

IMPLEMENTATION OF SERVICE ORIENTED ARCHITECTURE USING ITIL BEST PRACTICES

A. WAHAB¹, T. R. SOOMRO^{2,*}

¹Department of IT, SZABIST Dubai Campus, United Arab Emirates (UAE),

²Department of Computer Science, SMI University, Karachi, Pakistan

*Corresponding Author: trsoomro@smiu.edu.pk

Abstract

Service Oriented Architecture (SOA) principles normally allows the software applications to integrate with other software applications by means of a service in order to achieve the reusability, interoperability and this can also reduce the time of the other applications, which results in the support of new or changed business processes. However the expectation with SOA based applications in enterprise system was quite extensive and which hasn't been completely fulfilled for both IT and business. This paper proposes guidance in the implementation of SOA using the Information Technology Infrastructure Library (ITIL) best practices and from this a realization will come about the planning, designing and operating the SOA.

Keywords: SOA, ITIL, CMDB, Service Delivery and SLA.

1. Introduction

Information Technology Infrastructure Library (ITIL) is a compilation of best practices in IT Service Management. It allows delivering the infrastructure components of IT by means of services, which is known as IT Service Management (ITSM). It is mainly fulfilling the business requirements of an organization because its main concern is with delivering and supporting IT Services. ITIL offers a foundation of direction and it delivers what normally an IT organization thinks in terms of service delivery and support [1]. ITIL is the most widely used framework for management of Information Technology (IT) services that has been proven to improve customer satisfaction and operational efficiencies of services that IT departments offer to business [2]. ITIL is similar in many ways, especially in intent, to the ISO (International Standards Organization) process-improvement guidelines, which are normally designed to organize the service management and quality worldwide within operations. Consequently, if

we are contracting the data center for services then it can be assumed that it will incorporate ITIL methodologies; it should meet some level of best practices [3].

Service-oriented architecture (SOA) has always been a much debated and focused subject in IT. Initially the discussions of SOA focused on implementing the services / technologies, but with that work more exploration has come into a place in terms of management and governance of the components that is actually being developed / delivered using SOA techniques. Essential part of SOA is to deliver the services across a heterogeneous, distributed computing landscape. If not aligning these services with business, IT priorities and processes, then it can be assumed that SOA is just adding a burden to the management [4]. The benefits of using ITIL will bring as “Enables IT to consistently deliver services within the agreed SLAs across the enterprise” and SOA will bring as “Enables IT to consistently deliver loosely-coupled, reusable services within the agreed SLAs across the enterprise” [5]. This paper is organized as follows: section 2 will introduce SOA; section 3 will explore challenges in SOA implementation; section 4 will discuss the implementation of SOA, issues of SOA without ITIL & benefits of SOA with ITIL; final section will conclude this paper.

2. Service Oriented Architecture (SOA)

A SOA is basically a collection of services, the communication between services is either by simple data sharing or two or more services are coordinating via some activities. Historically, the first service-oriented architecture was based on the CORBA specification using Object Request Brokers (ORBs) or DCOM [6]. Getting more into service-oriented architecture, firstly one has to understand that what is service? A service is independent on the state or context of other services; it is a function that is self-contained. SOA is all about the web services, where the services are exposed, as shown in Fig. 1 [7]. In order to create a robust connection, web services use XML [6].

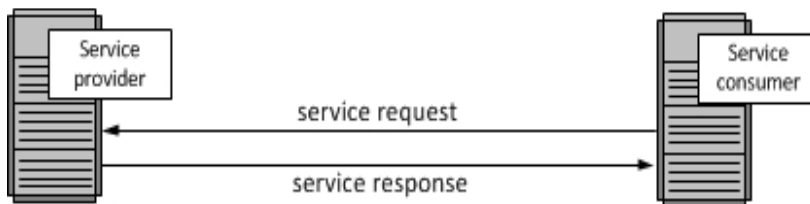


Fig. 1. Basic Service Oriented Architecture.

3. Challenges in SOA Implementation

SOA programs can bring up with the responsiveness benefits and tangible cost but there are few challenges, which should not be neglected. Nevertheless, there are numerous challenges, which need to be discussed if anyone wants to make SOA adoption a successful one. The challenges can be grouped into three common stacks: governance, quality and management [8].

3.1. SOA governance

It is the process of making the alliance among the main stakeholders like SOA Center of Excellence service consumers and the service providers. SOA Center of Excellence is usually handled by the architect or by the Chief Technology Officer (CTO) and they are mainly focusing on the service providers and consumers and making sure that a flexibility margin is there against control, they are also making sure that the standards have been followed to make the adoption of SOA as successful. Few questions needs to be answered in the area of governance are [8]:

- “How we can find services and trust them?”
- “Is the enterprise working on the right services?”
- “Can we establish a consistent and repeatable implementation process?” and
- “Can we control the services effectively that are already in production?”

3.2. SOA quality

It is the process that makes sure about the services, which are being delivered, should be fulfilling the functional and performance requirement of an organization, and be processed through a testing phase in the minimum amount of effort. It's very critical to encompass the testing process in order to discourse the precise essentials of SOA because implementing a service, which has already been developed by someone else so definitely it will be very risky for developers to do [8]. Furthermore if there is any change occurs to a service then proper testing should be done with respect to the test cases.

3.3. SOA management

It is the process of handling / managing the services that are already deployed in production. Following are the numerous characteristics of the management of SOA [8]:

- A proper monitoring mechanism for the services and the application that uses them should be there in order to check the performance and availability.
- There should be a proper restore plan, which ensures that whenever issues are detected it should be resolve or restore before impacting an end user.
- A proper SLA should be maintained between the provider and consumer.
- Services that are communicating during runtime must be managed by the policies.

4. Results and Discussion

SOA and management are always multifaceted, broad and deep in discussion. One may always consider that there is a service, where the components of service are developed within the context of business processes in terms of architecture and technology.

4.1. SOA implementation

Business processes are always established with respect to service level agreement, continuity, security, service catalogue management and more. Processes like change management, configuration management, release control and planning involves in the changing of a service between strategy and design. Lastly the focus on restoration and service availability should be governed for a service operation and that shouldn't limit to the service itself, it should involve in the discovery mechanism and with the involvement of problem management, incident management, access control and identity. Basically the key success factor for SOA is discovery. If let suppose a service is not consumable it means that a service cannot be found or no one knows about the existence of a service then the intact idea of composite application drops apart. The full realization to the service discovery process is brought with the merger of SOA Universal Description Discovery & Integration (UDDI) and ITIL configuration management database (CMDB) [4].

All above features are of SOA management and governance and that is what precisely ITIL & ITSM are all about. Keeping this in mind a clear picture has been developed that if any of the organization that has already adopted the ITIL and ITSM best practices then for them implementing SOA management and governance will have a much easier time defining. This appears to be very clear but the facts of the association need between ITIL and ITSM and SOA forms a complex topic. ITIL and ITSM are not specifically involved in SOA designed and build components basically it is used to address the governance and management of the services, which has been delivered or which will be delivered. Basically ITIL & ITSM is paired with ISO 20000; it also addresses many IT components in governance and management. Mainly ITIL classified into two groups: Service Management & Service Delivery [4].

SOA governance and management issues can be possibly solve by applying service management processes but the implementation of an effective and consistent change control and change management procedure is the biggest challenge that can be claimed for SOA built components. Although change is commonly known way for any organization in today's life but definitely the goal is to maximize the process, document each and every in-process change, exclude the unplanned change and control any emergency change. What many organizations do is first they find the exact value of a change control solutions, which is going to implement then they gain visibility into the change, finally they use some technology in order by apply change management policy. Change control has already been addressed by ITIL by initially using service support by means of incident management and the next steps are followed through with the problem management, change management, configuration management and lastly, release management. Although the surrounding areas of change management and change control are more prominent, commonly used and well known, but there are other areas also which come into play as well within the service delivery and that is also applied to SOA components. SOA components are increasing day by day because of diversify third party providers, which is combined with internally developed components. There are numerous best practices inside ITIL that can be applied to SOA components, for example, Financial Management & Supplier Relationship Management and this also a source from multiple vendors. These best practices communicate with the

processes of service management, such as, Availability Management, Capacity Management & Service Level Management. The importance of these processes is extremely significant as the SOA components also extends organizational boundaries and eventually with business boundaries [4].

4.2. SOA without ITIL

The survey has been conducted by global IT consultancy Ovum and 333 U.S IT decision makers validate it. According to the survey; 17% of medium-sized and 27% of large enterprises companies have deployed SOA in some of the extents of IT infrastructure. Nevertheless, satisfaction with the survey results are very inconsistent, adopting SOAs had resulted an unexpected complexity according to the almost one in five of the people's survey. SOA application and deployment requires much investment and support in terms of infrastructure management like same what it is being utilizing in development and testing tools because the most problematic part is that; the traditional IT management tools and processes are not permanently promising in terms of monitoring and managing. According to Gary Barnett (Ovum research director) the most SOA initiatives, which will be launching in the following three years, will apparently be fail. They discovered a high association among the satisfaction of business's level with SOA and its assurance to use the best practices of ITIL in order to manage IT as a set of services [9].

4.3. Benefits of SOA with ITIL

Many organizations are concerned in growing the efficiency of IT enterprise and refining the business priorities by adopting the best practices. The idea behind SOA is tremendously determined and promising with very attractive benefits. Following describes the goal and benefits of implementing SOA, which depicts more about it, as shown in Table 1 [4].

Table 1. Goals and Benefits.

Goal	Benefits
Reusability: Use of service	It is easy to share and reuse; the cost of reusability and management is less. This means easy standardization and flexibility, with reasonable cost.
Business Alignment: Functionality of the service	Traceability throughout the lifecycle to make it easy to align with business priorities.
Publish-ability: Functionality of service	Interface make is easy to integrate; it is simple and error less. Implementation is easily possible with greater adaptability and flexibility with lesser impact on consumer.
Formal: Formal contract between providers and consumers	It is easy to understand; collaboration between components is easily possible with quality of interface.
Abstracted: Extraction of Service	It eliminates particular dependence of technological implementation; No need to understand implementation model. This means simplicity, reasonable integration and assembly cost.

5. Conclusion

A global logistics company “Dematic” developed a new platform, which is developed using Service Orientated Architecture (SOA) and ITIL and according to them its replaced their core IT architecture. "SOA lets us basically plug and play. I know how painful legacy systems are and this means we don't need to mess around because we need to be very responsive", Allan Davies (Dematic Asia Pacific CIO) said [10]. SOA-designed provides significant improvement in the business because of its reusability nature. It is very important for the organization to follow the best practices of ITIL in order to strengthen the benefits; the earlier the alignment of SOA and ITIL is done and follow the process oriented guideline from ITIL the more successful result and benefits will come overall.

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