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**The Federated Broker Model at
The Dow Chemical Company: Blending
World Class Internal and External Capabilities**

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Abstract: Dow Chemical Company, a \$40 billion chemical company, has a highly integrated operating model emphasizing standardized business processes around the world. Global integration and standardization are reinforced through a matrixed organizational structure and considerable outsourcing. But Dow is pursuing a growth strategy involving rapid development of joint ventures. Dow's highly integrated operating model is not well-suited to joint ventures, so the company is embarking on an experiment known as the Federated Broker Model—an open, componentized, internet-based architecture in which Dow would buy many of its business services from vendors. This new architecture would allow Dow and its partners to purchase standardized ERP services, which would, in turn, facilitate the integration required for joint ventures.

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The Federated Broker Model at The Dow Chemical Company: Blending World Class Internal and External Capabilities

During its one hundred plus years of existence, The Dow Chemical Company had coped with volatile business cycles and ever-increasing raw material costs (i.e., for feedstocks) by, as its CEO Andrew Liveris explained, “controlling what we can control.”¹ In the late 1980s and through the 1990s, controlling what it could control involved developing a culture of process discipline. This discipline led to highly standardized and globally integrated business processes. In turn, these business processes had generated strong financial performance results for the company.

But in 2005, Dow management sensed that the competencies that had made the company successful over the prior ten years would not ensure success for the next ten. Markets were changing, and Dow’s highly integrated operating model was not a perfect fit for its new environment:

“Today what we need is more flexibility. We run a much more diversified company structurally than we did ten years ago. We are into more specialty niche products. When you start moving out of

commodity products, into specialty areas, you start introducing variation.”

—Michael J. Costa
Corporate Director

Six Sigma & Work Process Expertise

And just as business demands were changing, new technology capabilities were emerging. Dow’s operating model ran on a highly efficient technology platform that reinforced its existing global capabilities. Dave Kepler, corporate vice president for shared services and chief information officer (CIO), noted that the company would need to adjust both business strategy and the underlying technology platform to take advantage of a burgeoning market for IT products and services:

“My personal opinion is that the current model we have today works very well for us. But the [IT services] market offers us variability of costs in some areas today, and the [IT product] market’s going to offer lower-cost components in the future. We need to be able to adapt to those. The fact that the market is emerging more slowly than we expected has helped us keep our competitive position longer.”

Dow management had defined enterprise architecture reflecting expected changes in the business and technology landscapes. Called the Federated Broker Model, the vision was intended to leverage

¹ Letter to the Stockholders of The Dow Chemical Company by Andrew Liveris, President and CEO, February 9, 2005.

This case study was prepared by Jeanne W. Ross of the MIT Sloan Center for Information Systems Research and Cynthia Beath of the University of Texas at Austin. This case was written for the purposes of class discussion, rather than to illustrate either effective or ineffective handling of a managerial situation. The authors would like to acknowledge and thank the executives at Dow Chemical for their participation in the case study.

both the benefits of Dow's process discipline and the flexibility of the Internet and new technologies. Kepler charged Frank Luijckx, senior director, Information Systems Strategy and Architecture, with building a new technology platform to support the Federated Broker Model:

"We look at what we need and we create ourselves a platform of core IT infrastructure and Business & Systems architecture, from which we can, on one side, understand what the business needs are, what the functional needs are; and on the other side, understand what the market has to offer."

Company Background

The Dow Chemical Company developed and sold innovative chemical, plastic and agricultural products and services to customers in more than 175 countries around the world. Dow's products directly or indirectly reached consumers buying food, medicine, personal or home care products, automobiles, building materials and transportation services, among others. In 2004, Dow's 43,000 employees and \$45 billion in assets had generated annual sales of \$40 billion and net income of \$2.8 billion (see Exhibit 1).

Dow was founded in 1897 in Midland, Michigan, where it was still headquartered in 2005. Emphasizing a mission of applying science and technology to the benefit of society, the company had grown to cover the world through internal growth as well as through acquisitions—its largest merger being the 2001 merger with Union Carbide. Some of Dow's products, such as its "basic" plastics and chemicals, were commodity products. Many others were innovative, branded and patented "performance" products.

Dow's businesses were cyclical. Demand for its products was sensitive to the state of the economy. In addition, the capital-intensive nature of the business created industry cycles:

"Our industry grows in developed countries at about GDP. Capacity, however, is added in large increments. So we tend to have a few years where demand exceeds supply and pricing power is with us and our peers in the industry and times are good. And then somebody—maybe us, maybe someone else—brings significant new capacity online,

pricing power shifts to customers, margins decline and times are more difficult." —Mack Murrell
Senior Director,
Enterprise IT Operations and Services

Management attempted to counter the business cycles, in part, by upgrading its portfolio of businesses. The upgrade involved developing and acquiring profitable products and divesting those that were less profitable. But management also aggressively sought cost savings through centralization, standardization and integration:

"We're an asset-intense structured business. We're capital intensive, and our inputs, our hydrocarbons, are costly. So, we have fairly low gross margins compared to companies in other industries. So, the real issue is keeping our structural cost low. We measure productivity as a function of structural costs, which would be all the costs required to turn inputs, i.e., raw materials, freight, etc., to outputs, which is sales. Also, we look at productivity in terms of our sales volume (not dollars, because the price fluctuates) per that structural cost. And we also look at sales volume per employee." —Dave Kepler
Corporate Vice President
for Shared Services and CIO

Between 1994 and 2004, despite experiencing one of the economic troughs that typically have a negative effect on very cyclical industries, management's efforts had paid off handsomely. Dow had nearly doubled revenue, while increasing its employee base by less than 10%, effectively improving productivity 8% a year over the decade. The company had also reduced its energy and feedstock demands 21% during that time frame.

But change was on the horizon. While productivity improvements remained a concern, management was focusing on revenue growth. And the key to growth was joint ventures (JVs). In 2005, Dow had over 100 joint ventures with commercial firms and governments around the world to develop and manufacture plastics and chemicals. As CEO Andrew Liveris observed, joint ventures offered a number of advantages: "lower capital intensity; access to regional expertise and advantaged feedstocks; the ability to leverage our technology and know-how; and accelerated penetration in high

growth markets.”² In 2004, joint ventures (JVs) had accounted for 25% of the company’s earnings. But while JVs were an increasingly important element of Dow’s growth strategy, the company’s management model was not designed to accommodate the needs of some of the JVs:

“Historically, the JVs we’ve managed stand alone or Dow had a responsibility for the operational management and the other partner didn’t put a lot of their own employees in. The JVs we’re going into now—in the Middle East and China—are not going to be as highly leveraged and integrated into the company’s business model, but have a mix of companies and employees engaged. So, we know our systems need to be more flexible to support this model. We need to leverage Dow’s know-how and low cost structure, and we have to put some [IT] architecture in to give the JV the capability that we’ve negotiated, but not at the expense of opening up our entire enterprise.”

—Dave Kepler
Corporate Vice President
for Shared Services and CIO

Business Process Standardization and Integration at Dow

Dow’s pursuit of a low-cost structure in the nineties had led to an emphasis on global integration. In 1995, Dow reorganized from a geographical and functional structure to a product-oriented structure (see Exhibits 2A and B). The focus of optimization at Dow, however, remained the corporation as a whole, not the individual product lines. At the top of the organization chart in 2005 was Dow’s Office of the Chief Executive (OCE), which included the CEO, the CFO, the senior vice presidents for the three major businesses (Plastics; Performance Chemicals and Thermosets; and Chemicals and Intermediaries) and three functional corporate vice presidents: Manufacturing; Marketing and Sales; and Shared Services. Reporting to the OCE as a whole or its members were 20 product-oriented business units and 14 other function or process heads.

To encourage managers to focus on enterprise-wide, rather than local product issues, many had dual reporting relationships. Executives in product-

oriented business units, for example, usually reported solid line to a business unit head and dotted line to a functional head. In addition, managers across Dow frequently wore multiple hats. Darrell Zavitz was global director of Customer Services and eBusiness, as well as head of the order-to-cash work process. Mack Murrell was senior director of Enterprise IT Operations and Services, and also responsible for global facilities. Dow management thought of its complex reporting relationships as a source of competitive advantage:

“I think our integration, our ability to work in this bizarre type of organization, is an advantage and allows us to get what’s best for the company versus the individual businesses. I think that’s a real strength. Within our functions, we’ve got very strong ability to move quickly as a company, turn on a dime and take a different direction, if needed. Strong functional leadership with the capability to match up with business need and strong businesses, it’s not an easy thing to do, but we’ve been, I think, pretty successful.”

—Don Taylor
Vice President, Michigan Operations

Standardized work processes introduced some transparency into Dow’s complex structure. For example, financial work processes were common across the globe. Manufacturing had common processes for building plants, driven in part by the need for plants to be highly cost effective and environmentally secure. Standardized human resource processes allowed Dow to do performance management and plan salaries and incentives around the globe in three weeks, equitably and transparently, even taking into account multiple currencies and differing rates of inflation. Finally, some supply chain work processes (e.g., order-to-cash) were globally standardized, although others (e.g., planning and scheduling) were less so. Frank Luijckx estimated that as much as 60% of Dow’s work processes conformed to global standards:

“It is unbelievable what impact work process standardization can have. To get there, you need clear roles and responsibilities, the right organization, accountability, scorecards, and user-friendly systems that can manage and track your scorecards.”

Dow was constantly reengineering processes to introduce greater standardization and automation, as

² IBID.

appropriate. These efforts were intended, first and foremost, to cut costs. But they also increased quality, safety and security—other important organizational objectives. Dow invested substantial resources in understanding the costs of its processes and the impacts of its improvement efforts:

“At Dow, we tend to be a four decimal place culture.”

—Phillip H. Cook

Senior Vice President

Performance Chemicals and Thermosets

Dow’s shared services organization, under Dave Kepler, supported the company’s efforts to implement and sustain globally standardized and integrated processes. Shared services provided functional leadership to the businesses in the areas of information systems, purchasing, supply chain services, and customer service (including e-Business), along with expertise on six sigma and work process (see Exhibit 3). By bringing five of the firm’s key functions together under Kepler, Dow had cut the number of touch points required to drive cross-functional improvement in half.

“What we want to do is avoid businesses being involved in activity that doesn’t really differentiate them. From the customer down, there will be differences across the businesses. But from the infrastructure up, things will be the same across the businesses. And there’s some place in the middle, depending on the business, that you’re going to see a gray space that we’ll debate.”

—Dave Kepler

Corporate Vice President
for Shared Services and CIO

Integrating and Standardizing the Technology Platform

Technology support was critical to Dow’s global processes. Dow began to implement a technology backbone to drive both vertical and horizontal integration of the firm in the late eighties. A key part of that backbone was a single instance of SAP/R2. Supplementing SAP, the technology backbone included another eight or so software packages, such as PeopleSoft for HR, as well as an internally developed global reporting system:

“We run, for the most part, single applications that support the whole world. So, we are running a single instance of SAP. That’s very unusual for a \$40 billion company. As a matter of fact, you won’t

find it anywhere else in the Fortune 100. You won’t find a Fortune 100 that has truly used and leveraged global codes. You won’t find a Fortune 100 that is running a reporting environment that is truly hands-off integrated. When data goes into the transaction system, it is not touched again until it comes out in the reporting environment. And it is all automatic. So, when I say our strength is vertical and horizontal integration, that was a key enabler that drove a tremendous amount of value through the nineties.”

—Michael J. Costa

Corporate Director

Six Sigma & Work Process Expertise

The technology environment was similarly standardized. A single data center serviced the entire business. Every desktop machine was a Dow workstation. These technology standards—like the systems standards—were specified as part of Dow’s four inter-related architectures (see Exhibit 4): Business Architecture, Systems (and Data) Architecture, Technical Architecture, and Product (and Vendor) Architecture. Architecture specialists with reporting lines to each of the architecture staffs sat on application development and acquisition teams to promote architectural compliance.

Processes existed for reviewing exception requests, for articulating the costs and benefits of deviating from the architecture, and for bringing noncompliant systems into compliance. Application architecture decisions were made jointly by work process experts within IS and functional work process owners. Theoretically, disputes about the suitability of particular technologies for businesses could be escalated to the level of the SVPs. But, for the most part, technical architecture decisions were made within IT. As long as the architecture could demonstrate its value in reducing cost while meeting business needs, each new IT investment would contribute to the realization of the envisioned architecture.

Dow used a “most effective technology” (MET) concept to drive the technology standardization needed to support its integrated business processes. The MET concept was initiated in manufacturing:

“Manufacturing historically has been discipline and work process oriented. We start with work process definition, then role responsibility definition and, then, from that flow the tools that we need—the

“most effective technologies.” So, in manufacturing the electronic tools being used by an operator in Brazil are the same tools that are being used in China. How they run a shift, things they use to run a plant, process control systems—they are the same. An MET might be the best valve, the best pump or the best work process.”

—Don Taylor
Vice President, Michigan Operations

In IT many core information technologies were MET-1, meaning they ran identically anywhere in the world for any business. Others were MET-2—MET-1 technologies that had been modified to meet the requirements of, say, all the performance chemicals businesses. MET-3 technologies were those that were further modified to meet local requirements. MET-1 technologies were the lowest cost to serve. In early 2005, the “MET believers” were mostly in the functional work process groups, but the longer-term objective was to get the businesses to push commitment to MET as their effects on long term costs became evident. The concept of METs, however, worked least well for processes closest to the customer.

Senior management helped drive home the importance of architecture and global technology standards by centralizing its IS staff in the early 1990s. In 2005 the IS department was headed by the CIO Leadership Team, comprising CIO Dave Kepler and three of his key reports: Doug Snoddy, who headed development and maintenance of Dow’s application portfolio; Mack Murrell, who ran Dow’s enterprise IT operations and services, and Frank Luijckx, who oversaw Dow’s IT strategy and architecture (see Exhibit 5). IS directors in the business units had solid line responsibility to business unit heads and dotted line relationships to the CIO Leadership Team.

Heads of Dow’s business units and shared functions for the most part, had grown accustomed to the constraints of architecture. Most were also aware of significant benefits:

“We had probably a five-, six-, or seven-year competitive advantage from our IT standardization. Because we had a global R2 system, we were able to run global enterprises based on global information.”

—Clay Dunn
Vice President, Global Purchasing

From Centralization and Standardization to Outsourcing

Despite Dow’s long-term pursuit of process discipline and technology standardization, management could still identify additional opportunities for reengineering in 2005. However, the incremental impact of further standardization and centralization was declining. Increasingly, Dow found that its opportunities for significant cost savings and organizational change were in outsourcing processes to vendors who could leverage scale and expertise:

“I really think outsourcing is part of a commoditization cycle. Where you’re highly unique, highly specified, where you can provide value through your knowledge workers, you probably want to keep that inside. Where the work becomes more pervasive, more commoditized and somebody else can build a critical mass larger than yours, then you might want to consider outsourcing.”

—Darrell Zavitz
Global Director, Customer Service/eBusiness

Dow’s shared services organization, by centralizing and standardizing many processes, facilitated the migration of services to vendors. Dow typically knew how much a process cost, so management could understand the vendor’s value proposition:

“Prior to considering outsourcing activity, you have to understand the true cost of those activities, and you have to have looked at that performance against outside service providers, to benchmark it relative to yourself. Then, you need to determine what is the core competency that you think you need to manage, if there is any differentiation potential in the activity. If there is, those people should be maintained in-house, or at least a certain percentage of them. And you also have to make sure you have the ability to switch providers before you can go to outsourcing. If you have enough knowledge to be an informed buyer and, if you have leverage to switch suppliers—even though you may not switch very often—you can get some advantage from outsourcing.”

—Dave Kepler
Corporate Vice President
for Shared Services and CIO

Dow usually sought cost savings in its outsourcing deals. But outsourcing could be justified if it helped smooth the troughs of Dow’s business cycles. Dow

also justified outsourcing that allowed management to focus company resources on core competencies:

“We look for variable cost, variable capacity, best industry practice and people really knowing what they’re doing. If we can avoid investing in assets, we can put our money into changing molecules.”

—Dana L. Mathes
Director, Supply Chain Services

Dow relied on a two-by-two matrix to help identify good candidates for outsourcing. One dimension assessed the availability of skills in the marketplace. The other assessed the importance of the skills to Dow’s core competencies. If necessary skills were not readily available in the marketplace, outsourcing was not an option. But if skills were abundant, Dow could choose to either hand off an activity or augment its own staff, depending on the importance of the skills. Two major outsourcing arrangements—the outsourcing of application development and maintenance to Accenture and the outsourcing of distributed IT and network operations to IBM—illustrated the alternatives:

“With both Accenture and IBM, we’re dealing with skills that are highly available. With Accenture, some of the skills are core, so there we augment the skills of a core group of people. For example, program management’s a core competency. So, we keep some of that, but we have probably a four to one ratio. If we need to quadruple the size of our development structure, we can. But we maintain the core knowledge. With IBM, in general, the skills are not business differentiating, so we let them do more. We want a service level out of it, and we maintain just enough knowledge to make sure we can be knowledgeable buyers and service level managers and make sure they’re performing well.”

—Dave Kepler

The IBM Deal

The IBM deal was a seven-year contract signed in 2004 giving IBM responsibility for managing the distributed part of the IT infrastructure, including 2,800 servers, storage, security, e-mail, disaster recovery, and voice, data and video networking. The contract also included responsibility for several large projects, such as implementing global voice over IP (VoIP). In 2005, these activities required about 500 IBM FTEs, based primarily in Midland, and also around the world, mainly at Dow sites:

“Our IBM relationship is a traditional service level model. We do joint planning and get them integrated, but there is a boundary between us. It’s an infrastructure relationship. We’re trying to leverage the scale of IBM and leverage their work processes.”

—Dave Kepler

Dow was anticipating several benefits from this arrangement. First, Dow expected to realize cost reductions owing to IBM’s scale and their expertise in managing distributed IT environments:

I think it’s one thing for an outsourcer to come in and take some chaos from a struggling CIO and make it better. But if you’ve already optimized—and we already had significant portions of our work centralized, global and standard—then it’s a tougher proposition. The real opportunity then is scale. And so the question is, does IBM have scale? And they do. If you go to the control center where this is managed, you see people managing the Dow systems sitting next to people managing other big corporations’ environments, sharing facilities, tools and expertise.”

—Mack Murrell

Senior Director,
Enterprise IT Operations and Services

Second, because Dow did not believe that IT infrastructure management could be either a rare or distinctive competence at Dow, the IBM deal would allow Dow to apply world class expertise to IT management without having to develop that expertise internally:

“Do you really want your best and brightest focusing their energy on the day to day provisioning of IT services when there are companies out there who do that as a core competency? There are things that we believe others just do better.”

—Mack Murrell

The Dow and Accenture Alliance

In contrast with the IBM arrangement, Dow’s relationship with Accenture was described as an alliance. The alliance had been formed in 1996 and its purpose was to supplement Dow’s own capabilities in application development and support with Accenture’s expertise and variable resources. Dow personnel were accountable for overall program management and functional content of the applications, while Accenture was accountable for process leadership, team leadership and many

traditional developer roles (e.g., configuration, database design and programming).

The work of developing, maintaining, testing and implementing information systems was jointly managed and executed by integrated Dow-Accenture teams working on-site. In a team of 12, for example, there might be three Dow people, one of whom would be responsible for functional content and another who would be developing functional or business competency. In early 2005, there were about 350 Accenture people working for Dow at four locations: Midland, Detroit, Terneuzen (The Netherlands) and Manila, with Manila being the only site without Dow employees.

The Dow and Accenture alliance had produced a number of important benefits. First, it had given Dow repeatable software and delivery processes. The Independent Project Assessment Organization had benchmarked Dow's costs and delivery schedule as the best in their database. Dow had also achieved CMM level 3 at all four development locations. Finally, from 1996 to the end of 2004, the company documented productivity improvements of 45%. Doug Snoddy, the senior IT executive at Dow responsible for the alliance, noted that the outcomes were a joint accomplishment of Dow and Accenture:

“For me, the key is to have metrics going in that are a baseline, so that we’re going to be able to measure the change. You see it doesn’t matter whether you’re measuring Accenture’s specific or unique input so long as you understand where you are today. Does it really matter whether it’s Dow individuals that are creating that change or the partnership with Accenture that’s causing the change to occur? The benefit is in getting the value and driving the change. So, everybody thinks this is all about ‘What do I bring to the table?’ Frankly, in the end it’s how Dow benefits from whatever arrangements or organizations you have in place.”

Because of the close working relationship with Accenture, Dow employees developed greater competency in software development and support. This learning changed Accenture's value proposition:

“One of the things that Dow has gained from this is a lot more understanding about the processes that we need to have in place and the process discipline that it takes to execute. But as that becomes much

clearer and obvious to us over time, the value contribution that Accenture makes is somewhat eroding, because a lot of the other services that they bring to the table are more commodity type services.”
— Doug Snoddy

As Dow developed greater expertise in software development and support processes, the company would still value Accenture's ability to deliver variable capacity for services like programming—as long as Accenture could offer those services at a competitive price. But such an arrangement would not be optimal for Accenture. Thus, both parties were constantly looking for new opportunities to apply Accenture's expertise.

Snoddy noted that a big difference between outsourcing commodity-type skills, as in the IBM agreement, and more strategic skills, like those in the Accenture agreement, was in how he assessed the outcomes:

“Keep in mind that we’re not measuring Accenture’s productivity. It’s the alliance’s productivity. Dow is bringing a component to the table and Accenture is bringing their process leadership and expertise to the table, and we’re measuring the output of our combined productivity. And that’s a key point. When you look at our association with IBM, we’re measuring their specific and unique contribution. When we say are they meeting our service level agreement, it’s a contract-driven, specific IBM deliverable that they are creating, they are managing, and they are executing to. And, therefore, our contract with IBM is a much more traditional outsourcing model based on the service level agreement, and meeting that service level agreement at a specified cost.”

Across the company, Dow had outsourced hundreds of business activities, ranging from credit recovery to transportation logistics. Some encompassed a broad range of activities, like the Accenture and IBM deals, while others outsourced narrowly scoped and highly specified activities. While management believed that deals of all kinds had the potential to add value, Dave Kepler preferred fewer, larger deals:

“If you outsource a big activity to one supplier, there’s only one interface to manage, and there’s higher leverage, but it’s tougher to switch and tougher to keep market forces at work. If you use

multiple suppliers, your need to manage grows exponentially. You want to get as few suppliers as you can to manage the scale, but none so big that you can't switch."

—Dave Kepler

*Corporate Vice President
for Shared Services and CIO*

It was not clear how many large vendors Dow might ultimately partner with or what activities would be outsourced, but the company was clearly headed to a more heavily outsourced operating model:

"We need to get to a point where we are running a more variable cost model. And this is fundamentally what it takes to drive in that direction."

—Michael J. Costa, *Corporate Director
Six Sigma & Work Process Expertise*

The Federated Broker Model

Going forward, Dow intended to leverage the efficiency, security and reliability afforded by its global process standardization and integration. But management recognized that the highly integrated nature of its technology backbone, most notably SAP/R2, had some important limitations:

"The down side of still having R2 is that now the tools that are being developed don't match up with R2, and so we have to develop a different interface for everything that we want to do. Some of the tools we'd like to get would be very easy to implement in an R3 environment, and we have to spend a significant amount of money designing the interface."

—Don Taylor

Vice President, Michigan Operations

Potentially more problematic than this was the fact that R2 was a monolithic system that could not support Dow's joint ventures and other unique customer needs:

"Today's IT architecture, which is a monolithic architecture, is sometimes referred to as the castle. Within the castle, things are really nice. It's very secure, people work together very well, there is plenty of food, and we are generating a lot of value. But if there is somebody that we want to work with, we always have to bring them in the castle, right? Because the perimeter defense is on the outside of the castle. I don't mean just the security—it's reporting, everything. And within the castle, we don't have any rooms with doors. So, if we bring in a joint venture that we want to work closely with,

we have to bring them in the castle and trust them. And you can't do that. It is only a question of time before you are going to bring somebody in and it is not going to work, or where somebody else will say, 'Yes, I know you trust them, but we don't, we don't think this is a good relationship'."

—Frank Luijckx

*Senior Director
Information Systems Strategy and Architecture*

Dow had considered migrating from R2 to R3, a more modular version of its backbone system, but internal analyses did not support the initiative:

"There is a huge up front investment, and the incremental value of moving from R2 to R3 is next to nothing for Dow because we are so integrated today."

—Michael J. Costa

Instead of replacing technologies, Dow intended to gradually implement its concept of the Federated Broker Model (FBM). In this model, Dow's technical architecture would be internet-based, open and componentized (see Exhibit 6). Dow would purchase ERP services rather than maintain ERP systems. These services would offer integration across companies rather than solely within companies, allowing Dow to selectively integrate processes with its JVs and other partners and customers:

"The vision of the Federal Broker Model is that we shift workflow into the BSP, ASP, BPO area that is emerging. You enjoy a much more competitive pricing environment because now it is not the SAP's and the PeopleSofts and the Oracles that control how companies work. It is more of a battle among providers, on open platforms."

—Michael J. Costa

In the ideal state of the FBM vision, Dow would maintain their valuable horizontal and vertical integration, but they would no longer buy, build or run applications. Nor would they buy individual components from individual providers—a scenario entailing significant management overhead. Instead, Dow envisioned buying application functionality from a strategic alliance that would bundle hardware, network, desktop, software and process capability (combinations of ASP and BPO providers) into an integrated service model, giving Dow—and any other company—a single point of contact for this bundle. This alliance, not Dow, would choose the technology and make IT invest-

ments. Dow would pay for process-enabling functionality as and when they used it:

“In my vision, the vendors work nicely together, using a well-defined set of rules. I can take people management from PeopleSoft, logistics from SAP, and invoicing from Oracle, and they all adhere to agreed-to standards. Because of the industry standards, they are not trying to kill each other. They are not trying to out-manuever each other—and it all works smoothly together.”

—Frank Luijckx

*Senior Director
Information Systems Strategy and Architecture*

A variety of developments suggested to Dow management that the Federated Broker Model was a realistic vision of the future. For example, companies were starting to contract for services from providers (e.g., salesforce.com) rather than buy or develop applications. The chemical industry, with Dow in the lead, had started to develop data, security and business process standards. And the Internet had proved itself as a transport media allowing a common portal within and across companies. Dow had elicited the interest of major technology companies, including SAP and Microsoft:

“I believe the software players are going to get smarter and figure out that the revenue stream isn’t going to recover and they have to change their business model. We have been out selling this design for about three years now. SAP, Microsoft, PeopleSoft, Oracle—anyone that will listen, we are talking this up.”

—Michael J. Costa

Dow management recognized that the Federated Broker Model was a long way from reality, but Dow had implemented a few capabilities that reflected the promise of the Federated Broker Model. Many of these early examples leveraged Internet capabilities and provided employee self service, including outsourcing of expense reporting to Bank of America and outsourcing 401K and stock options to Fidelity and SmithBarney. Dow also outsourced functions like payroll and elements of transportation logistics:

“I could probably come up with a hundred micro-outsourcing examples, where we actually have given the process away and say, ‘You run it, you deliver it,’ but it would not add up to more than 10% of what the company is about, not even that, I think. We are right now working on office management—should we outsource that, should we

just have somebody manage offices for us? You tell them how many offices you want in what city, and they deliver it. When people move in and out of the office, they manage that for us. Have we done this with accounts payable? No. Do we do it with warehouses? Yes, we do.”

—Frank Luijckx

Building on early successes, management felt that Dow could gain a competitive edge by implementing capabilities as they became available.

“One of the realities is to recognize the marketplace and what you can leverage and where there are things that you’re going to have to really design yourself and use. We have to be very practical about the fact that the service providers will have a fair amount of volatility. So, the Federated Broker Model isn’t an end state as much as it is a recognition that, boy, we can’t develop all the software and we will try to leverage these variable services that we need. That means we’re going to have to kind of have a lot of interfaces in this thing and be pretty flexible in what we’re trying to do.”

—Dave Kepler

*Corporate Vice President
for Shared Services and CIO*

As a starting point, Frank Luijckx had accepted responsibility to start building the enabling architecture for a subset of ten key joint ventures. His goal was to deliver a pilot for the joint ventures by the end of 2006:

“We are going to pick our top ten joint ventures and say, okay, we are going to develop a solution that meets your needs: it is lower cost and more flexible, gives a good level of segregation, is easy to implement, is easy to run; and adheres to Dow’s level of expectations, the thing that we aspire to. Ideally, we want to be able to run our work processes that we are so proud of in the joint ventures. You have to be able to do the things that Dow does, that make us a great company. So, we are now pushing this project. It is going to take about two years, and what we will do is, we will take the architecture, we will take all the concepts and build a mini-version of this, and see how far we can go. It’s not really an experiment, it’s the first step on a long journey.”

Exhibit 1: Financials for 2004
Exhibit 1
The Dow Chemical Company and Subsidiaries
Selected Financial Data

In millions, except as noted (Unaudited)	2004	2003	2002
Summary of Operations (1)			
Net sales (2)	\$ 40,161	\$ 32,632	\$ 27,609
Cost of sales (2)	34,244	28,177	23,780
Research and development expenses	1,022	981	1,066
Selling, general and administrative expenses	1,436	1,392	1,598
Amortization of intangibles	81	63	65
Purchased in-process research and development charges	—	—	—
Special charges, merger-related expenses and restructuring	(20)	—	280
Asbestos-related charge	—	—	828
Other income	1,059	468	94
Interest expense — net	661	736	708
Income (Loss) before income taxes and minority interests	3,796	1,751	(622)
Provision (Credit) for income taxes	877	(82)	(280)
Minority interests' share in income	122	94	63
Preferred stock dividends	—	—	—
Income (Loss) from continuing operations	2,797	1,739	(405)
Discontinued operations net of income taxes	—	—	—
Cumulative effect of changes in accounting principles	—	(9)	67
Net income (Loss) available for common stockholders	\$ 2,797	\$ 1,730	\$ (338)
Year-end Financial Position			
Total assets	\$ 45,885	\$ 41,891	\$ 39,562
Working capital	5,384	3,578	2,519
Property — gross	41,898	40,812	37,934
Property — net	13,838	14,217	13,797
Long-term debt and redeemable preferred stock	11,629	11,763	11,659
Total debt	12,594	13,109	13,036
Net stockholders' equity	12,270	9,175	7,626
Financial Ratios			
Research and development expenses as percent of net sales (1,2)	2.5%	3.0%	3.9%
Income (Loss) before income taxes and minority interests as percent of net sales (1, 2)	9.5%	5.4%	(2.3)%
Return on stockholders' equity	22.8%	18.9%	(4.4)%
Debt as a percent of total capitalization	47.9%	55.4%	59.2%
General			
Capital expenditures	\$ 1,333	\$ 1,100	\$ 1,623
Depreciation (1)	1,904	1,753	1,680
Sales and wages paid	3,993	3,608	3,202
Cost of employee benefits	885	783	611
Number of employees at year-end (thousands)	43.2	46.4	50.0

(1) Restated for the sale of the pharmaceutical businesses in 1995.

(2) Adjusted for reclassification of freight on sales in 2000 and reclassification of insurance operations in 2002.

From The Dow Chemical Company's 2004 10-K filing with the U.S. Securities and Exchange Commission, page 20.

Exhibit 2A: Global Business Units Organization Chart

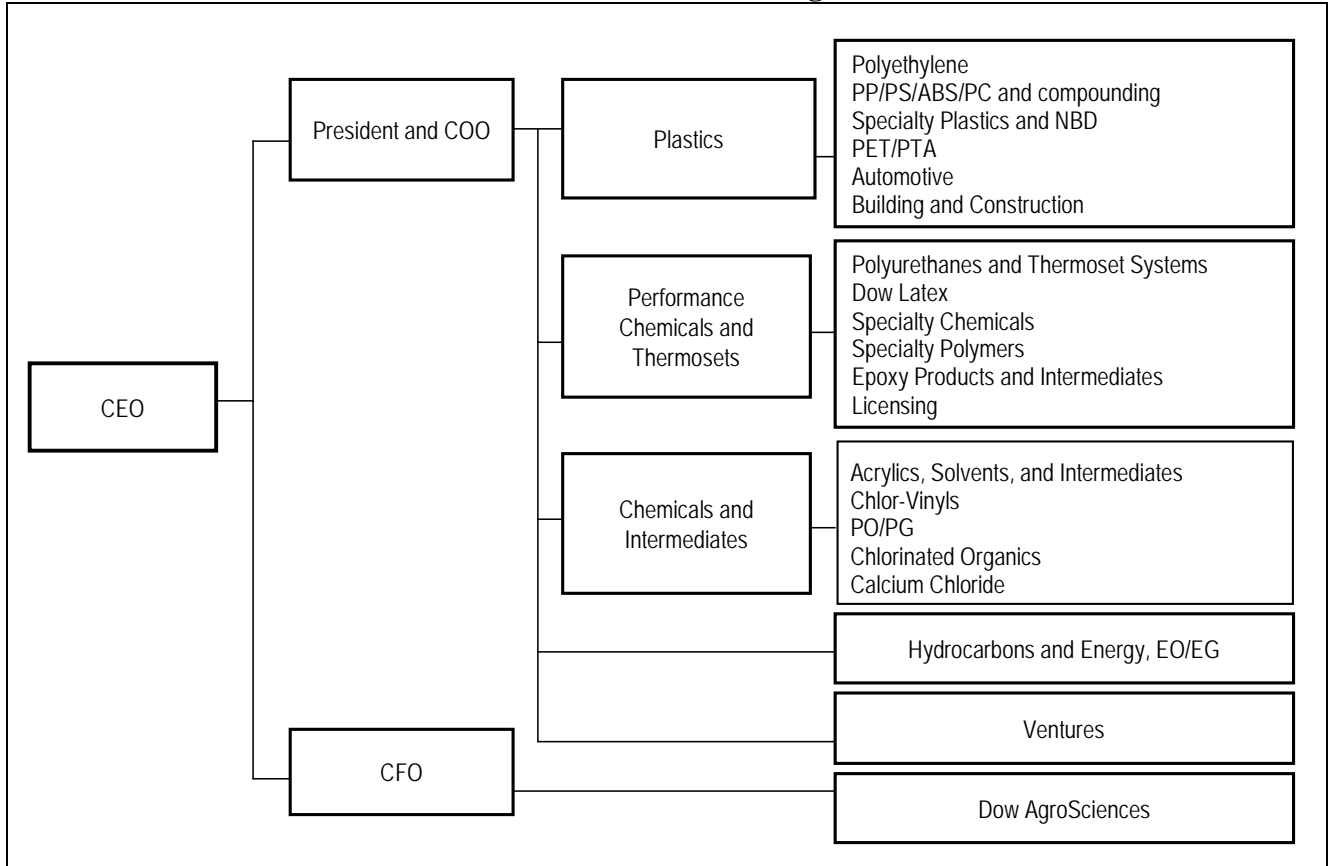


Exhibit 2B: Corporate Functions Organization Chart

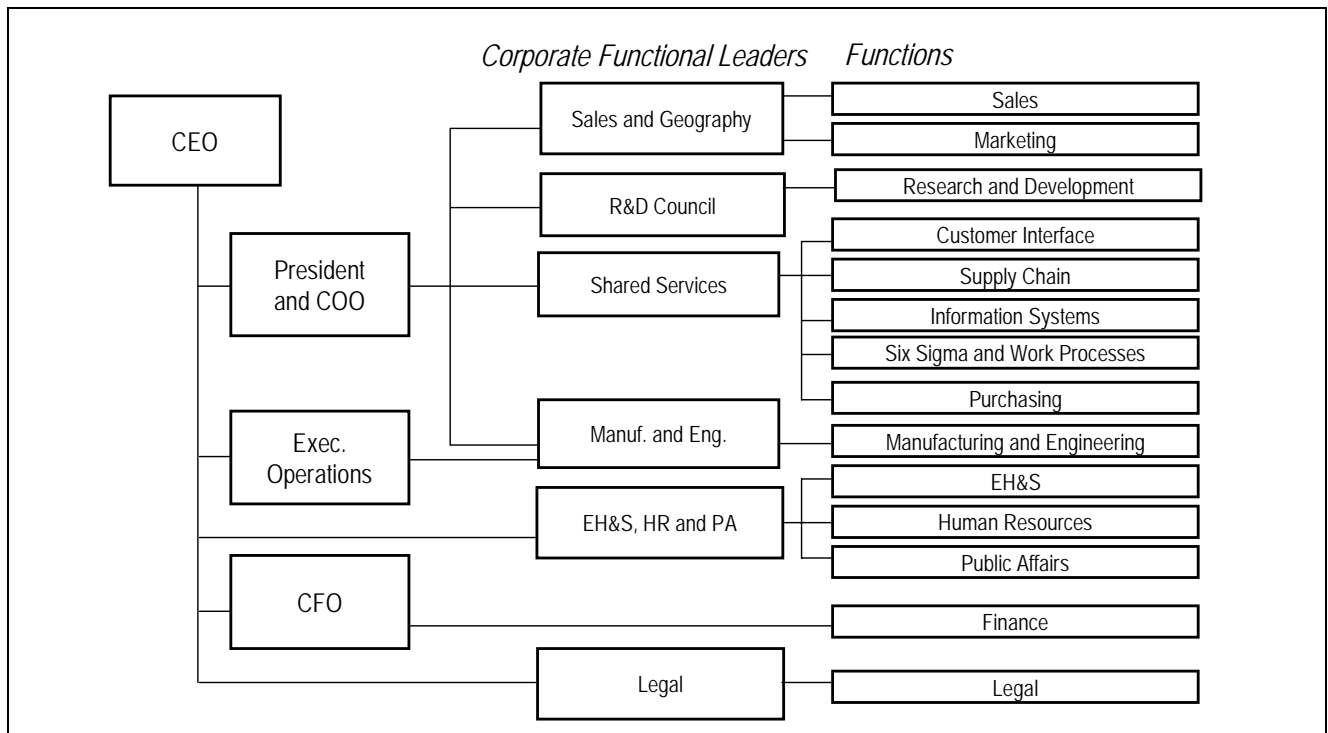


Exhibit 3: Shared Services Organization

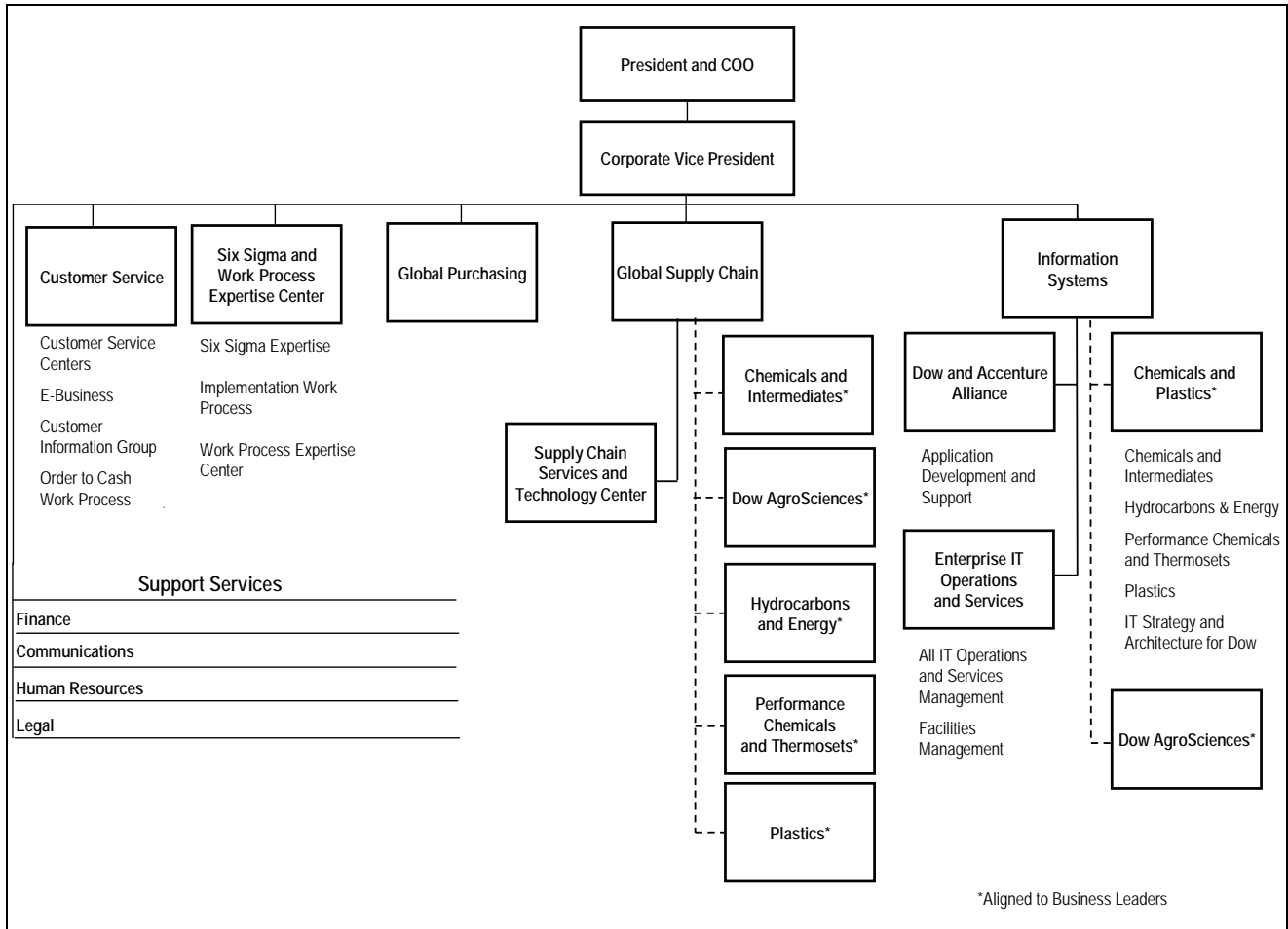


Exhibit 4:

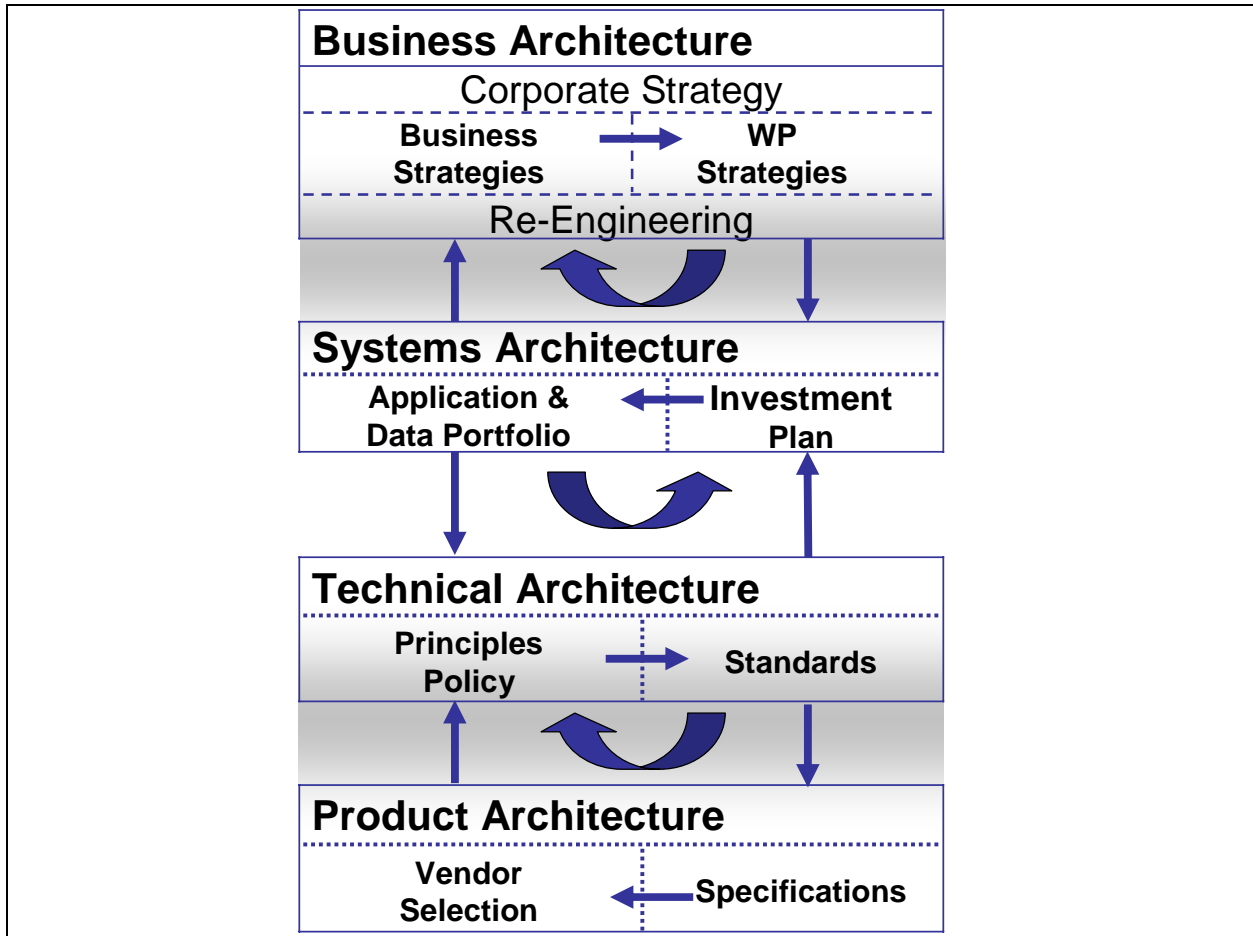


Exhibit 5: Information Systems

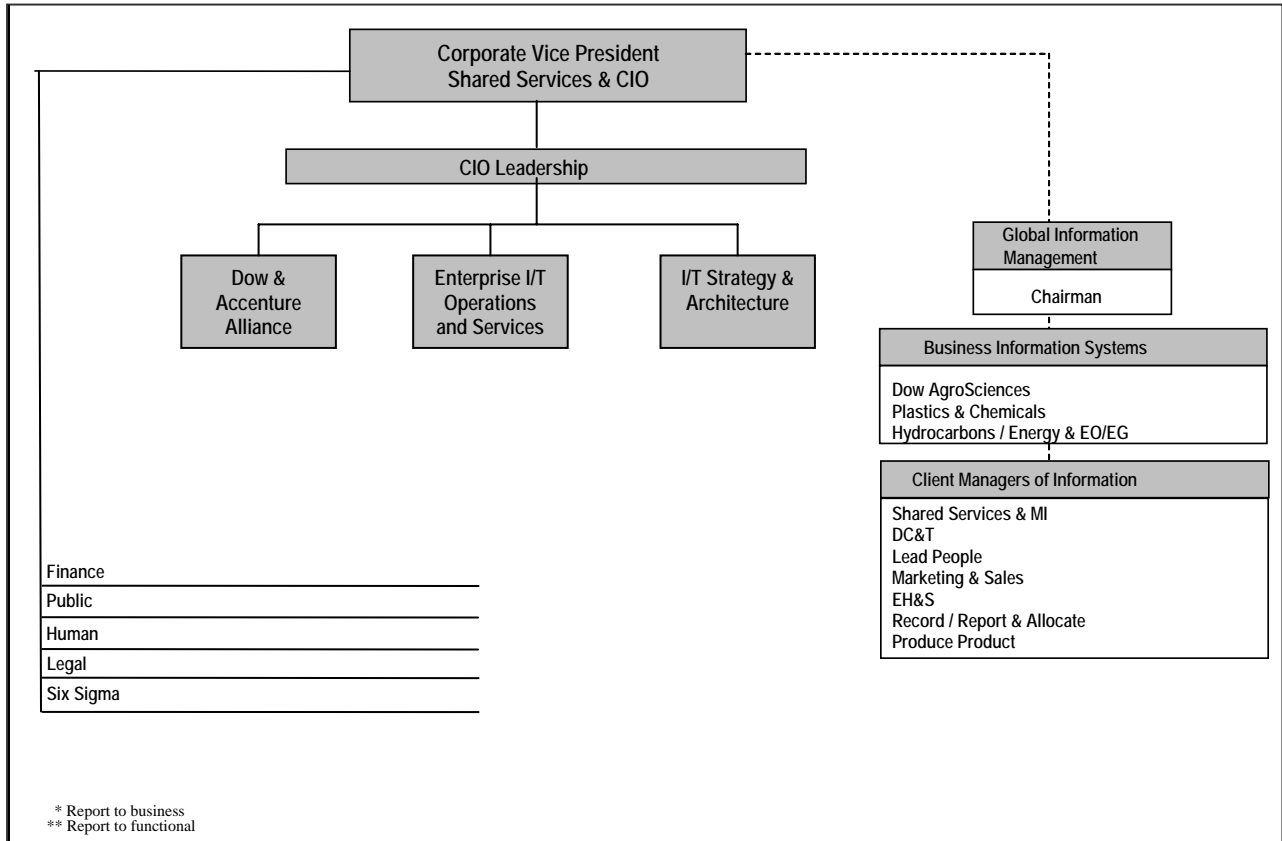


Exhibit 6: The Federated Broker Model

