Introduction to EA

General Description of EA

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This document describes Enterprise Architecture (EA) in general from the viewpoint of the business operators.

Purposes of using EA

EA is a mechanism that aims to improve businesses and systems in terms of the "whole optimization" in order to promptly respond to changes in social environments and information technology. EA also reviews and develops architectures for business processes, information systems, and the technologies employed therein. The government intends to use EA for the three main purposes that are listed below. These reasons are also applicable to municipal governments that face similar problems and can also be used by private companies.

1. Making IT investment efficient and streamlined → Clarifying and improving its current status

   The first purpose of EA is to use e-Government-related budgets more efficiently and effectively.

   In order to avoid any wasteful use of IT investments, streamlined systems should be built in view of "whole optimization" of the entire organization. For this purpose, the current status of businesses and systems should be clarified in advance in order to identify areas in which there exist duplicate and wasteful investments.

2. Achieving high-level administrative services by adopting a customer-oriented approach → Sharing the ideal

   The second purpose of EA is to provide high-level administrative services by adopting a customer-oriented approach. Thus far, e-businesses have contributed to efficient sectional business; however, there is no benefit gained by users who are provided administrative services through electronic means while maintaining the existing "rigidly compartmentalized" administrative structures. Business rules and systems that are separately developed for each individual business should be integrated and optimized to achieve whole optimization.

   For this purpose, businesses and systems should be integrated and streamlined by clearly defining the ideal goal shared by those responsible for businesses and systems. EA is used to determine the scope of business and system integration/streamlining and to clearly share the ideal of such integrated

/streamlined businesses and systems among those responsible for the businesses and systems.

3. Presenting integration/streamlining processes → Sharing processes to achieve the ideal goal

   The third purpose of EA is to present guidelines for the transitional processes of businesses and systems.

   As information technology and environments change rapidly, it is important to develop guidelines for the transitional process of moving from the current status toward achieving the ideal goal. Transitional plans and organization-wide rules and standards should be defined for businesses and systems based on the "idea of moving from the current status toward achieving the ideal goal," and businesses and systems should be improved in response to environmental changes. Such processes should be shared among those responsible for the businesses and systems.

EA is used to achieve the above-mentioned purposes. At the same time, it is also important to possess a long-term design philosophy. For example, from the long-term perspective, it would be important to realize administrative services by effectively utilizing private initiatives, and to plan business/system configurations equipped with easy-to-use security as the existing information systems will be integrated into Web-based technology systems in the long run. One of the important roles of EA is to provide long-term guidelines for business/system optimization while helping to develop an ideal goal based on the long-term design philosophy.

Roles of EA

EA can achieve the abovementioned three purposes through the following roles:

1. Clarifying the relationship between the current status of businesses and systems
   The first role of EA is to grasp the big picture by analyzing businesses and systems of all organizations as a whole through a unified method.
   EA makes the current status "visible" by converting the current status of businesses and systems into the current status (AsIs) model that is perceptible to everyone. During this process, it is important to clearly describe businesses as well as systems.
   EA development guidelines instruct the creation of "Application Architecture" that defines application configurations and "Technology Architecture" that defines technological system configurations. Further, it also instructs the creation of "Business Architecture" that defines the content of businesses and business flows beyond organizational divisions and "Data Architecture" that defines the content of information (data) used and the relationships.
   While analyzing businesses, it is important to analyze the businesses of the entire organization and to clarify the current status of businesses and systems, including businesses for which systems have already been used or will be used in the future, those for which IT will not be employed but the output will be processed by different systems. Further, businesses for which systems will not be used in the near future and other types of businesses should also be included.

2. Clarifying activities required to move from the current status toward achieving the ideal goal and establishing an improvement cycle
   The second role of EA is to define organization-wide improvement activities for businesses and systems.
   It is important to define, in advance, rules and standards for business and system development that will be shared by the entire organization while taking into account the future potential. For this purpose, it is important to establish the AsIs model of businesses and systems followed by the goal (ToBe) model that is considered ideal. The transition plan and common rules/standards to achieve the ideal goal should be defined while comparing the current status of the entire organization obtained through such models with the ideal goal.
   As system development may require modifying the predefined rules and standards, the basic direction of these rules/standards may require modification in accordance with technological innovation, etc. Therefore, it is important to establish an

improvement cycle to modify the rules/standards and, if necessary, the ToBe model based on the current status. The improvement activities of the entire organization can be defined by modifying the AsIs and ToBe models and the next generation of the realistic model of EA according to the actual system development and business reform. Moreover, these modifications can be used as new standards shared by the entire organization. The U.S. Federal Government refers to such improvement activities as the "EA Process," and the final goal of the government procurement reforms is to bring the outcome of the improvement activities as close as possible to the ideal goal.

3. Clarifying the relationship between information assets and businesses

   The third role of EA is to clarify the relationship between information assets and businesses to maximize the effective use of information assets possessed by each organization.

   Future system integration/streamlining requires system integration and business optimization based on data assets as well as functions, and EA provides the methodology required for such integration/streamlining.

   The effective use of information assets possessed by each organization can be maximized by unifying the data models that are currently used separately by each system and by preparing environments in which an increasing number of people can use various unused data stored in organizations. Data model-oriented analysis instead of function-oriented business analysis will facilitate business analysis for future business and system integration/streamlining.

4. Presenting guidelines for long-term design philosophy and technology version control

   The fourth role of EA is to present the long-term direction by clarifying business and system design philosophy and to introduce the guidelines for technology version control while establishing the ToBe model.

   EA development guidelines hypothetically describe the direction of transition of administrative services from the existing legacy-based to the new Web-based systems. In order to ensure the long-term transition to the new Web-based technology, it is important that technology versions are controlled by the entire organization so that the transition from the existing technology to the future technology via the next generation technology is smooth. EA development guidelines recommend the control of technology versions by using the "Technical Reference

Model" in the early phases.

Notes on using EA

While using EA, it is important to decide, in advance, the target and scope of EA. Targeted businesses and systems and the scope of the "enterprise" should be clearly defined.

In the United States, the missions of targeted organizations and clarified purposes and direction that are involved in the use of EA are called "Principles"; these are regarded as the basis of EA.

While developing EA, it is also important to consider the manner in which each business and system should be precisely described. It may vary depending on the goal of the whole optimization planned by the entire organization. EA will be made more effective by describing in detail businesses that barely change within organizations, while abstractly describing businesses that need to be radically reformed.

EA and reference models

"Reference models" as well as the guidelines are essential in the development of EA. Reference models are broad collections of the different types of businesses, and data types, options for application configurations, and technologies. Well-prepared reference models facilitate the selection of business models and technologies that are most appropriate for the optimization direction and the pace of evolution from among various kinds of reference models.

In the United States where the development and use of EA are in progress, the following five models have been adopted: "Business Reference Model" (BRM), "Technical Reference Model" (TRM), "Service Component Reference Model" (SRM), "Performance Reference Model" (PRM), and "Data Reference Model" (DRM).

Based on this concept, the Ministry of Economy, Trade and Industry (METI) has developed Japanese versions of the reference models and released them on their Web site.

EA development procedure

The EA development procedure is as follows:

<Preparation for EA development>

1. Clarify the target and scope of EA by performing the first phase analysis of policies/businesses to determine the integration/streamlining visions (Principles)

related to the direction of the optimization.

<EA outcome1_Current status (AsIs) model analysis>

2. Clarify the current status of businesses by performing the second-phase analysis of policies/businesses and the data assets analysis.
3. Clarify the current status of systems by performing an analysis of application configurations and system technologies.

< EA outcome2_Designing/developing ideal (ToBe) model>

4. Determine the overall picture of the targeted e-Government functions and the long-term design philosophy.
5. Develop the ideal goal.

< EA outcome3_Designing/developing next-generation model>

6. Determine the goal of deploying realistic next-generation systems by comparing the ToBe model with the AsIs model.

<Revision of EA outcomes and development of reference models>

7. Identify the areas in EA that require modification while using EA and designing and developing each system.
8. Develop relevant reference models as promptly as possible while modifying EA outcomes. Create comprehensive intellectual assets by incorporating the problems and the collected information into the reference models.