

Solutions for a New Enterprise Information System

Applying Mobile Computing Technology

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Overview: Along with the general availability of low-cost, high-performance mobile data equipment, data is readily available at the individual level, communications using portable data equipment has taken root, network technologies built around security and authentication techniques have seen dramatic progress, and use of the Internet and intranets has become commonplace. These developments make it possible to construct strategic information systems that integrate corporate data processing systems and informational activities at the individual level much closer than ever before. Yet there is still a gap between enterprise information systems and the data activities of field salespeople. While certainly there is a great demand for shared access to corporate data, there is also a justifiable concern that valuable private data might be leaked through the illegal accessing of files by an outside intruder. Restrictions are therefore imposed on individual access to information, and a diverse array of systems have evolved that allow different degrees of access for different levels of users. Back-end support for valuable data that is input also presents problems regarding the proliferation of mobile computing. This situation motivated Hitachi to develop a diverse array of mobile products meeting the needs of clients, and to provide a wide range of mobile computing solutions including sales force automation (SFA) for restructuring sales organizations toward building effective enterprise systems.

INTRODUCTION

REMARKABLE progress has been made in the deployment of mobile-ready infrastructure facilities capable of accommodating expanded portable phone and Personal Handyphone System (PHS) service areas and high-speed data transmissions. Meanwhile in the business community, e-mail has been introduced as a means of communication and the collection of wide ranging information via Internet access has become firmly established. Of course from the standpoint of mobile users, the improvement and expansion of robust data equipment and software offerings also cannot be overlooked. Hitachi has always been a leader in offering viable solutions for implementing mobile computing systems ranging from the underlying infrastructure to the hardware and software components.

This article describes some of the key issues involved in implementing mobile computing systems and how to cope with those issues. It then suggests how we anticipate mobile computing systems will

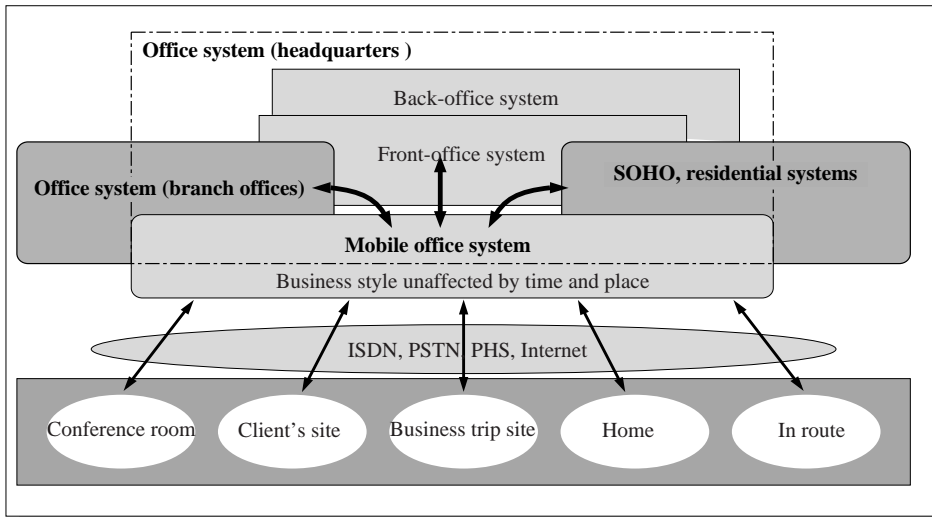
evolve in the years ahead.

USE OF MOBILE COMPUTING: CURRENT CONDITIONS AND ISSUES

Use of Mobile Computing: Current Conditions

As one of the primary motives for using mobile computing, one frequently hears that people want to be able to send and receive e-mail in the field. E-mail culture has thus evolved to the point where people take it for granted almost as if it is a right. Today, one commonly observes salespeople in the field or anywhere who are efficiently managing their business activities using Personal Digital Assistants (PDAs) to keep track of their schedules, phone numbers, addresses, memos, and other personal information almost as if they have a personal secretary along with them.

At the same time, more and more companies are introducing sales support systems such as exemplified by sales force automation (SFA). These systems basically involve the common use or sharing of



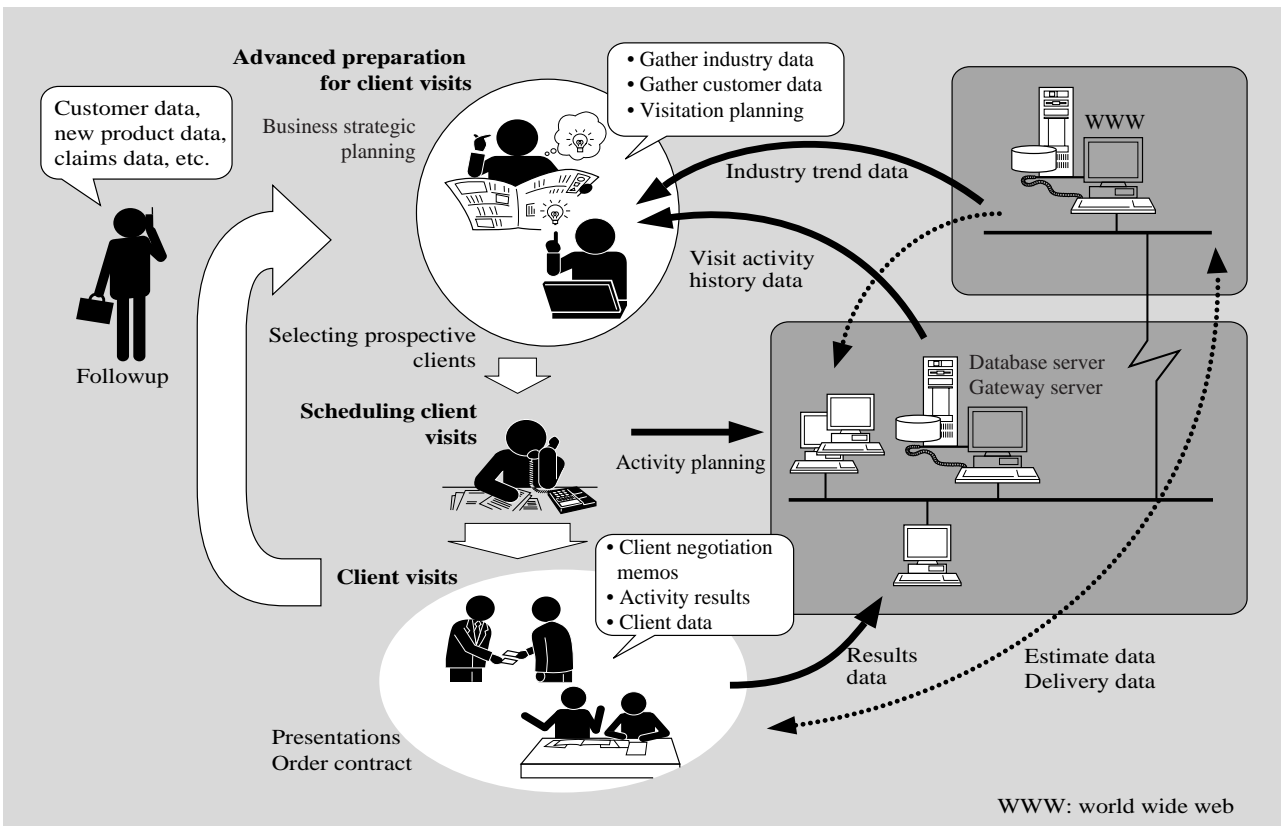
SOHO: small office home office
 ISDN: integrated services digital network
 PHS: personal handyphone system
 PSTN: public switched telephone network

Fig. 1—Mobile Office System Configuration.

A new business style in which work is not controlled by the dictates of place and time can be realized by synchronizing between the enterprise's front-office system and back-office system and by making effective use of the communication infrastructure including ISDN, PSTN, PHS, and the Internet.

information, but the primary aims are to use information more effectively and to improve customer satisfaction. The core capabilities making up a typical system include (1) transmitting daily business reports, (2) transmitting sales vouchers and sales orders, (3) retrieving customer data, and (4) retrieving sales performance data.

Fig. 2 illustrates how business support systems relate to the typical business activity cycle. One of the primary benefits is that salespeople in the field can keep their supervisors informed by sending in daily business reports. The supervisor is then able to directly intercede or make a determination by e-mail if a problem arises with the client. Moreover, the



WWW: world wide web

Fig. 2—Relationship Between Business Activity Cycle and Enterprise Support Systems. Various kinds of information are obtained at every phase of customer contact from advanced preparation to call on the client, during negotiations, and during followup activity. Activities repeat by a fixed cycle.

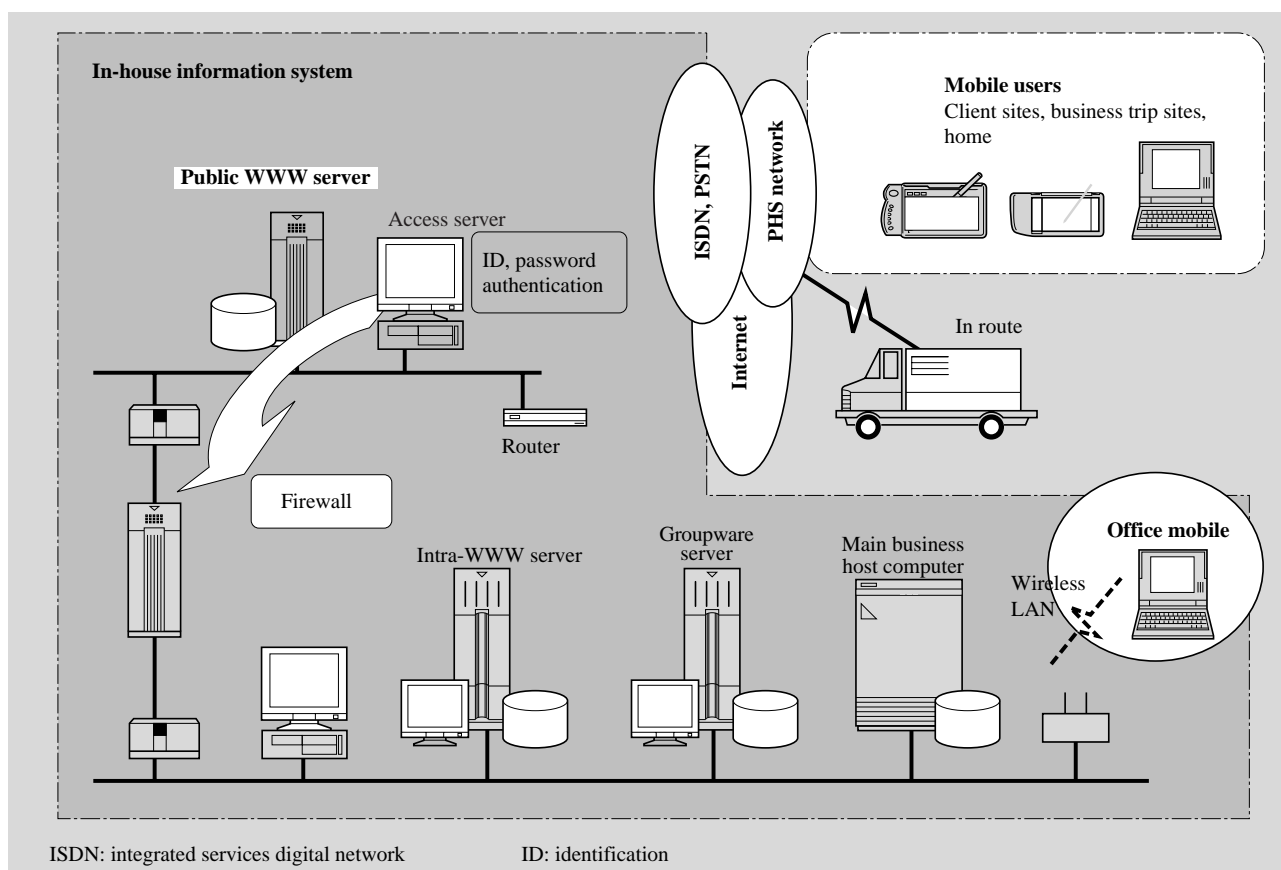


Fig. 3—Mobile Security Overview.

Illegal access from the outside is prevented through a combination of security measures including secure access servers and firewalls.

information that is gained on the front line of contact with clients is invaluable in developing business strategies and new products.

Use of Mobile Computing: Issues

Of course there are individual differences in mobile computing usage, but the emergence of integrated phone/data terminals optimized for e-mail and low-cost ten-yen-per-transmission rates again coupled with the rapid spread of cell phones and PHS has fueled the use of mobile equipment, and indeed has led to the growing expectation that e-mail is a right.

A fair number of businesses have implemented mobile computing, yet there haven't been more than a handful of dynamic success stories that have been written up extensively in the news media. The majority of these involve directly linking an individual's PC that is used for business to the company's main data processing system. Although business applications may be installed on the mobile equipment, the PCs are generally not directly connected to the office system via an on-line connection. Rather, information is uploaded to the office system by batch processing

after the sales report returns to the office.

The primary drawback of connecting a portable computer directly to the main office system is that not enough consideration has been given to the security aspect. There is always the latent threat of illegal access to valuable corporate data from the outside. Consideration of authentication by access servers, firewall filtering, and other protective measures are driven by necessity to make sure unauthorized outsiders cannot view documents they shouldn't, eavesdrop, tamper with corporate data, or pretend they are someone they are not (Fig. 3). Reinforcing security also adds an additional layer of operational complexity for the user. This means that, although we are building some excellent systems, they are often underutilized as a result of these security-related issues.

PREPARATIONS FOR MOBILE COMPUTING SUCCESS

Fostering an Information Mentality

It is crucial that users develop an information-oriented mentality in order to closely integrate mobile computing into a company's business operations. Take

TABLE 1. Database items essential for customer management
Essential data tailored to the form of business is stored and managed

Category	Description
Activity management	Business activity planning: schedule appointment calendar, client call notes (when, with whom, what business, until when, etc.)
Call management	<ul style="list-style-type: none"> • Name, department, position, address, telephone number, personal information, family composition, interests, etc. • Results, impact of meeting. • To-do list (starting day, prioritization, description, end day).
Customer management	<ul style="list-style-type: none"> • Client name, address, telephone number, facsimile number, e-mail address, etc. • Business status including sales, capital, etc.; detailed information about clients. • Negotiation contents (name of negotiation, product, order amount, current state of activity, etc.). • Call destination data, etc.
Sales management	<ul style="list-style-type: none"> • Customer, amount of deal, scheduled day of contract signing. • Order confirmation (sales personnel estimated value, computer projection). • Sales status (sales progress, client budget, sales competition). • Sale process, beginning/end of activity broken out by business process, step; planning for business activity, activity guide, checklist, flowchart, etc.

the example of client negotiation status reports. If these progress reports are simply submitted in text form, then someone back at the office has to go to a lot of trouble to analyze and arrange the data for inclusion in a shared corporate client database. For this reason, it is critically important for data to be arranged in

meaningful categories from the start: who met with whom? when? for what purpose? what was discussed (delivery date, a claim, new product data, industry trends, etc.)?

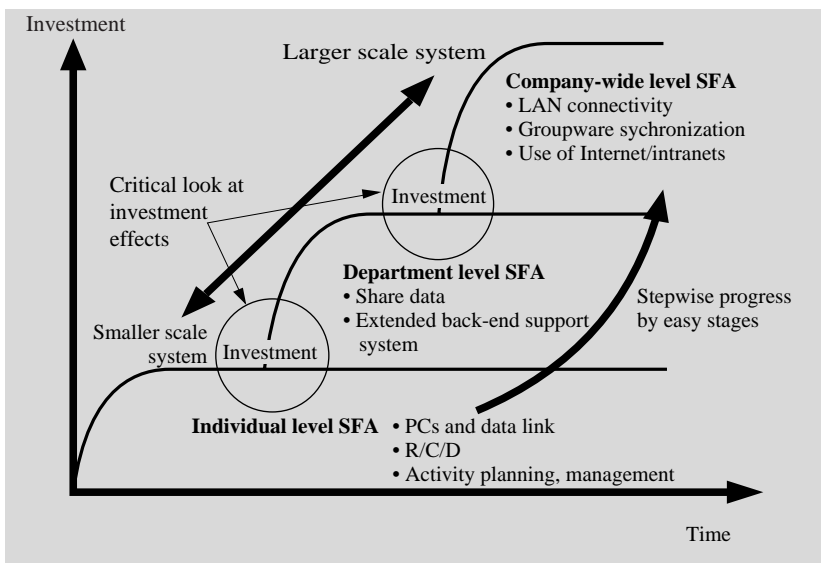
It is also important to foster the will and desire to input this type of data on a daily basis. If a salesperson in the field doesn't get any feedback from his supervisor even though he faithfully enters the data, then he begins to wonder just why he is going to all the trouble to enter the data in the first place. Providing positive feedback and back-end support for people in the field who are providing valuable data is an extremely important factor for establishing mobile computing in the company.

Table 1 lists the essential items that should be maintained in a client management database if it is to achieve its intended purpose. Note that a wide range of different types of data should be collected and managed that are tailored to different forms of business activity.

System Building Approach

Once a framework for organizing marketing and sales data is in place, the next step in deploying a mobile computing system is to consider how the data is to be used. The data is used for a wide range of purposes including integrated management of customer data, to improve customer satisfaction and competitiveness, and for total support of sales and marketing systems. Here we will focus on the subject at hand and discuss how the data is used in implementing sales force automation (SFA) systems.

Since most mobile computing systems have been



R/C/D: report, contact, discuss

Fig. 4—Steps in Constructing an SFA System.

Without losing sight of the purpose and effects, the system is implemented by a step phase moving from the individual level toward the company-wide level.

deployed to implement sales support systems, in this section we will concentrate on SFA solutions and describe how this approach is implemented. Fig. 4 shows the steps involved in constructing an SFA system. Here we will consider three different forms of SFA systems.

(1) Individual-Level SFA

This form of SFA is used to expand ordering activities based on the knowledge and experience of individual field salespeople. Because the desired information is taken down on location with the client, this permits faster responsiveness to customers and better planned more rational business activities. Currently this is the most common pattern of SFA using mobile computers.

(2) General SFA

This form of SFA is implemented at the departmental level, and is used to expand ordering activities when there is fierce competition or little qualitative difference among products. The beneficial effects of implementing this approach are to improve productivity of the entire department and to inspire all personnel in the department to seize sales initiatives.

(3) Complex, Large, Long-Term SFA

This form of SFA is implemented across multiple departments, and is used to expand ordering activities when the nature of the product is more complex or diverse, or when negotiations are larger in scale or take place over a longer time frame. The effects of implementing this approach are to realize customer-centered team sales, to improve customer satisfaction and loyalty, to lower the cost of sales and support, and to increase sales and profitability.

It is often the case that when initially applying SFA across multiple departments that different information is needed by different organizations and that barriers exist between organizations. SFA at this level thus often falls short of achieving its full potential effectiveness. We advocate not deploying SFA at this level from the beginning, but rather to adopt a phased implementation starting at the individual level. It is desirable to hold down investment costs and to determine the effectiveness of SFA at each level.

SFA Development Scenario

The objective of SFA is not simply to improve the efficiency of sales activities, but to restructure how the activities themselves are conducted. For example, by analyzing customer data with an eye toward improving customer satisfaction, we can increase the probability of successful orders from prospects and

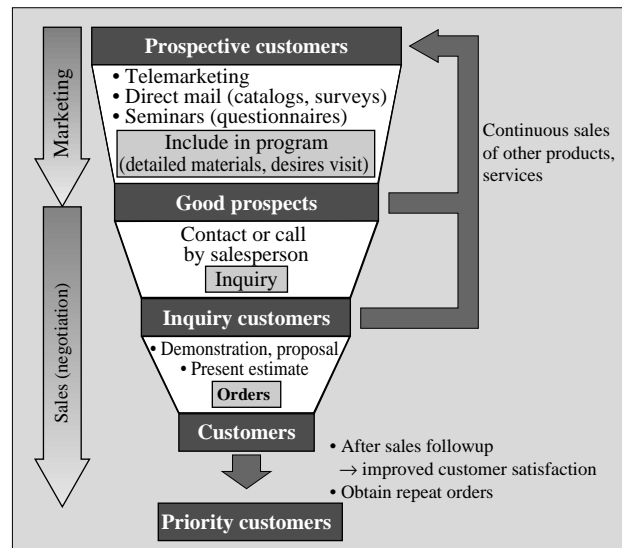


Fig. 5—SFA System Development Process.

Improves order performance by analyzing customer data and identifying the best prospects

thereby increase sales. Fig. 5 illustrates the SFA development process from marketing to identification of good prospects.

It is essential to identify good prospective target customers in order to achieve efficient and effective ordering activity. The first step is to narrow down to a short list of good prospects by analyzing the results of telemarketing, direct sales materials such as catalogs and questionnaire, and seminar surveys. After narrowing down to the best prospects, advance preparation is to be made to call on these customers and the inquiries that have been received are assembled. Then the final order is pursued by making appropriate proposals and/or demonstrations tailored to the customer's inquiry and by presenting an estimate that is in line with the customer's budget.

ENTERPRISE INFORMATION SYSTEM FOR IMPROVING CUSTOMER SATISFACTION

Techniques for Improving Customer Satisfaction

To date, Hitachi has supported the construction of a diverse range of systems toward making SFA a practical reality including mobile computing systems. Fig. 6 shows an example of an SFA system that was implemented to achieve the SFA-based process described earlier.

This system makes effective use of Vantive Sales with the support capabilities of the comprehensive

* Vantive is a registered trademarks of Vantive Corporation.

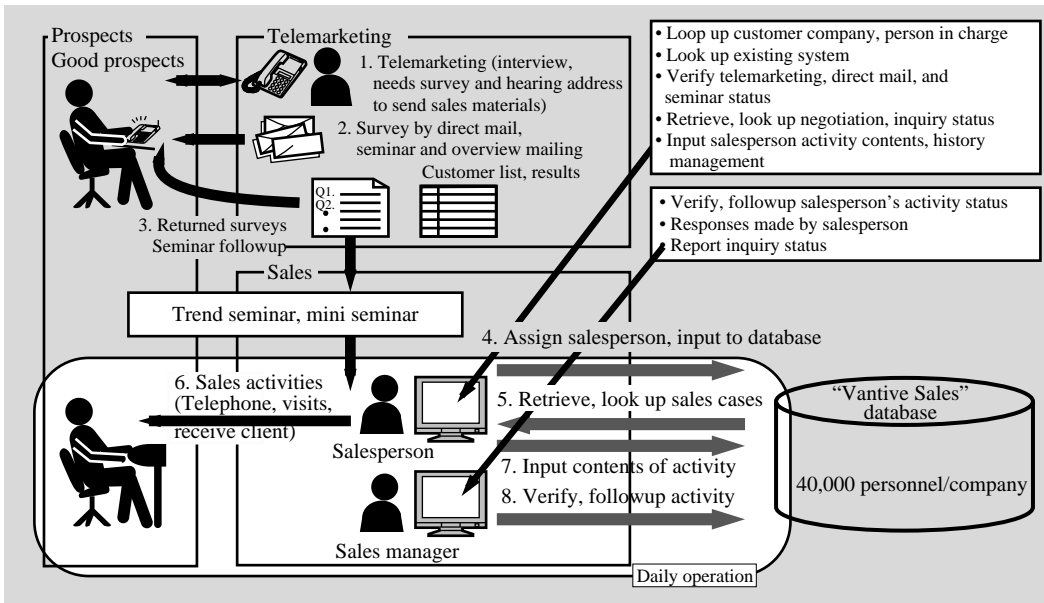
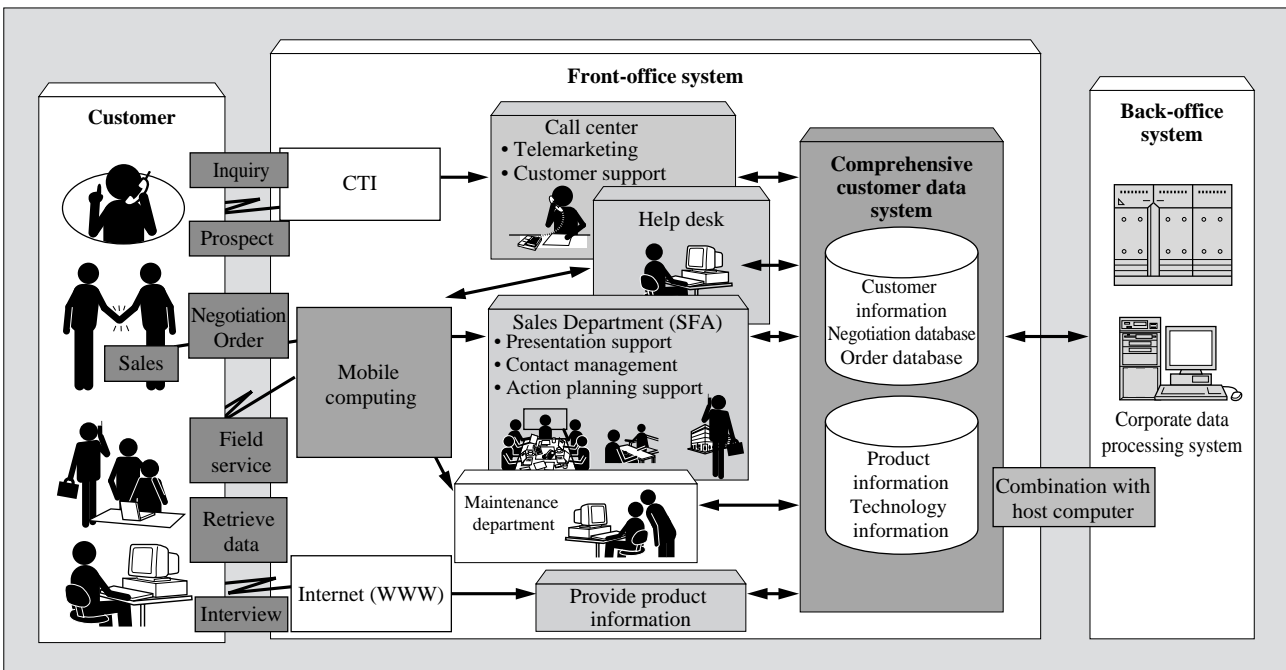


Fig. 6—SFA System Configuration. Realizes team sales by making effective use of cumulative customer data.

customer information system Vantive*. Vantive Sales offers an application that automates contact management and telemarketing activities including campaign management. This implementation supports the entire sequence of marketing and sales activity including the management of activity history from the identification of likely prospects through telemarketing and direct mailing to negotiations, the management

of daily customer negotiations, and so on. In this scheme, mobile computing is used to retrieve customer data, and to produce sales activity status reports (e.g., inquiry status reports, negotiation progress reports).

Next-Generation Enterprise Information System
Enterprise information systems have undergone a transformation from an efficiency-seeking approach



CTI: computer-telephony integration

Fig. 7—Next-generation Office System Implementing SFA. Increase customer satisfaction by streamlining comprehensive customer data system from initial inquiry to negotiation and followup.

to an information market approach. It is no exaggeration to say that he who controls the information will survive the competition. It is thus necessary to employ computers not so much as tools for improving productivity, but rather as strategic devices for enhancing sales. Of course mobile devices constitute one class of equipment serving the same goal.

Rather than selecting equipment that is limited to a particular form of use, it is already becoming increasingly important to use different types of equipment that are optimized for different tasks and contexts. Indeed, there are already some professionals who employ three different PCs at the office, each optimized for a different range of tasks.

Fig. 7 shows a schematic overview of the office system we envision in near-term future. As shown in the figure, we will see the emergence of a front-office system that is positioned right at the point of contact with the customer, and this will have far-reaching importance in the years ahead.

All sorts of customer information will be collected by diverse equipment having different intended purposes in widely scattered locations. This information will then be stored in consolidated customer information database systems and used to identify prime prospects offering the greatest assurance of firm orders. Historical data produced in response to inquiries and claims will also provide valuable input for improving customer satisfaction.

CONCLUSIONS

Today, a diverse array of applications make use of mobile computing. In this article we have outlined the contours of enterprise information systems, focusing especially on the deployment of sales force automation (SFA) systems. We can be certain that the range of applications for mobile PCs in implementing strategic information systems will only continue to expand, particularly as mobile systems evolve from largely individual use to company-wide applications.

Up to this point, not many mobile systems have been deployed. Hitachi intends to change this by continuing to play a leadership role in promoting more widespread use of mobile computing systems, and by proposing a diverse range of innovative enterprise information systems.

REFERENCE

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