Enterprise Architecture and Data Modeling

Practical steps to collect, connect and share your enterprise data for better business outcomes

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▶ Use a data-driven enterprise architecture to deliver better business outcomes.

Forget everything that you may have heard or read about enterprise architecture. It does not have to take too long or cost too much. The problems are not with the concept of enterprise architecture, but with how it has been taught, applied and executed.

All too often, enterprise architecture has been executed by IT groups for IT groups, and has involved the idea that everything in the current state has to be drawn and modeled before you can start to derive value. This approach has caused wasted effort, taken too long to show results, and provided insufficient added value to the organization.

For many organizations, this has led to erosion in the perceived value of enterprise architecture. For others, it has led to the breakup of **enterprise architecture** groups, with separate management of the constituent parts: business architecture, information architecture, solutions architecture, technical architecture and, in some cases, security architecture. This has led to fragmentation of architecture, duplication and potential sub-optimization of processes, systems and information.

Taking a business-outcome approach has led to renewed interest in the value of enterprise architecture. But such interest will only remain if enterprise architecture groups remember that **effective architecture is about smarter decision-making**, enabling management to make decisions more quickly because they have access to the right information in the right format at the right time. Of course, focusing on future state first (desired business outcome), helps to reduce the scope of current-state analysis and speed up the delivery of value. This increases perceived value, while reducing organizational resistance to architecture.
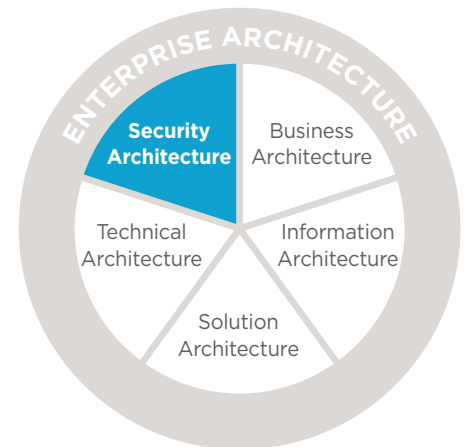
Enterprise architecture is the all-encompassing wrapper of which the other disciplines should be a part.

The four key inputs to a well crafted business outcome statement

Section 1 *(continued)*

Taking a business-outcome approach means you should:

a) **Understand who the real stakeholders involved in and benefiting from the enterprise architecture are in your organization.** While many stakeholders may still be within the IT organization, it is the business and C-level stakeholders who should be able to gain the most.

b) **Understand their goals, objectives and pain points,** and then help them to express them in clear business-outcome terms. This will take time and skill, as many business users simply ask for system changes without clearly stating their actual objectives.

c) **Review your current architecture efforts and tooling.** Question whether you are providing or managing data the business does not need, whether you are working too deeply in areas that may not be adding value, or whether you have your vital architecture data spread across too many disconnected tools.

▶ Enterprise and data architects who relate what they are doing back to what the C-suite really wants find it easier to get budget and stay relevant.
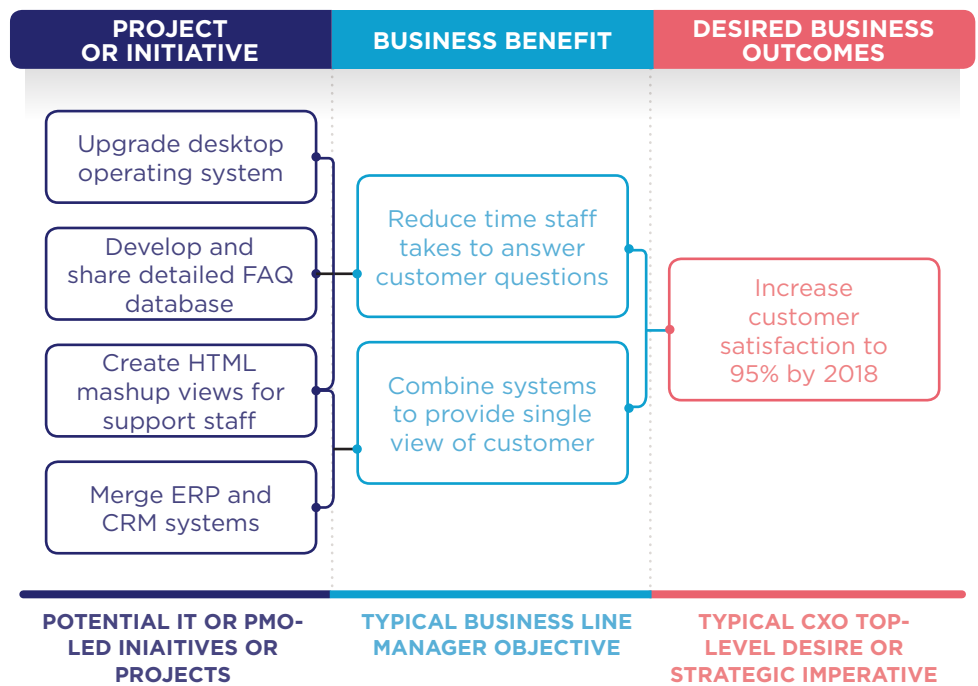
Often when architects (or indeed vendors) talk about the C-suite, they are referring to the role of CXO, which is a reminder that executives have different needs and agendas as compared to most people in the IT domain. But to think of them as a homogeneous group is a mistake. Take a look at the table below and you see that commonalities exist among the top five priorities of various members of the C-suite, but there are also many differences. This affords architecture groups greater opportunity to demonstrate their value to a broader audience.

Only when the connection between architecture and priority is explicitly stated in ways and terms that address the specific concern of the specific "C" role will this become apparent.

CEO	CFO	CIO	CDO
Stronger client focus	Cost optimization	Improving business processes	Leverage existing data to advance business
Fostering innovation	Process optimization	Reducing costs and driving efficiency	Find new revenue streams by monetizing data
Minimizing cybersecurity risks	Cash and liquidity management	Maintaining IT systems	Enrich data by linking with other data
Implementing disruptive technology	Financial risk management	Managing cybersecurity	Maintain quality and relevance of data
Responding effectively to regulatory change	ERP implementation	Business innovation	Protecting data as an asset
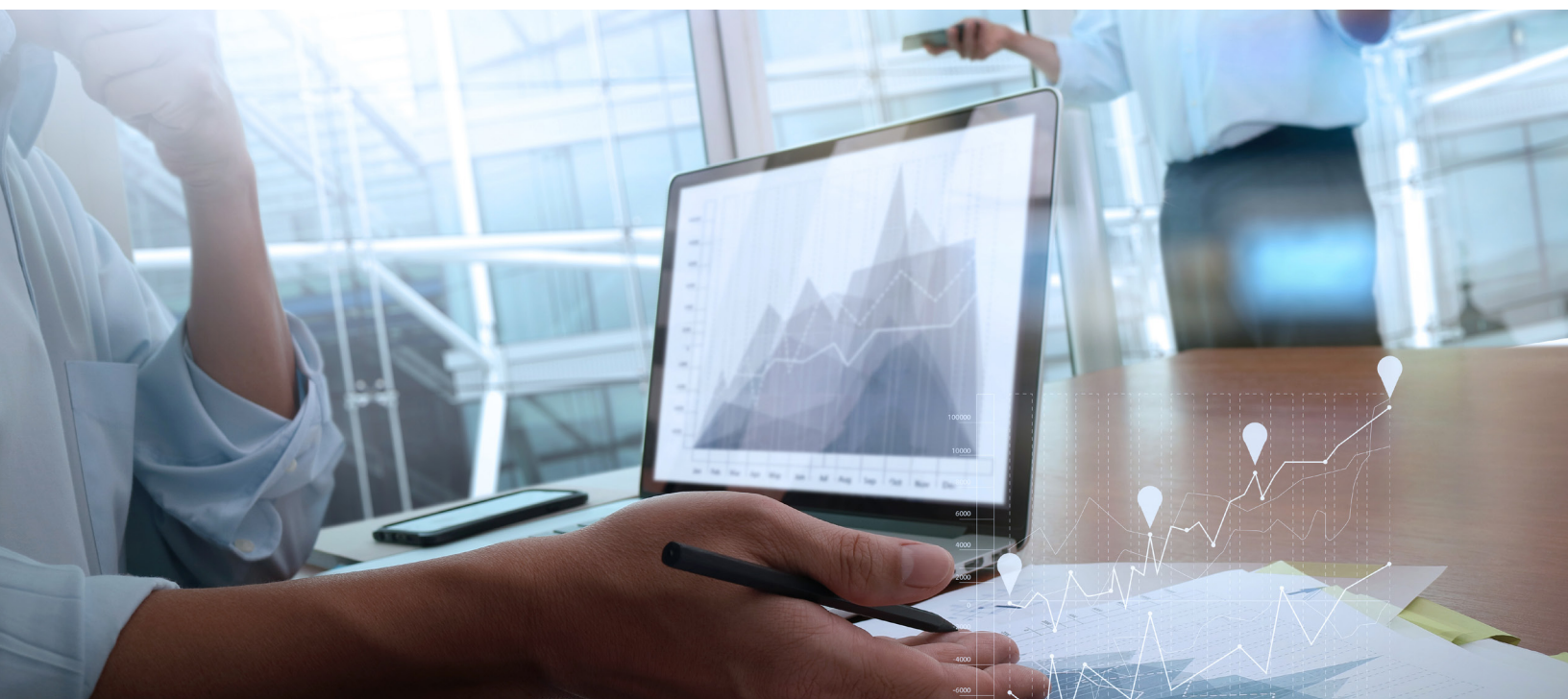
In summary, while the needs of C-level executives may be different, they are all trying to make smarter decisions that enable them to achieve their desired business outcomes.

PROJECT OR INITIATIVE	BUSINESS BENEFIT	DESIRED BUSINESS OUTCOMES
Upgrade desktop operating system	Reduce time staff takes to answer customer questions	Increase customer satisfaction to 95% by 2018
Develop and share detailed FAQ database		
Create HTML mashup views for support staff	Combine systems to provide single view of customer	
Merge ERP and CRM systems		
POTENTIAL IT OR PMO-LED INIAITIVES OR PROJECTS	**TYPICAL BUSINESS LINE MANAGER OBJECTIVE**	**TYPICAL CXO TOP-LEVEL DESIRE OR STRATEGIC IMPERATIVE**

An example benefits tree illustrates how a "desktop upgrade" is not an IT project that costs, but a mechanism to help the organization achieve one of its key business outcomes.

To make those decisions, they require actionable insights, and it is up to the architecture team to provide those insights. When we do, we help others connect their projects, programs and initiatives to those outcomes, then everyone understands **why** we need to do the things we do – putting the data in context and thus providing actionable information.

To make your architecture efforts relevant, add value from a C-suite perspective, and increase your chances of getting or keeping budget:

a) **Use benefit trees** to illustrate how your projects or architecture initiatives connect to the desired C-suite outcome.

b) **Focus architecture efforts** on presenting the data management needs to make decisions, rather than the maps and models technical staff use. This may mean maintaining multiple views of the same information, such as a business presentation version and a more technical model-based view.

c) **When collecting or connecting data, think broadly.** A catalog of processes, a list of standards, or a common dictionary of business terms are all forms of data. And data about the organization is just as important as business performance, customer, product or accounting data that forms part of the everyday fabric of the organization.

> **Architects who create future-state models first find it easier to get management to invest in their efforts.**

Traditional enterprise architecture approaches have focused on analyzing and creating current-state representations first, and only then consider future states. This is a little like creating an entire tube map, when all I wanted to know was how to get from place A to place B. Worse still, we sometimes get so wedded to those representations that we fail to see alternatives because they were not pictured. **Understanding where you want to go, when you want to get there and any limitations on time, budget or means, enables us to plan our journey better.**

The London Tube map is just a different representation of architecture.

Demonstrating that we understand the desired future state instills greater confidence that we are working toward something the business needs, takes less time to produce some tangible results, and makes it harder for the business to resist our proposals. With a future-state model in place, not funding the projects or proposals can be seen as giving up on the desired business outcome – not something many executives and managers feel comfortable with.

Initial future-state architecture does not have to take long or require complex tooling. The key to its success lies in painting a picture of the future in such a compelling way (either with actual visuals or words) that people can't resist wanting to go there. **Focus your efforts to:**

a) **Work with key stakeholders** to understand the where and when of the future and on how success will be measured. Any visualizations you create are best delivered as either sketches or highly graphical views that are readily accessible, masking any technical details.

b) **Ensure you note information that might support achievement** of the future when the time comes, or data that might be useful in evaluating alternative paths. This is also a good time to learn how the key stakeholders prefer to see information presented, ensuring maximum success when you present results at a later stage.

c) **Create business capability models and roadmaps** that can be connected to the future state's use for gap and project analysis.

▶ **Enterprise architects who leverage the skills and knowledge of their data management colleagues can build relevant current-state architectures quicker.**

Having identified our desired future-state architecture, then we start to create a current-state architecture to add detail and richness to our roadmaps, undertake detailed gap analysis and, where required, comprehensive impact analysis.

As we have already mentioned, approaching the current state in this manner has significantly reduced the scope of current-state analysis. This becomes important when you consider the interconnectivity of information.
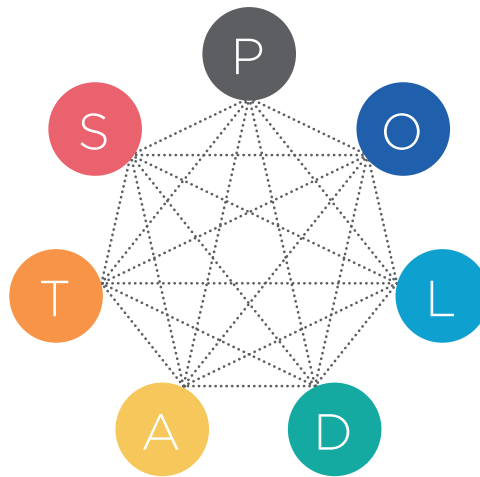
It's All Connected

Based upon the POLDAT approach cited in the CSC Catalyst methodology (extended to add "S" for security)

In the diagram above, we can see the connections between **process, organization, location, data, application, technology** and **security.** Let's look at this a bit more closely. If customer satisfaction is identified as an outcome, and the implementation of a CRM system is a stated project, then we already have a lot of work to do in identifying all the **POLDAT** pieces that will be relevant to that implementation. We cannot afford to waste time collecting information about processes that will not be impacted, or worrying about other systems that will not be connected with the CRM implementation.

We do, however, want to gather as much information about the **POLDAT** pieces that will be impacted. In this respect, architects that work with their data management colleagues will find that they can help extract relevant information from other data sources that will accelerate the creation of the current-state architecture. Organizations that adopt the "just enough just in time" approach to current-state architecture, and capture both current and future state architectures in a common tool, will reach a point where the entire enterprise architecture of their organization is captured and documented – without adding overhead to projects.

Section 4 *(continued)*

As we can see, there are faster ways to create relevant current-state architecture. You don't have to start with a blank page, but when you do start:

a) **Question all current-state activities being undertaken** and consider scaling them back if they cannot help achieve a desired future state that is linked to a business outcome.

b) **Consider employing a common enterprise architecture tool,** with a focus on its repository and data connectivity capabilities. Ensure that the tool can automatically create views from the data you populate it with and that it supports multiple concurrent users.

c) **Produce impact and gap analysis reports before detailed diagrams,** as most decisions are based on grids, tables and reports. It is often only the solution designers and technical architects that actually need the wiring diagrams we normally associate with enterprise architecture.

Data modelers working closely with enterprise architects can manage data in context and deliver the information that management needs.

In many organizations, data modelers appear to work in a vacuum. Initial database setup may be part of the solution architecture or technical architecture and linked to the implementation of a project. But then it seems to be handed off or forgotten.

As the world starts to change more quickly, system updates become even more interconnected. And system replacement cycles accelerate this problem. In particular, metadata management is no longer limited to inside the firewall but also extends to systems in the cloud, as well as to systems that support or are connected to customers.

To effectively manage data quality, data security and data integration in a changing world, the data modeling and data management teams need to understand the context of their work.

This context needs to be provided on an ongoing basis, not merely as a one-off exercise. Furthermore, the use of standards in the areas of information and data security are becoming more important.

Application, auditing and compliance with these standards will typically be handled by the enterprise architecture team. But the applications of standards will reside with data management, so close partnership is essential.

Context is also a key word when it comes to delivering value to business managers and customers. In most cases, they don't want or care about the data, but they do require accurate and timely information that is in context. This is where data modeling and management teams need to work more closely with enterprise architecture teams. Together, they can provide the clear context needed on the business issues and strategies of the organization.

Data modelers that work more closely with enterprise architecture position themselves as stepping out from the weeds and into the broader area of information architecture. Although information architecture is one of the major constituents of an enterprise architecture, many organizations don't have someone perform the role, in part because many data modelers resist looking at the bigger picture.

a) **Integrate your data management functions** into your overall enterprise architecture initiatives to avoid exacerbating the current siloed thinking that exists in organizations. It is easier to understand context and address risks as part of enterprise architecture.

b) **Focus data management efforts** on providing and protecting key information by focusing more on required management actions and decisions to add greater value to the organization.

c) **Consider ways to integrate enterprise architecture and data modeling tools** to ensure consistency and context. If you are unable to leverage a common toolset, then you should at least consider leveraging a common repository approach for models. **Process and data models are two sides of the same coin. To manage them separately is to waste time, effort and money.**

▶ Enterprise and data architecture teams that fail to fully realize the impact of digital business on the IT landscape are putting their organizations at risk.

There is no doubt the digital business wave will affect businesses large and small across all industry sectors and geographies. The disruptions it has caused so far are nothing compared to the disruptions that are coming. While self-driving cars, digital assistants, and drone delivery are grabbing headlines, the real impact goes far beyond these new technologies.

The internet of things (IoT) will drive vast amounts of sensor data on a minute-by-minute or second-by-second basis. That information will need to be sorted, cataloged and acted upon, often in the blink of an eye. Your applications and systems may no longer serve people but instead respond to requests from other systems. These systems will not be able to correct mistakes or be willing to wait a few more minutes while you work on things. The inability to respond accurately in real time may well spell the death of your business, and responding to the challenge will require close coordination between data management and enterprise architecture teams.

As organizations seek to leverage data to create and sell new digital products, often via APIs, enterprise and data architects will need to learn the skills of product managers. Once data or an API becomes a commercial product, new rules apply when it comes to quality, regularity of updates, and timeliness of availability. You will be required to take a customer-first approach and understand revenue risks. You may also need multi-lingual documentation, product support functions, and ways to deliver these new digital products. In these respects, neither data management nor enterprise architecture can afford to work alone – the risk of historical myopic thinking is just too great.

Closer to home, enterprise architects and data modelers are wrestling with the fact that much of their closed data may soon need to be exposed as open data via APIs. While in the past, systems and the data processed have all been within the control of the IT groups, it is now increasingly held in third-party applications based in the cloud or via APIs from other members of your ecosystem. The interactions and integrations between applications, inside and outside the firewall, means that enterprise architecture and data modeling teams must work closer together. They need to coordinate more effectively to ensure that data quality and data security is given greater emphasis, that they can collect and coordinate data that may not all be under their direct control, and be capable of operating not just as IT managers but also as product managers.

Enterprise architecture and data management teams should:

a) **Get together to discuss** what digital initiatives are planned or already underway and assess how they might be held back by current data practices.

b) **Work to ensure** that, in addition to solid physical model documentation for maintenance, there are comprehensive logical and conceptual models available for all parties affected by digital business. This may include business analysts, systems analysts, solution architects, business architects and, if your organization has one, the chief digital officer.

c) **Be proactive** in identifying ways that their organizations might package data to create new digital products, either on their own or as part of another ecosystem.

▶ Enterprise architects that focus more on the outputs and audience for architecture increase their standing and value to the organization.

Architecture is data too, and needs to be exercised to justify keeping it up to date and relevant. While the creation of architecture might reside with specialist teams, the value only comes when broad audiences within the organization use it and come to rely on it.

While we have been talking about addressing the needs of the C-suite and delivering the information they need in a timely manner, there is another group we need to consider. That group includes everyone in the IT organization, from architects to designers, from relationship managers to business analysts, from ERP teams to infrastructure teams. All these people are making decisions and implementing activities that are informed by and impact your enterprise architecture. To be credible with the non-IT audience, we first should demonstrate common use of the architecture within our organization.

Just as with non-IT users, this broad acceptance of architecture will only happen if the architectural information that is shared is relevant, easy to access and current. Talk to the different constituencies who could or should use the information, and ensure the delivery of architecture information is tailored to suit their needs.

a) **Socialize your architecture efforts, so that they become the business-decision tool of choice for the entire organization.** This applies not just to disseminating information but also to collecting it. The more people are heard, then the more they will listen.

b) **Take time to understand the information needs of different roles within the IT organization,** and present that information to them in such a way that enterprise architecture becomes a powerful tool that helps them do their jobs.

c) **Do not force architectural views on people who do not need them.** Accept that multiple views on data for different purposes should be welcomed if it increases the use of architecture data.

▶ A Last Thought

This paper has focused on practical steps and actions that will enable you to collect, connect and share the right data at the right time to increase your chances of success. The steps outlined here also will enable you to gain greater acceptance of architecture and its value within your organization, but there is one other important point for you to consider.

Much of the work in modern IT groups focuses on application portfolio management, de-duping overlapping systems, and reducing the number of suppliers. To be credible, IT groups need to do more to apply the same principals themselves. For example, you can't use five different vendors and tools for modeling and architecture with the argument that every individual group is different. You can't talk credibly to the business about consolidating data, while holding IT data in more systems than you need. And you can't justify to the business why it needs to change its processes, switch off favorite systems, or try new ways of working – while you are not willing to change yourself. So consider how you can consolidate your modeling and architecture tools, the way you approach architecture, and how to achieve pragmatic, data-driven, outcome-based approaches that elevate the perceived value of your architecture initiatives.

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