



White Paper Series

Workflow And ERP: Making ERP better

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Introduction

Companies continue to face challenges in aligning business strategy with business processes. Even when leading companies make the effort to share and integrate with their partners, most of them rely on a highly manual process and information from a tangle of Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), Supply Chain Management (SCM), Product Lifecycle Management (PLM), Product Data Management (PDM), Workflow, Web and legacy applications to coordinate order fulfillment across corporate divisions and external partners.

Developing an end-to-end business process or even one that crosses one or more functional corporate boundaries is made more difficult by the existence of functional software systems. For example, most CRM systems manage customer interactions but not the customer order. Without the ability to have visibility, let alone manage the order life-cycle, CRM systems constantly struggle to answer a simple yet fundamental question asked by the customer, “Where is my order?”, because the answer lies beyond the scope of the CRM application. A similar situation exists for processes currently addressed by other enterprise or departmental software systems. They tend to be inflexible, built on older, proprietary architectures, are web-enabled instead of web-based, and were initially designed to stand alone addressing the needs of a functional silo within the organization. They are generally transaction oriented and are not given to modeling the processes of the real world. They are also designed to manage product data so as to coordinate the supply chain in various countries and locations. This requires data transformation and integration in the backend. Process automation happens on the front end.

Current BPM offerings cannot meet the challenge either. Although they are good at human-to-human processes, and human-to-system processes, they are generally not good at transactional processes, and do not manage product data. Many companies, seeking to solve the process automation problem, may purchase one or more BPM product only to find that they do not work well together, and are simply unable to model real world processes that include managing activities, tasks, data, and other processes.

Being able to create a business process (Figure 1.) that can span functional areas of a company dramatically improves visibility into the process, and the data being generated, used, or created by the process or underlying enterprise system. The improved visibility and control over an extended business process provides companies with immediate benefits and a quick Return on Investment (ROI) that justify the costs of implementing a robust process orchestration system in conjunction with their ERP, PLM, CRM, or SCM system. While the processes can be simple or complex, companies can minimize risk and accelerate the payback by taking an incremental approach to deployment.

A new product is needed that can handle any kind of process in concert with product data. This new breed of BPM is called Enterprise Process Orchestration (EPO). EPO products, like Ingenuus, combine the ability to model any process, and also manage the data being generated, used, or created by the process including the product data in underlying ERP or PLM systems. EPO processes “float” over other applications and functional

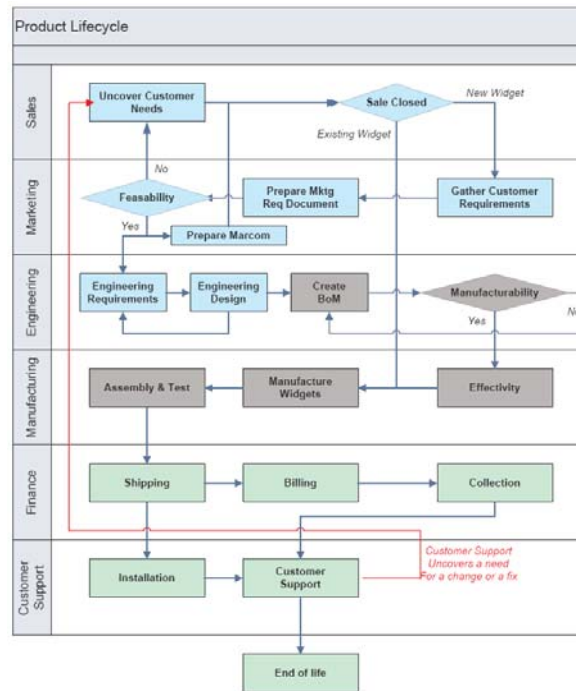


Figure 1

boundaries providing a platform to create powerful cross-functional processes that truly drive your business improving visibility, repeatability, accountability and productivity.

The Problem

Even with all the money spent on software systems, companies are still struggling to align business strategy with business processes. In manufacturing companies, the manufacturing department is still relied on to deliver the as-built records prior to any data sharing with partners. Also, compliance mandates across all industries have elevated the importance of manufacturing traceability. Sadly enough, even when leading companies make the effort to share and integrate with their partners, most of them rely on a highly manual process and information from a tangle of ERP, CRM, SCM, PLM, Workflow, Web and legacy applications to coordinate order fulfillment across corporate divisions and external partners. The best most can do is provide email notifications and file transfers via FTP or via a portal. Without visibility into these processes data is lost, delays are difficult to resolve, and precious time is lost just trying to get a handle on a problem in order to resolve it.

The Impact on Manufacturing Operations

Globalization and outsourcing is the name of the game for today's manufacturing industry. Successful companies are implementing demand driven business models – seeking ways to capture, shape, and respond to the demands of the global marketplace. As demand visibility improves, manufacturers are called upon to respond to that demand more quickly, more predictably, and more profitably. Organizational visibility into the capacity and performance of production facilities and subcontractors – wholly owned and outsourced - is increasingly needed to support decisions about where and how to profitably and predictably meet production and fulfillment demands.

A top-down approach to coordination and visibility is clearly in order. Manufacturers are looking beyond the realm of local execution capabilities to architectures and systems that support Process Orchestration – the synchronized execution of compliant manufacturing and logistics processes across a dynamically reconfigurable supply network to profitably meet demand.

The Impact on Global Operations

Forward-thinking companies see manufacturing as a strategic node in their supply networks. Brand owners are embracing the growing role of contract manufacturing and logistics to predictably and profitably supply product in increasingly volatile supply networks. This is fueling the rapid evolution of a market for applications that provide brand owners visibility into the performance of distributed manufacturing. This includes:

- Global product and process specification management
- Global visibility of manufacturing performance

The Impact on Local Operations

Manufacturing capabilities vary dramatically across industries, geographies, individual manufacturing sites, and even production lines within those sites. Mergers and acquisitions have compounded the problem of highly heterogeneous plant software and instrumentation and control landscapes, resulting in poor replication of manufacturing best practices. For the past 5 to 10 years, upgrading plant systems has taken a back seat to preferential investments in enterprise transactional systems, including Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Customer Relationship Management (CRM), and Supplier Relationship Management (SRM). Global manufacturers are now finding that in-house and contract manufacturing requires the following local investments in plant automation and control to ensure agile, compliant and right first time responses, along with the associated visibility into status and performance from all manufacturing locations:

- Track/trace, genealogy, and quality
- Production order management.
- Product Lifecycle Management (PLM) integration

- Equipment and process capability¹

Current Alternatives

Companies are looking for cost effective, easy to use alternatives to make Process Orchestration happen. For many, the cost of an ERP or CRM system means that there is pressure to make those systems do what they are not designed to do. This drives process owners and IT departments to attempt to use low cost BPM software to bridge the gap. But current BPM software alternatives cannot meet the challenge, even the more expensive options.

In a manufacturing environment there exist three different types of business processes: (1) Processes involving humans, (2) Processes involving systems and applications, and (3) Transactional processes. These different types of processes can be used to illustrate the differences between BPM and ERP systems and highlight the areas ripe with synergistic opportunity.

Most BPM offerings address all the three types of workflows outlined above, whereas ERP and other enterprise systems mainly address the third type, transactional workflows. BPM is more suitable to model workflows involving humans and software systems (Types 1 and 2), especially if the systems are autonomous and heterogeneous. On the other hand, ERP and other enterprise systems are more appropriate to model transactional workflows. Nevertheless, when transactional workflows involve heterogeneous systems a more appropriate alternative might be the adoption of a BPM. This is because ERP systems generally rely on a common, homogeneous, and interoperable data infrastructure.

The research shows that a combination of the two technologies can create powerful synergism boosting a company's efficiency and thus its bottom line. In effect, by using the right process automation tool with your existing enterprise system, particularly an ERP system, the result will be greater than the sum of the parts.

Finding the right BPM alternative is the key.

Workflow Capability and Drawbacks

There are three basic types of workflow tools:

- File/Image Management
- Folder/Forms Management
- Task Management

File/Image Management

Early document management vendors attempted to understand and implement workflow. For them, workflow was just the file status. Files or images were represented in a database. The assumption was that every record in the database represented a file or image. This was limiting to say the least.

Folder/Forms Management

Later stage document management vendors realized the need for representing abstract items, such as an empty folder, in their system. This would allow for more flexibility. The database was designed to represent the folder, and a file may or may not be associated with a folder. Workflow was now thought of as "steps" and each step could represent a task. This approach opened many opportunities for more complex file relationships and introduced the ability to model abstract data models. Modern Product Data Management (PDM) and Product Lifecycle Management (PLM) tools are excellent examples of this.

¹ AMR Research Spotlight, February 16, 2006, Simon Jacobson, Manufacturers Plan Increased Compliance Investments for Traceability in 2006

Vendors starting out with file management systems such as Documentum and Filenet, had to retool their products to accommodate the folder paradigm. The transition from the old to the new was not always smooth. The basic design assumptions of the software created barriers to flexibility.

Process/Task Management

Another type of tool came on the scene to address true process automation. These tools were the bridge between rudimentary document management with workflow and full blown BPM. They didn't look at the data to be managed, but the process the data had to go through to be managed. This created a "process centric" view of data management. Workflow now started to look more like what we have come to recognize in tools like Viso. The result was a new focus on the actions being done during a process rather than the data being acted upon.

Different Approaches

Both ERP and BPM focus on business processes, but the approaches taken by them are different. A typical BPM offering is implemented based on a process paradigm. Under a BPM, a workflow model is first created to specify organizational business processes, and then workflow instances are created to carry out the actual steps described in the workflow model. During the workflow execution, the workflow instances can access legacy systems, databases, applications, and can interact with users. ERP systems are implemented around the idea of prefabricated applications. To achieve better "fit" between the prefabricated applications and the needs of the organization, ERP systems must be configured by setting various application parameters. The more parameters an ERP application has, the more flexibility in configuring the business process. However, the workflow model in conventional ERP systems is not explicitly specified because it is embedded in the applications and the parameter tables.²

Integration Alone is Not the Answer

BPM can provide an important enterprise integration function standing alone. BPM systems can orchestrate and start other applications such as spreadsheets, legacy systems, ERP systems, *etc.* This capability makes them ideal for implementing workflows involving systems and applications. Thus, BPM acting in this mode could be viewed as a type of "middleware" platform serving to integrate diverse applications such as legacy applications and ERP applications. These systems are often labeled second generation Workflow (i.e., BPM), because they provide much richer integration capabilities than traditional Workflow systems.

BPM also can "float" above applications and disparate departments and functional groups unlike an ERP whose applications are specifically designed for a specific department or corporate function.

ERP vendors have moved into the supply chain management area. The integration of ERP systems into a supply chain is a complex task. ERP modules are designed to reflect a particular way of doing business. Organizations must usually adapt to the ERP system and not vice versa. This philosophy makes the integration of two or more different businesses in the supply chain difficult. One of the questions that often arise in these situations is which ERP business model should be used. Consider the case of integrating two ERP systems in a supply chain. If the two systems are from the same vendor, the integration can be achieved after the two application models involved are modified and connected. But, if the two ERP systems have a different architecture because they are from different vendors, the integration can be very difficult and expensive to achieve. However, using a BPM system to integrate a supply chain is simpler than using an ERP system.

A BPM system can work as a bridge between two or more organizations and applications. A BPM process that spans organizations is, in a sense, created on top of the supply chain topology. This process interoperation capability can be applied to link and manage the control and data flows between two or more ERP systems.

² Workflow Management Systems and ERP Systems: Difference, Commonalities, and Applications, Jorge Cardoso, Robert P. Bostrom, and Amit Sheth.

Thus, large organizations may need both ERP and BPM systems. Smaller organizations, or smaller subsidiaries of larger organizations can use only a BPM system. Workflow management systems are more directed toward process management, involving application and data integration of heterogeneous, autonomous, and distributed systems. Most of the BPMs show domain independence, in the sense they can be implemented in any business sector. ERP systems are data-centric, and therefore, they are more focused on information management and data integration. This type of system is also domain-dependent. Business templates are provided to be used in specific functional and market sectors. ERP systems are very suitable for a departmental, organizational, and cross-organizational scope operating on a national or international scale, where there is a good fit between desired organizational processes and those embedded in ERP applications. The system is built from prefabricated applications.

Both BPM and ERP systems will play a major role in larger organizations' application integration. BPM and ERP systems can be used independently or together to address intra- and inter-organizational application integration. In both intra- and inter organizational integration, flow logic is being separated out and captured in BPM with function logic found in ERP systems, other applications or other BPMs. In the intra-organizational area, we see this represented in the moves by ERP vendors to integrate BPM into their ERP architectures and emergence of EAI/BMP workflow based tools.

But in order to represent complex processes and exceptions, these new workflows had to have sub-processes, often referred to as "nested" processes, basically processes within processes. This resulted in huge processes that could not be graphically represented well, and were much too big and complex to grasp. And because the focus was on actions versus data, they were not suitable for product-reliant manufacturers who needed to manage both complex data and complex processes. A new generation of process automation is needed.

Current Alternatives Are Not Sufficient

Synergism between the right BPM and ERP in a manufacturing environment can result in additional benefits to the bottom line. Many ERP companies are attempting to either incorporate BPM capabilities into their systems, or bundle some sort of workflow solution. As a result, a common question most users have when evaluating a BPM system is why their existing ERP system can't accomplish the same function? They may be considering an ERP suite that is integrated to a workflow tool or have partnered to offer a third party workflow solution. Others are integrating with Enterprise Application Integration vendors to provide better "data flow" since this approach supports a data centric view of the world. Why won't these offerings provide process orchestration suitable to the problem at hand?

ERP Options

Let's examine some answers:

- ERP + EAI falls short of the answer - ERP and Enterprise Application Integration (EAI) alone is insufficient to provide a single view of a cross functional process. A good example would be an order from when it is created, confirmed, and then collected. EAI is largely focused on data-level integration and you need a process-centric framework that leverages EAI to integrate and coordinate ERP and non-ERP systems into an end-to-end Order Management process.
- ERP applications were designed to be stand-alone - ERP was designed with the goal of being the center of their users' universe for particular vertical departments in an organization. The goal was to streamline processes within a business unit or division and to serve as the system of record for transactions. ERP systems were never designed to coordinate business processes and workflow in an external environment. At best they enforce a rigid, single lifecycle for all processes.
- ERP applications are inflexible - These systems are rigid and require a lot of time, money and people to configure and maintain. In many cases, the business must accept the core process built into the system. In other words, the system determines the business process instead of the desired business process being enhanced by the system. As a result, the system drives strategy instead of strategy driving the system. ERP systems have inflexible, sequential transaction processing and workflow that cannot handle simultaneous or interactive processing.

- ERP applications have proprietary architectures – Although this is less common than even a few years ago, the vast majority of ERP applications were built from the ground up with proprietary tools, languages, application servers, and an architecture designed over a decade ago in a different era and on a technology stack that fails to address the realities of a multi-vendor, virtual corporation world. ERP's interoperability with other systems is limited because most systems are Web-enabled rather than truly Web-based.
- ERP integrated to Workflow misses the point – Most ERP systems that offer some sort of workflow are coming at process automation with a data centric view. Hence, they do not look for products that can provide process orchestration.

For large companies, BPM offerings alone are not the answer either. In the world of process automation, there are three basic types of processes:

- Processes involving humans
- Processes involving systems and applications
- Transactional workflows focused on data integration

Combining the Options

For small organizations with heterogeneous infrastructures, the adoption of a BPM to integrate their systems may be a more adequate solution than a more complex ERP, since it does not require the time and monetary investments associated with ERP implementations.³

When business processes are represented as hard- or semi-hard-coded applications, as is the case with ERP systems, an inherent flexibility is missing. The only flexibility in an ERP system comes from the parameters that can be configured. In a BPM, the idea is to be able to model processes, typically by using visual tools, and then delegate the responsibility of "designing" the behavior of the software to the workflow system.⁴

One of the key problems developers have with ERP systems is to understand and change the process flow model embedded in the applications and parameter tables. To address this problem, a recent trend has been to incorporate workflow components into existing ERP systems. The first strategy was to bring in a BPM simply as a stand-alone tool to implement workflows and to use the BPM as a documentation aid to document ERP flows.

This strategy has changed to make ERP systems more workflow-driven or workflow-enabled with the integration of workflow components or third part offerings. In order to succeed at this, ERP vendors need to replace the flow logic embedded in their applications and parameter tables with a BPM. The role of the BPM is to manage the flow logic and indicate the use of or invoke applications when necessary.

Although it appears the full integration of workflow into ERP suites is just getting started, many see this pattern continuing. The movement to the two-level programming model utilized by BPM (i.e., separation of flow logic from function logic) enables the creation and integration of applications with a higher degree of agility to respond to business needs.

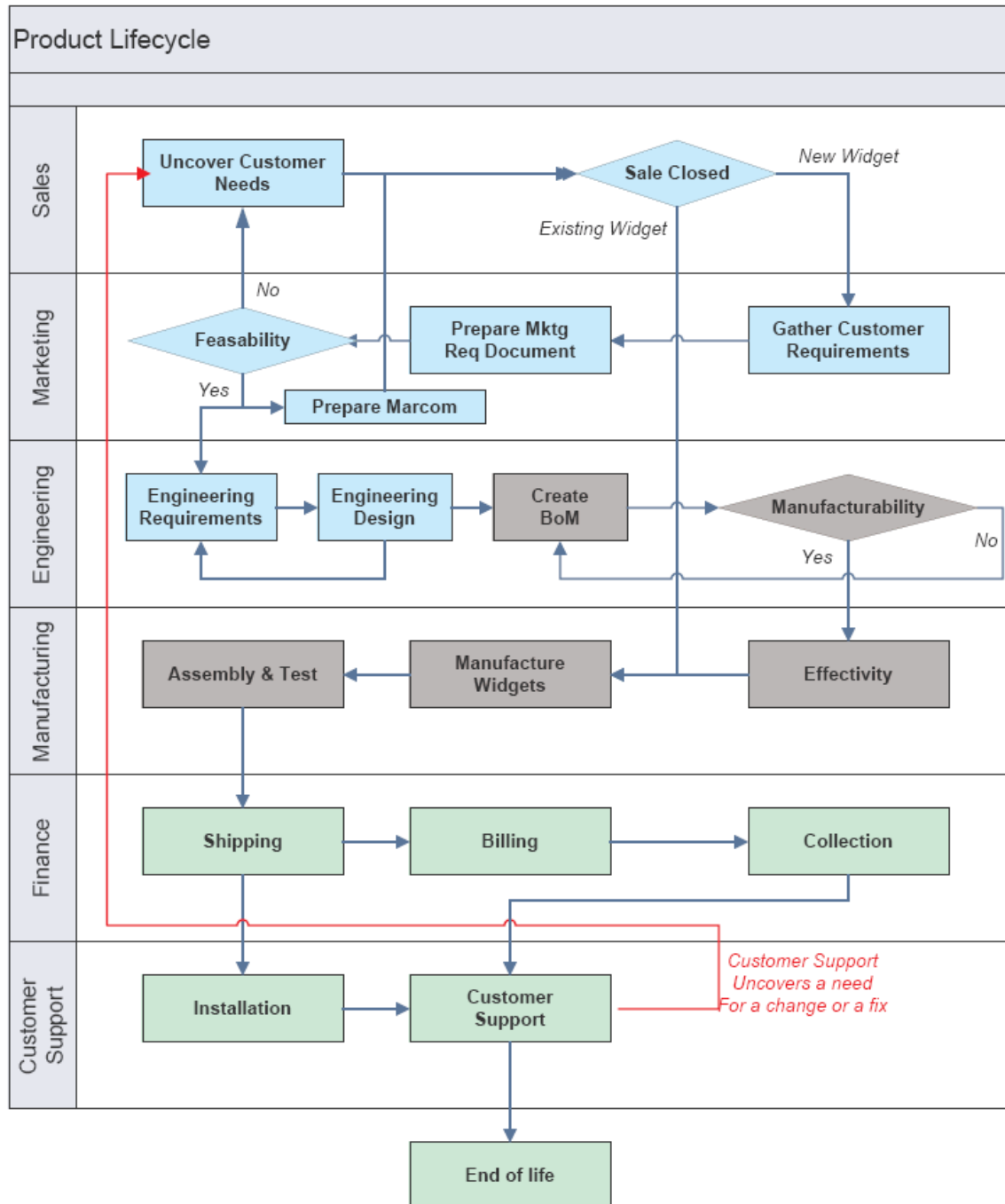
BPM can address all three types of workflows outlined above, however, they are most suitable for modeling workflows involving humans and software systems (Types 1 and 2), especially if the systems are autonomous and heterogeneous. On the other side, ERP systems are more appropriate to model transactional workflows, which are data oriented. Nevertheless, when transactional workflows involve heterogeneous systems, a more appropriate solution may be the adoption of a BPM. It is clear to see that a combination of the two can be an optimal solution.

³ Workflow Management Systems and ERP Systems: Difference, Commonalities, and Applications, Jorge Cardoso, Robert P. Bostrom, and Amit Sheth.

⁴ Ibid.

Ingenuus is the solution

How does the Ingenuus EPO offering solve the problem and why is Ingenuus the answer?



Better BPM

Ingenuus has developed a unique approach to solving the problems inherent with combining both a BPM and an ERP by creating a new generation of BPM that stands alone. This new generation product, Process Orchestrator™, is basically three workflow products in one:

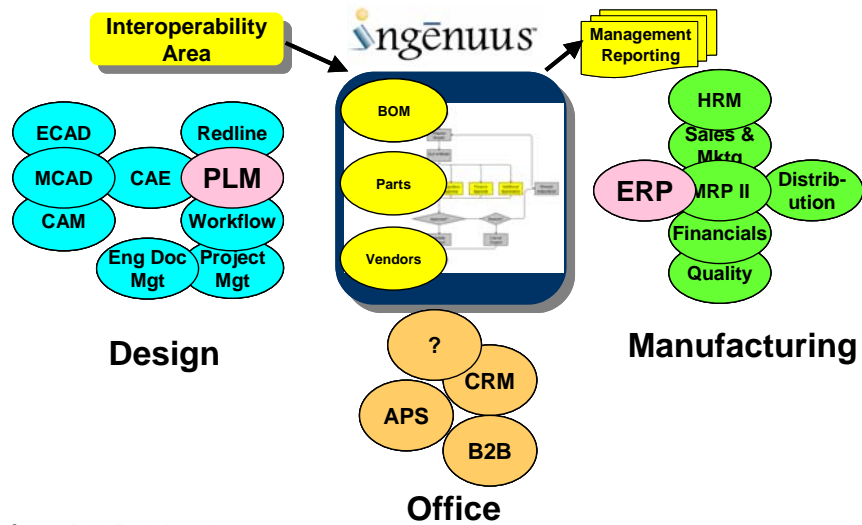
- File/Image Management
- Folder/Forms Management
- Task Management

We call this new generation of BPM Enterprise Process Orchestration (EPO). The Ingenius Process Orchestrator™ enables EPO by combining the best of the three types of process automation with EAI and PLM. The result is a unique business process automation platform that can literally tie together disparate manufacturing organizations.

This unique process automation tool can create “floating” processes that are end-to-end business processes.

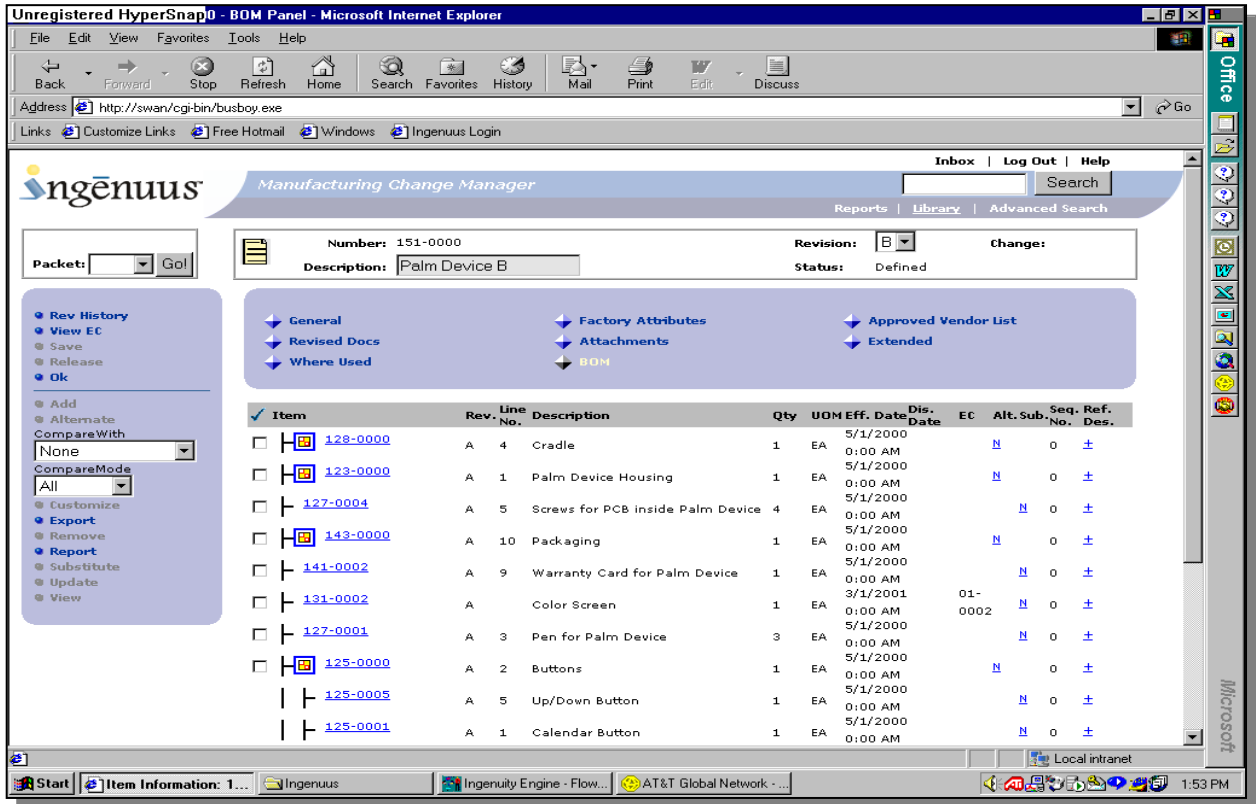
Unified BOM Across The Organization And Supply Chain

In addition to being able to create floating processes, like Job Management, Project Management, Quote-to-Cash, and Product Lifecycle, Ingenius provides an interoperability area that sits between enterprise and functional software tools providing a data neutral area for product data and related information to be managed across the enterprise and into the supply chain. Our interoperability area is process centric and designed to optimize collaboration and data sharing.



Source: D. N. Frank Associates

From a process point of view, the BOM is one of the data elements that are part of the process. In this respect, a BOM is treated like another document or information. But because a BOM is a very special type of information “bundle”, special tools are required to manage it. Ingenuus Process Orchestrator provides this capability fully integrated with cutting edge BPM. This is why Process Orchestrator is uniquely suited



to work with a company’s ERP or MRP system, or be a first step toward installing an ERP.

Because Process Orchestrator is data “agnostic” it doesn't matter which ERP, CAD/CAM or PLM system your product data comes from. Choose the ERP software that provides your company with the functionality required to run your business. In addition to your ERP, using Process Orchestrator you can create floating processes that tie all the pieces together allowing you to manage NPI, product life-cycles and changes, release and distribution of your critical corporate data. Import BOMs from ERP or PDM/PLM into Ingenuus. Process Orchestrator becomes an “inter-operability area” providing a web based indented BOM view for easy navigation. Ingenuus will not replace your ERP, CAD/CAM or PDM/PLM, but will enhance its effectiveness and extend the reach and visibility of your product data into your virtual manufacturing environment and your supply chain.

Bulk addition, deletion, and changes are imperative components of BOM management in an inter-operability solution. Configurable reports, BOM edits, BOM comparisons, and other BOM management capabilities are critical to making the change management process more efficient and productive.

Inbox | Log Out | Help

ingenuus Manufacturing Change Manager Search

Reports | Library | Advanced Search

Packet:

Revision: Number: 151-0000
 Description: Status: Defined

View: default Records: 1 - 13 of 13

Item	Rev.	Line No.	Description	Qty	UOM	Eff. Date	Dis. Date	EC	Alt. Sub.	Seq. #	Des.
<input checked="" type="checkbox"/> D	131-0001	A 6	Black & White Screen	1	EA	2/1/2001			N N	0	1
<input type="checkbox"/> A	131-0002	A 6	Color Screen	1	EA	10/30/2001		01-0001	N N	0	1
<input type="checkbox"/> =	141-0001	A 8	Manual for Palm Device	1	EA	2/1/2001			N N	0	1
<input type="checkbox"/> =	141-0002	A 9	Warranty Card for Palm Device	1	EA	2/1/2001			N N	0	1
<input type="checkbox"/> =	127-0004	A 4	Screws for PCB inside Palm Device	4	EA	2/1/2001			N N	0	4
<input type="checkbox"/> =	139-0001	A 7	PCB for Palm Device	1	EA	2/1/2001			N N	0	1
<input type="checkbox"/> =	125-0000	A 2	Buttons	1	EA	2/1/2001			N N	0	1
<input type="checkbox"/> =	128-0000	A 5	Cradle	1	EA	2/1/2001			N N	0	1
<input type="checkbox"/> =	143-0000	A 10	Packaging	1	EA	2/1/2001			N N	0	1
<input type="checkbox"/> C	127-0001	A 3	Pen for Palm Device	1	EA	2/1/2001			N N	0	1
<input type="checkbox"/> C	127-0001	A 3	Pen for Palm Device	2	EA	2/1/2001			N N	0	2
<input type="checkbox"/> C	123-0000	A 1	Palm Device Housing	1	EA	2/1/2001			N N	0	1
<input type="checkbox"/> C	123-0000	A 1	Palm Device Housing	1	EA	2/1/2001			N N	0	1

In addition to extensive and easy to use BOM features, Process Orchestrator provides Master Item/Part capabilities that make it easier for companies to standardize on a global part number scheme after an acquisition or merger.

Inbox | Log Out | Help

ingenuus Manufacturing Change Manager Search

Reports | Library | Advanced Search

Item: Item Type:

Description: Alternate Key:

Revision: Current Revision Factory: Affected Lot:

Effective Date: After << Any >> << Any >>

Release Date: After << Any >> << Any >>

Select an attribute: << Any >> Select More << Any >>

Query Results

Item Number Rev

Release Date Description Item Type Alternate Key

Listbox Source Code UOM

Users can query the Process Orchestrator using the part number they are familiar with and the system is smart enough to find the part and then show what other part numbers are used to describe the part.

The screenshot shows the ngēnuus Manufacturing Change Manager interface. At the top, there are navigation links for 'Inbox', 'Log Out', and 'Help', along with a search bar. Below this, the 'Revision' is set to 'B' and the 'Description' is 'JABRA Flexboom Headset'. The 'Number' is 100-56130000-42 and the 'Status' is 'Released'. A left sidebar contains a 'Packet' dropdown set to 'ECO' and a 'Go' button, along with a list of actions: Rev History, View ECD, Copy Item, Save, Release, Delete, and Ok. A central menu includes options like General, Revised Documents, Where Used, Factory Attributes, Attachments, BOM, and Approved Vendor List. At the bottom, there are input fields for various P/Ns: JABRA P/N (100-56130000-42), HDI P/N (1371), GN Europe P/N (2223-82-03B), and GN Nashua P/N (22-2382-03).

In addition to Master Part numbers, Process Orchestrator also provides for approved vendor lists (AVL) that are maintained in the interoperability area then uploaded into the ERP.

No interoperability area would be complete without integration middleware to make exchange of information with external systems easy. The Integration Gateway is an option that makes integration easy to do and maintain.

Integration

Using the Integration Gateway, companies can import data into any Process Orchestrator process. This is important in several areas. For example, to improve the change process, product cost information can be imported to help make material disposition decisions and allow engineers and other participants to understand the impact of the change proposal. In another example, BOM data is uploaded into the Process Orchestrator, managed, and when changes are approved, the changes are published back to ERP. The Process Orchestrator then tracks the “implementation” and acceptance of those changes through the entire supply and manufacturing chain.

The screenshot shows the ngēnuus Manufacturing Change Manager interface for a change order. The 'Packet' is 'ECO' and the 'Go' button is visible. The 'Number' is 01-0002 and the 'Title' is 'Modification of PCB'. The 'Status' is 'In Progress'. A left sidebar contains a list of actions: Approve, Reject, Release, Cancel, Send, Save, Report, Set Notification, Set Participant, and Recalculate Cost. A central menu includes options like General, Materials Disposition, Dates, Description Of Change, Revised Documents, Audit Trail, Revised Items, Attachments, and Where Used. Below the menu, there are input fields for 'Site' (NYMFG), 'Location' (InStock), 'Eng. Cost' (350.00), and 'TL.Cost SUM' (3850.00). A table shows the 'Item Affected' with columns for 'Rev', 'Act.', 'Disposition', 'Ext. Cost', and 'Loc. Total'.

Item Affected	Rev	Act.	Disposition	Ext. Cost	Loc. Total
131-0001	OBS		Scrap	1200.00	1200.00
151-0000	B		Rework	2300.00	2300.00

Materials Disposition can be managed stand alone in Process Orchestrator, or, using the Integration Gateway, provide a 2-way link to ERP to facilitate near real time estimations and dispositions.

Visibility

Data in a database is only as good as the tools available that assist in visualizing this data. Different groups of people are interested in different views of the same data set. As a result, the reports that come pre-packaged with various software systems are only starting points for real reports that the users want. Unfortunately, such reports are only as current as the last time they were run. This immediate obsolescence is not necessarily a problem for most uses like forecasting, continuous improvement, etc. In order to be really useful, a software system must allow easy setup of various watch/trigger points that sends out alerts based on user-specific business rules.

Process Orchestrator provides visibility in a number of ways consistent with its process centric approach. In fact, in the visibility arena, Process Orchestrator serves all users with data previously overlooked, or was difficult to access and mine.

For example, individual participant visibility is enhanced by collecting tasks into a single Inbox, and listing them in order of priority. Providing some sort of graphical representation of this information may not improve visibility for the participant. Tasks are listed and easily accessed.

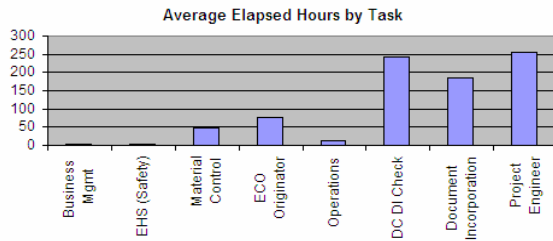
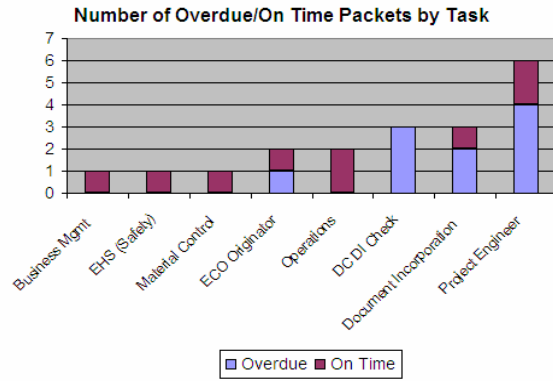
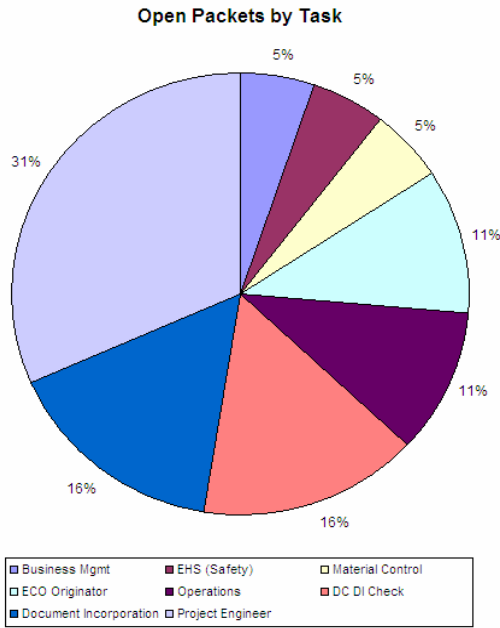
Data either needed to complete tasks, or generated by a task, are kept in process context via the Active Packet. This packet represents the process and allows for all other disparate data types to be intelligently associated to the process and tasks. This eliminates the time generally taken to find pertinent information, and insures that data is kept “in context”.

The Ingenious system allows users to set up configurable reports. It also allows process owners to easily configure business rules that drive alerts about exceptions.

Visibility is not only about reporting on data, but providing a quick glance at process status. Dashboards are a popular way to look at data, and many companies are using them to easily digest reams of information from their daily operations.

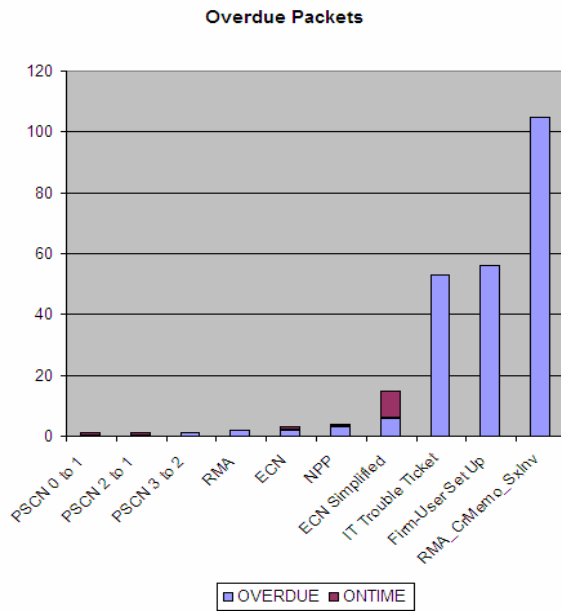
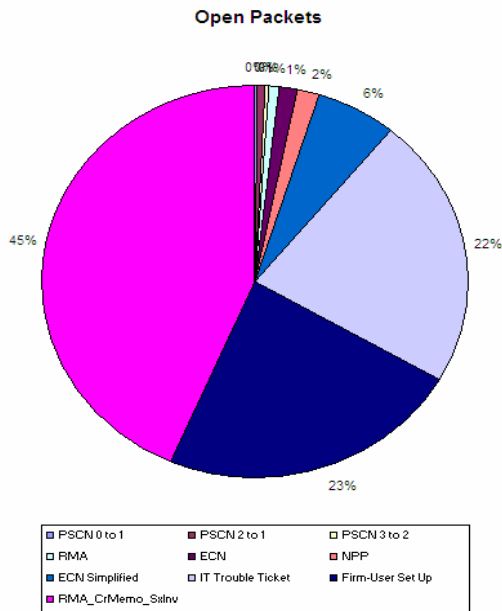
Visibility into processes can also be aided by dashboards. Process Orchestrator comes with 2 basic process reports:

- Task Status Reports
- Process Status Reports



Task Status Reports

Visibility into a particular process means viewing consolidated data from all instances of a process template. In the example shown above, the process is and engineering change order. All of the defined tasks for the process are listed, and are shown to be on time or overdue.



Process Status Reports

In the same way, a higher level view of processes enables operations managers to view the status of all the processes they have automated. In the example below, processes (referred to as “packets”) are identified, and then listed as overdue or on time.

These dashboards serve as management tools and are not used to inform management of delays. That is done using alerts in the process. In the real world, a manager would have received an email or phone email alerting them to the fact that a delay was occurring. There is no need to hover around a computer terminal staring at a dashboard to know what is going on. Process Orchestrator lets you know so that you can resolve the delay before it becomes a critical stop-work issue.

Conclusion

Companies continue to face challenges in aligning business strategy with business processes. Most of them rely on a highly manual processes and information from a tangle of Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), Supply Chain Management (SCM), Product Lifecycle Management (PLM), Product Data Management (PDM), Workflow, Web and legacy applications to coordinate order fulfillment across corporate divisions and external partners.

Enterprise systems constantly struggle to answer a simple yet fundamental question, “What is the status of my project?”, because the answer lies beyond the scope of the application. They cannot look into other systems, or create processes that “float” across systems to tie them together and be able to answer the question. They are generally transaction oriented and are not given to modeling the processes of the real world.

Current BPM offerings cannot meet the challenge either. Although they are good at human to human processes, and human to system processes, they are generally not good at transactional processes, and do not manage product data. BPM products do not work well together, or with other systems, and are simply unable to model real world processes that include managing activities, tasks, data, and other processes.

Being able to create a business process that can span functional areas of a company dramatically improves visibility into the process, and the data being generated, used, or created by the process or underlying enterprise system. The improved visibility and control over an extended business process provides companies with immediate benefits and a quick Return on Investment (ROI) that justify the costs of implementing a robust process orchestration system in conjunction with their ERP, PLM, CRM, or SCM system. While the processes can be simple or complex, companies can minimize risk and accelerate the payback by taking an incremental approach to deployment.

A new product is available that can handle any kind of process in concert with product data. This new breed of BPM is called Enterprise Process Orchestration (EPO). Ingenuus, a leading EPO supplier, combines the ability to model any process, and also manage the data being generated, used, or created by the process including the product data in underlying ERP or PLM systems. A true EPO can create and manage processes that “float” over other applications and functional boundaries, or be used to develop functional silo specific processes to deal with sub processes ultimately linking to a high level floating processes, providing a platform to create powerful cross-functional processes that truly drive your business improving visibility, repeatability, accountability and productivity.

Revision History

Date	Version	Author	Comment
March 2 nd , 2006	0.5	Christopher Williams	Draft for initial review
March 8 th , 2006	1.0	Christopher Williams	Release