

# Chapter 1.5

## Service Flavors: Differentiating Service Offerings in a Services Marketplace

**Harshavardhan Jegadeesan**  
*SAP Labs, India*

**Sundar Balasubramaniam**  
*BITS, India*

### ABSTRACT

In a services marketplace where a particular service is provided by multiple service providers, service offerings have to be differentiated against competitor services in order to gain market share. Differentiation of services is also needed for different markets and for different consumer segments. Strategies to differentiate service offerings have to be unintrusive—without requiring major changes to the existing service realization mechanisms. In this article, the authors present Service Flavors, a strategy for service providers to differentiate services. By using this strategy, it is possible to analyze and adapt various aspects of a service that help differentiate it from that of the competitors. The authors model differentiating aspects as policies and also provide a mechanism for enforcing these policies in the middleware.

### 1. INTRODUCTION

Service-oriented computing paradigm deals with organizing and utilizing distributed capabilities under the control of different ownership domains (Oasis, 2005). A service represents an underlying capability of a provider which meets the goals of a consumer. In the services marketplace (Papazoglou & Georgakopoulos, 2003) context, a service could be a commoditized service, a specialized service or a monopolistic service based on the number of service providers providing that service.

Specialized services are provided by very few service providers in the services marketplace (e.g. payroll & benefits services). A service offered by a single service provider is a monopolistic service. Examples of monopolistic services are *Apply for Driving License* and *File Tax Returns* services offered by the state department (service provider). The citizen (service consumer) uses these services

to apply for a motor vehicle driving license or to file his tax returns. Normally eGovernance services are monopolistic in nature as they are provided by a single service provider—the government (Press, 2003).

In contrast, commoditized services are always provided by multiple competing service providers in a services marketplace. For example, consider a *Shipping Service* in the context of an e-marketplace such as eBay®. It is provided by multiple providers such as UPS®, USPS®, DHL®, OverniteExpress® or FedEx®. More often than not, the underlying capabilities represented by these services remain the same due to standardization of messages and interfaces. Standardization leads to business layer interoperability; efforts such as Universal Business Language (UBL) (Meadows & Seaburg, 2004), ebXML (Kotok, 2001), RosettaNet (Damodaran, 2004) and UN/CEFACT (Hofreiter, Huemer, & Naujok, 2004) address business layer interoperability. The standardization of these competing services is a result of market compulsions. For customers, standardization supports easy migration from one provider to another. However, standardization takes away provider lock-in advantages for service providers. As a result, every service provider is faced with the dilemma of balancing standardization and differentiation of their service offerings. Given that standardization is a necessity, service providers of commoditized services must still differentiate their service offerings from that of the competition in order to sustain as well as gain market share. The differentiation strategy used to differentiate services in a services marketplace must be unintrusive, i.e. without requiring major alterations to already existing service realization mechanisms.

The context of this article is a service development and delivery platform that enables the service providers to differentiate their service offerings. Our main contributions in this article are the following:

- We present Service Flavors: A strategy for unintrusive differentiation of service offerings.
- We provide means to identify and specify differentiating aspects of service offerings. We propose a way to document these aspects in a catalog.
- We propose a model-based approach for domain experts to specify differentiating aspects of service offerings as service policies.
- We describe how differentiation is achieved at runtime through policy enforcement during service invocation and execution.

### 1.1 Example: *ShippingService*

We use the example of a fictitious *ShippingService*—a commoditized service provided by FedEx®. A commoditized shipping service in an e-marketplace like eBay® would be provided by multiple service providers such as UPS®, USPS®, DHL® etc. The schemas of the messages could either be similar or different across service providers, but the underlying capability is the same. The service capability model below represents the *ShippingService* (Figure 1). The service capability model is based on a services metamodel described in (Harshavardhan Jegadeesan, 2008). The corresponding WSDL 2.0 (Chinnici, Gudgin, Moreau, Schlimmer, & Weerawarana, 2004) snippet (Figure 2) shows the functional service description of the fictitious shipping service. The shipping service defines a *ShipItem* operation which supports shipping a package from one place to another.

The rest of the article is organized as follows: Section 2 introduces the concept of differentiating aspects (i.e. flavoring aspects); we identify specific flavoring aspects and document them in a catalog. Section 3 describes how the flavoring aspects are modeled as service policies using a generic policy metamodel. Section 4 describes how the policy models are translated to executable specification. Section 5 describes how these policies and

20 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/service-flavors-differentiating-service-offerings/43941](http://www.igi-global.com/chapter/service-flavors-differentiating-service-offerings/43941)

## Related Content

---

### The Influence of Travel Experience on Mature Travelers' Quality of Life

Yawei Wang, Francis A. McGuire and Bin Zhou (2011). *International Journal of Information Systems in the Service Sector* (pp. 52-64).

[www.irma-international.org/article/influence-travel-experience-mature-travelers/50567](http://www.irma-international.org/article/influence-travel-experience-mature-travelers/50567)

### A Quality Driven Web Service Selection Model

Pierluigi Plebani and Filippo Ramoni (2012). *Handbook of Research on Service-Oriented Systems and Non-Functional Properties: Future Directions* (pp. 142-164).

[www.irma-international.org/chapter/quality-driven-web-service-selection/60885](http://www.irma-international.org/chapter/quality-driven-web-service-selection/60885)

### Architectural Strategies for Green Cloud Computing: Environments, Infrastructure and Resources

P. Sasikala (2013). *Cloud Computing Advancements in Design, Implementation, and Technologies* (pp. 218-242).

[www.irma-international.org/chapter/architectural-strategies-green-cloud-computing/67904](http://www.irma-international.org/chapter/architectural-strategies-green-cloud-computing/67904)

### Knowledge Transfer in Product-Based Service Design

Naoshi Uchihira (2014). *Progressive Trends in Knowledge and System-Based Science for Service Innovation* (pp. 258-272).

[www.irma-international.org/chapter/knowledge-transfer-in-product-based-service-design/87926](http://www.irma-international.org/chapter/knowledge-transfer-in-product-based-service-design/87926)

### Service Coordination

Bill Karakostas and Yannis Zorghi (2008). *Engineering Service Oriented Systems: A Model Driven Approach* (pp. 87-113).

[www.irma-international.org/chapter/service-coordination/18308](http://www.irma-international.org/chapter/service-coordination/18308)