

Unified Communications in Manufacturing

Proven UC process improvements deliver significant results

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Abstract

Unified Communications represents new communications tools and capabilities that manufacturing firms are successfully applying to optimize their business processes. This form of continuous improvement is delivering operational breakthroughs as documented in a growing base of case study evidence. This white paper will describe those communication-based breakthroughs in five manufacturing functions:

- Production
- Distribution and Sales
- Customer Service
- Product Development and Marketing
- Enterprise Management and Operations

Case study references to Microsoft Lync 2010 deployments are included for each of these functional areas. The conclusion is that UC deployment is an immediate business imperative for manufacturing firms of all sizes.

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Manufacturing Highlights

Manufacturing is a more competitive industry than ever, with global production and transportation options and with Internet-based product and price comparisons. This competitiveness drives manufacturers to seek continuous improvement in their operational models. Now, with breakthroughs in communications technologies, called Unified Communications, manufacturers can realize bottom-line benefits by optimizing the communications steps in their value chains.

Manufacturing is a core industry with broad impact for most economies. Industry sectors are very diverse including aerospace, automotive, food, beverage, chemicals, pharmaceuticals, medical devices, electronics, clothing, furniture, and a wide range of consumer goods.¹

Manufacturing is a process-oriented industry, since a primary goal is to produce consistent quality products at high scale and low costs. Methods such as Lean manufacturing and Six Sigma management seek to maximize production efficiency by removing defects, errors, waste and rework from the manufacturing process.

Unified Communications (UC) in Manufacturing

Unified Communications (UC) has been widely embraced in manufacturing because UC enables so many process improvements. A core definition of UC is “Communications integrated to optimize business processes²,” which is closely aligned to the process improvement focus of manufacturing firms.

UC represents many new communications tools and methods which have become economically and broadly available in only the past 5 to 10 years, primarily delivered to the market via software-based products such as Microsoft Lync 2010. These new tools include:

- Presence (ability to see personnel availability, skills, location, and other attributes)
- Search (ability to find people and resources based on presence attributes)
- Instant messaging (IM) or texting, along with persistent chat when appropriate
- Communication via multi-media end-point devices including PCs, smart phones, and tablets
- Device-to-device and multi-party document sharing and collaboration
- Click-to-communicate or -conference (device-to-device and multi-party) via text, voice and video
- Communication in the modes above using collaborative workspaces and social networks
- Delivery of these tools securely across both enterprise networks and the Internet
- Incorporation of all of these UC elements into business processes and software applications, known as Communications-Enabled Business Processes or CEBP (see [CEBP White Paper](#)).

How Manufacturing Is Using UC

As shown below, Manufacturing firms are taking great advantage of these new UC tools to improve their value chains and optimize bottom-line results in unique and creative ways. We will review the major manufacturing business process improvements already being reported in Production, Distribution and Sales, Customer Service, Product Development and Marketing, and Enterprise Management and

¹ See <http://en.wikipedia.org/wiki/Manufacturing>

² See <http://www.ucstrategies.com/uc-resources/what-is-unified-communications.aspx>

Operations. Each type of improvement will be supported with case study examples based on Microsoft Lync 2010 or the predecessors, Microsoft Office Communications Server 2007 and 2007 R2.

Optimizing Production

Most production operations are already highly automated, which minimizes the amount of human communication in those processes. However, major opportunities remain for UC-based optimization.

First, it is possible to apply UC tools to production monitoring and problem resolution. When problems occur in the production process, UC software can assist in finding the best resources to resolve the problem by searching for on-shift technical staff with the proper skills. Using location awareness from the user's mobile device, the search can even prioritize based on proximity to the situation. In many cases, the problem may require interaction with engineering staff either on the manufacturer's own team or from one or more of their equipment suppliers. Once resources are located, UC capabilities enable interactions to begin immediately, both for communication about the specific event and, when necessary, for team collaboration about the repair, work-around, or recovery approaches.

- *[Wonderware](#), a leading maker of industrial automation software, has integrated Microsoft Office Communications Server 2007 R2 software with their production management software to provide presence (to locate the best resource), IM (for immediate communication with the technical staff), and conferencing (voice or video with document sharing for problem resolution). Results are reduced resolution times, less production output loss, and overtime avoidance.*

Second, UC assists in managing the supply chain intrinsic to production operations. Whether the issue is assuring or adjusting the flow of incoming parts or raw materials, adjustment of production team assignments, or resolution of supplier defects there is a regular need to communicate with suppliers and employees. With UC, that communication can be automated or optimized. By integrating UC tools, such as Microsoft Lync 2010 (Lync), with the production databases, messages can be immediately launched to suppliers or employees in the most efficient ways, from and to office or mobile locations.

If the process is to modify schedules, it is possible to offer shift changes via telephone calls to the employee, in conformance to work rules as appropriate; the employee can simply accept or reject the offer using simple touch tone or speech recognition commands.

If the process is to interact with the suppliers for quantity changes or quality improvement, the production team can click directly on supplier names or product numbers to automatically communicate via traditional media – phone calls or e-mail. Even better, the UC system can be connected via “federation” with the suppliers; if the suppliers are using Lync or another federated UC/IM system, or have guest accounts on the manufacturer's Lync system, or are using a public services such as Microsoft Live, the manufacturer's production staff can communicate with that firm or person directly and securely over the Internet using IM, voice or video, and document sharing.

These supply chain management tools are already proving highly valuable.

- [*Herrenknecht*](#) speeds production for its advanced tunnel boring machines with a Microsoft Lync-based Instant Messaging Stock Notification 'Bot' application. Herrenknecht field production teams use their mobile smart phones to send IM messages with part numbers to the Bot and receive immediate responses with information on the nearest available parts. This has both reduced costs for cellular calls used in the legacy process and has increased uptime for the expensive Herrenknecht production machines.
- [*Creation Technologies*](#) provides specialized manufacturing services to original equipment manufacturers. Working in 13 locations including the Burnaby, BC, Canada HQ and locations in China, Creation Technologies deployed the integrated UC functions of Microsoft Lync to accelerate collaboration and problem resolution across their teams and locations, for the benefit of their customers. The integrated solution also saved US\$ 83,000 vs. separate solutions.

UC is clearly being applied to optimize production by removing communication delays and rework in the production processes.

Streamlining Product Distribution and Sales

Once products are produced, manufacturers must move them to market. In some cases, such as consumer or low-ticket/high volume goods, the products will be handed off to wholesale and retail distribution companies who then put the products in front of the ultimate consumers or businesses. In other cases, the manufacturer has its own sales organization, usually for higher-ticket items or more complex (e.g., some technologies) or regulated (e.g. ethical drugs) products. This distribution process is communication intensive and UC can be applied to simplify and streamline the outcomes.

For consumer oriented products, the communication is intensive between the production facilities, the distribution warehouses, and retail facilities. While much of this communication is automated via ERP or other logistics systems, there is still a lot of communication for exceptions, adjustments, and expediting. UC has the ability to streamline these communications via presence (to find the right person), through mobile devices (to deliver the information to and from the exact point of need), and via optimal communications modes (IM for simple efficiency; voice, document or video when needed).

- [*JJ Food Service*](#) is a £134 million annual turnover UK-based food and catering equipment distributor. JJ Food Service equipped their 250 field personnel with presence, IM, search tools and mobile call routing on their mobile devices so the field teams are both more responsive to customers and better able to adjust to logistics changes through the day. JJ Food Service has also integrated UC functions with Microsoft Dynamics AX to enable their customer services team to quickly find experts and information in response to order adjustments. Using CEBP tools, automated IM messages update responsible parties on low warehouse inventory levels. JJ Food Service cites a 20% daily productivity gain.

For direct sales or high-ticket sales that require more complex and extended sales cycles, UC is demonstrating that these cycles can be improved in two ways. First, knowledge can be disseminated in a fraction of the time and at a fraction of the cost with UC web-conferencing tools. Second, when expertise is required for customer interactions, responses, bids or tender offers, UC provides presence,

skills search, collaborative capabilities, and click-to-communicate to find the expert and resolve the customer question most quickly.

- *[Champion Technologies](#), a 2,500 employee global manufacturer of chemical solutions for the oil and gas industry, combined the team co-editing features of SharePoint 2010 with the UC capabilities of Office Communications Server 2007 R2 to significantly improve their proposal process. Teams of 8 to 12 people from different offices can now edit the proposal documents simultaneously, can use presence to see who is available for consultation, and can communicate quickly via Instant Messaging, rather than less efficient e-mail. Overall, Champion sees travel avoidance savings of \$195,000 per year since the proposal teams can work from anywhere; further, proposal completion time will drop by 20% to 30% while proposal quality will improve.*

Clearly, UC can be used to streamline product distribution and sales to increase revenues, reduce asset costs, and lower sales expense to revenue (E::R) ratios.

Enhancing Customer Service

On-going customer service is an important manufacturing value chain element. The effectiveness of customer service impacts, positively or negatively, on brand value, costs, expenses, revenues and profits. Manufacturers already use contact centers and web pages to effectively support customers. However, UC can further improve customer services when the service issues are more complex, require multiple interactions for resolution, or include building on-going customer relationships. The improvements are in three categories:

- 1) Use of presence, search and software algorithms to find the best resource to support the customer. Often this allows same-call resolution rather than devolving into a series of call-backs. These solutions support situations in which the customer has contacts within operational departments; UC offers alternatives if the prime resource is unavailable. And in contact center applications, skills-based presence enables representatives to locate and engage experts who can answer detailed questions and fix issues immediately to achieve first call resolution.
- 2) Use of shared communications provide a rich environment for collaboration with customers. This can include communication-enabled workspaces or web portals to manage and track resolution and can also include federated UC tools such as presence, IM, document sharing and conferencing to provide the communications modes best suited to the situation. Some manufacturing firms are using UC video tools for visual diagnostics of failing equipment or products on the customer premises. Others establish secure portals where customers can authenticate and then see the presence of their internal teams, access documentation specific to their product configurations, and access information about status of orders or billings.
- 3) Use of high-touch UC tools to establish, maintain and sustain customer relationships. By extending the UC-based communications methods established in the sales cycle, manufacturers can create tight bonds with their customers. UC federation with the customers makes the service team visible and instantly available to the customer, so there is no need for the customer to find alternative sources for support. Communication-enabled shared workspaces

or portals establish an information-rich 'social network' environment. And, live communications will have the benefit of the best media – text, voice, video, and documents.

For example:

- *[Tieto](#) is the largest software solutions provider in the Nordic region, employing 17,000 people working in 26 countries. In deploying Microsoft Office Communications Server 2007 (OCS) and Microsoft Lync 2010, Tieto focuses on customer service and relationships. Tieto used the OCS CEBP tools integrated with SharePoint to provide customers with a web-based chat portal. Customers can log into the portal, view presence information for their support team, and chat directly with the contact they need. In addition, Tieto has reduced communications costs versus legacy telecom methods and has reduced travel expenses by 15% due to the improved inter-office collaboration tools.*

Accelerating Product Development and Marketing

Manufacturing is a fast-moving industry. Both customer demands and competitive pressures are accelerating the need for continual development of new products and for increasing speed with which those products must be brought to market. The new product developmental process requires high levels of collaboration between customers, product management, development engineering, production planning, finance, and executive management to select, fund, design, develop, test, and launch new products. Since this collaborative development cycle is such a communication-intensive process, UC is a powerful tool for accelerating development and reducing both cost and time to market, as shown below.

UC can be built directly into the processes and workspaces, such as those provided by Microsoft Office SharePoint, that are used by product development teams in every manufacturing sector. In these innovative workspaces, project team members are continually logged-in and all project interactions can happen from within these spaces, in a variety of modes:

- Team members can immediately see the presence and availability of the other team members, for immediate interaction.
- Persistent chat enables the team easily to create ongoing text records of their work, with postings of content and project information.
- Web document sharing in audio or video calls or conferences allows easy interaction, discussion and decision making on all varieties of information, from market research to product designs to software code to pricing analyses.
- Market research can include on-line audio, video and web conferences with focus groups and prospective customers for maximum clarity on market requirements and preferences.
- Both internal and external communications can be easily recorded, then saved or annotated in the shared workspace for team reference.
- Expert consultation is accelerated via social networking type expert search tools built right into SharePoint, giving visibility to all employees with knowledge of any search topic, based on both self-identification and automatic search tagging.

All of these powerful new communication tools are available to the team members with simple click-to-communicate capability, whether from team workspaces, shared documents, related e-mail messages, or any of the presence and search tools. The consolidation of activities, information, and communications enables faster completion of tasks as well as automated logging and reporting of work accomplished.

Importantly, as illustrated in the examples above, these UC capabilities extend beyond the physical boundaries of the enterprise. Suppliers, partners, and/or customers can readily be included in the process via secure UC federation or, more simply, with easy meeting invitations. Also, the new UC tools are all contained in a secure UC environment, to protect intellectual property and competitive advantages. Here are two, of many, examples:

- *[Dow Corning](#), a US\$5 billion Midland, Michigan innovator and silicone industry pioneer, offers 7,000 products to 25,000 customers worldwide. Focusing on speed of innovation, Dow Corning upgraded to Microsoft Lync 2010 to provide their employees with expert search and rich contact cards to improve access and utilization of engineering expertise; to enable instant collaboration including video and web sharing meetings with white-board capabilities to enhance the creative process; and to enable easy recording of meetings for follow-on team reference. In addition to accelerated innovation, Dow Corning uses Lync 2010 to reduce training costs by up to 20% and to lower IT and overhead costs.*
- *[Boeing](#), the world's largest manufacturer of commercial jetliners and military aircraft, depends on global teams to build highly complex products. These teams need rapid and effective communications services. Boeing found that their previous silos of communication technology – voice systems, separate conferencing systems and Instant Messaging (IM) – were hindering team effectiveness. Deployment of Microsoft Office Communications Server 2007 R2, now being upgraded to Microsoft Lync 2010, enabled the engineering teams to use presence to find the right person for consultation and then to utilize the best media for the purpose – IM, voice conversations, and desktop sharing. With Lync Server, "Boeing will help its employees solve complex issues and share knowledge and information more quickly and effectively, regardless of their location."*

Economizing Effective Enterprise Management and Operations

In addition to the focus on production, delivery and sales, customer service, and product development, manufacturers also need to manage their business operations. This includes the enterprise support operations such as IT, HR, Finance, Facilities, and similar departments. It also includes the management process itself, including leadership, monitoring results, employee and organizational development, and external communications to customers, shareholders, government, and the community. Each of these business processes needs to be both effective and economical. Again, UC provides breakthroughs in three ways – reach, agility, and economy.

First, UC is, by its nature, global. UC uses Internet technologies, whether on the company's own data backbone or on the public Internet with encrypted security, to connect the enterprise across all locations, both to mobile and remote/teleworker employees and to the ecosystem of suppliers and

partners. Of course, e-mail, IM and the public telephone/cellular network have global reach, too. But now UC combines all these technologies with other real-time communications such as video, document sharing, and integration with Office tools to provide a fully functional virtual environment to and from essentially anywhere on the globe. Thus, UC enables manufacturing management teams to compete more effectively in a global setting.

Second, UC enables agility. Management teams need to be able to make decisions more quickly than ever, without delays caused by slow communications or by the need to gather in a single location to work through tough issues. The same UC tools that enable faster time to market also empower management with increasing agility. Management teams can come together in a secure environment on a moment's notice, with document sharing for clarity and video interaction when needed for the intensely relational issues. When needed, experts from within the company or from outside advisors can be brought into the dialog instantly, securely, and with the best communication media.

Third, all of this added value can be realized with reduced costs. The advanced UC functions highlighted in this paper can be implemented and operated more economically than the current silos of legacy communications functionality, as described in related white papers³. In addition, UC solutions provide direct out of pocket savings in day-to-day operations for manufacturing firms by reducing travel, staffing (since projects are completed more quickly and efficiently), and facilities costs.

- *[Nikon Corporation](#) is a US\$9.4 billion worldwide producer of high-quality cameras and digital imaging products. Nikon deployed Microsoft Lync 2010 to accelerate collaboration and decision making across their dozens of companies around the world. Decision making is being accelerated by an integrated environment, so that employees do not have to switch applications or context to begin communication via IM, e-mail, calls or conferences. Presence information and social-networking style Activity Feeds enable quick selection of the best resource for specific decisions. Productivity gains of up to 30% are being experienced at Nikon and these gains are also resulting in improved customer responsiveness.*
- *[Pella Corporation](#) has been making top quality windows and doors for 85 years. Pella is a 'lean' manufacturer using the Kaizen approach. The Kaizen teams use SharePoint Server 2007 for fast, secure control of projects. Pella has integrated Lync 2010 with presence and communications into these workspaces to accelerate their many automated workflow processes. Also, using real-time video conferencing, Pella has improved their sales training effectiveness and reduced travel costs. The improvements also allow the IT team to support 10% more Pella employees with the same staffing levels.*

How Microsoft Lync 2010 Delivers UC Benefits for Manufacturing

Microsoft Lync 2010 is a fully integrated Unified Communications system and platform, as reflected in the Gartner Magic Quadrant for Unified Communications 2010. Microsoft Lync 2010 and the

³ See "[Achieving Cost and Resource Savings with UC](#)" and the related [Video](#); "[The Compelling Case for Conferencing](#)", and "[The Compelling Case for Unified Messaging](#)."

predecessor Microsoft Office Communications Server are being well accepted in Manufacturing as shown in over [60 case studies](#).

Microsoft Lync includes all of the UC functions described in the opening paragraphs. Manufacturing firms, based on case study reports, particularly value:

- Presence, Smart Search, and Activity Feed to facilitate resource identification for problem resolution.
- Integration of communications into collaborative technologies, especially SharePoint and Office, that are important to product development, marketing, sales and management.
- Support of enterprise voice telephony where appropriate, to provide an integrated IT environment and total cost of ownership savings.
- The ability to extend these capabilities beyond the enterprise infrastructure to include customers, distributors and supply chain partners.
- API and Toolkits to support Communications-Enabled Business Processes (CEBP) that prove especially valuable for the process-intensive manufacturing industry.

It is important to note that unified communications solutions are often deployed in parallel with existing communication infrastructure such as PBX and e-mail systems. Microsoft Lync 2010 can readily be installed initially to capture the major UC application opportunities, taking advantage of the easy scalability of the Lync 2010 software architecture. Thus, a deployment may begin with specific UC applications as suggested above, such as enterprise-wide presence and IM or such as the UC-based optimization of a specific process, then extended to serve other functions such as enterprise telephony or to improve other business processes. A logical roadmap for UC deployments will provide the highest ROI by quickly capturing the highest returns, then proceeding to convert other functions via incremental investments and returns.

Conclusion

Unified Communications enables a wide range of new business process improvements for manufacturing firms. These improvements can accelerate operations while also reducing costs and expenses. The potential for gains in your enterprise is shown by the many published case studies, which make a compelling case for immediate UC investments. In addition, many additional opportunities for innovation, especially through CEBP, will open up once the initial UC applications are deployed. Thus, manufacturing enterprises of every size should be moving aggressively to apply new UC functionality to achieve business process improvements and to realize gains in competitiveness and profitability.