

The Software Revolution

information technology in U.S. manufacturing today

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A global market economy - what it means for U.S. manufacturers and IT providers

Global competition is making it more difficult for American manufacturing companies to make a profit. Manufacturers need to become more agile to compete globally with economies where the cost of labor is an almost insignificant part of the cost of goods and they have access to the same high tech manufacturing equipment. It is time for forward thinking, competitively focused companies to move to the next generation of IT tools, and strengthen their manufacturing and management information systems. Technology providers need to provide manufacturers with cost effective, highly mobile, highly adaptable, thin-client competitive capabilities. These capabilities will come in the form of software which is web-based (or web-native), object-oriented, model-driven, thin-client, configurable and offered as a service (SaaS).

Old ERP technology - the first generation

The truth is that first generation ERP applications lack the flexibility to add or change functionality and they just aren't capable of full web functionality. Because of their age and code foundations, most existing ERP vendors just can't provide the full range of functionality made possible by the internet-native technologies. The ability of the native browser-based applications to interact with any device that can run a browser i.e. PDAs, cell phones and various data capture devices makes them intrinsically more valuable than the old ERP systems. These old legacy systems are difficult to expand and modify to make use of these wireless devices, or to change and add any new functionality to the system. It is also costly and laborious. Some vendors try to present the old systems in a browser and call the applications "web-enabled", using a technique known as "screen-scraping". But don't be fooled. Web-enabled does not mean web-browser native. These applications lack all of the abilities and advantages of a truly browser-native application. These first generation ERP vendors are racing to convert their aging, first generation offerings to the new, object-oriented, browser-based model of software. This is a difficult task, since the internal source code for these older packages is fundamentally unsuited for the web and cannot make use of the native functionality of the web browser. The total cost of ownership (TCO) for first generation systems is high, due to the legacy code burden, thick-client server setup and heavy support infrastructure. Much more IT workforce is needed to support a first generation ERP application.

A new vision for information technology - next generation software

The ultimate goal for any manufacturing organization is graphic, actionable, timely information when ever and where ever it's needed to support performance. Next generation software makes that goal attainable. Every manufacturer wants supply side and finished goods inventory reductions, energy use reductions, operational efficiency improvements and increased overall efficiency. Browser-based software applications which are easily configured are allowing manufacturers to become lean. A lean organization is one which can quickly and effectively adapt and make changes which lead to better productivity. The success of any software implementation needs to be measured by the achievement of benefits such as a reduction in manufacturing operational costs, a reduction of administrative costs, improved complete and on-time shipments, improved customer satisfaction and improved manufacturing schedule compliance. Next generation software, which is fundamentally different in design, function and form from legacy applications, is the beginning of the software revolution. Although the first generation systems have had their place and time, business practices of the new millennia, wireless technology, and the need for flexible systems is more than these aging systems were designed to deliver. The time has come to move on to a new generation of browser-based, object-oriented, model-driven toolsets which have the flexibility and functionality needed to carry us to the next level. The ultimate goal, real-time availability of information, is now attainable.

How does next generation software technology make an organization better able to adapt?

Adding functionality to software systems is a historical problem for first generation ERP vendors. This is because of the legacy code it is built upon. A next generation ERP provider does not have that problem, due to the use of an object-oriented software architecture. Making changes to or even adding functionality to an existing software system already in use is more easily and quickly done. Tuppas has also developed a set of rapid application development tools to which make modifications even faster. An application which might take a man year to develop using traditional methods such as asp.net, would take a matter of weeks with our development tools. Due to the relative ease with which they can be configured and changed, object-oriented software tools have brought drastic price reductions to normally high priced integrated management support software. Now not only can the largest organizations afford these software applications, small and medium sized businesses can too. The ease with which these applications can be reconfigured allows a vendor to collaborate with clients to quickly build customized software. This is extremely beneficial to corporations with a number of diverse plants. Tuppas can even help the customer learn to use their development tools so that they can modify the software themselves at their discretion. New business practices can be readily incorporated into an existing system. Our toolset gives us the kind of flexibility which allows us to create highly configured solutions for the corporate level and the plant level. Having the ability to modify the software that helps run the company as their needs change is a huge advantage in a highly competitive market. The system becomes more than just a software purchase. It is an adaptable tool to help them grow and innovate now and in the future.

Wireless adaptability accelerates decision making with real-time or just-in-time information

The faster that mission critical information can be recognized and made available, the faster the reaction time can be. The wireless capabilities of next generation software are providing unprecedented opportunities to accelerate the decision making process due to the decrease in time to acquire critical information. Wireless technology can be used to connect corporate entities, mobilize a sales force, track warehouse inventory, trace products and jobs, empower field personnel and more. The applications are really limitless. Having the ability to collect and organize timely information in a global environment, whether it be a field service technician, a sales person or a CXO, extends the power of any organization.

SaaS-Software-as-a-Service

The idea of software delivered over the web and hosted by a vendor has been around for a while, but it is just now beginning to come into its own as a viable option for software buyers. The benefits are numerous. Making monthly or quarterly payments for a system allows many more buyers into the market for high end software applications than traditional licensing purchases. Other benefits include lower cost of entry, quicker start up, faster return on investment, decreased internal support costs, reduced risk (initial investment is small), and better service and support since customers must be happy to be retained. Typically, the vendor or a third party host provide the maintenance, upgrades and security for the system relieving the customer of these burdens too. The absence of on-site servers, software, security and IT professionals means significantly lower total cost of ownership (TCO) for buyers.

The advantages of the thin-client system

A thin client strategy allows for the use of inexpensive work stations along with various other devices, such as palm computers, cell phones and more. It means anywhere, anytime access to information within the system from any browser capable device. It has made complete connectivity very cost effective. Thin-client software is browser-based software which resides on a dedicated server. The server may belong to the client, the vendor or a host. Users have full access the system via "thin client terminals", which really only require access through a browser to the dedicated server. This differs from traditional software installations, which require that a copy of the application be installed locally on each computer where it is to be used. This makes software upgrades infinitely easier, since only the program on the dedicated server needs to be upgraded, and not numerous client computers. This also saves time and disruption of work flow. Another advantage is the reduction in hardware needed at individual work stations to operate the software.

Model-driven design makes integration and upgrades easier

Model-driven software applications allow users to focus on functionality and core business processes without having to worry about technology platforms, technology upgrades and integration issues. Model-driven applications separate the business, or application logic from the underlying platform. It means that the software is created with two layers, so that one can change and upgrade the user side independently of the technical under-layer, and vice-versa. Software based on model-driven development eases platform integration issues and is a wise IT investment in the uncertain world of changing platform technology. It means reduced cost of ownership, reduced development time for new applications, rapid inclusion of emerging technology into systems and an increased return on technology investments. Model-driven design provides the framework which frees users to evolve their software and practices independently of the underlying technology or platform. It enables better, faster and less expensive system integration.

In conclusion

When you combine all of the features of the next generation software applications, what you end up with is a new class of software. Together, model driven development tools, object-oriented design, browser-based development, rapid development tools and wireless possibilities have created a revolution in software design and development. These applications mean greater flexibility at a significantly lower cost than first generation systems offered. U.S. manufacturers need to become more able to quickly react, move and respond to changing markets, regulations, finances and the competition in order to survive. This adaptability will soon become a necessary trait for any manufacturer who wants to survive in our new global marketplace.

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Tuppas offers manufacturing and ERP modules which were developed as browser-based, thin client applications. Their easily configurable modules gives manufacturers the ability to make changes to or even add functionality to the software. Tuppas software is web-based, object-oriented, model-driven, thin-client, configurable and available as a service (SaaS). Applications offered include: Production Scheduling, Advanced Planning and Scheduling, Production Reporting, Inventory Management, Warehouse Management, SPC, SQC, SCM, CRM, Accounting, Procurement, Job Tracking, Capacity Planning, Quality Assurance, Materials Requirements Planning, Process Control, Training Solutions, CMMS (Preventive Maintenance), Business Intelligence and Performance Dashboards.