

ZAPTHINK ZAPNOTE™

XAWARE 5 OPEN SOURCE DATA INTEGRATION SOFTWARE

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Abstract

Data integration, data abstraction, and data Services are core needs when considering SOA. Legacy databases alone do not provide adequate ways to represent information in the context of SOA. However, the use of a data abstraction layer allows architects to define virtual schemas using better logical structures that offer a more effective fit for SOA implementations.

The bundling of data integration as an open source solution further increases the value of this approach. Open source SOA solutions provide two major advantages: first, they are typically less expensive than proprietary tools and technology. Second, they are often simpler and easier to understand and use. XAware's open source model is a key differentiator in the data integration marketplace.

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The Value of Data Abstraction and SOA

Service-Oriented Architecture (SOA) is an approach to distributed computing that treats software resources as Services available on the network, where people can compose those Services into business processes to meet business requirements in a flexible, agile manner. From the business perspective, the Services organizations implement as part of their SOA initiatives represent functionality and data the organization requires to run its processes and thus meet the needs of the business. Business people don't care if some capability consists of application functionality while another actually represents a data operation, and furthermore, it's also not relevant to the business whether data are structured or unstructured, or where those data are stored or how they get to the user. Business users simply want Services to work as advertised.

The data challenge for the enterprise as it implements SOA, therefore, focuses on dealing with the various types and sources of data in the organization transparently to the business user. Implementing SOA depends upon exposing information and processes as self-contained Services that can communicate and interoperate with each other in a standard way, enabling the business to build flexible compositions of Services that implement business processes.

Addressing this SOA data challenge requires the appropriate use of *Data Services*. A Data Service is a contracted, composable representation of a data query or a combination of data queries. In essence, Data Services abstract both data sources as well as cross-database queries that result from Enterprise Information Integration (EII) or other data integration steps. Abstracting the underlying data infrastructure provides the separation between data and implementation that is essential to providing data building blocks that organizations can compose into reusable, composable business Services.

Individual Data Services, however, only provide a limited benefit. To fully apply SOA best practices to data, it is essential to create a Data Services layer. In the context of SOA, a Data Services layer consists of Data Services as well as the infrastructure necessary to deliver a production-quality runtime that manages delivery and persistence of data among Service consumers, business Services, and the multiple data sources such Services use, whether in an enterprise or in a cross-enterprise distributed computing environment.

Attempting to implement SOA without such a Data Services layer can lead to a range of issues. While many organizations implement SOA by binding Services directly to the legacy physical databases, those databases are typically not in the proper logical state that best represents the information the business requires from the Services. Existing physical schemas are externalized from a number of data sources, all using different models and technology. They also frequently have different variations on semantics, and no notion of a common semantic model for the business.

To solve this problem architects can alter the schemas from all relevant databases, but this maneuver is risky and often cost prohibitive. A more architecturally sound option is to place a layer of middleware between the data sources and the consumers. This middleware can

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create a virtual common schema, which is a better representation of the data and provides the following advantages:

- *The ability to remap existing physical schemas into virtual schemas that are better logical representations of the data for SOA.* Thus, the developers who build Services simply refer to a logical data layer that will be bound to back-end physical data.
- *The ability to combine many schemas into a common virtual schema, which allows a multitude of very different databases and schemas to appear as one.* This virtualization greatly simplifies the use of the data in the context of SOA since the SOA implementation leverages a single common schema.
- *The ability to place schema volatility into a single configurable domain.* As physical and logical semantics, and thus schemas change, the architect can adjust for those changes with a single configuration layer, providing better agility since changes to schemas don't inherently mean redevelopment of the Services.

XAware 5: Open Source Data Integration Software

XAware 5 allows endusers to quickly transform data into reusable SOA XML components that provide a single schema abstraction layer for SOA. To this end, the data Services layer that XAware supports provides consistent, real-time access to data, which can be available to many Services, business processes and applications. What's more, the architect has control over the representation of the data to the core Services that consume the data, either transactional or data Services.

XAware supports a "configure not code" approach, thus providing architects with the ability to define, configure, and reconfigure a data abstraction layer that supports the benefits defined above. Moreover, the design of complex multi-source, multi-destination templates with complex transformations to support on demand standards-based data integration is part of this technology. End users create a virtual data Services layer and an XML metadata abstraction layer.

XAware also offers a suite of development and deployment options on a variety of platforms which gives the user the ability to tailor the solution to its environment. XAware is capable of handling a variety of uses, from basic integration to more complex situations, including parallel processing, transformation, failover, schema validation, and it also supports disparate data sources.

Furthermore, XAware has chosen to offer their software as open source. While the value of data abstraction is clear, the ability to leverage this technology using the economies of open source solutions provides additional return on investment (ROI) to customers. SOA implementers often want to leverage open source technology because they are typically less expensive than proprietary tools and open source solutions tend to be simpler and easier to understand and use. The cost of commercial SOA tools makes them unobtainable by many SOA projects that don't yet have the budget to obtain, deploy, and test such technology. Although nothing is ever truly free, the use of the open source model allows IT personnel looking to understand and test this technology to obtain the technology at a reasonable price point. By leveraging this model, XAware will find additional markets for its data abstraction/data integration tools

XAware 5 Features

XAware Designer is an Eclipse plug-in design tool for creating, testing, and deploying standards-compliant Web Services and data integration applications. The tool provides a visual, drag-and-drop design, debug, and deployment environment. The Designer is the platform for creating the abstract data layers, and connecting them to the physical database.

The *XAware Engine* is the runtime engine companion to the XAware Designer design time environment. It is capable of running and managing concurrent Web Services, where it's possible to invoke each Service through different connectors. It's then possible to access and transform the data through multiple adapters. This is the component that actually takes the data abstraction design to a runtime state.

XAware 5

Overview:

XAware's "configure not code" approach, as well as the use of a data abstraction layer within the context of a SOA, provides a better approach to data access from a SOA than going direct to the physical databases. Its multi-purpose capabilities enable the design of complex, multi-source, multi-destination templates with complex transformations to support on-demand, standards-based data integration. When using this technology, users can create a virtual data Services layer and a rich XML metadata abstraction layer that is able to increase reuse and reduce infrastructure cost.

Features:

- **Data integration and data abstraction.** Allows the SOA developer to place schema and data volatility into a single domain, thus promoting agility.
- **The Eclipse-based XAware Designer.** Visual drag-and-drop, wizard-based IDE that speeds the development of XAware-powered applications.
- **Built on the Spring Framework.** A high-performance, scalable, dynamic data integration and data Services execution engine that leverages the standard Java framework.
- **XML to Schema.** Differentiated approach to data integration, allowing endusers to create the XML schemas, and then bind physical data schemas to them.

Value Proposition:

- Provides better architectural agility through data abstraction as compared to building Services on top of existing legacy databases.
- Open source model allows enduser organizations to leverage the technology without a great deal of investment.
- Ability to take multiple data sources and turn them into a single unified schema.
- Placing schema volatility into a single domain promotes agility within the SOA implementation.

The ZapThink Take

Clearly, the use of a common virtual database model that provides data abstraction is a core requirement to implement SOA that delivers both agility and cost effectiveness in the long term. Having the technology does not eliminate the need for good design and advanced



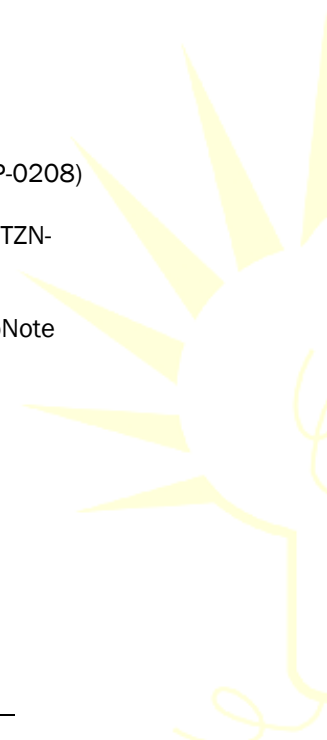
planning, but the end state architecture will provide a much better ROI when leveraging this technology.

As a result, architects must consider how data abstraction technology works in each stage of planning. As they create a Service-level, data-level, and process-level understanding of your domain, it's important to note that the data are part of the equation at each step. Therefore, the ability to create a common view of the data, and thus another layer to provide agility, is a concept that almost all SOA implementations will require to produce long term strategic value.

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Related Research

- *Service-Oriented Data Access White Paper (WP-0162)*
- *DataDirect XQuery 2.0 ZapNote (ZTZN-1198)*
- *Business-to-Business Data Integration in a SOA World ZapForum Podcast (ZTP-0208)*
- *DataDirect Technologies: Simplifying Data Integration with XQuery ZapNote (ZTZN-1189)*
- *DataDirect Technologies: Deploying XML Data Services with Stylus Studio ZapNote (ZTZN-1181)*



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ZapThink is an IT advisory and analysis firm that provides trusted advice and critical insight into the architectural and organizational changes brought about by the movement to Service Orientation and Enterprise Web 2.0. We provide our three target audiences of IT vendors, service providers and end-users a clear roadmap for standards-based, loosely coupled distributed computing – a vision of IT meeting the needs of the agile business.

ZapThink helps its customers in three ways: by helping companies understand IT products and services in the context of Service-Oriented Architecture (SOA) and the vision of Service Orientation, by providing guidance into emerging best practices for Web Services and SOA adoption, and by bringing together all our audiences into a network that provides business value and expertise to each member of the network.

ZapThink provides market intelligence to IT vendors and professional services firms that offer XML and Web Services-based products and services in order to help them understand their competitive landscape, plan their product roadmaps, and communicate their value proposition to their customers within the context of Service Orientation.

ZapThink provides guidance and expertise to professional services firms to help them grow and innovate their services as well as promote their capabilities to end-users and vendors looking to grow their businesses.

ZapThink also provides implementation intelligence to IT users who are seeking guidance and clarity into the best practices for planning and implementing SOA, including how to assemble the available products and services into a coherent plan.

ZapThink's senior analysts are widely regarded as the "go to analysts" for Web Services, and SOA, and Enterprise Web 2.0 by vendors, end-users, and the press. Respected for their candid, insightful opinions, they are in great demand as speakers, and have presented at conferences and industry events around the world. They are among the most quoted industry analysts in the IT industry, and their recent book, *Service Orient or Be Doomed!*, is the leading book on the business concept of Service Orientation.

ZapThink was founded in October 2000 and is headquartered in Baltimore, Maryland. Its customers include Global 1000 firms and government organizations, as well as many emerging businesses. Its analysts have worked at such firms as IDC, marchFIRST, and ChannelWave, and have sat on the working group committees for standards bodies such as RosettaNet, UDDI, and ebXML.

Call, email, or visit the ZapThink Web site to learn more about how ZapThink can help you to better understand how SOA will impact your business or organization.

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