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(54) **WIRELESS SUBSCRIBER LOYALTY SYSTEM AND METHOD**

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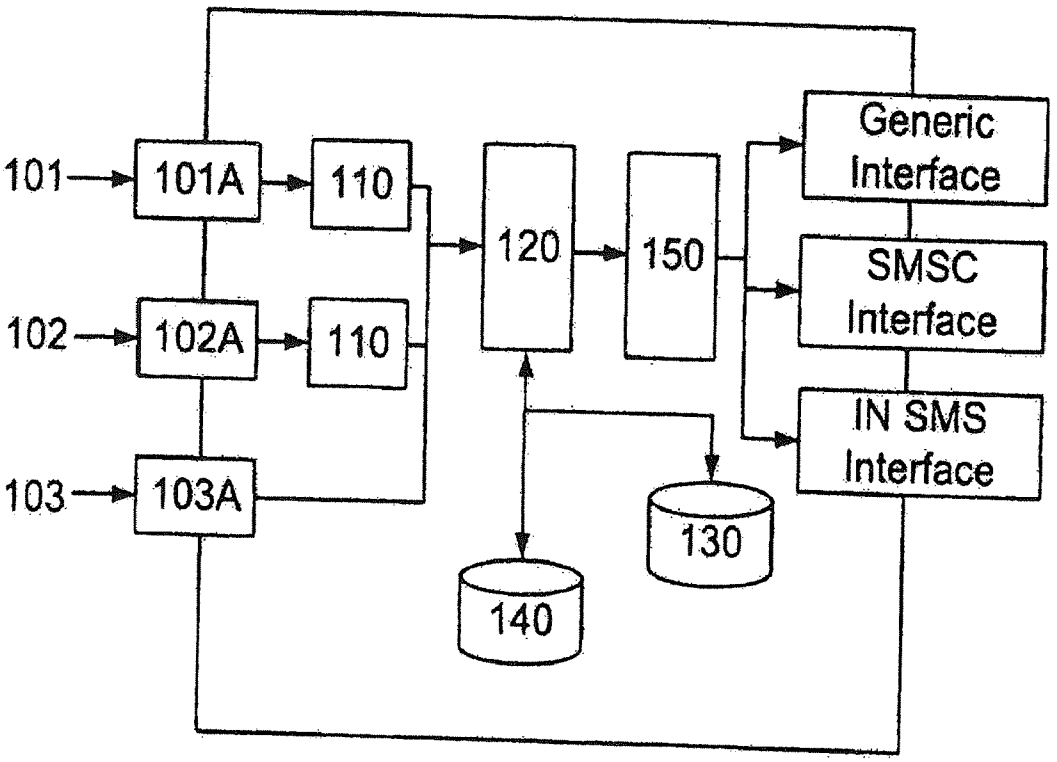
(57) **ABSTRACT**

A system and method are disclosed for providing a complete architectural and procedural solution to wireless subscriber loyalty issues. A flexible promotion creation environment allows mobile phone operators to rapidly create and deploy various incentive programs and other such loyalty schemes; together with a data mining and profiling method for tracking, monitoring and analysing subscriber (or aggregate) usage information associated with given promotions. The proposed data mining and profiling method purposely incents specific subscriber behaviors by triggering a point-based reward scheme based on the dynamic screening of event records which are correlated with incented behaviors. Wherein a threshold is assigned based on usage information for a particular promotion; upon realization of which, the subscriber is, immediately notified of the reward through a plurality of means including e-mail, voice notification and by way of Short Message Service (SMS) at their wireless handset.



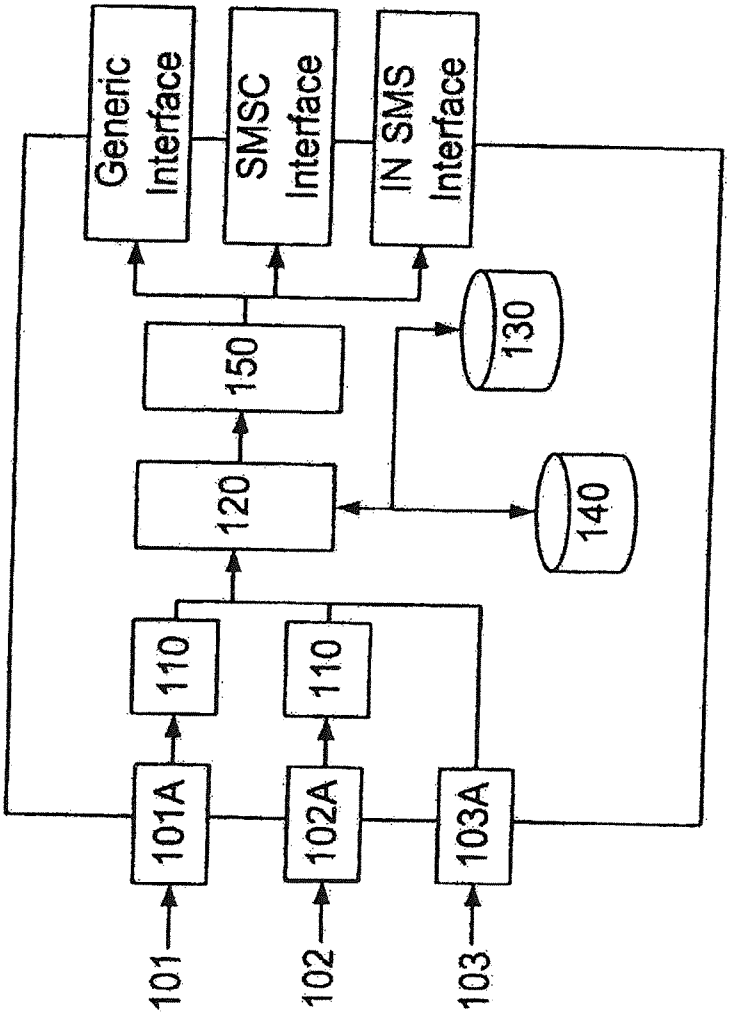

Generic Interface
SMSC Interface
IN SMS Interface
130
150
120
140
110
110
101A
102A
103A
101
102
103

FIG. 1

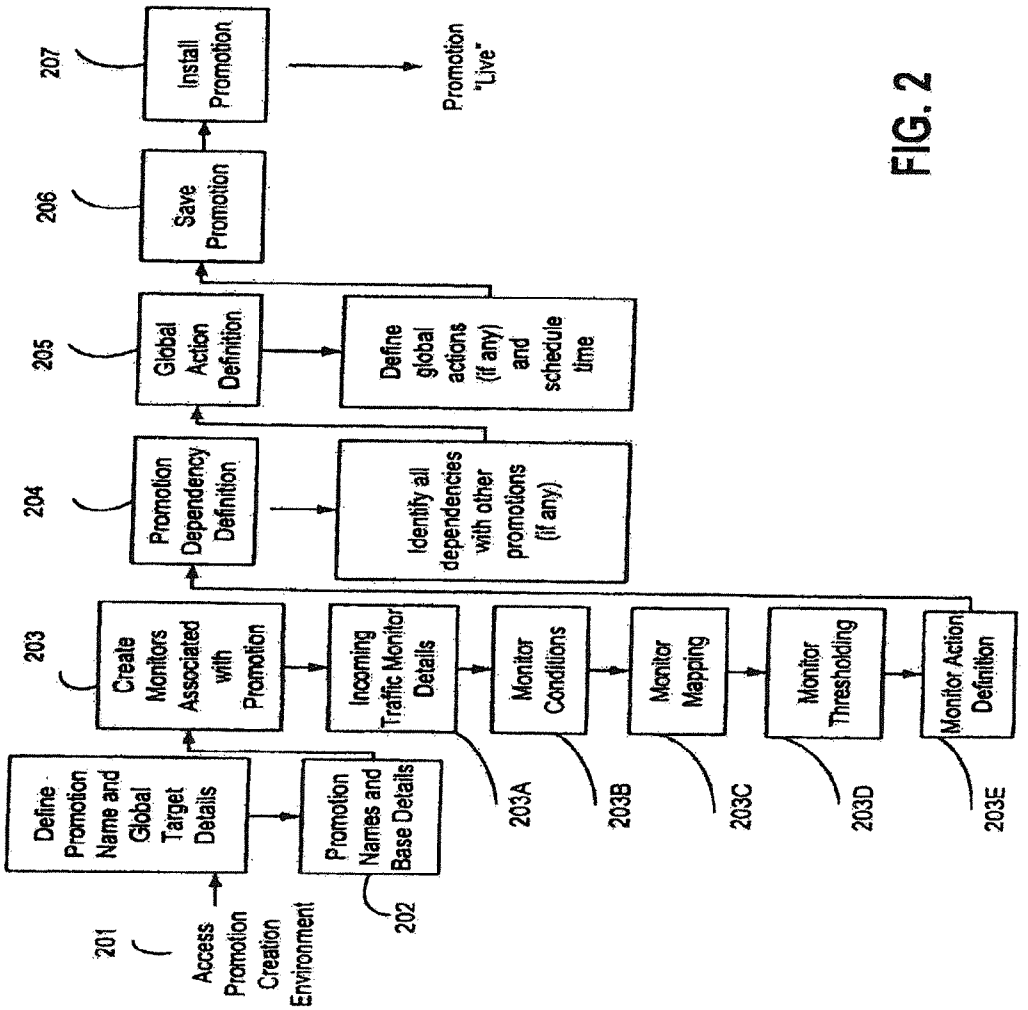

201
Access Promotion Creation Environment
Define Promotion Name and Global Target Details
202
Promotion Names and Base Details
203
Create Monitors Associated with Promotion
Incoming Traffic Monitor Details
203A
Monitor Conditions
203B
Monitor Mapping
203C
Monitor Thresholding
203D
Monitor Action Definition
203E
204
Promotion Dependency Definition
Identify all dependencies with other promotions (if any)
205
Global Action Definition
Define global actions (if any) and schedule time
206
Save Promotion
207
Install Promotion
Promotion "Live"

FIG. 2

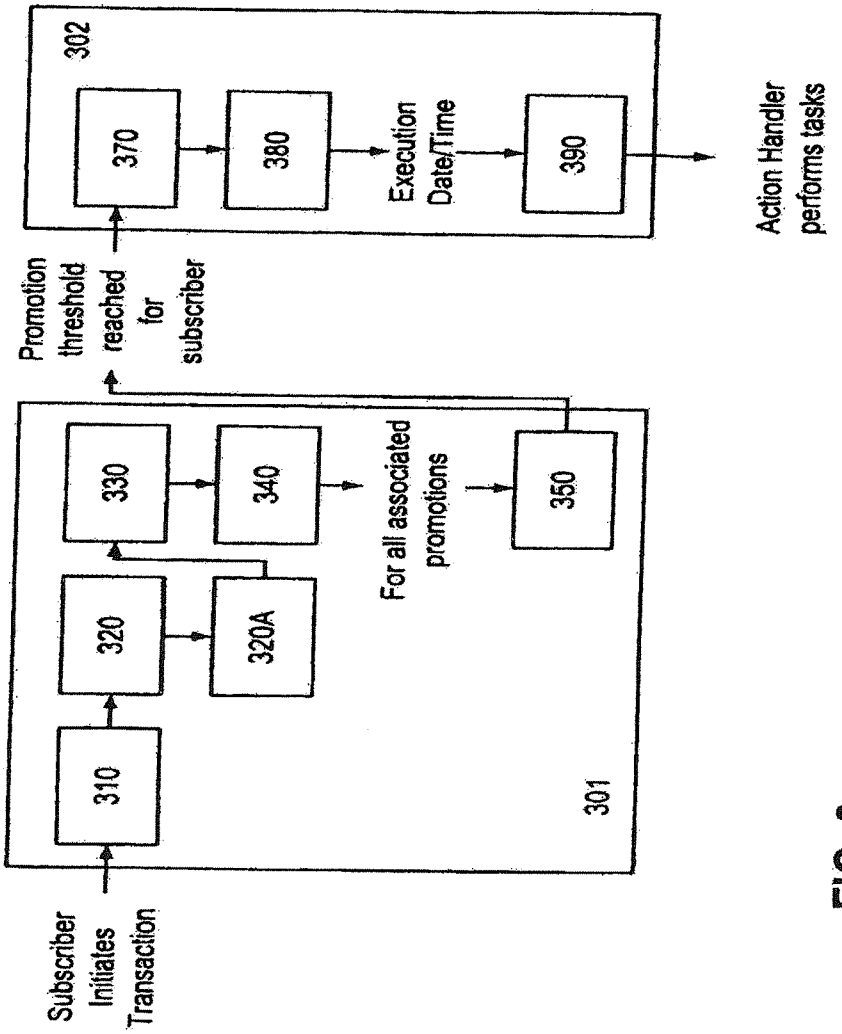

Subscriber Initiates Transaction
310
320
320A
330
340
For all associated promotions
350
301
Promotion threshold reached for subscriber
302
370
380
Execution Date/Time
390
Action Handler performs tasks

FIG. 3

WIRELESS SUBSCRIBER LOYALTY SYSTEM AND METHOD

[0001] This application is a continuation of U.S. application Ser. No. 12/782,122, filed May 18, 2010 (U.S. Pat. No. 8,346,599); which is a continuation of U.S. application Ser. No. 10/294,651, filed Nov. 15, 2002 (U.S. Pat. No. 7,747,461); the contents of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Description of the Prior Art

[0003] Securing new clientele while sustaining the approval and satisfaction of existing ones is perhaps a feature common to most, if not all business concerns. In seeking these ends most businesses implement various customer loyalty and reward programs, of which, frequent flyer miles would arguably be the most well-known. The telecommunications industry is no different. Mobile subscribers for instance are notorious for indiscriminately switching between mobile phone operators, with little regard as to brand or service loyalty. The latter must therefore learn to effectively manage and moderate such churn.

[0004] As loyalty, and related issues, remain crucial to the survival of telecommunications companies and service providers it seems unsurprising then that the prior art should disclose some existing inventions directed to such ends. For instance, U.S. Pat. No. 6,049,599 to McCausland, et al., entitled Churn Amelioration System and Method therefore, and U.S. Pat. No. 6,301,471 to Dahm et al., entitled Online Churn Reduction and Loyalty System, disclose art relevant solely to the prediction of churn. However, the subscriber data mining and profiling methods disclosed herein are for the most part not directed to the prediction of chum and remain materially unique. Indeed, it is an object of our present invention to disclose a complete system and architecture for the reduction of churn through the implementation of various loyalty schemes and promotions coupled with immediate subscriber notification of rewards thereof.

[0005] U.S. Pat. No. 6,052,447 to Golden et al., entitled Method and apparatus for aggregating customer information for a telecommunications system, discloses art directed towards applying discounts and/or promotions to calls which meet identified patterns or thresholds. Said patterns and the means used to identity and appraise them remain limited to call time, cost, number of calls, destination and/or geographic region. The art of our invention is not tied to any particular call variables, and indeed the value of the Promotion Creation Environment (PCE) remains in its bespoke and tailor-able nature. Additionally, our invention is directed to wireless subscriber loyalty issues and the benefits providing near real-time notification of rewards and other incented behaviour(s).

[0006] U.K. Patent No. 2,367,445 to Mayes et al., entitled Rewarding a Customer for Call Usage, presents a system for rewarding and penalising customers for call usage across a telecommunications network. However the art detailed therein does not intimate any special data mining and profiling method, nor a novel loyalty promotion creation environment, or for that matter, any immediate method for subscriber reward notification.

[0007] Similarly, U.S. Pat. No. 5,991,376 to Hennessy, et al., entitled Subscriber Reward Method, discloses a technique for providing an instantaneous reward to a communications subscriber. The method therein nevertheless remains particular to inter-exchange carriers, local service providers, and/or internet service providers.

REFERENCES CITED:			
U.S. Pat. No. 6,301,471	October 2001	Dahm et al.	455/405
U.S. Pat. No. 6,052,447	April 2000	Golden et al.	379/114.1
U.S. Pat. No. 6,049,599	April 2000	McCausland et al.	379/111
U.S. Pat. No. 5,991,376	November 1999	Hennessy et al.	379/114.1
Foreign Patent Document(s) 2367445	April 2002	GB.	

[0008] 2. Field of the Invention

[0009] The present invention relates generally to wireless communications and services; and more specifically, details a complete framework for the management and implementation of wireless subscriber loyalty programs and rewards.

SUMMARY OF THE INVENTION

[0010] Indeed, with the prior art particularly silent on the issue of wireless subscriber loyalty, the invention of present remains avant-garde in terms of its scope and application. Now, with typical loyalty-type promotions there usually requires something in the order of two to six months to develop and test the software and related technical architecture necessary for its implementation. However, it remains an aspect of the present invention to disclose a novel promotion creation environment which compresses the marketing-to-launch cycle well beyond the existing art (one day to a week at most). By means of graphical user interface (GUI), the mobile phone operator is presented with a system for autonomous promotion definition, which utilizes various trigger definitions, conditions and thresholds for the particular behaviour being incented.

[0011] Another aspect of the present invention discloses a data mining and profiling method which incents specific subscriber behaviours by triggering a point-based reward scheme based on the dynamic screening of event records which are correlated with incented behaviors. Specifically, the underlying algorithm gathers information via operational measurements and/or event detail records (EDRs) from various sources within the carrier's network and dynamically associates a point based reward if certain triggering criteria are met. The triggering criteria may be based on the number of events (weighted by importance) and chronologically delimited.

[0012] Furthermore, traditional subscriber profiling has traditionally been two dimensional in that a set of parameters was stored for each subscriber and used in single manner by one or more applications. A subscriber could have many different profiles but the profiles would be intended to only be used in one way. In addressing these deficiencies of the art, a new user profiling method is proposed in order to proactively define a multidimensional subscriber state which will include aspects such as the subscriber's service profile as a function of time, the subscriber's usage patterns, the user's preferences for the active acquisition of data (e.g. stock info, weather etc.) as a function of time, and the subscriber's preference's for the active dissemination of data (e.g. current location, ability to chat etc.) as a function of time.

[0013] For example, in the case of a carrier which wishes to incent the use of prepaid wireless services, the loyalty &

rewards algorithm may be set to allocate a 1DO-point reward on the basis of a $50 net recharge within a 30 day time window. The data mining and profiling engine would acquire and maintain a history of recharge activities for a specified grouping (e.g. all) of its subscribers. In particular, the value and date of each recharge over a suitable chronological window would be retained for each subscriber and utilized to determine if the specified trigger criteria has been met. Note that multiple recharge/usage activities may meet the trigger requirements (e.g. 5.times.$10 or 1.times.$50 recharge activities within 30 days). Where the trigger criteria are satisfied, a trigger notification is provided to the loyalty application which correlates the trigger event with a pre-defined point allocation.

[0014] In alternate embodiments, multiple trigger criteria could be established over a given event (chronological) window in that the same underlying event records may lead to several trigger criteria being met. In still further embodiments, the loyalty application may be implemented with a multiplicity of means for dealing with concurrent trigger events. The data mining and profiling method may for instance, (i) aggregate the points associated with each trigger over a given event window; (ii) allocate the points in a sequential (chronological) manner (a given trigger event would reset the applicable chronological window for subsequent trigger events to a point which begins after the event which initiated the earlier trigger); or (iii) select the trigger event with the minimum or maximum point value at the carrier's discretion.

[0015] Given then the present embodiment, upon creation of a promotion, one or more monitors would be applied to a subscriber's account, one or more triggers would be set for certain promotion criteria (date, balance of account) and one or more actions would be associated with each trigger. Where specified criteria are met, the monitors would be triggered and the corresponding actions would take place. An action can, non-exhaustively, range from an increment in a subscriber's account, modification of a subscriber's prepaid service rate plan or a Short Message Service (SMS) notification to the subscriber.

[0016] According to yet another aspect of the present invention, subscribers are immediately notified of their promotional reward through a plurality of systems, including e-mail, voice notification and by way of Short Message Service (SMS) at their wireless handset. Considering that existing promotional applications generate reports on a nightly, weekly or even monthly basis; it must be questioned whether the resulting output is meaningful in the least considering the time delay between the subscriber activity and the actual delivery of the reward notification to the subscriber.

[0017] Indeed, it may take up to a month to deliver the reward based on a recharge that happened 30 days ago. That is, the efficacy of existing loyalty applications are diminished as the subscriber does not correlate the receipt of the reward with the underlying incented behavior.

[0018] These features and other such advantages of the present invention shall become readily apparent from the following description and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] FIG. **1** illustrates a typical, non-limiting embodiment of the system level architecture employed in the disclosure of present;

[0020] FIG. **2** represents an illustrative block diagram of the Promotion Creation Environment (PCE) detailing the flexible graphical user interface (GUI) for the rapid creation of promotions;

[0021] FIG. **3** is an illustrative block diagram detailing the improved data mining and profiling methods for loyalty and related reward schemes, in tandem with the threshold realization facets and event/promotion notification aspects of the present art.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0022] With reference to FIG. **1**, subscriber and operator-initiated transactions generate transaction records and/or real-time notifications of the event in question; be they EDR streams **101**, ASP reports **102** and/or Provisioning requests **103**.

[0023] At the corresponding interface, SCP OAM interface **101**A, New Subscriber Provisioning interface (ASP) **102**A, or Promotion Provisioning interface **103**A, the Wireless Subscriber Loyalty System poller and translator **110** interfaces poll records from transaction record source locations and transforms said data into the Wireless Subscriber Loyalty System-standard data encoding format.

[0024] The Wireless Subscriber Loyalty System-standard encoded data is then processed by the Promotion Engine (PE) **120** in an attempt to identify if any said promotions are in fact associated with the subscriber in question **140** (usually based upon, in the preferred embodiment, said subscriber's Identifier(s) which may include the subscriber's Mobile Station Integrated Services Digital Network Number (MSISDN) or Mobile Directory Number (MDN) or Network Address Identifier (NAI), to retrieve the promotion details **130**. Those skilled in the art shall recognize that a variety of addressing schemes may be utilized as a form of subscription identification without diluting the intent and scope of the present invention.

[0025] For transactions which are associated with a promotion and satisfy all promotion conditions (e.g. called address not equal to *611), the subscriber profile **140** is updated based on the promotion profile **130** as defined in the Promotion Creation Environment (detailed further in FIG. **2**).

[0026] In the event that a subscriber profile **140** update causes a promotion monitor threshold to be breached (detailed further in FIG. **3**), the actions associated with the monitor are queued in the action queue handler with the corresponding action execution date (e.g. immediate, absolute date, relative date) **150**. Upon action execution date, the action queue **150** forwards the action data to the appropriate action handler.

[0027] FIG. **2** now, for the sake of simplicity, details in a word diagram the process flows concerned in the creation of promotions by means of a graphical user interface (GUI). At **201** the administrator in question logs into the representative Promotion Creation Environment (PCE) and defines the promotion name and relevant base details **202** (e.g. private versus promotion designation).

[0028] The procedural flow at **203** concerns the definition of various promotion monitors. Said monitors may include, incoming traffic characteristics **203**A (e.g. event record type), conditions that must be satisfied for this monitor **203**B (e.g. called address=*611), actions to perform upon condition satisfaction **203**C (e.g. increment minutes used counter), threshold values set for actions to be triggered **203**D (e.g. minutes

used equal **1000**), and/or actions performed (and execution time) upon threshold triggering **203**E (e.g. send SMS). The monitors, **203**A, **203**B **203**C, **203**D and **203**E remain representative and non-limiting in their scope.

[0029] At **204**, the promotional dependencies (if any) are defined to indicate any promotions co-existence restrictions. At **205**, global actions (if any) are defined and their requisite scheduled execution time (s). The promotion is then saved **206**, stored in the promotion database (**130** in FIG. **1**); and subsequently installed **207**. Said promotion is now "live."

[0030] Now in reference to FIG. **3** which details the subscriber profiling **310** and reward mechanisms **302** for the disclosed Wireless Subscriber Loyalty System and Method. Indeed, whenever said subscriber initiates a transaction an event record/trigger is generated **310** which is subsequently polled by the wireless subscriber loyalty system interface **320** and transformed into the Wireless Subscriber Loyalty System-standard data encoding format **320**A.

[0031] The Wireless Subscriber Loyalty promotion engine then processes the data of **320**A at **330**; the subscriber profile is queried to retrieve all applicable promotions **340**. The said subscriber profile is then updated based on the promotion mapping fields (detailed in FIG. **2**) **350**.

[0032] Upon promotion threshold realization, the reward mechanism of the present art is invoked **302**. Upon invoking a promotion action **370**, said action(s) are inserted into the action queue with the execution time (in the preferred embodiment) **380**. The action(s) are popped from the former action queue and sent to the action handler **390**, for delivery/routing as appropriate.

I claim:

1. Apparatus for creating and implementing a subscriber promotional reward scheme, the apparatus comprising:

a computer including a computer-based promotion engine configured to receive data from a computer-based interface connectable with said computer-based promotion engine, said computer-based interface configured to receive said data representing events relative to a subscriber;

said computer-based promotion engine further configured to transmit requests to a computer-based subscriber profile database connectable with said computer-based promotion engine, said computer-based subscriber profile database configured to maintain a subscriber profile relative to said subscriber, said requests being requests for subscriber profile data stored in said subscriber profile based on a subscriber identifier;

said computer-based promotion engine further configured to receive responses to said requests;

said computer-based promotion engine further configured to transmit further requests to a computer-based promotion profile database connectable with said computer-based promotion engine, said computer-based promotion profile database configured to maintain configurable promotion monitors;

said further requests being requests for promotion monitors corresponding to said events and based on said subscriber identifier and said events;

said computer-based promotion engine further configured to receive responses to said further requests;

said computer-based promotion engine further configured to update said subscriber profile data based on said promotion monitors and said subscriber profile data; and

said computer-based promotion engine being further configured to determine if a promotion monitor threshold has been reached for said subscriber and to forward instructions to an action queue handler connectable to said computer-based promotion engine for a reward mechanism in fulfillment of a promotion, wherein said promotion monitors are based on one or more of: time usage by said subscriber; usage patterns of said subscriber; user preferences for acquisition of active data as a function of time; and the subscriber's preferences for the active dissemination of data as a function of time.

2. The apparatus of claim **1**, said computer-based promotion engine being configured to receive standardized data from said computer-based interface, said computer-based interface configured to receive said data representing events relative to said subscriber and to transform said data into said standardized data.

3. The apparatus of claim **1**, wherein said promotional reward scheme is a subscriber loyalty program.

4. The apparatus of claim **1**, wherein said data representing events comprises event detail record (EDR) streams.

5. The apparatus of claim **4**, wherein said computer-based interface is a Service Control Point ("SCP") Operations Administration Maintenance ("DAM") interface.

6. The apparatus of claim **1**, wherein said data representing events comprises a provisioning request.

7. The apparatus of claim **6**, wherein said interface is a promotion provisioning interface.

8. The apparatus of claim **1**, wherein said active data is based on stock information or weather information.

9. The apparatus of claim **1**, wherein said subscriber's preferences for the active dissemination of data is based on current location of said subscriber and an ability of said subscriber to utilize chat services.

10. The apparatus of claim **1**, said computer-based promotion engine being further configured to receive commands for creating, modifying, deleting, and/or updating said promotion monitors from a computer-based graphical user interface connectable with said computer-based promotion engine.

11. A method for creating and implementing a subscriber promotional reward scheme at a computer-based promotion engine, the method comprising:

providing a computer programmed to receive data from a computer-based interface, said computer-based interface configured to receive said data representing events relative to a subscriber;

transmitting requests to a computer-based subscriber profile database, said computer-based subscriber profile database configured to maintain a subscriber profile relative to said subscriber, said requests being requests for subscriber profile data stored in said subscriber profile based on a subscriber identifier;

receiving responses to said requests from said computer-based subscriber profile database;

transmitting further requests to a computer-based promotion profile database, said computer-based promotion profile database configured to maintain configurable promotion monitors, said further requests being requests for promotion monitors corresponding to said events and based on said subscriber identifier and said events;

receiving responses to said further requests from said computer-based promotion profile database;

updating said subscriber profile data based on said promotion monitors and said subscriber profile data; and

determining if a promotion monitor threshold has been reached for said subscriber; and, forwarding instructions to an action queue handler for a reward mechanism in fulfillment of a promotion, wherein said promotion monitors are based on one or more of: time usage by said subscriber; usage patterns of said subscriber; user preferences for acquisition of active data as a function of time;

and the subscriber's preferences for the active dissemination of data as a function of time.

12. The method of claim **11**, wherein said promotional reward scheme is a subscriber loyalty program.

13. The method of claim **11**, wherein said data representing events comprises event detail record (EDR) streams.

14. The method of claim **13**, wherein said computer-based interface is a Service Control Point ("SCP") Operations Administration Maintenance ("DAM") interface.

15. The method of claim **11**, wherein said data representing events comprises a provisioning request.

16. The method of claim **15**, wherein said interface is a promotion provisioning interface.

17. The method of claim **11**, wherein said active data is based on stock information or weather information.

18. The method of claim **11**, wherein said subscriber's preferences for the active dissemination of data is based on current location of said subscriber and an ability of said subscriber to utilize chat services.

19. The method of claim **11**, further comprising: receiving commands for creating, modifying, deleting, and/or updating said promotion monitors from a computer-based graphical user interface.

20. The method of claim **11**, wherein receiving data from said computer-based interface comprises receiving standardized data from said computer-based interface, said computer-based interface configured to receive said data representing events relative to said subscriber and to transform said data into said standardized data.

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