opentext™

Building the digital thread for Manufacturing

Manage information across the manufacturing value chain

Industry backdrop

The world's manufacturing industries are experiencing unprecedented disruption. The pandemic put tremendous pressure on supply chains and company revenues. Violence in Europe and the Middle East has further stretched supply chains while pushing up prices for transportation and raw materials. In addition, ongoing climate change is driving governments to set climate control targets that impact manufacturing processes. Social media and AI are fundamentally changing the relationship between manufacturers and the market, forcing manufacturers to communicate and engage directly with end users.

As a result, manufacturers are rethinking how they operate:

- Moving to more centralized and agile supply chain networks rather than individual customized B2B relationships.

- Increasing focus on efficient operation to improve first-time quality, drive down costs, better meet delivery commitments, and reduce carbon emissions.

- Putting systems in place to manage and deliver software.

- Evolving processes to communicate directly with customers, pre- and post-sales.

This paper explores the important role of effective information management and of creating a digital thread of information across operational functions, from product engineering through to customer services. In the process, organizations can break down information silos, gain a single source of truth for information, and develop and drive business processes to combat industry disruption.

OpenText vision: The digital thread for Manufacturing

A key measurement of information management effectiveness across a Manufacturing company is the Cost of Poor Quality (CoPQ). This is based on a number of factors:

- Rework or rectification of existing parts

- Failure analysis

- Scrap

- Repairs and servicing

- Complaints

- Warranties and returns

A major contributor in producing poor quality is poor information management across functions and departments. The lack of a single source of truth for information causes duplication, multiple revisions, and local copies of information, resulting in difficulty processing changes and ultimately, incorrectly manufactured products.

Information management provides opportunities for improvement in the area of CoPQ if manufacturers are experiencing any of these situations:

- Product information not shared across the business from a single source of the truth.

- Product or manufacturing content not easily accessed.

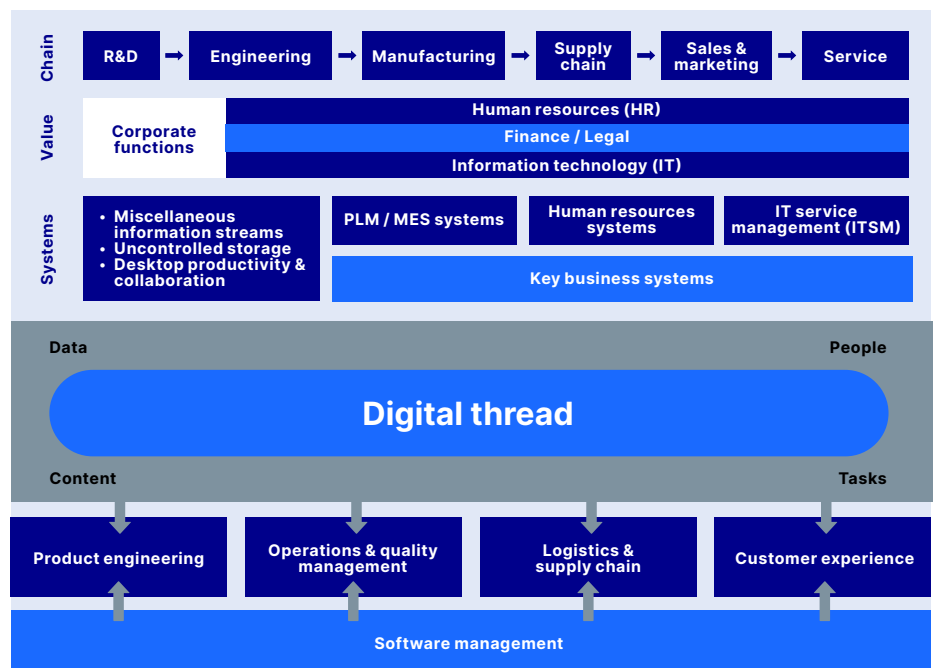- Management of change not reflected across the information landscape.

- Customer service engineers not having access to the correct configuration of product information to successfully perform maintenance.

- Software development, testing, and delivery not synchronized with the product lifecycle.

- Strategic suppliers not having secure access to real-time equipment sensor or process information to help predict failures and act sooner to eliminate unplanned downtime.

With a leading information management platform, Manufacturing companies can organize unstructured information, integrate it with structured information, secure it, and automate its flow across the enterprise. The results are higher operational productivity, lower operating risk, improved employee safety, reduced cost of quality, and improved customer satisfaction and retention.

With OpenText providing a digital thread (backbone), product engineering, operations, maintenance, supply chain, customer service, software management, and other lines of business spend less time searching for information and more time ensuring effective operations.

Chain	R&D	Engineering	Manufacturing	Supply chain	Sales & marketing	Service

Value	Corporate functions	Human resources (HR)
		Finance / Legal
		Information technology (IT)

Systems	• Miscellaneous information streams • Uncontrolled storage • Desktop productivity & collaboration	PLM / MES systems	Human resources systems	IT service management (ITSM)
		Key business systems		

Data ———————————————————— **People**

Digital thread

Content ————————————————— **Tasks**

Product engineering	Operations & quality management	Logistics & supply chain	Customer experience

Software management

Maximize quality and productivity with a digital thread

One of the most common forms of unstructured information is manufacturing documentation, including engineering drawings, equipment manuals, operational procedures, operational checklists and safety forms, and product datasheets. These critical documents are often not easy to access, unavailable offline, disorganized, difficult to work with, inaccurate, and lack workflow automation. Business processes associated with production operations suffer.

By leveraging an agile enterprise content management system, manufacturers can be confident that content reflects the products being manufactured or maintained. People can be connected to content when and where they need it to keep critical equipment running safely and reliably.

Product engineering at the start of the thread

The information process in manufacturing starts with product engineering. The definition of the product to be manufactured—3D models, 2D drawings, BOM, technical specifications—must be shared across the organization. Downstream functions, such as manufacturing operations, supply chains, and customer service, must be working on the latest and correct product definitions.

An effective digital thread starts with capturing released product information and making it available to the rest of the organization—providing a single source of truth. This must be combined with comprehensive change management processes, so that required changes can be initiated, approved, processed, and re-distributed to involved staff, ensuring work is carried out on the latest and correct data.

Next up: Manufacturing and supply chain

In the manufacturing and supply chain phase, information is added to product data to create a Manufacturing BOM, operating procedures, technical training, and supply chain logistics. This information needs to be made available to staff in the value chain, as well as effectively managed and controlled. The management of multiple "current" document versions and change across this thread is essential in producing the required quality of operations and an audit trail of decisions (essential for legal defensibility).

In addition, phone calls, emails, order confirmations, work orders, and logistic tracking contribute to unproductive time, unplanned manufacturing downtime, and poor product quality. To maximize productivity and quality, these exchanges with strategic vendors such as equipment manufacturers, field service providers, and other vendors, must be frictionless. End-to-end visibility is needed to ensure procurement issues do not contribute to production downtime.

All the way through to customer service and communications

Delivering effective aftermarket service/end customer communication can set a company apart. A single product line can have thousands of variations in the field, with varying specifications and BOMs. By creating a digital thread, customer service engineers have access to the correct information to support maintenance and customer service.

Predict and act on opportunities

OpenText CEO Mark Barrenechea says in Versant: Decoding the OpenVerse, "We will never move this slowly again." While this quote refers to all of humanity, the same can be said for the Manufacturing sector. Despite the substantial productivity gains the industry has seen in the past decade, the trend is sure to only accelerate.

> ❝ **"We will never move this slowly again."**
>
> – Mark Barrenechea, CEO
>   OpenText

Artificial intelligence, analytics, and Internet of Things (IoT) are key technologies to accelerate operational efficiencies, improve product quality, and reduce health, safety and environment risks across the Manufacturing sector. By applying AI to information management, manufacturers can gain the full strategic value of data faster and across diverse sources. As a result, organizations can:

- Automatically organize millions of documents that lack governance.

- Leverage advanced image analytics to identify quality problems.

- Use Industrial IoT to securely exchange sensor data with supplier and partners to predict failure.

- Use generative AI to have a virtual subject matter expert available for technicians, providing immediate information to avoid equipment failures and hazardous scenarios.

Why OpenText

OpenText is the world's leader in information management, offering the most complete and integrated platform. We serve thousands of Manufacturing companies across the world in their journey to organize, integrate, protect, and automate data as it flows through business processes inside and outside the organization. No information management platform is more secure or scalable to manage high volumes of information at various stages of the product lifecycle.

Effective information management is the foundation upon which a digital thread is built. OpenText solutions provide a comprehensive information management platform by managing, integrating, and automating information flows across the value chain. They reduce the cost of quality, accelerating supply chain digitization by leveraging a pre-connected network of more than one million companies and managing software development and delivery.

Manufacturing companies across the world are in a race to redefine their operations. That race is just as much about information management as it is about production itself. Your product information and subsequent operations are more important than ever and your team members and partners are essential to keep them operating efficiently, safely, and reliably, with a lower cost of quality.

We would welcome the opportunity to be your strategic partner in your digital thread journey and support you in making your business operations go from smart to smarter with OpenText.

Proposed next steps

Together, let's outline a vision and identify opportunities to quickly improve your operational excellence key performance indicators. Below are some suggested next steps to ensure your operational excellence journey is in lock step with your information management journey.

- **Introductory meeting**
  Bring together your OpenText Global Account Director or Senior Account Representative and your company's Account Business Unit President, COO, CTO, or decision maker on operational excellence investments.

- **Joint roadmap exchange**
  Hold a day-long information exchange with operations and critical supporting lines of business such as engineering, supply chain, and IT leaders (Directors and above). OpenText will gather insight about your operational excellence initiatives, current approaches, and obstacles, and provide an overview of information management technologies and best practices that support them.

- **Business Value Consulting workshop**
  Engage the OpenText Business Value Consulting team with project teams and supporting lines of businesses to assess current state and quantify the business impact of potential OpenText solutions.

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