SERENIC®
SOFTWARE

Materials and Information:

The Confluence of Two Value Streams

www.serenic.com

Executive Summary

Lean manufacturing is no longer an option. It is an integral part of the overall competitiveness of manufacturing companies today. However, lean manufacturing has created "islands of efficiency" as individual processes have been optimized and the overall production flow has been disconnected from ERP-pushed information by the use of manual pull-based parts movement systems such as Kanban.

In effect, there has been a separation of the two manufacturing value streams:

1) **Physical Materials Flow:** The movement of parts and materials throughout value-adding manufacturing process.

2) **Information Flow:** The information surrounding the physical flow of value-added materials – the parts movement triggers, production and quality statistics, parts audit trails and product genealogies.

Faced with the challenge of accelerated physical flows through increasingly complex customer requirements, manufacturers require accelerated information provision at both the shop floor and enterprise levels. But real-time shop floor information has largely remained outside of the domains of ERP and distribution/fulfillment systems, so many enterprise and operations functions that rely on product- and production-related information cannot respond to new requirements, and the daily dynamics and changes.

Serenic purports that an information conduit is required to bridge the gap between the shop floor and enterprise information systems. The ideal manufacturing information system should:

- Parallel materials flow, so that real-time production information can be used to optimize production.
- Fish in the value stream, ensuring ready access to information about the people, parts and processes that add value, as well as rooting out non-value-added waste and activities.
- Resolve the push/pull dichotomy, overlaying the constructs of an ERP-based production and materials plan with a demand-based triggering system that allows managers to expedite orders and re-prioritize production tasks.
- Give managers visibility into the big picture and shop floor realities, allowing managers to make adjustments to plans, monitor KPIs in real-time, and optimize on-the-fly.
- Collect data to add to efficiency gains, incorporating data collection as an integral step in the workflow to provide value stream of data.
- Enforce designed workflow, collecting the data to demonstrate that the product has been built according to specification, ensuring compliance and improved quality.

The confluence of physical material flow and its surrounding manufacturing information flow will result in a powerful tool that can be used by operations, financial and other corporate managers to improve productivity, profitability and competitiveness.

1 A Separation Develops Between Physical Material and Information Flows: Origins of the Divide

Since the era of W. Edwards Deming and the Toyota experiment that started a manufacturing revolution, Lean manufacturing initiatives have had a tremendously positive impact on manufacturing efficiency and waste reduction. As manufacturers tasked their Kaizen, Continuous Improvement and Six Sigma teams with improving manufacturing efficiency, their processes were examined, measured, analyzed, optimized and standardized. Lean manufacturers experienced tremendous improvement in efficiency as minutes were shaved off workcell cycles.

Then why did that not always translate into overall higher profitability? Why are overall increases in output per employee not always comparable to the significant achievements in workcell efficiency?

1.1 Lean manufacturing created "islands of efficiency"

In the early days, Lean manufacturing purists said there is no need for a computer system. All you needed to be effective is a white board and some cardboard tags. At first, it seemed that the purists were right. Companies started adopting Lean manufacturing processes and were able to make significant gains in productivity, performance and inventory levels.

Later, what we started to witness was a curious phenomenon: Lean manufacturing created "islands of efficiency" as each workcell or departmental team optimized its specific task. We started to see a growing disconnect between islands forming in warehouses and on the shop floor.

1.1.1 Lean workcells are disconnected

In companies building a small high volume repetitive item in a small work cell, management and monitoring was relatively simple. However, in larger discrete manufacturers, more problems were more pronounced. As the scale, scope and complexity of the product manufacturing activities increased, the more difficult it was to monitor and manage the production activities from cell to cell, building to building, and company to company.

Overall production tended to start and stop. Work in Process (WIP) was accumulating on the shop floor. Attempts to balance flows and fix bottlenecks tended to be based on standard workflow, and helped alleviate excessive WIP … as long as everything went as planned.

But there was no way to respond to glitches – changes in parts delivery times, labor absences or equipment breakdown. What companies gained in productivity through Lean, they lost in visibility and lack of flexibility.

1.1.2 ERP, DMS not designed for manufacturing workflow

Meanwhile, Enterprise Resource Planning (ERP) systems were being introduced to ensure that manufacturing had the materials and labor needed to meet the standardized production processes. Materials planning in ERP systems focused mainly on procurement: tracking approved vendors and materials lead times, recording bills of materials for production processes, and consolidating and automating materials procurement to match production plans with an optimal balance of volume pricing and minimal raw materials inventory. But the keyword here is standardized processes: ERP procurement and production planning is relatively inflexible to change.

Similarly, standard Distribution Management Systems (DMS) that were developed for the distribution and fulfillment of finished goods did a fabulous job of tracking storage locations and orders, creating pick lists for high efficiency in

retrieving single items for an order. Again, the keyword here is finished goods. Traditional DMS were not well-suited to the fulfillment of more complex orders involving manufactured products.

To the dismay of manufacturers, the only information systems gaining popularity did not support the minute-by-minute information needs of a complex manufacturing operation.

1.1.3 Manual systems developed to improve physical workflow

So, Lean manufacturers stymied by bottlenecks and over-abundances of WIP resulting from imbalanced work flows, parts shortages and other unforeseen events developed ways of triggering the physical flow of materials. They used manual triggering systems such as Kanban demand-pull tickets, semaphore flags. They filled out forms and exception reports, and signed-off labor charts. And to tackle the array of unavoidable things that can go wrong, they hired trouble-shooters and runners.

Ironically, inefficiencies were introduced to re-connect the islands. It often fell to operations and shop floor managers to convey instructions or remove hurdles – an expensive solution to a lack-of-information problem.

1.1.4 Automation introduces manufacturing data repositories

There was no shortage of information on the manufacturing floor. It just wasn't getting to where it was needed.

As workcells were automated in the latter decades of the 1900s, each island produced and was surrounded by a "sea of information". Data collection devices, programmable logic controllers (PLCs), remote terminal units (RTUs) and the like generated and collected production statistics, measurements for quality control, labor and part identification data, and other production related information.

However, much of the data was captured in disparate databases, often with different data formats. In some ways, suppliers of manufacturing devices were ahead of their time, making real-time shop floor data available before many enterprise systems and their IT managers were ready to accept it. With much of the sea of data still uncharted and IT managers unaware of its value, the seas became harder to navigate.

1.2 Gap develops as need for manufacturing info not filled

As Lean techniques took hold in manufacturing, enterprise IT personnel were facing a technology revolution of their own. Simultaneously, manufacturing information was being demanded of them at unprecedented rates. Production statistics and real-time information from the shop floor was increasingly demanded with the emergence and expansions of numerous functions. Further, customers developed heightened expectations for information about their order status and the products shipped to them. Figure 1 below indicates that programs that rely heavily on production- and product-related information still top manufacturers' spending initiatives.

1.2.1 Production and product information required at enterprise level

Production information was now needed at the enterprise level for the following:

- Management visibility and to satisfy customer needs.
- Production stats, parts serialization and product genealogy to fulfill the needs of regulatory agencies, customers in strictly-regulated industries, internal quality assurance, six-sigma and risk management teams.
- KPI measurements for company-wide performance tracking and continuous improvement.

- Up-to-the-minute status of work order progress, parts delivery, production schedules needed by customer service to provide better information to the customer and to be able to juggle demand priorities.
- Real-time inventories, shipment and receivables, and payables information for financial planning and creditors now that manufacturers are working with tighter working capital.

1.2.2 Manufacturing data flow as dynamic as physical material flow

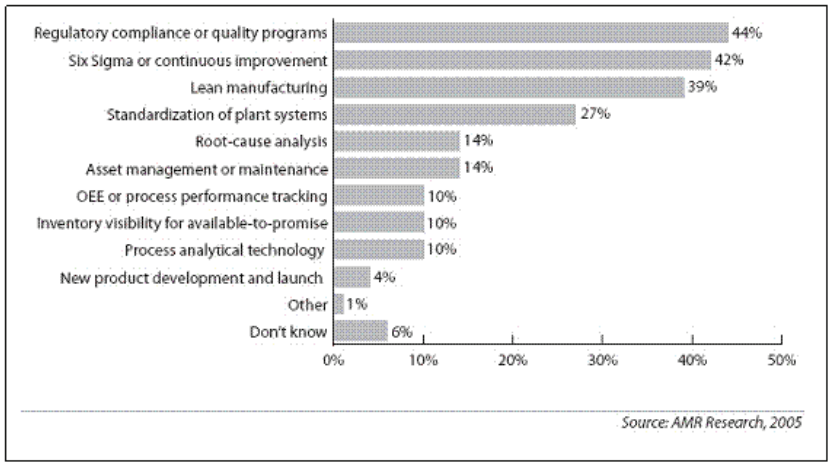

Figure 1. 2005 Manufacturing Investment Initiatives[1]

The traditional ERP system based primarily on Material Resource Planning (MRP) worked quite well until demands for information increased beyond their capabilities. Managers throughout the enterprise and manufacturing operations wanted information sooner – in real-time – rather than in periodic batches. They wanted to integrate and compare data from across the operation. They needed the flexibility to make changes and react to situation. The ERP system alone could not fulfill the demand.

There were two challenges to overcome:

Integrating data from disparate data collection and production control systems in manufacturing into the ERP system.

Using shop floor data effectively to manage the new demands of dynamic production and operations management, quality assurance, risk management and customer support.

Related to the first challenge, Oracle described the situation as follows: "Over the past few years, manufacturers have realized that having disparate systems has made it difficult to integrate shop floor data and make it communicate with ERP."[2] He cited among the negative outcomes: Information not being available in a timely manner, and poor shop floor visibility.

George Miller, principal at The Facilitator Group, summed up the second challenge, and what a manufacturer should do about is, as follows: "While our fathers' ancient MRP-centric ERP is largely obsolete, an evolving enterprise system approach definitely lives on, mutating and adapting to a new world of shrinking cycle times, budgets, non-value-added activities and headcounts."[3]

1 Simon Jacobson, AMR Research, "MES Market Rides Perfect Storm Through $1B Barrier," June 17, 2005
2 Sankaramurthy , Aravindan: "Oracle MES Solutions for Discrete Manufacturers, Oracle, November 2006.
3 Miller, George: "Lean and ERP: Can They Co-Exist?" The Facilitator Group, 2002.

George Miller continued:

"In our experience, software usually lags the development of new business philosophies and techniques by a number of years. It took an infuriatingly long time for even the very basic JIT concepts to percolate down into business software and corporate practices. Lean tools are gradually being incorporated into standard ERP offerings, but are lagging behind the pace of the overall Lean movement. Some ERP vendors are now addressing it more through white papers than product development. Third party vendors are helping to fill the gap. A new sub-industry of dedicated Lean software tools has emerged."

2 New Concept: Re-unite Materials Flow and Information Flow

It was in this era that Serenic pioneered its manufacturing-oriented information and data management systems. Serenic has played in this arena for years, first as a supplier of data collection devices, now as a supplier of software for manufacturing production and warehousing operations. Serenic systems are used by some of the biggest names in aerospace & defense, automotive and heavy equipment manufacturing.

Serenic's approach was a novel concept when it was introduced, and continues to fill a gap that is not provided by other manufacturing, enterprise and distribution information systems.

It addresses the need to reconnect the "islands of efficiency" that developed subsequent to the early successes in Lean manufacturing initiatives and business software implementation. The concept is to provide a channel for the "seas of information" generated in each functional area, with a focus on manufacturing in two major areas:

Ensuring that manufacturing operations managers have visibility into the information they need to respond to the daily dynamics and challenges of the shop floor.

Channeling real-time manufacturing information to the enterprise to meet demands in other corporate functions.

2.1 Value stream mapping lends itself to materials tracking system

Value stream mapping is a technique used in Lean programs to identify activities that add value to a company and its products, and consequently also identify non-value-adding activities as potential sources of waste to be eliminated.

In a discrete manufacturing environment, where revenue is generated from the products built and sold, there can be no denying that the stream of raw materials, parts, and sub-assemblies used to produce a company's products are part of the value stream.

Serenic recognizes that information about those parts and materials, as well as the real-time ebb and flow of the parts movement, is also a part of the value stream. Examples of the value of information about parts and their movement can be found in:

- **Increased Sales:** Contracts are won based on production and product information reporting: regulatory compliance, quality statistics, service levels and availability.
- **Risk and Cost Avoidance:** A company's ability to manage a safety issue or recall depends on parts serialization and traceability, and product genealogies.
- **Increased Throughput:** Lean techniques applied to optimizing parts movements and minimizing parts handling result in higher productivity per employee.

- **Improved Quality:** Proper part identification and availability ensure the right parts are used in production, while shop floor data collection is an essential tool for Six Sigma teams to reduce variability and improve quality levels.

Manufacturing information is key to many operational and strategic programs, and Serenic's manufacturing-oriented information systems fulfill a valuable need for accurate, real-time data and production- and product-related information.

2.2 Two value streams: Materials and Information

To be clear, the manufacturing value stream is made up of two intertwined flows:

1) **Value-Adding Physical Materials Flow:** The movement of parts and materials throughout value-adding manufacturing process. Lean manufacturing aims to increase production efficiency by reducing cycle times, work-in-progress inventory and waste.

2) **Value-Adding Information Flow:** The information surrounding the physical flow of value-added materials. Some information triggers value-added work and physical movements/status visibility across the manufacturing value stream. Other information is generated by value-adding production processes, and is used to document the value of the product.

2.3 Manufacturing information system used to unite materials and information flow

What Serenic realized is that an effective manufacturing information system needed to re-unite these two value stream flows. Data about value-adding materials needed to be collected at source, typically in the manufacturing storerooms and on the shop floor, and made available in real-time to all manufacturing operations and enterprise functions that needed that data.

The concept is that an integrated data collection and manufacturing information system must:

- Parallel materials flow,
- Fish in the value stream,
- Resolve the push/pull dichotomy,
- Give managers visibility into the big picture and shop floor realities,
- Not burden its users with data collection tasks.
- Enforce a correctly designed workflow.

Manufacturers that have implemented Serenic's system that incorporate these criteria, each of which will be explored individually in the upcoming sections, have experienced tremendous economic and competitive benefits.

The systems have evolved to incorporate new technologies, manufacturing techniques and expanded capabilities including labor management, and order fulfillment and distribution. But the concepts remain the same: track a manufacturer's people, parts and processes to support Lean initiatives, collaborative decision-making and greater competitiveness.

2.3.1 Information flow parallels parts flow

Poor visibility about parts and materials forces managers to make costly decisions. They stop production lines, sometimes laying-off laborers, as they look for parts or await deliveries. They build up "just-in-case" raw materials and finished goods inventory, which reduces inventory turns, drives up inventory and production costs, and slows time-to-value.

Managers may spend a good deal of their time dealing with missing parts or tools, locating them and rescheduling production to accommodate the delay. They may hire runners or assistant managers to troubleshoot. But as Jamie Flinchbaugh from the Lean Learning Center says: "Don't confuse 'activity' with 'productivity.'"[4] Productivity is effort expended towards adding value to the product or company. Activity may be effort put into non-value-added tasks. See Table 1 for two examples of how the systems eliminated wasted effort on non-value-added activity.

A good manufacturing information system will parallel the parts and material flow, capturing and providing information that makes value-added tasks more efficient, and eliminates the need for non-value-added tasks. It will give operations managers the information they need to ensure the flow of value-adding parts and materials:

- Sequenced in the order they will be consumed, based on work orders and production design plans.
- Arriving where they will be consumed just-in-time, balancing supply and demand to avoid line-side shortages without accumulating line-side raw materials or WIP inventory.
- Quick look-up tools to determine the real-time status of parts, materials, customer orders, work orders, WIP and finished goods.
- Full parts descriptions, including supplier information and approved alternate parts and/or suppliers.
- Unique parts identifiers and parts audit trails if required for quality assurance and/or regulatory compliance.

In short, a good manufacturing information system ensures that the right parts are delivered to the right place at the right time – and records what takes place in real-time.

4 Flinchbaugh, Jamie. As quoted in "How to Avoid the 5 Biggest Lean Pitfalls," Assembly Magazine editorial, September 1, 2006.

Table 1. Better Information about Parts Flow improves Productivity and Profitability

Example 1 – No more million dollar line stoppages searching for $20 part

A Heavy Equipment manufacturer builds made-to-order heavy equipment. The company frequently faced production stoppages due to "missing parts." Safety stock was used to compensate for unreliable inventory accuracy. Production was frequently delayed for wont of a $20 part. The company implemented a Serenic system to help track in-store and in-transit material, has improved inventory accuracy from 84% to 95%, and does not start a work order until it knows it can finish.

Benefits

– $500K savings in non-value-added labor searching for parts
– Higher throughput, faster invoicing, better cash flow
– Inventory control improvement
– Lower inventory cost.

Example 2 – Efficiency gains result in 3 month ROI

A Flight Simulator manufacturer builds highly complex, multi-million dollar equipment containing over 10,000 items. Searching for "missing" and in-transit parts accounted for the bulk of work for three warehouse manager. After implementing the system, which gave the company instant visibility to parts location and movement, production efficiency skyrockets such that they were able to double throughput without increasing overhead.

Benefits

– 2 redeployed warehouse managers
– Doubled throughput without increasing overhead

2.3.2 Information system fishes in the value stream

As mentioned before, although the value stream is generally thought of as being made up of a company's products, information about the product is also part of the value stream. See Table 2 for a partial list of manufacturing value stream information. Operations managers need to know not only the order-based plans, but real-time information about parts movement, availability and demand priorities in order to do their jobs effectively.

This information is not only useful to manufacturing operations, but also to other functional areas. Although they may not be value-added functions, they are necessary to the operation of the company. Having ready access to real-time data streamlines these functions, makes them more efficient and accurate, so that less non-value-add time is spent performing functions.

A good manufacturing information system makes all data about the manufacturing processes available to all the company-wide information systems that need the information.

Table 2. Information from the Manufacturing Value Stream Required for Operations Managers as well as Other Company-wide Functions

Value Stream Information	Functions	Benefits of Real-Time Information
Real-time parts locations and delivery schedule • Work order requirements • Delays, shortages	Operations	• Optimized real-time planning • Ability to expedite
Integrated shop floor labor tracking • Skills, contract type, training • Absences • Planned and actual labor allocation	Operations	• Optimized real-time planning • Ability to re-assign • KPI continuous improvement
	Human Resources / Accounting	• Faster payroll processing • Faster job costing
Customer, job and work order details	Operations	• Optimized real-time planning • Ability to expedite • KPI continuous improvement
	Customer Service/Order Fulfillment	• Faster responses to inquiries • Ability to expedite
Accurate inventory and inventory turns	Operations	• Work order planning • Faster counts, higher accuracy • KPI continuous improvement
	Financial Accounting	• Faster financial reports at month-end, year-end or for line-of-credit
Unique parts identifiers and product genealogy	Quality Assurance / Risk Management	• Traceability for quality issues or recall
	Contract Management	• Easy reporting for proof of regulatory compliance

Table 3 shows two examples where Serenic's manufacturing information system helped a manufacturer become more profitable because the data on which it was founded is based in the manufacturer's value stream.

Table 3. Integrating Manufacturing Information Improves Efficiency of Other Corporate Functions

Example 1 – No more false "rush orders"
Customers of an Aviation Aftermarket Parts facility knew that service levels were slower than promised, so they place expedite requests on most orders. This meant the Aviation Parts suppliers had difficulty fulfilling the true priorities, which were reserved for customers whose aircraft was grounded. The company implemented a system to deliver orders to the warehouse in real-time rather than batches, and intelligently pick parts with a goal of rapid order fulfillment.
Benefits
– Service levels improved dramatically. – Customer complaints turned to praise.

2.3.3 Information system resolves push/pull dichotomy

ERP systems typically "push" information to manufacturing operations. Based on orders, or projected demand, ERP systems will generate the list of materials needed for production, factor in lead times, and calculate procurement and replenishment strategies to ensure that materials are available for manufacturing operations. As work orders are schedule, materials replenishment programs start the flow of materials to manufacturing. As parts are consumed in production, materials replenishment programs kick in to procure more parts.

That's all good, as long as things go as planned. But when equipment breaks down, or labor is absent, or customer change orders arrive after parts order have been placed, or priority orders are dropped into the schedule – production plans need to change on the fly. Many manufacturers find that it's impossible to turn off the normal flow of parts. So inventory accumulates, at the receiving dock, in storerooms, as WIP.

To minimize WIP from accumulating in workcells, or excessive materials handling to remove and return WIP to workcells, manufacturers adopted "pull" or demand-based parts movement triggers. Kanban tickets or semaphore flag systems triggered just-in-time parts movement to where it was needed next. But these manual systems worked well only with standardized, repetitive production processes. Again, they were not integrated with the order management system to accommodate change orders or re-prioritization.

Likewise, distribution management and fulfillment systems were designed with the delivery of finished goods in mind. A customer order triggered a pick ticket and "pulled" it from the storeroom. The system's tentacles didn't reach back into manufacturing, generating or capturing information from work orders, so the systems didn't work well for value-added distribution.

Serenic systems filled the gap between when the ERP system "pushed" parts to the receiving dock and when finished goods were "pulled" off the shipping dock. They incorporated the "push" construct by interfacing with ERP systems to make customer orders, supplier purchase orders and in-transit inventory visible to manufacturing operations personnel. Further, Serenic systems overlay the "pull" construct, incorporating a Kanban-like ability to trigger parts movement through the production process.

2.3.4 Letting managers oversee the big picture and shop floor realities

With tight integration to the ERP system, a good manufacturing information system will draw the data it needs from the ERP's planning, procurement and order processing functions. Conversely, the manufacturing information system will also deliver real-time information for the ERP system's replenishment function and for financial accounting and reporting requirements – from performance management, to quality assurance and risk management, to regulatory compliance.

The real-time nature of the data, as part movement is tracked on the shop floor, means that production planning and scheduling and other operations functions can be dynamically managed. Batch becomes real-time. Sequential can become concurrent. Data transforms into valuable information and shop floor realities are visible throughout the company.

Managers are able to respond to change, make decisions on-the-fly, modify plans and develop strategies based on real-time information.

A good manufacturing information system does not replace an ERP system or a distribution management system. It augments the usefulness of these systems by filling the information gap. It channels real-time manufacturing information to the rest of the organization so that true collaborative decision-making is possible, and the benefits of Lean initiatives can be extended throughout the company.

A good manufacturing information system will also help to root out inefficiencies by identifying time and inventory used in non-value-added tasks and output. Scrap and waste material can be counted, weighed or measured with the intention of reducing the amount produced over time. Raw materials inventory levels can be gradually reduced as the need for "safety stock" and "just in case" stock is eliminated due to better material flow and more accurate inventory counts and location knowledge.

Similarly, labor not attributable to contract or job-related activity can be monitored with the intent of determining the root cause of indirect labor on non-value-added activities, and eliminating it through better process management. Table 4 below shows an example of how a Serenic system helped identify non-value-added activities that were not only costing indirect labor overhead hours, but also slowing down productivity in the value-steam.

Table 4. Operations Managers can Eliminate Non-Value-Added Activities with Flexible, Integrated Manufacturing Information System.

Example – Cross docking saves hours in receiving.
A company makes Aerospace substructures for customers including Boeing, Bombardier and Cessna. When a subset of daily receipts were examined, it was determined that over 14 person-hours/day were wasted because they weren't cross docking. Their procedures dictated that all items be received into stores. But many of the items were re-picked the same day. The software, which supports cross-docking and other expedite functions, allowed receiving staff to determine which items were needed immediately, and send them directly to the shop floor, bypassing the non-value-added activities.
Benefits
– Faster production throughput. – Savings of 14 indirect manufacturing overhead labor hours/day.

2.3.5 Data collection aids efficiency gains

The principles of Lean and Continuous Improvement dictate that you have to know where you're starting from, make a change, measure the impact it had, and if it had a positive impact, incorporate that change into new standards. So you need a standard process. Depending on the industry, you may have regulations and standards, and the standard process will need to include:

- Parts description, including approved suppliers and alternatives
- Manufacturing instructions, including design, dies, tools and handling equipment to / be used.
- Labor and skills requirements, including training or certification requirements and adhering to labor contracts.
- Cycle times and performance targets.

That's a lot of information. For efficient operation that minimizes the burden of capturing relevant data, an easy-to-use data collection system that is an integral piece of the workflow is a prerequisite. Each location that handles or adds value to a part needs to capture the part's location, work step and associated labor time stamps, and if necessary the process tools used, to add value to the part.

An integrated data management system, such as NaviNet, should be implemented to consolidate, synchronize and validate the shop floor data collected. This data management system should also be able to operate and collect data independent of the enterprise systems, should there be a network or other enterprise system service disruption. If

production and quality statistics or parts serialization and product genealogy are required for regulatory or customer compliance, redundant and fault-tolerant data management systems will ensure that shop floor data capture is always available.

2.3.6 Data collection enforces designed workflow

Lastly, a critical factor in quality assurance is making sure that a product was built the way it was designed to be built – using the correct parts, procedures, assembly sequences, labor skills, and tests.

A well-designed data collection system will be mapped to the production workflow design map. It will collect the part numbers used in production, the employee IDs of the laborers and testers, serial numbers of the machine tools and moulds used, the measurements from its tests.

From this data collected, a production audit trail can be produced as well as a genealogy that lists all the parts used in the final product or sub-assembly.

Quality assurance and compliance reporting should be supported seamlessly and completely by a good data collection and manufacturing information system.

3 Conclusion: Investing in Effective Manufacturing Information System is an Investment in Profitability

By investing in a manufacturing information system that is based on materials flow, the islands of efficiency in manufacturing and the rest of the enterprise are effectively re-united. Parts and materials flow in the value stream are paralleled by the information flow that triggers and tracks their movement.

Considerable profit and competitive gain can be achieved through the implementation of a manufacturing information system that is premised on the confluence of the two manufacturing value streams – physical parts flow and manufacturing information flow. The main benefits are:

- Better responsiveness to changing demands.
- Tighter inventory control, lower inventory costs.
- Higher productivity and throughput.
- Reduced overhead.
- Improved product quality.
- Better immunity to competitive and economic pressures

About Serenic Software

Serenic Software develops and delivers mission-critical ERP software solutions for public service organizations including: K-12 school districts/boards, public sector, nonprofits (NPOs), and international non-governmental organizations (NGOs). Serenic is a Gold ERP and ISV vendor and a development partner for Microsoft. Serenic public service solutions are trusted by over 1,000 organizations around the globe. You can learn more about Serenic Software at www.serenic.com.

Serenic Software

USA | Canada | UK

NORTH AMERICA
(+1) 604.273.9146

UK
+44 1635 521140

info-ed@serenic.com
www.serenic.com

SERENIC® SOFTWARE