Enterprise Architecture – Organizational Structure

Applies to:

Diploma thesis about “The Impact of the Enterprise Service-Oriented Architecture on the Future Role of the Enterprise Architect” written at the University of Applied Sciences, Karlsruhe / Germany.

Summary

The organizational structure is a central aspect in becoming a successful and agile market player who is fulfilling the business goals of an organization. Organizations had to realize that their goals can not be fulfilled by only adapting their systems landscape and implementing smooth business processes. Furthermore they should realize that a specific organizational structure is no “magic bullet” that can implicitly ensure the success of enterprise architecture. Organizational structure rather should be aligned with the strategy and processes of an individual organization.

Structure follows process follows strategy.

Alfred D. Chandler, 1969

Author: Sven Feurer

Company: SAP Deutschland AG & Co. KG

Created on: 20.04.2007

Author Bio

Sven Feurer joined SAP AG in 2005. Sven studied Business Information Systems at the University of Applied Sciences in Karlsruhe / Germany. He worked out his thesis on "The Impact of Enterprise SOA on the Future Role of the Enterprise Architect" in SAP’s Solution Marketing, now holding a master's degree. Today, Sven works as an Industry Advisor and consults SAP NetWeaver customers of different industries.
Table of Contents

Article at a Glance............................................................................................................................... 3
From Traditional to Lean Information Systems Organizations .......................................................... 3
The Enterprise Architecture Team ...................................................................................................... 9
Coming up next: ................................................................................................................................1 0
Bibliography...................................................................................................................................... 11
Article at a Glance

By reading last week’s article you learned more about the different enterprise architecture maturity stages and about their impact on the organizational structure of companies.

Organizations have realized that general business goals cannot be fulfilled by solely adapting their systems landscape and implementing smooth business processes. Furthermore, they consider the organizational structure to be a central aspect in becoming a successful, agile market player who is fulfilling their business goals. This requires the definition of roles and procedures for management and the governance of enterprise architecture early on.

This article provides an insight into the evolution of an information systems (IS) organization, demonstrate how enterprise SOA can affect the structure of IS organizations and describes the basic organizational structure of enterprise architecture teams.

From Traditional to Lean Information Systems Organizations

Information systems organizations come in various shapes and sizes. Each of these organizations is built around major macro processes that they perform or support. These processes generally fulfill specific, IT-related needs for internal customers. Although each information systems organization has a unique structure and individual processes, they may have many elements in common. As the enterprise architecture team is positioned within the information systems organization of a company, we will first address the major structural trends that face the entire information systems organization today [Pear06].

The information systems organization is typically led by a chief information officer (CIO)\(^1\). As the CIO is responsible for setting the strategic direction of the information systems organization, he or she has to choose an appropriate organization structure. Figure 1 represents a centralized approach to the information systems organization. A centralized approach was primarily dictated by mainframes in the 1960’s. Mainframes resided in one physical location and required centralized decision-making and local staff that operate and maintain these systems. During the 1980’s, personal computers allowed computing power to be spread beyond the raised-floor, air-conditioned rooms of mainframes. This was the very beginning of a decentralization approach to the information systems organization. Today the strategies, processes and structures of information systems organizations exist along a continuum from centralization to decentralization. Organizations should weight benefits and drawbacks against these two approaches. Some companies may combine the two approaches and choose a federal approach\(^2\), found in the middle of the continuum [Pear06].

As shown in figure 1, the information systems organization basically constitutes a central entity along a value chain of service providers and service customers. On the supply side, you can identify external service providers such as systems integrators, technology providers and professional services providers. On the demand side are customers of the information systems organization, mostly represented by company-internal business units.
Further indicated in the figure above are three major macro-processes within the information systems organization. These macro processes include all activities that the organization executes on operational, tactical and strategic levels [Gart03].

- The first macro process is about **driving innovation** within the company; therefore, it addresses processes such as strategic IT planning, management and oversight. In addition, this high-level macro process includes defining of business requirements in order to drive enterprise architecture as a key enabler for innovation.

- The second macro process of this organization takes up the innovations of the upper macro process and addresses all activities to effectively **deliver and facilitate change**. This includes supportive processes (such as educational processes, cultural change processes, etc.), as well as development processes to build applications and solutions.

- The last macro process is responsible for providing the **infrastructure** to support existing and emerging systems. This process includes basic IT disciplines such as data operations and maintenance, network management and desktop support.

Today many of these organizations are under tremendous pressure being in a marketplace that continuously demands “producing” more while spending less. IT divisions of publicly-traded companies are often challenged by increasing regulatory standards (e.g., the Sarbanes-Oxley Act) and compliance efforts (e.g., technology to enable sustainable compliance with these regulations). While information systems organizations have to manage an increased complexity in their IT environments, they additionally have to offer cost-efficient and convenient business solutions. These demands on IT have prompted information systems organizations to find an innovative answer in order to quickly and effectively meet these challenges. The answer consists of two main issues: outsourcing of selective IT services and shifting IT activities to business units. The result is a transformation of the structure of this organization toward a lean information systems organization.

### The impacts of IT outsourcing on the structure of the IS organization

To ease IT pressure, many information systems organizations delegate specific parts of their daily operations, and even of their tactical business (illustrated in figure 1), to an external entity that is specialized in these activities[^3]. While an example of IT services on the tactical layer may be application services, IT services on the operational layer comprise management of networks, data center operations, call center and Web hosting services. Thereby, organizations outsource (relocate) IT services that are not core and thus are
not directly responsible for business success. As the left arrow in figure 2 illustrates, IT outsourcing establishes new types of relationships between the IT organization and external services providers. Common vendor relationships shift to outsourcing relationships, such as strategic partnerships (vendor is responsible for an integral set of operations of the outsourcing IS organization), co-sourcing alliances (both outsourcer and IS organization are responsible for the success of the outsourcing project), and transactional relationships (the vendor processes well-defined, repeatable operations for the outsourcing organization)\(^4\).

Effective outsourcing of IT operations to external service providers moves information systems organizations to a more decentralized structure. Outsourcing enables information systems organizations to achieve multiple benefits \([\text{RoWR06]}\):

- **Lower costs**: Outsourcing reduces costs of the IS organization because outsourcing partners are mostly more professional in specific outsourced activities and thus can perform them more efficiently. Furthermore, offshoring\(^5\) provides many IS organizations with the opportunity to harvest the benefits of lower labor costs so they can achieve the value with less cost than through in-house provisioning of the same function.

- **Variable capacity**: There are diverse ways to price an outsourcing activity. For instance, when outsourcing desktop support, an information systems organization may choose a unit pricing model that offers to pay a fixed amount for each solved user’s support request. This means a conversion of fixed to variable costs. As a result, the organization can efficiently deal with peaks and valleys of demand by using variable capacities of their partners. Outsourced activities are defined and specified in a contract between the IT services provider and a customer in the form of service level agreements\(^6\).

- **Mitigate risks**: Outsourcing has risks; however, these risks can mostly be identified and measured by their nature, size and criticality. Outsourcing means that a certain amount of the risk is even transferred to the outsourcing party who is running the activities on behalf of the IT organization. So outsourcing partners typically provide advanced processes, offer 24/7\(^7\) technical support and are quite alert to the outsourced operations of their customers. IS organizations that, for instance, outsource the operation of their servers and network components, can reduce technology risks that would otherwise severely impact the business of the company\(^8\).

- **Focus on core capabilities**: Rarely focusing on outsourcing to reduce costs is a short-term objective that ignores the long-time viability of the organization. With a reliable and secure infrastructure as a base, information systems organizations are able to spend more time in business process design and

---

**Figure 1: Evolving IS organization which reflects the trend of outsourcing**

Adapted from: \[\text{Gart03}\]
improvements. Organizations are able to concentrate on value-adding core activities to deliver the changes that facilitate and support business innovations.

Outsourcing decisions must be made with adequate care and deliberation. Often these companies overlook the impacts of outsourcing on their employees (changing people’s behavior) and mostly lack an action plan to smoothly and incrementally address those issues. Examples of disadvantages should be considered and include a loss of managerial control over service quality and a thread to security and confidentiality. Furthermore, outsourcing can entail a loss of flexibility when organizations need to react to changing business conditions, as well as an increased complexity in managing and controlling outsourcing contracts [ChPe03].

A discussion about outsourcing activities within the information systems organization raises the question whether an outsourced enterprise architecture is the right decision or not. As a quick reply to this question, today the technical challenges of the enterprise architecture can be delegated, at least in part, to an external vendor. However, these transferred challenges cannot reduce upcoming relationship management challenges and organizational change challenges. Ultimately, this means that companies should not outsource their enterprise architecture because it is a crucial tool that links its mission and vision to its IT strategy [RoWR06].

The impacts of an enterprise SOA on the structure of the IS organization

Several times in this study, it was underlined that an adoption of enterprise SOA can result in a shifting of particular IT activities to business units. This change is expected to result in a more decentralized structure of the IS organizations. In a decentralized model, the information systems organization is responsible for core IT activities, leaving business units to establish their IT staff and allow them to make specific IT initiatives on their own (see figure 3).

Figure 3: Evolving IS organization which reflects major trends

With the concept of enterprise SOA, four new breeds of technology professionals emerge that can be assigned to appropriate levels of the information systems organization [WoMa06]:

- **Disruptive innovators**: This group is challenged to drive the business process innovation in the form of groundbreaking new services, applications and business processes. Disruptive innovators can be assigned to the strategic level of the information systems organization.
• **Composers**: The second group is primarily responsible for designing current business processes. Composers use model-driven development tools to efficiently combine process modules in the form of multiple enterprise services. They can be assigned to the tactical level of the information systems organization.

• **Consolidators**: This group mainly thinks about reusing prior IT investment and replacing legacy systems when they are not differentiating the company anymore and thus become commodity products. Consolidators can be assigned to a tactical organization level.

• **Repository keepers**: This last group primarily manages services in the enterprise services repository. They create services and maintain the repository to support composers and innovators. As composers and consolidators, repository keepers can be assigned to the tactical level as well.

While the enterprise architecture team is charged with all activities around the adoption of enterprise SOA, these groups are responsible for tapping the full potential and exploiting the value of the enterprise SOA. Below, each group is addressed in its appropriate level of the IS organization.

• **Driving business process innovation**: Today IT becomes a fundamental enabling force to achieve profitable growth through business process innovation. As enterprise SOA provides a platform that allows the composition of business processes and their migration across and outside the enterprise, the company may propel a new era of business process innovation. To underline the importance of a decentralized approach the chief architect of a pharmaceutical company said that an individual strategy depends on the organization structure and culture. The division of this company is more decentralized than other organization units. Decentralization builds the foundation for the community. The main idea is that innovation occurs in countries and cannot be done centralized. This is the point where disruptive innovators come into play. They can be assigned to the strategic level of the IS organization and aim to make a valuable contribution on the competitive edges of a business. “The disruptive innovator has to be a hunter and must be constantly on the move, looking for the next big thing.”

Having a broad view of the organization and its processes enables them to discover areas of opportunities for disruptive innovation [WoMa06].

• **Application development embedded in the business**: On the tactical level, the level of today’s projects and IT initiatives, enterprise SOA has a very important role. The heart of enterprise SOA’s promise is, in fact, to provide empowered employees in business units with tools that help them to do their job better. These employees can be assigned to groups of composers, consolidators or repository keepers [WoMa06]:

  • Composers mainly design and change business processes to enhance process efficiency and effectiveness. They are able to translate pure business logic into technical logic to utilize model-driven development tools and to delegate deployment of the appropriate solution.

  • However, consolidators are charged with phasing out and replacing systems that have outlived their return on investment and do not cope to reduce their TCO. Furthermore, this second group has to consolidate existing services and applications, identify and eliminate redundancies among them and provision ultimate reuse of these services.

  • In order to support process innovation, service composition and service development, repository keepers ensure a properly running architecture by managing the enterprise services repository. Members of this group define standards and govern the definition process for new enterprise services and business process components.

Driving success of the architecture in a decentralized, lean information systems organization often requires an intensifying of the collaboration between the enterprise architecture team and the company’s program management office. The program management office manages the project portfolio and ensures that all initiatives (e.g., projects of composers, consolidators and repository keepers) are well aligned to the
company’s business strategy expressed by the enterprise architecture. Ultimately, the program management office represents an important governance body which approves or declines the initiatives arising from IT activities from within both the information systems organization and the business units.
The Enterprise Architecture Team

An essential factor for the enterprise architecture success is the organization structure. First of all, enterprise architecture is a discipline that is handled quite differently across diverse organizations. Some companies may have achieved a certain architecture maturity stage that sufficiently helps them to operate their (current) business and thus these companies care little about architects within a formal enterprise architecture team. These companies typically have architects distributed across various IT domains, providing architectural advice in applications and infrastructure.

However, other companies that emphasize the strategic importance of their holistic enterprise architecture and assign key priorities for new architecture initiatives typically centralize all these architects into an enterprise architecture core team. Compared to decentralized architects within various IT domains, architects of the enterprise architecture team have a much broader view of the enterprise because they are directly involved in enterprise planning activities (strategic business planning in accordance with the business context) [BaJa06].

In order to develop an enterprise architecture fully aligned to the business strategy, the enterprise architecture team must be embedded in the information systems organization, and its activities must be linked to IT strategic planning processes [WeRB05].

![Image of typical enterprise architecture reporting structure]

Adapted from: [HaWe06]

The organization model above (figure 4) illustrates a quite common enterprise architecture reporting structure. As mentioned above, the information systems organization is typically led by the chief information officer (CIO) who directly reports to the executive management. The CIO is the strategic decision-making head of the entire enterprise architecture program and thus the key driver of enterprise architecture benefits. The enterprise architect often has the role of a senior manager and reports directly to the CIO. The enterprise architect leads the enterprise architecture team, composed of business, information, technical and solution architects. As the role of an enterprise architect was described above, we will turn particularly to the subordinated roles of an enterprise architect within the enterprise architecture core team [HaWe06]:

- **Business architects**: Business architects are business-savvy people and understand the business strategy of the company. They work with further business specialists, such as business analysts and business process experts, in order to develop coherent architecture models of the business.

- **Information architect**: Information architects have a clear understanding of information requirements, information flows and information usage within various business operations. They deal with basic topics concerning information accuracy and timing, as well as authentication and security. From a high-level perspective, information architects ensure that the company can efficiently run all business processes with the right, decision-supportive information at hand.
• **Technical architect**: Technical architects provide the basic infrastructure to perform business processes, to manage information and to run enterprise systems. They are often specialized in one or more technical domains.

• **Solution architect**: Solution architects design required enterprise solutions by combining architectural artifacts of the business, technology and information viewpoints. Systematic reconciling of these often-conflicting viewpoints allows solution architects to create architectural descriptions that resolve specific business problems in a best-practice manner. So they facilitate a rapid development and delivery of solutions to the business.

Architects of the enterprise architecture team must always hold the balance between architecting and governing the resulting architecture projects. They should not drift too far into issues around implementing the architecture or even implement projects on their own. This is indeed the governing task of a program management office as it ensures that standards, models, principles and guidelines defined by the architecture team are incorporated into the project life-cycle and afterwards get implemented within the development life-cycle.

As the adoption of the enterprise SOA moves the information systems organization to a more decentralized structure and embeds diverse IT activities in business units, it will influence the work of the enterprise architecture team as well. As a result, architects of the enterprise architecture core team more frequently work with multiple resources that are outside of the information systems organization. This new type of collaboration can be reflected in a virtual team structure. Such team structures help to draw talent from multiple organizational sources because virtual team members usually provide the enterprise architecture team with subject-matter expertise and professional competence in their specific (business) domains. Driving the team's attention beyond the traditional border of IT helps the core enterprise architecture team to retain oversight of the enterprise and enhance the quality of the architecture. However, designing an organization structure is as much art as science [HaWe06].

Finally, there will not be a “one structure fits all” approach to the enterprise architecture team. While we establish organization structure that spells out the positions to be filled with employees of the company, at the end of the day, it is mostly culture that defines the roles that go with these positions and the kinds of people who fill them.

**Coming up next:**

This series of articles is based on a very extensive customer survey in correlation with ASUG and SAP. The results of this survey are part of each article. To complete this series the last article next week will present to you all results of the survey.
Bibliography


1 Head of the information systems organization can also be a vice president or a director.
3 As suggested by Geoffrey Moore in his book “Living on the Fault Line”, companies should outsource anything and everything that isn’t core to their business based on the premise that they primarily invest and reallocate freed resources in core capabilities.
4 Please find further information regarding these three types of outsourcing relationships and their benefit-risk profiles in [RoWR06].
5 Offshoring is one type of IT outsourcing.
7 This means the service is available 24 hours a day, 7 days a week.
9 Ori Inbar, Senior Vice President of Solution Marketing for SAP NetWeaver (SAP). URL: https://www.sdn.sap.com/irj/sdn/weblogs?blog=/pub/wlg/4807.