



**Delivering the Technology to Extend  
IT Infrastructures to the Internet for a  
Seamless, Full-Bodied Business-to-  
Business Integration Strategy**

**Deploying Web Services and Enabling P2P Computing  
Implications for B2B Integration and Process Automation**

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Glue Technology, Inc.  
White Paper

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## The Internet Changes Things

The Internet has fundamentally altered the business landscape. No longer are organizations constrained by time or geographic location. Even the smallest business operator can function ubiquitously, reaching into time zones and destinations impossible to penetrate just a decade ago. However, we know that transformation from deeply ingrained traditional business thinking does not occur overnight. Rather, change is a timeless event, and a continuing journey filled with discovery and innovation along the way.

Just as the Internet erases time and location limitations, it also issues in new rules for business process and event flows, as it facilitates connections among partners, customers, and suppliers, and accommodates interaction from an broad array of business touch points and information appliances. With this, we have experienced a tremendous power shift, where enterprises are no longer *running the show*, but technology-savvy, informed consumers are directing business decisions made at the top.

In essence, all e-commerce activity must be consumer-centric. After all, business-to-business (B2B) transactions ultimately flow to the consumer market, in one way or the other. The key, then, to business success in the information-driven, knowledge-based economy is to delight the consumer beyond expectation in order to drive demand. To do so, we must find better ways to make our applications and systems customer-available in real-time, while somehow reducing the cost and complexity of delivering on our business promises.

Absolutely, the Internet is crucial to achieving new-order e-business objectives, as it enables and/or facilitates:

- Collaborative product and service development
- Real-time information sharing
- Knowledge exchange and transfer
- Reduced time -to-market
- An enriched buying experience
- Increased productivity
- New and expanded value-added services, such as multimedia product/service presentations, communities-of-interest, personalization/customization, and mechanisms for self-service

Indeed, e-business is well defined as: using global, Internet-connected computers to create new business relationships and transform old ones for real-time, integrated business process and workflows throughout the value chain.

## No e-Commerce Application Is An Island Unto Itself

We now know that traditional enterprise application integration (EAI) solutions do not fully take advantage of Internet technologies. As a result, they cannot possibly resolve the problem of total business integration—as the Internet is key to joining together all nodes of the value chain. Partially automated business processes, limited integrated components of the supply chain, and anything but real-time transaction and event processing simply will not do. In other words, "No e-commerce application is an island unto itself."

The event-driven economy demands an e-business architecture that seamlessly integrates all connection points. We need instantaneous process flows throughout the value chain so

that all participating systems are simultaneously notified that there has been a change, somewhere along the convoy of connections.

Currently, corporations all over the world employ a variety of generations of systems, with a broad assortment of enabling technologies—some new, many old. The imperative is to leverage these legacy systems with those of trading partners, customers, suppliers, and so forth. Therefore, for the e-business solution to be truly effective, it must be flexible enough to:

- Support industry standards, such as BizTalk, RosettaNet, SOAP, XML, ebXML, and more recently, UDDI, WSDL, JXTA, and XAML
- Integrate and extend existing IT infrastructures and legacy systems (DBMSs, Excel, Word, ERPs, and more)
- Propagate business events and processes between multiple application domains
- Enable the adding-on of more applications and systems from a variety of sources and geographic locations
- Ensure the availability, integrity, and confidentiality of the information that flows through the entire chain, and nonrepudiation (utilizing advanced security standards)
- Allow for multi-channel service integration
- Meld voice, data, and video transport networks
- Integrate and automate business processes and events cost-effectively, efficiently, and easily
- Tolerate an application domain's independent life cycle
- Accept input through a variety of mechanisms, including online, mobile devices, message-based, fax, e-mail, telephone, and call center desktops
- Enable the reuse of business processes and data between linked members
- Be friendly enough to be managed by users who lack an understanding of the details of the applications involved
- Facilitate P2P computing
- Support Web services

### The Internet As A B2B Integration Platform

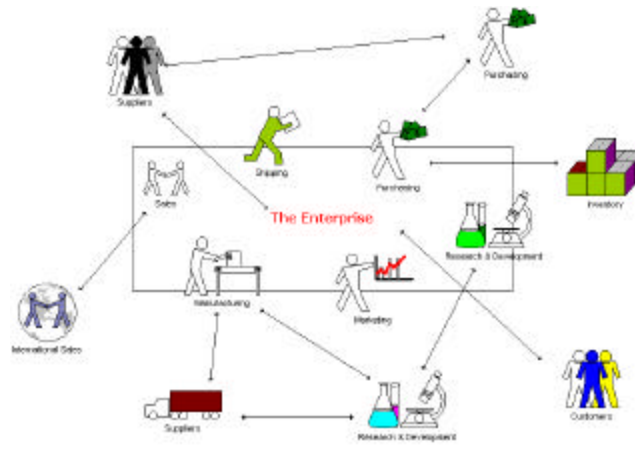
The Internet has created new, dynamic opportunities for collaboration among members of the commerce chain. The sharing of customer data and business intelligence brings many benefits and advantages such as:

- Reduced forecasting errors
- Improved inventory management
- Reduced cost and time to bring new products to market
- Automated internal and external business processes
- Improved efficiency within the organization
- Enhanced pricing and revenue management
- Increased opportunities for customer relationship management
- Improved market visibility and transparency

The Internet is ideal for extending the enterprise for a number of reasons. One reason is because it simply has leveled the playing field for smaller companies who need to leverage

the power of business integration. Successful B2B integration requires the common links that are found on the Internet, as well as the common platform of the Web. Very quickly and with little expense, small companies can become part of the enormous array of connected, always-open-for-business systems on the Web. We can say that the Internet is a natural integration platform.

B2B integration requires component-based software that leverages the strength of backend legacy systems, and is resilient to change. Today's business applications must be scalable and extensible, so require components that can be reused across disparate applications running on diverse computing platforms. The reason Java™ has had such an impact on e-commerce is because it is platform independent. As well, XML (eXtensible Markup Language) is key to business integration because it enables the sharing of files and documents across differing applications.



However, the power of the Internet platform, along with Java™, and XML are not all that is required for total business integration. Rather, we need an additional technology layer for business process and workflow integration between enterprises. ERP systems do not effectively address this problem because they do not deal with the complexities of integrating information from geographically dispersed and disparate systems. Other issues that need to be addressed are security, administration, performance, and scalability.

The World Wide Web Consortium's (W3C) efforts to develop interoperable standards, protocols, and software is helping to make end-to-end business integration a reality, and enabling organizations to maximize the power of the Web for "information, commerce, communication, and collective understanding". To be sure, open computer languages and protocols are critical for interoperability and integration. Other organizations are also enabling businesses to extend information flows across internal and external IT systems through standards development. A number of key technologies driving business integration are covered in the following section.

In addition to standards and protocols, interoperability between applications requires businesses to move away from tightly joined massive systems, toward loosely bound business components. Web services have emerged as a solution to this problem, and are promising for business integration. Briefly, Web services are software components or Web applications that are accessed "as needed," using standard Internet protocols. Even more, peer-to-peer technology increases our strides toward total B2B integration as it enables businesses to share critical computer resources or to make efficient use of infrastructure assets.

### Critical e-Business Standards

#### **XML**

XML (eXtensible Markup Language) is an extensible language for describing other languages, which gives businesses the liberty to design their own customized markup language. XML enables applications and databases to exchange information, and can be used to store any kind of structured information. It has the ability to transfer information between different application systems, which, without it, would not be able to

communicate. XML is far more flexible and extensible than traditional messaging and middleware communications. With XML, applications can send information across the Internet using HTTP, and support much "looser" connections.

### **SOAP**

SOAP defines a protocol for RPC (Remote Procedure Call—an application-to-application communication that hides underlying network complexities) across the Internet using HTTP and XML. It is a relatively simple way to exchange information between peers in a decentralized, distributed environment because it allows end-points to connect via the Web, and request the use of services. SOAP is an XML messaging protocol, and is now part of the ebXML architecture.

### **UDDI**

The UDDI (Universal Description Discovery and Integration) standard outlines a framework for a registry of companies, and a warehouse of their Web services. It is built on top of existing Internet standards. The UDDI Business Registry is a universal Web services business directory. jUDDI is an open source Java-based implementation of a UDDI registry, and enables developers to build access to UDDI registries in their applications.

### **WSDL**

WSDL (Web Services Description Language) is becoming the de facto standard for describing Web services in XML format. WSDL is extensible to allow description of endpoints and their messages regardless of what message formats or network protocols are used to communicate.

### **ebXML**

ebXML (Electronic Business XML) is a XML framework for global e-business that allows businesses to find each other, and conduct business based on XML messages. The framework includes specifications for a Message Service, Collaborative Partner Agreements, Core Components, Business Process Methodology, and Registry and Repository. ebXML enables businesses to implement Web services protocols (like WSDL, UDDI, SOAP).

### **BizTalk**

The BizTalk standard defines how information is structured, and the mechanisms that are necessary to process that information. The BizTalk Framework and BizTalk Server are Microsoft's platform for inter-enterprise communications and enterprise application integration.

### **RosettaNet**

RosettaNet e-business standards include the RosettaNet Business Dictionary, RosettaNet Technical Dictionary, RosettaNet Implementation Framework (RNIF) and RosettaNet Partner Interface Processes. The RosettaNet framework includes XML-based business processes known as Partner Interface Processes (PIPs) and dictionaries of common definitions for computer parts and business terms. RosettaNet PIPs describe the specific steps involved in completing a business-to-business process—such as managing a purchase order over the Internet.

### **XAML**

Transaction Authority Markup Language (XAML) enables the coordination and processing of online transactions in XML Web services. XAML defines a set of XML message formats and interaction models that Web services can use for business transactions among partners over the Internet.

## Glue Technology's Approach to B2B Integration

Glue Technology, Inc. delivers an open, Java™ and XML-based platform for seamlessly integrating distributed applications and Web services. Web services are reusable software components accessible over standard Internet protocols, which enable dynamically connected business applications and automated business processes across disparate systems. Glue's B2B application integration software and service solution connects value chain members, including internal operations, business and commerce partners, and customer channels, to enable real-time automation of business processes and events via the Internet and integration of disparate applications and systems for global business exchanges.

Glue Technology's peer-to-peer (P2P) computing approach takes advantage of otherwise idle yet available resources and services for the most efficient and cost-effective collaborate computing solution available. Glue Technology delivers a complete e-business solution, comprised of products, alliances and partnerships, and services for a rapid and simplistic deployment of a robust, flexible, extensible yet non-intrusive platform that:

- Eradicates corporate boundaries for perfect, real-time information delivery
- Mitigates information security risks
- Enables streamlined, automated business processes

## Glueware®: A Universal Delivery Platform For Integration and Web Services

Glueware™ (**Generic Language Universal Environment = Glue**) is Glue Technology's Java™ and XML-based platform that enables integration with backend-systems, and extends IT infrastructures to the Internet to deploy Web services and engage in P2P computing. Glueware's open architecture facilitates interoperability between partner and customer legacy systems and applications for real-time B2B collaboration and process automation.

Glueware™ conforms and supports business, industry, and technical standards, protocols, and technologies, such as SOAP, UDDI, WSDL, JXTA, BizTalk, ebXML, RosettaNet, .NET, HTTP, XA, XAML, XSL, WML, Open Applications Group (OASIS), and more.

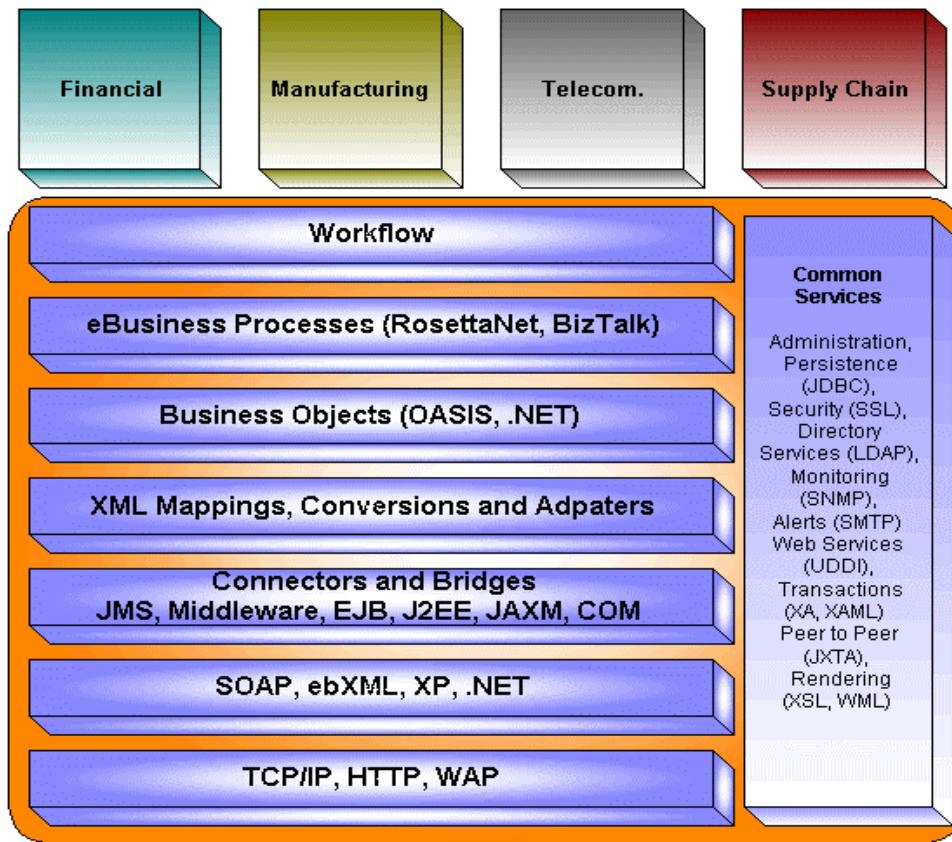
Glueware™ seamlessly links disparate applications and systems within the enterprise and between customers, partners, and suppliers for an end-to-end B2B integration solution. Glueware™ sets the standards for the next generation of integration products by leveraging the openness of the Web as a foundation for Web services, and enabling businesses to participate in peer-to-peer computing for a truly efficient resource utilization of the infrastructure.

The Glueware™ architecture is designed to be "plug-and-play," and integrates smoothly with existing enterprise infrastructures comprised of middleware, application servers, databases, packaged software, and legacy applications. Glueware coexists with other information technologies to automate intra- and inter-enterprise process and event workflows by integrating data and applications logic—or by allowing both data and business processes to communicate with one another across various applications and between connected organizations, using edge resources.

Glueware™ components can be separately integrated with OEM partners' products or installed software via straightforward APIs. Glueware components are non-intrusive to an existing infrastructure, and layer on top of diverse technologies to rapidly extend, integrate, and connect applications.

Glueware takes e-business to the next level by enabling subscribers using multiple interfaces to join a collaborative business context with trading partners, and to participate in business processes without the need for manual data entry.

The benefits of the Glueware product suite for the e-business environment are enormous, with significant advantages over competitors in B2B, EAI, Web services, and syndication.



## Technical Benefits

### Intelligent Client

By using the Glueware API, all backend server configurations are abstracted out, and configurable outside of the applications that embed the API. The applications using the API may be Web services, packaged software (SAP, etc), Websites, JAVA, COM, and .NET applications. The agents (clients) are controlled, monitored, and configurable dynamically through Glueware's administration console. The API is simple to use, yet powerful, complete, and supports enterprise computing with LDAP and SNMP.

### Global Administration and Control

Glueware provides the necessary infrastructure to track messages, to monitor and control client applications, and to administer Glueware services.

### Technology Abstraction (Plug-and-Play)

There is no dependency on a single Server product. Glueware supports middleware (i.e. JMS, Vitria, IBM MQ, or Tibco) and application servers (i.e. Weblogic and protocols, such as TCP/IP, HTTP(S), SOAP). Services are configurable and become plug and play.

## **SOAP and .NET**

Glueware uses SOAP the message format. Messages can be configured to support BizTalk, UDDI, RosettaNet, and OASIS standards.

## **Quality of Service (QoS)**

Glueware provides various degrees of quality for Message Delivery over the Internet. Messages can be configured to be reliable, guaranteed, or transactional.

## **Business Benefits**

### **e-Business Collaboration**

The peer-to-peer architecture and Web services work closely together to solve real-world IT problems such as the need for distributed computing and resource utilization on the edge (desktops). The Glueware Web services integration platform extends and enables enterprises for P2P to achieve a much more cost-effective full-bodied integration solution. The Glueware platform enables organizations to gain productivity benefits from a truly integrated set of business processes and value chain members.

### **Edge Services**

P2P computing allows enterprises to integrate services and capabilities across widely geographically arranged boundaries much more effectively because edge services bring data closer to the actual consumption point.

### **Distributed Computing and Resource Utilization**

P2P is extremely useful to enterprises with large-scale networks, as it takes advantage of idle CPU MIPS and disk space, which distributes mass workload over multiple systems. Just as important, business results are shared between participating peer members. The use of combined computing power across resources brings tremendous benefits such as increased time to completion and reduced costs because of the power capitalization on client systems.

### **Communicating Intelligent Agents**

In P2P computing, intelligent agents collaborate to facilitate information sharing and task initiation among peer systems.

### **Reduced Infrastructure Costs**

Glueware enables easy and cost-effective integration with existing IT systems, with component reuse from any Internet-based touch point. Expenses are minimized or eliminated, as there is no need for additional hardware and software servers.

### **Value-Chain-Wide Applicability**

Glueware easily and quickly integrates back-end legacy systems with new applications running through all nodes of the value chain. Glue Technology's READI methodology and professional services ensures rapid implementation and maintenance support.

### **Seamless B2B Integration**

Glueware provides the necessary infrastructure for business units to collaborate securely in real-time. Business units may be independent entities (suppliers, vendors, partners, or buyers) or departmental units (purchasing, accounting, or inventory) within an enterprise, encompassing an endless assortment of business touch points.

## Rapid Enterprise Application Development for the Internet (READI)

Glue Technology, Inc. provides an efficient and cost-effective end-to-end solution for integrating backend systems and existing IT infrastructures to facilitate Web services and collaboration in P2P processes. Glue's Glueware framework extends and expedites enterprise application integration through a well-defined UML-based methodology. Glue Technology is committed to delivering B2B integration solutions that realize immediate results.

Glue Technology's **Rapid Enterprise Application Development for the Internet** methodology is a structured approach to developing and deploying n-tier extended enterprise applications, and is based on de facto industry standards—the Rational Unified Process (RUP) (Glue Technology is a Certified Rational Solutions Provider) and the Unified Modeling Language (UML). Through our expertise and proven **READI** methodology, Glue Technology delivers high quality, cost-effective solutions for integrating distributed applications and Web services, and peer-to-peer computing.

Implementation of the Glueware platform is complemented with business-critical professional services and support that ensure project success. Glue Technology equips customers with the skill set and competence required for management, maintenance, and enhancement of any integrated and extended e-business system through knowledge transfer and specialized training and support.

The Glue Technology **READI** solution includes project management services and technical expertise in implementing systems with highly complex requirements for a reduced cost of and time to implementation and delivery.

### Glueprints®

**Glueprints** are fully implemented end-to-end solution sets, utilizing the Glue framework for common industry and technical requirements. These guide developers from requirements to finished product, and implement **READI** concepts by describing the most common application development patterns for Internet-extended enterprise applications.

**Glueprints** use the industry standard UML notation to specify requirements, design, and implementation artifacts, and are easily customized to accelerate development and deployment time.

### Professional Services Solution

At Glue Technology, we believe that no two projects are exactly alike. As such, we give individualized attention to each development assignment for a truly specialized and tailored approach. We plan and organize to meet our client's particular goals, and then we apply our technical expertise and e-business strategy skills to deliver the very best system for the investment.

### Strategic Definition and Planning

Glue's professional services help to quantify the business benefit of integrating distributed applications and Web services, and P2P computing. Experienced project delivery specialists manage the deployment of adaptive solutions throughout the lifecycle stages of strategic definition and planning, architecture and design, installation and integration, and deployment and training.

## **Architecture and Design**

Experienced architects work with you to design and draft a blueprint that seamlessly integrates Glueware products with your current information technology (IT) infrastructure. Glue Technology specialists assist with the design *of* and recommendation *for* hardware configurations, application software, and database architecture—for optimization and capacity planning of Glueware components.

## **Installation and Integration**

Glue technologists install, optimize, integrate, and tune all components of the Glueware product suite, including the Glueware Development Environment and the Glueware Wireless Server.

## **Decreased Time To Implementation**

Glue Technology can successfully launch and deliver distributed e-business solution implementations in timeframes as short as six weeks, in close collaboration with the client. The **READI** approach streamlines the implementation process, and **Glueprints** speed the client's learning curve dramatically, through best practices and proven methodology.

## **Deployment**

Glue technologists assist in the technology production lifecycle by working through quality assurance, documentation, and production deployment of adaptive e-business solutions.

## **Training**

Glue's **READI** solution facilitates knowledge transfer during all steps of installation, development, staging, and production of the Glueware product suite. This includes migration of all documentation, revision of routine procedures, and explanation of site architecture. External training courses are offered to customers and partners on a variety of topics such as basic installation and tuning, Glueware product upgrades, best practices, coding, system architecture, and administration.

At Glue Technology, we want our clients to know they are getting unmatched customer service and deep expertise in delivering mission-critical e-business solutions, including Web services and P2P computing. We understand that project success is not achieved at implementation, but through post-implementation services that help determine maintenance requirements and future enhancements to accommodate changing business needs.

## **Support**

Glue Technology provides direct support services to our customers, and to system integrators. Our professional services department will work closely with system integrators to train personnel in every aspect of design and implementation of Glueware components. Glue Technology offers telephone and Web support to its clients and partners/alliances, 24/7 (twenty-four hours a day, seven days a week). We strive to provide customer service excellence, in order to stand distinct from our competitors.

## **Benefits**

### **High-Quality Results**

Glue Technology brings superior domain expertise and field experience to each integration project. Our trained consultants have mastered all facets of implementing the Glueware product set, and possess extensive e-business strategy development skills, and process and technology experience, allowing them to deliver the highest-quality solutions.

### **Low-Risk, Rapid Implementation Methodology**

The **READI** methodology covers the entire development lifecycle from business analysis to architecture design to development and deployment. Our consultants have extensive backgrounds in implementing EAI solutions, including integration with many third-party enterprise software applications, Web services, P2P computing, in order to minimize integration risks.

### **Partnerships For A Full-Bodied Solution**

Glue Technology has a rapidly growing team of industry partners that contributes to the success of your e-business integration solution. If you need help with unique creative design or industry or custom development, Glue leverages proven expertise and talent from world class consulting partners.

### **About Glue Technology, Inc.**

Founded in 1998, Glue Technology, Inc. is a privately owned and operated corporation, headquartered in Great Neck, New York. Glue Technology has built a worldwide client base, including Qwest, Cablevision, Bellsouth, Advanced Radio Telecom (ART), Reuters, Telegea, Slam dunk Networks, Inc., Neon, KPMG, DTCC, and Duke Energy.

Glue Technology's strategic partners include TIBCO, Sun Microsystems, KPMG, Slam dunk Networks, Inc., iPlanet, IBM, Rational, Vitria Technology, Inc., FuegoTech, Neon, RosettaNet, CommerceNet, Oasis, UN/Edifact, and Asc X12.

For more information about the Glueware integration platform, contact:

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