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The New ERP vs. THE MONOLITH
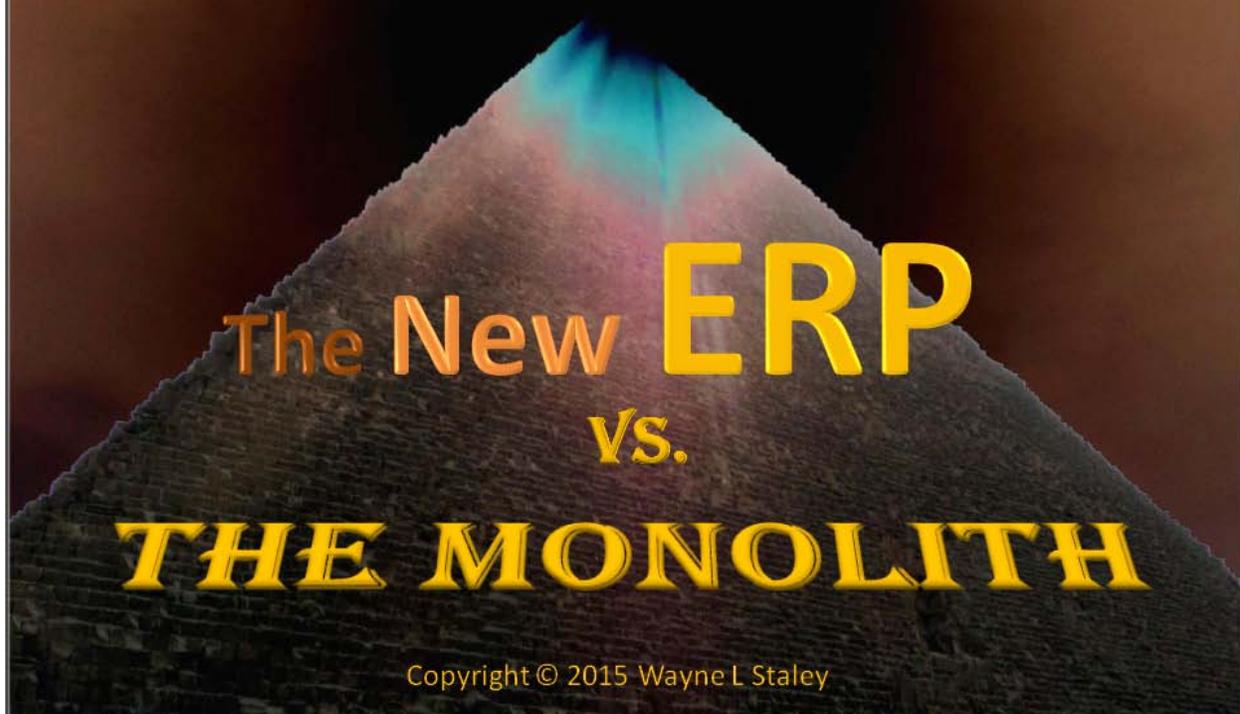
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The New ERP vs. the Monolith

By: Wayne L Staley

The history of ERP is replete with slow, monolithic systems with data updated and recalculated overnight and paperwork distributed each morning to the shop floor. Many of the reports were/are weekly or monthly, far too late for meaningful intervention. Today's systems must react instantly, supplying actionable information at the speed of reality.

At the heart of ERP beats a simple relational calculation. To build a unit (car, cookie, etc.), resources are needed. Using a list of parts, the number of units needed (independent demand), are multiplied by the amount of resources (dependent component) needed. These are gross requirements.

The second set of calculations net the requirements by subtracting supplies on hand, developing a shortage list, subsequently used to purchase or make the required resources.

Mixing or using the resources as dictated by a recipe or design (routings), results in the finished units needed to fulfill demand. It takes time to perform each step, and time offsets are a logical extension of the core calculations.

As systems grew and matured layers of calculations dramatically increased functionality while adding complexity. As ERP addressed many different types of applications, from vertical integration to horizontal supply chains, the systems became ever more encumbered and monolithic. These systems still prevail, but like the slow-moving dinosaurs, the future belongs to the Velociraptor, the fast, flexible, and efficient entities that work at lightning speed in concert with all the business systems. A modern analogy is the mainframe computer versus the distributed functionality of tablets/mobile systems and apps.

To understand the dynamics propelling this paradigm shift in ERP concepts, Affinity Systems is sharing this excerpt from Chapter 1, "ERP Realities," from ERP Information at the Speed of Reality.

Speed

Business activities are an effect of the marketplace and competitive pressures, changing the strategies and information requirements. As business velocity increases, the necessity for rapid information assimilation increases comparatively.

Software converts data into information. Information systems are strategic and therefore, software belongs to management. Fast, high-volume information flows fuel the smart enterprise.

Business is under extreme pressure to perform faster while supplying a rapid succession of personalized new products. This translates into smaller run quantities with shorter demand horizons and order to cash processes. Output continues towards the theoretical goal of one to one production. Customers' experiences need to be positive, whether it is buying home furnishings or a new car. In the new instant world, online reviews punish poor product or service performance.

Automation

Automation has dramatically collapsed production cycle times, altering the way information is captured and used. Contemporary systems drive manufacturing machines directly from designs. Automation, including event reporting and sensors, collect data from the shop floor, warehouse, transportation, and supply chain. Real-time data capture dramatically increases the volume of data to organize, store, and process. Database systems need to be integrated, powerful, scalable, and capable of converting large data volumes into usable information. Automation speeds up both the operational and information reality.

Computing Power and Data Transmission Speeds

Businesses were once concerned with the high cost and availability of storage and processing. Computer programs and methods considered these factors. One example is batch processing. Computers were not fast or large enough to support real-time transaction processing at every level, much less the ability to provide users with a continuous stream of information.

These limitations have disappeared. Companies without storage capacity can purchase it at reasonable prices on the cloud. The rapid accumulation of relevant data, storage, and super-fast conversion into information is one of the keys to the smart enterprise.

E-Commerce

The second part of the computing power equation is bandwidth or internet speed. Businesses and individuals have the ability to transmit large volumes of data/information anywhere in the world, and/or interact with business and each other in real-time.

The consumer world has changed, with more of the action moving to the Internet. Business-to-customer (B2C) and business-to-business (B2B) applications are escalating. On-line sales of products on Black Monday, free of shipping costs, show annual growth greater than 15%.

The Internet provides alternatives to traditional on-premise information processing. The emerging trend is SaaS, where processing takes place at a remote server. Rented software, priced on usage, replaces software normally purchased and installed on-premise. Internet applications are propelling enterprises into ever-higher velocity opportunities with worldwide integration capabilities. This will enable transformation into virtual enterprises, with the option to bypass traditional plant integration.

Mobile Technology

Mobile technology has moved the information reality from the office to the world, from voice to image and text, from status to content rich streaming flows. Actionable information is real-time and social media such as Facebook or Linked-In enables global collaboration. The differences between hand-held devices and PCs are increasingly blurred, separated more by personal choice and ease of use than functionality. The technology as applied to business is equally pervasive. Orders are tracked from any location as the product moves through the factory, warehouse, and onto the truck. GPS follows the order location in transit, and notifies the customer the second it arrives.

The increased use of mobile devices for pricing, order inquiry, available to promise, placing orders, shop reporting, order picking, and customer specific information translates into real-time information processing. Mobile technology, consuming data in enormous volumes, is one force driving information at the speed of reality. ERP databases unable to support these devices are technically obsolete.

Integration

The ability to integrate systems seamlessly is partially dependent on the selected software approach.

An integrated system offers full functionality to a vertical industry, such as manufacturing, distribution, or construction. Decomposing the manufacturing vertical one layer results in the following business types: process, repetitive, or engineer to order. The type of processes they use, for example, metal casting, fabrication, machining, and/or assembly further defines the business activity and required functionality.

General-purpose software addresses the core needs of a vertical, providing broader but less detailed functionality. Conversely, best of breed or industry-specific software more precisely addresses narrower but deeper functionality requirements. Consequently, industry-specific software is normally less expensive and requires less modification during implementation.

The decomposition eventually stops at functionality, where there is a proliferation of software applications such as Customer Relationship Management (CRM), analytics, Manufacturing Execution Systems (MES), Point of Sales, literally every application imaginable. Like any software product, the quality varies from one end of the distribution curve to the other.

The downside is that functionality beyond the specialty, often purchased separately, requires integration. Later chapters will address software modules as conceptual "Lego" blocks. To achieve a Lego effect requires that modules be designed and programmed using the same master files, labels, and language. That is clearly not the reality.

Although the debate continues comparing best practices and integrated software, tools exist to integrate most systems. The issue is cost, time, and result. The problems are the differences in format, field sizes, formulas used, programming language, and database technology. Each system is dissimilar in size and calculation, and conversion is required to move data back and forth from one system to the other. The reconciliation of these issues is basic to any form of automated integration, but the mashed result may prove that the sum total is worse than its parts.

Software code, defining how data will be processed and put into useful information, is relatively static. Modifications can be complicated and expensive. We devote one chapter to the topic. The term flexible information system is an oxymoron in some poorly structured software. ERP is a set of tightly designed and written procedures for executing repetitive formulas, requiring designed-in flexibility.

Flexibility comes in three forms. The first is architecture, where designed and coded functionality provide a number of solution pathways through seamless modules. The second level of flexibility is the ability to modify systems codes, features and functions, and upload or download data, sometimes into custom written subroutines. User fields add flexibility but lack the integrated functionality of standard system fields. The third flexibility is plug and play functionality for integrating third party or best of breed software. Adding significant ERP functionality such as CRM or Supply Chain Management (SCM) results in a system labeled "Extended ERP."

The decision to use industry specific or an integrated software package carries an implicit commitment to some level of integration, and for that reason, it is a critical selection criteria.

Big Data

Businesses are capturing large volumes of real-time data from multiple sources, including enterprise, vendors, and customers. This creates a condition labeled "big data." Where the prior evolutions of technology left business searching for viable analytical data, the problem today is how to manage and convert the data into useful information products. Most ERP suppliers provide data warehousing functionality. Find out if it is sophisticated enough to take advantage of the information opportunity.

In today's world, the resolution of big data is critical. If you are performing due diligence for a new system, there is a high probability your organization is not processing information at the speed of reality. If this becomes a critical selection criterion, then big data is in your future. Include the resolution in the future state and integration plans (Part 2, ERP Information at the Speed of Reality, Part 2, or ERP Lessons Learned, Structured Process).

Analytics

Enterprises have embraced the use of "business intelligence" tools. These come in a variety of sizes and shapes from simple drill down to complex analytics. The objective is to have functionality that builds information products-visualization, decision support, sales analysis, etc. in a timely and trustworthy fashion. Some programs require setting up reporting point codes within the software.

Include analytics in the future state and integration plans. Analytics may not be available in some standard packages, but provide useful functionality. Operational priority dictates rock solid ERP tools.

The lack of the feature cannot override the core requirements if the balance of the package fills your needs.

A number of companies offer analytic software. Some are IBM, SAP, Oracle, Microsoft SharePoint, Epicor, SAP Crystal Reports, Alteryx, Pentaho, and GE Intelligent Platforms. Suppliers also offer analytics through the SaaS format. An excellent guide is available at http://www.pentaho.com/resources/pdf-stream/20/the-ultimate-guide-to-buying-business-analytics.

Software Sophistication

Software suppliers service each market niche. Many of the features overlap, but the functionality varies widely in quality and scope. This diversity of both product and suppliers makes software selection tedious and difficult. Companies must make the commitment to do the work or risk being stuck with mismatched or unsupported ERP systems.

Many software companies have rewritten their packages with all applications and functionality in the same language, on common databases. These systems are truly integrated with every module working in sync by design, instead of being mashed together using real or conceptual middleware. While integrated, they are still monolithic and transitional to the interconnected and interchangeable models business will need and demand.

In the next chapter, we will discuss modular software in a different context.

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