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# Who Moved My ERP Solution?

By Dr. Matthew P. Stephens & Mr. Hugo X. Ramos

In his book, “Who Moved My Cheese?”, Spencer Johnson (2000) uses a parable to underscore the inevitability of change and the importance of dealing with change in our work and in our life. Johnson (2000) uses cheese to represent something that we value, related to our livelihood; it can stand for anything: our job, health, relationships, and even the industries in which we work. The moral of Johnson’s (2000) story is that change happens, and we must learn to deal with it. One deals with change by being alert to the changes in the cheese, and by preparing to run off in search of new sources of cheese when the cheese runs out or when it goes bad. This paper studies the change in cheese from the organizational point of view and the changes that affect enterprise resource management. It gives an overview of how enterprise resource planning solutions are in a constant state of flux.

The new world system is forcing changes in every aspect of our life. Globalization has forced businesses worldwide to adapt to these changes so as to maintain competitiveness. Friedman (2000) explains how this system involves the integration of capital, technology, and information across national borders. Furthermore, he argues that this electronic global economy is the new world order; and businesses must plug in or perish.

Change can be seen as either an opportunity or a threat. Globalization can be perceived as a threat when trying to defend current markets, especially for small and mid-sized companies. To the swift, globalization can bring the promise of expanded markets and enhanced opportunities for growth. Enterprise management solutions enable companies to become competent in the global arena; however, while some solutions enable business, there are some aspects of these systems that pose serious obstacles and limitations.

This paper explains how Enterprise Resource Planning (ERP) solutions have been changing, what the current trends are, and what type of solutions fit best in our time. For this purpose, this article presents a review of the current literature and incorporates some practical guidelines and a road map to follow when implementing an ERP solution. In addition, a model representing the digital enterprise is developed and presented to aid with visualizing how modern systems are integrated.

## Background

In the early 1990’s, businesses sought to find solutions for managing their resources. This search gave rise to a need to create an information backbone for the enterprise. The Gartner Group, a consulting firm in Stamford, CT, created the term ERP (Enterprise Resource Planning) over a decade ago to describe the system that aided in managing a company’s resources; at the time, it had an inward-looking perspective. The necessary technology existed, and vendors were jumping at the opportunity to create systems that claimed to be a cure-all for all of the ills. While some systems worked, others often required long implementation times and cost overruns, and yielded disappointing results. Nevertheless, the need for an information backbone still exists; and it is even greater today than it was a decade ago.

Traditional ERP systems were concerned with internal integration and were presented as single unified total enterprise solutions with applications for order processing, finance, purchasing, and manufacturing. Included in these systems were also some partial forecasting, warehouse management, business intelligence, and e-commerce capabilities, albeit to a limited extent.

The problem was that these systems had many constraints that at the time were hiding under a veil of

promise. A related article (“Taking the Pulse of ERP,” 2001) explains how old ERP systems had a monolithic architecture and were closed, meaning that the information was handled only within the organization. Internal optimization, however, has its limits. The role of traditional ERP was limited in that it did not integrate with trading partners and the customer; information was generated and consumed within the enterprise only. Contemporary ERP systems are Web-based, open to integration, and capable of interoperating with other systems. The functionality of the old ERP systems was predetermined and constrained by the vendor, and encased by the walls of the enterprise. Modularization of the new generation systems allows users to choose only the functionality they need. Contemporary business needs have increased rapidly within the past decade; there is a need for the enterprise to collaborate with its partners and the customer and to integrate globally by plugging into the Web. There is also a need to aggregate and manage the data surrounding all of the transactions of an enterprise as accurately as possible in real time and to be able to share this data in real time. ERP systems must extend from their traditional roles. It is necessary for the systems to cover and manage the entire supply chain, including planning and scheduling, customer relationships, and allowing for partner collaboration.

### **Total Enterprise Integration**

Langenwalter (2000), an expert in ERP education, uses the term, Total Enterprise Integration (TEI), to describe the process of integrating all information and actions required to fully support a company and its supply chain. He explains how it takes much more than simply adapting the technology; it requires incorporating the people into the system as well. Langenwalter (2000) describes TEI systems as a superset of ERP that acts as:

*The communications foundation for an entire enterprise, linking all functions internally, and linking to customers and suppliers externally. When properly implemented and*

*utilized, these systems can provide an almost insurmountable competitive edge by reducing lead times and waste throughout the supply chain, and by empowering individuals at all levels to substantially improve the quality of their decision making. (p.18)*

To maintain a competitive edge, it is important to stay alert and in tune to changes in the types of available solutions that best meet market demands, and to be flexible enough to adapt and perhaps extend the information backbone of the enterprise to reach and meet these demands. This, of course, is easier said than done, especially for companies that are having to adjust to a slow world economy and are trying to spend with as much discretion as possible. However, trends indicate that some applications are no longer being put off, but rather much attention is being placed on their implementation.

According to Tony Friscia (Baljko-Shah, 2001), President and Chief Executive Officer at AMR Research, Inc., the reason why new applications are being addressed is because “companies have already made significant investments in software, and now they are looking for ways to leverage that investment.” He goes on to say that “the focus now is on what kind of return on investment can we get, how can we add to what we did in the 1990’s, and how can we address supply chain, customer and supplier management, and procurement inefficiencies?”

### **Changing Solutions**

It was mentioned that the traditional inward-looking ERP solutions in which companies invested have changed significantly. It is important to recognize how and why these changes have occurred. The architecture of the new systems itself has changed. The old closed monolithic systems are being replaced by Web-based modular applications open to integrate and interact with other systems.

In a commentary related to ERP applications, Buchner (1999) states, “The difference between winning and

losing in ERP software can be the ability to integrate with existing applications.” Contemporary ERP solutions provide the ability to integrate core business applications and data libraries to ease the migration for the users and to reduce training time and the cost associated with the migration of data. Users are demanding the systems to be available in modules or components. This modularization allows the users to choose the functionality they need and allows for potential growth. Modularization also can better accommodate the enterprise as the organizational needs expand and change.

Beyond the ability to integrate and interact with existing applications, the more advantageous systems are also capable of connecting and collaborating with trading partners, and thus take processes and operations beyond the boundaries of the enterprise so as to optimize not only the enterprise as an island, but rather the entire supply chain. Now vendors provide integrated suites of object-oriented applications and become partners with their customers to provide an ever-growing relationship and as much customization as the enterprise can afford.

### **Beyond Traditional ERP: Current Trends**

Modern applications extend the role of traditional ERP. Apicella (2000) explains, “Today’s ERP functions must be more adaptable than the financial, procurement, and human resources applications of old, because e-commerce and business-to-business integration have made it easier for companies to adjust their goals.”

Enterprise Resource Planning is increasingly being viewed as “the root from which data is pulled into a complex information technology organism that links with customers’ and suppliers’ systems or with clusters of trading partners in Internet hubs” (Mullin, 2001). If not replaced by now, the systems that businesses originally launched a decade ago are serving as the core of a much more elaborate system that has been branching out at a rapid pace. These branches

serve functions with the purpose of yielding some competitive advantage.

The new world economic system has been pushing these developments by forcing businesses to compete in a world arena. The standards for quality are global now, and demands have increased. Customers expect quality of product and service, all very promptly. To attain a competitive advantage, businesses have to offer much more than just a good quality product and service. Businesses must accept the fact that in many aspects their market is global, no matter how small a business may be or how local it thinks its market is. The Internet has narrowed all of the gaps. The fact of the matter is that all businesses are competing globally, whether they like it or not. And if they do not act on this fact and adapt, chances are they will perish sooner rather than later. Businesses are reacting to these demands by extending and growing, not necessarily with more or new technologies, but rather first changing their strategy and, if need be, restructuring so as to prepare to stand their ground, defend, and attain new markets.

To be able to find and maintain the competitive edge, businesses realize that they must focus on the customer and collaborate as much as possible and with as many business partners as possible. In forging the new ways there must exist a realization that no business can operate in isolation and that survival depends on being able to maintain a good relationship with the customer, partners, and suppliers; this will enable the enterprise. This forging of partnerships is the true essence of collaborative commerce, or c-commerce. It embodies these ideas and is developing into a method that all competent businesses that wish to survive and prosper will adopt.

### **Applications**

The idea of c-commerce explains why the extending applications of ERP are not focused on the internal functions of the enterprise, but rather on the relationships that the enterprise has with its customers, trading partners, suppliers, and even its competitors. As the business strategy changes, so does

the ERP software, technologies, and the available solutions.

Web-enabled systems are now becoming a necessity. Web-enabled systems are those that allow businesses to integrate their ERP systems with the Internet and have portals that interact with and serve the customers, partners, and suppliers. Adopting service-based ERP solutions that are delivered over the Web is a relatively new trend; however, it is becoming a necessity, since the Internet serves as the medium to the global market arena. Furthermore, service-based Web-enabled ERP applications have many advantages, so much so that many vendors, including Oracle, Siebel, SAP, and J.D. Edwards, offer browser-enabled versions of their business suites; some will even host the company's applications (Apicella, 2001).

The functionality of traditional ERP systems is extending. Adding separate compatible software applications to old generation ERP systems is a means to this end. These branches touch upon various functions including, but are not limited to, customer relationship management (CRM), supply chain management (SCM), advanced planning and scheduling (APS), and total value management (TVM), which is used to attempt to assess and optimize a company's investments and put a dollar value on all changes that belong to what is known as the e-business suite.

Michel (2000) explains that "Today, the question isn't whether manufacturers will seek extended ERP functionality, but rather, how they will achieve it." There are many approaches. Businesses can get their solution from a single vendor and purchase big frameworks or toolkits, integrate modules and components from many vendors, or even outsource applications using middleware, and have vendors host them. With so many options and vendors scrambling to win over customers, the homegrown system approach is now becoming obsolete.

### **Making it Work**

Michel (2001) presents the case of Osram Sylvania that launched a Web-based supply chain portal. He main-

tains that ERP is alive and is "playing an important — though less upfront — role in the company's strategy." Michel (2001) explains how the portals and Web-based solutions with the ability to support information exchange improve the ERP systems. A Web-enabled system, focused on the supply chain strategy, together with the e-business platform, creates a business environment that allows collaboration among its partners through its information sharing capabilities.

Understanding what strategy needs to be implemented produces the questions of how, with what approach, using what extensions, and at what price. Some experts argue that technology can enable processes that are beyond what most people are capable of effectively implementing. The challenge then lies in preparing and continuously educating the user in order to keep up with the pace of technology and to be able to effectively implement it. To do so, it is not just a matter of investing in e-business technology, but to move and improve continuously and to incorporate people into the system along with the technology. Spending with discretion is still a good idea for our times, but there are ways to restructure a business by adopting the right strategy and methods.

Maintaining a lean philosophy is possible. Adopting the lean philosophy serves the purpose of focusing on the continuous improvement of the production processes and reducing waste, while ERP focuses on planning. Furthermore, instead of pushing the product or service to the customers, the lean philosophy supports a pull system by which the product or service is not produced until demanded and ordered by the customer. In return, the long-term result will be reduced waste, reduced inventory, improved lead-time, and improved quality. To adjust the pull system, some businesses may have to modify their *modus operandi* and eliminate the logic involved with pushing the product or service.

It is essential to plan well for a successful ERP execution. Brown (2001) states, "A lack of planning prior to implementation and unrealistic expectations are the culprits behind

unsuccessful executions.” She goes on to explain that “when an ERP project fails the finger pointing begins with the software”; companies buy the software, but have no real business plan of what to do with it to achieve their goals.

The following is a 12-step list as suggested by Langenwalter (2000) on successful implementation of enterprise resource systems.

1. Organize project: define realistic goals and incorporate all key individuals.
2. Define performance measures for the new system.
3. Create the detailed project plan.
4. Educate project team and key individuals.
5. Assess the integrity of the existing database; plan to address vital problems.
6. Install any new hardware.
7. Install the software; perform the computer room pilot.
8. Educate the critical mass.
9. Define and refine procedures for the new system.
10. Ensure that all data bridges are sufficiently robust and that the data is accurate.
11. Bring the first module/product/plant live; refine and adjust. Repeat for other modules/products/plants.
12. Improve continually.

The manufacturing of a new product or service now calls for the involvement of all of the company’s departments working concurrently: engineering, strategy, marketing and sales, planning and production, procurement, finance, and human resources. Lagenwalter (2000) presents a model of the Total Enterprise Integration as a super set of what started as Material Requirement Planning, then expanded to be Material Resource Planning II, and now has grown to become Enterprise Resource Planning. The model compares functionality among these systems. The concept of an integrated model was adapted by the authors from the Digital Enterprise Center at Purdue University to show a simplified representation of a totally integrated enterprise (See Figure 1).

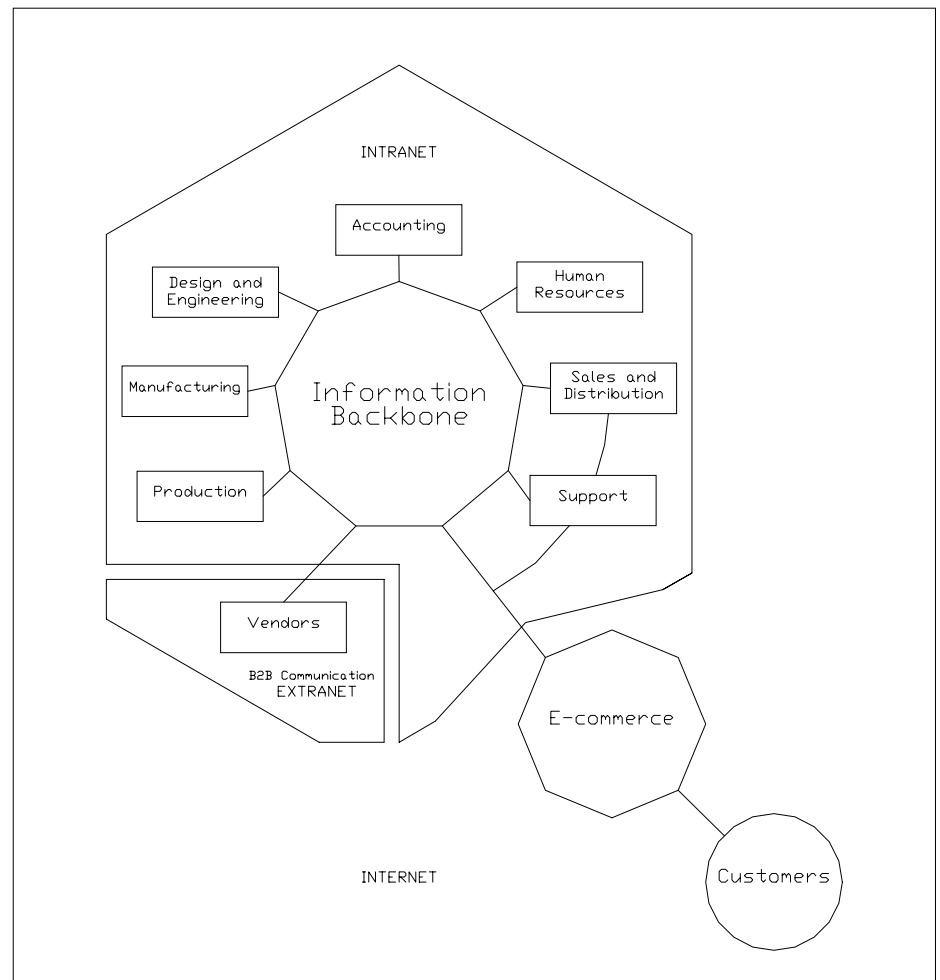
Similar to a CIM model but with a scope that encompasses the entire enterprise, the authors have aimed to represent a seamless enterprise in which it is possible to share and communicate digitally all of the information related to the company’s products, processes, and resources, internally and externally. The model has purposely been designed to resemble a cell to illustrate how each company, as a whole, is a living entity. As is the case with any living organism, it is able to communicate with other cells and its environment. It is through this communication and adaptability that the enterprise becomes an advanced and a more resilient organism, better capable of delivering to its customers. This is the idea of collaborative or c-commerce. Figure 2 illustrates this concept.

## Conclusion

ERP systems are not dead; rather they have evolved to become the backbone of businesses. When properly implemented and utilized, these systems provide a communications foundation for the enterprise, linking all functions internally and to customers, suppliers, and partners externally and concurrently. The result is a competitive edge that promises to reduce lead times and waste throughout the supply chain and by empowering individuals at all levels to substantially improve the quality of their decision-making process.

It is not easy to retain a competitive advantage when the solutions on which businesses invest and implement quickly become obsolete. Technology is running at an accelerated rate. The strategies, methods, and practices that are used to adopt these technologies seem to be

Figure 1. A Simplified Model of a Totally Integrated Enterprise.



running a step behind. As a result of globalization, businesses must compete in an open global market and deal with the continuous changes that are a consequence of the evolving markets.

A positive consequence of a global market economy is opportunity. It is possible for any business to succeed if it jumps on opportunities quickly and stays ahead of technology, not necessarily by picking up every new tool available, but rather by understanding how changes are occurring and why, and by being prepared to move along with the changes. The challenge is to remain vigilant in search of new ways to improve and implement new solutions, not different from the characters in Johnson's book, always looking for "new cheese." This philosophy and approach to change will be of even a greater value when adopted with collaboration with all entities that are related to the enterprise and are willing and eager to grow as partners alongside the enterprise.

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Figure 2. Enterprises Collaborating to Become a Greater Organism.

