

Business Benefits of SOA

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Abstract— In this short paper we examine the benefits of Service Oriented Architecture from a business perspective. The paper starts emphasizing business demands which require technical solutions. Solutions, which allow us to rationally derive true business benefits. In contrast, these benefits are depending on additional effort and new doctrines on how to design and create, deploy, maintain and change the IT environment. We will illustrate how SOA - despite these extra constraints - prevails by leveraging existing IT assets.

I. INTRODUCTION

During the start of globalization and the rapid growth of organizations, by mergers and vertical integration, one common strategic demand emerged: *Interoperability*. Also in IT [1]. The way how business managed to melt IT-supported cross-organizational processes without to deteriorate operations, turned out to be crucial. Among interoperability, there is the pressure of *cutting costs*, excel in PBM and *foster innovations*; representing properties of competitive advantage. More precisely, an organization must stay flexible to customer's, supplier's and competitor's [2] needs and serve them on adequate and *multiple sales channels*. In order to avoid fines and the loss of reputation it must also strive for local and global *compliance* in various environments.

A Service-Oriented Architecture, SOA in short, is not an IT-Silver-Bullet for business. However, it can significantly assist to leverage enterprise business resources. Having identified the demands - predominantly the properties of competitive advantage - we examine the potentials of SOA in the following chapters in order to derive the true business benefits.

II. SOA POTENTIALS

A. Nucleolus Autonomy

SOA has emerged from complex IT system landscapes and is message-oriented and event-driven. This is for an apparent technical advantage: In its nature, messages represent transactions of one or more communicators; while all communicators share the semantics of the message – *preconditioning a synchronized vocabulary* - they still might process the message internally in a custom manner. SOA calls the dispersion of these individual nodes: services. The *encapsulation* of the inner-process creates autonomy, often serving a single purpose only. Thus, information systems are *loosely-coupled* and turn into enablers of interoperability in enterprises and beyond their borders.

B. Redundancy Prevention, Discovery and Composition

When providing this nucleolus services, it's simpler to avoid *redundancy* of code and service and therefore, an organization might leverage a service by multiplying the times of *reuse*. The reuse is alleviated with documentation by the owner or, even more sophisticated, by a *service repository* storing not just the connection (White Pages) of a service but also meta data [3] like category and relationships (Yellow Pages). Ultimately, interface definitions (Green Pages) are added, representing a *contract* of use for service publisher and consumer.

While the number of services grows, an organization might also exploit them by assembling *composite services*. It may either create entirely new services or wrap existing services. Combining the former with the later means *hiding complexity* of various services and *heterogeneous systems*, also known as *abstraction*, as illustrated in Figure 1. Again, the capability of service discovery, description and contracting plays a critical role.

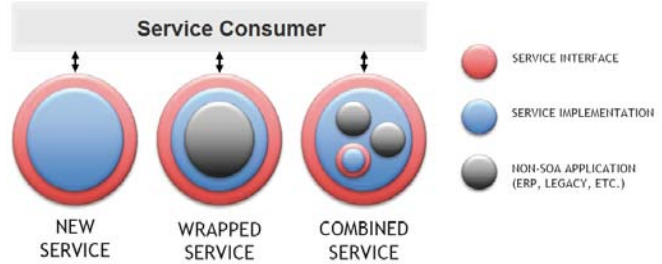


Figure 1 - composite services as an ubiquitous answer to information delivery. © Soreco AG, Switzerland

C. Coordination, Orchestration and Automation

«Media disruption», states Auinger and Nedbal, «lead to efficiency loss» in processes [4]. Since SOA builds on Web Services where *machine-to-machine* communication is intended, figuratively unlimited services, represented as activities, can be arranged in a process to avoid media breach. In a broader environment, one might also *orchestrate*, executed by a process engine, in order to fully *automate business tasks* [5]. A further stage is to synchronize concurrent running processes. This is known as *choreography* and is highly event-driven, because a SOA-capable engine is waiting and listening for necessary asynchronous processes, in order to finally accomplish a superior process.

As mentioned, these technical benefits are bound to the condition of having standardized messaging. Those standards are summarized in the *Interoperability Stack* [6].

III. THE TRUE BUSINESS BENEFITS DERIVED

So far we highlighted the technical potentials of SOA in chapter II. With these potentials, we can satisfy the business demands identified from chapter I and now lift extra gains.

A. Operational Business Benefits

Standardization of interfaces *reduces CAPEX and OPEX* [7] by leveraging existing software without suspending foreign technology; it *cuts labour costs* by reducing time-consuming and verbose API documentation needless when the Interoperability Stack is applied and complexity can be hidden.

Process time and process labour is downsized, by orchestrated machine-to-machine communication. Also one enriches processes with business rules and workflows, avoiding errors to happen – using various IT media at nearly the price of one. *Process optimization* in time, quality and costs is a prime business benefit. See Figure 2.

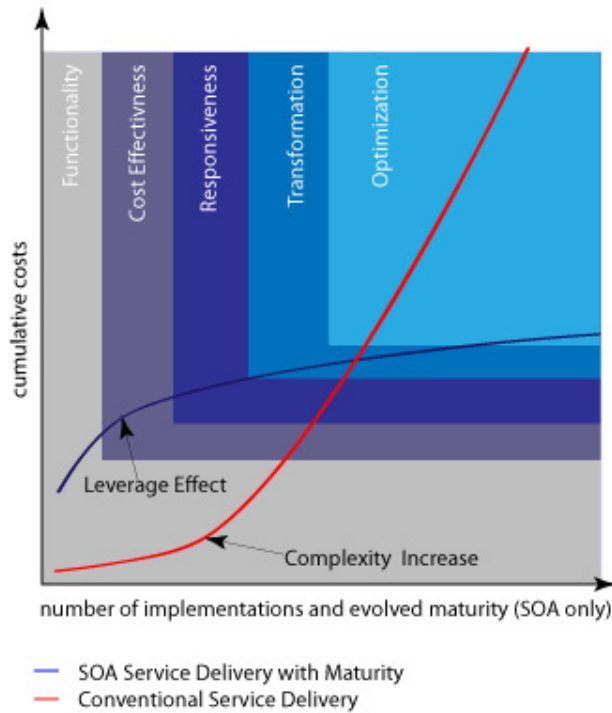


Figure 2 - Cost development comparison: SOA vs. Conventional Service Delivery. © Braynan Zimmerli and Progress Software Corp.

B. A Strategic Business Benefit: Agility

Agility [8] is won with SOA by quickly remove, change and add services according to business needs. In contrast, we ban conventional client-server technology, which slows down by proprietary standards and the change of entire software components instead of atomic changes within Web Services. From a more strategic perspective, the agility adds to the *first-mover-advantage* [9] and reduction of *time-to-market* [10] of products and services. To agility we also count the *avoidance of software vendor-lock-in* using *open standards*. Able to attach nearly any software to the application portfolio, technology will never hinder business. Additionally we take advantage of *global-sourcing* by

simply replacing a handful web-service in a supplier exchange scenario, and *streamline the supply chain* [11] with integration-centric PBM.

C. Risk Mitigation with Governance

Since autonomy of services will rise in an *integration-intensive* environment, integrity must be governed. Often this is accomplished by new roles [12] and SLAs attached to services. SOA supports the autonomy and makes it *transparent* [13], where *ownership* [13] can be unambiguously assigned. This creates accountability and responsibility. Since ownership is charged, it is a *natural barrier* for BPOs from subsidizing new services.

A comfortable side-effect is the *reduction of security risk*. Less services, is less vulnerability, is less risk and thus less cost in an unpleasant contingency event. Avoidance of social and environmental violation using IT, *increases reputation among investors* [14] and other stakeholders.

IV. CONCLUSION & OUTLOOK

We conclude, we establish a SOA environment to cut costs and sustain agility. But, it must be accompanied with adequate governance activities, in order to control the negative excrescence of SOA without harming agility and innovation. We align IT with business towards a respected service-oriented IT organization [12].

However, we grow governance incrementally [15]; service by service to avoid death-by-process and to keep agility up. We are well advised to apply the WS-Stack [16-17] to achieve solid QoS [18] levels.

Adding semantics technologies like ontologies, SWS and semantic service brokers to processes in the future, might even increase the *agility at run-time* [19].

I. APPENDIX

A. Keywords

SOA, Business Benefits, Interoperability, Agility, Cutting Costs, Process Performance, Governance

B. Major Business Benefits at a Glance

Major Business Benefit	Cause, Reason
Reduce Capital and Operational Expenditure	Leveraging legacy and existing IT asset; cut labour-hours by reducing service integration costs (documentation, maintenance, creation, etc)
Process Optimization (e.g. Streamline Supply Chain; Product Development; Billing Service; etc.)	No media disruption; integration-centric and automated PBM avoiding individual process errors; orchestration and choreography to streamline/smoothen processes; decrease customer response time.
Global Sourcing	Exploit supplier competition; single supplier has less bargaining power.
Agility	Cross-organizational interoperability with open standards; low service adaption cost; no vendor-lock-in; no technology lock-in; agility to increase revenue by innovation and reduction time-to-market days.
Business Risk Reduction, Controlling enabled	Natural incentives to leverage and govern existing resources; Pay-what-you-need; increasing reputation by controlling contingency and assure compliance of data management in particular security; capable of align IT with business.

C. Glossary

BPO	Business Process Owner
CAPEX	Capital Expenditure
OPEX	Operational Expenditure
PBM	Business Process Management
QoS	Quality of Service
SLA	Service Level Agreement
SWS	Semantic Web Services
UDDI	Universal Description, Discovery and Integration
WS	Web Service
WSDL	Web Service Description Language
WS-Stack	Web Service Stack
XML	Extensible Markup Language

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