CITY OF AUSTIN, TEXAS
INFORMATION TECHNOLOGY
Transforming your city with best-managed technology

Chief Information Office
Enterprise Architecture

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Austin, Texas 78704-2614

A Guide to City of Austin Enterprise Architecture

Roadmap to the Future

09/08/2015

Contents

Summary of Revisions

Date	Revision Summary
08/18/2015	Added City of Austin responsibility description to the Corporate Chief Enterprise Architect role in Table 1.
09/08/2015	Changed link to updated EA Training Plan.

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1.0 Introduction

An Enterprise Architecture (EA) establishes the agency-wide roadmap to achieve an agency's mission through optimal performance of its core business processes within an efficient information technology (IT) environment. Simply stated, enterprise architecture "blueprints" systematically define an organization's current (baseline) or desired (target) environment. Enterprise architectures are essential for evolving information systems and developing new systems that optimize their mission value. This is accomplished in logical or business terms (e.g., mission, business functions, information flows, and system environments) and technical terms (e.g., software, hardware, communications), and includes a Sequencing Plan for transitioning from the baseline environment to the target environment.

These institutional architectural blueprints assist in optimizing the interdependencies and interrelationships among an organization's business operations and the underlying IT that support the mission. Experience has shown that without a complete and enforced EA, agencies run the risk of buying and building systems that are duplicative, incompatible, and unnecessarily costly to maintain and integrate.

For the EA to be useful and provide business value, their development, maintenance, and implementation require effective leadership and management. This systematic process guide assists the City of Austin in defining, maintaining, and implementing an EA program by providing a disciplined and rigorous approach to EA life cycle management. It describes major EA program management areas, beginning with suggested organizational structure and management controls, a process for development of a baseline and target architecture, and development of a Sequencing Plan. This guide also describes EA maintenance and implementation, as well as oversight and control. Collectively, these areas provide a recommended model for effective EA management.

Enterprise Architecture offers a promising opportunity for the City of Austin (COA). In fact, EA is an innovation - innovation differs from improvement in that innovation refers to the notion of doing something different rather than doing the same thing better. EA is the process of translating business vision and strategy into effective enterprise change by creating, communicating, and improving the key requirements, principles, and models that describe the enterprise's future state and enable its evolution and transformation. The transformation process entails the analysis and design of an enterprise in its current and future states from a strategic, organizational, and technological perspective. However, EA is a very complex endeavor requiring senior leadership support in order to achieve this important desired outcome.

1.1 Purpose

This guide provides a process to initiate, implement, and sustain an EA program, and describes the roles and responsibilities for a successful EA practice. An EA establishes the citywide plan to achieve a department's mission through optimal performance of its core business processes within an efficient IT environment. Simply stated, enterprise architectures are "blueprints" for systematically defining an organization's current (baseline) or desired (target) environment. Enterprise architectures are essential for evolving information systems, developing new systems, and inserting emerging technologies to optimize their mission value.

1.2 Scope

This guide describes the processes, activities, roles and responsibilities to initiate a successful EA practice at the City of Austin.

1.3 Audience

This guide is primarily for COA leaders that currently do not have EAs and those that can benefit from improvements in their EA methods for development and maintenance. For departments without an EA,

this document provides useful guidance to the Chief Information Officer (CIO) and IT leadership for educating and obtaining key stakeholder commitment in establishing an effective EA program.

1.4 The Need for this Guide

While the current COA EA Team provides a successful framework and EA's processes provide valuable guidance on the content of enterprise architectures, there is literally no guidance how to manage the process of creating, changing, and using the enterprise architecture. Therefore, this guidance is crucially important. Without successful implementation of this roadmap, it is highly unlikely that the City can successfully produce a complete and successful EA practice to optimizing its IT system's business value and mission performance. Effective development of a complete EA needs corporate commitment with senior business leader sponsorship. The city requires an organizational entity held accountable for EA development and its overall success. Since the EA facilitates change based upon the changing business environment of the organization, the architect is the organization's primary change agent. Effective implementation requires establishment of system compliance with the architecture, as well as continuous assessment of compliance. Waiver of these requirements may occur only after careful, thorough, and documented analysis. Without these commitments, responsibilities, and tools, the risk is great that new systems will not meet business needs, will be incompatible, will perform poorly, and will cost more to develop, integrate, and maintain than is warranted.

2.0 Definitions, Drivers, and Principles

2.1 Enterprise Architecture Defined

According to numerous architecture frameworks (i.e., DoDAF, FEAF, TOGAF, etc.), Enterprise Architecture equals the integration of Business/Operational Architecture, Solution/System Architecture, and Technical/Standards Architecture. A well-accepted definition of EA is as follows:

- Enterprise Architecture (EA) facilitates the process of translating business vision and strategy into effective enterprise change by creating, communicating, and improving the key requirements, principles, and models that describe the enterprise's future state and enable its evolution and transformation. This transformation process entails the analysis and design of an enterprise in its current and future states from a strategic, organizational, and technological perspective.

If there's an architecture involved relevant to the enterprise, then EA is responsible for the architecture effort (the blueprint - the plan). Clearly, this is a tremendous effort and requires years of planning, training, mentoring, staffing, and changing processes to realize. Hence, the need for this guide. Appendix A contains a listing of additional EA terms, their definitions, and the source.

2.2 The Uses and Benefits of Enterprise Architecture

Enterprise Architecture is an asset. You invest in assets in order to enable something you otherwise are unable to do. Assets are reusable infrastructure. What makes an asset any different from an expense (a consumable)? It depends on how many times you use it. If you want to use it more than once, it is an asset. "Architecture is an asset, infrastructure, an investment, not an expense", ~John Zachman known as the father of EA. What is the return on EA or better yet, what is the return on the EA asset (RoEA)? The RoEA should calculate relative to the non-EA architecture baseline, the "do nothing" case. Unfortunately, there are no non-EA architecture performance measures to establish improved performance indicators, RoEA, therefore, is best determined through its intrinsic value. At today's pace of change, to conquer the soaring complexity, to deliver faster and better and be sustainable the enterprise must achieve the following state:

- Streamlined: integrated, simplified, to minimize unjustified variety, reduce unnecessary complexity, remove silos and improve focus
- Aligned: information technology (IT) and people (organization) resources aligned to business processes and strategy to achieve the business objectives
- Agile: modular, layered, standardized, technology independent, built out of services, quickly adapt to change through service-oriented architecture (SOA) and Cloud Computing
- Robust: strategically planned according to business vision and technology trends
- Documented for ease of change: a blueprint to document the current and target architecture to enhance comprehension and management of performance

Every enterprise has a structure, an architecture. The structure though is often not the outcome of a deliberate process but the result of an anarchic growth. Enterprises have organically grown into systems, sometime reminding us of a jigsaw puzzle, the result of years of patching and point solutions. Sometimes one feels the desire to scrap everything and start from scratch. Then again, the situation repeats itself. The primary purpose of an EA is to inform, guide, and constrain the decisions for the enterprise, especially those related to IT investments. The true challenge of enterprise engineering is to maintain the architecture as a primary authoritative resource for enterprise IT planning. We don't meet this goal via enforced policy, but by the value and utility of the information provided by the EA. There are many examples of EA's intrinsic value.

Using a traditional approach, EA designed a solution to identify the interface dialog between two city applications (Amanda and ProjectDox) to realize an electronic method to coordinate the review of citizen design plans prior to issuing a permit. The initial plan identified seven coded interfaces using our enterprise service bus (ESB). After EA applied the use of method called an *Interaction Overview* to understand the interface patterns, we identified the actual need for three interfaces. This is more than a 50% reduction in time and money to integrate these two applications. Although this example was measureable, the opportunity to compare against some baseline rarely exists.

2.3 Architecture Principles

Principles establish the basis for a set of rules and behaviors for an organization. There are principles that govern the EA process and principles that govern the implementation of the architecture. Architectural principles for the EA process affect development, maintenance, and use of the EA. Architectural principles for EA implementation establish the first tenets and related decision-making guidance for designing and developing information systems. The Chief Enterprise Architect, in conjunction with the Chief Information Officer Council (CIOC) and select Department business managers, defines the architectural principles that map to the organization's IT vision and strategic plans. As shown in Figure 1, architectural principles should represent fundamental requirements and practices believed to be good for the organization. These principles should be refined to meet department's business needs. It should be possible to map specific actions, such as EA development, systems acquisitions, and implementation, to the architectural principles. EA principles guide deliberate and explicit standards-oriented policies and guidelines for the EA development and implementation. The actions necessitated by the architecture principles support each phase of the system life cycle and the implications within the principles govern CPIC actions.

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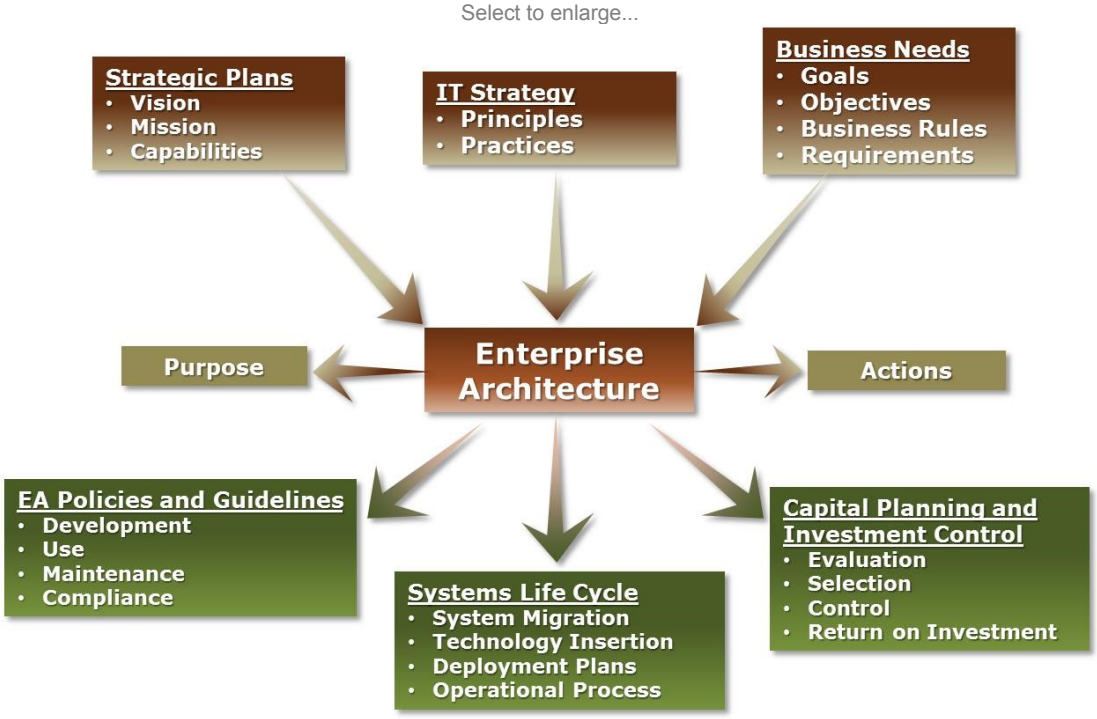

Figure 1: Role of Architecture Principles

Appendix B provides sample EA principles for consideration as a starting point, as well as the rationale for and the impact of implementing each principle. Each department should apply, add to, or modify these sample principles. Formulating these supporting statements should be an essential part of the City's effort to define its principles.

2.4 The Enterprise Architecture Process

As a prerequisite to the development of enterprise architecture, each department establishes the need to develop an EA and formulates a strategy that includes the definition of a vision, mission, capabilities, and measurable goals. The EA Program Management Office assists departments in defining these elements in the Corporate EA. Figure 3 shows a representation of the EA process. After obtaining executive buy-in and support, create an architectural team within the organization. The team defines an approach and process tailored to department needs. The architecture team implements the process to build both the baseline and target EAs. The architecture team generates a Sequencing Plan for the transition of systems, applications, and associated business practices predicated upon a detailed gap analysis. Once mature, strategically employ the architecture in CPIC through enterprise engineering and program management processes via prioritized, incremental projects and the insertion of emerging new technologies. Lastly, maintain architectures through a continuous modification to reflect the department's current baseline and target business practices, organizational goals, visions, technology, and infrastructure.

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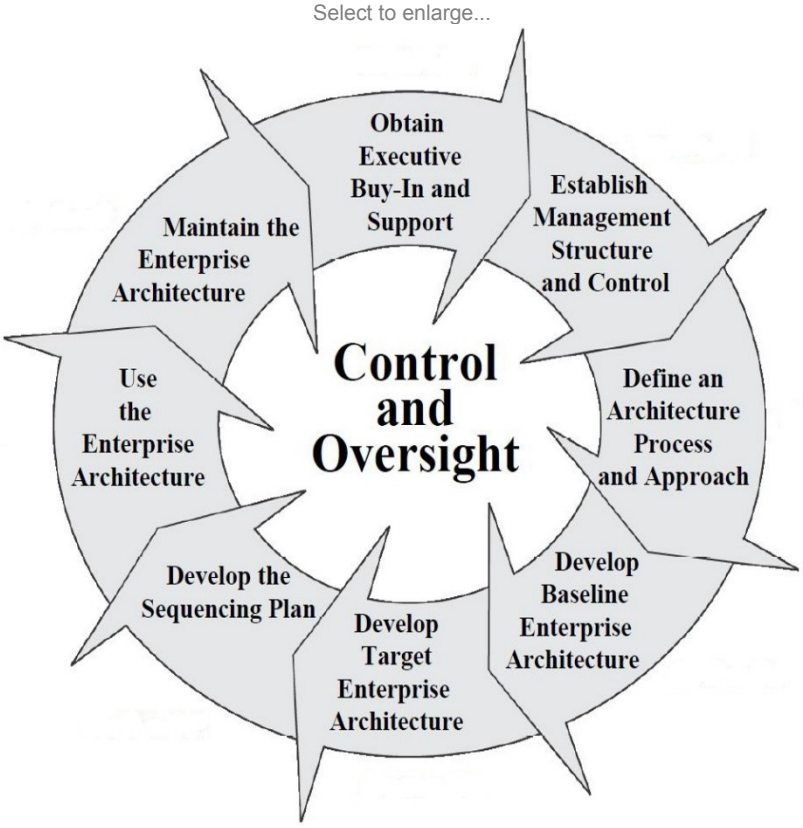

Figure 3: The Enterprise Architecture Process

3.0 Initiate Enterprise Architecture Program

We must manage EA as a formal citywide program and treat EA as a COA Corporate asset. EA is a business stakeholder asset and frequently mistaken as belonging to IT - when in fact, a key purpose of EA is to deliver business requirements to IT solution providers such as Communication and Technology Management (CTM) or other city IT departments. Successful execution of the EA process is a citywide endeavor requiring management, allocation of resources, continuity, and coordination. Therefore, city executives should work closely with the corporate architecture team to produce a description of the agency's operations, a vision of the future, and an investment and technology strategy for accomplishing defined goals.

Gaining executive commitment for any major initiative requires the development of a strong business case and a communications approach to convey the purpose. Since the concept of an EA is not intuitively obvious, the CIOC and the Chief Enterprise Architect create a marketing strategy to communicate the strategic and tactical value for EA development to senior City executives, and business units.

3.1 Issue an Executive Enterprise Architecture Strategy

The CIOC, in collaboration with the Department Directors Advisory Council (DDAC) and IT Steering Committee (ITSC), develops a strategy based on the City's architecture principles that governs the development, implementation, and maintenance of the EA. The IT Steering Committee approved EA strategy at a minimum includes the following:

- Description of the purpose and value of an EA
- Description of the relationship of the EA to the City's strategic vision and plans
- Description of the relationship of the EA to governance coordination and exception process
- Translation of business strategies into EA strategies, goals, and objectives
- Commitment to develop, implement, and maintain an EA
- Identification of the responsibility of the Chief Enterprise Architect
- Establishment of the Enterprise Transformation Office (ETO)

3.2 Obtain Support from Senior Executives and Business Units

Commitment and participation of the City's senior executive and business leaders are vitally important. The CIOC initiates a marketing program to emphasize the value of architecture and obtain organizational governance commitment through either general or enterprise fund departments. The senior executive team and its organizational units are both stakeholders and users of the architecture. Therefore, the CIOC invests time, effort in familiarizing staff with what an EA is and how it can help achieve organizational goals and commitments. The CIOC seeks assistance from the Chief Enterprise Architect for this activity as needed. Even though the target audience varies among departments, the audience may include assistants, deputies and their key staffs.

The primary goal of educating the department senior executives is to obtain their concurrence and commitment to having their organizations as active EA participants. Participation can involve the executives (or their designees) in attending planning sessions, committing resources (people and funding) for specific tasks, or becoming a champion or spokesperson for the effort. Maintaining the participation and support of key executives is crucial to sustaining a successful effort.

A recommended means for marketing the EA is a primer or introduction to inform City business executives and stakeholders of the EA strategy and plan. The primer includes an executive summary explaining EA's value. For example, the primer may express the City Manager's vision for the enterprise and the role of EA in accomplishing that vision - e.g., creating the integrated foundation for online government or streamlining business processes and technology.

The primer describes the tenets of the EA and its many benefits as an agent of change in achieving organizational goals (e.g., integrating business services and initiatives) or as a critical resource to evaluate options for change as business and technology needs evolve. The primer clearly describes the roles and responsibilities of the senior executives and their organizational units in developing, implementing, and maintaining the EA. The primer should demonstrate the benefits of an EA for the agency's stakeholders. This is particularly important since many of the stakeholders need to provide skilled resources, support, and time to the effort. Once completed, widely distribute the primer throughout the City, make available on the City's Web site, and ensure brief to all personnel impacted by the introduction of the EA.

3.3 Establish Management Relationships

Enterprise Architecture's purpose is to deliver business and operational architectural requirements to information technology (IT) service providers as a guide to implement successful business solutions - in essence, EA aligns technology to the business needs of the enterprise. EA also develops and oversees the solution/system architecture in close coordination with business applications and infrastructure management functions. EA is a tool containing the enterprise body of knowledge (BoK). EA is a business enabler and requires business leaders to direct, oversee and approve EA strategic direction for COA departments. Shown on Figure 4, is an entity relationship diagram identifying the key roles between various organizational resources and EA personnel. This diagram is the basis for the following organizational roles and responsibilities discussion.

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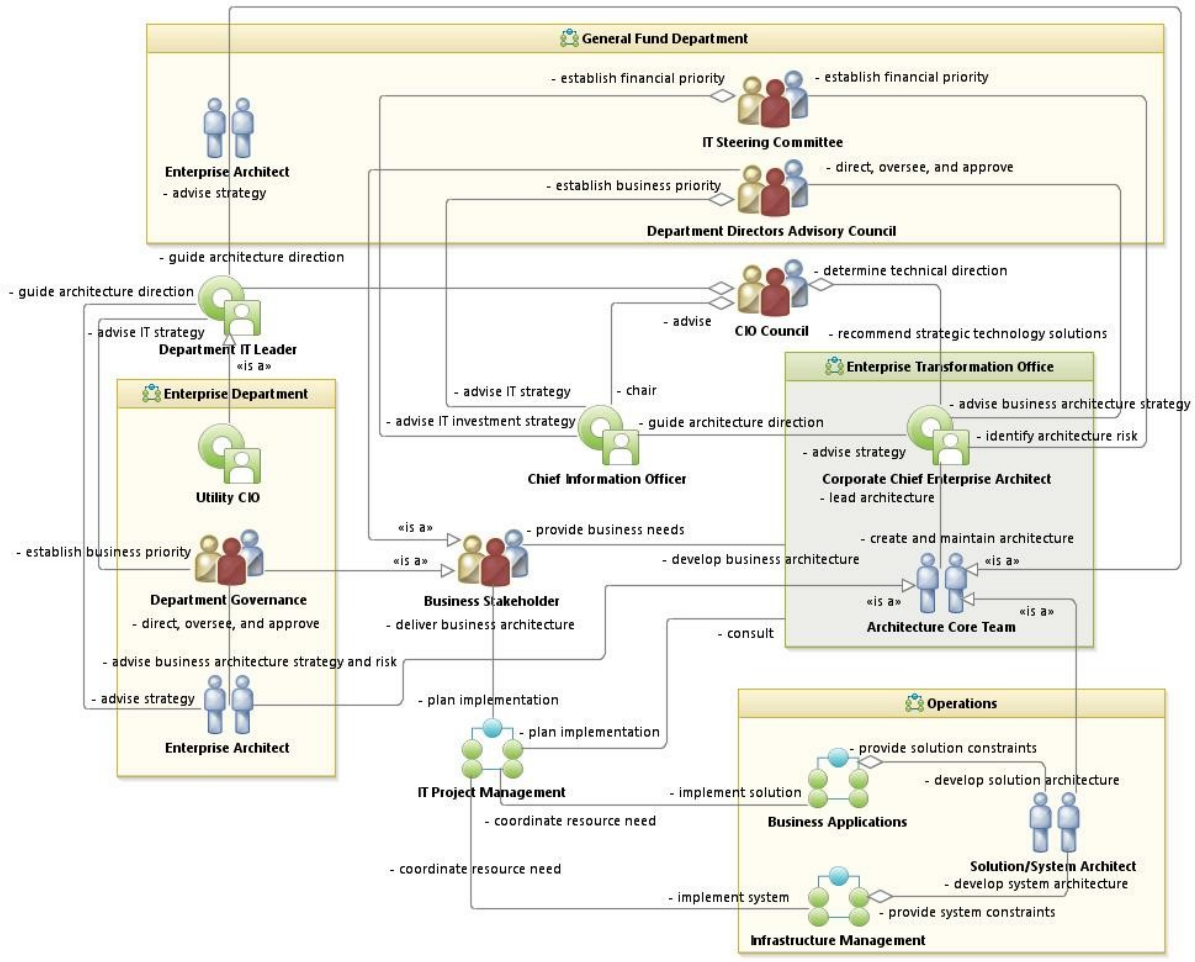

Figure 4: EA Role Relationships

The organizational relationship diagram uses four icons to include Capability Role, Personnel, Organizational Resource and Stakeholder (Figure 5). Although the diagram (Figure 4) appears busy, it is quite easy to read. For example, the Department Directors Advisory Council «stakeholder» provides two roles to include **establish business priority** and **direct, oversee, and approve**. The role relationship **establish business priority** is with the Chief Information Officer who in turn has the role to **advise IT strategy**. **Direct, oversee and approve** is the role of Department Directors Advisory Council in relation to the Chief Enterprise Architect role, who in return **advise business architecture strategy**.

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Figure 5: Entity Index

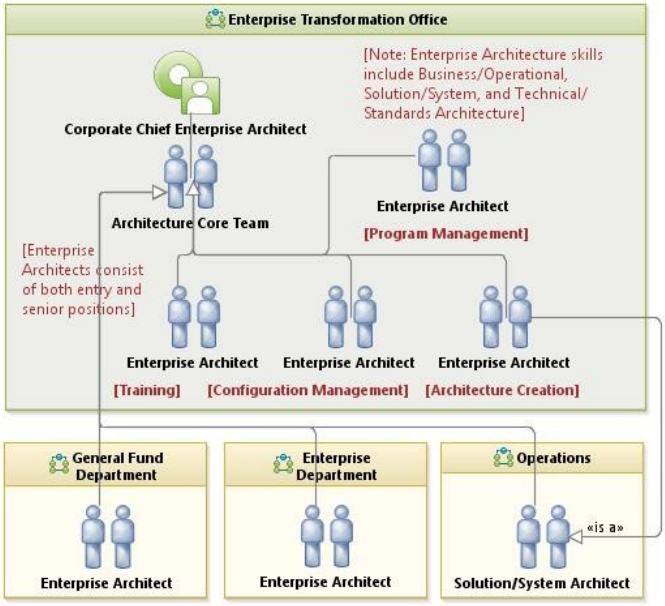
The following table describes the responsibility for each role identified on the EA role relationships shown on Figure 3. The relationship description is relevant to the associations shown on the diagram.

Table 1: Entity Role and Responsibility Description

Entity Role	Responsibility Description
Architecture Core Team	The Architecture Core Team encompasses certified Enterprise Architects and various non-certified Solution/System Architects throughout the city. The Architecture Core Team reports to the Corporate Chief Enterprise Architect for architecture guidance, policy, procedures, framework use, training, configuration management, certification, and standards. Reporting is either administrative (i.e., direct reports) or non-administrative (i.e., non-direct reports) administered through their respective Department IT Leader.
Business Applications	Similar to IT Project Management, various departments provide their own Business Applications organizational resource. Coordinated by IT Project Management, Business Applications provide a solution to implement the Business Stakeholder approved business architecture. When developmental activities (either internal or external) are required, EA may require the development of a solution architecture by an Enterprise or Solution/System Architect. These architectures are critical to a successful implementation of our enterprise service bus (ESB) among other important details needed to guide developmental activities to include risk reduction. ESB is an important EA strategy and critical to achieving a service-oriented architecture (SOA) framework - essential to provide innovative, reusable, efficient and productive information technology infrastructures - an important EA imperative.
Business Stakeholder	Business Stakeholders are business leaders for various general fund and enterprise operational departments. The ETO assigns Enterprise Architects to collaborate with Business Stakeholders to develop an approved business/operational architecture. A business architecture is an enterprise blueprint providing a common understanding of the organization's capabilities, goals, roles, important outcomes and aligns strategic objectives and tactical demands. The business architecture provides the basis for IT Project Management to plan implementations.
Chief Information Officer	The Chief Information Officer (CIO) makes executive decisions such as the purchase of IT equipment from suppliers, creation of new systems, and responsible to lead the city IT workforce. The CIO has the responsibility to recruit the best employees to complete the information and communications technology (ICT) mission. Working closely with Department IT Leaders, the CIO maps out both the ICT strategy and policy of the city. The ICT strategy covers planning, procurement and external and internal standards laid out by the city. Similarly, the CIO establishes the ICT policy, detailing utilization and application of ICT. The CIO provisions finance, recruitment of professionals and development of policy and strategy. The CIO guides the overall direction of the Enterprise Architecture in concurrence with DDAC, ITSC and Department Governance priorities. Reference Wikipedia definition of CIO.
Chief Information Officer Council	Chaired by the city's CIO, the CIO Council (CIOC) consists of general fund and enterprise Department IT Leaders and act in the capacity of a technical review committee, manages the review of candidate technology projects, and assesses recommended strategic technology direction. The CEA provides architecture recommendations to the CIOC and the CIOC determines final technical direction. For example, CEA may recommend one commonly shared ESB as a citywide service to achieve an enterprise-wide SOA framework, the CIOC may decide on an alternative direction. The CIOC provides the CEA opportunity to bring architecture concerns to the agenda for guidance and determination. CIOC members may delegate responsibility to a designated department Enterprise

Entity Role	Responsibility Description
	Architect with the understanding the department architect keep the CIOC member informed on important architecture decisions. When all department Enterprise Architects concur on a technology solution, this does not necessitate elevation to the CIOC for decision. However, the CEA is responsible to provide the CIOC status on important EA decisions. The CIOC assesses each proposed technology investment for compliance with the EA when relevant. The CIOC reports their conclusions to Department Governance and/or DDAC and ITSC. Finally, the CIOC ensures the Innovation Office coordinates new technologies through the ETO to ensure compliance or possible change of the EA strategy.
Corporate Chief Enterprise Architect	The Corporate Chief Enterprise Architect (CEA) is responsible to develop, oversee, and maintain the city's enterprise architecture strategic direction. Based on the business needs of the city, the CEA leads the development of a vision and citywide architecture roadmap to set technical direction to support the architectural framework, standardize the infrastructure, deliver technology solutions, and define the city's enterprise architecture processes to provide innovative, efficient and productive information technology infrastructures. According to the City of Austin Website, the Chief Enterprise IT Architect - Corporate job description includes the following: **Purpose:** Develop, maintain and leverage the enterprise architecture including process definition and integration across the organization, identifying requirements for resources, structures and cultural changes **Duties, Functions and Responsibilities:** Essential duties and functions, pursuant to the Americans with Disabilities Act, may include the following. Other related duties may be assigned. 1. Leads and coordinates the pursuit of corporate technical business information needs, governing principles, and solution architecture viewpoints 2. Understands, advocates and supports the corporate business and IT strategies 3. Leads the identification and analysis of corporate business drivers to derive corporate business, information, technical and solution architecture requirements and determines its potential impact 4. Ensures governance structure and compliance activities fitting solutions to architecture across all viewpoints 5. Analyzes current business and IT environments and recommends solutions for improvement 6. Leads and facilitates the creation of governing principles to guide solution decision making for the City 7. Develops and oversees an architecture implementation 8. Documents and reports all design, analysis work, impact, achievements and outcomes 9. Develops a promotional communication and education plan 10. Develops long term partnerships with City departments and vendors to facilitate collaboration in the development of their and the City's strategic business plans Reporting to the Chief Information Officer, a City executive serves as Corporate Chief Enterprise Architect and an advising member of the CIOC. The CEA or designated ETO Enterprise Architect serves as a technology and business liaison to the development organization (either internal or external) to ensure the

Entity Role	Responsibility Description
	integrity of the architectural development process and the content of the EA products. The Enterprise Architect is friend and liaison to the Business Stakeholders and ensures emphasis of the business architecture documented in the EA. The CEA is responsible to ensure the EA provides the best possible information and guidance to city IT Project Management organizations to ensure contextual intent of the business functional requirements. The CEA certifies Enterprise Architects at the entry (basic) and senior levels. Certification authorizes the Enterprise Architect read/write control of the citywide EA repository. In addition, the CEA becomes conversant with the department's business and IT environments. As the primary technical leader of the EA effort, the Enterprise Architect bridges the cultural differences that often exist between the business and IT organizations, and facilitates the interaction and cooperation between these two cultures.
Department Directors Advisory Council	The Department Directors Advisory Council (DDAC) directs, oversees, and approves the EA business architecture strategy - they act in the capacity of an EA executive steering committee. The DDAC with a designated chair or co-chair ensures general fund department strategic direction, oversight, and decision-making authority for the EA. The DDAC chair or co-chair may appoint additional business leaders as a subgroup for EA evaluation and recommendation. To perform effectively as a decision-making body, it is crucial that the EA business representatives are senior leaders, with the authority to commit resources, make and enforce decisions within their respective organizations.
Department Governance	Department specific certified Enterprise Architects are responsible to advise business architecture strategy to their respective enterprise Department Governance process following similar responsibilities between the CEA, DDAC and ITSC and advise EA strategy to their specific Department IT Leader. The Chief Enterprise Architect provides guidance to Enterprise Architects regarding architecture governance when needed and direction on CIOC and Business Stakeholder approved enterprise-wide strategies.
Department IT Leader	Provides similar responsibilities as the Chief Information Officer with a span of influence of their respective department. The Department IT Leader includes Utility CIOs and Department IT Managers for both general fund and enterprise departments. The Department IT Leader guides the department Enterprise Architect toward the business needs and priority of department specific Business Stakeholders. The CEA ensures proper architecture policy, procedures, framework and configuration controls. The Department IT Leader is a voting member of the CIO Council.
Enterprise Architect	Leads enterprise architecture modeling activities using object-oriented analysis and design (OOAD) methods, the Unified Modeling Language (UML) and technical standards capture. Mentors less experienced enterprise architects. Develops Capability Area Architectures, Use Case Models, and Logical Data Models leading to operational and solution concepts and capabilities enabled by information technology. Manages the definition, development, sustainment and evolution of modeled enterprise capabilities.
Enterprise Department	Departments that generate their own revenue and internally fund IT operations. These departments typically provide their own IT governance process.
Enterprise Transformation Office	The Chief Enterprise Architect (CEA) has management responsibility for the Enterprise Architecture Office also referred to as the Enterprise Transformation Office (ETO), with the authority, responsibility, and accountability for the overall architectural effort to include business/operational, solution/system, and

Entity Role	Responsibility Description
	technical/standards architecture. The CEA is responsible for the planning, staffing, and ultimate success of the program, including acquisition of sustaining funding, negotiating schedules, timely and accurate delivery of the EA products, and the establishment of an appropriate support environment that ensures proper application of these assets. Select to enlarge...  **Figure 6: Architecture Core Team** The ETO manages, monitors, and controls the development and maintenance of the EA. The ETO staff includes ten direct-report Enterprise Architects and various non direct-report general fund architects, enterprise department architects and solution/system architects (Figure 6). When business priorities established by the DDAC and/or Department Governance require specialized skills, the Chief Enterprise Architect may utilize architect resources to achieve the overall interest of the city wherever EA Personnel reside. The CEA coordinates these special conditions with the Department IT Leader or relevant supervisor. This provides significant benefit - first, the architect gains valuable mentoring opportunity to increase their skills and second, directs EA resources toward the overall city priority projects. The added exposure also provides Enterprise Architects body of knowledge of the EA repository. The ETO identifies and performs cost analysis of alternative approaches for developing the EA, and manages in-house or outside contractor EA development work if needed. Finally, the ETO determines needed resources and secures funding and resource commitments.
General Fund Department	City departments who compete for general fund resources through CIOC, DDAC, and ITSC governance process.
Infrastructure Management	Many departments independently manage their own department specific infrastructures. To the maximum extent possible, it is EA's mission to standardize the city IT infrastructure to reduce cost, enhance technical communication, strengthen tool support, ensure compatibility, and share resource skills. Many infrastructure elements are specific to the department mission and requires department oversight - usually not involving EA. However,

Entity Role	Responsibility Description
	there are many shared infrastructure service elements - ESB is a good example. The shared infrastructure service principle is not about CTM hosting all shared services; rather, it's about identifying shared infrastructure services and agreeing, through the CIOC, which department is best equipped to maintain and provide the service - sometimes referred to as centers-of-excellence.
IT Project Management	As an organizational resource, departments sometimes differ in their employment of IT Project Management. Some departments have project management offices such as Austin Energy and CTM provides a project management office for general fund projects. No matter the organizational resource structure, IT Project Management is responsible to plan implementation of the Business Stakeholder delivered business architecture. These planning functions frequently include coordination with Business Applications and Infrastructure Management organizational resource functions. ETO is a liaison and consultant to the Business Stakeholder and IT Project Management. Working directly for the Business Stakeholder, ETO creates an architecture to capture the business needs such as purpose, vision, mission, capabilities, business goals, scope, process, functional needs, success factors and other business technical requirements to complete the business architecture. On approval, the Business Stakeholder delivers the business architecture to IT Project Management. IT Project Management uses the business architecture to plan implementation (RFP development, contracting, coordinate resource needs, planning, outsourcing strategies, etc.). If IT Project Management identifies required changes to the business architecture deliverable, possibly due to technology considerations, strategies, etc., IT Project Management coordinates with the ETO (per guidance by the Business Stakeholder) to make necessary Business Stakeholder approved corrections or updates. During architecture collaboration sessions, IT Project Management may participate to obtain better business understanding regarding architecture design considerations and other business conclusions drawn. IT Project Management challenges include risk management, evaluation strategy and total cost of ownership among others. The IT Project Management may consult with ETO to gain insightful knowledge regarding important risk elements leading to a successful project plan. Because architecture focuses on important interfaces (e.g., business prescribed functional requirements and interfaces), this greatly simplifies risk identification and is useful in scope understanding and therefore total cost of ownership. In many circumstances, the architecture reduces or eliminates risk - depending on the complexity of the project. The architecture's clear scope also provides avenues to explore evaluation strategies leading to risk reduction, Cloud computing, and Small Minority Business Resource (SMBR) opportunities among others. The Business Stakeholder may request ETO to participate in these discussions or possibly liaison on the Business Stakeholder's behalf. For large scale, enterprise-wide architectures, the Office of the City Manager or the CIOC may request the ETO to manage the business and solution architecture on behalf of multiple Business Stakeholder and IT Project Management functions.
IT Steering Committee	The IT Steering Committee (ITSC) acts in the capacity of the IT capital investment council for general fund projects to achieve informed decision-making regarding costs, benefits, risks of alternative investment options and EA alignment. The goal of the ITSC is to ensure EA projects are feasible from a cost-benefit and risk standpoint. The ITSC reviews proposed IT investments and makes final investment funding decision. Based on DDAC prescribed EA direction, oversight and approval, the ITSC determines whether proposed

Entity Role	Responsibility Description
	projects fit within the overall budgeting and funding goals for the general fund portion of the city. While a project may be technically in compliance with the EA, the ITSC may reject funding for a project because of other external constraints or budgetary reasons. ITSC decisions may necessitate updates to EA plans.
Operations	Indicates operational organizational resource either general fund or enterprise department - includes Communications and Technology Management.
Solution/System Architect	Many departments provide personnel that perform solution and system architectures typically using various approaches and tools such as Visio, PowerPoint, spreadsheets, among others. The EA provides a framework and body of knowledge (BoK) to standardize the approach of architectural artifact development. Although it will take many years to achieve full EA framework standardization, the CEA may assess or request information regarding solution/system architecture activities and products from any city Business Application or Infrastructure Management department. When Enterprise Architect personnel resources exist, the CEA may direct use of the EA framework for select projects - particular for projects with a Business Stakeholder approved business architecture. This approach ensures solution architecture alignment with the business architecture.

3.4 EA Training

Enterprise architecture is not a trivial skill to learn - candidates require a tremendous amount of business process and technology experience. Certified by the CEA, the Enterprise Architect delivers business/operation, solution/system and technical/standards architectures. Training takes approximately one year (3 to 7 hours/week) plus an additional year of mentoring (on the job training) with an experienced Enterprise Architect. Depending on the experience of candidate EAs, the mentoring period could be less. The CEA certifies the candidate Enterprise Architect once observable performance demonstrates ability to capture architecture artifacts in the EA repository. Certification provides unsupervised read/write access to the city's EA repository.

The Chief Enterprise Architect is responsible for developing an EA training program to train future architects on the principles and processes used to develop the citywide enterprise architecture. See EA Training Plan for more information.

4.0 Summary

This guide to EA development, maintenance, and use offers a practical "how-to" manual that assists the City in initiating, developing, and maintaining an EA program in conjunction with other management processes. The EA is, by definition, a model of the City's enterprise and its future direction. Its value to the business operations should be more than simply IT investment decision management. The dynamic changes in technology and business practices impose greater pressure on the City to respond more rapidly to these stimuli than ever before. The EA is the main tool to reduce the response time for impact assessment, tradeoff analysis, strategic plan redirection, and tactical reaction.

Along with their importance in the capital planning and investment management arena, EAs provide a snapshot in time of the City's business and technology assets. They are the blueprint to build upon the roadmap to systems and business migration. They help mitigate risk factors in enterprise modernization, identify opportunities for innovative technology insertion, and aid executives and managers in key decision-making at all levels of the organization. These are but a few of the benefits of maintaining a thorough EA. The EA process is a long-term, continuous effort. Once developed, the EA is a "living" entity with many parts, whether in the form of a document, database or repository, or Web

page. To remain current and of optimal value, this "living architecture" needs continual care and maintenance. This, in turn, demands an organizational commitment from top to bottom, since department resources in time, money, and people should be dedicated to the architecture's maintenance for the long term.

As a department begins its EA efforts, its architecture proponents should secure corporate commitment and buy-in from senior executives and all levels of the organization. Without engaging the entire City from the top down, the architecture effort will face an uphill struggle during much of its existence. Thus, the initial stages of the architecture effort will need extensive work obtaining commitment and backing, grounding the EA in an approved framework, and establishing a functioning architecture structure within the City organization. As one of the first steps, the City's Chief Enterprise Architect established a well-proven architecture framework based on practical Department of Defense (DoD) experience. This framework is a stable starting point to become a best-managed city.