

THE FUTURE OF ENTERPRISE ARCHITECTURE (EA)

IN A MODERN DIGITAL ENTERPRISE

STAGES OF IT MODERNIZATION

As organizations modernize their IT, they typically follow a common pathway that enables them to become more agile and open. Each stage along the way has unique attributes and challenges. Agencies usually have portions of their IT portfolio spread across multiple stages as they navigate the way forward.

TECHNOLOGY INFRASTRUCTURE EVOLUTION

Traditional IT



Organization has no established way of collecting customer feedback, no data sharing between different systems in their IT infrastructure. Development, security, and operations teams are siloed and the cost of maintaining monolithic sprawling systems has become untenable. Security meets the minimum standards for compliance.

CommonARCH



Organization's handling of customer feedback is infrequent and siloed, while lack of orchestration and agility limits the ability to adjust and maintain momentum. Enterprise data warehouses encourage reuse, but cutting-edge data management or analytics tools are not employed. Agile development practices are used, but development and go-to-market teams collaborate poorly, and security stacks are basic with few vendor updates.

Migrating



Deeper, ethnographic customer feedback is collected and thoroughly analyzed. Data lakes/analytic workbenches drive new insights for data scientists. Security stacks are beginning to integrate automated processes. Software deployment and testing processes not fully automated, but development is approaching DevSecOps best practices. Need for increased speed to market requires architecture to promote re-use across enterprise, drives propagation of bimodal IT.

Agile & Open



Customer relationships are tracked and understood to drive continuous improvement. Next-generation cloud services and IaaS are employed and integrated with full DevSecOps best practices. Security is automated where appropriate, and open-source data is analyzed using powerful machine learning and artificial intelligence tools.

THE WORLD IS CHANGING

As the world changes, today's organizations face several factors pressuring them to change the way they engage with technology. Administrative changes in the Federal Government, evolving regulations, and new threat factors are placing pressure on agencies and organizations to update their mission and to seek more effective ways to execute. Meanwhile, the proliferation of digital products and services has raised consumer expectations, while budget reductions force organizations to do more with less. These factors have led to several new legislative requirements that encourage federal EA programs to lean forward as they innovate their information technology (IT) infrastructure.

At the same time, new trends in technological best practices are disrupting traditional IT strategy and modernization. While these trends offer new and more powerful ways to drive an organization's mission, they also present a new set of challenges surrounding systems migration and integration,

business process re-engineering, and software development.

To keep pace with these changes, IT leaders are facing pressure to quickly modernize their organizations. At the center of this initiative sits the EA, which refers to the coordinating and optimizing of the organization's strategy and processes driving its IT systems, information, and mission execution across business lines. It requires both technical knowledge of the underlying systems and an understanding of how they contribute to business functions. Being responsible for the IT infrastructure of the entire organization, an organization's EA provides the backbone for any IT or business process changes it might undergo. This white paper explores the ways that the modern EA program will adapt to a changing world, including the new roles it must fulfill and how it must engage with the organization to not only facilitate the IT modernization process, but to lead the organization into the future.

Key Legislation, Policy, and Initiatives

- President's Management Agenda (PMA)
- General Services Administration (GSA) Centers of Excellence
- Modernizing Government Technology (MGT) Act, and Technology Modernization Fund (TMF)
- Executive Order 13800 (2017)
- DoD CIO 10 Point Modernization Plan (2016)
- DoD Data Center Consolidation Mandate (2016)
- CIO Data Center Optimization Initiative (DCOI)

THE EA PROGRAM IN A MODERNIZING ORGANIZATION

As the changing world presses organizations to become more modern, the EA program should evolve to support the IT modernization process.

A modern EA program should facilitate and foster an organization's transition between each stage. As the organization transitions from traditional IT to Common Architecture, the EA program should focus on aligning IT systems to the business functions they support. This analysis informs IT investment decisions to reduce the amount of resources spent on duplicative capability. The modern EA program should also enforce adherence to IT standards and best practices through compliance to reduce the risk of project failure. Today, many organizations and enterprise architect programs are working on this transition.

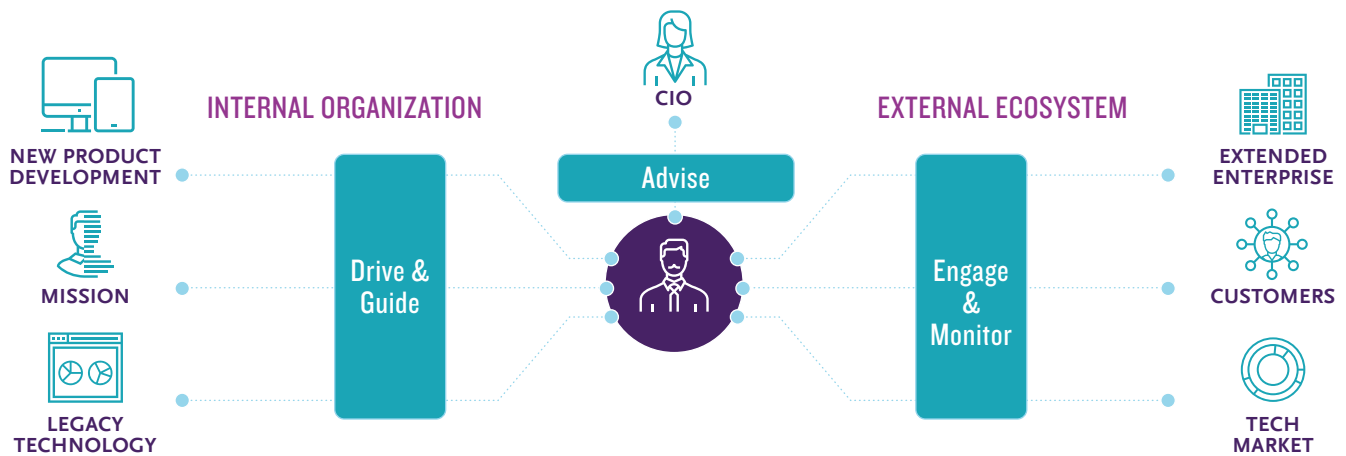
As the organization transitions to the Migrating stage, the EA program will need to identify common application architecture patterns to inform infrastructure consolidation and optimization strategies. Application portfolios should then be prioritized and sequenced for migration to cloud. As this occurs, business units will start to realize faster time to market for new capabilities and increased IT reliability and efficiency. A few organizations are moving to the Migrating stage today, with growing demand among many organizations to transition into this stage.

Lastly, to support an organization's move to the Agile and Open stage, the EA program must focus on balancing the reduction on technical debt with selecting and injecting new technology and capabilities. The program also

should implement governance to manage increased automation, access to data and algorithms, and microservices for reuse. While not many organizations are currently moving to the Agile and Open stage, in the rapidly shifting IT landscape, trends indicate that many will be there in just a few years. Given these trends, it is essential that EA programs begin planning for this transition now to avoid falling behind.

It is important to point out that since different sectors of an organization can be in different stages of modernization, the EA needs to be able to support all of these transitions simultaneously.

To effectively guide an organization through these IT modernizations, the EA program must itself evolve as a change-driving force. From a broad perspective, the future role of EA will be to balance (1) management and reduction of technical debt and risk with (2) introduction and exploitation of new capabilities and technologies to deliver new value to the agency's mission. To do this, EA must get closer to the mission, get closer to customers, get closer to technology, and bring these in-depth insights back to drive the transformation strategy. The EA program cannot foster these changes alone. The process will depend on active participation from internal and external stakeholders and the organization's leadership. To this end, the EA program must drive and engage in new ways with its internal and external environments.



How Future EA Will Engage Inside/Outside the Organization

As EA facilitates these connections, the program will need to encompass several new functional roles:

Risk Manager, Mission Architect, Strategy Partner, Innovation Leader, and Customer Champion.

Most important of these roles will be that of the Mission Architect, as it encompasses the other roles. As Mission Architect, the EA program will need to reimagine how mission areas can be transformed by leveraging new and emerging technologies in the future. In doing this, it will reach across business lines to develop innovative solutions for cross-cutting mission threads and serve as the voice of both the business and customer to guide new application development. It will also need to analyze risk and tradeoff between new capabilities and security/compliance, as well as balance these capabilities with the reduction of technical debt on existing IT systems.

As the EA office comes to execute these functions, it should occupy a more significant space within the organization. In the past, EA primarily focused on governance, compliance and supporting research, investment and auditing needs. However, as more and more organizations move toward IT modernization, EA extended its reach with enterprise strategies to guide program technology. Looking forward, the EA office should become the leader and driver of innovation for the enterprise. In this role, it will implement governance to manage increased automation, data access, and microservices, and engage with all BODs around future technology decisions.

“THE FUTURE ROLE OF EA IS TO BALANCE (1) MANAGEMENT AND REDUCTION OF TECHNICAL DEBT WITH (2) INTRODUCTION AND EXPLOITATION OF NEW CAPABILITIES AND TECHNOLOGIES TO DELIVER NEW VALUE TO AN AGENCY’S MISSION.”

FUNCTIONAL ROLES OF A SUCCESSFUL FUTURE ENTERPRISE ARCHITECT



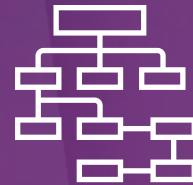
RISK MANAGER

The modern EA program will continually assess the as-is technical landscape, manage any risks associated with technical debt and make the determinations on the priority and sequence for modernization activities in a coordinated manner with an enterprise/corporate perspective.

All organizations face the problem of technical debt caused by implementing short-term fixes, and any serious overhaul of an organization's architecture carries a risk to security and compliance. During the modernization process, organizations need to maintain uptime and system reliability and plan for disaster recovery.

Having the EA function as a risk manager means that any modernization decisions will be made carefully and that any risk to the organization's mission, security, or compliance will be minimized. The organization will also be able to leverage EA's technical expertise to address technical debt, to best mitigate financial risks, and to maximize reliability, uptime, and fault tolerance.

EXAMPLE CASE: An organization is considering moving to a shared services model that would provide unified communications and file sharing across the organization. It needs to understand the risks associated with this migration, balanced with the potential value created. With input from the EA program, the organization can determine that the move will minimize financial risk along with the risk of system failures, and to develop a transition plan while maintaining compliance standards without interrupting day-to-day operations.



MISSION ARCHITECT

The modern EA program will contribute significantly to the mission of the organization and help re-imagine what and how core capabilities are executed using modern technologies and new innovative business models and approaches.

In many organizations, the EA program is simply given the mission from management and told to help execute. This unfortunately means that too often, the organization's mission is not designed with any input from the people who are working to support it, and that individual lines of business are not coordinated on an architecture level. This becomes increasingly important as more and more organizations are executing their mission using technology that requires high levels of expertise to stand up.

By working as a mission architect, the EA program can provide new, enterprise-level insights to different initiatives and provide technically driven guidance to the development of new capabilities. This will result in a mission that makes the most effective possible use of existing technologies and practices.

EXAMPLE CASE: A large organization relies on fraud detection in multiple departments and lines of business. In traditional organizations, fraud detection is often siloed between different lines of business, and therefore the organization's detection capabilities are not used most efficiently. An EA program as mission architect can focus on fraud detection from an enterprise viewpoint and identify common approaches and robust solutions to strengthen this capability across multiple programs.



STRATEGY PARTNER

The modern EA program will contribute significantly to creating a digital vision for the agency by serving as a change agent for transformation and bringing together stakeholders across multiple disciplines, departments, processes, and skill sets.

In a growing digital world, the long-term decisions made by an organization come to depend more and more on the participation of multiple functional teams and external partners, such as software vendors. Furthermore, advances in available technologies make decisions on tech investments increasingly complicated. There is a growing need for a strategy partner to connect disparate teams, external partners, and management in making strategic decisions.

The modern EA program is perfectly situated to utilize its organization-wide connections and relationships with external partners and management in bringing a diversity of opinions to strategic decision-making and unified direction and vision among various stakeholders. Leveraging this information, the EA program can help make decisions that reflect the input of all stakeholders and best serve the organization as well as plan ahead for downstream effects that could impact multiple parts of the organization.

EXAMPLE CASE: An organization is considering moving some of its applications to PaaS cloud services, but there is insufficient communication between the various stakeholders to make a coherent decision on how to execute the move. With the participation of the modern EA program, the organization can connect management to the different system teams that would be affected by the move, as well as leverage its connections with PaaS vendors to make the smoothest and most cost-effective transition possible. Instituting a quarterly program increment planning among the vendors ensures proper and efficient use of the PaaS services without negative downstream effects in system reliability and functionality.



INNOVATION LEADER

The modern EA program will serve as the gateway between the agency and the technology industry, monitoring new and emerging technology, matching new capabilities with mission and business use cases, developing pilots and establishing a path to scale value-added solutions.

Today new technologies are emerging faster than ever before, but oftentimes an organization's management is too disconnected from the various project teams or the forefront of newest tech developments to identify the best opportunities for injecting innovation. Individual business leaders may also lack the broad perspective needed to ensure that the entire enterprise innovates together.

As an innovation leader, the modern EA program can leverage technical knowledge and on-the-ground experience to make informed decisions about where different emerging technologies can best aid an organization's mission. The program can also use points of contact throughout the enterprise to galvanize different departments to adopt new technologies that are chosen, and to prepare the architecture itself to be nimble enough to adopt innovations smoothly. An EA program that is not afraid to advocate for change and think creatively will drive powerful new insights and cost savings.

EXAMPLE CASE: An organization has several teams that work to curate content and optimize search results. The modern EA program can identify where machine intelligence/AI can be applied to optimize content more efficiently and will work to ensure that the current architecture can support this strategy. In addition, leveraging the newest data analytics capabilities, EA is able to gain new insights on customer behavior and minimize the costs associated with manual content curation.



CUSTOMER CHAMPION

The modern EA program will be in touch with customer needs and demands, driving customer-centric approaches to ideation, design, development, and maintenance. The EA program will also emphasize and optimize digital engagement across the entire journey over all digital access channels.

As the growing presence of technology increases the public's expectations for user experience, it becomes more important that an organization have a central force supporting its experience across markets and capabilities. It is also important that this force is closely involved with building the systems that support the organization's capabilities and user interfaces.

When the EA program serves as a customer champion, it ensures that the entire organization's IT infrastructure and systems are built with the customer in mind. This results in better front-end and back-end systems, services that users actually want, increased uptime, and greater ease of access to services. This will help to drive a better, more unified customer experience and create cohesions between different systems, teams, and functions in the organization.

EXAMPLE CASE: An organization is developing a mobile app that will provide customers with individualized information and status updates about applications they've submitted. The EA program serves as a customer champion, who advocates for the customer's needs regarding information security, ease of use, accurate data, and minimal glitches. This drives a common customer-centric approach to designing, developing, and deploying the app, which ensures greater user experience and product quality.

THE PATH FORWARD



Any enterprise-level IT transformation could be challenging and far-reaching, but the benefits are also far-reaching and achievable. To effectively and efficiently modernize the EA program in this changing IT landscape with mission-dependent systems and limited resources, the most important steps on this path toward success are setting a common vision that the entire enterprise can get behind, developing a roadmap toward that vision, and galvanizing the organization to act on it.

Upon an honest look at the organization, the EA program could build an efficient IT strategy roadmap using some of the best practices below

as stepping stones from the current state to the envisioned state.

However, it is not enough for the EA Office to simply define a list of requirements. The modern EA practitioner will also have to engage deeply with change and community management around the modernization process. This means not only giving guidance to other departments, but also working to ensure that employees and leadership alike fully buy into the vision the EA office has set. To lead digital change, the architect needs not only to set the direction, but to convince and inspire others to embrace the transformation.

BY WORKING AS A MISSION ARCHITECT, THE EA PROGRAM CAN PROVIDE NEW, ENTERPRISE-LEVEL INSIGHTS TO DIFFERENT INITIATIVES AND PROVIDE TECHNICALLY DRIVEN GUIDANCE TO THE DEVELOPMENT OF NEW CAPABILITIES.

KEY BEST PRACTICES FOR MODERN EA



STRATEGY & PLANNING

- Coordinate all activities and plans into a cohesive approach to migrating to the cloud. Evaluate key attributes of applications to determine fit for cloud migration.
- Collaborate with Digital PMO on reporting and metrics, communications strategy, and governance.
- Collaborate on upfront analysis and planning around digital investments.



ARCHITECTURE & DESIGN

- Develop an architecture and a plan for standing up application deployments and migrating data sets to modern environments. Develop detailed designs to rehost and refactor applications to operate in a modern cloud-based environments.
- Build the designs and plans for standing up a DR/COOP environment to back up an existing cloud or on-premises environment.



IMPLEMENTATION & INTEGRATION

- Migration approach and plans cover a staged approach to deployments and incorporates longer term strategies.
- Collaborate with other offices to deploy an orchestration platform to manage multiple on- and off-premise cloud and data center environments. Assist in development planning and support for building or reconfiguring applications in the cloud.



SECURITY

- Implement gateway services, SIEM, and CDN solutions to secure ingress and egress activity. Analyze activities of users across environments.
- Examine and assess processes for FedRAMP and System Security Plans (SSP) for IaaS, PaaS, and SaaS providers.
- Deploy key vaulting to mitigate insider threats in the cloud.

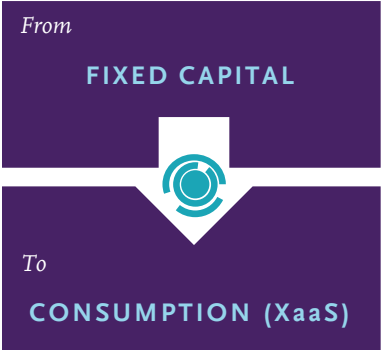


IT OPERATIONS

- Consult the establishment of tiered help desk support.
- Conduct quality review of historical performance of cloud resources, use for planning around improvements.
- Conduct analysis of historical billing and expected spend in the cloud

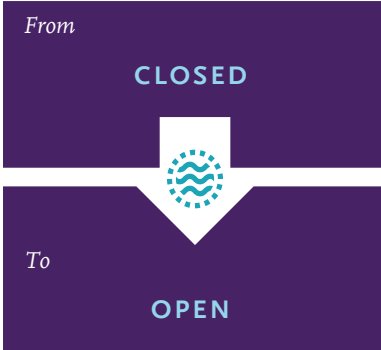
As nearly all aspects of IT management and implementation continue to shift, a modern Enterprise Architecture helps transform new trends from disruptors into enablers

IT INVESTMENTS



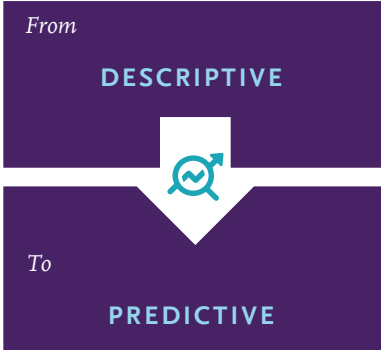
Reduced barrier to entry for new capabilities, increased complexity for cost control

TECHNOLOGY AND DATA



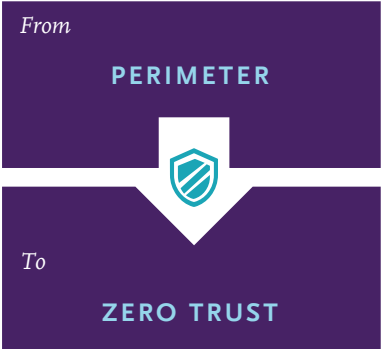
Increased portability, reduced vendor lock-in through open standards, open APIs, and open source

ANALYTICS



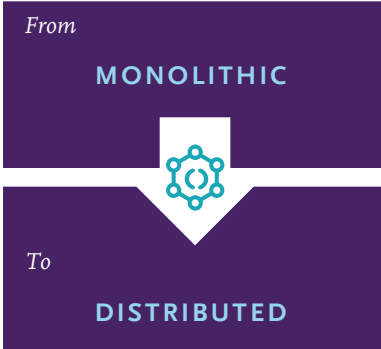
From data providing insights to humans, to data informing artificial intelligence actions

SECURITY



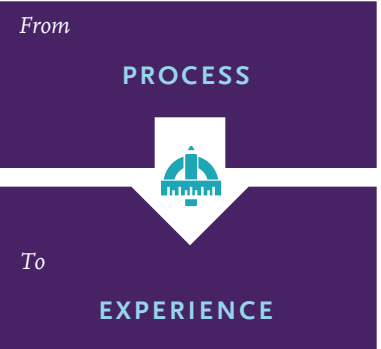
Proactive, risk-based defense against advanced persistent threats

ARCHITECTURE



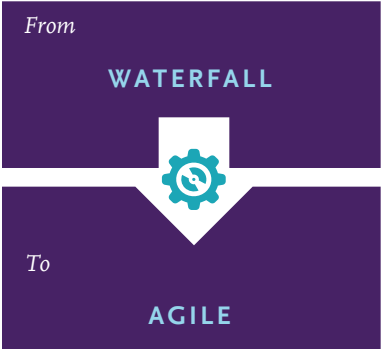
Efficiency and scalability through container orchestration, increased reuse through microservices

DESIGN



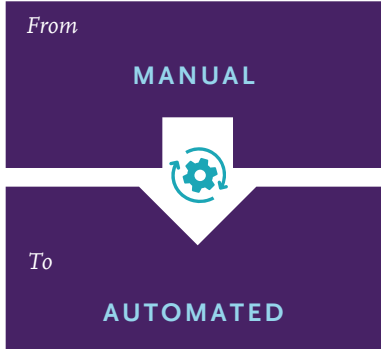
Increased focus on a customer journey and providing a multi-channel, unified, and personalized experience

SOFTWARE DEVELOPMENT



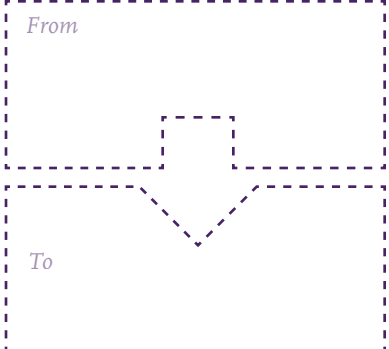
Faster time to market, lower failure rate of new releases

SYSTEMS DEPLOYMENT



Integrated DevSecOps teams leverage automated pipelines to move toward continuous integration and deployment

NEW TRENDS



There are endless possibilities for new trends to emerge.

The world is quickly changing, and the face of EA must change with it to keep up. The EA program that successfully adapts will become a digital leader in its organization, delivering increased value to its employees, its leadership, and to the consumer.

For more information on modern EA and best practices, please contact:



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EA is just one of many processes that drive IT modernization in an organization. Stay connected with us for additional content on other modernization processes.

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