

ENTERPRISE ARCHITECTURE AS SUCCESS FACTOR IN DIGITAL TRANSFORMATIONS

Digital Architecture Study 2020



CONTENTS

1. Management summary	4
2. Purpose of this study and research objectives	6
3. Research group of this survey	7
4. Current state of enterprise architecture	9
5. The value of enterprise architecture in innovations	11
6. Emerging technologies and the future role of enterprise architects	13
7. Agile enterprise architecture delivery	15
8. The role of enterprise architecture in corporate social responsibility	17
9. Conclusion and future outlook	20
10. Let's think ahead: enterprise architecture and corporate social responsibility	21
11. Digital architecture capabilities of Capgemini Invent	22
12. Our experts	23

MANAGEMENT SUMMARY

An increasing globalized, digital, and highly dynamic world is constantly disrupting established organizations. Leaders of organizations are facing new challenges and need to rapidly understand technology impacts on products, services, customers, and employees. But how can organizations handle increasingly complex ecosystems and keep up the pace of innovation while ensuring sustainable technology decisions? Which capabilities does a company need to design and scale for IT and business landscapes of the future?

This is where enterprise architecture comes into play. In recent years we saw an increasing interest in this discipline but also saw enterprises struggling with several challenges to re-invent existing enterprise architectures and to transform enterprise architects into trusted business advisors with deep business and technology understanding. The Capgemini Enterprise Architecture Study 2020 examines the current state and future role of enterprise architecture in innovation processes, its involvement in agile projects, and its potentials for corporate social responsibility (CSR). Our key findings are summarized in the following topics.

- **Current State of Enterprise Architecture:** Enterprise Architects are increasingly involved in tactical and strategic transformation initiatives with 95% of respondents stating that they are a key contributor in the successful realization of innovation efforts. But our study also found out that Enterprise Architects must elevate their role by adopting agile value delivery and by becoming experts in new disruptive technologies and innovative thinking.
- **Enterprise architecture value proposition:** The key benefits being delivered by enterprise architects are creating end-to-end transparency across all architecture layers and the proactive identification of business-model and process-related optimization potentials, including technology selection. This underpins the increasing strategic implication of this discipline on actively shaping the CxO agenda.
- **Future role of enterprise architects:** Enterprise architectures need to evolve along with emerging technologies to support new business and customer needs.

Seventy percent of study respondents said new competencies and skills are required, and should be supplied by training, certification programs, or hiring talent. On top of the list for future enterprise architecture capabilities are cloud computing (79 percent), microservices and containerization (68 percent), API and integration technologies (65 percent), as well as analytics (61 percent).

- **Agile enterprise architecture delivery:** The involvement of enterprise architects in agile delivery programs is still low, as only every second respondent states that enterprise architects are either part of agile teams or have an oversight function with decision-making power. If enterprise architects have insufficient decision-making authority for steering projects from an architecture perspective, they will not be able to foster a holistic architecture development. Furthermore, only slightly more than half of the enterprise architects are working agile. This is due to insufficient know-how and skills. Enterprise architects need to rapidly adopt agile principles to become accelerators of digital transformations.
- **Enterprise architecture and corporate social responsibility:** Only about half of the companies address CSR measures as a key topic in their agenda. Among those who consider CSR as being important, 81 percent take measures regarding the use of technology and reduction of limited resources into consideration. The role enterprise architects play in CSR activities will become more important in the future. CSR measures driven by enterprise architects could be the digitalization of information, the enablement of the shared use of resources, or the implementation of energy-efficient application and infrastructure landscapes. The potential of enterprise architects is huge to establish themselves as an enabler, not only for the digital transformation but also for the ecological and energy transformation.

The following publication will discuss and present all findings in more detail in order to provide a holistic view on enterprise architecture in digital transformations.



PURPOSE OF THIS STUDY AND RESEARCH OBJECTIVES

The immediate need to establish deep technological, innovative, and agile thinking along with finding ways to truly unfold the benefits of the digital era on new and existing business models, processes, and customer interactions raises the question: how should enterprise architectures and EA experts transform into the spearhead of innovation? This year's study aims to answer this question and provides insights into the current and future role and importance of enterprise architecture.

Enterprise-architecture management (EAM) comprises all activities that are carried out in an organization in order to capture, maintain, and further develop the enterprise architecture (EA) of an organization from a holistic perspective. This refers to all processes, methods, tools, and responsibilities that serve to achieve a consistent alignment with business and IT goals.¹ EAM answers the "How" while EA is the "What" as being the subject managed by EAM approaches.

Digital architecture leverages traditional enterprise architecture approaches while blending in new technologies and innovative thinking to accelerate the transformation of business and IT landscapes and its interaction with new digital economies. This includes a stringent focus on business and customer needs, their interaction moments, products, experiences, and enabling approaches to translate business needs into truly scalable technology solutions. As this study takes a more theoretical standpoint, the term enterprise architecture will be used throughout the following chapters.

In order to get a more detailed understanding on how our clients perceive the current role and importance of enterprise architecture but also to gain insights into the future evolution of this discipline, we focused on the following key research questions:

- What is the existing role and importance of the enterprise architecture function of our clients?
- How are enterprise architects involved in transformations applying business-centric technology advice and innovative enterprise architecture design?
- Do enterprise architects deliver the value and advisory service which is expected by their leadership?
- Which future roles, capabilities, and expertise are fundamentally required for enterprise architects to be the spearhead of innovation?
- Are enterprise architects already key members of agile innovation teams accelerating the delivery of solution architectures?
- How can enterprise architects shape the future agenda related to corporate social responsibility?

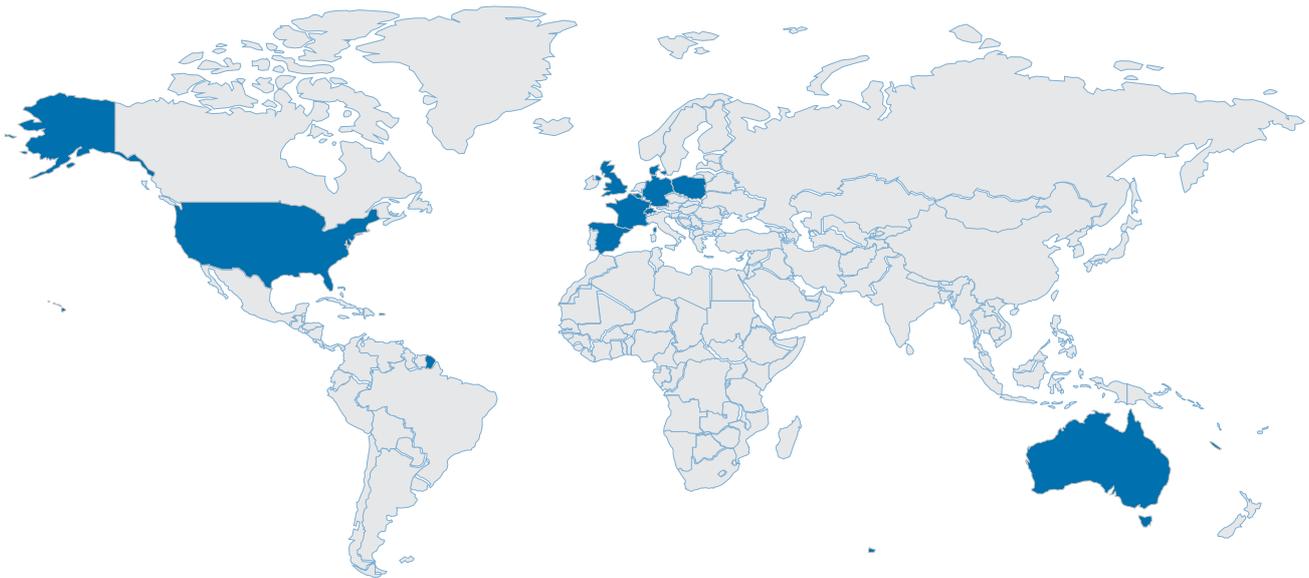
¹ *The Open Group (2011)*

3

RESEARCH GROUP OF THIS SURVEY

This year's *Digital Architecture Study* is based on the responses of 57 participants from 10 different countries. The respondents cover a wide variety of industries and companies of different sizes. Most responses have been received by clients from Germany, USA, UK, Switzerland, and Australia.

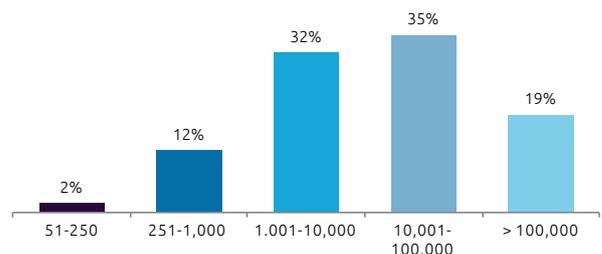
Figure 1: Participants' global distribution



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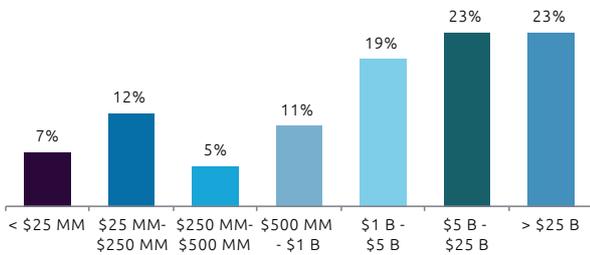
The main industries represented in this study include financial services, transportation and distribution, aerospace and defense, as well as consumer products and retail. Most answers were provided by experts working in the financial services sector, with the other industries being quite equally distributed. In terms of the organizational size, almost every second participant is working in large corporations with an annual revenue larger than US\$5 billion. The share of small-sized companies was significantly low. Only 7 percent of participants work in an organization with an average revenue of less than US\$25 million.

Figure 2: Organizations' size (number of employees)



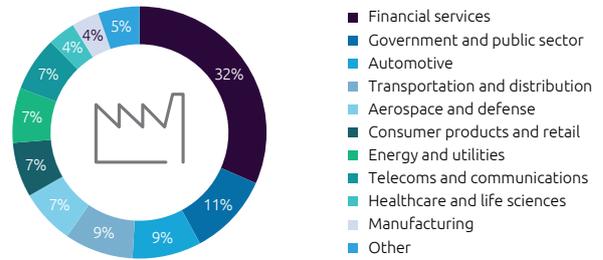
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Figure 3: Organizations' revenue distribution



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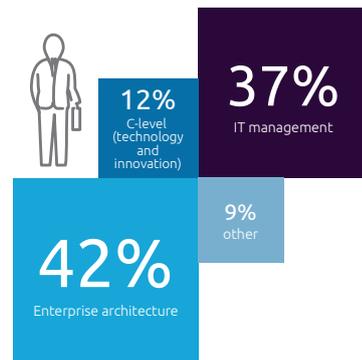
Figure 4: Participants' industry sectors



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In this study, we aimed to get insights on how different organizational roles perceive the importance and value contribution of enterprise architecture in their organization. The roles spanned different positions, from CxOs, e.g. chief information officer (CIO) and chief digital officer (CDO) to (chief) enterprise architects, IT managers, and IT practitioners. Mainly enterprise architects (42 percent) and IT management practitioners (37 percent) provided their view on enterprise architecture. Twelve percent of the participants are working in a C-level position such as CIO and CDO.

Figure 5: Participants' working area



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CURRENT STATE OF ENTERPRISE ARCHITECTURE

Enterprise architecture work includes activities and objectives which ultimately aim to facilitate business and IT collaboration, support business stakeholders to prioritize and make efficient technology investments, as well as to deliver artifacts promoting transparency across IT landscapes.² To align enterprise objectives with technology delivery, supporting methodologies such as TOGAF, Zachman, or Capgemini's Integrated Architecture Framework (IAF) are applied to systematically develop, evolve, and optimize enterprise architectures across all domains. In order to understand the current state of enterprise architectures in organizations, we asked this year's survey participants about the estimated number of enterprise architects in their organization and the main initiatives they are engaged in.

Figure 6: Distribution of technology-related investments



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In general, we found out that technology-related investments are currently targeting tactical transformation objectives (40 percent), while strategic and operational projects were described as more or less equally important (see figure 6). That being said, the top three initiatives on the agenda are 1) the modernization and transformation of legacy IT landscapes, 2) development of new digital products and services, as well as 3) the automation and enhancement of processes and operations (see figure 7).

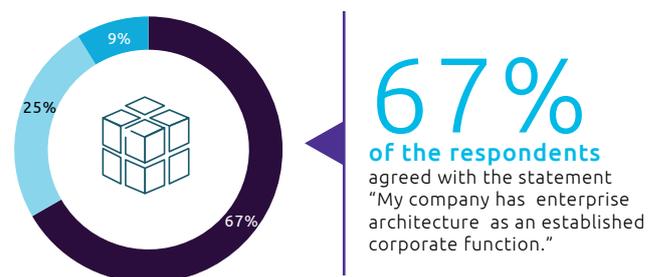
Figure 7: Enterprise architects as facilitators for common strategic decision making



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This shows us that there is a potentially high and increasing need for individuals within organizations who can interlink strategic business objectives with IT strategies and understand how new technologies can innovate existing enterprises.

Figure 8: Enterprise architecture as an established corporate function



- No EA function
- Existing but not formalized EA function
- Established EA function

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Sixty-seven percent of this year's participants stated that their organization has an established and formalized enterprise architecture function and every fourth organization is practicing enterprise architecture but does

not have a formalized department (see figure 8). More than 61 percent described that enterprise architecture as an IT practice, while only 35 percent perceive EA as a cross-organizational practice. We also aimed to understand the ratio between IT employees and enterprise architects in order to indirectly derive the importance of EA in today's organizations. On average, 5 percent of employees in IT organizations are enterprise architects, which indicates that this discipline is already playing an important role which is acknowledged by CIOs and other IT decision makers. However, there is the potential to further increase the share of EA experts in IT organizations to truly understand business needs and to translate them into scalable digital-technology solutions. Another interesting finding: according to the survey participants, 95 percent of enterprise architects are already actively involved in transformation initiatives and major IT decisions (see figure 9). Moreover, 68 percent see enterprise architects as a critical success factor in these transformations. The main activities in transformation projects are 1) the development of digital strategies, 2) target architecture development, and 3) architecture review and communication (see figure 10).

This shows that enterprise architecture is applied across all domains of the organization, from business and experience architectures to information technology, data, and infrastructure architecture. Enterprise architecture is of increasing importance when it comes to providing strategic technology guidance and oversight to assure sustainable technology decisions while accelerating the realization of digital transformation and optimization projects.

Also, the use of EA tools becomes more important in an increasing dynamic environment with everyday changes and a stringent evolution of an organization's enterprise architecture. In our survey, 44 percent of participants stated that enterprise architects are using tools such as LeanIX, Alfabet, Mega HOPEX, and BizDesign. These tools are mainly utilized to digitize and manage the enterprise architecture work and to leverage the use of intelligent technologies. Thus, EA tools are a main support and enabler for enterprise architects to analyze, plan, and execute. Especially in these dynamic and increasingly complex environments, digital tools are unavoidable to align enterprise architecture initiatives with tactical and strategic business goals.

Analyzing the current role and state of enterprise architecture does not provide a picture about the real value which is expected to be delivered. That is why we will provide additional insights about the benefits of enterprise architecture but also if and how EA work is being measured against enterprise-wide objectives.

Key takeaways about the current role and importance of enterprise architecture:

- Enterprise architects need to be able to link strategic business objectives with IT strategies, since the modernization of legacy IT landscapes, development of new products and services, as well as optimization of value chains is on top of the CxO agenda
- Enterprise architecture is mostly categorized as an IT practice (61 percent) and partially as a cross-organizational discipline (35 percent). This shows that enterprise architecture must become more business oriented, delivering true value to business stakeholders and customers
- 68 percent of respondents stated that enterprise architecture is already playing an important role in business and IT transformations. This statement can be underlined with the increasing strategic relevance of the work, with enterprise architects already being a key contributor in developing digital strategies

Figure 9: Involvement level of enterprise architects in transformation and innovation processes

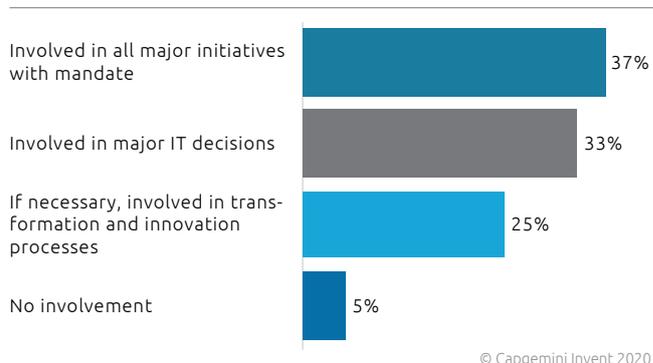
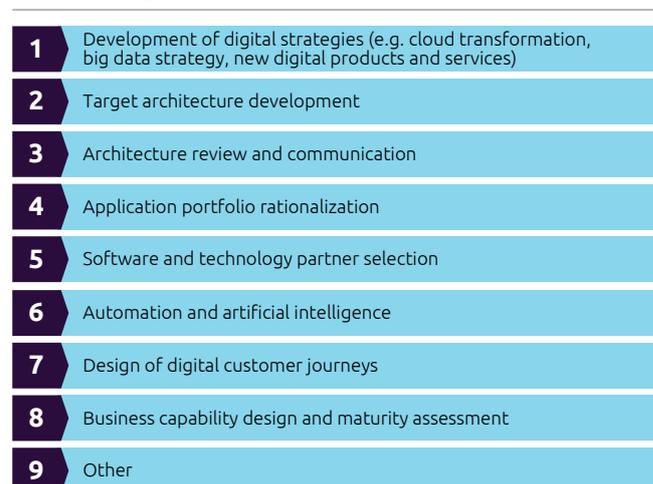


Figure 10: Topics enterprise architects already play a significant role in



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5

THE VALUE OF ENTERPRISE ARCHITECTURE IN INNOVATIONS

Traditionally, the value of enterprise architecture has been described as aligning business and IT strategies while ensuring interoperability, modularity, and agility of IT landscapes. It is also recommended to establish approaches to make the value of EA measurable in order to determine the return on investment of enterprise architecture.³ Working with clients, we often see that there is neither a clear understanding of the role of enterprise architects nor are clear mission and vision statements in place. Also, KPIs to make enterprise architecture outcomes measurable are not necessarily defined and continuously measured and communicated. We asked this year's survey participants to provide their point of view on the expected and achieved value which enterprise architects deliver in alignment to strategic business objectives.

With respect to the mission statement and main activities of enterprise architects discussed, 68 percent of participants are convinced that enterprise architecture is a critical enabler of digital-transformation efforts, while 30 percent state that enterprise architects are key contributors within their organization but not critical within transformations. But what is actually the value being delivered and why is EA work so critical to enable technology related innovations?

The most important value propositions and benefits being delivered are 1) creating holistic transparency across all EA layers, from business to IT and infrastructure landscapes, 2) the proactive identification of optimization potentials with regard to the business models and its operations, but also 3) oversight and support of technology selection and solution architecture design (see figure 11). Figure 13 shows that core EA artifacts being provided are especially technology (79 percent) and transformation roadmaps (72 percent), integration architectures (68 percent), architecture heatmaps (54 percent) to highlight optimization potentials and pain points, as well as business capability models (49 percent), and application and portfolio catalogues and diagrams (each 49 percent). This underlines Capgemini's view that enterprise architecture only succeeds with a holistic approach in all areas of the digital architecture reference model, experience, business, application, information, technology, and security architecture.

But we also asked this year's survey participants about current barriers which hinder enterprise architects to fully deliver expected benefits. The majority outlined that missing skills and capabilities are potentially limiting enterprise architects and are one of the main reasons why enterprise architecture is

Figure 11: Benefits of involving enterprise architects in innovation and transformation initiatives



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³ ScienceDirect, 2019: <https://reader.elsevier.com/reader/sd/pii/S0268401217305492>

not always considered as a key enabler of innovations. Chapter 6 analyzes in more detail which critical roles and competencies must be established in order to truly incorporate innovative and digital thinking into the EA function.

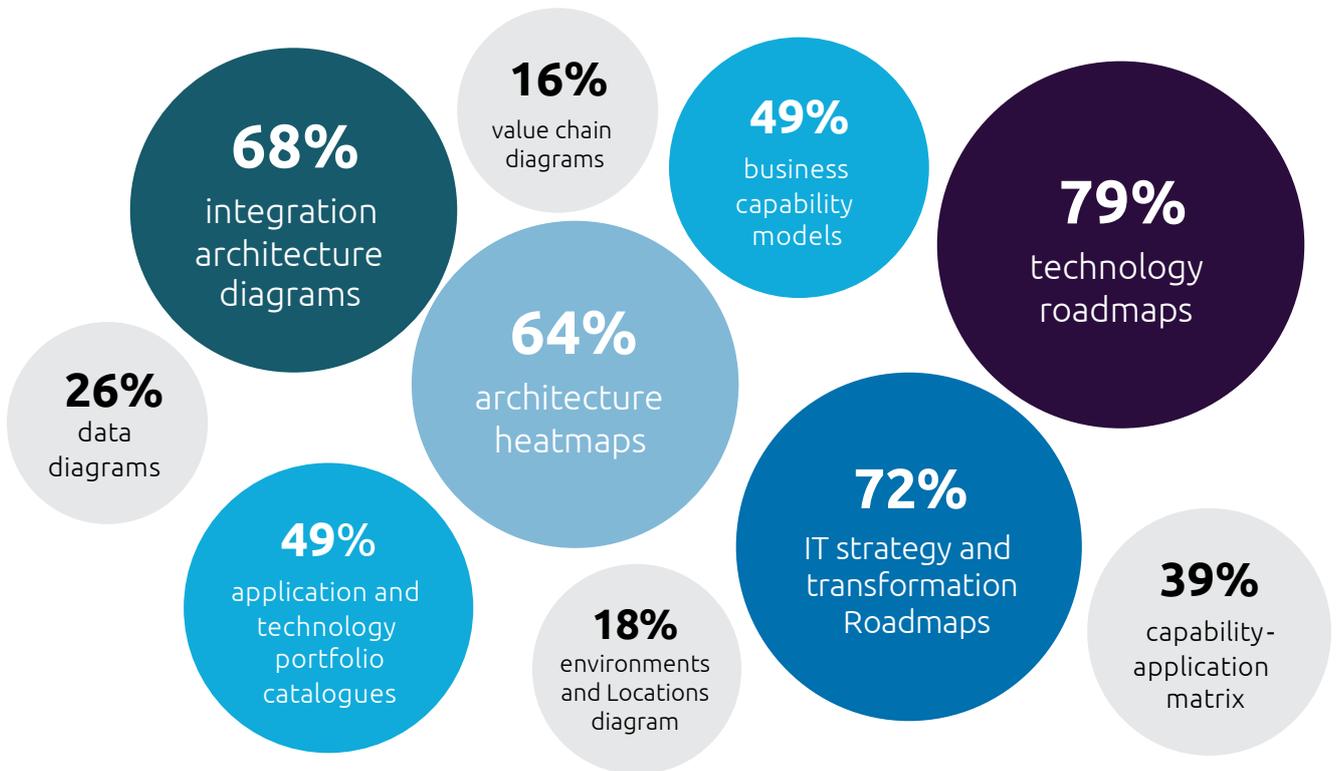
When it comes to measuring enterprise architecture value delivery against strategic objectives, only every sixth participant stated that KPIs do exist and are constantly measured. Even within this group, KPIs are not always proactively communicated and showcase the achieved benefits of enterprise architecture work. This implies that measurable EA outcomes are barely identified, measured, and made transparent within organizations. If organizations apply KPI-driven frameworks, they tend to focus on financial and service delivery performance indicators. Exemplary metrics are cost savings from reuse and shared technologies and application/technology redundancy (e.g. number of redundant application services). From our work with clients we can conclude that the main challenge for establishing relevant KPIs is that the achievements of their work often

only become apparent after years and an exact assignment of initiatives to benefits cannot clearly be defined.

Key takeaways about the value of enterprise architecture in innovations:

- 68 percent of respondents state that enterprise architects already deliver critical value and benefits in innovations and transformations
- Main artifacts being leveraged are technology and transformation roadmaps outlining the evolution of business and IT architectures over time
- Measuring the impact of enterprise architecture lags behind and KPIs are not defined, not continuously monitored, and not communicated. This results in the challenge that the value of enterprise architecture work is many times not visible, resulting in missing involvement in critical decision-making processes.

Figure 12: Main deliverables/artifacts which enterprise architects use to support transformation and Innovation Initiatives



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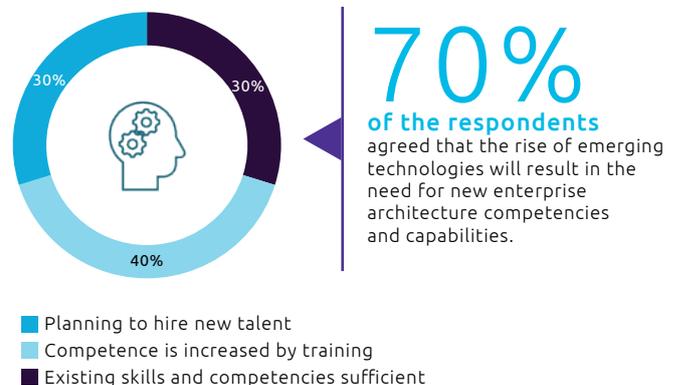
EMERGING TECHNOLOGIES AND THE FUTURE ROLE OF ENTERPRISE ARCHITECTS

Emerging technologies such as cloud computing, analytics, artificial intelligence, blockchain, or 5G are forcing organizations to re-invent their business models while simultaneously modernizing existing IT landscapes. Working with numerous clients on innovation and transformation projects, we see that many projects are initiated by strategic business ambitions but tend to fall short when it comes to technology adoption and execution. More than ever, companies need to think about required enterprise architecture capabilities to align their IT strategies, enabling technologies, and increasingly digital and automated operations with overarching business strategies and stakeholder expectations. In our survey, we aimed to understand how enterprise architects can accelerate innovations and which future roles and capabilities are expected to be the new core competencies of “digital” enterprise architects. What is the role of enterprise architects supporting emerging technology adoption and maturation?

We asked the survey participants if they believe that new emerging technologies will change the roles and skills of established enterprise architecture organizations and aimed to find out which competencies will be required in the future. The fact that 98 percent of the participants stated that enterprise architects will play a significant role in the development of digital strategies, including cloud, big-data, and other technology-related innovations, provides an indication that new competencies and know-how must be established rapidly. This is confirmed by all respondents stating that former roles and competencies of enterprise architects will change. The need to act now and close the competency and talent gap within enterprise architecture is underlined by the statement that missing competencies and knowledge are the main barrier limiting enterprise architecture involvement and success.

In addition, 30 percent of this year’s participants outlined that existing enterprise architects already have a sufficient technology know-how to work within the fields of emerging technologies. Forty percent responded that appropriate training approaches will be required to ramp up skills, while every third surveyed expert is planning to hire new talent (see figure 13). The immediate need to ramp up required training and certification measures is also underlined by the fact that 75 percent of the surveyed companies are planning to apply these measures in the short term to meet capability demands.

Figure 13: Importance of new enterprise architecture competencies



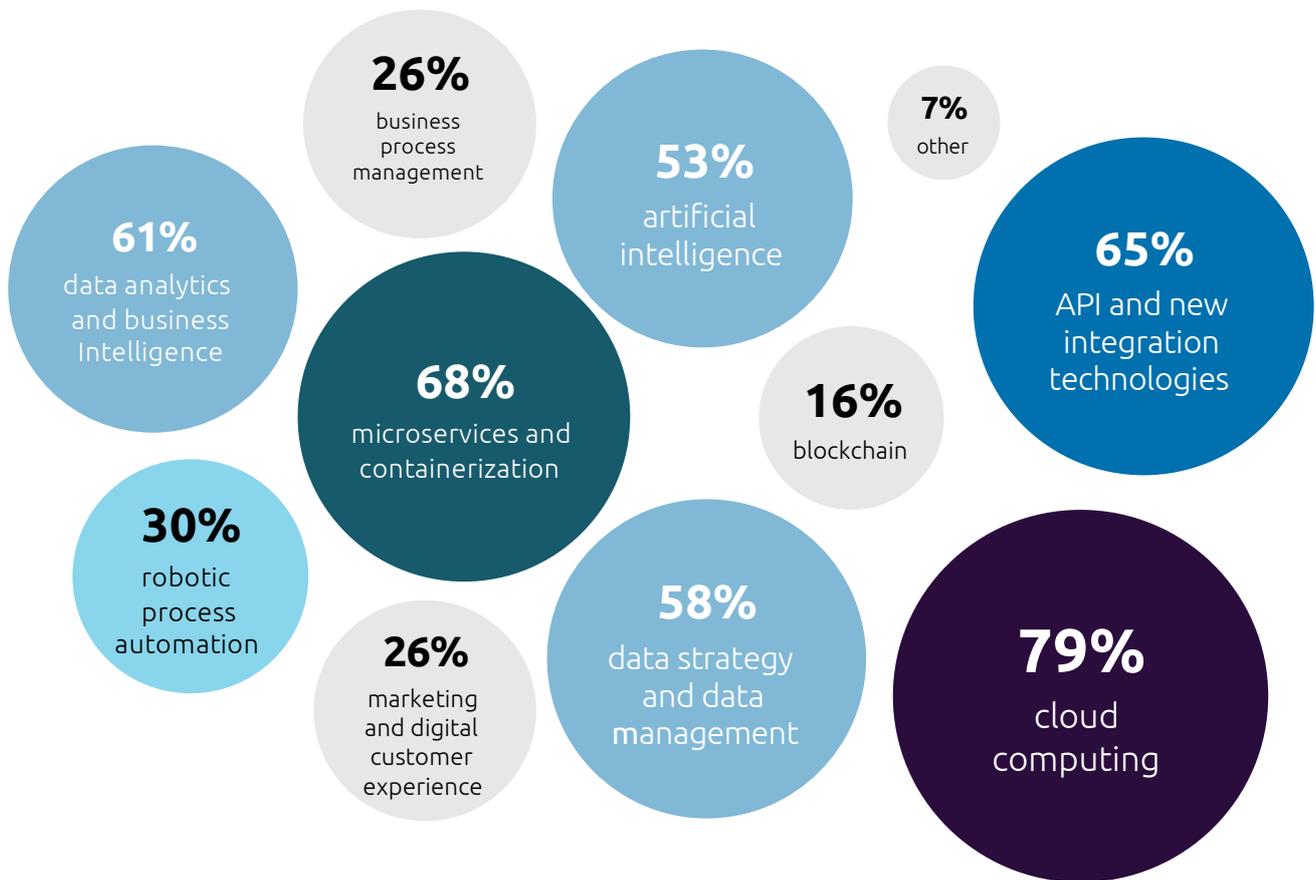
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In our study, we also found out that the most important EA competencies of the future are knowledge and skills in the field of cloud computing (79 percent), microservices and containerization (68 percent), API and integration technologies (65 percent), as well as analytics (61 percent). Other trend technologies such as blockchain and distributed ledger fall behind: only 16 percent of this year’s participants agreed that blockchain will be one of the future technologies to be supported by EA (see figure 14). This rapid shift in required competencies is driving the need to hire on external markets, bringing in new talent. Especially cloud computing (25 percent), data strategy (21 percent), analytics (18 percent) and microservices (18 percent) are booming EA competencies which are hired from external talent markets.

Key takeaways about emerging technologies and the future role of enterprise architects:

- All participants stated that the rise of emerging technologies combined with new digital customer needs will disrupt the traditional role of enterprise architects
- Actions being taken in organizations are on the one hand establishing new training and certification programs but also hiring new talent on external markets
- The need for new talent will especially be required in the fields of cloud computing (25 percent), data strategy (21 percent), analytics (18 percent), and microservices (18 percent)
- This results in the fact that enterprise-architecture organizations and their leadership must anticipate future competencies of their teams and quickly ramp up new competencies with a focus on new technologies but also business-oriented innovative thinking

Figure 14: Need for future competencies within the enterprise architecture function



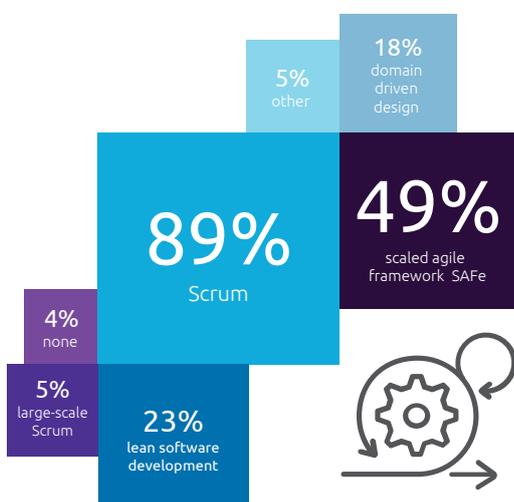
AGILE ENTERPRISE ARCHITECTURE DELIVERY

In our enterprise architecture study last year we revealed that the spread of agile methods in enterprise-architecture management still lags behind the use in IT management and development. While the **Enterprise Architecture Study 2019** focused on the reasons architects tend to adopt agile methods insufficiently, this year's study seeks to explore how enterprise architects are included in agile (IT) projects and how they contribute to their success.

An increasing number of IT-related programs or projects are using agile methods. As shown in figure 15, the Scrum and the Scaled Agile Framework (SAFe) are the two agile frameworks or methods which are spread the most among companies. SAFe defines the role of enterprise architects as an enabler on an overarching portfolio level:

How is this theoretical definition of the SAFe definition put into practice? How are enterprise architects involved in agile projects? For projects with a high architectural relevance and impact, enterprise architects should be actively involved in agile teams for a holistically aligned solution development.

Figure 15: Use of agile methods within companies



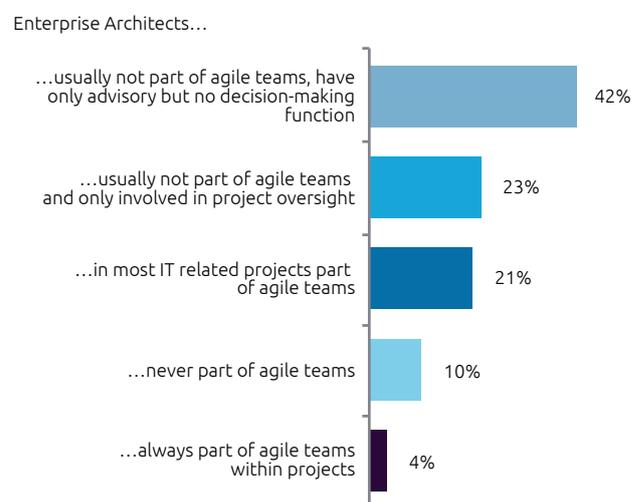
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As shown in figure 16, 21 percent of the respondents agree with this opinion and involve enterprise architects as active members of agile IT projects. Only 3 percent of the companies even go a step further and include them in all projects (also non IT-related ones).

“They drive design, engineering, reuse, application of patterns, and create Enabler Epics for the architectures that comprise the solutions in a portfolio. Relying on continuous feedback, these architects foster adaptive design, and engineering practices, and drive programs and teams to rally around a shared technical vision.”⁴

In 23 percent of the cases, enterprise architects have a function in project oversight and decision making (see figure 16). They should be involved from the early beginning in the strategy definition and initiation phase as they have the capabilities to foster innovation from two perspectives: to match business models and strategies with the appropriate technology and IT architecture as well as to drive technology-driven business innovation and enable digital business models.

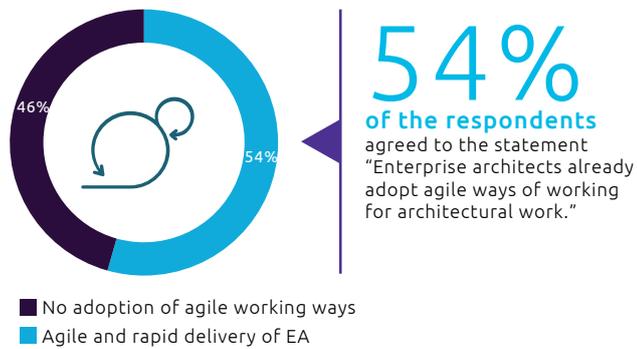
Figure 16: Enterprise architects as part of agile teams within projects



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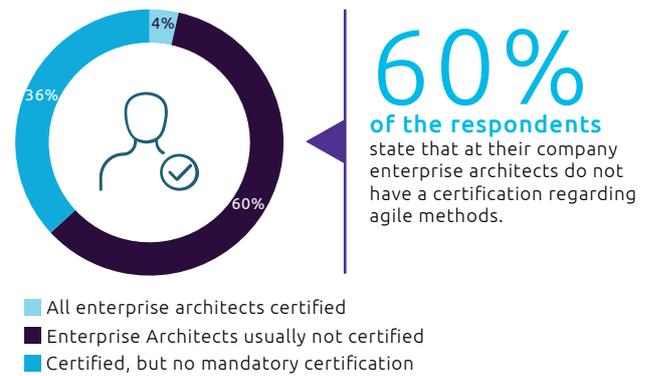
⁴ Scaled Agile (2020) <https://www.scaledagileframework.com/enterprise-architect/>

Figure 17: Enterprise architects' adoption of agile ways of working



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Figure 18: Certification of enterprise architects regarding agile methods



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However, 42 percent of the participants stated that enterprise architects have only an advisory function. In these projects, architects may be able to contribute their advice but they have an insufficient decision-making authority for steering projects from an architecture perspective. An insufficient leverage of architectural advice, visions, and principles can result in a de-prioritization of architectural goals in favor of short-term business-driven project goals (e.g. a short time-to-market). Since business sponsors usually pursue mainly business goals, enterprise architects need to be an assertive counterpart positioned on a peer level in organizations and project setups to deliver a sustainable architectural development. If enterprise architecture cannot enforce a holistic architecture development, it cannot fulfill its role as an overarching enabler and will become a toothless tiger.

Despite the level of involvement in agile projects, enterprise architects should also use agile methods (e.g. SAFe, Scrum) for their own architectural work and projects to become enablers of the digital transformation.

However, even though most of the companies have already adopted agile methods (see figure 15) in only slightly more than half of the surveyed companies, these methods are also used by enterprise architects to rapidly deliver architecture blueprints and support ideation and innovation (see figure 17).

As figure 18 demonstrates, 60 percent of enterprise architects are not certified in the usage of agile frameworks and 36 percent of respondents consider it as optional training. Even though certifications might not guarantee the establishment of agile methods, the corresponding trainings do set a foundation for an agile work mode and mindset. The Enterprise Architecture Study 2019 has shown that an insufficient skill set among employees is the main reason agile methods are not applied in practice. To become a true accelerator of digitization, enterprise architects need to be enabled by agile trainings tailored to architectural context.

Key takeaways about agile enterprise architects' delivery:

- Companies need to involve enterprise architects in projects from the beginning, and empower them with sufficient decision-making authority to navigate projects towards a holistic and sustainable architecture
- Enterprise architects need to make their own work and projects more agile to navigate projects towards a holistic and sustainable architecture. Therefore, it is necessary to provide agile training to architects as a foundation for an agile mindset
- Only enterprise architects with an agile mindset will be perceived as enablers and accelerators of digital transformation and thus be sufficiently involved in transformation projects

THE ROLE OF ENTERPRISE ARCHITECTURE IN CORPORATE SOCIAL RESPONSIBILITY

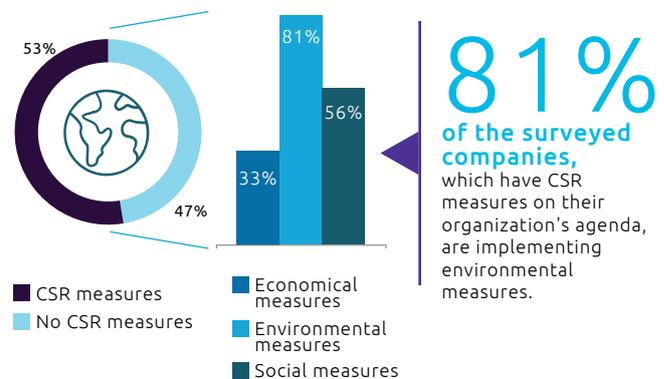
CSR and related topics such as sustainable growth and green IT are of increasing significance for corporate strategy. Recent Capgemini studies⁵ have shown ways economic growth can become sustainable from an ecological and social perspective as well. A key domain of technology influence on climate change is the potential reduction of carbon emissions by conscious decisions on virtual IT landscapes as well as energy-saving solutions in the hardware landscape. Considering these topics part of enterprise architecture, it is time to look at the environmental dimension of CSR in relation to the work of enterprise architects and its current state in practice.

As figure 19 shows, only 47 percent of the participants see CSR as a key topic on their organization's agenda. Especially measures regarding environmental sustainability are of central relevance (81 percent of the surveyed companies), followed by social (56 percent) and economical activities (33 percent). Our study reveals slight differences regarding the role of CSR depending on the company's location. While 62 percent of the companies in North America do not have CSR measures, half of the European participants (49 percent) work on CSR activities. A remarkable fact is that US companies seem to rather focus on economic measures, such as donations or social benefits for employees (see figure 21), while European companies foster

ecological initiatives, such as reduction of waste and resource consumption (see figure 20).

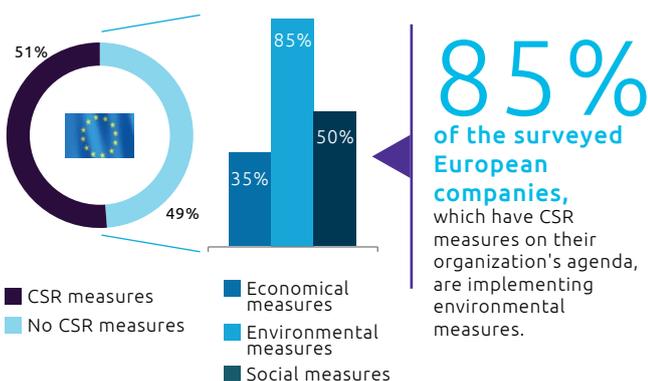
Nevertheless, it seems surprising that only about half of the companies address CSR measures in their agenda, considering the emphasis put on sustainability measures in recent research and media.

Figure 19: Implementations of CSR measures



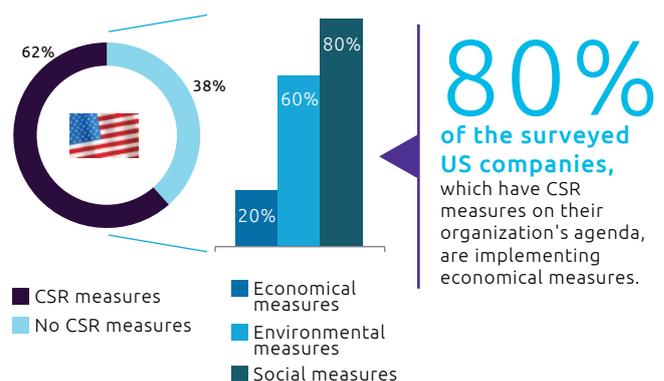
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Figure 20: Implementations of CSR measures (Europe)



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Figure 21: Implementations of CSR measures (USA)



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Having a closer look at environmental CSR approaches, the reduction of CO₂ emission and paper consumption are the most popular measures stated by the surveyed companies.

As the CO₂ emissions caused by global information and communication systems will rise from 2 percent as of 2020 to 20 percent by 2030, the reduction of IT-related CO₂ emissions is one of the greatest CSR leverages companies should focus on. In fact, eight out of 10 companies who see CSR as a key agenda topic are already working on CSR topics related to the use of technology and reduction of limited resources (see figure 22).

Enterprise architects have a holistic perspective on corporate business and IT functions. By fostering technology-driven business innovation and aligning business strategies with technology and IT strategy and feasibility, they are ideally positioned to implement IT-related CSR measures while keeping an eye on business impacts.

While enterprise architects are currently involved in CSR initiatives in 10 percent of the surveyed companies, 58 percent of the participants expect enterprise architects to play an active role in CSR activities in future (see figure 23), especially the increased digitalization of information (56 percent), the enablement of shared use of resources (51 percent) and fostering of an energy-efficient application and infrastructure landscape (46 percent) (see figure 24).

Key takeaways about the role of enterprise architects in CSR:

- CSR is not yet a key topic on all corporate agendas. If companies drive CSR initiatives, 81 percent are working on CSR topics related to the use of technology and the reduction of limited resources
- Enterprise architects have the potential to play a significant role in pushing CSR initiatives and to establish themselves as an enabler, not only for digital transformation but also for ecological and energy transformation

Figure 22: Technology and reduction of limited resources related to CSR measures

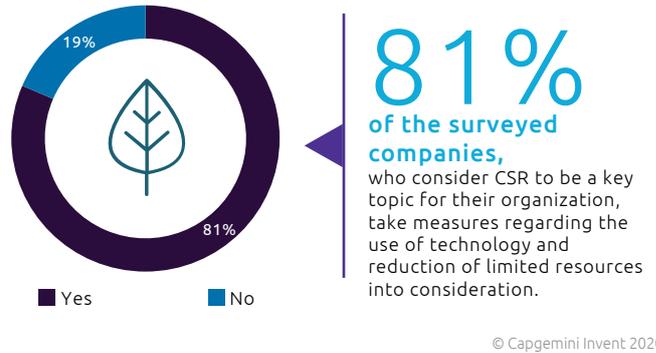


Figure 23: Enterprise architects' role in CSR

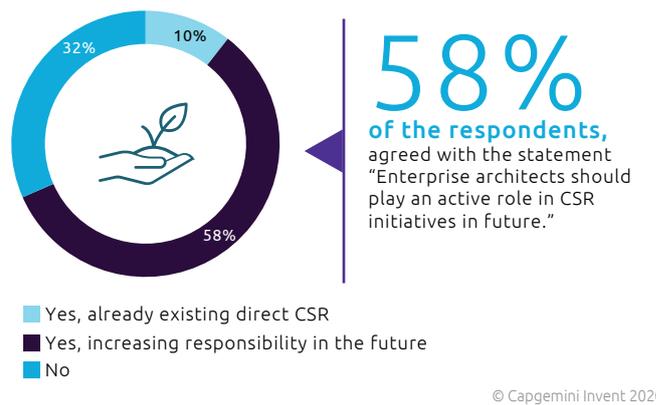
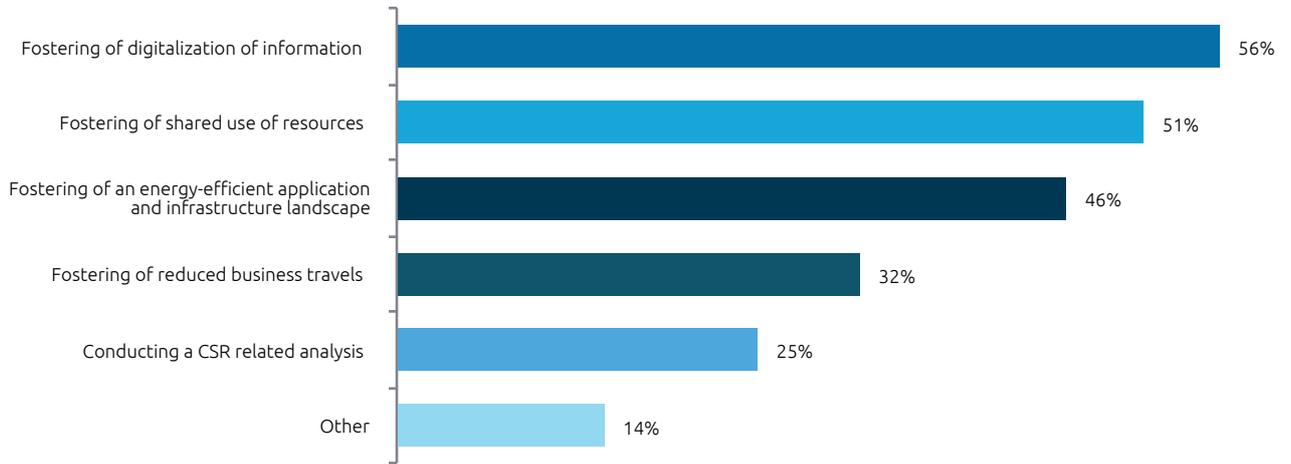
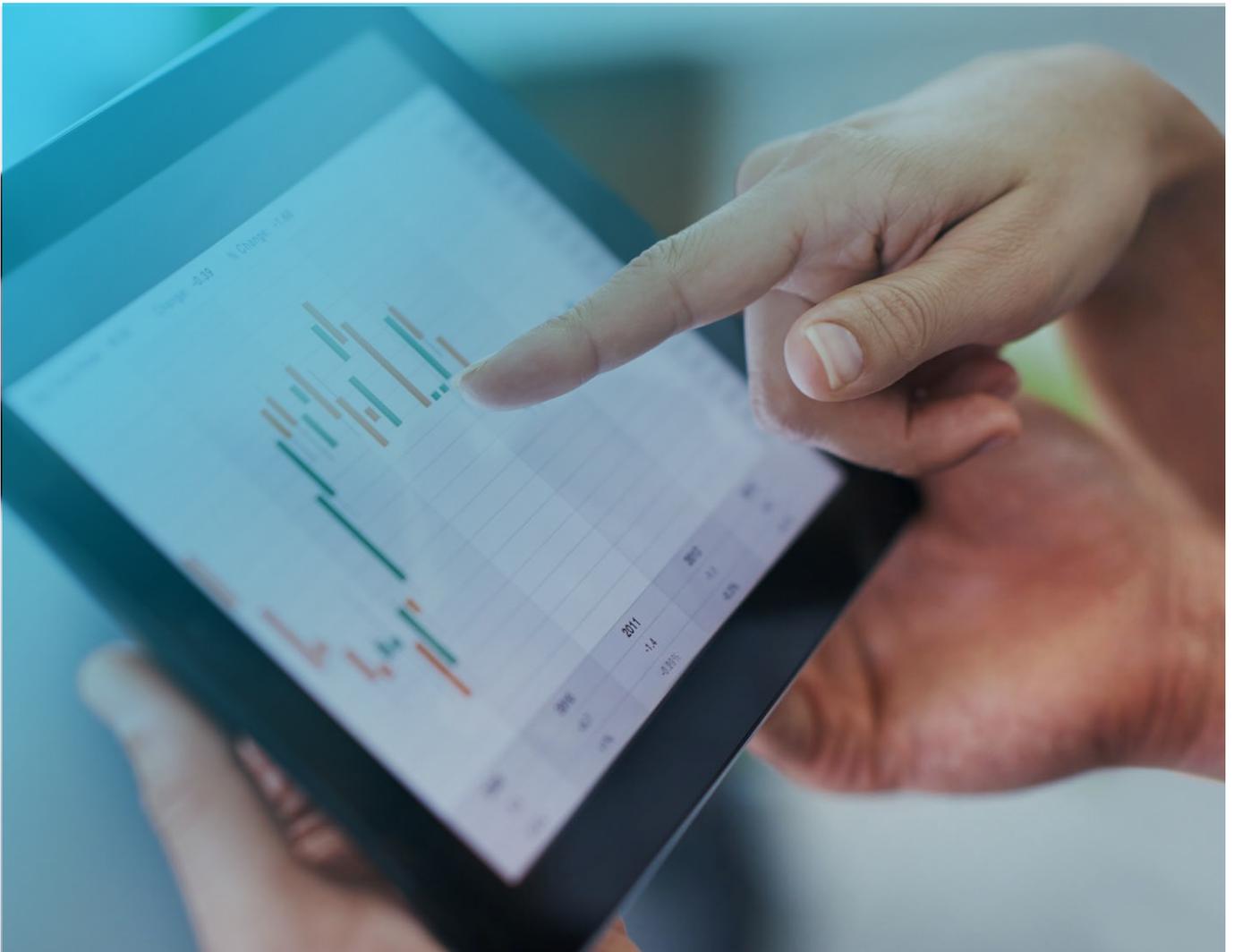


Figure 24: Enterprise architecture measures to CSR



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CONCLUSION AND FUTURE OUTLOOK

This study shows that the importance of enterprise architecture is already understood but will also significantly increase in a globalized, digital, and highly dynamic world. Enterprise architectures and its corporate function must shift to a more customer- and business-centric discipline, with a strong focus on enabling the strategic and tactical CxO agenda. This will require enterprise architects to focus more on business and customer needs and truly understand the impacts of new technologies on existing business models and value chains. In the future, enterprise architecture will not deliver expected benefits by simply documenting changes in the IT landscape. Rather, it must become a proactive driver and enabler of digital transformations and other optimization initiatives impacting existing business and IT architectures.

Highly interesting is the fact that enterprise architects will have to evolve their capabilities in two directions at the same time: on the one hand, we see a significantly increasing demand in new technology expertise (e.g. cloud computing and analytics) and, on the other hand, enterprise architects should have the

ability to translate the impact of these tech trends on products, services, customers, and enterprise-wide operations. Along with arising requirements to adopt agile ways of working and new innovative thinking, organizations need to act now in order to transform enterprise architects into the spearhead of innovations and transformations.

In summary, a successful digital transformation requires a comprehensive approach that blends both outside-in and inside-out perspectives of the enterprise, stakeholders, and the supporting technologies and data. Designing an enterprise architecture must start with the definition of the new digital business and customer needs. The customer experience as well as every single touchpoint along the customer journey needs to be covered by a holistic target architecture blueprint. Ultimately, we see that business and technology roadmaps need to be planned and implemented uniformly to ensure an efficient technology adoption and innovation cycle. This is key to a scalable solution at your organization and will become inevitable to succeed in digital transformations.



LET'S THINK AHEAD: ENTERPRISE ARCHITECTURE AND CORPORATE SOCIAL RESPONSIBILITY

Capgemini's Integrated Architecture Framework 6.0 (IAF) is one of the first architecture frameworks to support architects to systematically foster and actively drive CSR measures. The IAF helps architects balance the three dimensions of social, economic, and ecological factors by providing considerations, knowledge, measures, and examples on different abstraction levels. These cover different views from a contextual level (including scope, constraints, objectives, principles) through to a physical level (including interaction models, specifications, and component design).

The IAF framework provides an approach to understand and challenge business requirements and directions and to enrich architecture solution development in the context of CSR. The toolkits and methods enable enterprise architects to analyze the potential impact of sustainability considerations within the enterprise architecture. For example, the overall cost of operation, including the energy consumption of component development, product design, production, delivery, and retirement could be addressed instead of only considering end-point consumption of energy, and measures could be derived accordingly.

Through its foundational approach focusing on the three sustainability pillars (social, ecological, economic measures) the framework ensures an integration of CSR measures in a holistic structure, seeding the principles, challenging the business objectives, and defining constraints, risks, and potential long-term benefits. Furthermore, the IAF framework helps to establish performance controlling and ensures full traceability back to business requirements with clear identifiable measure of outcomes and impact, especially focusing on the three sustainability pillars.

Overall, IAF can be seen as a holistic toolkit to highlight and showcase how enterprise architects can actively and successfully implement measures supporting CSR strategies and goals.

In conclusion and based on the responses received in this year's survey, CSR is not yet a major topic for most of the companies. If companies do actively push CSR measures, environmental initiatives with a focus on the reduction of CO₂ emissions are currently prevalent and the large potential of reducing IT-related CO₂ has been recognized. Furthermore, there is a widely recognized potential for enterprise architects to establish themselves as enablers not only for the digital transformation, but also for the ecological and energy transformation. They have the abilities as well as the technological and business mindset to combine ecological goals with business and IT strategies to achieve a significant competitive advantage. The Capgemini Integrated Architecture Framework 6.0 is systematically leveraging and enabling the potential for being sustainability drivers who are significantly contributing to CSR.

DIGITAL ARCHITECTURE CAPABILITIES OF CAPGEMINI INVENT

At Capgemini Invent, we believe that enterprise architecture goes beyond designing target-state architecture views and supporting IT-enabled transformations. Enterprise architectures must be re-invented, blending in new digital thinking and emerging technologies along with modernizing existing legacy enterprise architectures to accelerate and scale innovations across enterprises. To support this, we offer the following services to established and emerging organizations.

Digital Architecture Academy and Value Optimization

Our Digital Architecture Academy and Value Optimization service offering provides organizations proven tools and approaches to establish digitally ready enterprise-architecture departments. This includes defining critical roles and capabilities as well as interlinking enterprise architecture processes with strategic planning processes and technology realization.

Digital Architecture

The Digital Architecture service offering is delivering approaches to successfully design target-state digital architectures as part of business-model innovations and IT backbone modernizations. Leveraging lightweight and agile ways of working, we provide proven templates and artifacts to develop target architectures outlining the impact of new technologies on your enterprise-architecture domains – from business and application architectures to cloud-based infrastructure landscapes.

DCX Architectures

Customer centricity and new digital services drive the need to establish service-oriented enterprise architectures which sit at the heart of our DCX Architectures service offering. We deliver flexible IT architectures for marketing, commerce, and service organizations with a stringent focus on lean and seamless customer integration across multiple channels and platforms.

Engagement Blueprinting

Our unique Engagement Blueprinting methodology helps clients fully understand the interaction of customers and employees with the full enterprise architecture stack. We deliver highly visual customer journeys outlining momentums, personas, and interactions and map those to your application, information, and infrastructure to create an end-to-end transparency about customer interactions and to uncover process gaps and potential pain points.

Application Portfolio Strategies

The Application Portfolio Strategies service offering supports organizations to systematically assess, rationalize, and optimize historically grown application portfolios. We provide cutting-edge tools such as the eAPM methodology which already helped numerous clients to uncover vast optimization potentials. We also help our client to translate optimization opportunities into roadmaps to gradually evolve to a best-in-class and highly efficient IT application landscape.

To find out more about our services and success stories, please visit our website using the following [link](#) or get in touch with our experts Nora Preisker (nora.preisker@capgemini.com) and Jace Cole (jace.cole@capgemini.com)

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ABOUT CAPGEMINI INVENT

Capgemini Invent is an integral part of Capgemini, a global leader in consulting, technology services and digital transformation. The Group is at the forefront of innovation to address the entire breadth of clients' opportunities in the evolving world of cloud, digital and platforms. Building on its strong 50-year+ heritage and deep industry-specific expertise, Capgemini enables organizations to realize their business ambitions through an array of services from strategy to operations. Capgemini is driven by the conviction that the business value of technology comes from and through people. Today, it is a multicultural company of 270,000 team members in almost 50 countries. With Altran, the Group reported 2019 combined revenues of €17billion.

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