Fifteen Clues that Your ERP System is Ready to Take Your Business to the Next Level, ERP Integration Part 2
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To seize the full value from your enterprise resource planning (ERP) system and keep it working for all business initiatives present and future, you need an event-driven integration platform. That’s one that integrates your ERP system with all other assets (internal and external applications, partners, mobile, social) and makes data available in real time.

**Introduction: How an Event-Driven Platform Works**

In an event-drive integration platform, an application (service) publishes its data as events on an enterprise-service bus (ESB) to which all other applications are connected. The ESB uses its integration capabilities to expose ERP functionalities and those of other applications as standard services. Any application that needs to know about a particular type of event subscribes to it and receives it simply, non-intrusively.

This technology, the event-driven integration platform, turns an organization into an event-enabled enterprise that exhibits 15 enviable qualities:

1 | **Flexible Integration**

Any new application can connect to the ESB, subscribe to events, and receive them in real time. This approach is much more efficient than creating another interface in the ERP system, which is costly in terms of development and maintenance and may cause latency when several systems need the same information. Coupling the ERP system to other systems one-by-one (point-to-point) also prevents reuse of existing integration logic and makes ERP upgrades even more complicated.
2 | Scalability for All Services

The messaging based architecture of the ESB guarantees event delivery. The bus ensures that applications in any of your geographies can publish and subscribe to events and receive new information immediately. This architecture also ensures scalability. Any increase in load will not impact real-time availability of information or business performance. This scalability also applies to services exposed via an API, or via web and mobile channels that cause the volume of services invoked or events exchanged to dramatically increase. Because some of the services can be used directly by customers, their performance must be excellent and reliable.

3 | High Connectivity

To ensure that all applications can be integrated with the ESB, there is a rich library of connectors that address applications and technologies using their native interfaces. The integration logic is standards-based, zero-coding, and entirely graphical. This includes the management of data formats, the logic to apply them to this real-time environment, and management of connectivity.

In the TIBCO ESB, connectivity starts with standard communication capabilities that many ERP systems support, such as Web Services (SOAP), REST/JSON, or XML exchanges over various transports (http and JMS). For ERP systems such as SAP or Oracle, we provide connectors that use native interfaces and expose the business functionalities (even the custom ones) that can be used for events and services.

We also provide connectivity for most types of applications involved in the same processes as the ERP applications:

- Legacy applications and programs hosted on zOS and iSeries platforms
- Custom applications developed in Java, .Net, or older technologies supporting protocols such as TCP, RMI, or even Tuxedo
- Operational technology to capture real-time manufacturing information, such as Osisoft Pi
4 | Comprehensive Tools Integration
To ensure the integration of all tools, the TIBCO ESB provides connectivity for collaboration platforms such as Sharepoint, Evernote, and Dropbox. Our software also integrates very well with mobile applications, either by exposing an open API, or by using web sockets to literally connect mobile applications to the bus. This asynchronicity is especially useful in situations where connectivity is not ensured, for example, users can be notified of events (even Apple iPhone notifications via APNS) while the organization can capture any information entered in the application.

5 | Easier Systems Evolution
Broad connectivity allows you to feed ERP applications with real-time data to ensure processes and decisions are made on accurate information. Connectivity also ensures an efficient collaboration and improved awareness of the teams involved in the processes. But on the IT strategy side, this connectivity combined with the bus architecture allows you to consider a more serene evolution of systems. Decoupling applications allows the exposition of business services to users via portals or other applications while back-end redundant systems are consolidated or retired and ERP systems upgraded or centralized.

6 | Highly Available Data
When you improve the business performance of ERP applications with real-time information, you also achieve high availability of data. The TIBCO integration platform not only ensures high availability of the components, but the resilience of events and services. By configuration, integration processes that were executed when an exception occurred at the engine, OS, or network level, are resumed on another engine. All of those exceptions, and the entire process, are duly logged so that operations can see the sequence and fix the issue.

7 | Easy and Cost-Effective Manageability
TIBCO’s integration platform also improves your agility by allowing a high level of industrialization. It is easy to manage with tools that your operations teams already use (testing, deployment, enterprise monitoring). It is easy to deploy in distributed environments, such as factories, and easy to connect to local ERP instances and other systems. You can shorten your time to results for new integration logic while reducing integration costs.

Con-way: Monitors 10,000 daily appointments
Con-way uses TIBCO to monitor as many as 10,000 daily shipping appointments along with the corresponding truck movement.
8 | Improved Exception Handling

After you increase the efficiency of your processes by streamlining them with real-time information, the next level of efficiency is to reduce the number of exceptions and limit their impact. The TIBCO integration platform provides a web interface for assessing the status of integration process instances and quickly identifying exceptions. When exceptions occur, this interface also lets users drill down to faulty instances and understand the issue using the same easy-to-understand diagram initially defined in the graphical design environment.

This browser-accessible cockpit view also lets you query logs, data, and performance of the integration process and its components, eliminating the need for costly experts to dig into systems logs. When the cause of the issue is identified, a task can be sent to the relevant IT team for correction. The web interface also gives business teams more visibility. It lets them search instances from business data and quickly assess the status of a process or impending event, such as the response to a customer request. The same data, aggregated over time, can be examined in the TIBCO analytics tool to identify bottlenecks and delete unnecessary parts to improve the performance of integration processes.

9 | High-Quality Data

Updates of key master data, such as customer, product, organization, and part numbers, can be processed, first, in a data-quality engine to ensure it describes a unique business object and does not create a duplicate. By applying this data-quality check on-the-fly as it enters information systems, you reduce the cost of erroneous decisions. Clean information can then be processed in the master data management (MDM) platform where rules and processes validate it. When validated (automatically or by users, depending on the process), the data can be propagated as an event and integrated into applications. This process ensures accurate data without having to define the data management processes and rules in an ERP system, which is too rigid to efficiently support this capability.

10 | High Performance

It is worth noting that TIBCO’s MDM system is not necessarily the master of all data, but it does allow the definition and enforcement of data governance. It natively exchanges events and services with the integration platform and supports the highest volumes of data processing using an embedded in-memory data grid. Its performance allows master data repositories hosted in the platform to supply real-time information without loading the ERP system. You can immediately add attributes without having to make changes in applications.

11 | Service Elasticity

The same in-memory data grid embedded in the TIBCO MDM platform can be used to store data on-the-fly and distribute it across machines. Not only is this functionality ideal for sharing information across processes, it allows creation of a cache that can be used to help systems cope with very high loads. The most frequent requests can be cached, and whenever there’s an update in the backend system, it is captured, pushed to the cache, and subsequently used in the request. The in-memory data grid lets you scale services without having to bear the cost of scaling all applications, while at the same time ensuring a great user experience.

IDC: TIBCO meets new customer needs

“TIBCO has shown that it is able to address new customer requirements with its expanded product portfolio and its professional services, especially in industries such as manufacturing and distribution, where a diverse set of non-standard workflows, MDM capabilities, and integration are critical to the solution...”

– Rüdiger Spies, analyst, IDC Central Europe GmbH
12 | Pattern Identification
The data stored in the in-memory data grid and the MDM platform can be combined with data from other sources (such as the database, data warehouse, and in some cases, ERP system). Combining data allows you to analyze using a web interface and measure quality of the processes, identify successful products and services, or even identify patterns that lead to important situations. Patterns can be a sequence of events that indicate decreased quality because of a lack of resources or that show varying product demand across regions so that the process to satisfy this demand and resulting revenue can be more predictable.

13 | Pattern Analysis
The TIBCO events processing engine lets you drill down to the events that contribute to patterns. This engine subscribes to real-time events on the integration platform to maintain a context on business or operational objects. It then applies correlation rules in real time and makes systems and users aware of the situation of interest.

14 | Contextual Intelligence
Context helps identify events and the lack of events. Events processing maintains a context of an end-to-end process by capturing events published on the integration platform by all systems involved in the process. In case of a communication exception, systems won't raise an alert because they all either finished processing or did not receive anything. Only the events processing engine will raise alerts because it did not receive all the expected information in the appropriate time period.

15 | Advanced Logic
The events processing engine also allows you to define advanced logic that automatically identifies and reacts to patterns that would otherwise require examining data from several systems. For example, the events processing engine can make a recommendation on how to replenish stock depending on external factors such as sales promotions, perishable inventory, or the supply chain’s allocation of spare parts. Business teams can graphically identify patterns leading to situations of interest in the analytics web interface, then use business models such as decision tables or trees to decide which scenario to anticipate or react to in real time and what actions to take.

These capabilities allow you to be extremely agile. You can continually add and analyze new information to discover new patterns, and react to those patterns without making major changes to applications. In this way, you create a new layer of awareness and intelligence for your existing applications.
Conclusion: Event-Driven Integration for ERP

TIBCO’s integration platform lets you extract more value from your ERP system including improved business performance, increased organizational awareness, and better coordination of processes. In particular, with a TIBCO integration platform, you can:

• Improve business processes: Accelerate and streamline processes to increase customer satisfaction and reduce risk
• Reduce errors: Validate data and automatically identify and correct exceptions, allowing better services and fewer resources dedicated to managing exceptions
• Increase productivity and reduce risk: Provide ERP systems and other applications all the necessary information for processing and decision-making, ensuring process consistency and enabling users to focus on the current process instead of aggregating the context themselves
• Provide more timely and more accurate information: Capture and immediately analyze data on-the-fly, allowing decisions to be made for maximum impact, developing agility that translates into better business performance

For a description of common problems caused by older integration technology, see Four Clues Your Organization Suffers from Inefficient Integration, ERP Integration Part 1.

For more information on TIBCO’s integration platform, join us at: www.tibco.com/maturity