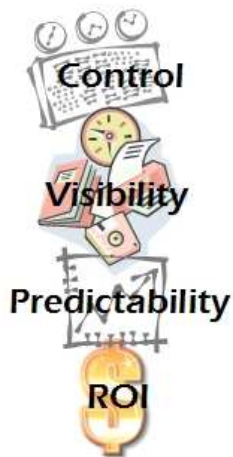


Ingenuus Active
Packet Technology
Provides:



Applying BPM to Lean Six Sigma to Achieve Continuous Optimization

White Paper

Information in this document is subject to change without notice and does not represent a commitment on the part of Ingenuus Software Inc.

Copyright © 2007 Ingenuus Software Inc. All rights reserved. This publication, or any part thereof, may not be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording storage, in an information retrieval system, or otherwise, without prior written permission of Ingenuus Software Inc.

Restricted Rights Legend

Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraphs (C) (1) (iii) of the rights in Technical Data and Computer Software clause at DFARS 252.227-7013 and 48 CFR 52.227-19.

The product described in this White Paper may be protected by one or more U.S. patents, foreign patents, or pending applications.

Trademarks

Ingenuus, Business Process Orchestration, Ingenuus Process Orchestrator, Process Flow, Process Optimization Flow, Process Optimization Pyramid, Power of the Process, Driving Efficiency, Making Processes Profitable, Integration Gateway, Integration Gates, Solution Suites, and Task Flow, Active Packet are trademarks or registered trademarks of Ingenuus Software Inc. in the United States.

All other trademarks or registered trademarks are the property of their respective owners.

This publication is provided "AS IS" without warranty of any kind, either express or implied. All warranties, including, but not limited to, the implied warranties of merchantability fitness for the particular purpose, or non-infringement are specifically disclaimed.

This publication could include technical inaccuracies or typographical errors. Changes are periodically added to the information herein. These changes will be incorporated in new editions of the publication. Ingenuus Software Inc. may make improvements and/or changes in the product(s) and/or program(s) described in this publication at any time without notice.

August 17, 2007
Rev 2.0



Ingenuus Software
6136 Frisco Square Blvd
Suite 400
Frisco, TX 75034
Tel: 469-252-1144

White Paper

Table of Contents

Introduction	4
The Problem	5
Current Alternatives	6
The Technology You Need	7
Process Optimization Framework	9
Ingenuus is the Solution	10
Conclusion	11

White Paper

Introduction

Companies are seeking best-in-class performance and are looking toward innovation and process optimization to achieve their goals. All of these initiatives (we are calling Lean Six Sigma) are increasingly coming under the umbrella of Process Management, but few are actually automated using commercial technology.

Lean Six Sigma initiatives are basically manual; therefore further gains in productivity and efficiency are not likely to be achieved until technology is used to address the situation.

The need is growing for a process optimization platform where all these activities can be orchestrated.

Unfortunately, a close look at current software options reveals that most traditional solutions do not meet the challenge. They tend to be time consuming and expensive to manage.

Ingenuus provides a unique industrial grade Process Optimization platform designed specifically for manufacturers by manufacturers. Our Process Optimization Pyramid establishes a corporate wide common process framework that can be used to orchestrate business process optimization from documentation to automation. This Process Optimization "portal" [if you will] enables companies to see, track, control, and find anything in any process across the entire supply chain eliminating black holes and restoring visibility and control. This white paper will show how Lean Six Sigma initiatives can be enhanced and automated by following a Process Optimization Pyramid strategy to orchestrate all Lean Six Sigma activities.

White Paper

The Problem

Malcolm Baldrige quality criteria, ISO, Lean Manufacturing, Six Sigma, TOM, Kanban, Kaizen, etc. are all methodologies. But they have a common goal – document and optimize processes while aligning them with business initiatives. For the sake of simplicity, we are calling all these things Lean Six Sigma.

Lean Six Sigma initiatives have something else in common: they are basically manual. Processes are first documented and then evaluated for optimization. Process owners are required to report on their process performance so that this information can be consolidated and presented to upper management. Change, improvements, and even new processes can be initiated from internal customers, external customers, management, and process owners themselves.

Companies, like Boeing's Airlift and Tanker Programs (Boeing A&T), that are committed to Process Based Management have typically developed an approach that coordinates tasks and reduces duplication of effort. Any technology used is typically developed by in-house IT staff. Even so, most of the effort remains manual.¹

Recent studies have shown that such companies are the exception rather than the rule. It is believed that for most companies, only 10% of their processes are documented. Only a few of these are considered critical enough to optimize and collect metrics on.

According to recent research done by Aberdeen Group best-in-class manufacturers standardize processes across the organization based on the findings from Continuous Improvement teams. Major gains are realized from improvement in visibility.²

It is obvious that for most companies further gains in productivity and efficiency are not likely until the following occurs:

1. Process optimization activities are coordinated with Business Initiatives such as Malcolm Baldrige, Six Sigma, ISO, Sarbanes-Oxley, etc.
2. More processes are documented and available for evaluation and optimization.
3. More processes are optimized.
4. More processes are automated with the help of technology.

1. How Boeing A&T Manages Business Processes, Pamela Garretson and Paul Harmon, from www.bptrends.com, 2005.

2. Lean Scheduling and Execution, May 2007, Aberdeen Group

White Paper

Current Alternatives

The major tenet behind Lean Six Sigma is to realize that everything takes time and costs money. All work is either adding value to the product or service, or it is not. Non-value adding work is basically “waste” and must be reduced or eliminated.

Leading contributors to ‘waste’ are the usual suspects: we can’t see it, we can’t track it, we can’t control it and we can’t find it. Manual methods of lean process management include - hiring a person to track progress; asking people questions so that you might be able to see what is going on; hiring a person to manage the process (make sure that all the steps are followed); and spending an inordinate amount of time looking for information needed to produce product or created by the production of product. All of these are non-value added work.

Companies looking for an edge in the global marketplace must establish a Process Optimization Platform to coordinate process activities with Business Initiatives. The question remains: what technology and information is best to empower a process optimization framework?

Quality Solutions

Malcolm Baldrige quality criteria, ISO, Lean Manufacturing, Six Sigma, TOM, Kanban, Kaizen, etc. are all methodologies. They are not software. They impact corporate culture because they impact the human element of business. In a sense, they are like a religious ideology that everyone must buy into and then adhere to. Still, a manual process is expensive to manage and prone to human error and loss of data.

Software solutions developed for Quality, such as corrective action, etc. are narrow in scope and cannot be expanded to create a process optimization platform.

Business Process Management

In looking for software to automate process optimization, companies naturally turn to workflow and BPM software. It appears to be a natural fit. In an attempt to figure out how to automate process optimization some Black Belts are looking into becoming process experts and they are beginning to explore the use of BPM software to control, track and provide visibility into Lean Six Sigma practices.

Many BPM vendors extol the virtues of reducing or eliminating non-value added activities. Unfortunately, many also cannot automate processes, and only offer suites of tools companies are already using to document and map processes. Traditional BPM cannot provide a process optimization platform that orchestrates all of the activities related to a complete process optimization solution.

White Paper

Enterprise Resource Planning

For many companies ERP software seems like the logical choice to bridge the gaps we have identified. These solutions tend to come as virtualized “modules” which seem to fit the segment or sub-process approach for process improvement. For the most part, every manufacturing company likely has one or more ERP or older MRP modules already installed.

Companies focused on enterprise resource planning are just beginning to see the value of business process management, so their offerings are not very mature. Most could not address process optimization.

Product Lifecycle (PLM) and Product Data Management (PDM)

PLM and PDM solutions manage product data, such as bills of materials, parts, CAD/CAM files, and 3D or 2D visualizations. Most are not equipped with robust process automation capabilities.

Various Other Software Alternatives

Some software vendors are trying to fill the gap and provide software that automates many of the Six Sigma Tools. These tools would be helpful in populating data between tools that share common data items simplifying the management and updating of tools and scorecards.

In House Development

Many companies are trying to create a process optimization platform with existing software using their own Information Technology expertise. Some companies, such as Boeing’s A&T Programs, have done so with stunning success. But this is the exception rather than the norm. Although most companies do not have the IT resources of a Boeing, virtually every manufacturing company has developed some in-house software to address the needs of automating process optimization.

The Technology You Need

A unique combination of technologies is required to make process optimization a reality as an off-the-shelf solution for manufacturers. Purchasing these technologies, then integrating them to work together can be done, but it is expensive and time consuming. This is why only a few companies such as Boeing A&T are able to do it, and even then, much of what they do remains manual.

The following is a brief synopsis of the technology required to create a process optimization solution.

Tasks

Tasks need to be more than just a to-do list. You need to be able to manage tasks as part of steps, not equal to a step, so that many tasks can be in one step. Users need the ability to assign “ad hoc” tasks at each step.

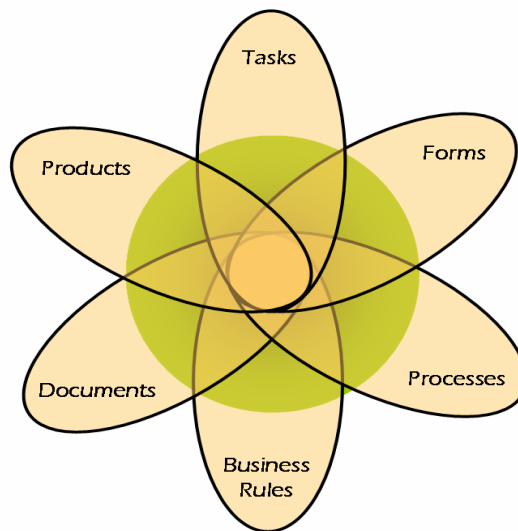
White Paper

Forms

The user interface needs to be an integral part of the solution so that building business rules and creating custom fields is simplified. Modifications to the user interface should be made without coding. The user interface should be a “thin” web client.

Processes

To support project processes you must have the ability to create a top level process to manage major milestones, while sub-process are dynamically linked to the top level process. The top level process (often called a “super” process) is “aware” of the sub-processes, but not so structured as to discourage changes or modifications. The result is a flexible design able to be changed or modified dynamically but still remains formal enough to pass an ISO or government audit. Processes must be under revision control.



Business Rules

You must be able to create both simple and complex business rules and these should be able to utilize the information being gathered in the user interface, as well as information in the system such as user role, etc.

Documents

You need a document repository capable of storing design data, typically in CAD/CAM files, revision controlled documents, and files not under revision control. Access to documents must be controlled by each process so that the rules can be context aware allowing for partners and others to participate and collaborate.

Products

You must be able to import and export product structures to create an “interoperability” area where changes to product information can be facilitated quickly without replacing existing engineering or manufacturing software.

In addition, you will require extraction of information for reports and dashboards. A web based reporting system integrated with the product so that any user can create their own reports. Any field, default or custom, must be immediately available for business rules and reporting. Users must be able to build a query and then modify the output in the manner they see fit. User queries can be stored for future use, and system queries can be shared with all users.

White Paper

You will need to be able to use existing Lean Six Sigma tools and templates. These templates should be stored in the document repository and under revision control insuring that the latest version is always used. If you don't have any Lean Six Sigma tools, they should be available as part of the solution.

Everything needed for process automation should exist in a single design manager, not an integrated "suite", that allows process owners to map a process, design user screens for input, and then create business rules to manage the process flow.

Once the process flow is mapped, screens modified and business rules set up, validation of the logic is performed. The Process Flow is under revision control and is not released into production until it has been verified.

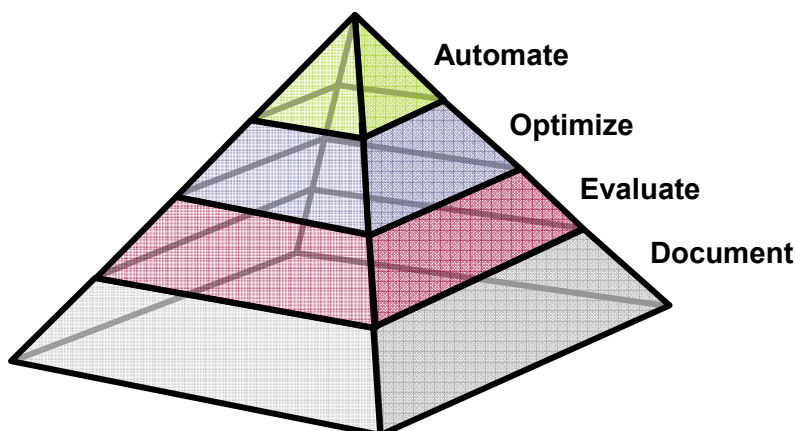
A Process Optimization Framework

Technology is not enough by itself. It must orchestrate process optimization activities and then map them to business initiatives.

To address the unique needs of a process optimization platform, you will need to have a process optimization framework. Similar to the Process Management solutions developed by leading edge companies such as Boeing, this framework will define and manage the Optimization Life-cycle of processes. It is, in effect, several processes working in concert to facilitate process optimization activities while orchestrating Lean Six Sigma initiatives.

There are 2 basic processes the framework must define and manage. Type 1 processes document, evaluate, optimize and automate other processes. Type 2 processes are every day end user processes to complete daily tasks.

The framework must not only manage Type 1 and 2 processes, but also provide for feedback on processes in the form of suggestions, corrective actions, and change requests.

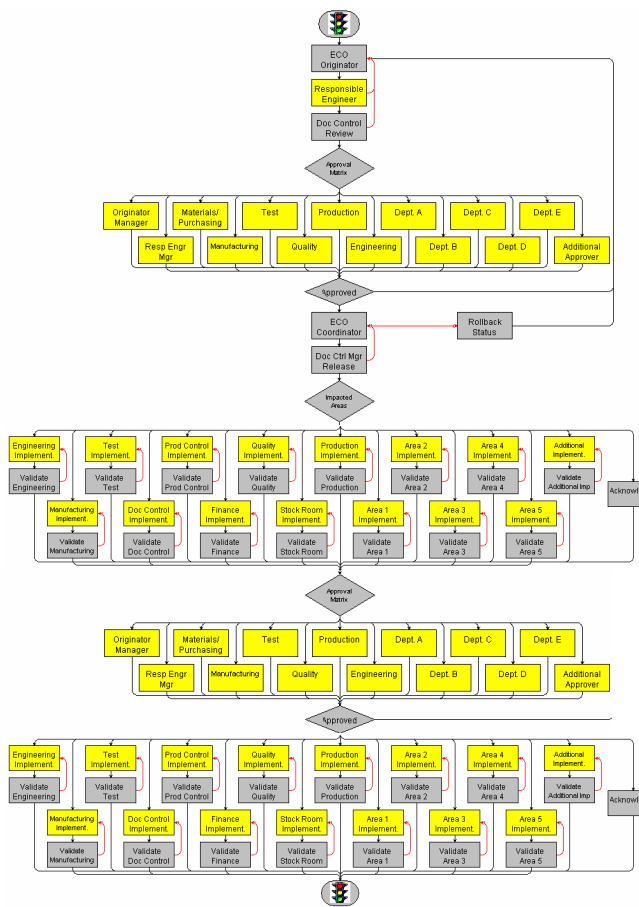


White Paper

Ingenuus is the Solution

Ingenuus provides the perfect solution for process optimization because we understand that a combination of methodology, tools, and automation is required. Our Process Orchestrator™ is a unique combination of software tools that manage the following objects to bring power to the process: Tasks, Forms, Processes, Business Rules, Documents, and Products.

Powered by the Ingenuus Process Orchestrator we have created the Process Optimization Pyramid™ framework. Using the Pyramid, companies can create a process optimization platform or “portal” that increases productivity and optimization with the achievement of each level. The Ingenuus Pyramid framework is the first of its kind and helps companies map out an optimization strategy while at the same time establishing a corporate wide process optimization platform. Companies using the Pyramid can start documenting processes immediately, without automating them.



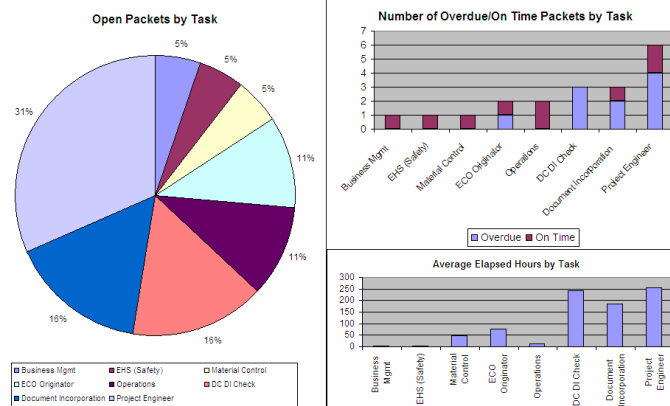
A complex Type 2 process.

The pyramid provides Type 1 processes that manage all process documentation, evaluation, optimization and automation tasks. This includes the process to document processes as well as corrective actions and requests for changes. Once a Type 1 or Type 2 process is documented and stored within Ingenuus, it can be retrieved later for evaluation, optimization, or automation.

Because the documentation process is automated, status and other reports can be automatically generated. Ingenuus has built in revision control document management so it automatically creates a process and document “repository”.

White Paper

You can use your existing optimization tools and store them and the results in Ingenuus, while being able to route them for review and approvals. The Pyramid works seamlessly with your existing process optimization efforts. Managers, Green, Black, and Master Black Belts, Process owners, and Users can analyze, map, evaluate, and document processes in any way they see fit using various tools from Six Sigma, Lean, Project Management, and Kaizen. Because Ingenuus automates processes, it is automatically collecting data. In addition to the data input by users, Ingenuus is also collecting process information useful in process optimization evaluations. This information is extracted and displayed in Excel spreadsheets creating custom reports, scorecards and dashboards.



A Sample Task Status Report.

Conclusion

Companies seeking competitive advantage through process optimization need to fuse Lean Six Sigma initiatives with technology. They must combine various technologies to create the engine to drive optimization. They also need to establish a process optimization framework to address the complete process optimization life-cycle.

Ingenuus provides a unique industrial grade BPM solution, the Process Orchestrator, designed specifically for manufacturers by manufacturers that creates a process optimization platform bringing together all of the best process improvement tools and methodologies into a single environment, a “portal” if you will. Ingenuus creates a unique solution suited for Lean Six Sigma and Innovation.

Ingenuus provides the required technology and framework in the Process Optimization Pyramid so that all process optimization activities can be coordinated and managed in one place.

Only Ingenuus solves the ‘can’t see it’, ‘can’t control it’, ‘can’t track it’, and ‘can’t find it’ issues. Ingenuus provides control over and visibility into your processes. Control makes sure that all the appropriate steps are followed. Visibility allows you to see early if a problem is in the making so that you can redirect resources. The combination provides you with predictability over your process cycle times.

This unique approach delivers remarkable return on investment.

White Paper

Revision History

Date	Version	Author	Comment
05/25/2007	0.5	Christopher Williams	Draft for initial review
06/08/2007	1.0	Christopher Williams	Reviewed & Released
06/12/07	1.5	Christopher Williams	Reviewed & Released
08/07/2007	2.0	Christopher Williams	Reviewed by Scott Cleveland Reviewed and updated by Christopher Williams



Ingenuus Software
6136 Frisco Square Blvd
Suite 400
Frisco, TX 75034
Tel: 469-252-1144