AIIM WHITE PAPER

Delivering the priorities and opinions of AIIM's 193,000 community

The Modern Manufacturer's Guide to Digitizing 7 Key Business Processes

Sponsored by

Docuware

aiim

aiim WHITE PAPER

Delivering the priorities and opinions of AIIM's 193,000 community

The Modern Manufacturer's Guide to Digitizing 7 Key Business Processes

About the White Paper

As the non-profit association dedicated to nurturing, growing and supporting the user and supplier communities of ECM (Enterprise Content Management) and Social Business Systems, AIIM is proud to provide this research at no charge. In this way the entire community can take full advantage of the education, thought-leadership and direction provided by our work. Our objective is to present the "wisdom of the crowds" based on our 193,000+-strong community.

We are happy to extend free use of the materials in this report to end-user companies and to independent consultants, but not to suppliers of ECM systems, products and services, other than DocuWare, its subsidiaries, and its partners. Any use of this material must carry the attribution – "© AIIM 2016 www.aiim.org / © ASG 2016 www.docuware.com"

Rather than redistribute a copy of this report to your colleagues, we would prefer that you direct them to www.aiim.org/research for a download of their own.

Our ability to deliver such high-quality research is made possible by the financial support of our underwriting sponsor, without whom we would have to return to a paid subscription model. For that, we hope you will join us in thanking our underwriter for this support:

DocuWare

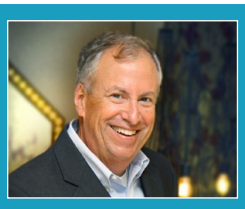
DocuWare Corporation
4 Crotty Lane, Suite 200
New Windsor, NY 12553
Tel: +1(845) 563-9045
Email: dwsales@docuware.com
Web: www.docuware.com

Process used and survey demographics

The survey results quoted in this report are taken from a focused survey on Working Beyond Corporate Walls. Two hundred and three responses were collected from individual members of the AIIM community using a web-based tool. Invitations to take the survey were sent via email to a selection of AIIM's 193,000+ registered individuals.

About AIIM

AIIM has been an advocate and supporter of information professionals for nearly 70 years. The association mission is to ensure that information professionals understand the current and future challenges of managing information assets in an era of social, mobile, cloud and big data. AIIM builds on a strong heritage of research and member service. Today, AIIM is a global, non-profit organization that provides independent research, education and certification programs to information professionals. AIIM represents the entire information management community: practitioners, technology suppliers, integrators and consultants. AIIM runs training programs, which can be found at http://www.aiim.org/Training.



Bob Larrivee
Vice President of Market Intelligence, AIIM

About the author

John Mancini is an author, speaker and respected leader of the AIIM global community of information professionals. He believes that in the next 5 years, a wave of Digital Transformation will sweep through businesses and organizations, and that organizations now face a fundamental choice between Information Opportunity and Information Chaos.

As a frequent keynote speaker, John offers his expertise on Digital Transformation and the struggle to overcome Information Chaos. He blogs under the title "Digital Landfill" and has almost 10,000 Twitter followers and a Klout score in the 60s.

John can be found on Twitter, LinkedIn and Facebook as jmancini77

AIIM
1100 Wayne Avenue, Suite 1100
Silver Spring, MD 20910
+1 301.587.8202
www.aiim.org

DocuWare Corporation
4 Crotty Lane, Suite 200
New Windsor, NY 12553
Tel: +1 845.563.9045
www.docuware.com

Table of Contents

Introduction

Manufacturing companies around the globe are clearly approaching a crossroads. Per Guy Bieber, director of strategy and architecture at Citrix, looming ahead for manufacturers is a revolutionary moment, driven by 3-D printing and the Internet of Things[1]: "The breakthrough moment will come when one customized part costs the same per unit to produce as a million of the same part."

But between now and that revolutionary moment, there are significant and immediate challenges that must be addressed by manufacturing executives:

- *How can we get to market quicker?*
- *How do I address global competition from low labor cost markets?*
- *What are the process implications of globally dispersed customers and suppliers?*
- *How can our company be both low cost and high quality?*
- *How can we deal with rising and more complex compliance requirements?*

Lean Manufacturing Principles

"Lean" manufacturing principles (standardizing processes, eliminating waste, reducing variants in products and services, and delivering higher qualities) are key to meeting these challenges. Per Wikipedia[2], Lean Manufacturing is a systematic method for the elimination of waste within a manufacturing system. Lean takes into account waste created through overburden and waste created through unevenness in workloads. Working from the perspective of the client who consumes a product or service, Lean is centered on making obvious what adds value (any action or process that a customer would be willing to pay for) and reducing everything else.

Many leading edge manufacturers are now taking Lean principles and applying them to their core business processes.

This journey almost inevitably leads manufacturers to question all the "unstructured" information that clogs these processes. Manufacturers must distribute, track, and archive countless documents, such as invoices, receipts, planning documents and engineering change order (ECOs) generated throughout the development and manufacturing process for every piece of equipment, part, and assembly. All of these must be integrated with multiple core manufacturing systems (e.g., MRP/ERP Software, Product Lifecycle Management Software, Supply Chain Management Software, Manufacturing Execution Systems, and Production Scheduling and Control Systems).

A lot of this is currently done manually and with hybrid digital/paper systems, creating extra work, opportunities for errors, and process interruptions – and creating a major potential barrier on the journey to apply Lean principles to core business processes.

InfoTrends[3] estimates that typically between 20% and 30% of organizations use their ERP (Enterprise Resource Planning) system to manage the unstructured information associated with many of the core business processes tied to manufacturing. The rest use a combination of their ERP system and paper documentation or use paper only.

The Conclusion

A high degree of manual and ad hoc processes are used to manage the unstructured information that surrounds key manufacturing processes. Making things even more complex is the fact that the macro business processes in Manufacturing are actually clusters of multiple document intensive processes, managing a wide variety of often incompatible document types in each process. Each process typically has its own information management needs and requirements, and often rests upon with a dedicated process platform (e.g., MRP/ERP Software, Product Lifecycle Management Software, Supply Chain Management Software, Manufacturing Execution Systems, and Production Scheduling and Control Systems).

Clearly there is room for improvement and many opportunities for automation and standardization in how unstructured information is managed in a manufacturing organization. In order to more deeply understand the overlapping document and information requirements faced by a typical manufacturer, let's first take a look at six very specific processes typical of any manufacturing operation – 1) Product planning and design; 2) Procurement; 3) Production; 4) Sales and order processing; 5) Distribution and logistics; and 6) Customer service – and then look at a key process of concern to every manufacturer that encompasses all of them, Compliance.

1 – Product Development and Design

Product Development and Design is the process by which R&D requirements are translated into Manufacturing requirements and specifications, and particularly core processes connecting engineering with manufacturing. Typical kinds of documents that must be managed in this process include[4]:

- ***Market Requirements Documents (MRDs)*** *outline the key market requirements at the beginning of a product development process.*
- ***Design sheets, research info, CAD/CAE drawings, standards and specifications, vendor catalogs, manufacturing instructions, and Engineering Change Orders (ECOs)*** *that are used to map Engineering requirements into Manufacturing requirements.*
- ***Manuals, product information sheets, regulatory applications, approval documents, inspection sheets, and legal documents*** *that are used to navigate from testing and trials to quality assurance and ultimately to product approval.*

Organizations typically tell us that a large quantity of design documentation and specifications from engineering are often in formats that cannot be easily assimilated by manufacturing.

Engineering information is largely thrown "over the wall," creating communication problems and time delays in handling engineering changes discovered during the manufacturing planning process. Most organizations have no application-neutral format to document and communicate changes either internally or with suppliers, and Engineering Change Order (ECO) documentation is scattered across multiple systems, making internal collaboration time-consuming. The net-net of this is time-consuming ECO bottlenecks between engineering and manufacturing.

Four key ways things could be different by automating and standardizing the unstructured information components of this process:

1. *Smooth transfer of requirements from engineering to manufacturing, lessening errors and speeding production.*
2. *Secure retention and protection of valuable design information and firm intellectual property.*
3. *Rapid action on and resolution to Engineering change orders resulting in faster production change cycle times, more rapid time to market, and reduced manufacturing costs.*
4. *Reduced re-work and more effective, timely, and predictable collaboration between internal staff.*

2 – Procurement

Procurement is the process by which manufacturing requirements are translated into supplier requirements, supplier relationships, and the ordering of goods and services needed to produce the product. Typical kinds of documents that must be managed in the processes that are part of Procurement include:

- ***Forecasting sheets, supplier information, product research documents, and regulatory information*** *used internally in the planning stages of building supplier relationships.*
- ***Requests for quotation documents (RFQs), inspection sheets and approval documents,*** *that map against the process by which suppliers are initially identified, audited, and approved.*
- ***Contracts, orders, purchase orders, estimates, correspondence*** *used to place an order with a supplier.*
- ***Manufacturing documentation, supplier data, bills of lading, freight bills, proof of delivery, invoices, correspondence*** *that are used to track an order.*
- ***Functional testing reports, inspection reports, supplier quality data, materials data, defect reports, and defect resolution workflows*** *used to determine whether an order met the original set of requirements.*

Long-term, information and intelligence about key supplier relationships winds up scattered across multiple repositories and systems.

Sources of process pain in managing these documents typically include poor supply chain visibility or too many supply chain hand-offs and supplier and customer frustration about lost documents and cumbersome processes.

Four benefits of automated these processes include:

1. Smooth acquisition of customer order and supporting documentation, ability to review this information against quotes or previously agreed upon contracts, and dispatch to production for fulfillment.

2. Greater management visibility to manufacturing and order process, issues, bottlenecks and problems.

3. Faster order fulfillment, increasing revenues by handling more orders per employee and unit time.

4. Faster bid processes and reduced procurement costs.

3 – Production

Production includes the processes by which the product is actually produced and the documentation associated with these processes. Key concerns that are part of the sub-processes that are part of the actual Production process include[5]:

- ***In process planning, design sheets and product information*** *are critical.*
- ***Access to invoices*** *is important in making sure that the materials received from suppliers are the materials actually ordered.*
- ***During assembly, product information, manuals, design, processes, procedures, test data, testing reports,*** *and lot documentation are needed.*
- ***Quality testing and final fulfillment*** *relies upon inspection documents, manuals, and approval documents.*

Bottlenecks are the primary enemy of throughput during the manufacturing process. Although bottlenecks are usually thought of in the context of physical obstacles and problems along the assembly line, the inability to find the right information at the right time in the right context is also a significant cause of bottlenecks. Consequences of having bottlenecks in production include possible stalls in production, supply overstock, fall in employee morale and loss of customers.

Key benefits of digital processes, documents and data in the above processes include:

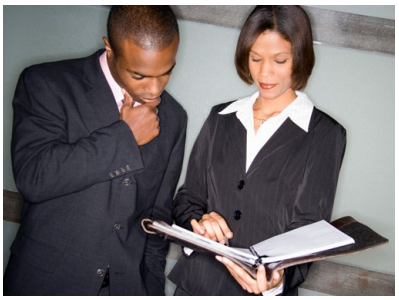
- ***Improved quality and efficiency*** *of operations by ensuring correct designs, processes and procedures are readily available*
- ***Streamlined testing, quality approvals, inspections and documentation.***
- ***Efficient management and control of the data and documents*** *needed to maintain regulatory compliance for environment, health, safety, and more.*

4 – Sales and order processing

Sales Order Processing is the process by which orders are placed and paid for by customers. Typical kinds of documents that must be managed in this process include:

- ***Documents tied directly to the sales process,*** *including proposals, quotes, collateral and correspondence.*
- ***Documents tied to order processing,*** *including purchase orders, credit applications, tax certificates, invoices, shipping documents, proof of delivery, and correspondence.*

A major bottleneck in any manufacturer who takes orders for custom or "job-shop" type products is the documentation and assembly of the orders. Organizations struggle with how to assemble an electronic package constituting full documentation of the order, and assembling and tracking all of the documentation created throughout the manufacturing and delivery process. Typically, documents that relate to sales are scattered in multiple (and often insecure) repositories, increasing administrative costs and decreasing process flexibility and agility.



Benefits of digital processes, documents and data include:

- ***Improved sales efficiency and sales effectiveness.***
- ***Reduced bottlenecks*** *in the "order to cash" work stream.*
- ***Improved sales yield.***
- ***Improved transparency*** *about orders in progress.*
- ***Improved customer satisfaction***
- ***Improved order turnaround time.***

5 – Distribution and Logistics

Distribution and Logistics refers to the set of processes by which goods move from the manufacturer to customer. Distribution management is an overarching term that refers to numerous activities and processes such as packaging, inventory, warehousing, supply chain and logistics. Typical kinds of documents that must be managed in this process include:

- ***Purchase orders.***
- ***Warehouse processes*** *require access to product/location information and out-of-stock information.*
- ***Product fulfillment and delivery requirements*** *include order instructions, product information, picking/ packing slips, inspection sheets, bills of lading, proof of delivery, invoices, and quality documentation.*

When manufacturers don't have full visibility to their inventory, they face the problems of either running out of stock at the wrong time or carrying too much stock and thus decreasing cash flow or increasing expenses to warehouse extra materials. These challenges are exacerbated by a growing global footprint of both suppliers and customers, a demand by customers for more specialized logistics and by delivery solutions, and by integration of manufacturers into networks of suppliers and customers, requiring improved distribution and logistics agility and flexibility. All of these point to the need for an integrated information management infrastructure.

Benefits of digital processes, documents and data:

- ***Minimize gaps/time delays*** *in the fulfillment, delivery and invoicing processes.*
- ***Increased customer satisfaction.***
- ***Faster time to revenue.***

6 – Customer Service

Customer Service Processes are focused on understanding customer needs and providing rapid resolution of customer problems. Typical kinds of documents that must be managed in this process include:

- ***Direct customer service and returns*** *requires access to customer files and correspondence, service contracts, product manuals, exception reporting, work orders, service alerts, and return slips.*
- ***Documents necessary to warranty management*** *include warranty claims, correspondence, and quality documentation.*

Firms can no longer maintain volume or profits only by seeking out new customers (an offensive strategy); they must adopt a defensive strategy that focuses on keeping current customers as loyal purchasers of the firm's goods and/or services.

"Where's my order?" is perhaps a customer's most frequently asked question. Manufacturers face the same kinds of multi-channel customer communications challenges as any other industry. Customers – even in the manufacturing space – expect to be able to communication via phone, email, FAX, chat, contact forms on a web site and even via social media. Reconciling these disparate inbound communications and then responding in a timely fashion – often in an environment where access to technical information and documents is critical – requires an integrated information management infrastructure in which the relevant piece of information is easy to find.

Forbes columnist Adrian Swinscoe describes a challenge the is often assumed to be limited to consumer companies, but is actually also typical in manufacturing.

Many companies are still struggling to achieve a single view of the customer.

Customers are walking into stores, placing orders online, calling companies when they have a difficult problem, self-serving and interacting with firms via the web and social media. In their minds they are having 'one' conversation albeit across multiple channels with one organization. The challenge for firms is to integrate all of these conversations into one system, integrate that with order and account history as well as equipping staff with the right tools, training and authority to be able to deal with every and any customer problem or question that comes their way."

According to Steve Curtin, author of Delight Your Customers, "Too many companies focus myopically on the infrastructure and technology to support voice of the customer (VOC), customer experience (CX), and enterprise feedback management (EFM) and neglect their greatest customer experience asset and feedback source: competent, customer-focused, and engaged employees who are both capable and inspired to consistently provide superior customer service." In order to meet this expectation, front-line employees need access to information that often must be drawn from multiple systems.

Benefits of digital processes, documents and data:

- ***Faster ability to access technical information*** *and provide service and one call service resolution.*
- ***Automated warranty and returns processes*** *to provide better service and improve business controls.*
- ***Cycle time reduction,*** *on time delivery, improved customer satisfaction, improved receipts.*

7 -- Compliance

Compliance is not really a single process within any organization, but actually represents a number of different processes by which the organization documents what it does and how it does it in order to demonstrate compliance with regulatory, industry or legal requirements.

Regulatory requirements. Per the Manufacturers Alliance for Productivity and Innovation (MAPI)6, U.S. manufacturers became subject to an estimated 2,183 unique regulations promulgated between 1981 and April 2012. Government regulatory complexity magnifies exponentially when doing business globally. Since 1998, growth in the cost of major regulations has far exceeded manufacturing sector growth and overall economic growth. In that span, the cumulative inflation-adjusted cost of compliance for major manufacturing-related regulations grew by an annualized rate of 7.6 percent. Over this same period, annual growth in the physical volume of manufacturing sector output averaged a mere 0.4 percent while U.S. inflation-adjusted GDP growth averaged 2.2 percent per year.

Separating these requirements using the North American Industry Classification System (NAICS), MAPI found:

- ***41 major regulations and 375 non-major regulations are directly related to the NAICS 31 sector,*** *which includes food, beverage, and textile manufacturing.*
- ***65 major regulations and 755 non-major regulations are directly related to the NAICS 32 sector,*** *which encompasses businesses involved in wood, paper, printing, petroleum, chemicals, and plastics.*
- ***185 major regulations and 1,423 non-major regulations are directly related to the NAICS 33 sector,*** *which includes machinery and transportation equipment.*

The net process drag of all of the above is significant enough when considering only U.S. regulatory requirements. Most manufacturing organizations, though, must comply with multiple and often conflicting regulatory requirements related to how they manage unstructured information. The is a recipe that grows increasingly unstable as the complexity and volume of information rises.

Process requirements. Manufacturers also face challenging requirements tied to the documentation of business processes. For example, food and pharmaceutical manufacturers must document compliance with Good Manufacturing Practices (GMP). These are the practices required in order to conform to the guidelines recommended by agencies that control authorization and licensing for manufacture and sale of food, drug products, and active pharmaceutical products. These guidelines provide minimum requirements that a pharmaceutical or a food product manufacturer must meet to assure that the products are of high quality and do not pose any risk to the consumer or public. Good manufacturing practices, along with good agricultural practices, good laboratory practices and good clinical practices, are overseen by regulatory agencies in the United States, Canada, Europe, China, and other countries.

Many manufacturers must also demonstrate ISO 9000 (technically, ISO 9001:2008) certification. ISO 9000 certification is increasingly required in subcontracts, especially by European multinationals. To achieve ISO 9000 certification, a manufacturer must collect, update, and share its large library of ISO documents with single point access to the latest documentation. All of this is made more complex given that a new standard was published on September 15, 2015. This means that the ISO 9001:2008 standard will become obsolete on September 14, 2018. As a result, All ISO 9001:2008 certifications issued in late 2015 and beyond will have to bear an expiry date of September 14, 2018.

- ***Quality Manual*** *– The quality manual defines how each requirement of the rather generic ISO 9001:2008 standard is applied at the company.*
- ***Quality Procedures*** *– The quality procedures are the essence of the ISO 9001 documentation. The ISO 9001 quality procedures explicitly describe how certain key processes within the company must be performed, and who is responsible for them.*
- ***Quality Policy*** *– The quality policy is the company's policy defining its stance towards quality and customer satisfaction.*
- ***Quality Objectives*** *– The quality objectives define measurable goals relative to the company's quality management system.*
- ***Process Flowchart*** *– The process flowchart is a description of how the various processes of the ISO 9001 QMS interact with each other.*
- ***Work Instructions*** *– Work instructions are the most detailed and most company-specific of all ISO 9001 documents. Work instructions describe in detail how particular tasks must be performed. Work instructions are typically written by the people who perform the actual work.*
- ***Records*** *– Records are different from the above documents, all of which provide directions on how to conduct business. Records, on the other hand, are evidence of things done. ISO 9001:2008 contains numerous explicit requirements on records plus requirements for many more undefined records.*
- ***Legal requirements.*** *Of course, manufacturers must also meet all of the same legal requirements and have the same verifiable document control processes as any other business organization. When core documentation is scattered across multiple and unconnected systems, replying to discovery requests, maintaining records holds when a litigation occurs, and demonstrating compliance with existing corporate records management policies becomes almost impossible.*

Automating and standardizing the unstructured information components of compliance processes ensures that operations use correct versions of information. Organizations can count on secure and instantly accessible SOPs (Standard Operating Procedures) and inspection reports, increased productivity and accuracy, improved adherence to corporate quality and compliance initiatives and audits. Lastly, organizations that manage compliance information and data in the same structure as they manage quality initiatives can leverage regulatory data beyond compliance, and use this intelligence for competitive advantage and quality improvement.

A Common Platform for Managing Unstructured Information is Key

Manufacturers across the globe face unique challenges along the journey to Digital Transformation. Competitors are everywhere. The Internet of Things and 3-D Manufacturing technologies are changing the way in which manufacturing processes are structured, the information that flows out of those processes, and the economics of production.

One key to Digital Transformation is simplifying and standardizing these myriad processes in a common platform to manage all of the unstructured information associated with these processes. The key challenge for manufacturing organizations is to achieve reduced cycle times and better cost efficiencies by improving information flow between their functional areas. One uniform document management backbone, used in multiple business areas, provides the ability to improve communication and reduce cycle time in the handoff of business functions across these functional areas.

The core requirements of the platform to address these challenges are straightforward but often hard to find:

- ***The platform must be easy and intuitive to use*** *(to minimize user adoption hurdles).*
- ***The platform must be easy to integrate with manufacturing software platforms*** *(to minimize drag on IT resources).*
- ***The platform must take advantage of the economies and flexibility of the cloud*** *(to allow maximum flexibility and agility).*
- ***The platform should have a broad-based community of users*** *(to increase opportunities for shared knowledge and standardized processes).*

A last – and perhaps most important – requirement is the ability to convincingly document the expected Return on Investment (ROI) of any proposed solution. Document and Content Management technologies are proven technologies with a track record of success. Therefore, any solution provider should be able to demonstrate the direct financial and process impact of their proposed solution – and do so with examples and references from manufacturing customers.

Underwritten by

DocuWare

Companies use DocuWare to drive better customer service, improve efficiency, lower operational costs, and support compliance by digitizing paper-based data and information, and automating business processes.

DocuWare is a leading enterprise content management company, with over 125,000 users in more than 14,000 installations. DocuWare is available on-premise or from the cloud; it is ISO-certified and BLI 5-Star rated. DocuWare is recognized for its ease of use, streamlined integration capability and fast ROI.

Curious about how digitizing processes and eliminating paper can deliver value and impact your top and bottomlines?

Contact us today to schedule a free, personalized ROI Consultation:
http://blog.docuware.com/roi-consultation

aiim

aiim

AIIM (www.aiim.org) AIIM is the global community of information professionals. We provide the education, research and certification that information professionals need to manage and share information assets in an era of mobile, social, cloud and big data.

AIIM
1100 Wayne Avenue, Suite 1100
Silver Spring, MD 20910
+1 301.587.8202
www.aiim.org

AIIM Europe
Office 1, Broomhall Business Centre,
Worcester, WR5 2NT, UK
+44 (0)1905 727600
www.aiim.eu