



Industria y Comercio

SUPERINTENDENCIA

Delegatura de propiedad Industrial

División de Nuevas Creaciones

SOLICITUD PATENTE DE INVENCION

21. EXPEDIENTE No. 04-8687.

54. TÍTULO procedimiento para transferir datos
personalizados en un aparato de servicio.

51. CLASIFICACIÓN INTERNACIONAL H04G 7/32

71. SOLICITANTE SCHUNDBERGER SYSTEMS

DOMICILIO Montreuil, Francia

74. APODERADO JOSE ANTONIO ULOZEA
T.P. 10.784. código 231.

22. BOGOTÁ, D. C., 4. Feb. 2004

**FORMULARIO UNICO DE SOLICITUD DE PATENTE
PCT
ENTRADA EN FASE NACIONAL**

① SOLICITUD DE:

☒ Patente de Invención ☐ Patente de Modelo de Utilidad

☒ Capítulo I. ☐ Capítulo II.

② SOLICITANTE (71)	Nombre: SCHLUMBERGER SYSTEMES	IDENTIFICACIÓN	
	Dirección: 50, Avenue Jean Jaurès, F-92120 Montrouge (FR) Nacionalidad o domicilio: Montrouge, Francia Lugar de Constitución: FRANCIA Teléfono: 3264270 Fax: 6089701 E-mail: jllcco@lloredacamacho.com	C.C. ☐ C.E. ☐	NIT ☐ Otro ☐ Cual _____ Número _____

③ REPRESENTANTE O APODERADO	Nombre: JOSE ANTONIO LLOREDA	C.C. ☒ C.E. ☐	NIT ☐ Otro ☐ Cual _____
	Dirección: Calle 72 No. 5-83 Piso 5o. Teléfono: 3264270 Fax: 6089701 E-mail: jllcco@lloredacamacho.com	Número <u>17.159.681</u> TP <u>10.784</u>	

④ INVENTOR(ES) (72)	Nombre: Rodolphe GRUNENWALD
	Dirección: 60, avenue d'Estienne d'Orves, F-94340 Joinville-le-Pont (FR) Nacionalidad o Domicilio: FRANCIA

⑤ PCT (86)	Solicitud Internacional No. <u>PCT/FR02/02624</u>	Fecha <u>22/07/02</u>
	Publicación Internacional No. <u>WO 03/015433 A1</u>	Fecha <u>20/02/03</u>

⑥ Título (54) "PROCEDIMIENTO PARA TRANSFERIR DATOS PERSONALIZADOS EN UN APARATO DE SERVICIO"

⑦ Clasificación Internacional (51) H04Q 7/32

⑧ Prioridad SI ☒ NO ☐	(33) País de Origen	(32) Fecha	(31) Número de Solicitud
	FR	09/08/01	01/10687

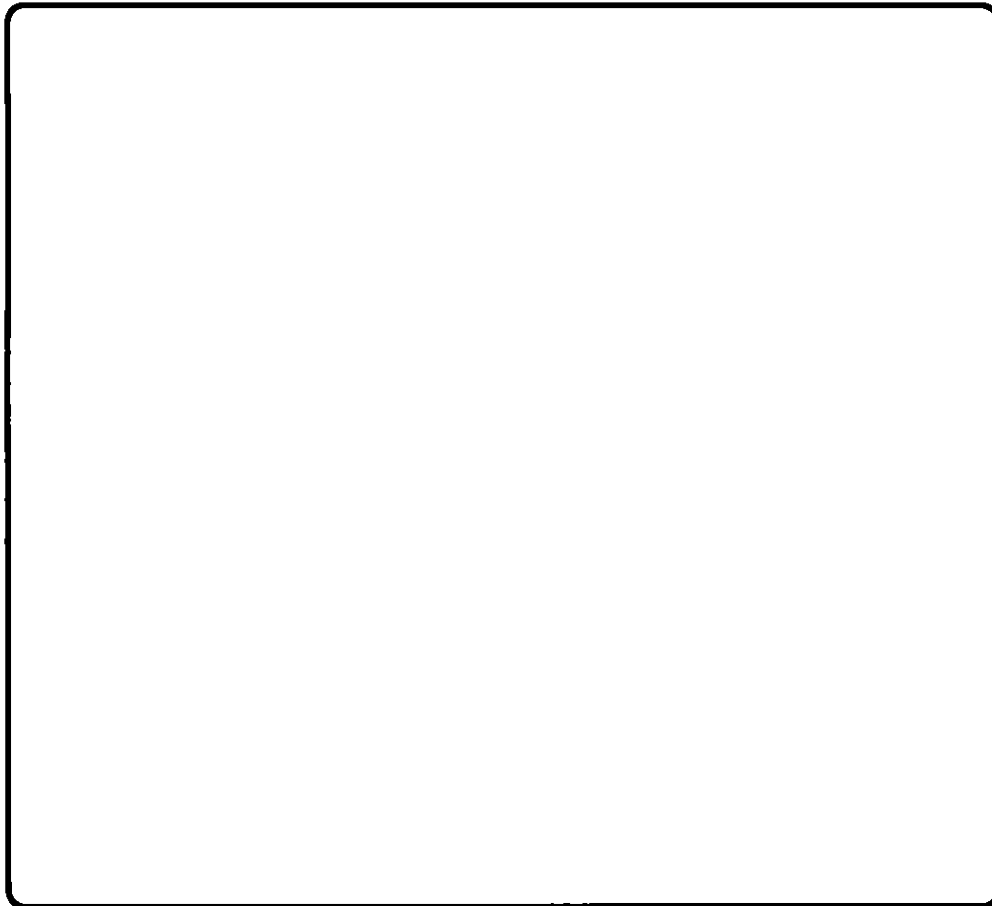
⑨ Comprobante de Pago No. 04 - 480 **Fecha:** Enero 6 de 2004

ANEXOS

- ☒ Comprobante de pago de la tasa de presentación de la solicitud.
- ☒ Documento que acredite la existencia y representación legal cuando el solicitante sea persona jurídica.
- ☒ Documento de Representación Legal.
- ☐ Documento de cesión del inventor al solicitante o a su causante.
- ☐ Declaraciones
- ☐ Copia de la solicitud internacional. (Resumen, descripción, reivindicaciones, dibujos)
- ☒ Traducción de la solicitud internacional al castellano. (Resumen, descripción, reivindicaciones y dibujo)
- ☐ Copia del examen preliminar internacional efectuado por la Autoridad Internacional de Examen Preliminar (IPEA).
- ☐ Traducción del examen preliminar internacional efectuado por la IPEA.
- ☐ De ser el caso, copia del contrato de acceso.
- ☐ De ser el caso, documento que acredite la licencia o autorización de uso de conocimientos tradicionales de las comunidades indígenas.
- ☐ Arte Final 12X12.
- ☐ De ser el caso, Información sobre otras solicitudes de patente o títulos obtenidos en el extranjero por el mismo titular o su causante, relacionados parcial o totalmente con la invención de esta solicitud.
- ☐ De ser el caso, modificaciones efectuadas a la solicitud internacional.
- ☒ Otros: Reporte de Búsqueda Internacional con su traducción y anexos; y Publicación con su traducción.

11

FIGURA CARACTERÍSTICA:



12

Solicito la concesión de la patente.

NOMBRE: JOSE ANTONIO LLORÉDA

FIRMA:

C.C. 17.159.681 B.S. T.F. 10.784

Radicación : 0400065/ 00000000
Fecha (RM): 2004-02-04 16:47:22
Transmite : 011 PCI-PRI-011 SIN FV'S POR: 01-01-01-01
Dependencia: 2000 DIVISION DE INGRESOS LEXIA JUR.

NIT : 800176089-2

CERTIFICACION DE EXCEDENTE : 04 - 480
FECHA : ENERO 6 DE 2004

***** CONSIGNACION *****

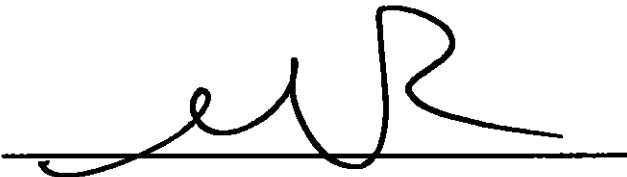
DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PBO	Vr. PAGO
LLOREDA Y CIA S. A	CONSIGNACION	BANCO POPULAR	050-00110-6	13591439	06/01/2004	8,162,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-09	OTROS SERVICIOS DE PROPIEDAD I	
		99 OTROS SERVICIOS ADMINISTRATIVOS	422,000.00
		TOTAL :	\$ 422,000.00

SON: CUATROCIENTOS VEINTIDOS MIL PESOS

RESPONSABLE :



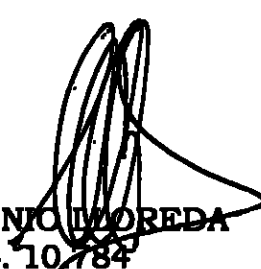
RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

ESTA CERTIFICACION DE EXCEDENTE DE PAGO SOLO PODRA SER UTILIZADA
COMO PARTE DE LA CANCELACION DE UNA TARIFA VIGENTE Y NO PODRA SER
SUSTITUIDA POR NINGUN RECIBO.

3
3

ANEXO

El documento que acredita la calidad de REPRESENTANTES LEGALES en Bogotá de los doctores **JOSE ANTONIO LLOREDA** y/o **GUSTAVO TAMAYO** y/o **ANGELA MARIA RESTREPO** y/o **ALICIA LLOREDA** para TODOS LOS ASUNTOS RELACIONADOS CON LA PROPIEDAD INDUSTRIAL de la sociedad peticionaria, que faculta a cada uno de dichos abogados para actuar individualmente, se esta presentando con esta solicitud. En consecuencia, ruego a usted reconocer la personería de cada uno de dichos Representantes Legales para actuar dentro del presente expediente, a fin de que cualquiera de ellos pueda intervenir en cualquier tiempo respecto de la solicitud en él contenida.


JOSE ANTONIO LLOREDA
T.P. No. 10.784
Código 231

4

TRADUCCIÓN OFICIAL No. 500/03 DE UN DOCUMENTO ESCRITO EN FRANCÉS, EL CUAL PARA SU IDENTIFICACIÓN SE SELLA CON EL SELLO DEL TRADUCTOR. ESTA ES UNA TRADUCCIÓN OFICIAL EFECTUADA EL DIA 24 DE NOVIEMBRE DE 2003 POR JEAN-JACQUES TURPIN, C.E.: 193849 DE BOGOTÁ, TRADUCTOR E INTÉRPRETE OFICIAL SEGÚN RESOLUCIÓN No. 2680/91 DEL 19 DE DICIEMBRE DE 1991, EXPEDIDA POR EL MINISTERIO DE JUSTICIA DE COLOMBIA.

Autenticaciones que se hallan a continuación de un documento de poder conferido en inglés y español por MARCEL TOURNEREAU, domiciliado en Schlumberger Systèmes, Service de la Propriété Intellectuelle, 50, avenue Jean-Jaurès, 92120 Montrouge, Francia, y otorgado a los Doctores JOSE ANTONIO LLOREDA y/o GUSTAVO TAMAYO y/o ÁNGELA MARÍA RESTREPO y/o ALICIA LLOREDA, todos domiciliados en Bogotá, Colombia, Calle 72 No. 5 – 83 (Piso 6º).

Dado en (en blanco), el (en blanco). Firma ilegible del Señor Marcel Tournereau.

Legalización de la firma del Señor Marcel Tournereau por M-D. Chauvin-Coqueux, Notario en Paris. Dado en Paris, el 5 de noviembre de 2003. Firma ilegible del Notario.

Sello seco: Marie-Dominique Chauvin-Coqueux – Notario en Paris - Tribunal Superior – República Francesa.

APOSTILLA

(Convención de La Haya del 5 de octubre de 1961)
Colombia

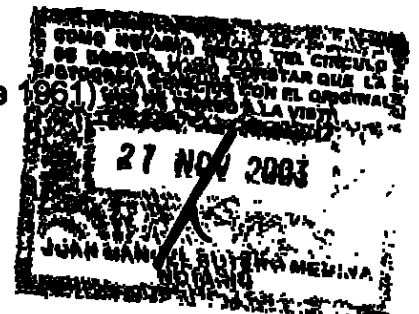
1. - República Francesa

El presente acta público

2. - Ha sido firmado por la Señora Chauvin-Coqueux

3. - Obrando en calidad de Notario

4. - Con sello de su Notaría



Traducción Oficial No. 500/0
JEAN - JACQUES H. TURPIN
Traductor e Intérprete Oficial
FRANCOIS - ESPAROL
Res. Ministerio No. 2680/91

5

CERTIFICADO

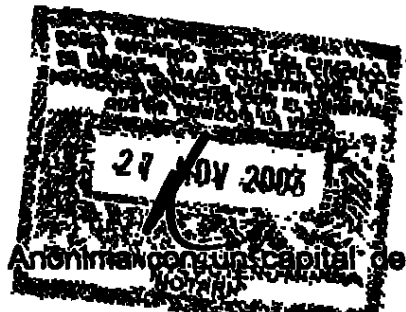
5. - En Paris 6. - El 11 de noviembre de 2003
7. - Por el Procurador General ante el Tribunal Superior
8. - Bajo el número 118052
9. - Tribunal de Superior de Paris – República Francesa.
10. - Firma ilegible.

CERTIFICACIÓN

La suscrita Doctora Marie-Dominique CHAUVIN-COQUEUX, Notario, miembro de la Sociedad Civil Profesional "Serge PASCAULT, Eric de LA HAYE SAINT HILAIRE, Marie-Dominique CHAUVIN-COQUEUX, Notaires Associés", cuya sede se encuentra en PARIS 8º, 29, rue François 1er,

CERTIFICA Y ATESTIGUA que

La Sociedad llamada Schlumberger Systèmes, Sociedad Anónima con un capital de 24.514.056.48 Euros, cuya sede está situada en el 50, avenue Jean-Jaurès, 92120 Montrouge, Francia, identificada en el SIREN bajo el número 562 113 530 y matriculada en el Registro del Comercio y Sociedades de Nanterre



500/03

A handwritten signature in black ink, appearing to be "Jean-Jacques H. Turpin", written over a horizontal line.

BOGOTÁ
1003 NOV 03 12 51
2003
BOGOTÁ

MINISTERIO DE JUSTICIA

502948
San Jorge Torpin
BOGOTÁ, D.C. 1003 NOV 03
NOTARIO DEL
LAS FUNCIONES DEL

OFICIO NOTARIO SEATO DEL CIRCULO
DE BOGOTÁ, HAGO CONSTAR QUE LA
FOTOCOPIA COINCIDE CON EL ORIGINAL
QUE HE TENIDO A LA VISTA
2 NOV 2003
JUAN MANUEL BOTERO MEDINA
NOTARIO

- 6
- Esta sociedad sí tiene existencia legal como sociedad francesa inscrita en el Registro del Comercio y Sociedades con esta calidad bajo el número 562 113 530m, y
 - Está habilitada para ser representada por el Señor Tournereau, su Director General Delegado, y quien dispone de los poderes más amplios para representar dicha sociedad.

EN FE DE LO CUAL, se expide la presente certificación para todos los efectos de ley a que haya lugar.

Dado en Paris, el 5 de noviembre de 2003. Firma ilegible.

Sello seco: Marie-Dominique Chauvin-Coqueux – Notario en Paris - Tribunal Superior – República Francesa.

APOSTILLA

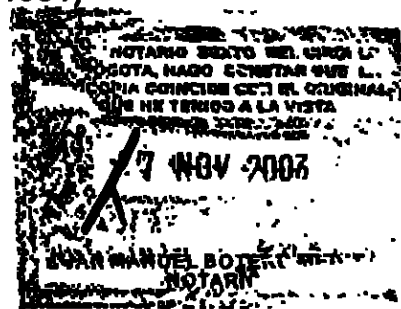
(Convención de La Haya del 5 de octubre de 1961)

Colombia

1. - República Francesa

El presente acta público

2. - Ha sido firmado por la Señora Chauvin-Coqueux
3. - Obrando en calidad de Notario
4. - Con sello de su Notaría



CERTIFICADO

5. - En Paris
6. - El 11 de noviembre de 2003
7. - Por el Procurador General ante el Tribunal Superior
8. - Bajo el número 118053

Traducción Oficial No.
JEAN - JACQUES H. TURPIN
Traductor e Interpreté Oficial
FRANCOIS - ESPAROL
Reg. Min. Justicia No. 2680/91

500/0:

2003 MAY 27 15 05
SECRETARÍA DE JUSTICIA
SECRETARÍA DE DEFENSA

MINISTERIO DE JUSTICIA
502849
JOSÉ JAYOS TOPIN
QUINTA DE SAN JUAN DE LOS
RÍOS, MUNICIPIO DE
LAS FLORES, DEPARTAMENTO DE

ESTE DOCUMENTO SEPTIMO DEL CIRCULO
DE FONTO, HAYO CONSTAR QUE LA
COPIA CONFORME CON EL ORIGINAL
QUE SE TIENE A LA VISTA
27 MAY 2003
JUAN MANUEL BOTERO MEDINA
NOTARIO

9. - Tribunal de Superior de Paris – República Francesa.

10. - Firma ilegible.

Es traducción fiel y completa de la cual se deja copia en los archivos de esta oficina para confrontación y a la cual me remito.

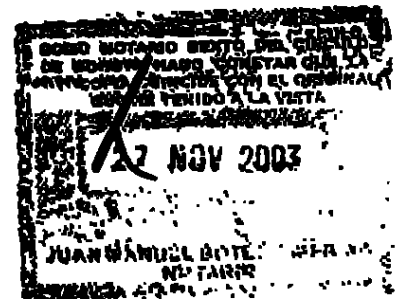
Traducción oficial No. 500/03.

Traductor: Jean-Jacques Turpin.

Bogotá, D.C., 24 de noviembre de 2003.

Traducción Oficial No.
JEAN - JACQUES H. TURPIN
Traductor e Interpretador Oficial
FRANCÉS - ESPAÑOL
Caja Minutaje No. 2680/91

500/03



Notaire à Paris, certifié véritable
La signature de M. Marcel Tournereau
apposée en bas de la page à droite
Paris, le 5 Novembre 2003.

03-065 300

8

Los abajo firmados,
Marcel Tournereau

con domicilio en
SCHLUMBERGER SYSTEMES
SERVICE DE LA PROPRIÉTÉ INTELLECTUELLE
50 Avenue Jean Jaurès
92120 Montrouge, Francia

The undersigned,

MARCEL TOURNEREAU

of

Schlumberger Systèmes
Service de la Propriété Intellectuelle
50 avenue Jean Jaurès
92120 Montrouge, France

nombramos por el presente a JOSE ANTONIO LLOREDA y/o GUSTAVO TAMAYO y/o ANGELA MARIA RESTREPO y/o ALICIA LLOREDA, domiciliados en Bogotá, Colombia, con oficinas en dicha ciudad, Calle 72 No. 5-83, piso 8º., nuestros representantes legales y verdaderos en Bogotá, con facultades para recibir notificaciones y nombrar apoderados judiciales o extrajudiciales, con el fin de dar cumplimiento al párrafo 1o. del artículo 543 del decreto 410 de 1971.

hereby appoint, JOSE ANTONIO LLOREDA and/or GUSTAVO TAMAYO and/or ANGELA MARIA RESTREPO and/or ALICIA LLOREDA, of Bogota, Colombia, with offices in said town, Calle 72 No. 5-83, Sixth Floor, our true and legal representatives in Bogotá, with power to receive notifications and to appoint judicial or extrajudicial agents, so as to comply with paragraph 1o. of article 543 of decree 410 of 1971.

Los doctores JOSE ANTONIO LLOREDA y/o GUSTAVO TAMAYO y/o ANGELA MARIA RESTREPO y/o ALICIA LLOREDA, o los apoderados que cualquiera de ellos designe, quedan especialmente facultados para representarnos ante las autoridades colombianas, administrativas, judiciales o de policía, en todos los trámites relativos a la propiedad industrial, a cuyo efecto les facultamos para dar ante dichas autoridades todos los pasos necesarios al objeto indicado; elevar solicitudes, declaraciones, reclamos y recursos; formular descripciones, enmiendas, oposiciones y apelaciones; instaurar cancelaciones y amparos administrativos; abonar todos los impuestos y cuotas y efectuar todo otro pago determinado por la ley; recibir todos los documentos y valores, dando el descargo respectivo; llenar cualesquiera otros requisitos y tomar, en fin, todas las medidas que creyeran conducentes al resguardo de nuestros intereses; y en caso de producirse oposición, pasando los antecedentes a los tribunales, quedan facultados para tomar intervención como demandantes o demandados ante los jueces que sean competentes, pudiendo transar, someter a árbitros, desistir, percibir y apelar, con todas las demás facultades que resulten necesarias, y por el presente declaramos desde ahora válido y bueno cuanto dichos representantes y/o los apoderados que cualquiera de ellos nombre hicieren en nuestro beneficio.

Asimismo, facultamos a los doctores JOSE ANTONIO LLOREDA y/o GUSTAVO TAMAYO y/o ANGELA MARIA RESTREPO y/o ALICIA LLOREDA, para solicitar en la Oficina de Propiedad Industrial la protocolización de este documento y de cualquier poder que cualquiera de ellos otorgue a nombre nuestro.

Dado y firmado

Doctors JOSE ANTONIO LLOREDA and/or GUSTAVO TAMAYO and/or ANGELA MARIA RESTREPO and/or ALICIA LLOREDA, or the agents by any one of them appointed, are especially empowered to represent us before the administrative, judicial or police authorities of Colombia, in all proceedings pertaining to industrial property, for which purpose we authorize them to take before the said authorities all the necessary steps for the said end; to file petitions, declarations, claims, recourses, cancellations and administrative injunction proceedings; to draw up specifications; to file amendments, oppositions and appeals, to pay all installments and effect all other payments prescribed by law; to receive proper receipts, to comply with all other requirements and, in short, to take all those measures which they may deem fit for the protection of our interests; and in case of opposition, where the proceedings be passed over to the courts, we authorize said agents to act on our behalf, as complainants as well as defendants, before the competent judges, with full powers to make arrangements, to submit to arbitrators, to desist, to collect, to appeal and, in short, with all such further powers as may be required, and we hereby declare from now on as valid and good all that our representatives and/or the agents by any one of them appointed may do for our benefit.

We also authorize doctors JOSE ANTONIO LLOREDA and/or GUSTAVO TAMAYO and/or ANGELA MARIA RESTREPO and/or ALICIA LLOREDA, to apply for protocolization of this document and of any power of attorney by any one of them conferred in our name before the Office of Industrial Property.

Given and signed this
NOTARY SHOULD EXECUTE OTHER SIDE

27 NOV 2003

.....



COMO NOTARIO SE AYU DEL CIRCULO
DE BOGOTA, HAGO CONSTAR QUE LA
FOTOCOPIA COINCIDE CON EL ORIGINAL
QUE ME FUEIDO A LA VISTA

27 NOV 2003

JUAN MANUEL BOTERO MEDINA
NOTARIO

ATTESTATION

Je soussigné Maître Marie-Dominique CHAUVIN-COQUEUX, Notaire, membre de la Société Civile Professionnelle "Serge PASCAULT, Eric de LA HAYE SAINT HILAIRE, Marie-Dominique CHAUVIN-COQUEUX, Notaires Associés", dont le siège est à PARIS (8^{ème} arrondissement), 29 rue François 1^{er},

CERTIFIE ET ATTESTE que

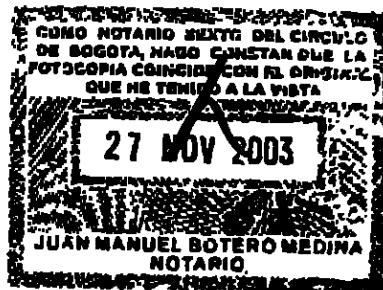
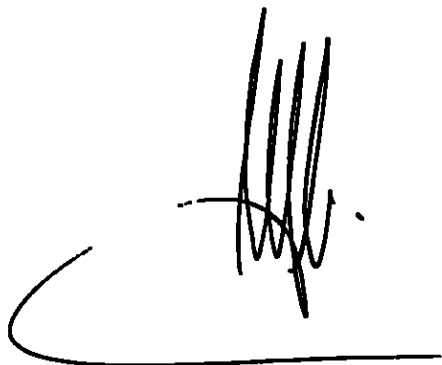
La Société dénommée Schlumberger Systèmes, Société Anonyme au capital de 24.514.056,48 Euros, dont le siège est au 50 avenue Jean Jaurès, 92120 Montrouge, France, identifiée au SIREN sous le numéro 562 113 530 et immatriculée au Registre du Commerce et des Sociétés de Nanterre

- Cette société a bien une existence légale en tant que société française inscrite au Registre du Commerce et des sociétés en cette qualité sous le numéro 562 113 530, et
- Est habilitée à être représentée par Monsieur Tournereau, son Directeur Général Délégué et qu'il a tous les pouvoirs pour représenter ladite société

EN FOI DE Quoi la présente attestation est délivrée pour servir et valoir ce que de droit.

Fait à PARIS

Le 5 novembre 2003

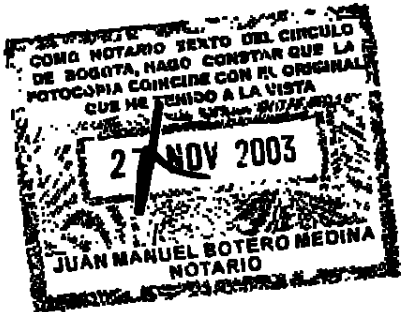


.....colombiana.....

1. - République Française
 2. - de... Chaux Capen
 3. - de... Chaux
 4. - de... Beland.....

ACTE ESTE

..... le 6.11.07...
 en l'absence de la Cour d'Appel
 11.8.07.3.....
 Le..... signature



Folio 10 Extracto Publicación
 Folio 11 Tarjeta Autor
 Folio 12 Tarjeta Temática

10 13

**TRATADO DE COOPERACION DE PATENTES
PCT
REPORTE DE BUSQUEDA INTERNACIONAL**

(PCT Artículo 18 y Reglas 43 y 44)

Registro de referencia del solicitante o agente 35.0048	PARA FUTURAS ACCIONES ver Notificación o Transmisión del Reporte de Búsqueda Internacional (Forma PCT/ISA/220) así como, donde aplique, el ítem 5 a continuación.	
Solicitud internacional No. PCT/FR 02/02624	Fecha de registro internacional (día/mes/año) 22/07/2002	Fecha de Prioridad (Primera) (día/mes/año) 09/08/2001
Solicitante SCHLUMBERGER SYSTEMES		

Este Reporte de Búsqueda Internacional ha sido preparado por esta Autoridad de Búsqueda Internacional y es transmitido al solicitante Según el Artículo 18. Una copia será transmitida a la Oficina Internacional.

Este Reporte de Búsqueda Internacional consta de un total de 4 hojas.

☒ También está acompañado de una copia de cada documento técnico anterior citado en este reporte.

1. Bases del reporte

a. Respecto al lenguaje, la búsqueda internacional se llevó a cabo según la solicitud internacional en el lenguaje en el cual se presentó, a menos que se indique de otro modo en este ítem.

☐ la búsqueda internacional se llevó a cabo según la traducción de la solicitud internacional proporcionada a esta Autoridad (Regla 23.1(b)).

b. Respecto a una secuencia de ácido nucleótico y/o amino revelado en la solicitud internacional, la búsqueda internacional se llevó a cabo según la lista de la secuencia:

☐ contenido en la solicitud internacional en forma escrita.

☐ presentada junto con la solicitud internacional en forma legible por computador.

☐ proporcionada subsiguientemente a esta Autoridad en forma escrita.

☐ proporcionada subsiguientemente a esta Autoridad en forma legible por computador.

☐ se ha proporcionado la afirmación de que el listado de secuencias escrito proporcionado subsiguientemente no va más allá de la revelación en la solicitud internacional según se presentó.

☐ se ha proporcionado la afirmación de que la información registrada en forma legible por computador es idéntica al listado de la secuencia escrita.

2. ☐ Ciertas reivindicaciones no pudieron localizarse (Ver Recuadro I).

3. ☐ Falta unidad de invención (ver Recuadro II).

4. Respecto al título,

☒ El texto es aprobado según lo presenta el solicitante.

☐ Esta Autoridad ha establecido que el texto se lea así:

5. Respecto al resumen,

☒ El texto es aprobado según lo presenta el solicitante.

☐ Esta Autoridad ha establecido el texto de acuerdo con la Norma 38.2(b), según aparece en el Recuadro III. El solicitante puede, un mes después de la fecha de haber enviado por correo este reporte de búsqueda internacional, presentar comentarios a esta Autoridad.

6. La figura de los dibujos que se publicará con el resumen es la Figura No.

☒ como lo sugirió el solicitante.

☐ porque el solicitante no sugirió una figura.

☐ porque esta figura caracteriza mejor a la invención.

☐ Ninguna de las figuras.

14 11 **REPORTE DE BUSQUEDA INTERNACIONAL**

Solicitud Internacional No.
PCT/FR 02/02624

A. CLASIFICACION DE MATERIA

IPC7: **H04Q7/32 · G07F7/10**

Según la Clasificación de Patentes Internacional (CPI) o según la clasificación nacional y la CPI

B. CAMPOS BUSCADOS

Documentación mínima buscada (sistema de clasificación seguido de símbolos de clasificación)

IPC7: **H04Q G07F**

Documentación buscada fuera de documentación mínima hasta donde dichos documentos se incluyan en los campos buscados

Base de datos electrónica consultada durante la búsqueda internacional (nombre de la base de datos y, donde sea práctico, buscar términos usados)
EPO-Internal, Datos WPI

C. DOCUMENTOS CONSIDERADOS RELEVANTES

Categoría *	Citación de documento, con indicación, donde sea apropiado, de los textos relevantes	Relevante a la reivindicación No.
X	US 6 138 009 A (J. BIRGERSON) 24 Octubre 2000 (2000-10-24)	1-6
A	extracto; reivindicaciones; figuras columna 2, línea 30 -columna 4, línea 45 columna 6, línea 41 -columna 8, línea 25 columna 11, línea 7 - línea 29	7-10
X	WO 00 40048 A (TELECOM ITALIA MOBILE) 6 Julio 2000 (2000-07-06)	1-3
A	todo el documento	2,5-9
A	EP 1 035 741 A (SIEMENS INFORMATION AND COMMUNICATION PRODUCTS) 13 Septiembre 2000 (2000-09-13)	1-3,5,7, 9
A	extracto; reivindicaciones; figuras	
A	WO 00 42795 A (SWISSCOM) 20 Julio 2000 (2000-07-20)	
	-/-	

☒ En el recuadro C se enumeran más documentos.

☒ En el anexo se enumeran miembros de la familia de patentes.

* Categorías especiales de documentos citados:

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'&' documento miembro de la misma familia de patentes

Fecha de la terminación real de la búsqueda internacional

17 de Diciembre de 2002

Fecha de envío por correo del reporte de búsqueda internacional

30/12/2002

Nombre y dirección de correo de ISA
Office Européen des Brevets, P.B. 5818 Patentlaan 2
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Funcionario autorizado

David, J

REPORTE DE BÚSQUEDA INTERNACIONAL

Solicitud Internacional No.
PCT/FR 02/02624

C. (Continuación) DOCUMENTOS CONSIDERADOS RELEVANTES

Categoría *	Citación de documento, con indicación, donde sea apropiado, de los textos relevantes	Relevante a la reivindicación No.
A	WO 99 57875 A (NE-PRODUCTS) 11 noviembre 1999 (1999-11-11) —	
A	DE 198 01 576 A (DETEMOBIL DEUTSCHE TELEKOM MOBILNET) 22 julio 1999 (1999-07-22) —	
A	GB 2 357 011 A (NEC CORPORATION) 6 junio 2001 (2001-06-06) —	

REPORTE DE BÚSQUEDA INTERNACIONAL
 Información sobre miembro(s) de la familia de Patentes

Solicitud Internacional No.
PCT/FR 02/02624

Documentos de Patente citados en el informe de búsqueda	Fecha de Publicación	Miembro(s) de la familia de Patentes	Fecha de Publicación
US 6138009 A	24-10-2000	SE 512110 C2 AU 741028 B2 AU 8049798 A BR 9810041 A CN 1267431 T EE 9900592 A EP 0983697 A1 JP 2002503426 T NO 996246 A SE 9702322 A WO 9858506 A1	24-01-2000 22-11-2001 04-01-1999 29-08-2000 20-09-2000 15-08-2000 08-03-2000 29-01-2002 14-02-2000 18-12-1998 23-12-1998
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RAPPORT DE RECHERCHE INTERNATIONALE

(article 18 et règles 43 et 44 du PCT)

Référence du dossier du déposant ou du mandataire 35.0048	POUR SUITE voir la notification de transmission du rapport de recherche internationale (formulaire PCT/ISA/220) et, le cas échéant, le point 5 ci-après A DONNER	
Demande internationale n° PCT/FR 02/ 02624	Date du dépôt international (jour/mois/année) 22/07/2002	(Date de priorité (la plus ancienne) (jour/mois/année) 09/08/2001
Déposant SCHLUMBERGER SYSTEMES		

Le présent rapport de recherche internationale, établi par l'administration chargée de la recherche internationale, est transmis au déposant conformément à l'article 18. Une copie en est transmise au Bureau International.

Ce rapport de recherche internationale comprend 4 feuilles.

☒ Il est aussi accompagné d'une copie de chaque document relatif à l'état de la technique qui y est cité.

1. Base du rapport

a. En ce qui concerne la langue, la recherche internationale a été effectuée sur la base de la demande internationale dans la langue dans laquelle elle a été déposée, sauf indication contraire donnée sous le même point.

☐ la recherche internationale a été effectuée sur la base d'une traduction de la demande internationale remise à l'administration.

b. En ce qui concerne les séquences de nucléotides ou d'acides aminés divulguées dans la demande internationale (le cas échéant), la recherche internationale a été effectuée sur la base du listage des séquences :

☐ contenu dans la demande internationale, sous forme écrite.

☐ déposée avec la demande internationale, sous forme déchiffrable par ordinateur.

☐ remise ultérieurement à l'administration, sous forme écrite.

☐ remise ultérieurement à l'administration, sous forme déchiffrable par ordinateur.

☐ La déclaration, selon laquelle le listage des séquences présenté par écrit et fourni ultérieurement ne vas pas au-delà de la divulgation faite dans la demande telle que déposée, a été fournie.

☐ La déclaration, selon laquelle les informations enregistrées sous forme déchiffrable par ordinateur sont identiques à celles du listage des séquences présenté par écrit, a été fournie.

2. ☐ Il a été estimé que certaines revendications ne pouvaient pas faire l'objet d'une recherche (voir le cadre I).

3. ☐ Il y a absence d'unité de l'invention (voir le cadre II).

4. En ce qui concerne le titre,

☒ le texte est approuvé tel qu'il a été remis par le déposant.

☐ Le texte a été établi par l'administration et a la teneur suivante:

5. En ce qui concerne l'abrégé,

☒ le texte est approuvé tel qu'il a été remis par le déposant

☐ le texte (reproduit dans le cadre III) a été établi par l'administration conformément à la règle 38.2b). Le déposant peut présenter des observations à l'administration dans un délai d'un mois à compter de la date d'expédition du présent rapport de recherche internationale.

6. La figure des dessins à publier avec l'abrégé est la Figure n°

☒ suggérée par le déposant.

☐ parce que le déposant n'a pas suggéré de figure.

☐ parce que cette figure caractérise mieux l'invention.

1
☐

Aucune des figures n'est à publier.

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/FR 02/02624

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 H04Q7/32 G07F7/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04Q G07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 6 138 009 A (J. BIRGERSON) 24 October 2000 (2000-10-24) abstract; claims; figures column 2, line 30 - column 4, line 45 column 6, line 41 - column 8, line 25 column 11, line 7 - line 29	1-6 7-10
X A	WO 00 40048 A (TELECOM ITALIA MOBILE) 6 July 2000 (2000-07-06) the whole document	1,3 2,5-9
A	EP 1 035 741 A (SIEMENS INFORMATION AND COMMUNICATION PRODUCTS) 13 September 2000 (2000-09-13) abstract; claims; figures	1-3,5,7, 9
A	WO 00 42795 A (SWISSCOM) 20 July 2000 (2000-07-20)	
	-/-	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

*** Special categories of cited documents:**

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document relating to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"Z" document member of the same patent family

Date of the actual completion of the international search

17 December 2002

Date of mailing of the international search report

30/12/2002

Name and mailing address of the ISA

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 Fax (+31-70) 340-3016

Authorized officer

David, J

INTERNATI NAL SEARCH REPORT

International Application No
PCT/FR 02/02624

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 99 57875 A (NE-PRODUCTS) 11 November 1999 (1999-11-11) _____	
A	DE 198 01 576 A (DETEMOBIL DEUTSCHE TELEKOM MOBILNET) 22 July 1999 (1999-07-22) _____	
A	GB 2 357 011 A (NEC CORPORATION) 6 June 2001 (2001-06-06) _____	

INTERNATIONAL SEARCH REPORT

International Application No
PCT/FR 02/02624

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			EP	1050175 A1	08-11-2000
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			GB	2371724 A	31-07-2002

SCHLUMBERGER SYSTEMES
PCT/FR 02/02624

DOCUMENTOS ANEXOS AL
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- ✓ US 6,138,009 A
- ✓ WO 00/40048
- ✓ EP 1 035 741 A2
- ✓ WO 00/42795
- ✓ WO 99/57875
- ✓ DE 198 01 576 A 1
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US006138009A

United States Patent [19]
Birgersson

[11] Patent Number: 6,138,009
[45] Date of Patent: Oct. 24, 2000

[54] SYSTEM AND METHOD FOR
CUSTOMIZING WIRELESS
COMMUNICATION UNITS

0 814 045 10/1997 European Pat. Off. .
43 21 381 1/1995 Germany .
7167174 10/1995 Japan .
96/32679 10/1996 WIPO .
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[75] Inventor: Jonkdm Birgersson, L ddek pings,
Sweden

[73] Assignee: Telefonaktiebolaget L.M. Ericsson,
Stockholm, Sweden

[21] Appl. No.: 09/097,942

[22] Filed: Jun. 16, 1998

[30] Foreign Application Priority Data

Jun. 17, 1997 [SE] Sweden 9702322

[51] Int. Cl.⁷ H04M 3/00

[52] U.S. Cl. 455/419; 370/338; 370/401;
713/2; 701/200

[58] Field of Search 455/419, 418,
455/414, 456, 403, 422; 370/338, 401,
352, 402-404, 313; 701/211, 213, 24, 300,
200; 342/457, 357.01, 357.06, 357.09, 357.1,
357.13; 709 229; 713/2; 379/58.17, 301

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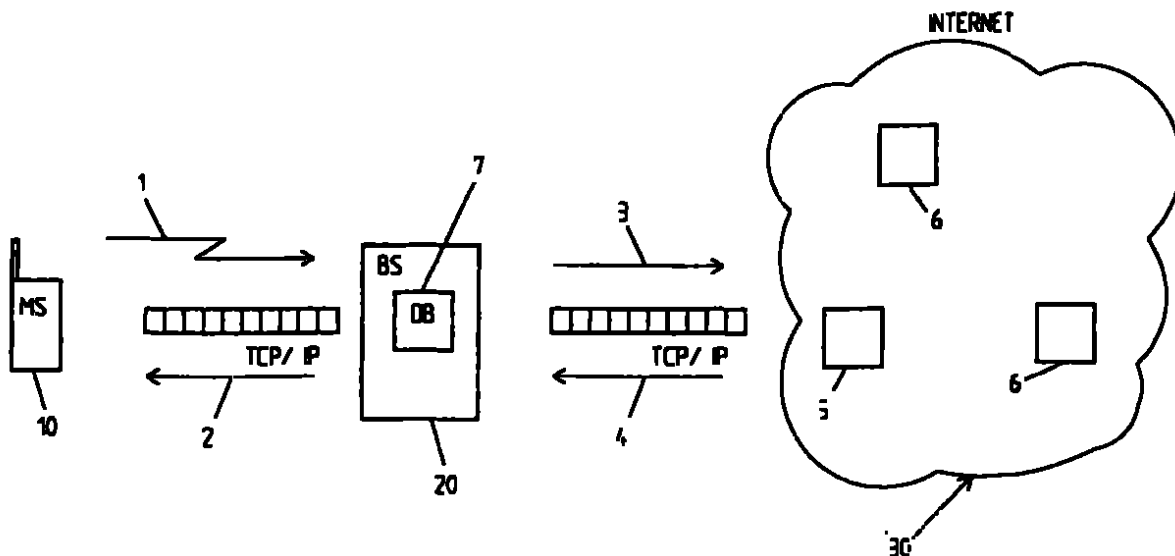
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Primary Examiner—Nay Maung
Assistant Examiner—Tracy M. Legree
Attorney, Agent, or Firm—Burns, Doane, Swecker &
Mathis, L.L.P.

[57] ABSTRACT

A system and a method respectively for customizing wire-
less communication units for use in wireless communication
systems. The wireless communication units are generic and
include a device for enabling establishment of contact with
a switching arrangement and a handling device including a
program executor. Software relating to the wireless commu-
nication units is provided in a number of storing devices
accessible over a global data communications network.
Location information is provided, and, with use of the
location information, software relating to a particular
generic communication unit is downloaded via the switching
arrangement using the global data communications network
to the communication unit.

31 Claims, 9 Drawing Sheets



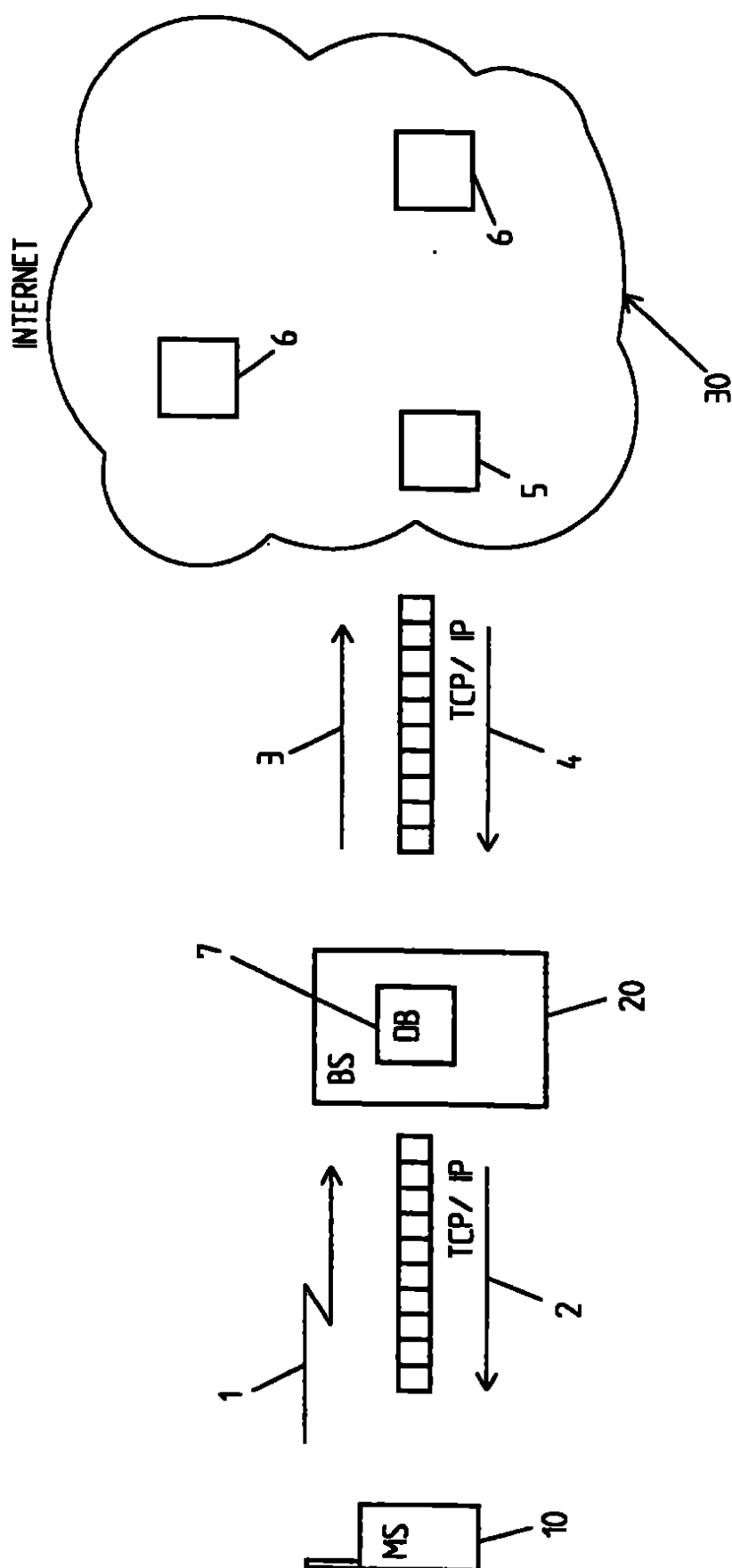


FIG. 1

22
19

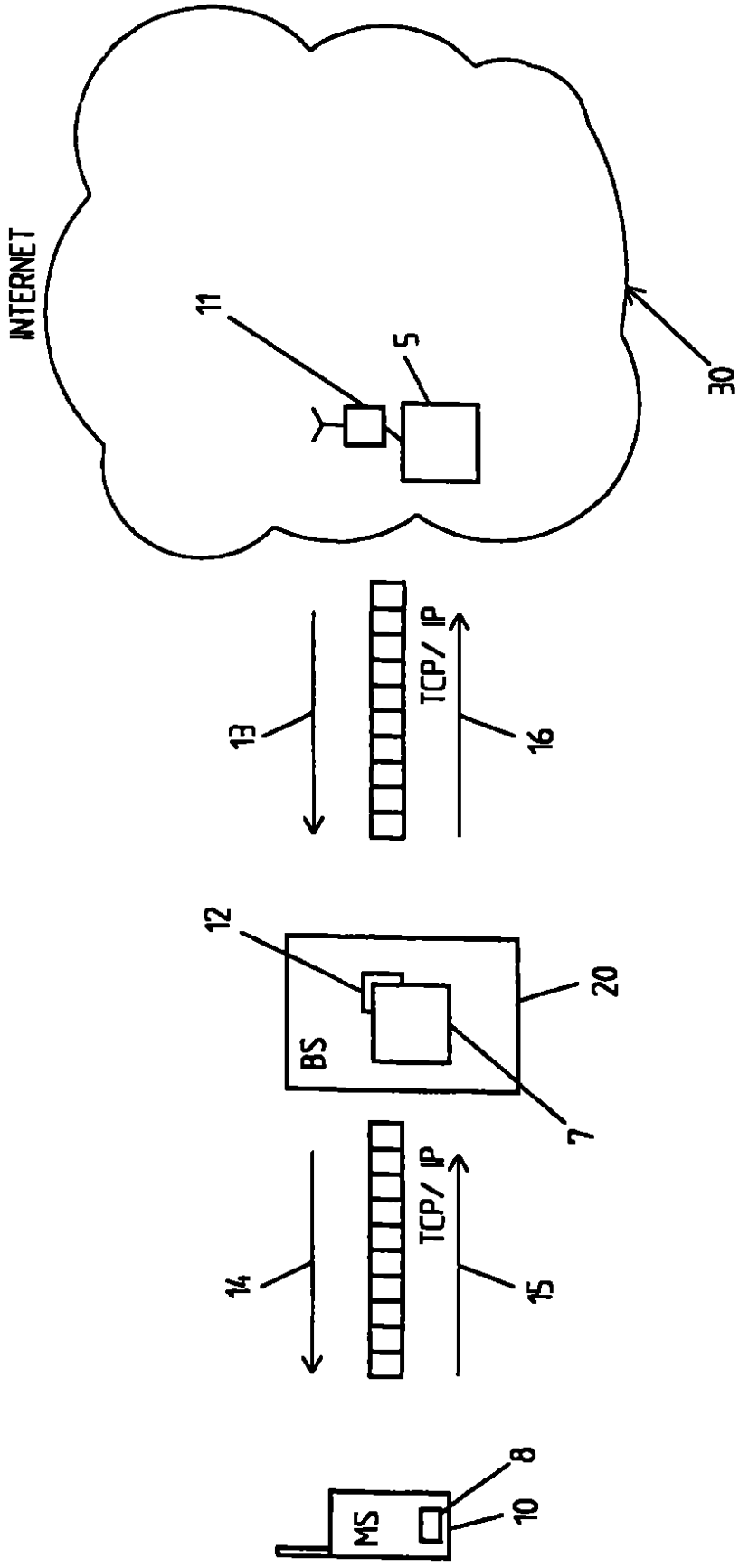


FIG. 2

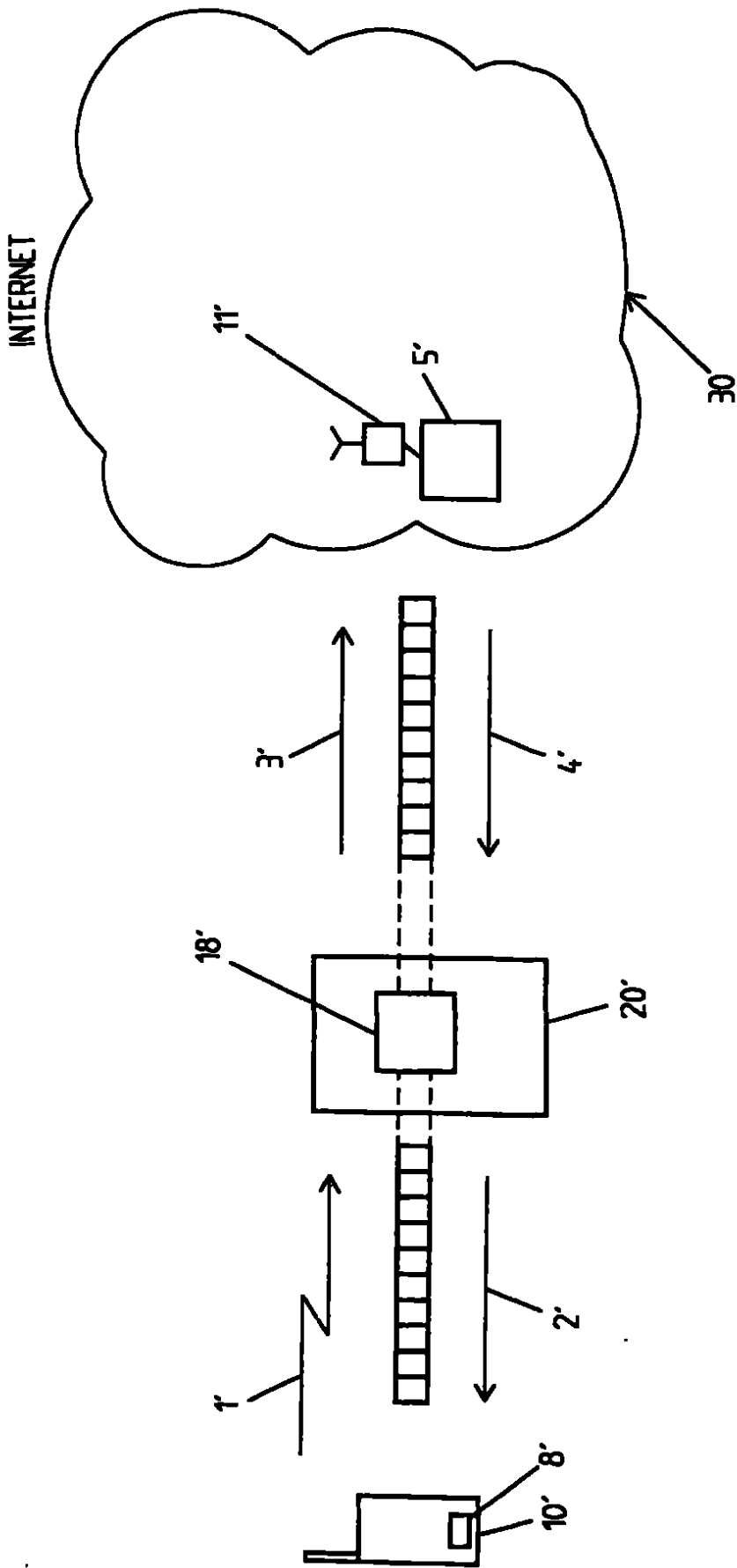


FIG. 3

23
29

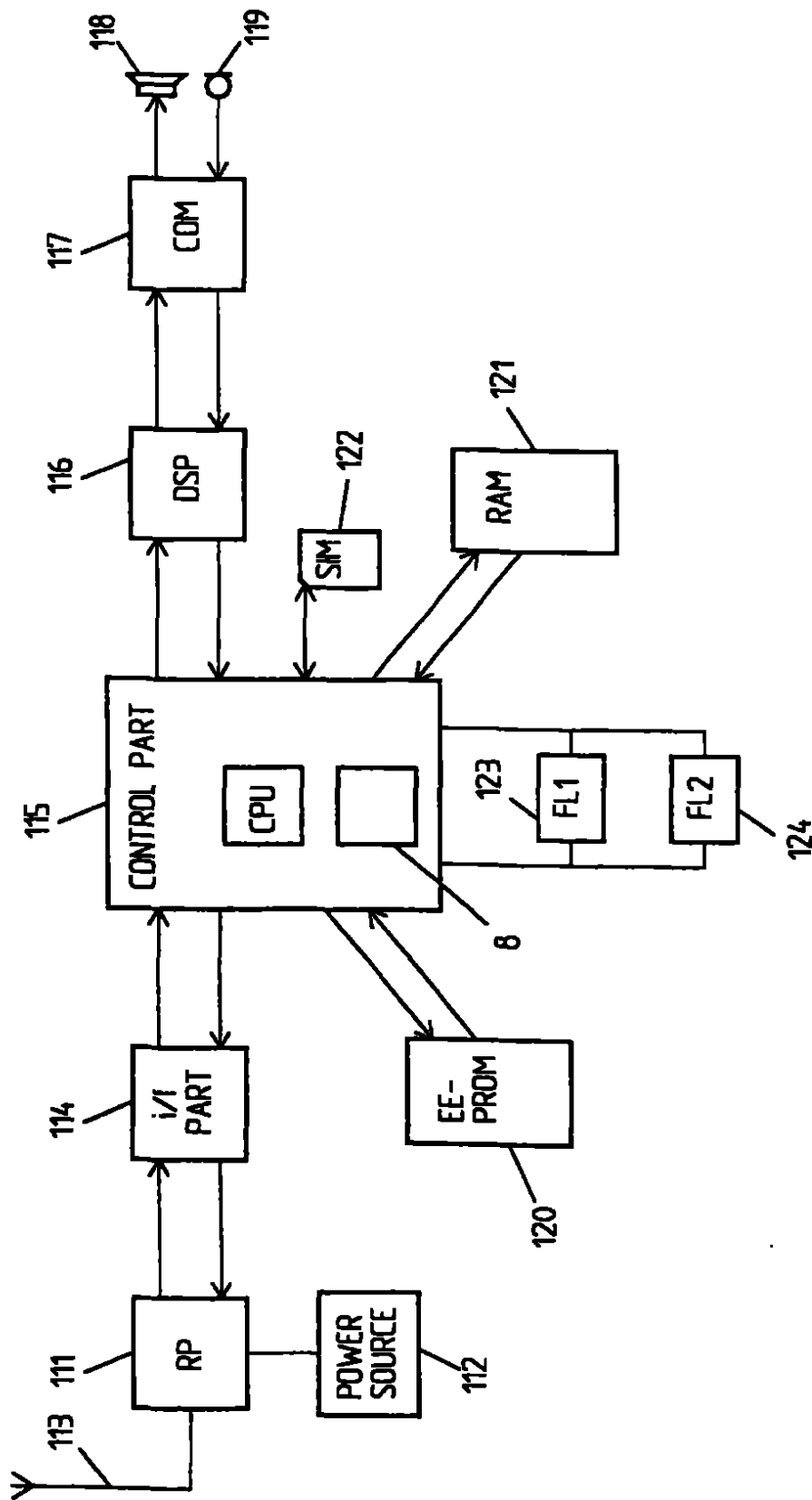


FIG. 4

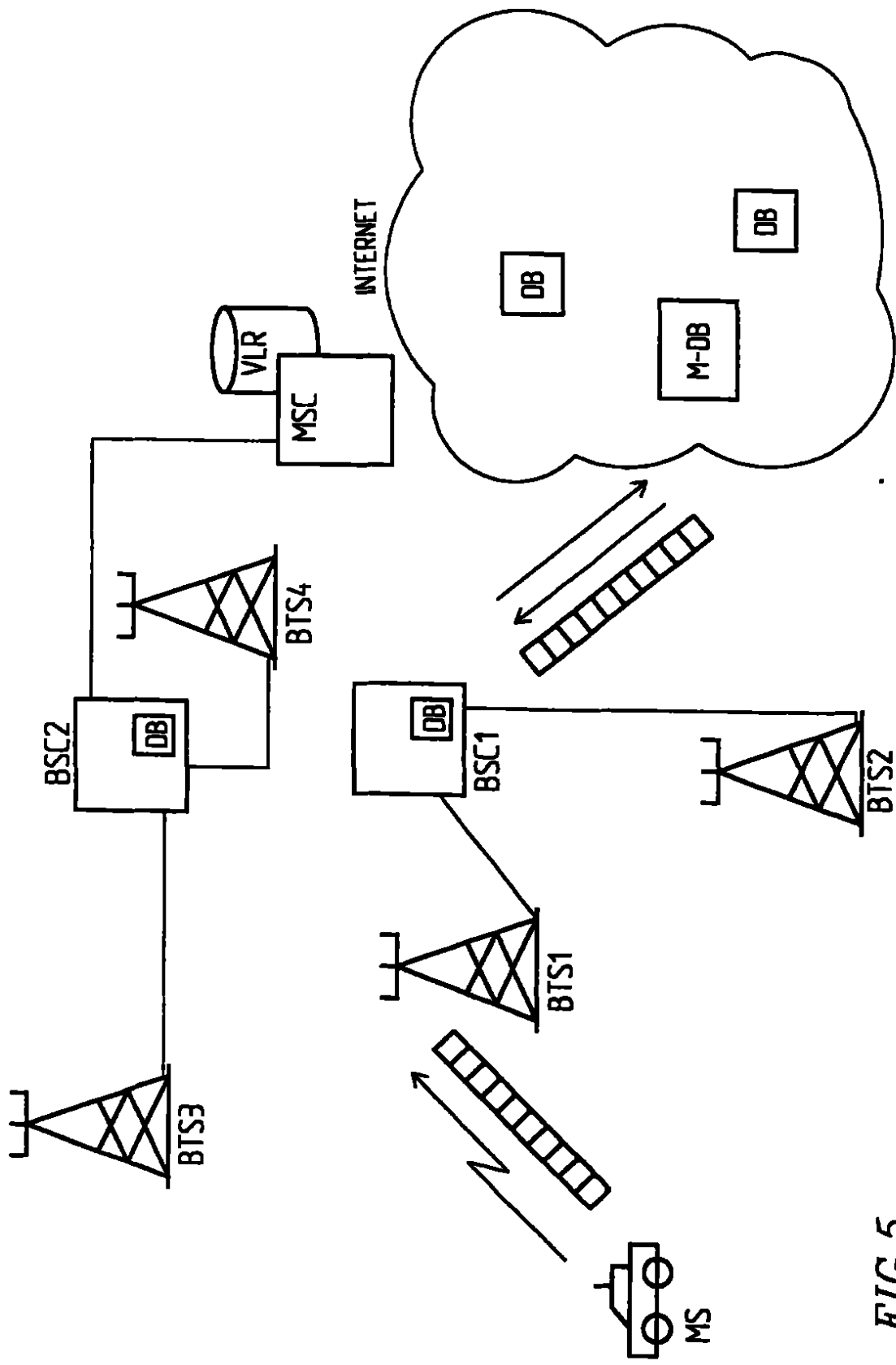


FIG. 5

24

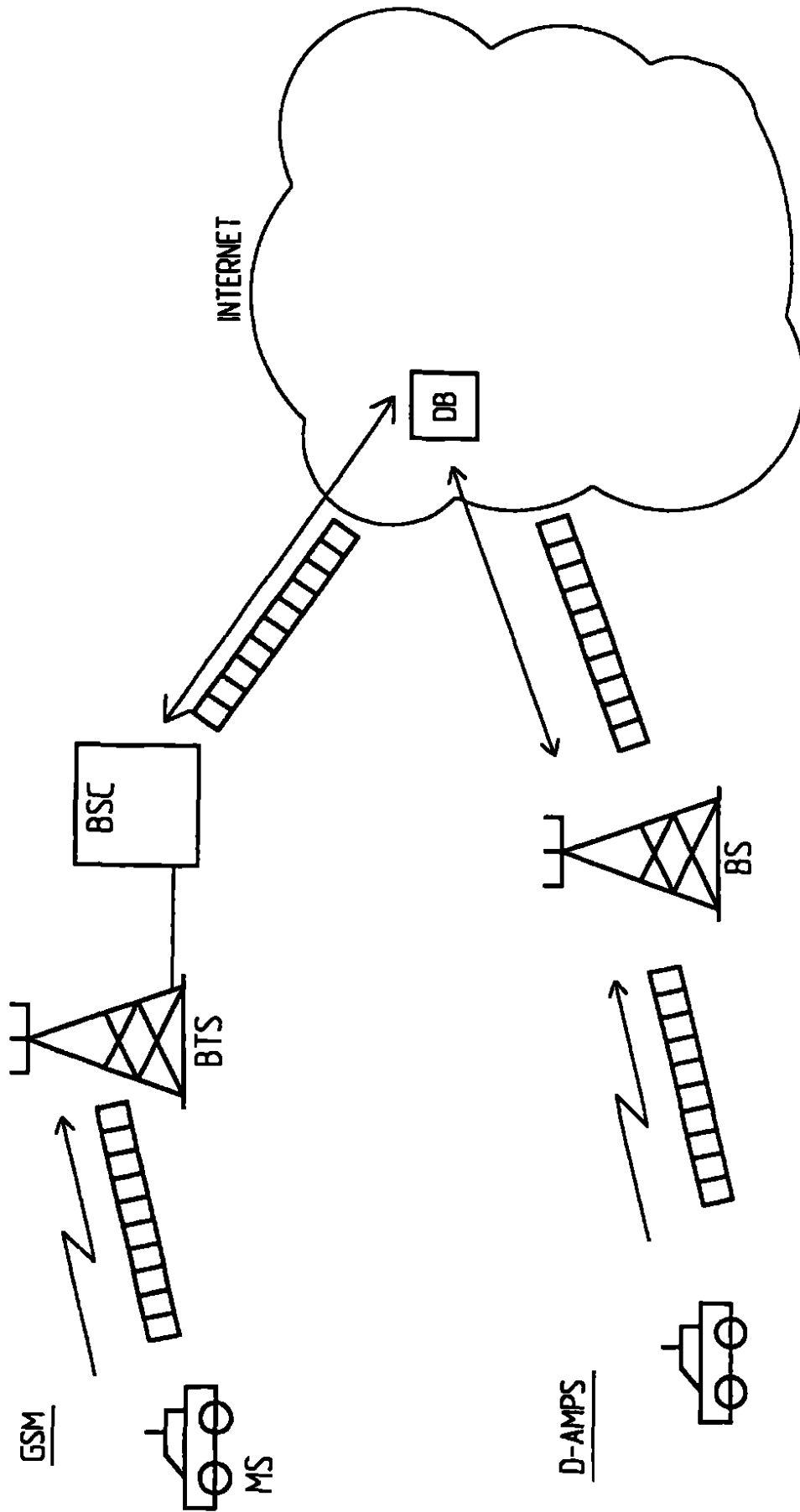


FIG. 6

FIG. 7

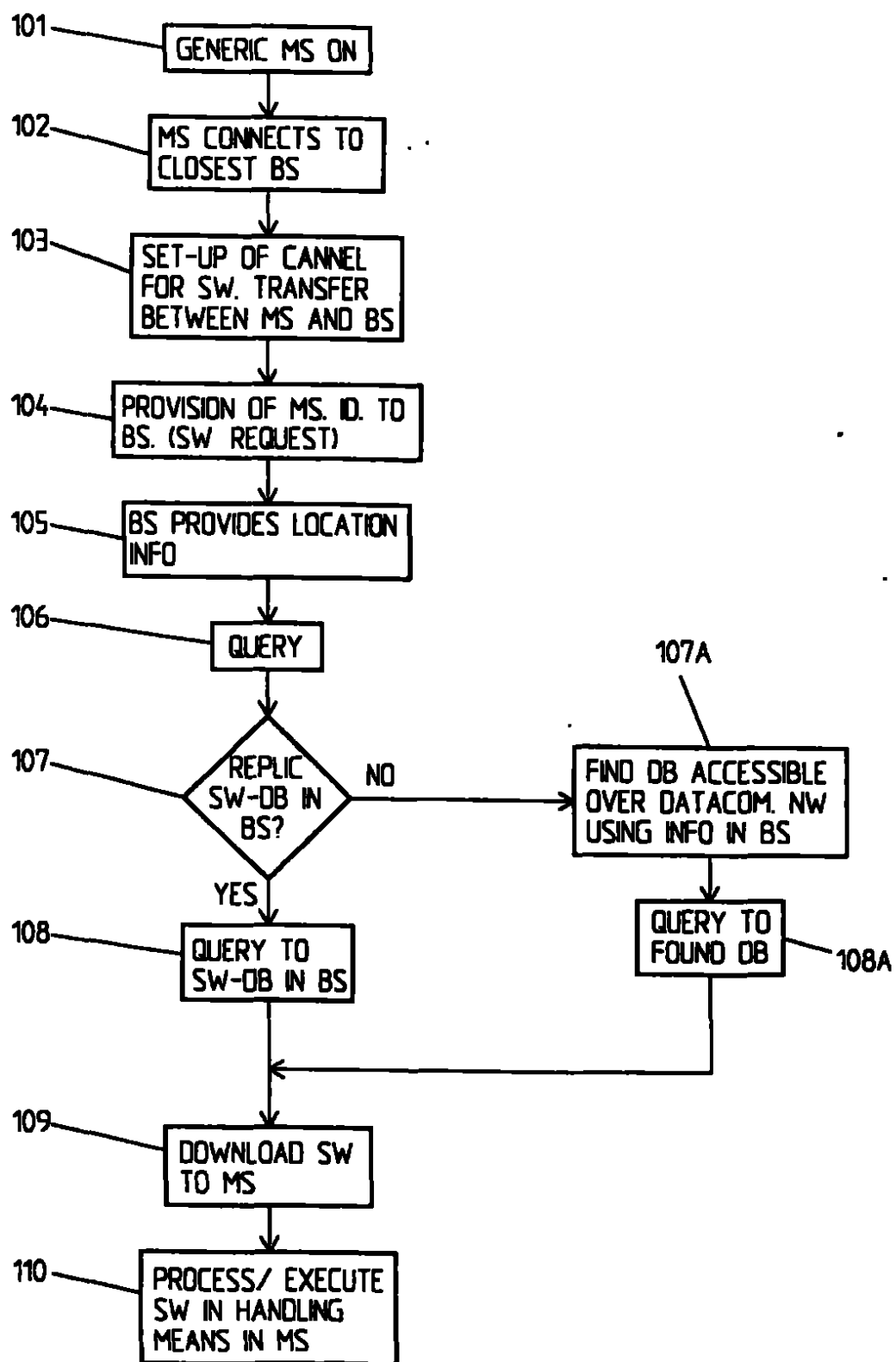


FIG. 8

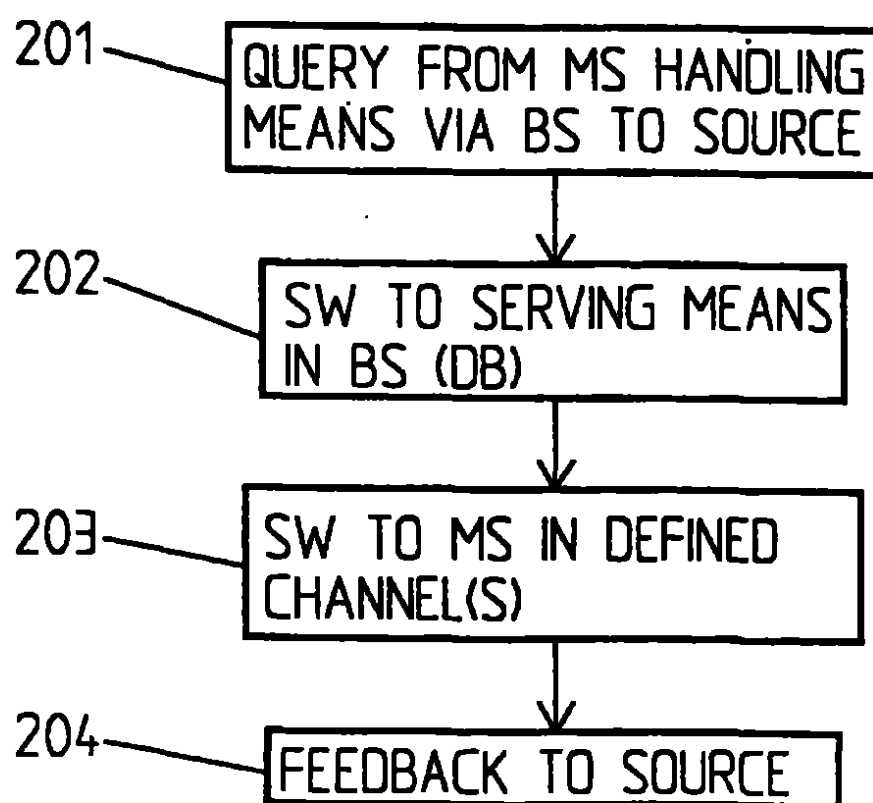
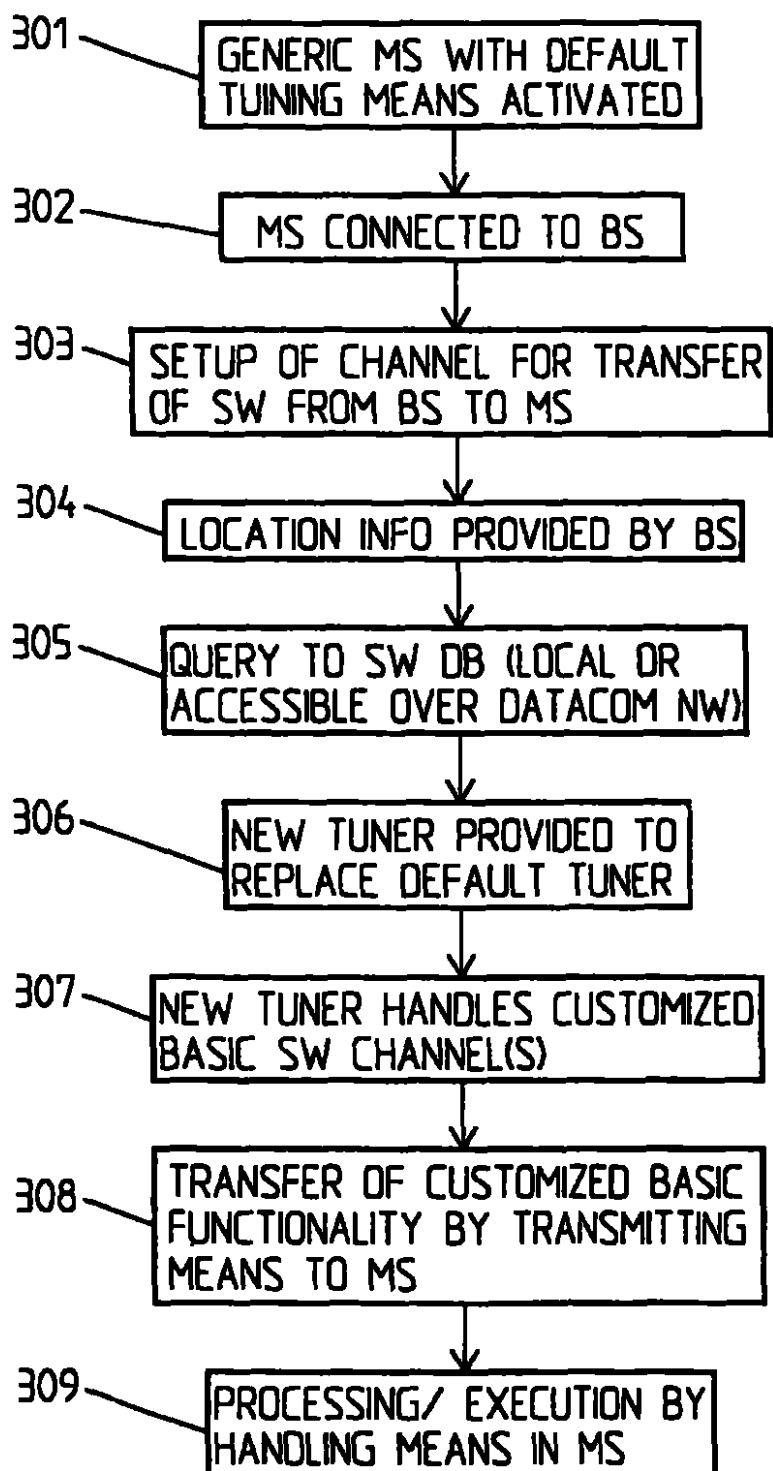


FIG. 9



SYSTEM AND METHOD FOR CUSTOMIZING WIRELESS COMMUNICATION UNITS

BACKGROUND

The present invention relates to a system and a method respectively for customizing wireless, generic communication units. The invention also relates to a generic, wireless communication unit.

The use of wireless communication units, such as for example cellular telephones is increasing rapidly all over the world. This means that the number of destination markets is growing steadily. The markets differ from one another in a number of aspects since different languages are used, different cultural aspects have to be taken into account etc. and also in other respects various needs and demands have to be taken into account. This complicates the situation for manufacturers of wireless communication units since for every market, different software sets for the communication units intended for the respective particular markets have to be provided, which causes complex and continuously changing situations since the markets are continuously evolving. The appropriate software intended for a particular market has to be introduced into communication units intended for each specific market and it is also a tendency to more specific local adaptations of the telephones which necessitates the generation of even more particularly adapted software sets. Communication units, such as for example cellular telephones, also tend to get more and more complicated to handle for a user in order to enable for increasing ability to provide for adaptation to user specific needs and services. Therefore for example cellular telephones get more and more similar to computers and allow a high degree of programmability. A common problem today is that the users do not bother about all the functionalities and services that actually are provided for through the telephones, since it is too complicated, which means that the provision of adaptation possibilities and service offers are not taken advantage of to an extent that corresponds to the intention of the telephone manufacturers, service providers etc.

U.S. Pat. No. 5,046,082 shows a system permitting remote access to cellular telephone RACT programming through PSTN. Operational data are stored in the remote access cellular telephone and it comprises an erasable memory for storing such operational data and processing means connected to the memory which is programmed to manipulate the operational data, an audio bus for transmission of audio frequency signals and a modem comprising an audio part connected to the bus and a data part connected to the processing means. The modem is operable to communicate data between the processing means and said audio bus. The system furthermore comprises signal detection means for detecting audio signals having predetermined parameters. This invention relates to the internal structure of the telephone and it is intended for analogue systems and thus does not solve the problems of providing a wide flexibility, simple telephones and particularly it does not relate to digital communication systems.

JP-A-7 (67) 174 shows a digital mobile telephone system including a downloading function for extended software and DE-A-4 321 381 discusses downloading of new or altered software into a memory of a telephone using a personal computer. WI 96/32679 relates to updating of software in mobile telephones. Managing hosts and an enhanced service complex are used for providing the update. However, none of these documents shows a really personally adapted

or market adapted telephone which is easy to fabricate and handle, e.g. to distribute, for the manufacturer and easy and flexible to handle for the user.

SUMMARY

What is needed is therefore a system and a method respectively for customizing wireless communication units such as for example cellular telephones, cordless telephones, any kind of hybrid communication units etc.

A system and a method are also needed through which the fabrication of communication units intended for a number of different markets, required to fulfil a number of different needs and implementations, is facilitated, made more efficient and cost-effective. A system and a method respectively are also needed through which local implementation requirements and niching of the communication units can be still further increased without affecting the fabrication process, distribution of communication units etc.

Still more particularly a system and a method respectively are needed through which the basic functionality can be altered, updated in an efficient and uncomplicated manner and without producing complications for the end-user, i.e. the subscriber or the user, of a communication unit. Still more particularly a system and a method respectively are needed through which the end-user in a non-complicated and efficient manner gets access to available service implementations existing locally on a market and also to newly introduced services or even services and applications not yet introduced on the market.

A communication unit intended for wireless communications such as a cellular telephone, cordless telephone, any kind of a hybrid communication unit etc is also needed which to a high extent is customizable without producing complications neither for the end-user, nor for the manufacturer, which easily can be updated and through which the services available on the market, as well as unforeseeable services that might be introduced or made available, can be provided without imposing on the user to keep himself informed about improvements, updates can be introduced also without requiring from the user to have knowledge about how to program his communication unit.

Therefore a system for customizing wireless communication units to be used in a wireless communication system, including a number of switching arrangements arranged throughout the coverage area of the wireless communication system, is provided. Each communication unit comprises means for enabling establishment of contact with a switching arrangement. The communication units are generic and the software relating to wireless communication units is provided in a number of storing means that can be accessed over a global data communication network. Each generic communication unit includes indicating means for indicating to a switching arrangement, or a communication means communicating with the switching arrangement, when contact is established (e.g. the first time of contact), that software is requested. Each generic communication unit furthermore comprises handling means for processing the software. The switching arrangement or the communication means provides information relating to the location of the communication unit (or simply of the switching arrangement itself) and with the use of said location information, software relating to a particular generic communication unit is downloaded to the communication unit via said communication means or switching arrangement using the global data communications network.

In a particular embodiment software relating to generic communication units is stored in a plurality of databases

comprising a master database and a number of replicated databases which are accessible via the global data communications network. Single sourcing can be implemented in different ways. In one embodiment all relevant software is provided in a master database which is directly accessed. Alternatively a number of replicated databases are provided which can be accessed.

In an advantageous embodiment a plurality of the communication means, or the switching arrangements themselves, include means for holding software replicated from the databases. Advantageously said means, which are provided in the switching arrangements or in communication means connecting thereto, are replicated software databases.

In a particular embodiment the indicating means are included in the communication unit activating means themselves such that, the first time a communication unit is activated, software is automatically requested. According to different embodiments it does not have to be the first time, or does not have to be only the first time but there can be provided for request activating means which indicate when software is requested and particularly through which is pointed out when software is required which is necessary for the functioning of the telecommunication unit, also called customized basic software, as opposed to basic software which is software that is common for every telecommunication unit irrespectively of where and how it is to be used. In an alternative embodiment the indicating means are separate from the activating means. However, activation of the telecommunication unit is required in order to obtain the location information, and possibly some other information, which is provided by the switching arrangement or the communication means.

In a particularly advantageous embodiment the communication means comprises the switching arrangement itself. Advantageously the switching arrangements are the base stations of the mobile communication system. When a communication unit is activated, contact is established with the closest, or an adjacent, base station. In some particular cases, a user of a communication unit wants to be provided with software that does not correspond to the location of the closest, or an adjacent, base station. A user may for example buy a communication unit in a country which is not his home country, using a different language etc. The desired customization can then be provided for in different ways. The master database (and advantageously also replicated databases) keeps all relevant software, irrespectively of locality, and via the indicating means a selection can be done relating to language etc. This means that the datacommunications network is used: In an advantageous embodiment means for user interaction is provided. In an alternative embodiment the telecommunications network is used to find the "home" switching arrangement in which the location information is provided and thus the relevant software is downloaded.

Advantageously the global communication network is Internet and when a communication unit is activated, a TCP/IP (Transmission Control Protocol/Internet Protocol) channel is setup between the communication unit and a switching arrangement, such as for example the closest base station. A software transferring means, e.g. a file transfer protocol PTP is advantageously used for transferring software to the communication unit. When software is requested (automatically or by user interaction) by a communication unit, the switching arrangement, or particularly the base station, is provided with information relating to the communication unit such as for example identity, e.g. IMSI (International Mobile Subscriber Identity), PIN (Personal

Identification Number), model etc. In one embodiment so called pull technique is used for loading down customized (basic) software to the communication unit. In a particular embodiment the switching arrangement, such as for example the base station, contains information about a number of databases for routing a query to an appropriate database relating to the software request made by a communication unit. Advantageously the switching arrangement, particularly the base station, sends a database query to a replicated database arranged locally in the base station.

In a particularly advantageous embodiment applications are downloaded to the communication unit. The application receives and manages applications and/or content to be delivered to the communication unit using the global data communication network, said applications having been selected by the communication unit user. In a particular embodiment applications can be downloaded without the customized basic functionality being downloaded according to the invention but being provided for in any conventional manner. Irrespectively of whether the customized basic software is downloaded according to the inventive concept or in some other way, selected software applications/content is dynamically, automatically or via user interaction, provided to the communication unit using push technique. Irrespectively of whether the basic customized software is provided using the inventive concept or any other known concept, the customized basic software as well as the basic software that is necessary for the functioning of the telephones, can be dynamically and advantageously automatically updated/modified via push technique. In one advantageous embodiment of the invention, handling means provided in the communication unit comprises a JAVA™ chip. In a particularly advantageous embodiment Castanet™ tuners are/can be downloaded to storing means provided in the communication unit, which can be executed by the handling means, e.g. a Java chip. In a particularly advantageous embodiment the switching arrangement, such as for example the base station, is provided with serving means, e.g. a Castanet proxy whereas a Castanet transmitting means, e.g. a Castanet transmitter and a number of repeaters distribute and manage a number of channels, i.e. application or content to be distributed across the data communication network, for example Internet, towards the communication unit. E.g. Castanet™ (of marimba™) is available (on Apr. 29, 1997) at www.marimba.com/datasheets/castanet and the content is herewith incorporated herein by reference.

In an alternative embodiment generic handling means are pre-programmed in the communication unit and push technique is used for downloading of software, customized basic software as well as applications, alterations, automatic, dynamic updates new software. The generic handling means can be customer adapted via user interaction or alternatively adaptation can be provided for by the switching arrangement, particularly the base station, after software has been downloaded to the communication unit. In a particularly advantageous embodiment the generic handling means comprises a Castanet™ tuner, software being accessible directly via a Castanet transmitter and a number of repeaters. Advantageously the basic functionality is automatically and/or dynamically updated/upgraded/modified using the global data communication network, for example Internet. Advantageously the customized basic functionality is updated etc. in the same manner. Particularly a default tuner is installed at the fabrication stage, which can replace itself when the communication unit is activated, i.e. a customized tuner is downloaded replacing the generic default tuner.

In a particularly advantageous embodiment the JAVA™-programming language is used and services can be down-

loaded as well as applications and so called JAVA applets, c.f. for example "Are JAVA chips better than general purpose CPUs? Or will new compilers make them obsolete?", Peter Wayner, November 1996, BYTE p. 79-83", which herewith is incorporated herein by reference. The Java™ Language: An Overview is available on Apr. 26, 1997 over the World Wide Web.

The invention also provides for a method of customizing a generic communication unit for use in a mobile communication system. The method comprises the steps of establishing contact between the communication unit and a switching arrangement of the mobile communication system, setting up a communication channel between the communication unit and the switching arrangement intended for software transfer, providing location information relevant to the generic communication unit and via said switching arrangement downloading software to the communication unit over a global data communications network, and in handling means in the mobile communications unit processing the downloaded software. In an advantageous embodiment the method comprises the steps of, providing a request for software, i.e. customized basic software, the first time the communication unit is activated or alternatively when an indication is provided that software is needed. In one embodiment downloading of customized basic software to the communication unit is performed using the pull technique, whereas for dynamic (automatic) downloading of updates/modifications to basic software as well as to customized basic software, the push technique is used. Alternatively the push technique is used for downloading of customized basic software as well. The push technique is also used for downloading of applications, services etc. subscribed to as well as new software, new applications etc.

Therefore also a communication unit, such as for example a cellular telephone, a cordless telephone, or a hybrid communication unit is provided which comprises basic functionality software and means enabling contact to be established with a switching arrangement, such as for example a base station, and handling means for receiving and managing customized basic software and applications: contents selected by the user of the communication unit. Advantageously the handling means comprises program executing means. In a particularly advantageous embodiment the telephone includes handling means comprising a JAVA™-chip. However, of course also other programming languages can be used, the essential being that the communication unit comprises program executing means for executing programs downloaded through a global communication network such as Internet. In an alternative embodiment an intranet can be used.

It is an advantage of the invention that wireless communication units, such as for example cellular telephones or cordless telephones, can be manufactured generically independently of which is the intended market and adjust themselves on the destination market or to the "home" market either on site or by pointing out which is the home market or which are the desired features. It is also an advantage of the invention that the manufacturing process is facilitated since a generic communication unit is manufactured without requiring separate storing facilities and without the need for provision of new software each time a new, and different, market is introduced. It is also an advantage of the invention that customized basic software as well as back-end functionality, functions essential to the performance of the communication unit in the communication system, and which is set during manufacturing, can be dynamically updated either without any interaction of the user or manu-

facturer at all, or through simple interactive commands. It is also an advantage that a user can subscribe to services and applications which are automatically provided access to without requiring from the user to perform any programming or complicated steps etc.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will in the following be further described in a non-limiting way and with reference to the accompanying drawings in which:

FIG. 1 schematically illustrates downloading of customized basic software according to one embodiment of the invention.

FIG. 2 schematically illustrates downloading of software using push technique to a communication unit in which customized basic software has been downloaded according to FIG. 1.

FIG. 3 schematically illustrates a communication unit to which customized basic software as well as new and/or updating software and/or services, applications are downloaded using push technique.

FIG. 4 is a schematical block diagram of a cellular telephone according to the invention.

FIG. 5 schematically illustrates the implementation of the inventive concept in a GSM system.

FIG. 6 schematically illustrates an implementation of the inventive concept for mixed, e.g. incompatible cellular communication systems.

FIG. 7 is a flow diagram illustrating downloading of customized basic software using the pull technique.

FIG. 8 is a flow diagram illustrating downloading of updating software, new software or software relating to services subscribed to etc., and

FIG. 9 is a flow diagram illustrating downloading of customized basic software using the push technique.

DETAILED DESCRIPTION

In FIG. 1 the communication unit is supposed to be a cellular telephone (MS) 10. It should however be clear that it also can be a cordless telephone, some kind of a hybrid telephone or any other kind of communication unit. The cellular telephone is used in a cellular communication system of which only a base station 20 is illustrated for reasons of clarity, and since, in this embodiment, the base station is the only part of the cellular communication system that is essential. Although the base station 20 here merely is illustrated as a base station, it should be clear that the invention of course also applies to the GSM system in which case a base station comprises a base station controller (BSC) which is connected to a base transceiver station (BTS). The cellular telephone 10 is generic which means that before customized basic software is installed, it could be used anywhere, with any kind of software etc. Advantageously the only software that initially is contained in the telephone is the minimum of software required in order to establish contact with for example a base station, some control logic etc.

According to an advantageous implementation of the invention, a batch of cellular telephones are for example fabricated in a first country. Since the telephones are generic the manufacturer does not have to bother about the destinations for the cellular telephones since the same generic telephone can be used everywhere and is locally adapted on site, i.e. in the destination country or in the destination

region or any other particular area. Still further, a telephone can be provided with any desired software irrespective of where it is actually activated. Then, however, the desired features, e.g. language etc. must be indicated using a scheme or similar. Alternatively some information relating to country, region or similar, is provided and the particulars associated with said region, country etc. are automatically provided, i.e. the appropriate software is downloaded.

In FIG. 1 it is supposed that the cellular telephone has been distributed to a country/region or whatever given location, where it is to be registered. The cellular telephone 10 is switched on, or activated. The cellular telephone then, in a conventional manner, finds (1) the closest base station 20. According to the invention a channel (2) is set-up between the cellular telephone and the base station 20, which comprises a protocol enabling the transfer of software. In this particular embodiment Internet is used as a global data communication network 30 for downloading of software. The invention is however not limited to using Internet; in alternative embodiments, global, in the sense that they cover a desired area, networks, e.g. intranets can be used as an alternative to Internet. They can also be used in combination with Internet. Other global or future data communication networks can of course also be used; the principle remains the same. However, if Internet is used as a global data communication network, the channel set-up between the cellular telephone 10 and the base station 20 is e.g. a TCP/IP channel (Transmission Control Protocol/Internet Protocol). TCP/IP also comprises a number of sub-protocols such as for example Small Message Transfer Protocol (SMTP) for E-mail, file transfer protocol (FTP) etc. Via the software transferring protocol, e.g. FTP, files can be transferred to the cellular telephone 10. When the telephone is switched on or activated and has found the closest base station, the cellular telephone 10 provides the base station 20 with identification information e.g. containing the model of the telephone, IMSI (International Mobile Subscriber Identity), PIN etc. and it also informs the base station 20 that it requests software, i.e. here customized basic software. These procedures in an advantageous embodiment take place automatically. In an alternative embodiment user interaction is required, e.g. the user activates indicating means to inform the base station that software is requested. A particular command may be provided to indicate that customized basic software is requested etc. As referred to earlier, basic functionality, i.e. back-end functionality relating to functions which are vital to the performance of the telephone in the system, may be provided during manufacturing; what is requested is thus the front-end functionality herein referred to as the customized basic functionality, such as for example locally adjusted menus, languages etc. also relating to all local particular adaptations of the phone that are available (locally) and that will be, or may be, available in the future.

When the base station 20 has received the information given by the cellular telephone, it provides the local or geographical parameters of the base station. Different kinds of information can here be provided, some optional parameters can be provided etc. The relevant parameters can also be provided via separate communication means connected to the base station, or included in the base station. The base station 20, or the communication means, uses the information from the cellular telephone 10 and the additional location information and sends a query via TCP/IP 3 to a local software database 7, if such is provided for in the base station 20 or is connected to the base station. The base station 20 or the communication means in the illustrated

embodiment contains a replicated software database 7 being a replication of a software database 5 available over Internet. In a particular embodiment there is just one master software database 5 which is accessed, but in an alternative embodiment a number of replicas 6 of the master software database 5 are provided which are accessible via Internet. In the latter case a higher degree of redundancy is provided. When a replicated software database 7 is provided in, or in connection to, the base station 20, no access via the telecommunications network is required when the cellular telephone 10 requests software.

If however no local software database 7 is available, the query is transferred to an appropriate software database according to a scheme or a database table (not shown) provided in the base station 20. Such a table can be provided for in many different ways as long as the information is provided. The requested customized basic functionality is then downloaded 4,2 via the global data communications network, here Internet, via the base station 20 to the cellular telephone 10, where it is activated. The base station 20 comprises handling means (not shown) for serving/routing queries to databases and software to the telephone.

The telephone 10 comprises handling means including program executing means. The telephone will be further discussed with reference to FIG. 4.

In an advantageous embodiment the JAVA™ programming language by Sun Microsystems, see for example "The JAVA™ language: An overview" of Javasoft which was incorporated herein by reference, is used. The JAVA-concept comprises programming-language generating applications, and JAVA applets. Advantageously the handling means comprises a JAVA chip which is integrated into the cellular telephone. JAVA chips are discussed in Byte, November 1996, page 79-88, "SUN gambles on JAVA chips" by Peter Wayner as discussed above. A JAVA chip is a dedicated JAVA processor, which, like so called pico JAVA chips, based on Sun's pico JAVA core architecture, natively understand JAVA byte code without the overhead of an interpreter or just in time (JIT) compiler. A JAVA chip executes JAVA byte code without converting it into another CPU instruction and it does not need any extra memory or cache space (that is required when a general purpose processor runs a job with a byte code interpreter or a just in time compiler). JAVA has an extensive amount of routines for coping easily with TCP/IP protocols like HTTP and FTP. Of course some other programming language providing a similar functionality can also be used.

In an advantageous embodiment the software database comprises Castanet™, of Marimba™, tuners. Castanet™ is used for distributing and maintaining software applications and content across Internet and to dynamically provide updated information automatically. A Castanet tuner is an application which monitors, receives and manages channels selected by a channel subscriber. A Castanet channel is any application or content that can be distributed across Internet or an intranet. A Castanet transmitter is an application running on a network server managing the distribution and maintenance of channels. Through the implementation of an application as a Castanet channel, the downloading of the software is given flexibility in development and distribution while providing subscribers with an application that will automatically improve over time when new features are added. Channels are stored locally. Castanet comprises a tuner client and a transmitter server wherein the tuner enables end-users to subscribe to application channels deployed by various transmitters across Internet or cooperative networks. Which tuner (in the software database) that is

loaded, is given by the geographical (or other) parameters) and the base station tunes or decides which channels the tuner subscribes to via default (automatic) subscription. If the Castanet™ concept is used, advantageously Castanet's Application Distribution Protocol (ADP) for mirroring code and data over a network connection is used as a protocol for software transfer, i.e. it is one example on an alternative to FTP ADP is briefly discussed in "marimba", available on May 28, 1997 over www.marimba.com/press/castanet-net.7. Using Castanet™, channel applications are enabled to communicate data back to the server, the transmitter. Via the ADP protocol software is updated in, very close to, real-time, requiring very little bandwidth. It should be noted that not only JAVA code can be run, but also e.g. DLLs (Dynamic Link Library), C.C++ objects can be deployed and managed.

In FIG. 2 an embodiment is illustrated according to which push technique is used for downloading of updating software and/or applications and/or entirely new software a user may subscribe to (and/or services). The cellular telephone 10 comprises storing and handling means 8 for receiving locally adapted and/or demanded software over one or more channels 13,14 defined in the handling means 8. Advantageously a number of different services are available to the subscriber/user. The services are according to one embodiment of the invention downloaded as applications which are small and contain interfaces, protocols etc. that are required to reach third party content providers. In a particular embodiment the applications are the above mentioned JAVA applets or applications. These services, the customized basic functions as well as the basic functions are advantageously (dynamically) updated with or without user interaction i.e. either requiring user interaction or automatically as in the push technique. An example of the push technique is Castanet as referred to above.

According to the invention a number of sources, e.g. databases and transmitting means and possibly also repeating means, are provided for distributing and maintaining channels towards available customers, e.g. cellular telephone 10. In an advantageous embodiment Castanet™ transmitters and repeaters are used. In a particularly advantageous embodiment serving means, e.g. a Castanet Proxy Server 12 is arranged in the base station 20 to provide for particularly fast access and for saving of bandwidth. Database replicas are then provided, and software is obtainable directly from the serving means 12.

The cellular telephone 10 here receives locally adapted software through a software transferring protocol, e.g. FTP or Castanet ADP, in the channel(s) which are defined in for example a downloaded Castanet tuner. Advantageously the handling means or program executing means, 8 comprises a JAVA chip. The cellular telephone 10 informs the base station 20 and source that it is accessible, 15,16 which means that, for example, the downloaded tuner in the cellular telephone makes a query to the source 15,11. Feedback information from the cellular telephone 10, i.e. the user, to the transmitter 11, is also enabled. The software database 5 as implemented in the present embodiment among others comprises a number of Castanet tuners. Which tuner that is loaded is given by the location information parameter in the base-station 20 which in turn also decides which particular channels the tuner automatically subscribes to. Examples of Castanet channels are a Castanet tuner through which the tuner can update/replace itself, language channels enabling a language and/or culture adaptation according to a geographic parameter or parameters, routines and telephone functionalities etc. Examples on services that can be pro-

vided are E-mail, browsing, database access, system integration, bank and financial services (with integration of the PIN-code), news and weather broadcast and other broadcasts. Using the concept of the invention, interactive communication to individuals is enabled which among others can be used for market inquiries etc.

FIG. 3 relates to an embodiment in which handling means are pre-programmed in the cellular telephone 10' when it is manufactured. The handling means 8' can be adapted by the user, who for example answers a number of questions controlling which channels that are to be requested. Alternatively the information controlling or adapting the pre-programming can be provided by the base station 20', for example the closest base station, when a contact first is established between the cellular telephone and the base station. The functioning is substantially the same as that described above with reference to FIG. 2, with the difference that the software only has to be accessible from the source 5' by a central transmitter 11' and possible repeaters (not shown); for example a Castanet transmitter and repeaters. No pull database in the base station, for example comprising Castanet tuners, is needed. In this case push technique is thus used both for loading down of customized basic software as well as services, applications, updates and new or additional software.

In FIG. 3 the preprogrammed handling means 8' are adapted by the user. When the telephone 10' is activated, the base station 20' adds location information and channels for transfer of software 2',4' are set-up. The base station does in this embodiment not comprise any replicated database and software is transferred, using the global data communication network, from the source, database 5' by transmitting means 11'. Queries/software is routed etc. via serving/routing means 18'. Of course a number of repeating means may be provided although not explicitly shown in FIG. 3.

In a particular embodiment a default Castanet tuner (or similar means) are provided initially, i.e. before downloading of customized basic software has taken place. When the telephone is activated (or software is requested), the tuner replaces itself, i.e. a customized tuner is downloaded.

In FIG. 4 a schematical block diagram of a cellular telephone is illustrated with a radio part 111 which in a manner known per se includes receiving and transmitting means for receiving and transmitting radio signals and to which an antenna, 113, is connected. The transmitting means and the receiving means share the antenna 113 in time multiplex. The radio part 111 also includes means for modulating, demodulating and equalizing in a manner known per se. The radio part 111 is powered from a power source 112. An interface part 114 is also provided including A/D, D/A converters, multiplexing means etc also in a well known manner. The control part 115 comprises encoding, decoding, interleaving means, a PCM interface, a SIM interface communicating with a SIM card 122 etc. and a central processor unit (CPU) etc. The control part, 115, in turn is connected to signal processing means, a digital signal processor (DSP) 116 which is connected to a communication part (COM) 117. The signal processing means 116 among others includes (also in a manner known per se) means for speech encoding/decoding etc. The communication part 117 among others includes PCM encoding/decoding means. It receives speech data from a microphone 119 and sends speech data to a loudspeaker 118 respectively and it communicates with the microprocessor of the control part 115. Basic storing means (SM) 120 e.g. an EEPROM (Electrical Erasable PROM) are provided as well as a RAM (Random Access Memory) 121. It should however be clear that this is

merely an example on an implementation. The functioning of the cellular telephone as such will not be further described herein since it is known per se and it may use different access techniques such as time division multiple access (TDMA), code division multiple access (CDMA) or frequency division multiple access (FDMA) etc.

However, according to the present invention additional processing means 8 is provided for execution of downloaded software. In an advantageous embodiment said program processing means comprises a JAVA chip. In the illustrated embodiment two flash memories FL1, FL2, 123, 124, are provided for redundancy reasons. The downloaded software (in a particular embodiment so called Castanet tuners etc.) are stored in one of the flash memories 123, 124. Thus, conventional processing means are provided for the conventional managing of the telephone whereas separate processing means, (program processing means 8) are provided for handling downloaded software. In an alternative embodiment common processing means are used for both functionalities.

As an alternative to an EEPROM or flash memories for storing of downloaded software etc. the SIM-card can be used (Subscriber Identity Module). This is an advantageous embodiment since the user then can change telephone (i.e. use the same SIM) without having to download software. Thus, in this way software related to the user/subscriber in a simple way can be moved from one communication unit to another without the user having to repeat the downloading procedure.

FIG. 5 very schematically illustrates a part of a GSM-system. Base Transceiver Stations BTS1 and BTS2 are connected to a base station controller BSC1 whereas BTS3 and BTS4 are connected to BSC2. BSC1 and BSC2 are both connected to MSC/VLR. When mobile station MS is activated, it finds the closest base station which in this case is BTS1. Actually it does not have to be the closest base station but rather the base station with which the signalling transmission is the best. As referred to earlier in the application the mobile station MS is generic comprising only basic software and it may have been fabricated anywhere. A channel is set-up between MS and BTS1 supporting transfer of software. BSC1 provides the location information of BTS1 and a channel for transfer of software over a global data communications network, here Internet, available in one or more databases, is set-up. Software relates to basic functionality as well as services, applications and new software etc. as discussed above. A replicated database may be provided in BSC1. In handling means provided in the mobile station, the downloaded software is processed. The software, e.g. customized basic software is downloaded to software storing means, e.g. a flash memory as discussed above with reference to FIG. 4.

FIG. 6 is a figure similar to that of FIG. 5 with the difference that two different cellular communication systems, namely GSM and D-AMPS are illustrated. The cellular communication systems are merely given for exemplifying reasons, the concept applies to other alternatives such as for example ADC, PDC, PCS, DCS 1800, DCS 1900 as well. The figure is merely included to illustrate the principle that different communication networks communicating with different frequencies, protocols etc. can use the same principle and the same source for providing a generic telecommunication unit with customized basic software. Furthermore basic software can be updated automatically or via user interaction. Different services, updates, applications etc. are available in one and the same manner, using one and the same global data communications network irrespectively

of which is the mobile communications network. Both for GSM and for D-AMPS location information is provided in the base station (BSC and BS respectively) and channels are setup for transfer of software.

FIG. 7 is a schematical flow diagram illustrating the downloading of basic functionality software to a generic mobile station including handling means for program execution. The generic mobile station is switched on, 101, and finds the closest base station, to which it connects, 102. A channel for software transfer is setup between the mobile station and the base station, for example TCP/IP comprising a file transfer protocol, 103. According to another example a Castanet™ ADP protocol is setup. Other alternatives are also possible. The mobile station then provides the base station with information relating to its identity (IMSI, PIN) and possibly also some additional information, including a software request, 104. According to one embodiment a software request is automatically provided the first time the generic telephone is activated. Alternatively some kind of user interaction is needed. The base station then provides information about its location, 105. A software query is then provided, 106. An examination is performed to establish whether the base station comprises a replicated software database, 107. If a replicated software database is provided in the base station, the query is directed to said local software database in the base station, 108. If no local software database is provided in the base station, an appropriate "global" database is found using information provided in the base station for example in a table or similar, 107A. The query is then transferred to said "global" data base, 108A. Using the software transfer protocol, software is downloaded to storing means in the mobile station, 119, and in the handling means in the mobile station the program code is executed and the software is activated, 110. The generic mobile station has thus been provided with customized basic functionality also called front-end functionality as discussed earlier in the application which for example may consist in that it is provided in the language used locally around the base station. Other local adaptations are advantageously also provided for.

FIG. 8 is a very schematical flow diagram illustrating one way of downloading software to a mobile telephone which already has been provided with customized basic functionality, e.g. as described under reference to FIG. 7. Alternatively the concept is applied to a telephone which has been provided with customer adapted functionality in any convenient or conventional manner.

It is here supposed that the handling means of a mobile station MS comprises serving (tuning) means enabling reception of one or more channels. In an advantageous embodiment, as referred to above, a Castanet tuner has been downloaded. A query is provided, 201, by the handling means via the base station to the source, for example a Castanet transmitter. Via transmitting means software is then provided to serving (storing) means e.g. a Castanet proxy, provided in the base station, 202, using the software transfer protocol. The software is then provided to the mobile station in the channels defined in its tuning means, for example a Castanet tuner, 203. Feedback information can be provided to the source, 204, i.e. the transmitter or the producer.

FIG. 9 is a flow diagram schematically describing the embodiment described with reference to FIG. 3. It is supposed that a generic mobile station (MS) is provided with preprogrammed tuning means, e.g. it contains a default Castanet tuner. As in FIG. 7, when the mobile station is activated, 301, it is connected to the "closest" base station, 302. A channel for transfer of software is setup between the

mobile station and the base station and identification information is provided to the base station, 303. The base station then provides location information describing its location, 304, and a query is sent to a software database accessible via the data communications network or provided locally in the base station, 305. A new tuner is then "built" or fetched from a DB using the location information provided by the BS and the information provided by the MS, to replace the default tuner initially provided in the mobile station, 306. The new tuner then starts handling one or more customized basic software channels (e.g. Castanet channels), 307. The adaptation information is thus in this embodiment provided by the base station and it contains the channels to which the mobile station subscribes. Customized basic functionality is transferred by transmitting means to the mobile station automatically, 308. The customized basic functionality is then processed in the handling means of the mobile station, 309. For updating of basic functionality as well as customized basic functionality, applications, services, new software etc. the principle as described with reference to FIGS. 2 and 8 apply.

It is an advantage of the invention that the manufacturing costs are reduced. Still further the manufacturing time is reduced. Another advantage is that the storing of telecommunication units is more efficient: "just in time". Yet another advantage is that "the time to market" and "the time to customer" are considerably reduced. More services can be provided as well as more advanced services and the software is always up-to-date.

What is claimed is:

1. A system for customizing wireless communication units for use in a wireless communication system including a number of switching arrangements arranged throughout the coverage area of the wireless communication system, each wireless communication unit comprising means enabling establishment of contact with a switching arrangement,

wherein each communication unit is generic and comprises handling means with program executing means; software relating to wireless communication units being provided in a number of storing means accessible over a global data communications network, each generic communication unit including indicating means for communicating a switching arrangement, with which contact is established, that software is requested; the switching arrangement or communication means connected thereto providing information relating to the location of the communication unit, and using said location information, for downloading software relating to a particular generic communication unit via said switching arrangement or communication means using said global data communications network to said communication unit.

2. The system of claim 1, wherein the storing means comprises a plurality of databases including at least a master data base.

3. The system of claim 1, wherein at least a plurality of communication means or switching arrangements comprise local storing means for locally holding software replicated from the database(s).

4. The system of claim 3, wherein when software is requested, a channel for transfer of software is set-up between the communication unit and the switching arrangement, software being transferred from replicated, local storing means to the communication unit.

5. The system of claim 1,

wherein said indicating means are included in communication unit activating means, the first time a communication unit is activated, software automatically being requested.

6. The system of claim 1,

wherein an indication that software is requested by a communication unit is provided through user interaction.

7. The system of claim 1,

wherein the switching arrangement is a base station.

8. The system of claim 7,

wherein when a communication unit is activated, contact is established with an adjacent base station which provides information relating to the location of the base station itself, said information being indicative of the location of the communication unit, so that when contact is established between the communication unit and the base station, information about communication unit identity is provided to the base station.

9. The system of claim 8,

wherein a channel for transfer of software is set-up between a communication unit and a switching arrangement, when software is requested, a software transferring channel being provided between the switching arrangement and a database containing software.

10. The system of claim 9,

wherein a software transferring protocol is used for transferring software to the communication unit.

11. The system of claim 9,

wherein the switching arrangement at least if it does not comprise/communicate with local information holding means, holds information about a number of databases for routing a query to an appropriate database relating to the software request of a communication unit.

12. The system of claim 1,

wherein the global communication network is the Internet.

13. The system of claim 1,

wherein the pull technique is used for loading down customized basic software to the communication unit.

14. The system of claim 1,

wherein an application comprising generic tuning means is downloaded to the communication unit, said application receiving and managing applications and/or content to be delivered using said global data communication network and which via a default procedure automatically is selected by the communication unit user.

15. The system of claim 14,

wherein selected software applications/content are provided to the communication unit using push technique.

16. The system of claim 15,

wherein generic tuning means comprising a Castanet tuner or similar is automatically downloaded to storing means of the communication unit.

17. The system of claim 1,

wherein the handling means comprising executing means is a JAVA™ chip.

18. The system of claim 17,

wherein the switching arrangement serving information holding means is arranged, and transmitting means and a number of repeaters distributing and managing channels towards the communication unit.

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19. The system of claim 1,

wherein generic, default tuning means are provided in the communication unit, the push technique being used for downloading customized basic functionality software as well as updating, new, application, service software to the communication unit. 5

20. The system of claim 19,

wherein the default tuning means comprises a Castanet tuner, customized tuning means being downloaded to replace the default tuning means when software is requested. 10

21. The system of claim 1,

wherein the generic communication unit includes basic functionality, front-end functionality basic functionality being automatically dynamically updated/upgraded/modified using software downloading from the global data communication network. 15

22. The system of claim 1,

wherein the JAVA-programming language is used, services being downloaded as JAVA applets. 20

23. A communication unit comprising basic functionality including means for establishing contact with a switching arrangement,

wherein the communication unit is generic and comprises handling means including processing means for program execution, customized basic functionality being downloaded to the communication unit via a global datacommunications network using location information provided by the switching arrangement with which contact is established, for providing customized basic software. 25 30

24. The communication unit of claim 23,

wherein basic and customized basic functionality is dynamically updated via said global datacommunications network, applications, services, as well as new software being downloaded to the communication unit automatically. 35

25. The communication unit of claim 23,

wherein basic and customized basic functionality is dynamically updated via said global datacommunica- 40

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tions network, applications, services, as well as new software being downloaded to the communication unit via user interaction.

26. The communication unit of claim 23,

wherein the handling means comprises a Java chip, Castanet tuners being downloaded to storing means provided in the communication unit.

27. A method of customizing a communication unit for use in a mobile communication system,

which comprises the steps of:

establishing contact between the communication unit which is generic and a switching arrangement of the mobile communication system, including a request for software,

setting up a communication channel between the communication unit and the switching arrangement for transfer of software,

providing location information relevant to the generic communication unit,

via said switching arrangement loading down software to said communication unit over a global data communication network using said location information.

28. The method of claim 27,

further comprising the step of:

providing a request for software the first time the communication unit is activated.

29. The method of claim 27,

wherein the pull technique is used for downloading of customized basic software to the communication unit.

30. The method of claim 28,

wherein the push technique is used at least for dynamical (automatic) downloading of updated/modified software.

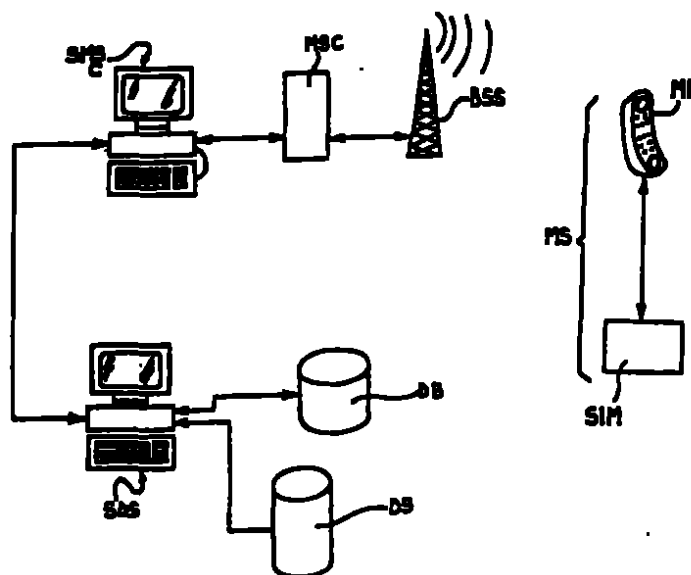
31. The method of claim 27,

wherein push technique is used for downloading software to the communication unit, basic functionalities initially provided in the telephone automatically and dynamically being updated/modified/replaced using the push technique.

* * * * *

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/EP99/10327 (22) International Filing Date: 22 December 1999 (22.12.99) (30) Priority Data: TO98A001088 28 December 1998 (28.12.98) IT (71) Applicant (for all designated States except US): TELECOM ITALIA MOBILE S.P.A. [IT/IT]; Via Bertola, 34, I-10122 Torino (IT). (72) Inventor; and (75) Inventor/Applicants (for US only): COZZOLINO, Sergio [IT/IT]; Via Leonardo da Vinci, 112, I-80055 Portici (IT). MORENA, Gastano [IT/IT]; Corso Susa, 33, I-10098 Rivoli (IT). (74) Agent: RIEDERER FRHR. V. PAAR, Anton et al.; Postfach 26 64, D-84010 Landshut (DE).	(81) Designated States: BR, CZ, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i>	

(54) Title: **MOBILE TERMINAL FOR TELECOMMUNICATIONS AND REMOTE SIM-CARD PROGRAMMING**

(57) Abstract

The subscriber identification module (SIM) of the terminal can be selectively so configured as to allow the user - through procedures carried out by the terminal itself - to load into/cancel from the same module (SIM) application programs for the access to respective services. The above application programs (12a, ..., 12e) are received by the terminal, for instance, within the so called short messages of the system. Preferably, the loading and cancelling operations of the above application programs (12a, ..., 12e) into and from the storage means of the subscriber identification modules (SIM) of the mobile terminals are performed under the control of the system server. (Fig. 2)

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MOBILE TERMINAL FOR TELECOMMUNICATIONS AND REMOTE SIM-CARD PROGRAMMING

The present invention relates in general to mobile telecommunications and concerns, in particular, a mobile terminal for telecommunications equipped with a identity module for the user or subscriber identification: in other terms, that module is the one commonly denoted by the acronym SIM (Subscriber Identity Module) in the systems operating according to the GSM standard. The invention is however applicable, in a similar way, to all the systems that envisage the use of said module, such as, for instance, the systems working according to the DCS 1800 or PCS 1900 standards. It is therefore understood that even if the following description is specifically referred to a GSM system and is based on the continuous reference to the relating terminology, this must not be seen as a limitation of the scope of the invention.

More specifically, the invention concerns a mobile terminal for telecommunications according to the preamble of claim 1.

The possibility of configuring the said mobile terminals in such a way as to allow the users to access information services such as, for instance, real time stock exchange information, news of different nature such as sports news, horoscopes, etc, is well known and has been exploited for some time. Both information services aimed at the general public (so called mass market services) as well as services

destined to a restricted area of users (for instance information relating to a company's organisation) can be involved.

5 The provision of such services exploits the possibility offered by mobile telecommunications systems (and in particular by those to which reference has already been made) of transmitting short messages, comprising fields for the transmission of user data, superimposed to and without mutual interference with the voice signal.

10 Two different modalities have been devised so far for the access to said services. According to the first one, the user utilises the terminal, and in particular the keyboard of the same, according to criteria substantially similar to those adopted for the use of a keyboard of a personal computer or a similar equipment, i.e. by introducing the required instructions through the keys of the mobile terminal.

15 This solution however is rather uncomfortable: the keyboard of a mobile terminal for telecommunications usually comprises a limited number of keys (in most cases a number of keys corresponding to that of a standard telephone dialling device, plus a limited set of auxiliary keys). This involves, for instance, that the same key is assigned different operating functions (for instance, a digit plus three letters) as a function of different actuation modalities, such as, typically, the number of times a key is pressed during a given time interval.

20 For this reason an alternative solution has been devised, according to which the SIM is used for storing one or more application programs that allow the user to access said services through a simplified procedure. By pressing a limited number of keys, the user can cause the automatic execution of the operations required to access the desired service through the respective application program(s) stored in the SIM module.

25 The main drawback of the latter solution is that the configuration of the SIM (in practice the number and the nature of the application programs stored therein) is fixed: to make possible modifications (for instance, deletion of the application program relating to a service which is no longer of interest and the storage of the application program relating to a new service of interest), the user must go to a technical service centre that is adequately equipped for carrying out the necessary intervention on the SIM. In this respect it must be considered that the identity data of the terminal relating to the execution of the normal communication service are

stored in the SIM module. Therefore it is in general desirable that the user or any unauthorised third party do not have the possibility of easily intervening on the SIM module in order to modify its content.

5 This invention aims at providing an improved additional solution, so as to overcome the above drawbacks.

According to the invention, this aim is attained by virtue of a mobile terminal for telecommunications having the characteristics specifically recalled in the appended claims. The invention also concerns the related system.

10 In the essence, the solution according to the invention allows customising the SIM through application programs defined by the operator.

In particular, the solution according to the invention allows implementing a so called middleware, that is capable of communicating with a service centre, for instance, through the short message service (SMS), circuit-switched data transmission services, unstructured data signalling services (USSD) or WAP (Wireless Application Protocol) application interfaces, in other terms, through so called "system messages".

20 The service centre may be located at the operator or in a remote position at a service provider, and its communication capability is ensured, for instance, through API (Application program Interface) interfaces. All this is arranged in such a way as to allow the mobile terminal to store the above application programs (by downloading them from the service centre), which programs can be selectively deleted, when no longer of interest.

25 In this way, the mobile terminal user is able to selectively vary the number and the nature of the application programs resident in the SIM module of his terminal according requirements and choices that may vary with time. All the above features are provided without the need of carrying out specific operations for modifying the SIM module and by acting also within a secure environment, through a mutual authentication of the SIM module and of the service centre.

30 In short, the reference architecture of the solution according to the invention includes on one hand a GSM terminal with SIM (preferably of 2+ phase) on which an application program is resident that enables the loading and deletion of the application programs.

The terminal is capable of communicating via SMS (or through any one of the

various types of system messages mentioned previously) with a service centre where the application programs are actually resident.

5 In particular, in the embodiment at present being preferred, the solution according to the invention allows the communication between user and server in only one direction: the application program resident on the SIM module sends towards the service centre some commands with a particular syntax to indicate if the user wants to effect a download or a deletion. Once a command has been received, the service centre sends to the SIM the instructions to download into the memory the application programs or to delete them.

10 This way of acting offers the advantage of rendering the application programs independent from the SIM manufacturers, thereby allowing the actual implementation of the application programs by third parties based on specifications.

The updating of the application programs is managed in a simple way, being the application programs centralised. The SMS transmission is used as a carrier for the application programs, not only for the downloading operations. This solution meets the need of avoiding any overburden of the application programs due to unnecessary SMS traffic.

15 The solution according to the invention is in particular compatible with the availability of SIMs equipped with a SIM Application Tool kit interface of 2+ phase. It may be implemented with an occupation of about 4 KB concerning the application program resident on the SIM module and responsible for the transmission of instructions towards the service centre. This application program may be resident on both a Read Only Memory (ROM) and on the E² PROM of the SIM module that stores the data required for the server authentication by the user.

20 The invention will now be described purely by way of a non-limiting example, with reference to the accompanying drawings, wherein:

- Fig. 1 schematically shows the general architecture of a mobile telecommunications system incorporating the invention,
- Fig. 2 illustrates the possible internal organisation of the subscriber identity module according to the invention in the form of a block diagram, and
- Fig. 3 is a flow chart depicting the operation of the above module.

30 Fig. 1 schematically illustrates the essential parts of a mobile communication system, in particular a GSM system. Such parts have been denoted by the respec-

tive acronyms of current use.

Thus, in the representation of the mobile terminal MS, the actual telephone set ME has been separated from the subscriber identity module SIM, that communicates with the telephone set according to the ETSI GSM TS 11.11 and 11.14 specifications.

The acronym BSS identifies the base station of each cell, that communicates (according to criteria governed by the specification GSM 08.0x) with the relating switching system MSC (Mobile Switching Centre). The latter in turn communicates (according to the GSM specification 03.40) with the service centre SMS C for the short message management.

As already said, the above description and in particular the relating acronyms, refer to a GSM system: it is however evident that the same basic arrangement and the same general criteria of operation may be found in systems such as the DCS 1800 and PCS 1900 systems, which, being on the whole equivalent systems, can also take advantage of the invention.

If considered from the standpoint of the general architecture of a system, the invention essentially associates to the centre SMS C with a service provider centre SDS, which, is connected to a database DS of the services provided and, also to a data base DB that contains the relating application programs for the access management, destined to be selectively transferred to the SIM of the mobile terminal MS interested in the services themselves.

As already mentioned, the service centre SDS may be resident at the system operator (and physically situated at the SMS C) or remotely located through the adoption of a connection interface, for instance of API type.

The same rationale may be reproduced for the physical arrangement of the data bases DS and DB, in the sense that - as is evident to the person skilled in the art - there is no specific need for having the data bases located in the same physical location. Besides, at least the data base of the services DS may be in turn located in a distributed way.

The diagram of Fig. 2 depicts in summary the organisation of the SIM module part devoted to the implementation of the invention.

In particular, the reference 10 denotes two files (typically on E² PROM) storing two numbers (in particular according to the ITU-T E.164 standard) which can be

selectively dialled by the user (usually by pressing one or more dedicated keys). The first number identifies the SMS C to which the service centre SDS is connected. The second number identifies instead the service centre SDS on which the server application program is resident. The requests for initial access to the services and for presentation of the list of the application programs available on the server are performed using these parameters. The terminal is capable of checking (on the SIM module) that any command arriving through SMS is identified by the provenance (previously specified). The system also is able, through the implicit mechanism of GSM authentication, to check the origin of the requests of access to the services by verifying the 'sender' field (the so called originating address) of the SMS received. In this way it is possible to guarantee the system security through the creation of access lists for restricted services, not generally available as mass-market services. Furthermore, the mechanism of customer identification may be used to customise the services and access thereto.

The solution according to the invention exploits the possibility of having two processes, one resident on the SIM module and the other on the service centre, which by mutually co-operating allow a remote management of the SIM memory and hence of the application programs contained in said memory.

The resident application programs (located in memory area 12) are also registered inside a file 14 which keeps record of the application programs present in the memory 12.

The file 14 has a record-based organisation.

Each application program 12a, ..., 12e stored in the memory 12 is associated with a record that indicates where the application program is stored and the name to which it is associated.

As will be better seen in the sequel, the download or the deletion of each application program 12a, ..., 12e are not complete if, besides the updating of the memory 12, an updating that makes file 14 coherent with the new state of the memory 12 is not carried out.

Block 18 schematises the man-machine interface of the terminal.

The user has access to the functions of download/deletion by virtue of a resident program, initially embedded on the module SIM, denoted by 16 and essentially having management functions. The access to such a program is per-

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formed through a menu selection by acting on the keyboard of the terminal ME. Once selected, said program allows the access to an additional menu in which it is possible to choose whether to effect a download or a deletion (according to the terms better illustrated in the sequel).

5 The experiments successfully conducted so far by the applicant are based on the possible storage into the memory 12 of five application programs 12a, ..., 12e relating to a corresponding number of services, such as, for instance, stock exchange service (quotations and index, sports news, personal calls, horoscopes, etc.).

10 Each application program 12a, ..., 12e implies a memory occupancy of about 2 KB.

After the initial step 100, the flow chart of Fig.3 envisages a step 102 in which the user notifies on the mobile terminal his request to access to the set of the services being considered in order to:

- 15 - access a information service for which the relating access application program is already available in the memory 12 of the SIM module,
- download into the memory 12 the application program (not available in the SIM module at that moment) required to access a given information service, or
- cancel from the memory 12 of the SIM module the application program
- 20 that allows accessing an information service that is no longer of interest.

The relating choice is effected by the user (for instance, through an acknowledgement to a visual signalling that appears - in a known way - on the terminal display) causing the system to evolve towards choice step 104.

In such a step, the system essentially recognises the choice made by the user.

25 Should the user request to perform an interrogation of one or more services for which the terminal already has the relating application program, the system shall evolve towards the relating interrogation sequence, schematically denoted by 106. This sequence is already known and therefore it does not require to be described herein, also due to the fact that it is not significant for the understanding of the

30 invention.

If however the system recognises that the user wishes to download on the SIM module an application program available at the service centre SDS but not yet present on the SIM module itself, the system evolves towards a step 108 corre-

sponding to the presentation of the application programs that may be downloaded. Such presentation is obtained by the management file 16 as a difference between the list of the application programs available at the service centre SDS and the list of application programs present at that moment in the memory 12.

5 Therefore, when choosing an application program among those proposed there is no risk of trying to download an application program already present in the memory 12. The list of the application programs present in the memory 12 is obtained by scanning the file 14, whereas the list of the application programs available at the service centre SDS can be embedded into the code as a constant. Obviously, one may also assume an alternate solution in which such a list is periodically updated by exploiting for instance the short message transmission mechanism or one of the other types of system messages, already cited before.

10 The next step 110 in Fig. 3 indicates the choice made by the user by acting on the keyboard of the terminal MS, of the new application program required among those available.

15 After the choice of the application program to be downloaded, the management file 16 sends towards the service centre a command indicating the type of command to execute (downloading denoted for instance by a letter "L" at message start) and the name of the relating application program (step 112).

20 Upon reception of such command, the server of the service centre SDS sends towards the SIM module the commands required for downloading into the memory the relating application program and for updating the file 14 (step 114).

25 A further possible outcome of the choice step 104 is the identification of the fact that the user requests to delete an application program among those present in the memory 12.

This can take place according to substantially complementary modalities with respect to those previously illustrated with reference to the downloading operation (steps 108 to 114).

30 In the embodiment of the invention being at the moment preferred by the applicant, the operation of deletion is simplified by imposing that the application program to be cancelled is last one loaded into the memory 12. This allows simplifying the management of the memory 12, in that a possible re-compacting of space which becomes free is not required.

Through the adoption of this simplified solution, once the user has chosen the operation relating to the deletion, the management file 16 does not ask which application program must be deleted, for it is known a priori that the last one will be cancelled. This will be recognised by accessing the last record of the file 14. The relating name serves to prepare the command to be sent (in the step 116) to the service centre SDS to request the cancellation. Once this command has been received, the centre SDS sends to the SIM module the instructions required to erase the memory area occupied by the application program and to cancel the relating item from the register 14 (step 118).

The sequences of steps illustrated in Fig. 3 and relating to the operations of downloading and deletion are represented as destined to re-converge upstream of the choice step 104.

As a matter of fact, it has here been assumed that the subsequent evolution of the system, also in view of the stop, occurs within the interrogation function represented by block 106.

It is evident that, leaving unchanged the principle of the invention, the implementation details and the practical embodiments may be considerably varied with respect to what has been already described and depicted, however without departing from the scope of the invention itself, as disclosed in the following claims.

CLAIMS

1. Mobile terminal for telecommunications comprising a communication module (ME) capable of receiving system messages (SMS) and a subscriber identity module (SIM) equipped with storage means (12) for storing at least one application program (12a, ..., 12e) for the access to a respective information service, characterised in that said storage means (12) can be selectively configured in writing and cancellation, for storing and cancelling application programs (12a, ..., 12e) received by the terminal (MS) through said communication module (ME) within said system messages.
5
2. Terminal according to claim 1, characterised in that said storage means (12) are equipped with register means (10) for storing a first code identifying the terminal (MS) and a second code identifying at least one service centre (SDS) with access controlled through said at least one application program, said first and second code being used as parameters for storing said application programs into said storage means (12)
15
3. Terminal according to claim 1 or claim 2, characterised in that said storage means (12) are equipped with at least one additional register (14) capable of containing, an identity information for each of said application programs that may be stored and cancelled and in that they are provided with control means (16) for the configuration of said storage means (12) acting in a co-ordinated way on said storage means (12) and on said additional register (14) so that the storage and cancellation of an application program on said storage means (12) are accompanied by the corresponding modification of the respective information present in said additional register (14).
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25
4. Terminal according to any one of the previous claims, characterised in that said storage means (12) are associated with control means (16) that are capable of detecting a user command (104) relating to the storage of a respective application program on said storage means (12), of forwarding (112) a respective storage command signal toward a respective service centre (SDS) starting
30

from the terminal (MS), of receiving from said service centre (SDS) through said communication module (ME) a corresponding storage signal, and of storing (114) into said storage means (12), as a consequence of the reception of said storage signal, the respective application program.

5

5. Terminal according to any one of the previous claims, characterised in that said storage means (12) are associated with control means (16) that are capable of identifying the application programs (12a, ..., 12e) for the access to a respective information service that are present on said storage means (12), of comparing the identified application programs with an overall list of the available services, and of generating a subtraction signal that can be presented to the user and that identifies the application programs for the access to a respective available information service for the storage on said storage means (12).

10

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6. Terminal according to any one of the previous claims, characterised in that said storage means (12) are associated with control means (16) that are capable of detecting a user command (104) relating to the cancellation of a respective application program from said storage means (12), of forwarding a respective cancellation command signal (116) towards a respective service centre (SDS) starting from the terminal (MS), of receiving from said service centre (SDS) through said communication module (ME) a corresponding cancellation signal, and of cancelling (118) from said storage means (12), as a consequence of the reception of said cancellation signal, the respective application program.

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7. Terminal according to claim 6, characterised in that said storage means (12) are configured so as to carry out the cancellation of the application programs (12a, ..., 12e) for the access to a respective information service, that are stored in such storage means (12), starting from the last application program stored.

30

8. Telecommunications system comprising:
- a plurality of mobile terminals according to any of the claims 1 to 7,
 - a data base (DB) of said application programs (12a, ..., 12e) for accessing

a respective information service, and

- communications means (SDS, SMS, MSC, BSS) to forward towards the communication modules (ME) of said plurality of mobile terminals (MS) system messages selectively conveying said application programs for the storage on said storage means (12) of said mobile terminals.

9. System according to claim 8, characterised in that said data base (DB) is associated with respective management means (SDS) that are responsive to the reception, from said plurality of mobile terminals (MS), of respective command signals for storage and cancellation of said application programs (12a, ..., 12e) into and from the storage means (12) of said mobile terminals (MS), the arrangement being such that said application programs (12a, ..., 12e) are stored into and cancelled from the storage means (12) of said mobile terminals (MS) only following the emission (114, 118) of respective storage and cancellation signals by said management centre (SDS).

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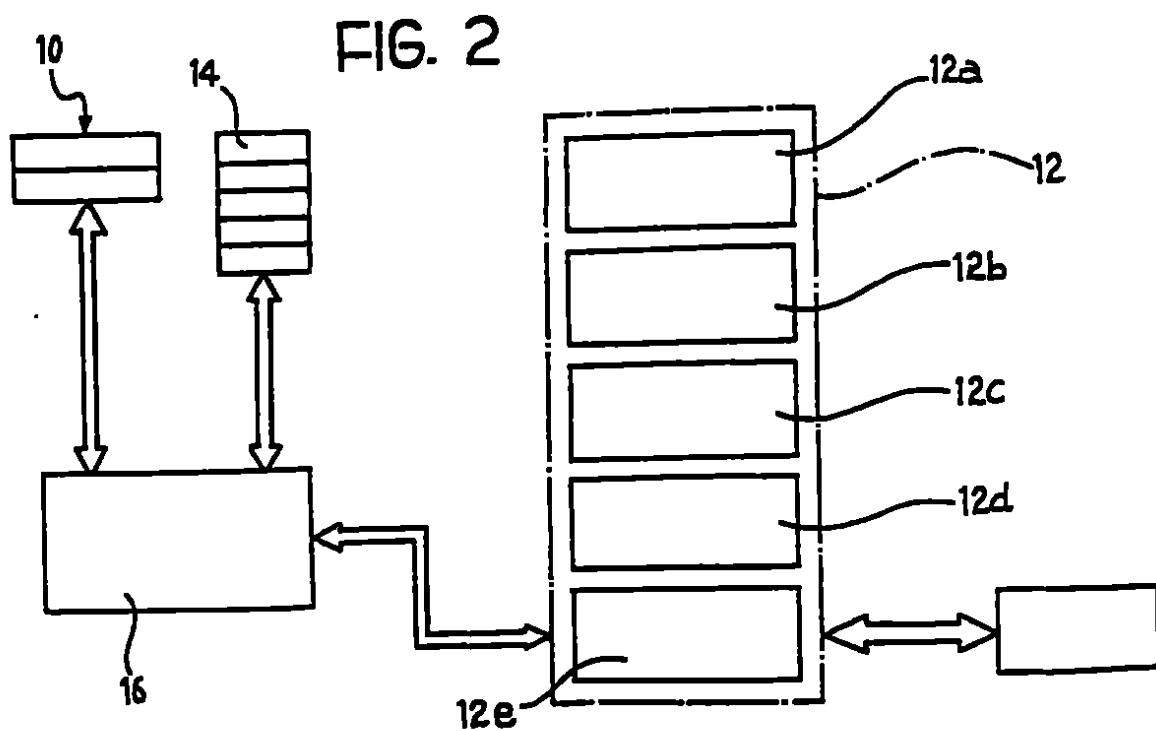
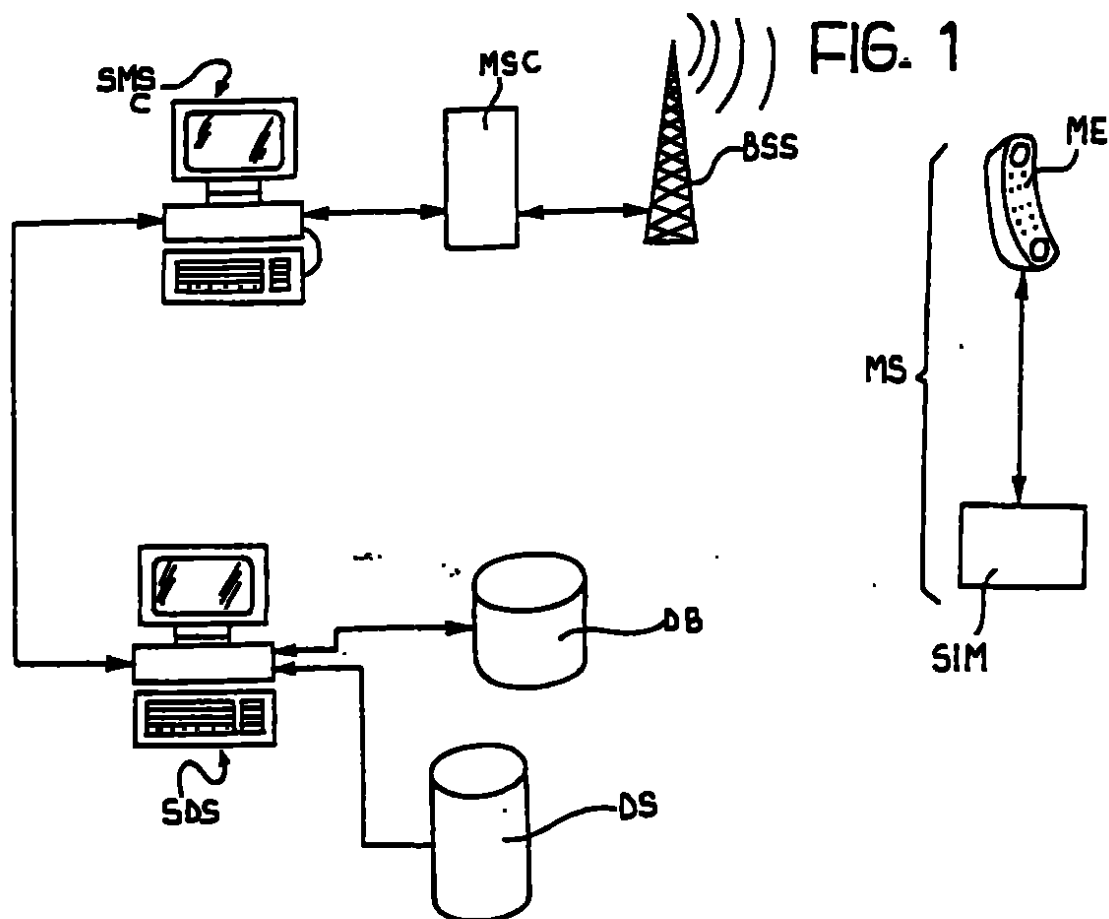
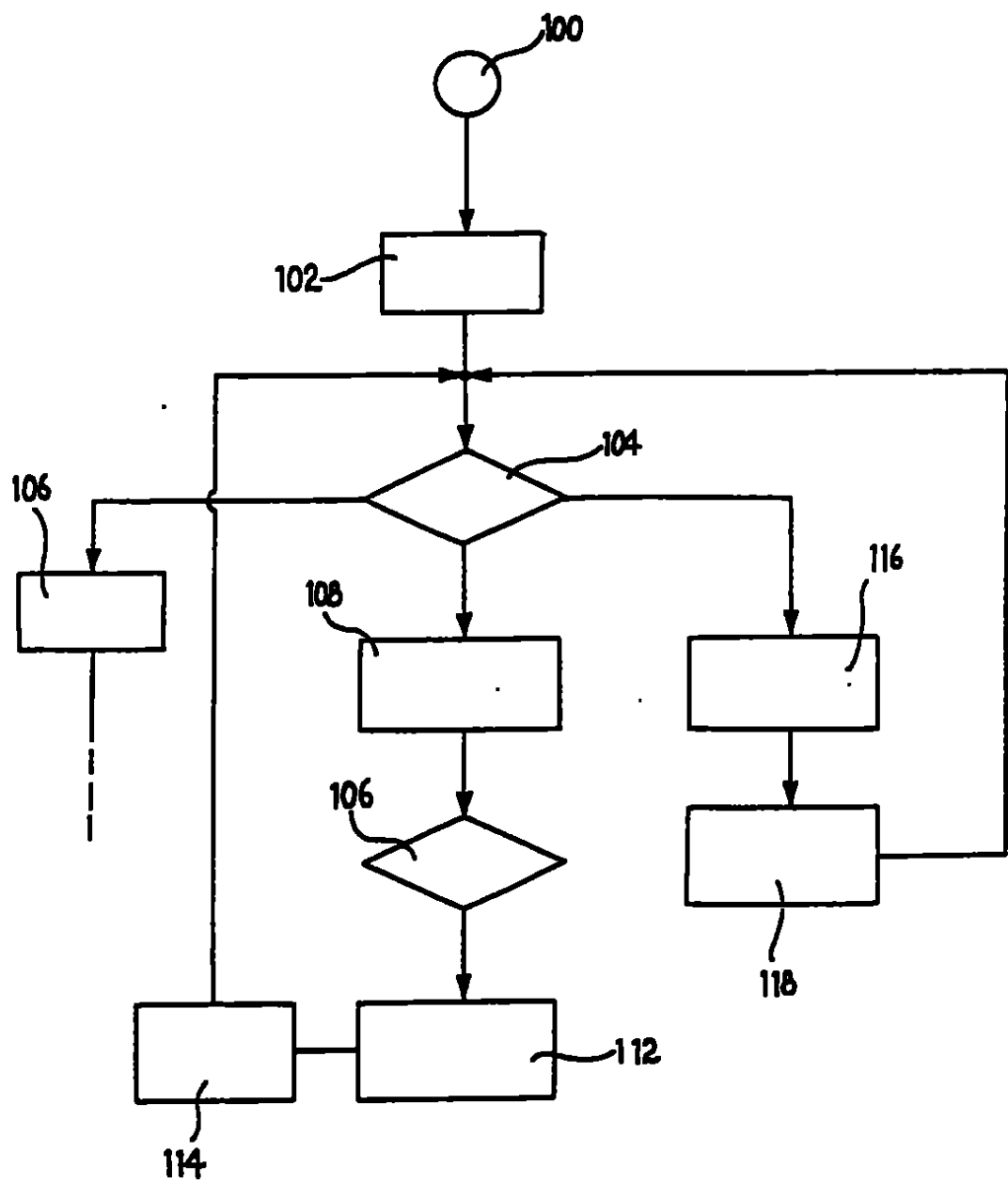


FIG. 3



INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 99/10327

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04Q/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

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	-/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

20 March 2000

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INTERNATIONAL SEARCH REPORT

Int. Application No.
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C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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Inventor and Application No

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(54) Wireless communication system having downloadable settings and method of operation

(57) A wireless communication system (12) having a base station (18) and a plurality of wireless communication devices (16) is provided. The base station (18) communicates with the plurality of wireless communication devices (16) and operates to store a plurality of device settings files (22), and download a respective

device settings file (22) to a respective wireless communication device (16). Each wireless communication device (16) operates to receive and store the respective device settings file (22) from the base station (18).

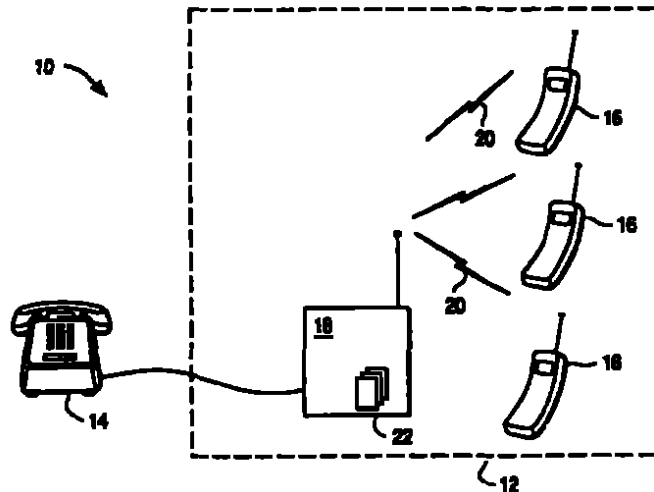


FIG. 1

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Description

[0001] This invention relates generally to the field of communication systems, and more particularly to a wireless communication system having downloadable settings and its method of operation.

[0002] Communication systems are used in nearly all aspects of modern society to establish a way for transferring information from one communication device, such as a telephone, to another communication device. One particular type of communication system is a wireless communication system.

[0003] Wireless communication systems generally communicate between a base station and a communication device over discrete radio frequency channels. The spectrum of radio frequencies is divided into separate bands that are used for different types of communication systems. In particular, the type of wireless communication system, and thus the type communication device, generally corresponds to the particular band of radio frequencies used in the particular wireless communication system. For example, cordless telephones utilize a different band of radio frequencies than cellular telephones, citizen band (CB) radios, satellite broadcast signals, microwave signals, and the like.

[0004] In some applications, the communication device is generic in that no one user uses the same communication device on a regular basis. For example, a cordless phone system often comprises a base station and a number of handsets that are interchangeably operated by various users. In this example, each handset is substantially identical to the other handsets, and each handset is used at different times by different users. To illustrate, assume a research lab utilizes a cordless phone system having a base station and ten different handsets. The handsets are not assigned to individual scientists, but are used interchangeably by the various scientists, which may number more than ten. In addition, due to the need to charge the individual handsets, ten handsets will not be operational at all times.

[0005] The generic, or non-personalized, nature of conventional wireless communication systems often limits the number of applications of conventional generic wireless communication systems. In other words, because conventional generic wireless communication systems are not personalized for each user, they are unpopular with users. Personalization may include such personalized settings as a phone list, personal phone number, individual system identifier, and the like. Accordingly, a need has arisen for a wireless communication system having downloadable settings.

[0006] The invention is defined in the independent claims, to which reference should now be made. Further advantageous features are detailed in the dependent claims.

[0007] Embodiments of the present invention provide a wireless communication system having down-

loadable settings and method of operation that aim to reduce substantially or eliminate problems associated with prior systems and methods.

[0008] In accordance with one embodiment of the present invention, a wireless communication system is provided. The wireless communication system comprises a base station and a number of communication devices. The base station communicates with the communication devices, operates to store a number of files such as personal settings files and downloads one, such as an individual personal settings file to an individual communication device. Each communication device may operate to receive and store the respective individual personal settings file. In a particular embodiment, the wireless communication system further comprises a security system, such as a password, that operates to prevent unauthorized downloading of the individual personal settings file. In another embodiment, the personal settings file comprises a personal phone number. Additionally or alternatively, the base station comprises an access system having a number of privilege levels that operate to restrict the operation of the wireless communication system.

[0009] Technical advantages of embodiments of the present invention include providing a wireless communication system that has wireless communication devices that can be downloaded with various types of personalized information, such as a phone list, day planner information, personal phone number, individual system identifier, and the like. Accordingly, the wireless communication system is flexible and can change with the needs of the user.

[0010] Yet another technical advantage of embodiments of the present invention is that the wireless communications system may incorporate a security system that protects the personal settings file of each individual. For example, the security system may include a password function. The password may be entered into the communication device prior to the personal settings file being downloaded to the communication device.

[0011] A further possible technical advantage of the present invention is that the wireless communication system may include a privilege access system having a number of privilege levels. The various privilege levels differentiate user access to the wireless communication system. For example, not all users should have the ability to make long distance phone calls. A privilege level can be associated with the users that can make long distance phone calls, and a different privilege level can be associated with users that cannot make long distance phone calls.

[0012] Other technical advantages will be readily apparent to one skilled in the art from the following figures, descriptions, and claims.

[0013] For a more complete understanding of the present invention and the advantages thereof, reference is now made to the following description of embodiments thereof taken in conjunction with the accompany-

ing drawings, wherein like referenced numerals represent like parts, in which:

FIGURE 1 illustrates a block diagram of a simplified communication system using a wireless communication system in accordance with an embodiment of the present invention;

FIGURE 2 is a flow diagram illustrating a downloading operation of a device settings program; and

FIGURE 3 is a flow diagram illustrating an uploading operation of the device settings program.

[0014] FIGURES 1 through 3 illustrate a wireless communication system having downloadable settings and method of operation. As described in greater detail below, the wireless communication system comprises a base station that operates to communicate with a number of communication devices. Each communication device can receive a personal settings file from the base station. The downloaded device settings file configures the communication device in accordance with the personalized user information contained in the device settings file. Accordingly, any communication device can be personalized to each user.

[0015] FIGURE 1 is a block diagram illustrating a simplified communication system 10 comprising a wireless communication system 12 and a peripheral communication device 14. The wireless communication system 12 comprises a number of wireless communication devices 16 and a base station 18. The base station 18 communicates with the communication devices 16 over a number of radio frequency communication channels 20.

[0016] The wireless communication system 12, as illustrated in FIGURE 1, is a cordless telephone system. In this embodiment the wireless communication device 16 comprises a handset that communicates with the base station 18 over discrete radio frequency channels 20. Although the wireless communication system 12 is illustrated as a cordless telephone system, it will be understood that the wireless communication system 12 may comprise any suitable type of wireless communication system. For example, the wireless communication system 12 may comprise a cellular phone system, Local Multiple Distribution Service (LMDS), and the like, without departing from the scope of the present invention.

[0017] The communication channels 20 may comprise any suitable band of radio frequencies. In particular, the type of wireless communication system 12 generally determines the band of radio frequencies used as communication channels 20. A number of discrete radio frequencies within the band are generally used for the communication channels 20. Accordingly, the greater the width of the radio frequency band, the greater the number of communication channels 20 that can be utilized by the wireless communication system 12.

[0018] The wireless communication device 16 generally

comprises a transceiver for two-way communication with the base station 18. In one embodiment, the wireless communication device 16 comprises a cordless telephone handset. In other embodiments, the wireless communication device 16 may comprise a cellular phone, a personal digital assistant, and other suitable receiver or transceiver.

[0019] The wireless communication device 16 also comprises a memory (not expressly shown) for storing a device settings file, described in greater detail below. The device settings file comprises personalized user information that operates to configure the wireless communication device 16. Specifically, the device settings file personalizes the wireless communication device 16, thereby improving the user-friendliness of the wireless communication device 16. Accordingly, the wireless communication system 12 is flexible and changes with the needs of the customer and each user.

[0020] The base station 18 also generally comprises a transceiver for communicating with the wireless communication devices 16. The base station 18 operates to store a number of individual device settings files 22. As will be described in greater detail below, each device settings file 22 is personalized by a respective user and saved by the base station 18. The user's respective device settings file 22 can be downloaded from the base station 18 to the wireless communication device 16 currently being used by that user.

[0021] In one embodiment, the device settings file 22 is created and revised by a user through the wireless communication device 16. In this embodiment, the wireless communication device 16 acts as a user interface for uploading the device settings file 22 to the base station 18. In another embodiment, the device settings file 22 is entered into the base station 18 by a separate graphical user interface (not expressly shown). In this embodiment, a user may modify the respective user's device settings file 22 by uploading a revised version of the device settings file 22 to the base station 18.

[0022] Each device settings file 22 contains personalized user information for the wireless communication device 16. For example, the personalized user information may include a phone list, macro programs, device information, and the like. It will be understood that the device settings file 22 may comprise other suitable information for configuring the wireless communication device 16 without departing from the scope of the present invention.

[0023] FIGURE 2 is a schematic flow diagram illustrating a downloading operation of a device settings program 30 for the wireless communication system 12. The downloading operation configures the wireless communication device 16 with the user's respective device settings file 22, thereby personalizing the wireless communication device 16.

[0024] As shown by step 33, the device settings program 30 is initiated from the wireless communication device 16. The device settings program 30 may be ini-

ated at different times during the operation of the wireless communication device 16. In one embodiment, the device settings program 30 is initiated at the time that the wireless communication device 16 is turned on. In this embodiment, the wireless communication device 16 cannot be operated without entering user identification information. As will be discussed in greater detail below, the user identification information may include a password or other such security system for preventing unauthorized access to a user's device settings file 22.

[0025] In another embodiment, the device settings program is initiated on command by the user. In a particular embodiment, the wireless communication device 16 can be operated without providing access to the personalized user information contained in the device settings file 22 of the wireless communication device 16. In another embodiment, the device settings file 22 stored in the wireless communication device 16 can be used by any operator of the communication device 16. In this embodiment, changes to the device settings file 22 are made by initiating the device settings program 30.

[0026] In yet another embodiment, the device settings program 30 is initiated when access to the personalized user information contained in the device settings file 22 stored in the wireless communication device 16 is attempted. In this embodiment, user identification information may be required prior to providing a user with access to the personalized user information contained in the device settings file 22. It will be understood that the device settings program 30 may be initiated at other times during the operation of the wireless communication device 16 without departing from the scope of the present invention.

[0027] As shown by step 35, the user identification information is entered into the wireless communication device 16. The user identification information operates to identify the user, or operator, of the wireless communication device 16. The user identification information may comprise a user code, a password, a verification code, and the like. The user identification information may be used as a security measure to prevent unauthorized access to the user's device settings file 22. The user identification information could also be used in a privilege access system. The privilege access system may include a number of privilege levels with the different privilege levels providing varying levels of user access to the wireless communication system 12. For example, a privilege level can be associated with users that are authorized to make long distance phone calls, and a different privilege level can be associated with users that are not authorized to make long distance phone calls.

[0028] As shown by steps 37 and 39, when the user's device settings file 22 is in effect, the user operates the wireless communication device 16. The wireless communication device 16 is personalized in accordance with the respective user's settings that the user stored in the device settings file 22.

[0029] As shown by steps 37 and 41, when the user's device settings file 22 is not in effect, the wireless communication device 16 communicates the initialization and user identification information to the base station 18. The device settings file 22 corresponding to the respective user identification information is accessed, as shown by step 43. The accessed device settings file 22 is then downloaded from the base station 18 to the wireless communication device 16, as shown by step 45. The downloading operation generally configures the wireless communication device 16 with the personalized user information contained in the downloaded device settings file 22. The wireless communication device 16 may then be operated using the personalized user information, as shown by step 39. It will be understood that other suitable operations may be performed by the device settings program 30 without departing from the scope of the present invention. For example, as will be described in greater detail below, the device settings program 30 also operates to upload and save changes to the user's respective device settings file 22.

[0030] FIGURE 3 is a schematic flow diagram illustrating an uploading operation of the device settings program 30 for the wireless communication system 12. The uploading operation allows a user to change the personalized user information stored in the device settings file 22 stored by the base station 18.

[0031] As shown by step 47, the device settings program 30 is initiated by the user from the wireless communication device 16. In this embodiment, the wireless communication device 16 is already configured with the user's respective device settings file 22.

[0032] As shown by step 49, the user modifies the user's device settings file 22 stored on the wireless communication device 16. In some applications, the user will not have the authority to modify all aspects of the device settings file 22. For example, in an embodiment in which the device settings file 22 incorporates a privilege access system, the user will not generally have the authority to change their own privilege level.

[0033] As shown by step 51, the user can choose whether to store the modified device settings file 22. In one embodiment, if the user does not choose to store the modified device settings file 22, the modifications are canceled and the user is given the opportunity to modify the device settings file 22. In another embodiment, not expressly shown, the device settings program 30 is canceled when the modified device settings file 22 is not stored.

[0034] As shown by step 53, if the user chooses to store the modified device settings file 22, the user enters the user identification information to verify the identity of the user. In an embodiment in which the user already entered the user identification information, the user may not be required to enter the user identification information for verification of the identity of the user.

[0035] As shown by step 55, the user identification information and the modified device settings file 22 are

uploaded from the wireless communication device 16 to the base station 18, where the modified device settings file 22 is stored. The modified device settings file 22 may then be downloaded to any generic wireless communication device 16, thereby personalizing the wireless communication device 16 for the user.

[0036] As discussed previously, the wireless communication system allows inexpensive generic wireless communication devices to be personalized for different users. In addition, the wireless communication system may include security and privilege access systems that provide user flexibility while maintaining control of access to the wireless communication system.

[0037] Although the present invention has been described in several embodiments, various changes and modifications may be suggested to one skilled in the art. It is intended that the present invention encompasses such changes and modifications that fall within the scope of the appended claims.

Claims

1. A wireless communication system (12) comprising

a plurality of communication devices (16), with each wireless communication device (16) operable to receive and store a device settings file (22); and
a base station (18) for communicating with the plurality of wireless communication devices (16), the base station (18) operable to store a plurality of device settings files (22) and download an individual device settings file (22) to an individual wireless communication device (16).

2. A wireless communication system (12) according to claim 1, wherein the base station (18) comprises a security system operable to prevent unauthorized downloading of an individual device settings file (22).

3. A wireless communication system (12) according to claim 2, wherein the security system comprises a user identification or password function; the user identification or password being entered into the communication device (16) and transmitted to the base station (18).

4. A wireless communication system (12) according to any of the preceding claims, further comprising a privilege access system having a number of privilege levels that operate to restrict the operation of the wireless communication system (12).

5. A wireless communication system (12) according to any of the preceding claims, wherein the device settings file (22) comprises a list of phone numbers.

6. The wireless communication system (12) according to any of the preceding claims, wherein the wireless communication device (16) operates to provide modification of the downloaded device settings file (22) and uploading of the modified device settings file (22) to the base station (18).

7. A wireless communication system (12) according to any of the preceding claims, wherein the base station (18) and/or at least one wireless communication device (16) comprises a transceiver.

8. A wireless communication system (12) according to any of the preceding claims comprising a cordless telephone system, in which

the plurality of wireless communication devices (16) comprises a plurality of cordless telephones.

9. A wireless communication system (12) according to claim 4, wherein the base station (18) comprises the privilege access system.

10. A method of configuring a wireless communication system comprising:

initiating a device settings program (30) in a wireless communication device (16);
entering user identification information into the wireless communication device (16);
requesting a device settings file (22) that corresponds to the user identification information to be downloaded from a base station (18) to the wireless communication device (16); and
downloading the device settings file (22) from a base station (18) to the wireless communication device (16).

11. A method according to claim 10, further comprising:

modifying the downloaded device settings file (22); and
uploading the modified device settings file (22) to the base station (18).

12. A method according to claim 10 or 11, wherein the user identification information comprises a user identifier code.

13. A method according to any preceding method claim, wherein initiating a device settings program (30) comprises initiating a device settings program (30) at the startup of a wireless communication device (16).

14. A method according to any of claims 10 to 12, wherein initiating a device settings program (30)

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comprises initiating a device settings program (30) of a wireless communication device (16) upon command.

15. A method according to any preceding method 5 claims, where the wireless communication device (16) comprises a cordless telephone.

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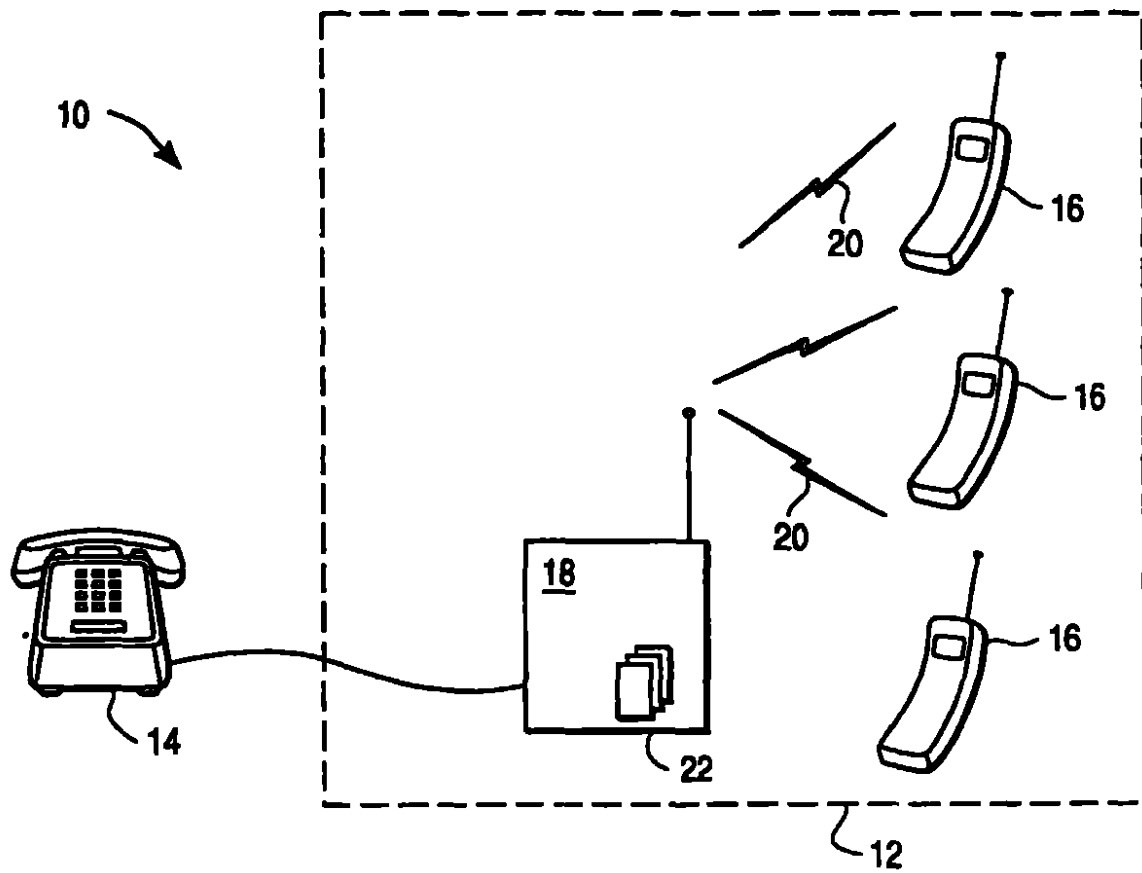
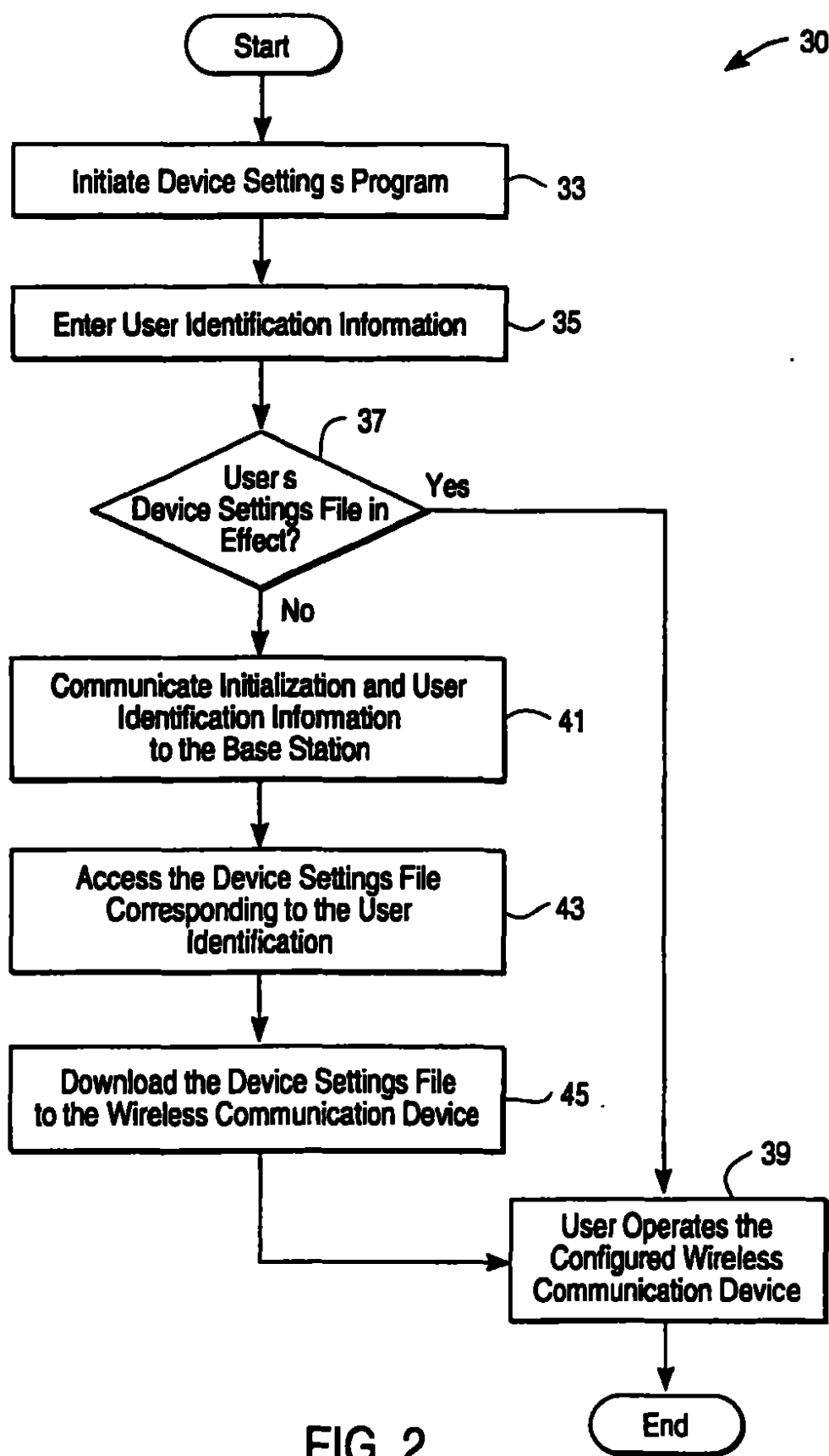


FIG. 1



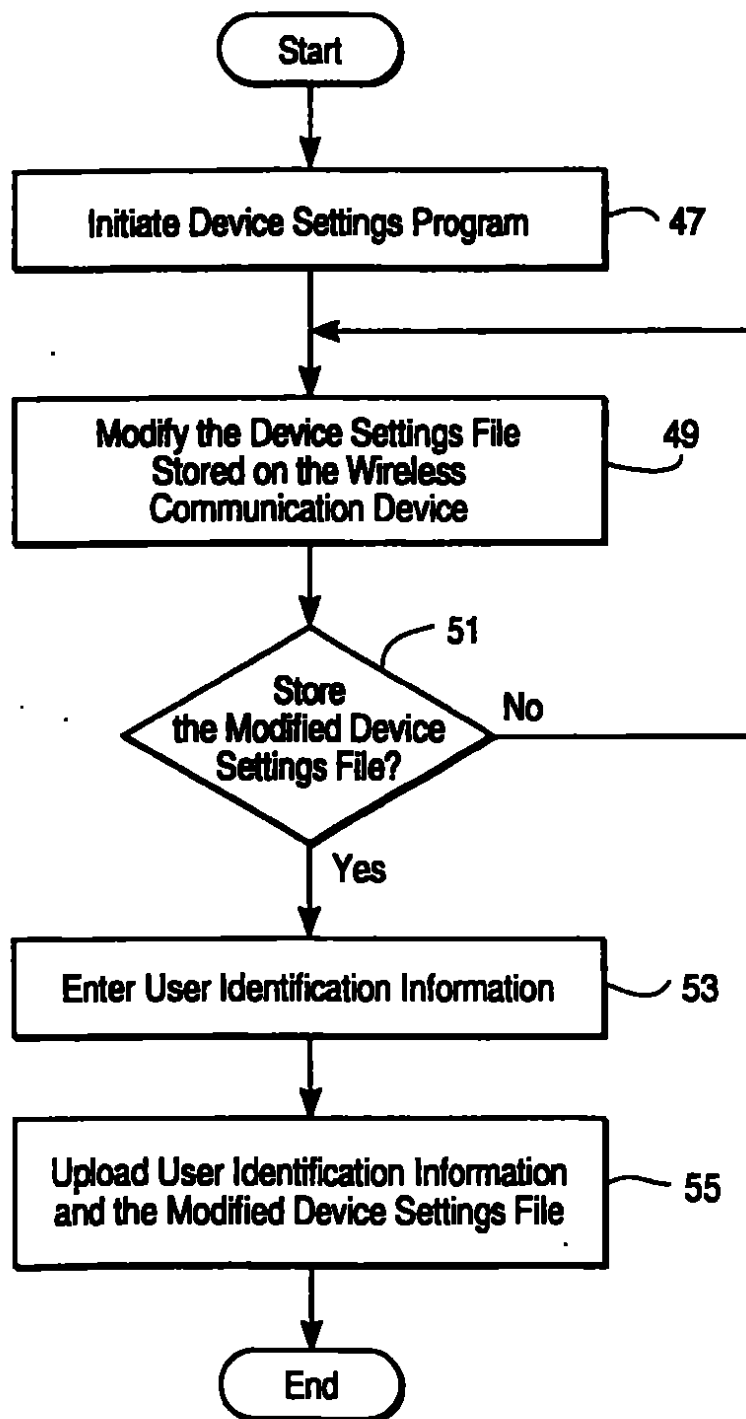


FIG. 3



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(54) **Wireless communication system having downloadable settings and method of operation**

(57) . A wireless communication system (12) having a base station (18) and a plurality of wireless communication devices (16) is provided. The base station (18) communicates with the plurality of wireless communication devices (16) and operates to store a plurality of device settings files (22), and download a respective device settings file (22) to a respective wireless communication device (16). Each wireless communication device (16) operates to receive and store the respective device settings file (22) from the base station (18).

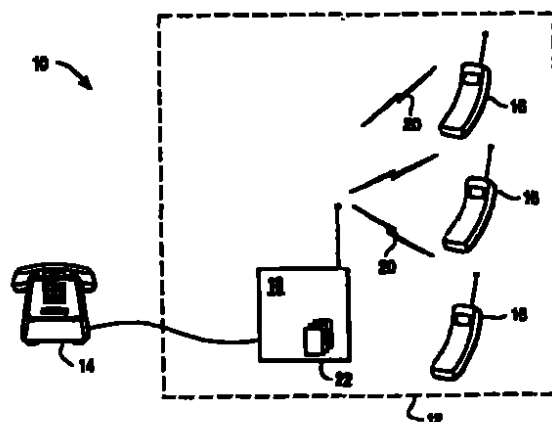


FIG. 1



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 00 30 1201

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			H04Q
Place of search THE HAGUE		Date of completion of the search 11 October 2000	Examiner Weinmiller, J
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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INTERNATIONALE ANMELDUNG VERÖFFENTLICHT NACH DEM VERTRAG ÜBER DIE
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(21) Internationales Aktenzeichen: PCT/CH99/00579 (22) Internationales Anmeldedatum: 2. Dezember 1999 (02.12.99) (30) Prioritätsdaten: 79/99 18. Januar 1999 (18.01.99) CH (71) Anmelder (für alle Bestimmungsstaaten ausser US): SWISS-COM AG [CH/CH]; Alte Tiefenastrasse 6, CH-3050 Bern (CH). (72) Erfinder; und (75) Erfinder/Anmelder (nur für US): RITTER, Rudolf [CH/CH]; Ronsweldweg 8, CH-3052 Zollikofen (CH). LAUPER, Eric [CH/CH]; Hochfeldstrasse 96, CH-3012 Bern (CH). (74) Anwalt: BOVARD AG; Optingenstrasse 16, CH-3000 Bern 25 (CH).		(81) Bestimmungsstaaten: AE, AL, AM, AT, AT (Gebrauchsmuster), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Gebrauchsmuster), DE, DE (Gebrauchsmuster), DK, DK (Gebrauchsmuster), DM, EE, EE (Gebrauchsmuster), ES, FI, FI (Gebrauchsmuster), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Gebrauchsmuster), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO Patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), eurasisches Patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), europäisches Patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI Patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Veröffentlicht Mit internationalem Recherchenbericht. Mit geänderten Ansprüchen.

(54) Title: METHOD FOR PROVIDING APPLICATION PROGRAMS FOR MOBILE RADIOTELEPHONE TERMINALS

(54) Bezeichnung: VERFAHREN ZUM BEREITSTELLEN VON APPLIKATIONSPROGRAMMEN FÜR MOBILFUNK-ENDGERÄTE

(57) Abstract

The invention relates to a method for providing application programs that can be executed in terminals (4) of a mobile radiotelephone network. In order to enable efficient and reliable execution of said programs in a terminal of a mobile radiotelephone network, the method is characterized in that: a) at least one chosen application program is individually and selectively downloaded in a given terminal (4); b) execution of an any application program downloaded as described is started by the end user of the terminal using the keys (24) of said terminal; c) execution of the application program is independent of an existing or non-existing radio link of the terminal (4) with the mobile radiotelephone network (1) and d) relevant program execution result is shown on a display field (25) of the terminal (4).

(57) Zusammenfassung

Verfahren zum Bereitstellen von Applikationsprogrammen, welche in Endgeräten (4) eines Mobilfunknetzes ausführbar sind. Um eine effiziente und zuverlässige Ausführung solcher Programme mit einem Endgerät eines Mobilfunknetzes zu ermöglichen, ist das Verfahren dadurch gekennzeichnet, dass: a) wenigstens ein ausgewähltes Applikationsprogramm individuell und selektiv in ein bestimmtes Endgerät (4) geladen wird; b) ein jeweiliger Ablauf eines so geladenen Applikationsprogramms vom Endgerätnutzer über die Tastatur (24) des Endgerätes (24) auslösbar ist; c) der Ablauf des Applikationsprogramms von einer bestehenden oder nicht bestehenden Funkverbindung des Endgerätes (4) mit dem Mobilfunknetz (1) unabhängig ist; und d) das jeweilige Ergebnis des Programm-Ablaufs auf einem Anzeigefeld (25) des Endgerätes (4) angezeigt wird.

LEDIGLICH ZUR INFORMATION

Codes zur Identifizierung von PCT-Vertragstaaten auf den Kopfbögen der Schriften, die internationale Anmeldungen gemäss dem PCT veröffentlichen.

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EE	Estland						

Verfahren zum Bereitstellen von Applikationsprogrammen für Mobilfunk-Endgeräte

Die Erfindung betrifft ein Verfahren zum Bereitstellen von Applikationsprogrammen für Mobilfunk-Endgeräte entsprechend dem
5 Oberbegriff von Anspruch 1.

Mobilfunktelefone stehen heute in grosser Zahl weltweit im Einsatz. Die zugeordneten Mobilfunknetze unterliegen weitgehend einheitlichen Grundsätzen, die durch Normenwerke standardisiert sind. In Europa gilt vor allem der GSM-Standard (Global System for Mobile Communication) für
10 zellulare Netze.

Aus der Schrift EP 0 617 869 B1 ist speziell ein drahtloses, modulares Mobilfunktelefon bekannt, dem ein gekapseltes Modul für Zusatzfunktionen zugeordnet ist. Das Modul ist an das Telefon harmonisch ankoppelbar und ermöglicht nicht-telefonische Anwendungen unter Benützung
15 der Eingabetasten und des Displays des Telefons. Als Zusatzfunktion wird unter anderem beispielsweise eine Fernbediensteuerung zum Öffnen von Türen genannt.

Aus der Schrift WO 97/46986 ist ein tragbares, elektronisches Kassiergerät mit Kartenleser, Tastatur und Display bekannt. Dieses Gerät für
20 monetäre Zwecke besitzt eine Antenne, über die es mit einem Partnergerät über ein Mobilfunknetz verbindbar ist.

Aus der Schrift WO 98/27760 ist ein weiteres Mobilfunktelefon bekannt, das um eine nicht der Telefonie dienende Zusatzfunktion erweitert ist. Diese Funktion besteht in der Umrechnung von Geldbeträgen von einer ersten
25 in eine zweite Währung. Der hierzu notwendige, einem stetigen Wechsel unterworfenen Konvertierungsfaktor lässt sich bei Bedarf über die Telefoniefunktionen von einer jeweiligen, zuständigen Stelle aktiv abrufen, oder dieser Faktor wird automatisch nach vorgegebenen Kriterien zugestellt. Die Betragseingabe erfolgt über die vorhandene Tastatur, die Ergebnisanzeige über
30 das Anzeigefeld des Telefons.

Der vorliegenden Erfindung liegt die Aufgabe zugrunde, ein Verfahren anzugeben, mit dem erreicht werden kann, dass Endgeräte eines Mobilfunknetzes eine Vielzahl von Applikationsprogrammen für die verschiedensten Zwecke durchführen können, die nicht der Telefonie dienende
5 Zusatzfunktionen für Mobilfunktelefone ermöglichen. Weitere Aspekte der Aufgabe, welcher der Erfindung zugrunde liegen, bestehen darin, günstige Lösungen für die Erstellung, Funktionsprüfung und Eingabe dieser Programme in die Endgeräte anzugeben.

Die Lösung dieser Aufgabe wird durch den kennzeichnenden Teil
10 von Anspruch 1 angegeben. Die abhängigen Ansprüche geben Ausgestaltungen der Erfindung an.

Mit dem erfindungsgemässen Verfahren werden insbesondere folgende Vorteile erzielt:

- Ein solches Verfahren ermöglicht, eigens dafür entwickelte
15 Applikationsprogramme mit einem mobilen Endgerät (mobile equipment) auszuführen, welches drahtlos mit einem Mobilfunknetz verbunden ist.

- Besonders vorteilhaft ist die Ausführung solcher Applikationsprogramme, wenn dabei fluktuierende Daten verwendet werden, die dem Endgerät über dem Mobilfunknetz zugeführt werden.

20 - Das anmeldungsgemässe Verfahren ist via GSM-Netzwerke weltweit verwendbar. Dafür werden keine zusätzliche Einrichtungen oder Massnahmen benötigt.

- Im Gegensatz zu anderen Diensten, wie z.B. Internet, ist bei der Verwendung des anmeldungsgemässen Verfahrens eine genaue
25 Gebührenerfassung möglich, und zwar mit bestehenden Einrichtungen bzw. Verfahren für Gebührenerfassung (Billing) anhand von Information.

Im Folgenden wird die Erfindung anhand von drei Figuren anhand eines Ausführungsbeispiels näher beschrieben. Es zeigen:

Figur 1 Schematischer, prinzipieller, an sich bekannter Aufbau eines Mobilfunknetzes nach dem GSM-Standard.

Figur 2 Schematischer Aufbau zweier sich räumlich überdeckender, voneinander unabhängiger Netze.

5 Figur 3 Schematische Ansicht eines Arbeitsplatzes eines Applikationsprogramm-Erstellers.

Figur 1 zeigt schematisch den an sich bekannten, prinzipiellen Aufbau eines mobilen Kommunikationsnetzes, das einen zellularen (GSM, GPRS) oder neuronalen Charakter aufweisen kann. Ein solches
10 Kommunikationsnetz ist z.B. ein Mobilfunknetz (mobile equipment network), das nach dem GSM-Standard arbeitet. Mit 1 ist darin der flächenmässige Bereich des Mobilfunknetzes bezeichnet. Die ganze Fläche dieses Netzes ist dabei von aneinander angrenzenden und einander überlappenden Funkzellen 2 bzw. 2a überdeckt. In jeder Funkzelle 2 bzw. 2a ist eine Basisstation 3 bzw. 3a (RBS,
15 Radio-Base-Station) vorhanden, welche die Funkversorgung zu den Endgeräten 4 bzw. 4a übernehmen. Endgeräte können Mobilfunktelefone oder Endgeräte sein, welche einen ähnlichen Aufbau wie ein Mobilfunktelefon haben, aber keine Telefonfunktion dienen und nur zum Empfang bzw. Senden von digitalen Daten geeignet sind. Auf jeder Funkstrecke zwischen einer
20 Basisstation 3 bzw. 3a und einem Endgerät 4 bzw. 4a werden alle Sprach- und Steuerinformationen sowie andere Daten wie beispielsweise Meldungen digital verschlüsselt übertragen.

Mit 5 bzw. 5a ist ein Controller bezeichnet (BSC, Base-Station-Controller), welcher mehrere Basisstationen 3 bzw. 3a steuert. Beispielsweise
25 ist der Controller 5 dafür verantwortlich, dass der Übergang eines Mobilfunk-Endgeräts 4 von einer Funkzelle 2 zu einer anderen benachbarten Funkzelle, ein sogenanntes Handover, funktechnisch reibungslos ablaufen kann.

Die Controller 5 bzw. 5a sind ihrerseits zu einer übergeordneten Mobilfunkzentrale 6 (MSC, Mobil-Service-Switching-Center) zusammengefasst,

welche Zentrale den Übergang zu einem drahtgebundenen, digitalen, dienstintegrierten Fernmeldenetz 7 herstellt.

Ein mit SMS (SMS, Short Message Service) bezeichneter Dienst ermöglicht, Meldungen an Endgeräte 4 bzw. 4a zu übermitteln, z.B. von einem
5 Endgerät 4 zu einem anderen Endgerät 4a. Die Verbindung wird dabei stets über eine Zentrale für den Kurzmeldungsdienst 8 abgewickelt (SMS-C, Short Message Service Center). Der Dienst SMS erlaubt es, Nachrichten von der Zentrale 8 zu einem Endgerät 4 zu schicken (SMS MT/PP, Mobile Terminated/Point-to-Point) bzw. diese von einem Endgerät 4a zur Zentrale 8 zu
10 übermitteln (SMS MO/PP, Mobile Originated / Point-to-Point). Jede Meldung ist dabei in einem Datentelegramm verpackt, welchem ein Datenvorsatz (Header) vorgespannt ist, in welchem u. a. die Identifikation des Endgerätbenutzers und ein Code, dass es sich hier um eine Meldung handelt, enthalten sind. Im Rahmen der Erfindung werden Applikationsprogramme bzw. Daten von einem
15 Personal Computer via einer Zentrale 8 des SMS-Dienstes einem Mobilfunk-Endgerät 4 bzw. 4a übertragen.

Dieses Vorgehen wird als GSM-Phase-2 bezeichnet und ist durch den Standard GSM 3.40 definiert. Es erlaubt, beliebige Bitströme in einem transparenten Modus zu übertragen. Kurzmeldungen wie beispielsweise "Ruf
20 doch bitte den Teilnehmer xyz an" lassen sich damit von Teilnehmer zu Teilnehmer übermitteln, wobei die Meldung beim Empfänger beispielsweise auf einem Display angezeigt wird.

Ab GSM-Phase-2 gibt es auch die sogenannten Klasse 2-Nachrichten. Hierbei wird vorausgesetzt, dass ein Speichermittel vorhanden ist,
25 vorzugsweise ein Teilnehmer-Identifikations-Modul SIM (Subscriber Identification Module) in Form einer Chipkarte. In der SIM-Karte sind unter anderem alle für die Identifikation des Benützers notwendigen Daten enthalten.

Figur 2 zeigt in einer zweiten schematischen Darstellung zwei Netze, die im Wesentlichen voneinander unabhängig sind, sich jedoch räumlich
30 überlappen oder vollkommen überdecken. Wegen der besseren Darstellung sind diese Netze jedoch nebeneinander dargestellt.

Das erste der beiden Netze ist das Mobilfunknetz 1 (mobile equipment network), wobei eine gegenüber der Figur 1 erhebliche Einschränkung der Darstellung vorgenommen ist. Gezeigt sind nur ein Mobilfunk-Endgerät 4, eine Basisstation 3, ein Controller 5, die Mobilfunkzentrale 6 und die Zentrale 8 für Kurzmeldungsdienst (SMS) sowie deren Verbindungen.

Das zweite der beiden Netze ist ein digitales Datennetz 11 für Daten, wie es heute beispielsweise unter dem Namen Internet besteht und weltweit betrieben wird. Das Netz 11 umfasst eine beliebige Anzahl von Hilfsmitteln 12, worunter Grosscomputer, Steuerungsrechner, Übertragungsstrecken usw. subsumiert sind. Weiter umfasst das Netz 11 Datenbanken 13 für die verschiedensten Daten, Server 14 als Spezialcomputer zur Unterstützung der Benutzer, usw. Von aussen ist das Datennetz 11 beispielsweise von einem Computer-Arbeitsplatz 15 aus über eine Zugangseinrichtung 16 erreichbar. Der Arbeitsplatz 15 kann beispielsweise durch einen Personal-Computer mit Ein- und Ausgabe-Geräte gebildet sein; und die Zugangseinrichtung kann durch eine Provider-Firma gewährleistet werden. Auf diese Weise ist es einem Benutzer möglich, mit Hilfe seiner Ein- und Ausgabe-Geräte, seiner eigenen Computerleistung und mit den beliebigen vom Netz 11 zur Verfügung gestellten Daten und Hilfsmitteln 12 beliebige Computer-Programme als Applikationsprogramme zu erstellen und diese nach Prüfung auf Funktionsfähigkeit beispielsweise im Server 14 für die Verwendung bereitzustellen.

Für die Zwecke eines Datenaustausches lässt sich der Server 14 des Netzes 11 bei geeigneter Anpassung mit der Zentrale 8 für Kurzmeldedienste des Netzes 1 verbinden, beispielsweise über eine drahtgebundene Leitung 17.

Über eine weitere entsprechende Leitung 18 kann mit der Zentrale 8 ein weiterer Server 21 verbunden werden, der weitere Daten mit der Zentrale 8 für Kurzmeldedienste austauscht. Hierbei kann offen bleiben, welchem Netz der weitere Server 21 zugeordnet ist. Er kann beispielsweise einem weiteren Netz zugeordnet sein oder auch dem Datennetz 11, was durch die gestrichelte Grenzlinie dargestellt ist.

Die Anordnung gemäss Figur 2 lässt sich nun wie folgt zum Bereitstellen eines beliebigen Applikationsprogramms für die Mobilfunk-Endgeräte 4 bzw. 4a und zum individuellen Laden dieses Programms in eines dieser Endgeräte 4 bzw. 4a verwenden. Hierzu erstellt der Endgerätbenutzer
5 oder ein anderer Programmierer an einem Arbeitsplatz 15 und mit Hilfe der Hilfsmittel 12 des Netzes 11 das gewünschte Applikationsprogramm. Dies entspricht einem Programmieren in einer geeigneten Entwicklungsumgebung. Der Code des Programms wird so optimiert, dass es auf dem Endgerät 4 ausführbar ist.

10 Durch Simulation lässt sich in einem nachfolgenden Schritt das fertiggestellte Applikationsprogramm auf Funktionstauglichkeit testen. Hierzu wird am Arbeitsplatz 15 und dem Datennetz 11 das Mobilfunknetz 1 und ein Mobilfunk-Endgerät 4 so simuliert, dass das Abbild 4b des Endgeräts 4 mit einem Abbild 24a seiner Tastatur und einem Abbild 25a seines Anzeigefeldes
15 auf dem Bildschirm 28 des Arbeitsplatzes 15 erscheint (Figur 3). Bevorzugt können bei der Simulation die Tasten des Tastaturabbildes 24a beliebig betätigt werden, so dass ein normales Gebrauchsverhalten mit den richtigen Betätigungen und mit beliebigen Fehlbetätigungen der Tasten erprob- und testbar ist. Nach erfolgreichem Abschluss der Tests des
20 Applikationsprogramms wird dieses im Server 14 für die praktische Benützung bereitgestellt.

In einer bevorzugten Ausführungsform wird folgende Prozedur ausgelöst, wenn ein im Server 14 bereitgestelltes Applikationsprogramm von einem Mobilfunk-Teilnehmer gewünscht wird:

25 Im Mobilfunknetz 1 wird durch die Zentrale 8 für Kurzmeldungsdienste vom Server 14 des Datennetzes das gewünschte Applikationsprogramm abgerufen und entsprechend einer Kurzmeldung über die Einheiten 6, 5 und 3 zum Mobilfunk-Endgerät 4 weitergeleitet und in der SIM-Karte des Endgeräts 4 oder in einem geeigneten Speicher dieses Endgeräts gespeichert.

30 Als Alternative kann das gewünschte Applikationsprogramm von einem Anbieter direkt auf eine SIM-Karte geladen werden.

In einer bevorzugten Ausführungsform ist es ferner vorgesehen, dass vom zweiten Server 21 und nach einem vorgegebenen Terminplan, nach vorbestimmten Regeln oder auf Anfrage des Endgerätbenutzers fluktuierende Daten bzw. Werte auf dem gleichen Weg individuell zu einem bestimmten, 5 jeweiligen Endgerät 4 übertragen und dort unter Ersatz der entsprechenden bisherigen Daten gespeichert werden. Fluktuierende Daten bzw. Werte werden auf diese Weise aktualisiert. Im Falle der automatischen Aktualisierung der fluktuierenden Daten bzw. Werte findet die Uebertragung der aktuellen Werte zum Endgerät erst statt, wenn die Verbindung qualitativ genügend ist. Es gehen 10 dadurch keine Daten verloren.

Unter fluktuierende Daten bzw. Werten werden Werte verstanden, die durch Einflüsse verändert werden, die von der Applikation gesehen extern sind.

Applikationsprogramme unterstützen im Rahmen der Erfindung insbesondere folgende Datentypen: ganze Zahlen, dezimale Zahlen, Zustände, 15 Ereignisse (Trigger) und Text.

Die für die Ausführung eines Applikationsprogramms in einem Endgerät 4 notwendigen Werte können entweder über das Kommunikationsnetz 1 aus Informationsservern bezogen oder lokal durch 20 Eintippen am Endgerät eingegeben werden.

Das jeweilige Mobilfunk-Endgerät 4 bzw. 4a ist hiermit anschliessend in der Lage, das Applikationsprogramm jederzeit auf Wunsch ablaufen zu lassen. Der hierzu notwendige Startbefehl erfolgt durch manuelle Betätigung der Tasten 24; das Ergebnis wird anschliessend auf dem Anzeigefeld 25 des 25 Endgeräts 4 angezeigt. Der Ablauf des Applikationsprogramms ist unabhängig vom Bestehen oder Nichtbestehen einer Funkbindung des Endgeräts 4 mit dem Mobilfunknetz 1.

Es ist klar, dass ein Applikationsprogramm auf gleiche Weise in beliebig vielen der vorhandenen Mobilfunk-Endgeräte 4 einspeicherbar ist. 30 Damit ergibt sich für den Betreiber des Mobilfunknetzes 1 die einfache

Möglichkeit für eine kommerzielle Vermarktung des Applikationsprogramms. Applikationsprogramme können auch von einer Betreiberfirma erstellt und von dieser kommerziell an beliebige Endgerätbenutzer weitergegeben werden.

Es ist weiter möglich, parallel zum genannten ersten
5 Applikationsprogramm weitere Applikationsprogramme im Server 14 bereitzustellen, und diese gemeinsam oder einzeln (bzw. individuell) den Endgerätbenutzern anzubieten. Die verschiedenen Applikationsprogramme selbst lassen sich auf dem beschriebenen Weg nebeneinander auf der SIM-Karte des Mobilfunk-Endgerätes 4 oder auf einen geeigneten Speicher des Mobilfunk-
10 Endgerätes 4 speichern, wobei sie beispielsweise durch eine Numerierung voneinander unterschieden werden.

Das beschriebene Verfahren ist grundsätzlich nicht an einen berechtigten Applikationsprogramm-Ersteller oder die Vermarktung durch den Betreiber des Mobilfunknetzes 1 gebunden. Es kann vielmehr grundsätzlich
15 jedermann in eigener Kompetenz ein Applikationsprogramm für seine eigenen oder fremden Bedürfnissen erstellen und im Server 14 oder einem entsprechenden anderen Server abspeichern und anschliessend auf sein oder mehrere Mobilfunk-Endgeräte 4 übertragen. Damit ergibt sich eine völlige Flexibilität für den Einsatz beliebiger Applikationsprogramme auf den
20 vorhandenen Mobilfunk-Endgeräten 4.

Gemäss dem Vorstehenden ist das Kommunikationsnetz 1 einerseits für die Installation der Applikationsprogramme auf Endgeräte des mobilen Kommunikationsnetzes und andererseits für die Aktualisierung der fluktuierenden Werte verwendbar.

25 Als mögliche Anwendungen des erfindungsgemässen Verfahrens seien genannt:

- Umrechnung von Geldbeträgen in unterschiedliche Währungen, wobei die fluktuierenden Daten des zweiten Servers 21 die sich ständig ändernden Konvertierungswerte zwischen den Währungen sind.

- 4972
- Ermittlung des Verlaufs von Ebbe- und Flut-Bewegungen für die Küstenschifffahrt, z. B. für im niederländischen Wattenmeer operierenden Fischkutter, wobei die fluktuierenden Daten des zweiten Servers 21 neben den "Bewegungen" von Sonne und Mond meteorologische Daten wie Windrichtung und Windstärke sind. Hierdurch lässt sich die jeweils zur Verfügung stehende, eigentliche Fangzeit optimieren.
 - Ermittlung des Einflusses von Seitenwinden bei Flugbewegungen, wobei die fluktuierenden Daten des zweiten Servers 21 meteorologische Angaben sind. Hierdurch kann bei ungünstigen Sichtverhältnissen die Einhaltung von vorbestimmten Flugbahnen verbessert werden.
 - Ermittlung von individuellen Medikamenten-Dosen, z. B. Insulin-Mengen bei Diabetes-Kranken, wobei die fluktuierenden Daten des zweiten Servers 21 von der medizinischen Betreuungsstelle bereitgestellt, auf den Kranken abgestimmte Werte sind. Hierdurch lassen sich auch relativ komplizierte Dosen-Abgabe-Folgen in Abstimmung mit den jeweils eingenommenen Speisen und anderen Parametern einfach optimieren.
 - Angaben über freie Parkplätze in einer Stadt in Abhängigkeit vom ungefähren Zielort des Benützers bzw. Autofahrers. Hierbei werden die fluktuierenden Daten von den Parkhäusern zentral bereitgestellt und laufend zum jeweiligen Mobilfunk-Endgerät übermittelt.

Die obige Liste möglicher Applikationen kann beliebig erweitert werden. Jede der Applikationen hat gemeinsam, dass vom Server 21 jeweils fluktuierende Daten zum jeweiligen Mobilfunk-Endgerät 4 geliefert werden, die das jeweilige Ergebnis beim Ablauf des Applikationsprogramms im Endgerät 4 so stark beeinflussen, dass dies für den Benutzer wichtig oder gar entscheidend ist.

Wichtig ist weiter, dass die Applikationen auf dem Mobilfunk-Endgerät 4 ablaufen, da dieses zur ständigen Ausrüstung des Benützers gehört. Somit muss nicht ständig an weitere Spezialgeräte für entsprechende Applikationen gedacht bzw. können diese bei Reisen nicht vergessen werden.

Patentansprüche

1. Verfahren zum Bereitstellen von Applikationsprogrammen, welche in Endgeräten (4) eines Mobilfunknetzes ausführbar sind, welches Verfahren dadurch gekennzeichnet ist,

5 dass wenigstens ein ausgewähltes Applikationsprogramm individuell und selektiv in ein bestimmtes Endgerät (4) geladen wird,

 dass jedem Applikationsprogramm ein Server (21) zugeordnet wird, der für den Ablauf des Applikationsprogramms notwendige Daten bereitstellt, welche Daten sich laufend ändernde, fluktuierende Daten sind,

10 dass diese Daten nach einem vorgegebenen Terminplan, nach vorbestimmten Regeln oder auf Anfrage des Endgerätbenutzers über das Mobilfunknetz (1) zum jeweiligen Endgerät (4) übertragen werden,

 dass ein jeweiliger Ablauf eines so geladenen Applikationsprogramms vom Endgerätbenutzer über die Tastatur (24) des
15 Endgerätes (4) auslösbar ist,

 dass der Ablauf des Applikationsprogramms von einer bestehenden oder nicht bestehenden Funkverbindung des Endgerätes (4) mit dem Mobilfunknetz (1) unabhängig ist, und

20 dass das jeweilige Ergebnis des Programm-Ablaufs auf einem Anzeigefeld (25) des Endgerätes(4) angezeigt wird.

2. Verfahren gemäss Anspruch 1, dadurch gekennzeichnet, dass das jeweilige Applikationsprogramm mit Hilfe eines vom Mobilfunknetz (1)
25 unabhängigen, digitalen Datennetzes (11) und dessen Hilfsmitteln (12) erstellt und in einem Server (14) des digitalen Datennetzes (11) bereitgestellt wird.

3. Verfahren gemäss Anspruch 2, dadurch gekennzeichnet, dass das jeweilige Applikationsprogramm nach dem Erstellen im Datennetz (11) getestet

wird, wobei die Funktionen des Mobilfunknetzes (1) und des Endgerätes (4) simuliert werden.

4. Verfahren gemäss Anspruch 3, dadurch gekennzeichnet, dass das Endgerät (4) so simuliert wird, dass das Abbild (24a) seiner Tastatur (24) betätigbar auf dem Arbeitsplatz-Bildschirm (28) des Programm-Erstellers erscheint.

5. Verfahren gemäss Anspruch 2, dadurch gekennzeichnet, dass im Server (14) des digitalen Datennetzes (11) zwei oder mehr Applikationsprogramme bereitgestellt werden.

6. Verfahren nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass in das Endgerät (4) zwei oder mehr Applikationsprogramme geladen werden, wobei diese durch eine Kennzeichnung voneinander unterschieden werden.

7. Verfahren nach Anspruch 6, dadurch gekennzeichnet, dass die Kennzeichnung in einer fortlaufenden Nummer besteht.

8. Verfahren nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass das Applikationsprogramm in einem im Endgerät (4) enthaltenen Speicher geladen wird.

9. Verfahren nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass das Applikationsprogramm in eine dem Endgerät zugeordnete SIM-Karte geladen wird.

10. Verfahren nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass das jeweilige Applikationsprogramm bei Bedarf vom Server (14) des digitalen Datennetzes (11) aus über das Mobilfunknetz zum jeweiligen Mobilfunk-Endgerät (4) übertragen wird.

11. Verfahren gemäss Anspruch 10, dadurch gekennzeichnet, dass das jeweilige Applikationsprogramm über folgende Einheiten des

Mobilfunknetzes zum jeweiligen Endgerät (4) übertragen wird: eine Zentrale (8) für Kurzmeldungsdienste (SMS-C), eine Mobilfunkzentrale (6), einen Controller (5), eine Basisstation (3) des Mobilfunknetzes (1) und eine Funkstrecke.

5 12. Verfahren nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass die für den Ablauf des Programms notwendigen Daten über die Einheitenzentrale (8) für Kurzmeldungsdienste, Mobilfunkzentrale (6), Controller (5) und Basisstation (3) des Mobilfunknetzes (1) und die Funkstrecke zum jeweiligen Endgerät (4) übertragen werden.

10 13. Verfahren nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass die vom Server (21) bereitgestellten Daten jeweils vor Beginn des Ablaufs des jeweiligen Applikationsprogramms vom jeweiligen Endgerät (4) vom Server (21) abgerufen werden.

15 14. Verfahren nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass das Mobilfunknetz (1) ein zellular nach einem GSM-Standard aufgebautes Netz ist.

GEÄNDERTE ANSPRÜCHE

[beim Internationalen Büro am 4. Mai 2000 (04.05.00) eingegangen;
ursprünglicher Anspruch 1 geändert;
alle weiteren Ansprüche unverändert (3 Seiten)]

1. Verfahren zum Bereitstellen von Applikationsprogrammen, welche in Endgeräten (4) eines Mobilfunknetzes ausführbar sind, welches Verfahren dadurch gekennzeichnet ist,

5 dass wenigstens ein ausgewähltes Applikationsprogramm individuell und selektiv in ein bestimmtes Endgerät (4) geladen wird,

 dass jedem Applikationsprogramm ein Server (21) zugeordnet wird, der für den Ablauf des Applikationsprogramms notwendige Daten bereitstellt, welche Daten sich laufend ändernde, fluktuierende Daten sind, deren Werte
10 durch Einflüsse ausserhalb des Applikationsprogramms verändert werden,

 dass diese Daten vom Server (21) nach einem vorgegebenen Terminplan und/oder nach vorbestimmten Regeln über das Mobilfunknetz (1) zum jeweiligen Endgerät (4) übertragen werden, wo sie unter Ersatz der entsprechenden bisherigen Daten gespeichert werden,

15 dass ein jeweiliger Ablauf eines so geladenen Applikationsprogramms vom Endgerätbenutzer über die Tastatur (24) des Endgerätes (4) auslösbar ist,

 dass der Ablauf des Applikationsprogramms von einer bestehenden oder
20 nicht bestehenden Funkverbindung des Endgerätes (4) mit dem Mobilfunknetz (1) unabhängig ist, und

 dass das jeweilige Ergebnis des Programm-Ablaufs auf einem Anzeigefeld (25) des Endgerätes(4) angezeigt wird.

25 2. Verfahren gemäss Anspruch 1, dadurch gekennzeichnet, dass das jeweilige Applikationsprogramm mit Hilfe eines vom Mobilfunknetz (1) unabhängigen, digitalen Datennetzes (11) und dessen Hilfsmitteln (12) erstellt und in einem Server (14) des digitalen Datennetzes (11) bereitgestellt wird.

GEÄNDERTES BLATT (ARTIKEL 19)

3. Verfahren gemäss Anspruch 2, dadurch gekennzeichnet, dass das jeweilige Applikationsprogramm nach dem Erstellen im Datennetz (11) getestet wird, wobei die Funktionen des Mobilfunknetzes (1) und des Endgerätes (4) simuliert werden.

5 4. Verfahren gemäss Anspruch 3, dadurch gekennzeichnet, dass das Endgerät (4) so simuliert wird, dass das Abbild (24a) seiner Tastatur (24) betätigbar auf dem Arbeitsplatz-Bildschirm (28) des Programm-Erstellers erscheint.

10 5. Verfahren gemäss Anspruch 2, dadurch gekennzeichnet, dass im Server (14) des digitalen Datennetzes (11) zwei oder mehr Applikationsprogramme bereitgestellt werden.

15 6. Verfahren nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass in das Endgerät (4) zwei oder mehr Applikationsprogramme geladen werden, wobei diese durch eine Kennzeichnung voneinander unterschieden werden.

7. Verfahren nach Anspruch 6, dadurch gekennzeichnet, dass die Kennzeichnung in einer fortlaufenden Nummer besteht.

20 8. Verfahren nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass das Applikationsprogramm in einem im Endgerät (4) enthaltenen Speicher geladen wird.

9. Verfahren nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass das Applikationsprogramm in eine dem Endgerät zugeordnete SIM-Karte geladen wird.

25 10. Verfahren nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass das jeweilige Applikationsprogramm bei Bedarf vom Server (14) des digitalen Datennetzes (11) aus über das Mobilfunknetz zum jeweiligen Mobilfunk-Endgerät (4) übertragen wird.

GEÄNDERTES BLATT (ARTIKEL 19)

11. Verfahren gemäss Anspruch 10, dadurch gekennzeichnet, dass das jeweilige Applikationsprogramm über folgende Einheiten des Mobilfunknetzes zum jeweiligen Endgerät (4) übertragen wird: eine Zentrale (8) für Kurzmeldungsdienste (SMS-C), eine Mobilfunkzentrale (6), einen Controller (5), eine Basisstation (3) des Mobilfunknetzes (1) und eine Funkstrecke.

12. Verfahren nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass die für den Ablauf des Programms notwendigen Daten über die Einheitenzentrale (8) für Kurzmeldungsdienste, Mobilfunkzentrale (6), Controller (5) und Basisstation (3) des Mobilfunknetzes (1) und die Funkstrecke zum jeweiligen Endgerät (4) übertragen werden.

13. Verfahren nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass die vom Server (21) bereitgestellten Daten jeweils vor Beginn des Ablaufs des jeweiligen Applikationsprogramms vom jeweiligen Endgerät (4) vom Server (21) abgerufen werden.

14. Verfahren nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass das Mobilfunknetz (1) ein zellular nach einem GSM-Standard aufgebautes Netz ist.

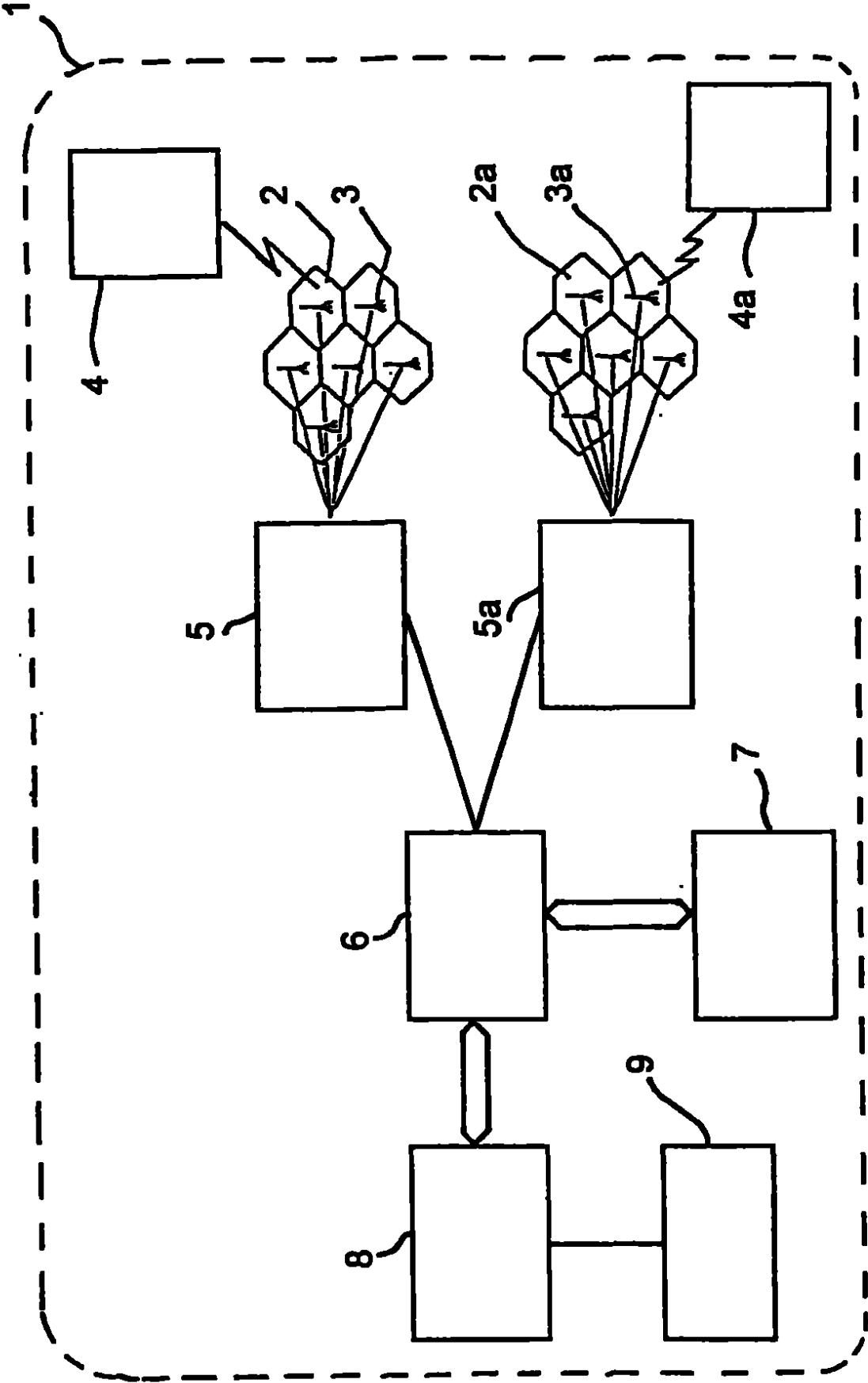


Fig. 1

53-76

2/3

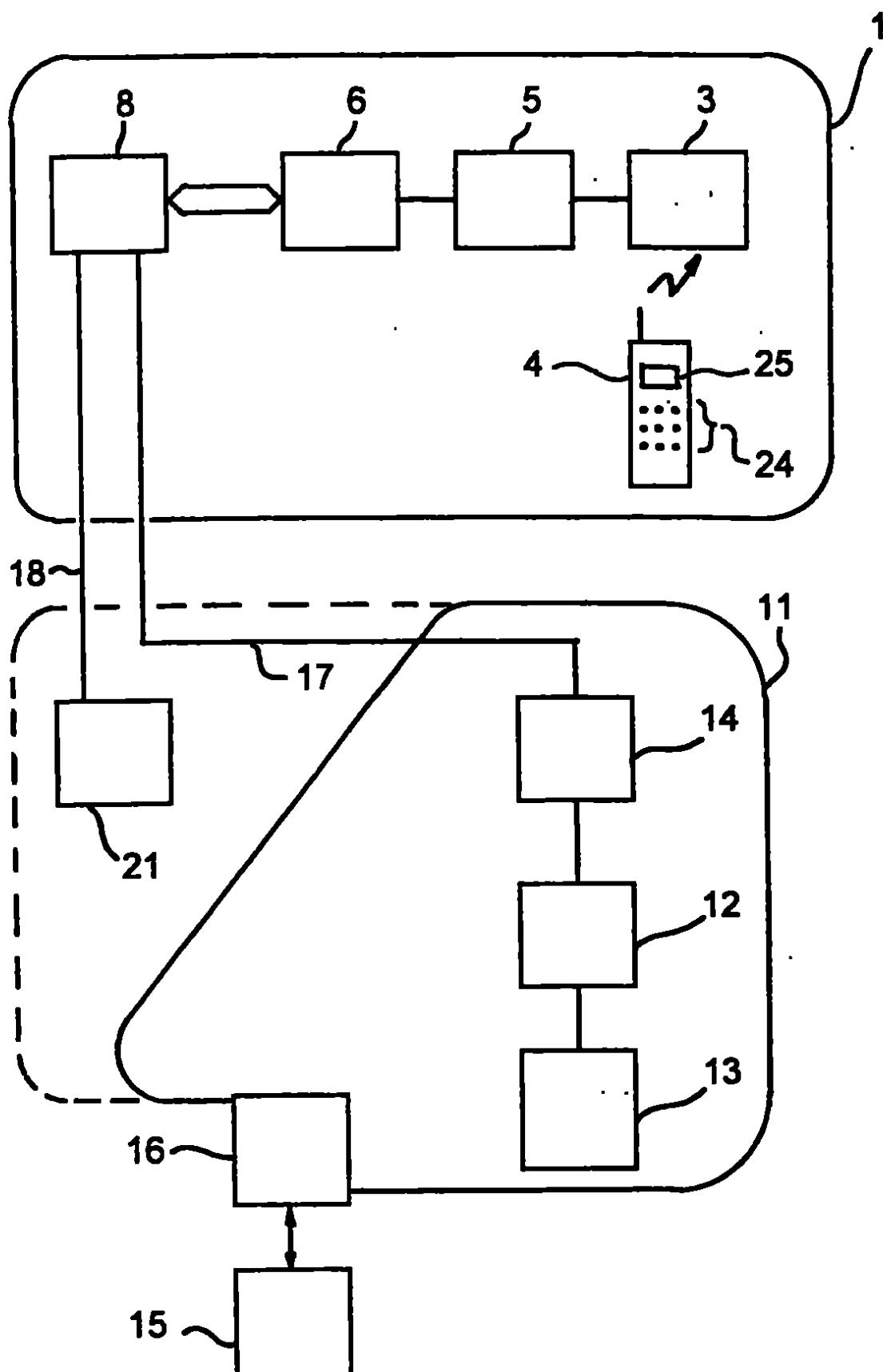


Fig. 2

3/3

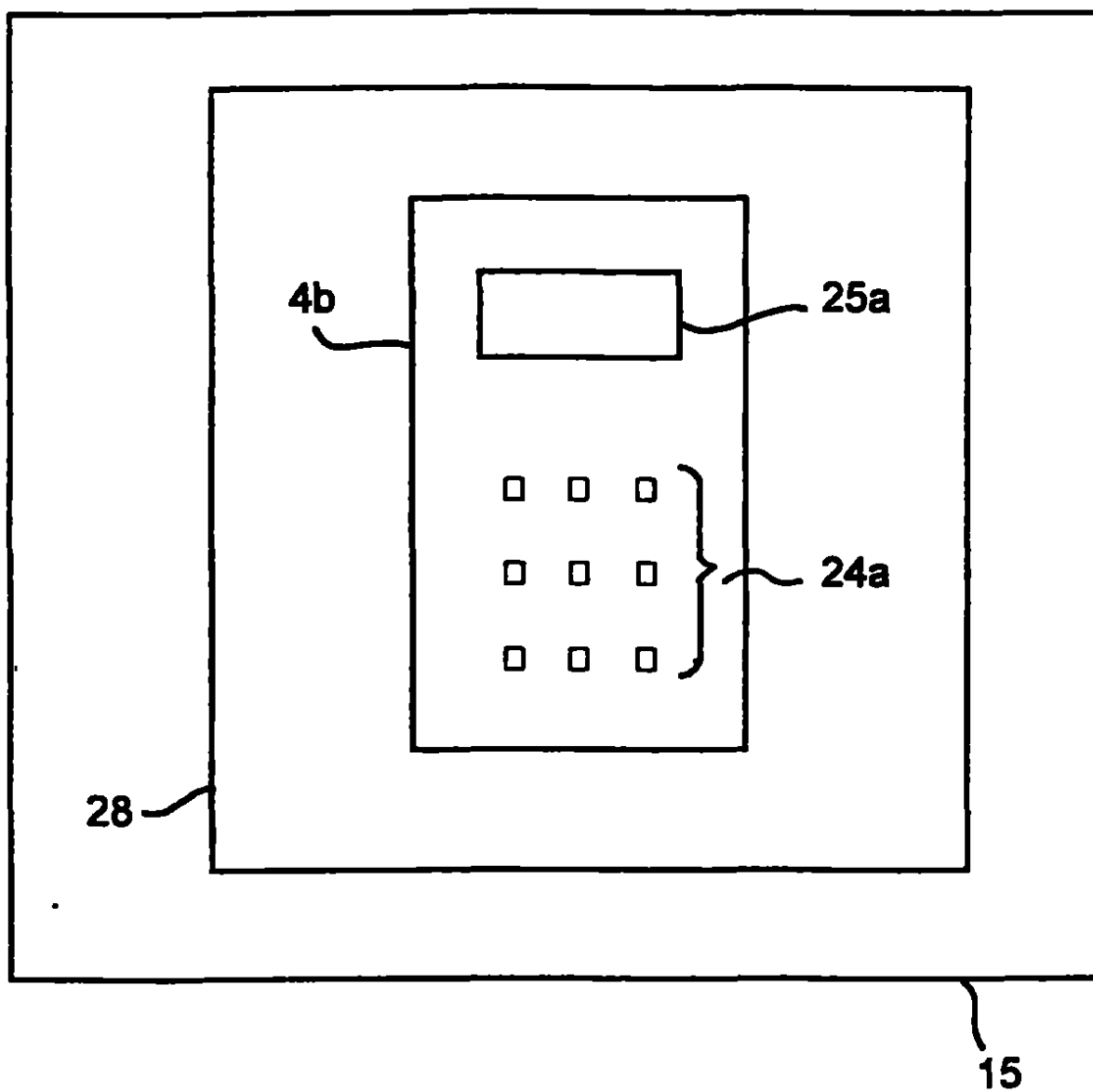


Fig. 3

INTERNATIONAL SEARCH REPORT

Int. Application No

PCT/CH 99/00579

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04Q7/32 H04M1/72

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of documents, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 32439 A (DECKER PETER ;KAARTINEN KALEVI (DE); GUSTAFSSON PATRIK (FI); NOKIA) 4 September 1997 (1997-09-04) page 2, line 11 - line 22 page 13, line 37 -page 16, line 5 page 20, line 9 -page 22, line 32 page 27, line 20 -page 29, line 36	1,6-14
X	DE 196 10 840 A (SIEMENS AG) 25 September 1997 (1997-09-25)	1,2,5,8, 10-14
Y	column 1, line 65 -column 3, line 49 column 4, line 25 -column 6, line 28	6,7,9
Y	WO 98 32089 A (GRAEUPEL ARNOLD ;SIEMENS AG (DE)) 23 July 1998 (1998-07-23) page 2, line 28 -page 5, line 28	6,7,9

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WO 9732439	A	04-09-1997	FI 960895 A	27-08-1997
			AU 1881497 A	16-09-1997
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DE 19610840	A	25-09-1997	NONE	
WO 9832089	A	23-07-1998	AU 6288898 A	07-08-1998

INTERNATIONALER RECHERCHENBERICHT

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X	WO 97 32439 A (DECKER PETER ;KAARTINEN KALEVI (DE); GUSTAFSSON PATRIK (FI); NOKIA) 4. September 1997 (1997-09-04) Seite 2, Zeile 11 - Zeile 22 Seite 13, Zeile 37 -Seite 16, Zeile 5 Seite 20, Zeile 9 -Seite 22, Zeile 32 Seite 27, Zeile 20 -Seite 29, Zeile 36 ----	1,6-14
X	DE 196 10 840 A (SIEMENS AG) 25. September 1997 (1997-09-25)	1,2,5,8, 10-14
Y	Spalte 1, Zeile 65 -Spalte 3, Zeile 49 Spalte 4, Zeile 25 -Spalte 6, Zeile 28 ----	6,7,9
Y	WO 98 32089 A (GRAEUPEL ARNOLD ;SIEMENS AG (DE)) 23. Juli 1998 (1998-07-23) Seite 2, Zeile 28 -Seite 5, Zeile 28 -----	6,7,9

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INTERNATIONALER RECHERCHENBERICHT

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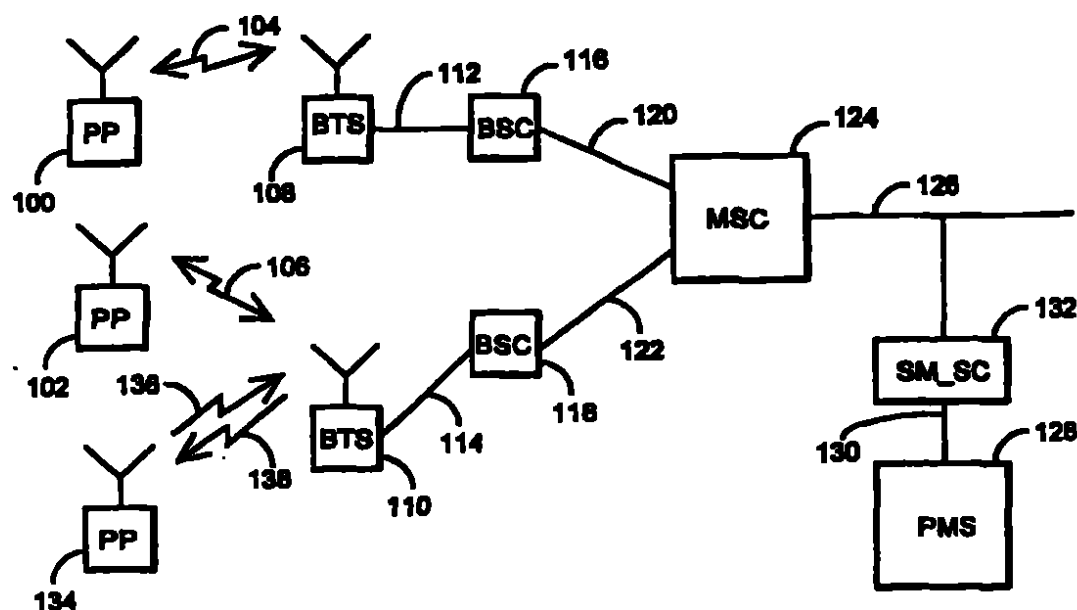
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WO 9732439 A	04-09-1997	FI 960895 A	27-08-1997
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		AU 4733599 A	11-11-1999
		BR 9707868 A	27-07-1999
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WO 9832089 A	23-07-1998	AU 6288898 A	07-08-1998

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6: H04M 3/42	A2	(11) International Publication Number: WO 99/57875
		(43) International Publication Date: 11 November 1999 (11.11.99)
(21) International Application Number: PCT/FI99/00323 (22) International Filing Date: 21 April 1999 (21.04.99) (30) Priority Data: 980887 22 April 1998 (22.04.98) FI (71) Applicant (for all designated States except US): NE-PRODUCTS OY [FI/FI]; Elektroniikkatie 13, FIN-90570 Oulu (FI). (72) Inventors; and (75) Inventors/Applicants (for US only): SAVOLAINEN, Kimmo [FI/FI]; Marjasuontie 1 C 15, FIN-90450 Kempele (FI). PARKKINEN, Jukka [FI/FI]; Kraselintie 11 B, FIN-90580 Oulu (FI). HUTTUNEN, Martti [FI/FI]; Kandintie 1 G 46, FIN-90570 Oulu (FI). KANTOLA, Matti [FI/FI]; Hiidentie 4 C 2, FIN-90550 Oulu (FI). PERÄLÄ, Martti [FI/FI]; Valtatie 5 A 11, FIN-90520 Oulu (FI). (74) Agent: PATENTTITOIMISTO TEKNOPOLIS KOLSTER OY; c/o Kolster OY AB, Iso Rooberinkatu 23, P.O. Box 148, FIN-00121 Helsinki (FI).		(81) Designated States: AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published In English translation (filed in Finnish). Without international search report and to be republished upon receipt of that report.

(54) Title: METHOD OF UPDATING TERMINAL SOFTWARE IN A TELEPHONE SYSTEM



(57) Abstract

The invention relates to a terminal, telephone system and method for updating terminal software in a telephone system comprising a number of terminals (100, 102) and a management system (128) controlling and monitoring the operation of the terminals wherein some terminal functions are implemented by means of software. At least one software is stored in the memory (204) of the terminal. To enable the memory to be preferably implemented, when a task having no corresponding software in the memory of the terminal is selected, the terminal downloads the necessary software in the memory of the terminal from the management system (128).

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METHOD OF UPDATING TERMINAL SOFTWARE IN A TELEPHONE SYSTEM**FIELD OF THE INVENTION**

The invention relates to a method of updating terminal software in a telephone system comprising a number of terminals and a management system controlling and monitoring the operation of the terminals wherein some terminal functions are implemented by means of software, the method comprising at least one software being stored in the memory of the terminal.

BACKGROUND OF THE INVENTION

With radio telephone systems becoming more common and their coverage areas growing more extensive often replacing systems implemented by fixed line telephone connections, it has become necessary to develop telephone networks utilizing radio telephone systems, such as cellular radio systems. Such telephones are needed for instance in a region where no fixed line telephone connections have been built, or in applications in which the terminal is placed in an environment with no connection to a fixed network readily available, for example in moving vehicles. The present invention can be applied particularly to systems implemented by means of cellular radio systems.

Possible systems and terminals include pay phones, wireless local loop (WLL) terminals, in-store payment terminals and smart card terminals that enable money to be transferred between a bank and a smart card.

In current terminals, most functions are implemented by means of software. A terminal comprises a processor and a memory in which necessary software is stored. When the user selects a function, the software is read in the memory and executed. Terminal design involves an inevitable compromise between the number of functions and the memory capacity available. For reasons of cost, the size of the memory to be placed in the terminals cannot be limitlessly increased; the number of functions is thus restricted by the memory.

As an example, examine a pay phone system implemented by means of a radio system. The system comprises a number of pay phones, each being connected to base stations via a radio path. As far as the radio path and the base stations are concerned, terminals operating as pay phones do not differ from common terminal equipment in any way. To enable charging, the pay phones comprise a charging means, which can typically be a reader for a pay card. Various pay cards abound, including different credit cards, loadable pay cards and bank cards. Furthermore, different card-type

variations exist, depending on the manufacturer and provider of the card. In addition, the same card can be used to select different functions. Each card variation necessitates in the terminal software that supports the card, called a card application. The card application comprises functions necessary for the user interface, card control and performing a transaction by the card, for example a payment transaction.

If card applications that support all card types were stored in the memory of a terminal reading a card, the amount of memory capacity needed would increase so much that the result would be an expensive terminal. Furthermore, adding new card applications in terminals would necessitate the software of the entire equipment to be changed in equipment maintenance.

In addition to pay phones, other wireless card-reading devices, such as pay card loading devices enabling electronic money to be loaded into pay cards from a bank account, also suffer from similar problems to those described above.

BRIEF DESCRIPTION OF THE INVENTION

An object of the invention is thus to provide a method and an apparatus implementing the method so as to enable the above problems to be solved. This is achieved with a method of the type disclosed in the introduction, the method being characterized by the terminal downloading necessary software into the memory of the terminal from the management system when a task having no corresponding software in the memory of the terminal is selected.

The invention further relates to a terminal in a telephone system comprising a number of terminals and a management system controlling and monitoring the operation of the terminals, the terminal comprising means for storing one or more softwares controlling the functions of the terminal. The terminal of the invention is characterized by comprising means for downloading software necessary at a given time from the management system.

The invention further relates to a telephone system comprising a number of terminals and a management system controlling and monitoring the operation of the terminals, the terminals in the system being arranged to store in their memory at least one software controlling the functions of the terminal. The system of the invention is characterized by the terminal being arranged to download software necessary at a given time from the management system

when a task having no corresponding software stored in the memory of the terminal is selected.

The preferred embodiments of the invention are disclosed in the dependent claims.

5 The invention is based on the idea that a terminal does not have all necessary software continually stored, but software can be downloaded from a telephone system when necessary. If a pay phone is used as an example, the terminal can store in its memory five cards that were last used. When a new user inserts a card into a device and the required card application does not
10 exist in the memory, the device downloads the software from the system. The system can keep the necessary software on a particular server or on some other apparatus, for example in connection with a mobile services switching centre or a pay phone services switching centre.

 Several advantages are achieved with the method and system of
15 the invention. The solution of the invention enables the price of a terminal to be kept low, since the amount of necessary memory capacity does not have to be increased although the number of functions and acceptable pay cards the terminal is supposed to allow increases. Further, the terminal characteristics can readily be updated according to need and location.

20 BRIEF DESCRIPTION OF THE DRAWINGS

 The invention is now described in closer detail in connection with the preferred embodiments with reference to the accompanying drawings, in which

25 Figure 1 is a block diagram illustrating the structure of a telephone system,

 Figure 2 shows an example of the structure of a terminal of a system in accordance with the invention at a block diagram level,

 Figure 3 illustrates the structure of a terminal memory block, and

 Figure 4 shows a flow diagram of a method of the invention.

30 DETAILED DESCRIPTION OF THE INVENTION

 Hereinafter, the invention will be described in closer detail using a pay phone system as an example, the pay phone system being implemented by means of a digital GSM mobile telephone system without, however, being
35 restricted thereto. It is obvious that the solution of the invention can be implemented with minor changes on any telephone system implemented by other

types of techniques when the system comprises terminals some of whose functions are performed by software applications.

Figure 1 illustrates the structure of a pay phone system implemented in a cellular radio network. The system comprises a number of pay phones 100 to 102, each being connected to base stations 108 to 110 via a radio path 104 to 106. As far as the radio path and the terminals are concerned, terminals operating as pay phones do not differ from common subscriber terminals in any way. Typically, the base stations 108 to 110 are connected to base station controllers 116 to 118, each controlling a plurality of base stations, via transmission lines 112 to 114, which can be implemented by means of an optical cable, a copper cable or a link connection. The base station controllers 116 to 118, in turn, are connected via transmission lines 120 to 122 to a mobile services switching centre 124, which controls the operation of the base station controllers and forwards the calls of the terminals to a fixed network or to the other parts of the cellular radio system by means of transmission lines 126.

The pay phone system further comprises a management system 128 controlling and monitoring the operation of the pay phones 100 to 102. In the pay phone system of the GSM system given by way of example the control equipment 128 is connected, utilizing for instance an X.25 connection 130, to a short message centre 132 in turn being connected to GSM cellular networks and the mobile services switching centres thereof. The above-mentioned description of a cellular radio system thus applies to the GSM system, but it is obvious that although the structure in other systems differs in details from the described one, the relevant parts in the structure are similar. It is to be noted that also in the GSM system the pay phone system can be implemented without a short message centre by using other known manners, for example by means of a modem, to connect the pay phone system's control equipment 128 to the cellular radio system.

Figure 2 illustrates an example of a preferred embodiment of a pay phone of the system in accordance with the invention. The pay phone of the invention comprises a cellular radio transceiver 200 and a control unit 204 having a direct connection 202 to the transceiver 200 without a two-wire connection. The terminal of the invention further comprises a charging means 206 connected to the control unit 204. Depending on the implementation, the charging means can accept call cards, credit cards or smart cards as means of

payment. Typically, the terminal further comprises a selection means 210 for selecting a desired phone number, display equipment 208, and an earpiece 212. The terminal can also comprise means 214 enabling a hands-free function and comprising a loudspeaker 216, a microphone 218 and necessary amplifiers. If desired, some or all of the above components can be placed integrated directly in the transceiver 200, but they can also be implemented as separate means while it is possible that the components are located inside the same housing structurally.

To enable a call to be transmitted, the transceiver 200 serves to set up a radio connection to the base station when necessary. The unit 200 is also responsible for all procedures associated with the radio path and call maintenance normally assigned to a mobile telephone.

The control unit 204 is responsible for controlling the pay phone. The control unit typically comprises a micro processor, fixed and reprogrammable memory circuits, multiplexing means and switches. The control unit controls the operation of the device's other units, keeps a record of made calls, being also responsible for charging. The operation parameters are usually stored in the memory of the control unit. These phone-specific parameters include the phone number, tariff information on calls to be made, language options on the phone's display, and the voice volume used. Excluding the inventive features described herein, the operation of the control unit does not differ greatly from the operation of the control units of the known pay phones.

Also the structure of the terminal can differ in its details from the above description, depending on the use of the terminal. If the terminal is an in-store payment terminal, for example, the device does not necessarily comprise audio parts, such as a microphone and a loudspeaker. At its simplest the device comprises a cellular radio transceiver, a control unit and a charging means, which can be integrated with each other structurally or, alternatively, components also detachable from each other to be temporarily combined for the duration of a transaction, call payment or purchase to be made, for example.

Software necessary for the terminal is stored in the memory of the control unit 204. This software includes software necessary for pay card variations, i.e. card applications. A card application comprises functions necessary for the user interface, card control and performing a card transaction, for example a payment transaction.

Figure 3 illustrates the structure of a memory. The memory, preferably implemented by one or more reprogrammable flash memory circuits, typically comprises a plurality of blocks 300 to 308 wherein software necessary for the device and other data are stored. Part of the memory is assigned to the storage of card applications, for example a block 306. A number of card applications 310 to 318 can be downloaded into this block. The memory can also be implemented in other ways, for example with battery-secured SRAM memory circuits.

Examine next the method of the invention by means of Figure 4 showing a flow diagram of a preferred embodiment of the method of the invention. In step 400 a user has inserted a card into a card reader 206 of a terminal. In step 402 the terminal examines the different functions of the card, feasible credit card alternatives, for example. In case there are several alternatives, the user is allowed to select the function to be used. Next, in step 406, it is checked whether the application required by the selected function exists in the memory of the terminal. The application keeps a record of applications in its memory at a given time. If the application exists in the memory, it can be activated in step 408.

If the application does not exist in the memory of the terminal, next it is checked in step 410 whether the application exists in the management system. Information on downloadable applications in the management system can be stored either in the terminal, or the terminal can request the information of the management system. If the application is not found in the management system, the function is rejected in step 412 and if the card comprises several functions a new one is inquired of the user.

If the application exists in the management system, the terminal inquires in step 414 about the amount of memory required by the application. Next, the terminal checks 416 whether the amount of memory required by the application is free. If there is not enough memory, an application to be removed from the memory is selected and it is removed in step 418 in order to vacate the memory for the use of the new application. The terminal can let the user select the application to be removed or, alternatively, the terminal itself can perform the selection on the basis of a predetermined criterion. A criterion can be formed, for example, such that applications used last are to be stored and an application that has been unused for the longest period of time is to be removed.

Next, in step 420 the terminal informs the management system of the free memory area in which the application should be placed. Referring to Figure 3, for example, the terminal can indicate that a memory area 312 is free for the application. In step 422, the management system downloads the application into the memory area indicated by the terminal. Subsequently, the application is ready to be put to use in step 424.

In another embodiment of the invention the management system does not control the placement of the application in the memory of the terminal but only transmits the application to the terminal, which itself places the application in its memory.

In addition to pay card applications, the downloadable software of the invention can comprise articles moved in an electronic form, such as tickets or information on timetables.

The method steps of the invention related to the terminal can preferably be implemented by software in the control unit 204 of the terminal. The connection to the management system required by the method can preferably be implemented using a data call connection. A data call is a call type available in digital radio networks, corresponding to a modem connection in analogue systems.

The terminal of the invention allows the user to be informed of the method used for example by displaying a message "wait - downloading software" or the like on the terminal's display 208.

Although the invention has been described above with reference to the example in accordance with the accompanying drawings, it is obvious that the invention is not restricted thereto but it can be modified in many ways within the scope of the inventive idea disclosed in the attached claims.

CLAIMS

1. A method of updating terminal software in a telephone system comprising a number of terminals (100, 102) and a management system (128) controlling and monitoring the operation of the terminals wherein some terminal functions are implemented by means of software, the method comprising at least one software being stored in the memory (204) of the terminal, characterized by the terminal downloading necessary software into the memory of the terminal from the management system (128) when a task having no corresponding software in the memory of the terminal is selected.
2. A method as claimed in claim 1, characterized by the software being downloaded by means of a data call connection.
3. A method as claimed in claim 1, characterized by the terminal storing in its memory a predetermined number of various softwares, and software stored in the memory being removed in connection with the download of new software.
4. A method as claimed in claim 1, characterized by the terminal storing in its memory as many softwares as possible, and software stored in the memory being removed in connection with the download of new software when the memory is full.
5. A method as claimed in claim 3 or 4, characterized by the software to be removed being selected by the user of the terminal.
6. A method as claimed in claim 3 or 4, characterized by the software to be removed being selected by the terminal on the basis of a predetermined criterion.
7. A method as claimed in claim 1, characterized by the software being software necessary for processing a pay card fed into the terminal.
8. A method as claimed in claim 7, characterized by the software comprising information necessary for the terminal's user interface, pay card control and transactions performed by the pay card.
9. A method as claimed in claim 1, characterized by the software stored in the memory at a given time being stored in a flash memory element divided into small blocks.
10. A method as claimed in claim 1, characterized by the software comprising articles moved in an electronic form.

11. A method as claimed in claim 10, **characterized** by the software comprising information on timetables.

12. A method as claimed in claim 1, **characterized** by the terminal detecting a pay card having been fed into the reader of the terminal
5 and the user having selected an application, and the terminal
checking whether the software necessary for implementing the application exists in the memory of the terminal, and

transmitting a download request to the management system, the request comprising information on the necessary software, and the management system
10

transmitting the necessary software to the terminal, and the terminal storing the software in its memory.

13. A method as claimed in claim 1, **characterized** by the task to be performed being selected by the user of the terminal.

14. A method as claimed in claim 1, **characterized** by the task to be performed being selected by the terminal.
15

15. A terminal in a telephone system comprising a number of terminals (100, 102) and a management system (128) controlling and monitoring the operation of the terminals, the terminal comprising means (204) for storing
20 one or more softwares controlling the functions of the terminal, **characterized** by comprising means (204) for downloading software necessary at a given time from the management system.

16. A terminal as claimed in claim 15, **characterized** by the terminal comprising means (204) for storing in the memory a certain number of softwares, and the terminal comprising means (204) for replacing a previous software in the memory with software to be downloaded.
25

17. A terminal as claimed in claim 16, **characterized** by the terminal comprising means (204) for selecting software to be removed.

18. A terminal as claimed in claim 15, **characterized** by the terminal comprising a card reader (206).
30

19. A terminal as claimed in claim 15, **characterized** by the memory means of the terminal being implemented by a flash memory circuit divided into small software blocks (300 to 318).

20. A telephone system comprising a number of terminals (100, 102) and a management system (128) controlling and monitoring the operation of the terminals, the terminals in the system being arranged to store in their
35

memory at least one software controlling the functions of the terminal, characterized by the terminal being arranged to download software necessary at a given time from the management system when a task having no corresponding software stored in the memory of the terminal is selected.

1/2

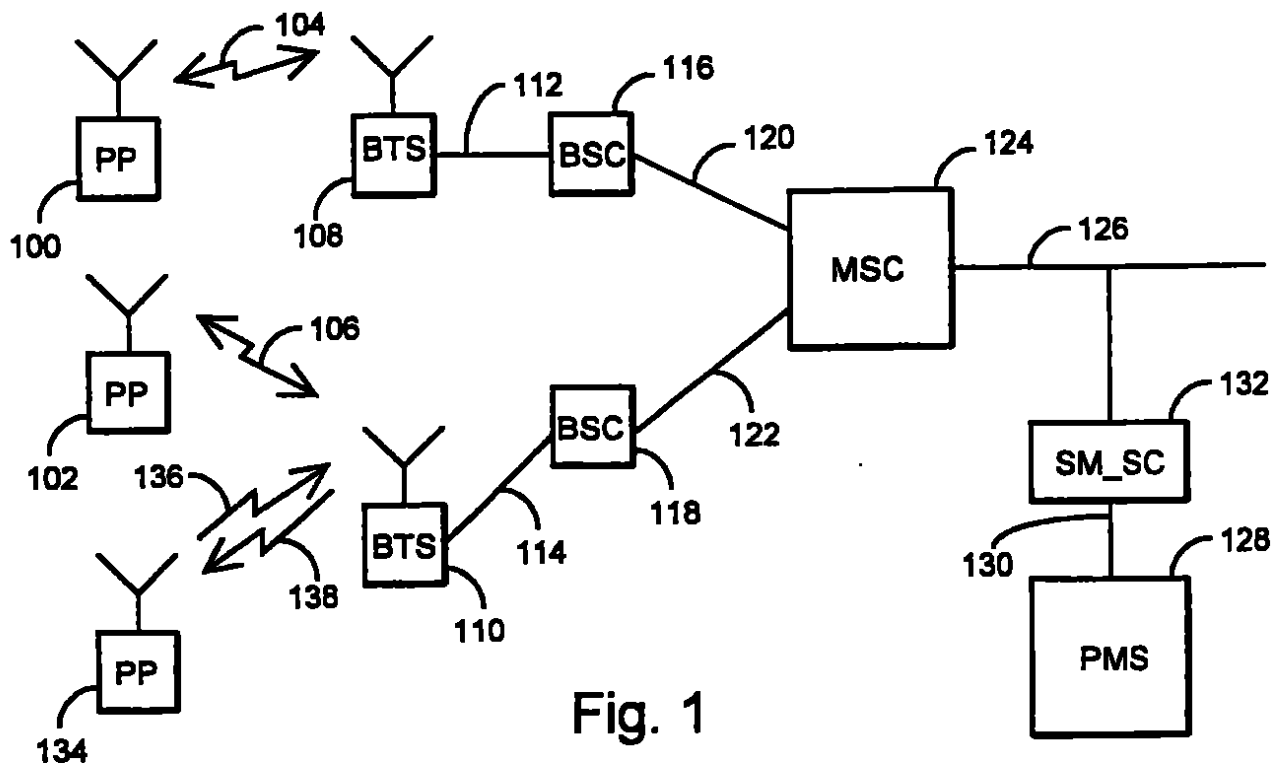


Fig. 1

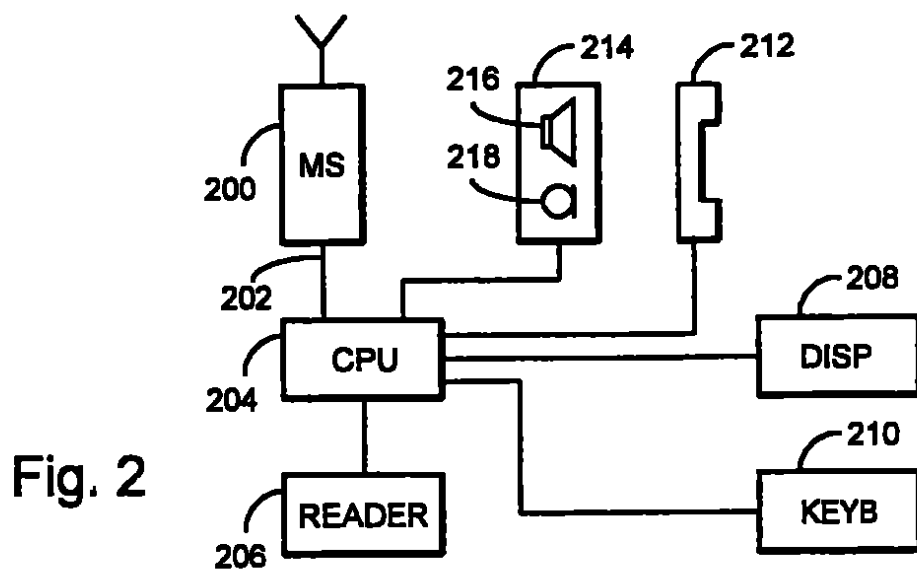


Fig. 2

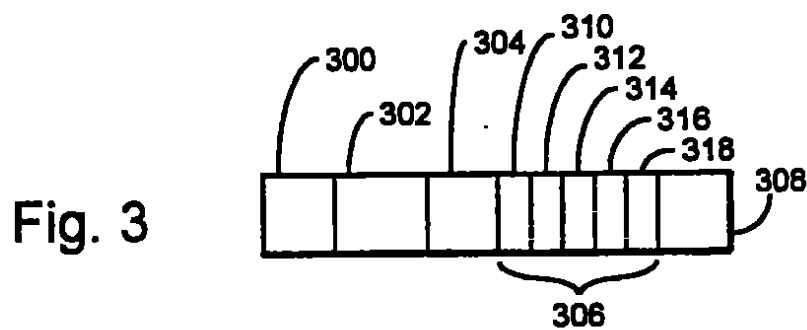


Fig. 3

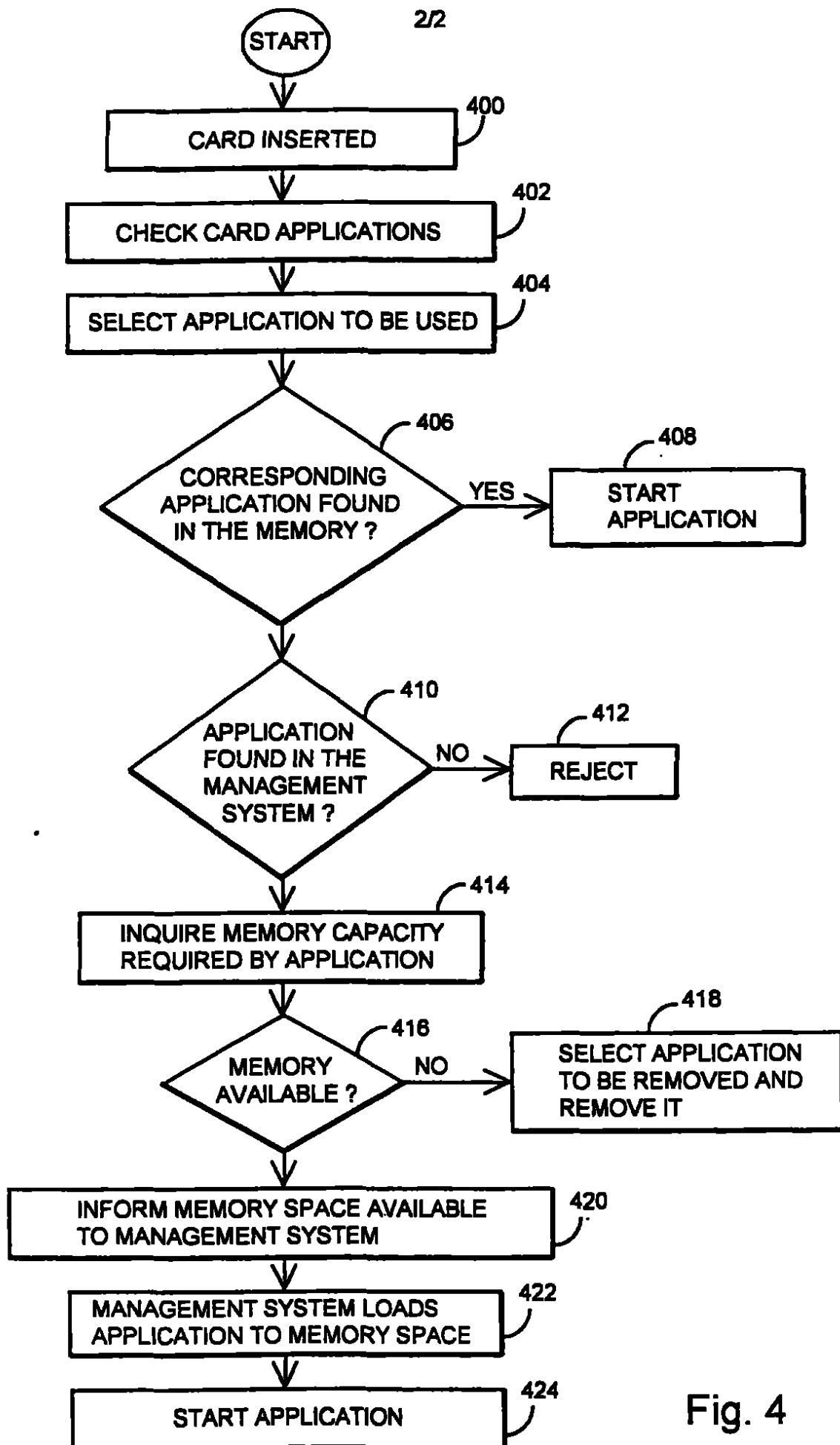


Fig. 4

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(30) Priority Data: 980887 22 April 1998 (22.04.98) FI			
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(75) Inventors/Applicants (for US only): SAVOLAINEN, Kimmo [FI/FI]; Marjasuontie 1 C 15, FIN-90450 Kempele (FI). PARKKINEN, Jukka [FI/FI]; Krasnelintie 11 B, FIN-90580 Oulu (FI). HUTTUNEN, Martti [FI/FI]; Kandintie 1 G 46, FIN-90570 Oulu (FI). KANTOLA, Matti [FI/FI]; Hiidentie 4 C 2, FIN-90550 Oulu (FI). PERÄLÄ, Martti [FI/FI]; Valtatie 5 A 11, FIN-90520 Oulu (FI).		Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. In English translation (filed in Finnish).	
(74) Agent: PATENTTITOIMISTO TEKNOPOUS KOLSTER OY; c/o Kolster OY AB, Iso Roobertinkatu 23, P.O. Box 148, FIN-00121 Helsinki (FI).		(88) Date of publication of the international search report: 16 December 1999 (16.12.99)	

The invention relates to a terminal, telephone system and method for updating terminal software in a telephone system comprising a number of terminals (100, 102) and a management system (128) controlling and monitoring the operation of the terminals wherein some terminal functions are implemented by means of software. At least one software is stored in the memory (204) of the terminal. To enable the memory to be preferably implemented, when a task having no corresponding software in the memory of the terminal is selected, the terminal downloads the necessary software in the memory of the terminal from the management system (128).

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INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H04M

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5600643 A (RICHARD B. ROBROCK, II), 4 February 1997 (04.02.97), column 2, line 12 - line 50; column 9, line 28 - column 11, line 7; column 13, line 34 - line 60 --	1-20
X	EP 0365200 A2 (AMERICAN TELEPHONE AND TELEGRAPH COMPANY), 25 April 1990 (25.04.90), column 1, line 45 - column 2, line 37; column 6, line 40 - column 8, line 3 --	1-20
A	EP 0797342 A1 (SONY CORPORATION), 24 Sept 1997 (24.09.97), page 3, line 9 - line 28 --	1-20

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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C. (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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INTERNATIONAL SEARCH REPORT
Information on patent family members

28/09/99

International application No.

PCT/FI 99/00323

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EP 0365200 A2	25/04/90	DE 68927219 D,T JP 2170756 A JP 2780822 B US 4897866 A	24/04/97 02/07/90 30/07/98 30/01/90
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EP 0802694 A2	22/10/97	CN 1174482 A JP 10094051 A US 5854978 A	25/02/98 10/04/98 29/12/98



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DEUTSCHES
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⑬ **DE 198 01 576 A 1**

⑭ Int. Cl. 8
H 04 Q 7/20
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⑳ Entgegenhaltungen:
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EP 08 02 694 A2
WO 973 24 439 A2

Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen
Prüfungsantrag gem. § 44 PatG ist gestellt

㉑ Verfahren zur endgeräteunterstützten Menüführung von Mehrwertdiensten in Mobilkommunikationssystemen

㉒ Die Erfindung betrifft ein Verfahren zur endgeräteunterstützten Menüführung von Mehrwertdiensten in Mobilkommunikationssystemen, wobei die Mehrwertdienste über Mehrwertdienste-Knoten zugänglich sind. Dabei werden Objekte, die Daten in Form von Programmen, Funktionen etc. enthalten, in das Mobilendgerät geladen und diese Objekte über die Luftschnittstelle des Mobilkommunikationssystems gesteuert, modifiziert oder zur Ausführung gebracht. Diese Objekte ermöglichen eine vorzugsweise visuelle Menüführung in der Mobilstation für den ausgewählten Mehrwertdienst, was die Bedienung für den Teilnehmer wesentlich erleichtert.

DE 198 01 576 A 1

Die vorliegende Erfindung betrifft ein Verfahren zur endgeräteunterstützten Menüführung von Mehrwertdiensten in Mobilkommunikationssystemen, nach dem Oberbegriff des Patentanspruchs 1.

Bisher muß sich ein Teilnehmer eines Mobilkommunikationssystems nach Auswahl eines Mehrwertdienste-Knotens (Value-Added-Service-Knoten, VAS-Knoten), wie z. B. eines Mobilboxsystems, über mündliche Ansagen im Menü orientieren um entsprechende Eingaben und Abfragen vornehmen zu können. Dies ist relativ zeitaufwendig, mühsam und fehlerträchtig, da der Teilnehmer sich meist mehrere Zuordnungen (Nummer-Funktion) merken muß. Vergißt er eine Zuordnung, muß er sich den Ansagetext erneut abspielen lassen. Dadurch kann der Bedienungsvorgang relativ lange dauern.

Aus der EP-A-0 659 (X4) ist ein Mobiltelefon bekannt, bei dem unter Verwendung einer Taste (Softkey) ein bestimmter, vorgegebener Dienst abgerufen werden kann. Diese Belegung der Taste mit dem entsprechenden Dienst wird bei der Herstellung des Mobiltelefons vorgegeben und ist im Gerät selbst gespeichert.

Der Erfindung liegt die Aufgabe zugrunde, ein Verfahren zur endgeräteunterstützten Menüführung von Mehrwertdiensten in Mobilkommunikationssystemen vorzuschlagen, welches den Teilnehmer über seine Mobilstation optimal in der Bedienung eines Mehrwertdienstes unterstützt.

Diese Aufgabe wird durch die kennzeichnenden Merkmale des Patentanspruchs 1 gelöst.

Es wird beschrieben, Objekte (Programme, Daten etc.) in Mobilstationen zur Unterstützung der Bedienung eines Mehrwertdienste-Knotens einzusetzen. Erfindungsgemäß werden die Objekte in das ME (Mobile Equipment) oder die SIM (Subscriber Identity Module) eines Mobilendgerätes geladen, über die Luftschnittstelle gesteuert, modifiziert oder zur Ausführung gebracht. Die Objekte unterstützen die Bedienung zwischen Mobilstationsnutzer und dem Mehrwertdienste-Knoten derart, daß das Menü zur Nutzung des entsprechenden Mehrwertdienstes auf dem Display der MS (Mobilstation) ganz oder in Teilen abhängig von der tatsächlichen Position im Menü angezeigt wird.

Der Mobilstationsnutzer kann durch Betätigen der im Menü angezeigten Tasten Funktionen in den Mehrwertdienste-Knoten auslösen wie z. B. Abhören von neuen Nachrichten in der Mobilbox. Nach Betätigen einer Taste wird das Menü im Display des Mobilendgerätes entsprechend der im Mehrwertdienste-Knoten stattgefundenen Aktion durch den Mehrwertdienste-Knoten angepaßt. Das kann auch durch das Laden eines neuen Objekts oder durch Modifizieren eines bereits geladenen Objekts geschehen.

Die Objekte ermöglichen eine vorzugsweise visuelle Menüführung in der Mobilstation für den angewählten Mehrwertdienst, was die Bedienung für den Teilnehmer wesentlich erleichtert.

Objekte werden entweder über die Luftschnittstelle oder an speziellen Ladestationen z. B. beim Händler in die Mobilstation geladen. Angestoßen wird das Laden über die Luftschnittstelle vom Nutzer oder durch Ereignisse wie z. B. erstmaliger Anruf von/van einen Mehrwertdienste-Knoten.

Die Objekte enthalten Daten und/oder Funktionen/Programme, die auf der SIM-Karte und/oder in der Mobilstation gespeichert und ausgeführt werden.

Objekte können sich an die Fähigkeiten der Mobilstation anpassen wie z. B. Größe des Displays, schwarz/weiß oder farbig. Diese Anpassung geschieht entweder über Polymorphismus oder durch Speicherung der Fähigkeiten der Mobil-

station im Kommunikationsnetz, wodurch bei Bedarf entsprechend angepaßte Objekte geladen werden.

Aktiviert werden Objekte in der Mobilstation entweder explizit durch den Nutzer oder implizit durch Ereignisse wie Einbuchen in das Mobilfunknetz, Nachrichtenempfang (Kurznachricht, Anruf), usw.

Modifikationen von Objekten werden entweder explizit durch den Nutzer oder implizit durch das Objekt selbst veranlaßt, z. B. zum Update einer Menüstruktur.

Die Erfindung wird nachstehend anhand eines in der Zeichnungsfigur dargestellten Beispiels näher erläutert.

Die Zeichnungsfigur zeigt eine Darstellung der beteiligten Systeme. Die Objekte (Applikationen) werden in einem Objekt-Zentrum 9 in einer Datenbank gehalten.

Das Laden der Objekte in die Mobilstation 1 (Mobile Equipment 2 und/oder (U)SIM 3) oder ein Modifizieren der Objekte geschieht über die Luftschnittstelle 5 des Mobilfunknetzes 4 oder die Schnittstelle eines STM-Kartenlesers eines Diensteanbieters 10 (Service Provider).

Als Übertragungsmechanismus der Objekte über das Mobilfunknetz 4 sind vorzugsweise Kurznachrichten (SM: Short Messages) oder GPRS-Dienste nutzbar.

Zur Steuerung der Objekte dienen ebenfalls Kurznachrichten (SM) oder GPRS-Dienste. Alternativ können von der Mobilstation 1 DTMF-Töne (Dual Tone Multi Frequency) bei bestehender Sprachverbindung z. B. zu Mobilboxsystemen verwendet werden. Die DTMF-Töne werden von der Applikation im Mehrwertdienste-Knoten 7 ausgewertet und können entsprechende Steuermeldungen an die Objekte über Kurznachrichten (SM) oder GPRS-Dienste nach sich ziehen.

Sofern eine Anpassung von Objekten an die individuellen Fähigkeiten der Mobilstation 1 erfolgen soll, sind entsprechende Profile der Fähigkeiten entweder im Heimatregister 8 (HLR: Home Location Register) des Teilnehmers oder im Objektzentrum 9 verfügbar. Im ersten Fall muß das Objekt-Zentrum 9 das Heimatregister 8 nach dem entsprechenden Profil abfragen.

Das SIM Application Toolkit nach der GSM Empfehlung 11.14 bietet eine Grundfunktionalität, Programme und Daten über die Luftschnittstelle 5 in die Mobilstation 1 zu laden und in der SIM 3 zur Ausführung zu bringen. Das in der Erfindung beschriebene Verfahren kann mit Hilfe dieser Grundfunktionalität umgesetzt werden. Das Verfahren kann jedoch auch auf Basis anderer Mechanismen realisiert werden.

Die folgenden Ausführungen beschreiben das Laden und Aktivieren von Objekten auf Basis des SIM Application Toolkits zur Unterstützung der Bedienung eines Mehrwertdienstes und sind als eine mögliche konkrete Ausprägung der Erfindung zu verstehen.

Ein Objekt enthält eine Kurzform des Menüs eines Mehrwertdienstes mit einer festen Zuordnung zwischen den Tasten der Mobilstation und Aktionen des Mehrwertdienstes.

Objekte werden bei Erstkontakt (Anruf) einer Mobilstation mit dem Mehrwertdienste-Knoten 7 über den Kurznachrichtendienst 6 in das Teilnehmeridentifikationsmodul 3 (SIM) geladen. Dazu stößt der Mehrwertdienste-Knoten 7 über eine Nachricht eine entsprechende Prozedur im Objekt-Zentrum 9 an, wodurch dann das dem angewählten Mehrwertdienst zugeordnete Objekt in die Mobilstation 1 geladen wird.

Aktiviert wird ein Objekt bei aufgebautem Ruf zum Mehrwertdienste-Knoten, indem der Mehrwertdienste-Knoten 7 eine Kurznachricht (SMS) zur Mobilstation 1 sendet. In dieser Kurznachricht ist eine Versionsnummer enthalten, die mit der Versionsnummer des in der Mobilstation vorhandenen Objekts verglichen wird und gegebenenfalls das La-

den eines aktuelleren Objekts veranlaßt.

Ist der Nutzer einen Menüpunkt über die Tastatur ausgewählt und ist diese Operation im Mehrwertdienste-Knoten 7 erfolgreich ausgeführt worden, so sendet der Mehrwertdienste-Knoten 7 eine Kurznachrichte (SM) an die SIM 3. Die SIM 3 aktualisiert daraufhin die Anzeige im Display der Mobilstation 1.

Modifiziert werden Objekte über Kurznachrichten (SM). Dies geschieht im wesentlichen bei Upgrades, d. h. wenn sich das Menü im Mehrwertdienste-Knoten 7 oder das Menü eines einzelnen Mehrwertdienstes geändert hat und das Objekt darauf angepaßt wird. Gegebenenfalls wird das Objekt vollständig gelöscht und durch ein neues ersetzt.

Alternativ können Objekte im Teilnehmeridentifikationsmodul 3 bei einem Diensteanbieter 10 geladen und modifiziert werden. Dies geschieht mittels eines SIM-Kartenlese- und Schreibgerätes 11 des Diensteanbieters 10, mittels welchem die erforderlichen Daten in den Speicher der SIM geschrieben werden. Die entsprechenden Objektdaten kann sich der Diensteanbieter von dem Objekt-Zentrum 9 anfordern und dem SIM-Kartenlese- und Schreibgerät 11 zur Verfügung stellen.

Bezugszeichenliste

- 1 Mobilstation
- 2 ME Mobile Equipment
- 3 Teilnehmeridentifikationsmodul (SIM, USIM)
- 4 Mobilfunknetz
- 5 Luftschnittstelle
- 6 Kurznachrichten-Dienstzentrum (Short Message Service Center)
- 7 Mehrwertdienste-Knoten (VAS-Knoten)
- 8 Heimatregister (HLR)
- 9 Objekt-Zentrum
- 10 Diensteanbieter (Service Provider)
- 11 SIM-Kartenlese- und Schreibgerät (Schnittstelle)

Patentansprüche

1. Verfahren zur endgeräteunterstützten Menüführung von Mehrwertdiensten in Mobilkommunikationssystemen, wobei die Mehrwertdienste über Mehrwertdienste-Knoten zugänglich sind, dadurch gekennzeichnet, daß Objekte in die Mobilstation geladen werden und diese über die Luftschnittstelle des Mobilkommunikationssystems gesteuert, modifiziert oder zur Ausführung gebracht werden.
2. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß das Laden der Objekte in die Mobilstation über die Luftschnittstelle erfolgt.
3. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß das Laden und/oder Modifizieren der Objekte an speziellen Ladestationen beim Händler, Diensteanbieter etc. erfolgt.
4. Verfahren nach einem der Ansprüche 1-3, dadurch gekennzeichnet, daß die Objekte aus Programmen, Funktionen und/oder Daten bestehen, welche die Kommunikation zwischen Teilnehmer und Mehrwertdienste-Knoten und die Bedienung der angebotenen Mehrwertdienste unterstützen.
5. Verfahren nach einem der Ansprüche 1-4, dadurch gekennzeichnet, daß mit Hilfe der Objekte ein Menü für einen Mehrwertdienste-Knoten erzeugt und auf dem Display der Mobilstation ganz oder in Teilen angezeigt wird.
6. Verfahren nach einem der Ansprüche 1-5, dadurch gekennzeichnet, daß das Menü im Display der Mobil-

station in Abhängigkeit der im Mehrwertdienste-Knoten zuvor ausgeführten Aktionen verändert, angepaßt und/oder durch Laden eines neuen Objekts aktualisiert wird.

7. Verfahren nach einem der Ansprüche 1-6, dadurch gekennzeichnet, daß die Objekte in einem Objekt-Zentrum des Mobilkommunikationssystems gespeichert sind und von dort abgerufen und in das Mobilendgerät geladen werden.

8. Verfahren nach einem der Ansprüche 1-4, dadurch gekennzeichnet, daß die Objekte in den Speicher des Mobile Equipment (ME) der Mobilstation geladen werden.

9. Verfahren nach einem der Ansprüche 1-8, dadurch gekennzeichnet, daß die Objekte in den Speicher des Teilnehmeridentifikationsmoduls geladen werden.

10. Verfahren nach einem der Ansprüche 1-9, dadurch gekennzeichnet, daß die Übertragung, Aktivierung, Modifizierung und Aktualisierung der Objekte über Kurznachrichten oder GPRS-Dienste des Mobilkommunikationssystems erfolgt.

11. Verfahren nach einem der Ansprüche 1-10, dadurch gekennzeichnet, daß durch die Objekte Tasten oder Tastenkombinationen der Mobilstation einzelnen Funktionen der Mehrwertdienste zugeordnet werden.

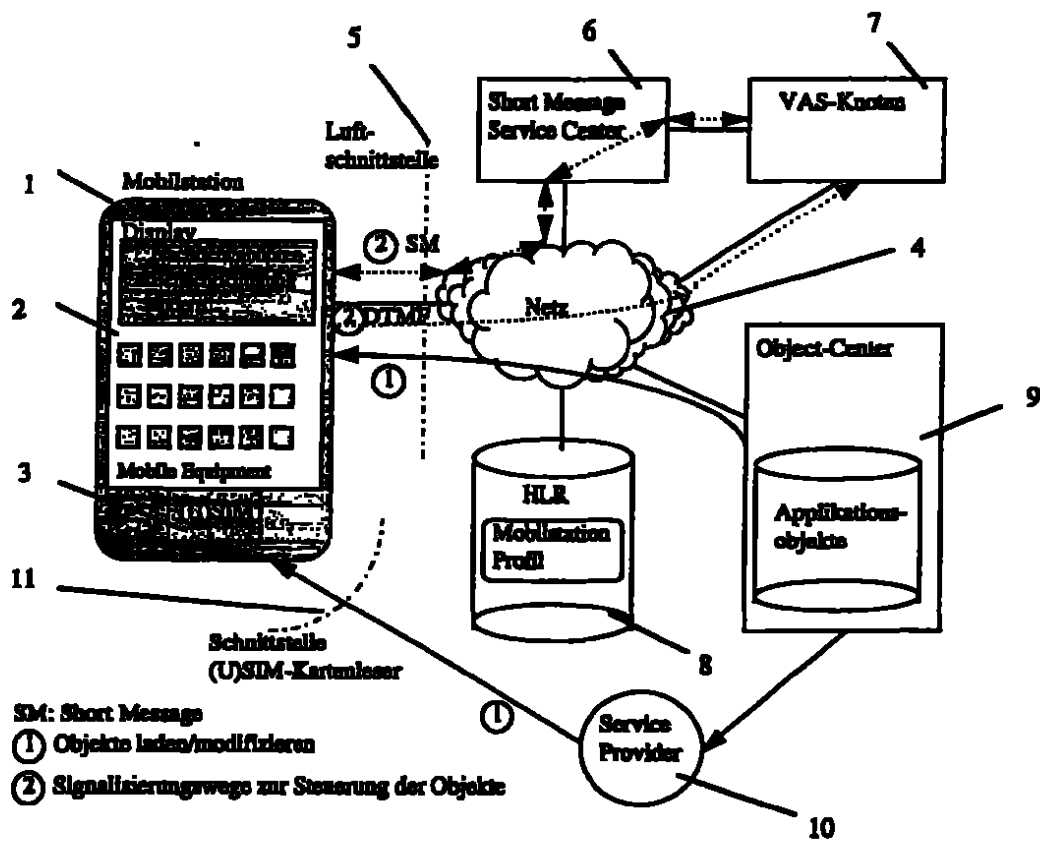
12. Verfahren nach einem der Ansprüche 1-11, dadurch gekennzeichnet, daß das Laden und/oder Modifizieren der Objekte in die Mobilstation durch ausgewählte Ereignisse veranlaßt wird.

13. Verfahren nach einem der Ansprüche 1-12, dadurch gekennzeichnet, daß das Laden und/oder Modifizieren der Objekte in die Mobilstation durch den Teilnehmer selbst veranlaßt wird.

14. Verfahren nach einem der Ansprüche 1-13, dadurch gekennzeichnet, daß die Objekte sich an die technischen Fähigkeiten der Mobilstation anpassen, indem diese die Fähigkeiten der Mobilstation prüfen und sich selbständig darauf einstellen.

15. Verfahren nach einem der Ansprüche 1-13, dadurch gekennzeichnet, daß die technischen Fähigkeiten der Mobilstationen in einer speziellen Datenbank abgelegt sind, und vor dem Laden eines Objektes in eine bestimmte Mobilstation geprüft wird, welche Fähigkeiten diese besitzt, und danach ein geeignetes Objekt ausgewählt und in die Mobilstation geladen wird.

Hierzu 1 Seite(n) Zeichnungen



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(54) Abstract Title

System-initiated method for updating a program stored in a mobile communication terminal

(57) Information about the version of a program currently stored in a mobile terminal 1 is stored in a database 52 of a download controller in a wireless communication network together, with a telephone number of the mobile terminal. When a version of the program later than that in the mobile terminal is input from an input unit 54, the download controller transmits the input program to the mobile terminal according to the telephone number via an exchange station and a mobile base station. When the mobile communication terminal receives the input program, the stored program is updated with the input program.

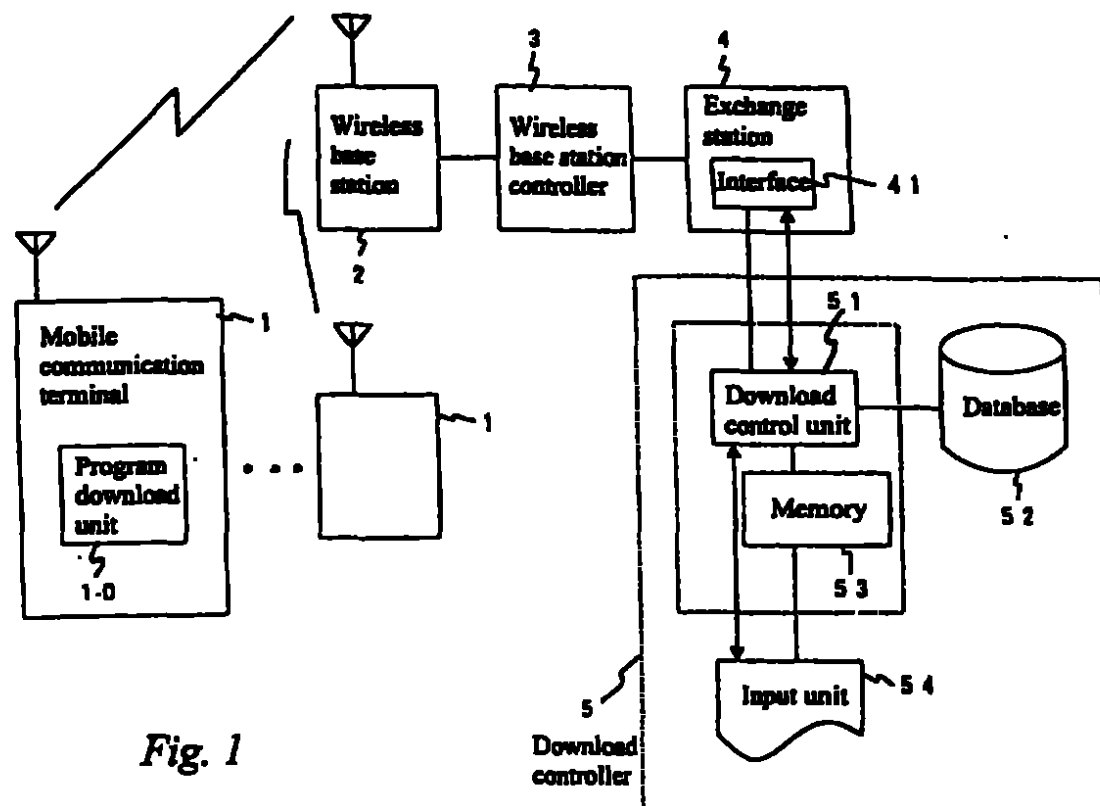


Fig. 1

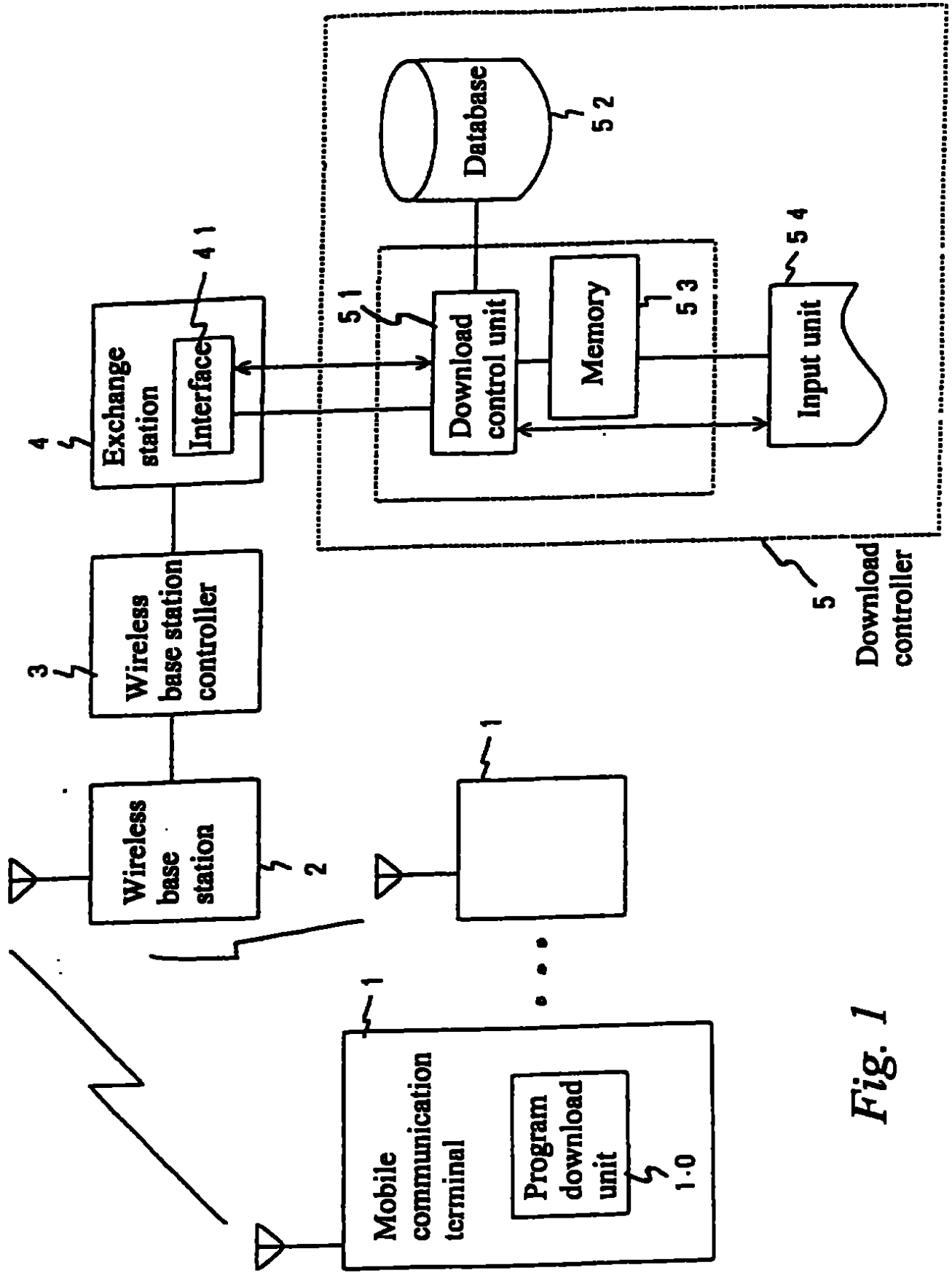


Fig. 1

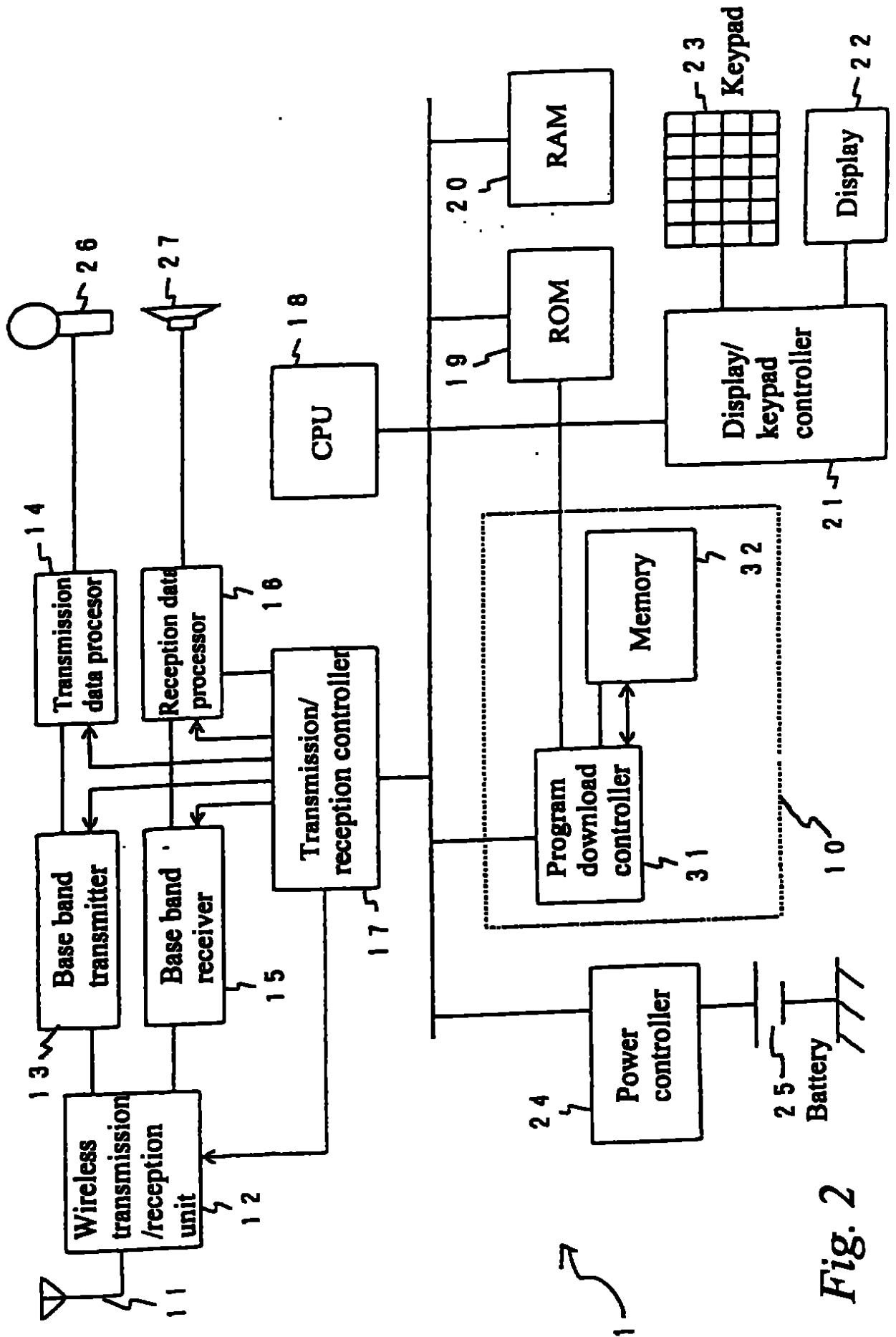


Fig. 2

Telephone Number	Product Serial Number	Model Number	Version Number	Latest Update Date
09012345678	1999010001	N 2 0 6	V 1. 0 1	1 9 9 9 / 0 4 / 0 1
09012345679	1999010002	N 2 0 6	V 1. 0 1	1 9 9 9 / 0 4 / 1 0
09012345700	1999010100	N 2 0 7	V 1. 2 0	1 9 9 9 / 0 5 / 0 1

.

Fig. 3

Fig. 4

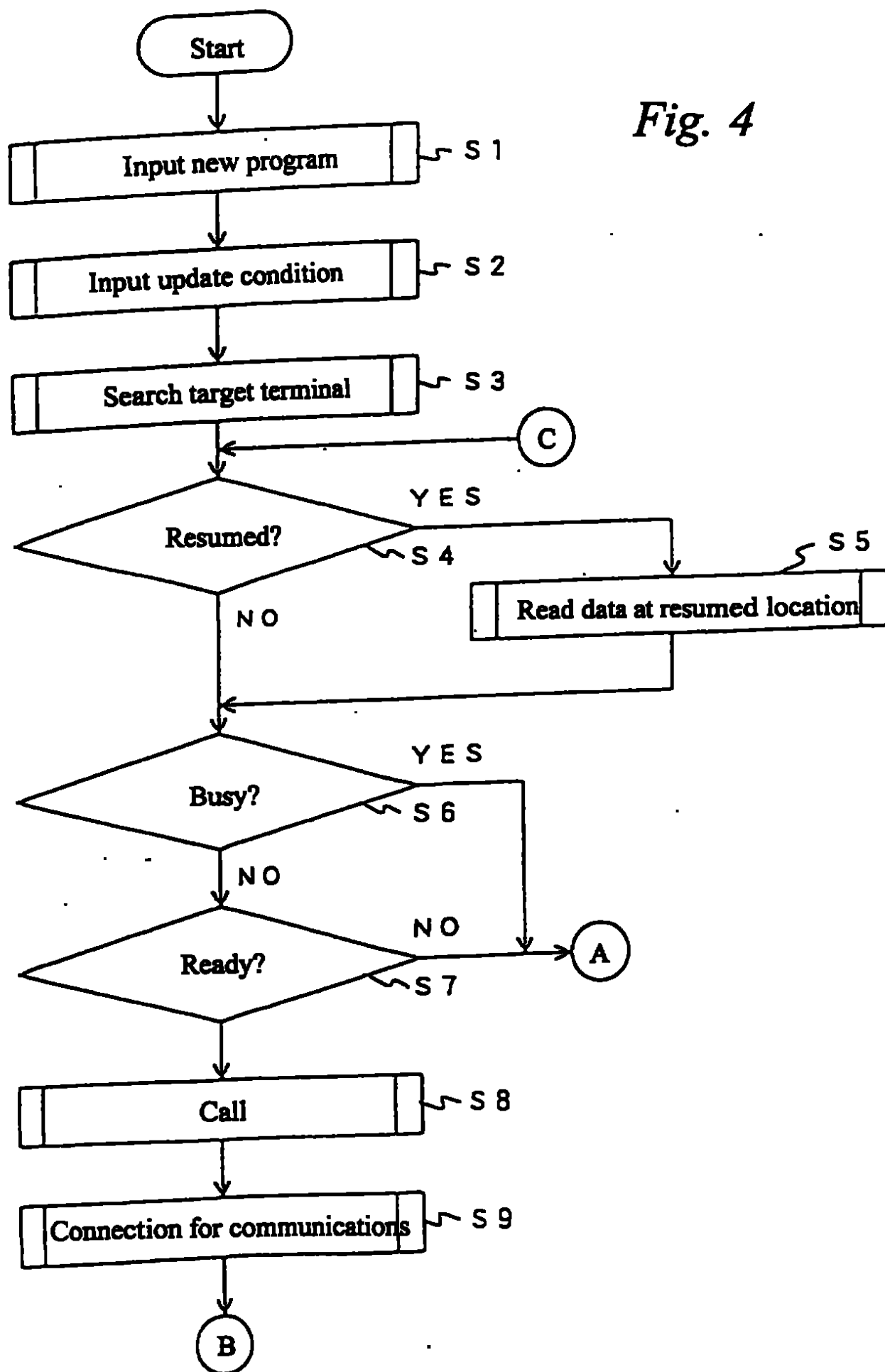
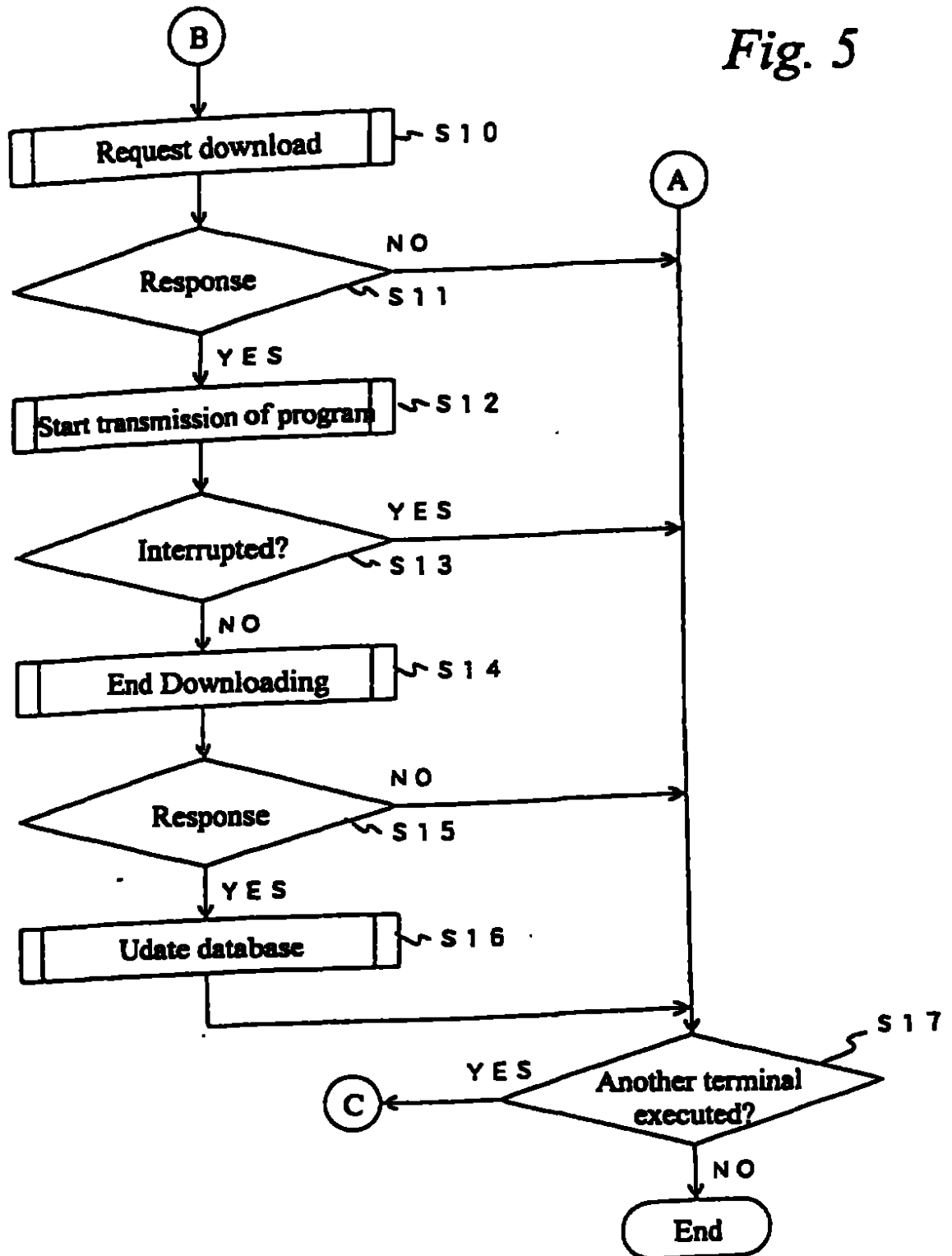


Fig. 5



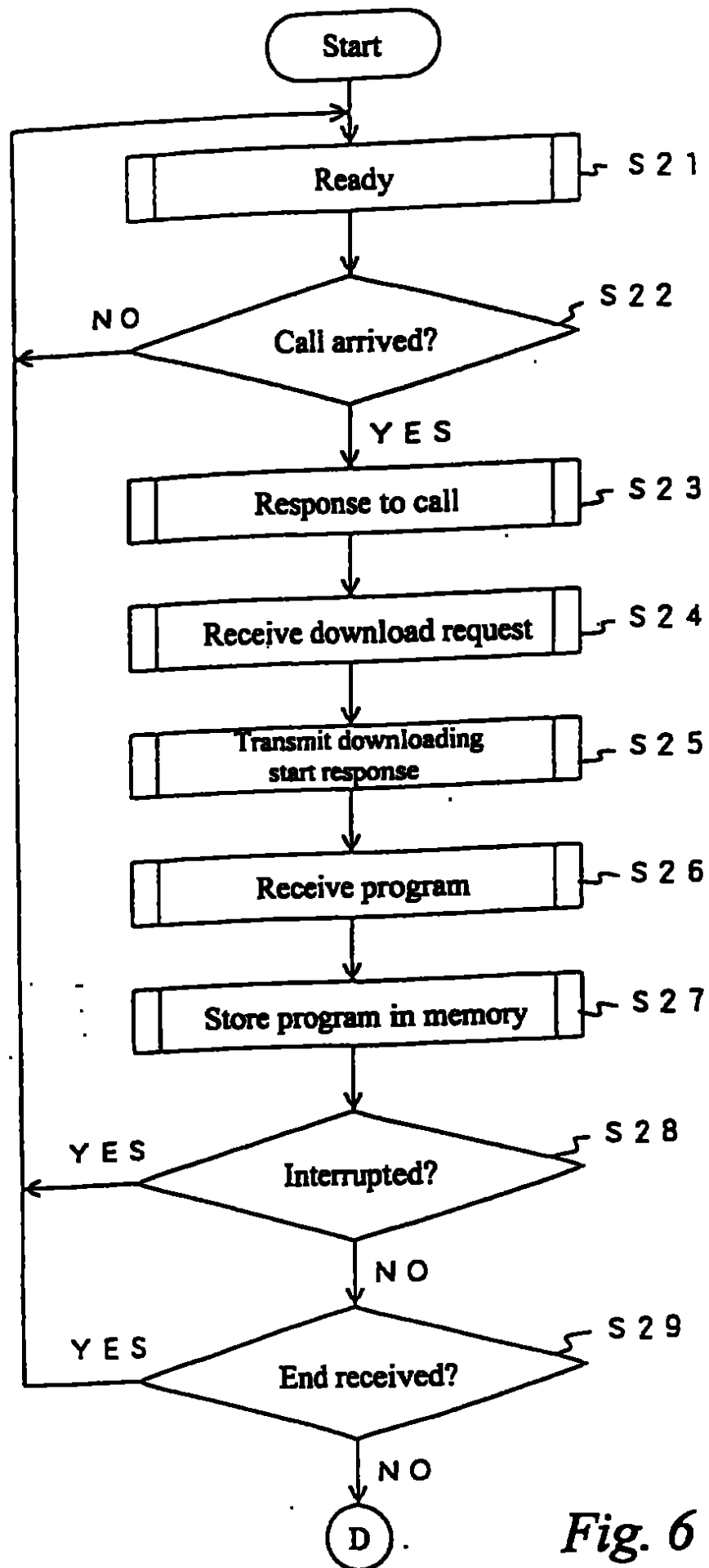
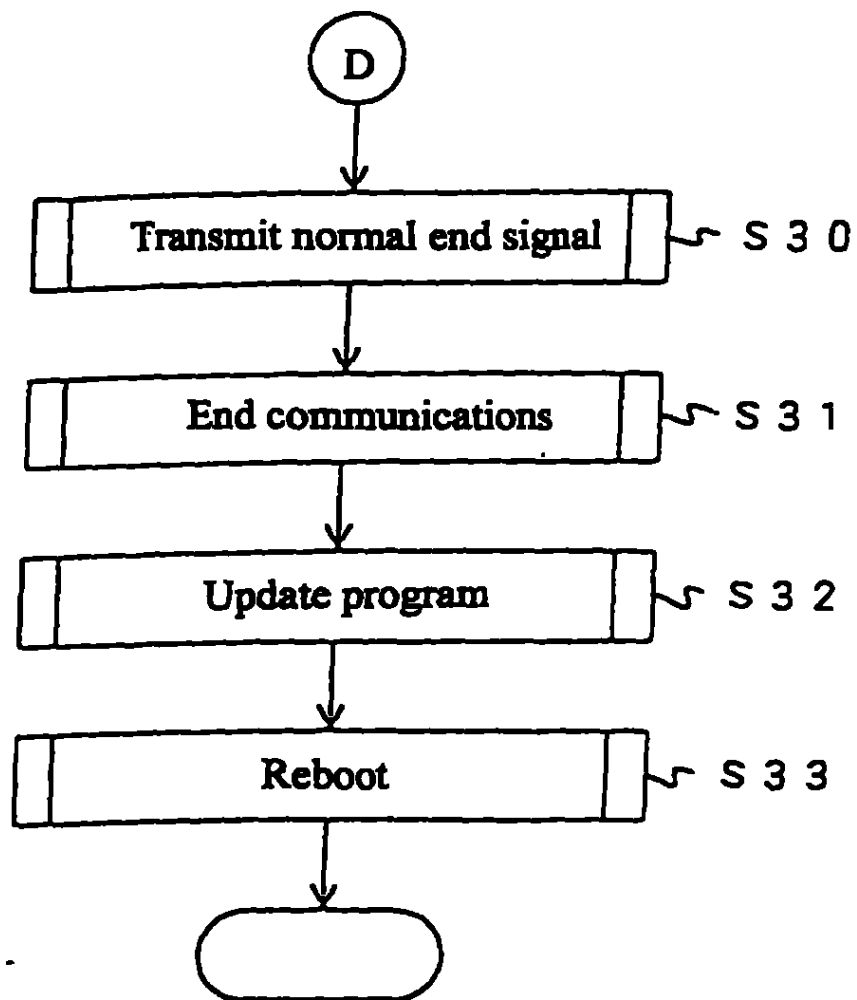
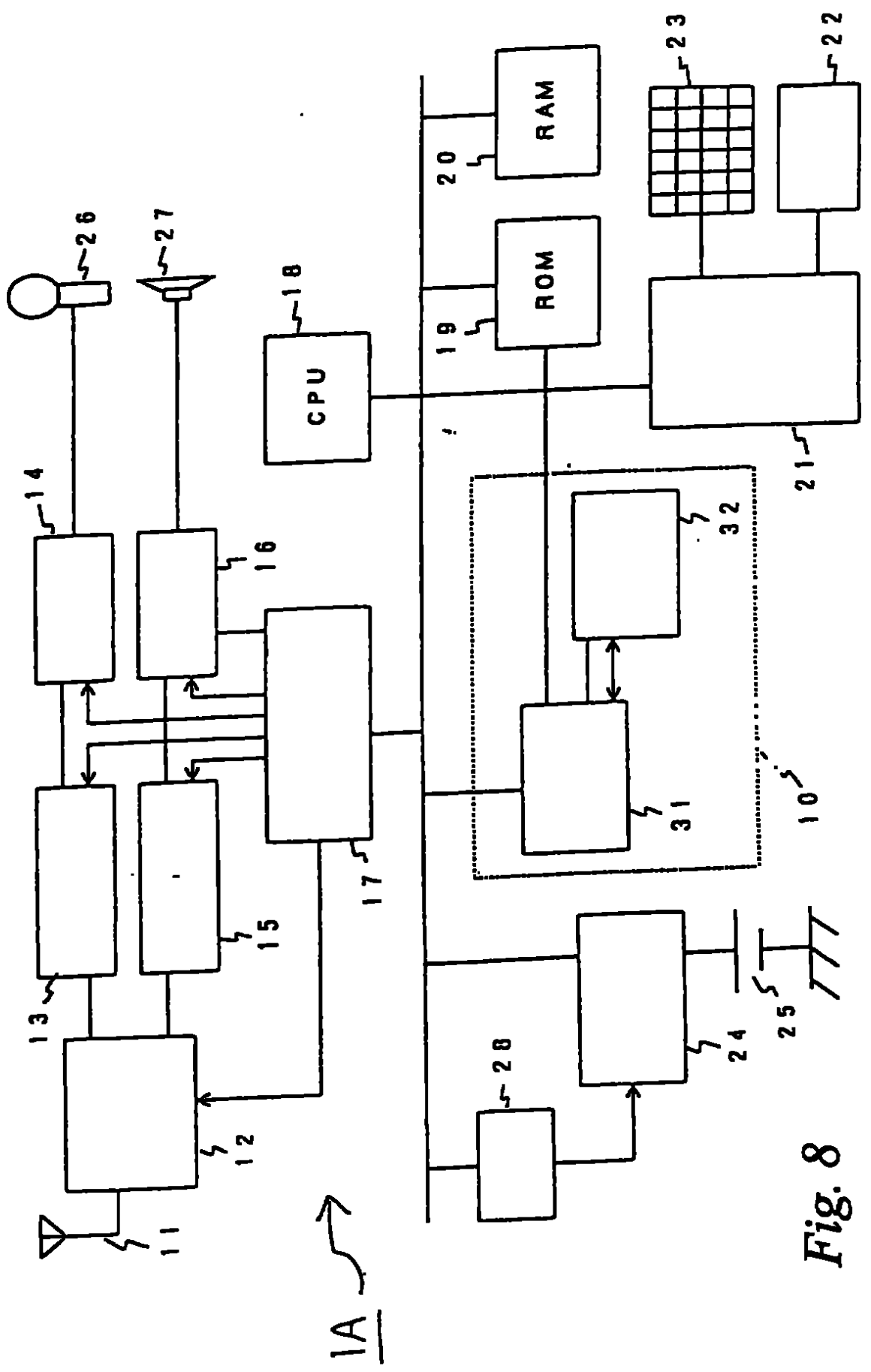
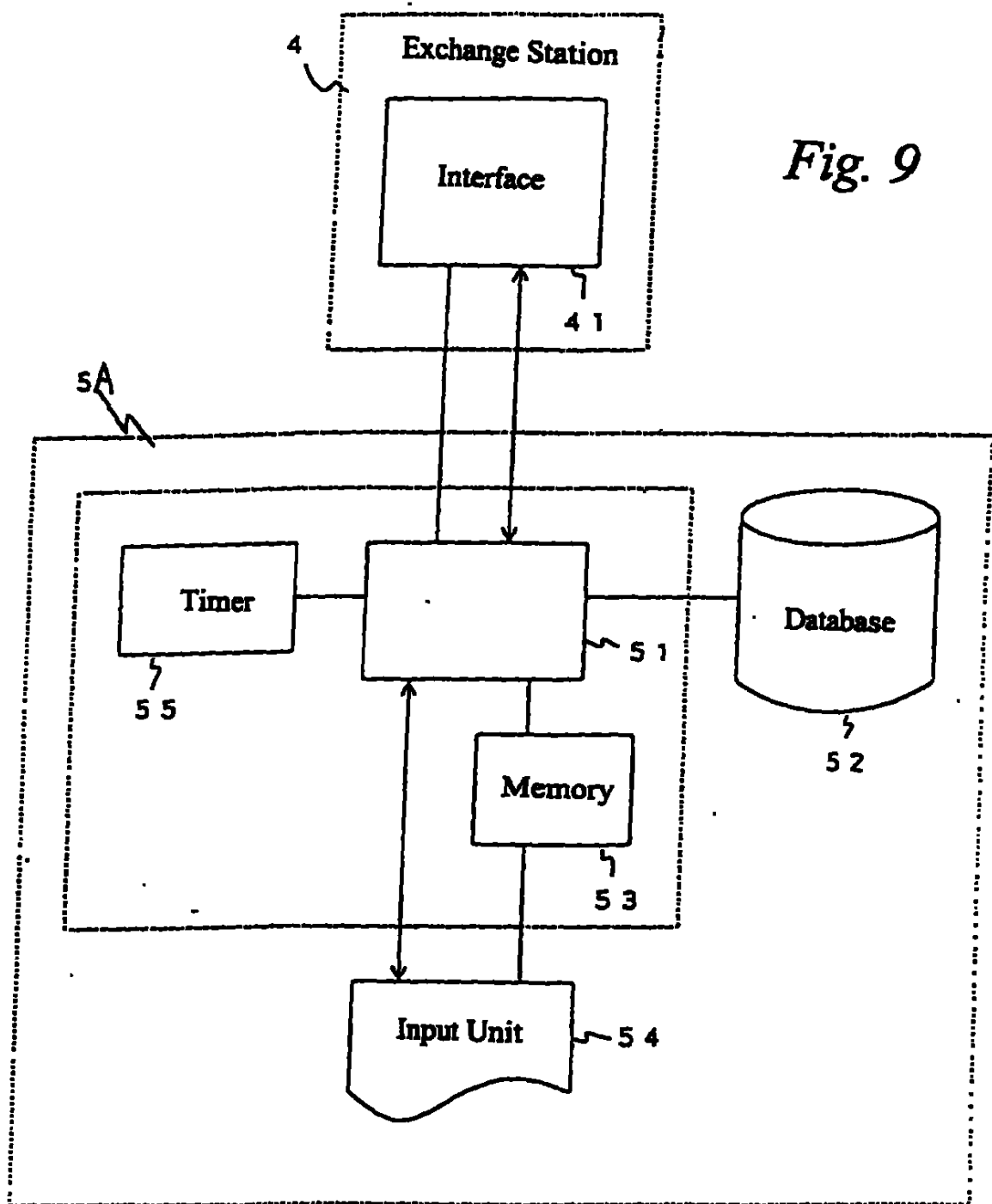


Fig. 6

*Fig. 7*





MOBILE COMMUNICATION SYSTEM FOR UPDATING A PROGRAM

STORED IN A MOBILE TERMINAL

BACKGROUND OF THE INVENTION

1. Field of the Invention

5 The present invention relates to a mobile communication system. In particular it relates to a mobile communication system, wherein a program currently stored in a mobile communication terminal can be easily updated.

10 2. Description of the Related Art

 Conventionally, when a software program that is internally stored in a mobile communication terminal, such as a mobile cellular phone, needs to be updated, the updating of the program is performed at a maintenance facility or in the plant of a carrier provider or a terminal manufacturer. The mobile communication terminal is designed so that a user thereof can not arbitrarily rewrite the program, because the mobile communication terminal can become inoperable if the user incorrectly updates the program.

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 When the program for the mobile communication terminal is updated at a maintenance facility, etc.,

a computer connected to the mobile communication terminal is used to rewrite the program, or the mobile communication terminal is disassembled so that memory modules in which the program is stored
5 can be exchanged.

Since the updating of the program stored in the mobile communication terminal has to be performed at the maintenance facility etc., once a mobile communication terminal has been marketed, it
10 is difficult to rewrite the program stored therein.

Moreover, a great deal of labor is required to perform the program updating process because of the use of the computer or the disassembling of the mobile communication terminal, whereby there is the
15 possibility that an operational failure may be induced by updating the program.

SUMMARY OF THE INVENTION

It is therefore an object of the preferred embodiments of the present invention to provide a mobile
20 communication system capable of easily updating or rewriting a program stored in a mobile communication terminal.

Another object of the preferred embodiments of the present invention is to provide a mobile communication

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system capable of updating or rewriting a program stored in a mobile communication terminal without an undue amount of labour.

5 Still another object of the preferred embodiments of the present invention is to provide a mobile communication system capable of updating or rewriting a program stored in a mobile communication terminal at predetermined times.

10 A mobile communication system according to an embodiment of the present invention comprises a mobile communication terminal having a first storage unit which stores a first program, a second storage unit storing first management information for the
15 first program, an input unit inputting a second program and second management information for the second program, and a controller coupled to the second storage unit and the input unit, controlling transmission of the second program to the mobile
20 communication terminal based on the first management information and the second management information.

Another mobile communication system, according to an embodiment of the present invention, wherein a

plurality of mobile communication terminals are coupled to an exchange station through a base station, comprises a storage unit storing first management information for each of the plurality of mobile communication terminals concerning a program currently stored in the mobile communication terminal, and second management information identifying each of the plurality of mobile communication terminals, wherein the first management information is stored associated with the second management information by each of the plurality of mobile communication terminals, an input unit inputting an input program and third management information for applying the input program; and a controller coupled to the storage unit and the input unit, searching the first management information and the second management information for a target mobile communication terminal among the plurality of mobile communication terminals based on the third management information input by said input unit, and transmitting the input program to the target mobile communication terminal according to the searching result.

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A mobile communication apparatus according to an embodiment of the present invention comprises a storage unit storing a first version of a program, a receiver receiving a second version of a program, wherein the second version of the program is a subsequent version to the first version of the program, and a controller updating the first version of the program stored in the storage unit with the second version of the program.

A method of downloading a program to a mobile communication terminal having stored therein a first program, according to an embodiment of the present invention, comprises inputting a second program, transmitting the second program to a mobile communication terminal when the version of the first program is subsequent to the version of the second program, and updating the first program stored in the mobile communication terminal with the second program.

Another method of updating a program stored in a mobile communication terminal, according to an

embodiment of the present invention, comprises storing first management information for a program currently stored in a mobile communication terminal, in association with a telephone number of the mobile communication terminal, inputting an input program and second management information for the input program, and transmitting the input program to the mobile communication terminal using the telephone number based on the first management information and the second management information.

A program download controller according to an embodiment of the present invention comprises a storage unit storing first management information for a first program stored in a terminal, an input unit inputting a second program and second management information for the second program, and a control unit controlling transmission of the second program to the terminal based on the first and second management information.

A transmission signal includes a second program, according to an embodiment of the present invention,

wherein the transmission signal is transmitted to a mobile communication terminal storing a first program, and the mobile communication terminal is determined according to a first management information for the first program and a second management information for the second program.

BRIEF DESCRIPTION OF THE DRAWINGS

Preferred features of the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

FIG. 1 is a diagram showing a first embodiment of a mobile communication system according to the present invention;

FIG. 2 is a diagram showing a first embodiment of a mobile communication terminal shown in FIG. 1;

FIG. 3 is a diagram showing data stored in a database shown in FIG. 1;

FIG. 4 is a flowchart showing a program download process at a network side according to the present invention;

FIG. 5 is a flowchart showing the program updating process at the network side in cooperation

with FIG. 4;

FIG. 6 is a flowchart showing a program download process at a mobile communication terminal side according to the present invention;

5 FIG. 7 is a flowchart showing the program updating process at the mobile communication terminal side in cooperation with FIG. 6;

FIG. 8 is a diagram showing a second embodiment of a mobile communication terminal; and

10 FIG. 9 is a diagram showing a second embodiment of a program download controller according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

15 The preferred embodiments of the present invention will be discussed by referring to the drawings.

Referring to FIG. 1, a mobile communication system has mobile communication terminals 1 such as a mobile cellular phone, a portable telephone etc.,
20 a wireless base station 2, a wireless base station controller 3, an exchange station 4, and a download controller 5.

The mobile communication terminal 1 includes a

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program download unit 10 for downloading a program,
such as a control program, an operation program and
an application program, to an internal memory (not
shown), whereby programs that have previously been
5 stored in the internal memory can be updated or
rewritten.

In the download controller 5, a download
control unit 51 controls the exchange station 4 to
download a program and output the downloaded
10 program. A database 52 is used to store a telephone
number, a serial number and model information for
each mobile communication terminal 1, and version
information for a program that is currently
installed or stored in each mobile communication
15 terminal 1. An input unit 54 inputs a program to be
downloaded and an instruction for downloading the
program to the mobile communication terminals 1. A
memory 53 stores the program input by the input unit
54.

20 The exchange station 4 includes an interface
41 with the download control unit 51 of the program
download controller 5.

Referring to FIG. 2, the mobile communication

terminal 1 includes a program download unit 10, an antenna 11, a wireless transmission/reception unit 12, a base band transmitter 13, a transmission data processor 14, a base band receiver 15, a reception data processor 16, a transmission/reception controller 17, a central processing unit (CPU) 18, a read only memory (ROM) 19, a random access memory (RAM) 20, a display/keypad controller 21, a display 22, a keypad 23, a power controller 24, a battery 25, a microphone 26, and a loudspeaker 27. The program download unit 10 includes a program download controller 31 and a memory 32 for storing a downloaded program.

Referring to FIG. 3, an arrangement of the database 52 is shown. In FIG. 3, stored in the database 52 are telephone numbers of each of the mobile communication terminals 1, e.g., "0912345678", "09012345679" and "09012345700"; product serial numbers of each of the mobile communication terminals 1, e.g., "1999010001", "1999010002" and "1999010100"; model numbers of each of the mobile communication terminals 1, e.g., "N206" and "N207", version numbers of programs

currently stored in each of the mobile communication terminals 1, e.g., "V1.01" and "V1.20"; and dates of the latest program update for each of the mobile communication terminals 1, e.g., "1999/04/01",
5 "1999/04/10" and "1999/05/01."

Next, a program download process according to the present invention will be discussed with reference to FIGS. 1-7.

When a version of a program that is currently
10 stored in the memory 32 of the mobile communication terminal 1 is upgraded, a system manager inputs an upgraded version of the program to the download controller 5 via the input unit 54. The input program is thereafter stored in the memory 53 of the
15 download controller 5 (S1). See Fig. 4.

Subsequently, the system manager employs the input unit 54 to set a condition for an application of the input program, e.g., information about the model of the mobile communication terminal 1 to
20 which the input program is applicable and/or the date when the input program was upgraded (S2). The mobile communication terminal with the currently stored program which is to be updated with the input

program will be referred to as a target mobile communication terminal 1.

5 The download controller 5 searches for and extracts the telephone number of the target mobile communication terminal 1 from the database 52 based on the condition input via the input unit 54. Then, the download controller 5 issues an initial download request, via the interface 41, to the exchange station 4 to initiate the program download process
10 for the target mobile communication terminal 1 (S3).

 The exchange station 4 manages the communication state of each mobile communication terminal 1. When the exchange station 4 receives the initial download request from the download
15 controller 5 to initiate the program download process for the target mobile communication terminal 1, the exchange station 4 performs a process to confirm that the target mobile communication terminal 1 is in a call waiting state. When it is
20 determined that the target mobile communication terminal 1 is in the call waiting state (S7), the exchange station 4 dials the telephone number of the target mobile communication terminal 1 and calls the

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target mobile communication terminal 1 via the wireless base station controller 3 and the base station 2.

When the exchange station 4 has succeeded in dialing and establishing communications with the target mobile communication terminal 1 (S8 and S9), the exchange station 4 issues a download request and transmits the input program from the download controller 5 to the target mobile communication terminal 1 (S10 to S12).

When the exchange station 4 has transmitted the input program, and receives from the target mobile communication terminal 1 a control message representing a reception end signal, the exchange station 4 completes the program download process and terminates the communications with the target mobile communication terminal 1 (S14). Then, the exchange station 4 notifies the download controller 5 that the program download process has been completed for the target mobile communication terminal 1. Upon receipt of this notification from the exchange station 4, the download controller 5 updates data for the target mobile communication terminal 1

stored in the database 52 (S15 and S16), so that a new program updating date and a new downloaded program version number are reflected in the database entries for the target mobile communication terminal 1.

When the target mobile communication terminal 1 is busy (S6), or although not busy (S6), is not in a call waiting state (S7), it is determined that the next program download process to be performed is for another target mobile communication terminal 1 is performed (S17). Similarly, when the target mobile communication terminal 1 does not respond to the download request from the exchange station 4 (S11), or when the target mobile communication terminal 1 does not transmit the reception end signal to the exchange station 4 (S15), it is determined that the next program download process to be performed is for another target mobile communication terminal 1 (S17). When the next program download process is performed, the same process shown in FIGS. 4 and 5 is performed.

Moreover, if the transmission of the input program from the exchange station 4 to the target

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mobile communication terminal 1 is interrupted
(S13), information regarding the point in the input
program where the interruption occurred is stored.
Then, this information regarding the point of
5 interruption is read out to restart the program
download process from the point of interruption (S4
and S5) and the program download process continues.
Such an interruption may be caused when the target
mobile communication terminal 1 starts speech
10 communication.

According to this embodiment, in the case
where a program download process is performed for a
plurality of target mobile communication terminals
1, when the program download process to one target
15 mobile communication terminal 1 is interrupted, the
program download process to the other target
communication terminals 1 is continued. The
interrupted program download process for the target
communication terminal 1 is restarted from the point
20 of interruption after completion of the program
download process for the other mobile communication
terminals 1. Alternatively, the next program
download process for another target communication

terminal 1 is not performed until a program download process for the current target communication terminal 1 has succeeded even if the program download process for the current target communication terminal 1 is interrupted.

Next, a program download process at the mobile communication terminal 1 will be discussed with reference to the drawings, mainly FIGS. 2, 6 and 7.

Upon the receipt of the call and the download request from the exchange station 4, the target mobile communication terminal 1 notifies the wireless base station 2 that the target mobile communication terminal 1 has received the download request and enters a program download mode (S21-25).

The target mobile communication terminal 1 then receives the input program via the wireless transmission/reception unit 12, the base band receiver 15 and the reception data processor 16, and sequentially stores the input program in the memory 32 (S26-27). If the program download process is interrupted during its reception, the target mobile communication terminal 1 returns to be in a call waiting state (S28). In this case, since the

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informati n regarding the point in the input program where the interruption occurred is stored at the exchange station 4 or the download controller 5, the program download process restarts based on this
5 information. On the target mobile communication terminal 1, the same processes from S22 to S27 are repeated until the program download process succeeds.

When the target mobile communication terminal
10 1 has successfully completed reception of the input program (S29), the target mobile communicati n terminal 1 notifies the wireless base station 2 of the completion and terminates the communication connection (S30 and S31).

15 . Following this, the target mobile communication terminal 1 uses the program download controller 31 to erase a program that is currently stored in the ROM 19, and then writes the downloaded input program in the ROM 19. An alterable memory
20 device such as an electrically erasable programmable read-only memory (EEPROM) can be used as the ROM 19. The updating of the program is thus terminated (S32 and S33).

As is described above, according to this embodiment, in an exchange network side or a wireless base station side, an instruction to update or rewrite a program stored in a mobile communication terminal is issued based on the product model number, the serial number and/or the program version information for each mobile communication terminal. Therefore, a user need not carry the mobile communication terminal to a retailer or a maintenance service place to have the program rewritten and the user is always assured that the latest program will be automatically and timely provided.

In this case, since the program is downloaded based on information stored in the database 52, sufficient security can be maintained.

Furthermore, programs for the mobile communication terminal 1 can be updated without users or a maintenance person having to touch the terminal 1 itself. Therefore, the occurrence of failure due to mistakes made during program rewriting can be prevented, and the cost of training program rewrite staff members, and other maintenance

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expenses, can be reduced. In addition, programs can be downloaded efficiently by utilizing time periods, such as the late night hours, when network traffic is light.

5 As a result, according to this embodiment, since programs can be easily rewritten without requiring maintenance facilities or using carrier providers' or terminal manufacturers' plants, the labor effort required for updating programs can be
10 eliminated, and the possibility of inducing operational failures by updating a program can be prevented.

 A second embodiment of the present invention will be discussed with reference to FIGS. 8 and 9.
15 In FIG. 8, a mobile communication terminal 1A is the same as the mobile communication terminal 1 shown in FIG. 2, except for a timer 28. The same reference numerals are also used to denote corresponding components. Furthermore, the operations performed
20 by the components of this embodiment, are substantially the same as those performed by corresponding components of the mobile communication terminal 1 shown in FIG. 2.

Also, a download controller 5A of this embodiment shown in FIG. 9, is substantially the same as that of the download controller 5 shown in FIG. 1, except for a timer 55. The same reference
5 numerals are also used to denote corresponding components. Furthermore, the operations performed by the components of this embodiment are substantially the same as those performed by corresponding components of the download controller
10 5 shown in FIG. 1.

In this embodiment, a program download time is the time when a program download process is performed. The program download time is managed or controlled by the timers 28 and 55, and the program
15 download process, for example, is automatically initiated at a predetermined time specified by the timers 28 and 55.

On the terminal side, a user or a carrier provider sets a predetermined automatic download
20 start time. Then, when the timer 28 reaches the predetermined automatic download start time, if the target mobile communication terminal 1A is off, the target mobile communication terminal 1A

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automatically powers itself on and then waits for arrival of a downloading start instruction from the base station.

On the base station side, the predetermined
5 automatic download start time that is set for each mobile communication terminal 1A is stored. The program download process for the target mobile communication terminal 1A begins when the predetermined time is reached.

10 This embodiment can be easily implemented merely by adding the timers 28 and 55 to the download controller 5 and the mobile communication terminal 1 as discussed in the first embodiment.

When midnight, for example, is set as the
15 predetermined automatic download start time for a mobile communication terminal 1A, the program download process is performed at a time period during which line traffic is comparatively light, so that the program download process is prevented from
20 overwhelming the transmission capabilities of a communication line.

Furthermore, when the predetermined time is set for a period during which the user normally does

not frequently employ the mobile communication terminal,
the program can be updated while, for example, the user
is sleeping. As a result, there is less of a chance
that downloading will interfere with the user's employ-
ment of the mobile communication terminal.

The invention may be embodied in other specific
forms without departing from the essential characteris-
tics thereof. The embodiments of the present invention
described here are therefore to be considered in all
respects as illustrative and not restrictive, the scope
of the invention being indicated by the appended claims
rather than by the foregoing description, and all
changes which come within the meaning and range of
equivalency of the claims are therefore intended to be
embraced therein.

Each feature disclosed in this specification
(which term includes the claims) and/or shown in the
drawings may be incorporated in the invention independ-
ently of other disclosed and/or illustrated features.

The text of the abstract filed herewith is
repeated here as part of the specification.

Version information for a program currently
stored in a mobile communication terminal is stored in
a database of a download controller, associated with a

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telephone number of the mobile communication terminal.
When a new version of the program is input from an input
unit, the download controller transmits the input program to the mobile communication terminal according to
5 the telephone number via a mobile base station and an
exchange station. When the mobile communication terminal receives the input program, the stored program is
updated with the input program.

CLAIMS

What is claimed is:

1 1. A mobile communication system,
2 comprising:
3 a mobile communication terminal having a first
4 storage unit which stores a first program;
5 a second storage unit storing first management
6 information for the first program;
7 an input unit inputting a second program and
8 second management information for the second
9 program; and
10 a controller coupled to said second storage unit and
11 said input unit, controlling transmission of the
12 second program to said mobile communication terminal
13 based on the first and second management
14 information.

1 2. The mobile communication system as
2 claimed in claim 1, wherein said mobile
3 communication terminal comprises:
4 a receiver receiving the second program; and
5 a program download controller updating the

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6 first program stored in the first storage unit of
7 the mobile communication terminal with the second
8 program.

1 3. The mobile communication system as
2 claimed in claim 1, wherein said second storage unit
3 stores a telephone number of said mobile
4 communication terminal, and said controller calls
5 said mobile communication terminal based on the
6 telephone number stored in said second storage unit
7 to transmit the second program to the mobile
8 communication terminal.

1 4. The mobile communication system as
2 claimed in claim 1, wherein the first management
3 information comprises product information of said
4 mobile communication terminal.

1 5. The mobile communication system as
2 claimed in claim 4, wherein the product information
3 of said mobile communication terminal includes at
4 least one of a model number and a product serial
5 number.

1 6. The mobile communication system as
2 claimed in claim 1, wherein said controller updates
3 the first management information stored in said
4 second storage unit with the second management
5 information when transmission of the second program
6 has succeeded.

1 7. The mobile communication system as
2 claimed in claim 1, wherein the first management
3 information comprises date information indicative of
4 the date when the first program was stored in the
5 first storage unit of said mobile communication
6 terminal.

1 8. The mobile communication system as
2 claimed in claim 7, wherein said controller updates
3 the date information into the date when transmission
4 of the second program has succeeded.

1 9. The mobile communication system as
2 claimed in claim 1, further comprising:
3 a base station coupled to said controller,

4 transmitting the second program to said mobile
5 communication terminal through a radio channel.

1 10. The mobile communication system as
2 claimed in claim 1, wherein the first management
3 information includes first version information f r
4 the first program and the second management
5 information includes second version information for
6 the second program, wherein the first and second
7 version information identify the version of the
8 first and second programs, respectively.

1 11. The mobile communication system as
2 claimed in claim 10, wherein said controller
3 controls the transmission of the second program t
4 said mobile communication terminal when the version
5 information of the first and second programs
6 indicates the second program is a subsequent version
7 of the first program.

1 12. The mobile communication system as
2 claimed in claim 1, further comprising a timer
3 determining when a predetermined time occurs,

4 wherein

5 said controller transmits the second program
6 at the predetermined time determined by said timer.

1 13. A method of downloading a program to a
2 mobile communication terminal having stored therein
3 a first program, the method comprising:

4 inputting a second program;

5 transmitting the second program to the mobile
6 communication terminal when the version of the
7 second program is subsequent to the version of the
8 first program; and

9 updating the first program stored in the
10 mobile communication terminal with the second
11 program.

1 14. The method as claimed in claim 13,
2 further comprising setting a predetermined time,
3 wherein

4 the second program is transmitted to the
5 mobile communication terminal at the predetermined
6 time.

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1 15. The method as claimed in claim 14,
2 wherein transmission of the second program is
3 interrupted, the method further comprising
4 restarting transmitting the second program from the
5 point in the second program where the interrupti n
6 occurred.

1 16. A mobile communication system, wherein a
2 plurality of mobile communication terminals are
3 coupled to an exchange station through a base
4 station, the system comprising:
5 a storage unit storing first management
6 information for each of the plurality of mobile
7 communication terminals, the first management
8 information concerning a stored program currently
9 residing in the mobile communication terminal, and
10 second management information identifying each of
11 the plurality of mobile communication terminals,
12 wherein the first management information is stored
13 associated with the second management information by
14 each of the plurality of mobile communication
15 terminals;
16 an input unit inputting an input program and a

17 third management information concerning the input
18 program; and
19 a controller coupled to said storage unit and
20 said input unit, searching the first and second
21 management information for a target mobile
22 communication terminal among the plurality of mobile
23 communication terminals based on the third
24 management information input by said input unit, and
25 transmitting the input program to the target mobile
26 communication terminal according to the search
27 result.

1 17. The mobile communication system as
2 claimed in claim 16, wherein the target mobile
3 communication terminal updates the stored program
4 with the input program.

1 18. The mobile communication system as
2 claimed in claim 17, wherein said controller updates
3 the first information for the target mobile
4 communication terminal when the target mobile
5 communication terminal has succeeded updating the
6 stored program with the input program.

1 19. The mobile communication system as
2 claimed in claim 16, wherein the first management
3 information includes first version information for
4 the stored program and the third management
5 information includes second version information for
6 the input program, wherein the first and second
7 version information identify the version of the
8 stored and input programs, respectively.

1 20. A method of updating a program stored in
2 a mobile communication terminal, comprising:
3 storing first management information for a
4 program currently stored in a mobile communication
5 terminal, in association with a telephone number of
6 the mobile communication terminal;
7 inputting an input program and second
8 management information for the input program; and
9 transmitting the input program to the mobile
10 communication terminal using the telephone number
11 based on the first management information and the
12 second management information.

1 21. The method as claimed in claim 20,
2 further comprising updating the program with the
3 input program.

1 22. The method as claimed in claim 21,
2 updating the first information for the program when
3 the program is updated with the input program.

1 23. The method as claimed in claim 20,
2 wherein the first management information includes
3 information identifying the version of the program
4 and the second management information includes
5 information identifying the version of the input
6 program.

1 24. The method as claimed in claim 20,
2 further comprising setting a predetermined time,
3 wherein
4 the transmitting of the input program to the
5 mobile communication terminal is controlled to occur
6 at the predetermined time.

1 25. The method as claimed in claim 20,
2 wherein the input program is transmitted to the
3 mobile communication terminal through a radio
4 channel.

1 26. A mobile communication apparatus,
2 comprising:
3 a storage unit storing a first version of a
4 program;
5 a receiver receiving a second version of a
6 program, wherein the second version of the program
7 is a subsequent version to the first version of the
8 program; and
9 a controller updating the first version of the
10 program stored in said storage unit with the second
11 version of the program.

1 27. The mobile communication apparatus as
2 claimed in claim 26, further comprising a
3 transmitter sending a notification to a base station
4 that said controller has completed updating the
5 first version of the program with the second version
6 of the program.

1 28. The mobile communication apparatus as
2 claimed in claim 26, further comprising a timer
3 generating a timing signal at a predetermined time,
4 wherein in response to the timing signal said
5 controller renders said receiver capable of
6 receiving the second version of the program.

1 29. A program download controller,
2 comprising:
3 a storage unit storing first management
4 information for a first program which is stored in a
5 terminal;
6 an input unit inputting a second program and
7 second management information for the second
8 program; and
9 a control unit controlling transmission of the
10 second program to the terminal based on the first
11 and second management information.

1 30. The program download controller as
2 claimed in claim 29, wherein the first information
3 identifies the version of the first program and the

4 sec nd information identifies the version of the
5 second program, and said controller controls the
6 transmission of the second program when the version
7 of the second program is subsequent to the version
8 of the first program.

1 31. A computer program product, comprising:
2 a computer readable medium bearing computer-
3 readable instructions for causing one or more
4 processors of a mobile terminal having stored
5 therein a first version of a program, to perform:
6 receiving from a base station, and over a
7 communications network, a second version of the
8 program; and
9 updating the first version of the program with
10 the second version of the program thereby generating
11 an updated program; and
12 storing the updated program in the mobile
13 terminal.

1 32. The computer program product as claimed
2 in claim 31, wherein the computer-readable
3 instructions further cause the processors of the

4 mobile terminal to perform:
5 generating a timing signal at a predetermined
6 time and performing said receiving in response to
7 the timing signal; and
8 sending a notification to the base station
9 indicating the first version of the program was
10 successfully updated with the second version of the
11 program.

1 33. A computer program product, comprising:
2 a computer readable medium bearing computer-
3 readable instructions for causing one or more
4 processors of a program download controller having a
5 storage unit, the storage unit having first
6 management information for a first program stored in
7 a mobile terminal stored in association with
8 information identifying the mobile terminal, to
9 perform:

10 accessing a second program and second
11 management information for the second program;

12 determining based on the first and second
13 management information if the first program is to be
14 updated with the second program;

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15 transmitting over a communication network the
16 second program to the mobile terminal if it is
17 determined that the first program is to be updated
18 with the second program; and
19 storing in the storage unit the second
20 management information in association with the
21 information identifying the mobile terminal.

1 34. The computer program product as claimed
2 in claim 33, wherein the computer-readable
3 instructions further cause the processors of the
4 program download controller to perform:
5 generating a timing signal at a predetermined
6 time and performing said transmitting in response to
7 the timing signal; and
8 receiving a notification from the mobile
9 terminal indicating the first version of the program
10 was successfully updated with the second version of
11 the program.

1 35. A mobile communication system substantially
2 as herein described with reference to and as shown in
3 the accompanying drawings.

1 36. A method of downloading a program to a
2 mobile communication terminal, the method being sub-
3 stantially as herein described with reference to and as
4 shown in the accompanying drawings.

1 37. A method of updating a program stored in a
2 mobile communication terminal, the method being sub-
3 stantially as herein described with reference to and as
4 shown in the accompanying drawings.

1 38. A mobile communication apparatus sub-
2 stantially as herein described with reference to and as
3 shown in the accompanying drawings.

1 39. A program download controller substantially
2 as herein described with reference to and as shown in
3 the accompanying drawings.

1 40. A computer program product substantially as
2 herein described with reference to and as shown in the
3 accompanying drawings.



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Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	EP 0905991 A2 (NEC) see whole document	13
A	WO 98/41044 A2 (NORTHERN) see whole document	13
A	WO 98/38820 A2 (ERICSSON) see whole document	13
X	WO 97/16938 A1 (NOKIA) see passages referred to in s.18 report	1-5, 9-11, 13, 20-23, 29, 30 and 33

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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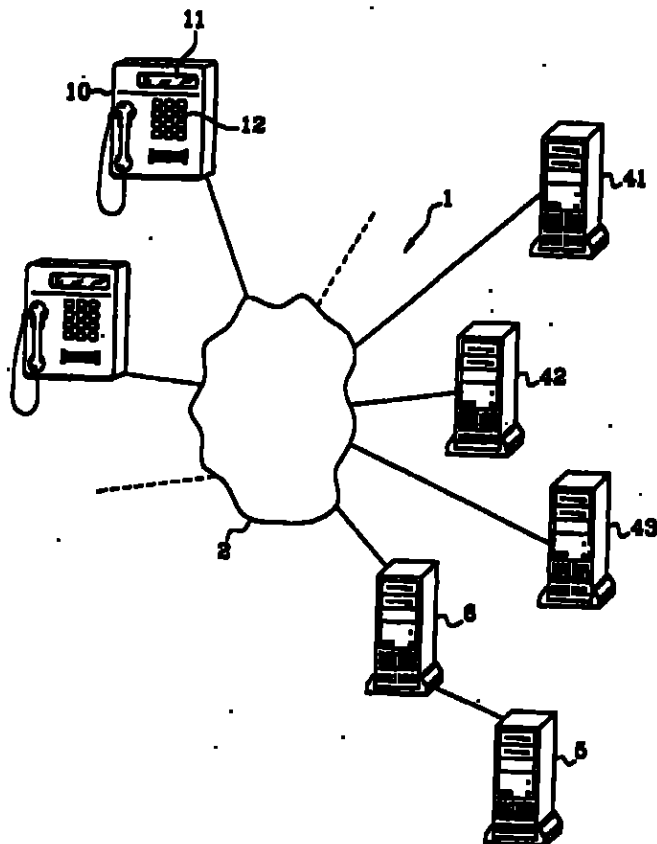
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(54) Título: "PROCEDIMIENTO PARA TRANSFERIR DATOS PERSONALIZADOS
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(57) Extracto: Procedimiento para transferir datos
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desde un computador central a distancia (5),
pudiendo el aparato de servicio (10) comunicar
con dicho computador central (5) a través de
medios de transmisión (2,41,42,43,6) apropiados,
que se caracteriza en que la transferencia de dichos
datos personalizados está mandada por dicho
computador central a la recepción de un
identificante correspondiente, comunicado por
dicho aparato de servicio (10) al computador a
distancia (5).

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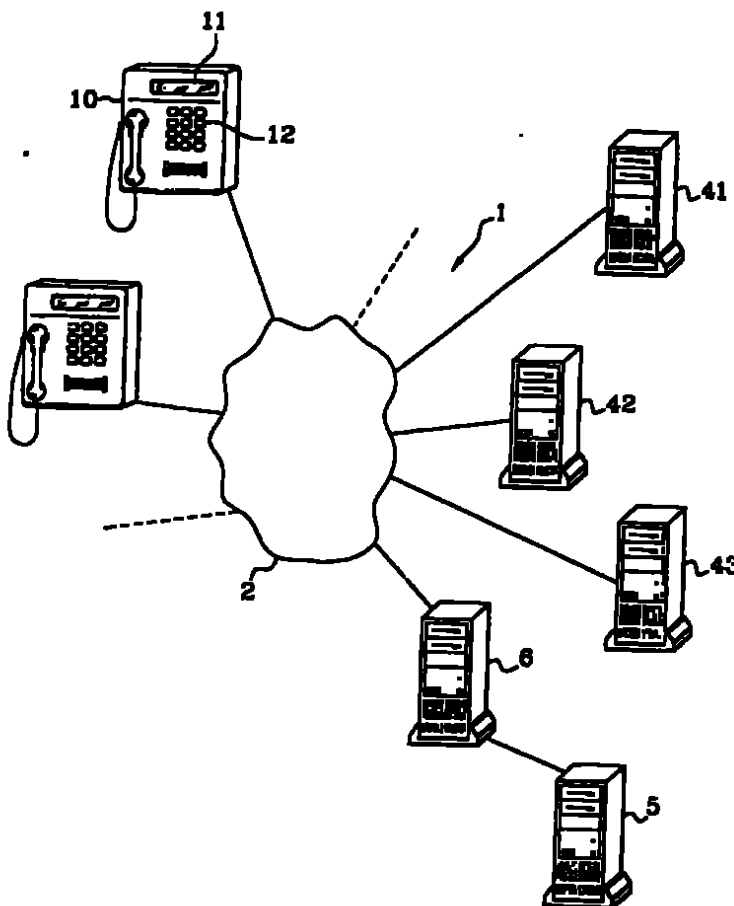
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(54) Title: METHOD OF TRANSFERRING CUSTOMISED DATA IN A SERVICE APPARATUS

(54) Titre : PROCÉDE POUR TRANSFERER DES DONNEES PERSONNALISEES DANS UN APPAREIL DE SERVICE



(57) Abstract: The invention relates to a method of transferring customised data in a service apparatus (10) from a central remote computer (5). Said service apparatus (10) can communicate with the central computer (5) via suitable transmission means (2,41,42,43,6). The inventive method is characterised in that the transfer of said customised data is ordered by the central computer upon receipt of a corresponding identifier that is communicated by the service apparatus (10) to the remote computer (5).

(57) Abrégé : Procédé pour transférer des données personnalisées dans un appareil de service (10) depuis un ordinateur central à distance (5), l'appareil de service (10) étant apte à communiquer avec ledit ordinateur central (5) par l'intermédiaire de moyens de transmission (2,41,42,43,6) appropriés, caractérisé en ce que le transfert desdites données personnalisées est commandé par ledit ordinateur central à la réception d'un identifiant correspondant communiqué par ledit appareil de service (10) à l'ordinateur à distance (5).

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**PROCEDIMIENTO PARA TRANSFERIR DATOS PERSONALIZADOS EN UN
APARATO DE SERVICIO**

RESUMEN – OBJETO Y FINALIDAD DE LA INVENCION

Procedimiento para transferir datos personalizados en un aparato de servicio (10) desde un computador central a distancia (5), pudiendo el aparato de servicio (10) comunicar con dicho computador central (5) a través de medios de transmisión (2,41,42,43,6) apropiados, que se caracteriza en que la transferencia de dichos datos personalizados está mandada por dicho computador central a la recepción de un identificador correspondiente, comunicado por dicho aparato de servicio (10) al computador a distancia (5).

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PROCEDIMIENTO PARA TRANSFERIR DATOS PERSONALIZADOS EN UN APARATO DE SERVICIO

La presente invención se relaciona con un procedimiento de transferencia de datos personalizados en un aparato de servicio a través de un servidor de gestión a distancia.

Más específicamente, la presente invención se refiere a un procedimiento para transferir archivos personalizados en un teléfono de una red de telefonía pública. Más específicamente, estos archivos están destinados a hacer funcionar módulos propietarios, tal y como un módulo seguro para tarjetas de pago (SAM), un microprocesador que equipa un validador para monedas o también cualquier otro órgano presente en un teléfono público y que requiere datos específicos para funcionar.

Una red de telefonía pública comprende teléfonos públicos distribuidos en un territorio dado. Los teléfonos públicos están conectados con una red de comunicación, constituida por ejemplo por una red telefónica conmutada PSTN (acrónimo anglosajón para Public Switching Telephone Network), con el cual comunican por medio de un MODEM. Por supuesto, esta red podría ser de otro tipo (ISDN, GSM, Internet, ...).

En general, una red de telefonía pública comprende un (o varios) computador central o servidor de gestión, a continuación llamado servidor PMS (acrónimo del término anglosajón "Payphone Management System"), que permite al operador de la red supervisar los diferentes teléfonos de su red. públicos repartidos en un territorio dado de la red. La función de este PMS, el cual está conectado con la red telefónica conmutada, consiste en intercambiar datos con el parque de teléfonos públicos.

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Los teléfonos públicos envían periódicamente al PMS un informe de actividad, el cual precisa el número y monto de las transacciones, etc. También, comunican bajo la forma de alarmas, el eventual suceso de algún acontecimiento (falla, acto de vandalismo, etc...) que requiere la intervención de un agente de mantenimiento.

En cuanto al servidor PMS, su función consiste en transferir a los teléfonos públicos archivos, tablas de tarifas o también actualizaciones de programas que hacen funcionar los microprocesadores de los teléfonos, actualizaciones que mejoran los programas ya instalados, o también que introducen nuevas prestaciones para los usuarios.

Hoy en día, las transferencias de archivos entre los teléfonos 10 y el PMS son operaciones rígidas, pesadas en tiempo y por consiguiente costosas. Así, un teléfono público que descarga archivos debe ser cambiado en modo fuera de servicio y no puede ser utilizado por usuarios durante todo el tiempo de una operación la cual puede durar varias horas teniendo en cuenta el tamaño actual de los programas y datos para descargar.

Además, cada nueva campaña de descarga necesita una programación compleja del PMS que toma en cuenta la naturaleza y tamaño de los archivos para transferir.

Por otra parte, si durante mucho tiempo los teléfonos públicos eran todos idénticos en cuanto a su programación, de manera que el PMS se limitaba a descargar los mismos datos hacia todos los teléfonos, hoy en día, esa situación tiende a evolucionar. Es así como los teléfonos públicos integran cada vez más módulos vinculados que necesitan programaciones personalizadas. A este título, se puede citar los módulos SAM (Secure Acces Module).

Estos módulos consisten en tarjetas electrónicas miniaturas que cumplen con el estándar GSM 11.11. Estas tarjetas electrónicas SAM tienen un contactor entradas/salidas (I/O pad) que responde a la norma ISO (Cnet) de las tarjetas electrónicas. La utilización de tales tarjetas SAM en los teléfonos tiene por objeto la ejecución de las tareas específicas tales y como las operaciones de identificación, verificación de clave, gestión de aplicación financiera de monedero electrónico que implican algoritmos y datos confidenciales que los organismos gestores propietarios no desean difundir y por consiguiente incorporar directamente al circuito electrónico del teléfono.

Por consiguiente, estas tarjetas SAM contienen informaciones confidenciales y son entregadas por los operadores (bancarios, etc.) a los operadores de las redes de telefonía pública o a los fabricantes de teléfonos públicos, debiendo estos últimos introducirlas en los teléfonos para poder ejecutar sobre estos aparatos aplicaciones específicas tales y como el débito/crédito de un monedero electrónico. Cada tarjeta SAM es distinta y contiene especialmente códigos secretos que le son específicos.

También se puede mencionar los dispositivos de validación de monedas, los cuales incluyen datos de programación específicos definidos por los constructores según características de fabricación de cada aparato.

Los calculadores de estos diferentes módulos pueden necesitar recibir nuevos datos de programación, tales como nuevas cartografías de parámetros o actualizaciones de programas, como por ejemplo aquellas necesarias para el paso a la moneda única europea Euro de validadores inicialmente programados en una moneda diferente.

Generalmente, estos nuevos datos para transferir a los módulos de los teléfonos son individualizados y, por consiguiente, deben ser cargados teléfono por teléfono, lo cual representa un trabajo muy dispendioso ya que el parque de aparatos es importante. Por otra parte, generalmente, estos datos son elaborados por los fabricantes de los módulos y las transferencias sucesivas de estos datos hacia el administrador del parque de telefonía pública, luego hacia los teléfonos públicos, son operaciones complejas.

Por consiguiente, la presente invención busca remediar estos inconvenientes al simplificar y racionalizar la transferencia de datos personalizados hacia aparatos de servicio tales como teléfonos públicos.

El procedimiento según la invención se refiere a la transferencia de los datos de un aparato de servicio, tal como un teléfono público, a un computador central a distancia tal como un servidor de gestión, pudiendo el aparato de servicio comunicar los datos al computador a través de medios de transmisión apropiados.

El procedimiento según la invención se relaciona con la transferencia de datos personalizados a un aparato de servicio desde un computador central a distancia, pudiendo el aparato de servicio comunicar con el computador central a través de medios de transmisión apropiados.

Según la invención, el procedimiento se caracteriza en que la transferencia de los datos personalizados es mandada por el computador central a la recepción de un identifiante correspondiente comunicado por el aparato de servicio al computador a distancia.

Según otra característica del procedimiento objeto de la presente invención, los datos personalizados son destinados a hacer funcionar el microprocesador de un módulo personalizado incluido en el aparato de servicio tal como un módulo SAM o también un validador de moneda, incluyendo estos datos personalizados medios de software que reemplazan o completan los medios de software ya instalados en dicho microprocesador.

Según otra característica del procedimiento objeto de la presente invención, incluye las siguientes etapas:

- el aparato de servicio abre una sesión de comunicación con el computador a distancia;
- luego, el aparato de servicio suministra el identificador necesario para identificar el módulo personalizado;
- el computador extrae el identificador y lo asocia en forma dinámica con una extensión única conocida por él mismo, con el fin de crear un nombre de archivo (archivo previamente creado por ejemplo por el fabricante del módulo y colocado en un servidor FTP propiedad del fabricante del módulo);
- luego, el computador transmite al aparato de servicio instrucciones (localización, nombre de archivo....) en cuanto a los datos personalizados que deben ser transferidos y cargados en el módulo.

Según otra característica del procedimiento objeto de la presente invención, las comunicaciones entre el computador y el aparato de servicio se hacen utilizando el protocolo de comunicación TCP/IP.

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Según otra característica del procedimiento objeto de la presente invención, los datos personales transitan entre el aparato de servicio y un servidor FTP donde se almacenan previamente las . informaciones confidenciales que deben ser descargadas en el aparato de servicio.

Según otra característica del procedimiento objeto de la presente invención, la dirección del servidor FTP es comunicada al aparato de servicio por el computador durante cada transferencia.

Según otra característica del procedimiento objeto de la presente invención, las informaciones personales para transferir se almacenan en el servidor FTP bajo la forma de un archivo cuyo nombre está constituido por la asociación de dicho identificador con el código o extensión apropiada.

Según otra característica del procedimiento objeto de la presente invención, dichas instrucciones dadas por el computador central al aparato de servicio, en cuanto a los datos personalizados que deben ser transferidos y descargados en el módulo, consisten en dar la orden de descargar, desde un servidor FTP apropiado, el archivo conformado por la asociación de dicho identificador con una extensión predeterminada.

Según otra característica del procedimiento objeto de la presente invención, el aparato de servicio es un teléfono público y el computador central es un servidor de gestión.

Según otra característica del procedimiento objeto de la presente invención, el servidor FTP es directamente administrado y actualizado por el fabricante del módulo personalizado.

Se entiende mejor los propósitos, aspectos y ventajas de la presente invención, según la descripción dada a continuación de un modo de realización de la invención, presentado a título de ejemplo no limitativo, refiriéndose al dibujo anexo, en el cual:

La figura 1 es una vista esquemática de la red de telefonía pública utilizada para la aplicación del procedimiento según la invención.

Solo figuran los elementos de la red de telefonía pública y su entorno que son necesarios para la comprensión de la invención.

En la Figura 1, se representa una red 1 de telefonía pública. Esta red comprende un parque de teléfonos públicos 10 (un mismo parque puede incluir desde varias decenas, hasta varios millares de teléfonos, inclusive varias decenas de millares, de acuerdo con la cobertura territorial de la red).

Los teléfonos 10 permiten a los usuarios realizar comunicaciones telefónicas utilizando una red telefónica apropiada referenciada 2. Esta red telefónica 2 es del tipo conmutado analógico PSTN (Public Switching Telephone Network) o del tipo conmutado numérico ISDN (Integrated Services Digital Network). También, esta red 2 puede ser constituida por una red de radiotelefonía móvil, lo anterior, cualquiera que sea su naturaleza: GSM, CDMA, TDMA, AMPS, D-AMPS, o también, por la red Internet o más generalmente por cualquier red de comunicación capaz de transmitir datos (X25, Ethernet,...) así como por cualquier combinación de tales redes.

También, estos teléfonos públicos 10 pueden ser adaptados para acceder a servidores de informaciones o de suministro de servicios de la Web y de Internet, así como a servidores de informaciones o de suministro de servicios que residen en redes privadas. Tales accesos permiten al operador que explota la red 1, proponer a los usuarios una amplia gama de servicios, que van por ejemplo, y a título no limitativo, de la lectura de los correos electrónicos a la consulta de informaciones locales (listas de médicos de turno de la zona del teléfono público, etc.).

Por supuesto, la invención no se limita a los teléfonos públicos que ofrecen tales accesos a Internet y a servidores privados.

De manera conocida, los teléfonos públicos 10 son terminales conocidos especialmente por su utilización en sitios públicos o semi-públicos, tales como la calle, o semi-públicos tales como centros comerciales, aeropuertos, recepción de hoteles, restaurantes, almacenes, etc.

Por consiguiente, presentan especificidades en términos de elementos constitutivos y software, consumo energético, ergonomía, utilización, etc., bien conocidos en sí mismos y que no se van a detallar más adelante.

Por consiguiente, de una manera clásica, cada teléfono público 10 incluye un cierto número de elementos especiales, inherentes a un teléfono público, especialmente en cuanto a ergonomía. En particular, se encuentran órganos de visualización y de recolecta de datos, tal y como una pantalla 11 y un teclado 12.

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Cada teléfono público 10 incluye un microprocesador principal que administra el funcionamiento del teléfono así como microprocesadores secundarios que ponen a funcionar módulos electrónicos específicos, tal como un validador de monedas o también un módulo SAM destinado a administrar una tarjeta de pago electrónica del tipo monedero electrónico. Algunos de estos microprocesadores secundarios, tales como aquellos del SAM o del validador, necesitan datos personalizados para funcionar. Como datos personalizados, se puede mencionar, a título de ejemplo no limitativo, para el módulo SAM, claves secretas de seguridad o un algoritmo de cálculo, y para el validador, la actualización de parámetros que permiten aceptar una nueva moneda o la actualización de un algoritmo interno.

Especialmente, el microprocesador principal del teléfono público 10 utiliza software que permite intercambiar y representar las informaciones según formatos específicos mejor adaptados a su ergonomía, a pesar de funcionar según los principios de las uniones hipermedia.

En efecto, cada teléfono público 10 es adaptado para comunicar con un servidor 5, también llamado PMS (acrónimo anglosajón de "Payphone Management System"), el cual se dedica al funcionamiento y gestión de la red de telefonía pública 1.

La función del PMS 5 consiste en intercambiar con el parque de teléfonos públicos 10 informaciones relacionadas con su funcionamiento y más generalmente el funcionamiento del sistema de telefonía pública. Especialmente, el PMS 5 administra las sesiones de inicialización de los teléfonos públicos y establece datos estadísticos a partir de las

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informaciones recibidas de los teléfonos públicos 10 (alarmas, contadores de explotación...).

Los teléfonos públicos 10 y el PMS 5 están provistos de medios apropiados de supervisión y recepción/emisión de informaciones. Estos medios, en sí ya conocidos, no se describen más en detalle. Estos medios de supervisión y recepción/emisión están encargados de organizar los intercambios de informaciones entre los teléfonos públicos 10, el PMS 5 y los servidores FTP 41, 42, 43 cuyas funciones se detallan a continuación, y especialmente controlar transferencias de datos o software, entre los teléfonos públicos 10 y los servidores FTP.

Entre otras funciones, el PMS 5 transfiere hacia los teléfonos públicos 10, los archivos necesarios para el funcionamiento de sus microprocesadores principales y secundarios, tales como tablas de tarifas, parámetros de configuración (como el tipo de numeración, las características de la línea, ...), listas de oposición y vigilancia de los medios de pago utilizados, un software, algoritmos de seguridad, claves de cálculo secretas, características físicas o magnéticas de monedas....

Por su lado, los teléfonos públicos 10 transmiten informaciones relativas a su utilización, es decir un informe diario que incluye datos relativos a las transacciones efectuadas, tráfico, un informe de alarmas que permite señalar al PMS 5 la ocurrencia de incidentes o alteraciones a su integridad, tal y como una falla en el lector de tarjetas o un auricular arrancado, para prever la intervención de un agente de vigilancia, un archivo de estatuto que caracteriza el contenido del teléfono (tales y como las indicaciones de las diferentes versiones de programas utilizadas por el microprocesador), etc.

Para facilitar los intercambios de datos, se utiliza servidores 41, 42, 43 específicamente concebidos y adaptados para la transferencia de archivos, llamados FTP (para File Transfer Protocol). Con base en los mandos recibidos por el PMS 5, cada teléfono público 10 que integra una entidad FTP cliente se va a conectar con el FTP requerido y cargar o descargar los archivos apropiados.

Preferiblemente, los teléfonos públicos 10 se conectan con un servidor PROXY 6 que sirve de interfase de comunicación entre los teléfonos públicos 10 y el PMS 5. Más adelante se especificará más detalladamente las funciones del PROXY 6.

Por otra parte, para permitir la conexión con los diferentes servidores, y específicamente con el PROXY 6, el PMS 5 o los FTP, los teléfonos 10 están equipados de protocolos de comunicación TCP/IP conformes con las recomendaciones técnicas del IETF ("Internet Engineering Task Force").

El PROXY 6 combina varias funciones. Una primera función consiste en orientar las solicitudes de los teléfonos públicos 10, según la naturaleza de estas solicitudes, hacia los correspondientes servidores. En este caso, se trata de una función de re-enrutamiento, la cual permite almacenar y actualizar la lista de las direcciones de los servidores susceptibles de ser llamados por los teléfonos 10 solo en el PROXY 6 más no en cada uno de los terminales telefónicos 10, ya que estos últimos solo necesitan conocer la dirección del PROXY 6. Esta disposición facilita de manera considerable las operaciones de mantenimiento de la red de telefonía 1.

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De esta manera, para comunicar con el PMS 5, un teléfono solo necesita enviar un mensaje al PROXY 6, mensaje cuyo contenido, por ejemplo "teléfono público número N solicita una conexión para inicialización", basta para que el PROXY 6 lo interprete como un mensaje destinado al PMS 5. Entonces, el PROXY 6 tiene que encontrar en sus memorias la dirección IP del PMS 5 y enviarle el mensaje.

Una segunda función consiste, cuando se requiere, en traducir los datos o instrucciones emitidas por los teléfonos 10 al formato de los servidores destinatarios. De esta manera, en caso de conexiones con el Internet o la Web, se trata de traducir el protocolo utilizado por los teléfonos públicos 10 en el protocolo apropiado (http, RMI, pop3...), y a la inversa para transferir las informaciones de la Web y de la Internet hacia los teléfonos 10.

Otra función del PROXY 6 consiste en controlar la sintaxis de las solicitudes emitidas por los teléfonos 10 antes de su nueva transmisión y también controlar accesos autenticados a la red más atrás (seguridad). Otra función consiste en establecer sesiones de intercambio de informaciones confiables y autenticadas que consiste por ejemplo en identificar de manera certera los teléfonos 10 durante un intercambio de informaciones con los servidores, o también encriptar los datos con el fin de ofrecer seguridad a la comunicación, si fuese necesario.

Otra función del PROXY 6 consiste en pilotear y regular los intercambios de informaciones realizados vía transferencias de archivos estándares y conformes con los protocolos del Internet.

También la función del PROXY 6 consiste en dirigir las solicitudes de los teléfonos públicos hacia servidores de emergencia, especialmente en caso de no disponibilidad de un servidor, y asegurar de esta manera una redundancia de arquitectura. Así, en la hipótesis de encontrarse no accesible el PROXY 6, debido especialmente a las operaciones de mantenimiento, es posible dirigir los informes diarios de los correspondientes teléfonos públicos 10 hacia otro servidor de gestión disponible. Siendo este cambio de un servidor hacia otro totalmente transparente para los teléfonos públicos 10 que no tienen de esta manera que administrar ellos mismos direcciones de emergencia sino solamente la dirección del PROXY 6. La redundancia del PROXY 6 mismo también es posible para evitar rupturas de comunicación en caso de falla observada.

De manera práctica, el PROXY 6 puede ser constituido de un computador de tipo PC que funciona sobre Windows NT (marca registrada) o también Linux, etc.

Cualquier solicitud de conexión a un servidor llega al puerto de entrada del computador, el cual es escuchado permanentemente por el PROXY 6, luego se dirige nuevamente hacia un puerto de trabajo. Luego, se analiza la solicitud mediante una aplicación software, por ejemplo en lenguaje Java (marca registrada) que permite el control y establecimiento de una sesión en el sentido protocolario del término. Luego, se abre una interfase estándar ("socket") y se emite la solicitud hacia el servidor de destino, y a la inversa.

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Por supuesto, el modo de realización ilustrado solamente se dio a título de ejemplo y no es de ninguna manera limitativo del conjunto de las soluciones que pueden ser aplicadas gracias a la presente invención.

De esta manera, el PROXY 6, el PMS 5 y todo o parte de los servidores FTP, en vez de ser máquinas separadas como el figura 1, pueden ser reagrupados en un solo computador de tipo PC por ejemplo.

Habiéndose presentado la red de telefonía pública 1 y los diferentes elementos que la componen, a continuación estaremos detallando el método utilizado para transferir datos entre el PMS 5, los servidores FTP y los teléfonos 10.

Cada teléfono 10 inicia la conexión con el PMS 5 por medio de un mensaje de tipo "CONNECT", generado gracias a programas específicos aplicados por los microprocesadores que equipan el teléfono 10. El procedimiento de conexión de un teléfono con el PMS 5, así como aquel utilizado para transferir datos o también protocolos de comunicación utilizados, son conocidos en sí mismos (y normalizados) y no se describen en detalle más adelante.

El acontecimiento que activa la conexión del teléfono 10 con el PMS 5 puede ser de diferentes tipos. La conexión puede ser iniciada manualmente por un agente de mantenimiento, por ejemplo durante la instalación de un nuevo teléfono 10 en la red 1. La conexión puede ser activada de manera automática a raíz por ejemplo de la ocurrencia de una alarma (monedero lleno, falla, vandalismo, etc.), alarma generada por programas de vigilancia apropiados. También, la conexión puede ser activada de manera automática por informes de actividad generados por

programas de supervisión apropiados, informes que suministran estadísticas sobre la actividad del teléfono 10 y destinados al empresario de la red 1 con el fin de mejorar el funcionamiento de la misma. Estos programas de supervisión pueden editar su informe de actividad con fechas y horas predeterminadas o en instantes definidos por el PMS 5. También, el teléfono se puede conectar con el PMS 5 a raíz de la solicitud expresa de este último, el cual dio la orden durante una llamada anterior al teléfono 10 de conectarse por un motivo dado: por ejemplo, para descargar archivos.

Este mensaje de conexión "CONNECT" incluye básicamente las siguientes informaciones:

- El identificador del teléfono 10, por ejemplo su número de llamada;
- El tipo del teléfono 10, es decir, su código producto;
- El tipo de sesión, es decir el contexto de la llamada: tele-recolecta (informe de actividad), descarga (transferencia de archivo hacia el teléfono, en general, se trata en este caso de una orden previa dada por el PMS 5), alarmas, etc.;
- Una firma que autentifica este teléfono 10, por ejemplo esta firma puede ser obtenida por criptografía por medio de un algoritmo de criptología de tipo DES (Data Encryption Standard) o cualquier otro tipo (RSA, etc.).
- El/los identificador(es) de los microprocesadores secundarios en la medida en que estos últimos son personalizados y por supuesto presentes: SAM, validador,...; estos identificantes son recuperados justo antes del establecimiento de la conexión por medios apropiados.

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El teléfono 10 comprende medios apropiados que le permiten recuperar de manera automática los identificantes de los diferentes microprocesadores secundarios con el fin de incluir estas informaciones en su mensaje de conexión con el PMS 5. Lo anterior se hace por medio de programas apropiados que permiten la interrogación de estos diferentes microprocesadores de manera a recuperar su respectivo identificador.

De esta manera, el teléfono 10 tiene una lista de sesiones tipo que definen a priori la razón de la llamada del teléfono 10. En general, y con excepción de las alarmas, esta llamada ha sido programada durante una sesión anterior.

El PMS 5 que recibe esta llamada "CONNECT" primero procede a su análisis y entre otras a la extracción de los datos de identificación. Luego, verifica la autenticidad de esta llamada y, si es el caso, reenvía un mensaje de aceptación "ACCEPT" que incluye entre otros datos: la fecha y hora corriente con el fin de proceder a una nueva sincronización entre los dos aparatos así como la hora y fecha de la próxima llamada programada.

Luego, el PMS 5 dirige una primera solicitud de trabajo para realizar.

Básicamente, esta solicitud de trabajo es de tres tipos: orden "DOWNLOAD" de transferencia de archivos de un FTP hacia el teléfono 10, orden "UPLOAD" de transferencia de archivos del teléfono 10 hacia un FTP y orden "DISCONNECT" de interrupción de la comunicación.

Preferiblemente, las órdenes de transferencia de archivos se formulan utilizando el siguiente protocolo:

Para cargar archivos:

ftp://uu:pw@163.285.6.45 ?21/upload/123456-05-time.cess

con:

- ftp//solicitud de apertura de sesión FTP, en el presente caso a título de ejemplo;
- uu : nombre del usuario;
- pw : clave, el nombre y la clave sirven para operar la conexión sobre el FTP;
- @163.285.6.45 : dirección IP del FTP donde descargar los archivos;
- ?21 : el número del puerto TCP del servicio requerido (en el presente caso FTP);
- upload : indica el repertorio destinatario (localización) asociado con un nombre de archivo como sigue:
 - o 123456 : que identifica el teléfono 10 recuperado en el "CONNECT" (dinámica);
 - o 05 : tipo del teléfono 10 recuperado en el "CONNECT" (dinámica);
 - o time (HH:MM:SS) : hora corriente que permite identificar de manera única un archivo, evitando así conflictos relacionados con la eventual asignación de un mismo identificador con varios teléfonos;
 - o cess : un identificador único del archivo para transferir (por ejemplo 02 para un archivo que contiene transacciones).

Por consiguiente, upload/123456-05-time.cess define a la vez el repertorio donde se debe copiar el archivo ".ces" y el nombre del archivo atribuido.

Para descargar archivos:

ftp://uu:pw@163.285.6.45 ? 21/download/work/aa-bbb-ccc-ddd.ee

con

- ftp//solicitud de apertura de sesión FTP, en el presente caso a título de ejemplo;
- uu : nombre del usuario;
- pw : clave, el nombre y la clave sirven para operar la conexión sobre el FTP;
- @163.285.6.45 : dirección IP del servidor FTP donde descargar los archivos;
- ?21 : el número del puerto TCP del servicio requerido (en el presente caso FTP);
- download : indica el repertorio raíz fuente (localización) en el cual se encuentran sub-repertorios asociados con los objetos software (parámetros, tabla de tarifa, publicidad...);
- work : sub-repertorio en parte clara (para mejorar la lectura de los archivos) que contiene un tipo de objeto preciso (tabla de tarifa, publicidad, parámetros);
- aa-bbb-ccc-ddd.ee : nombre del archivo para transferir.

Cada archivo dedicado a las funciones propias del teléfono público que se quiere transferir del FTP elegido hacia el teléfono 10, recibe un nombre según una sintaxis determinada. Por ejemplo, cada archivo puede recibir un nombre del siguiente tipo: "aa-bbb-ccc-ddd-ee" donde:

"aa" es un número de dos cifras que designa el tipo de teléfono involucrado;

"bbb" es un número de tres cifras que designa la versión del archivo;

"ccc" es un número de tres cifras que designa la revisión del archivo;

"ddd" es un número de tres cifras que designa la extensión del archivo;

"ee" es una sucesión de dos caracteres alfanuméricos que designa el archivo propiamente dicho identificado por tipo ("21" para una tabla de parámetros).

De esta manera, "download/work/aa-bbb-ccc-ddd.ee" define el repertorio, el sub-repertorio y el nombre del archivo que se quiere recuperar.

Cada archivo aa-bbb-ccc-ddd.ee se relaciona con un elemento especial del conjunto de los recursos de software de los teléfonos 10. En efecto, dentro de las memorias del microprocesador que se encuentra en los circuitos electrónicos (o hardware) de cada teléfono 10 se almacena de manera conjunta datos y programas que forman conjuntamente recursos de software (o software) necesarios para el buen funcionamiento del teléfono 10.

Según el modo de realización descrito, estos datos y programas se distribuyen en al menos tres grupos distintos de objetos: el software, las tablas de parámetros y las tablas de tarifas. Por supuesto, esta lista no es limitativa y puede ser incrementada según las funcionalidades de los teléfonos (publicidad, medios de comunicación....). Esta división en tres tipos de objetos que busca simplificar el funcionamiento de la red por el operador y especialmente el mantenimiento PMS 5, por supuesto no es de ninguna manera limitativa de la presente invención, la cual se sigue aplicando aún si los datos y programas no están diferenciados en distintos grupos. Por supuesto, cada grupo distinto de objeto está conformado por un cierto número de archivos.

Cada archivo corresponde a una división modular, es decir que solo se relaciona con una funcionalidad dada o un número limitado de funcionalidades.

De esta manera, el software se descompone en varias decenas de módulos de software entre los cuales se puede mencionar a título de ejemplo: un módulo de seguridad de línea telefónica, un módulo de gestión de las monedas (si el teléfono recibe monedas), un módulo de gestión de las tarjetas de pago, un módulo de gestión del auricular, un módulo de gestión de la pantalla, un módulo de gestión de las tasaciones de la línea, un módulo de gestión de la energía, un módulo de gestión del módem, etc.

De esta manera, entre las tablas de parámetros figuran las caracterizaciones de la red telefónica a la cual está unido el teléfono 10, las autorizaciones de acceso para ciertos servicios, las diferentes pólizas

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de idioma utilizadas para la visualización del teléfono: francés, inglés, alemán, español o también, árabe, chino, ruso, etc.

Esta modularidad de los archivos busca facilitar intervenciones más precisas y más rápidas, especialmente para las operaciones de descarga. De esta manera, cuando se actualiza una nueva versión de un software, resulta más fácil cargar en los centenares, inclusive millares de teléfonos involucrados, solo esta nueva versión, en vez de reiniciar la descarga del conjunto del software, incluido aquellos que no han evolucionado.

Por supuesto, los archivos que se quiere transferir del teléfono 10 al correspondiente FTP, en caso necesario, pueden utilizar la misma sintaxis. En general, los archivos para transferir del teléfono 10 al FTP son archivos de resultados (status, informe de actividad, alarma, etc.). Por consiguiente, pueden adoptar una sintaxis diferente de aquella de los archivos para cargar en los teléfonos 10.

Las órdenes de transferencia de archivos emitidas por el PMS 5 con destino a los teléfonos 10 pueden contener una sola instrucción y sucederse de manera secuencial según la siguiente secuencia:

UPLOAD 1

ftp://uu:pw@163.285.6.45 ? 21/upload/123456-05-time.01

UPLOAD 2

ftp://uu:pw@163.285.6.45 ? 21/upload/123456-05-time.02

UPLOAD 3

ftp://uu:pw@163.285.6.45 ? 21/upload/123456-0-time.03

.....

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Una orden también puede incluir varias instrucciones:

ftp://uu:pw@163.285.6.45 ? 21/upload/123456-05-time.01

ftp://uu:pw@163.285.6.45 ? 21/upload/123456-05-time.02

ftp://uu:pw@163.285.6.45 ? 21/upload/123456-0-time.03

.....

Además, otros archivos dedicados a los funcionamientos propios de los microprocesadores secundarios (SAM, validador de moneda...), que se quieren transferir de un FTP dado hacia el teléfono 10, reciben un nombre según una sintaxis apropiada. Por ejemplo, cada archivo puede recibir un nombre del siguiente tipo: "Identificante_Módulo.ee", donde:

- "Identificante_Módulo" es el identificador del microprocesador secundario, comunicado por el teléfono 10 al PNS 5 durante la conexión (número de serie, nombre...):
- "ee" es un código o extensión formada por un conjunto de dos caracteres alfanuméricos que designa el archivo propiamente dicho identificado por tipo ("21" para una tabla de parámetros).

Después de haber recibido una orden de tipo "UPLOAD" o "DOWNLOAD", el teléfono 10 abre una sesión FTP con el FTP cuya dirección le ha sido notificada (en el presente caso el FTP servidor dedicado a la actualización de los microprocesadores/memorias secundarias, propiedad del fabricante del módulo). La conexión con el FTP en paralelo a la sesión corriente establecida con el PMS 5 vía el PROXY 6. Luego, el teléfono ejecuta la transferencia de archivo(s) solicitada ante el(los) servidor(es) FTP que le fue notificado. Una vez terminada la transferencia de los archivos, el teléfono envía un mensaje de recibo mediante el cual confirma al PMS 5 que el trabajo ha sido bien o mal ejecutado. Luego, está pendiente de una nueva orden. En caso

de no recibir ninguna nueva orden después de un lapso de tiempo predeterminado, el teléfono corta la comunicación. Por supuesto, esta actualización de los microprocesadores/memorias secundarios será deseada por el operador y se establecerá en el PMS 5 una función que permite la activación de la carga o descarga.

Tal estrategia de comunicación entre el PMS 5 y los teléfonos 10, de tipo amo-esclavo: el PMS 5 ordena, los teléfonos ejecutan, ofrece una gran flexibilidad en materia de transferencias de archivos, ya que nada queda estático. Las sesiones de comunicación entre los teléfonos 10 y el PMS 5 se pueden adaptar según las necesidades.

Por ejemplo, el PMS 5 puede aprovechar la llamada de cada teléfono 10 para su informe de actividad cotidiano (también llamado tele-recolecta) para operar la descarga de una actualización de programa....

Por ejemplo, durante la inicialización de un nuevo teléfono 10 en la red de telefonía pública 1, el agente de puesta en servicio va a solicitar, de manera sistemática, ciertas informaciones relacionadas con la configuración del teléfono 10 (por ejemplo, un archivo de configuración), lo anterior mediante el lanzamiento de una sesión dedicada. En retorno, el PMS puede no solamente transferir el archivo solicitado (u organizar su transferencia) sino también obtener otros archivos en retorno de tipo tabla de tarifa activa, tabla de tarifa pasiva, tabla de parámetros, lista negra, lista gris, software, etc..

De igual manera, durante una sesión de tele-recolecta del informe diario de actividad, el PMS 5 puede no solo recuperar los archivos de las transacciones, los contadores de explotación y las alarmas sino también

descargar en retorno una tabla de tarifa activa, una tabla de tarifa pasiva, una tabla de parámetros, una lista negra, una lista gris, un software, un archivo personalizado con destino a un microprocesador secundario (SAM, validador de moneda, etc.) recuperado ante un servidor FTP, propiedad del fabricante del correspondiente módulo, etc.

Es importante señalar que los diferentes servidores, 41, 42, 43, 5 y 6 pueden estar en diferentes redes de comunicación. Por consiguiente, la presente invención permite liberarse de manera cómoda de las redes y distribuir de la mejor manera posible los servidores.

Según un modo especial de realización de la invención, la primera orden recibida por un teléfono 10 por parte del PMS 5 se refiere a la transferencia de un archivo también llamado STATUS que indica las referencias del conjunto o de los principales archivos que constituyen sus recursos de software. Esto permite posteriormente al PMS 5, en caso de un eventual malfuncionamiento, determinar las diferentes versiones de software utilizado por el teléfono 10.

En los intercambios entre el PMS 5 y los teléfonos 10, el PMS 5 siempre es decisorio en cuanto a los archivos transferidos, es el amo. Según la arquitectura descrita, el PMS 5 está en capacidad, con base en el análisis del contexto preciso de llamada de cada teléfono 10, de solicitar a este último un trabajo dado, modificable, y libre y fácilmente adaptable, especialmente en función de los deseos del empresario de la red 1.

Por otra parte, tal flexibilidad no tiene ninguna incidencia en los teléfonos 10 que funcionan en modo "esclavo". Por consiguiente, la lista

de los archivos para transferir, en un sentido u otro, se comunica en forma dinámica a los teléfonos 10 por medio del PMS 5, lo anterior después de la identificación de la conexión a través de solicitudes precisas: CONNECT, ACCEPT, UPLOAD, DOWNLOAD, DISCONNECT. Por consiguiente, los teléfonos no conocen con anticipación los archivos para transferir, es únicamente el PMS 5 que elige los archivos para transferir.

En cuanto al funcionamiento de los servidores FTP que vamos a estudiar ahora en forma más detallada, se puede diferenciar dos situaciones distintas: el servidor FTP 41, el cual está bajo el control directo del operador de la red de telefonía pública y los servidores 42 y 43 que pertenecen a los fabricantes de los módulos personalizados que están instalados en cada teléfono 10 tal como el SAM o también el validador de moneda.

En cuanto a la utilización del FTP 41, y especialmente de la carga sobre el FTP 41 de los archivos que se van a transferir luego hacia los teléfonos 10, existen diferentes soluciones. Por ejemplo, se puede elegir la siguiente solución.

Estos archivos, que se trate de tablas de parámetros, tablas de tarifas o también de software o de cualquier otro objeto dedicado al teléfono público mismo, fueron preparados a través de herramientas específicas y se cargan en el PMS 5 por ejemplo por medio de un CD ROM, un disquete o cualquier otro soporte legible por el PMS o también mediante una red de comunicación adaptada, bien sea del tipo privado o público como Internet o la Web.

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Los archivos para cargar en los teléfonos y dedicados al teléfono público mismo están acompañados por al menos un script correspondiente. Un script es un archivo de texto que incluye una serie de líneas de instrucciones destinadas a ser ejecutadas por el PMS 5. Un script contiene especialmente la arborescencia o repertorio donde están localizados los archivos, la lista de estos archivos así como instrucciones de tipo interrupciones o desconexiones.

Haciendo una elección, se puede reagrupar el conjunto de los archivos para transferir en un solo script o también utilizar varios scripts, si fuese necesario, por ejemplo, reagrupando los archivos según su tipo. En este último caso, se puede obtener un script "tablas de tarifas" un script "tablas de parámetros", un script "software".

Estudiemos el caso de un script específico por naturaleza de objeto. En este caso, cada script está identificado por un nombre de tipo xxx.yyy donde:

"xxx" es el nombre del script y ".yyy" el tipo de archivos involucrados: por ejemplo ".cli" para el software, ".tt" para las tablas de tarifas, ".tp" para las tablas de parámetros, etc.

Un script contiene por ejemplo líneas de códigos del tipo:

group1.dir = soft/v02r00e02/group1 (group1 nombre del repertorio de destino de un primer lote de archivos)

group1-file1 = 03-002-000-001.40 (archivo para cargar)

.....

;S-disconnect here

group2.dir = soft/v02r00e02/group2 (group2 repertorio de destino de un segundo lote de archivos)

group2-file1 = 03-002-000-001-74 (archivo para cargar)

....."

Por consiguiente, este script y los eventuales otros scripts relacionados con otros tipos de archivos son copiados en el PMS 5 al mismo tiempo que los archivos listados. Una vez implantados los scripts y archivos en el PMS 5, se activa el proceso de descarga de los archivos en los teléfonos pero no sin haber previamente seleccionado los teléfonos involucrados. En efecto, es posible que solo una parte de los teléfonos administrados por el PMS 5 necesiten la carga de los archivos.

Este proceso de carga comprende tres etapas: la descarga de los archivos en el FTP 41, la programación de los diferentes teléfonos involucrados y la carga de los archivos en los teléfonos a partir del FTP 41. Se puede adoptar varios métodos para la realización de estas tres etapas.

Una posibilidad es que las etapas del proceso de descarga sean claramente separadas: primero, el PMS 5 carga los archivos en el FTP 41 tan pronto se inicia el lanzamiento del proceso de descarga. Luego, el PMS 5 programa los teléfonos 10, los unos tras los otros a medida de su conexión para recuperar los archivos en el FTP 41. Finalmente, los teléfonos 10 transfieren los archivos del FTP 41 a sus microprocesadores.

Otra posibilidad es que las etapas del proceso de descarga estén unidas y los archivos se carguen en el FTP 41 al mismo tiempo que se

ejecuta el procesamiento del primer teléfono de la lista (lanzamiento de la sesión de descarga corriente).

Cualquiera que sea el proceso adoptado, el desarrollo de estas diferentes etapas se basa, a nivel del PMS 5, sobre los scripts.

Sírvase observar que para operar la programación de un teléfono, el PMS 5 no ejecuta el script original sino una copia hecha específicamente para este teléfono. De esta manera, es posible actuar sobre el script original, por ejemplo modificando el nombre del archivo para transferir, sin perturbar las operaciones de descarga en curso.

Así, ya que todos los archivos para transferir están almacenados en un repertorio claramente identificado de un servidor FTP, es posible transferir hacia los teléfonos 10 únicamente el nombre de este repertorio sin los nombres de los archivos, ya que los teléfonos transfieren el conjunto de los archivos de repertorio.

En cuanto a los servidores FTP 41 y 43, los archivos dedicados a un módulo personalizado (SAM, validador de moneda, etc.), preparados ellos mismos por medio de herramientas específicas, permanecen almacenados en los servidores FTP 42, 43 de los fabricantes, bajo la responsabilidad de estos últimos.

Analicemos por ejemplo los validadores de moneda. Cada validador contiene datos específicos de fabricación determinados por el fabricante y administrados por este último en sus bases de datos. Durante la ejecución de un nuevo programa como por ejemplo durante el paso al Euro, el fabricante elabora para cada validador el programa

adaptado, teniendo en cuenta datos de fabricación. Luego, se almacena este programa en el FTP 43 del fabricante, utilizando la sintaxis anteriormente mencionada, a saber "Identificante-Módulo.ee".

Durante la carga de esos programas en los teléfonos públicos asociados, le basta entonces al PMS, durante la campaña de descarga, indicar la dirección del servidor 43 para que los teléfonos 10 vayan a buscar los archivos en este servidor. De esta manera, no hay necesidad de transferir previamente esos archivos del fabricante de validador hacia el administrador del parque de telefonía pública.

En cuanto a los archivos "Identificante-Módulo.ee" para cargar en los servidores FTP 42, 43 pertenecientes a terceros, de ninguna manera se encuentran relacionados con un script previamente construido, el cual necesitaría la recolecta de un gran número de referencias, a saber el conjunto de los archivos "Identificante-Módulo.ee".

En cambio, el orden de carga de los archivos contenidos en los FTP 42, 43 se hace de manera dinámica, teléfono por teléfono, directamente después del análisis del contenido transmitido en la solicitud "CONNECT".

Esta manera de proceder facilita la actualización automática y flexible de un número muy grande de datos personalizados, sin que por lo tanto se sobrecargue el sistema o se imponga una acción difícil para el operador quien desea actualizar el conjunto.

Consideramos, a título de ejemplo no limitativo, el caso de un parque de 5000 teléfonos públicos equipados con 5000 módulos SAM

(Security Access Module) destinados a la utilización de monedero electrónico del tipo Moneo u otro. El establecimiento financiero que administra estos módulos SAM decide actualizar las claves de seguridad específicas de cada módulo, las cuales están destinadas a la encriptación de los datos intercambiados entre las tarjetas monedero y el módulo SAM.

Por consiguiente, el establecimiento financiero establece para cada uno de los 5000 SAM un archivo específico que contiene el nuevo juego de claves. Cada archivo se almacena en un servidor FTP 42 que pertenece al organismo financiero según la sintaxis "XXXXXXX.OC", donde "XXXXXXX" es el código de identificación de cada uno de los SAM o identificador, y donde ".OC" es el código correspondiente al hecho de que se trata de un archivo relativo a las claves de seguridad.

Luego, se programa el PMS en el momento de la conexión de los teléfonos. Estos últimos reciben la orden de cargar las nuevas claves. Esto se traduce por el enlace de las siguientes etapas:

- Durante la llamada de cada teléfono 10, el PMS 5 extrae de la solicitud "CONNECT", los elementos que permiten la identificación del SAM a saber el código "XXXXXXX" que le comunicó el teléfono 10;
- Luego, a través de un simple mando de procesamiento inscrito en su programa, el PMS 5 construye la asociación por una parte del nombre del archivo para recuperar, a saber el identificador del SAM "XXXXXXX" al cual adjuntó la terminación ".OC", por otra parte una orden "DOWNLOAD" que precisa especialmente la localización del servidor FTP

42 donde está almacenado el archivo "XXXXXXX.OC", lo anterior, para facilitar la recuperación efectiva del objeto:

ftp://uu:pw@163.285.6.45 721/download/keys/"XXXXXXX.OC"

con:

- ftp//solicitud de apertura de sesión FTP, en el presente caso a título de ejemplo;
 - uu : nombre del usuario;
 - pw : clave, el nombre y la clave sirven para operar la conexión sobre el servidor FTP del servidor tercero;
 - @163.285.6.45 : dirección IP del servidor FTP 42 donde descargar los archivos;
 - 721 : el número del puerto TCP del servicio requerido (en el presente caso FTP);
 - download : indica el repertorio raíz fuente (localización) en el cual se encuentra sub-repertorios asociados con ficheros;
 - keys : sub-repertorio en parte clara (para mejorar la lectura de los archivos) que contiene un tipo de objeto preciso (claves de seguridad);
 - "XXXXXXX.OC" : nombre del archivo para transferir (previamente colocado sobre la c).
- una vez recuperados el o los archivos, se genera una orden "DISCONNECT" de manera a interrumpir la sesión corriente.

Por supuesto, la recíproca puede ser válida y se podría imaginar fácilmente el depósito (y no la recuperación) de los archivos específicos a cada microprocesador secundario a fines de análisis, lo anterior hacia el FTP servidor FTP 42, propiedad del fabricante del módulo.

Una vez recuperado el archivo, se transfiere a través de medios apropiados del teléfono 10 en el módulo SAM correspondiente.

De esta manera, y a título de ejemplo, el PMS puede actualizar 5000 teléfonos públicos descargando datos específicos al módulo SAM de cada uno, lo anterior de manera sumamente rápida y simple. Los datos para transferir permanecen en el establecimiento financiero, el cual se puede encontrar en otro continente con respecto a la red telefónica pública y por consiguiente no tienen que ser llevados primero hacia el administrador de la red. El establecimiento financiero solo tiene que indicar la dirección del servidor FTP sobre el cual se almacenaron los programas. Luego, la programación del PMS 5 se limita a retomar el identificador del módulo SAM que le comunica cada teléfono, agregar al mismo la terminación ".OC" y contestar de ir a cargar el archivo así nombrado en el servidor FTP 42.

El PMS 5 no tiene que administrar ninguna tabla que haga referencia, para cada número de teléfono 10, a los identificantes de los microprocesadores secundarios que necesitan datos personales.

Por otra parte, el método según la invención ofrece una gran flexibilidad en la transferencia de archivo ya que esta transferencia se puede hacer módulo por módulo, inclusive funcionalidades por funcionalidades, lo cual elimina las obligaciones del arte anterior en el cual los archivos eran únicos y globales. Este método permite estandarizar la transferencia de archivos proponiendo un método de gestión único y general para el conjunto de los objetos a transferir, cualquiera que sea su naturaleza o nombre. Este modo de gestión dinámica, mediante la cual los teléfonos ejecutan transferencias según

instrucciones emitidas por el PMS 5 y describen el trabajo, no tiene ningún impacto sobre los teléfonos ni sobre el PMS 5, mientras que, según el arte anterior, un procedimiento de procesamiento tenía que ser desarrollado específicamente para cada transferencia.

Por supuesto, el modo de realización ilustrado sólo fue dado a título de ejemplo y no es en absoluto limitativo del conjunto de las soluciones que pueden implementadas gracias a la presente invención.

De esta manera, la red de los teléfonos públicos descrita anteriormente puede ser remplazada por cualquier red de aparatos de servicio que necesiten transmitir informaciones, especialmente a un servidor de gestión, por ejemplo fechadotes, distribuidores automáticos o también terminales bancarios.

De esta manera, si en los modos de realización anteriormente descritos, el teléfono 10 inicia la comunicación durante la cual se va a operar la transferencia de archivos, esto no puede ser limitativo de la presente invención. Tal comunicación también puede ser iniciada por el PMS 5. En este caso, durante la conexión, el PMS 5 informa al teléfono 10 que se va a iniciar una sesión de un tipo dado de transferencia de archivo. En respuesta a esta orden, el teléfono 10 responde mediante un mensaje "CONNECT" de tipo anteriormente citado y la continuación de la sesión se desarrolla según lo descrito anteriormente ("ACCEPT", luego intercambio de ordenes "UPLOAD", "DOWNLOAD" o "DISCONNECT" y de recibidos).

REIVINDICACIONES

1/ Procedimiento para transferir datos personalizados en un aparato de servicio (10) desde un computador central a distancia (5), pudiendo el aparato de servicio (10) comunicar con dicho computador central (5) a través de medios de transmisión (2,41,42,43,6) apropiados, que se caracteriza en que la transferencia de dichos datos personalizados está mandada por dicho computador central a la recepción de un identificador correspondiente comunicado por dicho aparato de servicio (10) al computador a distancia (5).

2/ Procedimiento para transferir datos según la reivindicación 1, que se caracteriza en que dichos datos personalizados están destinados a hacer funcionar el microprocesador de un módulo personalizado que equipa el aparato de servicio (10) tal y como un módulo SAM o también un validador de monedas, incluyendo estos datos medios de software ya instalados en dicho microprocesador.

3/ Procedimiento para transferir datos según la reivindicación 2, que se caracteriza en que comprende las siguientes etapas:

- dicho aparato de servicio (10) abre una sesión de comunicación con dicho computador a distancia (5);
- luego, dicho aparato de servicio (10) suministra el identificador necesario para identificar dicho módulo;
- Luego, dicho computador (5) transmite a dicho aparato de servicio (10) instrucciones en cuanto a los datos personalizados que deben ser transferidos y cargados en dicho módulo.

4/ Procedimiento para transferir datos según cualquiera de las reivindicaciones anteriores, que se caracteriza en que las comunicaciones entre

dicho computador (5) y dicho aparato de servicio (10) se hacen utilizando el protocolo de comunicación TCP/IP.

5/ Procedimiento para transferir datos según cualquiera de las reivindicaciones anteriores, que se caracteriza en que dichos datos transitan entre un servidor FTP (42,43) donde, en forma paralela, se almacenan las informaciones confidenciales que deben ser descargadas en el aparato de servicio, y dicho aparato de servicio (10).

6/ Procedimiento para transferir datos según la reivindicación 5, que se caracteriza en que la dirección de dicho servidor FTP (42, 43) es comunicada a dicho aparato de servicio (10) por dicho computador (5) durante cada transferencia.

7/ Procedimiento para transferir datos según cualquiera de las reivindicaciones 5 a 6, que se caracteriza en que dichas informaciones son almacenadas en el servidor FTP (42, 43) bajo la forma de un archivo cuyo nombre está constituido por la asociación de dicho identificador con una extensión predeterminada.

8/ Procedimiento para transferir datos según las reivindicaciones 3 y 7, que se caracteriza en que dichas instrucciones, en cuanto a datos personalizados que deben ser transferidos y cargados en dicho módulo, consisten en la orden de descargar, desde un servidor FTP apropiado, el archivo formado por la asociación de dicho identificador con una extensión predeterminada.

9/ Procedimiento para transferir datos según cualquiera de las reivindicaciones anteriores, que se caracteriza en que dicho aparato de servicio

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es un teléfono público (10) y en que dicho computador central es un servidor de gestión (5).

10/ Procedimiento para transferir datos según la combinación de las reivindicaciones 2 y 5, que se caracteriza en que dicho servidor FTP es directamente administrado y actualizado por el fabricante de dicho módulo personalizado.

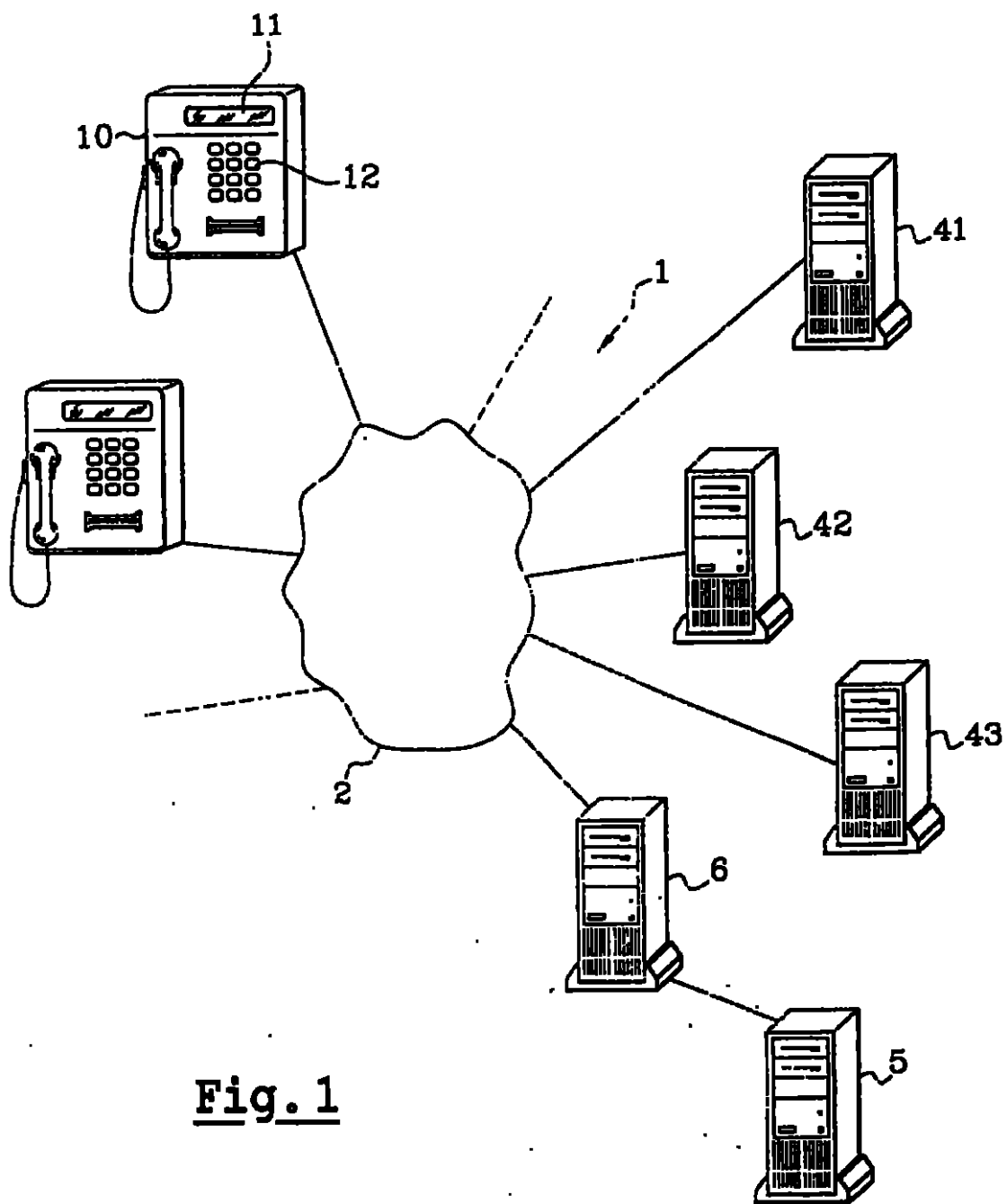


Fig. 1

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Radicación : 04000607 00000000 Folios: 15
Fecha (AMB): 2004-02-04 16:24:22
Trámite : 011 PCT-PAIENT J/O FOME MNCI 411 PRESENTO
Dependencia: 2020 DIVISION DE MARCAS COMERCIALES

relo
SUPERINTENDENCIA

REQUISITOS MINIMOS PARA ADMISION A TRAMITE PCT

PATENTE DE INVENCION [x]

MODELO DE UTILIDAD []

- ◆ Indicación de que se solicita la concesión de una patente [1]
- ◆ Datos de identificación del solicitante o de la persona que presenta la solicitud [1]
- ◆ Descripción de la invención [98]
- ◆ Dibujos de ser estos pertinentes [135]
- ◆ Comprobante de pago de las tasas establecidas [2]

COMPLETA [X]

INCOMPLETA []

DISEÑO INDUSTRIAL []

- ◆ Indicación de que se solicita el registro de Diseño Industrial []
- ◆ Datos de identificación del solicitante o de la persona que presenta la solicitud []
- ◆ Representación gráfica y fotográfica del Diseño Industrial o muestra del material que incorpora el diseño []
- ◆ Comprobante de pago de las tasas establecidas []

COMPLETA []

INCOMPLETA []

ESQUEMA DE TRAZADO []

- ◆ Indicación de que se solicita el registro de un Esquema de Trazado []
- ◆ Datos de identificación del solicitante o de la persona que presenta la solicitud []
- ◆ Representación gráfica del esquema trazado []
- ◆ Comprobante de pago de las tasas establecidas []

COMPLETA []

INCOMPLETA []

Edgar Navarro
Firma Responsable

Fecha 4 FEB. 2004

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134

2020
Bogotá, D.C.,

Doctor(a):
JOSE ANTONIO LLOREDA
Apoderado
SCHLUMBERGER SYSTEMES

Oficio N° 03882

ASUNTO:	Radicación N°	04 - 08687
	Solicitud Internacional	PCT/FR02/02624
	Fecha Inicio fase nacional	09/03/2004
	Trámite	011
	Evento	379
	Actuación	430
	Folios	001

Como resultado del examen de forma, realizado con fundamento en el artículo 38 de la Decisión 486 de la Comisión de la Comunidad Andina, artículo 27 del Tratado de Cooperación en Materia de Patentes (PCT), regla 51 bis del Reglamento y Circular Única de la Superintendencia de Industria y Comercio, se le comunica que:

- ☐ La solicitud no contiene la copia del documento en que consta la cesión del derecho a la patente del inventor al solicitante o a su causante. (Art. 26-k) Decisión 486).

En cumplimiento de lo dispuesto por el artículo 39 de la Decisión 486, se le requiere para que dentro del término de dos meses siguientes a la fecha de notificación del presente oficio, complete los requisitos anteriormente enunciados. En caso de no dar cumplimiento al presente requerimiento, la solicitud se considerará abandonada y perderá su prelación.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única N° 10 de 2001.


ALIX CARMENZA CESPEDES DE VERGEL
Jefe de la División de Nuevas Creaciones.

El anterior requerimiento fue notificado por fijación en lista de fecha 16 ABR 2004

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