

AN EXAMPLE

[0067] A mobile phone that does not utilize the present invention generally does not make use of any geographical information, beyond the fact that the phone determines if it is within or outside of the phone's home calling area. Thus, the user of the mobile phone must determine the appropriate dialing codes. Although this may be relatively easy if the user is in a location that requires an area code familiar to the user, it may render many of the entries in the mobile phone's autodialer unusable and may result in repeated recorded phone messages to the user to "hang up and dial again," as the user experiments with various dialing codes. If the mobile phone is used in a foreign country, the user may not understand any recorded foreign-language messages that are received, or know the proper dialing codes needed to reach the intended called party.

[0068] Some aspects of the present invention can be illustrated by considering the travels of an American mobile phone user as he slowly migrates from his mobile phone's "home" calling area to an overseas location in Germany. For this example, the American mobile phone user has a home calling area in Portland, Maine, a state presently served by the single area code (207) and which generally permits 7-digit in-state calling. Within the home calling area, the caller knows that: (1) all local calls may be dialed with 7-digits, (2) out-of-state calls must be dialed with 10-digits (i.e., NPA-NXX-SUBN, where SUBN stands for the 4-digit subscriber number, NXX stands for the central office code, and NPA stands for the area code); and (3) international calls require the leading digits "011" from the United States or "00" from many foreign countries to indicate an international call, followed by a 1-, 2-, or 3-digit country code (CC) and the called party's subscriber number of up to 10-digits. This example assumes that the mobile phone user has programmed various phone numbers into the mobile phone's auto-dialer.

[0069] If the mobile phone does not utilize the present invention, then, when the mobile phone user places a call to home and is 20-50 miles from home, but still within the home area code of 207, the user will find that the 7-digit dialing capability fails and the call must be re-placed using the area code. Thus, all the 7-digit numbers within the autodialer memory become useless, and calls involving these numbers must be manually dialed using 10-digits. Similarly, voice-activated commands, such as "call home" will fail under these same circumstances if those numbers were stored as 7-digit numbers.

[0070] In the circumstances described in the previous paragraph, the present invention would aid the mobile phone user in completing his call without redialing. In particular, the present invention would use information received by the mobile phone from the transmission tower supporting the mobile phone to determine that the phone is outside of its home area and may also determine that 7-digit calls initiated from the auto-dialer would require insertion of the 207 prefix.

[0071] The mobile phone user then travels to New Hampshire, which uses area code 603, to pick up the first of two international traveling companions. His first companion advises the mobile phone user that he should call ahead to check on the second traveling companion, who also is located in New Hampshire. The mobile phone user hands the phone to his companion and asks him to call. As the New

Hampshire companion is accustomed to dialing 7-digits in New Hampshire, he dials only those 7-digits. If the mobile phone does not utilize the present invention, then the New Hampshire companion receives a message to redial using 10-digits. If, however, the mobile phone does utilize the present invention, then the caller could complete the call without redialing. In particular, and in some embodiments, the present invention would recognize that a non-auto-dialer, 7-digit call was being made from a non-home location in New Hampshire, and would prompt the caller with appropriate area code choices for New Hampshire, such as 603 and, depending on the scope, 207 and other area codes from other geographically close locations. As described above, invalid combinations of area codes and exchanges would not be offered as choices, thus reducing choices.

[0072] Finally, the mobile phone user and his companions arrive in Frankfurt, Germany and wish to contact their German business hosts, before boarding their final flight to Berlin. The mobile phone user from Maine is using a globally-enabled mobile phone and had entered phone numbers of the German contact people into the autodialer, as he would dial them from home. The mobile phone user dials his principal German host, located in Berlin, using a number stored as 01 149-30-xxxxxxx in the autodialer. If the mobile phone does not utilize the present invention then the mobile phone user may receive a failure message in German. The mobile phone user may eventually determine that the USA-appropriate, 01149 prefix is incorrect from Frankfurt, and that he must redial the number as 030-xxxxxx. If the mobile phone does utilize the present invention, then it would analyze the original autodialer number; determine that it was appropriate only from the U.S.; determine that the phone was presently connected with a tower in the Frankfurt, Germany, area and not in Berlin; strip off the 011-49 prefix; and add the leading 0 (as required in dialing between German cities); and complete the call.

[0073] The 7-digit dialing ambiguity described above with reference to roaming mobile calls is an example of aspects of the present invention that some individuals may prefer to handle differently, in accordance with their personal preferences. For example, and in preferred embodiments, some users will prefer that their home area code is always used. In alternative preferred embodiments, some users will prefer to make a choice between the home area code, the local area code, or selected distant area codes. In preferred embodiments, the present invention will contain one or more setup menus, as would be apparent to one of skill in the art in view of this specification and the appended claims, which are used by users to configure the present invention in accordance with the user's personal preferences. For example, and in a preferred embodiment, a setup menu would customize the processing of the 7-digit ambiguity by permitting the user of the present invention to select an option, as follows: "After manual entry of a 7-digit number, (a) always prompt me concerning valid area code choices, (b) always dial my home area code only, (c) always dial the local area code I am within, (d) always provide me with at least N feasible area code choices." In preferred embodiments, the selection of option (d) would result in a further prompt asking the user for the maximum number of nearby area codes to be checked (e.g., 8) or for a list of area codes that are user-preferred candidate choices. For example, a user who resides in Maine but frequently calls business associates in California may provide a list of frequently-utilized California area codes. In