Communications of the Association for Information Systems

Volume 20 Article 26

10-5-2007

# Leveraging the Sales Force with Portal Technology at the American Subsidiary of a Japanese Motor Company Case Series (A), (B) and (C)

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**ABSTRACT**

Managers understand the need to have information aligned with their businesses - they see and feel its consequences every day. They also understand the goal of technology-based information systems (IS) delivers the right information to the right people at the right time so that both strategic and operational decisions can be made properly and quickly. This was the approach followed by the American subsidiary of a Japanese motor company. The firm implemented a single, unified, Web-based interface to centralize and synchronize data access to 12 stand-alone dealership sales applications. The implementation took less than six months and less than $500,000 was expended. Immediate results were that the sales managers became significantly more efficient with their time, the automobile division recognized a cost savings of $1.4 million through a more efficient use of employee resources, and there was an estimated $10 million savings corporate wide as a result of employee efficiency gains throughout the organization. Despite all of these benefits, the automobile division's chief information officer was faced with the decision of whether or not to return to fix the data integration and timeliness problems that remained among the division's autonomous sales applications. This case study series highlights the objectives, outcomes, and challenges that managers must address while implementing Web-based portals. This case series also provides a better understanding for identifying, leveraging, and improving operational efficiency within a firm.

**KEYWORDS:** Web-based portals, automotive industry, information systems, sales force, information technology, systems integration[1]

[1] A teaching note is available upon request. Please contact Dr. Mark Chun at Mark.Chun@pepperdine.edu.

# LEVERAGING THE SALES FORCE WITH PORTAL TECHNOLOGY AT THE AMERICAN SUBSIDIARY OF A JAPANESE MOTOR COMPANY RECOGNIZING THE OPPORTUNITY (A)

At the end of March 2003, Tom Richardson,[2] Chief Information Officer (CIO) at the American subsidiary of a Japanese motor company, returned from an executive meeting with his colleagues. His team had concluded that Web-based portal technology could help improve the process of accessing automobile sales data cross autonomous systems. Tom recalled:

> We wanted to create efficiencies in our automobile field sales force because the sales managers spent too much time trying to access IT systems, massaging the data, and making sense of the dealership sales information. …Most of their time was spent manipulating [dealership sales] data. Interaction that the computer should be doing was being done by the field sales staff.

Before deciding to implement the portal project, Tom wondered what factors needed to be considered in moving ahead. He knew that the more systems the portal needed to pull data from, the more valuable the technology would be to the sales division. At the same time, he recognized that the more inaccurate and unreliable the data in those systems, the more difficult it would be to implement the portal. The portal would be a more viable and worthwhile investment only if the quality of the underlying auto sales data was reliable and if the process of accessing auto sales data across autonomous systems proved to be more efficient. The decision to implement a Web portal also posed a big risk for the company, as it opened up backend systems to the Internet. The firm was very risk adverse, and it had not allowed prior access to its data systems from systems outside of the corporation's perimeter.

Prior to holding the role of chief information officer for 15 years at the American subsidiary of a Japanese motor company, Tom held numerous executive management positions with large aerospace and beverage corporations and had many opportunities to leverage and implement technology to improve business operations. Trained in engineering and mathematics, he championed projects focused on operations, distribution, and process improvements. Tom recognized that most companies experienced agony when redesigning and rewriting their existing systems as new technology became available in the industry. In his experience, he knew that many companies attempted to simplify the process for accessing data across autonomous systems by creating a portal "wrapper" around their disparate systems, rather than redesigning inefficient processes or fixing systems directly. Tom recognized two options: rewriting a portion of the automobile division's legacy systems or doing something different by introducing portal technology to assemble automobile sales data at a fraction of the cost. Although inclining toward the second option, Tom wondered if his information systems department (ISD) would be better off if prior to implementing the portal technology they would fix the data integrity and timeliness problems that existed in the underlying legacy applications.

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[2] Pseudonym names have been used for the actors and company name to comply with confidentiality agreements.

## BACKGROUND

### THE MOTOR VEHICLE INDUSTRY[3]

By February 2003, the motor vehicle industry worldwide was highly competitive. Although manufacturers varied in their degree of market presence in different geographical regions, the battle for advantage in the industry was fast becoming global. On average, 41 percent of worldwide motor vehicle sales were outside the producing country (U.S. 37 percent, Europe 39 percent, Asia 53 percent). The automobile industry also experienced an increase in joint venture alliances among suppliers involved with providing parts and services. This resulted in increased breadth and scope of international influence on the industry. The total number of direct suppliers dropped because numerous small suppliers could not compete in this emerging industry or were relegated to the second or third level of the supply chain hierarchy. The automobile industry also experienced significant mergers between the largest motor vehicle manufacturers.

During this time, most motor vehicle manufacturers had experienced a drastic decrease in the number of platforms[4] used to create different models. By 2003 all manufacturers were using a single platform.[5] There was a corresponding decrease in differentiation among vehicles. Manufacturers also shared components among plants located in different regions of the world. These improvements in productivity had continued until world motor vehicle production capacity exceeded demand by over 30 percent. Strong competition resulted in lower prices. Another effect of this over capacity was that modern versions of basic vehicles from developed countries were introduced in emerging markets. In fact, emerging markets had showed greater potential for immediate growth. But developing nations, eager to create wealth- and job-producing sectors, had encouraged development of their own export-oriented auto industries.

In this context, the relationship between vehicle manufacturers and their dealers had clearly been transformed. Traditionally, dealers closely guarded information about the actual costs of automobiles and often reaped large profits from uninformed and naive shoppers. However, the information provided on the Internet had allowed consumers to be better prepared during the automobile negotiation and purchasing process. The Internet armed automobile buyers with actual costs, competing prices, and details about cars' specifications and features.[6] Online automobile sites—such as Edmunds.com, Kelly Blue Book's KBB.com and Autobytel Inc.'s Web site—provided buyers with a plethora of information that allowed buyers to compare vehicles by price, features, or brand.[7]

### HISTORY OF THE AMERICAN SUBSIDIARY OF THE JAPANESE MOTOR COMPANY

The subsidiary opened in 1959 in Los Angeles, California, and was one of America's largest automakers and top sellers of motorcycles, automotive transport vehicles, personal watercraft, marine engines, and power equipment. The U.S. plants of this Japanese company sold a diverse

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[3] Background information for this section was obtained from the "Automotive Industry Report," Second Quarter 2003, a publication of the Global Automotive Group, Standard & Poor's.

[4] A platform, as defined by Standard & Poor's, is a set of technical solutions that allows the production of different models based on common components. The differentiation among the finished models is the result of changes in the motor size, vehicle body, optional equipment, and interior finishes.

[5] In 1997 there were 100 platforms being used, by 2002 only 60.

[6] Technology (A Special Report): Automobiles --- In the Driver's Seat: Car buyers are learning that a lot of knowledge goes a long way, WSJ, May 19, 2003, pp 12.

[7] Ibid.

line of products such as automobiles, motorcycles, ATVs, aquatic, and power-equipment products (see Attachment #1). By 2003, it had presence in over 50 states, employed over 24,000 individuals, and achieved a record level of sales of over 1.24 million automobiles.

The company structure was organized by its product group divisions (see Attachment # 1). Each division had its own set of executive management, such as the executive vice president of sales, the CIO, or the chief financial officer (see Attachment #2). The company as a whole, however, shared a common vision which centered on the concept of the three joys - *the joy of buying, the joy of selling, and the joy of creating.* The concept intended to ensure that all businesses evolved around customer satisfaction.

With relation to the information systems environment, each division had an IS department that followed the computing trends commonly followed in the 1970s and 1980s in fulfilling requests and developed IS applications to support autonomous functions within each of their respective divisions (such as parts manufacturing, motorcycles, power equipment, marine, etc). As a result, there was little to no consistency of the IS applications, processes, and functionality within or across the diverse business divisions. Included in the IS infrastructure was a combination of both mainframe and client-server computers. The company's applications and data were typically stored on the company's centralized back-end mainframe and server computers.

Within the automobile division, there were 12 applications that tracked automobile sales (see Attachment #3). These applications were developed to provide specific storage and reporting functionality of auto sales and were not designed to be integrated with other applications in the division. As a result, redundant and inconsistent auto sales data had become a common problem within the divisions IS infrastructure. Two specific problems were the *integrity* and *timeliness* of the sales data. The *integrity* of the data related to the accuracy, reliability, and consistency of the automobiles sales data. Because the 12 stand-alone applications were implemented autonomously, inconsistent processes were followed to input sales data into them, data integrity became an inherent problem. An ISD employee commented:

> There were a lot of inconsistent sales data across the sales applications. In a recent study, we discovered that only up to 80 percent of our sales data were consistent across the applications. … Much of the inconsistent data stemmed from the differences of how the sales data was input or maintained within each application.

The *timeliness* of the sales data was also problematic in the automobile division because of the inherent problems associated with capturing, processing, storing, and making data available to sales managers. The 12 applications kept track of two primary types of automobile sales data - *master* and *transactional* data. *Master data* were the key and static fields that were used to identify and/or linked other more high-level and detailed fields in the data. Typically, master data were created once in real time and were used to link or associate other data fields associated with auto sales activities. An example of master data is a dealership name, which is kept in the dealership information system (see Attachment #4). The IS applications in the automobile division were also used to track *transactional data*, which were all of the daily activities and details linked to the master data. An example of transactional data is the sales activities data captured on a daily basis. This type of daily sales activity data was maintained in the sales report system (see Attachment #4). In general, transactional data were batched and processed to update the sales applications data once a day. Due to the data being batched for daily processing, auto sales managers sometimes accessed incomplete sales data from the systems.

## THE ROLE OF THE AUTO SALES MANAGERS AND DEALERSHIPS

Within the automobile division, the auto sales department was responsible for monitoring the sales of all automobile dealerships and for working with the dealership owners to maximize sales and customer satisfaction. There were four levels of sales managers within the auto sales department, which included one national sales manager, three regional sales managers, 16 zone sales managers, and 84 district sales managers (DSMs) (see Attachment #2). To enable the

auto sales managers to be able to react to constant market trends within their sales domain and to provide specialized attention to the unique segments of the automobile sales market across the nation, the national sales manager broke down the sales territory into clusters of dealerships which exhibited similar sales characteristics.

All automobile dealerships of the American subsidiary of a Japanese motor company were privately owned and operated. The dealership owners purchased franchise license rights to sell automobiles within a geographical area specified by the sales executives of the automobile division. Run as independent businesses, these dealerships were the front line of business for the automobile division of the company. DSMs were responsible for directly interacting with and developing a relationship between the American subsidiary of the Japanese motor company and its auto dealerships. The DSMs acted as sales consultants to the dealerships and were required to visit each dealer at least once a month to work with them to increase sales.

Since the 1990s, the ISD implemented applications allowing sales managers to access sales information, place or check orders for inventory, request parts, receive notification for marketing incentives, read sales bulletins provided by the sales department, conduct vehicle registrations, collect part model information, and follow up on leads provided by the corporation (see Attachment #3). Although ISD managed technology, it was the auto sales managers who determined how the technology was used within its business operations. Keith, a former DSM, commented on his job responsibilities and how he and his peers used to gather automobile sales information prior to their monthly dealership sales meetings:

> We had to do some preliminary research before [our dealership meetings]. This would take 2-3 hours of preparation time per dealer. Gathering this information for dealership meetings was frustrating. Downloading or capturing sales information was a 12-step process because there were 12 different systems. Each particular type of information was captured from different mainframes, client applications, PC applications, printed hard-copies of sales reports, etc. …The DSMs spent a lot of time downloading information, as opposed to the analysis and research that they are paid to do.

The senior managers of the auto sales department did not enforce a common process for how its sales managers captured, manipulated, or used sales data from these applications. A sales manager further commented on the lack of standard procedures or guidelines and absence of training that existed:

> Each DSM had developed a different approach or procedure to getting a hold of the sales information from the different systems … Some of the DSMs gathered and massaged this information manually, some created macros in spreadsheets that which enabled the DSMs to input sales information and produce reports.

Given the mobile nature of the DSM work, accessing the information from the field, dealerships, hotel rooms, or home was a problem. Every time the DSM left the company premises and had to travel somewhere for their dealership meeting, they had access only to the information that they downloaded to their laptops. What further complicated this issue was that the DSMs needed to remember three to five different sign-ons to access the company autonomous applications and systems. When accessing dealership sales information, DSMs were often locked into the modem and the analog line, which was often slow. For example, when the DSMs were traveling, they were constrained by the hotel's 28K connection to dial into the company's network.

The sales information that the DSMs took to their dealership meetings was often outdated because the information had been pulled from the systems a few days prior to dealership meetings. The inability to easily access real-time sales information caused embarrassment on numerous occasions for DSMs in front of their dealerships, who clearly recognized that DSMs were not operating with current information. Furthermore, Keith noted:

> During the dealership meetings, there were a few routine tasks that we could prepare for, but every month there were always some new requests that we were not prepared for. …

> DSMs often responded with comments like, "Well, let me research it and I will get back to you" because they did not have any convenient or secure way of access the [company] network to retrieve real-time dealership sales information … By the time the DSMs got back to the dealerships with an answer, it was a few days or weeks later. … In addition, priorities changed quickly in the field. It was like being in a constant fire drill. I could have been driving along to visit a certain dealership, and then my zone manager called and asked me to change priorities and see another dealer ASAP. … If I didn't have the right sales information available, I had to show up unprepared.

The same difficulties of accessing auto sales data across multiple systems existed at all levels of the auto sales department. The regional and zone sales managers often met with their subordinates with sales data that was often outdated or inaccurate because it was pulled from the applications at a different time than their direct reports.

## A SINGLE SIGN-ON: ONE DOOR TO THE COMPANY

In November 2002, Tom observed that Web-based portal technologies were quickly becoming an important industry-wide tool for accessing information from autonomous stand-alone IS applications. He decided to implement a Web-based portal, called *FieldLink*, to serve as a single and secure point of access to dealership sales information and to provide a standardized process for accessing and acquiring field sales information.

First on the agenda was the establishment of an accountable leadership team for the project. Tom understood that the e-business group within the auto sales department, possessed more business-related experience and savvy with Internet Web-technology than his division. In addition, it was a business sales department that possessed the resources and sought useful corporate-wide projects. Tom also realized that his ISD could leverage technology to aid the sales department in finding a solution to the problem of accessing data across autonomous IS applications. As a result, he organized the FieldLink project as a joint effort between the three departments – auto sales, ISD, and one of the sales sub-departments, e-business - and invited them to help determine a solution for the issue at hand.

In March 2003, Tom identified two champions to lead the task of investigating whether or not a Web-based portal could provide some relief to the tedious task of gathering sales information across numerous stand-alone applications (see Attachment #5). One champion came from within the information systems department. John was a project manager who had been involved for more than eight years in the successful implementation of multiple IT projects within the company. He enforced efficient IT implementation methodologies across multiple projects, understood business processes, and was knowledgeable about best utilizing his staff's technical skills and capabilities. The other champion was Keith who came from the e-business group. Keith was recently hired by the e-business group managers as the associate efficiency project lead for the auto sales department. Keith's skills complemented John's expertise because he had four years of prior experience as a DSM and was considered an expert within the district sales department. He understood the sales operations and had first-hand experience of the difficulties that the DSMs had encountered when accessing autonomous sales data. John and Keith first identified and recruited 25 members to join their self-managed team. These members came from the e-business and the information systems departments, and were selected based on their experience in developing IT-business application implementation and understanding the dealership sales process.

During the team's initial kickoff meeting, they identified two key questions that they wanted to address during the investigation:

1. How much time would be saved by the portal implementation?

2. How could they improve the data quality so users could make better decisions?

During this initial meeting, the FieldLink team debated whether or not they needed to leverage the existing legacy systems within their architecture or to redesign an entirely new system.

At the conclusion of the meeting, the FieldLink team set September 2003 as the portal completion date, because it coincided with the automobile division's yearly national sales convention meeting, where all national, regional, zone, and district sales managers would be present. The team recognized that if they had not completed the portal development and implementation within their aggressive six-month target date, they had two alternatives: 1) to introduce FieldLink independently throughout each separate zone, which required a lot of coordination, logistics, and separate training sessions; or 2) to wait until the next dealership meeting a year later (September 2004) to unveil the portal technology. The FieldLink team determined that the two alternatives were cost- and time-prohibitive and decided to aggressively attempt to meet the September 2003 deadline.

As Tom was evaluating how to proceed in implementing a portal technology, he wondered to what extend he should ask the ISD team to go back and fix problems associated with data integrity and timeliness of the department's legacy application. What were some of the tradeoffs between a quick implementation of technologies, like portals, versus the lengthy redesign of legacy application infrastructures? And, if they were to proceed with a portal technology implementation, what should be the portal development stages that they needed to follow?

# LEVERAGING THE SALES FORCE WITH PORTAL TECHNOLOGYAT THE AMERICAN SUBSIDIARY OF A JAPANESE MOTOR COMPANY DEVELOPING AND IMPLEMENTING THE PORTAL (B)

In April 2003, the FieldLink team decided to proceed without making any changes to address the problems of integrity and timeliness of the system's data. Instead, the ISD employees focused on the developing and implementing the portal. They evaluated the technical expertise and skill in their department and found that this was insufficient to design, develop, and implement this type of portal technology. The FieldLink members educated themselves by attending portal conferences, identified key players for implementation, and sought external experts who shared experiences and knowledge with them. They spent the first few weeks researching Internet sources to understand how other companies (consumer sites, job sites) had used Web-based portals and identified the different types of technology available on the market.

During this time of investigation, the FieldLink team relied on their acquired knowledge to scope and document the system requirements for the portal development. Both the business and ISD employees on the team agreed to follow a formal process for determining the portal requirements (see Attachment #6). This process allowed both the business and technical employees to have equal input in determining the portal requirements; it also ensured that expectations for the portal development had been met by both departments. The FieldLink team spent two weeks shadowing four DSMs in the field to better understand how sales information was gathered, manipulated, and analyzed. John recalled:

> To begin our study, we were clear that we had to go to the place where things were happening. We couldn't assume that we knew what was happening. We went and lived with DSMs for a couple of weeks, traveled with them, and tried to understand what their days were really like.

Keith added:

> We took the time to get DSMs together to talk and share their frustrations in performing their job. We rode in their cars [as they visited the dealerships] to understand the processes that they took to gather their sales information, how they consolidated it for their meetings, then how they used it in their meetings.

During April 2003, the FieldLink team conducted surveys, focus groups, and interviews with DSMs and key executives in the sales, e-business, the information systems department, as well as dealership owners. Their objective was to gain additional perspectives on the problems involved in the dealership-company relationship, as well as to verify that the functional requirements that were needed to meet the expectations of the various stakeholders in this relationship.

Following this initial two-week requirements-gathering efforts, the FieldLink team spent an additional eight weeks scoping, identifying additional high-level requirements, and combining the findings into a prioritized matrix list which established priorities and sequence for the portal development. During these eight weeks, the FieldLink team discovered that the parts manufacturing department within a sister division, had implemented a portal technology a year earlier (in 2002) to aid their division in accessing information related to the company's parts manufacturing process. The FieldLink team contacted the department to see if they could learn from their portal implementation. The team used the information that they gathered to create a prototype to demonstrate that the portal concept could work in the automobile field sales environment.

The FieldLink team followed a five-step process to develop, test, and implement their portal prototype quickly.

| | |
|---|---|
| Step 1 | *Gain expertise from the parts manufacturing department.* |
| Step 2 | *Select portal software.* |
| Step 3 | *Select portal hardware.* |
| Step 4 | *Leverage external consultants for expertise.* |
| Step 5 | *Develop portal prototype.* |

The first step included learning from the manufacturing department by: 1) visiting and being exposed to how the portal was used in their department; 2) using and understanding the portal functionalities; 3) discussing implementation techniques with the portal champions who had implemented the portal in their department; 4) understanding the approaches and decisions that were made prior to and during the portal implementation; and 5) reviewing the existing documentation of the requirements and the processes that they followed during that portal implementation. The FieldLink team documented and adopted similar milestones and performance measurements of the parts manufacturing department portal implementation to benchmark their own systems development progress.

During this visit, the FieldLink team learned that they faced a tradeoff for using the portal technology. The tradeoff existed between standardizing the process for which their sales data was accessed and reported and the process of managing exceptions in the data. Pulling together a single dealership view from multiple systems in the portal was a challenge for the team. A FieldLink team member described the problem:

> When implementing the FieldLink portal, we faced a tradeoff dealing with the low integrity of the data [where the data is not 100 percent accurate], and establishing an efficient manual process. If users conducted five queries against the manual systems – sometimes they came across inconsistencies in the fields. For example, when searching for dealership data, they might have pulled up information on [Dealership A], where users had inputted two different street addresses – *Western Avenue and Western Blvd.* At this point, humans can easily spot errors in the data quickly and resolve the problem; users fixed or discarded data that was inaccurate. … Portals were beneficial because they standardized the manual processes for acquiring and reporting data, but they cannot be easily used to handle exceptions in the data. … Portals are primarily used to pull data together and to allow us to report it to users. … There still needs to be a human element in identifying and managing data exceptions.

During this step, the FieldLink team found out that rather than going back to existing legacy IS architecture to fix problems of data integrity across the 12 legacy auto sales applications, they had the option of designing a portal prototype to capture existing sales data from the legacy applications. The team realized that the portal was not a solution to fixing the data integrity problems that existed within their legacy architecture, but rather a short-term solution for the division. Further, the team recognized that the timeliness of the auto sales data and how it was captured, processed, and stored (i.e., static master data versus dynamic sales activity data) would still pose a problem for providing reports with timely information. The FieldLink team identified four possible options to implementing the portal within the automobile sales division:

1. To implement a portal across the existing legacy systems without making any changes to address the problems of integrity and timeliness of the systems' data. One of the FieldLink team members described this option as "putting lipstick on a pig." The team recognized that the primary advantage of this option was a quick delivery of a portal that standardized how auto sales data was gathered. They also recognized that the primary downfall of this solution

was the risk of consistently and perpetually providing auto sales managers with inaccurate sales data.

2. To selectively pick a few of the worst applications across the legacy environment and to improve the data integrity so that the portal would be able to pull more accurate sales data. The benefits to this option were that they would improve the overall quality and integrity of the data reported to the sales managers through the portal, and it would solve a portion of the data integrity problems that existed among the division's legacy systems. The detriment of this solution was that it would have hindered the team from quickly delivering the portal solution to the sales managers at their September 2003 meeting.

3. To rationalize systems by reducing the number of the systems that the portal would have had to talk to, to eliminate extra instances of master and transactional data, and to improve the overall quality of the auto sales data. The advantage of this approach was that to some extent, the team recognized that if all information is available in a single newly rationalized system, there may no longer be a need for a portal since the data will all be available directly from the new single system. However, a major downfall to this approach would be a delay of the portal delivery.

4. To selectively build a portal prototype and to improve the quality of data in the existing legacy system in parallel, so that the portal can be expanded in the future. The team recognized that if the auto sales managers were able to obtain all sales data from the portal, then there would have been no reason to change the underlying systems. The benefits of this option would be: a) efficient access to and report of auto sales data across autonomous applications; b) ability to meet the deadline that the team had set for themselves; c) ability to prove that the technology could work in their environment; d) gaining additional executive level support and funding; and d) meeting their September 2003 deadline. The team recognized that the portal could be redesigned in the future to accommodate changes in the back end infrastructure of the automobile division's IS architecture. However, they also recognized that this option was only a short-term solution for their long-term data problems associated with integrity and timeliness.

Due to the budget and time constraints of delivering a technology solution by September 2003, the FieldLink team chose to follow the first option of building a portal prototype without making any changes to address the problems of integrity and timeliness of the systems' data. The team decided to improve the quality of the data within their legacy applications at a future date.

The second step to developing the portal prototype included contacting portal software vendors who specialized in the technology. The FieldLink team preferred to use the same technology that was selected by the parts manufacturing department because it had already been proven successful in the division's environment. However, they wanted to get introduced to the latest portal software available on the market. After an initial evaluation of the technology in the market, the FieldLink team identified and contacted two companies which were proven leaders in the portal technology industry: Vignette (which was the same software used in the parts manufacturing department), and a leading vendor of Microsoft's .NET software solutions. The FieldLink team tested and experimented with both technology solutions for three weeks. They established a relationship with these software providers intended to create a long-term partnership for support and implementation opportunities. During this phase, the team learned that the portal software could be used to simplify the navigation to auto sales data and applications by pushing pre-specified auto sales reports to sales managers. The portal software leveraged the Internet by increasing the number of locations and types of devices that could be used to access data. Using the Internet to access the portal also improved the speeds to the company's networks and IS and improved the network's security by eliminating the need for sales managers to access the firm's back end systems.

The third step to develop the portal prototype was to work with the hardware vendors to understand the computing requirements needed to implement the FieldLink portal. The FieldLink

team contacted IBM, the vendor that provided the hardware for the parts manufacturing department portal and invited them to demonstrate their hardware capabilities. The FieldLink team spent three weeks experimenting with the hardware and testing whether it was sufficient for their portal implementation needs. During the team's evaluation of the portal software and hardware options, the team identified concerns that needed to be addressed during the portal development. Their concerns included: increased traffic on the company's network, additional hardware and software maintenance/support costs, extended support costs of legacy systems associated with the portal, Sarbanes-Oxley compliance issues, Y2K issues, and a possible increase in IS help-desk support related to using the portal. A major benefit that the team identified during these phases was that the portal technology was capable of increasing IS security within their architecture, as the technology would limit the access that sales managers (or other unauthorized users) had to the underlying back-end systems.

The fourth step of the portal prototype development involved contracting an outside consulting firm to learn and understand how to follow the best-known practices in portal development methodologies.[8] The consultants were also used to provide an unbiased verification of the development decisions made and requirements determined by the FieldLink team.

The fifth and final step of the portal development was the testing of the portal's technology functionality through the implementation of a prototype. The FieldLink team demonstrated that the portal technology solved the DSM's problems of accessing data from other autonomous IS applications because the technology enabled users to access standardized sales information across the 12 systems. Since the team saved time and resources learning through the parts manufacturing department portal implementation, they were able to demonstrate that the cost savings enabled them to develop the portal within the allocated budget.

While developing the prototype, the FieldLink team determined that they could design the portal to allow sales managers at each level of the department the ability to obtain access to all auto sales information that existed on the 12 auto sales applications. What this implied was that all users would have access to sales information *horizontally across* multiple levels (i.e., national, regional, zone, district) and *vertically within* each level of the sales department. This implied that the sales information which was traditionally controlled, managed, protected, and accessed across and within each level of the sales department (i.e., at the national, regional, or zone levels) could have been made available to all users of the FieldLink portal. This added capability would have resolved the problem of sales managers having to identify the appropriate sales managers at different levels of the auto sales department and to wait for them to provide the requested sales information. The FieldLink team discussed this opportunity with the sales department management and shared the implications of issues, such as data access, security, and territory domain rights. The tradeoff that the team considered was whether or not they should make available a function that would allow sales managers to have transparent and free access to all sales information or to ensure that portal users only had access to sales information within their own domain and responsibilities. The auto sales executives decided that the portal should have been designed to allow auto sales managers to only have access to sales information within their own territory or areas of responsibility.

In early June 2003, the FieldLink team completed the prototype and demonstrated that the portal technology solved the problem of accessing sales information across autonomous applications through one sign-on. The process that the sales managers used to access sales information within their own responsible areas was now standardized using a simple Internet connection. This eliminated the need for auto sales managers to go through the traditional process of dialing into or gaining access to the firm's internal network systems through slower, constraining, and dated technology. After demonstrating initial success of the technology, the team obtained

[8] The identity of the consulting firm has been purposely concealed due to confidentiality agreements.

approval from the executives of the three departments who sponsored the project (ISD, e-commerce, and auto sales) to continue with the full development and implementation. As the FieldLink team embarked on a four-month period (June–September 2003) to develop the full version of the portal, Tom wondered if the FieldLink team made the right decision to implement the portal to access the existing legacy systems without making any changes to address the overall problem of integrity and timeliness of systems data.

# LEVERAGING THE SALES FORCE WITH PORTAL TECHNOLOGY AT THE AMERICAN SUBSIDIARY OF A JAPANESE MOTOR COMPANY DELIVERING RESULTS AND SHARING THE WEALTH (C)

The FieldLink development was completed in September 2003 as scheduled. At the DSM convention that month, the FieldLink team unveiled and introduced the portal to all 84 DSMs at one meeting. During a 10-minute introduction session, the FieldLink team demonstrated how DSMs had access to the 12 autonomous sales applications with one sign-on, access, and was capable of consolidating their sales information from each dealership, keep notes on dealership conversations, and utilize analysis tools available in the portal (see Attachment #7). The FieldLink team received a standing ovation from the DSMs.

Over the next four months, the FieldLink staff rolled out the portal to the DSMs by conducting three-hour training sessions in every regional and national sales zones. The executive vice president of sales mandated that all DSMs needed to attend the training session. A DSM who used the FieldLink portal recalled:

> With the implementation of FieldLink, we have significantly cut our preparation time of the dealerships sales data. … Preparing a dealership meeting now takes about 5 percent of our time; we spend 50 percent of our time reviewing and analyzing the sales information and 45 percent consulting [sales, ROI, marketing, finance, credibility, etc.] with the dealerships. Our jobs have become more interesting and dynamic.

The standardized process involved with accessing sales information saved sales managers almost two hours of time that they would have spent gathering, cleansing, and analyzing sales information. The ability to access real-time auto sales data improved the credibility of the sales managers by better equipping them to gain access to auto sales data to address unexpected requests from dealership managers. The portal implementation improved the relationship between the dealership managers and the DSMs because they were better able to focus on their consulting services across their seven key responsibilities (see Attachment #4) and reengineer how value was provided.

## THE POST-IMPLEMENTATION OF THE WEB PORTAL TECHNOLOGY

Three months after the DSMs had the opportunity to use and understand the FieldLink portal (March 2004), the team conducted a follow-up implementation survey to understand the effectiveness of the portal. The survey results revealed that 96 percent of the DSMs were satisfied with the FieldLink portal and that 88 percent had experienced a gain in productivity during their information gathering and dealership sales meetings. The survey also revealed:

1. FieldLink improved the efficiency of DSMs by enabling them to reduce the time required to prepare dealership sales information by an average of 1.45 hours per visit (18.1 percent efficiency gains measured in total preparation time). This represented an estimated cost savings of $1.4 million in the first six months of the portal operation.

2. FieldLink improved the sales communications process by optimizing the information flowing to DSMs.

3. FieldLink improved access to company information with faster access speeds to the company networks and IS, expanded the accessibility to more locations and devices, and simplified navigation to information and applications.

4. FieldLink strengthened the company and dealer relations by improving the DSM's effectiveness during dealership visits. DSMs used FieldLink to accommodate their dealers' unexpected requests by accessing real-time field sales data. Through these capabilities, the DSMs increased their credibility by their ability to provide consulting services.

5. Fieldlink resulted in a 10 percent decrease in the frequency of sales managers contacting the IT help desk to get assistance with accessing auto sales data.

From a business perspective, the assistant vice president of e-business department recalled:

> What worked well was getting a lot of involvement from [both the ISD and sales departments], bringing them to consensus. The team's success was based on identifying team members and making sure everyone affected was on board. … After they developed the implementation plans, they made sure everyone agreed to the plan and to the milestones. They constantly checked their progress from the very beginning of the project.

## TOM'S NEXT DECISION

In October 2003 following the FieldLink portal deployment, Tom reflected on the value that the technology that took just six months to implement had brought to the automobile division. The implementation of the FieldLink portal provided the auto sales managers with quicker access to the latest dealership sales data, allowing them to talk to the dealers about current business issues. These efficiency gains enabled the auto sales managers to focus more on being business consultants, as they no longer spent their time gathering data across autonomous systems. Tom recognized that the implementation of the portal had solved their problems of gaining access to consistent sales data across 12 stand-alone applications. He was pleased that ISD had been able to leverage existing back-end systems and made significant efforts to rethink its front-end processes. As a result, the auto sales systems were rejuvenated without having to resort to radical maintenance or replacement of their existing applications and systems.

On the other hand, Tom also recognized that the portal was only a short-term fix to the long-term problems of data integrity and timeliness. As he evaluated how the ISD leveraged technology to provide additional efficiencies and value within the automobile division, he realized that his work was not done. Tom wondered if his department still needed to go back and fix the data integrity and timeliness problems that still existed in the underlying legacy applications.

**ACKNOWLEDGEMENTS**

The authors wish to acknowledge support from Pepperdine University's Graziadio School of Business and Management's Funds for Excellence for financially supporting this research project. We would like express our gratitude to the executives and employees of the American subsidiary of a Japanese motor company for allowing us to conduct this research investigation.

**APPENDIX: RESEARCH METHODOLOGY**

Our research was designed as a longitudinal, exploratory, single case study. A longitudinal analysis of the phenomenon aided in providing a rich understanding and evaluation of continuity and change [Yin 1994]. This research design enabled the researchers to explore the phenomenon in a natural setting and to engage in theory building in an area where there has been relatively little prior research and theory formulation [Miles and Huberman 1984] and where the researchers did not have any control over events. The research centered on a "how" question in order to explore and capture the nature of the investigation [Yin 1994].

The strategy for data collection is described as triangulated because it involved multiple methods for collecting historical and longitudinal data and helped deal with problems of establishing construct validity and reliability [Yin 1994]. The data were collected in two phases during a 25-month time period. Included was a review of how the firm developed the portal technology over a six-month time frame. In the first phase, the researchers collected corporate archival data relating to the development of the portal. The primary sources of data were archived corporate internal analyses, organization charts, strategic planning documents, minutes of meetings, external consultant analysis reports, and internal correspondence, memos, and e-mails. Secondary sources included industry reports, public disclosures, media publications, and Internet articles. While collecting archival data, the researchers documented the general direction of the portal development process, the primary actors involved, and the major decisions made over time. In the second phase of data collection, formal interviews were conducted with individuals who sponsored or were involved in the portal implementation. The interview format was semi-structured and used open-ended questions. The interviews provided a detailed account of how the decision to implement the portal was perceived and experienced; they also helped the researchers understand how auto sales data was acquired and manipulated before the portal was implemented. To ensure accuracy and to promote triangulation, all interviews were tape-recorded, transcribed, and reviewed and verified by key actors involved with the portal implementation. The researchers also conducted participant observation activities that totaled 22 hours and culminated in field notes and journal reflections. Covered were activities such as informal hallway conversations with employees, status report meetings, and planning meetings. A database was generated to organize and document the data collected from the field [Yin 1994].

*Editor's Note:* This article was received on July 12, 2006. It was with the authors one month for two revisions.

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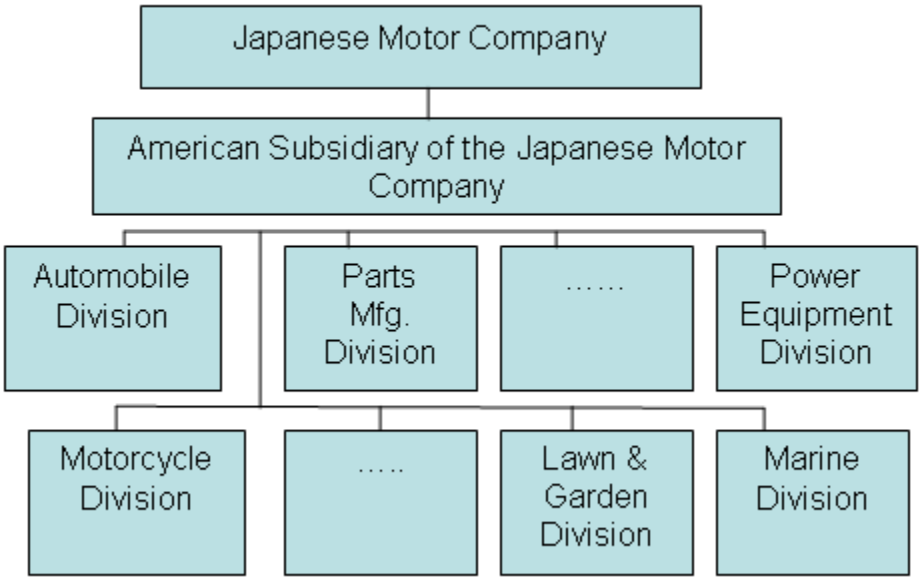
**Attachment #1**



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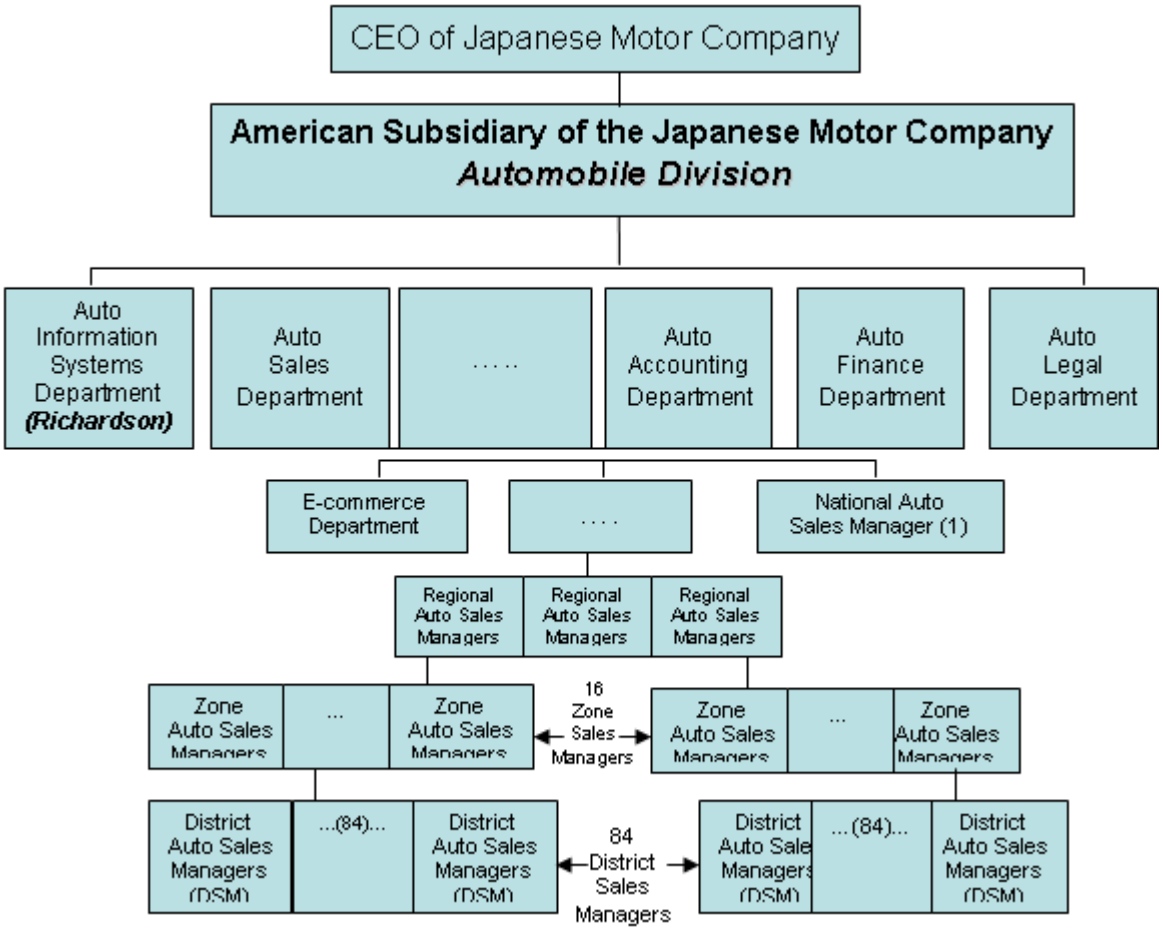
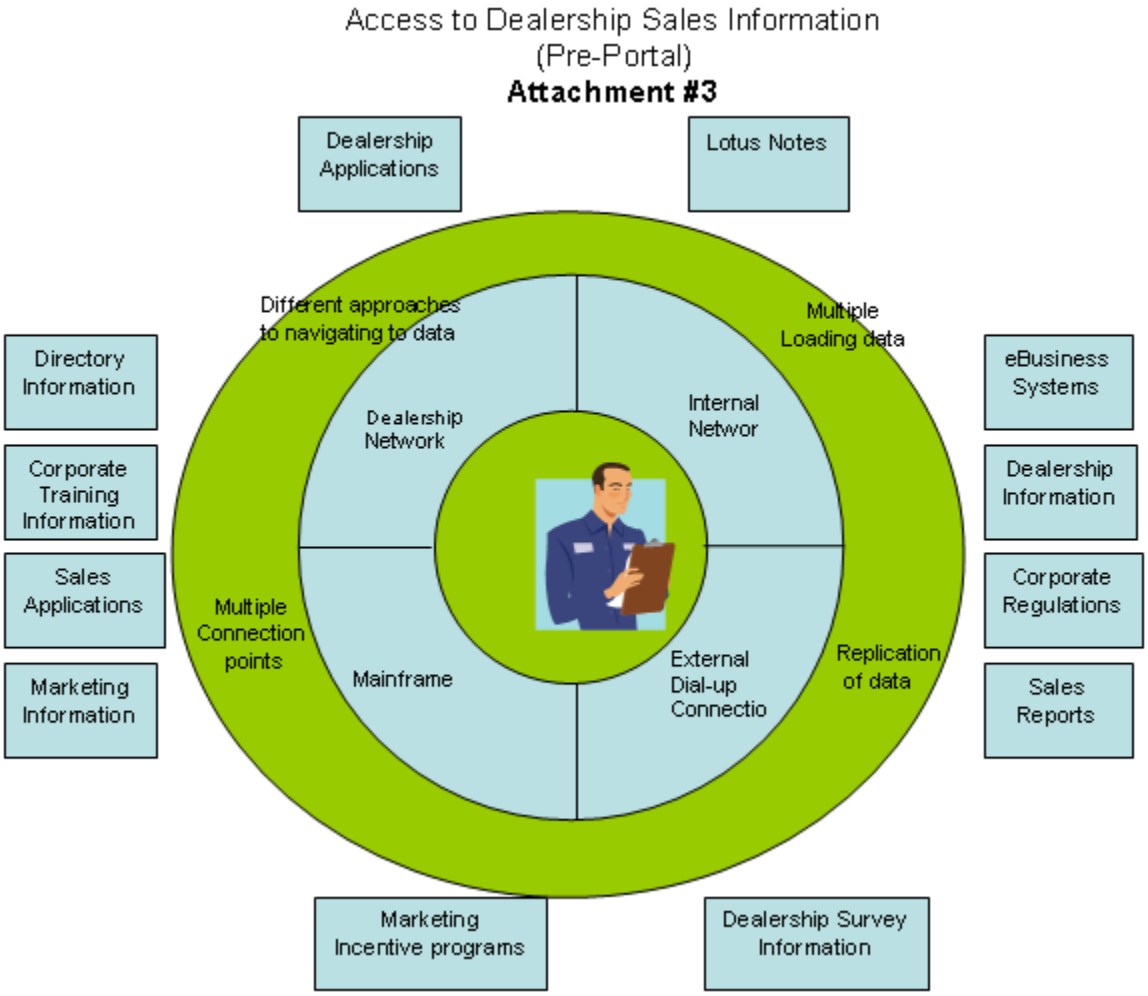
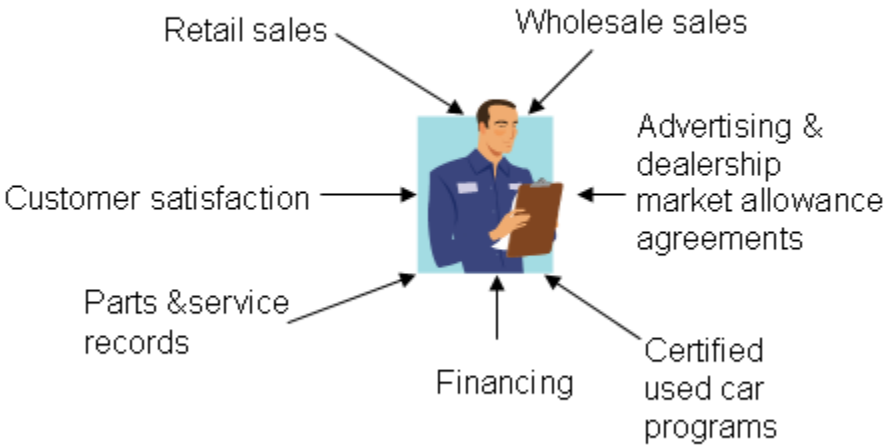
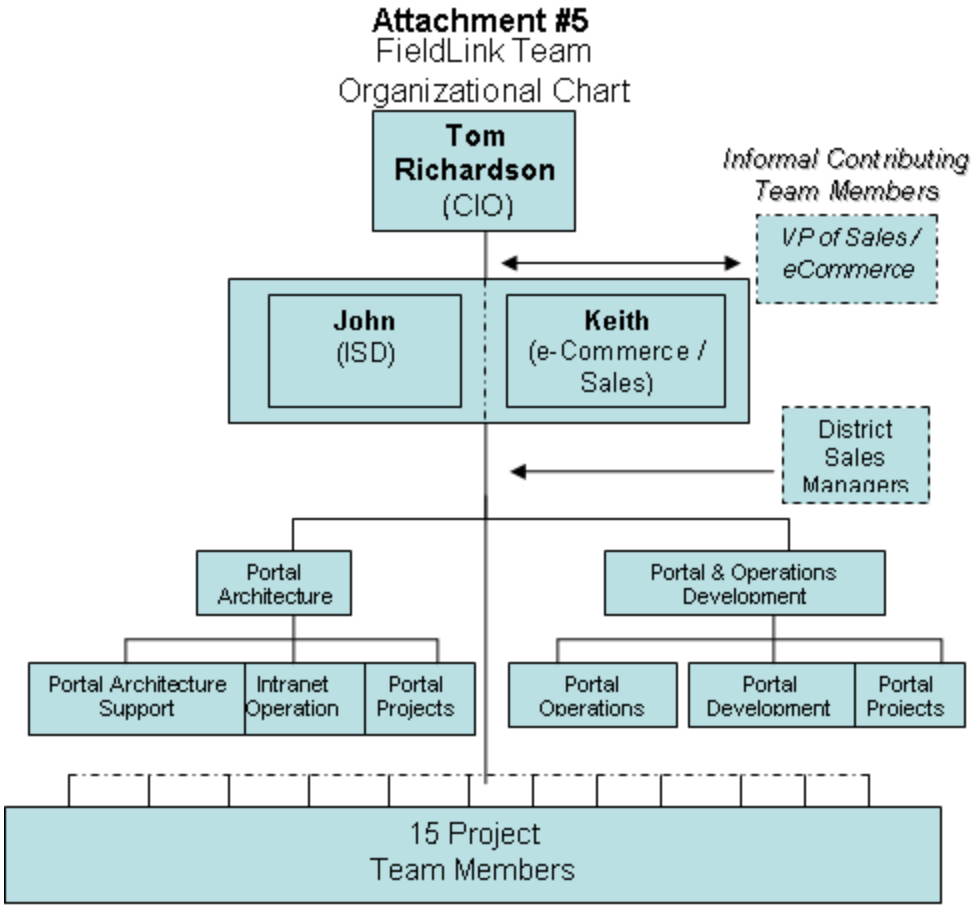




**Attachment #4**

Key Responsibilities of DSMs





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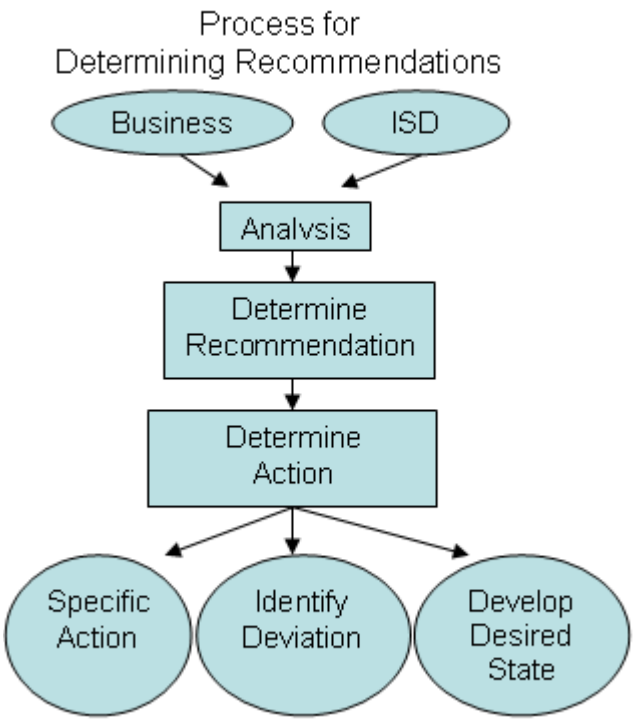
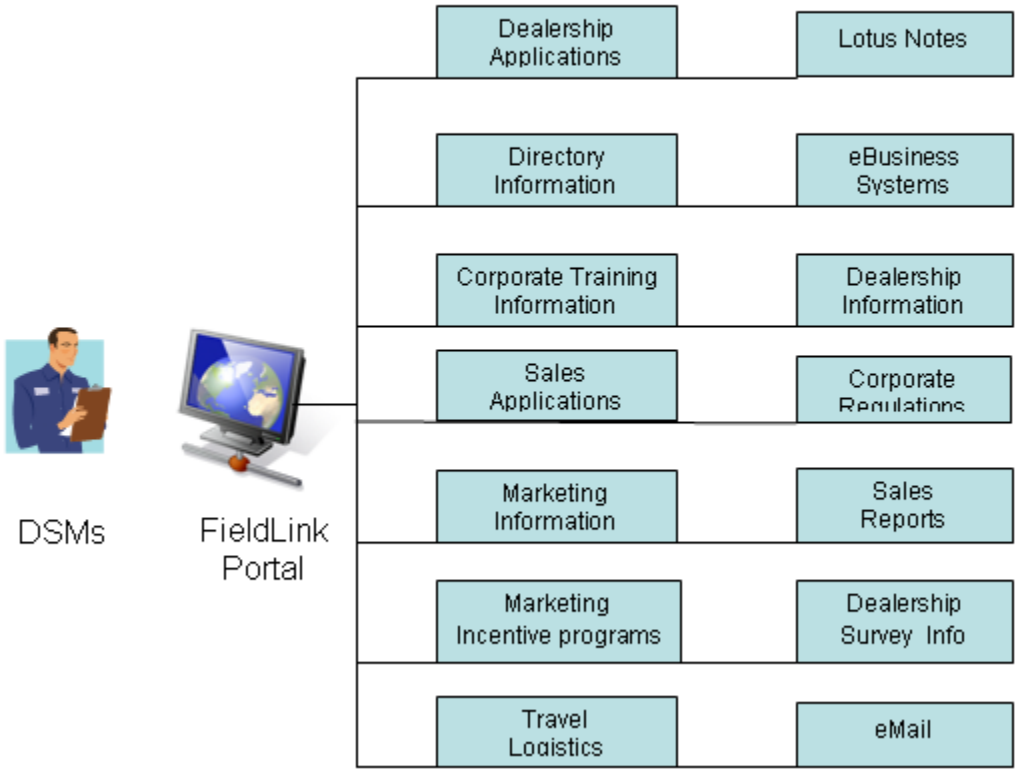


Access to Dealership Sales Information
(Post-Portal)
**Attachment #7**



Communications of the Association for Information Systems

ISSN: 1529-3181