i-channel Services Systems

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Starting with Web and mail services, DoCoMo has rolled out a wide variety of i-mode services. In order to increase the usage rate among light users that are almost half of the entire i-mode users now, we developed systems to introduce the i-channel services, which provide rich push-type contents distribution to FOMA users.

1. Introduction

With the implementation of the "pake-hodai", a flat-rate packet-data subscription, the era of flat-rate packet communication had started, and we aim to secure the sources of revenue and expand the utilization of our services among light users. In order to increase the opportunities for light users to use i-mode, we propose push-type contents distribution services that make contents usage more convenient.

The "Tokudane News-bin", a news distribution service which was started in October 2004 and uses Message R (Request), is also a push-type contents distribution service. But because "Tokudane News-bin" is based on mail distribution and thus has a strong mail-based newsletter flavor. The i-channel services, on the other hand, place much greater importance on visual aspects by using Flash Lite™ and Flash Cast™*1 by Macromedia, Inc. Moreover, the target mobile terminals are equipped with dedicated buttons to make the user interface more attractive and easier to use. DoCoMo aims to achieve further diffusion of the i-mode services through the i-channel services. In these services, DoCoMo will be playing the role of contents provider and carry out push-type information contents distribution, making use of a new message distribution function. This article presents the system overview introducing the i-channel services.

2. Service Development Background

We focused on light users who obtain the latest information using iMenu and various general-purpose sites, but do not care

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*1 Macromedia, Flash Lite™ and Flash Cast™ are trademarks or registered trademarks of Macromedia, Inc. in the United States or other countries.

to register themselves to pay services, and who use only the mail-based functions among the i-mode services, as they feel uncomfortable with Websites due to the massive information available. Hence, we placed high priority on the following points.

- Signaling the presence visually to the users
- Good operability
- Automatic contents distribution
- Real-time contents

Moreover, it is also important to mention that the i-mode usage is made easier by DoCoMo purchasing and distributing contents in bulk, which eliminates the trouble of users having to subscribe to individual Contents Providers (CPs), and allowing them to use the services directly by subscribing only to DoCoMo.

We firstly add the functions to the 701i series since its targets are light users, and later implement them in coming mobile terminals as necessary.

3. Services Overview

Figure 1 shows an overview of the i-channel services. In order to use the i-channel services, it is necessary to subscribe in advance. Once a user subscribes to the services, information about the corresponding contents is distributed at regular basis to her/his mobile terminal and displayed on the standby screen as telop (Fig. 1 (1)). The telop contents are distributed periodically from the server. When the user sees telop contents that attracts him/her, he or she can push the dedicated button (i-channel button) to switch to the channel contents list

screen (Fig. 1 (2)). The user then selects the contents he or she wants to see, and the selected contents are shown on the screen (Fig. 1 (3)). Channel contents are also updated regularly from the server. Channel contents are categorized into official channels provided by DoCoMo and general channels provided by CPs. The transmission method adopted by the official channels is denoted message C and that of the general channels is denoted message D.

4. Addition of Functions to Mobile Terminals

The new functions were efficiently added to the mobile terminals based on existing functions such as Flash Lite™ by Macromedia, Inc. In addition, we paid special attention to user friendliness and visual effects to achieve easy operations and attractive screen displays.
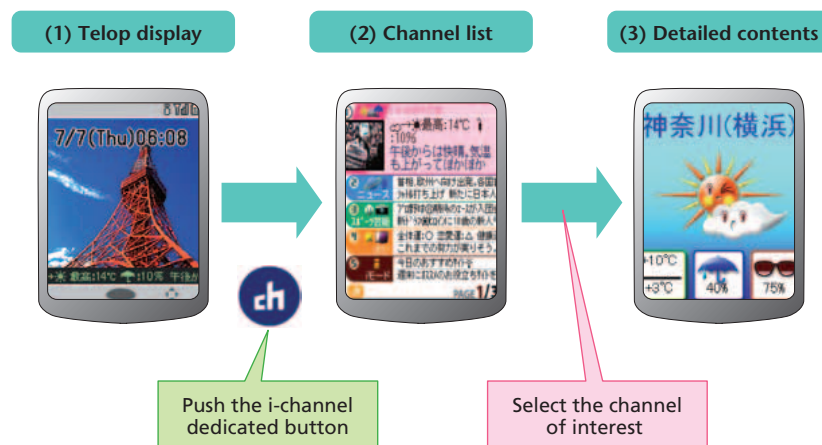
To realize better user friendliness, we adopted the dedicated startup button for the channel list and carried over the usage of i-mode browser operation without introducing new operations or complicated display manipulations, not to differentiate from existing mobile terminals.

As for visual effects, telop scrolling display and the graphical display of the channel list was introduced, ensuring that the distributed contents are presented in an easy-to-read manner that attracts attention.

4.1 Configuration of Mobile Terminal Functions

The mobile terminals are configured with the four new functions shown in **Figure 2**, which are implemented using existing applications.

1) Content Acquisition Function

(1) Telop display   **(2) Channel list**   **(3) Detailed contents**

Push the i-channel dedicated button

Select the channel of interest

* This service is provided in Japanese only.

Figure 1 Service usage overview

The applications of message R and message F (Free) contents are expanded to allow acquisition of message C and message D contents (Fig. 2 (1)).

2) Content Storage Function

The actual contents are extracted from messages C and D and saved in formats that can be used in the standby telop and channel list screen displays (Fig. 2 (2)).

3) Standby Telop Function

Text messages to be displayed as telop are displayed in the specified area of the standby screen so that they can be scrolled (Fig. 2 (3)).

4) Channel List Function

By pressing the dedicated button, the channel list viewer is activated and the channel list is displayed by the built-in Flash[®*2] Player software (Fig. 2 (4)).

If the user selects an item from the channel list, the mobile terminal is connected to the corresponding Website (Fig. 2 (5)).
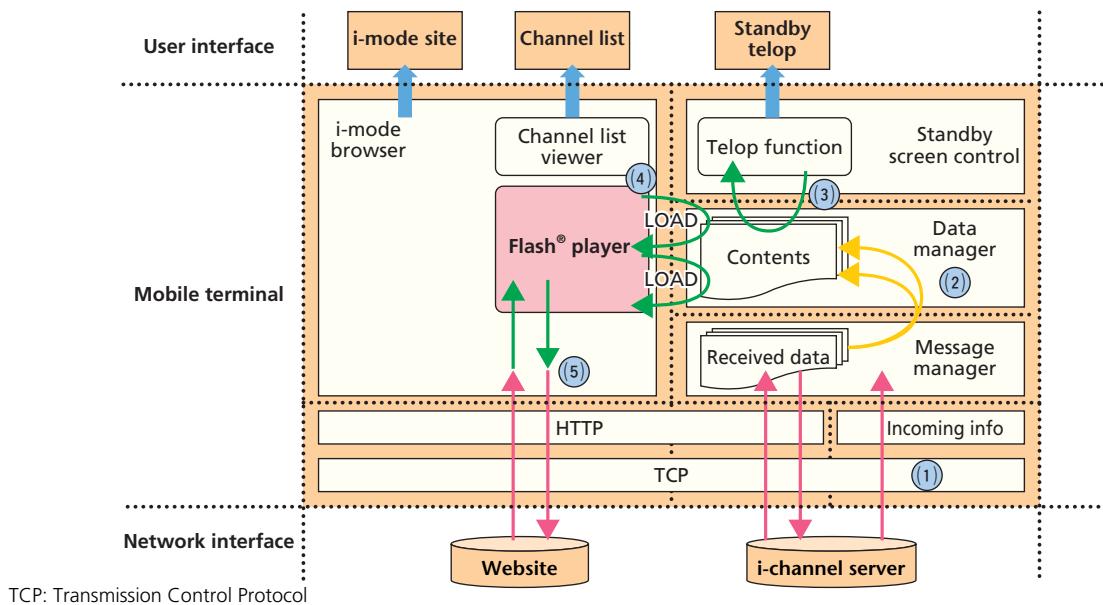
*2 Flash[®] is a trademark or registered trademark of Macromedia, Inc. in the United States or other countries.

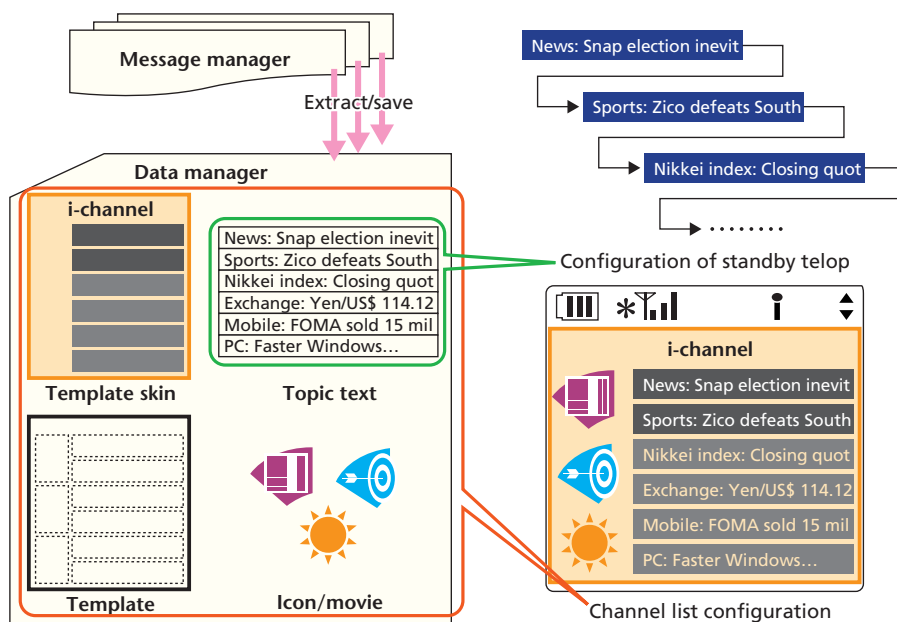**Figure 2 Configuration of mobile terminal functions**

Figure 3 Contents configuration in mobile terminal

4.2 Contents Configuration

Figure 3 shows the contents configuration within a mobile terminal.

The topic text for telop display and other contents (topic icons, movies, texts and detailed contents) to be displayed in the channel list are saved in the terminal by message distribution in advance.

The channel list viewer combines partial data of several kinds (differential contents) to configure and display the channel list.

The standby telop extracts and displays text files among the differential contents.

5. Addition of Functions to Servers

In the mobile terminals, Flash® files are played using the Flash® Player software. For this reason, it is necessary to generate and transmit Flash® files on the server side. In order to convert several image files into Flash® files, we chose to use Flash Cast™ by Macromedia, Inc., which is highly suitable for usage with mobile terminals. **Figure 4** shows an overview of the server system for the i-channel services, and the processing that takes place before the service is distributed is explained below.

1) Service Launch Function

A user utilizing a mobile terminal that supports the services subscribes to the i-channel services (Fig. 4 (1)). The subscription information is notified from ALl Around DoCoMo INformation systems (ALADIN) terminal to the i-channel server system via treasure Casket of i-mode service, high Reliability platform for CUStomer, commonly known as the i-mode center (CiRCUS), as a Service Order (SO). The user information such as area, star sign (birthday) and so forth included in the SO is registered in the user database. This user data is used to distribute personalized contents to individual users.

2) Contents Information Update Function

The official channels are updated at periodically by the CP of each official channel wherever new contents are created (topic icons, movies, texts, detailed contents) and the i-channel server acquires and updates the corresponding files (Fig. 4 (2)).

3) Data Conversion Function

Files acquired via the official channels are updated on each server at regularly. These files are automatically converted to formats that can be displayed in mobile terminals (Fig. 4 (3)).

The general channels, on the other hand, use Flash Cast™ servers (feed server and data source server) provided by Macromedia, Inc. for conversion to file formats that can be distributed to mobile terminals (Fig. 4 (4)).

4) Contents Distribution Function

The official channels distribute information to the mobile terminals at regular basis, basically not late at night. For the general channels, the user can set a common timer and the update processing is performed with that interval. If a user forgets to set the update interval via the general channel setting or acquire updates by general channel settings, a notification is sent to the mobile terminal during midnight (night time moni-
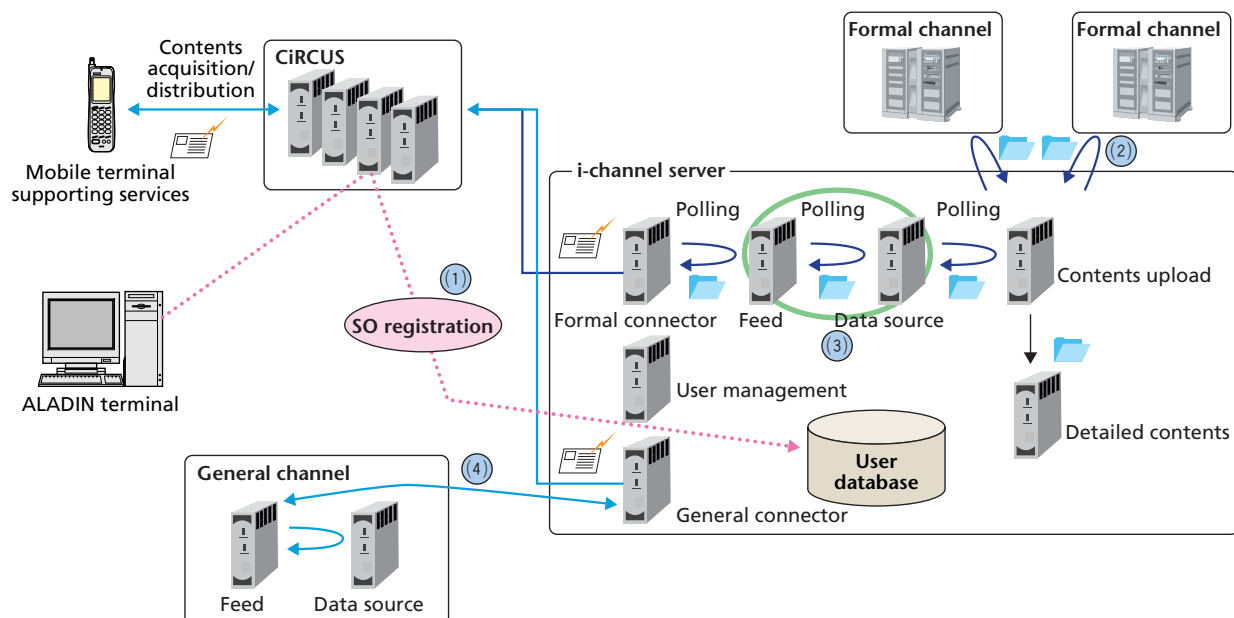

Figure 4 Server system overview

toring reception notification function), and remind the user to update the contents the next morning for the general channels, and prompting him/her to set the timer.

6. Conclusion

We developed a rich user interface using Flash Lite™ and various push-type contents distribution services to increase the usage of i-mode by light users. This is considered to provide a basis for DoCoMo to roll out push-type contents distribution services actively and aggressively in the future.

We will continue to enrich the contents and improve the user interface further, thereby enhancing the i-mode services as a whole.

ABBREVIATIONS

ALADIN: ALl Around DoCoMo INformation systems
CiRCUS: treasure Casket of i-mode service, high Reliability platform for CUStomer
CP: Contents Provider
SO: Service Order
TCP: Transmission Control Protocol