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(54) **CUSTOMIZABLE MOBILE MESSAGE SERVICES**

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(51) **Int. Cl.**

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H04W 4/14	(2009.01)
H04L 29/08	(2006.01)
H04L 29/06	(2006.01)
H04W 4/12	(2009.01)

(52) **U.S. Cl.**

CPC ***H04W 12/06*** (2013.01); ***H04L 67/04*** (2013.01); ***H04L 67/16*** (2013.01); *H04L 63/083* (2013.01); *H04L 63/0823* (2013.01); *H04L 63/0861* (2013.01); *H04W 4/12* (2013.01)

(58) **Field of Classification Search**

CPC H04L 63/0823; H04L 63/083; H04L 63/0861

USPC 455/466, 411; 379/142.05; 725/40

See application file for complete search history.

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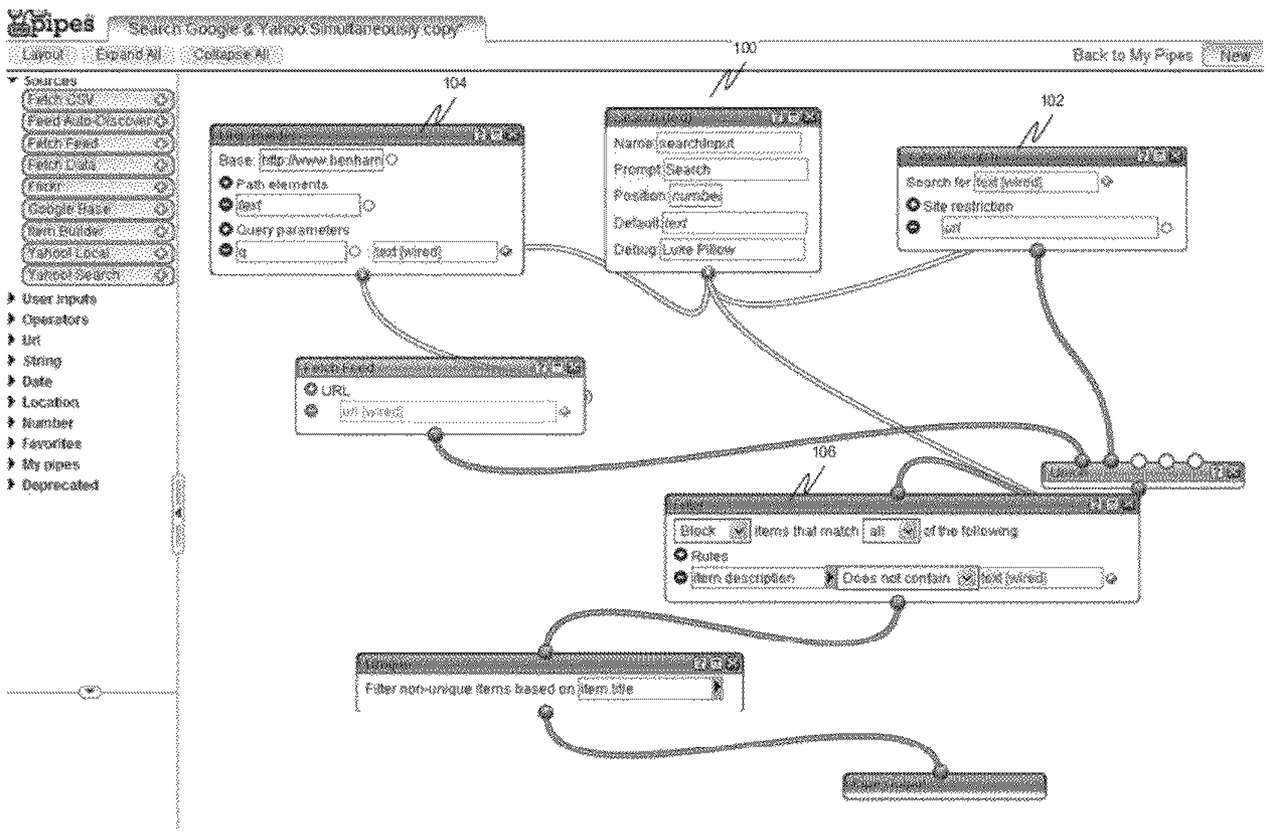
(74) *Attorney, Agent, or Firm* — Weaver Austin Villeneuve & Sampson LLP

(57) **ABSTRACT**

In one embodiment, a method includes: receiving, at a mobile device, a first service command and a second service command; sending the first service command from the mobile device to a server; sending the second service command from the mobile device to a server; receiving, at the mobile device, first service results corresponding to the first service command; receiving, at the mobile device, second service results corresponding to the second service command; combining the first service results with the second service results; and displaying the combined service results on the mobile device.

20 Claims, 6 Drawing Sheets



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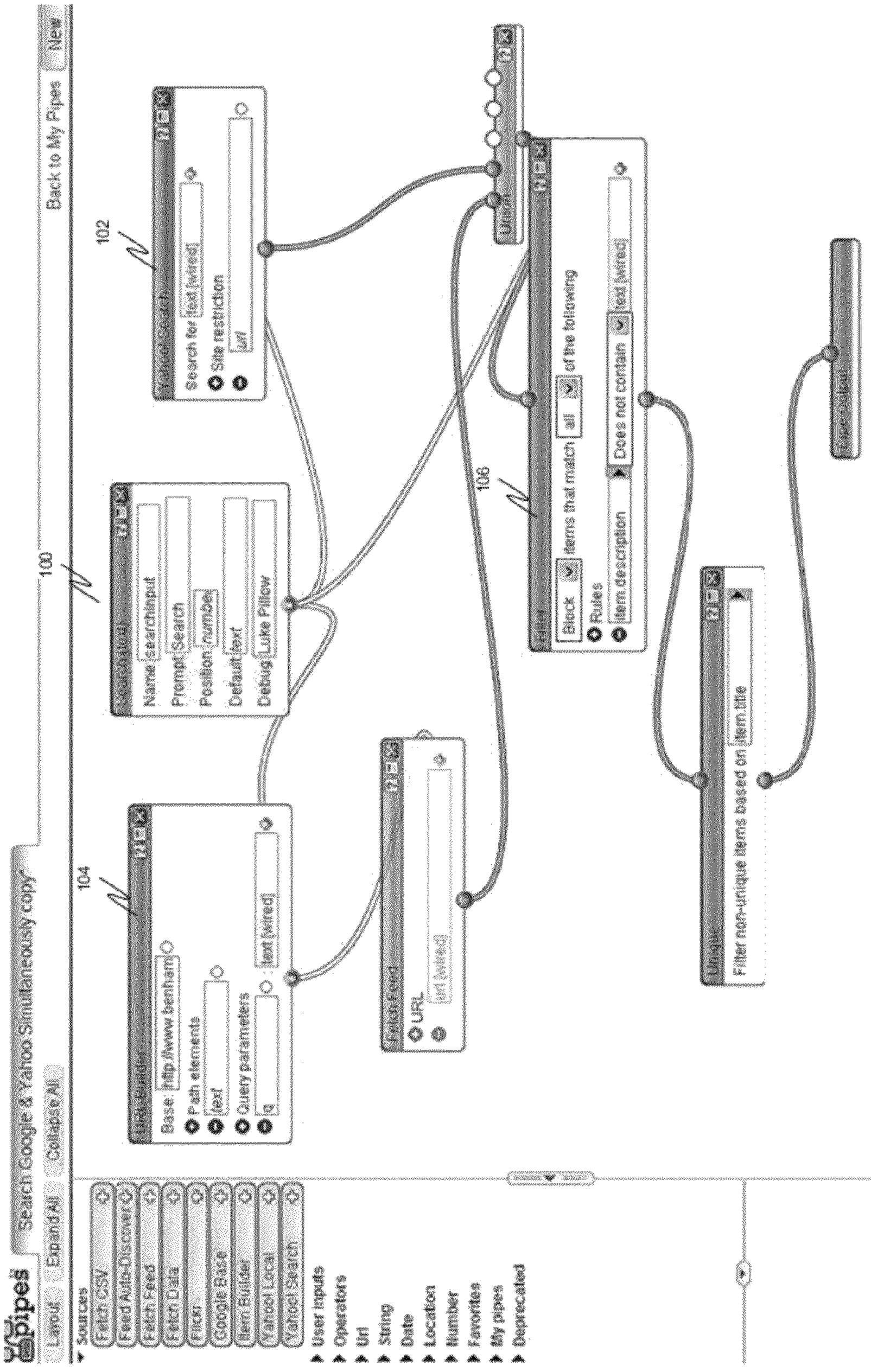
Back to My Pipes
New
Search Google & Yahoo Simultaneously copy*
Layout
Expand All
Collapse All
100
102
104
106
Yahoo! Search
Search for
text [wired]
Site restriction
url
Union
Filter
Block
items that match
all
of the following
Rules
item.description
does not contain
text [wired]
Unique
Filter non-unique items based on
item.title
Search Input
Name searchinput
Prompt Search
Position number
Default text
Debug Luke Pillow
URL Builder
Base http://www.benham
Path elements
text
Query parameters
q
Fetch Feed
URL
url [wired]
Sources
Fetch CSV
Feed Auto-Discover
Fetch Feed
Fetch Data
Flickr
Google Base
Item Builder
Yahoo! Local
Yahoo! Search
User inputs
Operators
Url
String
Date
Location
Number
Favorites
My pipes
Deprecated

FIG. 1

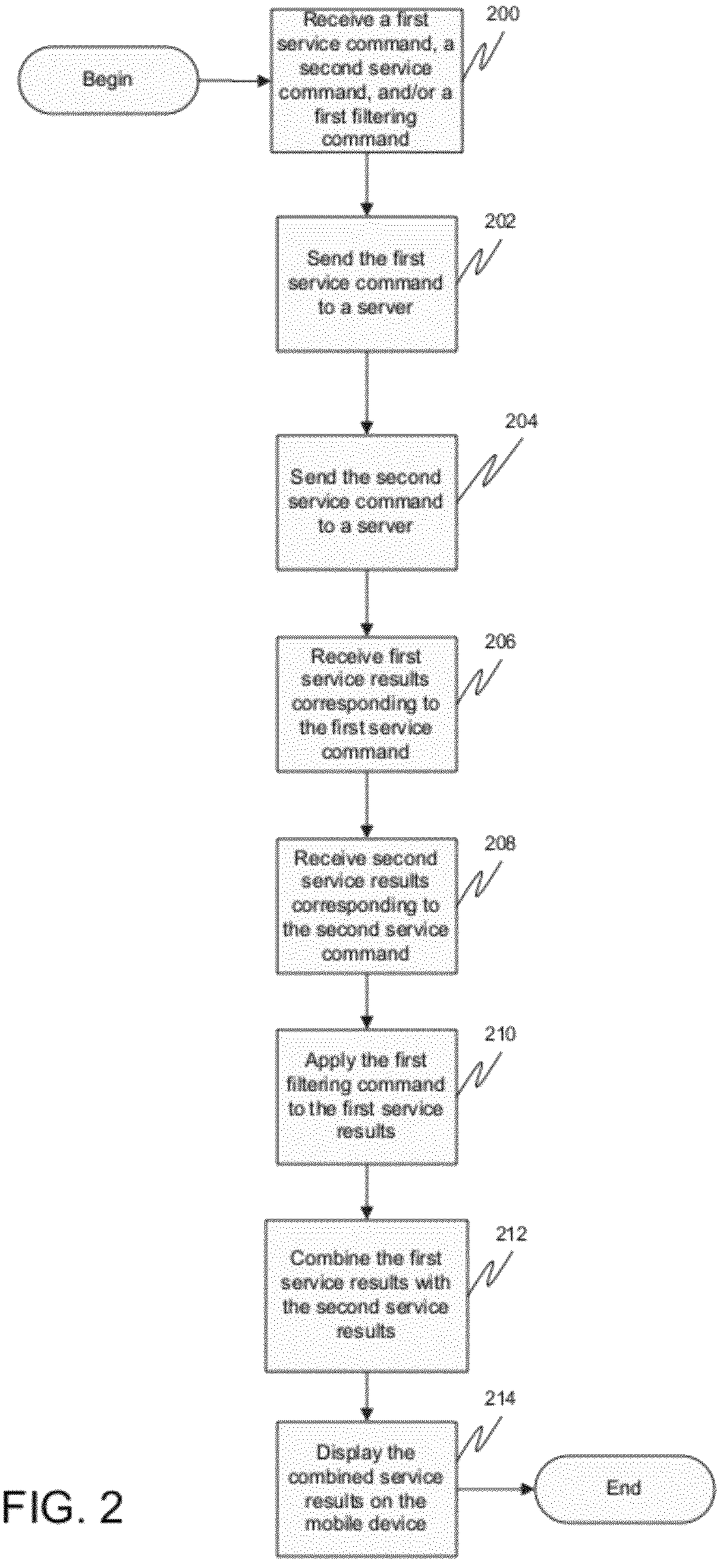
Begin
Receive a first service command, a second service command, and/or a first filtering command
200
Send the first service command to a server
202
Send the second service command to a server
204
Receive first service results corresponding to the first service command
206
Receive second service results corresponding to the second service command
208
Apply the first filtering command to the first service results
210
Combine the first service results with the second service results
212
Display the combined service results on the mobile device
214
End

FIG. 2

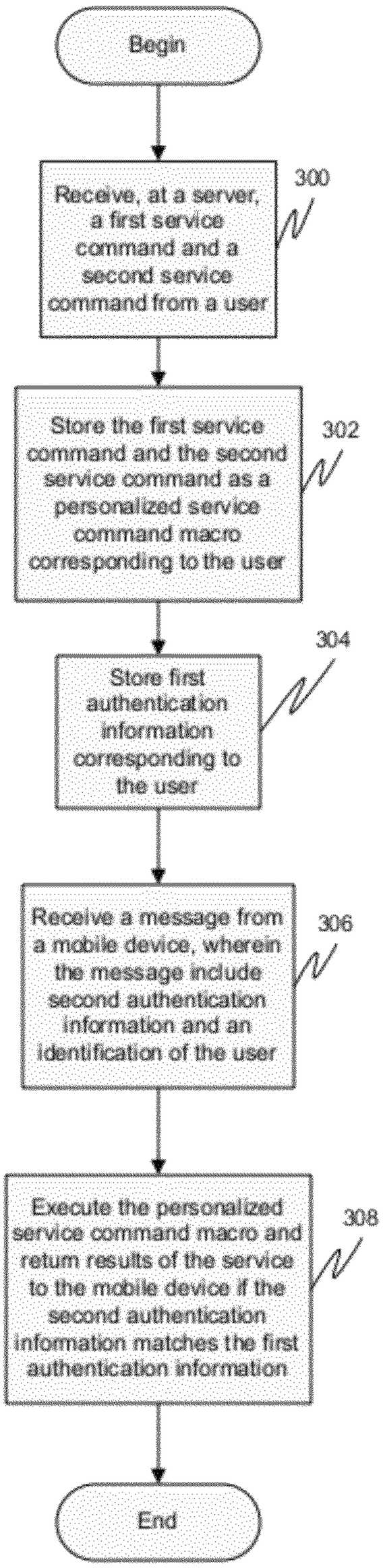
Begin
Receive, at a server, a first service command and a second service command from a user
300
Store the first service command and the second service command as a personalized service command macro corresponding to the user
302
Store first authentication information corresponding to the user
304
Receive a message from a mobile device, wherein the message include second authentication information and an identification of the user
306
Execute the personalized service command macro and return results of the service to the mobile device if the second authentication information matches the first authentication information
308
End

FIG. 3

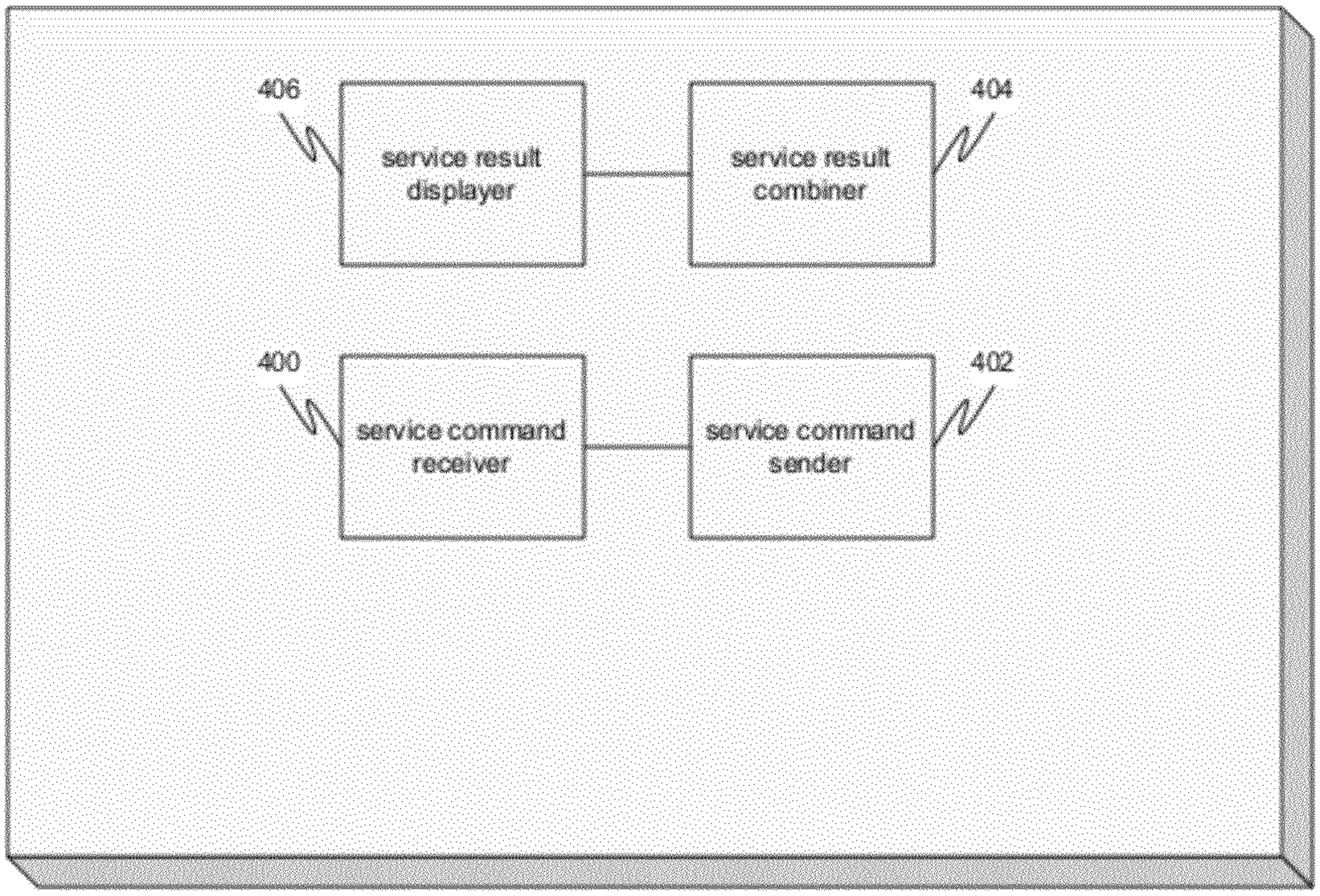
406
service result displayer
404
service result combiner
400
service command receiver
402
service command sender

FIG. 4

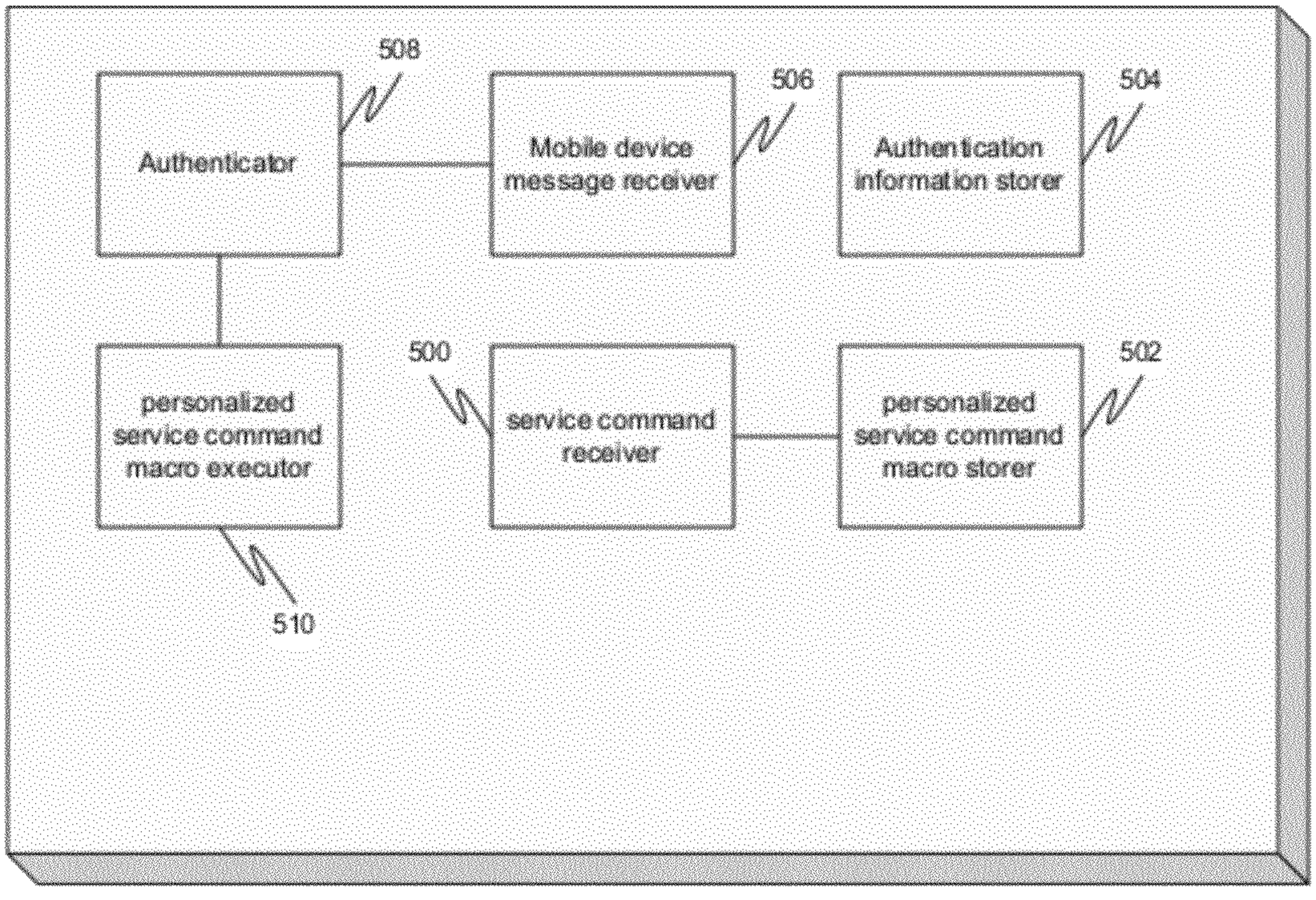
508
Authenticator
506
Mobile device message receiver
504
Authentication information storer
500
service command receiver
502
personalized service command macro storer
personalized service command macro executor
510

FIG. 5

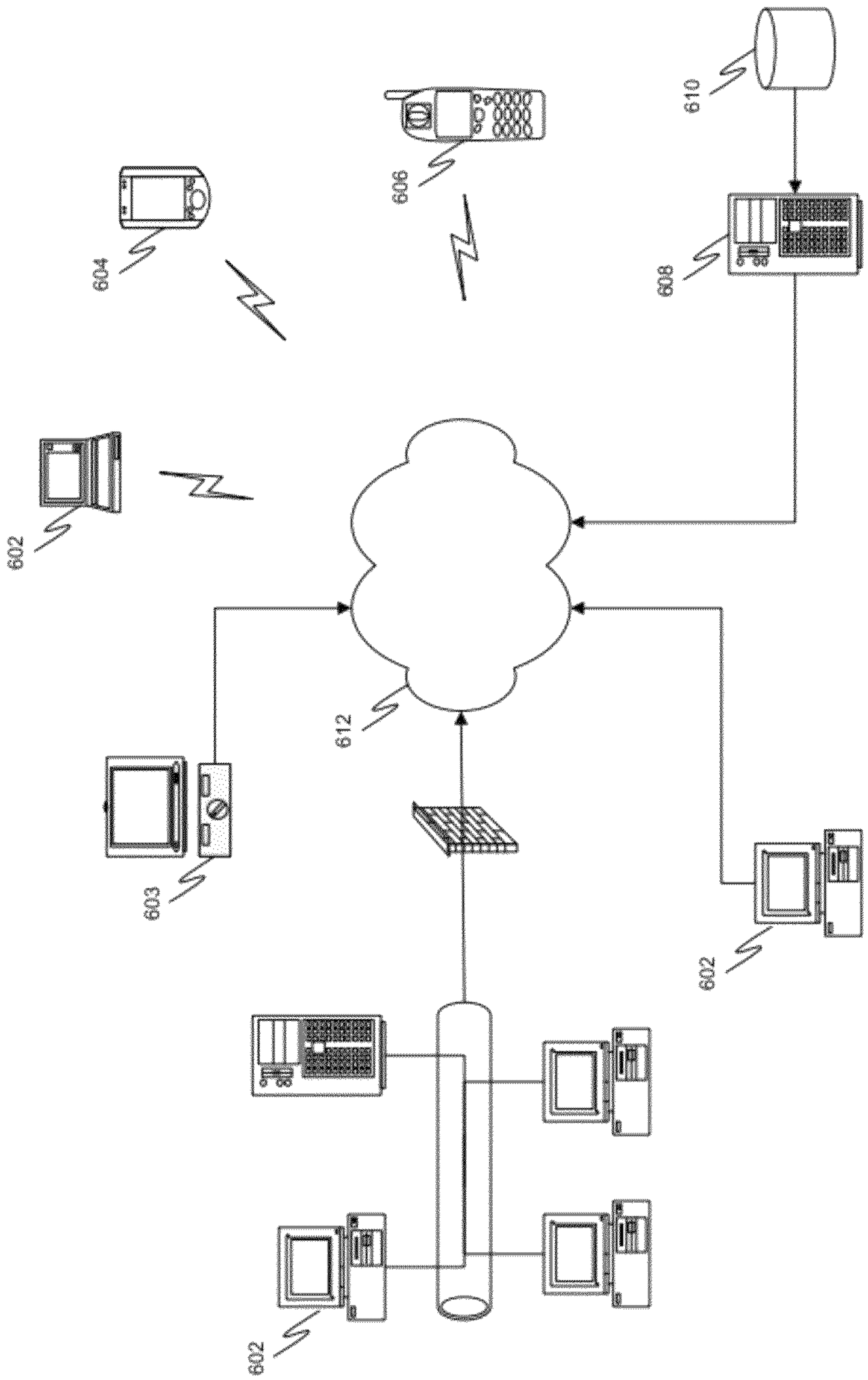

FIG. 6

CUSTOMIZABLE MOBILE MESSAGE SERVICES

RELATED APPLICATIONS

This application is a continuation application and claims priority from U.S. patent application Ser. No. 11/847,899, entitled "Customizable Mobile Message Services," by Ting et al, filed on Aug. 30, 2007, which is incorporated herein by reference for all purposes.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to mobile message services. More particularly, the present invention relates to customizable mobile message services.

2. Description of the Related Art

Mobile messaging protocols, such as Short Message Service (SMS) are utilized to allow mobile devices, such a personal data assistants (PDAs) and cell phones, to send text-based messages to one another. Various server-based services have also been introduced that allow users to send text messages to the service and receive responses with relevant information. For example, a user can type an SMS message saying "s restaurants" and send it to a service provider. A list of restaurants in the user's area may then be returned via an SMS message.

SUMMARY OF THE INVENTION

In one embodiment, a method includes: receiving, at a mobile device, a first service command and a second service command; sending the first service command from the mobile device to a server; sending the second service command from the mobile device to a server; receiving, at the mobile device, first service results corresponding to the first service command; receiving, at the mobile device, second service results corresponding to the second service command; combining the first service results with the second service results; and displaying the combined service results on the mobile device.

In another embodiment, an apparatus includes: a service command receiver; a personalized service command macro storer coupled to the service command receiver and to a memory; an authentication information storer coupled to the memory; a mobile device message receiver; an authenticator coupled to the mobile device message receiver and to the memory; and a personalized service command macro executor coupled to the authenticator and to the memory.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a screen shot illustrating an example of a server side implementation in accordance with an embodiment of the present invention.

FIG. **2** is a flow diagram illustrating a method for executing client-side macros in accordance with an embodiment of the present invention.

FIG. **3** is a flow diagram illustrating a method for executing server-side macros in accordance with another embodiment of the present invention.

FIG. **4** is a block diagram illustrating an apparatus in accordance with an embodiment of the present invention.

FIG. **5** is a block diagram illustrating an apparatus in accordance with an embodiment of the present invention.

FIG. **6** is an example network diagram illustrating some of the platforms that may be employed with various embodiments of the invention.

DETAILED DESCRIPTION OF SPECIFIC EMBODIMENTS

Reference will now be made in detail to specific embodiments of the invention including the best modes contemplated by the inventors for carrying out the invention. Examples of these specific embodiments are illustrated in the accompanying drawings. While the invention is described in conjunction with these specific embodiments, it will be understood that it is not intended to limit the invention to the described embodiments. On the contrary, it is intended to cover alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims. In the following description, specific details are set forth in order to provide a thorough understanding of the present invention. The present invention may be practiced without some or all of these specific details. In addition, well known features may not have been described in detail to avoid unnecessarily obscuring the invention.

In accordance with the present invention, the components, process steps, and/or data structures may be implemented using various types of operating systems, computing platforms, computer programs, and/or general purpose machines. In addition, those of ordinary skill in the art will recognize that devices of a less general purpose nature, such as hard-wired devices, field programmable gate arrays (FPGAs), application specific integrated circuits (ASICs), or the like, may also be used without departing from the scope and spirit of the inventive concepts disclosed herein.

According to various embodiments of the present invention, users are provided with the ability to create personalized "macros" or programs to execute a customized set or sequence of services. This allows users to set their own programs to perform the common tasks that are of primary importance to the user, as opposed to relying on a service provider to create programs that are only important to a large number of users.

The present invention may be implemented in at least two different ways. In one embodiment, client-side macros are enabled. Here, the service provider may provide a common set of functions that can be performed independently or can be performed in sequence where the results of one operation can be applied to a subsequent operation. Thus, rather than a user being able to only search on restaurants, the user may combine multiple queries into one operation and type, for example, "s japanese restaurant, san jose, ca|d|top 10". In this example, the service provider would then search for Japanese restaurants in San Jose and get directions (|d) for each of the restaurants, returning only the top 10 results. In another example, a user may type "s flight 90 american airline arrival time|c est|cal" and get the arrival time for a flight converted to eastern time. In another example, a user may type "s Dr. Smith, Cupertino, A|a contact" and search for information on Dr. Smith and add the listing to contacts.

In one embodiment, there are built-in filtering, aggregation, and sorting commands such as "Top 5" and "grep." Furthermore, in one embodiment, the provided macro language may be a derivative of an existing scripting language such as Perl, Javascript, Unix shell scripting, etc.

In another embodiment, server-side macros are enabled. Here, the service provider may provide an interface, such as a website, which the user may use to define macros. These macros are linked to the particular user, thus when a mobile

message is received from the user, the macros linked for that user may be used. In this embodiment, security may be provided to keep other users from accessing the user's macros. This is especially important if, for example, the user defines macros that access sensitive information, such as bank account records or medical files.

Security may be provided using some sort of identification in the mobile message as well as a password or other authentication scheme. For example, a user name and password may be embedded into the mobile message. Alternatively, digital certificates or biometrics (such as fingerprint scans) can be used.

In various embodiments, a number of commands may be applied to result sets, including, but not limited to:

Regular Expression
Sort
Truncate
Union
Intersection
Unique
Group By
If/then/else
Loops (while/for/do-while)
String operations such as
  substring
  translate (to different languages)
  replace
  concatenate
  encrypt
  encode
  reverse
Mathematical functions such as
  avg,
  count
  max
  sum
  ceiling
  floor
  base n conversion
  standard deviation
  sqrt
  median
  variance

Various phone specific functions may also be executed, such as

  getGPSLocation
  getCurrentTime
  getCurrentTimeZone

Other example services include:

find lowest price for item
query yahoo answers
translate languages
get nearest store/restaurant
get sports score updates
get financial information
stock quotes
analyst opinions
stock PE/Earnings or other information
exchange information
convert between currency, units (pint→liters, lbs→kilos)
travel information
hotjobs (job listings/search)
get information on music (artist/lyrics)
bid on auctions/price watch on auction

FIG. **1** is a screen capture illustrating an example of a server-side implementation in accordance with an embodiment of the present invention. A search **100** is performed through two different search services **102**, **104**, and the results are passed through a filter **106**. In this example, the macro is created using a graphical user interface that allows the various commands and services to be linked using graphical "pipes."

FIG. **2** is a flow diagram illustrating a method for executing client-side macros in accordance with an embodiment of the present invention. Each of the steps illustrated in FIG. **2** may be performed by a mobile device or by software/hardware associated with a mobile device. At **200**, a first service command, a second service command, and/or a first filtering command are received at a mobile device. At **202**, the first service command is sent to a server. At **204**, the second service command is sent to a server. This may or may not be the same server that the first service command was sent to in step **202**. Specifically, an embodiment is envisioned wherein service commands are sent to different service providers and the results from the disparate service providers are combined. At **206**, first service results corresponding to the first service command are received. At **208**, second service results corresponding to the second service command are received. At **210**, the first filtering command may be applied to the first service results. At **212**, the first service results are combined with the second service results. At **214**, the combined service results are displayed on the mobile device. It should be noted that the order in which these steps are presented in FIG. **2** does not necessarily reflect the order that the steps are executed. For example, embodiments are envisioned wherein step **206** is performed before step **204**.

FIG. **3** is a flow diagram illustrating a method for executing server-side macros in accordance with another embodiment of the present invention. At **300**, a first service command and a second service command are received, at a server, from a user. This may be received from the user via a mobile device. At **302**, the first service command and the second service command are stored as a personalized service command macro corresponding to the user. At **304**, first authentication information corresponding to the user is stored. At **306**, a message, such as an SMS message, is received from a mobile device, wherein the message includes second authentication information and an identification of the user. At **308**, the personalized service command macro is executed and results of the service are returned to the mobile device if the second authentication information matches the first authentication information.

FIG. **4** is a block diagram illustrating an apparatus in accordance with an embodiment of the present invention. This apparatus may be included as software or hardware on a mobile device that also includes a display and a processor. A service command receiver **400** may perform steps **200** and **202** of FIG. **2**. A service command sender **402** coupled to the service command receiver **400** may perform steps **204** and **206** of FIG. **2**. A service result combiner **404** may perform step **212** of FIG. **2**. A service result displayer **406** coupled to the service result combiner **404** may perform step **214** of FIG. **2**.

FIG. **5** is a block diagram illustrating an apparatus in accordance with an embodiment of the present invention. This apparatus may be included as software or hardware on a server that also includes a processor. A service command receiver **500** may perform step **300** of FIG. **3**. A personalized service command macro storer **502** coupled to the service command receiver **500** and to a memory (not pictured as it may or may not be part of the apparatus) may perform step **302** of FIG. **3**. The memory may be, for example, a database. An authentication information storer **504** coupled to the memory may perform step **304** of FIG. **3**. A mobile device message receiver **506** may perform step **306** of FIG. **3**. An

authenticator **508** coupled to the mobile device message receiver **506** and to the memory may perform the authentication aspects of step **308** of FIG. **3**. A personalized service command macro executor **510** coupled to the authenticator **508** and to the memory may perform service execution and results returning of step **310** of FIG. **3**.

It should also be noted that embodiments of the present invention may be implemented on any computing platform and in any network topology in which presentation of service results is a useful functionality. For example and as illustrated in FIG. **6**, implementations are contemplated in which the invention is implemented in a network containing personal computers **602**, media computing platforms **603** (e.g., cable and satellite set top boxes with navigation and recording capabilities (e.g., Tivo)), handheld computing devices (e.g., PDAs) **604**, cell phones **606**, or any other type of portable communication platform. Users of these devices may navigate the network. A user may utilize a mobile device such as **604** and **606** to perform client-side macros and/or to request that a server run server-side macros. Server **608** (or any of a variety of computing platforms) may include a memory, a processor, and a communications component and may then utilize the various techniques described above. The processor of the server **608** may be configured to run, for example, all of the processes described in FIG. **3**. Server **608** may be coupled to a database **610**, which stores information relating to the personalized service command macros and/or the users. Applications may be resident on such devices, e.g., as part of a browser or other application, or be served up from a remote site, e.g., in a Web page (also represented by server **608** and database **610**). The user may utilize computing platforms **602** or **603**, for example, to set up the personalized service command macros and input the authentication information. The invention may also be practiced in a wide variety of network environments (represented by network **612**), e.g., TCP/IP-based networks, telecommunications networks, wireless networks, etc. The invention may also be tangibly embodied in one or more program storage devices as a series of instructions readable by a computer (i.e., in a computer readable medium).

While the invention has been particularly shown and described with reference to specific embodiments thereof, it will be understood by those skilled in the art that changes in the form and details of the disclosed embodiments may be made without departing from the spirit or scope of the invention. In addition, although various advantages, aspects, and objects of the present invention have been discussed herein with reference to various embodiments, it will be understood that the scope of the invention should not be limited by reference to such advantages, aspects, and objects. Rather, the scope of the invention should be determined with reference to the appended claims.

What is claimed is:

1. A method comprising:

receiving, at a mobile device, a message including a first service command and a second service command, wherein the message indicates a sequence in which the first service command and the second service command are to be executed;

sending the first service command from the mobile device to a first server;

receiving, at the mobile device, first service results corresponding to the first service command;

sending the second service command from the mobile device to a second server, wherein the first service results are received prior to sending the second service command to the second server, wherein the second service command is applied to the first service results;

receiving, at the mobile device, second service results corresponding to the second service command;

and

displaying the second service results on the mobile device.

2. The method as recited in claim **1**,

wherein sending the first service command and sending the second service command comprise sending Short Message Service (SMS) messages.

3. The method as recited in claim **1**, wherein the message comprises a program that executes the first service command and the second service command.

4. The method as recited in claim **1**, wherein the first service command and the second service command are functions that are provided by a service provider.

5. The method as recited in claim **1**, wherein the second service command is a translate command, a convert command, or a sorting command.

6. The method as recited in claim **1**, wherein the second service command obtains directions corresponding to the first service results.

7. An apparatus comprising:

a processor; and

a memory, at least one of the processor or the memory being adapted for:

receiving, at a mobile device, a message including two or more service commands, the two or more service commands including a first service command and a second service command, wherein the message indicates a sequence in which the first service command and the second service command are to be executed;

sending the first service command from the mobile device to a first server;

receiving, at the mobile device, first service results corresponding to the first service command;

sending the second service command from the mobile device to a second server, wherein the first service results are received prior to sending the second service command to the second server, wherein the second service command is applied to the first service results;

receiving, at the mobile device, second service results corresponding to the second service command; and

displaying the second service results on the mobile device.

8. The apparatus as recited in claim **7**, wherein the first service command and the second service command are sent as Short Message Service (SMS) messages.

9. The apparatus as recited in claim **7**, wherein the first service command and the second service command are functions that are provided by a service provider.

10. A non-transitory computer-readable storage medium storing thereon computer-readable instructions that, when executed by a processor, perform a method comprising:

obtaining, at a mobile device, a message including two or more service commands, the two or more service commands including a first service command and a second service command, wherein the message indicates a sequence in which the first service command and the second service command are to be executed;

sending the first service command from the mobile device to a first server;

receiving, at the mobile device, first service results corresponding to the first service command;

sending the second service command from the mobile device to a second server, wherein the first service

results are received prior to sending the second service command to the second server, wherein the second service command is applied to the first service results;

receiving, at the mobile device, second service results corresponding to the second service command; and

displaying the second service results corresponding to the second service command.

11. The non-transitory computer-readable storage medium as recited in claim **10**, wherein the first service command and the second service command are functions that are provided by a service provider.

12. The non-transitory computer-readable storage medium as recited in claim **10**, wherein the first command comprises a search command and the second command comprises a sorting command.

13. The non-transitory computer-readable storage medium as recited in claim **10**, wherein the message including the two or more service commands is provided in a macro language.

14. The non-transitory computer-readable storage medium as recited in claim **10**, wherein the message includes a macro designed to execute the two or more service commands in a particular sequence.

15. The non-transitory computer-readable storage medium as recited in claim **10**, wherein the second service command is a translate command.

16. The non-transitory computer-readable storage medium as recited in claim **10**, wherein the second service command converts currency, units, or time zones.

17. The non-transitory computer-readable storage medium as recited in claim **10**, wherein the second service command obtains directions corresponding to the first service results.

18. The non-transitory computer-readable storage medium as recited in claim **10**, wherein the second service command returns a subset of the first service results.

19. The non-transitory computer-readable storage medium as recited in claim **10**, wherein the second service command is not a search command.

20. The non-transitory computer-readable storage medium as recited in claim **10**, wherein sending the first service command and sending the second service command comprise sending Short Message Service (SMS) messages.

* * * * *