

# Enterprise Architecture and Digital Leaders

A Survey Report Based on Research with  
McKinsey & Company and Henley Business School

Dr. Oliver Bossert, McKinsey & Company and  
Prof. Sharm Manwani, Henley Business School

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## A Survey Report Based on Research with McKinsey & Company and Henley Business School

Led by Dr. Oliver Bossert, McKinsey & Company and Prof. Sharm Manwani, Henley Business School

### ABSTRACT

#### *Are you a Digital Leader? Best Practices for Enterprise Architecture*

CEOs have seen “digital” disrupt industries over time and may consider it has reached maturity, even as COVID-19 accelerated its importance in their enterprises. Yet research from McKinsey and Henley Business School finds that going digital presents significant challenges. There is a pronounced performance gap between digital leaders and their peers. Hence CEOs should ask their executive teams: “Are we a digital leader and if not, why not?”

The survey report analyzes data from more than 300 enterprises and 50,000 data points to review the practices and outcomes for digital leaders of large enterprises. It shows that, in contrast to digital natives, striving for customer agility often leads to costly and inflexible IT interfaces and services. This IT complexity then results in an agility reduction paradox due to increasing technical debt. The survey quantifies the impact as being highly significant, and it explores how digital leaders are using Enterprise Architecture (EA) to address these issues.

We can think of EA as a capability to architect the business as would be required for a large building. EA evaluates and scopes how enterprise capabilities can be used to design strategic operating models that are both responsive and efficient. In this way, digital leaders are able to drive innovation without high cost, complexity, and increased time-to-market. A key architectural contribution is to help build a robust and secure digital platform for agile and reusable services. Through these approaches, EA helps to deliver more sustainable solutions.

Digital leaders use stakeholder engagement artifacts to redesign operating models; for example, building capability maps aligned to customer journeys. They choose artifacts selectively and update them regularly. This reflects that they have the professional skills to develop architectural designs, the business acumen to link capabilities with value, and the skills to influence a wide range of stakeholders. It is vital that enterprises attract the right EA talent and develop people through diverse methods to achieve this mix of skills.

Digital leaders execute transformation through a business lens and maintain a continued focus on benefits. They think big, scale small, release fast, and deliver big bang. This combination of being strategic and agile is a tough challenge in enterprises. EA leaders understand how to enable this by modeling future architectures and also connecting to both Solution Architectures and agile development.

Our survey demonstrates that EA is often the missing link in going digital. Yet many executive teams remain unaware of the potential contribution of their EA groups. This is a two-way street. Both parties need to educate themselves and each other on how to become a digital leader. Our wish is that the survey report facilitates this process. We welcome feedback and encourage you to add to our knowledge base by completing the survey at [easurvey.org](https://easurvey.org).

### SYNTHESIS OF KEY MESSAGES

#### Chapter 1: EA Role and Digital

Going digital presents challenges:

- Enterprises eager to digitize face significant IT complexity
- Tangled application architecture is common with digital
- Understanding of business processes is limited
- The cost of complexity is high

EA role can make major contribution:

- EA's ability to manage complexity is significant
- EA's potential contribution is underappreciated

## Chapter 2: EA Capabilities and Value

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EA requires distinctive capabilities:

- Use capability maps as a common language
- EA needs to engage with and be empowered by stakeholders
- EA should focus activities on strategic planning
- EA strategic focus enhances benefits, sustainable solutions, visibility
- EA delivers more sustainable solutions
- EA contributes to project benefits
- EA increases visibility within the enterprise

EA must attract and develop talent:

- Cultivate an environment that attracts, retains, and develops exceptional people
- Key EA skills are interpersonal, professional, and business
- EA career path should be across the company

## Chapter 3: EA and Agile Development

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We need to connect EA and agile:

- Adapt EA's operating model to agile:
  - Accelerate and simplify EA processes
  - Increase collaboration with IT operations team
  - Close the gap between EA and CIO/CDO
- Leverage EA artifacts to help build product backlogs
- Build synergies with Solution Architecture
- EA is a driver of strategic technology decisions

## Chapter 4: EA and Transformation

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Manage digital impacts:

- Understand negative impacts on digital transformation
- Limit business complexity
- Limit complexity of business artifacts – update them regularly
- Establish a business-driven digital foundation
- Avoid technical trap

Execute transformation through a business lens:

- Execute the transformation to deliver business benefits
- Scale small, release fast, and big bang
- Maintain continued focus on benefits

## OVERVIEW

### *Structure of this Survey Report*

Chapter 1 provides an introduction to the connections between EA and digital. Chapters 2 and 3 focus respectively on EA links to capabilities and to agile development. The concluding Chapter 4 consolidates and extends the prior chapters to propose best practices for EA and transformation. Each chapter starts with a research context, reviews the lessons from the survey, and summarizes key messages.

### *EA Research*

To what extent can EA facilitate digital transformation? That is the overall question addressed by this report of a McKinsey and Henley Business School survey that has evolved over the last five years.

We share a common goal with the AEA – to help Enterprise Architects in their aim to make a greater contribution to their enterprises. The AEA has played an active role in the survey by encouraging participation, publishing previous results, and organizing webinars. The publications are listed below under “References”.

The survey has been running for five years, and seeks to understand patterns of behavior that help make EA a vital contributor to both business and IT. It consists of over 100 questions, and more than 300 respondents across 27 industries have participated over the years. The core questions remained the same during this period with supplementary questions added in stages due to evolving practices. Participants have been given the opportunity at each stage to update their responses to core questions. This means that the survey data is both robust and timely, resulting in more than 50,000 quality data points.

In 2020, more than 1,000 participants attended our two AEA webinars on EA as a Digital Transformation Facilitator. We had some insightful questions and comments from participants; these have informed this survey report. This report aims for professional relevance and rigor based on insights from survey data rather than conceptualizing theory. We supplement this with observations from the AEA webinars and our deep experience of what enterprises do in digital transformations.

We do not see this as the end of the journey and plan to enhance the findings with further survey data and with case studies. Hence we welcome any feedback and inputs to achieve our goal of raising the capability and credibility of EA.

## **CHAPTER 1: EA ROLE AND DIGITAL**

### ***Research Context***

Digitization is arguably the biggest force changing business models across all industries. Customers want to be able to buy and configure products online and access the growing range of services through digital channels. To enable this level of customer flexibility requires comprehensive digital transformation. Hence, going digital is a top priority but it presents particular challenges for large enterprises, especially in industries with a long history of leveraging IT (e.g., banking, manufacturing, and public sector). For those companies that face major complexity in transforming, digitization requires a change of paradigm. While IT remains an important business support function, digital has a pervasive impact demanding a strategy in its own right.<sup>1</sup>

This need for a holistic perspective around digital that addresses complexity appears to play to the strengths of the EA function, yet is this really the case? In this first chapter, we highlight how the EA survey results inform the following questions:

- What is the relationship between digital and complexity (including cost)?
- How significant and appreciated is EA's role in digital?

### ***Going Digital Presents Challenges***

#### ***Enterprises eager to digitize face significant IT complexity***

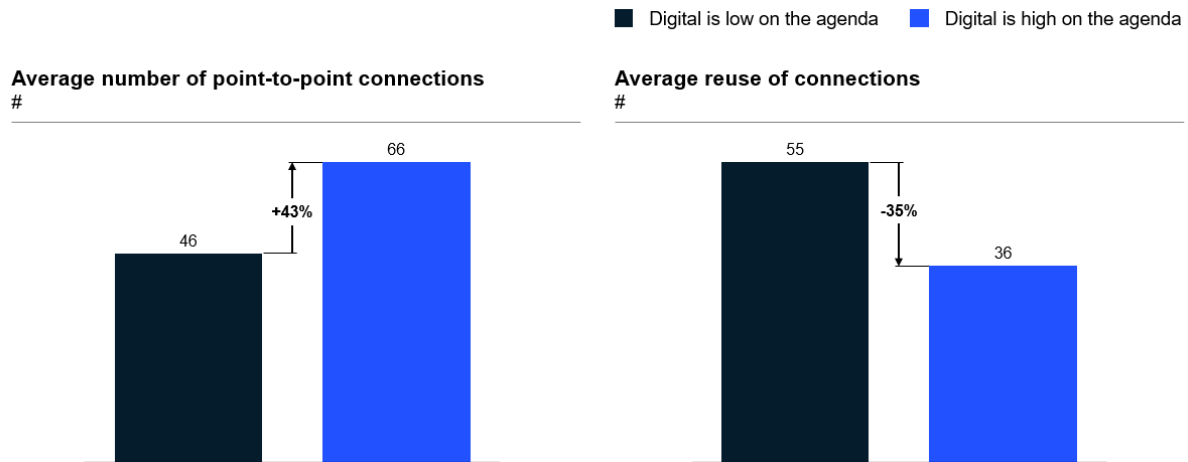
Most large enterprises must confront the fact that modifying and accumulating systems over many years results in considerable IT complexity. This “technical debt” makes digital transformation even more challenging and vital. We found that the urgency of a company's digital transformation is positively correlated with the complexity of its current environment. This complexity is highlighted in two survey findings, one linked to applications and the other to business processes.

#### ***Tangled application architecture is common with digital***

Larger enterprises going digital typically have a more cumbersome architecture, with a higher percentage of point-to-point connections. Survey respondents reported that, on average, 66% of their interfaces are point-to-point, which is more than 20% higher than the share of point-to-point interfaces at companies where digital is low on the agenda (Figure 1). This makes agile integration more difficult.

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<sup>1</sup> In this report, we refer to “IT” when we consider the vital legacy role of providing applications and technology services for enterprise operations, and we use “digital” to represent the pervasive impact on the external world of the enterprise.



**Figure 1**

The point-to-point paradigm – often associated with non-standard, consumer-driven, and legacy systems – is a tangled web seen at many companies. With this type of interconnectedness, making changes in one interface can have a domino-like, unpredictable effect. The vicious circle is that when these businesses need a quick solution, it is much easier to add another point-to-point connection rather than “untangle the beast”. It is no surprise that their application services are considerably less reusable (-19%).

***Understanding of business processes is limited***

Enterprise leaders going big on digital report lower quality of business-process documentation than their counterparts (2.7 *versus* 3.2 on a quality scale of 1 to 5). Redesigning business processes is key for effective digital, hence a limited understanding of processes is a barrier. We see some parallels with the application architecture in explaining this disparity:

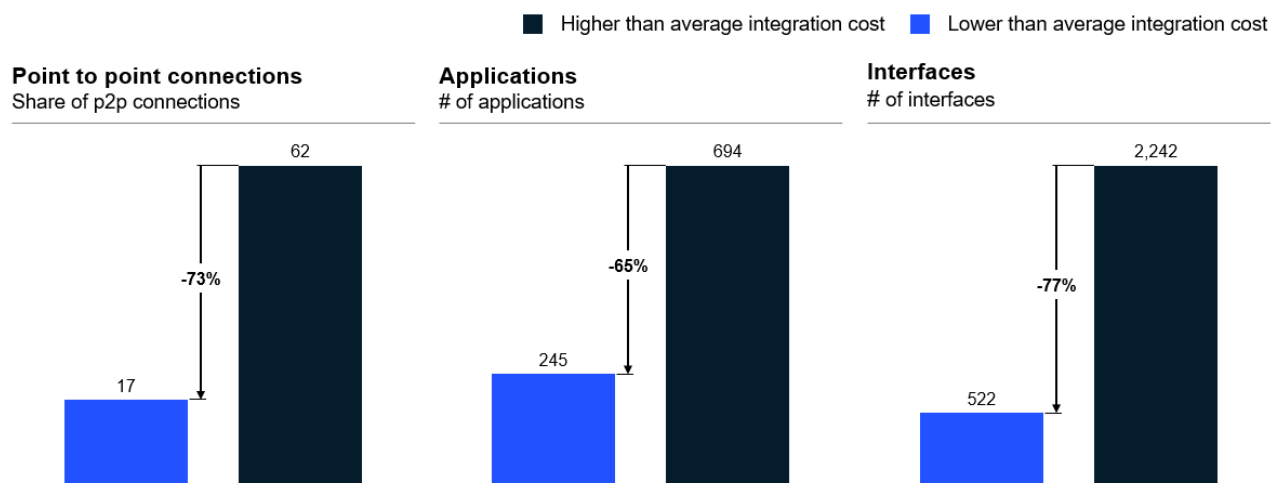
- Large complex business processes are harder to document and understand
- Sacrificing integration for speed adds to complexity
- A non-integrated approach to business-processes documentation has a negative impact on agility and efficiency

This reinforces that enterprises need to better understand the relationship between poor integration and complexity due to the cost and agility impacts.

***The cost of complexity is high***

With the data from the survey, we were able to assign values to specific indicators to get a clearer picture of the cost of complexity. This type of information is powerful, especially when combined with data on how much a company spends on integration/architecture. We recommend that Enterprise Architects share these insights in discussions with senior management, as we do.

We asked participants how much of their IT effort goes into integration (processes, applications, etc.). Companies with lower-than-average integration cost have a 45% lower share of point-to-point connections, 65% fewer applications, and 77% fewer interfaces (Figure 2).



**Figure 2**

We encourage enterprises to evaluate their complexity and what their IT group spends on integration. The survey findings indicate that addressing this area leads to a cut in long-term costs as well as facilitating digital transformation.

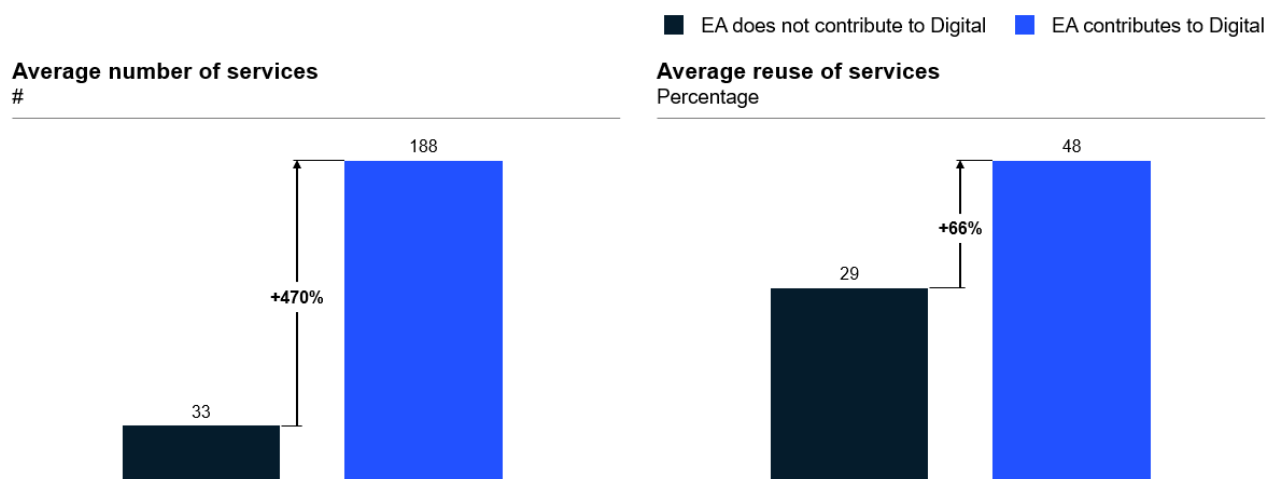
### ***EA Role Can Make a Major Contribution***

#### ***EA's ability to manage complexity is significant***

The survey demonstrates that enterprises going digital are most likely facing highly complex IT landscapes. A commitment to digital means enterprises are pressured to redefine themselves. This is much easier if there is a flexible, agile, automated, and robust service-based foundation. So how can enterprises deal with existing complexity from their legacy systems?

EA combines processes, information, applications, and technology into the building blocks of an integrated platform and services for enterprise deliverables. Since going digital impacts most services, a key role of the EA function is to ensure that the foundation remains fit-for-purpose.

We asked survey participants whether their EA functions are significant contributors to their digital strategies (Figure 3). Those who believe EA contributes to digital have more effective integration architectures – on average they have more than five times more services (188 *versus* 33), and importantly they are able to reuse them (+19%)



**Figure 3**

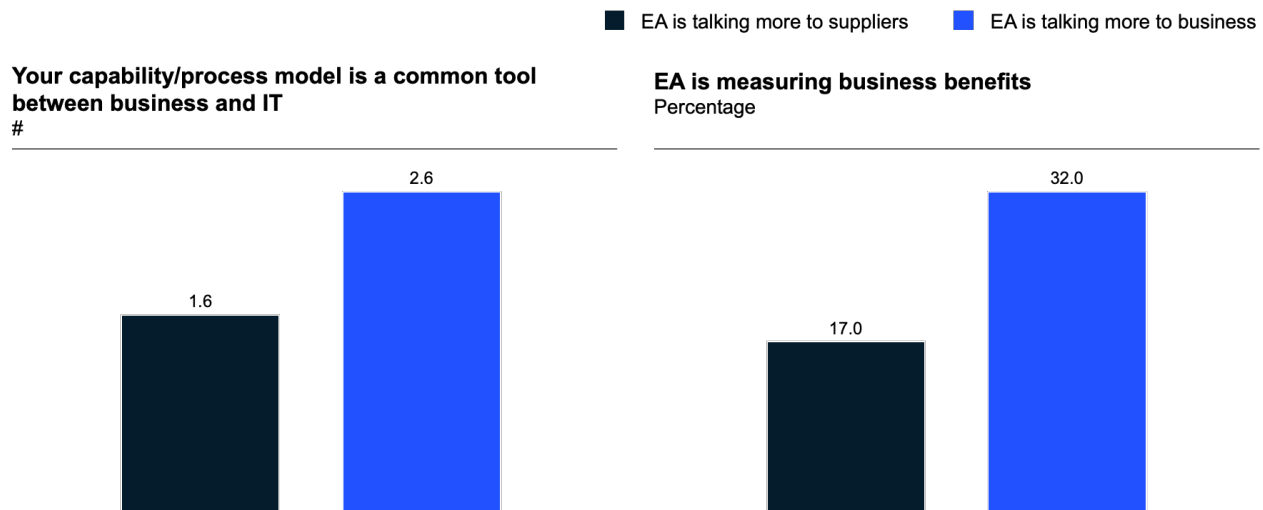
#### ***EA's potential contribution is underappreciated***

Despite the benefits of EA, its role and contribution are not universally understood. We found that 41% of business stakeholders are not aware of what the EA function does. In these companies, the survey found that several realities are prevalent:

- EA does not help to deliver business solutions, is not considered as necessary for managing standards, and Business Architecture is less mature
- Adherence to guidelines is lower
- There is a lack of the right talent to cope with business and technology challenges
- It is less likely that EA is modeling the future

Further, where EA functions prioritize talking to suppliers rather than business colleagues (Figure 4):

- EA does not facilitate business-IT discussions; for example, through the use of capability/process models as a communication tool
- EA is less likely to focus on business value, as EA is not measuring benefits



**Figure 4**

### **Key Messages**

Setting up an EA function is not enough. When EA is successful, its contribution to digital is significant, particularly because of its understanding of complexity and expertise in effective integration. Yet, in many cases, EA functions are not living up to their potential and have not been on the radar of CEOs. Given the clearly demonstrated importance of EA in the success of digital transformations, we believe CEOs should not only add EA to their agendas but fully empower their EA departments.

But this is a two-way street. EA needs to do more to earn stakeholder recognition. If EA can do that, its opportunities to contribute to digital and address complexity increase significantly.

In Chapter 2 we offer our perspectives on the capabilities of a successful EA organization.

## **CHAPTER 2: EA CAPABILITIES AND VALUE**

### **Research Context**

In the last chapter we described the critical role in handling complexity that EA plays in organizations' digital transformations. Central to this is the development of the right capabilities. Business capabilities describe an enterprise, including all functions that are needed to run the business, by focusing on the "what" and not the "how". The latter is provided more by defining processes and governance as well as by the enabling IT solutions. In the same way, IT – and specifically EA – needs to develop its own capabilities. In both cases it is important to identify distinctive capabilities – those that result in superior performance compared to peers. By analyzing the results of the survey, we have been able to evaluate the best practices and capabilities of digital leaders.

In planning this research, we were aware that IT in large, non-digital-native organizations has been historically positioned as a support function. IT services are often seen as utilities by the rest of the organization, and IT departments are treated as the provider of these utilities. With this expectation and placement within the organization, IT departments tend to be excluded from strategic-level discussions. We wanted to understand if and how business and IT could communicate better to enhance value and by contribution of EA capabilities.

In this chapter we explore the distinctive capabilities of effective EA units that allow them to operate in a way that brings value to organizations and successfully supports digitization. In our research, we found that evaluating these distinctive capabilities can be grouped into two questions, as follows:

What are the fundamental value-adding EA capabilities?

- EA requires distinctive capabilities

How does EA attract and retain talent to enhance the capabilities?

- EA must create an environment to attract, retain, and develop exceptional people

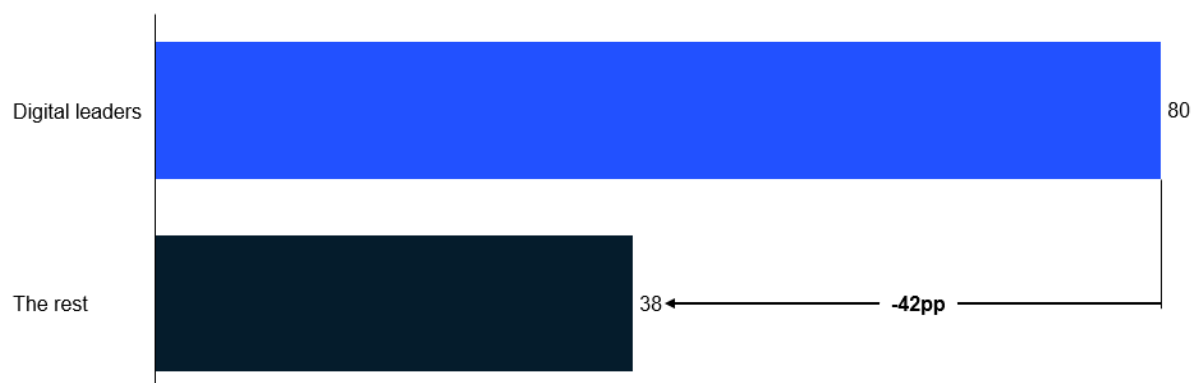
### ***EA Requires Distinctive Capabilities***

#### ***Use capability maps as a common language***

A key barrier to connecting business and IT is an inability to communicate in a common language. EA is extremely well positioned to help with that problem using capability maps. Our survey shows that digital leaders are more than twice as likely than other companies to leverage capability maps (Figure 5).

#### **Capabilities used as primary grouping for delivering milestones in target architecture**

% of population



**Figure 5**

When an enterprise embarks on a large digital transformation, a new emerging target architecture will help guide the path to digital enablement. A focus on capabilities deconstructs and connects the business and IT perspectives. If business colleagues are able to articulate which business capabilities their new products will need, it becomes easier for the development teams to create the right IT capabilities.

#### ***EA needs to engage with and be empowered by stakeholders***

In order to successfully orchestrate creation of capability maps and related artifacts to facilitate business and IT communication, EA needs to engage with and be empowered by senior stakeholders.

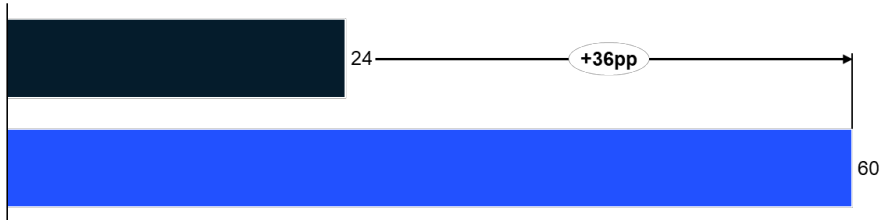
When we asked our participants about which stakeholder groups their EA departments interact the most with, digital leaders ranked CxO-level executives and strategy departments as number one (Figure 6). Prioritization of communication with the stakeholders responsible for strategic decision-making is a prerequisite to successful orchestration of business-IT communication. The same question led to another interesting insight – EA departments of digital leaders de-prioritize interactions with suppliers/vendors.

# Which stakeholder group does EA interact with the most?

Share of population

■ Rest of participants ■ Digital leaders within or beyond industry

**CXO level executives and strategy department ranked first**



**Suppliers ranked last**



**Figure 6**

This fits with what we see across many organizations – digital leaders often interact with suppliers through proofs of concept in agile sprints rather than a process-driven exchange of detailed specifications.

## ***EA should focus activities on strategic planning***

When CXOs give EA departments a mandate to participate in strategic-planning initiatives it comes with expectations – EA units need to become thought partners and focus their activities on value-adding tasks. Based on the data from our survey, we see three related benefits when EA contributes to strategic planning-oriented activities.

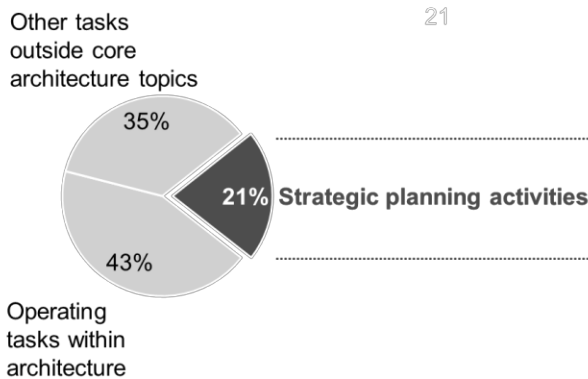
## ***EA strategic focus enhances benefits, sustainable solutions, and visibility***

In Figure 7, we see that on average one day per week is allocated to strategic planning. Yet there is a significant difference in benefits when this time is increased.

# The EA department brings more value to organizations when they incorporate more strategic focus

## How is EA team capacity distributed?

Average allocation of capacity



## Those organizations where EA's capacity is dedicated to strategic planning above average

■ The rest of the population ■ Strategic planning above average

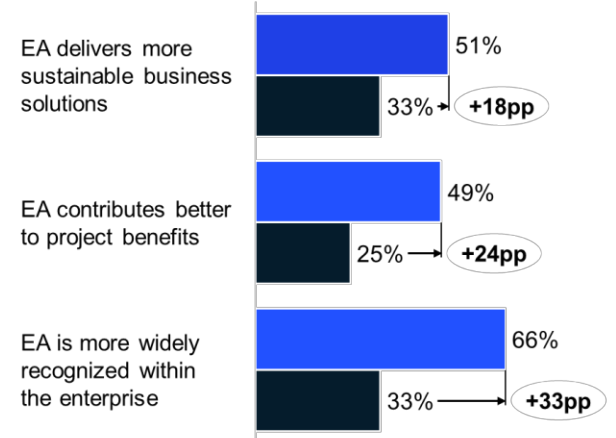


Figure 7

## EA delivers more sustainable solutions

As highlighted in the above exhibit, EA can help with sustainability; for example, by:

- Ensuring that customers and products are at the center of the discussion between business and IT
- Helping IT create a modern digital solution that will not increase technology debt

When business comes with deep customer knowledge it can represent the voice of the customer. EA can help to translate these customer insights into an IT solution/product catalog by creating an artifact (e.g., capability map) that can lead to greater sustainability. We propose the following questions to aid this assessment of sustainability (Table 1).

Table 1

| Customer & Capability Questions                                                                                        | Sustainability Implication                                                                                            |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| What customer data can be gathered or leveraged within this business requirement?                                      | Potential to enrich the data sets leveraged in digital marketing and thus improve its effectiveness.                  |
| Is this a differentiating capability, one that distinguishes the value proposition of the company?                     | Determination of sourcing; e.g., differentiating capabilities are more likely to be custom-built.                     |
| At which stage of the lifecycle is this capability/domain?<br>What is the maintenance effort required for this domain? | There might be potential to leverage implementation of the business request to reduce technology debt in this domain. |

## EA contributes to project benefits

Figure 7 above indicates that organizations focusing on strategic planning are twice as likely to contribute to project benefits. In the world of modern, agile ways of working and software delivery, the paradigm of projects, project ownership, and project management approaches is evolving – from linearity and sequence to non-linearity and cycles. Adjustment to this takes time, and EA departments can help both business and IT to shift mindsets toward a business orientation, one which aims to measure the benefits of what is being delivered. Some best practices of the (indirect) contribution of EA to project benefits emerged from the survey and customer engagements:

- Create a simple framework to help business assess the justification when approaching IT with requirements
- Help IT size the effort needed to create business solution – without increasing technical debt – through knowledge and having a mandate to help manage complexity of the IT landscape
- Help business colleagues establish a structured approach to actively monitor business value of the already delivered solutions and create a feedback mechanism toward future requirements

- Focus much more on modeling future/target/emerging architecture – this is a guiding light against which business requirements can be validated (as shown by digital leaders in Figure 8)

### To what extent are you modeling future/target architectures?

Share of population that answered "high" or "very high"

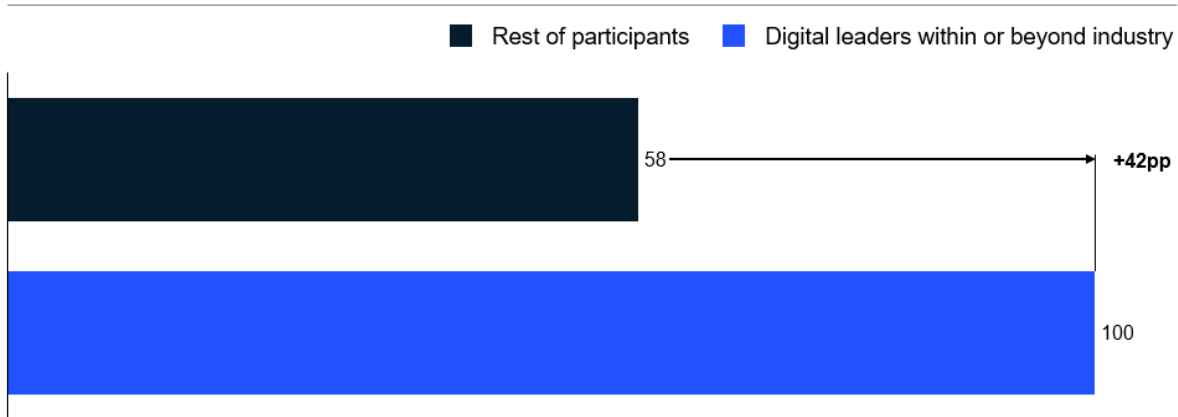


Figure 8

### EA increases visibility within the enterprise

We have seen many organizations in which the EA department was considered an “ivory tower”. The survey found that EA groups themselves often consider that their business colleagues are not aware of what they do. (As mentioned in Chapter 1, 41% of business stakeholders are not aware of what the EA function does.)

If EA is going to be a valuable and strategic component of the enterprise, this lack of awareness is not sustainable. People within the organization need to recognize EA’s capability and its value proposition. It is about creating connections, and this requires not only expertise, but also a variety of interpersonal skills. We will now look in more detail into this and other elements of talent-development within EA departments.

### EA Must Attract and Develop Talent

#### Cultivate an environment that attracts, retains, and develops exceptional people

The survey informs us of the ways that digital leaders motivate talent, which are the most critical skills and how can we build a career path for Enterprise Architects. Herzberg’s motivation theory argues that an environment that attracts and retains the best talent is one where interesting challenges are part of the job and being recognized as part of the team – i.e., not a commodity-producing function – is part of the organizational culture. Our survey backs this idea with the data – digital leaders almost unanimously ranked these two incentives “high” or “very high”.

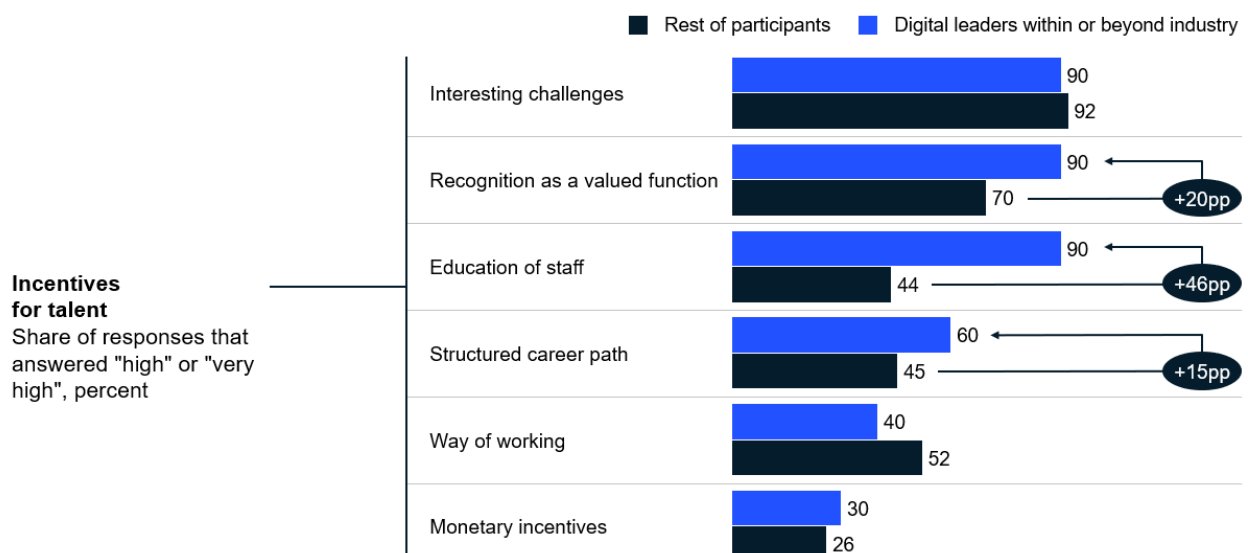


Figure 9

The third-highest ranked incentive and the biggest gap is education of staff, highlighting the importance of opportunities for professional development.

#### Key EA skills are interpersonal, professional, and business

We researched which education areas were most important and how the development took place. Professional competence is viewed as the second most important one and we can see in Figure 10 that investments in general professional education, methodology training, and learning from consultants in combination supports this professional competence at a high level.



**Figure 10**

However, it is interpersonal skills that have been indicated as the most needed area. Our experience in capability development for Enterprise Architects is that this is best connected to professional education, so, for example, EA communication skills are linked to presentation of an EA business case. The results in Figure 10 indicate that there is potential misalignment in terms of where companies currently invest to develop interpersonal skills since this does not appear high on the list.

In support of this finding is that large companies usually have many external consultants working on long-term contracts, and this is seen as a learning opportunity for Enterprise Architects, with 70% of companies putting this among their top three areas of EA skill development. Yet, often these consultants are technical experts, rather than interpersonal skills experts.

While internal training programs (70%) may be one way to address this, we propose more holistic ways to approach interpersonal skills:

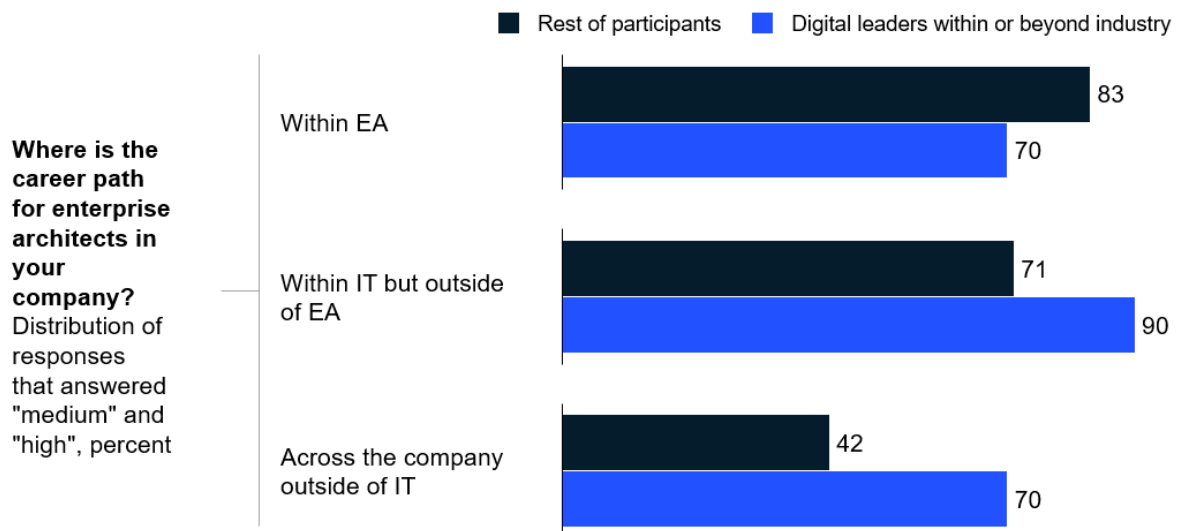
- Introduce modern ways of working with multi-disciplinary teams; for example, in agile teams with a scrum master introducing best practices of *modus operandi* as well as communication
- Conduct external training in interpersonal skills as part of a business and EA program with representatives from business, IT, and EA groups<sup>2</sup>
- Put in place mentoring and coaching from those with strong stakeholder engagement skills

#### EA career path should be across the company

There is evidence above that visibility of EA departments across many organizations is limited. This is not helped if EA's primary role is considered to be one of "policing of standards" from an "ivory tower". Our survey shows that digital leaders have deconstructed the ivory tower, making EA departments more accessible and opening them to the rest of the organization. When asked about the career path for Enterprise Architects, digital leaders are more likely to offer opportunities for growth outside EA departments, either to IT (90% *versus* 71%) or even across the company (70% *versus* 42%) (Figure 11).

The combination of motivating talent, developing a wide range of skills, and offering a broader career path is likely to make it easier to attract and retain talent which forms part of a virtuous circle in our key messages.

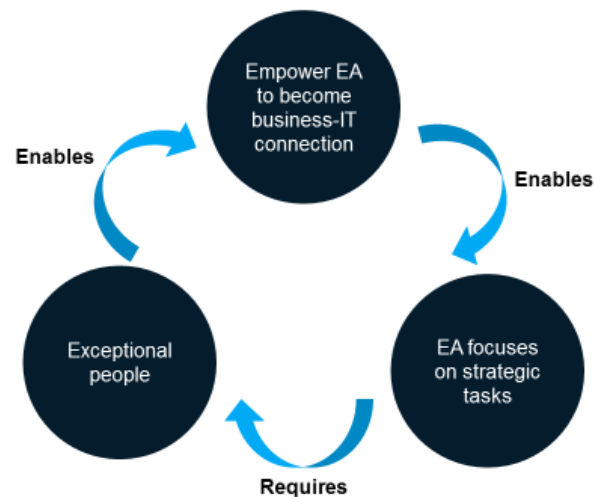
<sup>2</sup> The authors have taught together on programs of this nature designed and delivered by Henley Business School.



**Figure 11**

### **Key Messages**

We believe the three thematic pillars (Figure 12) discussed in this chapter are intertwined. Their connection can be illustrated in the form of a virtuous circle. EA can be the bridge that brings business and IT together in a closer working relationship. This new level of collaboration supports a commitment to more sustainable products and more efficient product development. This greater strategic orientation toward the product requires top EA talent with the technical skills to develop innovative products. It also requires the interpersonal skills to be successful in a “way of working” paradigm that is novel in its commitment to deep collaboration between two parts of the organization whose interactions are historically limited.



**Figure 12**

Often those organizations that boast a more modern way of working – aiming to bring the business and IT arms of an organization close together – do so selectively, failing to apply this heightened level of cooperation across the entire software development lifecycle. Taking banks as an example, we have seen technology departments entirely left out of five-year strategy discussions, formulations of business-line strategies, and even conceptual, business-level formulations of new products.

Thus, even if software development itself is, to some extent, realized in a modern, agile manner with IT at the table (by development squads led by “local” or IT product owners, applying some agile ceremonies), IT remains positioned simply as a “factory”. Companies embarking on large digital projects will need to change that mindset and follow a virtuous circle in order to create compelling digital value propositions for end customers.

We will take a closer look at modern ways of working and their impact on the *modus operandi* of EA in the next chapter.

## CHAPTER 3: EA AND AGILE DEVELOPMENT

### Research Context

We saw in previous chapters that EA needs to attract and develop talent to become a valued contributor in business strategy; and further that EA needs to deal with legacy complexity in order to deliver sustained agility. To combine strategic architecture and enterprise agility, EA needs to collaborate closely with the agile development and operations teams in IT. EA groups whose focus is primarily on developing architectural maps are likely to be seen as less relevant or, even worse, as an obstacle to effective delivery.

The corollary is that with the right approach, Enterprise Architects can become the company-wide glue keeping the various agile teams together and facilitating effective collaboration. This chapter considers how EA can best work with agile. The survey results indicate that one way is to create artifacts that support the link between architecture and development. Another way organizations have addressed this need is by including architectural competence in the solutions teams. However, this does not necessarily mean that Enterprise and Solution Architects are working well together.

Hence, in our research, we addressed three thematic questions:

1. How should EA adapt its operating model to agile?
2. What EA artifacts aid the communication with agile teams?
3. What are the synergies between EA and Solution Architecture?

### We Need to Connect EA and Agile

#### Adapt EA's operating model to agile

The findings of the survey were that if EA wishes to become the company-wide glue between various entities, it cannot engage in the same ways it did in traditional, non-agile environments. We conclude that agile software development requires agile EA processes. Our survey (Figure 13) supports a commitment to three actions that can facilitate the team's evolution from its "classical" approaches to EA toward a new way of working that keeps up with an agile environment. In each case, the comparison is with groups that use agile for most digital projects.

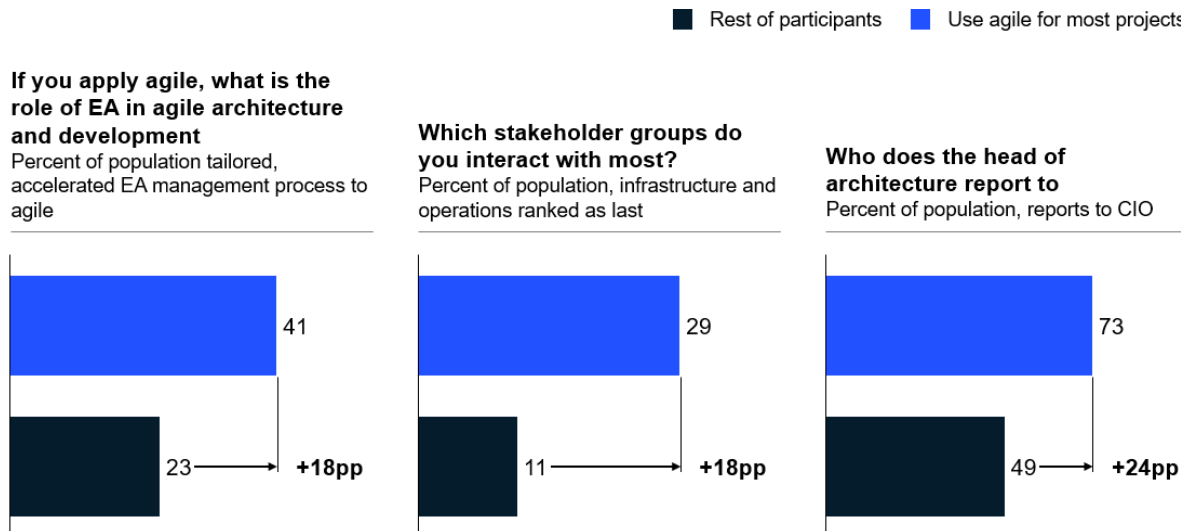


Figure 13

We explore the findings in Figure 13 through three recommendations:

- Accelerate and simplify EA processes

Greater speed is one of the key benefits expected from introducing modern ways of working such as an agile approach to software development. Specifically, this looks like faster time-to-market, rapid detection of bugs, and instant gathering of customer feedback. EA processes cannot lag behind. New standards, integration patterns, and other architectural guiding principles need to be established more rapidly following an iterative, Minimum Viable Product (MVP) type of approach. Examples of EA technical product integration principles that are more aligned with this new way of working include "All services are stateless", "We use JavaScript™ Object Notation (JSON) as a data format", "Message queues are used for asynchronous communication", and "We use HTTP responses for point-to-

point synchronous communication”. Each of the principles can then be iterated and detailed over the course of the product’s development.

- Increase collaboration with IT operations team

Agile leaders prioritize business stakeholder interaction over the IT operations team. While this is understandable from a time perspective, we believe that the nature of the engagement with the IT operations team needs to change. Achieving the true benefits of DevOps relies on mature software engineering and having strong capabilities in building architecture based on public cloud environments. Data from the survey backed up by our experience shows that EA departments should increase their collaboration and interaction with the IT operations team to ensure that new approaches and standards are consistent across all pilots/initiatives and take into consideration the wider, company-specific context.

- Close the gap between EA and CIO/CDO

As we have explained in previous chapters, it is very beneficial for EA departments to have more “face time” with senior stakeholders. This engagement is especially critical in agile projects. Architects can help to communicate the value of designed architecture, highlight the business benefits, explain the rationale behind applying some of the principles, and potentially recognize and point out red flags.

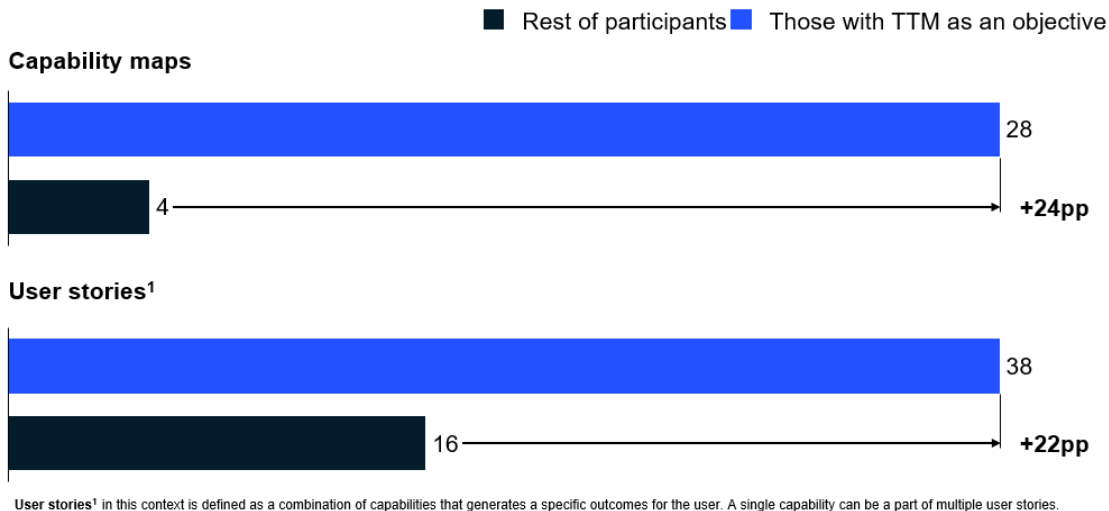
#### **Leverage EA artifacts to help build product backlogs**

When enterprises take their first steps in implementing modern ways of working it is usually connected with introducing a new digital product, which requires redesigning existing customer journeys. EA can help by facilitating the creation of artifacts around the journeys to be digitized.

For example, if the first journey to digitize is daily banking, EA can help to produce a number of capabilities around current account transactions and credit limit management. These capabilities start with a high-level view and are then progressed to a level of detail that will help product owners create user stories and successfully build product development backlogs.

#### **How many artefacts do you use?**

Percent of population, detailed coverage of the L2/L3 artefacts



**Figure 14**

Our survey shows that companies which pursue agility (assessed by faster time-to-market) construct Level 2/3 capability maps and user stories much more often than the rest of the participants. This indicates that these artifacts support a higher degree of engagement between EA and agile teams.

#### **Build synergies with Solution Architecture**

Solution Architects are full-time members of the agile teams that guide the software design decisions and are often also code-producing engineers themselves. The role of the architect is to help the team drive decisions on architecture.

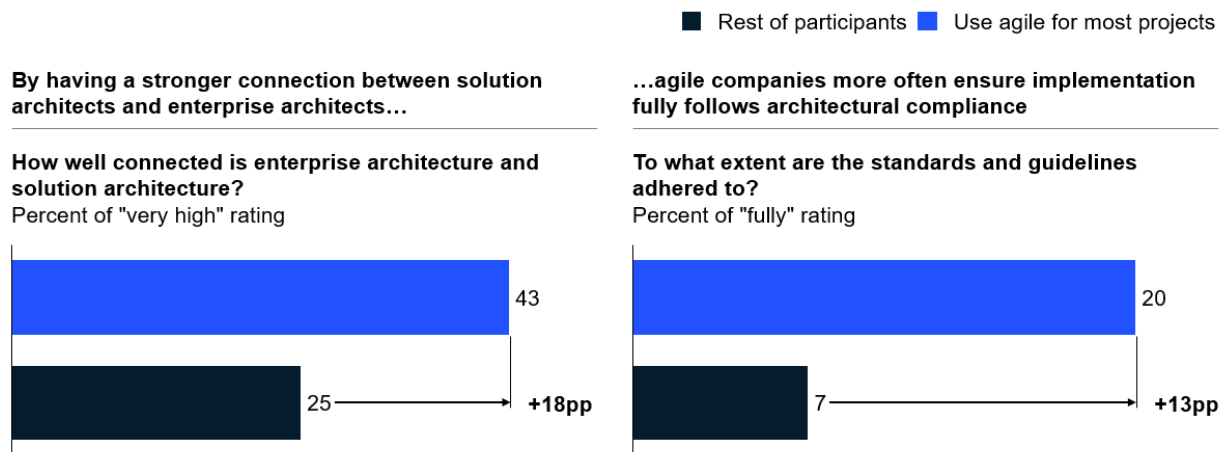
Taking into account both team and enterprise contexts, they also serve as the “link” to EA in this regard. In particular, the architect on the team should signal opportunities for code reuse (libraries that can be generalized, services that can be merged/split out of existing code, libraries/products that could be open-sourced, services that could be offered as an external API, etc.) working with EA to look for organization-wide synergies.

Sometimes, however, there is also a need for Enterprise Architects to get “hands on” with the Solution Architecture – especially at the beginning of a transformation. While in more mature organizations the Solution Architecture follows common-sense principles, in less mature incumbents a central team has an important task to coach and support the Solution Architects, especially at the beginning of a development.

Our survey explored this connection between Enterprise and Solution Architects and also reviewed the impact on architectural compliance.

#### ***EA is a driver of strategic technology decisions***

In an agile environment the EA team’s primary responsibility is to ensure strategic technology decisions are firstly made and then implemented by building a close connection with solution teams. Done well, the Enterprise Architect’s ability to build cohesion across the company is a strong asset. To this end, the success criteria for the EA team relate to the landscape as a whole and adoption of the standards that are being set. We can see from the survey results that by EA leveraging its artifacts and connecting with Solution Architects this leads to faster time-to-market and higher architectural compliance.



**Figure 15**

The results back the recommended approach firstly in having a stronger connection between Solution and Enterprise Architects (+18%) with companies that use agile for most projects and secondly that these agile companies are more able to ensure that implementations follow architectural compliance.

#### ***Key Messages***

Our experience and the survey indicate that EA should adapt its operating model to provide a dynamic view of architecture. 10-year roadmaps with shiny new technologies are not sufficient or realistic in agile environments. The reality is and will likely continue to be messy given the high pace of technological change. We consider it the role of EA to propose a balanced view between using proven technology and innovating in order to reduce risk and add business value.

When all of this is done right, it enables EA to have a greater focus on translating business decisions into company-wide technology decisions. EA should clearly describe how architecture decisions contribute to business outcome KPIs. EA also needs a perspective that cuts across technology, the organization, its people, and its processes at the enterprise level effectively operating as a cross-functional squad that proposes integrated solutions.

#### ***Toward enabling large digital transformations***

We have discussed the importance of EA to digital in (Chapter 1) and showed its key capabilities that can drive value for organizations (Chapter 2). This chapter focused on EA’s evolution to modern ways of working particularly in agile environments. In the final chapter we consolidate the learnings and show how EA can become an enabler for digital transformations.

## CHAPTER 4: EA AND TRANSFORMATION

### Research Context

In this chapter, we consolidate and extend the survey results reported in previous chapters to establish best practices for a business-driven digital transformation. Participants were given an option to self-assess how successful their digital initiatives have been against their peers within or even beyond their industries. The results gave us a clear view into a set of best practices of EA departments – practices that we believe are replicable for effective transformation.

### Manage Digital Impacts

In Chapter 1 we saw the negative effect of complexity and how EA could address IT complexity through integration. In Chapter 2 we reported on the importance of effective business and IT communications. In Chapter 3 we highlighted how EA needs to respond to the opportunities and challenges arising from an agile approach. Now we build on these survey findings to address the following transformation questions:

1. Which factors have a negative impact on digital transformation? (Analysis)
2. How can EA limit business complexity in designing digital transformation? (Design)
3. How can EA enable a business-driven digital foundation for transformation? (Platform)
4. How should transformation be executed to deliver the business benefits? (Execution)

### Understand negative impacts on digital transformation

In Chapter 1 we showed that, on average, companies which prioritize digital are dealing with more complex IT landscapes than those for whom digital is low on the list of priorities. Yet alongside IT complexity, business complexity can also be a significant roadblock on the path toward digital. Thus, we used the survey to understand how companies are tackling existing business complexity. It turns out that over 75% of those who perceive themselves as digital leaders leverage the customer journey as the key guiding artifact of their digital roadmap. Additionally, Figure 16 shows that those who structure their digital transformation through the customer journey do not signal business complexity at all as a roadblock.

### Which of the following has the biggest negative impact on time to market of our digital transformation

Percent of answers that ranked as #1

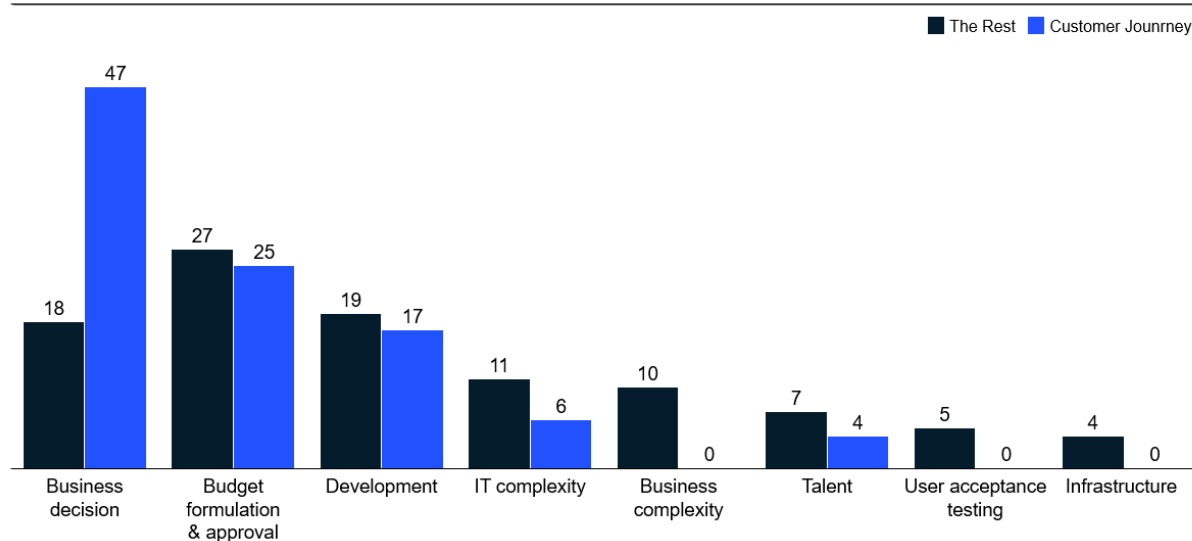
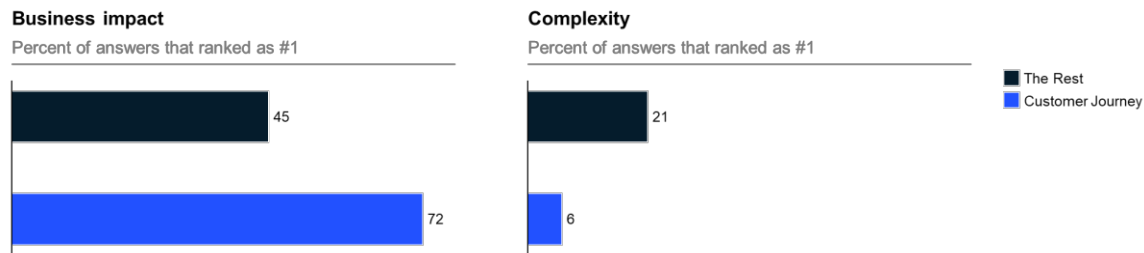


Figure 16

We can summarize the key findings from Figure 16 in Figure 17, where business impacts comprise business decisions and budget formulation, while complexity includes both IT and business components.



**Figure 17**

Figure 17 shows that it is the business impacts that most hinder digital time-to-market for those who prioritize the customer journey. It highlights the importance of our finding from Chapter 2 that EA leaders facilitate communication between business and IT, which helps tackle this issue of organizational decision-making. In contrast, complexity is a significant time-to-market issue for the rest. In all cases we should seek to limit business complexity.

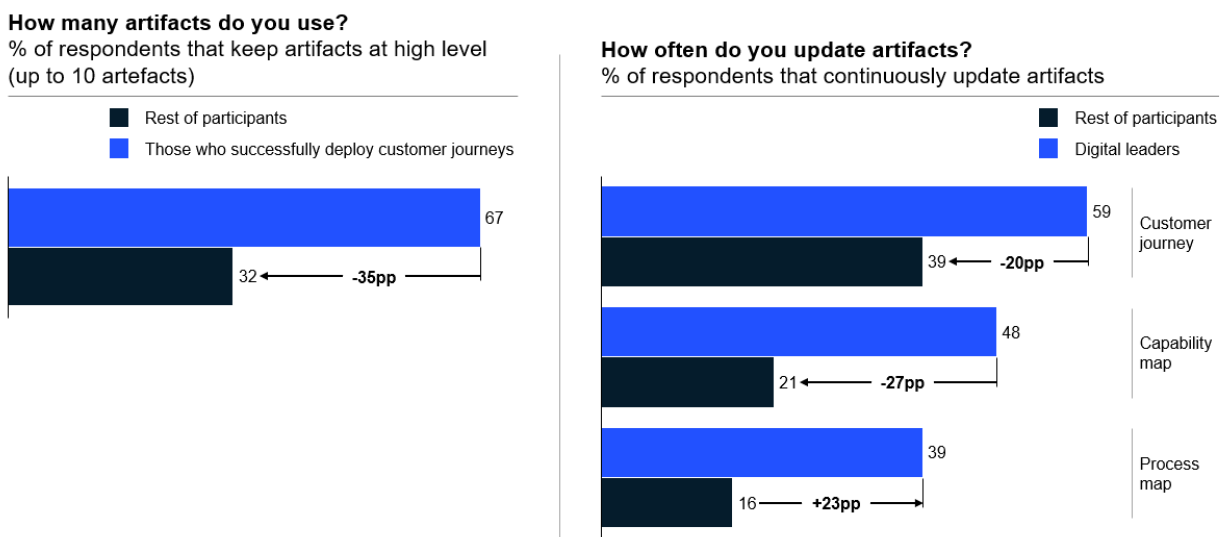
#### *Limit business complexity*

We have previously shown that capability maps are a successful tool to bring business and IT together. Capability maps help to establish a foundational, common understanding of business processes: they assist the business to articulate distinct elements of a business process, thus enabling IT to connect those elements with underlying IT applications. Once this common ground is established, it becomes an enabler for creating customer journeys and it helps designers and the rest of the agile team start crafting a digital value proposition. Hence, a combined use of the two artifacts – first capability maps, then customer journeys – is a way to tackle business complexity. These artifacts are particularly important in the design phase of digital transformation.

#### *Limit complexity of business artifacts – update them regularly*

Of course, if EA does not create and manage artifacts in a structured and conscious manner, these artifacts can create another level of complexity on their own. Having too many different types and too much of each type of artifact might have the opposite of the intended effect on accelerating processes and bring confusion. Figure 18 reveals two interesting findings on what approach might be successful.

- On average, two thirds of digital leaders manage customer journeys at a high level (up to 10 artifacts), compared to only one third of the others
- Digital leaders also do not write their artifacts in stone; whichever artifacts they leverage – whether customer journey, capability map, or process map – they are much more likely to continuously update them than the rest of the population; they clearly understand the iterative nature of modern ways of working



**Figure 18**

The question then arises of how best to create a digital foundation, recognizing that IT complexity is likely to have generated a high level of technical debt.

### Establish a business-driven digital foundation

As we presented in Chapter 1, those who prioritize digital on their strategic agenda, on average, face much more architectural and technical complexity. Our survey shows that digital leaders dedicate 64% of their effort to integration, compared to merely 4% for the rest of the participants. We consider that this high percentage might be a result of two factors:

- On one hand, creating an exquisite digital customer experience requires decoupling of the landscape and modernizing it toward a composable architecture – one that is rooted in an event-driven, microservices-based system
- On the other hand, digital initiatives can be used to purposely reduce technical debt – to gradually remove obsolete integration layers or process orchestrators

Digital leaders tackle the complex integration architecture and complement this with simplifying the applications portfolio, which together leads to an effective digital foundation.

### Avoid technical trap

There is an important caveat to the above – digital transformations need to be driven by customer value and enablement. Structuring them along the technology layer can be classified as “falling into a tech trap”. In this scenario, overly focusing on solving technology issues/complexity takes away from the all-important focus on the business value. Our survey (Figure 19) shows that those who structure digital transformation along technology layers may be operating inefficiently within their EA and IT departments in three key ways:

1. Their EA departments are less engaged with business and IT and focused more on collaboration related to internal architecture, which makes them less able to realize their potential described in previous chapters.
2. Their EA departments prioritize technical training for the architects.
3. The budget for the digital transformation is owned by IT: Where the budget resides is an indication of where responsibility lies. When IT holds responsibility for digital transformation, it means that the business can still operate in the classical “demand *versus* supply” mode with IT.

Digital leaders avoid this “tech trap” and they know how best to execute the transformation.

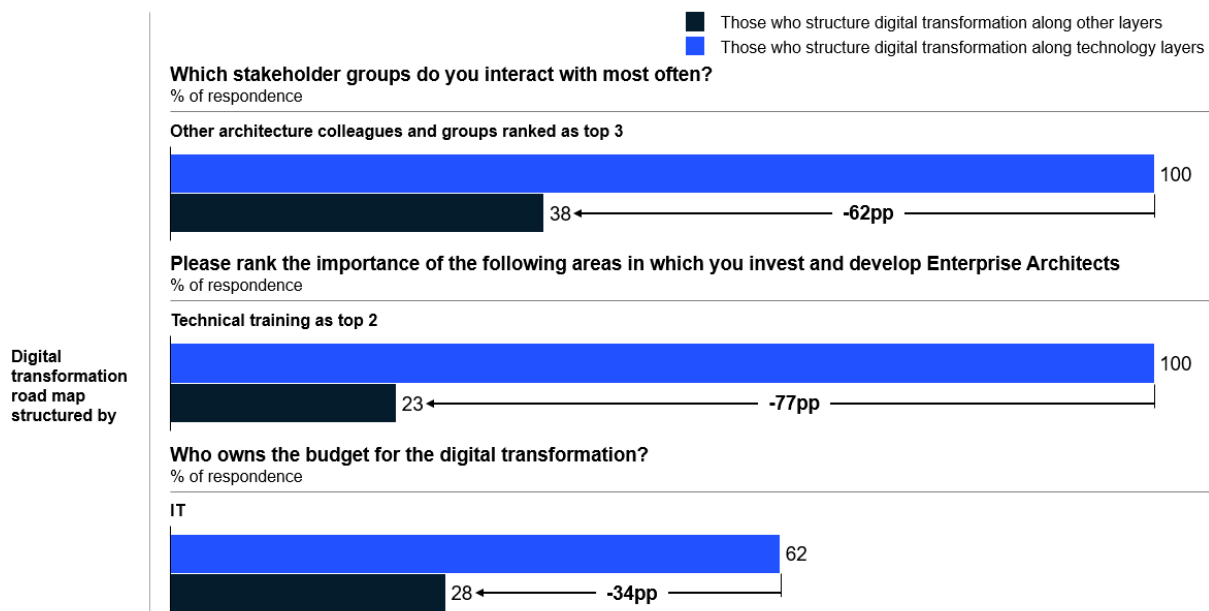


Figure 19

### Execute Transformation Through a Business Lens

There is an important business-lens message on transformation.

### Execute the transformation to deliver business benefits

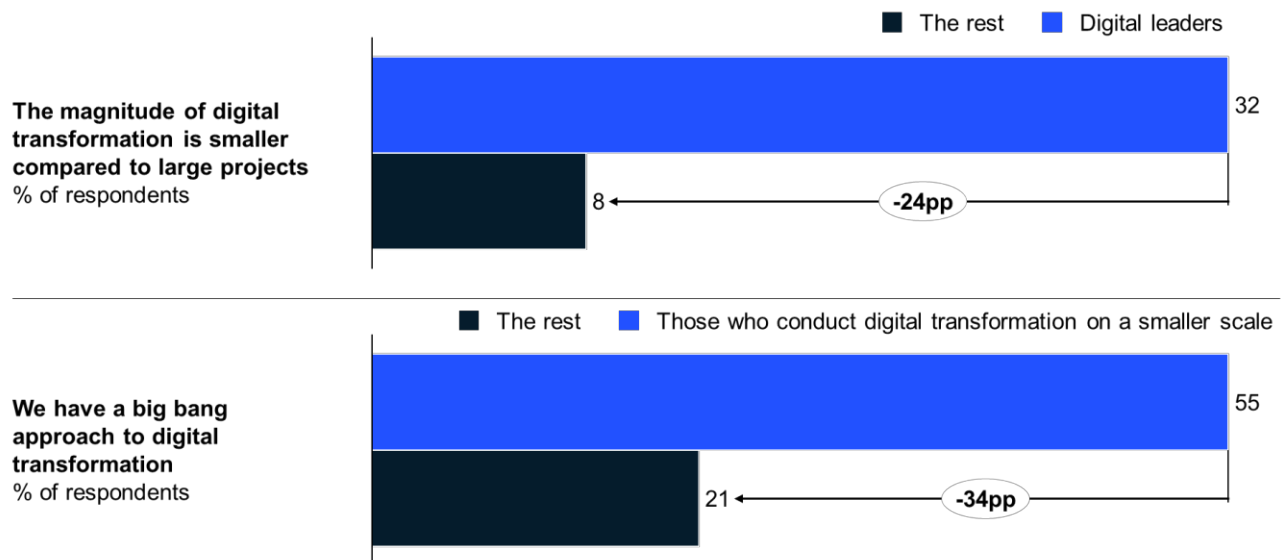
Larger-scale technology projects have much more potential to become black swans, meaning to continuously go beyond the intended scope and over budget. Whether it is core banking system replacement, ERP/CRM implementation, or a

large transformation, the chances are that it involves a “classical” approach to managing the IT initiative and delivering software. In other words, it is likely to include at least some elements of a waterfall delivery, a number of hand-offs between business and IT, and roadblocks to delivery due to IT complexity.

#### **Scale small, release fast, and big bang**

We wanted to understand how digital leaders size and scale their digital transformations relative to other large projects. We found that (Figure 20) for more than one third of digital leaders, the magnitude of their digital transformation is smaller compared to that of their peers’ large technology projects. Less than 10% of the rest of the sample reported that their digital transformation was small relative to the size of their other projects. Interestingly, smaller-scale transformations are typically approached in a “big-bang” manner (more than 55% of those who release in a big-bang manner apply that to digital transformations, which can be considered on a smaller scale).

Figure 20 demonstrates the principles of maintaining scale small and releasing fast with big-bang approaches to transformations. As previously highlighted, this is set within the context of an integrated architecture, focused design artifacts, and a digital foundation. It is also consistent with the Chapter 3 findings of an agile EA approach.



**Figure 20**

These findings fit well with cases we have seen at large organizations. For example, if a bank is conducting a digitization initiative and starts with the limited magnitude customer activity of daily banking, a “big-bang” approach might be the speedy introduction of a completely redesigned customer portal. In contrast, a smaller scale would mean that fewer features are available in that release, reducing the benefits.

#### **Maintain continued focus on benefits**

A continued focus on benefits is critical. Yet the survey found that in many organizations, monitoring and measuring are limited to the projected business case created at the very beginning. What distinguishes digital leaders from the rest is an understanding of the value of continuously measuring the benefits well beyond the business case. Of the digital leaders in our survey, 75% continue to measure the benefits after the completion of the project, while less than 20% of the rest can make this claim. We conclude that success requires three elements:

1. The business case is defined at the beginning of the project/product.
2. Clear measures of success are defined for the project or product delivery.
3. Measures are continuously validated after delivery.

Companies that commit to continuous measurement have built a culture of feedback and a value-driven mindset into their organizations and processes around digital product creation.

### **KEY CONCLUDING MESSAGES**

The companies that enjoy the most digital transformation success are those that define the target capabilities and let the customer journey guide the transformation effort. For this to happen, the gap between the business and IT needs to be closed; EA can facilitate this alignment with the right capability to manage complexity and integration. Reducing

complexity is a goal of digital transformations, but the transformation itself has the potential to create its own complexity. Organizations will want to be sure to minimize the number of types as well as the total number of capability maps and customer journeys.

A business-driven and integrated digital foundation is critical given that transformation is typically not a one-off outcome. Successful transformations tend to be contained in size, with related initiatives being rolled out quickly and refined iteratively. Digital leaders commit to continuously measuring the benefits of the transformations.

Developing and retaining an EA capability with the required mix of business and IT skills is a significant challenge. It is a key enabler for a digital foundation and an EA partnership with diverse stakeholders. These are critical ingredients for EA to facilitate agile digital transformations.

Our survey and client engagements highlight that companies that follow these principles are best positioned to reap the sustained benefits of EA-enabled digital transformations.

## ABOUT THE AUTHORS

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Besides serving clients, he is in constant contact with vendors, start-up companies, academia, and other third parties to continuously enhance and extend the firm's knowledge base. He also leads the Enterprise Architecture Survey, a collaboration with Henley Business School. Before joining McKinsey, Oliver earned a PhD in bioinformatics on image analysis and 3-D modeling.

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The following articles were published in the AEA Journal of Enterprise Architecture:

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