Understanding the Real Risk for Asset Intensive Industries

An MRO Software White Paper

Demystifying the Myths

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Understanding the Real Risk for Asset Intensive Industries

Executive Summary

The large enterprise software vendor's siren song of the benefit of one solution for all business processes is still heard in boardrooms around the world.

This decade-old mantra has lost much of its shine, particularly in asset-intensive industries. Changing requirements in the area of compliance and risk management are increasing the pressure on an enterprise's Operations group to manage their assets to higher standards and to demand "the best available solution/infrastructure" for people, process and technology.

Changes in technology such as service-oriented architecture (SOA) and web-services eliminate the need for a one-size-fits-all approach. Platform-oriented strategies of the large enterprise software vendors, and the adoption of standards-based architectures blur the boundaries between what is developed by the large enterprise vendors versus their ISV (Independent Software Vendor) partner community.

There are some common misconceptions about the value, capabilities and deployment of enterprise solutions in the asset-intensive industries that convolute the boardroom level debate. In this white paper, these myths are discussed and demystified so that decision makers in these asset-intensive industries can better understand what the real risk is.

Myth 1: ERP Solutions are "Good Enough" to Manage the Infrastructures of Asset-intensive Companies

In asset-intensive industries, failure of a critical asset infrastructure can have a detrimental impact on an organization not only from a financial perspective, but also from a social and environmental perspective. For a multi-national company, a failure is the kind of event that makes headline news. This kind of risk or failure can easily be a "billion dollar" type of risk, a risk that organizations tend not to take lightly.

So when big companies are looking for solutions to these potentially big problems, why would they not "put their best foot forward"? Why wouldn't a company try to use the best they can buy if they have the chance? For companies that manage critical asset infrastructures whose failures can have dramatic impacts on the lives of people (from a social, safety and environmental viewpoint), the prudent approach suggests that the "best you can buy" is the correct path to follow. And when you take this viewpoint, this decision quickly becomes a senior executive and boardroom level decision.

An example:

Imagine that you and your wife or husband just had a baby. You are ready to go from the hospital to your home. This will be the first time you are going to use the new car seat you purchased for your new baby.

What considerations were important to you when purchasing the infant car seat for the newborn? Did you buy the seat recommended by the car manufacturer because it was specifically designed for the car or did you research "Consumer Reports" to find out exactly what was the best car seat because you wanted to provide the safest seat possible for your child? What would your "better half" say if you were to arrive with a car seat that was "a great deal" or a perfect match, but not the best? The risk/reward profile is obvious to most parents.

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 deemed "good enough." For organizations that manage critical asset infrastructures, "good enough" is not really "good enough." Besides the fact that it increases the operational risk for the organization, what kind of message does a company send to its employees when it selects a solution that is "good enough," when the lives of people and the environment are at stake? (And make no mistake, end users know what systems work well and meet their needs and which ones are merely "good enough.") Is this the prudent decision to take?

Fact:

An asset intensive company that experiences a severe safety or environmental incident can easily incur a "billion dollar" problem.

An IT integration problem is more likely to be a "million dollar problem."

MRO Software is considered the "gold standard" in the world of asset & service management.

Myth 2: An ERP Solution Will Replace All of Your Niche Solutions

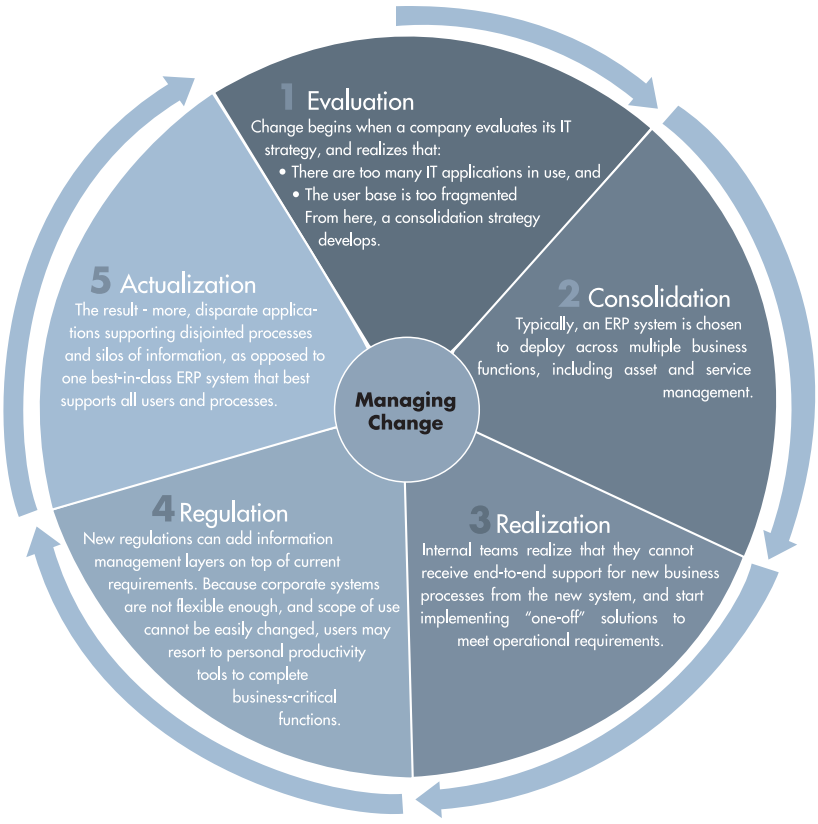
Following the logic of the earlier argument, asset-intensive companies that implement a "good enough" solution typically end up with 80% coverage of their functional requirements. What about the remaining 20%? Operations still need to get the job done. Finance still needs to create a new audit report and HR needs to create an employee radiation exposure report. So what do people do when they have a need for application capabilities the ERP solution doesn't support? They create their own. Personal productivity tools are used to create applications "on the fly" to deal with changes in regulatory requirements, or changes in business process. These applications are sometimes called **pop-up applications**.

A pop-up application is an application that an IT/business organization creates to fill a functional gap in a larger system, such as an ERP, in order to enable the company to better complete its operational mission:

- Applications are generally based in MS Excel or MS Access, or small niche applications,
- Applications are usually not secure, not supported by the IT organization, are not auditable, are costly to integrate, and are typically managed by one person or small group.

The implication of the occurrence of these so-called "pop-up" applications is twofold:

1. It increases the cost of IT (ironic, isn't it?) and
2. It increases the operational and regulatory risk (e.g., Sarbanes-Oxley, Basel II) to the organization. There no longer is a single repository of information related to the assets. (Wasn't that the goal of the ERP deployment in the first place?)



The life cycle of a pop-up appplication

An example

Regulated industries are required to track deviations of intended operations and follow a predefined process for root cause analysis. Large ERP vendors do not offer 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 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 pop-up applications: $TCO_{Enterprise} = TCO_{ERP} + TCO_{Pop\text{-}up}$.

Because they are not supported, pop-up applications are often a compliance risk. According to section 404 of the Sarbanes-Oxley Act, 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: $Risk_{Enterprise} = Risk_{ERP} * Risk_{Pop\text{-}up\ 1} * Risk_{Pop\text{-}up\ n}$.

Organizations that implement general-purpose ERP systems to manage their critical asset infrastructure are putting their companies at unnecessary risk and expense. They will not be able to achieve their goal of application consolidation. Instead, they will end up with a plethora of newly developed, unsupported set of applications that increase the operational risk of the organization while increasing the cost of IT.

Fact:

$TCO_{Enterprise} \neq TCO_{ERP} \rightarrow TCO_{Enterprise} = TCO_{ERP} + TCO_{Pop\text{-}up}$

$Risk_{Enterprise} = Risk_{ERP} * Risk_{Pop\text{-}up\ 1} * Risk_{Pop\text{-}up\ n}$

The chain is as weak as its weakest link (e.g., $Pop\text{-}up_1$ …..$Pop\text{-}up_n$)

Myth 3: Integration Between Best-in-Class Solutions and ERP is Painful, Risky and Costly

One of the old arguments in the Enterprise vs. Best-in-Class debate is that it is very costly to integrate a best-in-class solution to an ERP system and that any integration will increase the risk of the project.

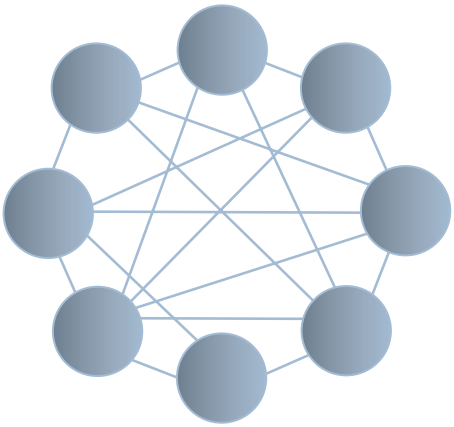
There are three things to consider relative to this myth:

1. Do not trade off integration risk against operational risk; they are not equal.
2. Integration technologies have changed dramatically over the last five years, changing the game and leveling the playing field.
3. When evaluating integration, one should not only consider the integration between one solution and the ERP, but the integration for the entire ecosystem.

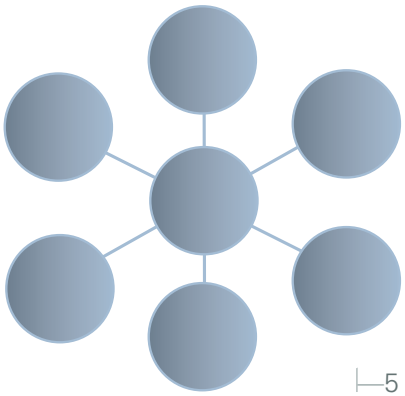
First of all, companies that are managing critical asset infrastructures that can have detrimental impact on people, the environment and the company's financial performance should "put their best foot forward" and select solutions that allow them to manage their assets to the highest standards possible in the areas of safety, integrity and reliability. They should not trade off perceived reductions in IT costs against placing their company at a higher risk, e.g., potential fines, prudent oversight, fatal accidents, environment problems, brand/corporate reputation damage, etc.

Secondly, integration concepts have matured significantly over the past decade and, as a result of this, the actual cost and risk of integration has changed as well.

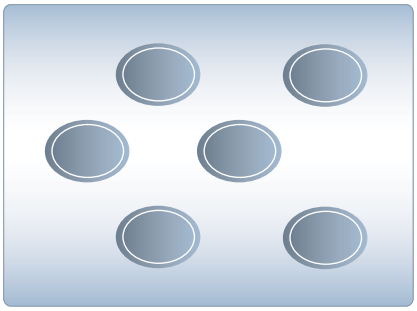
- **Point-to-point integration:** Applications are connected to each other with dedicated integration points. The approach is generally to "build an interface" for each requirement using each application's proprietary APIs. These interfaces are built specific to the application and make the applications tightly coupled. The interfaces are specific to the integration of two applications, and are also usually tied to each application's version and configuration. This type of integration is manageable if there are not too many. However, it can grow at an exponential rate and quickly get out of control as more applications are connected to each other. For example, a change in one application could affect all the interfaces with all other applications to which it is connected.



- **Hub-and-Spoke integration:** Applications are connected to a central integration system, commonly referred to as an Enterprise Application Integration (EAI) hub. The EAI hub, in turn, provides integration services and handles communication from application to application (spokes). While the hub-and-spoke approach does promote centralized management, standardization and reuse, the connections at the spoke typically require some effort. Applications at the spokes may not have APIs, or have proprietary APIs that require development and maintenance related to changes with the applications (upgrades, enhancements, etc.).



- **Service Oriented Architecture (SOA):** SOA is an architectural framework for enterprise application services and the interoperability of these services. In order to implement SOA, applications are required to have discoverable, implementable and reliable services. Also, SOA requires a robust platform and the means to explore, discover and route services and messages. Enterprise Service Bus (ESB) is the concept associated with the service invocation and routing aspects of SOA. ESB relies heavily on the platform to manage and route service invocations, events and messages. This platform is key to SOA. The majority of the platform vendors, especially the J2EE™ and .NET platform vendors are implementing SOA concepts and components into their platforms. Major ERP vendors, realizing the importance and the momentum of SOA, have either built or acquired SOA-capable platforms and are expanding their application provider role to include platform, integration and core services. One of the more recent entrants into this arena is the SAP NetWeaver,® the Enterprise Services Architecture that SAP® has established for deploying business solutions based on J2EE and Web services. SAP acquired a number of technology vendors and began to consolidate these technologies under the NetWeaver umbrella. NetWeaver offers an open-standards-based platform, portal and integration technology stack. It allows customers and partners to extend the product to cover functional gaps. It also enables best-in-class vendors to leverage the platform, look and feel, and provide seamless integration to their ERP applications in a very cost-effective manner.



Fact:

MRO Software uses an architecture that is founded on the same technology standards as the platform architectures of the large enterprise vendors.

MRO Software is an official member of a number of technology partner programs including the SAP NetWeaver partner program.

MRO Software's Maximo Enterprise Suite has been certified for a number of applications including the NetWeaver Application Server and SAP Portals.

Myth 4: EAM Modules from Large Enterprise Software Vendors are Functionally Rich and Equal to Best-in-Class EAM

The large enterprise software vendors claim that the functional footprint of their EAM modules is equal to the footprint of the best-in-class vendors. However, the best-in-class vendors have used their SOA architecture to quickly develop functional enhancements to their solutions 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 asset management requirements, such as:

Industry		Requirement
Regulated Industries	→	Calibration
Regulated Industries	→	Corrective Action
Utilities	→	Compatible Units Estimating
Transportation	→	Warranty Management
Transportation	→	Linear Assets
Facilities	→	Key Management
Federal Government	→	Real Property

Even more important, the market has shifted its view of asset management as an internal function into a view that asset management is really a support service to the business and should, therefore, be managed as such. This concept is called Asset & Service Management and it involves creating a layer around the asset management function that helps create alignment to the business. This helps the business maximize return on assets against limited resources and within a compliance framework. Further, this alignment ensures the highest reliability at the lowest cost.

Asset & Service Management solutions are designed around the people using it. They provide the user experience that drives the engineers to use the system. These systems empower the user which, in turn, drives the quality of data upwards. Without 100% acceptance of the system, it becomes not only worthless, but more importantly, it becomes dangerous.

An 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/tagout. This procedure is extremely safety critical. If the system doesn't get used because it is too cumbersome or hard to use, the system not only becomes worthless, it is dangerous. Granted, what usually happens is that the engineers will develop a pop-up application to handle the requirement (*see myth 2*). By doing so, management won't always know that there is a systems deficiency.

Fact:

MRO Software has developed Industry Solutions for Nuclear, Transmission & Distribution, Oil & Gas, Pharmaceutical and Transportation that provide industry specific functionality.

MRO Software's rational consolidation provides business with a single set of processes, lower risk and standardization. Also, IT achieves lower cost of ownership, increased agility and a modern architecture that ensures data visibility and process control.

Myth 5: The Best Run Businesses Run ERP Only

Many of the best run businesses run solutions from large enterprise software vendors. However, virtually no one will argue that SAP or Oracle is selected because it is the best solution for the job. This ERP approach may make sense when the risk profiles are low, i.e., the risk of not using the absolute best is acceptable. However, in enterprises where the risk profile is high ie: asset-intensive organizations, you will find that for the Asset & Service Management function, a majority of the leading global companies use solutions from best-in-class vendors instead of the solution of the large enterprise vendors.

Fact:

More than 50% of the Fortune 100 companies run Maximo from MRO Software to manage their business, in most cases in coexistence with a deployment(s) of a solution from ERP vendors.

According to the Gartner, Inc. Report "Market Share: ERP Software, Worldwide 2002-2004," MRO Software retained its position as EAM Global Market Leader.

Summary

There are some common misconceptions about the value, capabilities and deployment of enterprise solutions in the asset-intensive industries that convolute the boardroom level debate. In this white paper, these myths are discussed so that decision makers can better understand the real risk for asset-intensive industries.

The table below summarizes the myths identified in this paper and the reality associated with them.

	Myth	Reality
# 1	ERP solutions are "good enough" to manage the infrastructures of asset-intensive companies	Given the potential risks associated with a failure, "good enough" actually isn't "good enough" in asset-intensive industries
# 2	An ERP solution will replace all of your niche solutions	Functional gaps and changes in process lead to pop-up applications that increase risk and cost of IT and operations
# 3	Integration between Best-in-Class solutions and ERP is painful, risky and costly	Advancements in technology have mitigated risk and reduced cost of integration
# 4	EAM modules from large enterprise software vendors are functionally rich and equal to Best-in-Class EAM	Functional enhancements of Best-in-Class vendors have furthered the gap when compared to EAM modules
# 5	The best run businesses run ERP only	Most best run companies also run Best-in-Class solutions

The business process platforms that the 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-in-class solutions that are built on the right architecture as a way to increase the value of their ERP investments. Use of strong operational systems will enhance the quality of the data, ensure the safety of the people, and facilitate the prevention of disasters.

About MRO Software, Inc.

MRO Software is the leading provider of asset and service management solutions. Maximo Enterprise Suite, the Company's flagship solution, is delivered on a web-architected platform and increases productivity, optimizes asset performance, and service levels, reduces costs and enables asset-related sourcing and procurement across the entire spectrum of strategic assets.

The Company's asset management solutions allow customers to manage the complete life cycle of strategic assets, including: planning, procurement, deployment, tracking, maintenance and retirement. Using MRO Software's solutions, customers maximize asset retention, lower labor and resource costs, deliver high asset reliability and align asset and service management with the business goals across the asset base.

MRO Software (Nasdaq: MROI) is a global company based in Bedford, MA, with approximately 900 employees, and more than 300,000 end-users. The Company markets its products through a direct sales organization in combination with a network of international distributors. MRO Software has sales offices throughout North America, Europe, Asia/Pacific and Latin America. Additional information on MRO Software can be found at **www.mro.com**.

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