

UNIVERGE Solutions for Business Realms and Business Operations

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Abstract

NEC has been developing the UNIVERGE Solution, which contributes to the increased efficiency of business operations and enhances practical field operations of various enterprise activities through increased efficiency of communications and information sharing. The applicable domain is also penetrated by the ubiquitous environment, changing the solution into something that performs internal business operations to provide support for activities in the field, facilitating the sharing of information at points of contact with customers and furthermore, to enhance the core competence of enterprises with security considerations. The solution, therefore, expanded to encompass the entire domain of business categories. This paper introduces the UNIVERGE solution presented at iEXPO2005, which is a particularly advanced solution and offers a suggestion on the direction of enterprise work style innovations for the future.

Keywords

Ubiquitous environment, Genbaryoku-UP!, work-style innovation, mobile Centrex, transparency of discussions, entry and exit management, quarantine, information leak preventions, RFID, customer reception support

1. Introduction

The iEXPO2005 was considered an important part of the sales expansion activities of the current fiscal term for the UNIVERGE Solution. Presentations were made to promote the imagination of visitors regarding usage scenes relevant to highly needy themes.

This paper introduces the UNIVERGE Solution, which enhances the competitive strengths of businesses by proposing work styles that enable quick and flexible responses to changes in the market by utilizing the ubiquitous environment, from the aspects of business operations to business categories as well as security aspects that support the two, along with the latest activities relevant to the Solution.

2. Expanding Applicable Domains of the UNIVERGE Solution

Small scale production of a large number of items with a reduction in lead time is required by many competitive businesses. For this reason, it is essential to improve the quality of information sharing and communications between corporate

*The business solutions and products introduced in this paper are provided mainly for the domestic market. Those that will be available overseas will differ according to area.

organizations, affiliated companies in a group, suppliers and purchasers, as well as points of contact with customers, such as stores. This provides a means to launch products in the market ahead of other companies and becomes an effective means to revitalize the value chain. At the same time, security assured information access and sharing not only gives peace of mind and security, but also raises the value of the information.

On the other hand, with the advantage in the communication technology, which is represented by the IP phone, NEC has been contributing to the expansion of enterprise systems into the ubiquitous realm by systematizing the UNIVERGE Solution through the early development of applications that increase the efficiency of communications and promotes the sharing of information.

This means that the UNIVERGE Solution extends communications and information sharing within an enterprise system out in the field, outside the company or at storefronts, thereby improving performances in the field and revitalizing the value chain to provide enhancing effects on the strengths of core competence.

We presented our case for the aforementioned enhancement of core competence using the following business operations as triggers under the slogan of “Genbaryoku-UP!”** at iEXPO2005.

- Enhancing sales performances through reliable communi-

**“Genbaryoku-UP!” is the NEC Group slogan of UNIVERGE solutions, which means “Enhancing the performance of each of the company workplaces.”

cations.

- Enhancing support for partners through incorporation of means for communication on portal sites.
- Improving customer satisfaction through advanced use of customer information.
- Enhancing the plan developing capabilities through the sharing of information that transcends time and distance.
- Realizing a safe and secure ubiquitous environment through entry and exit management.
- Implementing security solutions with a high degree of usability for safe and secure use of ubiquitous environment.

The items mentioned above are introduced below with specific details.

3. Enhancing Sales Performance through Reliable Communications

The importance of liaising smoothly between relative persons is on the rise in sales organizations for the purpose of receiving accurate communications from customers and responding to a customer's needs in timely manner. Further efforts are being made to improve customer services by increasing efficiency in sales thereby attaining a higher degree of customer satisfaction as a result.

For this reason, the "UNIVERGE FOMA® Collaborative Solution" realizes a work style that facilitates work "at any time" and "anywhere" on the mobile Centrex system using terminals that connect to wireless LAN within the company and highly mobile FOMA® N900iL terminals that connect to FOMA® outside of the company.

The solution is enhanced in two directions in order to utilize the mobility of mobile phones to increase the efficiency of the core competence and business operations.

3.1 Sophistication of Communications through Mobile Centrex Application Software

Various applications described under 1) to 3) below, have been developed in order to resolve the inefficiencies that occur when initiating communications.

1) Automatic Presence Software: ActivePresence

ActivePresence is a software that automatically updates the presence information (availability status) when a person is away from their desk, participating in a conference or away from the office, based on positioning information of terminals, such as the FOMA® N900iL on wireless LAN. The carrying of a terminal on one's person at all times by itself increases the credibility and utility of the presence information.

2) Instant Message Distribution Software: UNIVERGE IM1000

UNIVERGE IM1000 is software that simultaneously distributes instant messages to FOMA® N900iL and DtermSP30 software phones. Since messages are automatically transferred via e-mail, when such messages cannot be received, important communications from customers are instantly received in a reliable manner.

3) Presence Collaborating Phone Directory Software: UNIVERGE TL1000

UNIVERGE TL1000 is a telephone directory for FOMA® N900iL that offers a range of selections for optimized means of communication, such as telephone numbers and e-mail addresses, in accordance with the presence information of the other party.

3.2 Enhancement of Support and Services through Variation of Terminals

Since work at support and service organizations are conducted primarily in the field, outside the company, a selection of terminals suitable for such operations is important. This means that mobile phones are unable to provide adequate screen sizes or processing capabilities for the purpose of business operations, while laptop computers are also difficult in terms of weight and booting time, thus neither of these options would be sufficiently suitable for fulfilling the needs in the field.

The "UNIVERGE PDA Collaborative Solution" is a mobile Centrex system created for this purpose through the addition of a communication function to PDA-size terminals, represented by handy terminals.

Significantly smoother support and service operations become possible in the field making it easy for personnel visiting a customer's site for maintenance work, to communicate with staff back in the office and exchange design drawings, parts lists and instruction manual data while talking to each other, or to share information and communicate with manufacturing plants, construction sites and design organizations in a similar manner.

The mobile Centrex system incorporating a PDA terminal lighter than laptop computers and offers richer expressive capabilities than mobile phones, created with the wireless LAN building technology of NEC accumulated through the development of the FOMA® N900iL, realizes a problem-solving work style in the field.

4. Enhancing Support for Partners through Incorporation of Means for Communication on Portal Sites

In any business partner supporting organization, it is essential to

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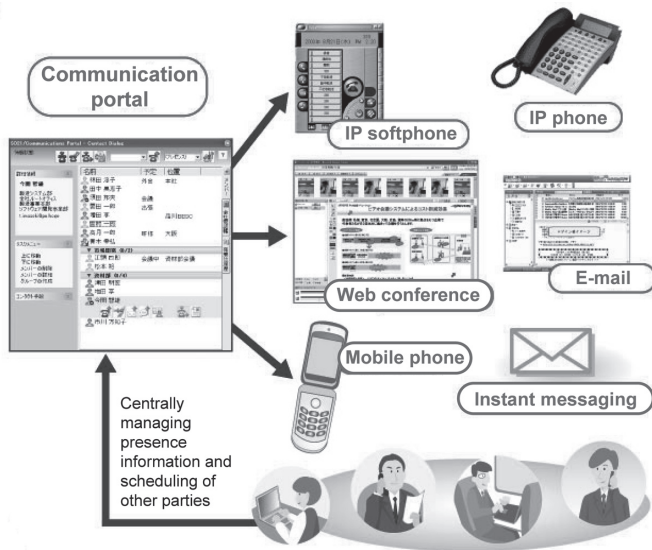


Fig. 1 UNIVERGE Communication Portal Solution.

collect real-time information from locations in the field in order to respond to the changing needs of the market and customers, while on the other hand it is also important to communicate quickly in order to provide new product information in a timely manner.

For this reason, the “UNIVERGE Communication Portal Solution” handles communication methods, such as IP softphones, mobile phones, e-mails, instant messages and web conferences, as well as presence information and scheduling, all in a unified manner. Speedy communication and information sharing are promoted by selecting the method of communication that is most suitable for the situation and the other party (Fig. 1). All communication operations, which have thus far been booted individually, have now been integrated into a single screen, making it possible to compare the presence information of multiple relevant persons on a single screen. This facilitates easier decision making and offers a highly operable portal function.

Its use is effective for enhancing the value chain with regards to business partners through the speedy transmission of information, such as new product information, or providing timely support when a problem occurs. We are planning to expand the scalability of the solution to enable simultaneous use by tens of thousands of users in the future.

5. Improving Customer Satisfaction through Advanced Use of Customer Information

An increasing number of businesses collect and utilize cus-

tomers information at storefronts. The range of needs for using information is broadening, therefore, customer satisfaction should be further increased or customer value maximized, through such methods as engaging in smoother customer reception and analyzing processes leading up to product purchases.

The “Customer Reception Support Solution” detects the arrival of a customer at a store with the RFID and provides characteristic information of the customer based on “individual psychology” to enable a customer reception that is optimally suited to the needs and personality of the customer to maximize the customer value.

A customer is requested to scan the RFID tag on a kiosk terminal upon arriving at the store, as shown in Fig. 2. The size of this tag is merely the size of a strap for mobile phones and has superior portability. It is also used as a membership tag. Customers can receive information on points earned or messages that may include beneficial information from the store simply by scanning the tag, whereas it provides the store an opportunity to notify and assign staff that is most suitable to receive the particular customer while providing such staff with customer information, thereby realizing a smooth customer reception at the store. All these are realized through the collaborative operation of the “RFID Manager”, which is a middleware from NEC that performs the centralized management of information acquired by the RFID reader, with the customer management system. We are planning to respond to the FeliCa built-in mobile phones in the future as well.

Conventional customer information is concentrated mainly on purchase history, age and for collecting information on interests and preferences through surveys, but such interests and preferences can change with the passing of time. The “Customer Reception Support Solution” defines the substantial personality of customers as attributes by using the “individual psychology.” It is able to provide analysis with a high rate of conformity with the customers. The attribute information can be used not only for product selections, but it can also be used to analyze suitable customer reception methods or the level of customer interest. The information provided to a customer upon arriving at the store, for example, can be different for each customer. Discount information, for example, can be offered to conservative customers while information with brief expressions may be offered to more intuitive-type customers. Through such selective use of information, it is possible to gain a high level of customer satisfaction.

Versatile analysis of customers is possible by keeping track of customer visits to the store and combining such information with customer management information based on purchase history that can be obtained using POS and the like. A new

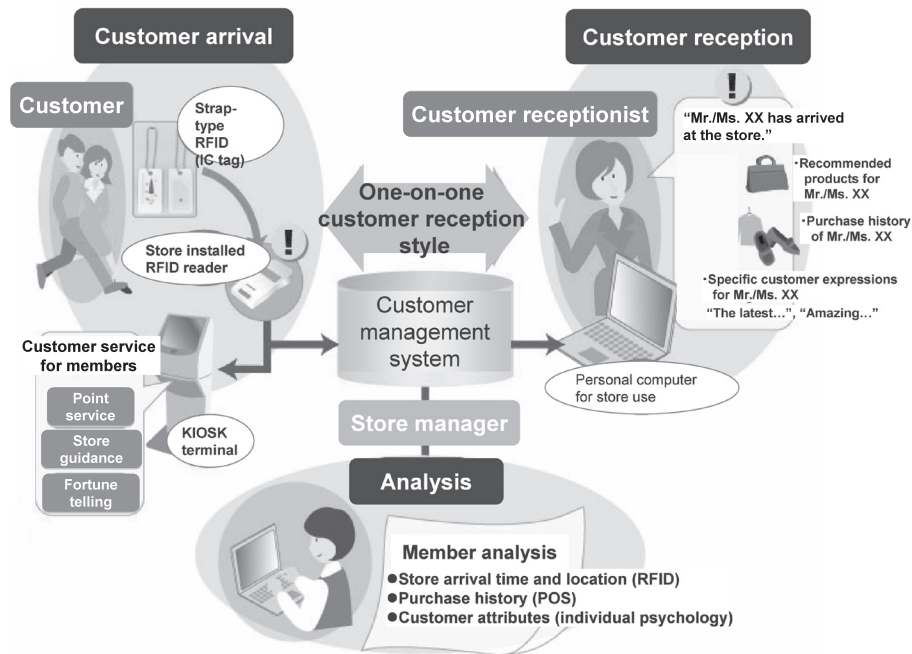


Fig. 2 Customer Reception Support Solution.

marketing approach, which can improve a customer’s reception and purchasing process, can be realized by analyzing data to find out whether there are not enough customers visiting a store or even when there are enough visits but they are not resulting in sales, or how many visits eventuate in a sale.

6. Enhancing Plan Developing Capabilities through Sharing Information That Transcends Time and Distance

The kind of work style that involves creation, with participation by members across corporate organizations and corporations to plan and develop highly novel products and services, is on the increase in plan developing organizations. However, since members of such creative efforts tend to work far away from each other, the sharing of information can be slow to achieve and decision making can be time consuming. These are the sorts of problems that are often encountered.

For this reason, the “UNIVERGE Knowledge Community Solution” is available to promote sharing of information and discussions among members who find it difficult to get together for a meeting, thereby enhancing the planning and developing capabilities. Solutions for the aforementioned problems are provided through the following three features (Fig. 3).

1) Secure Sharing of Information That Is Limited to

Project Members Only

Information can be shared with easy web-based operations, eliminating the time and location restrictions imposed on members participating in the exchange of opinions.

2) Revitalization of Discussions Through Real-Time Communications

It is possible to share materials and conduct discussions in an efficient manner through the linkup with a web conferencing system that offers superior operability.

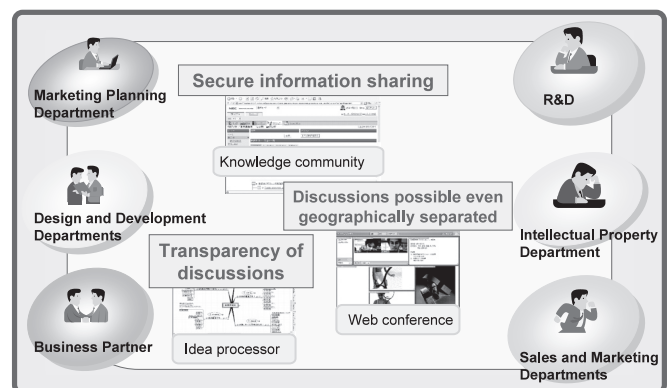


Fig. 3 Features of Knowledge Community.

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3) Visualizing Feature for Discussions Using Bulletin Boards

Collaboration with the “Idea Processor” makes it possible to provide graphical displays of the direction of the discussions on bulletin boards. It is possible to have an overall view with the layering of diverse opinions, making it easier to draw conclusions.

The consolidation of know-how among offices that are located far away from each other has been scarce with conventional methods, however, more sophisticated and practical methods will become available as the density of collaboration increases. The combination of the consolidated know-how and cooperative work will enhance the planning capabilities for customers, which will contribute to an increased competitiveness.

7. Realizing Safe and Secure Ubiquitous Environment through Entry and Exit Management

The full implementation of the Personal Information Protection Law was enforced in April 2005. Each business is required to enhance their management organization for personal data. Particularly in the current situation, where 80% of information leaks said to originate from the human factors, managing the movement of people is drawing attention as an effective means to enhance security in the office.

A security system based on the entry and exit management provided by the “UNIVERGE Physical Security Solution” can be implemented in a flexible manner, according to the required security level for this purpose, through a collaboration of sensor systems, visual monitoring, bioauthentication and vehicle gates. The accurate management and tracking of personnel movements can be realized to raise the level of security inside the office, in collaboration with the presence information of employees, along with various security services. It is, for example, feasible to authenticate the use of personal computers or permit access to wireless LAN only to those for whom entry information exists or perhaps prohibit the departure from a room without first logging off from the personal computer. These can be realized as a solution, as shown in Fig. 4.

Furthermore, since the overall system incorporates IP, it is possible to easily expand the system and for a diverse range of applications, from a tenant office with a single door to the implementation of an entire high rise building or even to scattered locations.

Due to the diversification, sophistication and massive capacity of the IC cards these days, as shown in Fig. 4, not only is it possible to use it for authentication by entry and exit systems but it is now also possible to use them as employee IDs, desktop computer authentication or remote access authentication. Based on experience and know-how derived from the numer-

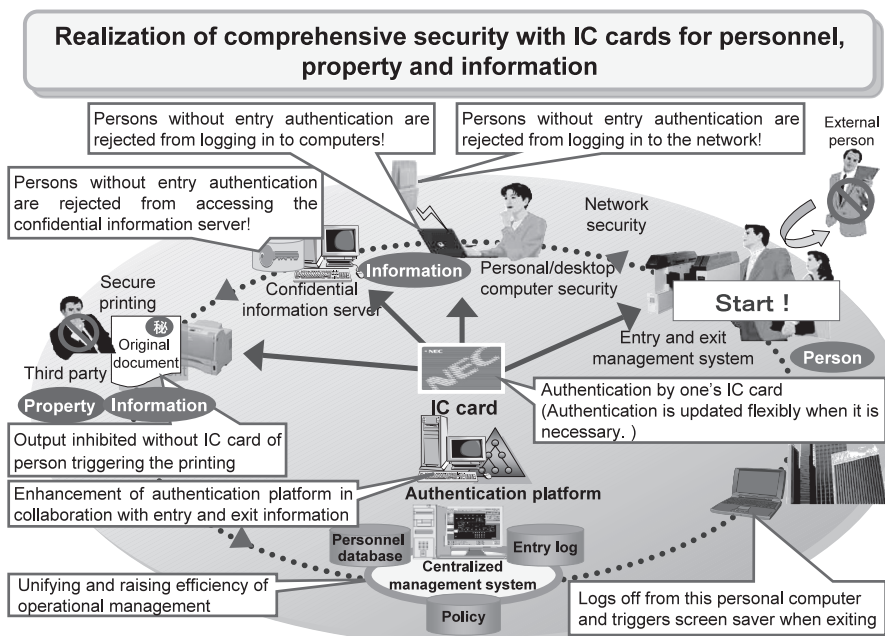


Fig. 4 UNIVERGE Physical Security Solution.

ous implementations of entry and exit management systems, we will be providing a one-stop service for IC cards by offering relevant consultations for system design, system building, formulation of operating rules, etc.

The “UNIVERGE Physical Security Solution” is the first step for realizing a safe and secure ubiquitous environment. We will continue to work on the enhancement of security products, including the detection of companions, as well as operating reducing costs and increasing convenience for our customers through integrated ID management in collaboration with authentication platforms.

8. Security Solutions with High Degree of Usability

Although we take advantage of ubiquitous environments in businesses, the threats of viruses, unauthorized accesses and information leakage are increasing. Business operations in the office can be made safe and secure by implementing the “UNIVERGE Office Security Solution” for both front and back ends in a single system as a condition for utilizing enterprise systems in a ubiquitous environment.

Personal computers that have not been used for a long period or personal computers brought back from external network may cause an information leakage, and the infection of viruses and worms that adversely affect the enterprise network. The “UNIVERGE PC Quarantine Solution” can solve such a problem. In order to prohibit the access to the enterprise network from unauthorized users, unauthorized PCs and vulnerable

PCs, the CapsSuite is used as a quarantine server and the combination of IEEE802.1X authentication and VLAN-enabled switching hub is used as a quarantine network, as shown in Fig. 5.

Utilization of enterprise system from both inside and outside the enterprise network, on the other hand, is essential to realize the sort of work style that is not restricted by time or location. The “UNIVERGE Secure Remote Access Quarantine Solution Model”(Fig. 6), therefore, provides an SSL-VPN remote access mechanism, to which remote access is possible from personal computers and mobile phones, keeping the security. For example, access to an electronic telephone directory or presence information on the “UNIVERGE FOMA® Collaboration Solution” from a mobile phone (an FOMA® N900iL) or access to the UNIVERGE Communication Portal or StarOffice21 from personal computers outside the office will be possible in a safe and secure manner. It is also feasible to combine the quarantine features that checks on the conditions of personal computers with various user authentications (e.g. one-time password authentication).

Furthermore, “UNIVERGE Mobile Desk Solution” can provide the countermeasure for the information leakage, which is drawing a lot of attention recently.

It is anticipated that needs for such security solutions will increase in the future, as a common infrastructure for personal computers and mobile phones. NEC intends to raise the level of usability for security solutions to provide safe and secure enterprise systems without losing the convenience of the ubiquitous environment.

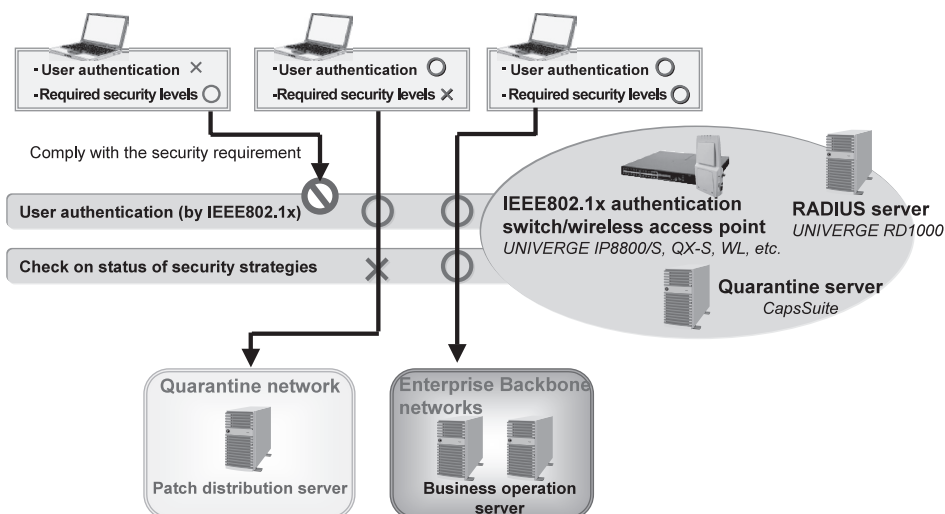


Fig. 5 UNIVERGE PC Quarantine Solution.

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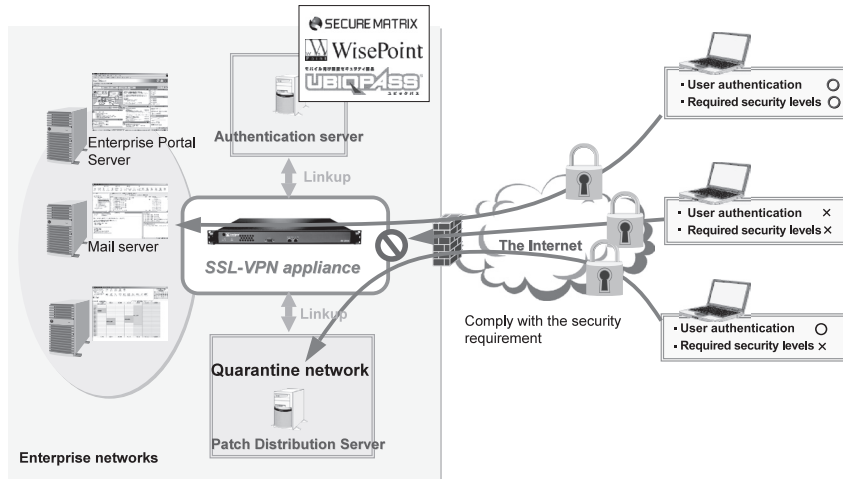


Fig. 6 UNIVERGE Secure Remote Access Quarantine Solution Model.

9. Conclusion

The latest activities relating to the UNIVERGE Solutions have been introduced in this paper. The utilization of live input information obtained from points of contact with customers and the rapid adaptation to changes in the external environment, are currently required of businesses. A change of work style to one that utilizes the ubiquitous environment and maximizes the potential capabilities of employees and organizations will be the source of power that raises the competitive capability of core competence in a business. NEC will be promoting plans for the UNIVERGE Solutions to continue with contributions toward the work style changes of our customers.

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