provide multimedia communications over a cellular network and/or over a data network. Herein, "data network" is used to refer to networks other than the data capabilities offered by commercial cellular networks. Examples of cellular networks (some of which provide data capabilities but are not "data networks" as used herein) include networks offered by cellular carriers such as T-Mobile, Sprint, Verizon, Nextel or others, that use protocols such as GSM, GPRS, CDMA, EVDO, Edge and so forth. Examples of data networks include the Internet, local area networks that use protocols such as 802.3 (Ethernet) and/or 802.11 (WLAN), and so forth. For example, according to certain embodiments of the present invention, an MMS handheld client **316** can be configured to provide services such as voice communications, email, instant messaging and so forth over a (non-cellular) data network, without requiring access to or enrollment with a cellular carrier.

[**0051**] According to certain embodiments of the present invention, the MMS client devices can be configured to provide "push-to-talk" or "walkie-talkie" capabilities, in which a first user can initiate voice communications with a second user simply by pushing a button. The "button" in this case can be a physical button on the keyboard or in any other location on the handheld device, or a virtual button accessed by touching the device's screen. The push-to-talk capability can further be full-duplex, such that two users can hold down their respective push-to-talk buttons and continuously communicate with each other in real-time and at the same time.

[**0052**] According to certain embodiments of the present invention, the MMS server **300** can be configured to provide store-and-forward capabilities. Accordingly, if a first user sends a message to a second user who is not currently connected, the message is stored in the MDC **302** of the MMS server **300** until the second user connects. When the second user connects to the MMS server **300**, the message is then delivered.

[**0053**] For example, if two MMS handheld clients **316** are configured to provide voice capabilities, the first MMS handheld client **316** can record an audio message and send it to the second MMS handheld client **316**. The MMS server **300** can store the message until the second MMS handheld client **316** is connected. When the second MMS handheld client **316** connects to the MMS server **300**, the MMS server **300** can deliver the stored audio message.

[**0054**] For another example, the MMS handheld clients **316** can be configured to broadcast messages to more than one other MMS handheld client **316** at the same time, and can be further configured to automatically play certain types of audio messages upon receipt. Accordingly, if a first MMS handheld client **316** broadcasts an audio message to a second MMS handheld client **316** and a third MMS handheld client **316** that are connected to the MMS server **300**, the MMS server **300** will immediately deliver the audio message to the second and third MMS handheld clients **316** and the second and third MMS handheld clients **316** will automatically play the audio message. The MMS server **300** and MDC **302** can be configured to automatically store the audio message as it is sent by the first MMS handheld client **316**. For another example, if the same audio message is also sent to a fourth MMS handheld client **316** who is not currently connected, then the MMS server **300** can deliver the stored audio message when the fourth MMS handheld client **316** connects to the MMS server **300**, at which point the fourth MMS handheld client **316** can automatically play the audio message.

[**0055**] The HipVoice architecture can support and interface with numerous media communications frameworks and standards, including IMAP and POP3 email clients, SMS text messaging, Instant Messenger protocols (AIM, Yahoo, etc.), contacts and calendar items from productivity applications such as Microsoft Outlook, and various image- and video-messaging standards for cellular phones. The HipVoice architecture can also support and interface with other frameworks and standards common to various types of handheld devices or networked communications, including but not limited to GPS location services, barcode scanning capabilities, Active Directory and LDAP.

[**0056**] The HipVoice MMS Server **300** can support all the MMS features of the HipVoice client by, for example, running in mixed mode. Message communications can be restricted through a lock-down mode protocol, while call communications can run in open mode. A web-based tool can allow a system administrator to set system parameters, manage users, monitor and manage messages, and manage sessions. Active Directory and LDAP integration can be supported for easy migration of user accounts.

[**0057**] According to certain implementations, HipVoice can integrate multiple handheld appliances into a single multi-function handheld unit. For example, for implementations that emphasize voice-based technologies for mobile users, several voice-related technologies can be incorporated or integrated into the MMS client handheld device **316**, including not limited to dialing to external voice phone numbers, importing SIM data from other mobile devices, n-way voice conferencing, speed dial, call history, caller ID, caller ID blocking, call holding, call waiting. For another example, HipVoice implementations emphasizing mobile users can provide an interface for disabling the mobile antenna when necessary such as when flying on an airplane.

[**0058**] In addition to providing the necessary MMS Server **300** implementation, the HipVoice server can be extended as needed to support all the requirements of a particular HipVoice Client implementation or MMS client hardware **314**, **316**. For example, an MMS mobile device can include an integrated barcode scanner, and the corresponding MMS server can be extended to provide integrated barcode features such as integration with an inventory management system.

[**0059**] For another example, an MMS mobile device **416** can be configured to make calls within the MMS network, meaning calls to users connected to the same MMS Server **300** or to an interconnected MMS Server **300**, using VOIP and to make calls outside the MMS network using a cellular communications network.

[**0060**] In cases where an MMS system is configured to connect to multiple networks having varying characteristics such as signal strength and cost per unit of data, the MMS system can be configured to route outgoing calls based on predefined preferences. For example, a user could define a call routing scheme of "least expensive network first," in which case the MMS system could automatically connect to the lowest cost network available at the time of the call.