

# Information Architecture: The key to maximizing the return on your RFID investment

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## A data explosion is coming. Are you ready?

There is no doubt that RFID technology—and other sensor-based technologies—presents massive potential for creating competitive advantage. Incorporating these technologies into your information infrastructure and integrating them into your business processes provides substantial business benefit. They let you more accurately track assets, monitor key indicators, and automate business processes, giving you greater visibility into your operations and allowing you to make better decisions based on real-time information. But, to realize maximum return on your investment, you need to strategically leverage your information architecture.

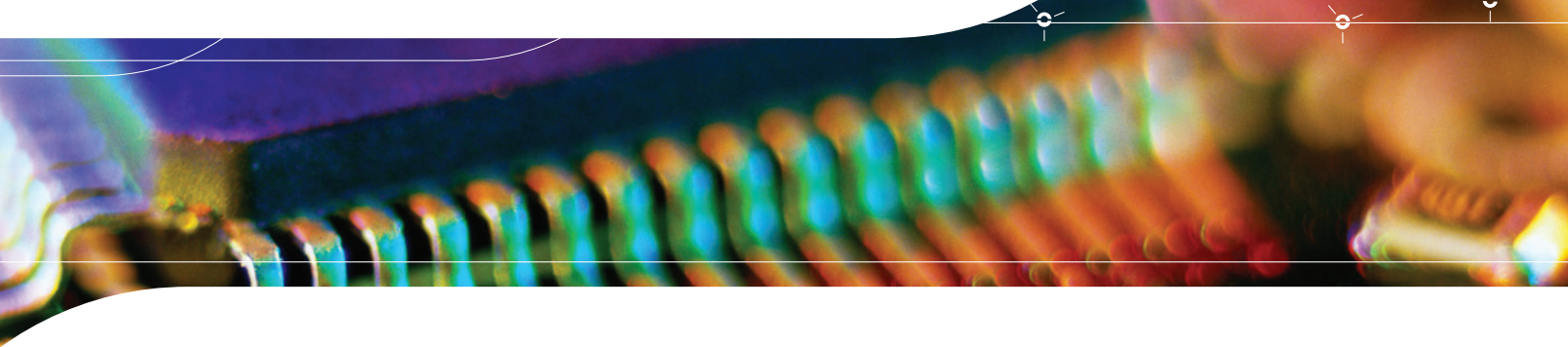
“Companies are increasingly evaluating RFID technology for its potential to dramatically change the economics of shipping, receiving and inventory management,” says Jeff Woods, principal analyst at Gartner. “Enterprises that can leverage RFID to create RFID-centric processes in order fulfillment, manufacturing and warehousing will achieve strategic differentiation from their competitors.”

With recent mandates from Wal-Mart, Target, the Department of Defense, Metro Group and others that suppliers incorporate RFID tags in all pallet shipments by 2005, many companies are under a lot of pressure to adopt RFID systems today. Others are investigating the opportunities for transforming and modernizing their businesses. But implementing an RFID system purely to ensure compliance risks leaving you with a high initial investment and few long-term benefits.



While it makes sense for organizations to adopt RFID technology today to stay ahead of the curve, turning the promise of RFID into *sustainable* competitive advantage depends on how effectively you turn the vast amounts of data collected into operational intelligence. Mountains of data, encompassing all aspects of the business value chain, will push the boundaries of information management in

With interfaces to Oracle Database 10g, Oracle Application Server 10g, Oracle Enterprise Manager 10g, and Oracle E-Business Suite, Oracle Sensor Based Services are designed to capture, manage, analyze, access, and respond to the information that will soon be flowing through your information systems.



terms of scalability, reliability, and security. In addition, information silos to handle each specific application will be created.

To protect your initial investments and realize maximum long-term returns, you need to ensure that you base your RFID strategy on sound *information architecture*—an architecture that adapts to changes in technology, standards, and business dynamics, providing an integrated “single source of truth” that ensures all your business constituents benefit from what RFID has to offer.

### The Oracle Solution

One of the key challenges of RFID is data management. And that’s something that Oracle Corporation has been doing for more than 25 years. As the leader in enterprise software, Oracle has been a leading innovator in data management, event processing, and enterprise resource planning. This heritage places Oracle at the top of a short list of technology companies that can help organizations meet the challenges of RFID and sensor-based services today and in the future.

Oracle’s continued focus on grid computing architecture, data quality, business process automation and a sustainable information architecture will enable your organization to turn the mountains of raw RFID data into practical business information. Oracle’s newly announced Sensor Based Services provide a transparent method of integrating RFID and sensor data into your software infrastructure.

Oracle Sensor Based Services provide the most cost-effective technology and tools to enable customers to automate business processes that handle routine events without human intervention. At the same time, customers gain greater operational visibility through a unified workplace so that they can manage by exception to reduce risks and maximize opportunities. Extensive collaboration tools and the ability to notify anyone, anywhere, provide the other key components for the responsive enterprise.

Let’s take a closer look at each of these processes.

### Capture Information

The first step is capturing appropriate, filtered information from a variety of different readers and sensors. Oracle Application Server 10g connects to readers and sensors at the “edge” of your infrastructure to capture and store the data. The Application Server performs appropriate filtering and abstraction of this information prior to passing the data to a common data store where it is analyzed and processed, making the information available to all business applications. Filters for redundancy and collision are built in. You can also define custom filters that will support complex business processes and intelligent decision making.

Oracle Application Server 10g also provides device management in the form of heartbeat detection and driver and firmware upgrades. These features are integrated with Oracle Enterprise Manager.

## Managing Information

Next, organizations must manage the explosion of data and events in a single data source that is scalable, reliable, and secure on a common flexible infrastructure that integrates with existing data, applications, and business processes.

applications and employees. Only Oracle provides a complete and cost-effective solution to address the full spectrum of business intelligence requirements: data quality, data analysis, and information access.

Analyzing data in real time provides only partial benefit. Sometimes the real value of information is only realized

“The value of RFID is not within the physics—the real value depends on how you create intelligence from all the data you capture. Intel Corporation's technology and industry expertise, coupled with Oracle's information architecture and data management capabilities, will drive the envelope for return on RFID investment.”

—Richard Wirt, Intel Senior Fellow, Enterprise Platforms Group General Manager, Software and Solutions Group, Intel Corporation.

Oracle's solution: manage information in Oracle Database 10g—the industry's most scalable, reliable, and secure database. With the built-in data warehousing and messaging capabilities in the Oracle Database, users and applications have a big head start in gaining a “single source of truth,” which will increase your confidence that your information is consistent and credible.

In addition, RFID and sensor-based processing require strong event management. Traditionally, event services have been separated from data management. However, the Oracle database combines these elements, because events are inseparable from data. Oracle Database 10g has a powerful queuing and messaging system that not only allows users to manage events, but also to transform, distribute, query, and audit these events.

Consequently, information that is exchanged between organizations, business partners, and suppliers can be treated like any other business-critical asset. Centralizing your data ensures that the benefits from incorporating RFID data are maximized with minimum changes to your existing applications.

## Analyze Information

With all of your data and events consolidated and scrubbed, you can analyze the data and events in real time to provide business intelligence and business activity monitoring for continuous process improvement—for

after the fact. This is especially true for RFID, and we are only beginning to explore the application and value this wealth of information represents. Time stamping and version control not only allow users to access data that reflects the current state of the organization, but allows you to “roll back” to previous points in time. Extensive statistical and analytic functions built into the database process this information without requiring you to code it into your applications. Only Oracle provides you with the capability to ask questions like: “How many times in the last six months have we not refilled the shelf based on low inventory”—without extensive programming up front.

From reporting to what-if analysis, ad-hoc queries, trending, marketing segmentation, and customer profiling, Oracle's Business Intelligence solution extends business intelligence and analysis capabilities to decision makers at all levels of your organization.

## Access Information

Information is useless if you can't access it. Your organization needs anytime, anywhere access to information by all the appropriate people, applications, and business processes. Oracle Application Server Portal and Wireless provide decision makers in your organization with comprehensive, up-to-the-minute business intelligence in a single place. Users get a rich and seamless experience for accessing information and applications from a variety of devices. In addition, Oracle Application Server provides a unified

workplace where your employees, partners, and customers can collaborate in real time.

### Respond to Information

The final step in Oracle's solution for RFID and sensor-based services is enabling your organization to respond to events and information automatically and to manage by exception to reduce risk and maximize opportunities. Oracle Application Server 10g lets you streamline business processes by efficiently integrating systems together. It also provides model-based, event-driven tools for Business Process Management (BPM) and Business Activity Monitoring (BAM) to help your organization track and analyze business flows through your entire system. Oracle Application Server Integration is a process-centric solution for integration that addresses your needs for automated event processing, human interactions, and business-to-business process protocols. An extensive notification architecture ensures that the relevant application, system, process, or individual is informed of any event requiring action—via any medium.

### Why Oracle?

Oracle believes that the right information architecture is the key ingredient to greater returns on RFID expenditures. Oracle delivers RFID-enabled applications, software infrastructure, and tools that can get you up and running more quickly and cost effectively—*today*. Oracle's RFID solutions exploit the powerful data and application integration capabilities of Oracle's information architecture.

Oracle also brings the power of grid computing to its RFID solution. With grid computing—the coordinated use of many small servers acting as one large computer—you don't need to worry about spikes in demand and the high cost of maintaining excess capacity. Computing power is available when you need it. Both Oracle Database 10g and Oracle Application Server 10g have built-in support for grid computing, while Oracle Enterprise Manager 10g automates the day-to-day maintenance required for an enterprise grid, and provides a centralized management console.

In addition, Oracle's services and our extensive partner network ensure that we provide solutions that contribute to your success.

When you think about an RFID solution, don't get lost in the lingo and the hype. Think about a comprehensive, secure, long-term data management solution. Think Oracle.

For more information, visit [www.oracle.com](http://www.oracle.com)

### Thank Heaven for RFID

7-Eleven, Inc. has been evaluating RFID technology extensively over the past year. "The potential for improved process efficiency, inventory control, and ultimately, cost savings are substantial," says Keith Morrow, chief information officer and vice president of Information Systems for 7-Eleven.

So when Oracle announced that the next version of the Oracle E-Business Suite would include new RFID and Electronic Product Code (EPC) capabilities, 7-Eleven, already an Oracle E-Business Suite customer, paid attention.

"We are keenly interested in the new RFID capabilities and its ability to leverage the Oracle database for effective management of new order information that will flow from the supply chain," says Morrow. "7-Eleven looks forward to the day when we can have RFID tracking by item, which is how we manage our inventory – item by item, store by store."

Oracle E-Business Suite will leverage Oracle Database 10g and Oracle Application Server 10g to provide a comprehensive RFID platform that can accommodate large volumes of transactional data and improve order fulfillment operations. This functionality provides companies with the ability to accommodate the huge volume and increased granularity of transactions, and the flexibility to meet their changing order fulfillment requirements.