

## Applies to:

SAP enterprise SOA offerings

## Summary

This is a short overview of basic definitions and common terms related to the **enterprise SOA** topic.

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## Author's Bio



Goran Stoiljkovski is a solution architect whose main focus is on architecture and design of distributed systems and solutions as well as on the emerging Web 2.0 technologies. He is member of a team called *Solution Co-Innovation*, which drives the technological co-innovation in SAP's ecosystem.

## Enterprise SOA Glossary

This is a short overview of basic definitions and common terms related to the **enterprise SOA** topic. This glossary does not claim completeness. Its sole intention is to help people not familiar with the SAP terminology find their way around the lingo of SAP's enterprise SOA offering.

The terms introduced in this glossary are widely accepted industry terms. People familiar with terms used in a general state-of-the-art context will identify the Enterprise SOA terms as "stuff they know of, but maybe name differently".

This glossary sometimes goes beyond a pure definition and gives some basic characteristics of a specific term – if appropriate – in order to contribute to their better understanding.

The terms and definition introduced here are mainly of technical nature. The business aspect of enterprise SOA was intentionally left out. Thus this glossary primarily addresses developers, architects and business process experts – but anyone may read it.

Unlike a traditional glossary, this one is not arranged alphabetically but has a rather contextual order.

Term	Definitions and Basic Characteristics
<b>Service Oriented Architecture (SOA)</b>	<p><b>Service Oriented Architecture (SOA)</b> is a software architecture based on the key concepts of</p> <ul style="list-style-type: none"> <li>• an <b>application frontend</b>,</li> <li>• a <b>service</b>,</li> <li>• a <b>service repository</b> and</li> <li>• a <b>service bus</b>.</li> </ul> <p>Services consumers and services providers are loosely coupled. The service interface definition is a kind of contract between the providers and the consumers.</p> <p>The terms service, service repository and a service bus are explained below.</p> <p><b>Note:</b> But in addition, SAP uses the term <b>enterprise SOA</b> to transport its idea on how SOA should be deployed in enterprises. This concept goes beyond the process of identifying and addressing the issues in an IT landscape but rather introduces a solution proposal for them.</p> <p><b>Note:</b> the SOA definition given here is according to Krafzig, D. et al.: <i>Enterprise SOA: Service Oriented Architecture Best Practices</i>, Prentice Hall International 2005</p>
<b>Enterprise SOA</b>	<p>Enterprise service oriented architecture (enterprise SOA) is a term introduced by SAP and stands for a business-driven software architecture that goes beyond SOA fundamentals by introducing business semantics to it. Enterprise SOA combines the technologies, standards, and approaches of a service-oriented architecture with a common business language that SAP co-defines with its ecosystem in the form of <b>enterprise services</b>.</p> <p><b>Note:</b> Recently the term <b>Enterprise SOA</b> emerges in the industry independently from SAP wording. The enterprise SOA term emerging outside the SAP world is understood as abbreviation for "<b>SOA deployed in enterprises</b>".</p>

<b>Web Service</b>	<p>A Web Service is any service/functionality available over the Internet and related transport protocols, which</p> <ul style="list-style-type: none"> <li>• uses a standardized XML messaging system (i.e. SOAP)</li> <li>• is not tied to any operating system or programming language</li> <li>• is self-described via a common XML grammar (WSDL)</li> <li>• is discoverable via a standardized mechanism (i.e. UDDI)</li> </ul> <p>The original and rather simplistic definition of a web service did not include the last two requirements. And though today we think of them as being not only desirable features but essential parts of a web service. Moreover most of the software and technology vendors nowadays provide a sophisticated set of frameworks and tools for seamless consumption and provisioning of web services.</p>
<b>Service</b>	<p>SOA defines a service as any kind of functionality exposed via fixed interfaces and using open standards. A service consists of</p> <ul style="list-style-type: none"> <li>• a <b>contract</b> (constituted by the interfaces' definitions),</li> <li>• one or more <b>interfaces</b> and</li> <li>• an <b>implementation</b></li> </ul> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• This definition of a service does not bear a restriction on the underlying technology. A (SOA) service is comparable to SAP's Enterprise Service, which is technically speaking a Web Service. The definition of a (SOA) service is wider - a JMS service for example is not a web service but very well a (SOA) service.</li> <li>• In terms of this definition a BAPI could also qualify for a SOA Service – if it used open standards.</li> <li>• These definitions do not indicate any limitation on the implementation of an enterprise SOA though. One can usually expose almost any functionality as a web service.</li> </ul>
<b>Business Service</b>	<p>Lately the term of a “business service” has come on stage. By definition, a business service is any IT service that is visible and has a stakeholder on the business side. This term has been adopted by some analysts (Forrester) and has been promoted as a “dynamic business-focused IT-service”.</p> <p>This term seems to emerge from the need for a common communication between the business and the IT in an enterprise. It is the closest approximation for an Enterprise Service as defined and promoted by SAP.</p>

<b>Enterprise Services</b>	<p><b>Enterprise Services</b> are services that have well defined business meaning. They are associated with</p> <ul style="list-style-type: none"> <li>• <b>Business Semantics</b> - Enterprise Services are structured according to a harmonized enterprise model based on Process Components, Business Objects and Global Data Types.</li> <li>• <b>Quality and Stability</b> - Enterprise Services ensure stable interfaces for the future. They are well documented (dependencies, configurations etc.)</li> <li>• <b>Standards</b> - Enterprise Services are based on open standards. The interfaces are described in WSDL. They are created out of Global Data Types (GDT) which are based on UN/CEFACT CCTS (Core Component Technical Specification)</li> </ul> <p>By introducing <b>enterprise services</b> as its core components, enterprise SOA puts the focus on the reusability of business functionality and thus supports enhanced agility in responding to changes in business process requirements.</p>
<b>Enterprise Service Bus</b>	<p><b>ESB</b> refers to a software architecture construct. This construct is typically implemented by technologies found in a category of middleware infrastructure products, usually based on recognized standards, which provide foundational services for more complex architectures via an event-driven and standards-based messaging engine (the bus).</p> <p>An ESB generally provides an abstraction layer on top of an implementation of an enterprise messaging system.</p> <p>ESB does not implement a service-oriented architecture (SOA) but provides the features with which one may be implemented. Although it is a common belief, ESB is not necessarily web-services based.</p> <p>SAP introduces a similar concept based on a product called SAP NetWeaver PI 7.1 (Process Integration)</p>
<b>Enterprise Services Repository</b>	<p>The ES Repository is the central repository where enterprise services, business objects, processes and their metadata are stored. The ES Repository contains information on the</p> <ul style="list-style-type: none"> <li>• Technical part of the service (WSDL)</li> <li>• Semantics of the service</li> </ul> <p>The central repository is part of the SAP NetWeaver platform and also includes a UDDI V3.0 based Service Registry.</p> <p>Casually spoken, the Service Registry contains information valuable at runtime of an application or process using the services.</p> <p>The Enterprise Service Repository contains information valuable at design time of the application/process.</p>
<b>Service Repository</b>	<p>Lately the term Service Repository came on stage independently from SAP as the need for repositories was identified in order to setup a usable SOA infrastructure.</p>

<b>Business Object</b>	<p>Business Object is a term defined in the classical computer science and denotes a representation of a uniquely identifiable business entity.</p> <p>Business Objects are the primary structuring element of Enterprise SOA and contain the business logic:</p> <ul style="list-style-type: none"> <li>• Business semantics</li> <li>• Data structure</li> <li>• Functional behavior</li> </ul> <p><b>Examples:</b> Sales Order, Purchase Order</p>
<b>Process Component</b>	<p>SAP term. Process Components is a modular, context independent and reusable piece of software that exposes functionality as a service. It can be identified with a business process. It combines related business objects, their services and the corresponding process agents.</p> <p><b>Examples:</b> Sales Order Processing, Purchase Order Processing</p>
<b>Core Components Technical Specification (CCTS)</b>	<p>CCTS is a specification driven by UN/CEFACT council. It defines meta models and rules necessary for describing the structure and contents of conceptual and physical/logical data models, process models, and information exchange models.</p> <p>For more information visit <a href="http://www.unece.org/cefact/">http://www.unece.org/cefact/</a> or <a href="http://xml.coverpages.org/ni2007-04-20-a.html">http://xml.coverpages.org/ni2007-04-20-a.html</a>.</p>
<b>Global Data Type</b>	<p><b>Global Data Types</b> are data types based on CCTS. Basically the advantage of the CCTS methodology is that it allows for definition of generic data types (for core components) and data types for a specific vertical industry.</p> <p><b>Example:</b> A generic global data type could be a “Sales Order”, which can be extended for the needs of a specific industry – i.e. oil and gas.</p> <p><b>Note:</b> The business objects of SAP’s Enterprise SOA are roughly speaking a structured set of Global Data Types.</p>
<b>Service Data Object (SDO)</b>	<p>A Service Data Object is a data object representation, which holds not only primitive and complex data structures, but also references to other data objects (references meta data). An SDO is roughly speaking an abstraction of a business object.</p> <p>The SDO is an open specification mainly driven by IBM.</p>
<b>Service Component Architecture</b>	<p>Service Component Architecture (SCA) is a set of specifications which describe a model for building applications and systems using a Service-Oriented Architecture. SCA extends and complements prior approaches to implementing services, and SCA builds on open standards such as Web services.</p> <p>SCA i.e. introduces a programming model for building service components for composite applications and also an assembly specification allowing for packaging and thus deploying such components.</p> <p>The standardization efforts run under the Open SOA initiative (<a href="http://www.osoa.org">www.osoa.org</a>). SAP is one of the main contributor and driver of this initiative.</p>

<b>PIC = Process Integration Council</b>	Actually the "Interface Definition Team". In a PIC Governance Process, this SAP-wide team is defining the "services" to be a part of the Enterprise Service Repository.
<b>Business Process Management (BPM)</b>	<p>"... is a generic software system that is driven by explicit process designs to enact and manage operational business processes". It means that BPM systems facilitate the separation/decoupling of processes and application logic.</p> <p>BPM has its roots in workflow management. Workflow management systems are primarily concerned with the execution of activities in a predefined but revisable order called workflow.</p> <p>BPM in contrast addresses a broader scope; it comprises methodologies, modeling techniques and tools to define, simulate and validate process flows.</p> <p>The term is embraced by the major vendors of SOA middleware (TIBCO, BEA, IBM etc) and analysts (Gartner, Forrester). Standardization efforts under <a href="http://www.bpmi.com">http://www.bpmi.com</a> - the business process management initiative.</p>
<b>Composite Application</b>	<p>Composite applications are assembled using reusable services from existing standard and custom-built applications that may reside within or across enterprise boundaries.</p> <p>Roughly speaking, they are the "Enterprise mash-ups".</p>
<b>xApp (cross application)</b>	<p>xApps are packaged composite application sold as an SAP product. Mostly industry specific.</p> <p>They correspond to the so called "packaged composite applications" – a state-of-the-art term used in a general industry context.</p>
<b>Composite Application Framework (CAF)</b>	<p>CAF is a Java based framework for building composite applications. It consists of two distinguished parts:</p> <ul style="list-style-type: none"> <li>• <b>CAF Core</b> is a framework for modeling and composing enterprise services and thus the application logic</li> <li>• <b>Guided Procedures</b> are a framework for modeling user centric business processes</li> </ul> <p>The functionalities of SAP's CAF are reflected in various tools from various vendors based on standards and to-become-standards like</p> <ul style="list-style-type: none"> <li>• WS-BPEL</li> <li>• EJB 3.0.</li> <li>• Software Components Architecture (SCA)</li> <li>• Service Data Objects (SDO)</li> <li>• etc</li> </ul>

<b>Composition Environment</b>	<p>SAP NetWeaver based runtime platform and infrastructure for designing, deploying and managing composite applications. The idea is that this piece of software should be used by ISVs (Independent Software Vendors), SIs (System Integrators) and customers for development and deployment of composite applications.</p> <p>Corresponding to this product, there are software packages from various vendors under different names on the market:</p> <ul style="list-style-type: none"><li>• IBM</li><li>• BEA</li><li>• JBoss</li><li>• Tibco</li><li>• Webmethods (Software AG)</li><li>• etc</li></ul>
<b>Enhancement Package (EhP)</b>	<p>A collection of new and improved business functions for SAP Business Suite and SAP ERP.</p> <p>Enhancement packages represent the new SAP approach to accelerate the delivery of innovation to customers via optional packages. Rather than engaging in large upgrade projects, customers can take advantage of ongoing business innovation while keeping the core systems stable. These optional enhancement packages can be configured in a completely modular fashion, by switching on only the desired features.</p>

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