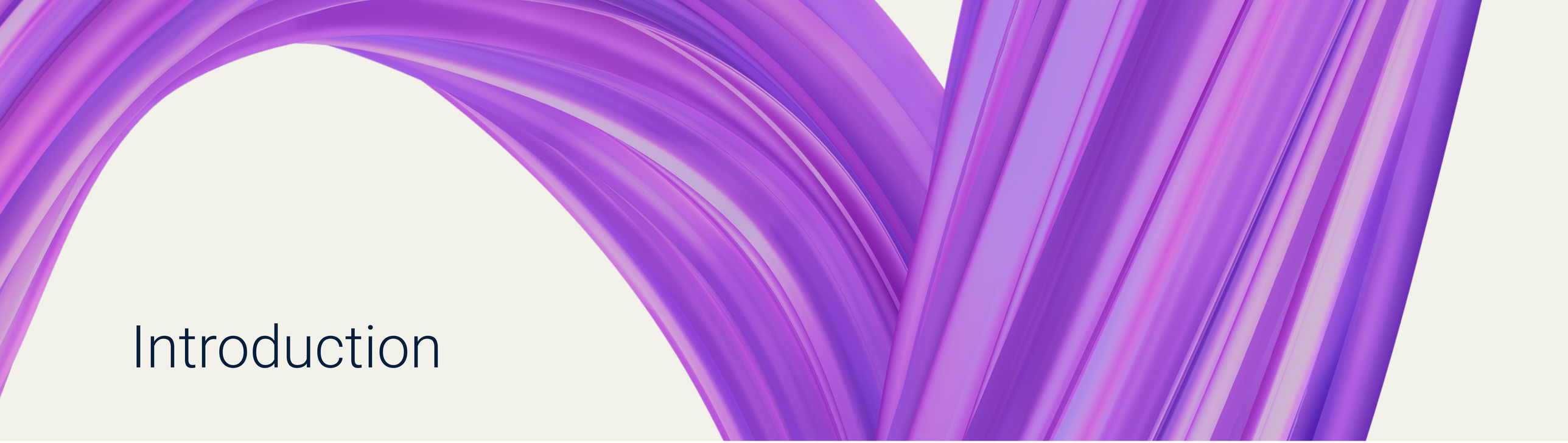
Annual APIs and Integration Report 2022

The State of APIs, Integration and Microservices

This is independent research conducted by Vanson Bourne.

Contents



Introduction

The strategic goals many organizations set to drive success are underpinned by a digital transformation journey that moves them towards greater connectivity and innovation. An integrated approach to this transformation remains an essential component of organizations' success, but as systems, applications and processes grow and change, the IT environment becomes increasingly complex to manage.

APIs, integration and microservices are widely used to support digital transformation and organizations can leverage multiple benefits from doing so. They can also be used to bring together and distribute data to enable organizations to make better decisions about their operational impact on the environment and sustainability. But use of this technology presents challenges to IT departments that can tie up resource and budget, or impact on ever-growing sustainability plans. Organizations could look to solutions that combine these technologies to help simplify the complexity, ensure that systems, applications and processes are all connected seamlessly, and allow greater flexibility in terms of meeting user and customer needs. This type of solution could fundamentally lead to greater business success.

1

Changes in API utilization

SECTION 1

Importance of APIs is unchallenged and essential to the operations of most enterprise organizations

APIs act as the gateway between applications, offering a set of defined ‘rules’ which allow applications to ‘talk’ to each other and share information. They are generally considered to be crucial in the use of applications, and that sentiment continues with our respondents.

The role that APIs play in organizations continues to be widely recognized by IT decision makers, with an almost universal agreement in 2022 that they are either extremely or very important to business operations. This is consistent with the findings of the 2021 study.

It is likely that this relates both to the specific role that APIs have in connecting organizations’ systems and data sources, as well as the part that they play in enabling organizations’ broader strategic objectives in relation to digital transformation.

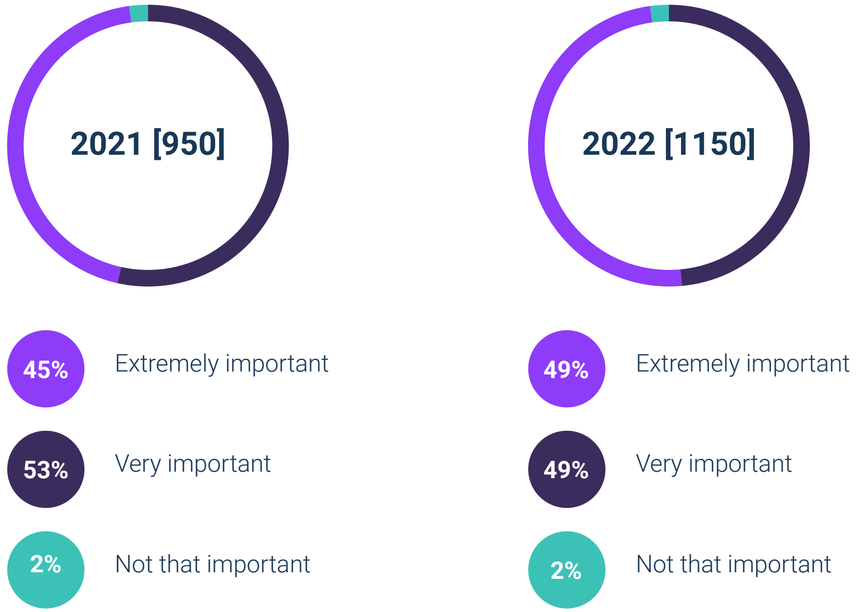


Fig. 1: How important are APIs/would APIs be to your organization’s operations? [Base numbers in chart] split by historical data. Not showing all answer options. Please note that no respondents selected the option “Not important at all”

SECTION 1

APIs are being used more frequently in a range of scenarios in 2022 compared to 2021

This variation and increased usage provides clear evidence of the growing importance of APIs in a variety of contexts. If this trend continues, it won't be long until APIs are embedded in all or the majority of projects related to digital transformation, modernization and innovation – it is therefore crucial that organizations are able to manage and utilize them as effectively as possible.

It is also already very common for APIs to be used in organizations' sustainability efforts. For many organizations, this will be a relatively new focus area, so those that can make good use of APIs in this context are likely to give themselves a strong foundation for sustainability success.

Digital transformation projects being the use of APIs to improve business operations and deliver value to customers. E.g. the development of new digital products and services, improving customer experience, and improving the efficiency of existing applications and processes

Modernization projects being the use of APIs to improve the scalability and management of IT projects. E.g. the use of APIs for improved management, scalability and resiliency in cloud environments, the ability to quickly develop and deploy new services/applications

Innovation projects being the use of APIs to innovate faster and more effectively

Sustainability projects being the use of APIs to reduce the negative impact of business operations on the environment

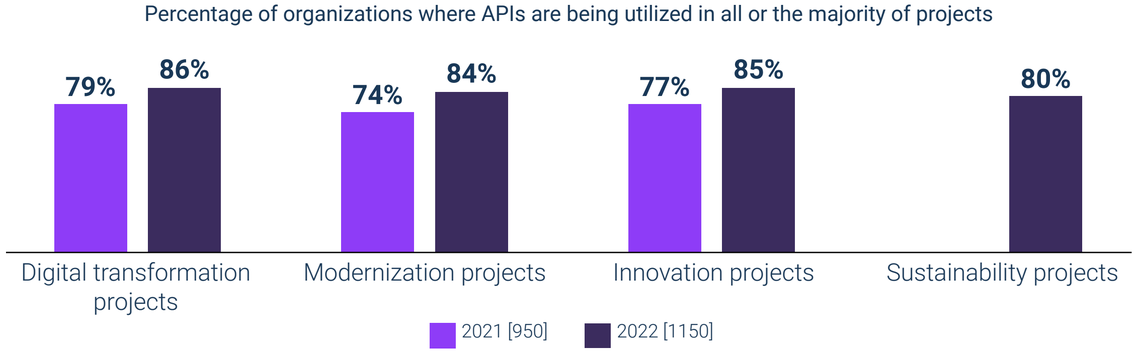


Fig. 2: For the following types of projects, to what extent are APIs being utilized within your organization? [Base numbers in chart] split by historical data. "Sustainability projects" was not asked in 2021

SECTION 1

The most cloud-centric organizations are more likely to be using APIs

A relationship exists between API utilization and organizations' broad attitude toward cloud, wherein the organizations that are embracing cloud most readily are also those that tend to be using APIs most often across a range of project types.

Given that APIs play such an intrinsic role in how cloud computing works and how cloud-based applications interact with one another, this data makes a lot of sense. It does also highlight that organizations that are already particularly cloud-centric or that have aspirations to move in this direction, considerable attention and investment in API strategies and programs should be high priority.

Percentage of organizations where APIs are being utilized in all or the majority of projects

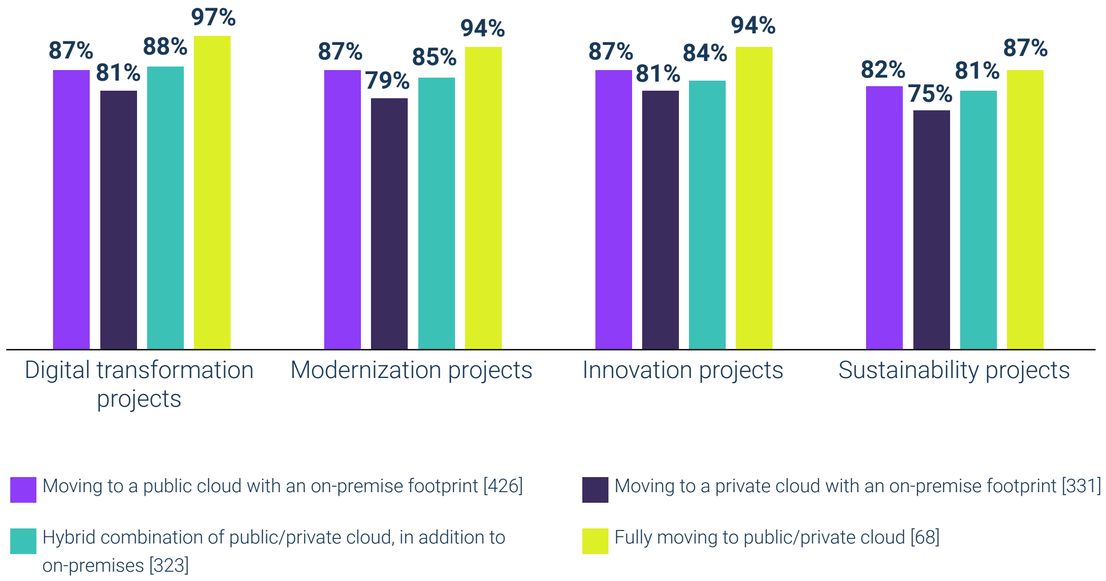
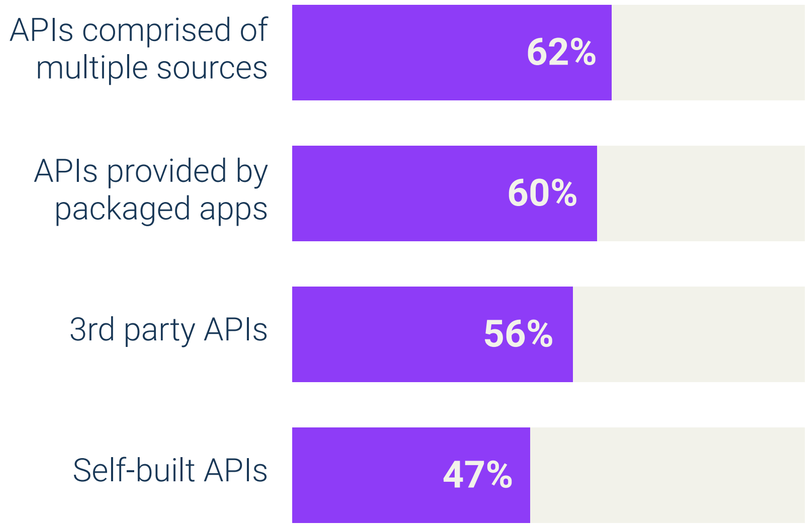


Fig. 3: For the following types of projects, to what extent are APIs being utilized within your organization? [Base numbers in chart] Split by organization's approach to the cloud. Not showing all answer options

SECTION 1

Organizations are likely to use composite API Solutions for their APIs



Utilizing APIs comprised of multiple sources can bring the benefit of enabling more flexibility for organizations in terms of what they use and where, and this may explain why this is the most common source used by organizations.

Many are also using packaged apps or 3rd party sources for their APIs, reinforcing that it is very common for organizations to use a variety of different sources to address their API needs. Meanwhile, approaching half (47%) are using self-built APIs, perhaps in instances where they are unable to find an appropriate API elsewhere for certain purposes, so are creating something slightly more bespoke for their business needs.

Fig. 4: What are the sources of APIs in your organization? [1150] Not showing all answer options

SECTION 1

Utilizing APIs leads to a variety of benefits across most organizations

The widespread use of APIs across a range of different scenarios in organizations makes a lot of sense when considering the benefits that are regularly reported as a result. Organizations can witness improved communication and integration between their systems and their partners', while also being able to deliver greater flexibility and personalization when it comes to providing services and user experiences.

Incidentally, flexibility and enablement of various cloud and non-cloud systems to be integrated together were the most common benefits to be cited in 2021 too, reinforcing the potential for organizations to achieve these things when making good use of APIs.

Using APIs in general is very common, so organizations must look to implement the best technology and processes available to ensure they are getting the most out of their APIs and therefore seeing these benefits to the greatest possible extent.

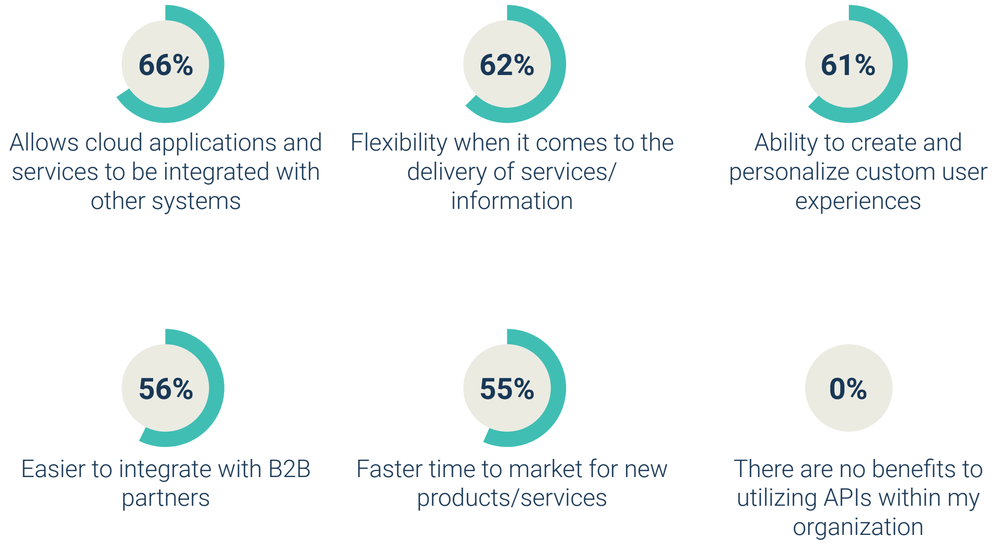


Fig. 5: Which of the following are the top three benefits achieved through APIs in your organization? Combination of responses ranked first, second and third [1150] Not showing all answer options

Alongside the benefits, organizations must overcome several challenges

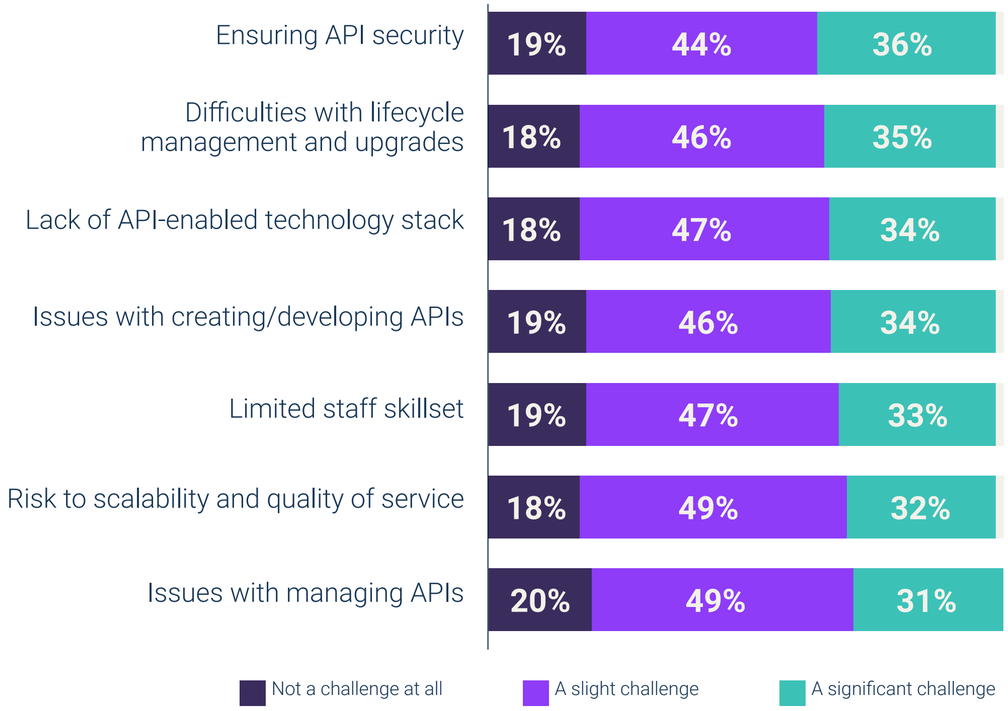


Fig. 6: To what extent are the following challenges for your organization when using APIs? [1150]
Not showing all answer options, ordered by "a significant challenge"

The most pressing challenge – as is often the case – relates to security. As with any technology use and development, security is taken as a key consideration throughout that process.

Security was also the most common API-related challenge according to respondents in the 2021 study, indicating that securing APIs continues to be a challenge for organizations as the critical role and impact of APIs continues to grow.

The limited availability of skilled workers for organizations has also led to challenges for both the successful development and management of APIs.

2

Evolving perspectives on integration

SECTION 2

Organizations prefer hybrid approaches when running integration systems

For enterprise-sized organizations, some type of integration system is almost indispensable. Modern organizations will undoubtedly be running countless applications, IT systems and data sources, and in order for the organization to operate in an efficient and streamlined way, integrating these together delivers unquestionable value.

As was the case in 2021, virtually all (99%) respondents' organizations have an integration system of some kind in place. Organizations are most likely to be operating an integration system on a hybrid environment, both on-premises and in the cloud, with use of this approach having increased somewhat between 2021 and 2022.

By contrast, cloud-only approaches to hosting integration systems are slightly less common in 2022.

This suggests that organizations are recognizing that they are better off to use a system that strikes a balance between cloud and on-premises deployment than running solely in one or the other.

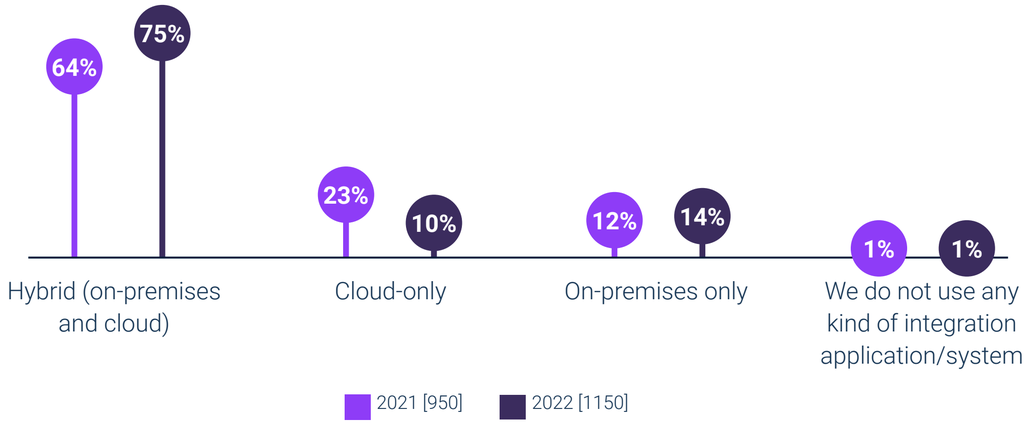


Fig. 7: Which of the following best describes where you are running your integration systems utilized in your organization? [Base numbers in chart] Split by historical data, not showing all answer options

SECTION 2

Integration systems are enabling time savings, organizational visibility and improved innovation

For those using an integration system, 99.8% identify several benefits of doing so. This highlights the importance of organizations having such systems in place, but also identifies the clear advantage that can be achieved for the organizations that implement the best integration platforms available.

Improving productivity will undoubtedly benefit any organization from any industry, while the same is true for enhancing data visibility. This holds especially true as organizations' data footprints continue to grow over time. Both of these benefits will in turn help to encourage innovation and growth within businesses.

Incidentally, the benefit of improved productivity was also the most common according to respondents in the 2021 study. This provides consistent evidence over time of how integration systems can deliver a vital improvement to organizations and help them become more efficient overall.

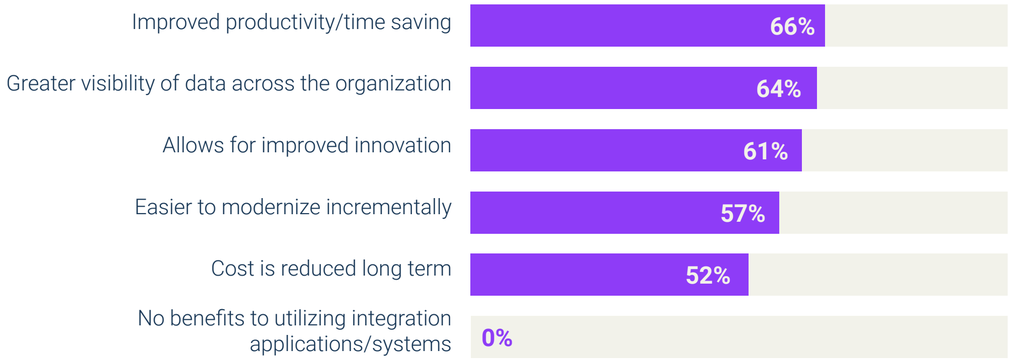


Fig. 8: Which of the following are the top three benefits achieved through integration applications/ systems within your organization? Combination of responses ranked first, second and third [1140] Organizations that use an integration system. Not showing all answer options

SECTION 2

Organizations are making steady improvements over time to integration processes

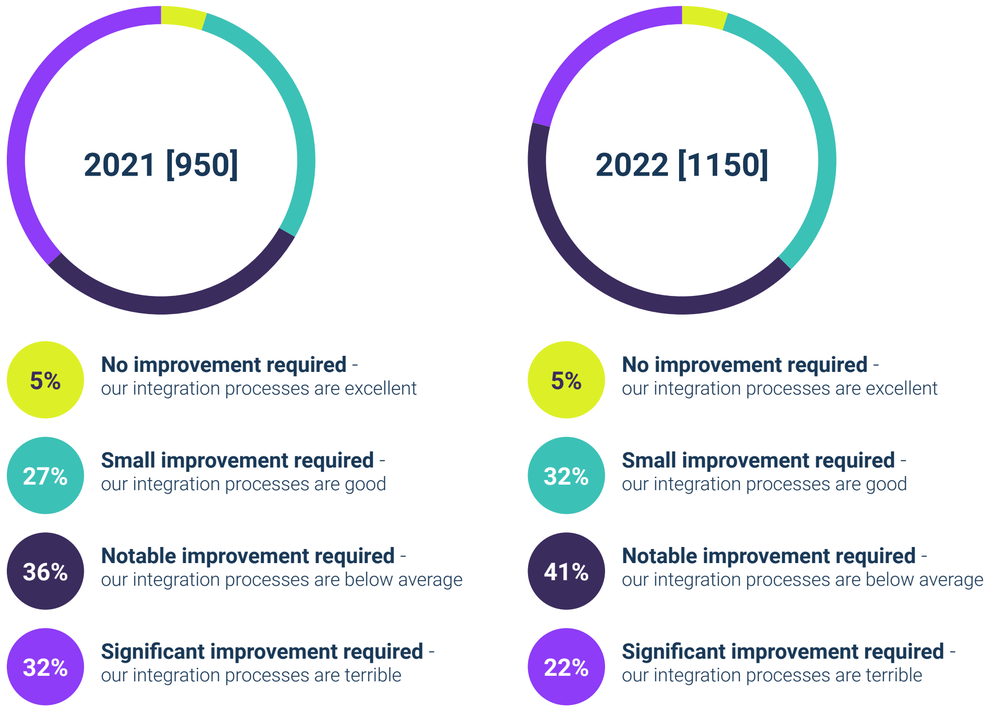


Fig. 9: To what extent do you believe that integration processes require improvement in your organization? [Base numbers in chart] Split by historical data, not showing all answer options

In 2021, 32% of respondents suggested that their integration processes needed significant improvement, identifying a clear need for change in many organizations. While approaching one in four (22%) still hold this view in 2022, there is evidence that progress is being made overall.

While positive, there is still a considerable way to go with enhancing integration processes. It is fair to assume that most organizations' IT environments will continue to grow in size and complexity over time, and this will mean that integration challenges are likely to do the same.

Organizations should aim to implement technologies and processes to further improve on their integration capabilities, with utilization of APIs and microservices holding considerable potential for doing this in a future-proofed way.

Integration challenges – often linked to complexity and security – remain highly common

Organizations will likely need to address and overcome integration challenges if they wish to optimize their integration potential and see the greatest amount of integration-based benefits.

Security, again, is a pressing issue and one that will need to be factored into any decision making around integration systems and processes. This was also a top challenge in terms of API utilization and while cybersecurity features so regularly in the news and in day-to-day life, this concern is understandable.

The data suggests that businesses need more effective means of simplifying their existing integration tools while also modernizing legacy systems. In an ideal world, business investments in new integration solutions would be able to overcome both of these challenges simultaneously.

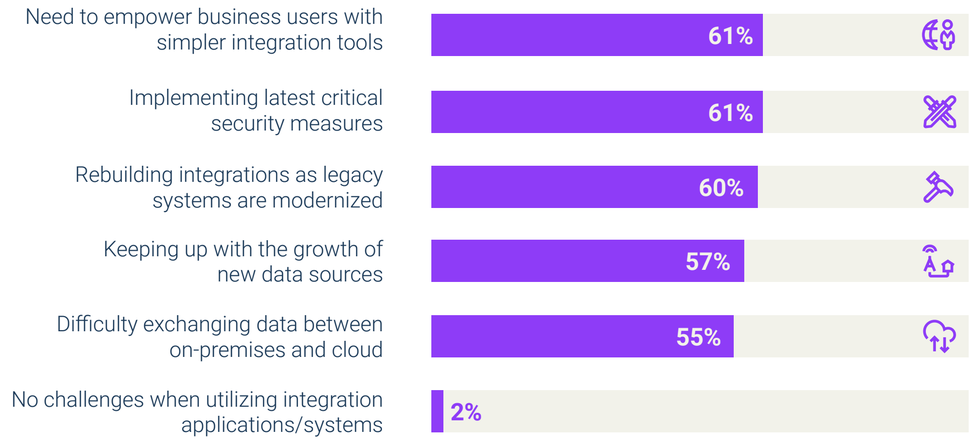


Fig. 10: Which of the following are the top three challenges your organization faces with integration applications/systems? Combination of responses ranked first, second and third [1140] Organizations that use an integration system. Not showing all answer options

3

Use of microservices and service mesh

SECTION 3

Microservices remain highly important to organizations' operations

Microservices are an architectural style for software and application development, where the functionality is divided up into small services which are independent to each other, as opposed to using large monolithic applications where all functionality is developed in the same place, as has been the case historically.

Whether organizations are already using them or not, there is unquestionable recognition of the value that microservices can deliver. This broad sentiment holds true across both the 2021 and 2022 study, underlining the drive that organizations are likely to have in terms of implementing microservices and then refining how and where they can be used to deliver the greatest business benefits.

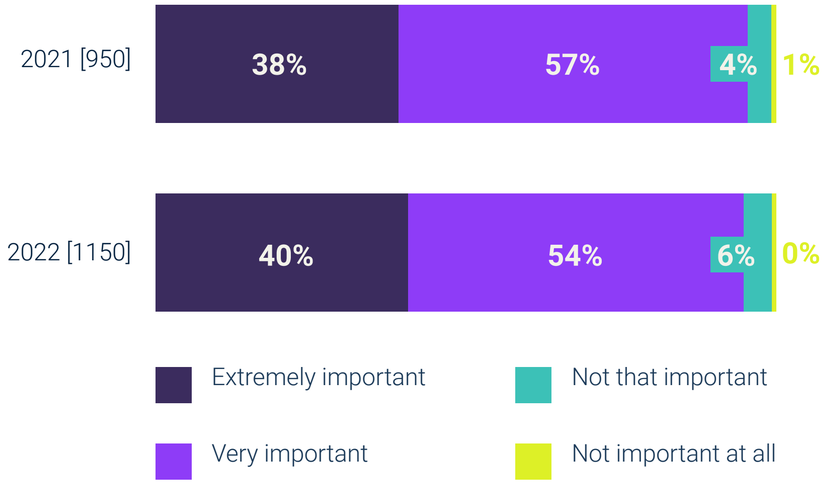


Fig. 11: How important are microservices/would microservices be to products you are delivering? [Base numbers in chart] split by historical data

SECTION 3

The extent to which microservices are being utilized in organizations is increasing over time

Percentage of organizations where microservices are being utilized in all or the majority of projects

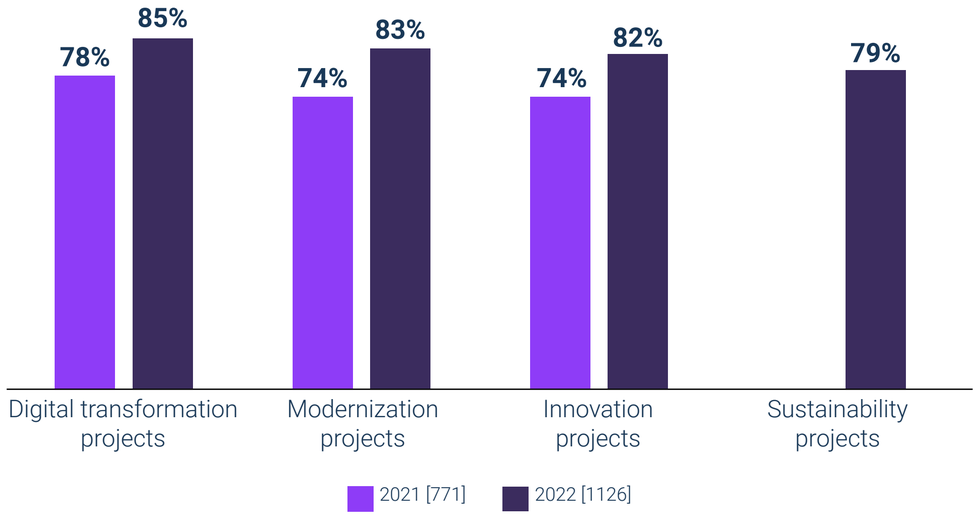


Fig. 12: What type of projects are microservices being utilized for within your organization? [Base numbers in chart] Asked to respondents whose organization currently utilizes microservices, split by historical data. "Sustainability projects" was not asked in 2021

As was also the case for APIs, organizations are making use of microservices more frequently across a number of different contexts.

Given the range of potential use-cases for microservices, this trend over time makes sense. Organizations are likely becoming more comfortable with the approach while also seeing greater evidence of benefits that it can deliver.

Digital transformation projects being the use of microservices to improve business operations and deliver value to customers. E.g. the development of new digital products and services, improving customer experience, and improving the efficiency of existing applications and processes

Modernization projects being the use of microservices to improve the scalability and management of IT projects. E.g. the use of microservices for improved management, scalability and resiliency in cloud environments, the ability to quickly develop and deploy new services/applications

Innovation projects being the use of microservices to innovate faster and more effectively

Sustainability projects being the use of microservices to reduce the negative impact of business operations on the environment

SECTION 3

Use of microservices is helping organizations to be more secure, agile and scalable

Microservices becoming more widely utilized in organizations is understandable when looking at the benefits being introduced when they are used. Over half of respondents in 2022 identified microservices as helping to improve security, presumably by creating many smaller attack surfaces than traditional, monolithic applications. This means that a successful attack on one does not necessarily mean a breach to other applications and data sources.

Many identify microservices as helping with business agility and scalability, both of which are vital for businesses in this day and age. In the 2021 study, greater business agility was the most common benefit witnessed in organizations using microservices, while security was ever so slightly less common. This may indicate a growing awareness of the potential security benefits that microservices can introduce.

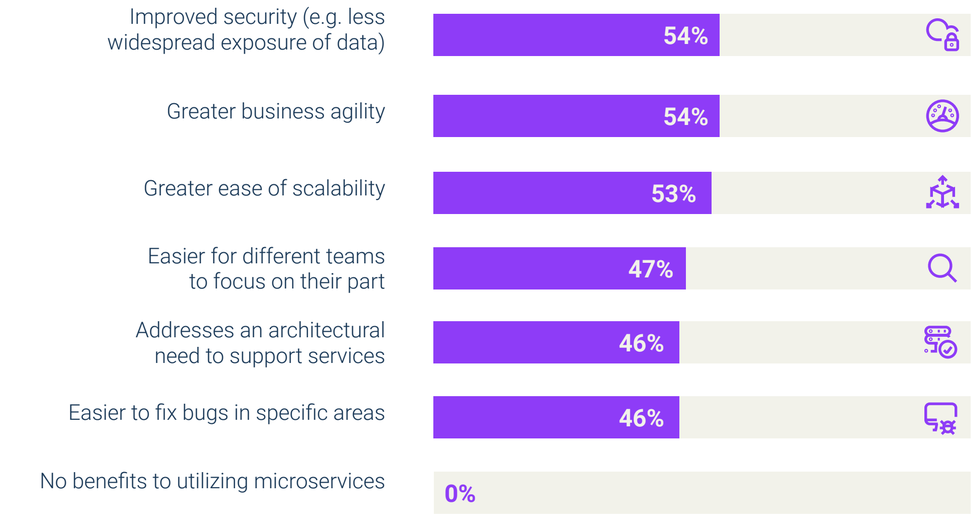


Fig. 13: Which of the following are the top three benefits achieved through using microservices in your organization? Combination of responses ranked first, second and third [1126] Asked to respondents whose organization currently utilizes microservices, not showing all answer options

SECTION 3

Despite benefits, challenges linked to microservices are almost inevitable

This approach remains fairly nascent, so while it is now relatively common for organizations to be investing in and making use of microservices, it is likely that many organizations still have some way to go before they are being used in the most mature and effective way possible.

Some of the potential benefits (e.g., security, agility) that can be derived from splitting systems into several, independently running elements also result in challenges, with complexity and difficulty with management both being pertinent.

Notably, the 2021 study saw limited budget to invest in this as the most common challenge. This could illustrate that budget is becoming more readily available for investment in this area, indicating that organizations' awareness of the value and need for microservice utilization is increasing.

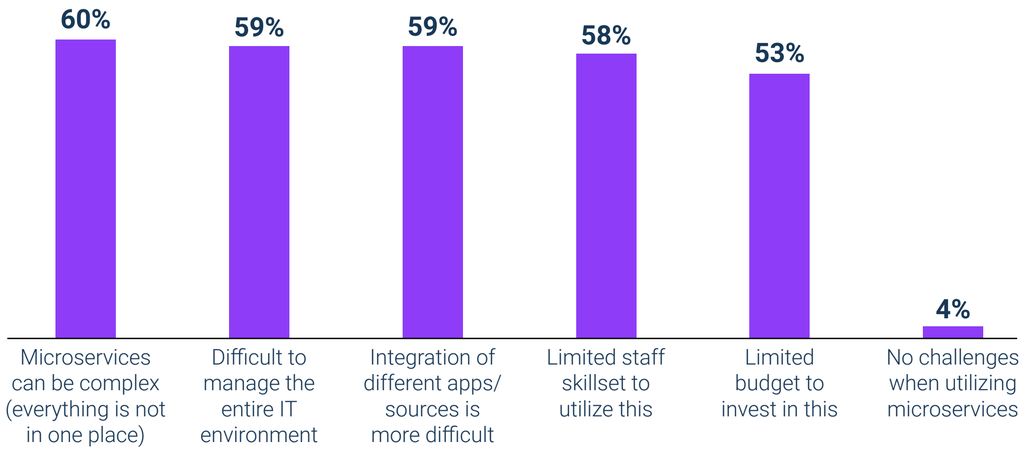


Fig. 14: Which of the following are the top three challenges you face when using microservices in your organization? Combination of responses ranked first, second and third [1126] Asked to respondents whose organization currently utilizes microservices, not showing all answer options

SECTION 3

Many organizations are exploring use of service mesh to help them with microservice management

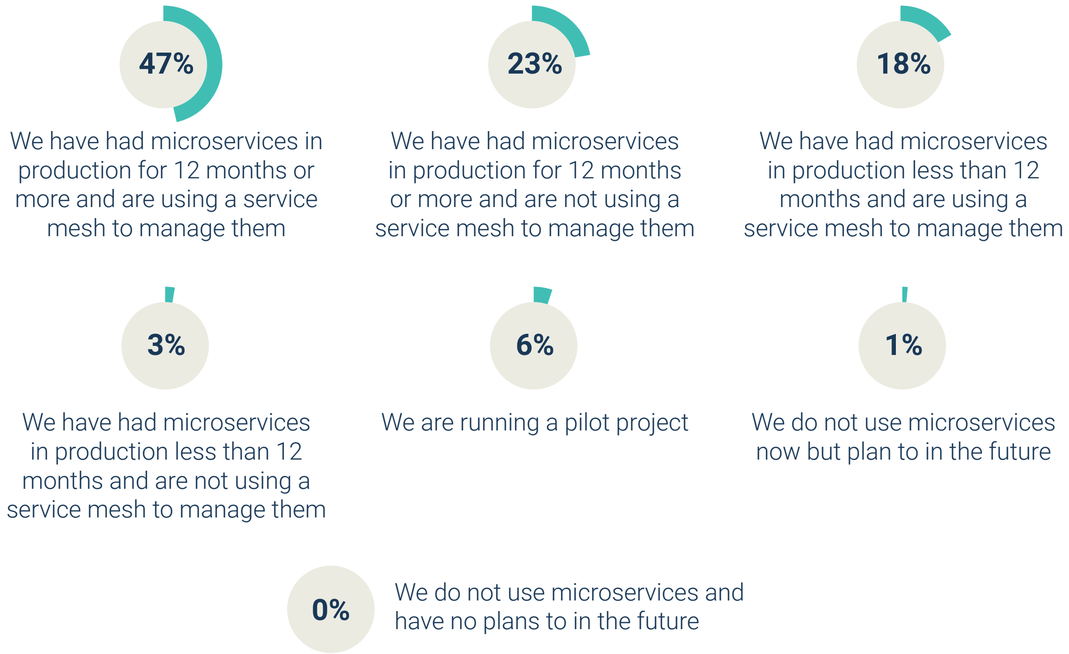


Fig. 15: Which of the following best describe your organization's use of microservices? [1150] Not showing all answer options

One method that organizations are using to assist them with the complexity and management of microservices is use of a service mesh – most of those that are utilizing microservices are taking this approach.

For those that are already making use of microservices but not yet also employing a service mesh to help them with the management, this is something they should be investigating as a way of overcoming challenges more readily to be in a better position to embrace the potential benefits of microservices.

SECTION 3

Service mesh utilization often brings challenges relating to implementation complexity

The vast majority identify at least one challenge related to service mesh implementation within their organization, and more often than not this is in relation to implementation complexity and issues with staff skillset. This largely aligns with the findings from 2021, where complexity was also found to be a key challenge, suggesting that this is proving to be a difficult barrier for organizations to deal with.

For organizations to get the most out of microservices and service mesh, they must find ways to overcome these issues, which is likely to either require them to introduce new staff or upskill existing staff, or to invest in new technology that helps to make the implementation and use of microservices and service mesh easier.

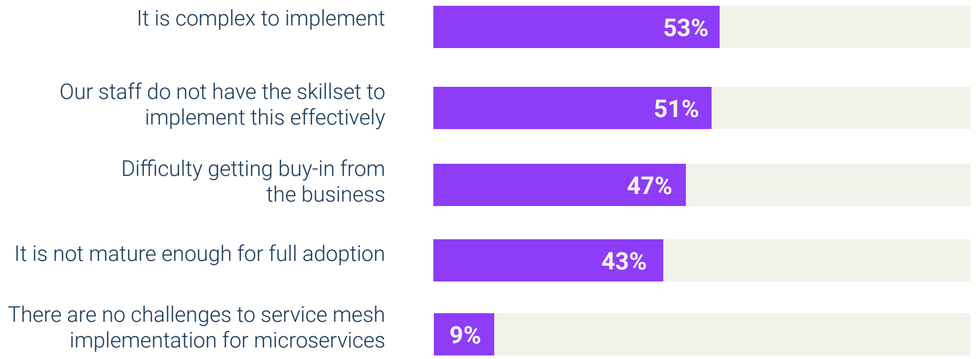


Fig. 16: What challenges come with/do you expect will come with service mesh implementation for microservices within your organization? [1150] Not showing all answer options

4

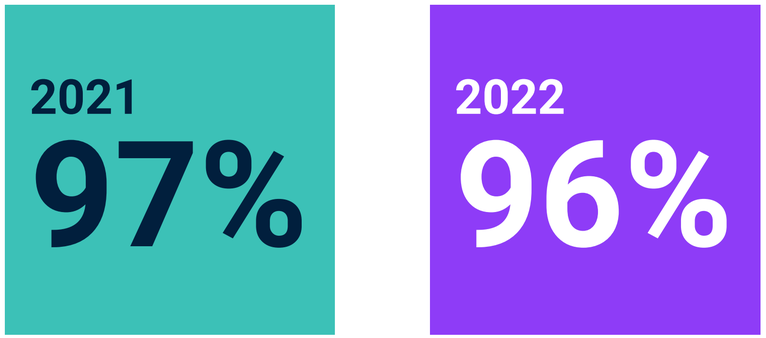
The need for a unified platform

SECTION 4

Demand is still high for a platform that combines APIs, microservices and integration

Despite the challenges being faced, organizations are making considerable strides with the utilization of APIs, microservices and integration in isolation.

However, as per the 2021 study, there is a very clear appetite for a solution that pulls these together into a unified platform. Almost all (96%) see this as having the potential to be at least somewhat beneficial, with 39% suggesting that it would be extremely beneficial.



Said that if it were possible, it would be extremely, very or somewhat beneficial to combine APIs, microservices and integration together in one platform

Fig. 17: If it were possible within your organization, would you want to combine APIs, microservices and integration together in one platform? [Base numbers in chart] split by historical data

SECTION 4

Productivity and flexibility boosts are considered among the top benefits of a unified platform

The expected benefits of combining APIs, microservices and integration into a unified platform are far-reaching and bring together some of the top benefits witnessed in relation to these technologies when used in isolation. In essence, this approach enables organizations to push their operations to the next level and deliver improved outcomes to their employees and customers alike.

A unified platform would result in greater productivity and faster time to market, both of which are essential for successful organizations. Meanwhile, the ability to gain better customer insights and improve customer satisfaction are both crucial for organizations striving to keep their existing customers happy while also winning new customers.

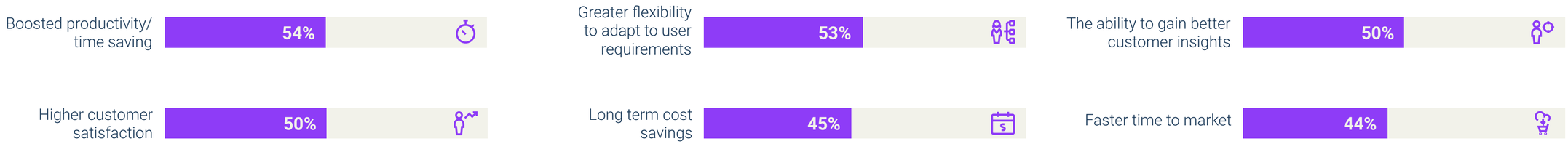


Fig. 18: What do you think the benefits would be for your organization in combining APIs, microservices and integrations into one platform? [1112] Asked to respondents who believed their organization would benefit from combining APIs, microservices and integration or if organization already does this, not showing all answer options

SECTION 4

A unified platform approach is seen as a way of simplifying IT and delivering a competitive advantage

With organizations' IT environments growing larger, more distributed and often more complex year after year, solutions that introduce greater simplicity are highly desirable. There is widespread belief among surveyed IT decision makers that a unified platform that consolidates APIs, integration and microservices into one place could make a considerable difference in addressing this.

This, by extension, will make life easier for employees, while also helping businesses to be more agile and more flexible, both of which are vital in the modern world, thus giving organizations an advantage over their competition.

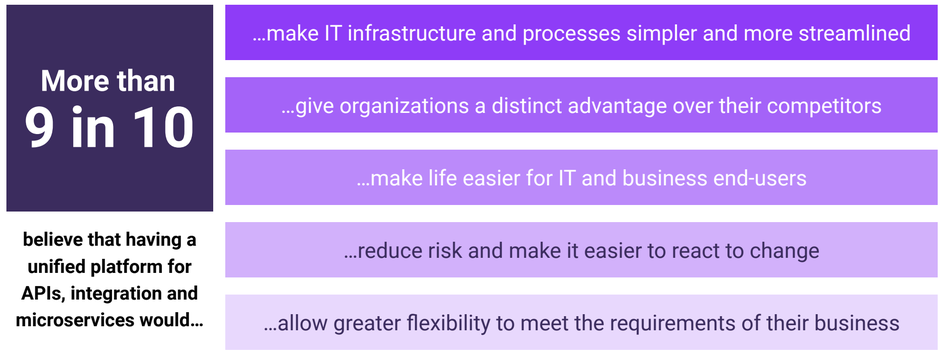


Fig. 19: To what extent do you agree or disagree with the following statements? [1150]

5

Technology is essential for sustainability

SECTION 5

Sustainability is becoming a key consideration for organizations

Sustainability, climate change and social responsibility have all moved beyond scientific and government focus into the language and conversations of the wider population. Increasingly people recognize that everyone has at least a small part to play in protecting the planet for future generations.

Activities around these topics, such as COP26* in 2021, have increased awareness of the responsibility that organizations have and the actions they can take to make a difference and many have responded – for almost all organizations, sustainability and the associated performance reporting dimension ESG (Environmental, Social and Governance) are at least a consideration when formulating strategic business priorities.

There is, however, a ways to go until this way of thinking is fully embedded and a top priority for all organizations. Organizations can utilize integration and APIs to collate and distribute data to better support decision-making around environmental and social impact, allowing organizations to progress further with their sustainability goals.

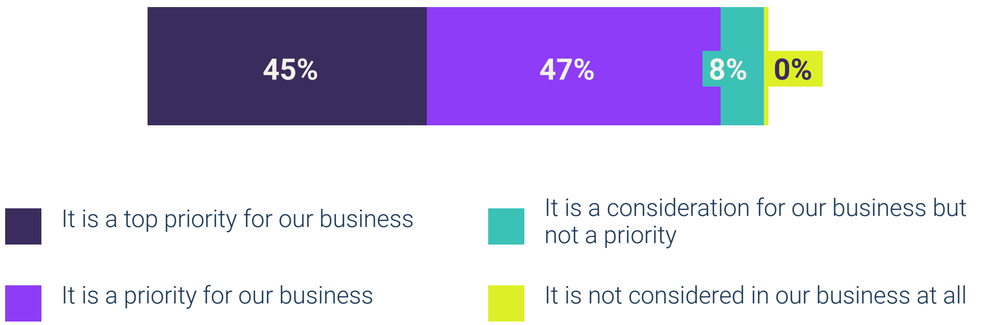


Fig. 20: To what extent is sustainability and its performance reporting dimension (Environmental, Social and Governance or ESG) a strategic business priority for your business in 2022? [1150] Not showing all answer options

***Source: https://ukcop26.org/**

There is a clear link between sustainability stance and strategic investment in technology to support these initiatives

Operating sustainably and responsibly often requires technology to enable the collection and analysis of data to support decision making around this. It might, therefore, be anticipated that organizations putting sustainability at the top of the agenda will already be on their way to implementing technology for this purpose, and this is certainly the case for most.

Organizations claiming top priority for sustainability but without the technology in place to support this yet, may simply be in their infancy in terms of rolling out their strategy. It is also possible that they may even be feeling the pressure to overclaim in terms of their sustainability agenda. Where overclaim is in play, this can be driven by feelings of discomfort that their organization should be doing more*.

It may be useful to vendors to bear this possibility in mind – to know that their customers want to be doing more to support their sustainability aspirations, but do not yet have the means of doing so*.

***Source: Vanson Bourne internal qualitative research conducted early 2022**

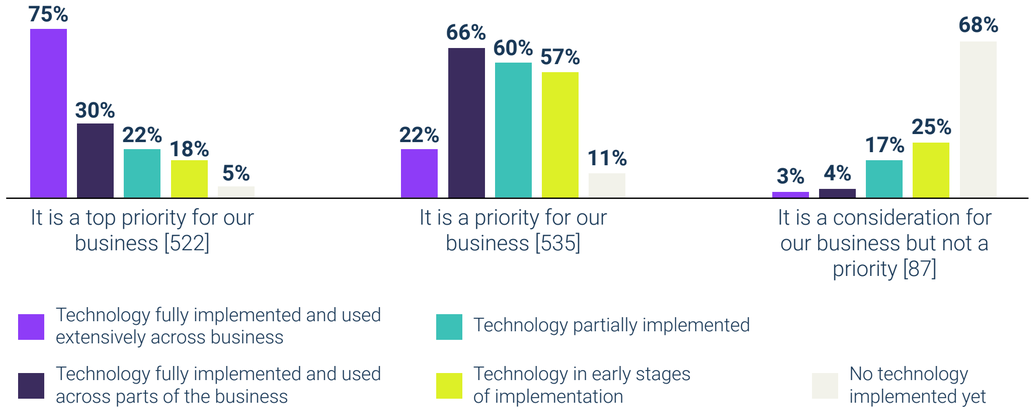


Fig. 21: To what extent is sustainability and its performance reporting dimension (Environmental, Social and Governance or ESG) a strategic business priority for your business in 2022? [Base sizes in chart] Split by the extent respondent's organization uses technology to help analyze operations and transform business processes for sustainability, not showing all answer options

SECTION 5

Organizations need greater support on working toward sustainability objectives

Many organizations have ESG KPIs in place and are already measuring their performance against these, again demonstrating the fact that sustainability is on the agenda for most. There are considerable challenges for organizations to overcome in this area though. While some challenges are internal issues to solve such as reaching consensus on and setting realistic goals (51%) and understanding standards and terminology (42%), there are key areas in which vendors can support such as the lack of access to quality datapoints (57%) and lack of underlying technology to automate data collection and analysis (48%).

Given the trend towards including sustainability as a strategic priority, it is also likely that this is an area which could increasingly be considered in vendor selection during procurement. Customers may start to look to vendors to support their sustainability and social responsibility strategies, by helping them decrease their carbon footprint, providing proof of sustainable operations such as use of renewable energy, paying ethical wages and recruiting with serious consideration to diversity and inclusion*.

***Source: Vanson Bourne internal qualitative research conducted early 2022**

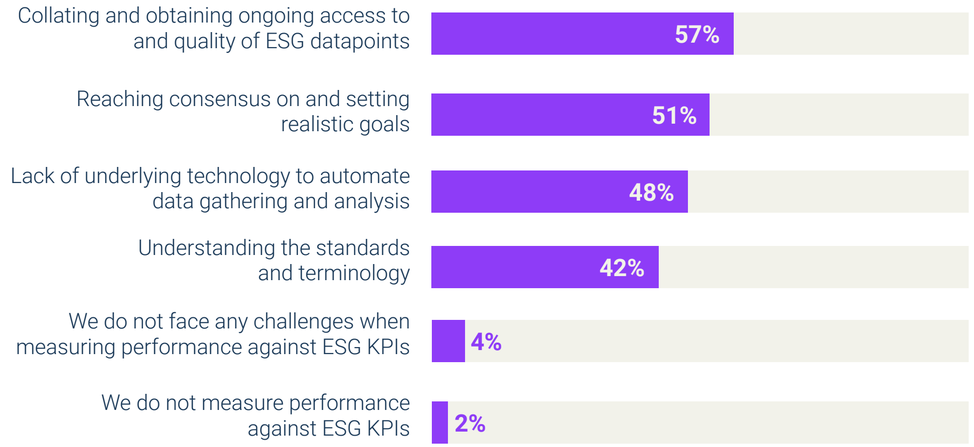


Fig. 22: What is the biggest challenge your organization faces when measuring performance against Environmental, Social and Governance (ESG) KPIs? [1150] Not showing all answer options

Conclusion

APIs, integration and microservices underpin the digital transformation journey of most enterprise organizations and therefore remain essential to their operations and products they deliver. Use of APIs and microservices in key project types has increased since 2021 and the benefits of using all of these elements are clearly understood. However, use of APIs, integration and microservices in isolation present multiple challenges that have not yet been overcome by many and take up IT departments' time to work around.

One potential solution to these challenges is combining APIs, integration and microservices into one platform. Many organizations recognize that a combined platform has the potential to simplify IT complexity for them, while also boosting productivity, saving time and money. In addition, there is widespread belief that such an approach can drive higher customer satisfaction, allow greater flexibility and innovation and bring products to market more quickly. Ultimately many recognize that combining APIs, integration and microservices into one platform can offer a competitive edge and precipitate business success.

CONCLUSION

Simplify the truly connected enterprise with APIs, integration and microservices from Software AG

We live in a connected world in which your employees, partners and customers expect a unified, connected experience. But the digital transformation required to meet those expectations is increasingly complex and difficult to navigate.

The keys to making digital transformation possible are APIs, integration and microservices. But managing all of these connections is no trivial task. They can be built and hard-coded manually, but that is an expensive, time-consuming and inflexible approach to digitalization.

At Software AG, we built webMethods, a unified API, integration and microservices platform, to be the digital backbone which integrates everything from applications to APIs in hybrid ecosystems so that information and insights flow freely.

Its open architecture and multi-user UI provide the flexibility to integrate anything easily – in the cloud and on premises. We provide scalability and resilience, central visibility, and an ecosystem of connectivity to automate workflows and drive efficiency. With webMethods, businesses are ready to tackle the next generation of digital transformation challenges.

To learn more about what you can do with better connections, visit: www.softwareag.com/integration

CONCLUSION

The Future is Sustainable at Software AG

Sustainability and social responsibility are clearly on the agenda for many organizations, and the trend is likely to move towards placing greater priority on these in the future. There will therefore be a key role for vendors to play in supporting customers with their aspirations to operate more sustainably and responsibly.

Doing good is good for business. From top to bottom, companies are improving their environmental and social footprint. However, it takes more than hope and good intentions to meet challenging (but important) environmental, sustainability and governance (ESG) goals. It takes a connected layer of technology that can assess, track and report on everything you do.

APIs, integration and microservices are an important part of the digital backbone that support all of your sustainability efforts – from ensuring your processes are compliant, your data is tracked, your “things” are running efficiently and your supply chain is transparent.

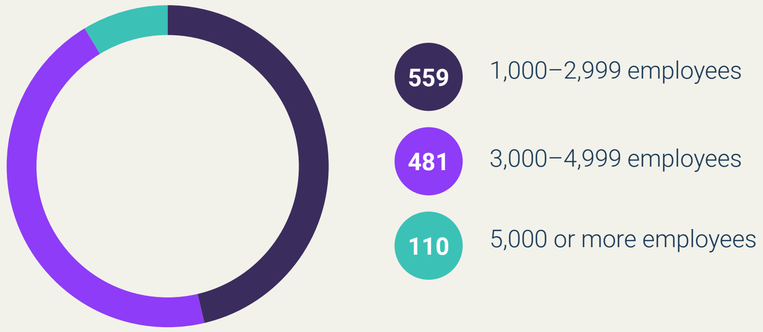
Demographics

This quantitative study surveyed 1150 IT decision makers between February and March 2022. All interviews were conducted using a rigorous multi-level screening process to ensure that only suitable candidates were given the opportunity to participate.

This study follows on from one conducted among 950 IT decision makers in December 2020 and January 2021, allowing trend comparison in some instances. Responses by region were the same then as for 2022, with the exception that Canada and South Korea were new additions in 2022.

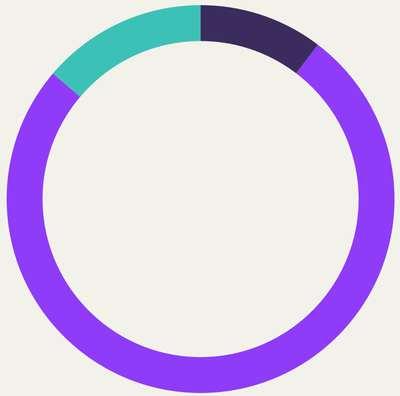
Respondents by region

Respondents by organization size



Demographics

Respondents by role



- 138 — Owner, MD, most senior level in the organization
- 838 — CXO, Director, SVP, senior manager of unit, etc.
- 174 — Department or intermediate management, etc.

Respondents by sector

- 207 — IT and technology
- 184 — Retail
- 168 — Financial services
- 155 — Manufacturing and production
- 61 — Media and entertainment
- 58 — Consumer services
- 51 — Travel and transportation
- 48 — Public sector
- 39 — Private healthcare
- 37 — Business and professional services
- 37 — Telecoms
- 33 — Energy, oil/gas and utilities
- 29 — Construction and property
- 43 — Other commercial sector

Software AG is the software pioneer of a truly connected world. Since 1969, it has helped 10,000+ organizations use software to connect people, departments, systems and devices. Software AG empowers truly connected enterprises using integration & APIs, IoT & analytics and business & IT transformation. Software AG's products establish a fluid flow of data that allows everything and everyone to work together. The company has more than 4,800 employees across more than 70 countries and annual revenue of over €800m. It is committed to its ambition of exceeding €1 billion of organic revenue and reaching an organic operating profit margin (EBITA, non-IFRS) of between 25 percent to 30 percent in 2023.

For more information, also follow on *LinkedIn* and *Twitter.*

Vanson Bourne is an independent specialist in market research for the technology sector. Their reputation for robust and credible research-based analysis is founded upon rigorous research principles and their ability to seek the opinions of senior decision makers across technical and business functions, in all business sectors and all major markets.

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