Gartner Enterprise Architecture Process: Evolution 2005

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The Enterprise Architecture (EA) Process Model described in this research represents the foundation on which Gartner's EA research is described. Architects (and many others) tend to think visually, so this provides a visual basis for thinking about the process by which successful EA programs are created and maintained.

Key Findings

- Successful EA programs are process-focused. A process prescribes what must be done when and how the steps are related to one another.

- An EA process and EA framework are not mutually exclusive. An EA framework is a taxonomy for organizing architecture artifacts. The Gartner EA Process Model is compatible with most credible, vendor-neutral EA frameworks.

- A bottom-up approach to EA is rarely successful in a sustainable fashion. Organizations must return to business strategy. It's best to start there and then address the technical details.

Predictions

- Organizations will increasingly adopt the discipline of following proven processes for key disciplines, such as EA, to reduce risk and quicken the delivery of value.

Recommendations

- An EA framework is useful (indeed, Gartner has one) but not sufficient to create a sustainable and successful EA program. Follow our proven, successful EA Process Model to improve the probability of your program's success.

- Avoid the temptation (and comfort zone) of jumping prematurely to the details of the modeling section of the process model. Many of the secrets to success lie in the earlier stages of the EA Process Model to create process and content that bridge the gap between business strategy and detailed technology decisions.

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1.0 The Reason an EA Process Model Is Needed

EA is a process discipline. Done well, it becomes an institutionalized part of how an organization makes decisions to direct its investments, such that the chosen business strategy will be realized. The EA process bridges the gap that otherwise exists between business strategy and technology implementation.

High-performing organizations are process-disciplined. In turn, every high-performing process must be defined/documented, have process owners and be closed-loop with governance in place. The Gartner EA Process Model has been synthesized from best-practice research to document the EA process in the form of a high-level model.

2.0 The Revised Gartner EA Process Model

The Gartner EA Process Model (see Figure 1) provides organizations with a logical approach to developing an EA. It is a multiphase, iterative and nonlinear model, focused on EA process development, evolution and migration, and governance, organizational and management sub-processes. It represents key characteristics and a synthesis of best practices of how the most-successful organizations have developed and maintained their EA. Gartner's body of applied research knowledge increases with each exposure to our clients' EA issues. This leads to the recognition of consistent approaches beyond the original scope of our EA Process Model that was developed in 1996. In its first incarnation, the EA Process Model only addressed technical architecture. In 1999, EA began going beyond the technical realm to a holistic EA. Enterprise business architecture has taken the discipline firmly beyond the borders of IT. Indeed, the EA process has become a major mechanism for building a true partnership between business and IT staff groups at several organizational levels.

The basis of the EA Process Model flow is the common and basic cycle, applied to many such models — future vs. current, followed by gap analysis between the two, and portfolio management, guided by the gap analysis and recommendations. The specifics of EA are included in this basic model to create the Gartner EA Process Model.

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Figure 1. Gartner EA Process Model
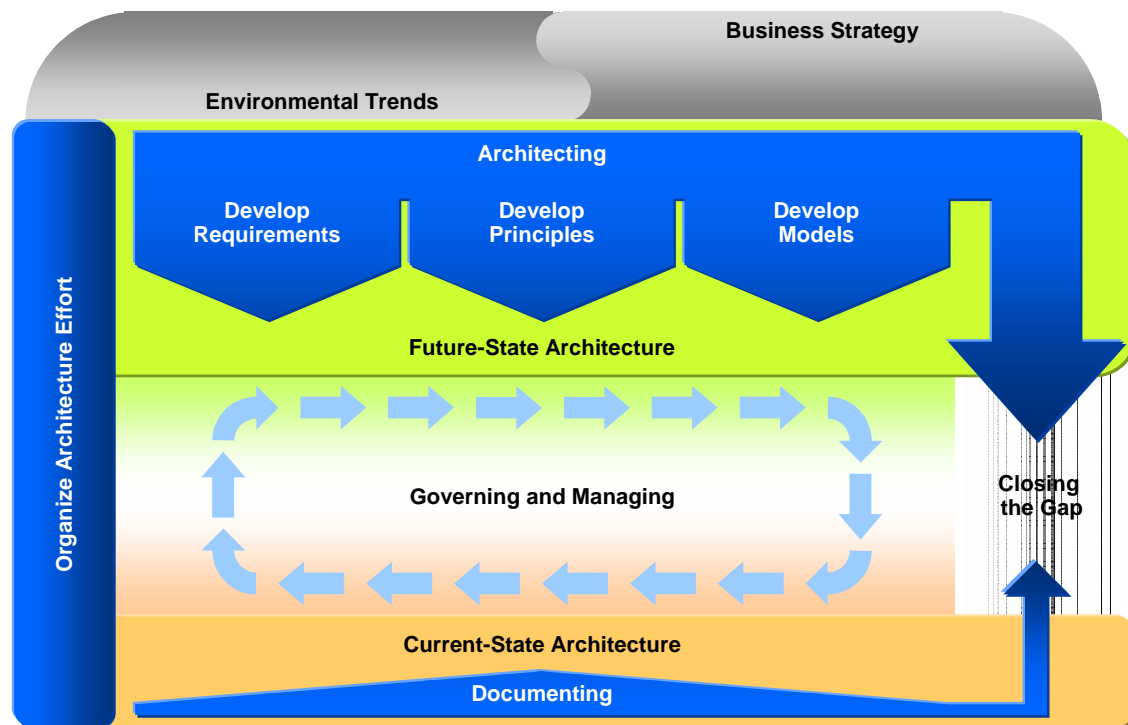
Source: Gartner (October 2005)

A companion document introduces the Gartner EA Framework, which articulates the relationships between enterprise business architecture, enterprise information architecture and enterprise technical architecture (ETA) and their synthesis with enterprise solutions architecture (ESA). Although the EA Process Model and EA Framework have their own merits and value, they are best used with each other. The Gartner EA Process Model is a valuable complement to any credible, vendor-neutral EA framework. So if an organization has chosen to adopt a different EA framework, the model introduced here will still add significant value to the architecture discipline. A framework doesn't answer the question of what to produce when and how it is all related; these are issues addressed by a process model.

During the next several years, the Gartner EA Process Model will remain quite stable. However, the best practices found among the detailed elements of the EA Process Model will continue to evolve, especially in the future-state modeling area.

3.0 Exploring the Revised EA Process Model

3.1 The Importance of a Holistic, Enterprise View

EA is intended to bridge the gap between strategic planning and implementation efforts. To bridge that gap requires a process that is holistic in its coverage and enterprisewide in scope. By holistic, we mean that the process must cover the impact of strategic business change on more than just technology. It must cover the impact of change on business processes and information.

EA is not about developing a master design to satisfy an aggregated set of requirements across a few projects. Rather, future-state EA is directly derived from business strategy. Projects, hopefully

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inspired by the business strategy, will therefore be meaningfully guided by the EA, in a manner that consistently contributes toward a common goal.

3.2 EA Evolution

The sequence of future-state EA development activities — develop requirements, develop principles and develop models — is meant to convey a logical sequence of development-based on relationships and dependencies, rather than a rigidly linear sequence of events.

The iterative nature of the process has been retained and extended in the new version. This unified EA Process Model asserts that EA must be developed by using an iterative, evolutionary step-wise refinement approach, with an initial focus on speed of delivery in providing higher-level guidance, followed by breadth and depth with each component of the EA. At any given point, each component will have a different level of maturity in terms of process, content, applicability and governance.

4.0 Environmental Trends

Every enterprise operates in the context of dynamic internal and external environmental conditions that will affect the enterprise's future state. Some examples of these conditions are:

- Economic climate

- Customer market demand

- Regulation and other legalities

- Geography

- Political conditions

- Culture

- Labor

- Technology

Trends in these environmental conditions clearly influence business strategy, ensuing EAs, and resultant development, procurement and operations. Environmental trends are often implied or are included tacitly with business strategy. However, these trends should be called out explicitly. Business strategy may include actions that change environmental conditions. However, strategy must often live with environmental constraints. Identify relevant environmental conditions as input to the business strategy and EA future-state developments. Follow up with change forecasts for the tactical and strategic planning horizons. Then develop business implications based on these forecasts.

The last type of trend noted — technology trends — is one that the EA group should own explicitly. A technology trend document should be created — and updated at least annually — as a deliverable to senior IT and business managers to inform them of relevant macro-technology trends and their potential implications on the enterprise.

5.0 Business Strategy

Many organizations face complex and unwieldy challenges in assessing and articulating the changes necessary to implement business strategy at a more-detailed (operational) level. The basis for senior executive legitimacy and credibility is predicated on the ability and willingness to

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articulate and share the mission, strategies and goals of the enterprise. Some executives suffer from weak integrity. When intention and action are not congruent, an "integrity gap" is formed, which generates a business context vacuum. The resulting "chaos" has a profound impact on the risk/reward behavior of employees, inhibits effective decision making, and erodes confidence and loyalty.

If an enterprise is to be successful bridging the business context vacuum referenced above, then a mechanism must be deployed to articulate the impact of strategy on the enterprise. We assert that this mechanism is EA. Many times, an enterprise's biggest challenge is not in the development of business strategy itself but rather in assessing and articulating the changes necessary to implement a strategy at a more-detailed level. While the intent of architecture is to articulate the effect at a more-detailed level on different areas, the EA process is dependent on some amount of business visioning at the enterprise level.

Senior corporate and line-of-business (LOB) management must provide the EA team with a clear vision of "enterprise futures." A lack of a formal, articulated and clear vision will manifest in the resulting architectural artifacts as business context gaps. Although it is unrealistic to expect senior corporate and LOB management to have a fully accurate view of the future, this exercise is intended to create a forum of strategic conversation among senior executives. The purpose of this forum is to discuss and resolve issues that hinder a clear vision and capture the driving business strategy being pursued at that time. By engaging in business visioning, senior executives can examine the impact of the different alternatives and communicate their decisions across the business, resulting in the unification of multiple groups of talented people striving toward common goals.

Enterprises can engage in different types of strategic business visioning. One of the goals of business strategy is to strike a balance between long-term strategy (traditional strategic planning) and the strategies to be pursued as a result of a short-term opportunity. The major difference regarding these two types of strategy is time. While everyone would love to achieve their strategy as quickly as possible, traditional strategic planning includes a longer planning horizon (18 to 36 months) for most companies than short-term, digital innovation planning. Every organization must decide which opportunities to pursue in the short-term while assessing the impact on long-range plans and, if necessary, adjust their strategy accordingly.

One of the important points to note is that EA, while dependent on business strategy, is an enabler of business strategy as it evolves into a more-mature process and set of deliverables. EA enables business strategy by providing a set of models that depict the state of business, information and technology architecture in the enterprise, making it easier to conduct impact and scenario analysis. The result of this paradox is that early attempts at business strategy will be more cumbersome and time-consuming because of the lack of modeling assistance.

6.0 Organize Architecture Effort

EA is intended to broadly influence and support investment decisions and organizational change. A properly resourced and well-run EA program is essential to achieving and communicating the promised benefits. The architecture effort must be properly scoped, resourced and executed, and its goals and accomplishments must be communicated effectively. While the development of EA artifacts, such as principles, models and standards, usually garner most attention, this collection of EA artifacts risks falling into disuse, if the architecture effort is not properly organized and sustained.

This phase in the process may appear to be a one-time effort at the beginning of an EA program. While this is certainly required at the beginning of an EA program, at least part of the phase must be repeated under some conditions. The EA process must be performed in iterative fashion. As

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such, each iteration needs some portion of this organizational effort to be performed. In addition, a change in leadership or a significant organizational change may motivate the need to reorganize the architecture program.

Activities in this phase of the architecture process include:

- Scoping the EA program and the next iteration thereof in terms of breadth and depth, which is known as defining what is meant by "enterprise"

- Gaining executive sponsorship and support

- Conducting stakeholder analysis

- Identifying the EA leader or chief architect

- Building and chartering the "EA team," which will own and facilitate the EA process and establishing clear roles and responsibilities

- Assessing organizational readiness and EA maturity

- Developing an initial communications plan, communicating the role of EA and setting expectations of individuals participating in the process

- Establishing a plan for setting up a governance mechanism

- Defining measures of success to articulate value delivered

A time box limit for each iteration through the EA Process Model should be established at the beginning of that iteration. It should be no longer than one budget cycle (typically a year). Therefore, the EA team must be prudent and pragmatic about what parts of the plan can be completed in each iteration to deliver measurable value.

A well-planned EA measurement program clearly articulates the EA value proposition across the organization at every level of management. Many EA groups have failed to measure or have poorly implemented EA metrics. They focus too much on what can be measured rather than planning and implementing a refined measurement process. When developing EA metrics, the approach should be planned and proactive. Take into consideration the state of the organization and the expectation of stakeholders for the value proposition that can be delivered by EA. The primary goal of a measurement program is to improve performance through understanding the effectiveness of the EA group. This continuous improvement can only be achieved if the EA measurement program has been well-planned and implemented.

7.0 Future-State Architecture

Architecting the future state of EA is the heart of the entire process. The goal is to translate business strategy into a set of prescriptive guidance to be used by the organization (business and IT) in projects that implement change.

However, it should be noted that this is a pitfall for many organizations that only do this via a series of white papers, which are entirely ignored by the organization and, thus, yield no value. Balanced attention to the rest of the process is required.

Future-state architecture produces the following classes of work products:

1. Requirements — Express the needs of the enterprise

2. Principles — Provide high-level guidance for decision making

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3. Models — Illustrate future-state architecture in greater detail to guide more-detailed decision making

This was how we came up with the three primary development areas (develop requirements, develop principles and develop models). The creative work of developing content across these areas is best done in conjunction with the Gartner EA Framework, although it is compatible with any credible EA framework.

7.1 Develop Requirements

It has always been a best practice to develop EA in a business-driven fashion. This will never change. Consequently, this EA Process Model, like its predecessors, includes the identification of the business-driven requirements for each architectural viewpoint and the synthesis of them with the architecture. While some dependencies remain among the requirements, not every requirement must necessarily be identified in earlier iterations through the process. For instance, while focusing on ETA, the architecture team may have attempted to focus on deriving technical architecture requirements directly from enterprise business strategy. This is far too large a leap for nearly everyone. Most EA teams will find that they can develop a much-more-robust and justified set of technical architecture requirements after first deriving business information requirements (as recommended) from the business strategy statements. Further, the act of linking and tracing requirements across viewpoints leads to more focus. Remember that requirements must direct architecture in what they are to provide in support of the business, instead of how they will provide it.

7.2 Develop Principles

Conceptual architecture principles should reflect the collective and common direction sought for the organization. Principles are guiding statements of position that communicate fundamental elements, truths, rules or qualities that must be exhibited by an enterprise to realize its goals. Principles are a management tool used to provide boundary conditions for decision making by individuals because the leaders can't be everywhere when decisions are being made. Once adopted, principles should be used immediately to guide consistent decision making. In parallel, they provide guidance to more-detailed modeling efforts. Principles should be used as evaluation criteria in the absence of detailed models that direct decision making much more discretely and comprehensively. For example, one type of architecture "model" is a technology domain configuration standard that details technology products and the way that they are configured to deliver a reusable building block of technical infrastructure, such as an application server. In the absence of a defined configuration standard, an application development team's technical design for an application should be evaluated for its consistency, with the conceptual principles dealing with applications, information and technical infrastructure.

Not every type of principle is necessarily identified in earlier paths through the EA Process Model. The basis for many principles is industry and internal best practices, approaches that have consistently been demonstrated by diverse organizations to achieve similar results. So the degree to which an organization can establish principles across architecture viewpoints is dependent on its ability to identify and apply best practices in each area.

7.3 Develop Models

Many architectural efforts have failed because they started with modeling, rather than establishing a common set of business-driven requirements and conceptual principles to direct the modeling efforts. The "Develop Models" symbol in the EA process model represents the detailed drilling down of domain architecture content development across each of the architecture viewpoints in the EA framework. No one can model everything, so architects require guidance in what to model.

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Just-enough models should be created just in time to address specific questions. Stakeholder analysis (from the "organize" phase) of the requirements will identify the questions that must be addressed. This enables a focus on developing the right models at the right time and helps avoid "analysis paralysis."

As we stated, conceptual architecture principles must be developed (at a minimum) before detailed models. Conceptual architecture models (high level), which follow conceptual principles, while not a minimum requirement, will provide valuable additional guidance to the development of more-detailed models in each of the architectural viewpoints. Models will make up an increasing percentage of content. Principles tend to be fairly timeless and static, while models are dynamic and time sensitive, in some cases. Accordingly, as an EA matures, the type and number of models will change. In addition, depending on what types of models are being developed, the scope, purpose, level of detail and audience will be different and increase over time. Remember to model the future state as well as the current state (albeit in limited depth) to assist in gap analysis, impact analysis and migration planning.

8.0 Current-State Architecture — Documenting

Organizations complete future-state analysis as an impetus for change and to ensure that investments support business strategy requirements. Every organization has an as-is or baseline architecture, regardless of whether it is documented. If it weren't created via EA guidance, some would say it really is a current-state environment because it was never really architected. Understanding and documenting current-state architecture is necessary to proceed with plans to close the gap between current and future states. The purposes for documenting current-state architecture are to:

- Provide an initial baseline to compare against the future state

- Help identify dysfunctions, duplications, complexity and dependency

- Facilitate continual updating of infrastructure documentation

- Serve as reference material

Clients should avoid attempts to document and analyze every aspect of the current-state architecture. Many EA programs have bogged down for this reason. As a general rule, future-state architecture should be developed before the current-state architecture for given EA viewpoints or areas within viewpoints (although there are exceptions to this rule). The list of prioritized future-state initiatives and investments should be the guide for scoping the current-state documentation exercise. Future-state business and information requirements, principles, and technology implications provide evaluation criteria for assessing the applicability and appropriateness of technology products and standards. Scoping the current-state documentation based on future-state architecture helps answer the following questions about applications, infrastructure and standards:

- Do they support future-state IT requirements?

- Are they consistent with your position on technology/technology market trends?

- Are they aligned with the design principles?

Identify technology requirements that are not met by technical infrastructure. These are the gaps.

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9.0 Closing the Gap

Gap analysis is the step of the EA process that seeks to identify differences between current-state and future-state specifications from the EA deliverables. A solid gap analysis describes offerings in terms of architectural models and compares them with future-state specification models derived from the EA process. IT organizations (ITOs) must be wary of neglecting the gap-analysis phase of EA. A common failure for an ITO skipping this critical step is to fall back on previous bad habits. For example, an organization that has completed an ESA future-state specification is ready to propose project efforts to close the gap with the current state. Instead of performing the due diligence required of traditional gap analysis at this stage of the EA effort, organizations skipping gap analysis consider only project submissions from traditional sources (for example, regulatory requirements, department heads and LOB management) and fail to consider the transformational business-driven opportunities inherent in ESA guidance. The result is that the EA output becomes "shelfware," and the ITO resorts to the failed project-driven culture permeating ITOs that lack business credibility. Without future-state guidance, the ITO will be unable to project the road map for technology investment to meet business capabilities over time. (Note that this is an example only. Gap analysis should be performed on every architecture viewpoint.)

The following key inputs are required (although not exclusively) to effectively identify, analyze and propose recommendations:

- Business solution requirements from the common requirements vision

- Conceptual architecture principles

- Future-state specifications

- Future-state architecture models and artifacts

- Documentation of the current-state architecture

The gap analysis phase specifies the following steps to use the inputs:

- Identify and classify gaps (cultural, structural and functional) — In this step, differences between current-state and target architecture are identified and classified accordingly.

- Analyze gaps — Different tools are used to understand the difference between the current state and the target.

- Develop recommendations — Actions are proposed to close the gaps. Different scenarios may be considered to close these gaps.

- Prioritize recommendations — Illustrations of interdependencies and priorities are completed to fulfill the recommendations to close the gaps from the scenario list, as warranted.

10.0 Governing and Managing

Governing refers to the processes and organizational structure, along with their associated input and decision rights, that guide desirable enterprise behavior. There are several potential governance processes or touchpoints for EA with other management disciplines. However, the two most important pertain to governing the structure and content of EA artifacts and the linking of project portfolio management with EA compliance.

Managing refers to the discipline of creating and maintaining EA artifacts.

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10.1 Governing EA Artifact Creation

Primary goals of EA are to inculcate its principles and standards and drive desirable behavior. A governance body must be established to make final decisions regarding the approval of new or modified EA content. Gartner refers to this entity as the architecture review board (ARB).

10.2 Governing EA Compliance and Project/Procurement Management

The EA does not become real until it is used to make decisions in projects and procurements. The second major responsibility of an ARB is to define and conduct the EA compliance or waiver management process. This process explains how to deal with a situation in which a project believes it must proceed in a manner inconsistent with at least one element of the defined future-state architecture. Projects should not have the authority to make such a decision on their own. A waiver must be sought through a defined process managed by the ARB.

10.3 Managing

In addition to making governance decisions about EA artifacts, the core EA team must manage the EA repository and its contents. In the early stages of EA development, the repository may be a simple file system, holding text, spreadsheets and graphics. More-advanced and detailed EA may be managed with document-management systems, modeling tools or tools tailored specifically to EA development.

Managing includes the management of the EA program itself. Each process iteration can be managed as a project, so this section includes work associated with these project management activities. The management of internal EA consulting to project teams is addressed here as well.

This research is part of a set of related research pieces. See "Gartner's Enterprise Architecture Process and Framework Help Meet 21st Century Challenges" for an overview.

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