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WHITEPAPER

MODERNIZING LEGACY APPS FOR ERP
LEVERAGING BLENDED ERP FOR EASIER CUSTOMIZATION, REDUCED COST, AND REDUCED RISK

Introduction

Implementing a new ERP system to replace a "home grown" ERP built by your business over many years is challenging at best. Some of the processes within are ripe for change but many make up the heartbeat of the company, enabling success and competitive advantage. Historically, when contemplating an ERP deployment there were two choices: Modernize what you have or implement an off-the-shelf ERP system, then customize it to meet your needs. With the emergence of new technologies, many organizations are opting to create a "Blended ERP", one that uses the best functionality of the home grown systems to decrease the time, cost, and difficulty of deploying an off-the-shelf commercial ERP system. Commercial ERPs have core capabilities that deploy well but bog down when the need to customize them to meet the "must have" needs of the business arise. "Blended ERP" combines the best of commercial solutions and the best of legacy migration technologies to simplify and reduce the risk of the transition to the new platform.

If it Ain't Broke, Why Fix It?

Companies look to implement ERP systems to reduce internal costs, improve processes, and increase efficiency. Establishing a common platform across the organization enables a level of visibility and control that is incredibly attractive. However, the reasons and benefits must be carefully weighed, as a project of this scope has significant upfront costs and change management implications that requires buy-in across the organization.

Solving Disparate Platform Issues

Over time, companies typically find themselves immersed in many different software systems across many departments. These systems are usually inherited with acquired companies or cobbled together to enable work with partners and vendors. Unfortunately, this lack of cross-departmental conformity has a detrimental effect on process flow and efficiency.

Problems arise when systems are incompatible, too expensive to maintain, undocumented, outdated, or unable to be upgraded. Implementing ERP solutions tend to make the most business sense when it becomes apparent that these systems need improvements. By establishing a common cross-departmental platform (the cornerstone of an ERP system), operational costs are drastically reduced through process automation, productivity increases, and legacy systems can finally be retired... In theory.

Streamline Business Practices

Large scale ERP systems typically include the software and supporting infrastructure for Customer Relationship Management (CRM) and sales automation which aims to streamline sales processes and reduce work redundancy. Simply put- When sales professionals, product marketing, customer service personnel, and finance teams work on a common sales platform, integrated and relevant cross-departmental practices and reporting flow throughout the organization helping to increase employee productivity.

Replace An Old ERP or Legacy System

According to Panorama Consulting's 2013 ERP Report, the second most popular reason for implementing a new ERP solution is to replace an old system that the company, the industry, or the technology that it supports has outgrown. Many of the legacy systems targeted for replacement in new ERP implementations were developed prior to the advent of the internet and connected devices such as smart phones. While these legacy environments can be augmented to accommodate new technology to some extent, their capabilities reach a point where cost and functionality intersect, rendering the legacy system too costly to retain in a competitive environment.

Position the Company for Growth

It is always much less painful to implement a new ERP system when the organization is smaller, than when it is in the throes of a huge growth spurt. Of course, finding the sweet spot between size, growth, and potential return on investment requires more than just a call to your favorite clairvoyant. It requires a deep knowledge of the direction of the business as a whole, driven by visibility into all facets of its operation. The rub is that most companies arrive at the decision to review an ERP implementation partly because of a lack of the very visibility required to hit that sweet spot in the first place.

Improve Customer Service

Ultimately exceptional customer service is one of the best ways to differentiate you from your competitors and drive sales growth. A good ERP system will provide you with a fast, efficient, and more flexible offering to take to market, making life better not only for your clients but also for your employees.

Many organizations are turning to ERP solutions to fuel sales without increasing labor costs. They have found that an ERP solution with a solid CRM component improves customer service by making customer-facing business processes more efficient and effective. From a customer's point of view, this translates to sales messaging and outreach targeted directly to their needs which increases the value of every interaction.

25% of Companies plan to purchase a new ERP system in the next 3 years

of those, **3 out of 5** will replace an existing ERP solution

and, **2 out of 5** will be first-time purchases, either for the entire enterprise or for a new site not previously supported by ERP

Source: Mint Jutras

With an abundance of compelling reasons to migrate to all-encompassing ERP solutions, ripping and replacing old, inefficient, and disparate systems seems to be a no-brainer. Strategically it is, but the devil is in the details. Under the hood, the legacy systems that a large scale ERP system is positioned to replace are infinitely complex, poorly documented, and ingrained in the operating culture of the company. The disconnect between the strategic vision driving these implementations and the often under-appreciated difficulty involved in extrapolating a maze of business processes and unhinging employees from the culture of the legacy system cause many ERP implementations fail.

Why Do So Many ERP Implementations Fail?

The typical ERP solution contains a myriad of packages and modules designed to automate just about every piece of a given organization's processes from supply chain to the showroom floor, from HR to finance, and everything in between. With all of these moving parts trying to integrate with each other and the existing infrastructure, it makes sense that problems often arise when the rubber meets the road.

Marin County, CA. vs. SAP and Deloitte is an interesting case of failed ERP implementation. Marin leveled charges of fraud and racketeering in its suit. Although the case settled out of court in 2013, it shows just how far some of these catastrophic projects can go. Interestingly, the county did not focus on SAP's products, just the way they went about things during the project. In another case, in jewelry retailer Shane Co.'s 2009 chapter 11 filing, the company blamed a failed SAP install, at least in part, for its downfall. Bad ERP implementations have been blamed for countless financial and project management failures over the past few decades.

Every Day Deserves a Kiss

The poster child of ERP implementation failures is Hershey Foods. Hershey had started revamping its IT infrastructure in 1997. By 1999, as the last leg of the ERP implementation was wrapping up, trouble reared its ugly head. Big delays in the production release of some of the modules associated with their ERP overhaul overlapped with the explosive influx of orders for the Halloween and Christmas seasons.

To speed the implementation process and reduce the potential monetary impact, Hershey chose to push the release of several modules simultaneously- many of which were not tested properly due to lack of time. This decision led to problems related to order management and fulfillment. Although the finished product was stocked and on the shelves in their warehouses, the problems with the new system kept them from being able to ship to many of their major retailers and distributors on time (or in some cases at all).

The effects of this ERP implementation blunder were swift and widespread. Hershey saw a significant drop in revenues in the third quarter of that year to the tune of $150 million as compared to those in 1998, a drop of 12%.

> " ... we fully expected a strong finish in the second half of the year. Instead, the implementation of the final phase of the Corporation's enterprise-wide information system created problems in the areas of customer service, warehousing, and order fulfillment. These difficulties were exacerbated by our growth in recent years which had resulted in shipping capacity constraints. As a result, Hershey's sales and earnings fell well short of expectation for the year.
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> - Kenneth L. Wolfe, Chairman & CEO, Hershey Foods Corporation

They Just Did It

Around the turn of the century, Nike spent roughly $400 million to update their ERP and supply chain management system. The update focused on an environment built to oversee the process of fulfilling warehouse orders. In short, they implemented the solution without testing it, and paid a hefty price. Their newly implemented system had a glitch which resulted in an unequal distribution of the company's Air Jordan and Air Garnett sneakers (the system ended up ordering low-selling sneakers in place of high demand ones, collapsing the supply chain). Stores around the world were left unable to fill orders for highly anticipated Air Jordans, resulting in a public relations nightmare. On the financial side, the testing oversight and resulting ERP issues were responsible for an estimated $100 million in lost sales, several class action lawsuits, and a 20% dip in their stock price.

Why Do So Many ERP Implementations Fail?

Failed ERP projects such as those described on the previous page are usually a combination of risks and the issues that arise when those risks are not identified, managed, or mitigated. These systems cover an enormous scope and are typically positioned to replace legacy systems that are poorly documented, cumbersome, and lack cross-functional integration. Although the high-level functionality of individual pieces of these legacy systems can appear simple on the surface, much is unknown holistically about their inner workings and as a result, issues are sure to arise during implementation that were never considered in planning. Gartner has identified twelve primary risk categories that should be considered prior to engaging in any ERP implementation, a bird's eye view of the potential for trouble in these massive projects.

Gartner: Common ERP Project Risk Factors	
Management Commitment	Lack of executive commitment, management support and/or sponsorship Misalignment with management control structures and processes Ineffective management control processes Ineffective ERP project governance
Strategic Fit	Lack of business-owned ERP strategy ERP strategy does not align with business strategy (or does not remain aligned) Business strategy changes render the initial ERP strategy no longer relevant
Solution Design	Failure to design changed business processes that support strategic business goals A high degree of business process change or new business processes Failure to adhere to agreed ERP template scope and content
Technology	Failure to recognize and plan for integration needs Absent or inadequate technology architecture and standards to maintain Introduction of technical complexity Ineffective technical change management Insufficient technical assets to support business needs
Organizational Change	Lack of assessment of change impact Failure to define and drive organizational change to achieve the desired outcomes Failure to identify and manage changes outside the enterprise
Skills & Expertise	Insufficient internal or external expertise Inappropriate mix of internal and external expertise Internal resources stretched between existing project commitments Failure to plan and establish appropriate ERP support structure
Data & Information	Failure to collate, audit and convert master data to the necessary quality Failure to maintain and govern data quality Failure to define information needs Failure to provide information in a timely and usable manner
Planning	Poor planning that fails to account for necessary project activities and deliverables Schedule and milestone overruns Changes in business plans disrupt ERP project (such as restructuring) Failure to plan business disruption and modified business activities
Execution	Failure to achieve cutover to the quality and timelines planned Significant unplanned incidents and problems occur post-go-live Failure to implement new business processes envisaged in the solution design Failure to embed organizational and process changes, resulting in user reversion

Why Do So Many ERP Implementations Fail?

Gartner: Common ERP Project Risk Factors (continued)	
Operational	Failure to effectively transition from project to operational mode Failure to plan for ongoing operation and evolution Inadequate or unready resourcing for the ERP support team
Cost/Value	Failure to accurately assess the implementation costs Decisions taken on project cost alone Failure to design for quantified/qualified business outcomes Failure to define and agree business benefits Failure to establish a benefits baseline and measure value throughout the project Failure to deliver agreed/expected business benefits
External	Economic or market factors lead to changes to the support of the ERP project M&A activity impacts the proposed ERP project design or implementation timelines

Among other tactics, Gartner suggests ERP leaders include external parties in the risk identification and management process. In particular, leverage their individual areas of expertise, for example, when assessing legacy mainframe systems or pre-relational databases, a partner with experience in understanding legacy systems and translating that understanding into a working model based upon need can significantly reduce risk around loosely understood and outdated systems that are responsible for core business operations.

The Postmodern or 'Blended' ERP Approach

Gartner also asserts that by 2020, fewer than 20% of multinational organizations will continue to plan and adopt an ERP strategy based on a single-instance mega-system. The traditional ERP suite is being deconstructed and replaced by more-federated and loosely coupled ERP environments. Gartner refers to this as postmodern ERP. Most required ERP functionality will be sourced as cloud services or via business process outsourcing. This move to adopt cloud solutions and services is already underway, and, within 10 years, most organizations will abandon on-premises, monolithic ERP solutions. The same characteristics of deconstruction are being seen across the wider business applications landscape.

Decoupling the traditional monolithic ERP solution to allow for more situationally appropriate SaaS and/or custom applications may appear to complicate the ERP experience, however many organizations are finding that with proper visibility and understanding through rigorous assessment of the legacy systems that ERP solutions are designed to replace, risks and costs can be significantly reduced while key functionality can be retained or enabled.

In a 2013 Panorama Consulting Survey:

67% of respondents reported they need a solution with more industry-specific functionality than their current ERP system gives them

How Leveraging Modernization Tools Reduces Risk

Legacy systems play an enormous role in business today- 80% of the world's corporate data resides in or originates from mainframes running technology that is more than half of a century old. Many organizations find that when ERP implementations appear to be the right move to reduce internal costs, improve processes, and increase efficiency, mainframe data and applications make up the core of the conglomeration of systems to be replaced. These systems introduce a great deal of risk because they are infinitely complex, poorly documented, and ingrained in the operating culture of the company. They also tend to be highly customized to specific business processes that fall outside of the breadth of the features and capabilities commonly packaged with ERP mega-suites.

The costs and complexity of implementing a new ERP system are largely influenced by how much customization is needed to make the software fit business processes or to twist it to provide the important functionality that a legacy system provided. The reality is, there are many custom applications that just don't fit into ERP without a great deal of customization.

Let's take a large University example, how do you put a parking application built using ADABAS and Natural into a commercial ERP system? Organizations typically choose to keep the legacy system running until the new ERP suite has much of the planned functionality implemented, and is then cut over. Unfortunately, this strategy does not account for the costs and risks of customizing the ERP solution to fit the desired functionality, nor does it account for the enormous cost of keeping an unwanted mainframe running for years longer than it should.

By taking advantage of the tools and expertise that a legacy modernization partner such as Modern Systems offers, these costs and risks can be significantly reduced or eliminated completely.

Assessment

For many organizations, legacy systems are a "black box" - a vast entanglement of intertwined code written by developers who retired or left the firm long ago, leaving behind little documentation or applied standards of any kind. These unknowns make planning migration as part of a larger ERP implementation extremely difficult.

Most of the common risks associated with migrating away from these systems revolve around understanding the breadth of influence of the business rules housed within the legacy system, and planning based on the accuracy of the assessed complexity of the system itself. The depth of understanding of the source environment is directly related to an organization's ability to plan for and implement a successful ERP strategy.

With an accurate, detailed understanding of the mainframe environment that plays a key role in core business function, organizations reduce the potential of ERP failure by understanding the scope of the project earlier, being able to plan around complexities with more visibility, and understanding the intimate functionality of the system and services that are to be replicated in the new ERP platform.

Our Portfolio Analysis service is designed to give organizations abstract and granular detail on the critical aspects of legacy systems. This goes far beyond a standard assessment- this service delivers valuable data for developers, architects, and testers. It plays a key role in providing inventory for the legacy environment, presenting it in a way that can be understood cross-functionally, and providing comprehensive planning strategy and tactics to reduce risk. Understanding the legacy system and the options available for modernization will help in setting timelines and expectations around any ERP implementation.

How Leveraging Modernization Tools Reduces Risk

Replatforming as an Alternative

It is possible- and easy- to replatform "one off" legacy applications (COBOL, Natural, etc.) to a Windows, Unix, or Linux environment. This eliminates the immediate need to force fit unique legacy functionality into the new ERP system and provides the functionality needed without all the cost, added project time, or schedule risk. In fact, the money saved by an efficient replatforming of "hard to ERP applications" produces an immediate cost reduction by reducing mainframe MIPS use. Those savings can be applied to the ERP project and in some cases can add up to several million dollars.

The business is then free to leave the replatformed application running in the less costly modern environment or, by utilizing our unique "save as" feature, to automatically convert the legacy codebase into an object-oriented language to be deployed alongside the ERP system or as part of a hybrid ERP solution.

Re-Engineering Made Easy

As we illustrated in this paper, ERP implementations bring change. Many times, after an ERP system has been deployed, the "hard to ERP applications" that were replatformed require adjustments to work seamlessly with the ERP system it must integrate with. Although this path is more time consuming than leaving the application "as-is" in a replatformed environment, the target applications are made up of object-oriented code that is not dependent on custom frameworks, where performance can be carefully tuned, and applications can easily be changed or extended.

Adjusting the core functionality of a legacy application while modernizing it can be tricky. Modern Systems developed the Rapid Program Modernization (eavRPM) product to meet the needs of organizations seeking architectural transformation in a unique way: It empowers legacy systems developers to drag and drop functionality from the source system into the re-written environment and seamlessly translate the new procedures into C# or Java.

Conclusion

Whether implementing an ERP mega-suite or a postmodern, blended ERP, the likelihood of running into applications that require a great deal of ERP application customization is high, particularly in companies that have been in business for a long time. To mitigate the risks around these applications, Gartner suggests including external parties by leveraging their individual tools and areas of expertise.

Modern Systems has over 30 years of best-practice expertise in legacy assessment and modernization. We work closely with our customers to minimize risk and provide a clear path from legacy platforms like COBOL, Natural/ADABAS, CA GEN and others to modern solutions like Java/C#, SQLServer, Oracle Database and DB2.

Our customers come from diverse industries such as automotive, government, banking and financial services, insurance, manufacturing, and retail. Modern Systems has offices in the USA, UK, Italy, Romania, and Israel.