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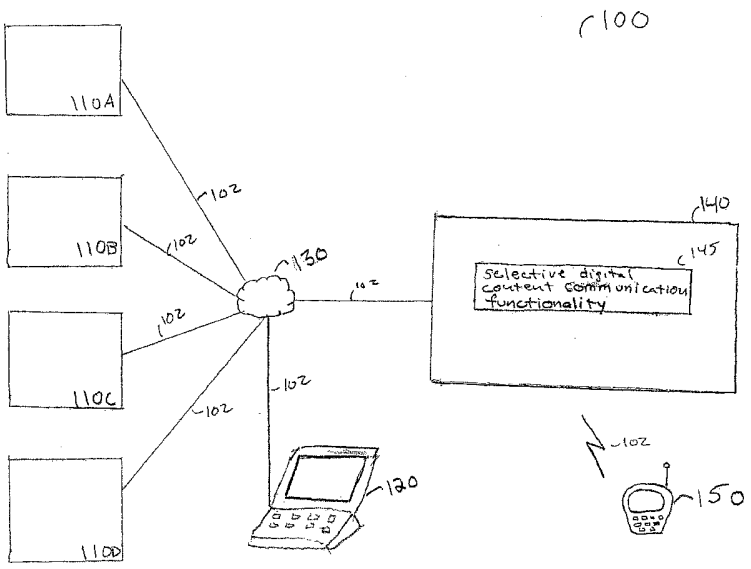
(54) **Title:** METHODS AND SYSTEMS FOR COMMUNICATING DIGITAL CONTENT



(57) **Abstract:** A method and system for selectively communicating digital content is disclosed. For one embodiment of the invention, digital content communications of a user are analyzed. A rule in regard to communicating the digital content of the user is formulated based upon the analysis of the digital content communications. The rule is then presented to the user and suggested as an additional rule to be applied to the communication of the digital content. Upon acceptance by the user, the rule is implemented and applied to the digital content. For alternative embodiments of the invention, the rule, based upon the analysis of the digital content communications, may be automatically implemented. For one embodiment of the invention, the rule governs whether or not digital content is forwarded to the user's mobile device.

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METHODS AND SYSTEMS FOR COMMUNICATING DIGITAL CONTENT

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application is a non-provisional application claiming priority to U.S. Provisional Application Ser. No. 60/652,261, filed on February 11, 2005, entitled "Message Router and Platform for Routing E-mail Between External E-mail Systems and Simple Hand-held Devices," which is herein incorporated by reference in its entirety.

FIELD

[0002] Embodiments of the invention relate generally to the field of digital communication systems and more specifically to methods and systems for effectively communicating digital content.

BACKGROUND

[0003] There are several types of conventional digital content communication systems. For example, mobile messaging systems are known. For example, cell phones might be enabled for text messaging, such as SMS, wireless web page viewing via WAP, network MMS or the like. Wired systems might use e-mail as a form of messaging. In some cases, mobile e-mail is provided for in a carrier's system using carrier infrastructure such as store-and-forward mail servers. There are a number of disadvantages to such approaches, including increasing the complexity of the mobile device that provides user interface and increased costs of carrier infrastructure.

[0004] Typical mobile messaging systems allow a user to receive digital content on a mobile communications device (mobile device). The digital content may include e-mail, news feeds (e.g., RSS news feeds), blogs, audio and video clips and multimedia for example, while mobile

devices may include hand-held devices such as personal digital assistants (PDAs) and cellular phones or wireless devices having messaging functionality.

[0005] Conventional digital content communication systems have a number of disadvantages. For example, some systems often allow the user to have digital content that is addressed to one or more destinations forwarded to the mobile device. For example, a user may maintain several e-mail accounts and have the e-mail messages that get delivered to all of those accounts subsequently delivered to the mobile device. A user may wish to have many of the e-mails received through various accounts forwarded to the mobile device, but for a number of reasons may wish that some or even most of the e-mails were not forwarded. For example, typical messaging service providers charge the user based upon the amount of digital content that is forwarded to the mobile device. Having all digital content forwarded to the mobile device may therefore be cost prohibitive and the user may wish to have only that digital content deemed sufficiently important forwarded to the mobile device. Additionally, a user may not have time to respond to all of the digital content in a mobile situation and may therefore desire that only a small subset of the digital content deemed to have the highest priority be forwarded. Moreover, typical mobile devices are limited in their capacity to present digital content and therefore it may be difficult for a user to present and respond to a large amount of digital content using the mobile device.

[0006] These disadvantages have been addressed in several ways. For example, e-mail filtering programs may be used to prevent forwarding identified spam to a mobile device. Such e-mail filtering programs generally identify most spam, but occasionally desired messages are blocked as well, presenting the user with the possibility that an important message might not be

received. To address this concern a user may implement a whitelist, which is a list of e-mail addresses or domain names from which an e-mail filtering program will allow messages to be received.

[0007] Using a whitelist has particular disadvantages. For example, the whitelist requires continual updating and is limited to allowing digital content from addresses or domain names known to the user. In many instances a user may wish to receive digital content from an unknown source and have that digital content forwarded to a mobile device.

[0008] Another method of addressing the problem is to implement a set of rules based on the address of the digital content that govern forwarding the digital content to a mobile device for a particular user. However, implementing a set of rules is complex and often beyond the sophistication of most users. The process of implementing a set of rules is time consuming as well, and often the user must access a web-based application to implement the rules. Moreover, a typically user may not be able to determine which rules are required to effect the desired digital content forwarding, and may not be able to accurately implement the rule.

[0009] Conventional digital content communication systems may allow the user to have digital content that is stored in one or more locations forwarded to the mobile device. For example, a user may maintain several external e-mail accounts and have the e-mail messages that get delivered to all of those accounts subsequently delivered to the mobile device.

[0010] In order to have digital content from an external digital content source forwarded, the user provides specific parameters about the external digital content source. For example, to have e-mail messages forwarded from an external e-mail account, the user specifies the host name of the e-mail server, the particular transmission protocol (e.g., POP3, IMAP, etc.), incoming and

outgoing servers, authentication, and the port addresses for the external e-mail account. This information allows the digital content forwarding system to access the stored digital content for forwarding as directed by the user. For example, the user may direct the digital content forwarding system to forward the e-mail messages received at some or all of the user's external e-mail accounts to a mobile device.

[0011] Typically, a user may configure an account (e.g., an e-mail account) by obtaining this information from an account service provider which may be, for example, an Internet service provider (ISP). The user then inputs the information to an application via a personal computer. To have digital content forwarded to a mobile device, the user typically obtains the information from the account service provider and provides it to the mobile service provider. The information may be provided via the Internet by accessing a website of the mobile service provider (e.g., from a personal computer).

[0012] A disadvantage of current methods of configuring a digital content communication system to forward digital content is that the user must know, or obtain, the configuration information. This is not information that the average user retains. Such methods become even more problematic in regard to forwarding digital content to mobile devices. This is because mobile device users tend to desire to add and delete the accounts from which digital content is forwarded to their mobile devices on a much more frequent basis. Additionally, the user may often wish to have a particular account added to the accounts from which digital content will be forwarded at a time at which access to the account service provider or access to the mobile service provider's website is not possible. In such cases it would be beneficial for the user to be able to add an account for digital content forwarding via the mobile device.

[0013] The burden of either obtaining or remembering the configuration information is often enough to dissuade the user from having digital content communicated (e.g., forwarded) as desired.

[0014] Conventional digital content communication systems may allow the user to make various changes to the operational aspects of the mobile messaging service. For example, modifying the contents of a whitelist, having digital content that is addressed to one or more destinations forwarded to the mobile device, or suspending service for some reason, and subsequently resuming service.

[0015] Such operational aspects as well as others are typically modified by the user via a fixed-line system such as a web-based or PC client type interface. This may present substantial inconvenience for a user. For example, a user may wish to effect modifications to the operational aspects of their mobile messaging account when access to such fixed-line systems is limited or unavailable (e.g., when traveling).

[0016] Some mobile messaging services address this problem through the installation of a client application (an application that relies on a server to perform some operations) on the mobile device. This solution has disadvantages in that it requires the user to download and install the client application on the mobile device. This is often time-consuming and may be beyond the abilities of many users. Moreover, many mobile devices cannot support a client application; it is typically the more sophisticated and more costly mobile devices that are capable of supporting a client application.

[0017] As discussed above conventional digital content communication systems may provide e-mail filtering programs to prevent forwarding identified spam or digital content containing

viruses to a mobile device. Such filtering programs generally identify most spam and viruses, however the filtering is accomplished at the source when the digital content is received and stored. Typically, digital content communications systems that forward stored digital content assume that the content has been filtered for spam and viruses. However, some sources do not provide filtering and many often provide inadequate filtering. This may result in undesired digital content or virus-bearing digital content being forwarded to a user. This situation can be quite problematic, especially for users of mobile devices. The user typically has to pay for the communication of unwanted digital content. Moreover, many mobile devices can present only a relatively limited amount of digital content to the user at a time. This means the user may spend quite a bit of time addressing the unwanted digital content.

[0018] These disadvantages of conventional digital content communications systems as well as others may be addressed by various embodiments of the invention.

SUMMARY

[0019] In accordance with various embodiments of the invention, disadvantages of conventional digital content communication systems have been addressed.

[0020] For one embodiment of the invention stored digital content is analyzed. A digital content forwarding rule is formulated based upon the analysis of the stored digital content, and presented to a user. Additionally, or alternatively, rules may be formulated based upon the previous behaviors of the user and relationships between new digital content and previously accepted or denied content. A response is received from the user regarding the digital content forwarding rule presented, and digital content is forwarded to the user based upon the response.

[0021] For one embodiment of the invention a request is received from a user to configure a digital content communication system to communicate stored digital content. The request contains information related to a configuration used to configure the digital content communication system to locate and access the stored digital content. One or more candidate configurations is then determined based upon the related information. The digital content communication system then attempts to locate and access the stored digital content using one of the candidate configurations. If the stored digital content cannot be located and accessed using the candidate configuration, a successive attempt is made to locate and access the stored digital content using another of the candidate configurations.

[0022] For one embodiment of the invention a request message is received from a user to modify an operational aspect of a digital content communication service. The digital content communication service and user account are identified based upon an origination of the request message. The operational aspect of the digital content communication service is then modified

in accordance with the request message. For one embodiment of the invention, the request to modify the operational aspects of a mobile messaging service is sent as a short text message such as an MMS message or an SMS message. For such an embodiment, the request may be sent from a mobile device.

[0023] For one embodiment of the invention digital content to be communicated as directed by the user is accessed. The digital content is then retrieved and processed for communication. During processing for communication, the digital content is subjected to anti-abuse filtering. Concurrently, an anti-abuse analysis is performed to determine if the digital content should be communicated as directed. A portion of the digital content is then communicated, as directed by the user, based upon the analysis.

[0024] Other features and advantages of embodiments of the present invention will be apparent from the accompanying drawings, and from the detailed description, that follows below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0025] The invention may be best understood by referring to the following description and accompanying drawings that are used to illustrate embodiments of the invention. In the drawings:

[0026] **Figure 1** illustrates a system in which digital content may be selectively communicated in accordance with one embodiment of the invention;

[0027] **Figure 2** illustrates a process in which digital content is selectively communicated in accordance with one embodiment of the present invention;

[0028] **Figure 3** illustrates a process in which rules governing the selective forwarding of e-mail messages are formulated and implemented in accordance with one embodiment of the invention;

[0029] **Figure 4** illustrates a process in which rules governing the selective forwarding of published digital content are formulated and implemented in accordance with one embodiment of the invention;

[0030] **Figure 5** illustrates a system in which a digital content communication system is configured in accordance with one embodiment of the invention;

[0031] **Figure 6** illustrates a process in which a digital content communication system is configured to locate and access stored digital content in accordance with one embodiment of the present invention;

[0032] **Figure 7** illustrates a process in which a DCC system is configured to access and forward e-mail messages from an external e-mail account in accordance with one embodiment of the invention;

[0033] **Figure 8** illustrates a system in which the administration and control of a mobile digital content communication system is effected using a mobile device in accordance with one embodiment of the invention;

[0034] **Figure 9** illustrates a process in which changes to the operational aspects of a digital content communication system service are effected in accordance with one embodiment of the present invention;

[0035] **Figure 10** illustrates a process in which anti-abuse protection is applied to digital content during the communication process in accordance with one embodiment of the invention; and

[0036] **Figure 11** illustrates a functional block diagram of a digital processing system in accordance with one embodiment of the invention.

DETAILED DESCRIPTION

[0037] In the following description, numerous specific details are set forth. However, it is understood that embodiments of the invention may be practiced without these specific details. In other instances, well-known circuits, structures and techniques have not been shown in detail in order not to obscure the understanding of this description.

[0038] Reference throughout the specification to "one embodiment" or "an embodiment" means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the present invention. Thus, the appearance of the phrases "in one embodiment" or "in an embodiment" in various places throughout the specification are not necessarily all referring to the same embodiment. Furthermore, the particular features, structures, or characteristics may be combined in any suitable manner in one or more embodiments.

[0039] Moreover, inventive aspects lie in less than all features of a single disclosed embodiment. Thus, the claims following the Detailed Description are hereby expressly incorporated into this Detailed Description, with each claim standing on its own as a separate embodiment of this invention.

SELECTIVELY COMMUNICATING DIGITAL CONTENT

[0040] One embodiment of the invention provides methods and systems for selectively communicating digital content. For one embodiment of the invention, digital content communications of a user are analyzed. A rule in regard to communicating the digital content of the user is formulated based upon the analysis of the digital content communications. Additionally, or alternatively, rules may be formulated based upon the previous behaviors of the

user and relationships between new digital content and previously accepted or denied content. The rule is then presented to the user and suggested as an additional rule to be applied to the communication of the digital content. Upon acceptance by the user, the rule is implemented and applied to the digital content. For alternative embodiments of the invention, the rule, based upon the analysis of the digital content communications, may be automatically implemented. For one embodiment of the invention, the rule governs whether or not digital content is forwarded to the user's mobile device.

[0041] Embodiments of the invention are applicable in a variety of settings in which digital content is communicated and selective communication of the digital content may be desired.

[0042] **Figure 1** illustrates a system in which digital content may be selectively communicated in accordance with one embodiment of the invention. System 100, shown in Figure 1, includes a number of digital content storage devices, shown for example as digital processing systems (DPSs) 110A – 110D. The DPSs 110A – 110D may be network servers, personal computers, or other types of digital processing systems. The DPSs 110A – 110D are configured to store and communicate a plurality of various types of digital content such as e-mails, news feeds, blogs, audio and video clips and multimedia, for example, as well as documents such as web pages, content stored on web pages, including text, graphics, and audio and video content. For example, the stored content may be audio/video files, such as programs with moving images and sound. The DPSs 110A – 110D store digital content for a user which may have been communicated from any of a variety of sources, shown for example, as DPS 120.

[0043] The stored digital content may be communicated between the DPSs through any type of communications network through which a plurality of different devices may communicate

such as, for example, but not limited to, the Internet, a wide area network (WAN) not shown, a local area network (LAN), an intranet, or the like. For example, as shown in Figure 1, the DPSs are interconnected one to another through Internet 130 which is a network of networks having a method of communicating that is well known to those skilled in the art.

[0044] The user may wish to have some portion of the digital content stored on DPSs 110A – 110D forwarded to the user's mobile device 150. The mobile service provider's operator network 140 is connected via Internet 130 to the DPSs 110A – 110D storing the digital content. Operator network 140, which also has digital processing capabilities, has, in accordance with one embodiment of the invention, a selective forwarding application 145 installed thereon. Application 145 provides selective digital content communication functionality.

[0045] The user's mobile device 150, which also has digital processing capability, is connected to the operator network 140. The communication links 102 coupling the DPSs, the operator network, and the mobile device need not be direct links, but may be indirect links, including but not limited to, broadcasted wireless signals, network communications or the like.

[0046] In accordance with one embodiment of the invention the application 145 polls the digital content stored on DPSs 110A – 110D and determines if there is new digital content to be forwarded to the mobile device. The application 145 applies general and user-specific rules to the digital content to determine whether or not the digital content is forwarded to the mobile device 150. In accordance with one embodiment of the invention, the application 145 analyzes the digital content and formulates rules based upon the analysis. Additionally, or alternatively, rules may be formulated based upon the previous behaviors of the user and relationships between new digital content and previously accepted or denied content.

[0047] The formulated rules are then presented to the user, and if accepted by the user are applied to the digital content. In accordance with one such embodiment of the invention the formulated rules are presented to the user and accepted by the user via the mobile device 150.

[0048] **Figure 2** illustrates a process in which digital content is selectively communicated (e.g., forwarded) in accordance with one embodiment of the present invention. Process 200, shown in Figure 2, begins with operation 205 in which the selective communication application polls external digital content storage systems (e.g., external e-mail systems) for digital content. For one embodiment of the invention, the digital content storage systems are configured to notify the selective communication application of digital content so polling is not required. For one embodiment of the invention, digital content stored previously in external storage systems as well as digital content presently received (e.g., in the process of being received) is polled.

[0049] At operation 210 the selective communication application analyzes the digital content. The analysis of the digital content can take many forms depending on the type of content and the user's response to the content. For example, for e-mails an analysis may be the number of e-mails the user has received from a particular e-mail address or domain name. In general the application analyzes the metadata of the digital content. For one embodiment of the invention, the analysis includes examining existing preferences of the user and determining if the digital content has a threshold correlation or relationship with existing preferences.

[0050] At operation 215 a digital content communication rule is formulated based upon the analysis of the digital content. For example, the rule may be "forward e-mails from a particular e-mail address" where the user has received a threshold number of e-mails from that e-mail address. Or, for example, the rule may be "do not forward e-mails from a particular domain

name," where, even though such e-mails have not been designated as spam, the user has nevertheless shown no interest in e-mails from that domain name. Such an embodiment is discussed more fully below in reference to Figure 3.

[0051] At operation 220 the rule is presented to the user. For one embodiment, the user may be presented with a query such as "Forward all e-mail messages from name.domain.com to the mobile device?" For one embodiment the user may be presented with one or more such queries via the mobile device and can respond via the mobile device as well.

[0052] At operation 225, if the user accepts the rule, the user's rules are updated accordingly and digital content is communicated in accordance with the updated rules. For one embodiment of the invention the rule may implemented in regard to subsequently received digital content. Alternatively, the rule may be applied retroactively (e.g., to a specified time) to previously received digital content. The user may accept the rule via the mobile device, and when the user's acceptance is received by the selective forwarding application, the rule is implemented.

[0053] At operation 226, if the user's acceptance of the rule is not received, the rule is not implemented.

[0054] As discussed above, embodiments of the invention are applicable to a variety of digital content communication including e-mail message forwarding. **Figure 3** illustrates a process in which rules governing the selective forwarding of e-mail messages are formulated and implemented in accordance with one embodiment of the invention. Process 300, shown in Figure 3 begins at operation 305 in which a user's e-mail accounts are polled. A number of previously received e-mail messages are examined. The number of e-mails examined may be a fixed number or may include all e-mails received after a given date.

[0055] At operation 310 the e-mail addresses (and/or domain names) are analyzed and categorized based on frequency of received e-mail messages from those addresses. For one embodiment of the invention, those e-mail messages designated as spam by conventional spam filters are not included in the analysis. The information regarding the highest frequency e-mail addresses or domain names is compiled. For one embodiment of the invention, such information may have a specified limit as to the number of addresses or domain names. For example a list of the ten addresses or domain names from which e-mail messages are most frequently received. Additionally or alternatively, the information may be limited by the number of e-mail messages received from a particular address or domain name. For example, a list of all addresses or domain names from which ten or more e-mail messages have been received in the previous month. For one embodiment of the invention, only those addresses or domain names that were not already part of an e-mail forwarding scheme (e.g., contained on a whitelist) are analyzed.

[0056] At operation 315 the list of addresses or domain names from which e-mail messages are frequently received is presented to the user. Accompanying the list may be a message prompting the user to select those addresses or domain names, from the list, from which the user would like e-mail messages to be forwarded (e.g., forwarded to the user's mobile device).

[0057] At operation 320 the user selects those addresses or domain names from the list, from which the user desires to have e-mail messages forwarded. For example, the list of addresses or domain names from which e-mail messages are most frequently received may include a checkbox next to each address or domain name, which the user checks to indicate a desire to have e-mail messages from such addresses or domain names forwarded.

[0058] At operation 325 the user's selection of addresses and domain names are used to formulate and implement e-mail forwarding rules in regard to forwarding the user's e-mail. For one embodiment of the invention, the user's non-selection of a particular address or domain name may result in the suspension of forwarding e-mail messages from that address or domain name.

[0059] At this point, e-mail messages from addresses or domain names selected by the user will be forwarded as directed by the user. For one embodiment of the invention, such e-mail messages will be forwarded to the user's mobile device. For one embodiment of the invention, some or all of the previously received e-mail messages from the selected addresses or domain names will be forwarded. For alternative embodiments, only subsequently received e-mail messages from the selected addresses or domain names will be forwarded.

[0060] For alternative embodiments of the invention, the subject matter of the e-mail messages may be used in addition to, or instead of, the address or domain name frequency information to analyze the user's e-mail messages. For such an embodiment, where the user receives a threshold number of e-mail messages pertaining to a particular subject, forwarding e-mail messages having a common or related subject may be suggested to the user in a like manner as described in reference to Figure 3.

[0061] As discussed above, embodiments of the invention are applicable to various other types of digital content as well. **Figure 4** illustrates a process in which rules governing the selective forwarding of published digital content are formulated and implemented in accordance with one embodiment of the invention. Published digital content is digital content such as web-syndicated content that is made generally available to specific groups or the general public. In

contrast to e-mail messages, which are delivered to a user, published content is typically stored in general repository where it is located and accessed by a number of users. Process 400, shown in Figure 4, begins at operation 405 in which the published digital content presently accessed and/or forwarded by a user is analyzed. For example, various characteristics of the published digital content that user accesses or forwards may be analyzed and correlated with similar characteristics of other published digital content not presently selected for forwarding by the user. For one embodiment of the invention, characteristics of the published digital content may be the subject matter of the published digital content or demographic information of users currently accessing the published digital content.

[0062] At operation 410 published digital content not presently selected for forwarding by the user is presented to the user based upon the analysis. For one embodiment of the invention each instance of published digital content may be accompanied by a rationale for suggesting the published digital content be forwarded. For example, the subject matter of the digital content presented to the user may have a high correlation to digital content presently selected for forwarding by the user. For example, the published digital content presented may be digital content from a website containing particular subject matter (e.g., gourmet cooking) with an accompanying explanation that the user presently has digital content from several similar websites forwarded. Or, for example, the published digital content presented may be a blog discussing particular subject matter (e.g., sports) with an accompanying explanation that the digital content is typically accessed by users who access published digital content presently forwarded by the user.

[0063] At operation 415 the user's selection of published digital content not presently selected for forwarding by the user is received. As discussed above, the user's selection may be the acceptance of a formulated rule such as "always forward the particular published digital content" or may be a response to a query such as "would you like this published digital content forwarded."

[0064] At operation 420 published digital content is forwarded to the user based upon the user's selection.

SYSTEM CONFIGURATION

[0065] One embodiment of the invention provides a method for ascertaining configuration information for a digital content communication system to access a digital content account. For one embodiment of the invention, one or more possible configurations (candidate configurations) are determined using configuration information provided by the user in conjunction with known configuration parameters applicable to such systems. For one embodiment of the invention, configuration information is ascertained and a digital content communication system configured using configuration information provided by the user in conjunction with configuration information stored by the system. Additionally, or alternatively, the digital content communication system may use configuration information provided by the user to dynamically obtain additional required configuration information. For such embodiments, the information provided by the user may be information that is readily available to the user and may be input to the digital content communication system via a mobile device.

[0066] **Figure 5** illustrates a system in which a digital content communication system is configured in accordance with one embodiment of the invention. System 500, shown in Figure

5, includes a number of digital content storage devices, shown for example as digital processing systems (DPSs) 510A – 510N. The DPSs 510A – 510N may be network servers (e.g., mail servers), or other types of servers storing and providing digital content. The DPSs 510A – 510N are configured to store and communicate a plurality of various types of digital content which may include e-mails, news feeds, blogs, audio and video clips and multimedia, for example, as well as documents such as web pages, content stored on web pages, including, text, graphics, and audio and video content. For example, the stored digital content may be audio/video files, such as programs with moving images and sound. The DPSs 510A – 510N store digital content for a user which may have been communicated from any of a variety of sources.

[0067] The stored digital content may be communicated between the DPSs through any type of communications network through which a plurality of different devices may communicate such as, for example, but not limited to, the Internet, a wide area network (WAN) not shown, a local area network (LAN), an intranet, or the like. For example, as shown in Figure 5, the DPSs are interconnected one to another through Internet 530.

[0068] The user may wish to have some portion of the digital content stored on DPSs 510A – 510N communicated in a specific manner, for example, the user may wish to have such digital content forwarded to the user's mobile device 550. The digital content communication (DCC) system 540 is connected via Internet 530 to the DPSs 510A – 510N storing the digital content. The DCC system 540, which also has digital processing capabilities, has, in accordance with one embodiment of the invention, an account configuration application 545 installed thereon. Application 545 provides account configuration functionality. The DCC system has a data base, shown for example as database 546, that stores account configuration information.

[0069] The user's mobile device 550, which also has digital processing capability, is connected to the DCC system 540. The DCC system 540 may also be connected to a domain name system (DNS) server 560. The DNS server 560 is a DPS that maintains a database of digital content host systems (e.g., servers) and their corresponding IP addresses.

[0070] The communication links 502 coupling the DPSs, the DCC system, the DNS server and the mobile device need not be direct links, but may be indirect links, including but not limited to, broadcasted wireless signals, network communications or the like.

[0071] In accordance with one embodiment of the invention the user provides the application 545 configuration information regarding stored digital content that the user desires to have communicated in a specific way. In accordance with one embodiment of the invention, the configuration information, which may be provided by the user via the mobile device 550, is readily available to the user, but is not sufficient to completely define the source of the digital content or to access the digital content for communication. The application 545 uses the information provided by the user in conjunction with a set of rules that apply generally to the communication of digital content and define how a majority of accounts are configured.

[0072] In accordance with one embodiment of the invention, the application 545 may alternatively, or additionally, correlate the information provided by the user with previously determined configuration information stored in database 546.

[0073] **Figure 6** illustrates a process in which a digital content communication system is configured to locate and access stored digital content in accordance with one embodiment of the present invention. Process 600, shown in Figure 6, begins with operation 605 in which a portion of the information required to configure a system to locate and access stored digital content (e.g.,

stored e-mail messages in an external e-mail account) is received from a user. For one embodiment of the invention, the information provided by the user is provided via a mobile device. For one embodiment of the invention the information received from the user may be related to the actual information required to effect configuration, or may indicate aspects of the actual information required to effect configuration.

[0074] At operation 610 the application determines one or more candidate configurations for the account. In accordance with one embodiment of the invention the candidate configurations are determined using the information received from the user in conjunction with one or more rules that apply generally to the communication of digital content and define how a majority of accounts are configured. For example, the rules may define a precedence allowing for highly probable assumptions as to the location and access requirements of stored digital content.

[0075] In accordance with an alternative embodiment of the invention, one or more candidate configurations may be determined by correlating the information provided by the user with one or previously determined configurations.

[0076] At operation 615 one of the determined candidate configurations is selected and used to attempt to locate and access the digital content.

[0077] At operation 620, if the digital content is located and accessed using the configuration, the user is informed that the configuration has been successfully completed.

[0078] If the digital content cannot be located or accessed using the configuration, then another of the determined candidate configurations is selected and used to attempt to locate and access the digital content at operation 625.

[0079] If all of the determined candidate configurations have been used without successfully locating and accessing the digital content, then the user is prompted to ascertain and provide the complete configuration information at operation 630.

[0080] As discussed above, embodiments of the invention are applicable to a variety of digital content communication including e-mail message forwarding. **Figure 7** illustrates a process in which a DCC system is configured to access and forward e-mail messages from an external e-mail account in accordance with one embodiment of the invention. Process 700, shown in Figure 7 begins at operation 705 in which an e-mail address (or portion of an e-mail address) and an access authorization password are received from a user. This is information that a user has typically committed to memory or has readily available.

[0081] At operation 710 various combinations of candidate configurations are determined based upon a set of rules and/or known configurations in conjunction with the information provided by the user. For example, if the user provides an e-mail address of "username@specificdomain.net" the mail server name may be related to the specific domain name provided. Assumptions as to probable mail server names are made, as are assumptions as to the transmission protocol and port information used to retrieve e-mail messages from a server. Using permutations of the combination of likely server names, protocols, and ports, a number of candidate configurations can be determined.

[0082] At operation 715 the various candidate configurations are used to attempt to locate and the user's e-mail account. So for the example discussed, where the domain name provided is "specificdomain", addresses such as specificdomain.net, mail.specificdomain.net, pop.specificdomain.net, and imap.specificdomain.net may be determined to be possible mail

server names. Assumptions as to the possible transmission protocols and ports include POP and IMAP and 110 and 143, respectively. For one embodiment the candidate configurations may be designated as more or less probable. Attempts to locate the user's e-mail system would then be made with the more probable configurations first followed by the less probable configurations. For one embodiment, stored domain level configuration information is used first in an attempt to locate the user's e-mail system.

[0083] For one embodiment attempts to access the user's e-mail system may be made using a protocol for transmitting data securely over the Internet such as secure sockets layer (SSL) or secure-HTTP (SHTTP). For another embodiment of the invention attempts to access the user's e-mail system are made with and without a secure connection.

[0084] At operation 720 after determination of the correct server, protocol, and port information, an attempt is made to login to the e-mail system using the user's e-mail address and access authorization information (e.g., password). If the login attempt is successful (the user's e-mail is accessible), the particular configuration used is assumed to be the correct configuration for the user's e-mail system and is stored for the user. For one embodiment of the invention, the corresponding domain level configuration information is stored and can be used for other user's having common domain level information. For one such embodiment, multiple configurations may be stored for the same domain. For example, an ISP may have multiple e-mail servers with different configurations.

ADMINISTRATION AND CONTROL

[0085] One embodiment of the invention provides systems and methods for administration and control of mobile digital content communication system services. For one embodiment of

the invention, a message specifying modification of the operational aspects of a mobile messaging service is received at the operator network of the mobile messaging service. The message is recognized as a request to modify the operational aspects of a mobile messaging service. The message is parsed to determine the modification to the operational aspects of the mobile messaging service, and the requested modifications are effected. For one embodiment of the invention, the request to modify the operational aspects of a mobile messaging service is sent as a short text message from a mobile device.

[0086] Embodiments of the invention are applicable in a variety of settings in which digital content communication systems are configured.

[0087] **Figure 8** illustrates a system in which the administration and control of a mobile digital content communication system is effected using a mobile device in accordance with one embodiment of the invention. System 800, shown in Figure 8, includes a mobile service provider's operator network 840. A mobile device 850 is connected to the operator network 840. Operator network 840 has, in accordance with one embodiment of the invention, a control application 845 installed thereon that controls the mobile digital content communication system service for the mobile device 850. The operator network 840 also includes a multimedia message service (MMS) center (MMSC) 847, a short messaging service (SMS) center (SMSC) 848, and a WAP gateway 849 to communicate messages between the operator network 840 and the wireless device 850.

[0088] The mobile service provider's operator network 840 is connected via Internet 830 to any number of digital content storage devices, shown for example as digital processing system (DPS) 810. The DPS 810 may be a network server, personal computer, or other type of digital

processing system. Such DPSs are configured to store and communicate a plurality of various types of digital content such as e-mails, news feeds, blogs, audio and video clips and multimedia, for example, as well as documents such as web pages, content stored on web pages, including text, graphics, and audio and video content. For example, the stored content may be audio/video files, such as programs with moving images and sound. The DPS 810 may store digital content for a user which may have been communicated from any of a variety of sources, shown for example, as DPS 150.

[0089] The stored digital content may be communicated through any type of communications network through which a plurality of different devices may communicate such as, for example, but not limited to, the Internet, a wide area network (WAN) not shown, a local area network (LAN), an intranet, or the like. For example, as shown in Figure 8, the DPSs are interconnected one to another through Internet 830.

[0090] Operator network 840 and the user's mobile device 850, which also have digital processing capability, as well as the DPSs 810 and 820 are coupled via communication links 802. The communication links 802 coupling the DPSs, the operator network, and the mobile device need not be direct links, but may be indirect links, including but not limited to, broadcasted wireless signals, network communications or the like.

[0091] The user may wish to have the digital content stored on DPS 810 communicated to the user's mobile device 850 in variety of different ways under different circumstances. In accordance with one embodiment of the invention, the user modifies operational aspects of a mobile digital content communication system service by providing a message to the application 845. The application determines the particular service based upon the origin of the message

(e.g., the mobile device 850) and parses the message to determine the modification requested. For one embodiment of the invention, the message received from the user may be a short text message such as an MMS message or an SMS message.

[0092] **Figure 9** illustrates a process in which changes to the operational aspects of a digital content communication system service are effected in accordance with one embodiment of the present invention. Process 900, shown in Figure 9, begins with operation 905 in which the service provider receives a message from the user requesting a modification of the operational aspects of the digital content communication service. For one embodiment of the invention a syntax for the message is provided that allows for a quick and definite recognition of the change in operational aspects to be effected.

[0093] At operation 910 the service provider determines the origin and destination of the message. That is, the service provider determines the particular user's service from which the message originated and determines that the message is directed to the service provider. For example, for one embodiment of the invention the message is sent to a short code from a mobile device. The service provider is able to determine the service associated with the originating device. The short code is recognized by a control application as being a message to the service provider (i.e., as opposed to a message between users). Messages so recognized then, are redirected by the service provider to the control application.

[0094] At operation 915 the requested modifications are determined from the message. For example, once the short code is recognized as a message to the service provider, the content of the message is analyzed to determine the request of the user (i.e., which modifications to the operational aspects of the identified digital content communication service the user requests).

[0095] At operation 920 the service provider attempts to effect the requested modification. For one embodiment of the invention the message is parsed to determine which operational aspects to modify and how to modify those aspects. For example, an embodiment may provide a syntax for request messages which is recognized and effected by the control application.

[0096] In general, the request message may be any message that requests a modification to the operational aspect of the digital content communication service. For example, the message may be a request to stop service or resume service. Such modification to the operational aspect of the digital content communication service can generally be effected quickly and efficiently (e.g., without further input from the user).

[0097] Other requests for modification to the operational aspect of the digital content communication service may be of a more sophisticated nature. For example, the request message may be to start forwarding messages from a particular e-mail account to the mobile device of the user. Methods for configuring digital content communication systems to communicate digital content with limited configuration information from the user are discussed in co-pending application entitled "Configuration of Digital Content Communication Systems". In some cases the information provided by the user may be insufficient to effect the requested modification to the operational aspects of the digital content communication service.

[0098] Moreover, the message from the user may not be understood and require further clarification from the user. In such case the user may be prompted to provide further or clarifying information.

[0099] At operation 925 the user is informed of the outcome of the attempt to effect the requested modification to the operational aspects of the digital content communication system

service. That is, if the requested modification has been effected, the user is informed of this. In some cases, as noted above, it may not be possible to effect the requested modification, without further information from the user, if at all, in such case, the user is so informed.

[00100] As discussed above, for one embodiment of the invention a syntax is provided for messages requesting modification to the operational aspects of the digital content communication system service. For example, the commands "stop" and "start" may be used, respectively, to suspend and resume service. As another example, the commands "stop delivery" and "start delivery" where followed by a specific source of digital content (e.g., an e-mail address) may be used to suspend or resume forwarding of the identified digital content. Or for example, the command "deliver" followed by a time may be used to have digital content communicated to the user during a specified time. The syntax used can be varied to indicate any number of operational aspects of the digital content communication system.

[00101] Such syntax allows a relatively short message to adequately convey the user's request for modification. Moreover, the syntax allows the control application to quickly identify requests for modification to the operational aspects of the digital content communication system service and to determine the nature of the request.

[00102] The use of such syntax facilitates the transmission of the user's requests as short text messages such as SMS messages or MMS messages. Such short text messaging, typically used for communications between mobile devices may have limits on the message size and content. For example, SMS messages may be limited to 160 characters. The request syntax allows the request to be communicated as a MMS or SMS message. Moreover, because the user can

quickly create and send a request the user is encouraged to make desired modifications to the operational aspects of the digital content communication system as desired.

[00103] As discussed above, embodiments of the invention are applicable to a variety of types of digital content. For example, embodiments of the invention are applicable to published digital content such as web-syndicated content that is made generally available to specific groups or the general public. Such published content is typically stored in a general repository where it is located and accessed by a number of users. In accordance with one embodiment of the invention, a user may provide a command (e.g., deliver) in conjunction with a generally used, or generally available name for such content to effect modification to operational aspects of the digital content communication system in regard to such content.

IN-PROCESS PROTECTION

[00104] One embodiment of the invention provides in-process anti-abuse protections to address the problems of digital content sources containing spam or virus-infected content. For one embodiment of the invention, digital content requested by the user to be communicated from one or more locations is filtered (e.g., for spam and viruses) during the communication process. The digital content is only communicated as directed by the user, if upon in-process analysis it is determined that the digital content is not spam and does not contain a virus. Such an embodiment provides greater protection against the communication of spam and or virus-bearing content than relying on typical pre-storage filtering. For example, due to the methods typically employed to determine spam and viruses, it is quite possible that spam or virus-bearing content which may pass a filter and be stored at a particular time, would be identified and filtered at a subsequent time.

[00105] Figure 10 illustrates a process in which anti-abuse protection is applied to digital content during the communication process in accordance with one embodiment of the invention.

[00106] Process 1000, shown in Figure 10, begins at operation 1005 in which digital content to be communicated as directed by the user is accessed. Such digital content, could be, for example, stored digital content. The digital content may have been subjected to anti-abuse protections such as spam filtering and virus detection previously (e.g., when received at the storage location).

[00107] At operation 1010 the digital content is retrieved and processed for communication. During processing for communication, the digital content is subjected to anti-abuse filtering. Concurrently, an anti-abuse analysis is performed on the digital content to determine if it should be communicated. For example, the analysis may determine that the digital content contains a virus, and may, for that reason, not be communicated. Or, the analysis may determine that the digital content has a high likelihood of being spam and may not be communicated (or may be notwithstanding) based upon other concerns and directions from the user.

[00108] At operation 1015 a portion of the digital content is communicated as directed by the user based upon the analysis. The portion communicated may range from all of the digital content (e.g., where no spam or virus was detected) to none of the digital content where, for example, all of the digital content was determined to be virus bearing.

General Matters

[00109] Embodiments of the invention include systems and methods to address various disadvantages in conventional digital content communication systems. Various embodiments of the invention may be combined in a single system to address such disadvantages.

[00110] Embodiments of the invention have been described as including various operations. Many of the processes are described in their most basic form, but operations can be added to or deleted from any of the processes without departing from the scope of the invention.

[00111] The operations of the invention may be performed by hardware components or may be embodied in machine-executable instructions, which may be used to cause a general-purpose or special-purpose processor or logic circuits programmed with the instructions to perform the operations. Alternatively, the steps may be performed by a combination of hardware and software. The invention may be provided as a computer program product that may include a machine-readable medium having stored thereon instructions, which may be used to program a computer (or other electronic devices) to perform a process according to the invention. The machine-readable medium may include, but is not limited to, floppy diskettes, optical disks, CD-ROMs, and magneto-optical disks, ROMs, RAMs, EPROMs, EEPROMs, magnet or optical cards, flash memory, or other type of media / machine-readable medium suitable for storing electronic instructions. Moreover, the invention may also be downloaded as a computer program product, wherein the program may be transferred from a remote computer to a requesting computer by way of data signals embodied in a carrier wave or other propagation medium via a communication cell (e.g., a modem or network connection). All operations may be performed at the same central cite or, alternatively, one or more operations may be performed elsewhere.

[00112] As discussed above, embodiments of the invention may employ DPSs or devices having digital processing capabilities. **Figure 11** illustrates a functional block diagram of a digital processing system in accordance with one embodiment of the invention. The components of processing system 1100, shown in Figure 11 are exemplary in which one or more components

may be omitted or added. For example, one or more memory devices may be utilized for processing system 1100.

[00113] Referring to **Figure 11**, processing system 1100 includes a central processing unit 1102 and a signal processor 1103 coupled to a main memory 1104, static memory 1106, and mass storage device 1107 via bus 1101. In accordance with an embodiment of the invention, main memory 1104 may store a selective communication application, while mass storage devise 1107 may store various digital content as discussed above. Processing system 1100 may also be coupled to input/output (I/O) devices 1125, and audio/speech device 1126 via bus 1101. Bus 1101 is a standard system bus for communicating information and signals. CPU 1102 and signal processor 1103 are processing units for processing system 1100. CPU 1102 or signal processor 1103 or both may be used to process information and/or signals for processing system 1100. CPU 1102 includes a control unit 1131, an arithmetic logic unit (ALU) 1132, and several registers 1133, which are used to process information and signals. Signal processor 1103 may also include similar components as CPU 1102.

[00114] Main memory 1104 may be, e.g., a random access memory (RAM) or some other dynamic storage device, for storing information or instructions (program code), which are used by CPU 1102 or signal processor 1103. Main memory 1104 may store temporary variables or other intermediate information during execution of instructions by CPU 1102 or signal processor 1103. Static memory 1106, may be, e.g., a read only memory (ROM) and/or other static storage devices, for storing information or instructions, which may also be used by CPU 1102 or signal processor 1103. Mass storage device 1107 may be, e.g., a hard or floppy disk drive or optical disk drive, for storing information or instructions for processing system 1100.

[00115] While the invention has been described in terms of several embodiments, those skilled in the art will recognize that the invention is not limited to the embodiments described, but can be practiced with modification and alteration within the spirit and scope of the appended claims. The description is thus to be regarded as illustrative instead of limiting.

CLAIMS

What is claimed is:

1. A method comprising:

analyzing stored digital content;

formulate a digital content communication rule based upon the analysis of the stored digital content;

present the digital content communication rule to a user;

receive a response from the user regarding the digital content communication rule presented; and

forward digital content to the user based upon the response.

2. The method of claim 1, wherein the digital content communication rule is presented to a user via a mobile communications device.

3. The method of claim 1, wherein in the stored digital content comprises e-mail messages of the user contained in one or more e-mail accounts.

4. The method of claim 1, wherein the stored digital content is digital content selected from the group consisting of e-mail messages, news feeds, blogs, audio content, video content, and combinations thereof.

5. The method of claim 3, wherein the digital content communication rule is based upon the frequency of e-mail messages received from a particular source.

6. The method of claim 1, wherein the digital content communication rule is based upon previous digital content communication decisions of the user.

7. The method of claim 1, wherein the digital content communication rule is based upon digital content communication decisions of one or more other users.

8. The method of claim 5 further comprising:

designating one or more e-mail messages as spam; and

disregarding e-mail messages designated as spam during the analysis of the stored digital content.

9. The method of claim 6, wherein the digital content communication rule is based upon a correlation between a subject matter of the stored digital content and a subject matter of digital content presently selected for forwarding by the user.

10. A system comprising:

one or more digital content storage devices storing digital content;

one or more communication devices capable of receiving and presenting digital content; and

a digital content communication device coupling at least one of the digital content storage devices to at least one of the communication devices, the digital content communication device having a selective communication application that analyzes stored digital content, formulates a digital content communication rule based upon the analysis of the stored digital content, and presents the digital content communication rule to a user.

11. The system of claim 10 wherein the selective communication application further receives a response from the user regarding the digital content communication rule presented and forwards digital content to the user based upon the response.

12. The system of claim 10 wherein the digital content storage devices are configured to notify the selective communication application of digital content.

13. The system of claim 10, wherein the one or more communications devices are mobile communications device.

14. The system of claim 10 wherein the one or more digital content storage devices are coupled to the digital content communication device through a communications network selected from the group consisting of the Internet, a wide area network, a local area network, an intranet, and combinations thereof.

15. The system of claim 10, wherein in the stored digital content comprises e-mail messages of the user contained in one or more e-mail accounts and the digital content communication rule is based upon the frequency of e-mail messages received from a particular source.

16. The system of claim 10, wherein the stored digital content is digital content selected from the group consisting of e-mail messages, news feeds, blogs, audio content, video content, and combinations thereof.

17. The system of claim 16, wherein the digital content communication rule is based upon previous digital content forwarding decisions of the user.

18. The system of claim 16, wherein the digital content communication rule is based upon digital content communication decisions of one or more other users.

19. The system of claim 15 wherein the selective communication application further designates one or more e-mail messages as spam and disregards e-mail messages designated as spam during the analysis of the stored digital content.

20. The system of claim 16, wherein the digital content communication rule is based upon a correlation between a subject matter of the stored digital content and a subject matter of digital content presently selected for forwarding by the user.

21. A machine-readable medium that provides executable instructions, which when executed by a processor, cause the processor to perform a method, the method comprising:

analyzing stored digital content;

formulate a digital content communication rule based upon the analysis of the stored digital content;

present the digital content communication rule to a user;

receive a response from the user regarding the digital content communication rule presented; and

forward digital content to the user based upon the response.

22. The machine-readable medium of claim 21, wherein the digital content communication rule is presented to a user via a mobile communications device.

23. The machine-readable medium of claim 21, wherein in the stored digital content comprises e-mail messages of the user contained in one or more e-mail accounts.

24. The machine-readable medium of claim 21, wherein the stored digital content is digital content selected from the group consisting of e-mail messages, news feeds, blogs, audio content, video content, and combinations thereof.

25. The machine-readable medium of claim 23, wherein the digital content communication rule is based upon the frequency of e-mail messages received from a particular source.

26. The machine-readable medium of claim 21, wherein the digital content communication rule is based upon previous digital content forwarding decisions of the user.

27. The machine-readable medium of claim 21, wherein the digital content communication rule is based upon digital content communication decisions of one or more other users.

28. The machine-readable medium of claim 25 further comprising:

designating one or more e-mail messages as spam; and

disregarding e-mail messages designated as spam during the analysis of the stored digital content.

29. The machine-readable medium of claim 26, wherein the digital content communication rule is based upon a correlation between a subject matter of the stored digital content and a subject matter of digital content presently selected for forwarding by the user.

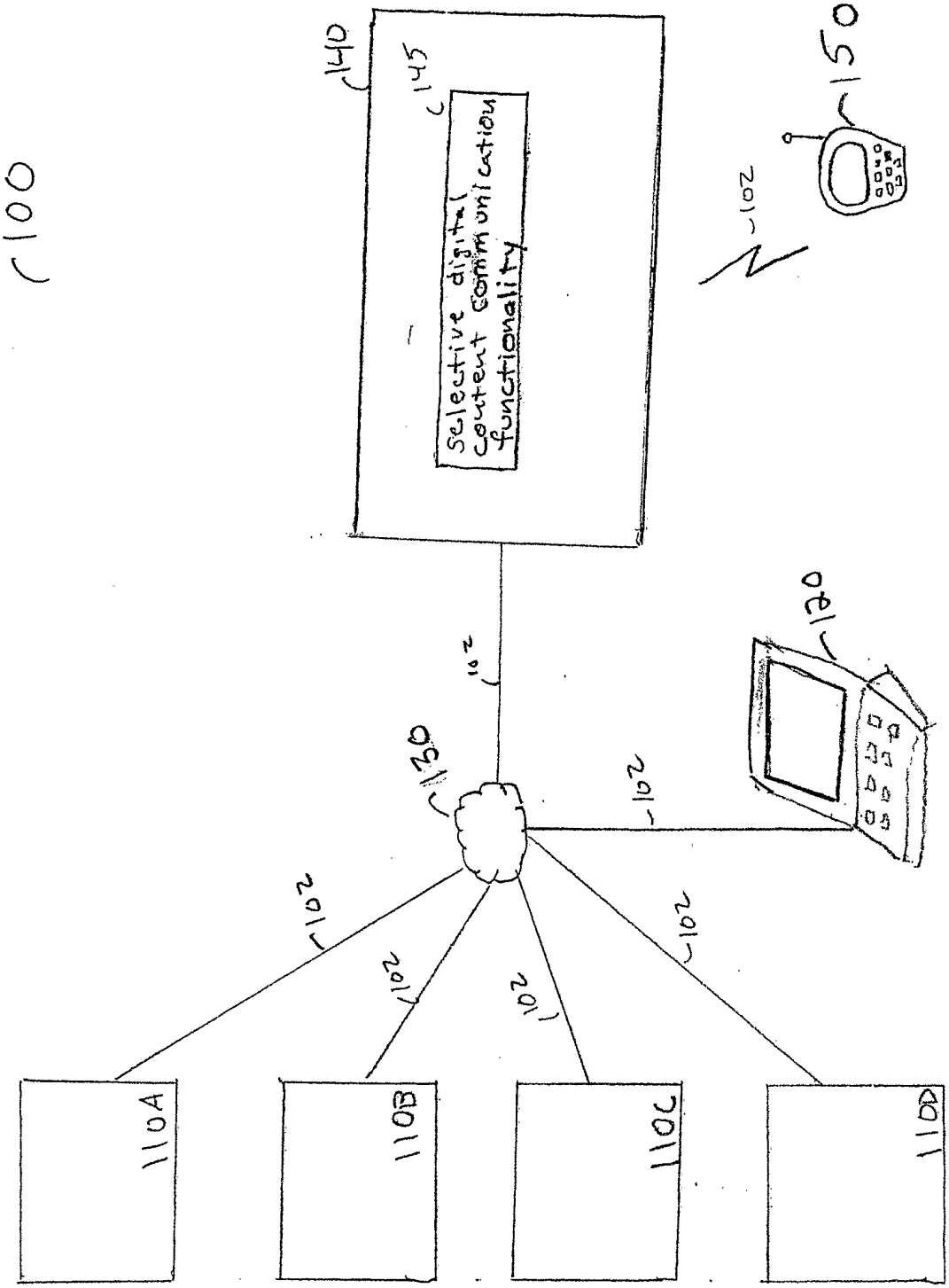
100
140
145
Selective digital content communication functionality
150
102
120
102
130
102
102
102
102
102
110A
110B
110C
110D

Fig. 1

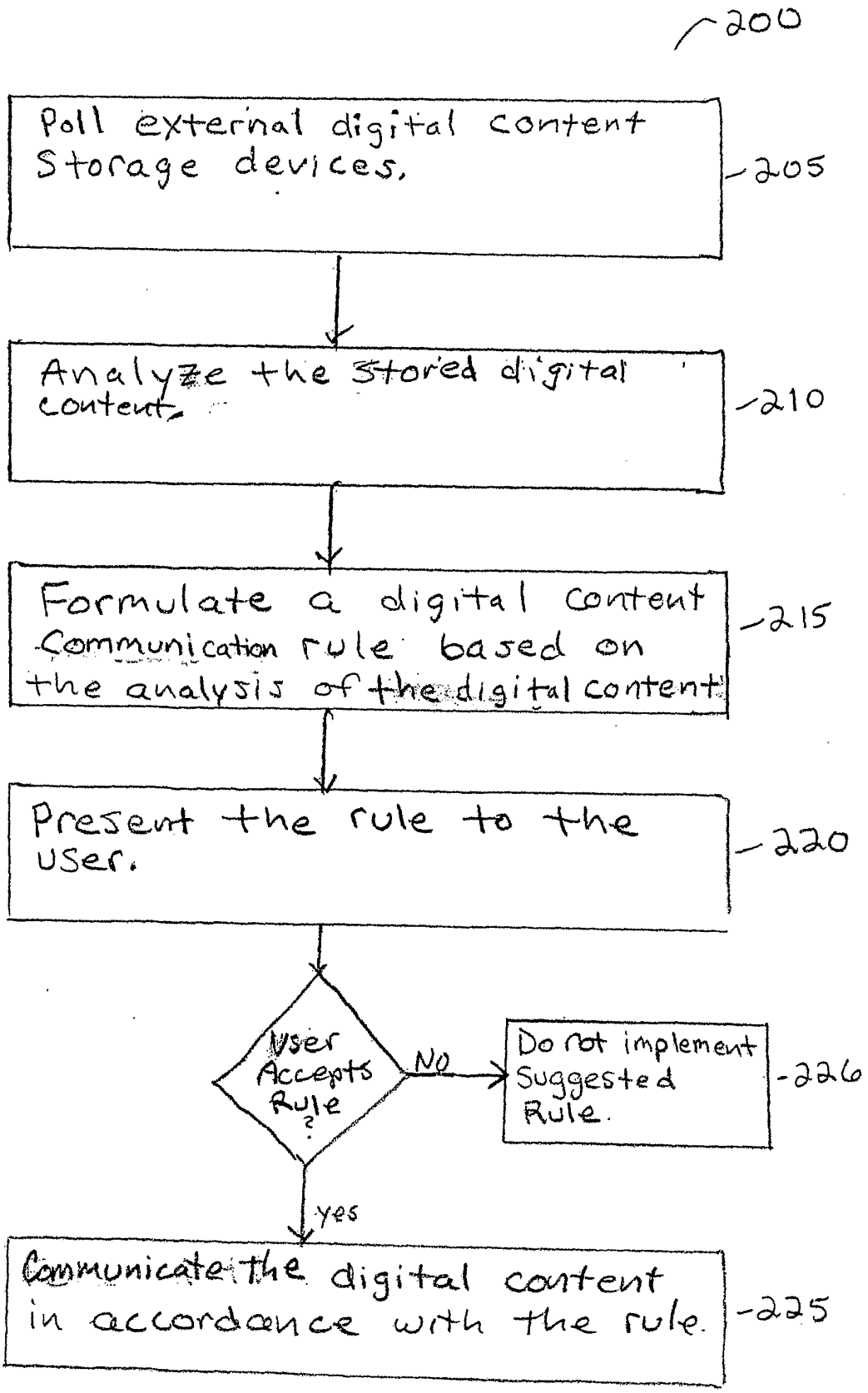
200
Poll external digital content Storage devices.
205
Analyze the stored digital content.
210
Formulate a digital content communication rule based on the analysis of the digital content.
215
Present the rule to the user.
220
User Accepts Rule?
NO
Do not implement Suggested Rule.
226
yes
Communicate the digital content in accordance with the rule.
225

Fig. 2

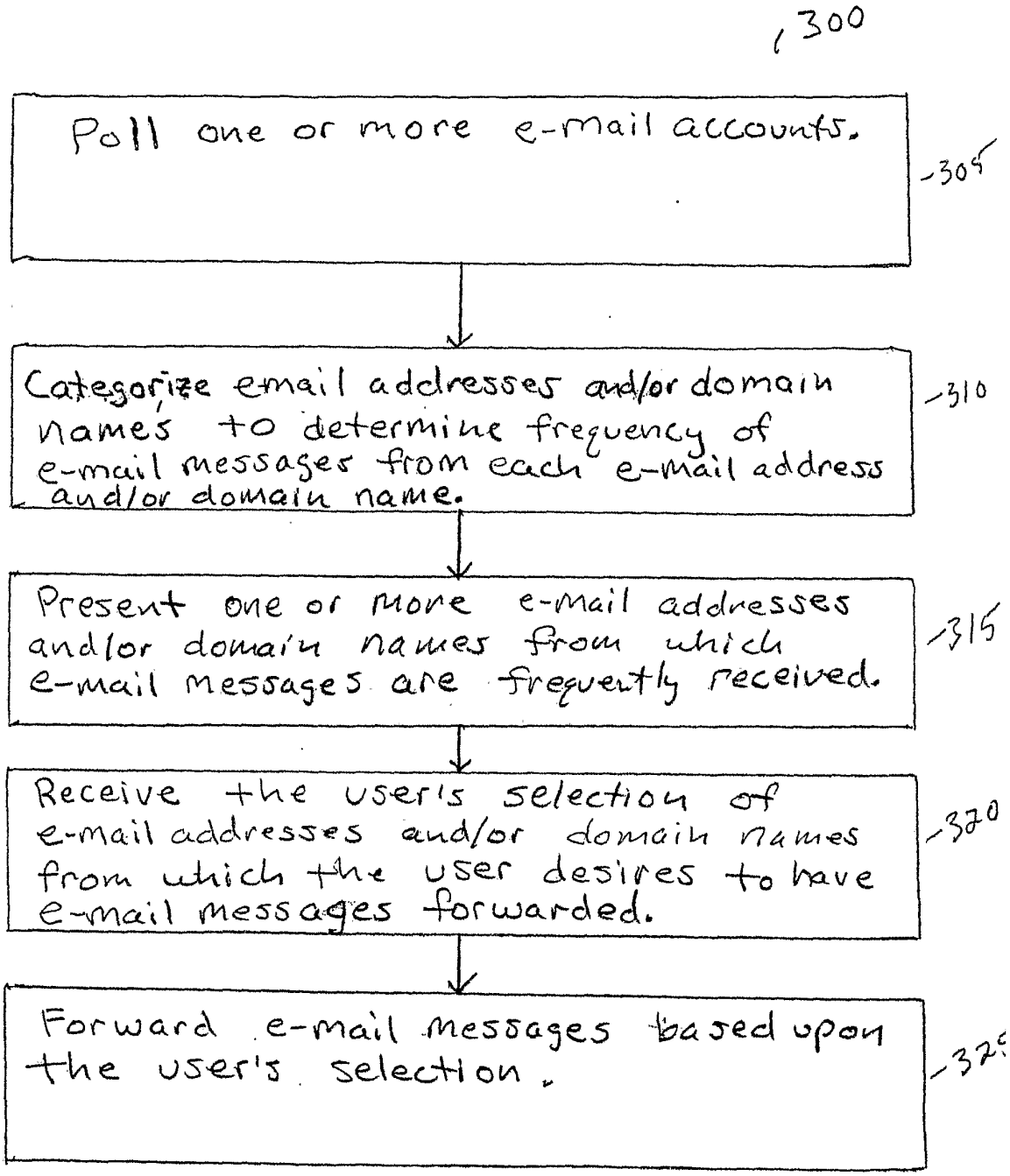
300
Poll one or more e-mail accounts.
305
Categorize email addresses and/or domain names to determine frequency of e-mail messages from each e-mail address and/or domain name.
310
Present one or more e-mail addresses and/or domain names from which e-mail messages are frequently received.
315
Receive the user's selection of e-mail addresses and/or domain names from which the user desires to have e-mail messages forwarded.
320
Forward e-mail messages based upon the user's selection.
325

Fig. 3

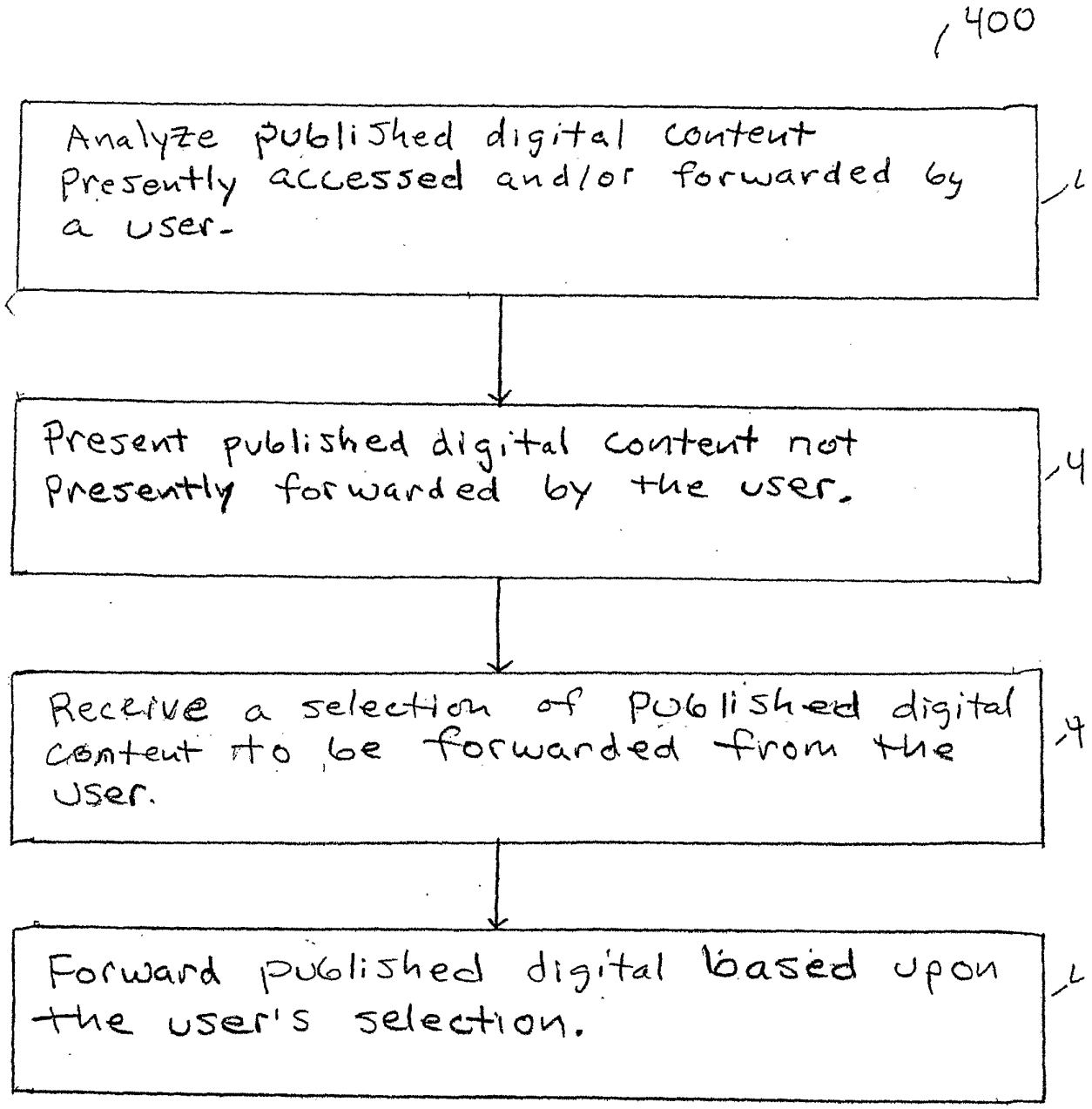
400
Analyze published digital content presently accessed and/or forwarded by a user.
402
Present published digital content not presently forwarded by the user.
404
Receive a selection of published digital content to be forwarded from the user.
406
Forward published digital based upon the user's selection.

Fig. 4

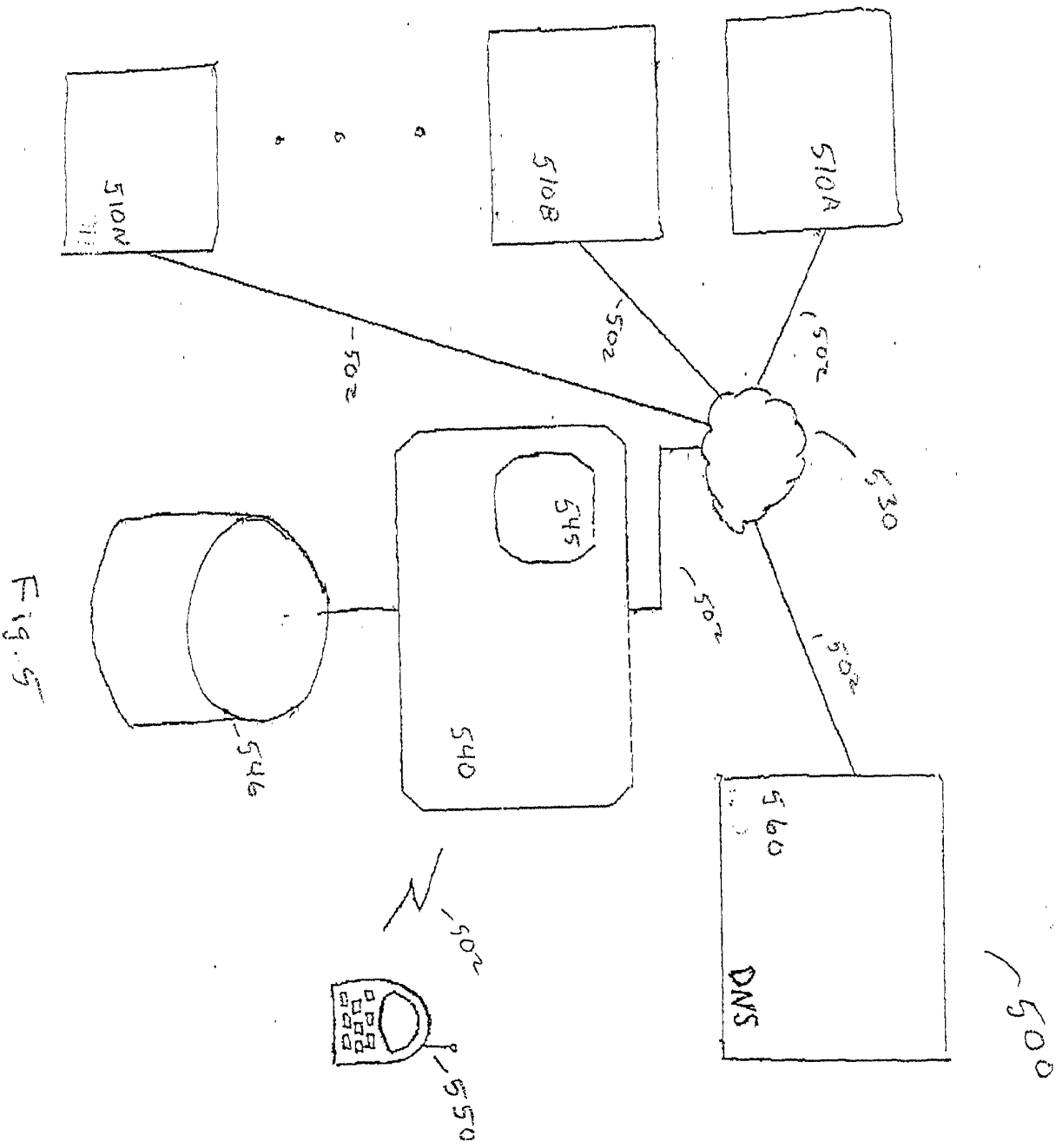

Fig. 5

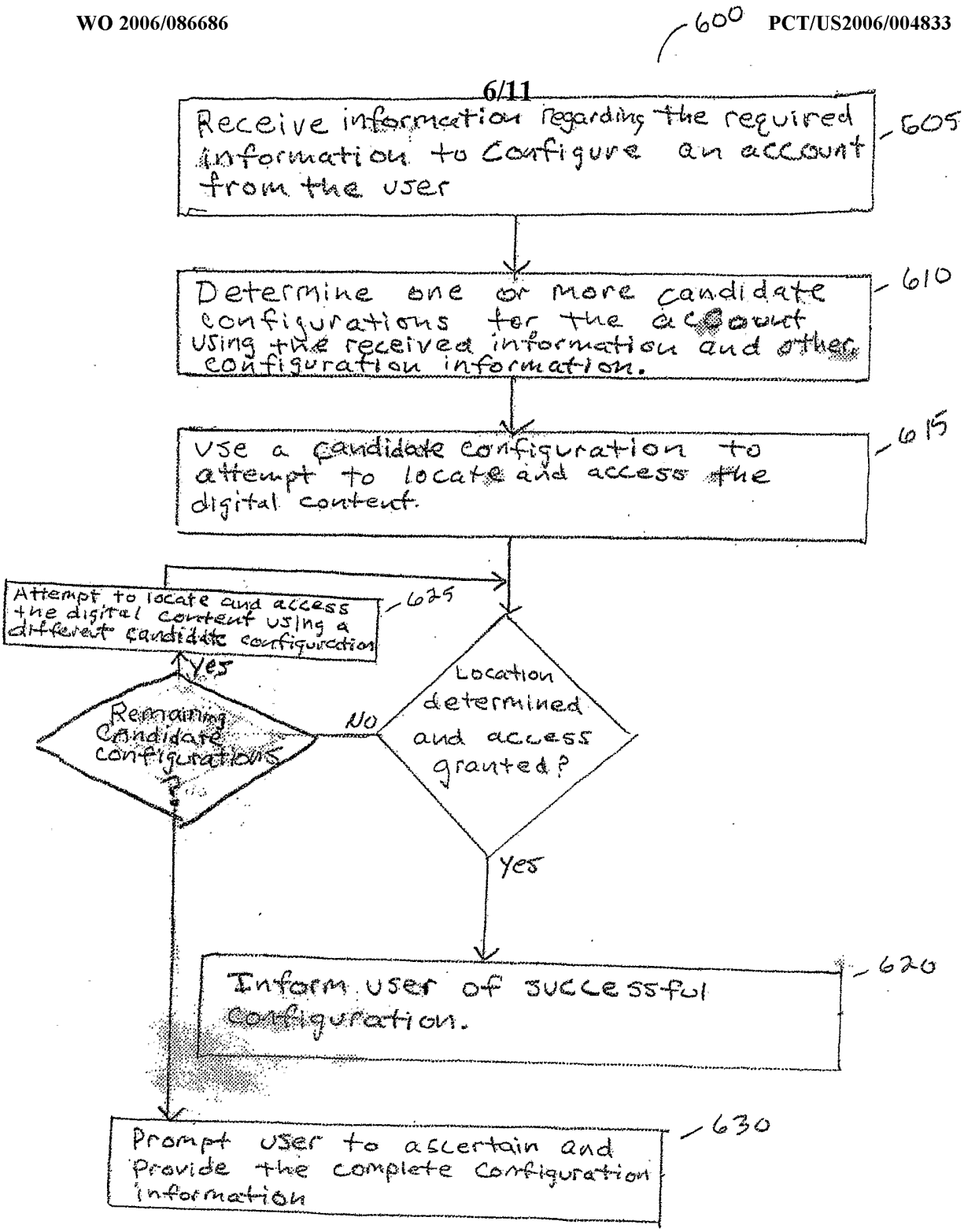
600
Receive information regarding the required information to configure an account from the user
605
Determine one or more candidate configurations for the account using the received information and other configuration information.
610
Use a candidate configuration to attempt to locate and access the digital content.
615
Attempt to locate and access the digital content using a different candidate configuration
625
Yes
Remaining candidate configurations?
No
Location determined and access granted?
Yes
Inform user of successful configuration.
620
Prompt user to ascertain and provide the complete configuration information
630

Fig. 6

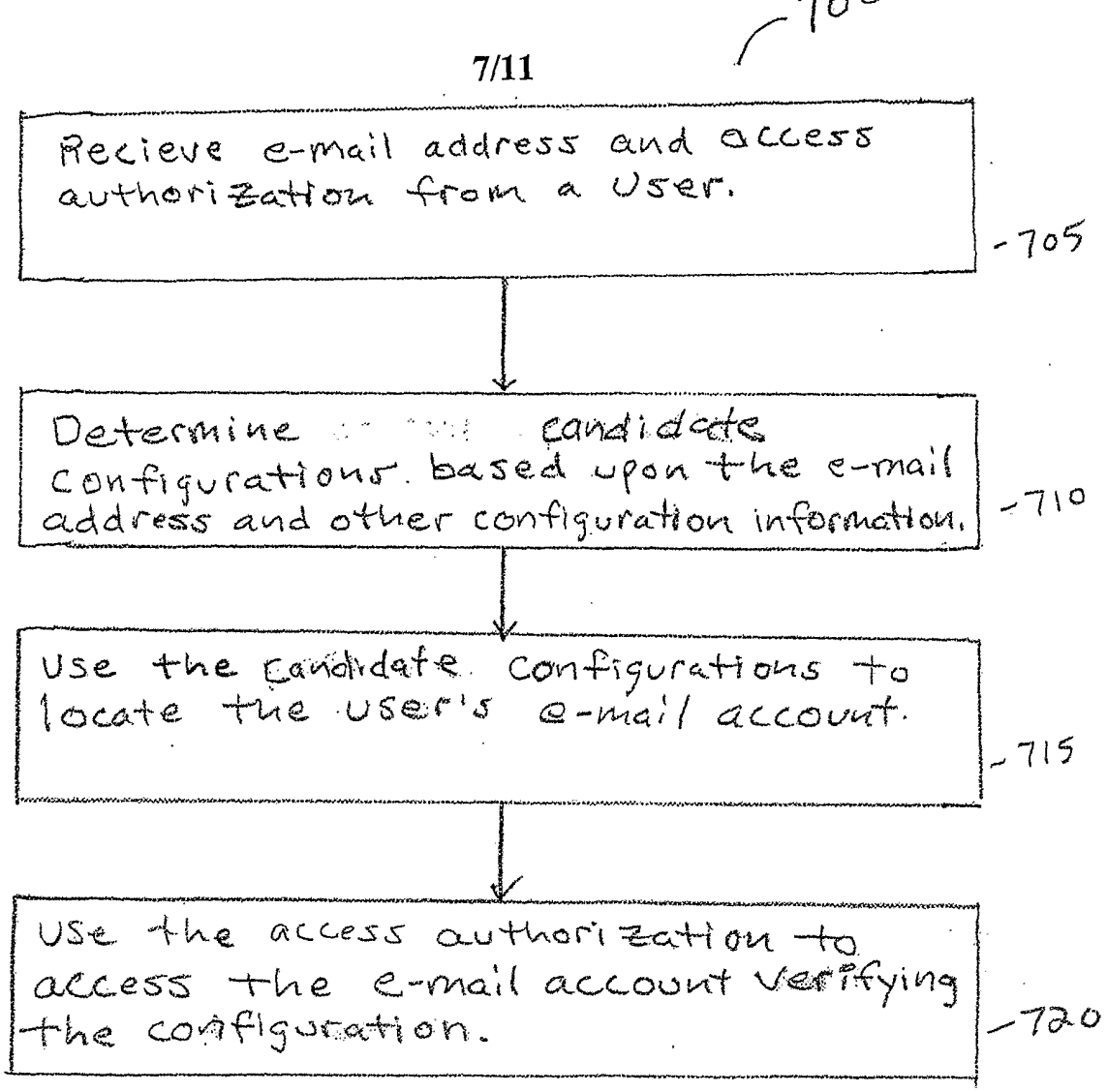
700
Recieve e-mail address and access authorization from a User.
705
Determine candidate configurations based upon the e-mail address and other configuration information.
710
Use the candidate configurations to locate the user's e-mail account.
715
Use the access authorization to access the e-mail account verifying the configuration.
720

Fig. 7

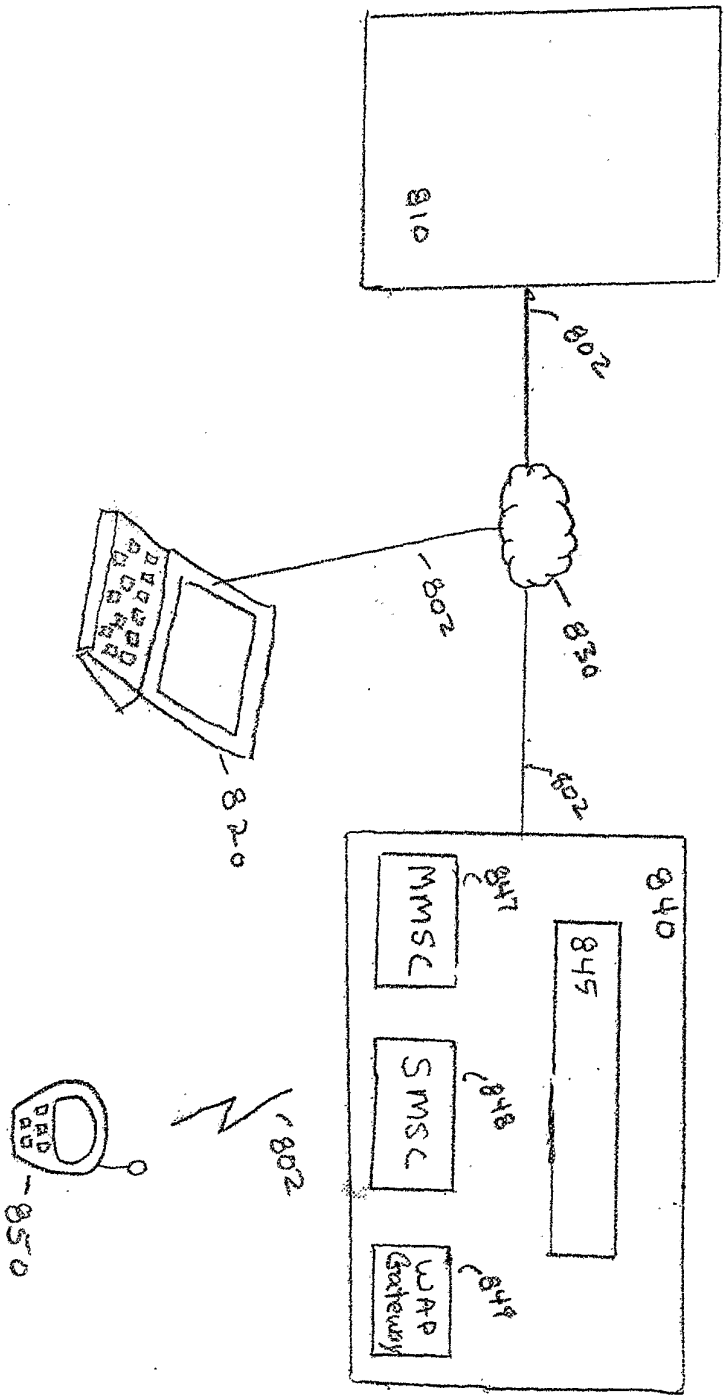
810
802
830
802
820
802
840
MMSC
847
SMSC
848
WAP Gateway
849
845
802
850
800

Fig. 8

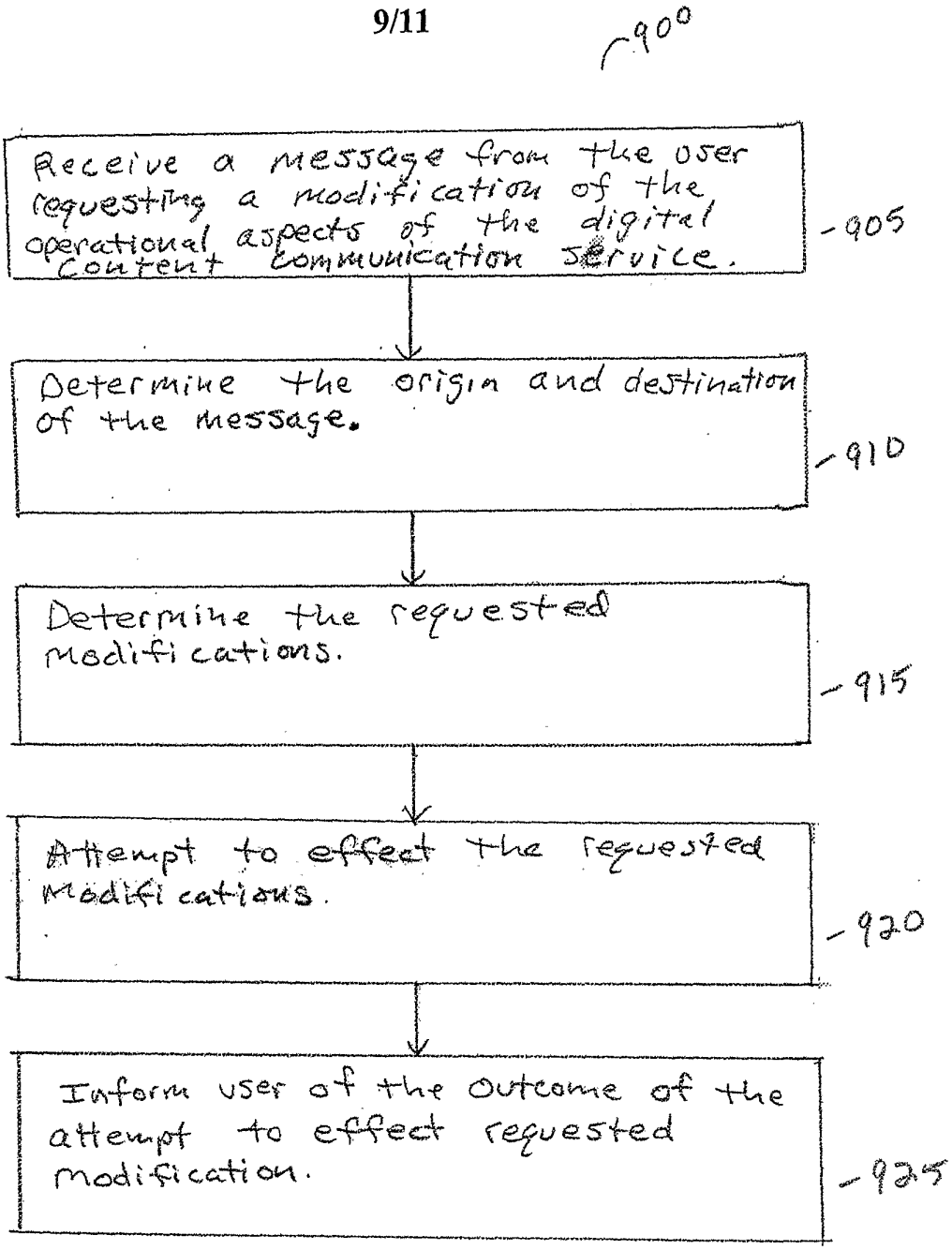
900
Receive a message from the user requesting a modification of the operational aspects of the digital content communication service.
905
Determine the origin and destination of the message.
910
Determine the requested modifications.
915
Attempt to effect the requested modifications.
920
Inform user of the outcome of the attempt to effect requested modification.
925

Fig. 9

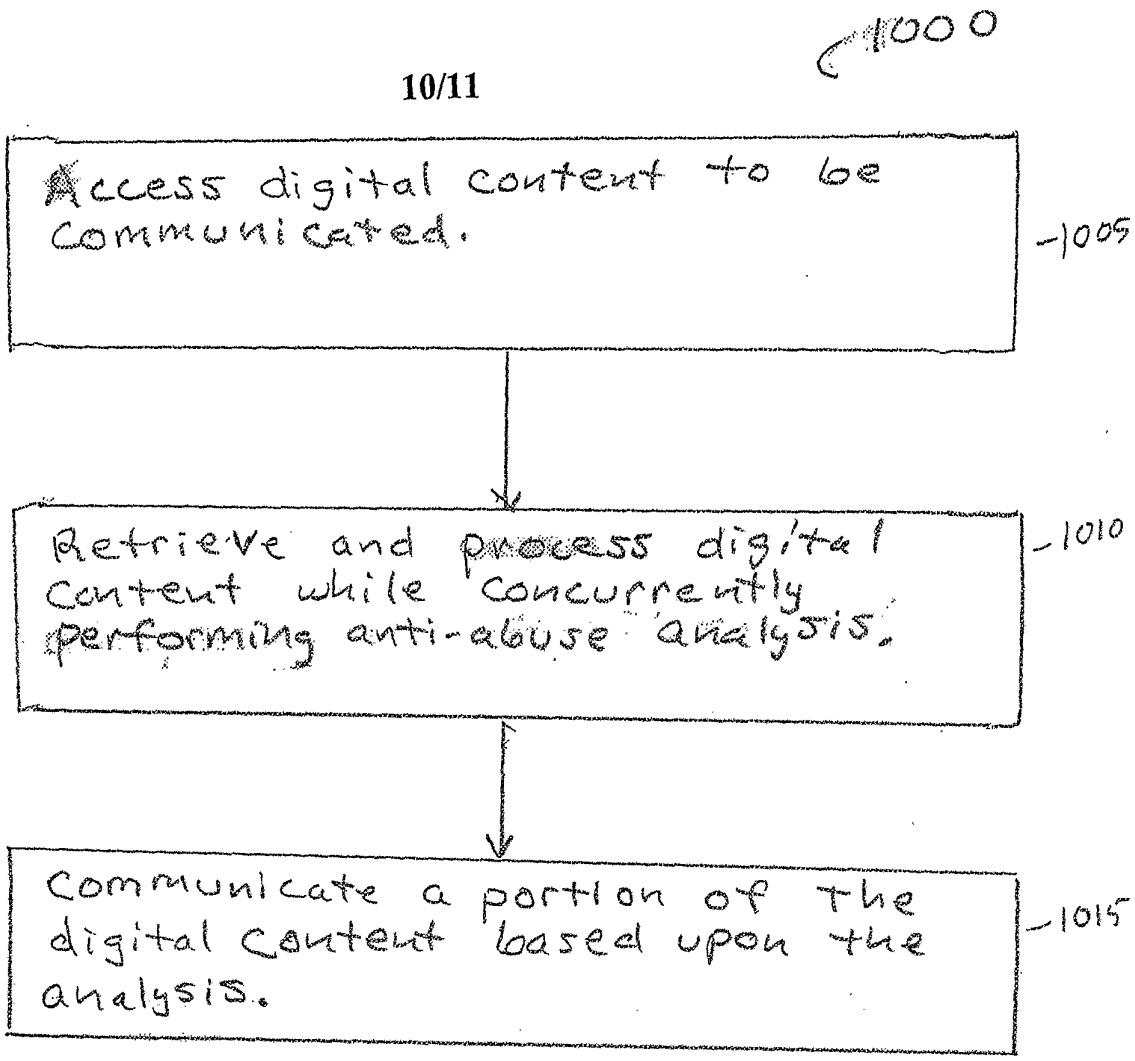
1000
Access digital content to be communicated.
1005
Retrieve and process digital content while concurrently performing anti-abuse analysis.
1010
Communicate a portion of the digital content based upon the analysis.
1015

Fig. 10

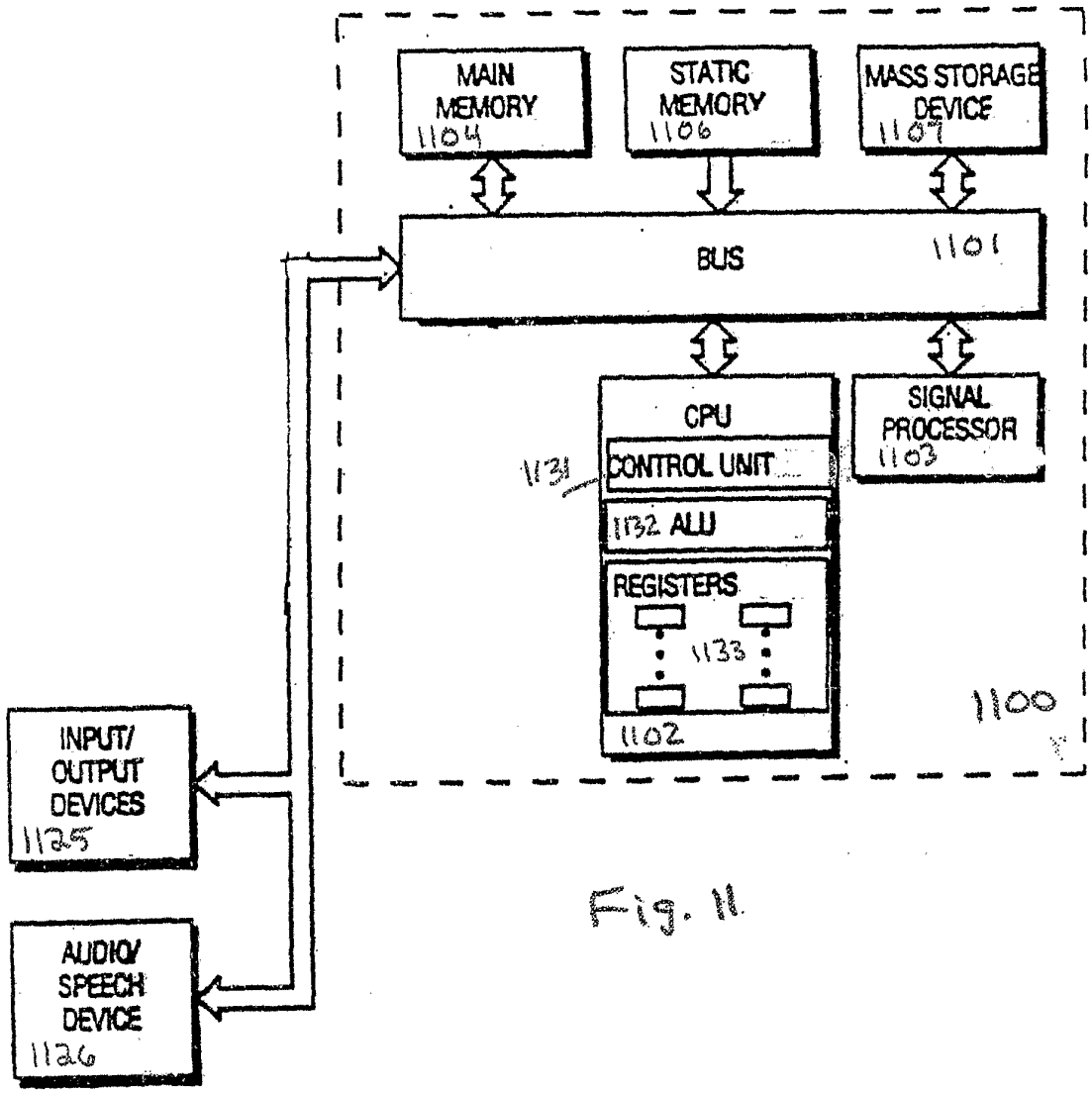
MAIN MEMORY 1104
STATIC MEMORY 1106
MASS STORAGE DEVICE 1107
BUS 1101
CPU
CONTROL UNIT 1131
1132 ALU
REGISTERS
1133
1102
SIGNAL PROCESSOR 1103
1100
INPUT/ OUTPUT DEVICES 1125
AUDIO/ SPEECH DEVICE 1126

Fig. 11