

Becoming a Proactive Enterprise with Device Relationship Management

Why Businesses Are Adopting This New Enterprise Software Solution

Staying Ahead in a Global Economy

No company is immune to the intense pressures of doing (and staying in) business in today's economy. Global competition and downward price pressures have created mounting business and operational challenges for virtually every enterprise in every industry. Product life cycles are shrinking, and the pace of technological change is increasing.

Organizations are being challenged to improve the quality and time to market of the products they manufacture and the speed and effectiveness of the service and support they provide—while simultaneously reducing costs and increasing customer satisfaction. It's a tall order, exacerbated by the lack of real-time operational and business information that is the key to helping companies improve how they develop, manufacture, resupply, market and service their products.

Imagine, for example, what organizations could do if they could continuously monitor the performance and usage of the “devices”—instruments, equipment, machines, sensors, systems, vehicles, appliances—remotely deployed at their customer sites. Imagine what they could do with this new source of business information:

- Anticipate problems *before* they occur and repair them (often from a remote location) even before their customers are aware of them
- Identify and diagnose problems *before* deploying technicians, so that on-site repairs can be done right the first time, by the right people armed with the right skills and the right parts
- Monitor consumables usage and automatically resupply customers *before* they run low and have to call
- Implement pay-per-use billing models to enhance revenue streams
- Develop new services as new sources of revenue and profits

For lack of an alternative, manufacturers and service organizations have had to operate in reactive mode—often in crisis situations—responding to problems only *after* customers report them and acting on information that has been filtered through the customer and is often incorrect or biased. These organizations are paying the price, not just in productivity, effectiveness and actual cost of service, but perhaps most critically, in reduced levels of customer satisfaction.

Device Relationship Management Bridges the Information Gap

Virtually all devices today, made “intelligent” through embedded, computer-based control technology, actually contain a wealth of information that offers significant business value to the companies that manufacture, service and use them. If these devices could talk, they could tell when they are malfunctioning, out of spec or about to fail, and even report what the specific problem is. They could inform when they are out of raw materials, how many times they are used in a week, when they are used most and by whom, what output is generated and what features are most popular or least used.

The challenge is how to get this information—especially when devices are deployed at remote sites—and when you do, how to tap the value of this information and turn it into actionable business intelligence. No technology or software has provided a complete solution, rendering this valuable, untapped device data inaccessible, and thus useless, until now.

Device Relationship Management (DRM) is a new category of enterprise software that leverages the global reach of the Internet to provide the real-time, continuous exchange of information between remote devices, business systems and people. DRM lets businesses, manufacturers and service providers use the Internet to monitor, manage and service intelligent devices deployed at remote sites anywhere in the world—cost-effectively and in real time. Companies can now connect directly to their deployed products rather than rely on feedback filtered through their users and benefit from a continuous yet managed flow of information that lets them improve how they develop, manufacture, market, service and resupply their products.

By enabling the communication and management of device data from customer to service organization, factory floor to executive suite, across the enterprise and throughout the life cycle of each device, DRM helps companies transform the way they do business. With DRM, companies can capitalize on this previously unavailable source of real-time business information with better decision support, product development and customer service, and improved operational efficiencies. Most important, *DRM turns reactive businesses into proactive businesses, providing new sources of revenue and increased operational efficiency at lower costs—while optimizing customer relationships—with an ROI that can often be measured in months.*

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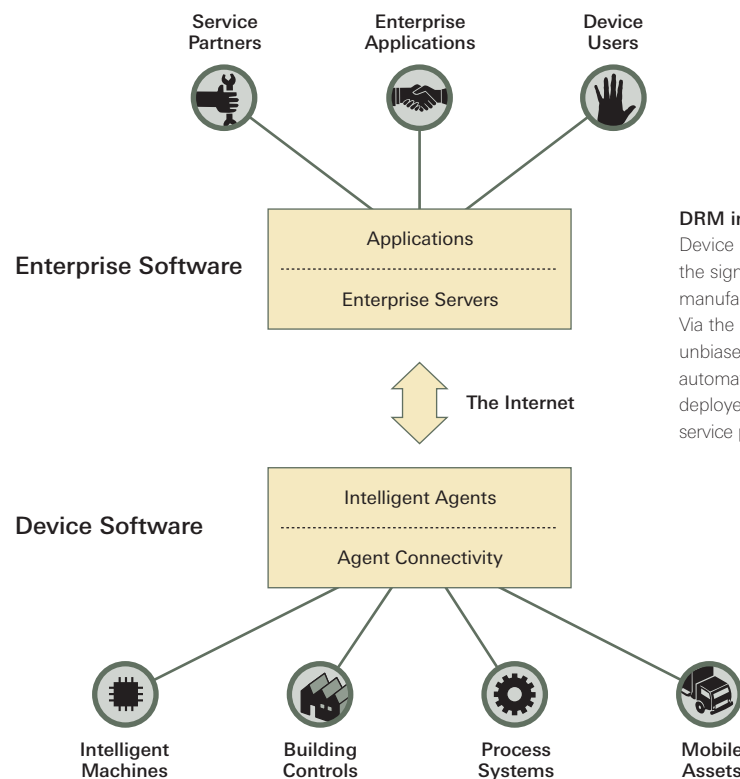
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How Does DRM Work?

In simplest terms, a Device Relationship Management system is based on a distributed architecture with software intelligence at all levels. At the device level, software is attached to existing devices or embedded into new devices to allow distributed monitoring, communications and control. This software exchanges data between the devices and a central server that provides the central clearinghouse and processing center for all of the information flowing through the system.

Users located anywhere in the world can access this information from the server through a variety of applications that employ standard Web browsers and communicate back to the devices to perform a host of remote device administration, desktop sharing, diagnostics and data visualization tasks. For example, users can remotely calibrate a product at a customer site, administer a remote desktop, graph real-time data for a device or update profile information in hundreds of installed products. No special client-side software is required, and installation can typically be completed in a matter of days, enabling companies to reap the benefits of DRM almost instantly.

For added business benefits, Device Relationship Management systems can also be integrated with other popular enterprise systems, such as Customer Relationship Management (CRM) systems, enhancing the value of those systems by feeding them with a continuous flow of real-time information collected from deployed devices. Unlike previous attempts to bridge the information gap between intelligent devices and the enterprise, Device Relationship Management technology addresses organizations' key technical, environmental and organizational concerns, such as communication through firewalls, security and scalability.



DRM in Action

Device Relationship Management addresses the significant information blind spot in today's manufacturing and service organizations. Via the Internet it allows timely, accurate and unbiased information to be communicated automatically between remote devices deployed at customer facilities and external service personnel or enterprise business systems.

Who Needs DRM?

Virtually any organization that builds, services or uses intelligent devices to run a business will benefit significantly from Device Relationship Management. DRM is being rapidly adopted by a variety of industries with a wide range of devices, from sophisticated machines in the factory to mobile assets on the road to low-cost appliances in the home.

In particular, industries that have significant service costs and uptime requirements, as well as complex, intelligent systems—such as the industrial and building automation, high-technology devices, medical instrumentation, office automation and semiconductor equipment industries—are looking to DRM to initially increase the productivity and cost-effectiveness of their service organizations. In the long run, they want DRM to redefine their business operations based around real-time information management.

The *semiconductor industry*, for example, has long awaited a standardized remote device diagnostic technology to support its complex and highly sensitive fab environments. Now, groups such as International SEMATECH and Semiconductor Equipment and Materials International (SEMI) are finalizing industry-revolutionizing e-diagnostic guidelines to reduce equipment downtime and optimize production across the board.

DRM technology meets these requirements and the needs of chipmakers and equipment suppliers alike, providing e-diagnostics capabilities, as well as comprehensive monitoring, communication and remote operation. From front-end to back-end machinery, DRM enables continuous, reliable and secure monitoring and communication from machines in the fab to those responsible for servicing them. It reduces service costs and improves productivity of field service personnel, optimizing preventive maintenance processes, increasing machine availability, productivity and efficiency, and reducing mean time to detect, diagnose and repair.

For *office and technology equipment* manufacturers, DRM allows a wide range of products such as printers, copiers, fax machines, scanners, multifunction printers, file servers, uninterruptible power supplies, computers, postage stamp machines and more to be managed, supported and serviced from behind corporate firewalls. With DRM, devices throughout a company and at multiple sites can be remotely and automatically monitored, so predictive maintenance can be delivered at the optimum time, eliminating the two alternative extremes, downtime and over-service. Suppliers can leverage real-time continuous device connections to create new business models and new revenue opportunities, such as supplier-managed automatic replenishment of consumables and supplies, remote software upgrades, automatic purchasing of software options and meter reading for dynamic pay-per-use billing, among others.

The high cost of servicing equipment in the field and the need to respond quickly and efficiently in a high-pressure environment where downtime is simply not acceptable is prompting DRM adoption by many *medical instrument* manufacturers. Diagnostic instrument manufacturers, for example, are using DRM to proactively monitor operational processes such as power supply levels, vacuum/pressure levels, reagent temperatures and more. If these processes fall outside of preset parameters, the instrument in the field sends alarms to the service department or help desk as appropriate.

Case in Point

A leading provider of instrument systems and complementary consumable products that automate clinical laboratory processes relies on a Device Relationship Management system to remotely monitor, diagnose and anticipate problems with instruments it has deployed at hospitals across the United States. The system monitors the instruments and transmits usage and performance data via the Internet back to a dedicated, secure, DRM server at the company's headquarters. As abnormal conditions are detected, e-mail notifications are sent by DRM software embedded within the equipment to the company's technicians, who then use their standard Web browsers to execute remote troubleshooting, problem analysis and maintenance.

The company is getting a head start on its competition by using DRM to reduce the high cost of servicing its complex equipment once it's deployed at the customer site. Not only will the company's salespeople be able to promise unparalleled customer service, but its R&D department will be able to see how customers are using the equipment as reported by the devices themselves. Most important, the company expects to realize annual savings of \$1 million—just from one of its product lines.

DRM enables service personnel to simply log on to a device via the Internet from any location to monitor instrument health and performance, perform preventive maintenance, and identify and diagnose problems directly. Significant ROI is achieved by moving to proactive service models, often fixing problems remotely, eliminating costly and repair-delaying travel to the customer site. When on-site service is required, use of DRM ensures that an appropriately skilled technician arrives on the scene with the right parts to fix the problem and get the device up and running as soon as possible.

Productivity and uptime are critical drivers in the *industrial equipment* manufacturing industry, where machine downtime can easily cost \$1 million a day, and companies are often responsible for hundreds or even thousands of machines on factory floors around the world. These machines are complex, expensive, service-intensive and globally dispersed, typically operating in sensitive and costly environments. And the more sophisticated they become, the more costly they are to service. Now, with DRM providing the means to remotely monitor, service and maintain even very large numbers of systems in real time—around the clock—this industry looks forward to recouping millions of dollars annually in high service costs and lost revenues.

DRM Turns Reactive Businesses into Proactive Businesses

Typically, the benefits of DRM start in the service department through the ability to provide better service at lower costs. Instead of costly, reactive, travel-intensive service practices in which time to repair is limited by distance and available skilled technicians, DRM enables a new, proactive service model. In this model continuous automated monitoring of trends and remote diagnostics enables proactive fault determination and repair, and helps service organizations:

- Get customers up and running fast without the cost and delay of unnecessary travel
- Increase first-call close rate
- Minimize “no problem found” on-site visits
- Arrive on site with the right parts and the right skills the first time
- Extend service systems to automatically validate performance, uptime and regulatory compliance
- Coordinate response and escalation with authorized service providers
- Leverage critical expertise globally

But the business benefits of DRM extend far beyond the service organization. By reducing the time between information capture in one place and its availability in another, Device Relationship Management helps companies become “zero-latency” enterprises. DRM automates real-time access to critical business performance indicators across departmental and business boundaries and improves the speed and effectiveness of business operations, enabling real-time business decisions to be made based on up-to-the-minute status from remote machines, devices, control systems and sensors. As a zero-latency enterprise, companies can:

- Automate monitoring of remote production lines and buildings
- Synchronize business processes with manufacturing processes
- Enable real-time alignment of supply and demand
- Manage capacity planning, productivity and yield analysis in real time

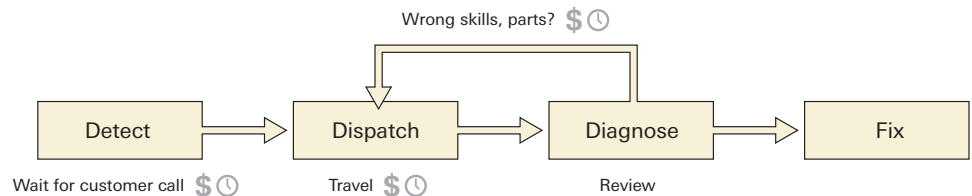
DRM creates opportunities to not only save costs, but also to grow revenue. Continuous monitoring from remote devices enables completely new business opportunities based on predictable, automated services, such as remote tracking of device consumable usage for predictive resupply, e-commerce-based, vendor-managed inventory services, pay-per-use billing models with real-time visibility and audit trails, and new high-value services to create customer-retaining relationships.

Ultimately, DRM helps companies build better products and customer relationships by providing full-life-cycle, full-device-population usage feedback. With personalized customer information, companies can create one-to-one relationships that last, as well as build barriers to competition and commoditization, anticipate customer needs, drive product development and target after-market up-selling and cross-selling.

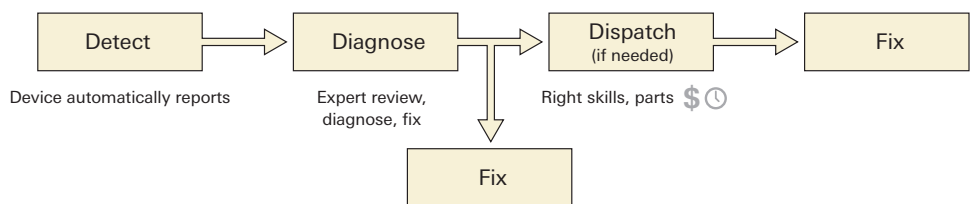
The Reactive vs. Proactive Service Model

DRM enables a new service model in which companies can now proactively detect, diagnose and repair problems remotely, delivering faster and more effective response at a lower cost.

Reactive Model

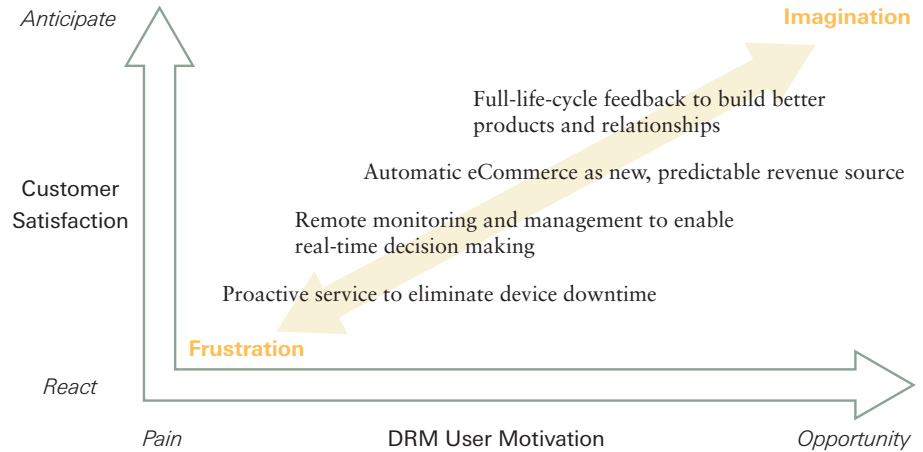


Proactive, DRM-Enabled Model



The DRM Revolution

Companies adopt DRM to initially address their biggest pain points and greatest challenges. Over time, however, DRM can be leveraged to create revolutionary new opportunity and increased value. Whether saving money through proactive customer service, enabling real-time business planning, developing new sources of revenue, or building better products, DRM is helping businesses capitalize on a wealth of previously unavailable device performance and usage data.



Why Companies Are Adopting DRM—Now

Companies have been trapped in reactive business models and paying the price for one simple reason: lack of enabling technology to transform their businesses. Device Relationship Management is rapidly changing this landscape. Now there is an easy, quick, viable and cost-effective way to tap into valuable device data, access it in real time, and turn that data into business intelligence that can translate into significant competitive advantage.

Leading companies are seizing the DRM opportunity now before their competition does. Those that tap the value of real-time device information rapidly find themselves at a competitive advantage. With the ability to deploy a DRM system into an enterprise in as few as 30 days, companies that have adopted DRM are already reaping the business benefits, rapidly transforming their businesses from reactive to proactive and realizing ROI in just months. Early adopters are creating a rapidly widening competitive gap.

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Analysts agree that exploiting real-time device information to operate businesses more efficiently is now a requirement, and note that new business models are emerging as a result. Companies and, for that matter, industries that fail to implement this new technology will rapidly find themselves at a significant competitive disadvantage. Soon, virtually all devices will incorporate some level of intelligent connectivity. Ultimately, the opportunity costs of not being connected to these devices will be too great.

About Axeda

Axeda Systems Inc. (NASDAQ: XEDA) is an enterprise software and services company that helps businesses become more competitive by using the Internet to tap the value of real-time information to optimize their service, development, sales and manufacturing operations. The company's flagship Axeda Device Relationship Management System is a distributed software solution that lets businesses monitor, manage and service intelligent devices deployed at remote sites. Axeda serves Global 2000 companies in multiple markets, including industrial and building automation, high-technology, medical instrumentation, office automation and semiconductor equipment industries through sales and service offices in the United States, Europe, Israel and Japan, and distribution partners worldwide. More information about Axeda is available at www.axeda.com.

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