



Redefining the Concept of 'Connected Factory' for Manufacturing Companies

Anuradha Muralidharan
& Abishek Bhat



Microsoft Partner
Gold Application Development
Gold Collaboration and Content



Abstract

The manufacturing industry's predominant concerns of the last two decades, i.e. global expansion, new equipment and plant productivity are now being nudged aside by a different set of challenges which in some ways may be linked to the earlier ones. These issues include complex portfolios, confusing supply networks and far too many metrics. Analysts and thought leaders alike see technology as the way forward to manage and overcome these challenges. This whitepaper delves into the transformations that manufacturers can relate to, i.e. overcoming inefficiencies, securing processes and intellectual properties, while reducing costs. However, it may not be enough for manufacturing companies to merely rely on known manufacturing technology solutions such as ERP to achieve this.

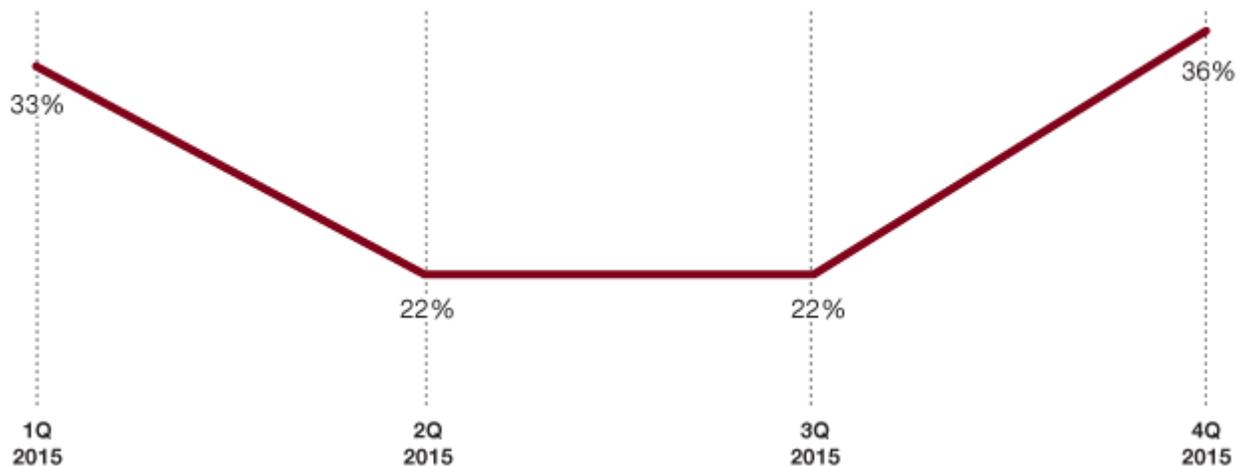
Overview

Manufacturers irrespective of their industry, size of business or end customer/product are all unanimously focussed on new growth and fresh opportunities. A recent report by KPMG confirms that over 60 percent of companies' researched indicate growth as a high priority in the next two years. According to the survey, manufacturers plan to make significant and often fundamental changes to their business in order to drive future growth and they see technology as an enabler. Eight-in-ten respondents also said that they would enter into new sectors to achieve growth with manufacturers making significant investments into new businesses, models and technologies that help them expand their footprint into new sectors.

If growth is then the governing factor and technology a key enabler, it is important for manufacturers to prepare for a data-driven factory, where all internal and external activities are connected. They need to think beyond supply chain and product life cycles to a seamless connected world where customers, operators, designers, suppliers and resellers collaborate and communicate to achieve a common goal of productivity.

And stagnant spending on information technology.

Percent planning to increase IT spending in next 12 months



Source: Copyright © PwC Manufacturing Barometer™ report

Technology innovations across the segment are already bringing about this change. Take for example, the Internet of Things (IoT) or the connected factory, where machines are linked to men and data becomes super intelligence to deliver superior quality, more durable, cost effective products. Similarly, disrupters such as cobotics (collaborative robots), are combining the power of man and

machine, and being seen as a viable option by large companies. Augmented reality where users follow the text, graphics, audio and video enhancements to perform complex tasks is also a trend. Some companies see this technology as a means to increase safety while providing a real-time view of operations.

All these innovations are redefining the way manufacturing industries performed their business but are they really connected? Are they synchronized to create a seamless world where all the bits and pieces combine to form a larger picture? More worrying is what will happen when the next innovation happens? Will that innovation lead to redundancy of existing processes and therefore result in more disruption? When that happens, how will manufacturing companies continue to focus on growth while ensuring seamless operations?

What should businesses be mindful of as they plan for growth?

Manufacturing companies traditionally look at technology investment in terms of machinery and manpower and information technology is often left to the IT department to make sense of. Of course, IT departments have more than enough already on their platter, busy as they are with supporting new operating models, integrating technologies and all this while not disrupting existing business. What if there was a platform which would unify operations and empower individuals to manage, data, collaborate and communicate. Would this help to at least ensure that process interruption is limited? Is it possible to ensure seamless global operations, virtual supply chains, and global operational standards? Taking off from there, can factories use big data to move from being cost centers to profit centers?

If you have not already noticed, the underlying theme to make all this work is collaboration, as without collaboration, none of these technology innovations can work across the enterprise to produce meaningful results. But is that not what ERP does, would be the pertinent question from the IT department of a manufacturing company? The answer is, not necessarily. ERP manages the supply chain, it does not optimize communication and collaboration. Which is probably the reason why platforms such as SharePoint are being chosen by forward thinking manufacturing companies. These companies see SharePoint as a cornerstone for businesses' internal communication, collaboration, information and workflow and may be the timing is right for manufacturing companies, irrespective of line of business or size, to embrace SharePoint now.

SharePoint helps to create a connected factory

Over the years, the manufacturing sector has been a productivity-driven landscape. But today's connected world is a very different animal. Industries which have always experienced innovation, suddenly find themselves dropping behind agile companies that are quicker to adopt new technologies.

To elaborate, manufacturers can no longer create products entirely within the walls of a building. With increasing global footprint, they need to identify customer problems and solutions faster. They need to do this, while catering to customers in new markets, developing new solutions for connected consumers, and all this while adhering to complex regulations.

To overcome these challenges, manufacturers need to create an environment that will enable the next generation workforce to operate as efficiently and effectively as possible. But many IT systems and information tools are so restrictive that people work around them instead of with them. The way forward is for manufacturers to create an environment where efficiency is not compromised. To simplify:

- A need to provide for collaborative data environments that protects IP at all stages of product evolution.
- A need of a knowledge foundation where complex interdependent changes initiated by various stakeholders still remain simple and accessible.
- A need to create strong relationships between PLM (Product Lifecycle Management), MES (Manufacturing Execution System), and ERP (Enterprise Resource Planning) and SharePoint (collaborative platform) to build a comprehensive closed loop information system

“I think SharePoint has just become a natural extension for the manufacturers to use,” Catherine White, an IDC research analyst.

Citing an example she says, “They started out with [SharePoint] 2003 pretty much just for their engineering department. It's pretty much turned into their global platform for collaboration for their entire organization.”

- A need to create a connected world where data becomes business intelligence to fuel growth

SharePoint helps to connect the dots and answers all the three above mentioned requirements for a sturdy, growth-driven manufacturing company.

Collaborate and safeguard data environments for IP and regulatory compliance

Managing compliance, IP, data security and sovereignty have become overly complex in the Manufacturing Industry. IP can take on many forms ranging from logos to trademarks and patents to copyrights. Information vulnerability in traditional methods leaves information unprotected. Employees especially have easy access to sensitive data and employee movement can leave this data exposed and vulnerable. SharePoint offers Information Rights Management (IRM), a feature that limits the actions a user can take on a file, even after it is downloaded. This essentially means that some views can only view/edit files but may not be able to copy or printed. In this way, documents can be protected from theft, and duplication. SharePoint Logging allows administrators to track users, their actions and the administrator has a complete purview within the library of the site collection. This helps to track changes and control data privacy.

The manufacturing industry across the globe has established agencies to regulate their own market. However, as growth across regions becomes more common, multiple agencies formulate different rules and different products relating to expansion. From the FDA in the United States to the European Medicines Agency in Europe and State Food and Drug Administration in China, regulatory agencies are demanding more information than ever before. Manufacturers are inspected frequently, sometimes even once in two years, , and they need to expect more frequent inspections based on compliance history, recall history, risk level of products and devices, etc. It is understood that manufacturers are expected to supply all data in advance of an inspection.

To stay compliant with safety, quality and regulatory standards, manufacturing companies must have and consistently follow quality manufacturing processes in line with GMP (good manufacturing practice) guideline and documentation control process in compliance with regulatory requirements. A solid document management strategy is essential to prevent business crippling. Technology and processes must become the foundation of a virtual enterprise to reduce cost of compliance and improve productivity while meeting regulatory demands.

Knowledge foundation with detailed history and ability to manage complex interdependent changes initiated by various stakeholders.

Quoting a specific case, a large food manufacturing company used paper-based workflow processes to handle incidents related to product quality, employee injury, safety violations and equipment downtime. These workflows which existed in paper format were accessed and updated by various employees. There were multiple stages within an incident such as notifying the concerned person, investigating the event, checking records for past events, forming reports based on past records of similar incidents for the management, corrective action procedures and final sign off and follow up.

In a paper world, one person would have access to the system to update the same on it while the paper version would exist in parallel. The chances of the paper version being lost, misplaced or mishandled were extremely high. It is also time consuming to organize the information and track incidents especially across geographical locations. Sometimes paper information will have to be couriered with backup copies in multiple places. All this leads to paper proliferation, inefficiencies in workflow and frequent break in processes.

The struggle begins when machinery stays in one place but people move – across locations and between jobs and knowledge management becomes a bigger than imaginable challenge especially in a paper-driven landscape. Traditional methods to manage content are not only expensive they also fail when the need arises. It is time consuming for people to search for information and frustrating when they don't find it. Efficiency and effective work are both compromised.

SharePoint as a result of its ability to create workflows, control accessibility and seamless availability has simplified this process. When documents are stored on a SharePoint server, employees can track and access them easily. Forms, policies, applications and other communication processes can also move online. Electronic documents can be stored safely in virtual libraries. Cross referencing is another added benefit from SharePoint.

As in the above case, if someone is looking for all documents related to the case, a search will bring them all up together. This is an invaluable advantage of SharePoint. Switching from a paper-based system to an automated SharePoint-based system helps to manage workflows, streamline manufacturer's processes to ensure greater flexibility and functionality. The SharePoint system can be easily scaled to include different geographies and makes corporate visibility possible, since all the sites across locations have adopted the same automated workflows.

To empower employees, manufacturers need to provide a more collaborative workplace. Employees use multiple IT systems and interact on extended networks with partners and suppliers. Unless all the systems are connected, communication will exist in silos. SharePoint because of its ability to store vast amount of data, protect the same and be available virtually through the online version, makes collaboration and communication extremely easy. For manufacturers, this create an empowered environment where employees anywhere can access all the information that they want and make decisions based on the same, all in real time.

Strong relationship between ERP and SharePoint to build a comprehensive closed loop information system.

Manufacturers can use SharePoint as an information management platform to ensure content control and better collaboration and tie together people and processes through role-based workflows. SharePoint can be connected to SAP to enable users to execute business processes in SAP from SharePoint. The future of manufacturing is the ability to receive real-time data on your own mobile device from anywhere in the world while still connected to your enterprise and your responsibility. Some see an overlap between PLM and SharePoint, but one can confidently say that SharePoint is Microsoft's answer to PLM.

Going beyond connecting the dots, SharePoint can be the manufacturing industries' answer to growth. It takes what ERP does and moves it to the next stage where cost and efficiency benefits are visible.

A connected world where data becomes business intelligence to fuel growth

Manufacturing companies which see SharePoint as an intranet portal, connected to their ERP, will accept the fact that the intranet is the epicentre of an organization, a place to meet, get news and collaborate. Available as a SharePoint mobile app, employees can now stay connected to important content, sites, portals and people on the go. SharePoint intranet, is intuitive allowing employees to browse recent, followed and other sites, where they can launch quick searches and see recent files. SharePoint is a real collaboration platform empowering people to go to sites and portal across geographies within

Nine out of 10 intranet design award winners selected SharePoint as their chosen platform (Nielsen Norman Group [2016 Intranet Design Awards](#)).

the company. The intranet provides access to people and visibility into tasks performed by individuals. Search is constantly available offering clean, filtered results.

Mobile Access

The SharePoint mobile app which is available on Windows, iOS and Android, helps users to create a space, quickly find and create sites. It helps to find and discover places, people and information. For the manufacturing sector, this translates into seamless connectivity between its stakeholders. Not

Microsoft's vision for productivity in the modern workplace focuses on four building blocks: natural expression, social workplaces, self-service insight and responsible empowerment. SharePoint creates a more social workspace that engages internal and external teams to solve problems quickly, enables innovation through crowdsourcing ideas, and allows real-time collaboration.

restricted to locations, the mobile app essentially means that employees on the go, can access information that they need and act and react to the same, immediately. It has clearly wiped out offline communication and for that matter, chain mails. Its collaborative features ensures that issues raised can be reacted to instantaneously, requests adhered to making for a total customer experience.

Microsoft's Power BI for Office 365 cloud based business intelligence solutions helps manufacturing companies to gain insights from their data, working with Excel to analyse and visualise it in a self-service way. According to Microsoft, the solution includes Power Query, which allows manufacturers to search and access public and internal data from within Excel, as well as the Power Map

3D data visualisation tool for mapping, exploring and interacting with geographic and temporal data, and Power Pivot, which allows manufacturers to create and customize flexible data models within Excel. Finally, manufacturers can create interactive charts, graphs and other visual representations of data within Power View.

Using these tools, manufacturing companies can create a productive workplace and transform operations.

Today, manufacturers have a wealth of data coming in from operations and other functions. This data can provide a wealth of information which can be turned into a competitive advantage. You can leverage these insights for increasing product quality, better design, efficient production and improved distribution.

Summary

Use of Microsoft SharePoint continues to increase as it is adopted by more and more corporate IT departments for the purpose of providing a company-wide infrastructure for collaboration, information sharing, and content management. Manufacturers -small and large alike- are also learning how to leverage the value that this tool can provide, from sharing of contact lists and files, to streamlining their manufacturing processes. The beauty of SharePoint is that it almost completely removes paper from the equation, stores data securely, creates an environment of sharing and collaboration. It is in fact the answer to today's connected factory.

About Trigent

Trigent is a privately held, professional IT services company and a Microsoft Gold Partner with its U.S. headquarters in the greater Boston area and its Indian headquarters in Bangalore. We provide consulting services in various technologies including Microsoft Solutions. Our operating model is to conduct sales, customer relationships and front-end consulting (e.g., business case, requirements, architecture) onsite with our clients and perform the detail design, development, integration, testing and quality assurance offshore at our world class development and support center in Bangalore. We are a SEI CMM Level 4 company and is ISO 9001:2000 TickIT certified organization.

For sales contact sales@trigent.com or call 508-490-6000.



Microsoft Partner
Gold Application Development
Gold Collaboration and Content

