

A Common Perspective on Enterprise Architecture

Developed and Endorsed by

The Federation of Enterprise Architecture Professional Organizations

Introduction

According to Michael Porter (Porter, 2008), more than 80% of organizations do not successfully execute their business strategies. He estimates that in over 70% of these cases, the reason was not the strategy itself, but ineffective execution. Poor strategy execution is the most significant management challenge facing public and private organizations in the 21st century according to Gartner (Lapkin & Young, 2011).

There are many reasons for the failure of an organization to bring its strategies to life. Escalating complexity and rapid change have made the development and execution of effective strategy increasingly difficult (Kaplan & Norton, 2006). The field of Enterprise Architecture (EA) has rapidly evolved to address these challenges.

Enterprise Architecture, as a formalized practice, is less than twenty years old (Greefhorst & Propper, 2009). As with any profession or practice, there are many definitions, perspectives, and schools of thought surrounding Enterprise Architecture. This paper addresses a shared goal among Enterprise Architects to evolve the practice from a fragmented, often poorly understood field to a “real profession,” on par with well-established professions such as accounting and engineering.

This paper provides a high level description of Enterprise Architecture and what it can do for an organization, removing much of the jargon that often surrounds such efforts. It was written to provide insight into what Enterprise Architects do, what kind of skills are needed, and what results an organization should expect from their Enterprise Architecture efforts. Note that details of how to establish an Enterprise Architecture practice within your organization will be covered in a future paper.

Section I: What is Enterprise Architecture?

Enterprise Architecture is a well-defined practice for conducting enterprise analysis, design, planning, and implementation, using a holistic approach at all times, for the successful development and execution of strategy. Enterprise Architecture applies architecture principles and practices to guide organizations through the business, information, process, and technology changes necessary to execute their strategies. These practices utilize the various aspects of an enterprise to identify, motivate, and achieve these changes.

Effective Enterprise Architecture frequently provides pragmatic artifacts such as requirements, specifications, guiding principles, and conceptual models that describe the next major stage of evolution of an organization, often called the “future state.” Enterprise Architecture analyzes the gaps between the future state and the current state, and provides the road maps that support the evolution of the enterprise to the future state by closing the gaps.

Enterprise Architecture uniquely fosters dialog to create shared meaning and to deliver shared goals. The primary purpose of describing the architecture of an enterprise is to provide the holistic information and insights to effectively frame the opportunities of the organization and make better informed decisions. With Enterprise Architecture, organization leaders can more readily improve the effectiveness, efficiency, and responsiveness of their enterprise.

Organizations undertake Enterprise Architecture (EA) for a variety of reasons. Leaders want their organizations to better perform and better satisfy their stakeholders by doing things differently, and they expect the EA practice to enable such change. Because enterprise architects consider common strategic goals and strong integration between business strategy, enterprise program management, portfolio management and governance functions, they are able to bridge the gap from strategy to implementation in an organization.

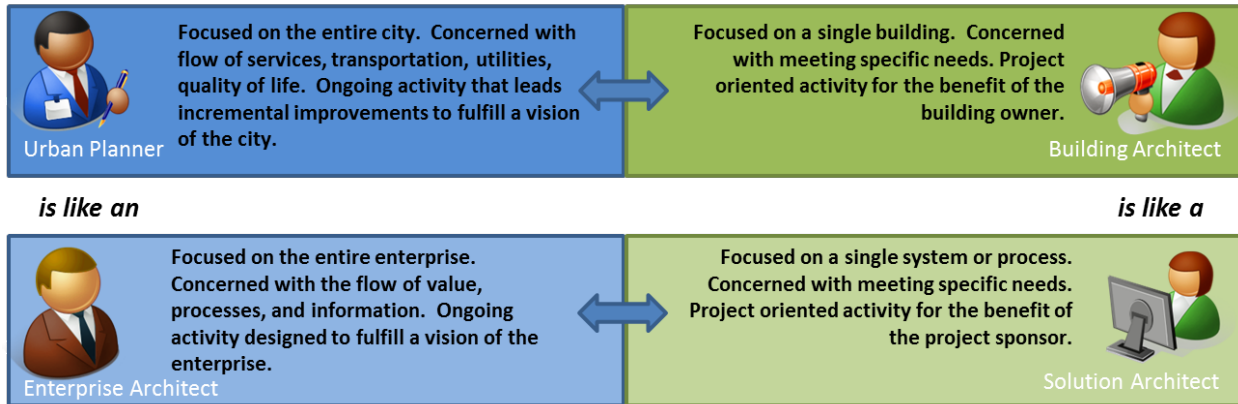
Importantly, the work done by an Enterprise Architect is not specific to any one kind of organization. Enterprise Architecture provides benefits to government, commercial, military, non-profit, and composite organizations. In addition, EA can apply its methods at different organizational levels -- from departments and divisions up through companies and more complex organizations (such as multi-nationals and national governments). As a result, EA considers the relationships and value streams that occur within any arbitrary "boundary" as well as outside that boundary.

In this respect, Enterprise Architecture engenders a practice that not only requires awareness of the organization's "external" environment, but actively leverages that knowledge to identify improvements "internally." EA is a highly versatile and useful mechanism for fitting an organization into its environment in the most effective and purposeful manner possible.

Some argue that the practice of Enterprise Architecture is not really a new discipline but rather a collection of older, existing practices. In many respects this is true. Just as many of today's established professions evolved from a collection of practices, Enterprise Architecture is in the process of consolidating, enhancing, and adding structure to many practices that have been performed to different degrees in organizations for decades. As the Enterprise Architecture practice evolves into a more formalized profession, the link that EA could (and many would say should) have with enterprise strategic planning is beginning to be better understood in many organizations today.

One frequently used analogy is the comparison of an Enterprise Architect to an Urban Planner. As the following figure implies, the building architect is analogous to the solution architect in that both are typically concerned with the construction of a single entity or system. The Urban Planner is somewhat analogous to the Enterprise Architect and Enterprise Architecture team in that the urban planning team needs to understand what the building architect (solution architect) does, but also needs to understand a wide range of topics that the building architect doesn't need to deal with – things like the vision of how the urban area should evolve, the safety and livability of the urban area, urban infrastructure capacity and modernity, urban systems interactions and integration, and many other areas.

In many respects, Enterprise Architecture professionals are the urban planners for the enterprise.



The Evolving View of Enterprise Architecture

Enterprise Architecture as a practice meets an emerging need in our rapidly changing world. Any area of an organization that has to deal with rapid change and a complex set of challenges can leverage Enterprise Architecture. This ability to cope with complexity amidst change is driving the evolution of EA.

Enterprise Architecture rose to prominence when organizations began to cope with rapid changes in technology and diversity in operating models. The business needs around systems integration, the shift from mainframe computing, and the emergence of personal computing were sufficiently complex to push organizations to find systematic solutions to the problems of complex change.

The scope of Enterprise Architecture in some organizations today is maturing. All kinds of organizations, from commercial businesses to government agencies, find themselves needing to cope with complex changes in order to quickly react. The ideas used by Enterprise Architects are not technology specific, and these expert change agents have found their skills and methods to be in demand well beyond technology settings. Enterprise Architecture provides a wide array of services such as helping with broad changes in business and organizational models, improving partner relationships, implementing strategies, and addressing changing stakeholder demands. While many of the existing methods and tools were developed with technology change in mind, these tools are rapidly evolving to address such non-technical concerns.

The individual models produced in the EA process are arranged in a logical manner, and this provides an ever-increasing degree of detail about the enterprise, generally including (but not limited to):

- Enterprise goals and objectives
- Enterprise capabilities, values streams, and information
- Enterprise portfolio of business solutions
- Enterprise technologies and resources

The term “Enterprise Architecture” has various uses. In some cases, EA practices may focus on the outputs (“the noun”) rather than the practice of EA. This paper primarily uses the term “Enterprise Architecture” to refer to a practice (“the verb”) rather than outputs or deliverable artifacts. Practitioners find that focusing on Enterprise Architecture as a continuous practice allows EA guidance to evolve in

response to the desire for particular business outcomes. A continuous process provides clarity for the ongoing transformation of an enterprise.



Figure 2: The General Process of Enterprise Architecture

Ongoing Change

One element worth noting is the potential for Enterprise Architecture to be a mechanism for transformational change and adaptation in an organization. The environment “outside” an organization is always changing. Responding to that change results in a steady stream of new products, new consumers, new partners, and new ways to do business. Organizations must “dance to the new music” or risk becoming inefficient or uncompetitive. Enterprise Architecture is quickly becoming an essential feature of companies and organizations that evolve to meet changing needs.

Adaptation, by itself, is not the goal: nimble organizations are. But organizations are simply groups of people, and helping people to adapt requires making changes. Sometimes, small changes, like a new product or a feature in a product, are sufficient. Sometimes, the company itself has to change. For example, an organization may need to outsource (or insource) a part of the business to stay competitive. Perhaps it needs to open up sales in new markets, or distribute production among suppliers in a new way, or merge with a former competitor or supplier. Nearly every large organization has dealt with these changes, often many times.

Changing an enterprise is not just the job of Enterprise Architecture, and in fact most organizations “execute change” without Enterprise Architecture involved. Those that are beginning to use EA, however, have a distinct advantage. EA provides a repeatable set of techniques that allow an organization to design their own future, plan for its evolution, and successfully implement these changes. The result is an organization that is simpler to operate, more nimble in the marketplace, and quicker to seize opportunities.

With Enterprise Architecture involved, organizational changes are completed more quickly, while protecting and enhancing shareholder value. On the opposite end of the spectrum, organizations that change without EA often become frail and cumbersome over time. These organizational changes can be dramatic, with large-scale reorganization of people, systems, and accountabilities. They can also be gradual and steady, involving hundreds of small, non-disruptive steps. Regardless of the approach taken, change is often complex and error-prone. Enterprise Architecture, through continuous evaluation and adaptation of the enterprise, reduces the cost of change and improves the chances for success.

Enterprise Architects, used correctly, are able to employ a wide array of techniques to bring about changes, both dramatic and incremental. These techniques are often discussed in the context of four “types” of architecture that are all included within the scope of EA. Business architecture is used to design competitive structures and processes, leverage existing strengths, and identify potential investment opportunities that advance the business’s objectives and drive innovation. Information architecture accelerates the availability, consistency, and quality of rapidly growing volumes of information. Applications architecture describes the behavior, structure and interrelationships of the applications used in an organization and their interactions with information, business processes, and the people who use them. Technology architecture brings new and existing technologies together in a rich yet consistent mosaic to ensure security, availability, and reliability. A fifth “type” of architecture, often called solution architecture, is composed of all four of the above types, but operates at a tactical level below enterprise architecture, focusing on the scope and span of a selected business problem. For a

given organization, the EA function may partition their scope differently to accommodate the wide variety of stakeholder concerns.

Transformational Change

Regardless of whether an organization undergoes a large and dramatic reorganization or a steady series of non-disruptive tweaks, Enterprise Architecture has the opportunity to contribute by finding and expressing transformational opportunities. These are opportunities to transform beyond the typical areas of responsibility and alignment by addressing the challenges of new business models. For such larger changes, the planning for transformation is continuous, but the transformation itself may occur in a short time frame.

Transformational change, when conducted under the rigorous lens of Enterprise Architecture, uses a methodical approach to understand the existing enterprise and to create measurable and clearly aligned change programs. This methodology reduces risk and speeds up the transformation process. Transformational changes typically include large mergers or acquisitions, rapid adoption of new business models, or the shift from one overarching operating model to another.

With transformational change being demanded by the ever-increasing speed of business, Enterprise Architecture has had to change as well. While the Enterprise Architecture practice in the past had focused primarily on the technological aspects of change, the practice is quickly evolving to use a rigorous business architecture approach to address the organizational and motivational aspects of change as well.

Enterprise Architects, in this new mold, are evolving to leverage cross-functional business acumen as well as cross “domain” understanding within both business and technology. Transformational Enterprise Architecture coordinates enterprise-wide efforts that allow the benefits of transformation to be realized as quickly as possible without shying away from the difficult work of process improvement, clarification of decision structures, and systems integration.

Section II: What Differentiates the Enterprise Architecture Practice from Other Functions and Practices in an Organization?

Creating an effective business strategy is difficult. It is also difficult to make the needed changes to an organization to bring that strategy to life. Enterprise Architecture requires a specific mix of skills and abilities, combining the mindset of an engineer with the business awareness of an operational leader, and adding in the innovative creativity of an entrepreneur. Enterprise Architecture gives powerful tools and methods to these unique individuals, allowing them to do more than offer tiny improvements or even to optimize investments.

Enterprise Architecture is both an art and a science. Enterprise Architects guide stakeholders within an organization to look across systems and silos to envision change with far reaching enterprise implications. These talented practitioners help leaders to consider alternative ways in which that change can happen, and they are able to dive to the deepest details needed to ensure that business and process changes are properly constrained and executed. From the highest levels of change (changes in the business models and value streams) to the most detailed minutiae like the use of specific tools or

technologies, the Enterprise Architecture process offers an effective and needed complement to strategic planning by doing more than describing a series of projects. Enterprise Architects are comfortable with uncertainty and bring a socially-aware approach to addressing difficult and ill-defined complexities.

To understand what is meant by this statement, let's go back to the urban planning analogy. The mayor and city council (the C-level executives) work with a strategic planning group to develop a strategic plan for the city. The urban planner then works closely with elected officials, civic leaders, civil engineers, building architects, and community groups to help develop and implement the city's strategic plan over time. Without the urban planning team as the bridge between the strategic vision and the people who implement aspects of the strategic plan (building architects, road and infrastructure architects, engineers, etc.), there would be little or no coordination between the people at the implementation level and no city-wide analysis, design, and planning to ensure an effective and efficient implementation of the city strategic plan.

An Enterprise Architecture practice collaborates with many inter-connected disciplines including performance engineering and management, process engineering and management, IT and enterprise portfolio management, governance and compliance, IT strategic planning, risk analysis, information management, metadata management, and a wide variety of technical disciplines as well as organizational disciplines such as organizational development, transformation, innovation, and learning. Increasingly, many practitioners have stressed the important relationship of Enterprise Architecture with emerging holistic design practices such as design thinking, systems thinking, and user experience design.

Section III: What Value Does Enterprise Architecture Bring to an Organization?

An EA practice delivers business value by producing several results, including but not limited to:

- An articulation of the strategic requirements of the enterprise
- Models of the future state, which illustrate what the enterprise should look like across all EA viewpoints in support of the business strategy
- A road map of the change initiatives required to reach that future state
- The requirements, principles, standards and guidelines that will steer the implementation of change initiatives

While these outputs are often the visible “things” created by Enterprise Architects, they are created in service of specific outcomes. Enterprise Architecture exists to help deliver an array of outcomes including, but not limited to:

- Improvements to the effectiveness, efficiency, and agility of the enterprise
- Innovations in the structure of an organization
- Improvements in the capability of continuous organizational innovation and change competency
- The rational centralization or federation of business processes
- Improvements to the quality and timeliness of business information
- Clarification and articulation of business rules
- Alignment of spending so that money spent on business initiatives and systems actually delivers on the strategic intent

There are many different ways to use this information to improve the functioning of an organization. One common approach is to maintain a description of the enterprise that represents a "target" or "future state" goal. A set of intermediate steps is created that illustrates the process of changing from the present situation to the target future state. These intermediate steps are called "transitional architectures" by some in the field.

The value of Enterprise Architecture is measured in many ways. In most cases, the notion of "value" includes measures that are non-financial as well as financial measures. When discussing the value of strategically oriented functions like strategic planning or urban planning, a longer-term value understanding is essential. Strategic planning alone does not produce a directly measurable return on investment (ROI). However, the successful execution of the strategic plan in the form of projects that are well aligned with the strategic plan produces benefits on many levels to the enterprise.

A formal Enterprise Architecture practice or group can provide for the efficient, effective, and consistent analysis, planning, design, and implementation of strategic needs. The lack of a formal EA practice implies that the needed bridge between strategy and execution either does not exist at all or exists in fragmented pieces in the organization.

The Enterprise Architecture practice can have a unique vantage point across an enterprise. That insight and viewpoint is necessary to help identify and develop areas of possible innovation.

More Than a Fad

The trends and needs of business are constantly changing. Just a few years ago, organizations were focused on agility and manageability as core issues. After that, the focus shifted to security. The current management trend is around innovation. Regardless of which one of these trends may be motivating change in an organization or what trends may emerge in the future, Enterprise Architecture is a key element enabling rapid and rational changes in businesses, government, non-profit organizations, and any other kind of human enterprise.

Conclusion

Enterprise Architecture is a useful and unique practice. It is quickly becoming a core competency for organizations dealing with the complexity of overwhelming change. The continuous and ongoing application of Enterprise Architecture solves one of the most difficult challenges of modern enterprises: making sure that senior leaders can bring about the changes needed to deliver the strategies they have promised to their stakeholders. The unique blend of skills demanded by Enterprise Architecture, including business, information, and technology competencies, and the carefully engineered and proven methods they employ allow Enterprise Architects to address the obstacles to strategic change. Commercial, government, and non-profit organizations throughout the world are successfully using Enterprise Architecture to adapt to the ever-increasing demand for change.

Future Directions

The seventeen professional organizations of the Federation of Enterprise Architecture Professional Organizations (FEAPO) authored and developed this paper. FEAPO, a worldwide association of professional organizations, was established in 2011 to provide a forum to standardize, professionalize, and otherwise advance the discipline of Enterprise Architecture.

This paper is the first of a planned series of papers on the Enterprise Architecture profession that will progressively dive deeper into various aspects of this evolving field. The initial papers will explore current and emerging issues and trends surrounding many of the topics highlighted in this paper. For more information on FEAPO and how to become involved in these and other initiatives, please visit: <http://www.feapo.org/>.

Acknowledgements

FEAPO would like to recognize and thank Dr. Brian Cameron, FEAPO Founding President, and Nick Malik, Center for the Advancement of the EA Profession (CAEAP), for their efforts in organizing and drafting the initial survey, assisting with the data collection, and drafting the initial versions of this paper. Without their efforts, this paper would not be where it is today.

FEAPO would also like to acknowledge and thank the representatives of the FEAPO member organizations for their contributions to this paper:

- Trekker Armstrong*, Canadian Information Processing Society
- Kevin Brennan, International Institute of Business Analysis (IIBA)
- Andy Chen*, IEEE Computer Society
- David Chesebrough*, The Association for Enterprise Information
- Steve Delahunty, The Network Professional Association
- Charles Dickerson, International Council on Systems Engineering
- Michael Gladstone, International Institute of Business Analysis (IIBA)
- Mark Goetsch*, Center for the Advancement of the EA Profession
- Andrew Guitarte*, Business Architecture Society
- Bob Hart, Australian Computer Society
- Deborah Henderson, DAMA International and DAMA International Education & Research Foundation
- Ingrid Batiste Hunt*, DAMA International and DAMA International Education & Research Foundation
- Stephen Ibaraki*, The Global IT Community Association (GITCA) and The International Federation for Information Processing International Professional Practice Partnership
- Graham Jones, The Global IT Community Association (GITCA)
- Mark Lane*, Center for the Advancement of the EA Profession
- Marc Lankhorst, Netherlands Architecture Forum
- Richard Martin, International Council on Systems Engineering
- Robert McIlree, Center for the Advancement of the EA Profession
- Maureen McVey, International Institute of Business Analysis (IIBA)
- Daniel St. George, Institute of Information Technology Professionals New Zealand
- Paulo Rocha, Institute of Information Technology Professionals New Zealand
- Mike Rosen, The Business Architecture Guild
- Julian Sammy, International Institute of Business Analysis (IIBA)
- Eric Sweden*, The National Association of State Chief Information Officers (NASCIO)
- Barry Sellers*, The Network Professional Association
- Sanjay Shirude, DAMA International
- Raymond Slot, Netherlands Architecture Forum
- William Ulrich*, The Business Architecture Guild
- Gina Van Dalen, Canadian Information Processing Society
- Charlene (Chuck) Walrad*, IEEE Computer Society
- Jeff Walk, Center for the Advancement of the EA Profession
- Ralph Whittle, Business Architecture Society

- Peter Wilson*, The Enterprise Architecture Shared Interest Group from the Industry Advisory Council

*FEAPO Founding members

FEAPO would also like to recognize and thank the group of external reviewers that graciously offered to provide additional input into this paper:

- Bill Cason, Troux
- Ross Eisenberg, The Corporate Executive Board
- Leonard Fehskens, The Open Group
- Ben Geller, Troux
- Tim DeGennaro, Forrester Research
- Christiane Groth, The Corporate Executive Board
- Ulrich Kalex, Alfabet
- Zbigniew (Joe) Kielczewski, Cisco
- Dr. James Lapalme, Numerix Research Laboratory
- Navin Maganti, Confiance Group
- Ed Moshinsky, Lockheed Martin Corporation
- Kurt Nelson, Boeing Corporation
- Dr. Carlo J. Ninassi, Pennsylvania State University
- Roberto Sehringer, Johnson & Johnson
- Jeff Scott, Accelare
- Rolf Siegers, Raytheon Corporation
- Dr. Jeffrey L. Spearly, Pennsylvania State University
- Bob Szelistowski, Raytheon Corporation
- Maria W. Taylor, Pennsylvania State University
- Mark Thomas, Progressive Insurance
- David Twadell, BCS, The Chartered Institute for IT
- Dr. Albert A. Vicere, Pennsylvania State University
- Michael Warner, EMC

References

- Greefhorst, Danny, & Propper, Erik. (2009). Enterprise Engineering: Architecture Principles - The Cornerstones of Enterprise Architecture. In Jan L.G. Dietz, Erik Proper & José Tribolet (Eds.), *Architecture Principles the Cornerstones of Enterprise Architecture* (Vol. 4th). Heidelberg: Springer.
- Kaplan, Robert S., & Norton, David P. (2006). *Alignment Using the Balanced Scorecard to Create Corporate Synergies*. Harvard Business School Publishing Corporation.
- Lapkin, Anne, & Young, Colleen M. (2011). *The Management Nexus: Closing the Gap Between Strategy and Execution*. Gartner.
- Porter, M.E. (2008). The Five Competitive Forces That Shape Strategy. *Harvard Business Review*, January 2008, pp. 79–93.