iWay Software | Accelerating Business Integration

iWay SOA Middleware

An Agile Framework for Fast, Flexible, Low-Risk Service Deployments

A White Paper

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Table of Contents

Service-Oriented Architecture

Originally, service-oriented architecture (SOA) concepts arose in response to demands for better ways to cost-effectively integrate large-scale business processes. The concept was simple: applications and automated processes access information resources through standard service interfaces, without requiring programming or knowledge of lower-level systems. Web services, in particular, provide the open standards needed to implement ubiquitous, reusable business functions, which enable complex business processes to be broken down and implemented as simplified, manageable entities.

Collaboration and agility are enabled by a few primary SOA principles and their associated benefits:

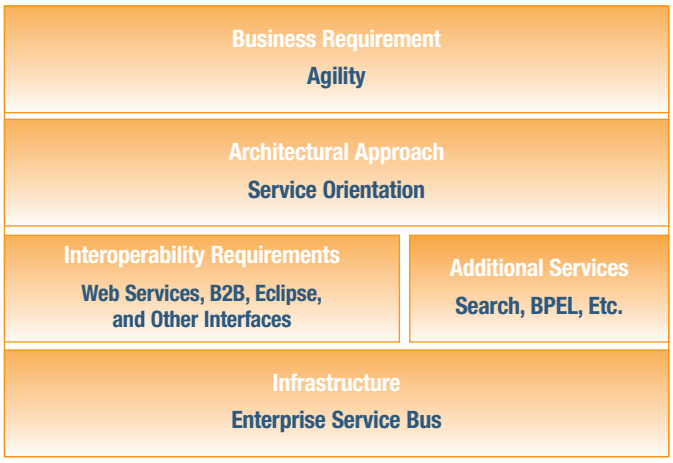
- **Alignment of IT with business requirements** – Management gains better visibility into business processes by defining the services they need, while application managers, integration specialists, and other experts retain control over service implementation.
- **Shielding complexity** – Developers and integrators need not understand low-level systems in order to build and maintain composite processes. Applications can be maintained and modified independently since low-level functions can be masked behind high-level services.
- **Specialization** – Best-of-breed applications and processes can be developed by experts, and deployed in a fashion that makes them accessible by developers in other areas.
- **Enabling collaboration** – By shielding the details of application implementation from other applications, standard interfaces allow otherwise incompatible applications to cooperate as they perform the tasks needed in higher-level business processes.
- **Broadly adopted services** – Any application or process can provide services to any other applications or processes, allowing broad reuse of existing software and the design of innovative solutions to business problems.

Deploying a new application or process utilizing SOA constructs and making its resources available through services requires a basic understanding of SOA principles. Services must be designed in such a way as to provide the required functionality while eliminating dependencies on low-level application interfaces as much as possible. When properly designed, a service becomes usable over any established service channel in the enterprise. Limiting services to Web service standards is a strategic mistake: Services should be available using a variety of interfaces, including J2EE Connector Architecture (JCA), XML, electronic data interchange (EDI), simple object access protocol (SOAP), Web service definition language (WSDL), and message queuing – or combinations of these standards. In addition, services should be reusable with existing proprietary application and integration technologies, which often require specialized plug-ins.

Integrating large, complex legacy applications with emerging services presents perhaps the most challenging aspect of the migration toward an SOA. These applications require expertise that can be scarce and costly. Businesses need affordable solutions that protect existing software investments without slowing the introduction of SOA approaches into their infrastructure and business processes.

Organizations seeking to migrate to SOA can choose from a variety of platform and developer tools offered by software vendors. Many people have adopted the term "enterprise service bus," or ESB, to indicate a collection of functionality needed to create an SOA, including the following:

- **Transformation** – When applications work together to respond to events or provide services, a sophisticated transformation engine must provide the mapping between their different representations of business entities – and although XML transformations are important, the engine must also handle non-XML formats like EDI, SAP IDocs, flat files, and much more
- **Intelligent routing** – Service calls and other events enable collaboration by stimulating action in applications and other parts of the enterprise, which requires a comprehensive mechanism for identifying messages types, recognizing data values in them, knowing the possible endpoints for messages, and routing messages to where they're needed – without burdening developers with the complexity of communication mechanisms or application manipulations
- **Optimized runtime engine** – A scalable, distributed service engine must run on a variety of operating platforms and offer customizations for unique business needs
- **Service monitoring tools** – As organizations move to a more distributed architecture, they must be able to see who is using their services and whether service-level agreements (SLAs) are being met
- **State management** – Although most people agree that services in an SOA should be stateless, long-running business processes that use these services require a state management capability such as that provided by a Business Process Execution Language (BPEL) engine
- **Advanced capabilities** – Certain types of services fit more effectively into the distributed ESB architecture than they would in other platforms, such as extending services to partners and enabling simplified enterprise searches



Achieving business agility can be accomplished by adopting an SOA approach, enabled by services that are deployed on an enterprise service bus (ESB).

iWay SOA Middleware

To overcome the challenges relating to SOA, iWay Software developed a suite of SOA middleware solutions. For organizations that need to get the most out of their existing applications and infrastructure while laying a foundation for SOA capabilities, iWay solutions can:

- Dramatically increase productivity by reducing IT complexity and eliminating most custom integration code
- Help users create powerful and reusable business-level services
- Mitigate project and maintenance risk
- Speed project implementations
- Reduce total cost of ownership for projects

By simplifying the transition from point-to-point or hub-and-spoke architectures to SOA, iWay SOA Middleware enables rapid, incremental business process changes. Each project leaves the existing architecture more open than it was previously, gaining a return on investment while simultaneously building for the future.

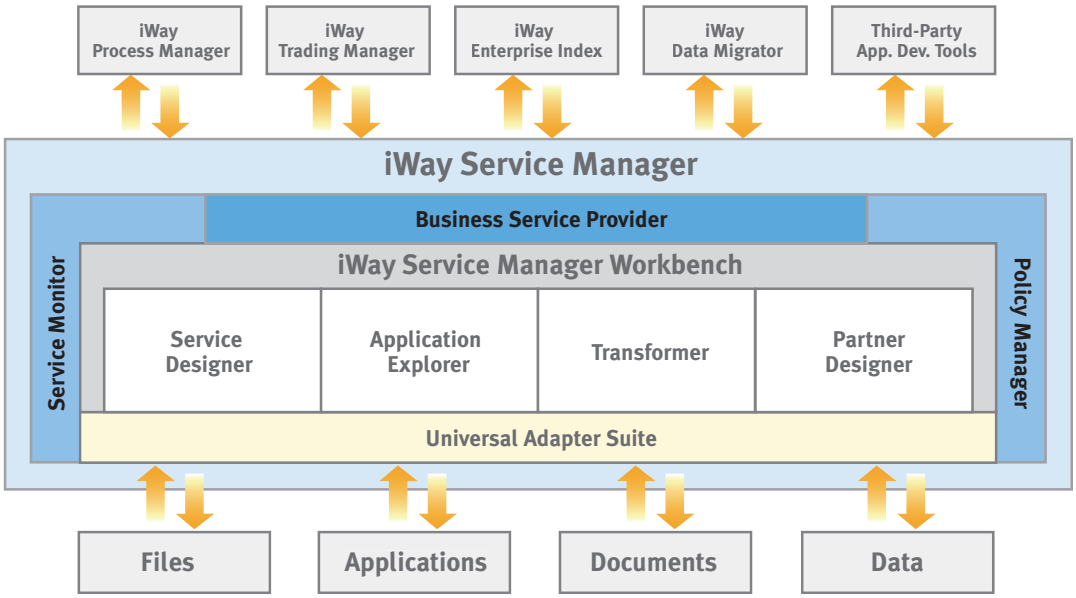
Interoperability Among New Services and Existing Applications

All iWay solutions are developed with the goal of preserving as much existing software as possible while introducing standards and services that maximize the value delivered by all new and existing software. To that end, iWay SOA Middleware includes support for a wide variety of existing software – customers can keep and use any applications and middleware that they choose, and take advantage of any standards that they like. iWay SOA Middleware isolates business requirements from changes in the infrastructure, and frees businesses to better align IT with business goals. Services can be introduced while allowing the experts to retain control of the underlying applications, and providing end users with more user-friendly access to resources.

By providing the best interoperability for more infrastructure components than any other company in the market today, iWay makes all aspects of your existing environment work in concert. This includes nonstandard legacy applications that are typically ignored by other SOA vendors. With the iWay foundation, the principles of SOA and event-driven architecture (EDA) can be followed while rapidly developing new business applications that utilize all existing information systems and resources.

iWay SOA Middleware Products

The suite of iWay products enables businesses to expose functionality and information resources from a wide variety of perspectives. Without writing code, services and interfaces can be rapidly developed and deployed so that service consumers can use them in automated business processes. iWay Software's approach to SOA provides true agility and flexibility for the enterprise. Components of iWay SOA Middleware products are listed below.



iWay Service Manager is an open-transport ESB that provides a single platform for SOA and EDA, and extends to B2B service design and deployment.

iWay Service Manager

iWay Service Manager (see above) is an enterprise service bus that provides a single platform for SOA and EDA, and can be extended for business-to-business (B2B) service design and deployment.

iWay Service Manager encourages service reuse by providing the most comprehensive set of service interfaces available. It automatically generates WS-I compliant WSDL for Web services-based tools, and also supports a broad array of additional service interfaces, including standards such as JCA and plug-ins for tools such as Eclipse, BEA WebLogic Workshop™, IBM WebSphere™ tools, Microsoft BizTalk Server™, SAP NetWeaver™, and many more.

iWay Service Manager consists of:

- **Graphical service design tools** – iWay Service Manager's service design toolkit provides the ability to publish services from virtually any information asset in the enterprise (including those with proprietary application interfaces), compose coarse-grained business services from fine-grained application services, and transform one service interface to another
- **Runtime engine** – The highly scalable and distributable runtime architecture for iWay Service Manager includes event detection, service hosting, intelligent routing, transformation processing, adapter hosting, and built-in security capabilities, logging, and correlation management
- **Service monitoring** – iWay Service Manager provides several ways to monitor overall system characteristics, service characteristics, usage characteristics, and service level agreements (SLAs)

iWay Trading Manager

This add-on extends iWay SOA Middleware to B2B environments and complex internal integration environments. In addition to message correlation and expanded auditing capabilities, it provides a graphical interface that enables users to create partner agreements: the correlation of a partner, security information (e.g., digital certificates), transport (e.g., EDIINT), message type (e.g., EDIFACT), and process. Trading partner information is managed by hierarchy (i.e., how a partner fits within its parent organizations, if any) and by exception (i.e., how a partner differs from others within its hierarchy), so users only need to specify the bare minimum to manage any trading partner interaction.

iWay Enterprise Index

iWay SOA technology extends to enterprise search by combining the Google Search Appliance and iWay Service Manager for a new way to find, manage, and use information within the integrated enterprise. In a standalone configuration, the Google Search Appliance only indexes standard document types such as HTML, PDF, and Microsoft Word; but with iWay Enterprise Index, it can index information from ERP systems, CRM applications, B2B interactions, and virtually any other information type in the enterprise. The result is rapid, easy retrieval of information that previously would have been locked up in proprietary information systems.

iWay Process Manager

For organizations that want to create long-running, stateful business processes, iWay Process Manager leverages existing assets using Web services and BPEL. This tool provides an Eclipse-based graphical interface that helps users build and simulate business processes, create expressions, reuse common BPEL snippets, and ensure the validity of BPEL documents. Deployment is easy and platform-neutral, and provides the scalability and reliability needed for the most critical business processes.

The BPEL specification only uses Web services. To design services for assets that aren't available as Web services, or to create business-user-friendly services instead of trying to use low-level application services, use iWay Service Manager.

iWay Universal Adapter Suite

iWay Software's 15-year history with thousands of customers has led to the iWay Universal Adapter Suite. More than 300 adapters provide access to any information system. iWay's adapter suite works across everything in the SOA Middleware Suite.

Creating Reusable Value

iWay SOA Middleware's unprecedented interoperability ensure that regardless of your existing infrastructure – applications, data sources, platforms, application servers, integration tools, enterprise service buses, B2B protocols, and more – you will always be able to create powerful, reusable services that will provide continuing value in your environment for years to come.

Sample of Supported Technologies

Technologies	Supported by iWay SOA Middleware
Messaging systems	Standard and proprietary. Supports interface standards (e.g., JMS), wire standards (e.g., EDIINT AS2), and proprietary messaging (e.g., TIBCO Rendezvous).
EAI tools	Other ESBs and integration brokers. For most major vendors, iWay Software provides plug-ins that take advantage of proprietary extensions to appear in their GUIs for a seamless appearance and high productivity. For all others, Web services and JCA provide standards-based interoperability.
Utility protocols	Common and legacy. TCP/IP, SOAP, HTTP, HTTPS, FTP, FTPS, LU 6.2, file structures, etc.
Business-to-business middleware and standards	Interoperates with a variety of transports and formats, including Transora, EDIINT (AS1, AS2, AS3), ebXML Message Service, UCCNet, IATA, EDI (general-purpose such as EDIFACT and ASC X12 as well as industry variants such as EDIG@S, SWIFT, FIX, HL7, HIPAA, ISO 8583, ISO 8359), XML interchange formats (e.g., Justice XML). Where possible, these are certified by the appropriate standards body (e.g., eBusinessReady for AS2).
Runtime platforms	All popular commercial J2EE application servers: BEA WebLogic, IBM WebSphere, Oracle AS10g, SAP Web Application Server, Sun Java Enterprise System, etc. Also common open-source runtime engines (Jetty, Tomcat, etc.), and standalone JVMs.

Conclusion

Unlike other approaches, iWay SOA Middleware doesn't assume that the foundation of an SOA is already in place. Consequently, it minimizes the amount of custom integration code required to expose applications so they can be flexibly reused to improve business processes, and provides better interoperability than any other enterprise service bus. The result is the ability to create powerful, reusable business services with reduced cost, time, and complexity. IT staff align themselves with business requirements more easily, becoming more productive, while projects become less risky.

iWay SOA Middleware can run standalone, or can be directly deployed on other vendors' platforms or open source platforms. The flexible deployment options, interoperability, and easy access to any information system position iWay SOA Middleware solutions to maximize the return from past investments, fit into today's complex infrastructures, and bridge companies to the future.

For More Information

With more than 15 years as a pioneer of integration middleware, iWay is among the top ten integration vendors worldwide. Thousands of companies rely on iWay solutions to quickly and efficiently transform business processes by integrating existing data, applications, and environments with new systems and applications. To learn more about iWay and its products, please visit www.iwaysoftware.com.

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DN3601207.0206

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