Chapter 12
Service Oriented Architecture
Conceptual Landscape:
Part II

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ABSTRACT

Contemporary architectural approach is for an orchestrated, agnostic, federated enterprise through the adoption of loosely-coupled open Service interfaces. The Service-Oriented Architecture (SOA) paradigm unifies disparate, heterogeneous technologies. It resurrects legacy technology silos with a Service 'face-lift' while maintaining their autonomy. Somewhat in its infancy as standards and methodologies are evaluated and adopted, the differences between theory and praxis of SOA remain to be fully determined, predominately due to the size and complexity of the conundrum it addresses.

INTRODUCTION

Service-Oriented Architecture (SOA) attempts to deliver a potentially Panglossian promise of an IT infrastructure agile enough to cater for rapidly changing Business demands. It offers a panoptic vantage point for enterprise Business state and empowers the Business to define and map IT infrastructure to process.

This article draws extensively on published research in the past two years and supporting sources germane to current SOA issues in collaboration, to describe a conceptual landscape of current, prominent SOA concerns.

Part I addressed how SOA is defined, its characteristics, evolution, motivation and approach (Young, 2009).

Part II concentrates on the technology of SOA particularly, Semantics, Representational State Transfer (REST), Object Orientation (OO) and, Operations and Quality aspects.

Final conclusions are presented based on the literary review and in relation to the OASIS SOA Reference Architecture (OASIS, 2006).
SERVICE-ORIENTED ARCHITECTURE (SOA)

‘Service Oriented Architecture (SOA) is a paradigm for organizing and utilizing distributed capabilities that may be under the control of different ownership domains’ (OASIS, 2006).

ENTERPRISE SERVICE BUS (ESB)

[Enterprise Service Bus] is the middleware glue that holds an SOA together and enables communication between Web-based enterprise applications. However, ESB...faces challenges, such as implementation costs and complex migration and management (Ortiz Jr., 2007).

Enterprises often must provide employees, suppliers, customers, and partners with on-demand services and information culled from various data sources (Ortiz Jr., 2007).

The Enterprise Service Bus (ESB) provides the middleware that binds disparate, heterogeneous and legacy systems together. Unlike the 1980/90’s Enterprise Application Integration (EAI) incarnations that forced point-to-point interfaces that had to be developed individually in a ‘hub-and-spoke’ pattern, SOA allows for service reuse through flexible connectivity and communication through the ESB pipe. ESB’s lack of central broker also permits gradual adaptation and consequently, growth, and eliminates potential bottlenecks and Single Points of Failure (SPoF). The use of standardised and familiar protocols increases adoption and reduces development time.

In many ways ESB faces the same charges as EAI however, with potentially high implementation costs, and complex migration and management. Successful ESB implementation in an organisation requires specific attention to that organisations needs. There may be little business advantage for the first few ESB initiatives. Selecting a technology vendor is often a daunting task especially while specifications are volatile and experience is lacking.

WinterGreen Research predicts the global ESB market will grow from $203.8 million USD to $494.4 million USD by 2013 (Ortiz Jr., 2007).

SERVICE-ORIENTED COMMUNICATION (SOC)

Chou, Li, and Liu (Chou et al., 2008) propose an extension of SOA as a methodology for service integration to a framework for Service-Oriented Communication (SOC). As well as WS-Session standards, they discuss WS Initiation Protocol (WIP) as a WS and SOA-based communication paradigm for multimedia and voice communication over IP.

Chou, Li, and Liu (Chou et al., 2008), ‘...describe a service-oriented communication (SOC) paradigm based on Web services for real-time communication and converged communication services over IP. This approach extends Web services from a methodology for service integration to a framework for SOC. In particular, [they] introduce the generic Web services-based application session management (WS-session), the two-way full duplex Web services interaction for communication, and most importantly, the development of Web Services Initiation Protocol.

IP MULTIMEDIA SUBSYSTEM (IMS)

The real challenge for the community is to identify and document patterns of SOA introduction and existing or legacy system migration, because some strategies can be applied in multiple contexts (Hutchinson et al., 2008).

We...discuss the possibility of using the service oriented architecture (SOA) to integrate IMS [IP Multimedia Subsystem]-based enterprise...
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