Enterprise Architecture – Maturity Stages

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
Enterprise Architecture is no static, one-time issue. As a company’s business undergoes changes, an enterprise architecture needs to get adapted as well. The journey can be described by starting with the business silo architecture. Therein companies primarily make IT investments to meet local business needs. Passing through the two other stages, which are often called “standardized technology” and “optimized core”, the journey ultimately leads to the business modularity stage (e.g. enterprise SOA). It is quite obvious that this evolution of enterprise architecture implicates changes within the organization, especially of the role of the enterprise architect.

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Author Bio
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Article at a Glance

After giving you an understanding of the enterprise architecture process within the last two articles you are provided with detailed information about the process which aims at the implementation of enterprise SOA.

To give you a basic understanding of the continuous enterprise architecture journey, today’s article will be about the transitioning through enterprise architecture maturity stages. Starting with the business silo architecture, the article explains the meaning of the different stages and its impact on a company’s IT organization and business units.

Transitioning through Enterprise Architecture Maturity Stages

Since enterprise architecture is a continuous journey, you can basically classify four different maturity levels illustrated in figure 1: the business silo architecture, the standardized technology stage, the optimized core stage, and the business modularity architecture (e.g., enterprise SOA). In order to achieve the next maturity stage, management cannot easily shut down the enterprise and start from scratch. They need to redesign and then smoothly implement the architecture without interrupting daily operations.

Companies that move through these maturity stages require lots of persistence. However, when they advance their enterprise architecture from the business silo architecture to later stages, they can achieve a number of benefits (such as reduced IT costs, increased IT responsiveness, improved risk management, increased management satisfaction and enhanced strategic business outcomes).

In order to move the architecture to a next maturity level, a re-architecting change is required. As delineated in the figure above (by the dashed loop), this is managed by accomplishing an entire enterprise architecture process. Many companies migrate through all architectural stages. Some companies may choose not to migrate to a specific architecture stage, and others may wait and see if other companies have successfully adopted the next architecture stage. As described above, transitioning through the architecture stages affects the organization and changes the way a company does business. Enterprise architects must be aware of the organizational change at each stage and keep on learning from each stage. This is an important pre-requisite for creating value from the current stage and to be ready for the next stage. Companies take different amounts of time- for these transitions. Large companies typically require several years for each architecture stage [RoWR06].

The following table (table 1) characterizes enterprise architecture maturity levels by defining their impacts on the company, its IT organization and business units. These impacts are specified below.

<table>
<thead>
<tr>
<th>Maturity Stages</th>
<th>Impacts of architectural maturity levels on…</th>
<th>Company</th>
<th>IT organization</th>
<th>Business units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Business Silo</td>
<td>Delivers solutions for</td>
<td>Implement specific, local</td>
<td>Design individual</td>
<td></td>
</tr>
</tbody>
</table>
### Stage 1: Business Silo Architecture

The business silos architecture represents the first stage of enterprise architecture. Companies primarily make IT investments to meet local business needs. In this stage, the architecture does not make any constraints (e.g., standardized business processes, shared services, etc.) on business units’ activities. Thus IT ideally provides the functionality for delivering 100 percent solutions to the business. This often results in one-off solutions mainly demanded by local business managers in order to support their individual business requirements. These solutions make companies highly responsive to local market changes. However, one-off solutions are developed from scratch and are often not designed to communicate with each other. Subsequent efforts to integrate these disparate systems are time consuming, risky and expensive. It is often not the frustration about silos that demand the enterprise architect to move to the next maturity stage. It is the cost.

### Stage 2: Standardized Technology

In the second stage of architecture, maturity standardized technologies are the motor to move from local applications to a shared infrastructure. Companies mainly decrease the number of platforms by establishing a small set of technology standards. IT therefore utilizes these standards and negotiates solutions (e.g., best-of-breed solutions) if they are not aligned to their technology platforms. Standardized technologies facilitate global flexibility and reduce complexity of the consolidated systems landscape.

Before passing this stage, we will now take a closer look at the example of a finance service company. Their systems landscape was characterized by common business silos. As in most other companies, in the past this company bought best-of-breed solutions that did not fully fit in a harmonized and standardized
application portfolio. While moving to the second stage, they defined standard platforms which support this architectural concept. Today there is a basic, architectural decision-making process for purchasing or developing enterprise solutions systematically. This means new applications must be compatible with the existing systems landscape and need to be aligned with the IT strategy.

Systems landscape consolidation by reducing the numbers of platforms is a significant responsibility of enterprise architects in this phase. They have broad knowledge of business operations performed by systems, data structures embedded in applications and technology components that run these platforms. The survey clearly shows (graph 1) that enterprise architects, in junction with the CIO, make and enforce platform decisions.

**Question IV.5b: Do enterprise architects participate in platform decisions?**

![Graph 1: Participation in platform decisions in consideration of company sizes](image)

In general, the enterprise architect similarly participates in these decisions regardless of the company size. 61% to 68% say that enterprise architects participate in almost all platform decisions while 31% to 39% say that enterprise architects just support but cannot control platform decisions. But it seems that in 5% of the large companies with more than 40,000 employees, enterprise architects lose their power to actively participate and contribute in platform decisions. To bring architects into the decision-making process of large companies, they need to gain more authority.

**Stage 3: Optimized Core**

In the optimized core stage, companies view data and applications from an enterprise perspective and so mainly focus on shared data and enterprise systems. IT extracts crucial data from enterprise systems and makes it reusable for business processes and other IT applications. Business process platforms enable companies to effectively create solutions on top of the optimized core architecture. However, standardizing shared data and optimizing core business processes necessitates taking control over business processes that were previously "owned" by local business unit leaders. Thus it is difficult for enterprise architects to sell this architecture stage to business managers. Business managers should articulate the company’s operating model and work hand in hand with senior architects in order to define the enterprise architecture and implement the operating model. Global data and standardized process designs mostly influence or even dictate local decision-making. Even though local business needs are met suboptimal, standardized process designs do best support global business needs.
Stage 4: Business Modularity (Enterprise SOA)

Business processes optimized in the third stage are refined and modularized in the fourth stage. The outcomes from these activities are reusable modules (mostly based on Web service technology) connected to core data and backend processes. IT ensures that these modules can be seamlessly integrated and (re)composed into business process. These modules even allow business unit managers to individually create and optimize their front-end processes without accounting for backend implementation issues. This stage basically fosters a culture of innovation. In general, employees feel more empowered than ever before because they believe that their suggestions can make a difference in the development of new products or in the optimization of processes. In this stage of architecture maturity, IT and business units can more quickly implement these suggestions and reward productivity. In other words, business modularity architectures decentralize decision-making by handing the tools to the line managers and thus creating a proactive, innovative climate.

Impacts on the role of an enterprise architect

Today many companies are at the threshold of migrating their existing architecture to the business modularity stage. One well-known concept characterized by business modularity is Enterprise SOA.

Question IV.6: What are challenges for enterprise architects in future?

Graph 2: The biggest challenge for enterprise architects

As shown in the graph above, 83% of the survey participants specified that a migration to enterprise SOA is the major challenge for enterprise architects in the future. This is now the right starting point to turn to the challenging impact of enterprise SOA on the role of the enterprise architect.

The advent of enterprise services increases the importance of enterprise architects within companies. Enterprise architects are responsible for managing the development of enterprise services. As mentioned above, enterprise services make up the enterprise SOA and are, by nature, loosely coupled business modules with standardized interfaces. Such a loosely coupled architecture does not work by magic. On the one side, enterprise architects have to define the scope of enterprise services with the IT personnel and must make services available throughout the organization. On the other side, enterprise architects must understand the requirements of business units, as well as how they will access and consume those services. However, looking at both sides of the curtain (the one side of service providers, as well as the second side of service consumers) and thereby not losing the oversight to proactively enhance the architecture is a difficult undertaking. Without the enterprise architect, who is responsible for the big picture of the architecture, service specifications hardly reconcile with service requirements and vice versa. If such a mismatch happens, the architecture will not solve any business problems that were expected being solved before adopting the enterprise SOA [BlJa03b].

To meet these challenges of managing modularized enterprise services, enterprise architects must possess a wide range of capabilities, most of them non-technical.

- Manage expectations: Enterprise architects need a certain amount of pragmatism when adopting enterprise SOA. For instance, while enterprise SOA is primarily business process oriented, a
deployment of enterprise services must consider the underlying architecture over which the solutions should be deployed. Furthermore, architects may need to reengineer enterprise services before deployment in order to effectively drive service reuse. These are all aspects that demonstrate the need to manage expectations. The adoption of enterprise SOA may be impeded if business people and IT staff see enterprise SOA as working like a “magic bullet”.

- **Ensure stakeholder involvement**: Designing enterprise services is best served by inputs from experts of cross-functional teams. Therefore it can be necessary to expand the enterprise architecture team and include virtual members. This team can identify where benefits cross business units and make an impact on business results. Once an enterprise service is integrated into the enterprise architecture (more precisely, into the enterprise services repository of the enterprise SOA environment), users of these services are often non-technical and can be in virtually any part of the organization. The purpose of enterprise services, and so the concept of enterprise SOA is to remove the day-to-day burden from IT and shift it to business users. Thus enterprise architects must ensure continuous stakeholder involvement to realize value from this architecture maturity stage.

- **Decrease the need for SOA governance when using existing services**: It is important for enterprise architects to provide the right guidance and control to effectively govern the enterprise SOA. On the one side, companies can dramatically reduce the need for IT governance when adopting enterprise SOA. The answer is quite simple. The company can reduce the incidence of decision-making as they use existing enterprise services provided by SAP. These services are predefined, standardized and available for free. Enterprise architects can easily browse the Enterprise Services Workplace (ES Workplace) and afterwards integrate and deploy services in their environment [WoMa06].

- **Adapt and reengineer IT governance**: However, companies might not only use existing services from SAP and other software vendors. Then enterprise architects need to adapt the existing IT governance in order to ensure management of enterprise services across the entire lifecycle (from inception through analysis, design, construction, testing, deployment and production execution). The IT governance process traditionally starts with defining goals for IT initiatives. Next, the process delegates these goals to departments within the IT organization, such as application, hardware, security, networking and so forth. The SOA governance, however, tries to keep a constant dialog between business and IT through the concept of domain ownership. A new governance body may be established - let’s call it the SOA governance council - which is responsible for defining these domains. Domains are characterized by a set of managed enterprise services sharing a common business context. Consequently, members of each domain have to maintain applications that consume their services and ensure that services interfaces are accessible for other domains. The notion of service domains radically changes responsibilities of development teams. While developers were mainly focused on implementing functionality within applications they are now responsible for developing enterprise services within their specific service domain. The enterprise architect should understand that pursuing a cultural shift is necessary in order to make various developers and IT professionals aware of the new practices and their benefits [BlJa04]¹.

- **Leverage the architecture by joining an enterprise SOA ecosystem**: As enterprise SOA is adopted, enterprise services will begin to proliferate within companies. It will become increasingly important for enterprise architects to provide services that meet specific requirements of their customers (both internal and external). Therefore SAP has established the Enterprise Services Community (ES Community)² as a way for all members to directly influence the design and specification of new enterprise services. Companies who participate in the ES Community are able to make proposals of desired enterprise services that SAP should deliver to lower their integration efforts. Ultimately, enterprise architects should understand how to benefit from the ES Community in
order to leverage their enterprise services foundation to drive innovation around business processes and composite applications [WoMa06].

Coming up next:
The next article will provide you with an insight into the changing structure of IT organizations and how enterprise SOA and IT outsourcing can influence this structure. Furthermore the article will discuss how an enterprise architecture team can be embedded in the IT organization.
Bibliography


1 Please find further information regarding SOA governance: [MiTi05], [MaFr05].