New Technology Report

New Portal Service for PDA: infogate

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NTT DoCoMo launched a new portal service for Personal Digital Assistants (PDAs) called 'infogate' on March 1, 2002, for the purpose of proposing new ways to use PDAs, which are expected to increase in number in the future.

1. Introduction

The Personal Digital Assistant (PDA) market has been radically expanding in recent years, and this trend is expected to continue in the future. Back in the day, PDAs were merely regarded as PC companions to complement desktop computers. Recently, however, new terminals have emerged, which serve as network terminals with wireless applications in mind.

In consideration of such market background, NTT DoCoMo launched a new portal service for PDA called 'infogate' on March 1, 2002.

This article describes the outline of infogate and the service implementation policies.

2. Service Concept

2.1 Market Background

With respect to the market in light of terminals, the domestic PDA market is expected to amount to about 3 million PDAs in FY2004 [1]. Particularly in the past year, the market was stimulated partly by the entry of leading manufacturers into the market. PDAs are gradually changing their status from PC companions to network terminals. PDAs that have been released in recent years support not only telecommunication carriers' networks such as mobile phones and Personal Handyphone System (PHS) but also wireless Local Area Network (LAN). In terms of hardware, PDAs have gained the ability to support multimedia such as music and video playback, due to faster processing speed and larger memory capacity, and many models equipped with such functions are being released one after the other. It is also worth noting that many of the recent models have a preinstalled browser.

With respect to the Application Service Provider (ASP) market in light of content, as an online service targeting businesses and companies, the market size will amount to approximately 300 billion yen in FY2004 according to various surveys [2]. These surveys show that the potential demand in the corporate market is by no means small. At the same time, however, it is also true to say this market is uncultivated compared to the consumer market. In the world of wired communications, Asymmetric Digital Subscriber Line (ADSL) and other broadband connections have rapidly spread in the past year or two. The market for ASP services is expected to further expand in line with this trend. It is hoped that the world of wireless communications will grow further by accommodating the trend to use ASP in business systems, which is gaining momentum in the world of wired communications.

2.2 NTT DoCoMo's Approach

To date, NTT DoCoMo has been providing products and services with various functions to these markets. However, such products and services are deemed to have been provided and rolled out separately to each other, and suggestions have been made that many products are hard to take up for inexperienced users.

As a matter of course, the introduction of these products involve the participation of system integrators and sales personnel in designing the system as a whole. However, it is undeniable that the total cost incurred in the process is easily affordable.

For this reason, NTT DoCoMo provides infogate aimed at offering a service in a visible end-to-end, one-stop style while realizing a customized service for each customer, so as to promote user convenience and expand the corporate market.

2.3 PDA Usage Conditions

NTT DoCoMo conducted various market surveys before launching a portal service targeting PDAs, with respect to such factors as how PDAs are used in real life. The following user profiles emerged by putting together the survey findings.

- PDA owners who use PDAs in a wireless communications environment only once a week or so account for 80% of all PDA owners.
- Almost 80% of PDA users use the schedule function. On the other hand, less than 50% use the mail function, and only about 20% use PDAs for web browsing.
- More than 40% of users said that they would like to use PDAs more actively if there are enhancements in PDA-dedicated websites.

The survey results indicate the fact that although there is a high potential demand for PDA's browsing functions, they are not used much in practice. Furthermore, the Internet has a limited amount of content suitable for browsing by PDAs.

NTT DoCoMo considered that it would be able to fully penetrate the market by collecting content optimized for PDAs and by offering a portal based on a uniform style. Taking this into account, NTT DoCoMo advocates the following ideas of infogate and provides the service accordingly.

① Increase added value and stimulate the market by promoting the use of PDAs in networks.

② Create a new market by providing content that would enable PDAs to demonstrate their potential abilities, considering that PDAs are transforming from PC companions into network terminals.

3. Portal Service

3.1 Service Category

The term "portal" is essentially defined as "door" or "entrance." The definition evolved in such a manner that sites serving as the entrance to the Internet became known as "portal sites." Hence, an increasing number of people recognize "portal" as "portal sites" nowadays. However, the term "portal" in the Internet assumes the existence of three functions.

(1) Entrance Point

In terms of an entrance point, it is possible to define a "portal site" as "a site that serves as an entrance for accessing information on the Internet." For example, if a portal site is the first site to which a person connects when the browser is activated, he/she will be able to access most of the information on the Internet by clicking on the links. This corresponds to such an entrance point function.

(2) Sorting and Aggregation

It is pointless to merely have disorderly links to sites on the Internet. In a network community, it is an important function for the "portal" to show an orderly roadmap towards desired information, which is practically unlimited in volume. In the early days, portal sites were launched based on a massive collection of links. Nowadays, portals are being differentiated by function: some have the function to shorten the time that the user has to spend when accessing information by using an advanced search

engine, while others have an aggregation function, which makes only carefully-selected content available on the portal.

(3) Unification of Interface

Recently, a great deal of attention has been paid to a function called "interface unification," which goes one step further than the aforementioned aggregation function. The idea is to unify the interface of applications that have conventionally required the use of separate software –such as database access, mail, bulletin board and messenger– so that it would not only result in a user-friendlier interface for beginners, but also be effective in utilizing limited resources (e.g. memory), cutting development costs and even reducing the time and money required to master the operation methods. For example, an Intranet that enables users to access a company's database via a browser is provided based on the strong awareness of this function.

The functions that portals should have are as briefly described above. If anyone takes a look at the individual functions of infogate as at the time of its launch, it is obvious that all of them could be achieved by combining already-existing services. However, users would find it unattractive if the individual functions and services were provided in an uncoordinated fashion. Also, it would constitute the service provider's failure to accomplish its mission if the users were left to combine them with their imagination.

The "unification of interface" is precisely what infogate pursues. The aim is to unify the style of terminals, networks and content on the PDA front, in order to make it easier for inexperienced persons to take up PDAs and realize the potential demand thereby.

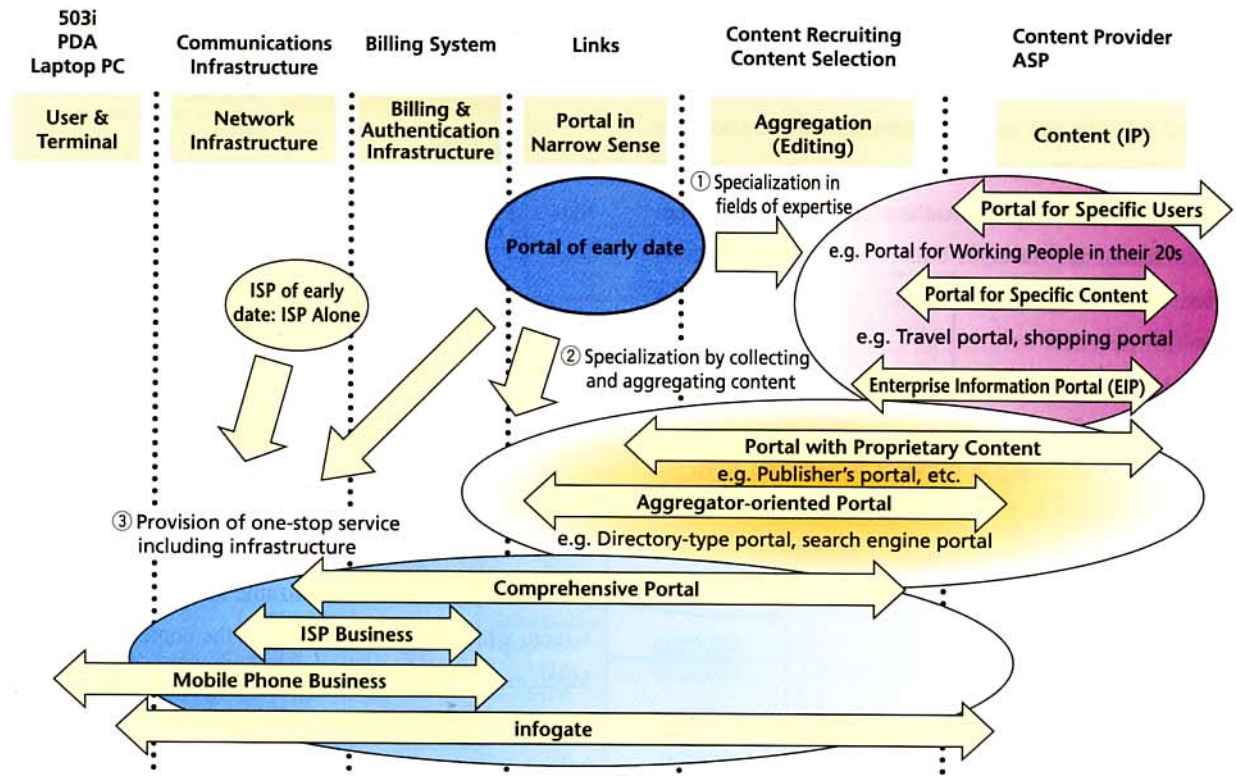
3.2 Analysis of Portals in terms of Value Chain

The scope of the service sector referred to by the term "portal" is extremely wide in terms of value chain*1, from websites advertising proprietary products to the entire service including the network infrastructure. **Figure 1** categorizes the portals in terms of value chain.

From the user's point of view, it would be desirable to have all services provided in a one-stop format, regardless of the demographics of the user being served (Figure 1③).

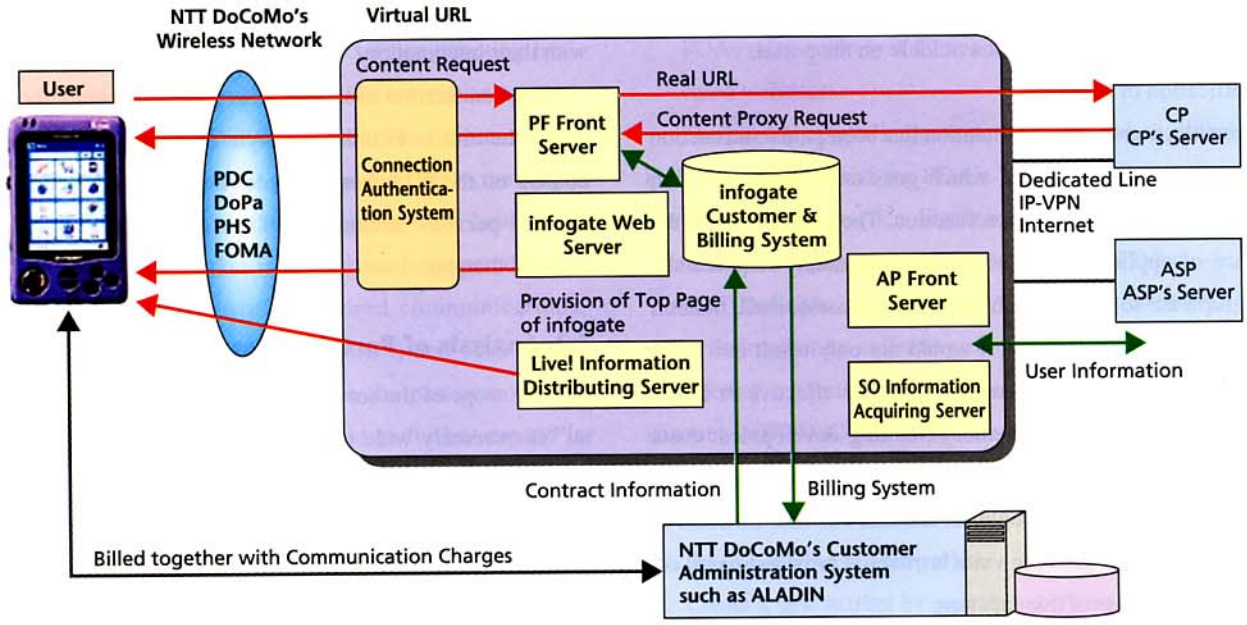
NTT DoCoMo's policy for providing infogate is to offer all services as one-stop services. In other words, the basic concept is not to provide music, video, location information and other functions on the basis of each service but to offer all of them in

*1 Value chain: Flow of value creation for providing products and services to the end user.



ASP: Application Service Provider
EIP: Enterprise Information Portal
IP: Internet Protocol
ISP: Internet Service Provider
PDA: Personal Digital Assistant

Figure 1 Categorization of Portals in terms of Value Chain



ALADIN: ALl Around DoCoMo INformation systems
AP: Access Point
ASP: Application Service Provider
CP: Content Provider
FOMA: Freedom Of Mobile multimedia Access
IP: Internet Protocol
PDC: Personal Digital Cellular
PF: Platform
SO: Service Order
VPN: Virtual Private Network

Figure 2 System Configuration

an integrated manner through a portal service.

4. Service Overview

As described above, infogate aims to provide various network services and functions in a coordinated style. The functions offered by infogate and the system configuration are shown below (**Figure 2**).

- PlatForm (PF) Front Server: Authenticates end users, confirms purchases, and manages bills related to the collection of information charges on the behalf of Content Provider (CP).
- infogate Web Server: Provides the Top Page and My Menu.
- APplication (AP) Front Server: Provides information on an end user who is accessing in response to inquiries from the CP server.
- Live! Information Distributing Server: Distributes (pushes) information from CPs to users through Live! mail.

4.1 infogate Top Page and My Menu

In order to enhance the convenience of PDA usage, infogate offers a top page and a menu list optimized for PDA displays. In consideration of the market trends at the time of service launch, infogate offers a top page that is easy to use on a vertical QVGA (240 x 320 pixels) display, which is the current industry standard (**Figure 3**).

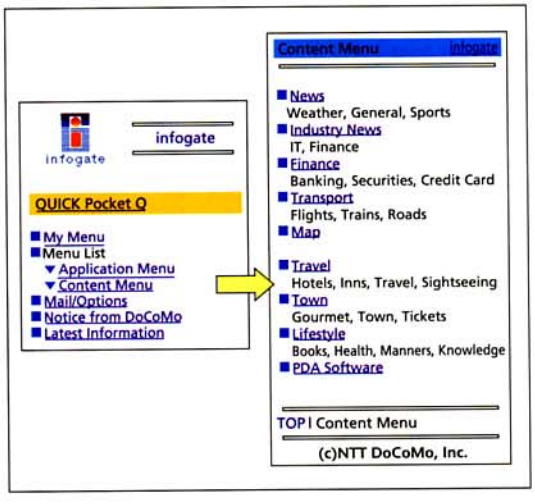


Figure 3 Top Page and Menu Screen of infogate

In My Menu, the user can register the content he/she has purchased. There is a customizable area in the upper part of the screen, which can display some of the content registered in My Menu as selected by the user according to his/her preference.

Also, content for specific users –which will be described below– can be displayed according to the user's preference. This makes it possible to provide services through a single interface while realizing customization functions.

4.2 Mobile Phone and Terminals (PDAs) targeted by Service

An NTT DoCoMo mobile phone capable of connecting to Mobile OPEration Radio Assistant (mopera) and a terminal equipped with a browser (e.g. PDA) are required to use infogate. In consideration of user support, terminals that have been confirmed to support the operation of infogate are announced on its website.

4.3 Authentication and Billing Functions

Access to infogate by the user is authenticated based on the phone number, user ID and password. A user who has been authenticated to access infogate is connected to PF Front, which makes a content request on his/her behalf to CPs. This arrangement serves as a system for preventing unauthorized access to CPs. CPs can acquire information on the user's account ID, circuit type, access speed, etc. by requesting the end user's connection information to AP Front.

As for the billing method, there are two plans: a metered plan, which allows the user CPs to arbitrarily decide the accessible duration; and a monthly fixed-fee plan, which allows the user to access as many times as he/she wants during the month until he/she cancels, once the plan is purchased.

These functions enable CPs to offer pay information services over infogate.

4.4 Grouping Function

infogate can group the end users' phone numbers and assign IDs by using group authentication equipment. Grouping enables the user to use functions such as bulk purchase/cancellation and purchase/cancellation limitation.

(1) Bulk Purchase & Cancellation Functions

By using this function, cancellation and purchase of content can be performed by group. For example, a company can install an application in, or remove an application from, all employees' terminals on a certain day.

(2) Purchase & Cancellation Limitation Functions

This function makes it possible to impose limitations on grouped MSs so that individual users would not be able to purchase content or cancel the content.

(3) Function to Provide Content to Specific Users

In cases where a CP or company uses group authentication equipment, the group authentication equipment exercises control so that only users belonging to a permitted group can access the content of the CP or the company. This function enables CPs and companies to provide content to specific users. For example, an ASP customized for a specific company can be provided through infogate (**Figure 4**).

4.5 Live! Information Distributing Service

Live! Information Distributing Service is a service that transmits (pushes) text messages to terminals with reception functions. Although there have been terminals with reception functions in the past, such as exire, exire II (DoCoMo) and E-707 (Casio), they were basically designed for terminal-to-terminal communications, and were not suitable for companies and CPs to transmit information. infogate offers the function to transmit information to many users via broadcasting, making corporate use feasible.

Applications of the Live! Information Distributing Service include messaging as well as the synchronization of data with a company's database.

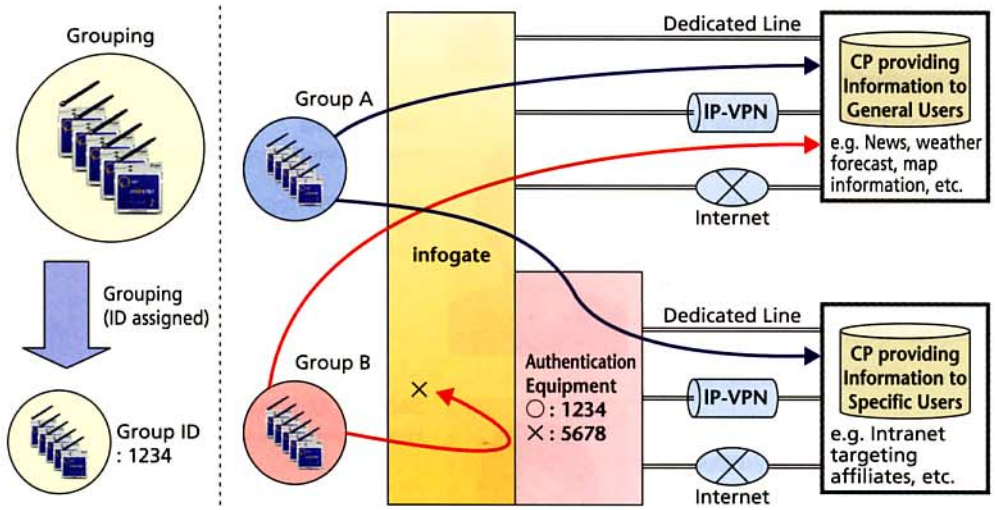


Figure 4 Function to Provide Content to Specific Users

4.6 Content

infogate target users are business-minded consumers

and corporate users. The available collections of content center on these target users.

The menu is structured and divided according to these two demographic groups: the Content Menu targets consumers, whereas the Application Menu focuses on business use.

The Content Menu offers content to be used personally by business-minded consumers. In contrast, the Application Menu offers applications to be used at the corporate level, such as groupware and sales support systems. While the Application Menu can be used based on the default configuration, it can also be customized for each user.

With respect to content, infogate has the following content development guidelines in consideration of the fact that the circuit speed and the display performance depend on the user's MS or terminal.

(1) Content Capacity Limit

If PC-oriented content is provided to PDAs as it is, it will be user-unfriendly due to problems in the display size, etc. Moreover, the transmission speed is limited when PDAs are communicating wirelessly, meaning that content of excessively large data volume will lead to longer communication time and higher communication charges. For these reasons, the data size per page recommended to CPs is 60kB for Personal Handyphone System (PHS) and Freedom Of Mobile multimedia Access (FOMA), and 10kB for DoPa[*2] and Personal Digital Cellular (PDC).

(2) Display Performance Differences between Terminals

As the PDA's display performance is terminal-dependent, there is no guarantee that the content is being offered to all platforms if it has been provided in one format. This is particularly the case when the content requires applications other than a browser.

With this in mind, infogate requires each content to clearly state the terminals and the circuit type (PHS, PDC, PDC mobile Packet data communication system (PDC-P), FOMA data communications, FOMA packet-switched communications) for which it is intended. This information is also clearly stated in the menu for end users.

5. Conclusion

This article overviewed the new portal service for PDA, infogate, and described the implementation policies. In the future, NTT DoCoMo intends to roll out the service focusing on "the cultivation of ASPs assuming business use," "enhancement of area information function, messaging services, etc.," "expansion of multimedia content suitable for use through FOMA," and "simpler procedures for introducing the system based on packages for businesses and companies."

*2 DoPa: A service that connects data terminals to networks of the PDC mobile Packet data communication system (PDC-P), and enables users to access the Internet, corporate LANs and other external networks by PPP. Launched in March 1997.

REFERENCES

[1] Yano Research Institute: "PDA Market 2001" [Japanese Version]

[2] Shiino, et al: "IT Market Navigator," Nomura Research Institute, 2000. [Japanese Version]

[3] Sato, et al: "Overview of mopera Step 3," NTT DoCoMo Technical Journal, Vol.9, No.1, pp.56-61, Apr.2001. [Japanese Version]

GLOSSARY

ADSL: Asymmetric Digital Subscriber Line
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