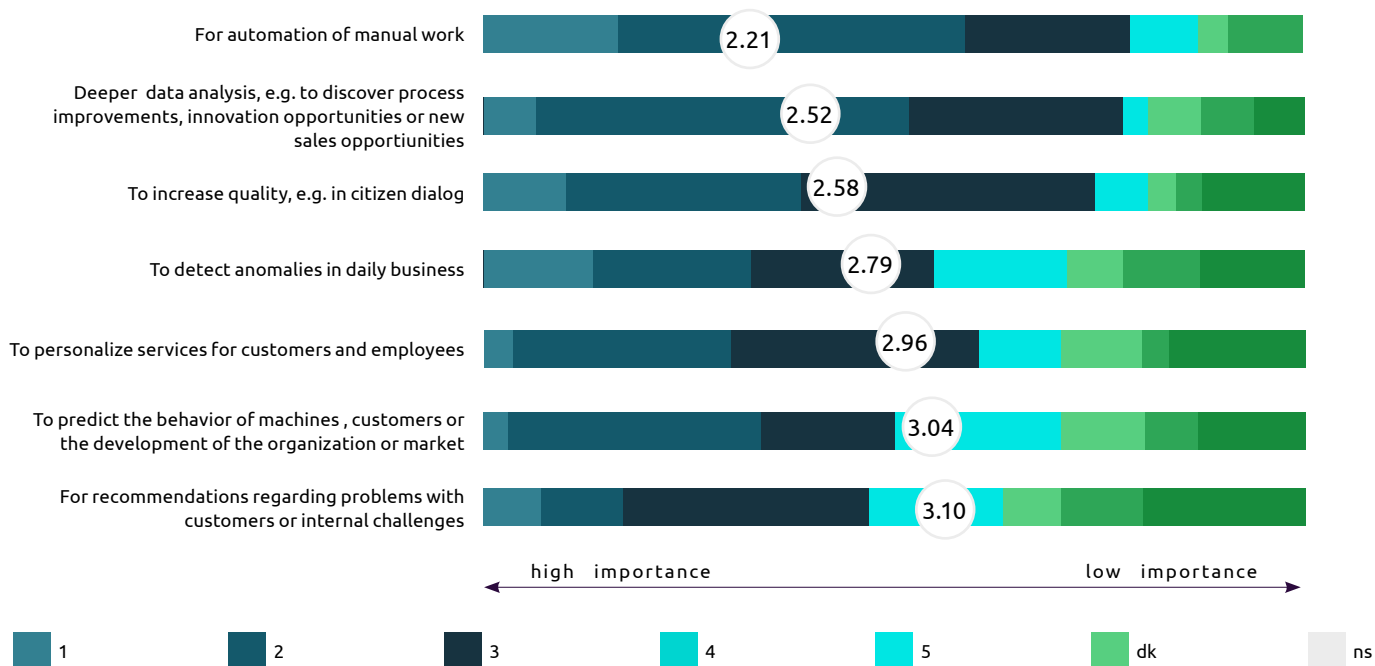
The figures in the ellipses are the average scores for each business process.



HOW DO THE BUSINESS USERS IN YOUR ORGANIZATION RATE THE BENEFITS OF INTELLIGENT TECHNOLOGIES IN DIFFERENT AREAS?

n=31; 1=very high to 5=non existent; dk =don't know; ns=not specified

The figures in the ellipses are the average scores for each business process.



One in five uses intelligent software robots

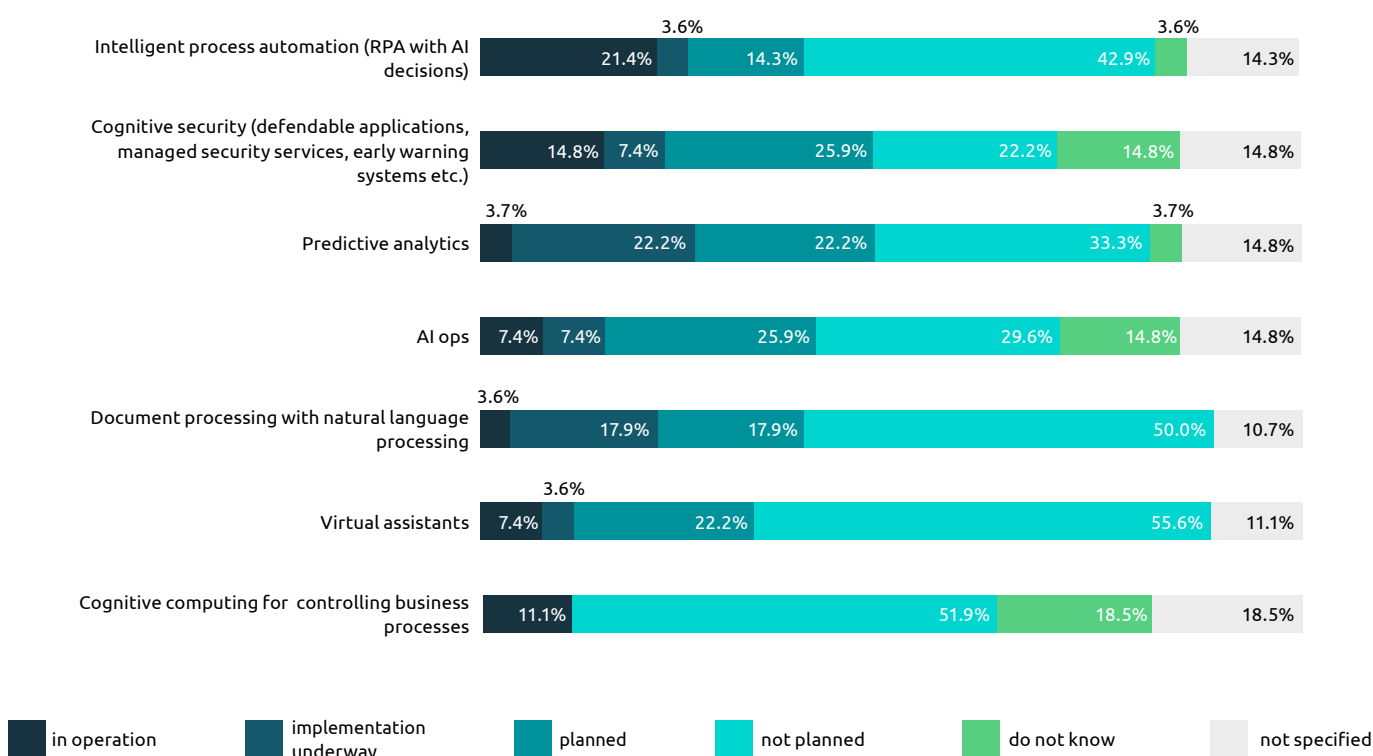
Technologically, the respondents consider predictive analytics, cognitive security and AI Ops to be important. Except for cognitive security, the number of deployments is small, but 30 to 40 percent of respondents are planning to set up projects this year.

Intelligent Robotic Process Automation (RPA) is obviously a polarizing topic: On the one hand, the technology is already used by a good 21 percent. In addition, about

18 percent of the participants are currently planning or implementing projects. On the other hand, the number of those not planning its deployment in the near future is also high, at just under 43 percent.

This may be due to the fact that more than half of the participants are already using or implementing traditional RPA (without the support of intelligent technologies). It is possible that they are very satisfied with their software robots, thus do not see any reason to evaluate intelligent RPA at the moment.

INTELLIGENT TECHNOLOGIES: HOW ADVANCED ARE PROJECTS ON THESE TOPICS? n=28



Organizations that do not use intelligent technologies primarily lack the budget to do so or have legal concerns. In some cases, there is also a desire to maintain the personal

contact with citizens and businesses or there is a lack of appropriate change management. Ethical concerns, lack of data or leadership support, and the desire to preserve

jobs play almost no role in the decision not to use smart technologies.

German authorities hold back on data exchange

Yet almost 70 percent of the respondents are probably quite well prepared to deploy intelligent technologies from a technical point of view. This is because they operate a data platform, which in almost all cases is also a strategic component of the IT infrastructure.

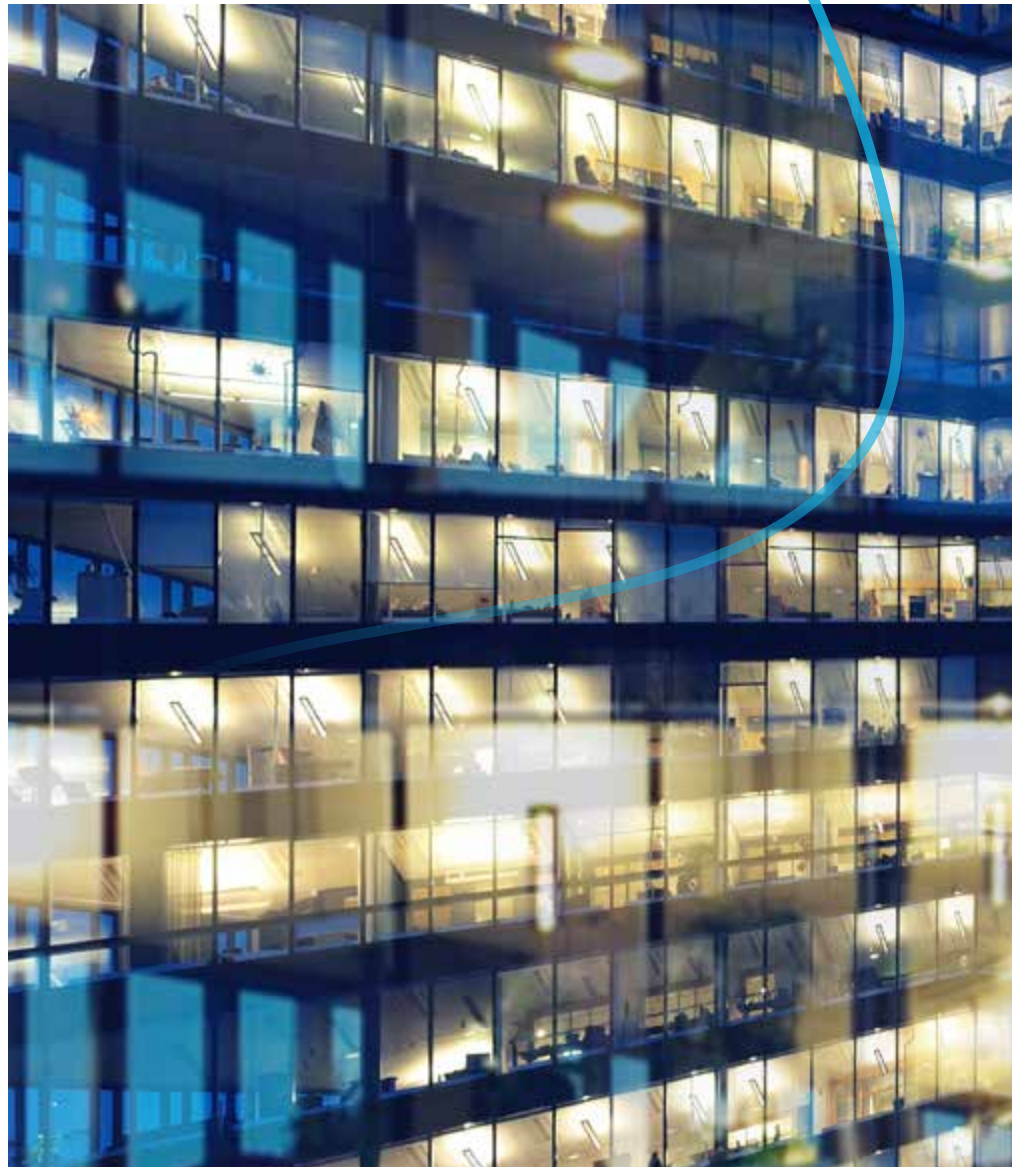
At present, however, these data platforms are probably primarily used for the exchange of information and not for providing input for intelligent systems. Data exchange is apparently very active with supervisory authorities and other authorities and administrations. When it comes to third parties outside the public sector, data is exchanged by every second respondent, with German organizations being more reticent than Swedish and French ones. This is probably due to the higher sensitivity to data protection in Germany, which is also reflected in German authorities' reluctance to engage in open data projects.

Capacities at European cloud providers to be increased

About 60 percent of public IT services are cloud services, about half from European providers and the other half from non-European providers. Slightly more than 50 percent of the respondents intend to shift capacities to European providers in the coming years. The top two reasons for doing so are to increase data sovereignty and data protection. Some also want to reduce dependency on

individual providers and diversify to a higher degree.

Awareness of GAIA-X as a European data infrastructure is — outside Germany — apparently low and accordingly the interest in it is low as well. The project, launched by France and Germany, is intended to increase the sovereignty of European authorities and companies with a European data infrastructure and to ensure compliance with European data protection standards. Other reasons for the lack of interest besides the low level of awareness could be the fact that many modalities of the future platform have not yet been defined and the services are not available yet.



TECHNOLOGY TRENDS

In total, we presented 34 technologies and topics from seven areas to IT managers to evaluate and indicate to what extent they use them. This list is not exhaustive and contains a variety of technologies and methodologies. Some of them are innovations, others have been on the market for a while but are not yet established.

In the eyes of the participants, DevOps, metadata management, multi-channel architectures, open

APIs and predictive analytics are currently the most important. Without exception, these are technologies and methods that have been available on the market for some time. And with the exception of predictive analytics, at least one in five of the CIOs in the public sector we surveyed uses them.

Smart things, digital twins, blockchain technologies, mobile wallets and virtual and augmented reality applications are at the other end of

the scale. These technologies are the least important and, with the exception of mobile wallets, are currently rarely found in operational use. However, it should be noted that while the majority of respondents did not see intelligent things as among the most important technologies, 12 percent of the participants are currently implementing them and around 24 percent are planning to in future.

TECHNOLOGIES AND TOPICS OF HIGHEST IMPORTANCE

n=35; 1=very important, 5=not important at all

Technology or topic	Average score
DevOps including DataOps, DevSecOps, BizDevOps etc.	1.70
Metadata management	2.00
Multi-channel architecture	2.17
Open APIs	2.25
Predictive analytics	2.56

TECHNOLOGIES AND TOPICS OF LEAST IMPORTANCE

n=35; 1=very important, 5=not important at all

Intelligent things (IoT: Industrial & consumer)	4.13
Creation of digital twins (modelling of physical objects for digital simulations)	4.16
Blockchain	4.32
Mobile wallet (payment, ticketing, access control)	4.33
Virtual augmented reality	4.56

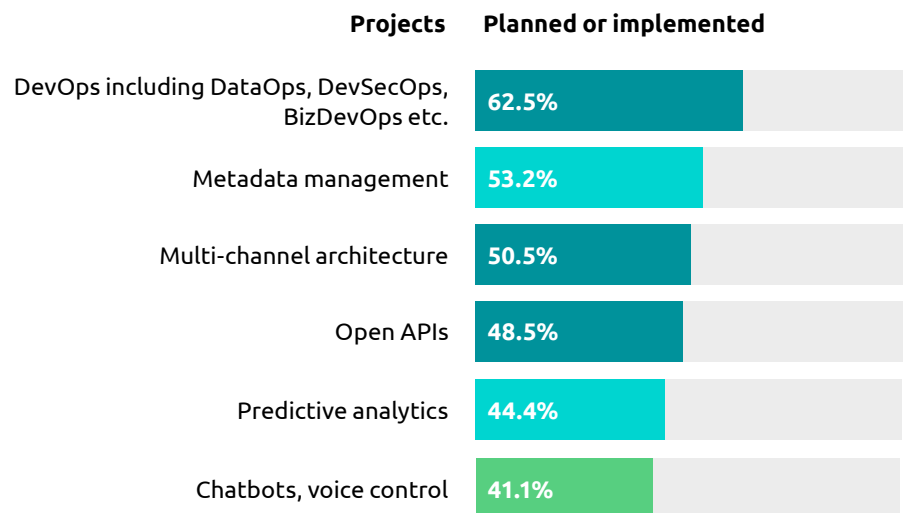
PROJECTS

The technologies and methods being implemented this year are primarily those of great importance to the participating CIOs. While in most cases they are moving in familiar territory and merely expanding the degree of utilization, predictive analytics is new territory for most.

Although the technology has been around for some time, it has experienced a renaissance in recent years due to advances in Big Data and Machine Learning. Predicting the future based on historical data has many applications: from the extent of tax evasion and bed availability in hospitals to the mobility behavior of residents and workers in cities.

As digitalization has increased sharply in almost all countries due to the pandemic, public sector CIOs can now use more and better data. Accordingly, the number of use cases is also increasing, such as monitoring air quality and traffic or controlling street lighting and cameras.

PROJECTS BEING PLANNED OR IMPLEMENTED





RECOMMENDATIONS

1 Use the momentum created by the pandemic to boost innovation

In the wake of the coronavirus pandemic, the digitalization of public authorities has been significantly expanded and the willingness to innovate within organizations increased. Now it is a matter of using this momentum and launching further innovations — by building on recovery funds and frameworks that support the acceleration of digitalization. In this regard, national players will also rely on international initiatives — as the EU wants to further expand digitalization with the Digital Europe Programme, for example. The new goals of the EU for 2030 stipulate that key public services should be 100% available online by

that time. In addition, a secure and sustainable digital infrastructure is to be established, in the course of which the development of data and cloud solutions will also be financially supported.

2 Leverage data as a first step towards implementing intelligent technologies

The acceleration of digitalization depends on dealing with data the right way — for both the transformation of processes and the use of intelligent technologies. Today, data is available but hardly ever used for a full-scale deployment.

Thus, organizations are missing the true value data can unlock in terms of insights and workforce support. Three recommended steps to overcome the current hurdles are:

- Ensure data stays protected with governance set-ups and anonymization tools
- Explore the full scope of available data by relying on data sharing and open data from other sources
- Develop trusted data platforms that can digest citizen-centric use cases leveraging personal data that needs protection and compliance, for example in the care and security fields.

3

Get involved in data sharing ecosystems, including GAIA-X

Initiatives such as the Support Centre for Data Sharing and GAIA-X create new options for data-centric public administration. Data exchange is on the rise. The aim must be to build secure, federated ecosystems for data sharing, balancing data sovereignty and the promotion of innovation. Where to start? At the local level, initiatives such as smart cities enable collaboration among providers of diverse public services and sectors such as energy and transportation. Internationally, challenges in border control, policing and tax collection present a clear and compelling case for establishing international information ecosystems.

4

Explore the cloud-first approach with tailor-made pathways

Although the benefits and potential of cloud infrastructures are clear, for many the full move into the cloud is yet to come. In the public sector, the move to cloud demands a tailor-made plurality of pathways, meeting specific needs for sovereignty, hybrid scenarios and the possibility of multi-cloud. In the discovery phase of those scenarios, public sector organizations can and shall engage on a global level and implement with a local touch, contributing to change the national IT landscape in the process by relying on sovereign players where needed. This way, the journey to cloud will expand the toolbox of government organizations and make the benefits of cloud solutions accessible for additional areas by fostering innovation and advanced technologies.

5

Link the IT journey with a purpose connected to today's challenges

The Berlin Declaration, the Sustainable Development Goals or the Lisbon Declaration have all shown one recurrent theme - digitalization is the key to overcoming societal challenges, whether it is to close the digital divide, tackle the climate crisis or better protect data and resources by achieving digital sovereignty. Public sector organizations are well placed to harness the power of IT to tackle these systemic challenges and leverage their links to current institutional frameworks to deliver progress towards a better future.



About Capgemini

Capgemini is a global leader in partnering with companies to transform and manage their business by harnessing the power of technology. The Group is guided everyday by its purpose of unleashing human energy through technology for an inclusive and sustainable future. It is a responsible and diverse organization of 270,000 team members in nearly 50 countries. With its strong 50 year heritage and deep industry expertise, Capgemini is trusted by its clients to address the entire breadth of their business needs, from strategy and design to operations, fueled by the fast evolving and innovative world of cloud, data, AI, connectivity, software, digital engineering and platforms. The Group reported in 2020 global revenues of €16 billion.

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