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## Enterprise Architecture: A Governance Framework

### Part II: Making Enterprise Architecture Work within the Organization

– Sohel Aziz, Thomas Obitz, Reva Modi and Santonu Sarkar

#### Introduction

[Enterprise Architecture](#), the holistic view of an enterprise's processes, information and information technology assets as a vehicle for aligning business and IT in a structured and therefore more efficient and sustainable way, has attracted significant attention over the last years.

This paper is the second of two parts. [Part I](#) describes how to embed the enterprise architecture function into an organisation effectively. It introduces the governance dimensions of leadership, organisation and investment. For each dimension, practices which have proven effective in real-world enterprises are described. The paper is available on the Infosys website<sup>1</sup>, and we recommend it for an overview of the Infosys approach to Enterprise Architecture.

This paper (Part II) focuses on how to operationalise Enterprise Architecture (EA), using the dimensions of policies and principles, processes, measurement and tool enablement.

<sup>1</sup> <http://www.infosys.com/enterprise-architecture>

*These whitepapers are related to two sessions of the Infosys Knowledge Sharing Series web seminars. They were conducted on August 3<sup>rd</sup> and Sept 6<sup>th</sup> 2005. Recordings can be accessed at <http://infosys.webex.com>.*



In this framework, **policies and principles** govern the relationship between the enterprise architecture function and its stakeholders within and outside IT – in particular if conflicts arise.

**Processes** are at the heart of embedding Enterprise Architecture into the information and control flows of the enterprise. They ensure that the architecture function is involved in the corporate planning cycle, feeding it with the information needed to drive towards an IT landscape which is aligned to business needs. Processes are required to roll out and communicate architecture to its users and beneficiaries. And finally, they ensure that the architecture function is able to guide and align business projects with the IT strategy.

**Metrics** are crucial to both managing the development of Enterprise Architecture and to justifying its existence.

Today's fast-paced business and IT environment makes it extremely challenging to keep a documented up-to-date view of the architecture. **Tools** play an important role of simplifying this task.

### Enterprise Architecture Governance Framework

As discussed in Part I of this paper, the success of an Enterprise Architecture function is bound to the implementation of effective governance mechanisms – which tends to carry a bigger risk of failure for architecture projects than the actual production of the right content.

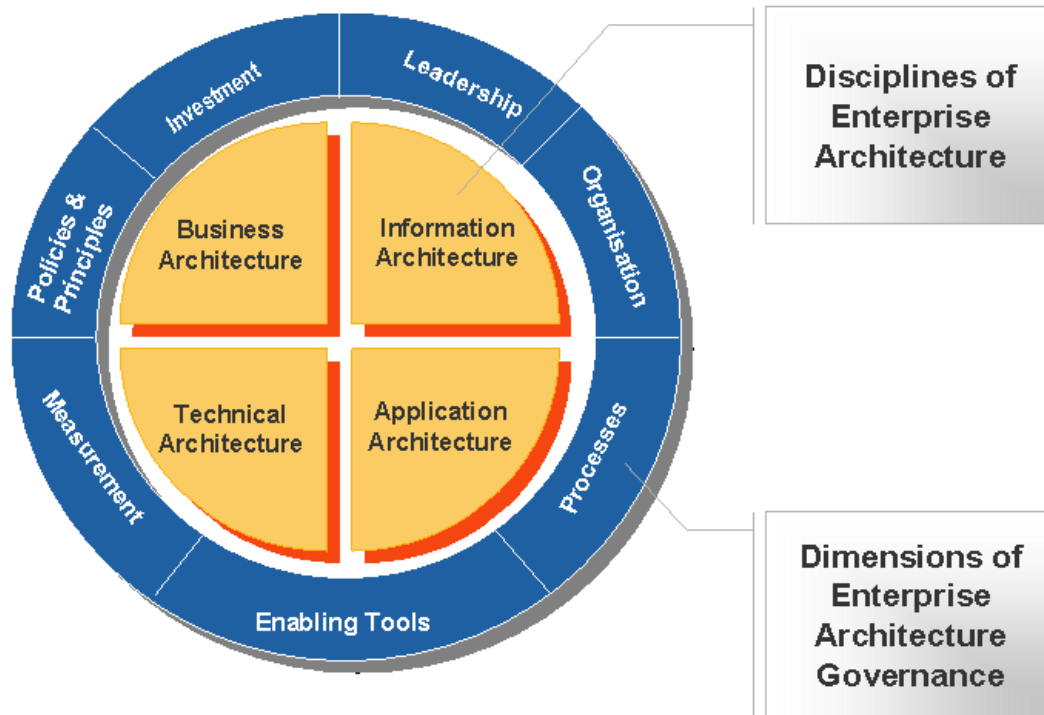


Figure 1- Enterprise Architecture Governance Framework

Source: Infosys Technologies Ltd.

Based on our experience, we have identified seven dimensions of architecture governance to be critical constituents of a successful enterprise architecture effort:

- Leadership
- Organisation
- Investment
- Policies and Principles
- Processes
- Measurements
- Enabling Tools

While the first three dimensions of Leadership, Organisation and Investment (which have been discussed in Part I) are critical for embedding the Enterprise Architecture function within the corporate ecosystem, the four dimensions of **Policies and Principles, Processes, Measurement** and **Enabling Tools** are indispensable for making it work effectively in an enterprise context.

### **Policies and Principles**

Policies and principles define guidelines for decision making on architecture development, implementation and management, to ensure transparency and objectivity.<sup>2</sup>

They govern the relationship between enterprise architecture and its stakeholders within and outside IT. This becomes important if conflicts arise or if new situations demand quick decisions, which are nevertheless inconsistent with the framework already in place.

Architecture governance principles are guidelines describing the reasoning behind decisions. While each architectural discipline has its own set of principles, the governance principles address interaction between the architecture and the organization it is embedded into. Such a principle could be: "Each shared service needs to have one and only one business owner."

Policies reflect an organizational decision about architecture governance. Such a policy could be "Exceptions from technology standards require approval by the head of the business unit owning the project, the head of finance and the head of architecture. They have to be reviewed on an annual basis."

Well-defined principles and policies for architecture arbitration improve acceptance of results and reduce time required for decision making.

It has proven particularly effective to look into the following areas:

- Identify and address foreseeable areas of conflict (e.g. development vs. operations)
- Take into account the architecture long-term vision, as well as the requirements & constraints of the environment under which Line of Business (LOB) IT teams operate.

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<sup>2</sup> The principles mentioned here are not related to architecture principles, which are part of the architectural content. They apply to the way how decisions on enterprise architecture itself and on its governance are arbitrated.

## **Processes**

The process dimension defines how architecture content is planned, developed, ratified and communicated, maintained and complied with by projects.

Enterprise Architecture processes enable technology to be managed in a manner that aligns it with business goals, adopted in the IT Strategy. These processes enable the architecture team to integrate with other enterprise processes such as project funding and portfolio management, to enable decision making at the right time and in the right manner.

EA processes are a mechanism to ensure compliance with enterprise policies and standards. They must account for vendor partners (e.g. integration partners, technology partners).

Successful architecture teams

- Treat communication as a core activity
- Build activities into the EA development process which develop buy-in for its deliverables early
- Integrate architecture with the processes for
  - IT Strategy
  - Funding/Investment
  - Budgeting & Planning
  - Procurement
  - Operations
  - IT Delivery

Key areas of architectural processes are

- Architecture Alignment
- Architecture Rollout, including communication and training
- Architecture Compliance, for instance through project reviews and procurement policies.

## **Architecture Alignment**

### ***1. Architecture Planning***

Enterprise architecture needs constant alignment with business strategy and other external drivers. Alignment is an ongoing process maintaining the current, future state, and intermediate architecture blue prints in order to guide projects

### ***2. Standards Definition***

Definition, review and publication of technology standards, policies, and guidelines

## **Architecture Rollout**

Rollout of architecture means more than publishing deliverables on a website. It includes the whole spectrum of internal marketing, as well as training for users.

### **1. Publication**

Architecture needs to be subject to a controlled release cycle, governed by appropriate reviews and approvals. Dependencies have to be managed carefully to ensure consistency. This is covered by publication processes.

### **2. Communication**

The first and foremost requirement of architecture communication is its accessibility. An industry wide best practice is to create an architecture website within the corporate intranet.

This, however, is not sufficient to create awareness of a new enterprise architecture and to establish it in the minds of its stakeholders; additional effort is required. An internal communication function – often located within the Marketing & Communications (Marcom) department – is aware of appropriate means given the culture of the enterprise.

For example, town-hall meetings can be an effective means of communication to reach a wider audience, and to demonstrate backing by senior management. For minor releases and fixes, mailing lists are a proven approach.

The purpose of communication is not only to ensure that the enterprise is aware of the Enterprise Architecture function and its deliverables. It also provides a mechanism to develop a collaborative community of architects that work together to ensure that Enterprise Architecture is current, and that IT projects are aligned to the technology strategy.

### **3. Influencing**

The enterprise architects need to be represented in steering committees both on application coordination and infrastructure change. They need to maintain formal and informal relationships to all architectural stakeholders.

### **4. Training**

Application architects require formal training on enterprise architecture, in particular to understand the interdependencies of applications, and to use enterprise architecture tools to document the applications.

## **Architecture Enforcement**

In giving an enterprise architecture team its mandate, the corporation gives the authority to take decisions on its behalf. This, however, means that it also needs to find ways and means of enforcing architectural decisions.

### **1. Investment Governance**

Investment governance processes comprise of reviewing the contribution of an IT project proposal to the implementation of the architecture, including the go/no-go decision on the budget.

## **2. Software Development Process**

Reviews of project architecture deliverables by the Enterprise Architecture team need to be embedded into the software development process in order to ensure its alignment with the medium-term architecture, and to drive it towards the target state. These are the review processes which are of crucial relevancy.

Identification, registration, promotion and tracking of software asset reuse opportunities is enabled by component reuse processes.

## **3. Operations**

IT operations need to be involved in the architecture rollout processes, to keep the function updated on the platforms on which future applications will be built. This includes both information regarding hardware and software infrastructure.

## **4. Exception Management**

Approval and regular review of exceptions to architectural standards to ensure that compliant alternatives have been considered, exceptions have business justification, and plans exist to realign with standards, once feasible and appropriate.

## **5. Procurement**

Usually the involvement in the procurement process is indirect, by defining “buy lists”.

## **6. Human Resource Processes**

A key element in enforcing architecture is to create motivators to align to architecture on an individual level. This can be achieved for example by linking performance metrics of project managers and architects to compliance to architecture standards.

## **Measurement**

Measurements need to be integrated with architecture processes so that architecture baselines can be formed and maturity tracked, architecture effectiveness and resulting business value can be measured.

EA initiatives are aimed at long term change, often without a direct correlation to delivering specific business functionality. Nevertheless, EA teams must be able to demonstrate value to business through quantitative measures.

With increasing maturity of architecture in an enterprise, metrics will proceed through the classes of

- Activity oriented metrics, tracking the performance of the group
- Acceptance oriented metrics, describing the perception within the enterprise
- Value oriented metrics, measuring the benefit generated for business and IT

It is important to

- Align and evolve measurement parameters and techniques with architectural maturity
- Make measurement an integral part of the review and status reporting processes
- Limit metrics to few, critical ones
- Regularly poll the satisfaction of stakeholders at all levels by formal surveys to gather feedback and enable continuous improvement
- Focus on benefit rather than cost alone – however, claiming to generate business value is credible only if it is underpinned with “hard”, measurable figures based on acceptance or activity metrics.
- Use an EA metrics dashboard to communicate EA effectiveness and progress

### **Sample Metrics**

#### Activity oriented metrics

- Number of architecture and design artefacts reviewed
- Number of architects certified

#### Acceptance oriented metrics

- Percentage of compliant projects
- Relative rating of EA as a support function in the organisation
- Number of software development team members in business units who look to EA for mentoring
- Feedback surveys (qualitative)

#### Value oriented metrics

- Revenues generated by new business initiatives during the time to market won by improved agility
- Cost savings through re-use of software components

### **Tool Enablement**

The tool enablement dimension defines tools, formats and conventions used to describe and define the disciplines of enterprise architecture as well as to support architecture governance processes.

Tools are no panacea for content related problems. Their value lies in

- Supporting the EA process
- Capturing architectural information in a structured form independent of their representation in models, and allowing a consistent representation in models of varying point of view and level of abstraction.

These tools not only include the software category of explicit EA tools, but all applications used to support capturing and representation of information used in the context of an enterprise architecture effort, including

- EA modelling & simulation tools
- EA communication tools
  - Intranet site
  - Collaboration tools

- Metrics dashboard & reporting
- FAQs
- Exception Management tools
- Architecture component repositories
- Enterprise Data Dictionaries

EA artefacts require collaborative development and communication across a diverse & distributed team. This needs a “common architecture definition language”, which however has to cater to different views and levels of abstraction, in order to be understood by all stakeholders.

When selecting a tool, it has to be ensured that it can be used easily throughout the enterprise, i.e. is available to all application architects. Otherwise, the effort of documenting applications, which form the building blocks of enterprise architecture, will fall to the architecture team, resulting in significant workload. There is also a significant risk of artefacts becoming outdated if projects are not able to keep them current.

Tools tend to be most effective if they

- allow driving and monitoring change
- become an integral part of the IT planning and delivery processes
- foster collaboration between architects and business analysts
- make models maintainable by reducing redundancy and integrating different views through a central repository, leveraging information from existing repositories (e.g. data models, infrastructure, and process models).
- enable collaboration across geographic locations
- are easy to use and to adopt, rather than being highly sophisticated, and demanding significant training.

## **Samples**

### Tools

- Alfabet SITM
- Telelogic System Architect®
- Troux/Metis<sup>3</sup>
- IBM Rational Rose
- Portal Server (Enterprise Architecture intranet site)
- ASG Rochade
- Mega
- IDS Scheer ARIS

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<sup>3</sup> Both vendors merged.



## Conclusion

Making Enterprise Architecture work means more than just developing the right content. It requires a defined governance framework. The governance framework is a critical enabler of an effective enterprise architecture.

Effectiveness cannot be achieved without having an appropriate level of maturity in all the identified dimensions. It is necessary to understand the inherent dependencies - dimensions embedding EA into the organisation (leadership, organisation and investment) have to be addressed before moving too far on operational dimensions - the policies and principles, processes, metrics and tools.

Our governance framework can help organizations determining how they are doing along each dimension. This assessment enables them to chart a continuous improvement course that deepens the impact of their EA programme and ensures that it delivers the business value promised.

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