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(71) Applicant: **SAP AG**
69190 Walldorf (DE)

(72) Inventors:
- **Weiss, Burkhard**
  69168 Wiesloch (DE)
- **Becker, Dirk**
  69254 Malsch (DE)

(74) Representative: **Richardt, Markus Albert**
Patentanwalt
Leergasse 11
65343 Eltville am Rhein (DE)

(54) A data processing system and method

(57) The data processing system has a database for storing master contracts and billing customizing tables. The master contracts refer to the billing customizing data by means of result and condition attributes. This has the advantage that a modification of the billing customizing data, such as for the purpose of changing the bundle pricing scheme for the master contracts, does not require storage of the updated data in the database.

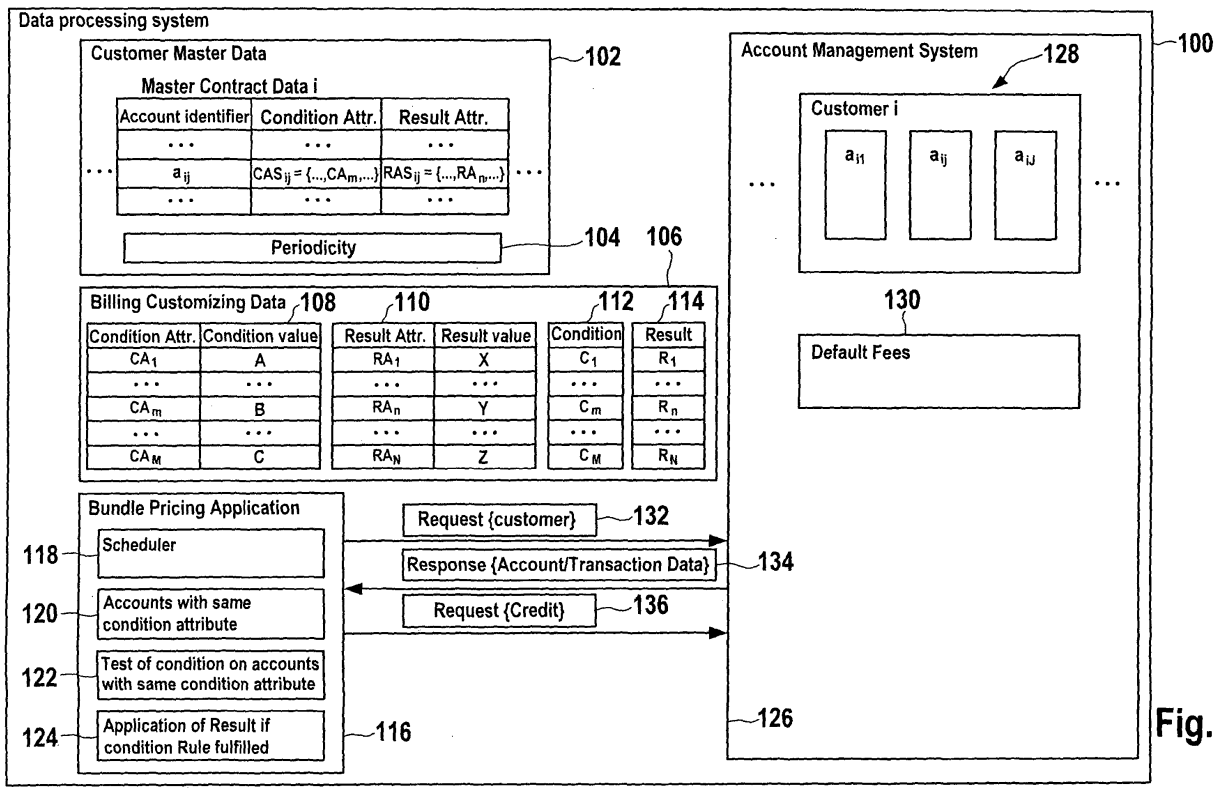

Fig. 1

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Description

Field of the invention

[0001] The present invention relates to the field of data processing, and more particularly without limitation to billing systems.

Background and prior art

[0002] Bundle pricing of services is as such known e.g. in the banking and telecommunication industries.

[0003] For example, a telecommunication customer is charged with telecommunication fees for various telecommunication services, such as voice communication, data communication, the use of pre-paid and post-paid services, and/or the transmitted data volume. Typically the customer receives a rebate for the telecommunication services depending on the amount of usage of the various telecommunication services.

[0004] Bundle pricing is also commonly used in retail banking. A bank's customer gets a rebate for bank fees, such as fees for account maintenance fees, inter-account transfers, debit orders, electronic account payments, cash withdrawals and/or interest rates, when a certain condition is fulfilled, e.g. when one of the accounts of the customer exceeds a defined threshold balance.

[0005] The bundle pricing conditions, e.g. the threshold balance, is stored with the customer contract data record. If the threshold balance needs to be changed, this requires storage of the new threshold value for each customer master contract. This is a common disadvantage of prior art data processing systems that are used for bundle pricing as storing the new threshold value for thousands or even millions of customer master contracts requires a relatively long processing time and has a relatively high processing expense.

[0006] There is therefore a need to provide an improved data processing system and method that facilitates a reduction of the data processing resources for bundle pricing applications.

Summary of the invention

[0007] In accordance with the present invention there is provided a data processing system that has first storage means for storage of sets of account identifiers, at least some of the account identifiers having assigned thereto a condition attribute of a predefined set of condition attributes and a result attribute of a predefined set of result attributes. The data processing system has second storage means for storage of a condition rule and a condition value for each condition attribute of the predefined set of condition attributes and for storage of a result rule and result value for each result attribute of the predefined set of result attributes.

[0008] For example, the first storage means is provided by a large database or a plurality of databases that hold the master data of a bank's customers. The second storage means does only require a minimal amount of storage as the condition rules, condition values, result rules and result values do only need to be stored once, but not for every customer.

[0009] The data processing system has first program means for determining a sub-set of the account identifiers of a set of account identifiers, wherein the account identifiers of the sub-set have a common condition attribute. Second program means serves for determining if the sub-set fulfils the condition rule of the common condition attribute when applied with the respective condition value. If the sub-set fulfils the condition rule applied with the respective condition value, third program means are initiated for calculating a result for each account identifier of the sub-set using the respective result rule and result value.

[0010] The present invention is particularly advantageous as the condition rules, condition values, result rules and result values are stored separately from the sets of account identifiers, e.g. the master contract data of the customers. This facilitates to update the condition rules, condition values, result rules and result values without a need to change the customer master data.

[0011] In accordance with an embodiment of the invention the data processing system has a database for storing master contracts and billing customizing tables. The master contracts refer to the billing customizing data by means of result and condition attributes. This has the advantage that a modification of the billing customizing data, such as for the purpose of changing the bundle pricing scheme for the master contracts, does not require storage of the updated data in the database.

[0012] In accordance with an embodiment of the invention a scheduler is used for determining a priority of the sets of account identifiers for which processing is due or overdue. The scheduled sets of account identifiers are processed as a batch job without a need for user interaction. For example, the periodicity of the processing i.e. the bundle pricing, can be defined for each customer master contract.

[0013] In accordance with an embodiment of the invention the bundle pricing data processing system is coupled to an account management system that keeps the accounts identified by the account identifiers. The account management

system can have a billing component for charging default service fees. In this instance the results calculated by the data processing system can be credited to the respective accounts. Alternatively the complete billing is performed by the data processing system taking into account default bank fees and rebates that are given to a customer if certain condition rules applied with the respective condition values are fulfilled.

[0014] This is particularly advantageous as this facilitates to use a legacy account management system for advanced pricing applications. In particular, this avoids a need to replace a legacy account management system if advanced pricing applications are to be introduced.

[0015] In accordance with an embodiment of the invention the bundle pricing application and the account management system are coupled by an interface that implements a request-response protocol. The bundle pricing application can request account/transaction data from the account management system that it requires to apply the condition and/or result rules to a given mater contract or set of scheduled master contracts. The account management system responds with the requested data via the interface.

[0016] In accordance with another embodiment of the invention a graphical user interface is provided for selecting condition attributes and result attributes for a customer master contract. This facilitates the registration of a new customer. After a certain set of accounts has been opened, the bank clerk can select one or more condition attributes for each of the accounts and/or one or more result attributes depending on the agreement with the customer. This provides a high degree of flexibility for the bundle pricing of the set of accounts.

[0017] In another aspect the invention provides a method of bundle pricing comprising:

- storage of sets of account identifiers, at least some of the account identifiers having assigned thereto a condition attribute of a predefined set of condition attributes and a result attribute of a predefined set of result attributes,
- storage of a condition rule and a condition value for each condition attribute of the predefined set of condition attributes,
- storage of a result rule and a result value for each result attribute of the predefined set of result attributes,
- determining the sub-set of one of the sets of account identifiers having a common condition attribute of the predefined set of condition attributes,
- determining if the sub-set fulfils the condition rule of the common condition attribute, when applied with the respective condition value,
- calculating a result for each account identifier of the sub-set, if the sub-set fulfils the condition rule, by applying the respective result rule with the result value,
  wherein each set of account identifiers defines a bundle of services, and
  wherein the calculated results serve for pricing of the bundle.

[0018] In accordance with an embodiment of the invention the bundle comprises financial and/or bank services.

[0019] In accordance with an embodiment of the invention the bundle comprises telecommunication services.

[0020] In accordance with an embodiment of the invention at least one of the account identifiers belongs to a loyalty points account.

[0021] In accordance with an embodiment of the invention at least one of the account identifiers belongs to a pre-paid account.

[0022] In still another aspect the invention relates to a computer program product comprising computer executable instructions for performing a method of bundle pricing.

Brief description of the drawings

[0023] In the following embodiments of the invention will be described by way of example only making reference to the drawings in which:

Figure 1 is a block diagram of a first embodiment of a data processing system,

Figure 2 is a block diagram of a second embodiment of a data processing system,

Figure 3 is a flowchart illustrating an embodiment of a data processing method,

Figure 4 schematically shows a window for entry of master contract data and selection of condition and result attributes.

Detailed description

[0024] Fig. 1 shows a data processing system 100 that has a database 102 for storage of master data, such as master contract data. The database 102 can be implemented as a single database or as a distributed database. In the embodiment considered here the database 102 serves for storage of master contract data i for each customer i, where $1 \leq I \leq I$. The number of master contracts and customers I can be as large as several thousands or even millions such as in the case for large retail banks or telecommunication operators or service providers.

[0025] The master contract data i that describes the master contract i of a customer i contains a set of account identifiers, i.e. account numbers, a_{i1}, a_{i2}, ... a_{ij}, ..., a_{ij}. The number of accounts J of the master contracts i is typically 1, 2 or more. For example, the customer i has a deposit account a_{i1}, a current account a_{i2}, a stock depot a_{i3} and an account a_{i4} for collecting customer loyalty points or 'miles' under a miles-and-more like customer loyalty scheme.

[0026] At least some of the account identifiers of the master contract data i have assigned a respective set of condition attributes. For example, the account identifier a_{ij} has assigned the set of condition attributes CAS_{ij} which contains a sub-set of the condition attributes CA_1, CA_2, ..., CA_m ..., CAM, where M is the total number of the predefined condition attributes. Likewise a set of result attributes can be assigned to one or more of the account identifiers of the master contract data i. For example, a set of result attributes RAS_{ij} is assigned to the account identifier a_{ij}. The set of result attributes RAS_{ij} contains a sub-set of the complete set of predefined result attributes RA_1, RA_2, ..., RA_n, ..., RA_N.

[0027] In addition, a timer data value 104 can be stored with the master contract data i for the purpose of scheduling the master contract data i for processing at certain periodic time intervals, such as daily, weekly, monthly or yearly.

[0028] The data processing system 100 has a storage 106 for storing of billing customizing data. The billing customizing data contains a table 108 for storing the predefined set of condition attributes. Each condition attribute has an assigned condition value. For example, the condition attribute CA_1 has the assigned condition value A; the condition attribute CA_m has the assigned condition value B; and the condition attribute CAM has the assigned condition value C.

[0029] The billing customizing data further contains a table 110 for storing the set of predefined result attributes and their respective result values. For example the result attribute RA_1 has the result value X; the result attribute RA_n has the result value Y; and the result attribute RA_N has the result value Z.

[0030] Further, the billing customizing data 106 has a table 112 for storage a set of condition rules C_1, ..., C_m, ... C_M for the respect conditions. Likewise, a table 114 of the billing customizing data serves for storage of result rules R_1, ..., R_n, ... R_N.

[0031] In other words, an arbitrary condition m is constituted by the condition rule C_m stored in the table 112 together with the condition value B of the respective condition attribute CA_m stored in the table 108. Likewise a result is obtained by applying one of the result rules R_n stored in the table 114 together with the result value Y of the respective result attribute RA_n.

[0032] It is important to note that the data volume of the billing customizing data stored in the storage 106 is very limited in comparison to the size of the database 102.

[0033] The data processing system 100 has a bundle pricing application program 116 for bundle pricing of the account bundles defined by the master contract data stored in the database 102. The bundle pricing application program 116 has a scheduler 118 for scheduling the processing of one or more master contract data i.

[0034] For example, the scheduler 118 determines the master contract data i of database 102 that is due or overdue for processing using the timer data value 104 as a selection criterion. This results in a batch of master contract data i that can be processed as a batch job.

[0035] The bundle pricing application program 116 has a program module 120 for determining a sub-set of the account identifiers contained in master contract data i that have a common condition attribute. Such a sub-set is further examined by means of the program module 122 which applies the respective condition of the common condition attribute as defined in the billing customizing data stored in storage 106 to the sub-set. If the sub-set fulfils the respective condition the program module 124 is invoked which determines the respective result for each of the account identifiers of the sub-set.

[0036] The data processing system 100 has an account management system 126 for keeping the accounts of the customers. This is done by means of a database 128 that stores the account data and/or transaction data for all accounts of all customers. Again, the database 128 can be a central database or a distributed database.

[0037] In the embodiment considered here the account management system 126 has a program module 130 that serves for billing default fees for a certain number of services, such as account maintenance, inter-account transfers, debit orders, electronic account payments, cash withdrawals, interest rates, etc. These default fees do not take into account special bundle pricing rebates as such rebates are determined by the bundle pricing application program 116 in the preferred embodiment considered here.

[0038] In operation various services are provided for the customer i by means of his or her accounts a_{i1}, a_{ij}, a_{ij}. The program module 130 determines the default fees incurred for providing the various services, such as account maintenance fees, transaction fees, cash withdrawals from automatic teller machines, purchase or sale of stock, etc.

[0039] For the purpose of bundle pricing of the services provided to the customers, the bundle pricing application

program 116 starts its scheduler 118 in order to identify master contract data i in the database 102 that are due or overdue for bundle pricing processing. For example, the scheduler 118 is started on each business day in order to find those master contract data i in the database 102 that have a timer data value 104 that matches the current date. As a consequence, the scheduler 118 identifies a batch of master contract data i that is due or overdue for bundle pricing processing.

[0040] The program module 120 is started for the batch processing. The program module 120 checks each master contract data i for the presence of account identifiers within the given master contract data i that have a common condition attribute. For those account identifiers that have a common condition attribute the program module 122 is used in order to apply the respective condition of the common condition attribute as defined in the billing customizing data stored in storage 106. If the sub-set of account identifiers of the master contract i fulfils the condition of the common condition attribute, the program module 124 is used to determine the respective results for the account identifiers of the sub-set. This is done by using the result rules and result values stored in the billing customizing data.

[0041] For testing the condition of the common condition attribute the program module 122 generates a request 132 that identifies the master contract data i and thus the customers i of the batch job to be processed. The account management system 126 generates a response 134 which contains respective account and/or transaction data of the customers identified in the request 132. This account and/or transaction data forms the basis for testing the condition by the program module 122.

[0042] The results that are determined by the program module 124 for one of the master contract data i are summed up which provides a credit value. The program module 124 generates a request 136 in order to request that the credit value be credited to the respective customer i to one of the customer's accounts by the account management system 126.

[0043] In order to reduce the amount of account/transaction data that needs to be transmitted from the account management system 126 to the bundle pricing application 116 upon the request 132, the request 132 can specify the kind of account/transaction data that is required with a finer level of granularity. This can be accomplished by assigning request categories to the condition rules or condition attributes and/or the result rules or result attributes stored in storage 106. Each request category specifies a certain kind of account/transaction information that is required to apply the respective condition and/or result rule. The request 132 can indicate the request categories in order to limit the data volume returned by the response 134. An interface that implements a request-response protocol such as http can be used to couple the bundle pricing application and the account management system.

[0044] Fig. 2 shows an alternative embodiment. Elements of Fig. 2 that correspond to elements in the embodiment of Fig. 1 are designated using like reference numerals.

[0045] In the embodiment of Fig. 2 the account management system 226 does not charge the default fees. The account management system 226 has a counter program module 238 that serves to generate a history log 240 for each customer i. For example, the history log 240 of customer i contains a table with various transaction types and respective counter values. For example, the customer i has performed a number of 10 wire transfers, 15 cash withdrawals from an automatic teller machine (ATM) and 5 stock purchases during the current month.

[0046] In response to the request 232, the response 234 provides the history logs of the customers identified by the request 232 to the bundle pricing application. The bundle pricing application calculates the respective default fees for each customer i and subtracts any rebates that are determined by the program module 224. The resultant charges for the customers are sent to the account management system 226 by means of request 236.

[0047] The data processing system 200 can be coupled to various client devices via a network 242, such as personal computers 244, 246, 248, and/or mobile telephones 250, and/or telephones 252.

[0048] For example, the personal computer 244 is used by an administrator for administration of the billing customizing data stored in storage 206. The administrator has the user rights that are required in order to view and modify the billing customizing data 206. It is important to note that a modification of the billing customizing data does not require any change of the content of the database 202.

[0049] For example, the personal computers 246, 248, belong to customers that can use these computers for the purpose of online banking or to bank clerks. Likewise the mobile phones 250 and telephones 252 can be used for telephone banking.

[0050] Alternatively the data processing system 200 belongs to a telecommunication services provider, such as the operator of a telecommunications network. In this instance the customer i can have a number of accounts for telecommunication fees, such as a post-paid account, a pre-paid account and an account for charging data downloads.

[0051] As in the embodiment of Fig. 1, the request 232 can specify the required information for applying the condition and/or result rules with a finer level of granularity. For example, the request 232 can specify the transaction types for which the counter values are required from the table 240 for processing of the condition and/or result rules with respect to a scheduled master contract. This can be accomplished by request categories assigned to condition and/or result rules or attributes in the storage 206 where each request category specifies certain transaction types for which the counter values are required.

[0052] Fig. 3 shows a flowchart illustrating a preferred mode of operation of the data processing systems of Fig. 1 and

2. In step 300 the scheduler schedules a batch of master contracts that are due or overdue for processing. In step 302 account/transaction data, such as a history log, is requested from the account management system for the batch of scheduled master contracts.

[0053] In the following step 304 the batch of scheduled master contracts is processed. For each scheduled master contract i the step 306 is carried out. For each condition attribute CA_m the following steps are performed as sub-steps of step 306 for a given scheduled master contract i starting with m=1:

In step 308 the sub-set of accounts contained in the currently processed master contract i that have the common condition attribute CA_m is determined, if there is such a sub-set. If such a sub-set of accounts can be determined in step 308 the step 310 is performed where the condition of the common condition attribute CA_m is tested on the sub-set. If the condition is not fulfilled, a default fee can be charged as a result, depending on the implementation. If the contrary is true the step 312 is carried out.

In step 312 the sub-step 314 is carried out for each account of the sub-set determined in step 308. In step 314 the result is determined for the currently processed account of the currently processed scheduled master contract in accordance with the applicable result rules and result values as identified by the one or more result attributes assigned to the currently processed account by the master contract data i. The result or the results, if there is more than one result for the currently processed account, can be charged to the account as an alternative to the default fee. Alternatively the default fee is charged in any case but the result is a credit or debit which is credited or debited to the customer.

[0054] Preferably the kind of account/transaction data that is required for steps 310 and 314 is specified in the request of step 302. This can be done by defining categories of the account/transaction data and to indicate those categories which are required for the bundle pricing of a given master contract.

[0055] Fig. 4 shows a window 400 that is displayed on the monitor of a bank clerk for entry of a new master contract. The window 400 has a data entry portion 402 that includes data entry fields 404 and 406 for entry of personal data of the new customer, such as name and address, and a data entry matrix 408 for the setting of condition and result attributes.

[0056] Further, the window 400 has a legend portion 410 that contains a legend 412 for the condition attributes and a legend 414 for the result attributes.

[0057] The window 400 has a save button 416 for uploading of the new master contract data to the data processing system, e.g. the database 102 or 202 (cf. Fig. 1 and 2).

[0058] In the preferred embodiment considered here there is a predefined set of condition attributes 1, 2, 3, 4 and 5 that are assigned to respective condition rules. In accordance with the condition rule 'MaxCombBalance' that is assigned to the condition attribute 1 the maximum combined balances of the accounts of the customer that have the condition attribute 1 is determined. If the maximum combined balances of the accounts exceeds the respective condition value stored in the billing customizing data for that condition rule, the condition is fulfilled.

[0059] Likewise, the condition rule of condition attribute 2 'MinCombBalance' relates to a minimum combined balance of the accounts of the customer that have the condition attribute 2. The condition rule 'MinCombBalance' is fulfilled if the minimum combined balance does not exceed the respective condition value.

[0060] Likewise the condition rule 'MinCombBalance CASH DEPOSIT' relates to the minimum combined balances but only as far as cash deposit is concerned, the condition rule 'AverageBalance' relates to the average balance of the accounts that have condition attribute 4. The condition 'AverageBalance' is fulfilled if the average balance of the

[0061] accounts that have condition attribute 4 exceeds the respective threshold value. The condition rule 'MaxCombounter' relates to the cash withdrawn from automatic teller machines. If this exceeds the threshold value given by the respective condition value as far as the accounts that have the condition attribute 5 are concerned, the condition is fulfilled.

[0062] In the preferred embodiment considered here the predefined set of result attributes contains the result attributes 1, 2, 3 and 4. The result attribute 1 is assigned to the result rule 'reduce maintenance fee'. If the account to which the result attribute 1 is assigned meets a condition, the account maintenance fee is reduced by the result value of the result rule given in the billing customizing data. Likewise there are result rules for reducing the counter fee, i.e. the fee per posting, reduction of the customer's rating and reduction of the credit interest the customer needs to pay if he or she overdraws his or her account.

[0063] In the example considered here the new customer has opened a deposit account, a current account, a stock depot and loyalty points account. By clicking on the data entry matrix 408 the bank clerk can enter check marks for selection of condition attributes and result attributes as shown in Fig. 4.

List of Reference Numerals

[0064]

100 Data processing system

102 Database

104 Timer data value

106 Storage

108 Table

110 Table

112 Table

114 Table

116 Bundle pricing application program

118 Scheduler

120 Program module

122 Program module

124 Program module

126 Account management system

128 Database

130 Program module

132 Request

134 Response

136 Request

200 Data processing system

202 Database

204 Timer data value

206 Storage

208 Table

210 Table

212 Table

214 Table

216 Bundle pricing application program

218 Scheduler

220 Program module

222 Program module

224 Program module

226 Account management system

228 Database

230 Program module

232 Request

234 Response

236 Request

238 Counter program module

240 History log

242 Network

244 Personal computer

246 Personal computer

248 Personal computer

250 Mobile phone

252 Telephone

400 Window

402 Data entry portion

404 Data entry field

406 Data entry field

408 Data entry matrix

410 Legend portion

412 Legend

414 Legend

416 Safe button

Claims

1. A data processing system comprising:

- first storage means (102; 202) for storage of sets of account identifiers, at least some of the account identifiers

having assigned thereto a condition attribute of a predefined set of condition attributes and a result attribute of a predefined set of result attributes,
- second storage means (106; 206) for storage of a condition rule and a condition value for each condition attribute of the predefined set of condition attributes and for storage of a result rule and a result value for each result attribute of the predefined set of result attributes,
- first program means (120; 220) for determining a sub-set of one of the sets of account identifiers having a common condition attribute,
- second program means (122; 222) for determining if the sub-set fulfils the condition rule of the common condition attribute when applied with the respective condition value,
- third program means (124; 224) for calculating the result for each account identifier of the sub-set, if the sub-set fulfils the condition rule, by applying the respective result rule with the result value.

2. The data processing system of claim 1, each of the sets of account identifiers being related to master contract data.

3. The data processing system of claim 1 or 2, at least some of the sets of account identifiers having assigned thereto a timer data value (104; 204), and further comprising a scheduler (118; 218) for identification of sets of account identifiers for which the respective timer values indicate that processing is due, and for processing the identified sets of account identifiers as a batch job.

4. The data processing system of claim 1, 2 or 3, further comprising an account management system (126; 226) for keeping the accounts identified by the account identifiers, the account management system being coupled to the third program means.

5. Data processing system of claim 4, the account management system having a billing component (130) for charging default fees, wherein the result calculated by the third program means is credited to the respective account.

6. The data processing system of any one of the preceding claims, the second storage means being accessible for modification of the condition rules, condition values, result rules and result values by an administrator (244).

7. The data processing system of any one of the preceding claims, further comprising a graphical user interface (400) for setting at least one of the condition attributes and at least one of the result attributes for each account identifier of one of the sets of account identifiers.

8. The data processing system of any one of the preceding claims, wherein the condition value and/or the result value is an absolute value or a percentage value.

9. The data processing system of any one of the preceding claims, the predefined set of condition attributes comprising a first condition attribute having a first condition value, the first condition value defining a threshold value, the second program means being adapted to aggregate the balances of the accounts identified by the account identifiers of the sub-set that have the first condition attribute and to compare the aggregated balance with the threshold value defined by the first condition value.

10. A data processing method comprising:

- storage of sets of account identifiers, at least some of the account identifiers having assigned thereto a condition attribute of a predefined set of condition attributes and a result attribute of a predefined set of result attributes,
- storage of a condition rule and a condition value for each condition attribute of the predefined set of condition attributes,
- storage of a result rule and a result value for each result attribute of the predefined set of result attributes,
- determining a sub-set of one of the sets of account identifiers having a common condition attribute of the predefined set of condition attributes,
- determining if the sub-set fulfils the condition rule of the common condition attribute when applied with the respective condition value,
- calculating a result for each account identifier of the sub-set, if the sub-set fulfils the condition rule, by applying the respective result rule with the result value, if a result attribute is assigned to the respective account identifier.

11. The method of claim 10, further comprising:

- scheduling a plurality of the sets of account identifiers that are due for processing,
- processing the plurality of the sets of account identifiers as a batch job.

12. The method of claim 10 or 11, further comprising receiving account and/or transaction data from an account management system (126; 226) for application of the condition rules with the respective condition values and the result rules with the respective result values.

13. The method of any one of the preceding claims 10 to 12, further comprising storage a new condition value and/or a new result value in the second storage means while leaving the content of the first storage means unaffected.

14. The method of any one of the preceding claims 10 to 13, further comprising:

- entering master data for a customer master contract, the master data comprising a set of account identifiers,
- setting at least one of the condition attributes and at least one of the result attributes for at least one of the account identifiers of the set.

15. A computer program product comprising computer executable instructions for performing a method in accordance with any one of the preceding claims 10 to 14.

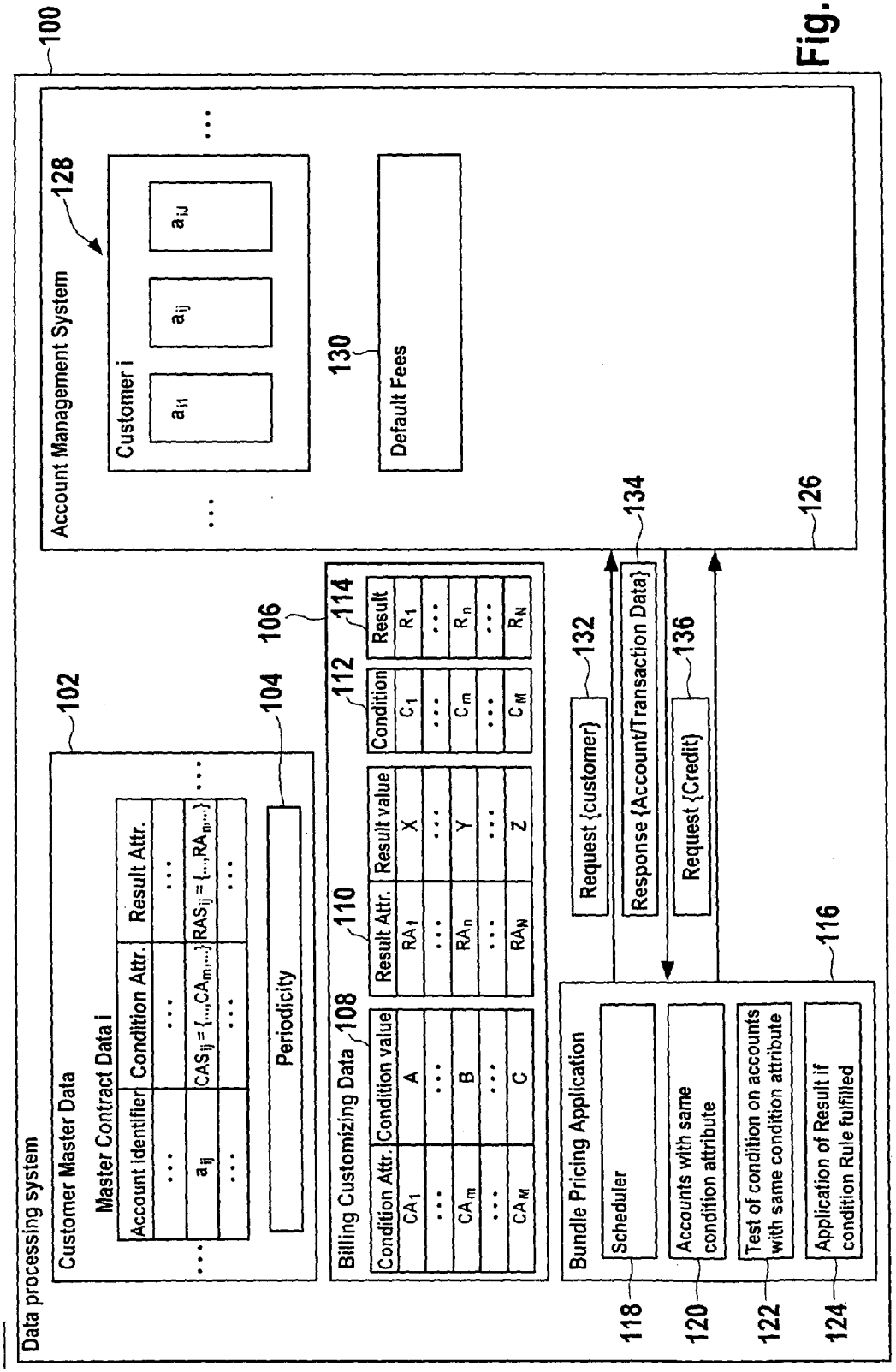
Data processing system
100
Customer Master Data
102
Master Contract Data i
Account identifier
Condition Attr.
Result Attr.
a_{ij}
$CAS_{ij} = \{...,CA_m,...\}$
$RAS_{ij} = \{...,RA_n,...\}$
Periodicity
104
106
Billing Customizing Data
108
110
112
114
Condition Attr.
Condition value
Result Attr.
Result value
Condition
Result
CA_1
RA_1
X
C_1
R_1
CA_m
B
RA_n
Y
C_m
R_n
CA_M
C
RA_N
Z
C_M
R_N
Account Management System
128
Customer i
a_{i1}
a_{ij}
a_{iJ}
130
Default Fees
126
Bundle Pricing Application
116
Scheduler
118
Accounts with same condition attribute
120
Test of condition on accounts with same condition attribute
122
Application of Result if condition Rule fulfilled
124
Request {customer}
132
Response {Account/Transaction Data}
134
Request {Credit}
136

Fig. 1

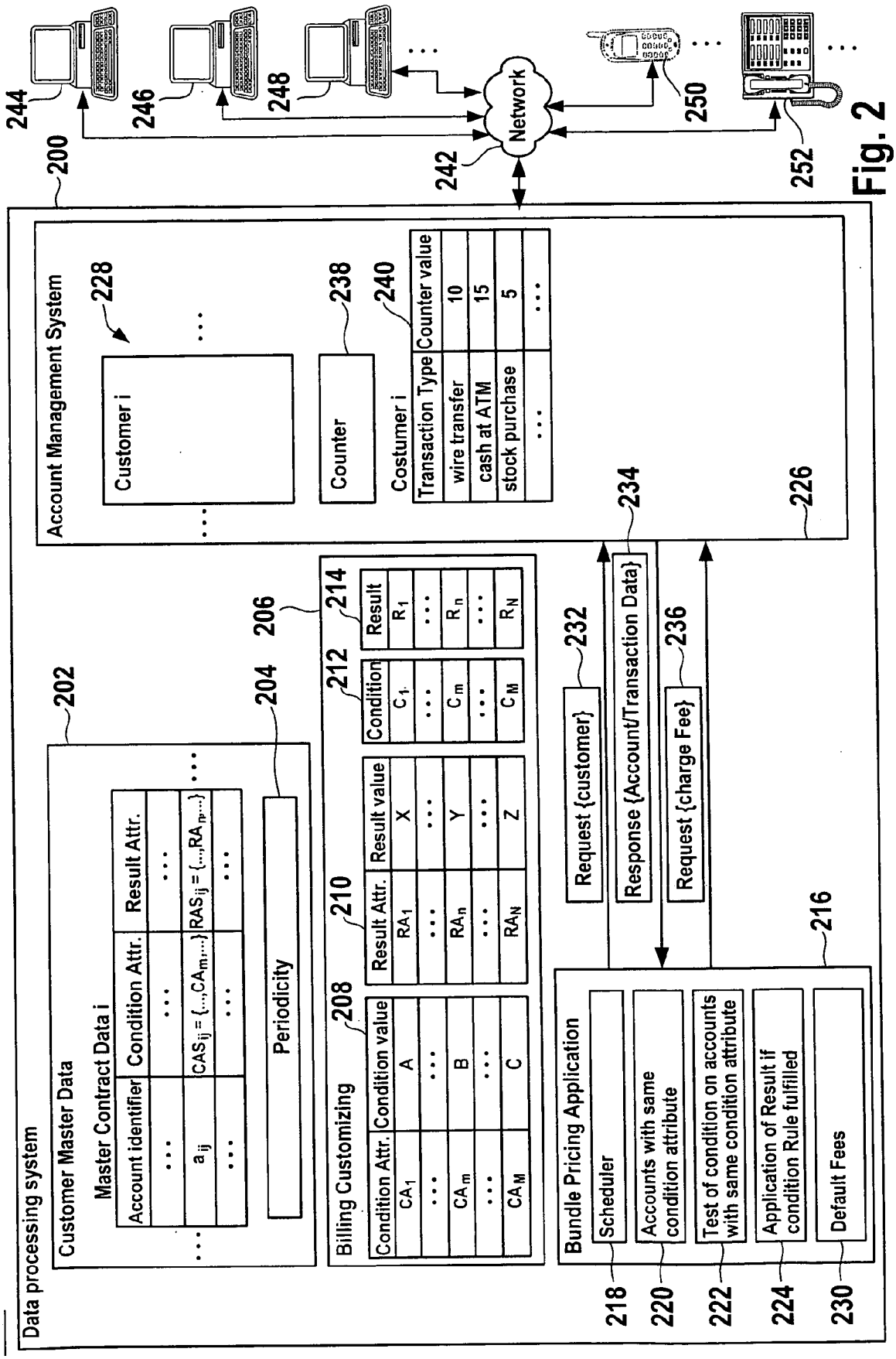
Data processing system
200
Customer Master Data
202
Master Contract Data i
Account identifier
Condition Attr.
Result Attr.
a_{ij}
$CAS_{ij} = \{...,CA_m,...\}$
$RAS_{ij} = \{...,RA_n,...\}$
204
Periodicity
206
Billing Customizing
208
Condition Attr.
Condition value
CA_1
A
CA_m
B
CA_M
C
210
Result Attr.
Result value
RA_1
X
RA_n
Y
RA_N
Z
212
Condition
C_1
C_m
C_M
214
Result
R_1
R_n
R_N
Account Management System
226
228
Customer i
238
Counter
240
Costumer i
Transaction Type
Counter value
wire transfer
10
cash at ATM
15
stock purchase
5
232
Request {customer}
234
Response {Account/Transaction Data}
236
Request {charge Fee}
Bundle Pricing Application
216
218
Scheduler
220
Accounts with same condition attribute
222
Test of condition on accounts with same condition attribute
224
Application of Result if condition Rule fulfilled
230
Default Fees
Network
242
244
246
248
250
252

Fig. 2

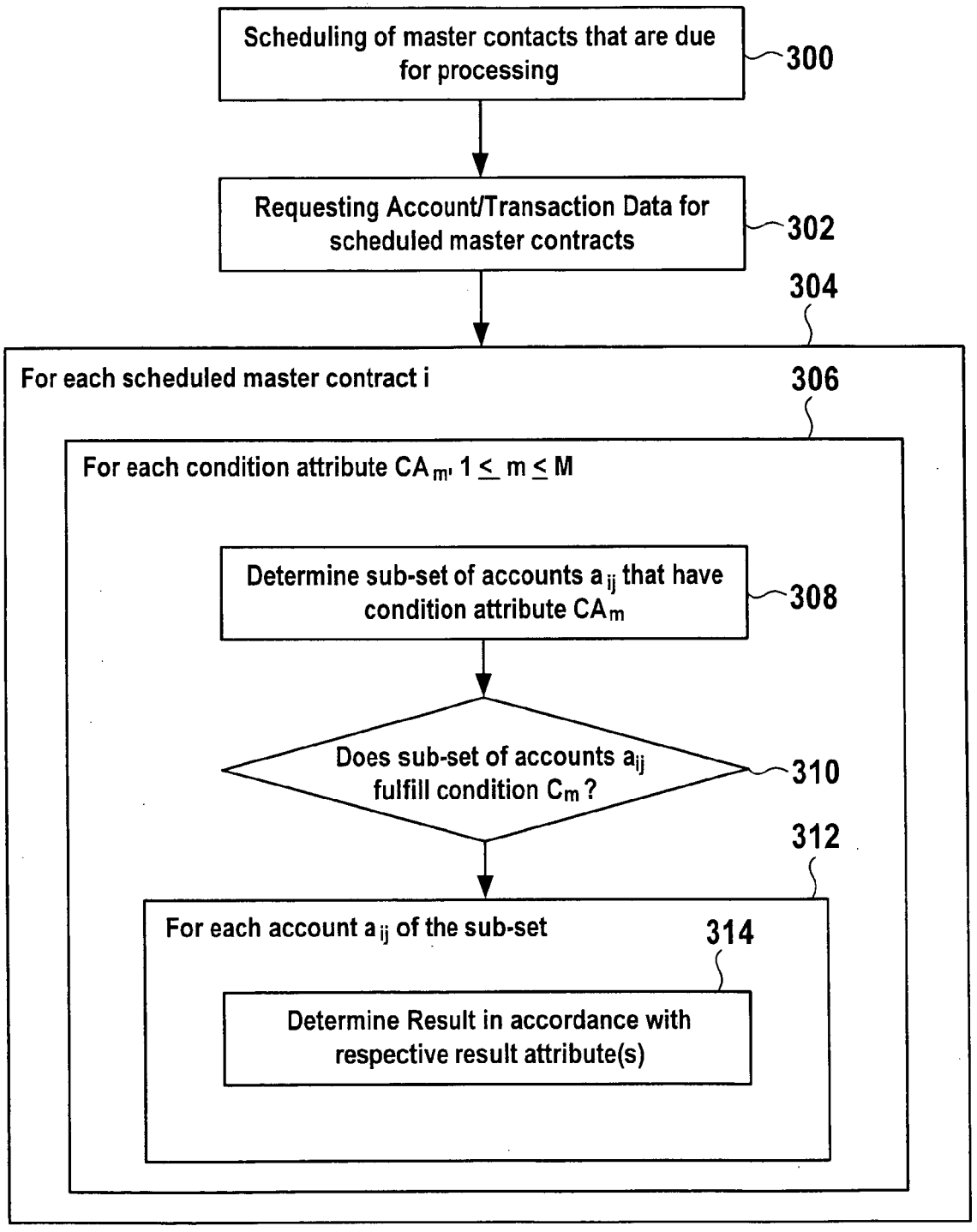
Scheduling of master contacts that are due for processing
300
Requesting Account/Transaction Data for scheduled master contracts
302
304
For each scheduled master contract i
306
For each condition attribute CA m, 1 ≤ m ≤ M
Determine sub-set of accounts a ij that have condition attribute CA m
308
Does sub-set of accounts a ij fulfill condition C m ?
310
312
For each account a ij of the sub-set
314
Determine Result in accordance with respective result attribute(s)

Fig. 3

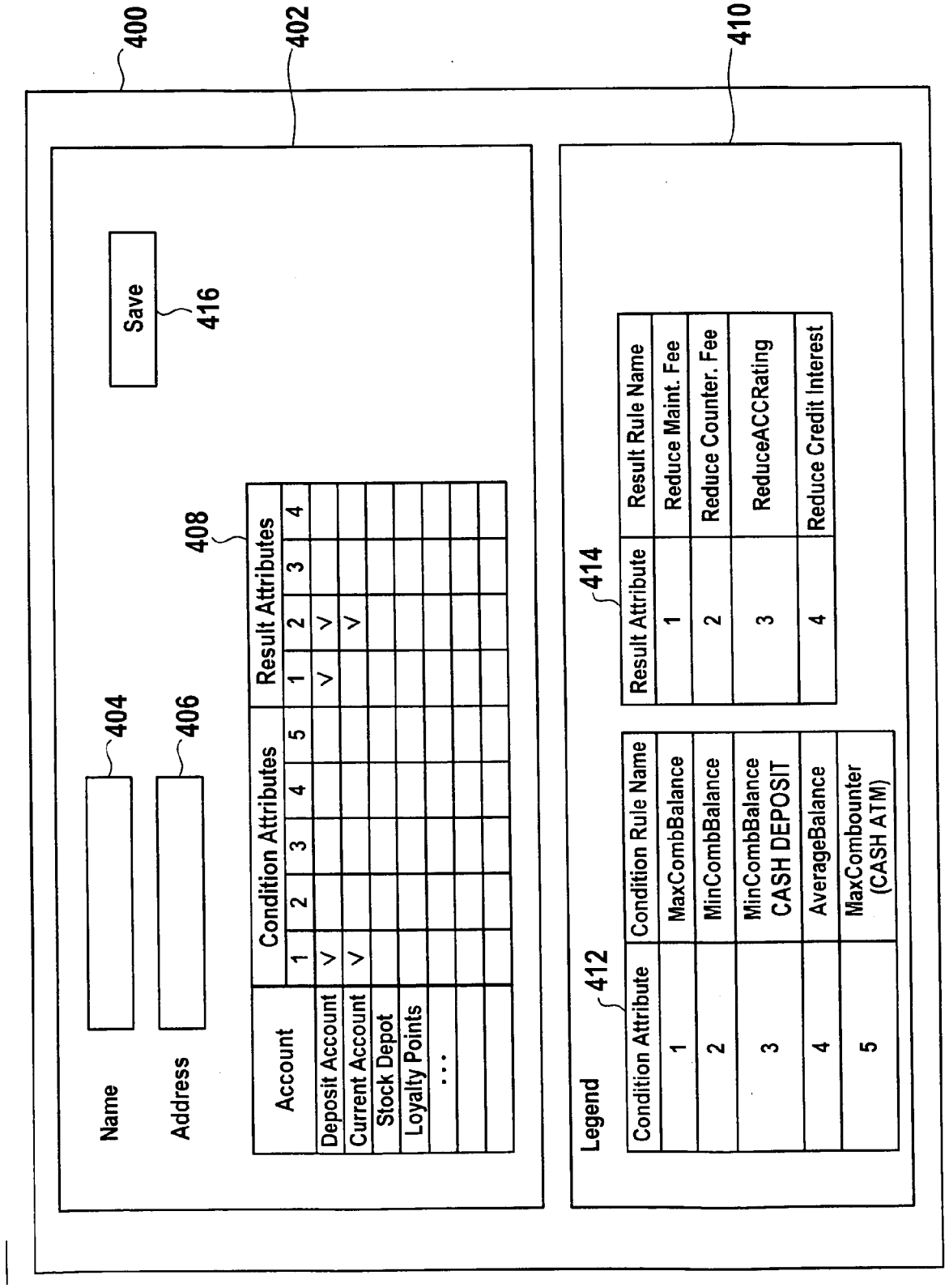
400
402
404
406
408
410
412
414
416
Name
Address
Save
Account
Condition Attributes
Result Attributes
1
2
3
4
5
Deposit Account
Current Account
Stock Depot
Loyalty Points
...
Legend
Condition Attribute
Condition Rule Name
MaxCombBalance
MinCombBalance
MinCombBalance CASH DEPOSIT
AverageBalance
MaxCombounter (CASH ATM)
Result Attribute
Result Rule Name
Reduce Maint. Fee
Reduce Counter. Fee
ReduceACCRating
Reduce Credit Interest

Fig. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 05 00 5941

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	EP 1 482 418 A (SAP AKTIENGESELLSCHAFT) 1 December 2004 (2004-12-01) * abstract; claims 1,3,4,6-8,10-12; figures 1,2 * -----	1,2, 6-10, 13-15	G06Q30/00 G06Q40/00

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

G06F
H04L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	21 July 2005	Streit, S

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 05 00 5941

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21-07-2005

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82