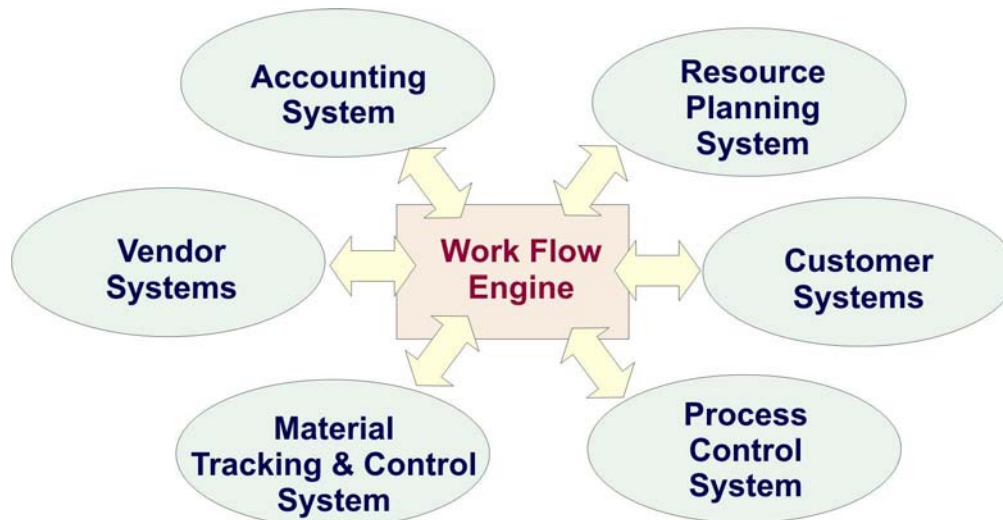




Work-Flow Architectures – the Successor to ERP Systems



Work-flow architectures are emerging in this new millennium as the successor to the ERP vendors' one-size-fits-all and does-everything-for-everybody approach to building manufacturing information systems that pervaded the 1990s. With a work-flow architecture, best of breed software components are linked through a rules-based work-flow engine, such as Biz-Talk from Microsoft, to form a seamless manufacturing information system that is expansible and rapidly customizable to the needs of an individual organization. This approach allows for seamless interconnection with customer and vendor systems over the Internet, which is essential if manufacturers and distributors are to participate in the Global Supply chains of the 21st century.

At the heart of a work-flow system is a work-flow engine which has three major components:

1. Adaptors to enable the work-flow engine to talk to the component applications. These adaptors may exchange messages with the component applications, transfer data from and into their databases directly, and/or call procedures made externally accessible from within the application.
2. A rules-based routing engine. When data is received from one component application these rules decide what other applications should receive copies of the data.
3. Mapping functions to translate the data formats and terminology of one application to another.

One important aspect of a work-flow engine is that it is technology neutral and can link a wide variety of component applications together into a seamless work-flow system. Another, and probably the most critical aspect, is that it enables an organization's systems to interact on a peer-to-peer basis with its customer's systems and its vendor's systems.

A vendor, for example, can send an advanced shipment notice (ASN) to a customer with full details of each container being shipped. This ASN is generated by the vendor's material tracking

system as soon as the truck leaves the dock and automatically routed to the customer's system without needing any human interaction. Within the customer's system, the ASN may be routed to an ASN approval system and to the material tracking system by the work-flow engine. When the ASN is approved then the customer's material tracking system is notified. When the materials have been received by the material tracking system then the accounting system is notified that the vendor can be paid for the materials and the resource planning system is notified that more inventory is available. Finally, to close the loop, the vendor's work-flow engine is notified that the materials have been received and also notified when payment will be made.

The big advantage of work-flow based systems is that much of the interaction takes place computer to computer and does not require paper handling, data entry, or people intervention except for approval or to make critical decisions. This can save lots of money for companies that participate in the global supply chain.

This computer-to-computer interaction takes place over the Internet using messaging protocols such as XML, FTP and EDI or can use ODBC/SQL or even flat-file transfers within the organization. The most important gain with work-flow architectures is that we only have to develop one adaptor for each component application and not the N factorial interfaces needed to tie N applications together. These adaptors hide the complexity of the inter-computer communications from the component applications, thus making it easy to modify components without affecting other components. Also the rules that govern the work flow can easily be changed and new component applications added as needed.

Does this mean that you should throw out your ERP system? Absolutely not; for a start, at the core of all ERP systems is an accounting system that handles General Ledger, Accounts Receivable, Accounts Payable and other financial transaction handling. This makes an excellent component that can be attached to a work-flow engine. The best part is that you own it and your accounting staff is familiar with its operation. Why throw it out, unless it is based on really old technology. Your ERP system may also contain an excellent resource planning component, Again there is no need to throw this out but rather it can be used as a work-flow architecture component.

Should you invest in a new ERP System if your existing system is obsolete? Yes, but focus on the modules that really fit your needs. One of the major issues here is customization. Most ERP systems are designed to be sold as-is with little or no customization to thousands of like customers. This works for the financial aspects of most ERP systems but does not work for areas like job, labor, equipment, and material tracking, which typically need to be customized to the requirements of each individual organization.

The emergence of work-flow architectures will encourage the development of application specific components that meet the needs of segments of the marketplace. It is mirroring the change from vertically integrated manufacturing to a situation where one company (or software component) handles a horizontal slice of a Global supply chain. BellHawk Systems is supporting this trend by making its software modules, such as those used for barcode and RFID tracking, usable as components in a work-flow architecture. A critical element of this support is BellHawk's data exchange interface, which can readily be configured to fully support interaction with most work-flow engines.