

Unified Communications in Manufacturing: Accelerating Decisions While Lowering Costs

WHITE PAPER

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MANUFACTURING INSIGHTS OPINION

Unified communications (UC) broadly defines a highly integrated communications environment that combines, or unifies, email, voice, video, and data communications in innovative ways to provide process and productivity improvement. Given that the competitive effectiveness of global manufacturing firms will be largely dictated by their ability to get the greatest performance out of their business networks, UC technology represents an important enabling technology platform. UC represents both immediate business benefit in the form of reduced travel and telecommunication costs and long-term returns through higher levels of information use, better decision making, and shortened process cycles.

This document frames the business environment, discusses the state of UC technology, and provides examples of highly successful UC implementations. Key findings from the research include:

- Several trends are converging that compel manufacturing firms to rethink organizational models, processes, and how information is used for competitive advantage. Particularly important is how these trends will impact knowledge work going forward, including a new generation of workers who demand that the same or better tools be available outside work.
- Increasingly, manufacturing companies will drive profitable growth via the business networks that they operate. They are not computer networks but rather a globally dispersed portfolio of suppliers, customers, design partners, and manufacturing plants that must be coordinated to realize objectives.
- Unified communications has become a key area for investment in the industry. The implementations seek to bring together divergent communication approaches that can reduce costs and enable faster and better business networkwide decision making.

- The worldwide market for UC is growing. IDC estimates that UC spending will grow from nearly \$5 billion in 2007 to approximately \$17 billion by 2011. Growth is expected to be fastest in those organizations with large numbers of mobile service workers and dispersed manufacturing/support facilities.
- Our interviews with Bavarian Auto Group, Siemens, Dow Corning, Shell, BenQ, and AHM Honda Motor Company provide examples of how companies are reducing costs while engendering a culture of increased collaboration.

Specifically, we recommend companies do the following:

- Transition all telecommunications responsibility to the IT organization.
- Understand the cultural drivers that can impact the efficacy of an implementation.
- Identify and prioritize inefficient processes that have a high human latency factor.
- Designate subject matter experts throughout the organization, engendering a highly responsive "expertise hub."
- Assess current IT infrastructure, telecom equipment, and support contracts.
- Educate the user community on how UC can positively impact communication.
- Require vendors to provide return on investment (ROI) analysis and empirical data.

IN THIS WHITE PAPER

This white paper is presented by Manufacturing Insights, an IDC company, and sponsored by Microsoft. The white paper presents specific use cases of how unified communications can support manufacturing scenarios such as:

- Collaborative product development
- Global supplier collaboration
- Revenue growth
- Operational excellence

Collectively, the use cases demonstrate how manufacturing firms are using UC platforms to optimize their global performance networks for revenue, product, supply, and operational management. The white paper includes specific recommendations for selecting, implementing, operating, and harvesting value from unified communications platforms.

SITUATION OVERVIEW

Trends in Manufacturing

The manufacturing industry is undergoing substantial change. Notions of mass production for mass markets have given way to a continuous balance between global scale and local scope. Four major trends are shaping the future of the industrial sector.

Trend 1: The Aging/Emerging Dynamic

Manufacturers are living simultaneously in two worlds. One is the reality of geographies where they are well-established, while the other is the chaos of geographies that are establishing themselves as major factors in the world economy. The balancing act for manufacturers revolves around several dimensions:

- **Aging versus emerging markets.** Manufacturers are trying to grow share in established markets while catching the wave of double-digit growth in growing markets. Customers in aging markets want more choice, while customers in emerging markets are value buyers that demand scale. Global integration demands effective reuse of products to serve both requirements.
- **Aging versus emerging infrastructure.** Roads, telecommunication, and other key pieces of infrastructure can be inadequate, to say the least, in emerging markets. At the same time, there is crumbling infrastructure in aging geographies.
- **Aging versus emerging assets.** As manufacturers locate manufacturing plants in South America, Eastern Europe, and China/Southeast Asia, modern equipment is being deployed. Meanwhile, plants in aging geographies are showing signs of diminishing productivity.

Perhaps the most talked-about dimension is people. The aging workforce in established geographies is becoming well-documented. For example, most aerospace engineers are now over 45, and 40% of Finland's workforce will reach retirement age by 2015. At the same time, there are significant issues in the emerging regions. While labor pools are plentiful for basic jobs, finding trained and experienced specialists in areas such as inventory coordination, logistics

management, or plant supervision is extremely difficult. The aging workforce highlights another generational difference: the Internet-born versus the Internet-adopted.

Trend 2: Managing Risk

Manufacturing firms that operate globally have always had to deal with the specter of natural disasters, labor actions, and political turmoil. These unforeseen events may be even more of a reality today. However, additional risks must be dealt with, including:

- **Volatile costs.** Rapidly growing economies quickly drove new demand for natural resources — not just oil, but everything from platinum to soda ash. At the first signs of economic sluggishness, these same commodities came crashing down. This volatility impacts almost all the raw materials, components, and subsystems that manufacturers buy for their products and represents significant risk if not managed properly.
- **Regulatory risk.** No industry sector faces more scrutiny than manufacturing. In addition to industry-specific regulations around hazardous substances, product safety, and recycling, the whole manufacturing segment is the prime target for sustainability legislation for carbon management.
- **Supplier risk.** When a toy coated with lead-based paint enters the market, the brand owner — not the contract manufacturer that made the mistake — faces the wrath of consumers. Increasingly, manufacturers have to be accountable and take responsibility for their suppliers' actions.

Effectively managing risk is enabling appropriate experts to expedite mitigation decisions for a given risk through access to timely, relevant information. Risk management is becoming a crucial competency for manufacturing firms.

Trend 3: Process Digitization

The manufacturing industry has spent billions of dollars on enterprise applications to create a common platform for companywide processes. Key applications include:

- **Enterprise resource planning (ERP)** is by far the biggest software application investment for most manufacturing companies. ERP suites provide the necessary double-entry accounting to effectively keep score and extend that transaction model to human resources, resource management (production and procurement), and customer order management.

- **Customer relationship management (CRM)** automates the processes for attracting, selling to, and serving customers. Originally an independent investment, these applications are increasingly being purchased from the company's ERP vendor to ease integration.
- **Supply chain management** automates the processes for balancing supply and demand and then executing on the inbound and outbound logistics. A number of specialized vendors remain, but like CRM applications, supply chain management applications are increasingly becoming part of the ERP vendor's influence.
- **Product life-cycle management** automates the process of designing, introducing, and sustaining products. Many segments within manufacturing are served by a set of sizable, non-ERP vendors, including Dassault, PTC, and Siemens PLM.
- **Manufacturing execution systems** have historically been largely independent of the rest of the portfolio, but more recently, they have become more integrated.

These applications have contributed greatly to better productivity in the industry, but most companies believe an additional set of investments exists that will allow them to harvest even more value. There is an active modernization of the applications that make integration, via service-oriented architectures, more flexible and data acquisition, via sensor technology, more timely and accurate. As data and process integration improves, the processes can be extended outside the company for greater levels of collaboration.

These enterprise tools have traditionally been siloed from communication tools, but the convergence of the two brings about communications-enabled business processes and unprecedented levels of responsiveness and efficiency.

Enterprise applications are also improving decision making as better information is put into the hands of knowledge workers faster. Resolving anomalies and deciding on a course of action typically involve resolving a number of factors to gain consensus. Today, this is largely accomplished in an ad hoc fashion, with fragmented communication tools and little integration with transaction platforms such as ERP. Unified communications not only brings together mechanisms such as email, SMS, voice, and video but also enables an organizational unification across functional silos that delivers on the promise of faster decision making and greater use of enterprise information and expertise.

Trend 4: Global Integration

To take advantage of a globally integrated economy, a manufacturing firm must have a globally integrated organization. Manufacturing firms previously evolved from being "international" — centralized production and management with physical distribution channels — to "multinational," with each region having its own product variations and management. Now companies are looking to become globally integrated or "transnational," where locally tailored products can be designed anywhere, made anywhere, and sold anywhere — and be managed by anyone anywhere.

Moving toward a globally integrated business model entails establishing standard operating platforms corporately that have built-in flexibility that allows local execution to be tailored to specific needs. Information must move fast; all knowledge workers — both internal and external — must be utilized; and, most important, local customers must be served. Those that have already started will accelerate, and others will have a sense of urgency about catching up. Laggards will find themselves at a competitive disadvantage. Identity, presence, and federation of enterprise directories are the underlying technologies that enable the requisite cross-firewall communication for this organizational transformation.

The Rise of Global Performance Networks

As the major trends in manufacturing develop, manufacturing companies will continue to compete on the basis of the business networks they construct to support a globally integrated model. The term *network* in this context is not a computer or communications network; rather, it is the flow of ideas, goods, and money through the commercial ecosystem of lead manufacturing enterprises as they seek to meet corporate objectives for profitable growth. Based on our conversations with manufacturing companies about their corporate strategies for profitable growth, we can categorize goals into four areas — revenue growth, product innovation, supply management, and operational excellence. Each of these categories is underpinned by a global performance network tasked with executing the strategies.

Customer Networks for Revenue Management

Despite a volatile economic environment, manufacturers see many opportunities for growing revenue. This growth is coming largely from three sources:

- **Market niches.** The phenomenon of the "long tail" is at work in the markets — particularly mature markets such as North America, Western Europe, and Japan — served by manufacturing firms. No longer satisfied with mass-produced, one-size-fits-all products, customers are expecting goods that fit their lifestyle and needs.

Manufacturing companies see opportunity in serving these narrowing market niches by locking in specific customer segments and gaining market share.

- **Service revenue.** General Electric refers to what it sells not as products but rather as service platforms. Like many manufacturers, General Electric realizes that it makes more profit on the services needed by customers after they take title to the asset than on the original sale itself. This source of growth is not just big-ticket items such as turbines or medical gear. Consumer packaged goods companies that assume more supply chain responsibility on behalf of major retailers are essentially offering a service on top of the product they sell and do so to grow revenue.
- **Emerging markets.** The most discussed sources of revenue growth, of course, are countries with growth rates far exceeding those of mature economies. Manufacturers seek to reach Brazil, Russia, India, and China with their products and take advantage of the rising standard of living.

Customer networks seek to bring together far-flung sales organizations, selling/service partners (e.g., wholesalers, distributors, resellers, retailers), and end customers. New contextual and more secure communication methods such as instant messaging, VoIP, video, and Web conferencing integrated with business applications on the customer network can translate to better specified products, more efficient introductions, more effective promotions, and better sell-through.

Innovation Networks for Product Management

Serving more narrow market niches may be a strategy for revenue growth for manufacturers, but it also raises expectations for engineering groups that are expected to churn out a higher number of products. In addition to the higher number of new products, cycle times for bringing a product from idea to introduction are also shrinking. Meanwhile, research and development, the basic input into product innovation, is shrinking as a percentage of revenue in most manufacturing segments.

This "do more with less faster" product management environment puts a strain on engineering organizations and highlights the need to make these groups more productive and to include external personnel in the process. Innovation networks make this possible by allowing for the sharing of internal expertise and the connecting to external capabilities at suppliers, partners, and engineering service firms. Unified communications technology can deliver the tools to enable new levels of collaboration in a cost-effective, secure, and auditable way.

Value Networks for Supply Management

The world continues to change, with growing pressures on manufacturers' supply chain organizations for greater efficiency and sustainability. At the same time, supply chain complexity, driven by diversified customer demands, in the form of new products and services, requires unparalleled flexibility.

The balance between raising customer service levels while managing costs changes the language of the industry. No longer are we operating supply chains or even supply networks — they are value networks that deliver increased utility to customers while improving efficiencies. Value networks must include upstream suppliers and downstream distribution partners and ensure that products are delivered to the right place, at the right time, and for the right price. Collaboration in the supply network must be done securely, and the ability to federate directories with those at key suppliers makes communication span the respective organizational structures and provides assurance for appropriate identity, authentication, and authorization of users.

Manufacturing Networks for Operational Excellence

The use of continuous improvement techniques such as lean and Six Sigma, combined with investments in factory automation, has driven tremendous gains in manufacturing productivity. In fact, productivity gains have outpaced revenue growth. Of course, the unintended consequence of productivity gains being faster than market gains is idle capacity. The typical response to idle capacity is to lower prices so that capacity is filled, which, in turn, puts more pressure on operations to be even more productive.

This "productivity vise" that faces operational executives dictates that continuous improvement go beyond activity at individual factories and extend to the entire network of plants the company operates as well as those operated by contract manufacturing partners and suppliers. Activity must be carefully coordinated and monitored to ensure that the productivity of the entire network improves on an ongoing basis.

Contractual Versus Relationship Networks

Performance networks are composed of two distinct components. The contractual or execution component defines the basic rules of engagement that flow from formalized agreements and define the accepted process and information standards for the network. The relationship or innovation component results from the trust that comes from common objectives for making the network increasingly successful in its basic endeavors for revenue, product, supply, and operational management. The relationship component enables the global performance network to recognize anomalies (good or bad) and to initiate appropriate action.

Academic research (see Autry and Griffis, et al.) suggests that these two components both influence the business performance of the network. The contractual component provides the platform for execution-oriented performance or greater efficiencies, while the relationship component is the platform for innovation or greater agility. Together, each performance network represents an accumulated social capital that manufacturing companies wish to exploit.

From a technology perspective, manufacturing enterprises have invested heavily to support the structural component of the global performance networks — enterprise applications, electronic data interchange, and B2B integration, for example. The relationship component has been less well-served. Communication and ad hoc process management are the important elements, but the tools available to knowledge workers remain a loose collection of disparate technologies. Unifying these technologies enables a new world of knowledge work with some interesting characteristics:

- Organizations are less bound to a particular geography and, in fact, often have different functions such as R&D, engineering, sales, HR, or supply chain located in different parts of the world.
- Web conferencing is the preferred mechanism for meetings based on lower travel costs and greater immediacy over in-person conferences.
- IDC cites that over 25% of the workforce was mobile at the end of 2007.
- Employees are always on, always connected.
- In the United States, teleworking programs for employees are growing rapidly, resulting in an increased need for improved communications tools.
- Because of a shifting workforce, the expertise of older knowledge workers must be shared.
- Recently graduated knowledge workers expect multiple communication mechanisms.

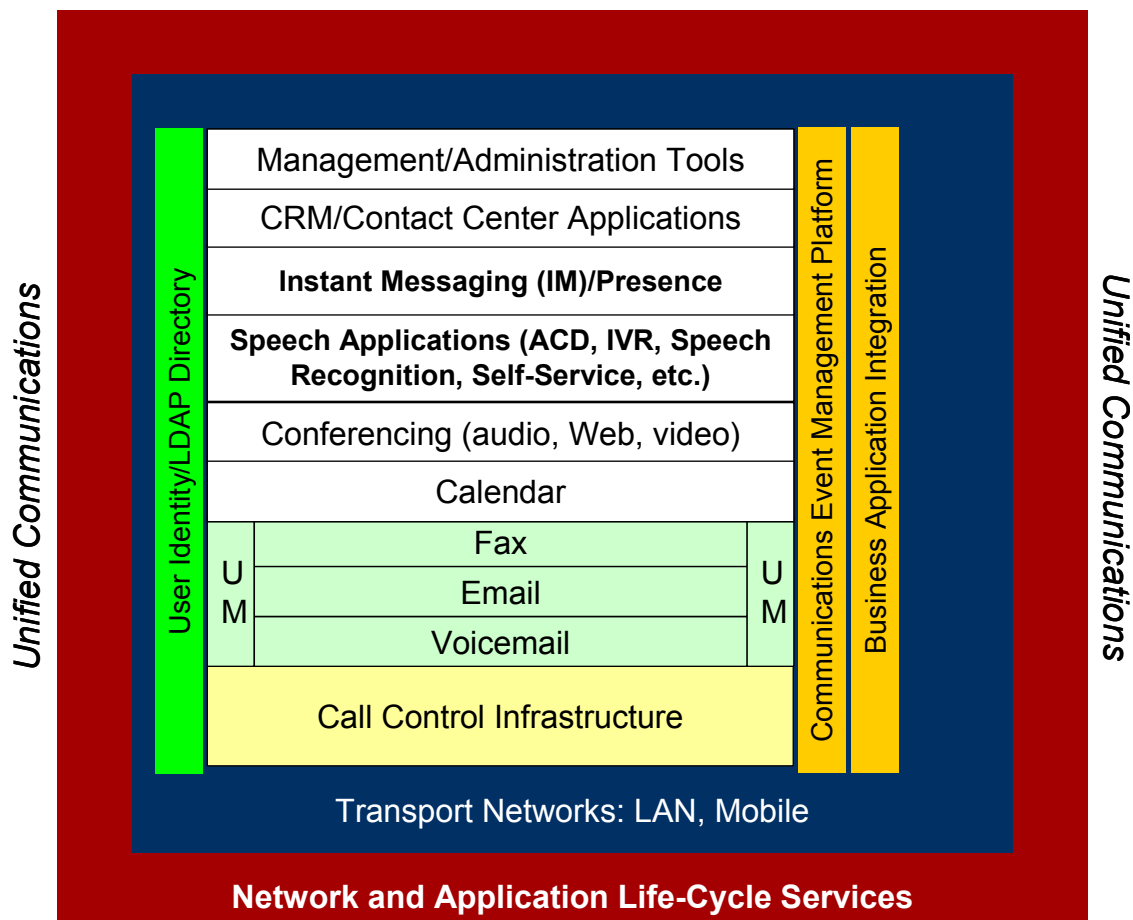
For a company to get the most from its performance networks, it must do more than just emulate the structural support that everyone else undertakes and look for ways to speed information delivery, establish effective collaboration, and continuously improve. The path to this capability is through the relationship component of the network supported by a unified set of communication mechanisms.

What Is Unified Communications?

Unified communications broadly defines a communications environment that comprises several different elements. These elements can include email, telephony, voicemail, instant messaging, video, Web conferencing, and SMS, which can be brought together in various combinations in real time and coordinated. An overview of UC architecture is shown in Figure 1.

FIGURE 1

IDC's Unified Communications Ecosystem



Source: IDC, 2008

IDC defines UC as:

A software infrastructure platform that consolidates directory, routing, and management of communications across a growing set of applications — including advanced IP telephony calling and management; Web, audio-, and videoconferencing; instant messaging; and pervasive presence management and awareness — all accessible through desktop and mobile devices and as functions available to business applications developers (see *IDC's Definition of the Unified Communications Ecosystem*, IDC #204737, January 2007).

The terms *unified communications* and *unified messaging* (UM) are sometimes, but incorrectly, used interchangeably. While similar, they are not the same. UC refers to real-time delivery of communications based on the preferred method and location of the recipient, while UM is a component of a UC environment. UM collects messages from several sources (e.g., email, voicemail, and faxes) and holds the messages for retrieval at a later time via a user-designated (and user-modifiable), preferred delivery method.

The concept of presence is also a fundamental element of UC. Presence conveys, in real time, the knowledge to a UC system user as to where the intended recipients of its communication are located and if they are available. If presence management is correlated to end-user profiles, then presence may also indicate which modality is best to reach the intended recipient. IDC suggests that the use of presence and identity should also be closely aligned with existing LDAP directories and authentication and security policies to ensure the most effective use of the communications infrastructure.

In effect, UC integrates (or "unifies") all the communications modalities that an individual might already be using and helps those systems work together in real time.

The deployment of UC is gaining significant momentum, and the worldwide market for UC is growing. IDC estimates that UC spending will grow from nearly \$5 billion in 2007 to approximately \$17 billion by 2011. Growth is expected to be fastest in those organizations with large numbers of mobile service workers and dispersed manufacturing/support facilities. Additionally, growth in emerging regions, where the opportunity to leapfrog a generation of communication technology exists, is particularly strong.

FUTURE OUTLOOK

Companies will use unified communications platforms to drive value from the social capital they have vested in their global performance networks. Investments will generally look to solve a specific problem and will include at least partial justification based on reduced travel costs. Once unified communications platforms are in place, firms will extend the ecosystem and find additional use cases. Common initial use cases in manufacturing include:

- **Collaborative product development** — the ability to convene expertise dispersed globally to make determinations of engineering approaches to product performance challenges
- **Global supplier collaboration** — the ability to include key suppliers in responding to shifting market demands
- **Revenue growth** — the ability to make informed decisions to meet customer delivery expectations while optimizing transportation and inventory carrying costs
- **Operational excellence** — the ability to optimize the effectiveness of production assets by including knowledge workers across the operations function to better specify tooling, materials, production processes, and equipment maintenance

Manufacturing Insights conducted several interviews with companies that have utilized Microsoft unified communications solutions to deliver these capabilities. The following case studies illustrate the path to value realization for these companies.

CASE STUDY 1: ENABLING THE MANUFACTURING NETWORK TO DRIVE OPERATIONAL EXCELLENCE

Bavarian Auto Group (BAG) established operations in Egypt in 2003 with a single plant and approximately 100 employees. Since then, the group has grown to more than 1,700 employees in 11 locations. In addition to assembling BMW vehicles, the organization also provides contract assembly for an Indian OEM and a Chinese OEM.

Challenges

The rapid regional expansion created a number of significant challenges to maintaining the company's high standards for engineering and operational excellence. The availability of expertise was limited in the region, and the people available within the organization had become spread very thin. Getting the necessary decision makers to the locations that needed assistance involved considerable travel expense and problem resolution latency.

Additionally, the existing communications infrastructure in the Middle East and Africa was of inconsistent reliability. This technology challenge made telephony-based collaboration difficult, if not impossible. Employees had begun to use IP-based communication tools in the public domain — instant messaging and Internet-based telephony, specifically — but BAG worried that a lack of governance would create security and privacy issues.

Framing the Approach

BAG required an IT tool that would reduce travel expenses; minimize employee downtime; and deliver continual contact to its personnel, partners, and corporate headquarters. Ideally, the selected application would be an Internet-based platform leveraging familiar user interfaces and running on existing BAG IT infrastructure. Furthermore, the selected approach needed to be independent of any legacy telecom infrastructure.

BAG's justification for the investment was not limited to reduction of travel expenses, although they were substantial. Rather, the greater emphasis was on finding a communication approach that would allow corporate management to reach its personnel at any time, in any place, via any means: voice, messaging, and email with presence awareness were key criteria. BAG believes achieving operational excellence is predicated on an ability to optimize intellectual capital and the knowledge of its employees. An important step toward this capability would be establishing a multitiered unified communications framework that serves headquarters-based personnel as well as field-deployed staff. The platform would deliver the foundation for information exchange, immune from traditional reach restriction or aging legacy communication infrastructures.

BAG's IT organization decided its most effective approach would be to leverage its Microsoft Exchange infrastructure as the underlying platform for its unified corporate communication framework. And by establishing user standards and rules that could be enforced by IT security, BAG would establish effective governance while offering the wide range of communication options required by its workforce. BAG believed that Microsoft's UC platform presented an approach that could be implemented quickly and with minimal capital investment.

Implementation

BAG's management recognized the value of establishing a common communication platform that operated with consistency across geographies. Knowing members of its user community had been using generally available applications such as Microsoft Instant Messenger as a way to communicate business issues, BAG naturally considered Microsoft's UC solutions. Moreover, BAG would be able to leverage

current IT administrative skills to support the UC installation, and as such, no additional human resources needed to be added. In short, UC represented familiarity from both a user perspective and an administrative perspective.

Benefits Realized

The UC implementation presented BAG with an opportunity to provide its workforce with a single communication platform for messaging, voice, video, and presence/locator functionality. The UC platform is well-integrated into the existing enterprise application portfolio, which allows the company to bring information from its transaction and engineering systems into communication sessions. To date, BAG supports upwards of 400 users on its UC instance and expects this number to increase as operations expand throughout Egypt, Sudan, and Libya.

Key benefits include:

- The company wouldn't share specifics, but it indicated that both travel costs and telecommunications costs had been reduced substantially.
- **The major business benefit articulated by BAG is the ability to locate experts quickly to resolve manufacturing problems.** If a machine or a piece of tooling is not performing to expectations at one plant, management can locate the right personnel, establish communication, and share relevant information so that corrective action can be initiated.
- The company estimates that the average "time to resolution" for manufacturing anomalies has been reduced by more than half. BAG realizes that operational excellence is about not only rigorous lean processes but also having a capability to respond quickly to unanticipated events. BAG feels that having a UC platform is a critical tool to enable this capability.

Looking Ahead

BAG has integrated its UC instance with knowledge sharing applications such as Microsoft SharePoint and believes that as UC becomes further integrated with the Bavarian Auto Group's legacy IT infrastructure, mechanisms will be in place that will capture UC information exchanges and will catalog this information for future reuse. Information reuse will help BAG drive even higher levels of excellence in its operations. In the near future, BAG anticipates that UC's functionality will expand to a point where it will be the lone tool used for its telephony, voice, messaging, video, and knowledge sharing purposes.

CASE STUDY 2: ENABLING THE INNOVATION NETWORK FOR COLLABORATIVE PRODUCT DEVELOPMENT

Siemens IT Solutions and Services is an international leading provider of IT solutions and services. The organization covers the entire IT service chain by a single source; from consulting to system integration, right through the management of IT infrastructures. Siemens IT Solutions and Services extends the range of offerings of the other Siemens Sectors to include IT solutions.

With its comprehensive know-how and industry-specific knowledge, Siemens IT Solutions and Services provides measurable added value to its customers. Founded in January 2007, this Siemens Division employs more than 41,000 and posts annual sales approximating 5.3 billion euros, of which 70% are generated outside the Siemens Sectors.

Challenges

Coordinating project execution effectively is a monumental challenge and under traditional models comes with travel and telecommunications costs. Finding alternatives to traditional project execution models while not stifling innovation at Siemens represented a major challenge during the current global realities.

Framing the Approach

Siemens IT Solutions and Services decided to deploy a UC platform. Siemens' business drivers for UC adoption were predicated on the stated need to:

- Deliver a platform that promotes a collaborative work culture
- Enhance communication networks as a replacement for employee travel
- Minimize carbon dioxide emissions in support of Siemens' corporate green IT initiatives
- Reduce traditional telephony expenses
- Develop a UC platform as part of Siemens' service portfolio

On the last point, Siemens IT Solutions and Services' existing service portfolio consists of consulting, systems integration, application development/management, and infrastructure management. The portfolio "network services" includes unified communications and other services such as local area networks, voice networks, traditional voice, voice over IP, mobile devices, and remote access. Siemens' UC platform was built on the extended Active Directory deployment, the

existing Microsoft-based messaging architecture, and the existing IP network infrastructure. Siemens IT Solutions and Services envisions further opportunity in extending the value of existing Microsoft collaboration products such as LiveMeeting and Office Communicator and eventually integrating information from enterprise transaction applications such as SAP. This ambitious road map was seen as delivering the identified benefits, including building the requisite experience for similar implementations at external customers.

Implementation

Siemens IT Solutions and Services has deployed collaboration for its employees and, in addition, has about 600 pilot voice users within its organization and manages thousands more across its external customers. The existing Microsoft platform (e.g., Active Directory, Exchange) has made the integration of the applications straightforward and has minimized training. The implementation has met expectations for cost and schedule.

Benefits Realized

Siemens IT Solutions and Services has recognized significant internal business value in its use of the platform, particularly the collaboration capability that has been introduced. Product development teams span the globe, creating a requirement to leverage collaboration infrastructure that approximates/models physical proximity between team members.

Through the application of UC, Siemens IT Solutions and Services has found that teams have been using technologies such as Microsoft RoundTable and Live Meeting as replacements for traditional and telecom-based teleconference functionality. The interactivity of the deployed UC systems has achieved the goal of creating collaborative work teams operating on a common platform. Siemens IT Solutions and Services highlights the case of work teams in different countries that, prior to UC rollout, had relied on voice communication alone. The teams experienced lexicon challenges relying on traditional teleconferencing exclusively; the inclusion of video functionality offered team members the benefits of visual interpretation of concepts and ideas that had been previously dependent on voice communication alone.

In contrast to traditional videoconferencing capability, which is expensive and thus not widely available within companies, Siemens IT Solutions and Services offers an easy-to-use tool accessible to all levels of the organization. The work teams found that the harmonization of voice and video running on their UC instance has assisted their work in a more efficient and faster way. Moreover, in this instance, UC addressed the issues of work team collaboration and reduction of expenses associated with travel and also adhered to a commitment from Siemens to reduce the corporation's carbon dioxide footprint.

Looking Ahead

Siemens IT Solutions and Services intends to make continued progress in realizing its UC road map. In addition to improving internal processes, Siemens IT Solutions and Services believes it is gaining valuable experience that will benefit all customers.

CASE STUDY 3: DOW CORNING MANAGES REVENUE GROWTH WITH UC

Dow Corning is a global leader in silicon-based product development. Dow Corning's products — of which there are over 7,000 — can be found in items ranging from semiconductors to devices used to convert solar energy to usable power. Roughly half of Dow Corning's products are sold outside of the United States. Increasing demands on Dow Corning to train its global staff in markets far removed from headquarters (Midland, Michigan) have set the company on a trajectory to find a single platform IT solution to fulfill its knowledge exchange/management requirements.

Challenges

The need for an evolved communication platform is largely driven by the demographic realities facing Dow Corning. The company, like others in the hard sciences community, is confronted by the fact that over the next 5–15 years, a large number of its "brain trust" will be approaching retirement age. Unified communications investment is seen as a key part of the apparatus for knowledge retention and management.

Dow Corning had been an early adopter of content, communication, and collaboration tools including NetMeeting, Documentum, WebEx, and eRoom as a way to distribute corporate information to its globally deployed workforce; however, the sheer number of applications that were required to fully exploit the potential of Dow Corning's intellectual capital was determined to be excessive and inefficient —from both a user perspective and a system administration perspective. Dow Corning has recently focused its research efforts on delivering a single, unified communications platform, which will present consistency and reliability to users independent of where an employee is deployed.

Framing the Approach

Dow Corning has assigned a team within its IT division to champion efforts to develop and deploy this unified communications framework. The mission of this group (Enterprise Content Management team) is to research and deploy a communication system that moves information quickly and accurately and does not burden the Dow Corning end-user community with technologies that require extensive training. The

Enterprise Content Management team embarked on a due diligence exercise to find an approach that would unify voice, data, and desktop sharing while also adding functionality such as employee presence.

Business drivers that supported the investment of resources were clear, namely the need to support Dow Corning's rapid growth in emerging markets such as Asia, the Middle East, and Eastern Europe while also reducing traditional expenses associated with global expansion such as travel, training, and telecommunications. While Dow Corning had maintained a limited presence in these geographies for some time, expansion trends and the shifting of global economic realities predicated the near-term need for a platform that would allow information to be delivered rapidly, efficiently, and accurately. Additionally, the platform had to be straightforward to use and maintain. A unified and familiar platform that leveled the technical communication field between engineer and administrative personnel would be ideal.

Furthermore, Dow Corning identified the following benefits of acquiring such a unified communications system:

- **Increased global collaboration** — integration of geographically dispersed teams
- **Increased productivity** — identification of opportunities for reuse
- **Increased operational excellence** — maturation of localized best practices globally
- **Lowered costs associated with training** — promotion of "virtual" training options as opposed to onsite training
- **Increased ease of contacting subject matter experts** — more immediate ability to locate and make use of subject matter experts
- **Lowered dependence on employee travel** — increased reliance on technology over travel

Implementation

With a clearly defined set of objectives and goals, Dow Corning began researching its UC options. Having a long-established relationship with Microsoft and convinced that the user interfaces of Microsoft's UC offering would best match Dow Corning's users globally, the company decided to go with Microsoft. The first step taken by Dow Corning was to deploy Microsoft's Live Meeting to replace legacy NetMeeting and WebEx licenses. The next engagement was the rollout of Microsoft's Office Communications Server (OCS). OCS would allow Dow Corning to integrate two critical elements of its UC offering quickly, namely Live Meeting and Presence. Within the first

12 months of UC deployment, 10,000 Dow Corning employees have been provisioned. Generally, these employees have access to Live Meeting, Presence, and Instant Messenger.

Dow Corning's IT and telecommunications departments are working closely with each other and Microsoft to ensure that capabilities between PBX and UC voice are equitable and appear seamless when the transition is executed.

Benefits Realized

UC at Dow Corning has started to provide the synchronous and asynchronous collaboration that the IT department had envisioned when it stated its UC goals. For example, a group of Dow Corning account executives was meeting with an existing client at a Dow Corning facility. The client posed an inquiry concerning a particular process that Dow Corning had recently developed. The client was interested in receiving a demonstration of the new process. The Dow Corning account team was able to initiate a video-enabled Live Meeting session where a Dow Corning chemist was able to demonstrate, via the Live Meeting console, a complex chemical process. The Live Meeting event itself was effective; however, the ability to locate the exact expert at Dow Corning (via Presence) to address the client's very specific request allowed Dow Corning to expedite the process and close the sale. Furthermore, the Live Meeting event was initiated and conducted by the business people with no IT staff intervention, validating the Dow Corning hypothesis that the UC tool of record must be accessible by employees spanning corporate disciplines.

While the original justification of better revenue management in emerging markets has been fulfilled, Dow Corning also identified several other areas where UC has enabled improvements and delivered benefits.

Dow Corning has also realized significant savings in terms of employee training; for instance, a recent European compliance/legislation mandate dictated that Dow Corning scientists, sales personnel, and distributors be trained on the proper registration of certain chemicals with the European Union (EU). As opposed to flying personnel from around the world to be trained on compliance with the EU mandate, Dow Corning conducted the compliance training via Live Meeting sessions, saving more than \$500,000 annually.

Another instance of how UC has worked out well at Dow Corning is the manner in which external suppliers have been able to troubleshoot a piece of equipment remotely and dissect an issue to resolution. Similar issues once required Dow Corning to absorb the expenses associated with flying an equipment supplier to a location to diagnose an issue. One example highlighted by Dow Corning was a recent issue related to

a high-value asset that required support from the supplying vendor. In this instance the supplier was able to diagnose the issue and instruct Dow Corning personnel on the procedures needed to get the asset back into production mode. This event was conducted via Live Meeting.

Lastly, Dow Corning has determined that UC is an excellent utility for crisis management. In particular, Dow Corning believes that the ability to leverage UC features such as presence will allow it to rapidly pull together its executive leadership team when situations demand a uniform response to an event. Prior to the inclusion of UC, Dow Corning had relied on Microsoft Excel call sheets to handle such events. However, this manual process for maintaining communications information such as mobile phones was prone to outdated contact information and could cause challenges and delays when managing through a crisis.

Looking Ahead

Dow Corning views UC as a paradigm shift that exceeds the feature and functionality of technology alone; in fact, UC will evolve into the platform of all manner of communication at Dow Corning. Certainly, the rollout of UC at Dow Corning will be measured and staged, but the initial returns and use cases justify the investment in UC thus far.

Dow Corning hopes to explore how UC interactions can be integrated into its ERP instances — the belief being that embedding real-time communications into the context of work processes will speed up those processes and improve decision making.

CASE STUDY 4: SHELL USES UC FOR MODERNIZING ALL BUSINESS PROCESSES

Royal Dutch Shell (Shell) is a global energy company with 104,000 employees across 110 countries and 150,000 total IT users. Shell has been using multiple vendors for communications and collaboration services, but this approach inhibits true integration of real-time communications. As a result, Shell's IT architecture group is now leading Shell's deployment of a single user interface desktop environment to Shell end users, suppliers, and partners in order to improve their work environment.

Challenges

Shell maintains 200 PBXs worldwide. The PBX infrastructure served the telecommunications needs of Shell well; however, costs associated with maintaining aging telecom equipment made the use of IP-based communications attractive to the company. Moreover, IP-based communications offer capabilities that exceed those of telephony alone.

Shell is decommissioning its PBX infrastructure and migrating telecom services to Microsoft Office Communications Server 2007 (OCS) clusters housed at three datacenters. Shell anticipates significant cost savings and increased collaboration as a result of standard but flexible communication options available to end users in this environment. The use of OCS to replace legacy PBX infrastructure is more than an upgrade to Shell's telecom infrastructure — it also addresses Shell's voice, video, instant messaging, and Web conferencing communication requirements.

Shell, like other large global companies, faces challenges related to a workforce that is nearing retirement: The accumulated knowledge of this workforce is neither centralized nor easily accessible. The risk of losing valuable institutional information is real, and companies facing this demographic trend must act. Shell's UC strategy is part of its response.

Another dimension of the demographic landscape is new graduate recruits. New hires in the coming years will represent an obviously different age profile, and Shell recognizes that UC is easily adopted (if not demanded) by this "Internet-born" generation.

By providing a framework for knowledge exchange that runs on an easy-to-use and familiar interface, Shell has established a foundation for corporate information exchange not previously possible.

Framing the Approach

Shell's UC initiative, dubbed "My Workspace," resides on Microsoft Office Communications Server and has achieved considerable traction since its introduction. The initiative has helped Shell realize savings in travel and training costs, but Shell is quick to point out that its motivation for implementing My Workspace had less to do with cost savings and more to do with providing tools that would drive collaboration. Shell anticipates the business benefits of My Workspace will increase as it rolls out incremental functionality.

Implementation

As a result of existing Microsoft Windows desktop infrastructure, it was natural for Shell to select Microsoft's Office Communicator 2007 as a critical element of its standard desktop image. As Microsoft ceased support of Windows XP and Office 2000, Shell commenced its transition to the Vista desktop environment. Vista has embedded communication services such as instant messaging, email, and SharePoint, Microsoft's project collaboration utility.

In 2009 Shell plans to introduce voice and video capability; any delays in this regard would most likely be associated with infrastructure challenges faced in certain locations.

Shell has found training personnel on its new communications capabilities to be straightforward and low cost; in fact, Shell's UC training is delivered via the UC platform. A spectrum of user types, from engineers to administrative personnel, successfully receive the same training.

Benefits Realized

Shell has realized savings resulting from its use of UC but points to collaboration as the most valuable benefit. The company emphasizes that the prime objective for ongoing investment in UC is to spur collaboration in new areas. Shell has already found employees adopting SharePoint for information exchange uses that in the past were available via costly air travel. SharePoint is a standard element of Shell's My Workspace environment and serves as a valuable demonstration of the unification of voice and visualization.

Looking Ahead

Shell has successfully introduced and deployed unified communications. While the initial rollout addressed immediate needs such as providing telephony services and a collaboration platform for end users, UC has a bigger future at Shell. The company's vision of UC is that of a global interactive knowledge management platform where end-user collaboration drives the company's future innovation. This vision, fueled by Shell's embrace of enhanced communications, will allow the company to provide an advanced communication platform that will lead it far into the future.

CASE STUDY 5: ENABLING THE SUPPLY CHAIN FOR GLOBAL EXCELLENCE

BenQ Global is a manufacturer of consumer electronics such as projectors, laptop PCs, LCD displays, LCD TVs, digital cameras, mobile phones, and computing peripherals. The company maintains operations in Asia, North America, Europe, and Latin America and is headquartered in Taipei, Taiwan.

The company relies on contract manufacturers and its complex supply chain to compete in the rapid innovation space of consumer electronics. As a result of dependence on partners, the company found it necessary to adopt a common platform for communication between its headquarters and partners.

Challenges

The economic downturn has strengthened the company's commitment to seek alternatives to air travel and aging infrastructure to manage its vast network of facilities, personnel, and partners. The company found that costs were increasing as the range of communications grew more outdated.

Framing the Approach

BenQ believes its future success relies as much on the functionality of its electronic gadgetry as it does on the efficiency of its supply chain. To realize an informed supply chain, the company felt communication uniformity via an IT platform was essential.

BenQ concluded that the selected platform must deliver all the communication needs that its personnel require to perform their daily tasks. BenQ's management was explicit in the requirement that the solution be of benefit to the company's entire supply chain and partner network. Accordingly, the needs of users, both internal and supply chain partners, became requirements that BenQ brought to vendors.

Company management also mandated that the selected communication platform fulfill the following capabilities:

- Voice
- Video
- Data

It became clear during the technology investigation process that BenQ needed a platform that could both leverage existing infrastructure and maximize the technical skills of its workforce and those of its federation partners. Selecting a solution that offered all the desired technical capabilities yet also demanded an extensive training process before personnel achieved competency levels was not an option for BenQ.

The company's IT staff evaluated communication products from telecom providers, network device manufacturers, and enterprise software vendors. BenQ concluded that Microsoft's UC platform met the technical, cultural, and fiscal guidelines defined by BenQ's corporate leadership.

Implementation

By selecting Microsoft's UC offering, BenQ was able to leverage existing IT infrastructure. Moreover, the company highlights that its use of Microsoft's Exchange mail system and Microsoft Active Directory helped speed the realization of unified communications at the company.

The time and fiscal investments required for employee training have been low, as the user interfaces and functionalities of UC are consistent with other Microsoft applications.

Benefits Realized

Since UC adoption, the company has found that its ability to collaborate between locations is at a high level. The company relates that best practices once the domain of standalone facilities are now propagated throughout the supply chain federation network.

Including software licensing fees and hardware purchases associated with its UC deployment, BenQ has spent slightly over US\$2 million. The investment in UC has translated into significant reduction in both travel expenditures and telecom costs. BenQ estimates an ROI of 106% in the past two years as a result of reduced travel and telecom expenses.

BenQ has termed the extension of its corporate communication platform as "federations." These federations allow BenQ suppliers and partners to be included in the company's communication environment, allowing for expedient communication with entities beyond the IT reach of BenQ. By extending communication to its partners, BenQ not only has increased control of suppliers but also has provided suppliers with a proven and reliable communication platform.

Looking Ahead

BenQ is pleased with the UC-related savings to date; however, the company believes that the greatest benefit realized is the improvements related to the ever-increasing collaborative nature of work at the company. With the first phase of implementation complete — supporting seven countries in Asia — BenQ is now looking at rollouts in Europe and America.

BenQ's leadership feels that rapid and precise collaboration, made possible by the UC infrastructure, offers the company an advantage over its competition in the slim-margined consumer electronics marketplace.

CASE STUDY 6: EXPEDITING DECISION MAKING

AHM Honda Motor Company (AHM) is headquartered in Jakarta, Indonesia and operates facilities throughout Indonesia to manufacture 10,000 motorcycles daily. AHM's extensive supply chain includes a network of 200 suppliers and 10,000 sales and service channels to meet market demands.

AHM's leadership was looking for a platform to enable faster decisions, encourage collaboration, and drive the company forward during a period of economic uncertainty. Traditional communication options were not meeting the fiscal and operational objectives of AHM's leadership.

Challenges

The global economic downturn reinforced the company's commitment to more efficiently manage its vast network of internal and external resources.

The company had prioritized communication because of its many locations and its goal of achieving operational excellence across corporate disciplines. AHM sought a solution that was cost-effective and free from dependence on unreliable infrastructure or expensive in-person interaction.

Framing the Approach

AHM's management recognized that its global expansion demanded a platform that mirrored its production and facility growth. The company's management determined that communication tools, specifically IT-based applications, would provide the foundation for its approach. AHM needed a solution that could be readily implemented and adopted by diverse groups of users.

The primary selection considerations for AHM were:

- Ability to run on existing infrastructure
- Limited investment required for user training
- Ability to support "anytime, anywhere" communications

Implementation

After considering the capabilities and performance standards of commercially available communication platforms, AHM found that Microsoft's UC offering met management's mandate of "anytime and anywhere."

AHM conducted a successful pilot of Microsoft's UC solution, which validated the potential for cost reductions and confirmed that users of various technical skill could leverage the UC platform. The pilot began as a limited implementation and was gradually expanded to include additional groups. As more groups adopted the solution, the company discovered that communication and — more importantly — collaboration among groups increased.

Benefits Realized

The company has found that since UC adoption, it has reduced travel and telecom costs. Moreover, the company believes that UC has helped create a new culture of collaboration at AHM. For example, service personnel are sharing lessons learned from activities in the field with the broader organization via the UC platform.

Additional benefits AHM associates with UC are:

- Faster time to market of new products
- Faster product information to customer-facing personnel
- Faster ramp-up of new manufacturing facilities
- Reduced telecom costs
- Reduced travel costs
- Faster resolution of customer queries
- Faster on-boarding process for new suppliers and partners

Looking Ahead

AHM is committed to equipping its personnel with the tools and procedures that will allow them to make the most informed decisions in the shortest period of time. By having implemented UC, AHM has laid the foundation for operational excellence for the challenging time ahead.

ESSENTIAL GUIDANCE

UC and the technologies that enable it are quickly becoming vital components of a manufacturing organization's IT infrastructure. Industrial firms must consider the impact of rolling out new UC technologies not only on administrative and functional staff but also on telecom and IT staff, as well as their existing telecom infrastructure:

- **Transition telecom to IT.** The first challenge will be migrating telecom staff and functions to the IT department. Certain processes such as help desk functions should be integrated; telecom help should be combined with the IT help desk function, although handled by staff with the appropriate skill set. Manufacturing organizations need to establish and maintain a business focus — a step that is often, unfortunately, skipped by many organizations. A senior-level individual should be assigned to the task of managing enterprise communications and collaborative tools to improve not only IT processes but also functional processes.

- **Understand the cultural drivers.** Before seeking a new UC application portfolio, manufacturing firms must understand how both administrative staff and functional staff currently communicate with each other. For example, organizations need to identify the heavy phone users and ask why they use this channel over other channels. The same is true for email, instant messaging, and mobile phone users.
- **Identify inefficient processes that have a high human latency factor.** Manufacturing organizations should seek to identify communications processes that are highly inefficient, such as those for which the first-attempt success rates are lowest, the time required to successfully complete the contact is greatest, and the response delays are the longest and the consequences of those delays pose the greatest potential risks or represent significant avoidable costs. Prioritizing in this manner helps to identify broken processes and will help garner support for staff participation in pilot projects. Processes tied directly to revenue, supply, product, or operational management should be given additional priority.
- **Engage human hubs for network communication processes.** Social network analysis (an audit of the flow of information through communication channels) is still in its infancy, but almost every study we have seen finds a person within the organization who serves as a key interchange point for communication. Frequently, these individuals are not at a high management level, but they have a lot of interaction across functional boundaries and typically have longer employment tenures with the organization. Identifying these "human hubs" and making them part of a UC pilot generate momentum at the early stages of an implementation.
- **Assess current IT infrastructure, telecom equipment, and service provider contracts.** Key considerations include investment protection, vendor standardization or multivendor environment, and use of common IT standards (e.g., SIP, XML). Industrial companies simply cannot afford "rip and replace" strategies. Consequently, and where practicable, they should extend existing infrastructure. Most organizations start with identity management to lay the foundation for email and calendaring, and then mobile messaging. With these foundational UC applications in place, organizations can add presence and instant messaging. Unified messaging capabilities coordinate the aggregation and dissemination of messages to staff according to their preferred channel (e.g., email, fax, phone). Lastly, conferencing and VoIP are deployed to complete the UC stack. It should be noted that once identity is established, deployment of the UC components can occur in any order, depending upon the organization's unique business and system requirements.

- **Educate the user community about how UC can positively impact communications.** An informed user community will often use technology to solve its own challenges in ways that may surprise the "experts" but that can be very much effective. Several of the organizations interviewed as part of our research reported that the more successful pilot projects were those in which users described to IT how they envisioned the technology could be used to solve their communication challenges. Once the various UC components are in place, end-user teams can often devise their own communication processes and, through viral, internal marketing of the platform, encourage other colleagues to adopt the applications for their own purposes.
- **Require vendors to provide ROI and other empirical studies.** As with any other major IT investment, organizations are encouraged to ask vendors to provide objective studies that show how their solution will yield a positive ROI. In addition, manufacturing professionals respect empirical data and will respond favorably to studies that demonstrate the efficacy of using UC.

Parting Thoughts: Buy on Cost, Benefit from the Network Effects

Investment in unified communications can often be justified solely on the reduction of telecommunication and travel expenses. If these savings meet corporate hurdle rates and justify the project, wonderful. However, an order of magnitude more value comes not just from the unification of communication mediums but also from the integration of information from enterprise applications. Armed with information and the ability to bring the right people together to chart a course of action, manufacturing companies can realize faster and better decision making across their customer, supplier, innovation, and operation networks. This higher velocity of decision making transforms those structural networks into collaboration-enabled performance networks.

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