Advertisement Guidance Service that Uses Positional Information
— Sapporo JR Tower as an Example —

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Network advertising, which uses the Internet and mobile telephones, is starting to gain recognition for its effectiveness, along with television, radio, magazines, newspapers and posters on display at railway stations. The features of network advertising include its immediacy, interactivity and bidirectional ability, as well as its pin-pointed targeting. Due to these characteristics, it is becoming more and more visible with campaign projects targeting an improvement in response rates from customers. On the other hand, electronic mail advertising that arrives often is resented, while conventional advertising lacks its interactivity and bidirectional ability. It is also difficult to link the real stores (actual stores) with the advertisements, thus the issue of how to guide a customer to a store and connect them to sales, still remains.

The "Advertisement Guidance Service" (hereinafter referred to as the "Service"), which utilizes positional information and uses a combination of electronic posters (used as advertisement guidance media) and mobile telephones, is introduced in this paper as the means for resolving such problems.

The main characteristic of this Service is the guidance of customers to the stores, based on the positional information of the viewers (hereinafter referred to as "Users") of the advertisement. The Service aims to make a contribution towards the sales promotion, turnout and the evocation of the will to purchase, by adding value that guides customers to real stores to transit advertisements such as posters, which have no relevance to real stores in the neighborhood. This brings "pleasure" and "savings" to Users, while for advertisers (hereinafter referred to as "Businesses") it is a sales promotion tool that also has utility value as a market data collection tool.

Electronic posters, installed in the East Exit Concourse of the Sapporo Station and the "Sapporo Steller Place" inside the Sapporo JR Tower, are introduced as examples in this paper.

Issues of Shopping Promenades

Many developers, of large-scale shopping malls and shopping promenades, indicate that it is difficult to gain a grasp of visitor trends (purchase, flow pattern and migration information) in the trading areas.

They provide the following reasons:

(1) Costs required for investigating.

(2) Technical problems for automating the acquisition of visitor flow pattern information

(3) Ordinary questionnaires as a means to obtain attribute information, such as individual preferences, do not work well with Users, as they become wary and do not enter their real feelings, intentions and motives.

(4) Although such information can be obtained in combination with POS information, there could be many cases where privacy issues may cause problems.

The present situation is as described above, however, developers and store owners have requests, such as:

(1) To acquire information on key customers, while respecting their privacy.

(2) To control the flow pattern of visitors to trading areas somehow and link it to sales.

Concept of Information Recognition Levels at Shopping Promenades

The concept of information recognition levels is described here. Visitors to trading areas can be categorized into five layers, as described in Fig. 1. This Service targets the improvement of recognition and guidance effects on Users of the third and higher layers, who have relatively high recognition levels.

Estimation Model for Advertisement Guidance Effects

The estimation model of this Service is established in cooperation with the Fukuoka University Institute of Quantitative Behavioral Informatics for City and Space Economy (FQBIC). The method for estimating the calculation is as follows (figures are taken from fictional data).

(1) Base data

1) Number of campaign participants: 2,000.

2) Campaign period: Approximately one month.

3) Visiting frequency of Users: 2.5 times per week.

4) Customer transaction: JY2,500.

(2) Definition of sales promotion effects

Sales promotion effect = Sales increase effect by increased frequency of visits + sales increase effect due to migration effects

Raising recognition levels

Fifth layer
Recognition of information exchange locations
⇨ Circulation of customers from these locations
Fourth layer
Recognition of existence of information utility
⇨ Provision of coupons (information provided by both stores and customers)
Third layer
Updating
⇨ Information on bargain sales and limited time sales
(one-way provision of information)
Second layer
Existence of information
⇨ Implementation of membership and point services
(information that is useful once recognized)
First layer
Recognition of location
⇨ Map and store information (information that can be provided on paper)

Resident repeaters and visiting repeaters

Resident repeaters and visitors

Residents and portions of visitors

Resident patrons

Particular Users

Fig. 1 Concept of information recognition levels

(3) Example settings

1) Amount of purchases for each visit.
Assumption: JY1,500.
(Derived by assuming the purchase determining rate to be 0.6, thus JY2,500 x 0.6)

2) Visiting frequency increases due to sales campaigns.
Current: 2.5 times per week→
Forecast: Increase to 3.0 times per week

3) Number of stopping by occasions
Number of locations for stopping by (ordinarily): Two locations.
Number of locations increased (due to sales campaign effects): One location.

(4) Sales increase forecast for the validation experiment period.

1) Effects of an increase in visits due to sales campaigns:
4 weeks x 0.5 times x 2,000 people x JY1,500 x 2 locations = JY12 million

2) Effects of an increase in migrating locations:
4 weeks x 2.5 times x 2,000 people x JY1,500 x 1 location = JY30 million

Based on the estimates above, a total of approximately JY42 million in increased sales can be expected by implementing this Service.

Summary of this Service

(1) Media used and its characteristics

1) Media 1: Electronic poster
An electronic poster is equipment that has a plasma or other type of display, to which static and motion picture content can be distributed via networks. A total of 16 units of the IntelligentPoster® of the ITnews (Phot. 1) are used at the JR Tower with advertisements and news being broadcast to these plasma displays.

Phot. 1 Electronic posters installed at the East Exit of the Sapporo Railway Station

Electronic posters have the following features:
- Good eye catchers with static and motion pictures.
- Schedules advertisement distribution:
  →Broadcasts the latest information.
  →Switches between multiple content.
  →Changes content in accordance with days and times.
- Bidirectional ability with mobile telephones.
  →Links to URLs (possible to use two-dimensional bar codes)
  →Controls the electronic poster display content from mobile telephones.

2) Media 2: Mobile telephones
Mobile telephones are now so popular that the number of units in use exceeds 80 million, as they offer:

- Superior portability (can be worn at all times).
- Accessible information tool (almost every person targeted by this Service, including students and female office workers, owns one).
- Sophisticated features.
  - →Operates applications such as Java or Brew.
  - →Incorporates global positioning system (GPS) functions.
  - →Incorporates camera functions.

(2) Description of Service

Electronic posters will guide visitors to stores and mobile telephone sites, according to the display content. After this, the location of the poster, takes on a new meaning as the place of origin (positional information). For example, it is possible to obtain detailed information using the camera function of the mobile telephone to scan the two-dimensional bar code displayed on the electronic poster and access the embedded information (URL). On the other hand, it is also possible to dispatch a virtual concierge (a navigator, hereinafter referred to as "Personal Navigator") to the application on the mobile telephone or web site. The Personal Navigator understands the content of the conversation with the User and is loaded with a conversational technology that provides recommended information in response to the attributes of conversation.

The Personal Navigator is configured by individual modules, as shown in Fig. 2 (it will appear as a character on the actual mobile telephone). The "scenario files" are particularly important components as they define the flow of the conversations that are used to control conversations with Users. The following types of scenario files can be conceived:

Examples:
- Migration survey scenario.
- Preferences and interests survey scenario.

(3) Advantages of this Service

Advantages for each participant using this Service (businesses and Users) are described below (Each can be customized for individual businesses):

<Advantages for businesses>

The Personal Navigator will offer advantages to businesses, with the use of the following tools:
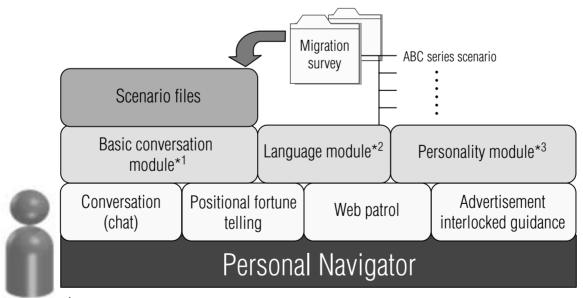
1) Hypothesis verification tool

It is possible to add or alter scenario files, according to the purpose of this Service. It is, therefore, possible to repeat "hypothesis setting → verification → analysis → hypothesis setting" to make the Service evolve and suitable for a User.

2) Responsive tool

It is possible to create scenes that are suitable for the changes in Users, by sequentially changing the scenario content online. For example, let us assume that there is an "advertisement scenario". By rewriting the advertisement content according to the time zone, day, weather, events and other such varying factors, it is possible to provide information that is in line with the targeted population.

3) Marketing information collection tool

Marketing surveys are possible, through conversations (which are a kind of scenario as well) with the Personal Navigator.

$*^1$: Loaded with a semantic recognition technology necessary to engage in conversation.

$*^2$: Loaded with a dictionary file that is necessary for conversations.

$*^3$: Configures character personalities.

Fig. 2 Mechanism of a Personal Navigator

For example, the following exchanges may take place through a casual conversation:

• **Example of a conversation**

(It is possible to engage in conversations with the character on a mobile telephone.)

Personal Navigator: "Who did you come with today?"

↓

User: "I came with my father."

↓

Personal Navigator: "Did you come here in your father's car?"

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In such a manner, it is possible to collect marketing information without the User being aware of such information collecting efforts. So far we gained information concerning "whether the User came alone or not", "their relationship with the accompanying person" and "their means of transportation".

4) Sales promotion tool

Many existing electronic mail advertising services, such as mail magazines, broadcast advertisements one-sidedly (push-type) to Users. Many of these are considered to be junk mail (garbage information) and although they are opened at first, they tend to be thrown out eventually without being opened. For this reason, there are concerns about the deterioration in the opening and response rates. With web advertisements, a certain level of effectiveness can be verified, although it serves no purpose unless the people are led to the applicable web site. With the Personal Navigator, on the other hand, the Users themselves set the information they want to search for and take the information they desire (a pull-type) by running through various web sites and mail magazines. The opening rate, therefore, is 100%. The response rate can be improved with certainty, provided that the information provided is of a good quality (for example the offering of novelty gift items, etc.).

5) Corralling tool

The mode of this Service involves the dispatch of Personal Navigators (specifically, it is possible to set different characters and scenarios for individual trading areas). This makes it possible to prepare character personalities and scenarios to suit a particular area. For this reason, it is possible to corral repeating customers and use the Service as an information broadcasting tool by offering premium information that is limited to members.

6) Advertising tool

In order to reduce any resistance by Users, it would be sensible to avoid outright advertising, as Users also incur packet transmission costs when the Service is offered to mobile telephones. Efforts are being made, therefore, to devise advertisements using this Service through the following two methods:

Method 1: Displaying a logo

The logo of the store can be embedded in the background of the application, to reduce the resistance of Users (since the background data is retained by the application, communication charges will apply only when it is initially downloaded).

Method 2: Offering coupons first

First offer information that can lead to savings as a way to reduce the psychological resistance of Users.

7) Customer guidance tool

The most important purpose of this Service is the guidance of customers. As mentioned earlier, the biggest objective of the Service is to utilize the respective advantages of its tools to guide Users to actual stores.

<Advantages for Users>

The Personal Navigator offers the following advantages to Users:

(1) Service that provides savings

The Service is conceived as a source of information that can save money, such as with coupon information.

(2) Tool used to fill in time

This is a tool that can be used to fill in time. A pleasant conversation can be had with a character as information is acquired, while filling in idle time.

Case Examples at Sapporo JR Tower

Actual events of store guidance, using the Personal Navigator function, are introduced in this paper. This service is implemented as a sales promotion tool at the "Sapporo Steller Place" in time for their commemorative sales campaign period in celebration of their first anniversary. The execution of the sales campaign announcements, descriptions of the services offered and the process flow for measuring the effectiveness, are all introduced below.

• **Flow of service**

Step 1: Sales campaign announcements

(1) Announcements of a sales campaign are broadcast to electronic posters and participants are guided to a web site using empty electronic mail and two-dimensional bar codes (Phot. 2).

(2) Participants download from the web site the application for mobile telephones that is necessary for participating in the sales campaign.

Phot. 2 Commercial for announcing the sales campaign (45 seconds)

Step 2: Sales campaign participation

(1) The application is booted and an initial setting is conducted. In the initial setting, a simple profile of the User (only age group, occupation and gender) is set that will control the attributes of the questions in the quiz (described later).

(2) The contents for the quiz are solicited from stores and developers. The contents and hints for the questions in the quiz must be formulated in such a way that they become understandable only after an actual visit has been made to the store. Many such devises are included to promote visits to the trading area.

(3) The information about the coupons (solicited from the stores in advance), is provided once a User responds to the quiz correctly. This coupon information includes discount tickets and novelty gifts, which are intended to evoke the urge to visit the store.

Supplement: Two methods for presenting the questions of the quiz are available.

Question presentation method 1: Random questioning pattern

Questions of the quiz are presented randomly, to suit the attributes of a participant (when questions are recruited, market segment designations are also requested, so that questions can only be addressed to an appropriate target layer of the population).

Question presentation method 2: Store specification pattern

Participants of the sales campaign specify the store they choose, respond to quiz questions and receive coupons. Participants can specify a store by selecting it with a free text entry or by selecting it from a genre listing of stores. Even though the free text entry may result in the specification of a store that is not participating in the particular sales campaign, it will nevertheless, be utilized as a source of important marketing data.

Step 3: Double winning chances with membership points

Points are given each time a question is answered correctly in the quiz, which is offered during the sales campaign. Once the sales campaign comes to an end, a drawing for prizes will take place, with the chances corresponding to the number of accumulated points. Efforts are being made to devise ways to ensure that the participants do not lose interest over a long period of time with such means as by adding a membership point system besides the quiz and coupons, mentioned above.
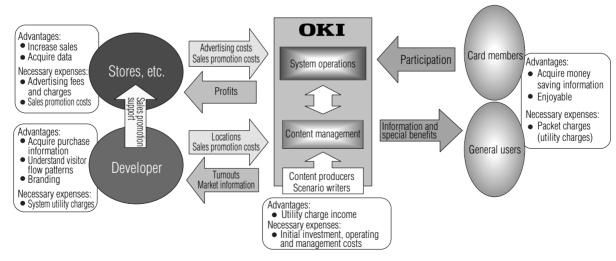

Fig. 3 Business scheme

Step 4: Aggregation of results for measuring the effectiveness

Each individual coupon distributed during the sales campaign period is given an individual ID. The tastes and interests of Users can be analyzed from the aggregation of such information and conversational information obtained through conversations with the Personal Navigator, along with information on migration, flow patterns and purchases.

Business Scheme

The business scheme of this Service is described below (Figure 3). The major participants of this Service are businesses (developers and stores) and Users. Therefore, the Service is formulated using the B-B-C business model. The utility charges for the Service are comprised of the following:

- **Personal Navigator induction charge**

This is a charge applicable for customizing the Personal Navigator to a particular trading area and to add on a basic scenario.

- **Advertisement placement charge**

Store advertisements (advertisement copy, coupons, logo, etc.).

- **User utility charge**

This charge is for using the Personal Navigator. If there is resistance to charging the User for the Service, the trading area (primarily developers and stores) may bear the cost.

Developments for the Future

A case example of the Sapporo JR Tower was presented in this paper. The Service is expected to be packaged and introduced nationwide. The following specific candidates have been nominated for the Service:

- Shopping malls.
- Large-scale supermarkets and outlets.
- Department stores.
- Shopping promenades.
- Credit card membership services.
- Regional vitalization services.
- Various customer assistant services for corporations.

Such targets for implementing the Service include trading areas and customer assistant services for corporations, for which repeating customers can be expected (indoor services, in particular, are being included in the scope). Further, proactive collaboration is being sought, with electronic posters and further sophistication (linkup with global positioning system, etc.) for Personal Navigator functions, in line with the advancement of mobile information terminal capabilities. Sequential support of PDAs, car navigators (vehicle global positioning and navigational systems) and wireless LAN terminals are also being considered.

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