

Intel® & TIBCO

Helping Businesses Reap the Rewards of Operating B2B Using RosettaNet Standards

This white paper introduces RosettaNet standards and discusses how TIBCO solutions running on Intel® Architecture provide the right tools for rapidly implementing individual RosettaNet Partner Interface Processes™ (PIPs™) that enable companies to operate Business-to-Business (B2B) to increase revenue costs and build full-functional, robust, and reliable integration with suppliers, distributors, and other trading partners.

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Executive Summary

The evolution of the digital marketplace and the strong emergence of the global e-business trading network is changing the way companies work with each other. The supply chain is now the critical competitive factor and businesses are being challenged to cooperate with each other to synchronize their supply chains and forecast future customer needs as never before.

Maximizing efficiency through business-to-business (B2B) collaboration throughout the e-business supply chain is essential to success in today's trading network.

Industry standards lie at the heart of any successful e-business solution. Even proprietary e-Commerce systems, such as Intel's E-Business site, rely on global standards such as TCP/IP, HTML and Secure Sockets.

Standardization is the key that makes B2B integration possible and enables companies to develop trading networks that leverage the

internet to its fullest to achieve excellence in the flow of the e-business supply chain.

Integration with B2B partners is built on a foundation of shared business processes that have few manual steps. As business applications between B2B partners are integrated, partners have visibility into other partner systems and the ability to initiate transactions and manage exceptions. B2B integration is enabled by RosettaNet*, the leading process consortium in the high technology industry of e-business.

RosettaNet is setting the standards and developing the Partner Interface Processes (PIPs) for B2B integration and Intel Corporation and TIBCO Software are committed to and playing an active role in the success of the RosettaNet standards. TIBCO has B2B integration solutions that have the breadth and depth needed for any customer base – from small businesses to large-scale enterprises, and Intel® Architecture is providing the optimum hardware solution for B2B that has proven reliability and scalability.

About RosettaNet*

RosettaNet is an independent, non-profit consortium founded in February 1998 by leading IT organizations in direct response to the need to align B2B integration processes within the global high-technology trading network. Currently, more than 400 companies, including Intel Corporation and TIBCO Software participate in RosettaNet's standards development, strategy and implementation activities. These companies are the leaders in the high-technology industry and represent over \$1 trillion in annual Information

Technology, Electronic Components, and Semiconductor Manufacturing revenues. Each of these companies has a commitment to participating in the evolution of the industry through implementing RosettaNet's standardized, Internet-based processes in the high technology trading network.

RosettaNet is dedicated to the collaborative development and rapid deployment of open Internet-based business standards that align the B2B integration efforts. The consortium's mission is to drive collaborative development and rapid deployment of Internet-based business standards, creating a common language and open e-business processes that provide measurable benefits and are vital to the evolution of the global, high-technology trading network.

RosettaNet operates through collaborative technological and corporate support at the highest levels of the technology industry's largest corporations. RosettaNet Partners, including Intel Corporation and TIBCO Software, contribute significantly throughout the standards development process – from concept to implementation – providing technical input, including expertise in process methodology, technology and best practices; project management; and implementation services, support and solutions. This unique organizational structure ensures that the best minds from the most notable companies in high technology contribute to standards that meet the needs of the entire industry. The motivation, expertise and leadership enable RosettaNet to develop and deploy standards with accelerated speed.

RosettaNet standards offer a robust nonproprietary solution, encompassing data dictionaries, implementation framework, and business message schemas and process specifications, for e-business standardization. Available to the public free of charge at www.rosettanet.org, RosettaNet standards include the RosettaNet Business Dictionary, RosettaNet Technical Dictionary, RosettaNet Implementation Framework (RNIF) and RosettaNet Partner Interface Processes* (PIPs*). RosettaNet offers everyone involved in the supplying and buying of today's technologies opportunity to profit: Businesses that offer the tools and services to help implement RosettaNet standards gain exposure and business relationships. RosettaNet-adopting companies realize global, dynamic and flexible trading networks, time- and money-saving operational efficiencies, and new business. End users enjoy speed and uniformity in purchasing practices.

You can find out more about RosettaNet on the Intranet at <http://www.rosettanet.org>.

Why Use TIBCO Software to Meet RosettaNet Standards?

TIBCO Software Inc. (Nasdaq:TIBX) is a leader in the RosettaNet consortium and the leading provider of total business integration solutions. TIBCO provides infrastructure software that enables companies to seamlessly integrate all aspects of their business – processes, partnerships and people – in real time. TIBCO's products enable the real-time distribution of information through patented technology called The Information Bus*, or TIB*. TIBCO technology was first used to digitize Wall Street and has

since been adopted in diverse industries including financial services, telecommunications, electronic commerce, transportation, logistics, manufacturing and energy. TIBCO's global customer base includes more than 1,000 customers such as Cisco Systems*, Yahoo!*, Ariba*, NEC*, Enron*, Sun Microsystems*, GE Capital*, Philips*, AT&T*, Pirelli*, and AOL/Netscape*.

You can find out more about TIBCO on the Internet at <http://www.tibco.com>

Why Use Intel® Architecture for Your TIBCO Solutions?

Intel is a board member in the RosettaNet consortium and is the world's largest chipmaker. Intel leads the high technology industry as a manufacturer of computer networking and communications products. Intel® Architecture provides an industry-proven hardware platform that can grow with your business. By taking advantage of the modularity and scalability of the Intel® Architecture, an e-business organization can utilize a vertically distributed, multi-tier architecture that provides:

- Scalability and flexibility – 8-way Intel Pentium III Xeon processors running industry-standard software, assures the scalability and flexibility needed for e-business services
- Modularity – By taking advantage of the modularity and scalability of the Intel® Architecture, an e-business can use a vertically distributed, multi-tier architecture.

- Strong foundation – A multi-tier architecture implemented on scalable servers provides a flexible, modular e-Business foundation. With such a foundation, capacity can be easily added to accommodate new services or rising usage. Use scalable, reliable Intel® Architecture to keep pace with fast-moving business demands.
- Performance – Intel® Architecture-based servers enable organizations to deploy new servers as their B2B grows, supporting each system with a full array of high-availability features.

You can find out more about Intel on the Internet at <http://www.intel.com/pressroom>.

Intel and TIBCO are Making RosettaNet Standards Happen

Intel Corporation and TIBCO Software are committed their corporate-backed commitment to the success of the RosettaNet standards. Intel, a RosettaNet Managing Board member, is committed to evolve its systems in a way that continues to make its customers competitive in the fast paced PC business. Based on customer feedback and a review of Intel's own e-business processes, Intel has focused its technical implementation of RosettaNet developed standards initially in the areas of order and inventory management. Intel's participation in the RosettaNet initiative is focused on the development of next generation systems, infrastructure, and standards-based commerce technologies that will help fuel the growth of the Internet economy.

TIBCO has been an active participant in the RosettaNet consortium from the beginning and has leveraged its world-class integration solutions to develop products that enable businesses to make their partnerships an integral part of their business within the framework of the RosettaNet standards. For over a decade, TIBCO's technology and solutions have been solving the system and process integration challenges of leading companies around the world. Based on this experience, TIBCO is able to provide the most complete and proven solution for enabling RosettaNet-compliant B2B interactions.

TIBCO's solutions have been developed specifically to address the primary pain points of the high-tech manufacturing industry, such as purchase order management, inventory management, catalog management, and the distribution of real-time information throughout the supply chain. TIBCO's solution has been successfully deployed by leading companies including NEC*, Xilinx*, Hitachi*, Seagate*, Network Appliance*, Agere Systems*, and many more.

TIBCO is the only vendor that lets companies integrate all of their partners regardless of size. Its unique browser-interface and client-side software solutions enable literally any business to participate in B2B transactions and processes. TIBCO provides tools for quickly implementing individual Partner Interface Processes (PIPs) as well as all of the complementary solutions that are required to build out full-functioned, robust and reliable integration with suppliers,

distributors, customers and other trading partners using the RosettaNet standards.

Together, Intel and TIBCO are providing the turn-key solutions for rapidly implementing individual Partner Interface Processes (PIPs) for B2B integration.

B2B Integration and RosettaNet Standards

TIBCO provides solutions that let companies quickly implement individual Partner Interface Processes (PIPs), as well as a complete set of complementary solutions that let companies fully integrate their trading partners using the RosettaNet standards.

All of TIBCO's RosettaNet solutions are designed to provide a high level of performance and reliability when running on Intel® Architecture platforms under the Windows NT* and Windows 2000* operating systems. A multi-tier architecture approach implemented on scalable servers provides the flexible, modular foundation needed to meet today's e-Business needs. And with Intel® Architecture platforms, capacity can be easily added to keep pace with fast-moving business demands.

TIBCO's RosettaNet Solutions

The foundation of TIBCO's RosettaNet solutions is TIBCO ActiveExchange – a B2B integration platform that enables the complete integration of partner interactions, including the automation of public and private processes. TIBCO ActiveExchange provides solutions that meet the needs of small, medium, and large companies, including several options for businesses that are

looking for low-cost and rapidly deployable document exchange solutions.

- **TIB/BusinessConnect for RosettaNet** is an industrial-strength B2B integration server that enables businesses to conduct transactions and share information with their trading partners. It fully supports RosettaNet standards including the RosettaNet Implementation Framework (RNIF) 2.0 and all PIPs, and also enables non-RosettaNet interactions.
- **TIB/NetworkConnector for RosettaNet** is a lightweight and easy-to-use application that can be used by mid-tier trading partners who don't have their own B2B systems in place, enabling them to participate in a company's trading network by automating the exchange of business documents using RosettaNet standards.
- **TIB/PartnerExpress** is a browser-interface application that lets small or infrequent trading partners participate in B2B processes and transactions using only their Web browser.

Solving Key Business Problems

TIBCO's RosettaNet solutions address 5 primary areas of RosettaNet standards enablement:

- Order and Inventory Management
- Marketing Catalog Information Management
- Technical Information Management
- Information Hubs (iHUB)
- Mid-tier Trading Partner Enablement (RosettaNet Basics)

Order and Inventory Management

In today's fast-moving business environment, the efficient management of orders, invoices and inventory is the key to customer satisfaction and retention. The process of order management and fulfillment typically takes place through multiple channels including fax, e-mail and EDI. Each of these mechanisms is costly either because of manual steps in the process or high cost of ownership. The widespread use of the Internet and the adoption of standards such as RosettaNet enables businesses to cut costs and improve efficiency, but there are many issues that need to be addressed to make this happen:

- Deploying systems that automate B2B processes requires that both companies are able to participate in the transaction.
- Even when backend ERP systems have been automated and have the information necessary for automated end-to-end order processing, there is frequently no integration between public and private processes.
- Exception handling is typically handled as a manual process. Ideally, exceptions need to be instantly reflected in backend systems and communicated immediately to the appropriate trading partners.
- With business models like Just-In-Time (JIT) manufacturing and Vendor Managed Inventory (VMI), order shipment and delivery information need to be passed along not only to the partner that initiated the transaction, but distributed to 3rd parties such as

providers of logistics, transportation, risk management and financial settlement services.

The automation of order management enables manufacturers to improve customer service by giving customers visibility into the status of their order, and by enabling them to process orders faster by eliminating manual steps in the process. And by sharing information about inventories and demand forecasts, companies can produce the goods that will give them the best return on their investment. This also lets them decrease the amount of inventory that exists in the distribution channel – allowing the more rapid rollout of new products and greatly reducing the price pressure on existing goods.

How RosettaNet Standards Address the Problem

RosettaNet standards address Order and Inventory management issues with PIP Clusters 3 and 4. The PIPs of these two clusters cover processes such as issuing, receiving and modifying purchase orders, and the distribution of inventory and order forecast information. Sample PIPS include 3A4 “Issue Purchase Order”, 3A7 “Notify of Purchase Order Acceptance”, 4A4 “Notify of Order Forecast” and 4C1 “Distribute Inventory Reports”.

The Solution

In this area, TIBCO’s RosettaNet solutions supports:

- Rapid integration with backend ERP systems such as SAP*, PeopleSoft*, and Oracle* Applications in order to support the PIPs.

- Rapid deployment with process and transformation templates that address the basic needs of the PIPs out of the box with minimal configuration
- An easy-to-use graphical user interface for configuring and modifying transformation maps
- Ability to activate business processes based on both inbound events from a trading partner and outbound events from the business system.

Marketing Catalog Management

Manufacturers typically create, edit and maintain catalog content in an internal electronic catalog; then pass it on to the marketing department which distributes it either in paper form, in some kind of bulk media form such as CD-ROM, or as electronically distributed documents. There are several problems with these ways of managing catalog information:

- Without an agreed upon standards for the kinds of information that is provided or level of detail, and no common standard for the organization of products, the Information that is available about similar products from different vendors is inconsistent, causing delays as people figure out exactly how the products compare.
- They rely on reentry of the same information at multiple locations, which introduces delays and increase the risk of data entry errors.
- Product planning and design relies on having absolutely the latest product information

possible. Outdated information about the features and/or availability of a given product can result in significant problems from a scheduling and financial perspective.

Automating catalog management improves sales opportunities by decreasing the time it takes to add new products to catalogs and promote them. It also enables manufacturers to provide better customer service by providing collaborative forecasting information that reduces the likelihood of customers ordering out-of-stock products.

Another benefit of automating catalog management is that it reduces the transaction cost of buying and selling materials and products, and eliminates errors and delays caused by manual steps in the process, such as the reentry of order information and manual approval of routine operations.

How RosettaNet Standards Address the Problem

RosettaNet standards address the problem of managing catalogs with Cluster 2 PIPs. They define processes for distributing information about new products to resellers, and for retrieving product information from manufacturers. Sample PIPS include 2A1 "Distribute New Product Information" and 2A2 "Query Product Information."

The Solution

In this area, TIBCO's RosettaNet solutions support:

- Conversion of catalog information from electronic catalog form to RosettaNet

standard form for pushing to trading partners.

- Ability to broadcast catalog information to multiple trading partners at the same time.
- The ability to push full and/or incremental catalog information to Trading Partners based on Trading Partner preferences and configuration.
- Schedule driven initiation of Catalog updates (weekly, monthly, quarterly) to trading partners integrally supported within Solution framework.

Technical Information Management

Buyers of electronic components need to access highly technical information including detailed behavioral, electrical, physical characteristics. Engineers absolutely have to have access to detailed, accurate and up-to-date technical information. There are several issues with getting them the information they need:

- Users are currently forced to aggregate information from multiple sources in multiple formats, and then sort through it to get the desired information.
- Request for detailed information typically have to be made through point-to-point contacts.
- There is no commonly agreed upon vocabulary to describe Technical Characteristics and their attributes, and no standards governing the exchange of Product Information.

- Obsolescence, availability and other information is not synchronized with technical information, causing rework at later stages of design and engineering process. This increases the overall cost of design, and affects time-to-market.

Improving the distribution of technical information and giving engineers a better way of gathering such information minimizes the amount of time and effort that developers must spend researching product specs. This eliminates design errors caused by incorrect data, and also lets designers focus on designing products instead of searching for and validating information. On the other side of the equation, manufacturers can be sure that engineers have accurate information about their products, which creates more informed buyers and shorter sales cycles.

How RosettaNet Standards Address the Problem

RosettaNet's Cluster 2 Partner Interface Processes (PIPs) on Electronic Component Technical Information define processes that let customers query detailed technical information. The most significant in this area is 2A9 "Query EC Technical Information". PIP 2A9 is largely based on Si2's (Silicon Integration Initiative) ECIX (Electronic Component Information eXchange) query/response XML format. This allows users of PIP 2A9 to request Pin Maps, package descriptions, datasheets, models and other parameters packaged together for specific design chain use (e.g. life cycle information).

The Solution

In this area, TIBCO's RosettaNet solutions support:

- RosettaNet PIP 2A9 in both synchronous and asynchronous modes.
- Handling of RNIF 2.0 features that address the handling and transfer of single or multiple ASCII and binary attachments across trading partners.
- Out-of-the-box processes that integrate to leading Product Information Data Management vendors such as ChipData and Saqqara.
- Ability to integrate the solution framework (open API) into in-house Product Information Management application framework with minimal changes.
- The import of Registry information as Trading Partner information to ensure synchronization with standard 2A9 registry.
- Query broadcast to multiple trading partners during the initial phases of the engineering life cycle so as to evaluate products from a broad base of suppliers.
- Ability to support the concept of preferred suppliers and partners and control the amount of information disseminated based on trading partner agreements.

The Information Hub (iHUB)

In today's world there exist considerable information delays and distortion between various levels in a supply chain. As a result

Planning activities are not synchronized, resulting in frequent changes to forecast and demand plans. This is further compounded by very minimal inter-enterprise process design and optimization, and the inability to view the exception conditions in the supply chain. Key issues faced by trading partners include:

- No seamless integration of inter-enterprise supply chain planning and execution processes.
- No clear end-to-end visibility of planning, forecast and demand data for all partners in the supply chain. As a result planning changes result in delayed response, and inventory is not optimized for out-of-stock and over-stock conditions.
- Effective Collaborative commerce not possible today with supply chain partners.
- Currently serious exceptions are lost amidst the other exceptions that could have been avoided with end-to-end visibility. This results in higher cycle times for both customer service, and administration and management of exceptions.

Manufacturers implementing an iHUB can more effectively allocate constrained materials to the partners that need them the most, increasing their ability to meet customer demand. By receiving a consolidated and real-time view of demand, they can provide more accurate forecasting and cut down on delays. This improves the continuity of supply and percentage of on-time shipments, and lets the manufacturer better respond to changes fluctuations in supply and/or demand.

How RosettaNet Standards Address the Problem

The Information Hub (iHUB) RosettaNet program team was formed with the purpose of proposing supply chain information alternatives that would address the supply chain information needs of large OEMs. The iHUB team is finding ways to leverage existing RosettaNet Clusters and PIPs along with the development of new PIPs that would address the problem. The iHUB PIPs are categorized along with the existing clusters covering Product Information, Order Management, Inventory, and Production.

The Solution

In this area, TIBCO's RosettaNet solutions support:

- Solution ability to support all elements of the supply chain - OEM, Contract Manufacturer, Supplier, Distributor, Carrier and 3rd Party Logistics Provider.
- Highly scalable infrastructure to support high volume requirements of an Information Hub.
- Predefined private process solution templates for leading ERP systems such as SAP R/3, PeopleSoft and Oracle Applications for all released iHUB PIPs. This will enable all elements of the supply chain to rapidly implement and deploy iHUB connections.
- Solution templates based on an extensible and customizable framework, which can rapidly build and deploy other solutions (new PIPs) with a very quick time-to-market.

- Ability to use the same infrastructure to push information to multiple private hubs. This would be a requirement for the intermediate and leaf nodes of the Information Supply chain.
- Robust and extensible exception handling framework that will allow any partner in the supply chain to rapidly address and resolve exceptions.

RosettaNet Basics

One of the 2001 milestones that Intel and TIBCO are committed to is B2B Integration with Mid-Tier Partners with a focus on small- and medium-sized trading partners. The RosettaNet Basics program defines a set of core PIPs that address baseline, B2B functionality, and aligns with efforts of solution providers to develop affordable, turnkey solutions that ease adoption. Led by Intel, approximately 10 IT and EC Board Member companies are participating in the RosettaNet Basics program and have committed to connecting to 50 to 100 mid-tier suppliers by Q4 2001. TIBCO Software is one of the first solution providers to partner with supply chain companies to ensure that turnkey solutions are available to support implementation and quick entry.

This new approach should extend the benefits of RosettaNet to a much wider scope of consortium companies and their non-consortium trading partners. Specifically, companies will be able to connect hundreds of mid-tier trading partners through reusable and affordable solutions.

How RosettaNet Standards Address the Problem

Simplification of PIPs will be accomplished by specification of inclusion (use) during implementation of only those mandatory attributes required for a much more rigorously defined scope or use case. Any single current PIP, for example, PIP3A4 v2 Purchase Order Create, may spawn several PIP use cases, such as standard PO, blanket PO, and drop ship. The core content of this effort will be driven by a small group of larger consortium member companies such as Intel, yet the final results will be openly available for review by the remaining consortium member companies

The RosettaNet consortium has defined the first RosettaNet Basics milestone as five to ten board member companies connected with 50 to 100 mid-tier trading partners by October 10, 2001.

The Solution

TIBCO and Intel are working together to create a RosettaNet Basics solution optimized for Intel® Architecture:

- Predefined solution templates for the PIPs and use cases defined by RosettaNet Basics PIPs
- Simple-to-use configuration user interface
- Built-in integration with databases or flat files for very fast implementation time
- Ability to upgrade solution for integration with enterprise systems (e.g. SAP R/3, PeopleSoft, Oracle Applications)

Conclusion

Intel & TIBCO are strong believers in open industry standards, and have been actively involved in RosettaNet development since 1999. As consortium members, they are active in the definition and creation of this XML-based standard and in developing PiPs. Intel and TIBCO are partnering as well as to develop complementary solutions – TIBCO tools on Intel® Architecture – which enable companies to realize a strong return on investment by taking

advantage of the agility, flexibility, performance, scalability and cost-effectiveness of the Intel® Architecture.

RosettaNet will continue to focus on providing and enabling the B2B integration through adoption of standards and PiPs that offer companies extreme value, as well as extend process standards in the high-tech verticals it currently serves. Additionally, RosettaNet will continue to spread the creation and adoption of standards throughout the world.

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