

DESCRIPTION

TITLE OF INVENTION: INFORMATION PROCESSING SYSTEM AND INFORMATION PROCESSING METHOD

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This international application claims the benefit of Japanese Patent Application No. 2022-048517 filed on March 24, 2022 with the Japan Patent Office, and the entire disclosure of Japanese Patent Application No. 2022-048517 is incorporated herein by reference.

TECHNICAL FIELD

[0002] The present disclosure relates to an information processing system and an information processing method.

BACKGROUND ART

[0003] A technique is known in which databases are cross-referenced and a group of second consumers similar to a group of first consumers selected from a first database is selected from a second database, thereby delivering an advertisement to an expanded group of target consumers (e.g., Patent Document 1).

PRIOR ART DOCUMENTS

PATENT DOCUMENTS

[0004] Patent Document 1: Japanese Unexamined Patent Application Publication No. 2017-097717

SUMMARY OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0005] In recent years, with the proliferation of smartphones and tablet terminals, there has been a growing interest in delivering advertisements to information terminals. A plurality of advertisement delivery companies already exists, and

advertisers can deliver advertisements to consumers through these advertisement delivery companies.

[0006] However, a method for submitting an advertisement, in particular, a method for specifying a destination is different for each advertisement delivery company, and these differences in specifying methods cause complexity of submission for the advertisers.

[0007] In one aspect of the present disclosure, it is desirable to provide a new technique capable of simplifying the work of information senders with respect not only to the delivery of advertisements, but also the delivery of content.

MEANS FOR SOLVING THE PROBLEMS

[0008] In one aspect of the present disclosure, there is provided an information processing system comprising a section information storage, a target information acquirer, a determiner, a condition information storage, and a delivery requestor.

[0009] The section information storage is configured to store section information describing, with respect to a plurality of sections defined by subdividing a feature space corresponding to a set of first feature values, for each of the sections, features of a set of entities having the first feature values of a corresponding section.

[0010] The target information acquirer is configured to acquire a second feature value that is related to a focus target entity and that is related to the features described in the section information. The determiner is configured to map the focus target entity to the feature space based on the section information and the second feature value to thereby determine, as a target section, a section with which the focus target entity is associated in the feature space.

[0011] The condition information storage is configured to store definition information defining, for each of the sections in the feature space, a delivery condition for a delivery system. The delivery requestor is configured to request the delivery system to deliver content in accordance with the definition information stored in the condition information storage. The delivery requestor

is configured to request the delivery system to perform a delivery in accordance with the delivery condition defined for the target section.

[0012] This information processing system is capable of requesting the delivery system to deliver the content while specifying the delivery condition based on the feature value of the entity provided by an information sender. Therefore, in one aspect of the present disclosure, it is possible to simplify the work of the information sender with respect to the delivery of content.

[0013] In one aspect of the present disclosure, the delivery system may be a plurality of delivery systems including a first delivery system and a second delivery system. The delivery requestor may request at least one of the plurality of delivery systems to deliver content.

[0014] The definition information may include first definition information and second definition information. The first definition information may define a first delivery condition that is a delivery condition for the first delivery system. The second definition information may define a second delivery condition that is a delivery condition for the second delivery system.

[0015] Based on the first definition information, the delivery requestor may request the first delivery system to perform a delivery in accordance with the first delivery condition defined for the target section. Based on the second definition information, the delivery requestor may request the second delivery system to perform a delivery in accordance with the second delivery condition defined for the target section.

[0016] This information processing system is capable of requesting each of the plurality of delivery systems to deliver the content while specifying a delivery condition suitable for the delivery system. Therefore, in one aspect of the present disclosure, it is possible to simplify the work of the information sender with respect to the delivery of content using the plurality of delivery systems.

[0017] In one aspect of the present disclosure, the first delivery condition and the second delivery condition for each of the sections may be delivery conditions for delivering the content to an entity associated with a corresponding section.

The first definition information may define the first delivery condition using a parameter related to the delivery condition specifiable in the first delivery system. The second definition information may define the second delivery condition using a parameter related to the delivery condition specifiable in the second delivery system.

[0018] In one aspect of the present disclosure, the delivery requestor may request at least one delivery system specified by a delivery instruction source among the plurality of delivery systems to deliver the content. With this information processing system, the delivery instruction source can realize content delivery through a desired delivery system by simple operation, even without knowing the detailed method for specifying the delivery condition for each of the plurality of delivery systems.

[0019] In one aspect of the present disclosure, the delivery requestor may select a delivery request destination from the plurality of delivery systems depending on the target section. This information processing system enables delivery of the content through the appropriate delivery system.

[0020] In one aspect of the disclosure, the information processing system may include a performance information acquirer. The performance information acquirer may be configured to acquire, from at least each of the first delivery system and the second delivery system among the plurality of delivery systems, performance information that is related to an effect of content delivery through a corresponding delivery system and that enables determination of an effect of delivery in each of the sections.

[0021] The delivery requestor may select the delivery request destination based on the effect of delivery in the target section, the effect of delivery being determined from the performance information. This information processing system enables the delivery of the content through the delivery system with an excellent effect of delivery.

[0022] In one aspect of the disclosure, the focus target entity may be a plurality of entities. The target information acquirer may acquire a second feature value

of each of the plurality of entities. The determiner may map the plurality of entities to the feature space to thereby determine, as a group of target sections, a group of sections with which the plurality of entities is associated in the feature space.

[0023] With respect to the group of target sections, for each of the target sections, the delivery requestor may request the first delivery system to perform a delivery in accordance with the first delivery condition defined for a corresponding target section, and may request the second delivery system to perform a delivery in accordance with the second delivery condition defined for the corresponding target section

[0024] In one aspect of the disclosure, the delivery requestor may select, from the group of target sections, at least one section as a delivery target section and may request the delivery system to perform a delivery in accordance with the delivery condition defined for each of the at least one section.

[0025] This information processing system enables the delivery target section to be appropriately set based on the feature values of the entities provided by the information sender, and to request the delivery system to deliver the content while specifying the delivery condition for the section.

[0026] In one aspect of the present disclosure, the delivery requestor may determine, for each of the target sections, an effect of content delivery through the delivery system and selects the delivery target section from the group of target sections based on the effect of content delivery. This information processing system enables the delivery target section to be set in consideration of the effect of delivery.

[0027] In one aspect of the present disclosure, the information processing system may comprise a performance information acquirer configured to acquire performance information that is related to an effect of content delivery through the delivery system and that enables determination of an effect of delivery in each of the sections. The delivery requestor may select the delivery target section from the group of target sections based on the effect of delivery in each

of the target sections, the effect of delivery being determined from the performance information.

[0028] In one aspect of the present disclosure, there may be provided an information processing system comprising a section information storage, a target information acquirer, a determiner, an entity information storage, and a delivery requestor. The target information acquirer may be configured to acquire a second feature value that is related to a focus target entity and that is related to the features described in the section information.

[0029] The determiner may be configured to map the focus target entity to the feature space based on the section information and the second feature value to thereby determine, as a target section, a section with which the focus target entity is associated in the feature space.

[0030] The entity information storage may be configured to store entity information describing, for each of the sections in the feature space, a group of entities associated with a corresponding section using an identifier individually assigned to each of the entities.

[0031] The delivery requestor may be configured to specify, in the delivery system, as delivery destinations of the content, a group of identifiers including the identifier of each of the entities associated with the target section, the identifier being determined from the entity information. Thereby, the delivery requestor may be configured to request the delivery system to deliver the content so that the delivery system delivers the content to the group of entities associated with the target section.

[0032] This information processing system makes it possible to request the delivery system to deliver the content by the method of specifying the delivery destinations using the identifiers based on the feature value of the entity provided by the information sender. Thus, it is possible to simplify the work of the information sender with respect to specifying the delivery destinations using the identifiers.

[0033] In one aspect of the present disclosure, there may be provided an

information processing system comprising a section information storage, a selector, a target information acquirer, a determiner, and a delivery requestor. The selector may be configured to select at least one section as a delivery target section from the plurality of sections.

[0034] The target information acquirer may be configured to acquire, with respect to a plurality of entities, for each of the entities, a second feature value related to the features described in the section information. The determiner may be configured to map the plurality of entities to the feature space based on the section information and the second feature value to thereby determine, as a group of delivery target entities, a group of entities associated with the delivery target section.

[0035] The delivery requestor may be configured to specify, to a delivery system, as delivery destinations of the content, an identifier of each of the entities constituting the group of delivery target entities. Thereby, the delivery requestor may be configured to request the delivery system to deliver the content so that a delivery of the content to the group of delivery target entities is performed.

[0036] This information processing system makes it possible to request the delivery system to deliver the content to the corresponding group of entities using the identifiers based on the selection of the delivery target section. Therefore, in one aspect of the present disclosure, the work of the information sender can be simplified when it is necessary to specify the delivery conditions using the identifiers.

[0037] In one aspect of the present disclosure, the selector may be configured to determine, for each of the plurality of sections, an effect of content delivery through the delivery system. The selector may select the delivery target section from the plurality of sections based on the effect of content delivery. This information processing system enables the delivery target section to be appropriately set in consideration of the effect of delivery.

[0038] In one aspect of the disclosure, the information processing system may

include a performance information acquirer. In this case, the selector may select the delivery target section from the plurality of sections based on the performance information acquired by the performance information acquirer.

[0039] In one aspect of the present disclosure, the performance information acquirer may acquire, with respect to each of the plurality of delivery systems, the performance information on the effect of content delivery through a corresponding delivery system. Based on the performance information, the selector may further select, for each of the sections corresponding to the delivery target section, a delivery system as a delivery request destination from the plurality of delivery systems.

[0040] For each of the sections corresponding to the delivery target section, the delivery requestor may request the delivery system selected as the delivery request destination, to deliver the content so that a delivery of the content to a group of entities associated with a corresponding section among the group of delivery target entities is performed. This information processing system enables the delivery system as a delivery request destination to be appropriately selected in consideration of the effect of delivery.

[0041] In one aspect of the present disclosure, there may be provided an information processing system comprising a section information storage, a target information acquirer, a determiner, a selector, an entity information storage, and a delivery requestor. The target information acquirer is configured to acquire, with respect to a plurality of entities, a second feature value of each of the plurality of entities, the second feature value being related to the features described in the section information.

[0042] The determiner is configured to map the plurality of entities to the feature space based on the section information and the second feature value to thereby determine, as a group of target sections, a group of sections with which the plurality of entities is associated in the feature space.

[0043] The selector is configured to select at least one section as a delivery target section from the group of target sections. The entity information storage is

configured to store entity information describing, for each of the sections in the feature space, a group of entities associated with a corresponding section using an identifier individually assigned to each of the entities.

[0044] The delivery requestor may specify, in the delivery system, as delivery destinations of the content, a group of identifiers including the identifier of each of the entities associated with the target section, the identifier being determined from the entity information. Thereby, the delivery requestor is configured to request the delivery system to deliver the content so that the delivery system delivers the content to the group of entities associated with the delivery target section.

[0045] This information processing system can request the delivery system to deliver the content to the corresponding group of entities using the identifiers based on the selection of the delivery target section.

[0046] In one aspect of the present disclosure, the selector may determine, for each of the target sections, an effect of content delivery through the delivery system and select the delivery target section from the group of target sections based on the effect of content delivery.

[0047] In one aspect of the disclosure, the information processing system may include a performance information acquirer. The selector may select the delivery target section from the group of target sections based on the effect of delivery in each of the target sections, the effect of delivery being determined from the performance information.

[0048] In one aspect of the present disclosure, the entities may be persons. The identifier used to specify the delivery destination may be an identifier to deliver the content to an information terminal of a corresponding entity by the delivery system as a delivery request destination. In one aspect of the present disclosure, the identifier may include at least one of an advertising ID, a cookie ID, or an email address.

[0049] In one aspect of the present disclosure, there may be provided a computer program causing a computer to perform at least a part of functions in the

information processing system. In one aspect of the present disclosure, there may be provided a computer program causing a computer to perform functions as the target information acquirer, the determiner, and the delivery requestor in the information processing system.

[0050] In one aspect of the present disclosure, there may be provided a computer program causing a computer to perform functions as the selector, the target information acquirer, the determiner, and the delivery requestor in the information processing system. In one aspect of the present disclosure, the computer program may be recorded in a computer readable non-transitory recording medium.

[0051] In one aspect of the present disclosure, there may be provided an information processing method related to the operation of the information processing system. The information processing method may be implemented by a computer. The information processing method may have effects similar to those of the information processing system.

[0052] In one aspect of the present disclosure, there may be provided an information processing method performed by a computer. The information processing method may include acquiring section information from a storage device storing the section information describing, with respect to a plurality of sections defined by subdividing a feature space corresponding to a set of first feature values, for each of the sections, features of a set of entities having the first feature values of a corresponding section.

[0053] The information processing method may include acquiring a second feature value that is related to a focus target entity and that is related to the features described in the section information. The information processing method may include determining, as a target section, a section with which the focus target entity is associated in the feature space by mapping the focus target entity to the feature space based on the section information and the second feature value.

[0054] The information processing method may include acquiring definition information from a storage device storing the definition information defining,

for each of the sections in the feature space, a delivery condition for a delivery system. The information processing method may include requesting the delivery system to deliver content in accordance with the definition information. The requesting includes requesting the delivery system to perform a delivery in accordance with the delivery condition defined for the target section.

[0055] In one aspect of the present disclosure, an information processing method performed by a computer may be provided. The method comprises: acquiring the section information from a storage device; acquiring a second feature value that is related to a focus target entity and that is related to the features described in the section information; determining, as a target section, a section with which the focus target entity is associated in the feature space by mapping the focus target entity to the feature space based on the section information and the second feature value; acquiring entity information from a storage device storing the entity information describing, for each of the sections in the feature space, a group of entities associated with a corresponding section using an identifier individually assigned to each of the entities; and requesting a delivery system to deliver content.

[0056] The requesting may include requesting the delivery system to deliver the content so that the delivery system delivers the content to the group of entities associated with the target section by specifying, in the delivery system, as delivery destinations of the content, a group of identifiers including the identifier of each of the entities associated with the target section, the identifier being determined from the entity information.

[0057] In one aspect of the present disclosure, an information processing method performed by a computer may be provided. The method comprises: acquiring the section information from a storage device; selecting at least one section as a delivery target section from the plurality of sections; acquiring, with respect to a plurality of entities, for each of the entities, a second feature value related to the features described in the section information; determining, as a group of delivery target entities, the group of entities associated with the delivery target

section by mapping the plurality of entities to the feature space based on the section information and the second feature value; and requesting a delivery system to deliver content.

[0058] The requesting may include requesting the delivery system to deliver the content so that a delivery of the content to the group of delivery target entities is performed by specifying, in the delivery system, as delivery destinations, an identifier of each of the entities constituting the group of delivery target entities.

[0059] In one aspect of the present disclosure, an information processing method performed by a computer may be provided. The method comprises: acquiring the section information from a storage device; acquiring, with respect to a plurality of entities, a second feature value of each of the plurality of entities, the second feature value being related to the features described in the section information; determining, as a group of target sections, a group of sections with which the plurality of entities is associated in the feature space by mapping the plurality of entities to the feature space based on the section information and the second feature value; selecting at least one section as a delivery target section from the group of target sections; acquiring entity information from a storage device storing the entity information describing, for each of the sections in the feature space, a group of entities associated with a corresponding section using an identifier individually assigned to each of the entities; and requesting a delivery system to deliver content.

[0060] The requesting may include requesting the delivery system to deliver the content so that the delivery system delivers the content to the group of entities associated with the delivery target sections by specifying, in the delivery system, as delivery destinations of the content, a group of identifiers including the identifier of each of the entities associated with the delivery target sections, the identifier being determined from the entity information.

[0061] In one aspect of the present disclosure, there may be provided a computer program including instructions to cause a computer to perform the information processing method described above when executed by the computer. A

computer readable recording medium storing the computer program may be provided.

BRIEF DESCRIPTION OF THE DRAWINGS

[0062] FIG. 1 is a block diagram showing a configuration of an information processing system.

FIG. 2 is an explanatory diagram of tables maintained by the information processing system.

FIG. 3 is a diagram illustrating a configuration of a base mesh table.

FIG. 4A is a diagram illustrating a configuration of a panel table, and FIG. 4B is a diagram illustrating a configuration of a data holder table.

FIG. 5A is a diagram illustrating a configuration of a location information master, and FIG. 5B is a diagram illustrating a configuration of a place characteristic table.

FIG. 6 is a diagram illustrating a configuration of a client table.

FIG. 7A is a diagram illustrating a configuration of a PFER table, and FIG. 7B illustrates a configuration of a DCR table.

FIG. 8A is a diagram illustrating a configuration of a mapping table associating the panel table with the base mesh table. FIG. 8B is a diagram illustrating a configuration of a mapping table associating the data holder table with the base mesh table.

FIG. 9 is a diagram illustrating a configuration of a mapping table associating the client table with the base mesh table.

FIG. 10A is a diagram illustrating a configuration of a mapping table associating the PFER table with the base mesh table. FIG. 10B is a diagram illustrating a configuration of a mapping table associating the DCR table with the base mesh table.

FIG. 11 is a flowchart showing a table creation process performed by a processor.

FIG. 12 is a flowchart (1) showing a first submission-related process

performed by the processor.

FIG. 13 is a flowchart (2) showing the first submission-related process performed by the processor.

FIG. 14 is a conceptual diagram illustrating a flow of a series of processes related to mapping to a mesh space, segment determination, and submission.

FIG. 15 is a flowchart showing a second submission-related process performed by the processor.

FIG. 16 is a flowchart showing a third submission-related process performed by the processor.

FIG. 17 is a conceptual diagram illustrating a flow of a series of processes related to mapping to a mesh space, expansion of delivery destinations, and submission.

FIG. 18 is a flowchart showing a fourth submission-related process performed by the processor.

FIG. 19 is a flowchart showing a fifth submission-related process performed by the processor.

EXPLANATION OF REFERENCE NUMERALS

[0063] 10...information processing system, 11...processor, 13...memory, 15...storage, 17...user interface, 19...communication interface, 20...platform provider system, 21...delivery part, 25...effect measurement part, 30...client-side system, 40...data holder-side system, 110...base mesh table, 115...mesh data, 120...panel table, 125...panel data, 129...mapping table, 130...data holder table, 135...consumer data, 139...mapping table, 140...location information master, 145...place data, 150...place characteristic table, 155...place characteristic data, 160...client table, 165...customer data, 169...mapping table, 170...PFer table, 175...segment data, 179...mapping table, 180...DCR table, 185...DCR data, 189...mapping table

MODE FOR CARRYING OUT THE INVENTION

[0064] Some embodiments of the present disclosure are described below by way of example with reference to the accompanying drawings.

[First Embodiment]

An information processing system 10 of this embodiment shown in FIG. 1 is a system for submitting, i.e., requesting for delivery of, advertising content to a platform provider system 20 based on delivery instructions from an advertiser. In response to the delivery request, the platform provider system 20 delivers corresponding advertising content to a consumer's information terminal under delivery conditions specified by a delivery request source.

[0065] Hereinafter, the advertiser using the submission service provided by the information processing system 10 is referred to as a client. In this embodiment, consumer data 135 is provided from a third-party company holding a large amount of data. Hereinafter, this third-party company is referred to as a data holder.

[0066] The information processing system 10 of this embodiment comprises one or more servers on which a computer program necessary to provide the submission service is installed. To simplify the description, an example is described below in which the information processing system 10 is implemented by one computer system.

[0067] In this embodiment, the information processing system 10 comprises a processor 11, a memory 13, a storage 15, a user interface 17, and a communication interface 19. The processor 11 performs a process in accordance with a computer program stored in the storage 15. The memory 13 is a primary storage device including a RAM, and is used as a work area during the execution of the process by the processor 11.

[0068] The storage 15 is a secondary storage device comprising, for example, a hard disk drive or a solid state drive, and stores various data in addition to the computer program.

[0069] The user interface 17 comprises an input device for inputting an operation signal from an administrator of the information processing system 10 to the

processor 11. The user interface 17 further comprises a display for displaying various information to the administrator.

[0070] The communication interface 19 is connected to a wide area network. The information processing system 10 is configured to communicate with a plurality of platform provider systems 20, a plurality of client-side systems 30 and a data holder-side system 40 through the communication interface 19.

[0071] In the information processing system 10, a relational database is built to implement the submission service. FIG. 2 shows that the information processing system 10 comprises a base mesh table 110, a panel table 120, a data holder table 130, a location information master 140, a place characteristic table 150, a client table 160 for each client, a PFER table 170 for each platform provider system 20, a DCR table 180 for each platform provider system 20, and mapping tables 129, 139, 169, 179, and 189 connecting between tables 110, 120, 130, 160, 170, and 180. The relational database includes these tables.

[0072] The base mesh table 110 illustrated in FIG. 3 is a table that serves as a base point when the tables 120, 130, 160, 170, and 180 are referenced. With respect to a plurality of sections defined by subdividing a feature space, the base mesh table 110 comprises statistical data for each of the sections. The feature space corresponds to a set of first feature values related to consumers. The statistical data statistically describes the features of a set of consumers in a corresponding section, as described below.

[0073] In this embodiment, the feature space is subdivided in a mesh form. Hereinafter, a single section is referred to as a mesh. The statistical data of each mesh is referred to as mesh data 115. FIG. 14 shows the general idea of the feature space subdivided in a mesh form.

[0074] When the first feature values describing consumer's features are represented by two-dimensional feature vectors including a feature X and a feature Y, the feature space is a two-dimensional XY coordinate space having an X axis that is a coordinate axis corresponding to the feature X and a Y axis that is a coordinate axis corresponding to the feature Y.

- [0075] The feature X is a numerical representation of consumer's features related to consumer awareness, for example. For example, the feature X represents a plurality of subcategories in a particular category in which a consumer can be interested. A single consumer can selectively have an interest in one of the subcategories. The feature X represents the subcategories in a discrete set of numbers. For example, the feature X can numerically represent a consumer's preferred vehicle type (e.g., coupes, light motor vehicles, minivans, and wagons). The feature Y can numerically represent, for example, a feature related to media contact. For example, the feature Y represents a rate of contact with a particular media. Examples of the particular media include newspapers and magazines.
- [0076] In this example, the feature space defines a mesh for each combination of subcategory and level of contact with the particular media. The level of contact may be a level defined by dividing the contact rate into three levels: "high," "medium," and "low," for example.
- [0077] For example, one mesh in the feature space is a section where a set of consumers who are interested in light motor vehicles and have a "high" media contact rate is positioned. Another mesh in the feature space is a section where a set of consumers who are interested in coupes and have a "low" media contact rate is positioned. Here, for ease of understanding, an example has been described in which the feature space is a two-dimensional space, but the feature space may be a three- or more dimensional space. The first feature values may be defined in various ways.
- [0078] As shown in FIG. 3, the base mesh table 110 includes, for each mesh defined in this manner, the mesh data 115 for each consumer group. That is, the base mesh table 110 includes the mesh data 115 for each combination of mesh and consumer group. The mesh data 115 corresponding to one combination describes a probability that the consumer group corresponding to the combination is present in the mesh corresponding to the combination.
- [0079] The mesh data 115 shown in FIG. 3 includes a mesh ID that is an identification code for the corresponding mesh, consumer group information

describing the consumer group, and information on the probability that this consumer group is present in the mesh. The consumer group information describes the features of this consumer group by demographic attributes of this consumer group and other features of this consumer group.

[0080] In FIG. 3, the mesh data 115 describes, as the demographic attributes of the consumer group, a location ID corresponding to a place of residence of the consumer group and the gender and age of the consumer group. The location ID is an identification code for the place.

[0081] Elements 1 through N shown in FIG. 3 mean that other features of this consumer group are described using a plurality of elements including the elements 1 through N. Examples of the elements may include parameters describing additional demographic attributes such as height, body weight, and occupation, and parameters describing the features of consumer awareness and consumer behavior.

[0082] Examples of the consumer awareness include consumer's interests and concerns. Examples of the consumer behavior include purchasing behavior and leisure behavior. Examples of the parameter describing the features of the consumer behavior may include parameters describing the presence of purchase and/or the amount of purchase of each of a plurality of products. The base mesh table 110 described above may be generated based on survey data acquired by one or more national and large-scale surveys including a census, for example.

[0083] The panel table 120 illustrated in FIG. 4A includes participant data for each survey participant (hereinafter, referred to as "participant") with respect to a group of survey participants. The participant data describes a participant ID that is an identification code for the corresponding participant, weight, demographic attributes (e.g., a place of residence, gender, and age) of this participant, and other features of this participant. In a panel survey as a sample survey, each participant represents a subset in a population. The weight describes how many consumers the corresponding participant represents.

[0084] The data holder table 130 illustrated in FIG. 4B includes the consumer data

135 for each consumer provided by the data holder. The consumer data 135 describes, in association with a consumer ID that is an identification code for the corresponding consumer, an advertisement delivery identifier of the consumer, a demographic attribute of the consumer, and other features of the consumer. The consumer data 135 may describe an email address and/or an advertising ID as the advertisement delivery identifier. The consumer data 135 may describe, for example, a place of residence, gender, and age as the demographic attributes.

[0085] The data holder may be, for example, a company that runs a rewards program in which valuable points are awarded to shoppers based on their purchases of a target product or in a target store. In this case, the data holder accumulates purchasing data of each consumer participating in the rewards program.

[0086] The data holder table 130 may be generated based on the accumulated purchase data. In this case, the consumer data 135 may describe, as other features of the consumer, features related to the consumer's purchasing behavior. The features related to the purchasing behavior may be described by the presence of purchase and/or the amount of purchase of each of a plurality of products.

[0087] The consumer ID included in the consumer data 135 may be a member ID for the rewards program. The email address may be collected from the consumer at the time of membership registration. The advertising ID may be collected from an information terminal used for the membership registration and the installation of a digital membership certificate. The advertising ID is, as well known, a unique terminal ID that is individually assigned to each information terminal as an advertisement delivery ID. Examples of the information terminal include a smartphone.

[0088] The location information master 140 illustrated in FIG. 5A includes, for each location ID, place data 145 describing the details of a corresponding place. The place data 145 describes the place corresponding to the location ID using one or more of large, medium, and small regions, and describes a regional level.

- [0089] The regional level takes a value representing "large", "medium", or "small". The regional levels "large", "medium", and "small" respectively mean that a corresponding location ID indicates a place corresponding to the large region, a combination of the large and medium regions, and a combination of the large, medium, and small regions.
- [0090] The large region is a prefecture-based region. The medium region is a municipality-based region. The small region is an area-based region smaller than the medium region. The location information master 140 is used, for example, to determine a relationship between the location ID and a place indicated by an address.
- [0091] The place characteristic table 150 illustrated in FIG. 5B includes place characteristic data 155 for each location ID. The place characteristic data 155 includes a plurality of types of data indicating characteristics of the place corresponding to the location ID. Examples of the plurality of types of data include automobile data, land price data, and network-related data. The automobile data describes the number of registered automobiles by type in the corresponding place (i.e., area). The land price data describes a land price of each point in the corresponding place. The network-related data statistically describes consumer information acquired through a plurality of communication terminals present in the corresponding place.
- [0092] The client table 160 illustrated in FIG. 6 includes a group of customer data 165 about a group of customers of the corresponding client. The customer data 165 describes, for each customer, an email address of a customer, a demographic attribute (e.g., a place of residence, gender, and age) of the customer, and other features of the customer in association with a customer ID that is an identification code for the corresponding customer. The email address is used to contact the customer and deliver an advertisement. The customer data 165 may further include an advertising ID for delivering the advertisement.
- [0093] Other features may be, for example, features related to the customer's purchasing behavior identified from the customer's purchase history through an

offline/online store. In the example of FIG. 6, the customer data 165 describes the presence of purchase and/or the amount of purchase of each of a plurality of products as other features of the customer. The customer's demographic attributes and other features included in the customer data 165 correspond to second feature values that are referenced when the customer is mapped to a mesh, and that are related to consumer's features described as the consumer group information in the base mesh data.

[0094] The PFER table 170 illustrated in FIG. 7A is a table for each platform provider system 20, i.e., for each platform holder. Each PFER table 170 includes segment data 175 for each consumer segment that can be specified as an advertisement delivery destination.

[0095] The segment data 175 is data for specifying a corresponding consumer segment as the advertisement delivery destination in a corresponding platform provider system 20. Specifying the advertisement delivery destination in the platform provider system 20 means specifying delivery conditions for the advertising content in the platform provider system 20.

[0096] The segment data 175 describes or defines delivery conditions for delivering the advertising content to the corresponding consumer segment through the corresponding platform provider system 20. Each platform provider system 20 has a different method for specifying the delivery conditions. The segment data 175 describes the delivery conditions in a manner acceptable to the corresponding platform provider system 20.

[0097] In the example of FIG. 7A, the segment data 175 describes the delivery conditions using a group of parameters specifiable in the corresponding platform provider system 20 in association with a segment ID that is a classification code for the consumer segment. FIG. 7A shows an example in which the segment data 175 specifies the delivery conditions based on the place of residence, gender, age group, and whether affinity categories are specified or unspecified.

[0098] The DCR table 180 illustrated in FIG. 7B is prepared for each platform provider system 20. Each platform provider system 20 includes a delivery part

21 and an effect measurement part 25 as shown in FIG. 1.

[0099] The delivery part 21 operates to deliver the designated advertising content under the delivery conditions specified by the information processing system 10. The effect measurement part 25 operates to measure the customer's response to the delivery of the advertising content as an effect of delivery. The effect measurement part 25 further operates to provide aggregate information on the measured effect of delivery to the information processing system 10. The aggregate information corresponds to performance information on the effect of content delivery.

[0100] The effect measurement part 25 provides a so-called data clean room and, upon request from the information processing system 10, provides the aggregate information on the effect of delivery to the requesting information processing system 10.

[0101] The DCR table 180 is a table describing the aggregate information acquired from the effect measurement part 25, i.e., the data clean room (DCR) of the corresponding platform provider system 20.

[0102] The DCR table 180 includes effect data for each consumer segment for which the platform provider can provide the aggregate information. The effect data describes metric values for the effect of delivery together with the attributes of the corresponding consumer segment, in association with a DCR segment ID that is an identification code for the corresponding consumer segment. Examples of the metric values include the number of impressions and a conversion rate.

[0103] The number of impressions corresponds to the number of times that the advertising content was displayed. The conversion rate represents a percentage of consumers who took a specific action after viewing the advertising content. The conversion rate includes, for example, a page view rate that is a percentage of a group of consumers who viewed a particular web page out of a group of consumers who viewed the advertising content. The effect data may describe the effect of delivery using various metrics.

- [0104] The configurations of the base mesh table 110, the panel table 120, the data holder table 130, the location information master 140, the place characteristic table 150, the client table 160, the PFER table 170 and the DCR table 180 were described above. Then, mapping tables 129, 139, 169, 179, and 189 that associate a table 110 with tables 120, 130, 160, 170, and 180 are then described below.
- [0105] The mapping table 129 shown in FIG. 8A is a table that associates the panel table 120 with the base mesh table 110. This mapping table 129 describes, for each participant ID used in the panel table 120, the participant ID, the mesh ID associated with the participant ID, and the weight.
- [0106] In some cases, a single participant ID may be associated with a plurality of mesh IDs. In this case, the number of consumers based on the weight described in the panel data 125 of the corresponding participant ID is distributed to and associated with the plurality of meshes. That is, the sum of the weights of the plurality of mesh IDs associated with the single participant ID is equal to the weight described in the panel data 125.
- [0107] The mapping table 139 shown in FIG. 8B is a table that associates the data holder table 130 with the base mesh table 110. This mapping table 139 describes, for each consumer ID used in the data holder table, the consumer ID, the mesh ID associated with the consumer ID, and a mapping probability.
- [0108] The mapping probability is a probability that the consumer corresponding to this consumer ID is a consumer in the mesh corresponding to the mesh ID. In some cases, a single consumer ID may be associated with a plurality of mesh IDs. In this case, the sum of the mapping probabilities of the plurality of mesh IDs associated with the single consumer ID can be 1.
- [0109] The mapping table 169 shown in FIG. 9 is a table that associates the client table 160 with the base mesh table 110. This mapping table 169 describes, for each customer ID used in the client table 160, the customer ID, the mesh ID associated with the customer ID, and a mapping probability.
- [0110] The mapping probability in the mapping table 169 corresponds to a

probability that the customer corresponding to the customer ID is a consumer of the corresponding mesh. In some cases, a single customer ID may be associated with a plurality of mesh IDs. In this case, the sum of the mapping probabilities of the plurality of mesh IDs associated with the single consumer ID can be 1.

[0111] The mapping table 179 shown in FIG. 10A is a table that is prepared for each PFER table 170 and that associates one corresponding PFER table 170 with the base mesh table 110. This mapping table 179 describes, for each segment ID used in the PFER table 170, the segment ID and the mesh ID associated with the segment ID.

[0112] The mapping table 189 shown in FIG. 10B is a table that is prepared for each DCR table 180 and that associates one corresponding DCR table 180 with the base mesh table 110. This mapping table 189 describes, for each DCR segment ID used in the DCR table 180, the DCR segment ID and the mesh ID associated with the DCR segment ID.

[0113] FIG. 11 is a flowchart showing a table creation process performed by the processor 11 every time the client table 160 is provided from the client-side system 30. The processor 11 performs the process shown in FIG. 11 to generate the mapping table 169 shown in FIG. 9, which associates the client table 160 with the base mesh table 110.

[0114] When this process is started, the processor 11 acquires a client table 160 to be processed, which is provided from the client-side system 30 and stored in the storage 15, by reading from the storage 15 (S110). The processor 11 further reads and acquires the base mesh table 110 from the storage 15 (S120). The processor 11 performs a mapping process based on the acquired client table 160 and the base mesh table 110 (S130).

[0115] In the mapping process, the processor 11 calculates, for each customer data 165 included in the acquired client table 160, the mapping probability that the corresponding customer is associated with each mesh, based on the second feature values of the corresponding customer indicated by the customer data 165 and an existence probability of each consumer group in each mesh. Mapping

here means probabilistically mapping each customer to one or more of the meshes in the feature space (i.e., mesh space) based on the base mesh table 110 and the client table 160.

[0116] With respect to each of the one or more meshes having a non-zero mapping probability, the processor 11 then generates the mapping table 169 so that the mesh ID of the corresponding mesh and the customer ID of the corresponding customer are associated with each other.

[0117] In the subsequent S140, the processor 11 registers the mapping table 169 generated in S130 in association with the corresponding client table 160 in the storage 15, in particular, in a relational database. In this manner, the processor 11 performs the table creation process every time the client-side system 30 provides the client table 160.

[0118] The number of client tables 160 and mapping tables 169 registered in the relational database increases as the number of clients using the submission service provided by the information processing system 10 increases, thereby accumulating valuable information in the relational database.

[0119] FIGS. 12 and 13 are flowcharts showing a first submission-related process performed by the processor 11 when a delivery instruction is input from the client-side system 30.

[0120] When the first submission-related process is started, the processor 11 acquires a delivery target advertising content and destination-related information from a delivery instruction source (S310). The destination-related information includes information necessary for the information processing system 10 to determine the delivery conditions to be specified for the platform provider system 20.

[0121] The destination-related information handled in the first submission-related process describes, as a group of focused customer IDs, a group of customer IDs of a group of customers corresponding to consumer segments to which the delivery instruction source wishes to deliver the content. The group of customers here is a group of customers of the delivery instruction source client.

The destination-related information further includes information specifying a submission destination, i.e., the platform provider system 20 that is a delivery request destination.

[0122] In the subsequent S320, the processor 11 determines a group of mesh IDs associated with the group of focused customer IDs as a group of delivery target mesh IDs. The processor 11 may reference the mapping table 169 associated with the delivery instruction source client, and determine, as the group of delivery target mesh IDs, the group of mesh IDs that are associated with the group of focused customer IDs with mapping probabilities equal to or higher than a specified probability.

[0123] The mapping table 169 of the delivery instruction source client is the mapping table 169 that associates the client table 160 containing the customer data 165 of the delivery instruction source client with the base mesh table 110.

[0124] In the subsequent S325, the processor 11 determines whether the destination-related information specifies two or more platform provider systems 20 as the submission destinations. If it is determined that two or more platform provider systems 20 are specified (Yes in S325), the processor 11 performs the processes of S360 to S395. On the other hand, if it is determined that one platform provider system 20 is specified (No in S325), the processor 11 performs the processes of S330 to S350.

[0125] In S330, the processor 11 references the mapping table 179 associated with the PFER table 170 of the submission destination platform provider system 20, and converts the group of delivery target mesh IDs determined in S320 into a group of segment IDs of the submission destination platform provider system 20.

[0126] As mentioned above, the mapping table 179 describes the correspondence between the mesh IDs and the segment IDs. The processor 11 converts the group of delivery target mesh IDs into the group of segment IDs in accordance with the correspondence indicated by this mapping table 179.

[0127] In the subsequent S340, the processor 11 references the PFER table 170 of the submission destination platform provider system 20, and generates

submission data that conforms to a method for specifying the delivery conditions in the submission destination platform provider system 20.

[0128] The generated submission data includes information specifying the delivery conditions for delivering the advertising content to a group of consumer segments corresponding to the converted group of segment IDs.

[0129] As mentioned above, the PFER table 170 describes, for each segment ID, the delivery conditions for requesting the platform provider system 20 to deliver the advertisement to the corresponding consumer segment using a plurality of parameters acceptable to the platform provider system 20.

[0130] The processor 11 may read a group of segment data 175 corresponding to the converted group of segment IDs from the PFER table 170 and generate the submission data describing these delivery conditions.

[0131] In the subsequent S350, the processor 11 transmits the submission data generated in S340 to the submission destination platform provider system 20 to thereby send a delivery request specifying the delivery conditions to the platform provider system 20, and completes the submission. Thereafter, the processor 11 terminates the first submission-related process.

[0132] When the destination-related information specifies two or more platform provider systems 20 as the submission destinations, as described above, the processor 11 performs the processes of S310 and S320 and then, performs the processes of S360 to S395 shown in FIG. 13 in the first submission-related process.

[0133] In S360, the processor 11 selects one of the submission destination platform provider systems 20 as a target system. In the subsequent S370, the processor 11 references the mapping table 179 associated with the PFER table 170 of the target system. The processor 11 converts the group of delivery target mesh IDs determined in S320 into a group of segment IDs associated in the mapping table 179 of the target system.

[0134] In the subsequent S380, the processor 11 references the PFER table 170 of the target system based on the converted group of segment IDs. The processor

11 generates submission data that conforms to a method for specifying the delivery conditions in the target system in accordance with the delivery conditions of the group of segment IDs described by the PFER table 170.

[0135] In the subsequent S390, the processor 11 transmits the submission data generated in S380 to the target system. The processor 11 then transmits a delivery request specifying the delivery conditions to the one platform provider system 20 that is the target system, and completes the submission.

[0136] In this manner, when a plurality of platform provider systems 20 are specified as the submission destinations in the destination-related information, the processor 11 sequentially selects, as the target system, one of the plurality of platform provider systems 20 specified as the submission destinations (S360). The processor 11 generates submission data that conforms to a method for specifying delivery conditions in the selected target system (S370, S380), and transmits it to the target system (S390). When the submission to all the platform provider systems 20 specified as the submission destinations is completed (Yes in S395), the processor 11 terminates the first submission-related process.

[0137] In the first submission-related process, the client does not need to know the details of the method for specifying the delivery conditions in one or more platform provider systems 20 that the client wishes to use as the submission destinations. The client only needs to inform the information processing system 10 of the group of customer IDs of the group of its own customers, the group of customer IDs indirectly representing the consumer segments to which the client wishes to deliver the advertisement, to thereby deliver the advertisement to the consumer segments through the platform provider systems 20.

[0138] As shown in FIG. 14, the first submission-related process causes the information processing system 10 to map the group of customer IDs of the client to the feature space described in the base mesh table 110 to thereby determine the mesh to which each customer belongs (S320).

[0139] The information processing system 10 further determines, for each submission destination, the consumer segments associated with the meshes and the related delivery conditions, and generates the submission data for the submission destination platform provider system 20 (S380). The information processing system 10 uses the generated submission data to perform the submission to the platform provider system 20 (S390).

[0140] As can be understood from FIG. 14, with respect to the same group of focused customer IDs described in the destination-related information, submission data specifying segments A, B, and C as delivery destination segments is generated for a first platform provider system 20, while submission data specifying segments I, II, and III as the delivery destination segments is generated for a second platform provider system 20. Therefore, in this embodiment, it is possible to simplify the work on the advertiser's side with respect to the delivery of the advertising content.

[0141] [Second Embodiment]

The information processing system 10 of a second embodiment is configured such that the processor 11 performs a second submission-related process shown in FIG. 15 in addition to or in place of the first submission-related process described in the first embodiment. Hereinafter, the details of the second submission-related process performed by the processor 11 are selectively described as the configuration of the information processing system 10 of the second embodiment. It may be understood that the configuration and peripheral configuration of the information processing system 10 not mentioned in this embodiment are the same as those in the first embodiment.

[0142] FIG. 15 is a flowchart showing the second submission-related process performed by the processor 11 when a second delivery instruction is input from the client-side system 30. When the second submission-related process is started, the processor 11 acquires an advertising content to be delivered and destination-related information from a delivery instruction source (S410).

[0143] The destination-related information handled in the second submission-

related process differs from the destination-related information handled in the first submission-related process in that it includes information on the group of focused customer IDs, but does not include information specifying the submission destination platform provider system 20.

[0144] In the second submission-related process, the processor 11 selects, for each delivery target mesh ID, an appropriate platform provider system 20 from the plurality of platform provider systems 20 in consideration of the effect of delivery of the advertising content. The processor 11 performs the submission to the selected platform provider system 20.

[0145] After the process of S410, in the same way as in the process of S320, the processor 11 references the mapping table 169 associated with the delivery instruction source client, and determines, as the group of delivery target mesh IDs, the group of mesh IDs corresponding to the group of focused customer IDs described in the destination-related information (S420).

[0146] In the subsequent S430, the processor 11 selects one process target mesh ID from the group of delivery target mesh IDs. Thereafter, the processor 11 selects the submission destination platform provider system 20 of the process target mesh ID from the predefined plurality of platform provider systems 20 (S440). The submission destination platform provider system 20 selected here is the platform provider system 20 that will be requested to deliver the advertising content to the consumer segment corresponding to the process target mesh ID.

[0147] In S440, with respect to the plurality of platform provider systems 20 selectable as the submission destination, the processor 11 acquires the aggregate information on the effect of delivery from each platform provider system 20 (S441). The processor 11 updates, for each platform provider system 20, the DCR table 180 of the corresponding platform provider system 20 based on the aggregate information acquired from the effect measurement part 25 of the platform provider system 20 (S443).

[0148] The processor 11 extracts the DCR data 185 of the DCR segment ID

corresponding to the process target mesh ID from the updated DCR table 180 of each platform provider system 20 (S445). The relationship between the mesh ID and the DCR segment ID is determined by referencing the mapping table 189, which associates the DCR table 180 with the base mesh table 110.

[0149] The processor 11 compares the extracted DCR data 185 of each platform provider system 20 among the platform provider systems 20 to thereby select a platform provider system 20 having the highest effect of delivery as the submission destination platform provider system 20 (S447).

[0150] In S447, the processor 11 may select the platform provider system 20 having the highest effect of delivery as the submission destination platform provider system 20. In another example, the processor 11 may select a certain number of platform provider systems 20 in the order of high effect of delivery as the submission destination platform provider system 20.

[0151] The degree of the effect of delivery may be determined, for example, based on the conversion rate included in the DCR data 185. Alternatively, the processor 11 may substitute the metric values of the plurality of types of effect of delivery into a given score calculation formula to calculate a score related to the degree of an effect of delivery and may determine the degree of effect of delivery based on the score.

[0152] After selecting the submission destination platform provider system 20 associated with the process target mesh ID in S440, the processor 11 performs a process of S450. In S450, the processor 11 determines whether the platform provider system 20 selected as the submission destination with respect to the process target mesh ID satisfies a given submission condition.

[0153] The given submission condition may be that the effect of delivery in the submission destination platform provider system 20 is a threshold value or higher. When multiple platform provider systems 20 are selected as the submission destinations for the process target mesh ID, it is determined whether the submission destination platform provider system 20 having the highest effect of delivery satisfies the submission condition.

- [0154] When the effect of delivery in the submission destination platform provider system 20 is lower than the threshold value, the processor 11 may determine that the submission condition is not satisfied. When the effect of delivery in the submission destination platform provider system 20 is equal to or higher than the threshold value, the processor 11 may determine that the submission condition is satisfied.
- [0155] If it is determined that the submission condition is not satisfied (No in S450), the processor 11 excludes the process target mesh ID from the delivery target mesh IDs (S455). This exclusion means that no submission based on the process target mesh ID is made to any of the platform provider systems 20.
- [0156] If it is determined that the submission condition is satisfied (Yes in S450), the processor 11 converts the process target mesh ID into the segment ID suitable for the submission destination platform provider system 20, as in the processes of S330 and S370, and sets the segment ID as the delivery target segment ID (S460).
- [0157] After completing the processes of S455 or S460, the processor 11 determines whether the processes from S430 onwards have been performed for all of the delivery target mesh IDs (S470). If it is determined that any of the processes have not been performed (No in S470), the processor 11 selects a new one mesh ID as the process target from the group of delivery target mesh IDs (S430), and performs the processes from S440 onwards.
- [0158] If it is determined that the processes from S430 onwards have been performed in this manner for all of the delivery target mesh IDs (Yes in S470), the processor 11 generates, for each submission destination platform provider system 20, the submission data specifying the delivery conditions for delivering the advertising content to the group of consumer segments corresponding to the group of delivery target segment IDs (S480).
- [0159] In this embodiment, the submission destination platform provider system 20 is selected, for each mesh ID, from the plurality of platform provider systems 20. In S480, the submission data is generated so that the delivery conditions

based on the segment ID associated with the mesh ID are specified in the submission destination platform provider system 20 associated with the mesh ID.

[0160] The processor 11 then transmits, for each submission destination platform provider system 20, the submission data for the corresponding platform provider system 20 and completes the submission (S490). Thereafter, the second submission control process is terminated.

[0161] In the information processing system 10 of this embodiment described above, a group of meshes having a high effect of delivery is selected as the group of delivery target meshes from the group of meshes associated with the group of focused customer IDs (S450-S460). Moreover, for each mesh, a platform provider system 20 having a high effect of delivery is selected as the submission destination among the plurality of platform provider systems 20. Thus, this embodiment allows the advertising content to be delivered through the advantageous platform provider system 20 to the beneficial consumer segment, in terms of the effect of delivery, based on the information on the group of focused customer IDs provided by the client. Thus, it is possible to provide a more convenient submission service to the client.

[0162] [Third Embodiment]

The information processing system 10 of a third embodiment is configured such that the processor 11 performs a third submission-related process shown in FIG. 16 in addition to or in place of the process described in the first or the second embodiment. In the following description, the details of the third submission-related process performed by the processor 11 are selectively described as the configuration of the information processing system 10 of the third embodiment. It may be understood that the configuration and peripheral configuration of the information processing system 10 that are not mentioned in this embodiment are the same as those in the first or second embodiment.

[0163] FIG. 16 is a flowchart showing the third submission-related process performed by the processor 11 when a third delivery instruction is input from the client-side system 30. When the third submission-related process is started, the

processor 11 acquires an advertising content to be delivered and destination-related information from a delivery instruction source (S510).

[0164] The destination-related information handled in the third submission-related process is the same as the destination-related information handled in the first submission-related process, and includes information on the group of focused customer IDs and information specifying the submission destination platform provider system 20.

[0165] However, the group of focused customer IDs in this embodiment may be a group of customer IDs of all customers for which the customer data 165 is prepared in the client table 160 of the corresponding client. In this case, the destination-related information does not necessarily include the information on the group of focused customer IDs, and the processor 11 may handle the group of customer IDs of all customers of the client as the group of focused customer IDs.

[0166] After the process of S510, the processor 11 references the mapping table 169 associated with the delivery instruction source client (S520), and determines, as a group of delivery candidate mesh IDs, a group of mesh IDs associated with the group of focused customer IDs described in the destination-related information.

[0167] In the subsequent S530, the processor 11 extracts, from the group of delivery candidate mesh IDs, only a group of mesh IDs satisfying a specified condition as a group of delivery target mesh IDs. For example, the processor 11 counts the number of customer IDs associated with each delivery candidate mesh ID to thereby determine, for each mesh, the number of customers of the client mapped to the corresponding mesh.

[0168] The number of the customers may be weighted based on the mapping probability. Based on this number of customers per mesh, the processor 11 may determine one or more given number of meshes as delivery targets in the order of a large number of customers. The processor 11 may extract the determined group of mesh IDs as the group of delivery target mesh IDs.

- [0169] Alternatively, for the purpose of customer acquisition in a consumer segment having a small number of customers, the processor 11 may determine one or more given number of meshes as the deliver targets in the order of a small number of customers. The processor 11 may extract the determined group of mesh IDs as the group of delivery target mesh IDs.
- [0170] Alternatively, the processor 11 may extract, from the group of delivery candidate mesh IDs, one or more given number of groups of mesh IDs having a high effect of delivery as the group of delivery target mesh IDs. For this purpose, the processor 11 may reference the DCR table 180 of the submission destination platform provider system 20 and the associated mapping table 189. The processor 11 may determine the effect of delivery in each of the consumer segments associated with the group of delivery candidate mesh IDs from the corresponding DCR data 185. The magnitude of the effect of delivery may be determined based on the conversion rate and the score according to the score calculation formula as in the second embodiment.
- [0171] In the subsequent S540, the processor 11 converts the group of delivery target mesh IDs into a group of identifiers for advertisement delivery of the corresponding group of consumers. Examples of the identifiers for advertisement delivery include the email address and the advertising ID, as described above. Alternatively, a cookie ID may be used as an alternative advertisement delivery identifier. The tables 130, 160 described above may describe the cookie IDs.
- [0172] When the submission destination platform provider system 20 is configured to accept a delivery request that specifies a delivery destination consumer using the consumer's email address as a delivery condition, the processor 11 may convert the group of delivery target mesh IDs into a group of email addresses of the corresponding group of consumers.
- [0173] When the submission destination platform provider system 20 is configured to accept a delivery request that specifies the delivery destination consumer using the advertising ID assigned to the information terminal as the

delivery condition, the processor 11 may convert the group of delivery target mesh IDs into a group of advertising IDs of the corresponding group of consumers.

[0174] A group of delivery destination consumers includes a group of customers mapped to the group of meshes corresponding to the group of delivery target mesh IDs. The processor 11 may determine the group of customer IDs associated with the group of delivery target mesh IDs based on the mapping table 169 that associates the client table 160 with the base mesh table 110. The group of customer IDs determined here may be a group of customer IDs having mapping probabilities equal to or higher than a given value.

[0175] As described above, the customer data 165 may include the email address and/or the advertising ID as the advertisement delivery identifier. The processor 11 may reference the group of customer data 165 corresponding to the group of customer IDs to thereby convert the group of customer IDs into the group of identifiers for advertisement delivery. The processor 11 may abandon the conversion to the advertisement delivery identifier with respect to a customer ID for which the advertisement delivery identifier cannot be acquired from the customer data 165.

[0176] The processor 11 may utilize the data holder table 130. The processor 11 may reference the mapping table 139 that associates the base mesh table 110 with the data holder table 130 to thereby determine a group of consumer IDs associated with the group of delivery target mesh IDs. The group of consumer IDs determined here may be a group of consumer IDs having mapping probabilities equal to or higher than a given value.

[0177] The processor 11 may convert this group of consumer IDs into the group of identifiers for advertisement delivery by referencing the data holder table 130. The consumer data 135 includes the advertisement delivery identifier as described above.

[0178] In this manner, the group of delivery destination consumers may include, in addition to or in place of the group of customers, the group of consumers

mapped to the group of meshes corresponding to the group of delivery target mesh IDs among the group of consumers registered in the data holder table 130. The group of consumers mapped to the group of meshes corresponds to the group of consumers associated with the group of meshes.

[0179] In the subsequent S550, the processor 11 generates submission data that describes the converted group of identifiers for advertisement delivery and that requests the submission destination platform provider system 20 to deliver the advertising content to the information terminals corresponding to these identifiers for advertisement delivery.

[0180] In the subsequent S560, the processor 11 transmits the submission data generated in S550 to the submission destination platform provider system 20. This causes the processor 11 to transmit the delivery request specifying the delivery conditions to the platform provider system 20 and complete the submission. Thereafter, the processor 11 terminates the third submission-related process.

[0181] The information processing system 10 of this embodiment described above maps the group of focused customer IDs to the mesh space (i.e., a meshed feature space) to thereby determine the group of delivery target meshes. Furthermore, based on the client table 160 and/or the data holder table 130 as entity information and the associated mapping tables 169 and 139, the information processing system 10 determines the group of identifiers for advertisement delivery corresponding to a group of entities (customers or consumers) associated with the group of delivery target meshes. The information processing system 10 specifies, in the platform provider system 20, the determined group of identifiers for advertisement delivery as the delivery destinations of the advertising content.

[0182] This causes the information processing system 10 to request the platform provider system 20 to deliver the advertising content so that the platform provider system 20 delivers the advertising content to the group of consumers associated with the group of delivery target meshes.

[0183] In this manner, the information processing system 10 of this embodiment can request the platform provider system 20 to deliver the content based on the group of focused customer IDs by a method for specifying the delivery destinations using the identifiers for advertisement delivery.

[0184] Furthermore, based on a group of consumer data 135 provided by the data holder, this information processing system 10 can specify not only the identifiers for advertisement delivery of the group of focused customer IDs, but also the identifiers for advertisement delivery of the group of consumer IDs that are mapped to the same meshes (M1, M2, M3) as the group of focused customer IDs as shown in FIG. 17 to thereby expand the identifiers for advertisement delivery to be specified as the delivery destinations. Thus, this embodiment can provide an even more convenient submission service to advertisers.

[0185] As a variation, in S540, the processor 11 may convert the group of delivery target mesh IDs into the group of segment IDs corresponding to the submission destination platform provider system 20 as in the first embodiment and the second embodiment. In S550, the processor 11 may generate the submission data specifying the delivery condition based on a group of segment data 175 corresponding to the group of segment IDs.

[0186] [Fourth Embodiment]

The information processing system 10 of a fourth embodiment is configured such that the processor 11 performs a fourth submission-related process shown in FIG. 18 in addition to or in place of the process described in the first, second, or third embodiment. Hereinafter, the details of the fourth submission-related process performed by the processor 11 are selectively described as the configuration of the information processing system 10 of the fourth embodiment. It may be understood that the configuration and peripheral configuration of the information processing system 10 that are not mentioned in this embodiment are the same as those in the first, second, or third embodiment.

[0187] FIG. 18 is a flowchart showing the fourth submission-related process performed by the processor 11 when a fourth delivery instruction is input from

the client-side system 30. When the four submission-related process is started, the processor 11 acquires an advertising content to be delivered and destination-related information from a delivery instruction source (S610).

[0188] The destination-related information handled in the fourth submission-related process is different from the destination-related information handled in the first, second, and third submission-related processes in that it does not include the information on the group of focused customer IDs. The destination-related information includes information specifying the group of delivery target meshes and information specifying the submission destination platform provider system 20. The group of meshes is specified by a group of corresponding mesh IDs. The submission destination platform provider system 20 may be specified for each mesh.

[0189] In the subsequent S620, the processor 11 selects the group of specified mesh IDs as the group of delivery target mesh IDs according to the destination-related information. Thereafter, the processor 11 converts the group of delivery target mesh IDs into the group of identifiers for advertisement delivery of the group of corresponding consumers as in the process of S540 (S630).

[0190] In S630, the processor 11 may convert, for each of the mesh IDs, the mesh ID into the identifiers for advertisement delivery of the group of consumers associated with the corresponding mesh. At this time, it is possible to adopt the type of advertisement delivery identifier acceptable to the submission destination platform provider system 20.

[0191] In the subsequent S640, for each submission destination platform provider system 20, the processor 11 generates submission data describing a group of converted identifiers for advertisement delivery associated with the group of mesh IDs that specify this platform provider system 20 as the submission destination. The submission data is generated to request the submission destination platform provider system 20 to deliver the advertising content to the information terminals corresponding to these identifiers for advertisement delivery.

[0192] In the subsequent S650, the processor 11 transmits the submission data generated in S640 to each submission destination platform provider system 20. This causes the processor 11 to transmit the delivery request specifying the delivery conditions to the platform provider system 20 and complete the submission. Thereafter, the processor 11 terminates the fourth submission-related process.

[0193] The information processing system 10 of this embodiment explained above can perform the submission using the identifiers for advertisement delivery with respect to the consumer segments corresponding to the group of meshes specified by the advertiser. In this embodiment, the group of delivery target mesh IDs may also be converted into the group of segment IDs in place of the group of identifiers for advertisement delivery. The submission data that specifies the delivery conditions based on the group of segment data 175 corresponding to the group of segment IDs may be generated.

[0194] [Fifth Embodiment]

The information processing system 10 of a fifth embodiment is configured such that the processor 11 performs a fifth submission-related process shown in FIG. 19 in addition to or in place of the process described in the first, second, third, or fourth embodiment. Hereinafter, the details of the fifth submission-related process performed by the processor 11 are selectively described as the configuration of the information processing system 10 of the fifth embodiment. It may be understood that the configuration and peripheral configuration of the information processing system 10 that are not mentioned in this embodiment are the same as those in the first, second, third, or fourth embodiment.

[0195] FIG. 19 is a flowchart showing the fifth submission-related process performed by the processor 11 when a fifth delivery instruction is input from the client-side system 30. When the fifth submission-related process is started, the processor 11 determines in S710, as a distribution of customers of the delivery instruction source client, a distribution of all customers registered in the client table 160 of the delivery instruction source in the mesh space. The distribution

of customers may be evaluated in terms of the ratio of the group of customers mapped to each mesh to all customers. Each of the customers may be counted as the number according to the mapping probability.

[0196] In the subsequent S720, the processor 11 determines, as a distribution of consumers in a market, a distribution of consumers within a market that is same as the market of the client in the mesh space. For example, the processor 11 may determine the distribution based on the information contained in the place characteristic table 150, the data holder table 130, and/or the client tables 160 of other clients.

[0197] In the subsequent S730, the processor 11 selects a group of delivery target meshes from the mesh space based on a difference between the distribution of customers of the delivery instruction source client determined in S710 and the distribution of consumers in the market determined in S720. For example, in the distribution of customers, a group of meshes with fewer customers is determined in comparison with the distribution of consumers in the market, and the group of meshes with fewer customers may be selected as the group of delivery target meshes.

[0198] The processor 11 then generates submission data that sets a delivery condition for delivering the advertising content to the group of consumer segments associated with the group of delivery target meshes (S740). The processor 11 may reference the group of segment data 175 related to the group of segment IDs associated with the group of delivery target meshes to thereby generate the submission data.

[0199] Alternatively, the processor 11 may determine the group of identifiers for advertisement delivery of the group of consumers associated with the group of delivery target meshes to thereby generate the submission data describing them. The submission destination platform provider system 20 may be specified by the delivery instruction source, for example.

[0200] Alternatively, the submission destination platform provider system 20 may be selected from the plurality of platform provider systems 20 in consideration

of the effect of delivery. The submission destination platform provider system 20 may be selected for each mesh.

[0201] In the subsequent S750, the processor 11 transmits the generated submission data to the corresponding platform provider system 20 to thereby complete the submission.

[0202] The information processing system 10 of this embodiment described above determines the group of delivery target meshes based on the difference between the distribution of consumers in the market and the distribution of customers. Therefore, the advertiser can perform an appropriate submission by a simple operation.

[0203] [Others]

The present disclosure is not limited to the above embodiments, but may be embodied in various forms. For example, the technique of the present disclosure may be used to deliver information contents other than advertising content.

[0204] In the first submission-related process and the second submission-related process, the submission data may be generated using the identifiers for advertisement delivery. For example, in S330 and S370, the group of mesh IDs may be converted into a group of identifiers for advertisement delivery of the group of consumers mapped to the group of corresponding meshes with reference to the data holder table 130. In S340, S380, the submission data that describes the group of identifiers for advertisement delivery may be generated.

[0205] Similarly, in S460, the process target mesh ID may be converted into the group of identifiers for advertisement delivery of the group of consumers mapped to the group of corresponding meshes with reference to the data holder table 130. In S480, the submission data that describes the group of identifiers for advertisement delivery may be generated with reference to one or more submission destinations.

[0206] A plurality of functions of one element of the aforementioned embodiments may be performed by a plurality of elements. A plurality of functions of a

plurality of elements may be integrated into one element. A part of the configurations of the aforementioned embodiments may be omitted. At least part of the configurations of the aforementioned embodiments may be added to or replaced with the configurations of the other embodiments described above. It should be noted that all modes included in the technical idea specified from the wording described in the claims are embodiments of the present disclosure.

CLAIMS

1. An information processing system comprising:

a section information storage configured to store section information describing, with respect to a plurality of sections defined by subdividing a feature space corresponding to a set of first feature values, for each of the sections, features of a set of entities having the first feature values of a corresponding section;

a target information acquirer configured to acquire a second feature value that is related to a focus target entity and that is related to the features described in the section information;

a determiner configured to map the focus target entity to the feature space based on the section information and the second feature value to thereby determine, as a target section, a section with which the focus target entity is associated in the feature space;

a condition information storage configured to store definition information defining, for each of the sections in the feature space, a delivery condition for a delivery system; and

a delivery requestor configured to request the delivery system to deliver content in accordance with the definition information stored in the condition information storage,

wherein the delivery requestor requests the delivery system to perform a delivery in accordance with the delivery condition defined for the target section.

2. The information processing system according to claim 1,

wherein the delivery system is a plurality of delivery systems including a first delivery system and a second delivery system,

wherein the definition information includes first definition information defining a first delivery condition that is a delivery condition for the first delivery system and second definition information defining a second delivery condition that is a delivery condition for the second delivery system,

wherein the delivery requestor requests at least one of the plurality of delivery systems to deliver content,

wherein, based on the first definition information, the delivery requestor requests the first delivery system to perform a delivery in accordance with the first delivery condition defined for the target section, and

wherein, based on the second definition information, the delivery requestor requests the second delivery system to perform a delivery in accordance with the second delivery condition defined for the target section.

3. The information processing system according to claim 2,

wherein the first delivery condition and the second delivery condition for each of the sections are delivery conditions for delivering the content to an entity associated with a corresponding section,

wherein the first definition information defines the first delivery condition using a parameter related to the delivery condition specifiable in the first delivery system, and

wherein the second definition information defines the second delivery condition using a parameter related to the delivery condition specifiable in the second delivery system.

4. The information processing system according to claim 2 or 3,

wherein the delivery requestor requests at least one delivery system specified by a delivery instruction source among the plurality of delivery systems to deliver the content.

5. The information processing system according to any one of claims 2 to 4,

wherein the delivery requestor selects a delivery request destination from the plurality of delivery systems depending on the target section.

6. The information processing system according to claim 5, further comprising a performance information acquirer configured to acquire, from at least each of the first delivery system and the second delivery system among the plurality of delivery systems, performance information that is related to an effect of content delivery through a

corresponding delivery system and that enables determination of an effect of delivery in each of the sections,

wherein the delivery requestor selects the delivery request destination based on the effect of delivery in the target section, the effect of delivery being determined from the performance information.

7. The information processing system according to any one of claims 2 to 6, wherein the focus target entity is a plurality of entities, wherein the target information acquirer acquires a second feature value of each of the plurality of entities,

wherein the determiner maps the plurality of entities to the feature space to thereby determine, as a group of target sections, a group of sections with which the plurality of entities is associated in the feature space, and

wherein, with respect to the group of target sections, for each of the target sections, the delivery requestor requests the first delivery system to perform a delivery in accordance with the first delivery condition defined for a corresponding target section, and requests the second delivery system to perform a delivery in accordance with the second delivery condition defined for the corresponding target section.

8. The information processing system according to any one of claims 1 to 5, wherein the focus target entity is a plurality of entities, wherein the target information acquirer acquires a second feature value of each of the plurality of entities,

wherein the determiner maps the plurality of entities to the feature space to thereby determine, as a group of target sections, a group of sections with which the plurality of entities is associated in the feature space, and

wherein the delivery requestor selects, from the group of target sections, at least one section as a delivery target section and requests the delivery system to perform a delivery in accordance with the delivery condition defined for each of the at least one section.

9. The information processing system according to claim 8,
wherein the delivery requestor determines, for each of the target sections, an effect of content delivery through the delivery system and selects the delivery target section from the group of target sections based on the effect of content delivery.

10. The information processing system according to claim 9, further comprising a performance information acquirer configured to acquire performance information that is related to the effect of content delivery through the delivery system and that enables determination of an effect of delivery in each of the sections,

wherein the delivery requestor selects the delivery target section from the group of target sections based on the effect of delivery in each of the target sections, the effect of delivery being determined from the performance information.

11. An information processing system comprising:
a section information storage configured to store section information describing, with respect to a plurality of sections defined by subdividing a feature space corresponding to a set of first feature values, for each of the sections, features of a set of entities having the first feature values of a corresponding section;

a target information acquirer configured to acquire a second feature value that is related to a focus target entity and that is related to the features described in the section information;

a determiner configured to map the focus target entity to the feature space based on the section information and the second feature value to thereby determine, as a target section, a section with which the focus target entity is associated in the feature space;

an entity information storage configured to store entity information describing, for each of the sections in the feature space, a group of entities associated with a corresponding section using an identifier individually assigned to each of the entities;
and

a delivery requestor configured to request a delivery system to deliver content,

wherein the delivery requestor specifies, in the delivery system, as delivery destinations of the content, a group of identifiers including the identifier of each of the entities associated with the target section, the identifier being determined from the entity information, to thereby request the delivery system to deliver the content so that the delivery system delivers the content to the group of entities associated with the target section.

12. An information processing system comprising:

a section information storage configured to store section information describing, with respect to a plurality of sections defined by subdividing a feature space corresponding to a set of first feature values, for each of the sections, features of a set of entities having the first feature values of a corresponding section;

a selector configured to select at least one section as a delivery target section from the plurality of sections;

a target information acquirer configured to acquire, with respect to a plurality of entities, for each of the entities, a second feature value related to the features described in the section information;

a determiner configured to map the plurality of entities to the feature space based on the section information and the second feature value to thereby determine, as a group of delivery target entities, a group of entities associated with the delivery target section; and

a delivery requestor configured to request a delivery system to deliver content, wherein the delivery requestor specifies, in the delivery system, as delivery destinations of the content, an identifier of each of the entities constituting the group of delivery target entities to thereby request the delivery system to deliver the content so that a delivery of the content to the group of delivery target entities is performed.

13. The information processing system according to claim 12,

wherein the selector determines, for each of the plurality of sections, an effect of content delivery through the delivery system and selects the delivery target section

from the plurality of sections based on the effect of content delivery.

14. The information processing system according to claim 12 or 13 further comprising

a performance information acquirer configured to acquire performance information that is related to the effect of content delivery through the delivery system and that enables determination of an effect of delivery in each of the sections,

wherein the selector selects the delivery target section from the plurality of sections based on the performance information.

15. The information processing system according to claim 14,

wherein the delivery system is a plurality of delivery systems,

wherein the performance information acquirer acquires, with respect to each of the plurality of delivery systems, the performance information on the effect of content delivery through a corresponding delivery system,

wherein based on the performance information, the selector further selects, for each of the sections corresponding to the delivery target section, a delivery system as a delivery request destination from the plurality of delivery systems, and

wherein, for each of the sections corresponding to the delivery target section, the delivery requestor requests the delivery system selected as the delivery request destination, to deliver the content so that a delivery of the content to a group of entities associated with a corresponding section among the group of delivery target entities is performed.

16. The information processing system according to claim 12 or 13,

wherein the delivery system is a plurality of delivery systems,

wherein the information processing system further comprises a performance information acquirer configured to acquire, with respect to each of the plurality of delivery systems, performance information that is related to the effect of content delivery through a corresponding delivery system and that enables determination of an effect of

delivery in each of the sections,

wherein based on the performance information, the selector further selects, for each of the sections corresponding to the delivery target section, a delivery system as a delivery request destination from the plurality of delivery systems, and

wherein, for each of the sections corresponding to the delivery target section, the delivery requestor requests the delivery system selected as the delivery request destination, to deliver the content so that a delivery of the content to a group of entities associated with a corresponding section among the group of delivery target entities is performed.

17. An information processing system comprising:

a section information storage configured to store section information describing, with respect to a plurality of sections defined by subdividing a feature space corresponding to a set of first feature values, for each of the sections, features of a set of entities having the first feature values of a corresponding section;

a target information acquirer configured to acquire, with respect to a plurality of entities, a second feature value of each of the plurality of entities, the second feature value being related to the features described in the section information;

a determiner configured to map the plurality of entities to the feature space based on the section information and the second feature value to thereby determine, as a group of target sections, a group of sections with which the plurality of entities is associated in the feature space;

a selector configured to select at least one section as a delivery target section from the group of target sections;

an entity information storage configured to store entity information describing, for each of the sections in the feature space, a group of entities associated with a corresponding section using an identifier individually assigned to each of the entities; and

a delivery requestor configured to request a delivery system to deliver content, wherein the delivery requestor specifies, in the delivery system, as delivery

destinations of the content, a group of identifiers including the identifier of each of the entities associated with the delivery target section, the identifier being determined from the entity information, to thereby request the delivery system to deliver the content so that the delivery system delivers the content to the group of entities associated with the delivery target section.

18. The information processing system according to claim 17,
wherein the selector determines, for each of the target sections, an effect of content delivery through the delivery system and selects the delivery target section from the group of target sections based on the effect of content delivery.

19. The information processing system according to claim 17 or 18 comprising a performance information acquirer configured to acquire performance information that is related to an effect of content delivery through the delivery system and that enables determination of an effect of delivery in each of the sections,

wherein the selector selects the delivery target section from the group of target sections based on the effect of delivery in each of the target sections, the effect of delivery being determined from the performance information.

20. The information processing system according to any one of claims 11 to 19,

wherein the entities are persons, and

wherein the identifier used to specify the delivery destination is an identifier to deliver the content to an information terminal of a corresponding entity by the delivery system as a delivery request destination.

21. The information processing system according to claim 20,
wherein the identifier includes at least one of an advertising ID, a cookie ID, or an email address.

22. A computer-implemented data processing method comprising:

acquiring section information from a storage device storing the section information describing, with respect to a plurality of sections defined by subdividing a feature space corresponding to a set of first feature values, for each of the sections, features of a set of entities having the first feature values of a corresponding section;

acquiring a second feature value that is related to a focus target entity and that is related to the features described in the section information;

determining, as a target section, a section with which the focus target entity is associated in the feature space by mapping the focus target entity to the feature space based on the section information and the second feature value;

acquiring definition information from a storage device storing the definition information defining, for each of the sections in the feature space, a delivery condition for a delivery system; and

requesting the delivery system to deliver content in accordance with the definition information,

wherein the requesting includes requesting the delivery system to perform a delivery in accordance with the delivery condition defined for the target section.

23. A computer-implemented data processing method comprising:

acquiring section information from a storage device storing the section information describing, with respect to a plurality of sections defined by subdividing a feature space corresponding to a set of first feature values, for each of the sections, features of a set of entities having the first feature values of a corresponding section;

acquiring a second feature value that is related to a focus target entity and that is related to the features described in the section information;

determining, as a target section, a section with which the focus target entity is associated in the feature space by mapping the focus target entity to the feature space based on the section information and the second feature value;

acquiring entity information from a storage device storing the entity information describing, for each of the sections in the feature space, a group of entities associated

with a corresponding section using an identifier individually assigned to each of the entities; and

requesting a delivery system to deliver content,

wherein the requesting includes requesting the delivery system to deliver the content so that the delivery system delivers the content to the group of entities associated with the target section by specifying, in the delivery system, as delivery destinations of the content, a group of identifiers including the identifier of each of the entities associated with the target section, the identifier being determined from the entity information.

24. A computer-implemented data processing method comprising:

acquiring section information from a storage device storing the section information describing, with respect to a plurality of sections defined by subdividing a feature space corresponding to a set of first feature values, for each of the sections, features of a set of entities having the first feature values of a corresponding section;

selecting at least one section as a delivery target section from the plurality of sections;

acquiring, with respect to a plurality of entities, for each of the entities, a second feature value related to the features described in the section information;

determining, as a group of delivery target entities, a group of entities associated with the delivery target section by mapping the plurality of entities to the feature space based on the section information and the second feature value; and

requesting a delivery system to deliver content,

wherein the requesting includes requesting the delivery system to deliver the content so that a delivery of the content to the group of delivery target entities is performed by specifying, in the delivery system, as delivery destinations, an identifier of each of the entities constituting the group of delivery target entities.

25. A computer-implemented data processing method comprising:

acquiring section information from a storage device storing the section information describing, with respect to a plurality of sections defined by subdividing a

feature space corresponding to a set of first feature values, for each of the sections, features of a set of entities having the first feature values of a corresponding section;

acquiring, with respect to a plurality of entities, a second feature value of each of the plurality of entities, the second feature value being related to the features described in the section information;

determining, as a group of target sections, a group of sections with which the plurality of entities is associated in the feature space by mapping the plurality of entities to the feature space based on the section information and the second feature value;

selecting at least one section as a delivery target section from the group of target sections;

acquiring entity information from a storage device storing the entity information describing, for each of the sections in the feature space, a group of entities associated with a corresponding section using an identifier individually assigned to each of the entities; and

requesting a delivery system to deliver content,

wherein the requesting includes requesting the delivery system to deliver the content so that the delivery system delivers the content to the group of entities associated with the delivery target sections by specifying, in the delivery system, as delivery destinations of the content, a group of identifiers including the identifier of each of the entities associated with the delivery target sections, the identifier being determined from the entity information.

26. A computer readable recording medium storing a computer program including instructions to cause a computer to perform the information processing method according to any one of claims 22 to 25 when executed by the computer.