

CASE STUDY

**Dow Corning Corporation C:
Transforming the Organization**

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Title: *CASE STUDY—Dow Corning Corporation C:
Transforming the Organization*

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Abstract: *Dow Corning Corporation(C): Transforming the Organization* is the third in a series of cases that describes Dow Corning management's decision to implement SAP as the first step in a long-term reengineering process and its subsequent implementation efforts. Part A describes the role of IT at Dow Corning in the early 1990s and management's decision to view IT as a strategic asset, which led to decisions to name a CIO and implement SAP. The second part of the case describes the firm's approach to ERP implementation ending with a discussion of the pilot implementation in three European sites. This third case is intended as a follow-on to complete the discussion of the implementation. The case describes how the firm captured its learnings from the pilot implementation and successfully implemented SAP on a global basis. The case then examines the outcomes from the implementation. It is clear that despite its success in getting the system in, Dow Corning has much work yet to do in order to ensure that the firm derives real, long-term benefits from the system. It is intended to both describe the persistence and focus that led to a successful large-scale ERP implementation as well as reveal the ongoing challenges of managing in an ERP environment.

19 pages

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Dow Corning Corporation C: Transforming the Organization

In February, 1999, Charlie Lacefield, Vice President and Executive Director of Business Processes and Information Technology (BPIT) at Dow Corning, reflected on the firm's recent completion of a massive SAP implementation effort within budget and on schedule. Nonetheless, he observed that the systems implementation was merely the first stage in the firm's large-scale reengineering effort:

The SAP implementation has resulted in three major changes in Dow Corning. One, we have taken a significant step toward being a fully integrated global company. Two, we have become process-oriented; people realize their interdependence. Three, we have increased our discipline in how we perform our processes. Now we have to accelerate productivity improvement and grow revenue without significantly increasing our employment levels. And we have to attack commercialization—getting product that meets customer needs to market faster and sharing the knowledge to do that better on a global basis, as well as understanding the customers' service needs as part of the total value of Dow Corning's offerings.

After thirty-six years at Dow Corning, Lacefield was preparing to retire. He felt he was leaving a company that was in the process of transforming itself.

Background

Dow Corning Corporation, a jointly owned enterprise of the Dow Chemical Company and Corning, Inc., developed and manufactured silicone materials and polycrystalline silicon. In 1998 the company had sales of \$2.5 billion and approximately 9000 employees on five continents. Although based in Midland, Michigan, USA, over half of Dow Corning's sales were generated outside the US, and for two years the company had seen its sales languishing due to a severe financial crisis in Asia. The Asian crisis had arrived on the heels of financial pressures resulting from protracted litigation around breast implants, which had resulted in a filing for Chapter 11 bankruptcy protection in 1995.¹ (Financial results through 1997 are shown in Exhibit C1.)

Responding to competitive pressures that demanded both cost effectiveness and customer responsiveness, Dow Corning had decided in early 1995 to embark on Project Pride, a corporate-wide reengineering effort that used SAP to provide the applications infrastructure for greater integration across the firm's product lines and geographies. In its early discussions about Project

¹ In 1999, Dow Corning and the official Committee representing Tort Claimants agreed to a joint plan to resolve product liability claims in the bankruptcy. A confirmation hearing was scheduled for Summer 1999 for the bankruptcy judge to consider confirming the plan and ending the bankruptcy.

Pride, Dow Corning's senior management team acknowledged that anticipated financial returns from Project Pride would materialize only after the firm undertook major process reengineering. Nonetheless, they decided to focus attention first on implementing SAP rather than on reengineering. They cited three reasons for this implementation-then-reengineering sequence: first, to provide a data and workflow foundation for reengineering, second to minimize later arguments for modifying the software to fit the organization, and third, to bound the limits to change, since the SAP implementation itself would demand some new workflows and roles. Charlie Lacefield explained:

The decision to implement SAP first was a conscious act driven by the desire to make change visible in a very short time frame. I do see the debate of which should come first, ERP implementation or process reengineering, as a chicken or egg discussion which can trap a company into intellectual inactivity as opposed to taking action.

Charlie Lacefield, Vice President and Executive Director, BPIT

In June 1995, Dow Corning assembled a global team of forty financial, operations, and IT professionals to head up an enterprise-wide SAP implementation. This global team was charged with configuring the software and implementing a single core model in all sites world-wide. Dow Corning Corporation intended to store the SAP-generated data from all its sites in a single database located in Midland.

The system was pilot tested at three UK sites beginning on September 30, 1996. The implementation proved disruptive to business processes at those sites, but useful in helping PRIDE team members identify major issues to be addressed in future implementations. Project leaders assessed the learnings from the pilot to clarify global, area, and local team roles, to define training needs, and to develop a clearer implementation plan. Meanwhile, the global team started to work with a team of process managers who reviewed SAP-induced process changes and began to consider future process designs.

Rolling out SAP

Following the pilot, the senior management team established a December 1998 deadline for full implementation of the SAP suite—except for the human resource module, which was not as tightly integrated as the other modules. To help management assess readiness as each site approached cut-over, European leadership developed a schedule of key milestones to support each implementation. Exhibit C2 displays the milestones and lists the activities leading up to each.

Milestone A—Implementation scheduled. The first step in the implementation was the scheduling of sites. The pilot sites had all been part of Dow Corning's rubber business. They were small but represented a broad range of functional requirements, so they gave the firm a basis for learning the unexpected challenges that would accompany implementations. Future implementations were similarly grouped, recognizing the interdependencies of sites that sourced one another or shared distribution and sales facilities. The implementation schedule is shown in Exhibit C3.

Milestone B—Schedule Verified. For each site the global team's first task was to identify unique legal requirements and how the firm's core model could address them. Thus, each new implementation started with extensive negotiations around local and global processes. If a site had to address a local tax issue or collect data that was not part of the core model, the global team sought ways to accommodate those needs. In most cases, however, the local site adopted global

standards. For example, one site asked the global team to extend the core model in order to implement its existing range of customer payment terms:

They (local management) were talking about all these payment terms that they want to have. We said: “No, we are standardized now with a set of global payment terms. If you want to talk about that [standard payment terms] with the global business process managers, then that is up to you.”

—*Global Project Coordinator*

In the process of the negotiations over legal requirements and global standards, site management worked with the global team to identify change management needs and a detailed activity plan. When site management deemed that these tasks were completed, Milestone B was achieved.

Milestone C—Implementation Cut-over Date Confirmed. Training on both the system and on global processes began months before implementation. Area and local team members, later referred to as power users, attended a two or three-week training session at Pride Academy in Midland, where Global Team members shared their insights and expertise. These power users then returned to their sites to train other users. In total, over 500 persons attended Pride Academy, and many then participated in implementations prior to their own to enhance their learning. Trainers found that teaching people how to enter transactions in SAP was not difficult, but teaching them how their processes would change was extremely challenging. Most employees had developed a great deal of expertise in how they were conducting their work:

We were taking away 15 or 20 years worth of experience and expertise that people had in how to get the job done, both in workflow and the system capability that they have, whatever it is. They had become the masters of it.

—*Director, Americas BPIT*

A critical task in preparing for implementation was cleaning and loading master data. This involved eliminating item numbers that were no longer active, adding data that linked master data to specific workflows, and editing data as it was loaded into SAP. Because master data embodied not only materials but workflows, one data management expert estimated that SAP required ten times more data to operate than the legacy systems had required. Dow Corning developed automated data editing mechanisms for checking data as it was loaded into SAP:

Some companies and some other people have basically just loaded the tables. You have no editing. So when you get ready to use that data, if it's bad data, it doesn't work and you don't know it until you get ready to use it. We knew it when we tried to load it.

—*SAP Data Administrator*

Despite the caution in preparing the data for implementation, the final loads inevitably revealed some bad data, and last-minute adjustments were necessary:

Some of the data preparation was very sloppy. It was very bad. They just didn't understand.

—*Director, BPIT Consulting Services*

When site management declared that training and data conversion were complete, the site had passed milestone C. Until that time, site, area, or corporate management could request delays of the scheduled implementation. However, the global team was very committed to its deadlines,

and the detailed activity plans tended to keep the sites on schedule. In total, just two sites postponed their implementations to allow more time for these activities.

Milestone D—Stable Site Operation. The week before and after cut-over was one of very long hours and intense learning. Global team members worked with area team members and local power users to help clarify workflows. Global team members usually departed within a week or two of implementation in order to start the process with the next set of sites. This could be unsettling to sites that were not yet comfortable with the new global workflows, but it was representative of the challenge of allocating scarce human resources as Dow Corning attempted to meet deadlines. Occasionally, an appeal from a site manager led to a reallocation of global team resources.

Each implementation experienced moments of euphoria and frustration as successes and problems built upon one another. These were frequently chronicled in email messages to corporate management. (Exhibit C4 has excerpts from ongoing reports on the December 1, 1997 implementation in Japan.) Some implementations were clearly more difficult than others. Lacefield attributed the difference to "...whether their database is in reasonable shape; whether they've had the appropriate kinds of training... A lot of it has to do with leadership."

In general, the implementations became progressively smoother over time, because global and area teams were able to leverage their learning. However, the July 1, 1998 implementation at two US sites was particularly rough. Problems included: inconsistent units of measure across related manufacturing and warehousing sites, inaccurate paperwork accompanying orders shipped, and at one plant, inability to accept its customers' customized color selections. These problems were visible to customers and caused great concern among management, as described in the following email message from a customer service manager to project leaders:

The transition and cutover to SAP was supposed to be for the most part transparent to our customers and distributors; but unfortunately it hasn't been and now it is becoming a "major bone of contention" ... WE NEED TO BE ABLE TO FIX THESE ISSUES ASAP and assure our customers/distributors/employees that we are RESOLVING THESE PROBLEMS IN AN EXPEDITED MANNER WITH BOTH WORDS and ACTIONS and that we are "customer friendly" to do business with and they can again rely on Dow Corning Corporation as they could in the past and should expect to in dealing with the industry/market leader, etc!!!!

—Email message from Customer Service Manager, August 11, 1998

Corporate management attempted to resolve issues with the troubled implementations by creating a special stabilization team that included reinforcements from Europe who provided additional workflow training. Management also provided IT support to resolve the custom color problem. Largely because of the difficulties with the July 1 US implementations, plant managers in Midland became concerned that the scheduled October 1 implementation at the Midland plant was too ambitious. Midland was by far Dow Corning's most complex site, because it sourced internal as well as external customers. Thirty-five percent of its output was shipped to foreign Dow Corning sites and another 30-40% was shipped to Dow Corning sites in the US. Thus, a disruptive implementation in Midland would have serious implications for the whole company. Concerned about competing for resources that were needed to correct for ongoing problems in the earlier implementations, Midland plant management requested an extension of their October 1, 1998 implementation date. But Lacefield argued emphatically that the real benefits of Project PRIDE could not accrue until the entire company was integrated;

My premise was that once you focus on process orientation, you can't stop the first time something goes bump in the night and say, "Hey, wait a minute, we can't go on." The key to working as a process oriented company is that you have to get the flagship in place so you have everybody on the same database, so we worked toward date driven goals. The fact was we were still struggling with the two sites that had postponed their implementation, yet we needed to move forward with the Midland implementation to maintain our schedule. As it turned out, Midland was a smoother start-up than the two sites that were postponed.

—*Charlie Lacefield*

Ultimately, Dick Hazleton, Dow Corning's CEO, addressed plant management's concerns by funneling additional resources to Midland rather than delaying the implementation. The Midland implementation took place on October 1, as planned.

As was true in earlier implementations, Midland lost some systems functionality in the conversion to SAP. This resulted in more work for an employee base that was struggling to understand and adopt new processes. And while customers had been warned about the cut-over and most had responded by ordering surplus in advance, Midland management was determined not to allow the wrinkles of the cut-over to become visible to customers. This created additional resource demands. For example, the quality center staff increased from four to seven people to ensure shipment accuracy while employees ironed out new processes. Four months after implementation the plant manager reported that:

We can continue to make product and ship product to the customers. But it's taking a lot more effort than before [SAP was implemented]. It's taking off-line systems.

—*Midland Plant Manager*

Sites passed Milestone D when they had achieved performance at about the level at which they were operating prior to implementation. Due both to limited baseline measures and to changes in what was measured, the determination that Milestone D had been achieved was somewhat subjective. But the stabilization period appeared to be getting shorter. The pilot sites had needed almost 18 months to reach stabilization, whereas (with the exception of the two US sites noted above) later implementations usually required only four to six months.

Post-Implementation

Dow Corning, as a corporation, had essentially passed Milestone C by the end of 1998. It had almost 9000 registered SAP users and was supporting as many as 1500 concurrent users in 48 legal entities at 109 locations in 17 countries. Two sites, Argentina and Brazil, had not passed milestone C, due to unique business circumstances that required functionality not available in SAP/R3 version 3.0F (the version used for Dow Corning's initial implementation). These facilities would not be part of the firm's single instance in Midland, until Dow Corning upgraded to version 4.5 sometime in 2000. In addition, management of a joint venture had insisted that customer data available to selected employees should not be accessible by all SAP users; a capability contrary to the data visibility built into the SAP system. Implementation of the joint venture had been delayed while that issue was explored.

Dow Corning management attributed its success in passing Milestone C to very tight scope control. This meant that the global team sometimes had to sacrifice functionality that they would have liked to implement:

Early on in a project, it is essential that you define the scope, that you define the implementation schedule. Then you get the right kind of people with the right kind of skills in the right kind of jobs in the project, and after that it's very simple, you execute.

—*Ralph Reed, PRIDE Project Manager*

In 1998 top management included on-time implementation at all sites as a goal in the variable compensation performance incentive plan for all U.S. employees. Senior managers felt that this incentive had increased motivation to meet project deadlines, although individual employees indicated that they were not clear as to how much of their variable pay was tied to meeting PRIDE deadlines. Ultimately, the delay in two implementations had a negative effect on the U.S. payouts.

The SAP project came in under its \$100 million budget, largely due to very stringent use of consultants. Although Dow Corning had called in consultants to address specific needs, such as configuration of the human resource module, the firm had not hired a systems integrator. Consequently, consulting costs represented less than 10% of the total cost of the project. Management felt that minimizing the number of consultants had resulted in the development of significant SAP expertise within the firm:

It's made individual careers in Dow Corning much more satisfying. I think people are very proud of what they know, what they can do, and what they've done.

—*Director European BPIT*

Using Dow Corning employees rather than consultants did have a price. It led to an explicit policy to populate the global team with highly-skilled professionals rather than with those employees who could most easily be made available. Dick Hazleton described the impacts:

This policy caused resentment from line managers as their best people were reassigned, with some negative impact on operations. However, an unexpected benefit was that the team members had extremely high personal and professional credibility among their peers, which greatly facilitated acceptance of new workflows.

—*Dick Hazleton, CEO*

Performance Outcomes of the SAP Implementation

As implementation wound down, Hazleton had shifted his attention from getting SAP in to generating a return on the firm's investment. The case for SAP had been built around the need for an infrastructure to support reengineering, and now that SAP was in, he established aggressive goals for performance improvements. Hazleton expected annual cost reductions of \$200 million by 2000, and he anticipated revenue growth to \$10 billion by 2010. Individual business unit managers had taken ownership of a specified portion of the annual cost savings. Management intended to tie business unit managers' 1999 variable compensation to their success in delivering operating cost improvements as well as to their efforts to leverage the SAP platform through process reengineering.

Dow Corning was historically a metrics based company, and the data provided by new workflows and systems was expected to facilitate the continuing development of global metrics:

We are collecting more information into a single database that gives us the ability to truly have some consistent measurement capability.

—*Project PRIDE Production and Scheduling Module Team Leader*

On a global basis the operational metric on which management was most focused was customer request date (CRD). This was the percentage of orders that were delivered on their requested dates—neither early nor late. The company's performance against this measurement had deteriorated as sites installed SAP. By early 1999, CRD performance was improving across the company but still varied widely across sites. At sites that had passed Milestone D, management was also observing improvement in measures such as inventory days of supply, supply chain throughput, and overtime. Dow Corning was working with St. Gallens University in Switzerland and a select group of firms to establish a useful set of metrics around SAP-supported business processes. The company emphasized metrics that focused on cycle time:

If you focus on cycle time there is a belief, and I think substantiated, you'll get everything else you want. You'll get the kind of quality, you'll get the kind of productivity, you'll get the kind of cost, you'll get the kind of customer satisfaction.

—*Ralph Reed, PRIDE Project Manager*

One visible sign of forthcoming operating efficiencies was consolidation of processes and facilities. Europe had reduced the number of locations that accepted orders from nine or ten down to five and expected to drop down to three. Plants or warehouse facilities closings had been completed or announced in Germany, Australia, Italy, France, the US, and the UK. The financial impact of these consolidations was confounded by other factors, but management believed they augured the ability to do more with less.

Another source of optimism about process improvements built on the SAP infrastructure was the company's experience with modules that had been added to the core model after sites had converted. During the course of the Dow Corning implementation, SAP had made available additional functionality that was considered particularly valuable to Dow Corning, so the global team had implemented plant maintenance, advanced planning optimizer, and data quality modules. Unlike the original implementation, the added functionality tended to go in smoothly and to yield immediate benefits. The following reaction to the plant maintenance module was typical:

I've been in maintenance at Dow Corning for over 22 years and I never really thought I'd see the day when we had the ability to view maintenance data and costs on a global scale, but we do now.

—*Email message summarizing status of plant maintenance, December 1, 1998*

The ongoing challenge in achieving performance improvements in the short-term was that employees were still learning new processes that were supported by the initial SAP implementation. It would take time to achieve the kinds of performance improvements that would noticeably impact the bottom line:

Because of all the activities that we're doing to get everybody up and running, we haven't been very good at focusing on solving those problems. So we're still doing what we have to do, but it's taking a lot more effort than with the old

systems. It's certainly not unexpected from implementing a huge new software system, but something we need to get at.

—*Midland Plant Manager*

Organizational Impacts of SAP Implementation

In addition to financial measures of operating improvement, management was looking for evidence that employees were adapting well to new processes and roles. A corporate relations administrator noted that the service lapses that often followed an implementation were "extremely frustrating because these problems have occurred despite a great deal of hard work, problem-solving and troubleshooting by a large number of employees in the Americas." Similarly, a plant manager in Midland, commenting that the implementation had gone well, nonetheless observed that "SAP is like taking a long walk with a pebble in your shoe. You get there but it's uncomfortable."

While the firm attempted to stay focused on performance improvement, the heavy demands on employees' time and psyches required managerial attention as well. The PRIDE Project Manager for Europe was quoted in a company newsletter:

Training people, helping them through the learning process, giving people the chance to express their worries and even offering a shoulder to cry on – it all helped.

—*From BPIT WORLDWIDE UPDATE, June 1998*

Charlie Lacefield noted that if he could change one thing about the implementation, he would start sooner on change management techniques to prepare employees for the discomfort of the change. Nonetheless, only one person from the global Project PRIDE team and one other person from the IT unit had left the firm during the three-year implementation process. While morale was described as "mixed" at sites that were in implementation, management felt that employees were committed to the change, and given time, would adjust to it:

They're more than willing to accept it, but it's a tremendous learning curve that people go through. It's huge, unimaginable.

—*Director Americas BPIT*

There were, however, indications that both individual employees and entire sites were starting to learn new processes and appreciate the capabilities that SAP offered. A global team member noted with delight that a resistant scheduler had clearly started to adapt to her new role:

She called and she said, "Can you help me understand what I'm looking at? I've got demand. I'm doing the pegging [i.e., checking production and inventory requirements]. And I peg it all the way back to Seneffe [a distribution site in Belgium] and they don't have any firm demand." So what this is telling me is that she's now looking at her demand on a global basis.

—*PRIDE Global Team Member*

At the managerial level, data access and reporting mechanisms were still troublesome. Eventually, the wealth of data was expected to provide better information for managerial decisions, but managers said they would need to define decision making processes and apply resources to developing reports and reporting tools:

It isn't that SAP doesn't provide reporting. They have oodles of it, but it's pretty generic and it needs to be tweaked, and it needs to be made to work with our processes.

—*Director, BPIT Consulting Services*

Similarly, a plant manager in Japan hinted that part of the stabilization process was stabilizing employee attitudes and their approach to their work. He was particularly delighted to see employees working together to solve problems rather than assign blame for them:

Throughout the last one week, I have seen people working very long hours at every floor of Tokyo office... It was so impressive that I saw no emotion, no irritation, no whatever. People talked about problems and issues, but in a very objective way, and seemed to understand where is the cause and how to work it out.

—*Email message from plant manager (98-12-03)*

Technology Impacts and Issues

On January 8, 1999, the mainframe in Europe was shut down. In announcing the shutdown, the Global IT Operations Director noted that "this momentous event" was the result of replacing legacy functionality with SAP, which rendered old systems obsolete.

The firm's new client-server environment was much more powerful but considerably more complex than its old mainframe environment. In addition, the volume of data had grown from one-half terabyte pre-SAP to four terabytes in early 1999, and, as one business unit manager observed, IT had "gone from important to central." Increasingly, the firm could not afford system down-time, and both IT and business managers were engaging in discussions as to the value of ensuring that their hot-site could take over immediately upon failure without any data loss. Initially, the hot-site was used only if the system might be down for several hours. Converting to the hot-site caused a loss of 30-60 minutes' data.

At various times IT had experienced perplexing performance problems. These had resulted from bugs and deficiencies in hardware, database software, and SAP. In one case, there was a delay of 10-15 minutes between the confirmation of a delivery and the printing of a delivery document because the SAP code caused the system to read unnecessary records prior to printing. On another occasion, a faulty disk caused the entire system to go down for several hours twice within a week. And the system was down the better part of two and a half days when a database software bug corrupted the data tables.

Over time, the computing environment at Dow Corning was becoming increasingly reliable. Nonetheless, the large number of vendors whose products had to interact, and the speed at which SAP and supporting technologies changed, created a highly dynamic learning environment for IT professionals:

Everything I ever learned in the last twenty years is in a landfill somewhere.

—*Senior BPIT Technologist*

Among their many vendors, Dow Corning concentrated especially on its relationship with SAP. Dow Corning was the first company in North America to be certified by SAP in its Customer Competency Center Certification Program. This gave Dow Corning easier access to SAP's developers, and the firm took advantage of this relationship to do some joint development as well as help establish priorities for future releases. Most notably, Dow Corning worked closely with

SAP to implement a multiple language capability, so that each site could interact with SAP in its native language, and a label management program that printed out labels in the customer's language. Dow Corning personnel also encouraged SAP to accelerate its efforts to develop an Advanced Planning Optimizer module that supported production scheduling.

The implementation of SAP left Dow Corning more dependent upon information technology, and highlighted the importance of the IT function. Harry Ludgate, who in January 1999 was named to succeed Charlie Lacefield as CIO, noted that "...the reputation of the IT department and individuals in the organization has gone up significantly as a result of the project."

Looking Ahead

As SAP and accompanying Project PRIDE reengineering efforts sought to reinforce process-orientation, global thinking, and organizational discipline, the firm was adopting a new culture. Dick Hazleton noted that this was not an easy change for employees and would not be easy to sustain:

We are implementing the same system with the same processes at all sites. We need to maintain a discipline to sustain the global processes or we lose much of the value of the system. To a large extent the system imposes most of the discipline, but it is possible to do some things locally that will undermine global processes.

—*Dick Hazleton, CEO*

Management was anxious to implement process improvements, and they were aware of enormous opportunities to do so, but the firm first had to adopt the discipline that enabled the improvements:

If you ask any level of executive management they would tell you, "We need finite scheduling tools." In fact, we need to maintain data and discipline within ERP before we can ever do this. But we still haven't determined how we hold people responsible and accountable [for the data and discipline].

—*PRIDE Global Team Member*

Management felt that part of developing the discipline needed to become a global firm was developing the habit of constantly identifying and implementing process improvements. Although the SAP implementation had forced some changes in business processes and many of those changes had some value, most processes were still suboptimal. Management was concerned that employees would find it easier to settle into new habits rather than identify and improve processes:

My major concern is that people will tend to sit back, as opposed to continue to strive for improving things.

—*PRIDE Project Manager for Europe*

It was clear that process improvement needed to be an organization-wide effort, and management was hoping for constant, significant change:

We spent hours and hours and hours just putting our heads together and working out all the nitty gritty details of what have you got to do to make this so-called

nice big step change happen. And it's one thousand things. And almost none of them lie within the power of any one individual.

—*Harry Ludgate, incoming Executive Director, BPIT*

In February 1999, Hazleton announced a restructuring of Dow Corning to facilitate the transformation of the firm into a proactive customer-driven company working as a process-oriented organization. The new organization was to be a matrix of global Industry Business Units (IBUs) and business process management, combined with functional excellence centers. The Project PRIDE global team would be dispersed, with some members of the team taking jobs as Business Process Stewards who would report to a global process manager and take responsibility for coordinating worldwide process improvements. The new organizational structure disbanded Dow Corning's long-standing regional structures. As one manager noted, eliminating one axis of Dow Corning's management matrix simplified organizational decision making:

It will be helpful not to have area structures. There are fewer people who can say no.

—*Midland Operating Unit Manager*

While the management matrix was simpler, the coordination requirements for a process-oriented, global firm were daunting. Dow Corning could insist on standardized processes globally but also needed to ensure cross-functional communication about existing and potential business processes:

The one constant in SAP is the integration. That integration makes it so you cannot make a decision on your own. We have to learn within this new organization how we are going to communicate with each other to deal with these integration impacts.

—*Project PRIDE Global Coordinator*

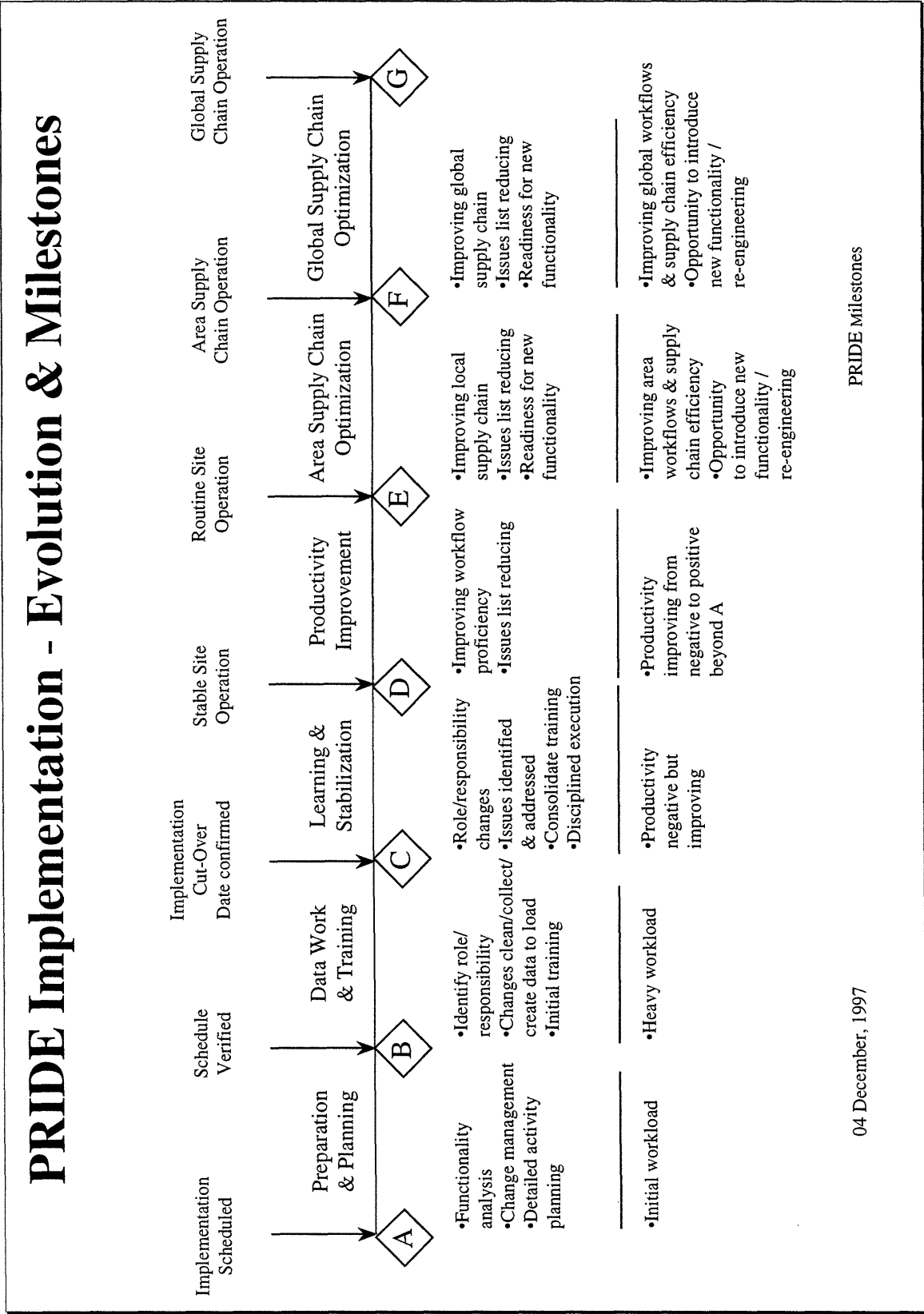
An ongoing challenge within Dow Corning would be to establish priorities for IT to address new process needs. The list of requests for additional functionality was extensive and the organization needed to ensure that priorities were clear on a global basis. Meanwhile, SAP was relentless in issuing new releases with functionality that could be of value. As the first wave of implementations neared completion, however, Hazleton hoped to slow the pace and adopt upgrades with some caution:

The organization is exhausted from constant deadlines and the dual responsibilities of implementing and running the business. So we will wait and assess the upgrade. On average, we will delay 12-18 months after an upgrade becomes available, which will discipline us to focus on the tools we have in place and get good at leveraging them.

—*Dick Hazleton, CEO*

Exhibit C1

<u>DOW CORNING CORPORATION AND SUBSIDIARY COMPANIES</u>				
<u>CONSOLIDATED STATEMENTS OF OPERATIONS AND RETAINED</u>				
<u>EARNINGS</u>				
	<u>1997</u>	<u>1996</u>	<u>1995</u>	<u>1994</u>
NET SALES	\$2,643.5	\$2,532.3	\$2,492.9	\$2,204.6
OPERATING COSTS AND EXPENSES				
Manufacturing cost of sales	1795.9	1674.0	1664.4	1470.3
Marketing and administrative expenses	466.9	462.3	450.3	415.4
Implant costs	-	-	351.1	241.0
	<u>2262.8</u>	<u>2136.3</u>	<u>2465.8</u>	<u>2126.7</u>
OPERATING INCOME	380.7	396.0	27.1	77.9
OTHER INCOME (EXPENSE):				
Interest income	70.4	54.1	36.6	18.0
Interest expense	(11.0)	(7.8)	(43.0)	(70.3)
Other, net	32.2	16.1	(22.6)	(11.0)
INCOME (LOSS) BEFORE REORGANIZATION COSTS AND INCOME TAXES	472.3	458.4	(1.9)	14.6
Reorganization costs	45.0	49.4	21.0	-
INCOME (LOSS) BEFORE INCOME TAXES	427.3	409.0	(22.9)	14.6
Income tax provision (benefit)	168.8	168.9	(9.6)	7.9
Minority interests' share in income	20.9	18.4	17.3	13.5
NET INCOME (LOSS) (1997 - \$95.04 per share; 1996 - \$88.68 per share; 1995 - \$(12.24 per share; 1994 - \$(2.72)per share	237.6	221.7	(30.6)	(6.8)
Retained earnings at beginning of year	788.6	566.9	597.5	604.3
Retained earnings at end of year	\$1,026.2	\$788.6	\$566.9	\$597.5



04 December, 1997

PRIDE Milestones

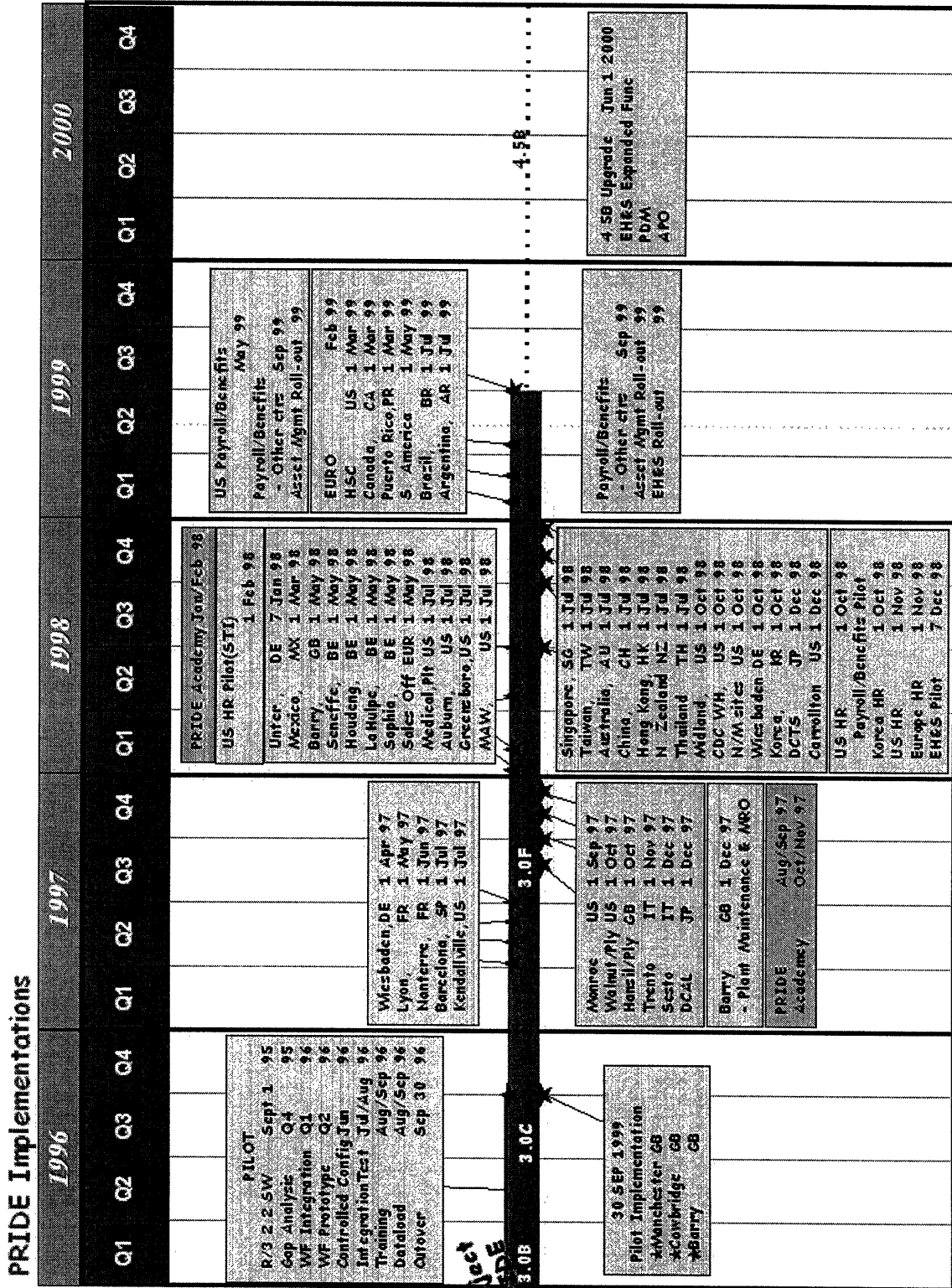


Exhibit C4

Excerpts from email messages chronicling December 1, 1997 implementation results at a plant in Japan

December 1, 1997 Email from global team leader

- Things are tough but we are working through issues as they occur
- People are working hard and long hours
- There has been very good and committed help from Midland (even during very late hours)
- It is great to see the leadership from the Global team members and the cooperation with the Area team members and site team
- The management commitment from the Area and [the site] has been great

Specific areas to talk about

- [The global team's quality expert] arrived on-site to find the Quality data in very bad shape and he has done very well to salvage what he can and communicate direction on how to resolve issues.
- The Global team members are working through global workflows in each area and trying to get the site personnel to understand the discipline of keeping SAP up to date.

December 3, 1997 Email from Asian Area Implementation Manager

Quality

- Data concerns improving daily
- C.O.A.data being reviewed for accuracy and corrections are being made on an as needed basis

Sales

- Invoices have been tested on 2 orders
- First manual invoice run tonight
- Several new orders received and entered yesterday

Production

- MRP was run Monday evening
- MRP and planning process being reviewed with planner
- Production started up again on Tuesday morning
- First production receipts recorded this morning

Procurement

- All current purchase orders have entered
- Procurement should start working off MRP planned purchases

Inventory and Delivery

- 295 deliveries have been created since Monday
- startup workflow problems for shipping materials was the cause of delay for some shipments yesterday, but these will be shipped today.

- These workflow problems have been discussed with the site team and management and a process was agreed to ensure yesterdays and today's shipments will be completed by this evening
- A build up of shipments from the cutover period has added to the problems and normal amount of shipments are anticipated after today

Other

- The discipline of data maintenance is being understood in some areas and needs to be reinforced in other areas
- Reviews for workflows will be conducted on Thursday

A quote taken from a global team member's daily update

"the realisation of change has hit, and is placing people in discomfort zones, but we have not received total resistance – the changes are taking place and will soon be accepted as the way to conduct business."

We can now say we have successfully implemented the SAP workflows at [this site].

December 4, 1997 Email message from PRIDE Project Manager for Asia

Thursday evening a celebration party was held at [site] for the successful implementation of PRIDE. The members of the Global, Area, and Local PRIDE teams, as well as the management of [site] smiled a lot, and seem to all be confident in calling the implementation a success.

A number of hurdles were crossed earlier in the week, and I know that you have been receiving daily status reports. In particular, the team overcame challenges with the form and accuracy of the QA data, some confusion about workflows and SAP operation in the materials flow area, and a volume of business on the first two days of operation that was about 20% above normal (190 orders per day vs. a normal 160). Not all customer shipments were made the first day of operation; on the second day, all shipments were completed by 9pm; on the third day (Thursday) all shipments were made by 7pm. Global and Area team members reported that many people made significant progress on Thursday in their understanding of how the new system and workflows operate. The learning curve is steep, but the lights are turning on! [The plant manager] told me that one of the plant operators said to him, "this new SAP system is very good, and gives us data about our operations that we never had before." Not a bad comment from the plant floor on the third day of operation!