Understanding the real risk for asset-intensive companies

Five myths behind the value of ERP solutions as an enterprise asset management tool

Watson IoT

IBM

Understanding the real risk for asset-intensive companies:
Five myths behind the value of ERP solutions as an enterprise asset management tool

Page 1

Executive summary

The goal of having one enterprise resource planning (ERP) solution for all business processes is still popular, but the idea is no longer practical, particularly in asset-intensive industries (Table 1). For asset-intensive industries such as manufacturing, mining, oil and gas, transportation and utilities, the cost of unplanned downtime can be significant—not only in financial terms—but also in the loss of customer, citizen or shareholder confidence in an organization. Changing requirements in the areas of enterprise risk management, health, safety and environment, integrated operations, and asset life cycle management are increasing the pressure on an enterprise's operations group to manage their assets to higher standards. These changing requirements also increase demand for the best available solution for enterprise asset management.

Changes in technology including Internet of Things (IoT), inexpensive sensors, and cloud data eliminate the need to compromise operational effectiveness. Platform-oriented strategies of the large enterprise software vendors and the adoption of standards-based architectures blur the boundaries between what is developed by large ERP vendors versus those with specific business-critical functions.

There are some common misconceptions about the value, capabilities and deployment of ERP solutions in asset-intensive industries (Table 2). In this ebook, several myths are discussed and demystified so that decision makers in these asset-intensive industries can better understand the real risk.

Understanding the real risk for asset-intensive companies:
Five myths behind the value of ERP solutions as an enterprise asset management tool

Page 2

Myth 1:
ERP solutions are sufficient to manage infrastructures of asset-intensive companies

In asset-intensive industries, failure of a critical asset or infrastructure can have a detrimental impact on an organization, not only from a financial perspective, but also from a social and environmental viewpoint. For a multinational company, an asset or infrastructure failure can be the kind of event that makes headline news. This type of risk or failure could be measured in billions of dollars, a risk that organizations cannot take lightly. When large companies look for enterprise asset management solutions, it is imperative that they implement the best technologies available.

Company executives, sometimes supported by reports from renowned analyst firms, may claim that the modules for managing assets that are part of the financial systems are sufficient. But for organizations that manage critical assets or infrastructures, there is too much risk associated with this compromise. When a company selects an insufficient solution it increases the operational risk for the organization and sends the wrong message to its employees and stakeholders.

The financial performance of the company, the health and safety of the workforce, the reliability and effectiveness of assets and the preservation of the environment are at stake.

Facts:

– An asset-intensive company that experiences a severe safety or environmental incident could easily incur a problem measured in the billions of dollars.

– Part of the IBM® Watson IoT™ portfolio, IBM Maximo® Asset Management is considered the "gold standard" for enterprise asset management and has been positioned as a leader for over 15 years.

Understanding the real risk for asset-intensive companies:
Five myths behind the value of ERP solutions as an enterprise asset management tool

Page 3

Myth 2:
# An ERP solution will lower IT costs and risk

Asset-intensive companies that use an ERP solution for enterprise asset management typically end up with less than 100% coverage of their functional requirements. What about the remaining requirements? What do people do when they have a need for application capabilities that the ERP solution doesn't support? They create their own solutions. Operations, engineering and maintenance departments use productivity tools to create applications "on the fly" to deal with changes in operational and/or regulatory requirements or changes in business process. These applications are sometimes called renegade applications.

These renegade applications are created to fill a functional gap in a larger system, such as ERP, to help the company better meet its operational objectives. Often based in Microsoft Excel, Microsoft Access or some small niche application, these stop-gap solutions/applications are generally not secure, not supported by the IT organization and not auditable. They are costly to integrate and are typically managed "under the radar" by one person or small group.

The implications of these types of applications are two-fold:

– They increase the cost of IT.

– They increase the operational and regulatory risk to the organization, as there is no longer a single, readily auditable repository of information related to the assets.

For example, regulated industries are required to track deviations of intended operations and follow a predefined process for root cause analysis. Large ERP vendors may not offer management of change and/or corrective action modules to support these requirements. Some companies build Access databases to address this problem. Other companies buy niche applications to solve it. In both cases, these applications need to be maintained, integrated and supported on top of the enterprise application.
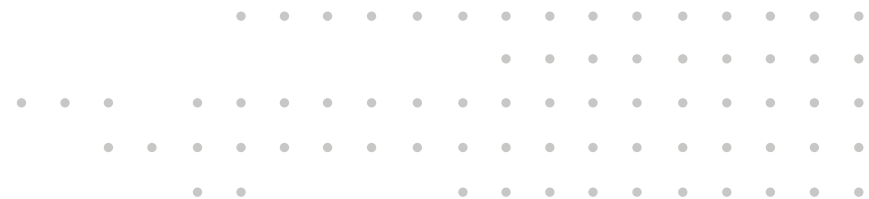
ERP solution vendors often claim no integration is required because they offer a complete suite, while in fact, complete enterprise asset management requires integration to systems such as: GIS,SCADA, data historians and company specific applications.

ERP deployments are often funded by business cases that are based on reduction of total cost of ownership (TCO) by rationalizing the application portfolio of the enterprise, following the formula $TCO^{Enterprise} = TCO^{ERP}$. It seems more correct to extend this formula to take into account the impact of renegade applications: $TCO^{Enterprise} = TCO^{ERP} + TCO^{Renegade}$. Because they are not supported, renegade applications are often a compliance and operational risk. According to certain regulations, companies need to be able to ensure that applications used to process information are fully documented and supported. So instead of $Risk^{Enterprise} = Risk^{ERP}$, the real risk to the enterprise is: $Risk^{Enterprise} = Risk^{ERP} * Risk^{Renegade} 1 * Risk^{Renegade} n$.

Organizations that use general-purpose ERP systems to manage their critical assets and infrastructure may be putting their companies at unnecessary risk and expense. They may not be able to achieve their goal of application consolidation. Instead, they could end up with an abundance of newly developed, unsupported applications that not only increase the operational risk of the organization but increase the cost of IT as well.

Facts:

$$TCO^{Enterprise} = TCO^{ERP} + TCO^{Renegade}$$

$$Risk^{Enterprise} = Risk^{ERP} * Risk^{Renegade} 1 * Risk^{Renegade} n$$

The chain is as weak as its weakest link
(for example, Renegade 1...Renegade n)

Figure 1: The life cycle of
a renegade application

Click figure to enlarge

Understanding the real risk for asset-intensive companies:
Five myths behind the value of ERP solutions as an enterprise asset management tool

Page 5

Myth 3:
Integrating best-of-breed solutions and ERP is complex, risky and costly

One of the old arguments in the enterprise versus best-of-breed debate is that it is very costly to integrate a best-of-breed solution with an ERP system, and that any integration will increase the risk of the project. There are three points to consider relative to this myth:

– In most cases, integration risk and operational risk are not equal.

– Integration technologies have changed dramatically over the last few years, enabling new levels of integration.

– When evaluating integration, one should not only consider the integration between one solution and the ERP but the integration for the entire ecosystem.

Companies that manage critical assets and infrastructures that can impact people, the environment and the company's financial performance should select solutions that allow them to manage their assets to the highest standards in the areas of health, safety, integrity and reliability.

They should not trade-off perceived reductions in IT costs against placing their company at a higher risk for potential fines, diminished oversight, accidents, environmental problems or brand/corporate reputation damage. Furthermore, integration technologies have matured significantly over the past decade, and as a result of this, the actual cost and risk of integration have changed as well.

Service-oriented architecture

Service oriented architecture (SOA) is still very important in the world of integration. The only difference is now instead of soap-based services, everything is being connected via RESTful application programming interfaces (APIs). That and the granularity of what is being exposed are moving into micro services—where instead of exposing a module as an integration point, we are able to expose a key function and have less data and overhead move between integrations.

Integration capability is provided through the IBM Maximo Enterprise Adapter for SAP. The adapter enables real-time information exchange between Maximo Asset Management and SAP ERP applications by providing bi-directional connectivity and prebuilt integrations between the two applications. The adapter is a complete integration development environment that allows customers to extend prebuilt integration processes as well as develop new ones that are specific to their SAP ERP and other systems in their enterprise. It helps accelerate integration across modules typically implemented between Maximo Asset Management and SAP ERP, including general ledger, accounts payable, inventory, purchasing, human resources and projects.

The adapter enables customers to be more productive at the line of business where usability and functionality of a business system is critical in empowering people to work more efficiently, while maintaining information flow between line-of-business and enterprise planning and reporting processes. One of the goals is that it does not impact the user of either system, nor does it require the user to perform any additional tasks related to integration while performing their work. It is seamless and transparent to the user.

Facts:

– Integration technologies have come a long way and modern RESTful APIs and micro services minimize the data require to move between applications.

Understanding the real risk for asset-intensive companies:
Five myths behind the value of ERP solutions as an enterprise asset management tool

Page 7

Myth 4:
Large enterprise asset management modules are equal to the IBM solution

Many large ERP vendors claim that the functional footprint of their enterprise asset management (EAM) modules will soon approach the footprint of Maximo Asset Management, an EAM market leader for over 15 years. In reality, the gap between Maximo Asset Management and current ERP solutions is wide and is likely to increase in some important areas. Maximo Asset Management uses agile development and a continuous delivery process to quickly develop functional enhancements to the application and bring them to market. These extensions are often organized according to industries or asset classes and provide significant value for industries that have specific enterprise asset management requirements, as shown in Table 1.

Industry	Requirements
Regulated industries	Calibration, corrective action, health safety and environment, risk assessment and regulatory compliance
Utilities	Compatible units estimating, linear assets, spatial, location based services, smart meter asset management
Transportation	Warranty management, fuel management, linear assets, campaigns
Nuclear power	Tech specs, permits, duty stations, Surveillance testing, procurement engineer
Oil and gas	Management of change, knowledge management, investigations, compliance managementprocurement engineer

Table1: Industry-specific enterprise asset management requirements

Understanding the real risk for asset-intensive companies:
Five myths behind the value of ERP solutions as an enterprise asset management tool

Page 8

The market has shifted its view of enterprise asset management as an internal function to a view that enterprise asset management is a support service to the business. This helps the business maximize return on assets against limited resources and within a compliance framework. Further, this alignment ensures high reliability at a lower cost. EAM management solutions are designed around the people using them.

They provide the user experience that drives the engineers to use the system. These systems empower the user, which, in turn, drives higher quality data. Without 100 percent acceptance of the system, it not only becomes worthless, it can also become dangerous.

This danger can be highlighted by the following example. In electric utilities, before certain work can be done, the area where the people are working needs to be powered down. The procedure to ensure that workers are entering an area that is not electrified is called lockout or tagout. If the system isn't used because it is too cumbersome or hard to use, worker safety can be jeopardized. Granted, what usually happens is that the engineers will develop a renegade application to handle the requirement (see Myth 2). By doing so, management won't always know that there is a systems deficiency.

Facts:

– The Maximo Asset Management software portfolio has solutions that provide industry-specific functionality for nuclear power, utilities, oil and gas, life sciences, aviation and transportation.

– The Maximo Asset Management rational consolidation capability provides businesses with a single set of processes for lower levels of risk and higher levels of standardization. In addition, it helps IT achieve lower cost of ownership, increased agility and a platform that supports greater data visibility and process control.

Rational Consolidation

When it comes to maximizing your return from asset and service management software systems there are two primary ways that you can add dollars to the bottom line: productivity gains and lowering the total cost of ownership of the technology itself.

Improved productivity is the reason why you implement software systems in the first place. In essence, you are using these systems to create a competitive advantage for your organization. Software systems enable organizations to improve upon current operations to: reduce cost, improve revenue generation, mitigate risk, manage regulatory compliance and maintain a competitive edge. Consolidating applications can yield significant savings. The logic is simple—if you can operate better with fewer systems and resources, it is a win for everyone.

Understanding the real risk for asset-intensive companies:
Five myths behind the value of ERP solutions as an enterprise asset management tool

Page 9

At the same time, it is important to recognize that consolidating for the sake of consolidation is a fool's game. In fact, there is a tipping point where consolidation no longer provides a meaningful return and can actually erode savings and productivity gains.

A system consolidation strategy and program requires financial and human resources, thus a hard benefit must be recognized to justify the investment. One should expect three primary benefits from a successful strategy and program implementation: improved operational efficiency, lower overall total cost of IT system ownership and agility. These benefits will come in many shapes and sizes based upon the state of your business prior to consolidating systems, and the period of time over which a program is implemented.

The benefits from a successful consolidation are real and should not be understated, as your competition is likely to have their own system consolidation program in place.

– **Improved operational efficiency:** Take your average employee and imagine how many systems he or she might touch during a typical day. How about the maintenance mechanic who uses one system for work management, one for ordering parts, and yet another for reporting his or her time at the end of a shift? Imagine the time spent if these were three distinct systems with differing user interfaces, and the duplication of data that must occur. Imagine a streamlined process in which the mechanic utilizes one system that supports the deliverables and objectives set forth by their work requirements.

A rational grouping of systems clearly enables all workers leveraging information technology to be more efficient and

effective, whether maintaining a nuclear power plant or supporting mission readiness requirements for the military.

– **Lower overall total cost of ownership:** Take the example above with the maintenance mechanic—how much is it costing you to maintain the three systems verses one? Take into account maintenance fees, upgrade costs, integration costs, IT efficiency, and more. IT provides a service to the business, and hence directly supports operational efficiency and effectiveness. However, IT departments can improve their service and likely lower their costs of doing so via a system consolidation program; provided they perform the balancing act of lowering cost of ownership while respecting the needs of the business (do not exceed the tipping point). Hard dollar savings can be found in: reduction of data storage and scope, reduction in personnel costs (IT administrators can do more thanks to technology standards), reduction in software licenses and maintenance fees, and reduction in business continuity/data backup expenses, among others.

– **Agility:** Competitive advantage is a broad term that indicates strength over one's competition, be it another company in your industry or a new entrant. It is no secret that technology can be applied to create competitive advantage; you just need to find the right pieces at the right time.

A system consolidation program can move you towards an agile IT infrastructure, based upon standards that will support the business better by providing a streamlined and integrated set of rational systems, coupled with a likely decrease in investment requirements.

Understanding the real risk for asset-intensive companies:
Five myths behind the value of ERP solutions as an enterprise asset management tool

Page 10

Myth 5:
The best-run businesses use ERP only

Many of the best-run businesses use solutions from large enterprise software vendors. Often, SAP or Oracle are selected, but they may not be the best solution for enterprise asset management. This ERP approach may make sense when the risk profiles are low. However, in enterprises where the risk profile is high, such as in asset-intensive organizations, most of the leading global companies use best-of-breed solutions like Maximo Asset Management.

Fact:

– All of the Fortune 100 companies use an ERP system to manage their businesses, but more than 25 percent of these same Fortune 100 companies use Maximo Asset Management to manage and service their business-critical assets.

→ **View the infographic**

10 of the **13**
largest pharmaceutical companies[1]

5 of the **15**
busiest shipping ports in the world[1]

10 of the **20**
largest oil and gas companies[2]

16 of the **24**
largest automotive companies[1]

16 of the **24**
largest diversified utility companies[1]

7 of the **10**
major aerospace and defense companies[3]

14 of the **20**
largest power generation utilities[1]

12 of the **20**
largest power distribution utilities[1]

44.2
million rail travelers daily

9 of the **18**
busiest airports in the world[4]

Figure 2: IBM Maximo manages the world's most asset-intensive organizations

Understanding the real risk for asset-intensive companies:
Five myths behind the value of ERP solutions as an enterprise asset management tool

Page 11

Summary

There are some common misconceptions about the value, capabilities and deployment of enterprise solutions in asset-intensive industries. In this ebook, these myths are discussed so that decision makers can better understand the real risk. Table 2 summarizes the myths identified in this paper and the realities associated with them.

The business process platforms that ERP companies now provide serve as a great foundation for developing a seamlessly integrated environment that is based on solutions from multiple vendors. Organizations can view this as an opportunity to use best-of-breed solutions that are built on the right architecture as a way to increase the value of their ERP investments. Use of Maximo Asset Management as a strong operational system can enhance the quality of asset data, contribute to the health and safety of the workforce, and help facilitate better practices that directly

Myth	Reality
ERP solutions are sufficient to manage the infrastructures of asset-intensive companies.	Potential risks associated with an asset failure mean ERP solutions are not appropriate in asset-intensive industries.
An ERP solution will lower IT cost and risk.	Functional gaps and changes in process lead to renegade applications that increase the risk and cost of IT and operations.
Integration between best-of-breed solutions and ERP is complex, risky and costly.	Advances in technology have mitigated the risk and reduced the cost of integration.
EAM modules from large ERP vendors are functionally rich and approaching the capabilities of Maximo Asset Management.	Functional enhancements of the Maximo Asset Management portfolio have widened the gap when compared to ERP modules.
The best-run businesses use ERP only.	Most of the best-run companies also use best-of-breed solutions like Maximo Asset Management on combinations with their ERP

Table 2: ERP myths and realities

Understanding the real risk for asset-intensive companies:
Five myths behind the value of ERP solutions as an enterprise asset management tool

Page 12

For more information

Watson IoT learns from, and infuses intelligence into, the physical world to transform business and enhance the human experience.

Learn how Watson IoT is transforming industries with cognitive insight into IoT data at ibm.com/internet-of-things. Follow us on Twitter at @IBMIoT, on the blog at: ibm.com/blogs/internet-of-things and join the conversation #WatsonIoT.

To learn more about how Maximo Asset Management can help you manage your enterprise assets more effectively, contact your IBM representative or IBM Business Partner, or visit ibm.com/internet-of-things/iot-solutions/asset-management
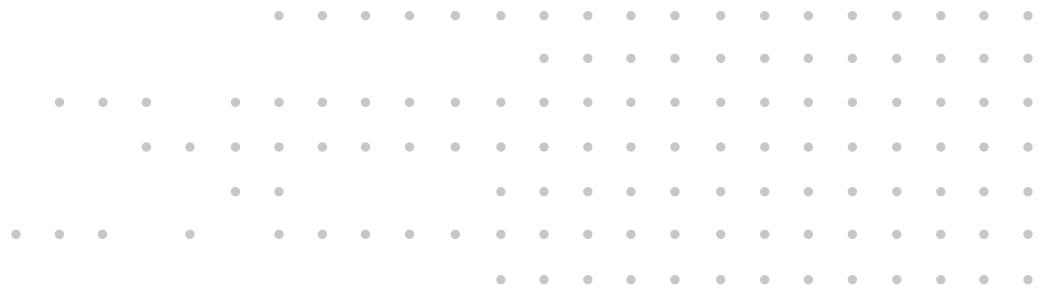
Footnotes

1. Fortune Magazine, Fortune Global 500, Time Inc. 2016

2. Forbes Magazine, Forbes' List of the 25 Biggest Public Oil & Gas Companies, Forbes Media LLC (need year for this)

3. Defense News, Defense News Top 100 Global Defense Companies (2015).

4. Wikipedia busiest airports, Wikipedia, 2017

Watson IoT™