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Señor

SUPERINTENDENTE DE INDUSTRIA Y
DIVISIÓN DE NUEVAS CREACIONES
E. S. D.

SUPERINDUSTRIA Y CIENCIA

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Trámite: 002 PATENTES D 1 REGISTRADO/ 329 COMPLETADO

Dependencia: 2000 DIVISION DE NUEVAS CREACIONES

REF. Expediente:

00-097.930

Patente de Invención:

METODO PARA LA
FACILITACION DE LAS
COMUNICACIONES
ELECTRONICAS
ERICSSON INC.

Titular:

DESTINO: 09

Humberto RUBIO CAMACHO, mayor de edad, vecino de Bogotá, D.C., identificado con la cédula de ciudadanía número 17'192.062 de Bogotá, abogado en ejercicio portador de la Tarjeta Profesional No. 50.007, expedida por el Consejo Superior de la Judicatura, en carácter de apoderado de la Sociedad **ERICSSON INC.**; encontrándome dentro del término legal establecido en el Artículo 4º del Convenio de París, me permito anexar los siguientes documentos:

- 1.- Copia certificada de la Solicitud No. 09/514,657 del 29 de Febrero del 2.000, expedida por la Autoridad Competente, junto con su respectiva traducción al Castellano; base de la prioridad reivindicada en la solicitud de registro de la Patente de Invención citada en la referencia; todo de conformidad con el Artículo 4º del Convenio de la Unión de París y el Concepto 5 de enero de 1.999 de la SIC.

Atentamente,

**HUMBERTO RUBIO CAMACHO**

C.C. 17'192.062 de Bogotá

T.P. 50.007 Consejo Superior
de la Judicatura

COD 4134

00/1076-06/PI

LOS ESTADOS UNIDOS DE AMERICA

DEPARTAMENTO DE COMERCIO DE LOS ESTADOS UNIDOS

Oficina de Marcas y Patentes de los Estados Unidos

Diciembre 22, 2000

ESTO ES PARA CERTIFICAR QUE LO ADJUNTO A ESTE DOCUMENTO ES UNA FIEL COPIA DE LA OFICINA DE MARCAS Y PATENTES DE LOS ESTADOS UNIDOS DE LOS DOCUMENTOS DE LA SOLICITUD DE PATENTE IDENTIFICADA POSTERIORMENTE QUE CUMPLE LOS REQUISITOS PARA SER OTORGADA EN UNA FECHA DE PRESENTACION BAJO 35 USC 111.

NUMERO DE SOLICITUD: 09/514,657
FECHA DE PRESENTACION: Febrero 29, 2000

**Por Autoridad de
COMISIONADO DE MARCAS Y PATENTES**

T. WALLACE
Certificador oficial

Coats
&
Bennet

Febrero 2 2000.

CORREO VIA EXPRESS No. EL 552045955US

SOLICITUD DE PATENTE

Honorable Comisionado de Patentes
y marcas
Washington, D.C. 20231

RE: U.S. Solicitud de Patente

Inventor: Anders Waesterlid

**METODO PARA LA FACILITACION DE LAS COMUNICACIONES
ELECTRONICAS**

Apreciado Señor:

Anexo encontrar la Solicitud de Patente anteriormente
identificada, que incluye lo siguiente:

1. Especificaciones y Reivindicaciones
2. Dibujos formales (3 juegos de 9 hojas)
3. Declaración y Poder de Abogado para Solicitud de Patente
4. Traspaso incluyendo
5. Corrección preliminar
6. Certificación por correo express- Estampilla No. EL552045955US
7. Postal

También anexo nuestro cheque por la cantidad de \$820.00 para cubrir la tasa de presentación Gubernamental y archivo del Traspaso, si las tasa no son suficientes, por favor deducir de nuestra Cuenta No. 18-1167.

Respetuosamente,
Coats & Bennet

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OFICINA DE MARCAS Y PATENTES EN LOS ESTADOS UNIDOS

En re Solicitud de :)
Anders Waesterlid)
Numero de Serial. _____)
Presentado: _____)
Para: **METODO PARA LA FACILITACION**)
DE LAS COMUNICACIONES ELECTRONICAS)
Agenda de abogado No. P-4015.321)

Certificación Correo Express
Estampilla No. EL552045955US

Raleigh, North Carolina
Febrero 29, 2000

Honorable Comisionado de Patentes y Marcas
APARTADO SOLICITUD DE PATENTE
Washington, D.C. 20231

CERTIFICADO DE CORREO EXPRESS ESTAMPILLA NO. EL552045955US
FECHA DE ENVIO: Febrero 29 2000.

Yo certifico que la especificación anexada y reivindicaciones, dibujos (3 juegos de 10 hojas), Declaración y Poder de Abogado, Traspaso y Hoja de Grabación, Corrección Preliminar, y nuestro cheque No. 0949 por la cantidad de \$820.00, están siendo depositados con el Servicio Postal de los Estados Unidos Oficina Postal de Correo Express a Dirección" servicio bajo 37 C.F.R. \$ 1.10 en la fecha indicada anteriormente y es enviada al Honorable Comisionado de Patentes y Marcas, Solicitud de Patente, Washington, D.C. 20231.

Respetuosamente,
Coats & Bennet

David E. Bennet
Registration No.32.194

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OFICINA DE MARCAS Y PATENTES EN LOS ESTADOS UNIDOS

En re Solicitud de :
Anders Waesterfield :
Serial No. TBA : **CORRECCIÓN PRELIMINAR**
Para: **METODO PARA LA FACILITACION** :
DE LAS COMUNICACIONES ELECTRONICAS :
Agenda de Abogado No.4015-321

Febrero 29 2000
Raleigh, North Carolina

Honorable Comisionado de Patentes
y Marcas
Washington, D.C. 20231

Señor:

En la Especificación

Por favor corregir la especificación de la solicitud de la patente antes mencionada en la pagina 8, linea 23. " La presentación lista 60 miembros del grupo de afinidad junto con la información de estado pertinente de cada miembro en lista" debe ser cambiado para leer, "La presentación 116 lista miembros del grupo de afinidad junto con la información de estado pertinente de cada miembro en lista".

Respetuosamente,
Coats & Bennet, P.L.L.C.

David E. Bennet
Registro No. 32.194

REIVINDICACIONES

1. Un método de comunicación implementado en una red de comunicaciones que permite que los miembros de un grupo de afinidad envíen a otros miembros de un grupo de afinidad y reciban de éstos información del estado. Dicho método de comunicación comprende:
 - a. La formación de un grupo de afinidad que contenga dos o más miembros.
 - b. El almacenamiento, en el dispositivo de comunicación de cada miembro, información del estado correspondiente a los demás miembros de dicho grupo de afinidad.
 - c. Cuando el estado de un miembro de dicho grupo de afinidad cambia, el envío por parte de dicho miembro de un mensaje de actualización de su estado a los demás Miembros de dicho grupo de afinidad.
 - d. La recepción de dichos mensajes de actualización de estados correspondientes a los demás miembros de dicho grupo de afinidad.
 - e. La actualización de la información de dicho estado en el dispositivo de comunicación individual de cada miembro cuando un mensaje de actualización de estado correspondiente a otro Miembro se recibe.
2. El método de comunicación de acuerdo con la reivindicación 1, en donde dicha información del estado comprende una pluralidad de elementos del estado.
3. El método de comunicación de acuerdo con la reivindicación 2, en donde la información del estado incluye por lo menos uno o más de los siguientes elementos sobre el estado: estado de encendido o apagado del miembro; estado de actividad del miembro y ubicación del mismo.
4. El método de comunicación de acuerdo con la reivindicación 2, en donde cada miembro individual selecciona los elementos del estado a

partir de una lista de elementos de estados disponibles que se reportan a los demás miembros de un grupo de afinidad.

5. El método de comunicación de acuerdo con la reivindicación 2, que además incluye el paso de designar un período durante el cual se habilitan las actualizaciones del estado.

6. El método de comunicación de acuerdo con la reivindicación 2, que además incluye el paso de designar un período durante el cual se suprimen las actualizaciones del estado.

7. El método de comunicación de acuerdo con la reivindicación 1, que incluyen además los pasos de detectar automáticamente cambios de estado en un miembro y de enviar mensajes de actualización del estado cuando se detecta un cambio de éste.

8. El método de comunicación de acuerdo con la reivindicación 7, en donde el estado de un miembro es monitoreado por el dispositivo de comunicación de dicho miembro, y en donde éste dispositivo de comunicación está programado para transmitir automáticamente un mensaje de actualización del estado cuando se detecta un cambio en éste.

9. El método de comunicación de acuerdo con la reivindicación 7, en donde un servidor centralizado monitorea el estado de dicho miembro en dicha red de comunicaciones y en donde se transmiten mensajes de actualización del estado a los demás miembros de dicho grupo de afinidad cuando el estado de uno de sus miembros cambia.

10. Un método de comunicación implementado en una red de comunicaciones móviles, que permite que los miembros de un grupo de afinidad envíen y reciban información del estado de los demás miembros de dicho grupo, éste método de comunicación comprende:

a. Formar un grupo de afinidad que contenga dos o más miembros

b. Almacenar datos de información del estado del miembro en dispositivos de comunicaciones móviles utilizados por dichos miembros.

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- c. **Enviar un mensaje de actualización del estado desde el dispositivo de comunicaciones de un primer miembro a un servidor centralizado cuando el estado de dicho miembro cambie.**
 - d. **Reenviar dicho mensaje de actualización del estado desde ese servidor a un segundo miembro de dicho grupo de afinidad.**
 - e. **Recibir dicho mensaje de actualización del estado en dicho dispositivo de comunicaciones móviles del segundo miembro.**
 - f. **Actualizar dicha información del estado en el dispositivo de comunicaciones móviles del segundo miembro cuando se reciba dicho mensaje de actualización del estado.**
11. **El método de comunicación de acuerdo con la reivindicación 10, en donde dicha información del estado comprende una pluralidad de elementos de estados.**
12. **El método de comunicación de acuerdo con la reivindicación 11 en donde la información del estado incluye por lo menos uno o más de los siguientes elementos de estados: estado encendido o apagado del miembro; estado de actividad del miembro, y localización del mismo.**
13. **El método de comunicación de acuerdo con la reivindicación 11, en donde cada miembro individual escoge los elementos de estados a partir de una lista de elementos disponibles de estados que se reportan a los demás miembros del grupo de afinidad.**
14. **El método de comunicación de acuerdo con la reivindicación 11, que además incluye el paso de designar un período durante el cual se permiten las actualizaciones del estado.**
15. **El método de comunicación de acuerdo con la reivindicación 11, que además incluye el paso de designar un período durante el cual se suprimen las actualizaciones del estado.**
16. **El método de comunicación de acuerdo con la reivindicación 10, que además incluye los pasos de detectar automáticamente cambios en un miembro y de enviar mensajes de actualización del estado cuando se detecte un cambio de éste.**

17. El método de comunicación de acuerdo con la reivindicación 16, en donde el estado de un miembro es monitoreado por el dispositivo de comunicaciones de dicho miembro, y en donde dicho dispositivo de comunicaciones se programa para transmitir automáticamente un mensaje de actualización del estado cuando se detecta un cambio en éste.
18. El método de comunicación de acuerdo con la reivindicación 16, en donde el estado de un miembro es monitoreado por un servidor centralizado de dicha red de comunicaciones y en donde se transmiten mensajes de actualización del estado a los demás miembros de dicho grupo de afinidad cuando el estado de un miembro cambia.
19. Un dispositivo de comunicaciones móviles que permite que un miembro de un grupo de afinidad envíe y reciba información del estado de los demás miembros de dicho grupo de afinidad. Este dispositivo de comunicación móvil comprende lo siguiente:
 - a. Una memoria para almacenar los datos de información del estado del miembro.
 - b. Un transmisor sensible, para transmitir mensajes de actualización del estado a los demás miembros de dicho grupo de afinidad, cuando ocurre un cambio en el estado de un miembro.
 - c. Un receptor para recibir los mensajes de actualización del estado de los demás miembros de dicho grupo de afinidad.
 - d. Un procesador operativamente conectado a dicha memoria, para registrar y recuperar información del estado desde y hacia dicha memoria. Para:
 1. Generar un mensaje de actualización del estado cuando el estado de un miembro cambia, que será transmitido por dicho transmisor a los demás miembros de dicho grupo de afinidad.

2. Actualizar la información del estado almacenada en dicha memoria, cuando se recibe un mensaje de actualización del estado de otro miembro de dicho grupo de afinidad.
- 5 20. El dispositivo de comunicaciones móviles de acuerdo con la reivindicación 19, en donde la información del estado de miembro almacenada en la memoria incluye una pluralidad de elementos de estados.
- 10 21. El dispositivo de comunicaciones móviles de acuerdo con la reivindicación 20, en donde los elementos de estados incluyen uno más de los siguientes elementos de estados: estado encendido o apagado del miembro, estado de actividad del miembro y ubicación del mismo.
- 15 22. El dispositivo de comunicaciones móviles de acuerdo con la reivindicación 19, que incluye además medios para seleccionar elementos de estados a partir de una lista de elementos de estado disponibles que son reportados a los demás miembros de grupo de afinidad.
- 20 23. El dispositivo de comunicaciones móviles de acuerdo con la reivindicación 19, que incluye además medios para designar un período durante el cual se permiten actualizaciones del estado.
24. El dispositivo de comunicaciones móviles de acuerdo con la reivindicación 19, que incluye además medios para designar un período durante el cual las actualizaciones del estado se suprimen.
- 25 25. El dispositivo de comunicaciones móviles de acuerdo con la reivindicación 19, que incluye además medios para detectar automáticamente cambios en el estado de un miembro y medios para enviar mensajes de actualización del estado cuando se detecta un cambio en éste.

PA 345547

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

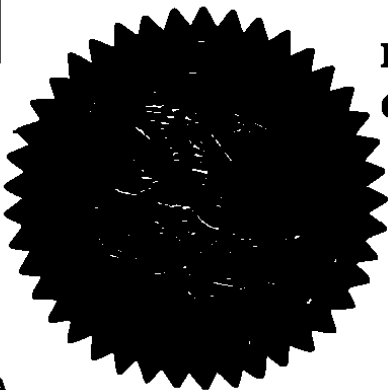
December 22, 2000

**THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM
THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK
OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT
APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A
FILING DATE UNDER 35 USC 111.**

APPLICATION NUMBER: 09/514,657

FILING DATE: February 29, 2000

**By Authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS**



T. Wallace
T. WALLACE

Certifying Officer

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Coats & Bennett

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Patents, Trademarks,
Copyrights, Trade Secrets,
Licensing, and
Related Litigation

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Patent Agent
Michael D. Murphy

February 29, 2000

VIA EXPRESS MAIL LABEL NO. EL552045855US

BOX PATENT APPLICATION

Honorable Commissioner of Patents
and Trademarks
Washington, D.C. 20231

RE: U.S. Patent Application
Inventor: Anders Waesterlid
**METHOD FOR FACILITATING ELECTRONIC
COMMUNICATIONS**

Dear Sir:

Enclosed please find the above-identified U.S. Patent Application, which includes the following:

1. Specification and Claims
2. Formal Drawings (3 sets of 9 sheets)
3. Declaration and Power of Attorney for Patent Application
4. Assignment Including Recordation Form Cover Sheet
5. Preliminary Amendment
6. Express Mail Certification - Label No. EL552045855US
7. Postcard

Also enclosed please find our check in the amount of \$820.00 to cover the Government Filing Fee and recordation of the Assignment. If fees are not sufficient, please deduct from our Deposit Account No. 18-1187.

Respectfully submitted,

COATS & BENNETT, P.L.L.C.

By:

David E. Bennett

David E. Bennett
Registration No. 32,194

DEB/mjp
Enclosures
P-4015.321

jc864 U.S. PRO
09/514657
02/29/00

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jc864 U.S. PRO
02/29/00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Anders Waesterlid

Serial No. _____

Filed: _____

For: **METHOD FOR FACILITATING
ELECTRONIC COMMUNICATIONS**

Attorney's Docket No. P-4015.321

**Express Mail Certification
Label No. EL552045955US**

Raleigh, North Carolina

February 29, 2000

Honorable Commissioner of Patents and Trademarks

BOX PATENT APPLICATION

Washington, D.C. 20231

EXPRESS MAIL CERTIFICATE LABEL NO. EL552045955US

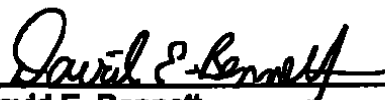
DATE MAILED: February 29, 2000

I hereby certify that the enclosed specification and claims, drawings (3 sets of 10 sheets), Declaration and Power Of Attorney, Assignment and Recordation Sheet, Preliminary Amendment, and our Check #0949 in the amount of \$820.00, are being deposited with the United States Postal Service Express Mail Post Office to Addressee" service under 37 C.F.R. §1.10 on the date indicated above and is addressed to Honorable Commissioner of Patents and Trademarks, BOX PATENT APPLICATION, Washington, D.C. 20231.

Respectfully submitted,

COATS & BENNETT, P.L.L.C.

By:


David E. Bennett
Registration No. 32,194

Telephone: (919) 854-1844

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:
Anders Waesterild	:
Serial No. TBA	: PRELIMINARY AMENDMENT
Filed: TBA	:
For: METHOD FOR FACILITATING ELECTRONIC COMMUNICATIONS	:
Attorney's Docket No. 4015-321	:

February 29, 2000
Raleigh, North Carolina

Honorable Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Sir:

In the Specification

Please amend the specification of the above referenced patent application on page 8, line 23 as follows. "The display 80 lists members of the affinity group along with the pertinent status information of each listed member" should be changed to read "The display 116 lists members of the affinity group along with the pertinent status information of each listed member."

Respectfully submitted,

Coats & Bennett, P.L.L.C.

By: *David E. Bennett*

David E. Bennett
Registration No. 32,194

Telephone: (919) 834-1844

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Express Mail Label No.: EL552045955US
Date Mailed: February 29, 2000

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UNITED STATES PATENT APPLICATION FOR GRANT OF LETTERS PATENT

Anders Waesterlid
INVENTOR

METHOD FOR FACILITATING ELECTRONIC COMMUNICATIONS

00541657-022000

COATS & BENNETT, P.L.L.C.
P.O. Box 5
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METHOD FOR FACILITATING ELECTRONIC COMMUNICATIONS

Field of the Invention

The present invention is relates generally to mobile communications devices and more particularly, to a method for establishing affinity groups that enable members of the group to send status information to and receive status information from other members of the affinity group.

Background of the Invention

One reason for the popularity of portable, wireless communication devices, such as cellular phones, is that it frees people from tethers to fixed communication networks. A user can roam freely in the network, yet remain in touch with others. Thus, mobile communication devices provide a means by which people can remain in contact with whomever they want, wherever they happen to be. This is especially true among groups of individuals who share a common interest or affiliation (e.g. families, co-workers, those who share a common avocation or interest, such as tennis or music, and members of a club). Such groups shall be referred to herein as an affinity group.

Several existing technologies facilitate interaction among the members of an affinity group: Internet "chat rooms," electronic mail (e-mail), advanced personal information management (PIM) applications such as Microsoft® Outlook, paging services, and advanced messaging services employing contact servers. Some Internet chat software, for example AOL® Instant Messenger™, ICQ or other similar programs, inform members of an affinity group which other members of the group are currently logged into the server. Microsoft Outlook provides a means for automatically scheduling meetings and notifying participants based on available time shown on each individual's calendar. Some advanced messaging services employing contact servers provide information on how to best contact a particular individual based on the person's stored schedule or preferences. In some cases, the assistance may even extend to automatically setting up a call using the best possible known method at that time.

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All these technologies support, to some degree, the desire of members of an affinity group to stay in close contact. The Internet chat room approach of informing the user which affinity group members are on-line is particularly useful. However, this approach has limitations, the most serious of which is that the user must be logged onto the Internet and in contact with a particular server to receive information on the status of the other group members. For example, suppose a first group member would like to chat with a second member. The first member has no way of knowing whether the first member is logged onto the chat server without first logging onto the server himself.

Therefore, there is a need for a communication method that allows members of an affinity group to receive up to date status information about other group members without having to log into a server.

SUMMARY OF THE INVENTION

The present invention is a connectionless status reporting method that allows members of an affinity group to send status information to and receive status information from other members of the affinity group. The invention provides members of the affinity group with up-to-date information concerning the status of other members in the affinity group without having to establish a connection to a server to obtain such information. This makes it easier to contact members of the affinity group and to avoid common communication pitfalls, such as voice mail, phone tag, etc.

The present invention is particularly well-suited for mobile communication networks, though it can be applied to advantage in fixed networks as well. Each member of the affinity group is provided with a communication device, such as a cellular phone or personal digital assistant (PDA). The communication device includes a memory for storing member status information. An application running on the member's communication device monitors the member's status and sends a status update message to other members when a status change is detected. Status update messages may be sent directly from one member to another, or, alternatively, be sent to a centralized messaging server which then forwards the message to all other members. When a member receives a status update message from another member, the

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application running on the member's device updates the member status information stored in memory to reflect the current status of the member. The member can view member status information on a display to determine the status of a particular member.

In a preferred embodiment of the invention, the application can be programmed to allow each member to select the particular status items that the member wants to report to other members of the group. Also, status reporting can be limited to particular periods of time, such as during working hours.

An advantage of the present invention is that each member receives status updates concerning other members as long as the member's communication device is turned on. Status reporting is performed automatically and there is no need for the member to establish a connection to a server to obtain status information concerning other members. The user simply retrieves the latest status information from the memory of his communication device.

Brief Description of the Drawings

Fig. 1 shows a block diagram of a mobile communication network used to implement the communication method of the present invention;

Fig. 2 is a block diagram of a mobile communication device used to implement the communication method;

Fig. 3 is a diagram showing the general format for message used to implement the communication method;

Fig. 4 is a block diagram of an affinity group using a client/server approach;

Fig. 5 is a block diagram of an affinity group using a peer-to-peer approach;

Figs. 6A and 6B are a flow diagram of a set-up procedure used to create a new affinity group or to add a new member to an existing group;

Fig. 7 is a flow diagram of a resignation procedure for removing members from an existing group;

Fig. 8 is a flow diagram of a status update procedure for updating the status of a group member, and

Fig. 9 is a drawing of a user interface showing how member status information is displayed for viewing.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention is a communication method that allows members of an affinity group to send and receive status information to one another. The communication method is implemented in a communication network, such as a mobile communication network shown in Figure 1. The present invention is not, however, limited in its application to mobile communication networks, but may also be used in fixed networks. As seen in Figure 1, the cellular communication system comprises a plurality of cells 12 that provide radio coverage throughout the network. Each cell 12 is served by a base station 14 that provides radio coverage to mobile communication devices 100 within that particular cell. The base stations 14 are connected to a Mobile Services Switching Center (MSC) 16. Typically, a cellular network will include many MSCs 16. At least one MSC 16 in the network is connected via a gateway to the Public Switched Telephone Network (PSTN) 18. Some MSCs 16 also serve as gateways connecting the network 10 with other cellular networks. The function of the MSCs 16 is to route calls and signals in the network to the appropriate destination. For example, the MSC is responsible for connecting calls to the appropriate base station or to the PSTN or other connected network via a gateway. The mobile radio communication devices 100 may be cellular telephones, PCS phones, personal digital assistants (PDAs), pagers, or other similar devices that communicate over RF channels. The base stations 12 are connected to mobile service switching centers MSCs 16.

In order to perform its call routing function, the MSC 16 must know the location of the mobile phones in the PLMN network so that calls can be forwarded to the appropriate base station. Information concerning the whereabouts of each mobile phone is stored in databases that are centrally located in the network. Each service provider will typically maintain its own database containing subscriber information which is shared with other networks in the PLMN. These databases include the Home Location Register (HLR) 20 and the Visitor Location Register (VLR) 22.

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The HLR 20 is used to store information concerning subscribers to a cellular network. This information typically includes the user's name and address for billing purposes, the serial number of the user's mobile phone, and the services to which the user is entitled to receive. In addition, the current location of the subscriber is stored in the HLR 20 for retrieval by an MSC 16 to use in routing calls to the subscriber. The mobile unit registers with the servicing MSC 16 when it is powered on and at periodic intervals so that the servicing MSC 16 can keep track of the location of the mobile unit. The mobile unit also registers when it travels between two different service areas (areas served by different MSCs). As part of this registration procedure, the mobile unit transmits its Mobile Identification Number (MIN) to the MSC 16. The MSC 16 uses the MIN to determine which HLR 20 to access. When the mobile unit registers with MSC 16, the servicing MSC 16 updates the HLR 20 with the current location of the mobile phone. When an MSC 16 receives a call addressed to a subscriber that is not currently in that MSC's 16 service area, the MSC 16 will query the HLR 20 for the subscriber's location so that the call can be forwarded to the MSC 16 currently servicing the subscriber.

The VLR 22 is used to store information about users that are not in their home service area. When subscribers roam outside of their home service area, the VLR 22 in the area being visited must keep track of the subscriber's location and be able to verify the Mobile Identification Number (MIN) of the mobile telephone. The VLR 22 in the area being visited queries the HLR 20 in the subscriber's home service area to authenticate the subscriber and determine the services to which the subscriber is entitled. Information concerning the user is stored in the VLR 22 as long as the subscriber remains in the service area. The VLR 22 also stores the current location of the subscriber. The subscriber's current location is also communicated back to the home HLR 20 so that the home network will know how to forward calls addressed to the subscriber who is currently outside of the home network.

Many cellular networks 10 implement a service called the short message service. This service allows mobile users to send and receive short text messages. Messages originating from, or terminating at, a mobile phone 100 in the network are stored in a message center 24 connected to an MSC. The message center 24 is a store-and-

forward device or system that is used to support teleservices like cellular messaging. The typical interfaces to the message center 24 allow direct dial-in access, computer interface for e-mail delivery to phones, or human operator input for paging services. Mobile-originated SMS messages are initially forwarded to the MSC 16 servicing the addressed mobile phone 100 and routed by the MSC 16 to the message service center 24 where the SMS message is stored. The MSC 16 searches for the targeted mobile phone 100 and alerts the mobile phone 100 that a message is coming. The mobile phone 100 tunes to a designated messaging channel (typically an SDCCH channel) where it waits for the SMS message. The MSC 16 then forwards the SMS message to the mobile phone 100 on the designated channel and waits for an acknowledgement from the mobile phone 100 confirming receipt of the message. If an acknowledgement is received from the mobile phone 100, the message is removed from storage. If receipt of the message is not acknowledged, the MSC 16 may attempt to deliver the message again.

Referring now to FIG. 2, a communication device 100 that implements the present invention is shown. The particular embodiment disclosed is a personal digital assistant (PDA) though other types of communication devices, such as cellular phones and pagers could also be used. PDA 100 combines a cellular radio transceiver with a hand-held computer. The PDA 100 includes a microprocessor 110, program memory 112, user interface 114, including a display 116 and an input device 118, audio processing circuits 120, and a transceiver section 130 connected together by a system bus 150 having address, data, and control lines. The PDA may also include an infrared and serial interfaces, 140 and 142 respectively, for exchanging data with other devices.

The microprocessor 110 controls the operation of the device according to instructions stored in memory 112. The processor 110 can be any commercially available or custom microprocessor suitable for an embedded application. The memory 112 is representative of the overall hierarchy of memory devices containing the software and data used to implement the functionality of the communication device 100. The memory 112 can include, but is not limited to, the following types of devices: cache, ROM, PROM, EPROM, EEPROM, flash, SRAM, and DRAM. As shown in Figure 2, the memory 112 may hold four major categories of software and data used in the computing

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device: the operating system 112a; the input/output (I/O) device drivers 112b; the application programs 112c; and the application program data 112d.

The operating system 112a is typically designed for embedded applications and, preferably, is relatively compact to make the most efficient use of the memory. One such example of an operating system meeting these criteria is the EPOC operating system sold by Symbian Ltd., Sentinel House, 16 Harcourt St., London W1H 1DS UK, which was developed for portable hand-held computers and can be used in a preferred embodiment of the present invention.

The I/O device drivers 112b include software routines that are accessed through the operating system 112a by the application programs 112c to communicate with devices such as the display 116, certain components of the memory, and I/O ports such as a serial port 140 or Infra red (IR) port 142 for transferring data to another device or system.

The application programs 112c comprise the programs that implement the various application functions of the computing device 100. The application programs may include software to implement features such as e-mail, Internet access, word processing, or contact management. The present invention relates particularly to a messaging application residing in memory 112c. The messaging application 112c may be a stand-alone application or may be a component of a larger application, such as a contact manager. The static and dynamic data used by the application programs 112c is represented by the application data 112d.

The user interface 114 includes a display 116 and a user input device 118. Display 116 enables the user to view stored information, such as user status information. The input device 118 may be any known input device for a computing device including without limitation a keypad, pointing device (such as a mouse, trackball, touch pad, or light pen), or touch screen. Voice activation could also be used for user input.

The transceiver section 130 is a fully functional cellular transceiver capable of transmitting and receiving radio signals. The details of transceiver section 130 are conventional and well known to those skilled in the art. To briefly describe, the transceiver 130 of the preferred embodiment includes a digital signal processor 132 for

processing signals transmitted and received by the device 10, and an RF circuits 134 connected to an antenna 136. Since transceivers 130 are well-known in the art and are not per se material to the present invention, further description of the transceiver 130 is omitted for the sake of brevity.

The audio processing circuits 120 are shared by the transceiver 130 and application programs 112c executed by the processor 110. A microphone 122 converts audible sounds, such as voice, into electrical signals that are input to the audio processing circuits 120. The processed audio signals can be transmitted by said transceiver 130 or used by an application program in memory 112c. A speaker converts audio signals output by said audio processing circuits into audible sounds that can be heard by the user. The audio signals may be received by said transceiver 130, generated by an application program in memory 112c, or retrieved from memory 112d.

The messaging application stored in memory 112c enables members of an affinity group to obtain up-to-date status information about other members of the affinity group without the need to first connect to or poll a server. The status information for each group member may include, but is not limited to, the following status items:

- 1) current state of the members communication device 100,
- 2) current activity (e.g. work, meeting, lunch, traveling, of-duty, etc.), and
- 3) current location.

These are but a few examples of the types of status information that can be shared with members of the affinity group.

Figure 9 illustrates an example display screen, which might be used by a client application running on a member's mobile communication device 100. The display 60 lists members of the affinity group along with the pertinent status information of each listed member. There are many other ways in which the status information could be displayed. The particular manner chosen to display status information is not material to the invention, but is shown to facilitate the understanding of the invention.

In order to implement the status reporting method of the present invention, it is necessary for the messaging applications running on different users' communication devices 100 to exchange messages 150. Figure 3 shows the general format for all messages 150 used by the messaging applications. The content of particular

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messages 150 will be described in detail below. Each message 150 includes a header 152 comprising a Message Identifier field 154, Message Type field 156, and Group Identifier field 158. The header 152 is followed by an Information field 160 that varies from one type of message to another. The Message Identifier field 154 contains a flag that indicates to the receiving device 100 that the message is for the messaging application so that the receiving device can decode and route the message to the messaging application. The Message Type field 156 indicates the type of message contained in the packet (e.g. Membership Request message, Membership Reply message, Status message, Group Update message, etc.). The various types of messages are described below. The Group Identifier field 158 contains a unique identifier for the affinity group so that the application can discriminate between messages for different groups. This feature allows the user to join a plurality of different affinity groups.

Two distinct approaches may be taken to communication between group members. The preferred approach is the client server approach illustrated in Figure 4. In this approach, a messaging server 170 is installed at a central location in the network 10, such as the messaging center 24. Client applications 172 are installed in individual member's communication devices 100. The messaging server 170 is responsible for maintaining a master group database. Individual clients also maintain member status information in a member database or file. The short message service is used to transmit messages between the messaging server 170 and the clients 172 running on the individual member's communication devices 100. One advantage to using the short message service is that it allows the present invention to be easily implemented in any system where the short message service is already being used. A messaging server 170 can be easily installed at the messaging center 24 without significant modifications.

An alternative approach, called the direct messaging or peer-to-peer approach, is shown in Figure 5. In this approach, each communication device 100 is a peer 180 and communicates directly with other peers 180 in the group. There is no centralized server or database. Instead, each peer 180 in the group is responsible for maintaining its own database for each group in which that peer 180 is a member. Messages are sent as datagrams via the communication network 10 directly from one peer 180 to another.

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For example, when the status of a member changes, the peer 180 sends a Status Update message to every other peer 180 in the affinity group. This direct messaging or peer-to-peer approach has the drawback of requiring numerous uplink messages to be sent by the peer 180, particularly where the affinity group is large. On the other hand, the peer to peer approach does not depend on the network or a centralized server in order to function. The peer to peer approach can therefore be implemented in any network that supports datagram signaling between clients.

Messaging Procedures

The messaging procedures are largely independent of the particular communication method chosen. According to the present invention, a user creates an affinity group and then sends a Membership Request message inviting one or more other users to join the affinity group. The user creating the affinity group becomes the owner of the group and is referred to as the group administrator. Recipients of the Membership Request message can reply to the invitation by sending a Membership Reply message either accepting or declining the invitation to join the affinity group. Those accepting the invitation are added to the group along with the group administrator. After joining the affinity group, each existing member receives a Group Update message from the group administrator or messaging server containing the names of the other members to the affinity group. New members may also receive a Group Update message, but in this case, the message will contain information concerning the existing members and their current status.

A member of the affinity group can withdraw from the group by sending a Resignation message to the group administrator or messaging server. Receipt of a Resignation message by the group administrator or messaging server spawns a Group Update message deleting the resigning member from the group.

Once affinity group is established, Status Update messages are transmitted by members whenever their status changes. The client application monitors the user's status and reports any status changes to the messaging server or other group members. The Status Update messages allow all members of the affinity group to be

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kept abreast of the status of other members in the affinity group. As will be explained in more detail below, the member can customize the application to specify the type of status information that the member wants to disclose to other members.

Figures 6-8 illustrate the various procedures for establishing a group and reporting status information in a system using a centralized messaging server as shown in Figure 4. These procedures can be readily adapted for use in a peer to peer system.

Figure 6 is a flow diagram illustrating an exemplary setup procedure 200 for establishing a new affinity group or adding a new member to an existing group. A first user sends a Membership Request message via the messaging server 170 to one or more prospective members whom the first member would like to join the affinity group (block 202). The Membership Request message specifies a particular affinity group to which the request applies. The messaging server 170 determines whether the group specified in the Membership Request message already exists (block 204). If the group already exists, then the messaging server 170 simply relays the message to the addressed parties (block 208). If not, it creates a new affinity group and designates the first user as the group administrator (block 206). The Membership Request message is then forwarded by the messaging server 170 to the addressed parties (block 208). Only the group administrator can send a Membership Request message. The invitation to join an affinity group may be time limited. The time period to join may remain open for a predetermined time period that is set by default or for a time period that is specified by the group administrator in the Membership Request message.

The format of a Membership Request message is shown in Appendix A. Since the number of members is constantly changing, the length of the message is variable. As shown in Appendix A, the Membership Request message contains data corresponding to each member of the affinity group. The member data may include, for example, the name, address, telephone number, and current status of each member.

When the Membership Request message is received, the client application on the member's device displays the member information so that the receiver of the message can decide whether to join the affinity group. Prospective members who receive the Membership Request message can either accept or decline the invitation to join an affinity group by sending a Membership Reply message. When a Membership

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Reply message is received at the server 170 (block 210), the server 170 decodes the message and determines whether the prospective member has accepted or rejected the invitation to join the affinity group (block 212). The format of a Membership Reply message is shown in Appendix A. The Membership Reply message is a fixed length message. The Information field of a Membership Reply message includes only a response flag that indicates whether the prospective member has accepted or rejected the invitation to join the affinity group.

When a prospective member accepts a Request for Membership message, the client application on the new member's communication device 100 creates an affinity group database and stores it in memory. A record is created in the database or file for each member of the affinity group. Each user record is populated with the corresponding member data contained in the Membership Request message.

If the prospective member declines the invitation, the server 170 relays the Membership Reply message to the group administrator and no further action is taken (block 214). If the prospective member accepts the invitation, the server adds the prospective member to a member database stored in memory (block 216) and forwards the acceptance to the group administrator (block 218). A Group Update message is then sent to all current members (block 220). The Group Update message may be generated automatically by the server 170 or the client application running in the group administrator's communication device 100. In the latter case, the Group Update message is sent to the messaging server 170 and then forwarded to each member of the affinity group. The Group Update message contains a list of all members of the group, including the newly added member. The Group Update message may also include other information about the new member, such as home or business address, occupation, telephone number, or other pertinent information if desired.

The format of a Group Update message is the same as the Membership Request message, however, the Message Type field is different to distinguish it from the Membership Request message. The Group Update contains a complete list of Group Members and is sent to all members of the group. When the Group Update message is received by a member, the client application on the member's communication device

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100 takes appropriate action to add, delete, or modify member records in the corresponding group database.

Figure 7 illustrates the resignation procedure 300 for withdrawing from an affinity group. A resigning member sends a Resignation message to the messaging server. When the Resignation message is received (block 302), the server forwards the Resignation message to the group administrator (block 304) and then removes the resigning member from the group database (block 306). The group administrator or messaging server then generates a new Group Update message deleting the resigning member (block 308). After receiving the Group Update message, the client software on the member's communication device 100 deletes the resigning member from its records.

Figure 8 is a flow diagram illustrating the procedure 400 for updating status information. The flow chart is a composite of the actions taken by both the client and server applications. In the preferred embodiment, the client application 172 operates in the background to monitor the member's status (block 402). Periodically, the client application checks to see if the member's status has changed (block 404). If no change in status has occurred, no action is taken and the client application continues monitoring (block 402). When a status change is detected, the client application automatically sends a Status Update message to the messaging server (block 406). The user could cause a status update message to be sent by entering a new status. The format of the Status Update message is shown in Appendix A. The Status Update message includes, in the information field, a member status record field that contains data reflecting the current status of that member. The member status record field includes a Member Identifier field, an On/Off Status field, an Activity Status field, and a Location field. The messaging server relays the Status Update message to all members using the broadcast short message service (block 408). The server may combine Status Update messages received from different clients into a single message to reduce the number of messages that must be transmitted. An example of a combined Status Update message is shown in Appendix A. The Status Update message contains a plurality of member status record fields. Generally, there is one member status record field for each member whose status has changed.

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When a Status Update message is received by a client application, the client application takes appropriate action to update the group database to reflect the changes in member status (block 408). If desired, the client application can generate a signal to notify the user that a Status Update message has been received. The signal can be audible, visual, or tactile.

In the preferred embodiment of the invention, each member has the ability to specify what status information is made available to other members of the affinity group. Members may choose to communicate any subset of the three parameters discussed (on/off state, activity or location) or others that end users may create to the other members of the group. These preferences are preferably stored in the non-volatile memory in each member's communication device 100, or alternatively, at the messaging server 170. For applications in which parents may want to use the invention as a means to keep track of children (e.g. in an amusement park), a simple password security provision can be added so that the children cannot turn off the reporting of status information without the permission of a parent.

Further, in a preferred embodiment, the user can limit status reporting to predetermined time periods. For example, the user could program the client application 172 to send status updates only during a specified period. The period can be specified in any manner, such as by time. For example, the user could limit status reporting to daytime hours. Also, the user could specify a particular mode (e.g., work) corresponding to an activity status during which the user's status is reported. Equivalently, the user could suppress status reporting during a specified time period or mode.

The number of messages that must be sent by a client can be reduced by using available network information about phone on/off status or location. For example, the on/off status or location of the member can be reported to the messaging server by the HLR 22 eliminating the need for the client to report such information. The server 170 could then generate a Status Update message and send the Status Update Message to the members. In this embodiment, no uplink transmissions reporting changes in on/off status or location are needed. However, this would require that additional functionality be built into the network and may not be practical to implement in existing networks.

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It should be appreciated that the present invention can be applied to fixed networks such as the Internet or local area network. For the same reasons that it is desirable to know the status of other portable communication device carriers, it may desirable to know that a co-worker on a local area network is "In a meeting" or other status which may affect the desire of the user to contact the other member of the affinity group. Furthermore, it should be appreciated that the amount of information available in a single indoor wireless communication system, such as the Ericsson Freeset, is much greater. Specifically more information is immediately available at the location of each member of the group since the indoor base stations are generally fixed and known a priori.

The present invention may, of course, be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, and all changed coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

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APPENDIX A

Message Format

Membership Request Message

Message Identifier
Message Type
Group Identifier
Member Data (member 1)
Member Data (member 2)
...
Member Data (member k)

Membership Reply Messages

Message Identifier
Message Type
Group Identifier
Response Flag

Group Update Message

Message Identifier
Message Type
Group Identifier
Member Data (member 1)
Member Data (member 2)
...
Member Data (member n)

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Status Update Message (format used by client)

Message Identifier
Message Type
Group Identifier
Member Identifier
On/Off Status
Activity Status
Location

Status Update Message (format for combined message)

Message Identifier
Message Type
Group Identifier
Member Status Record 1
Member Status Record 2
Member Status Record 3
...
Member Status Record n

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6. The communication method according to claim 2 further including the step of designating a period during which status updates are suppressed.
7. The communication method according to claim 1 further including the step of automatically detecting status changes of a member and sending status update messages when a status change is detected.
8. The communication method according to claim 7 wherein the status of a member is monitored by said member's communication device and wherein said communication device is programmed to automatically transmit a status update message when a change in status is detected.
9. The communication method according to claim 7 wherein the status of a member is monitored by a centralized server in said communication network and wherein status update messages are transmitted to other members in said affinity group when a member's status changes.
10. A communication method implemented in a mobile communication network for allowing members of an affinity group to send status information to and receive status information from other members of said affinity group, said communication method comprising:
- a. forming an affinity group containing two or more members;
 - b. storing member status information data in mobile communication devices used by said members;
 - c. sending a status update message from a first member's communication device to a centralized server when said first member's status changes;
 - d. forwarding said status update message from said server to a second member of said affinity group;
 - d. receiving said status update message at said second member's mobile communication device; and

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wherein status update messages are transmitted to other members in said affinity group when a member's status changes.

19. A mobile communication device for allowing a member of an affinity group to send status information to and receive status information from other members of said affinity group, said mobile communication device comprising:

- a. a memory for storing member status information data;
- b. a transmitter responsive for transmitting status update messages to other members of said affinity group when said member's status changes;
- c. a receiver for receiving status update messages from other members of said affinity group;
- d. a processor operatively connected to said memory for writing status information to and reading status information from said memory, said processor being programmed to:
 1. generate a status update message when said member's status changes for transmission by said transmitter to other members of said affinity group; and
 2. update said status information stored in said memory when a status update message is received from another member of said affinity group.

20. The mobile communication device according to claim 19 wherein the member status information stored in said memory includes a plurality of status items.

21. The mobile communication device according to claim 20 wherein the status items include one or more of the following status items: on/off status of the member, activity status of the member, and location of the member.

22. The mobile communication device according to claim 19 further including means for selecting the status items from a list of available status items that are reported to other members of the affinity group.

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23. The mobile communication device according to claim 19 further means for designating a period during which status updates are enabled.

24. The mobile communication device according to claim 19 further including means for designating a period during which status updates are suppressed.

25. The mobile communication device according to claim 19 further including means for automatically detecting status changes of a member and sending status update messages when a status change is detected.

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ABSTRACT OF THE INVENTION

A communication method allows members of an affinity group to obtain up-to-date information concerning the status of other members of the affinity group. Each member of the affinity group is provided with a communication device for communicating with other members. The communication device includes a memory for storing member status information. When the status of one member in the affinity group changes, a status update message is sent from the member whose status has changed to other members of the affinity group. When a status update message is receiving from other members, the status information data contained in the message is used to update the member status information stored in memory.

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Declaration and Power of Attorney for Patent Application

As below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe that I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled **METHOD FOR FACILITATING ELECTRONIC COMMUNICATIONS**, the specification of which

☒ [X] is attached hereto.

(Check one)

☐ [] was filed on _____ as
Application Serial Number _____
and was amended on _____
(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to me which is material to patentability (as defined in C.F.R. §1.56) in connection with the examination of this application.

I hereby claim foreign benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)			Priority Claimed	
NONE (Number)	(Country)	(Day/Month/Year Filed)	☐ [] YES	☐ [] NO
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	☐ [] YES	☐ [] NO
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	☐ [] YES	☐ [] NO

Declaration and Power of Attorney for Patent Application

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

NONE

(Application Serial No.)

(Filing Date)

(Status: Patented/Pending/Abandoned)

(Application Serial No.)

(Filing Date)

(Status: Patented/Pending/Abandoned)

Power of Attorney: As a named inventor, I hereby appoint the following agents/attorneys to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

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82

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Year-Month-Day

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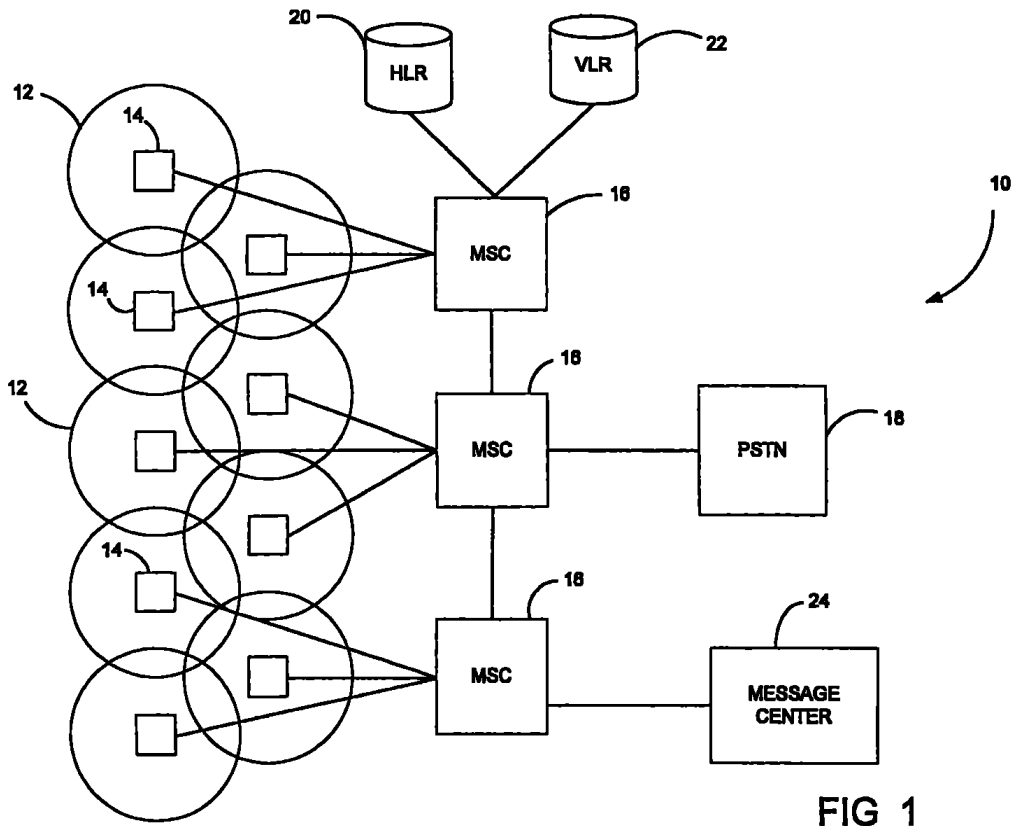


FIG 1

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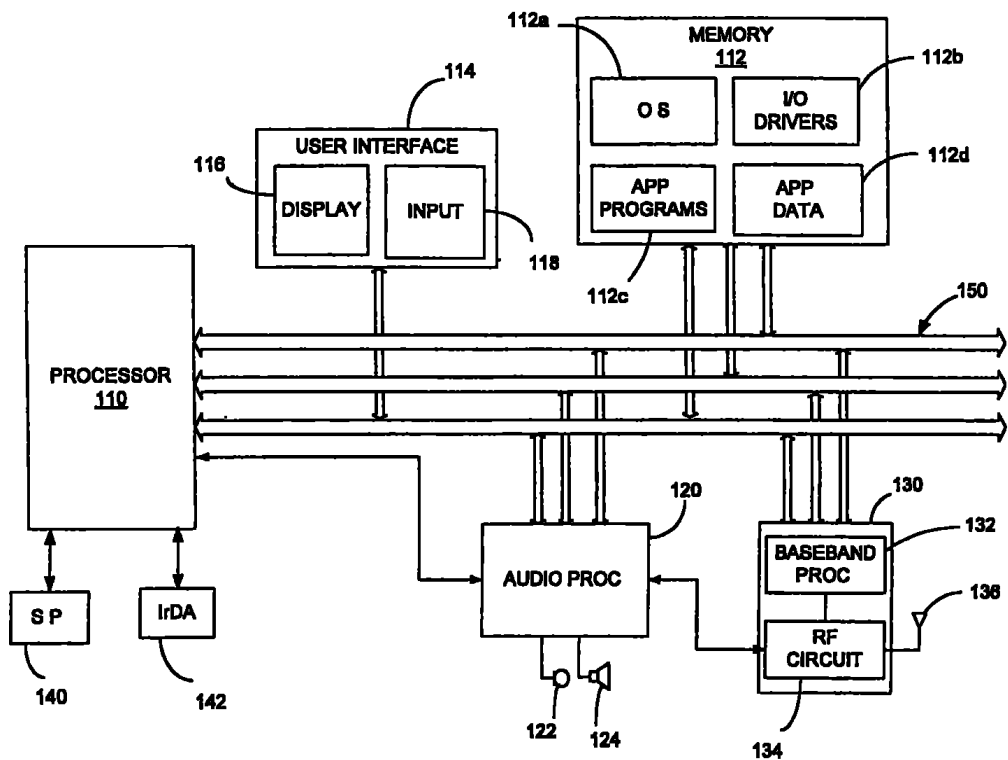


FIG 2

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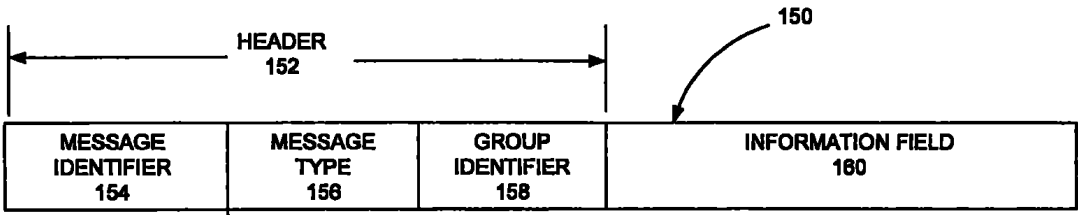


FIG 3

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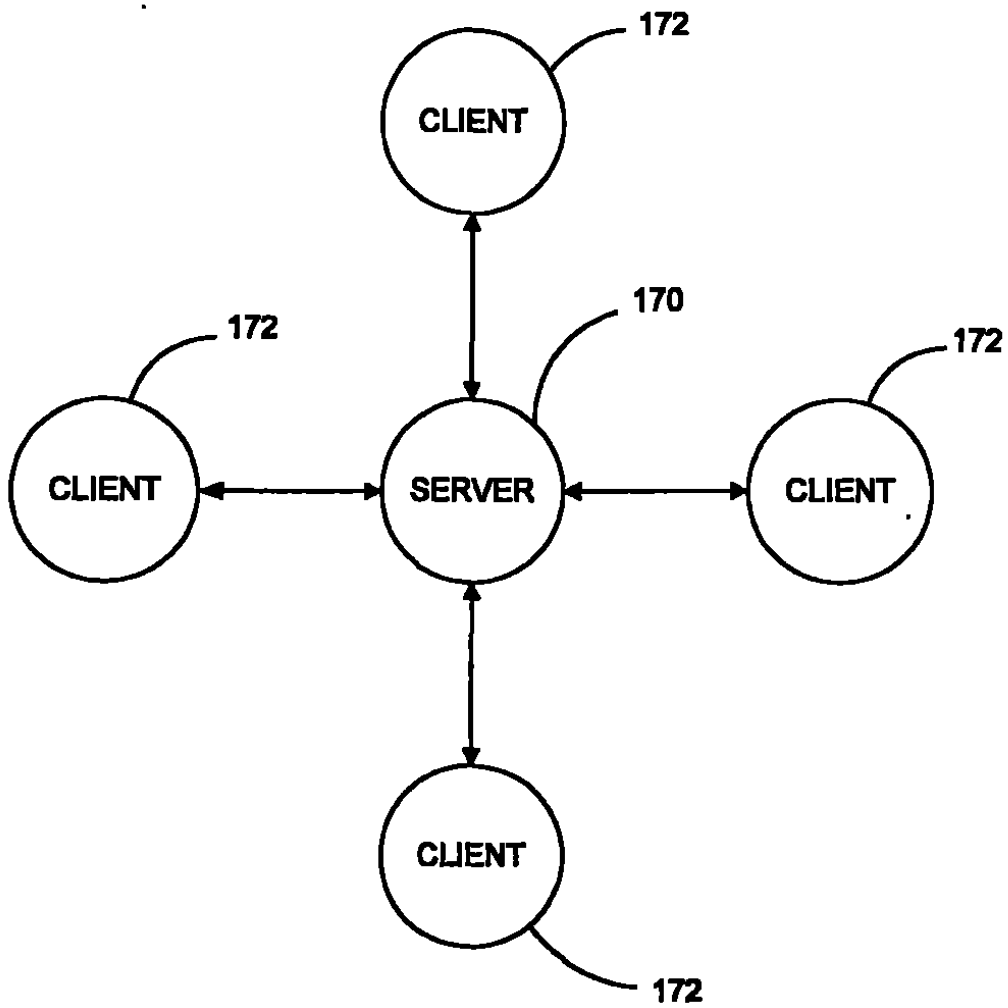


FIG. 4

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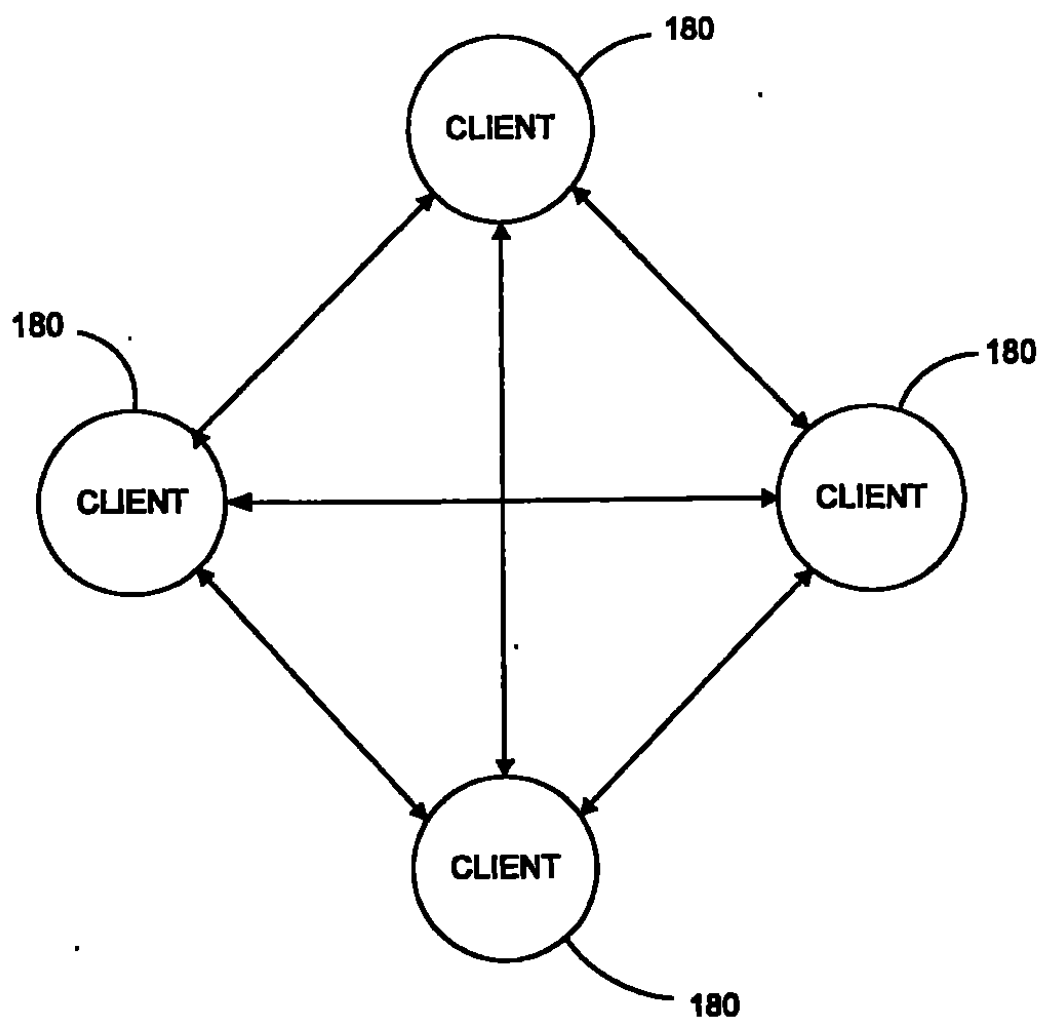
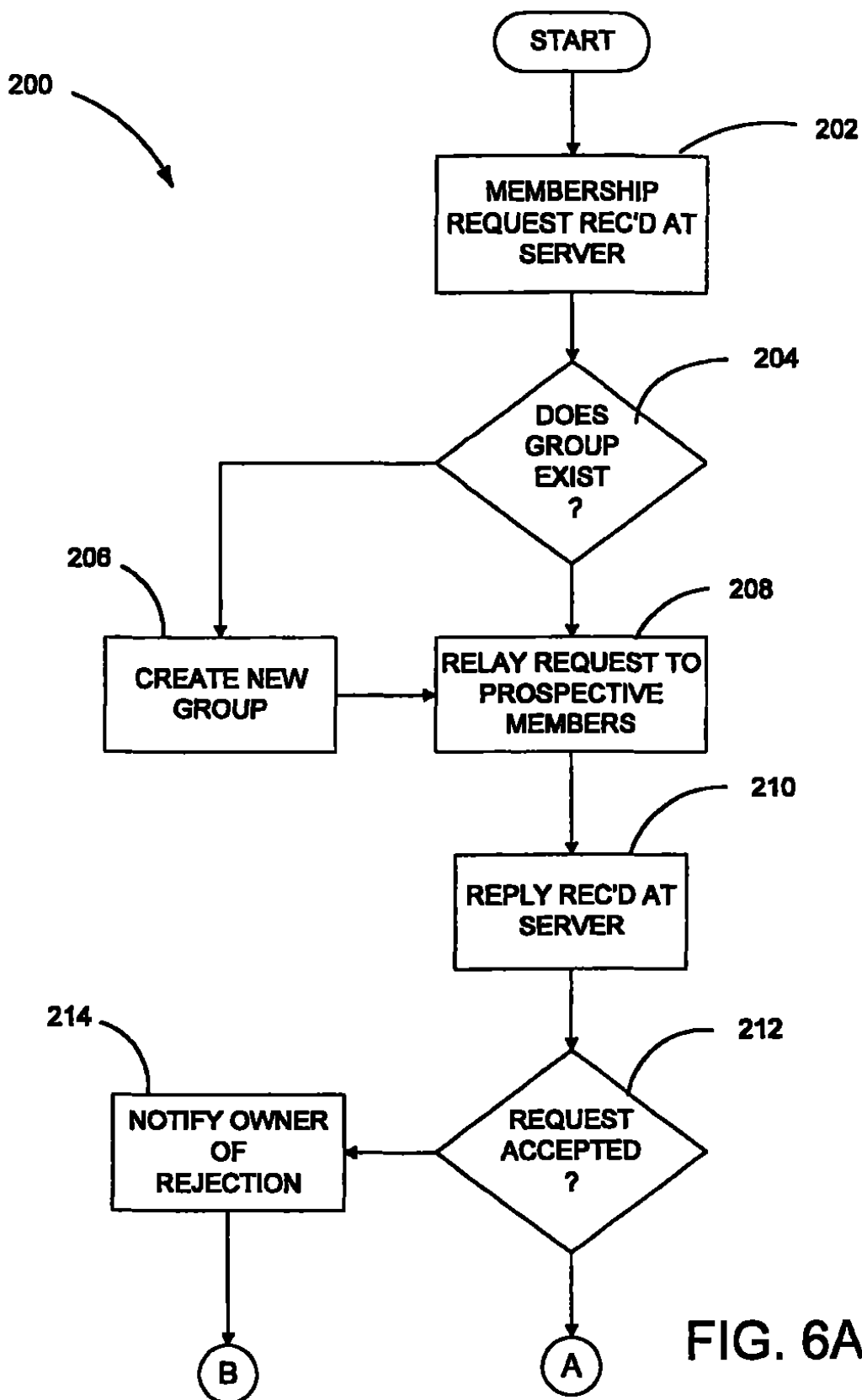


FIG. 5



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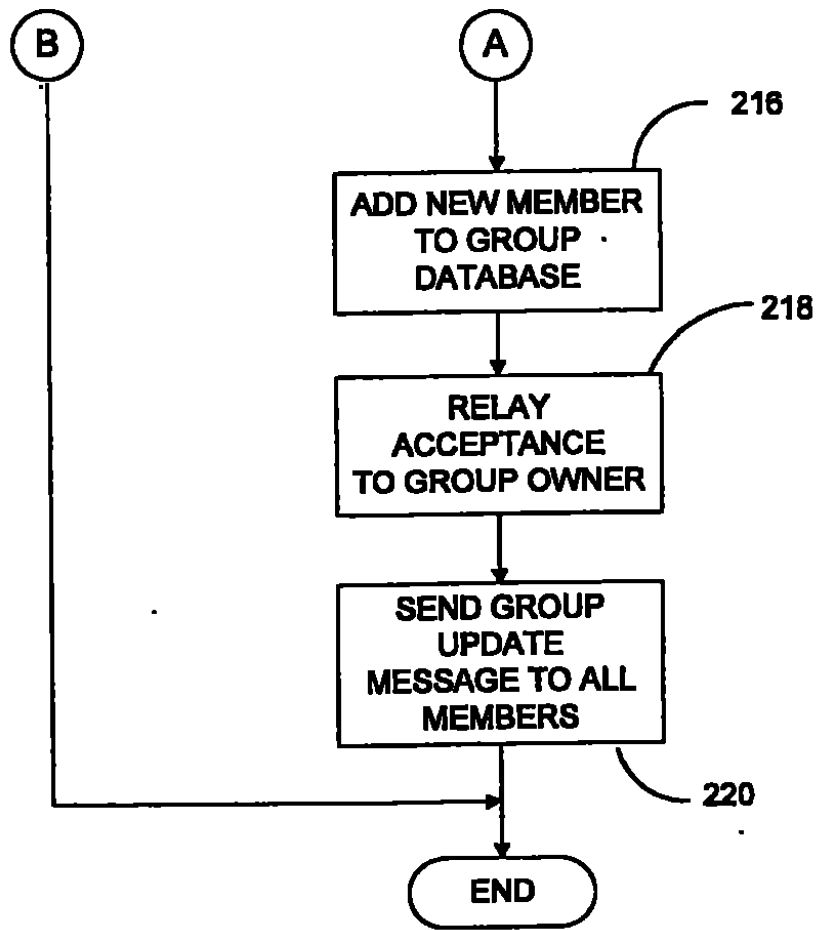


FIG. 6B

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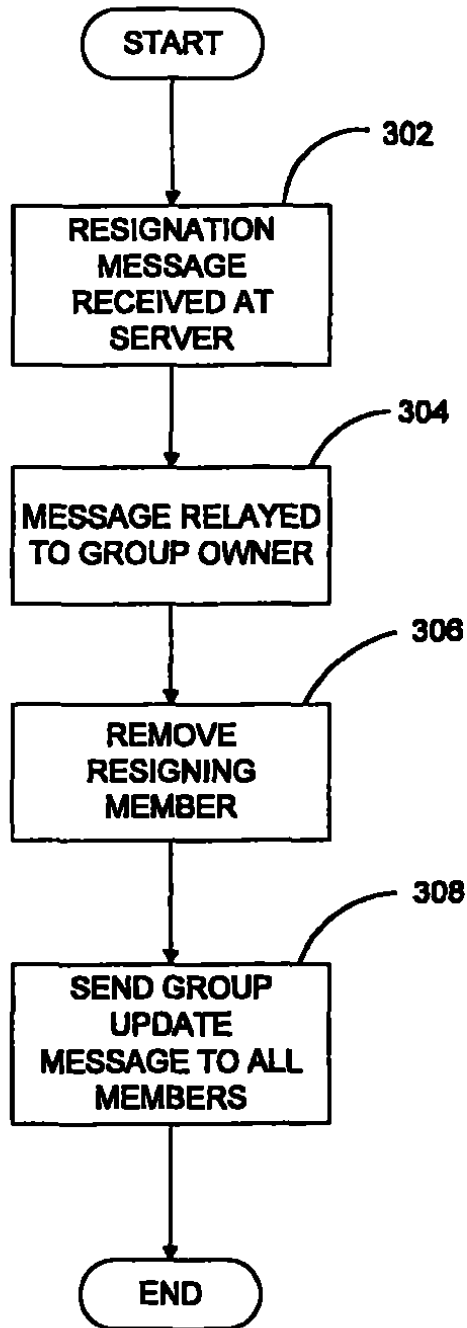


FIG. 7

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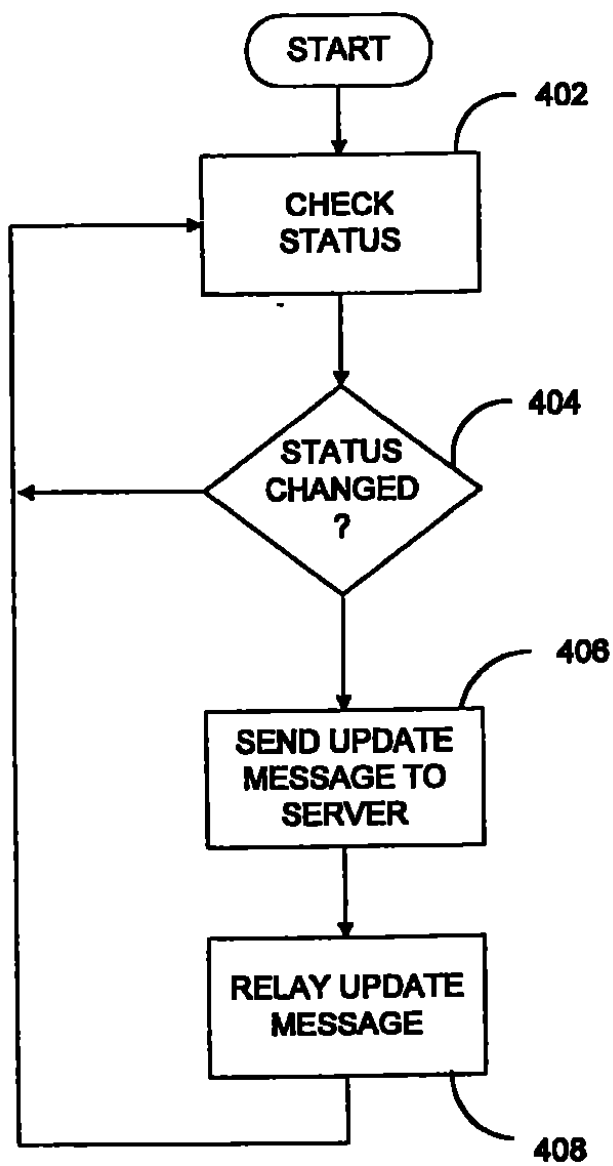


FIG. 8

006220 25917560

96

52
93

MEMBER 1	ON	MEETING	MAIN OFFICE
MEMBER 1	ON	OFF-DUTY	HOME
MEMBER 1	OFF		
MEMBER 1	ON	TRAVELING	REMOTE OFFICE
MEMBER 1	OFF		
MEMBER 1	ON	MEETING	MAIN OFFICE

FIG. 9