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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/682,600	09/25/2001	Scott C. Harris	7398-0003

CONFIRMATION NO. 5190

POA ACCEPTANCE LETTER

11788
Stolowitz Ford Cowger LLP / ptomail
621 SW Morrison Street
Suite 600
Portland, OR 97205



Date Mailed: 05/02/2011

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/26/2011.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/deelliott/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/682,600	09/25/2001	Scott C. Harris	GPS-PRI-CIP/SCH

CONFIRMATION NO. 5190

POWER OF ATTORNEY NOTICE

23844

SCOTT C HARRIS

Law Office of Scott C Harris, Inc

P O BOX 1389

Rancho Santa Fe, CA 92067-1389



OC000000047442877

Date Mailed: 05/02/2011

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/26/2011.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/deelliott/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail**

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Alexandria, Virginia 22313-1450
(703) 746-4000**

or **Fax**

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CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

23844 7590 10/16/2003

SCOTT C HARRIS
P O BOX 927649
SAN DIEGO, CA 92192



Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO, on the date indicated below.

<i>Janet Christy</i>	(Depositor's name)
<i>Janet Christy</i>	(Signature)
<i>1/15/04</i>	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/682,600	09/25/2001	Scott C. Harris	GPS-PRI-CIP/SCH	5190

TITLE OF INVENTION: POSITION PRIVACY IN AN ELECTRONIC DEVICE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$665	\$300	\$965	01/16/2004

EXAMINER	ART UNIT	CLASS-SUBCLASS
BLUM, THEODORE M	3662	342-357100

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ individual ☐ corporation or other private group entity ☐ government

4a. The following fee(s) are enclosed:

- ☒ Issue Fee
- ☒ Publication Fee
- ☒ Advance Order - # of Copies 10

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- ☐ Payment by credit card. Form PTO-2038 is attached.
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Director for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature) *Scott C Harris* (Date) 1/15/04

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01 FC:2501
02 FC:1504
03 FC:6001

665.00 OP
300.00 OP
30.00 OP

TRANSMIT THIS FORM WITH FEE(S)



PATENT

Case Docket No. GPSPrivCIP/SCH

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Scott C. Harris
Appl. No. : 09/682,600
Filed : September 25, 2001
For : POSITION PRIVACY IN AN
ELECTRONIC DEVICE
Group Art Unit : 3662
Class/Sub-Class : 342-357100
Examiner : T. M. Blum

I hereby certify that this correspondence and all
marked attachments are being deposited with the
United States Postal Service as first class mail in an
envelope addressed to: Box Issue Fee, United States
Patent and Trademark Office, P.O. Box 2327,
Arlington, VA 22202, on

1/15/04

(Date)

Janet Christy
Janet Christy

TRANSMITTAL LETTER

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United States Patent and Trademark Office
P.O. Box 2327
Arlington, VA 22202

Dear Sir:

Enclosed for filing is the Issue Fee for the above-identified application:

- (X) Form PTOL-85.
- (X) A check in the amount of \$995 to cover the issue fee is enclosed.
- (X) 4 sheets of drawings.
- (X) The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment, to Account No. 50-1387.
- (X) Return prepaid postcard.

Scott C. Harris
Scott C. Harris
Registration No. 32,030
Attorney of Record

1/4

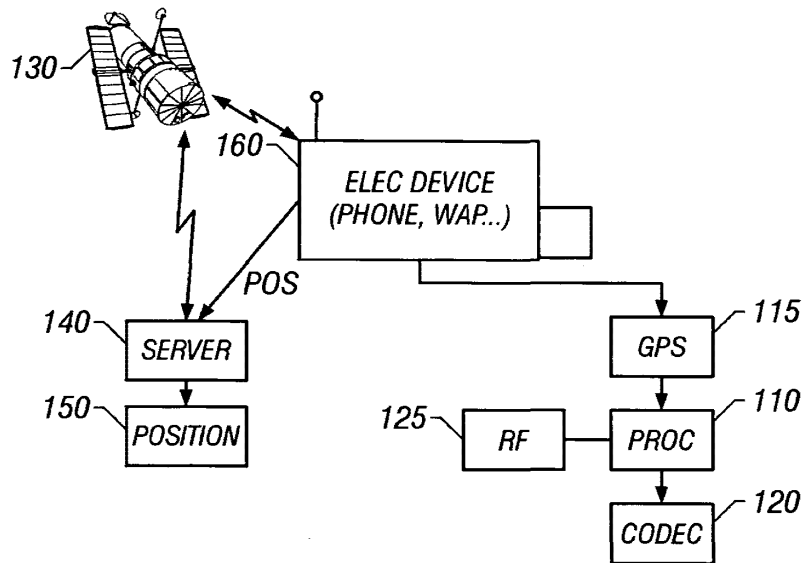


FIG. 1

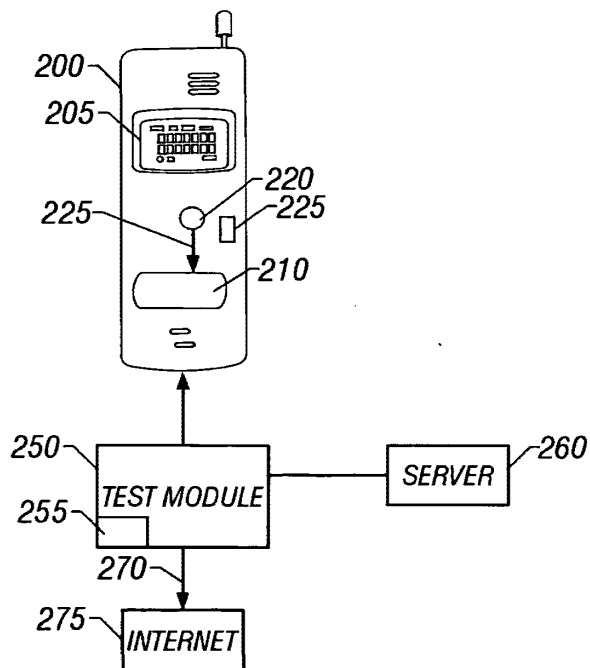


FIG. 2



2/4

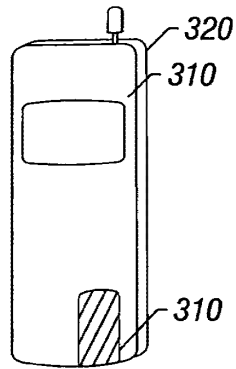


FIG. 3A

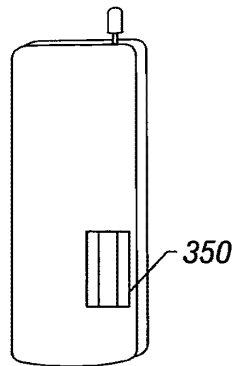


FIG. 3B

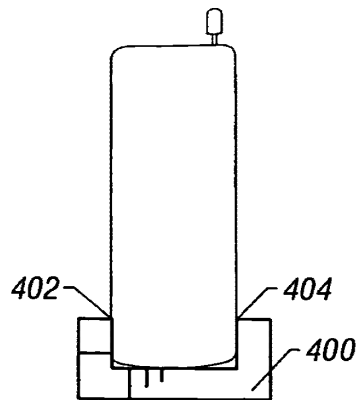


FIG. 4



3/4

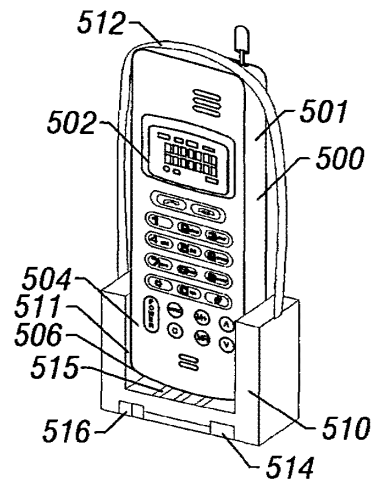


FIG. 5

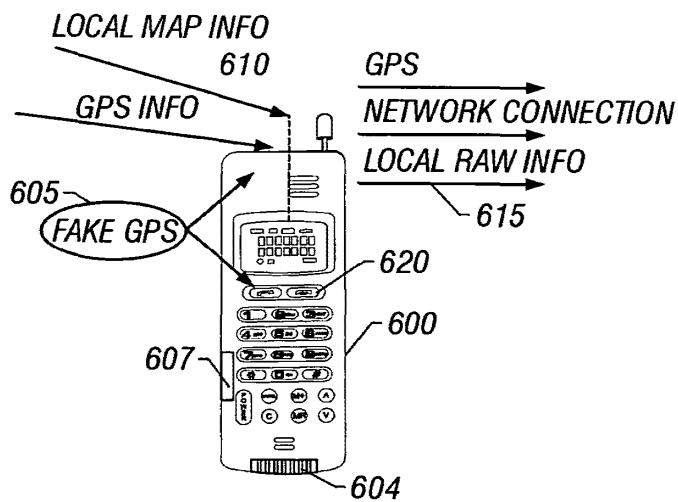


FIG. 6

<time_since> 12.07 </time_since>
<cell_recep> AB07 </cell_recep>

FIG. 7

4/4

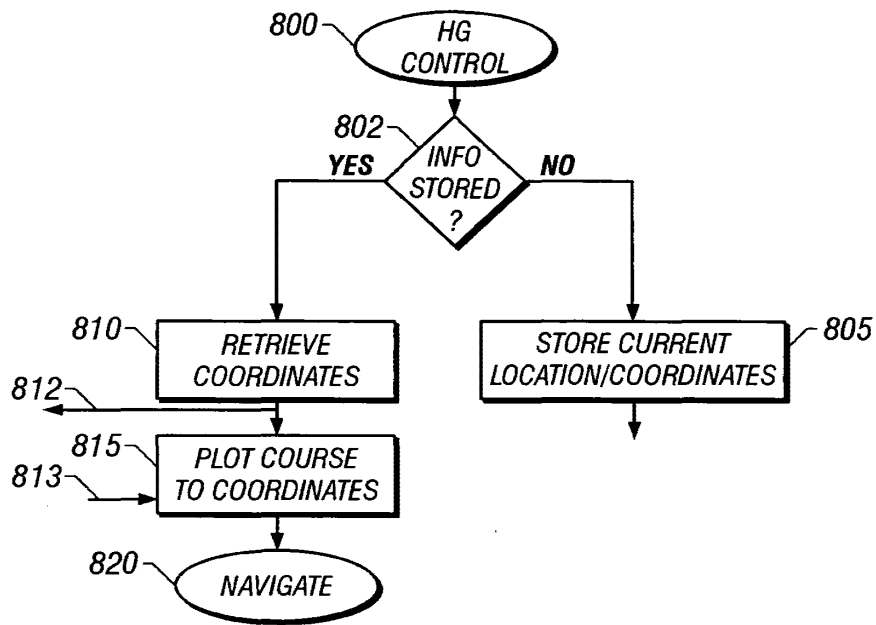


FIG. 8

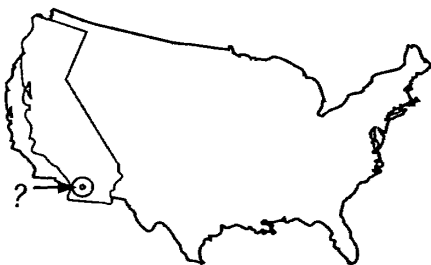


FIG. 9A

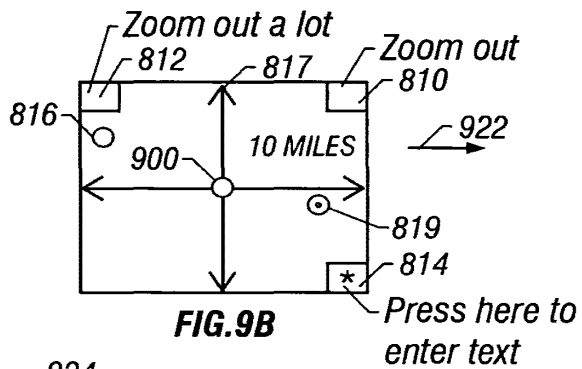


FIG. 9B

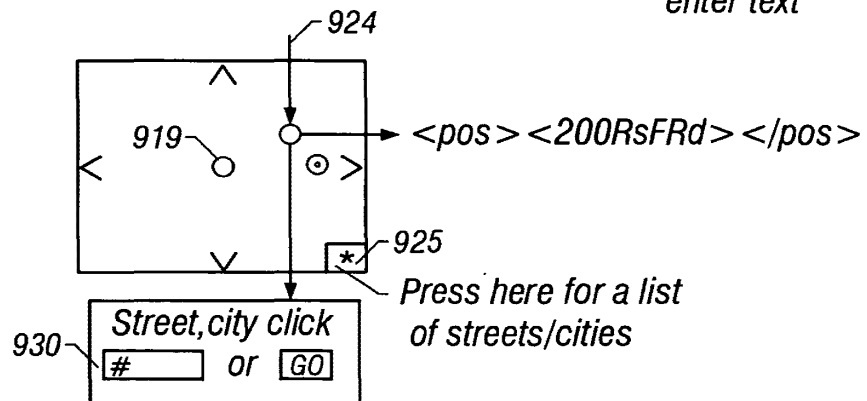


FIG. 9C

PATENT APPLICATION FEE DETERMINATION RECORD

Effective October 1, 2000

Application or Docket Number

09682606

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	24	
FOR :	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	24 minus 20 = 4	
INDEPENDENT CLAIMS	3 minus 3 = 0	
MULTIPLE DEPENDENT CLAIM PRESENT ☐		

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY
TYPE ☐

OR
OTHER THAN
SMALL ENTITY

RATE	FEE		RATE	FEE
BASIC FEE	355.00	OR	BASIC FEE	710.00
X\$ 9=	36	OR	X\$18=	
X40=		OR	X80=	
+135=		OR	+270=	
TOTAL	391	OR	TOTAL	

CLAIMS AS AMENDED - PART II

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	24	Minus 20	= 4
Independent	3	Minus 3	= 0
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

SMALL ENTITY

OR
OTHER THAN
SMALL ENTITY

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 9=		OR	X\$18=	
X40=		OR	X80=	
+135=		OR	+270=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	20	Minus 20	= 0
Independent	3	Minus 3	= 0
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 9=		OR	X\$18=	
X40=		OR	X80=	
+135=		OR	+270=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total		Minus	=
Independent		Minus	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 9=		OR	X\$18=	
X40=		OR	X80=	
+135=		OR	+270=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

- * If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
- ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
- *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Electronic Filing System (EFS) Data
Electronic Patent Application Submission
USPTO Use Only

EFS ID: 12464
Application ID: 09682600
Title of Invention: POSITION PRIVACY IN AN ELECTRONIC
DEVICE
First Named Inventor: Scott Harris
Domestic/Foreign Application: Domestic Application
Filing Date: null
Effective Receipt Date: 2001-09-25
Submission Type: Utility Patent Filing
Filing Type: new-utility
Confirmation Number: 0
Attorney Docket Number: GPSPrivCIP
Digital Certificate Holder: cn=Scott C. Harris, ou=Registered Attorneys, ou=Patent and Trademark
Office, ou=Department of Commerce, o=U.S. Government, c=US
Certificate Message Digest: PKOR0ib5SiO+cIK/NSxiDg==
Total Fees Authorized: \$566.0
Payment Category: DA - Deposit Account
Deposit Account Number: 501387
Deposit Account Name: Scott C. Harris



TRANSMITTAL FORM



Electronic Version 1.0.2

Stylesheet Version: 1.0

Attorney Docket Number:

GPSPrivCIP

POSITION PRIVACY IN AN ELECTRONIC DEVICE

First Named Inventor: Scott C. Harris

SUBMITTED BY

Name: Scott C. Harris
Registration Number: 32,030
Electronic Signature Mark: sch Date Signed: 20010925

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Attached Files:

bibd-transmittal	GPSCIPapds.xml
fee-transmittal	GPSCIPfee.xml
specification	GPS-PrivCIP.xml
declaration	gpgpdec_1_0001.tif
declaration	gpgpdec_2_0001.tif

Attached Image File(s):

gpgpdec_1_0001.tif
gpgpdec_2_0001.tif

Comments:

09582600-092501

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

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

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled POSITION PRIVACY IN AN ELECTRONIC DEVICE, the specification of which:

- ☒ is attached hereto.
☐ was filed on _____ as Application Serial No. _____ and was amended on _____.
☐ was described and claimed in PCT International Application No. _____ filed on _____ and as amended under PCT Article 19 on _____.

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

I acknowledge the duty to disclose all information I know to be material to patentability in accordance with Title 37, Code of Federal Regulations, §1.56.

I hereby claim the benefit under Title 35, United States Code, §119(e)(1) of any United States provisional application(s) listed below:

U.S. Serial No.	Filing Date	Status
-----------------	-------------	--------

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

U.S. Serial No.	Filing Date	Status
09/690,001	October 16, 2000	Pending

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

Country	Application No.	Filing Date	Priority Claimed
			☐ Yes ☐ No ☐ Yes ☐ No

Attorney's Docket No.: _____

Combined Declaration and Power of Attorney

Page 2 of 2 Pages

Address all telephone calls to SCOTT C. HARRIS at telephone number (619) 823-7778.

Address all correspondence to SCOTT C. HARRIS at:

Customer No. 23844
Scott C. Harris
P.O. Box 927649
San Diego, CA 92192-7649

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

Full Name of Inventor: Scott C. Harris

Inventor's Signature: _____

Date: 9/04/01

Residence Address: 3329 Cerros Redondos, Rancho Santa Fe, CA 92067

Citizenship: USA

Post Office Address: P.O. Box 927649, San Diego, CA 92192

FEE TRANSMITTAL

Electronic Version 1.0.4

Stylesheet Version: 1.0

Patent fees are subject to annual revisions on or about October 1st of each year.

Small Entity

Independent Inventor

TOTAL FEES AUTHORIZED: \$ 566

The commissioner is hereby authorized to charge indicated processing and/or publication fees and credit any overpayments to:

Deposit Account Number: 50-1387



Deposit Account Name: Scott C. Harris

Charge Any Additional Fee Required Under 37 C.F.R. Sections 1.16 and 1.17.

SUBMITTED BY

Authorized Name: Scott C. Harris

Electronic Signature Mark: SCH

Date Signed: 20010925

BASIC FILING FEE

Fee Description	Fee Code	Fee Paid
Utility Filing Fee	201	\$ 355

Subtotal For Basic Filing Fee: \$ 355

EXTRA CLAIM FEES

	Fee Code	Fee	Extra Claims	Fee Paid
Total Claims: 39	203	\$ 9	19	\$ 171
Independent Claims: 4	202	\$ 40	1	\$ 40

Subtotal For Extra Claims Fees: \$ 211

APPLICATION DATA SHEET

Electronic Version 0.0.11

Stylesheet Version: 1.0

Attorney Docket Number: GPSPrivCIP

Publication Filing Type: new-utility

Application Type: utility

Title of Invention: POSITION PRIVACY IN AN ELECTRONIC DEVICE

Attorney Docket Number: GPSPrivCIP

Customer Number Correspondence Address: 23844



INVENTOR(s):

Primary Citizenship: U.S.
Given Name: Scott
Middle Name: C.
Family Name: Harris
Residence City: Rancho Santa Fe
Residence State: CA
Residence Country: US
Address: P.O. Box 927649
San Diego CA, 92192
619-823-7778
858-678-5082

SPECIFICATION

Electronic Version 1.2.8

Stylesheet Version 1.0

POSITION PRIVACY IN AN ELECTRONIC DEVICE

Cross Reference to Related Applications

This is a continuation in part of U.S. Application number 09/690,001, filed October 16, 2000.

Background of Invention

[0001] The present invention defines a system for enhancing privacy in an electronic device with automatic position location detection.

[0002] Modern electronic devices often include automatic position location detection technology. For example, the modern cellular phone may include a satellite positioning system such as a GPS device. Other cellular phones, referred to as WAP phones, also automatically keep track of the users position.

[0003] Figure 1 shows an electronic device, which can be a wap phone, regular cellular phone, or any other electronic device 100. The device is shown with electronic circuitry including electronic processor 110 which processes signals from both GPS device 115, and from a codec 120. The processor also controls an RF device 125.

[0004] The electronic device automatically determines its position. In this embodiment, it does so by communicating with a constellation of global position detecting satellites 130, for automatic determination of position. The electronic device may also communicate with the server 140, such as to a base station. The electronic device may communicate its determined position to the server. This may be done, for example, for emergency purposes. In the case of a WAP device, this may be done simply to monitor the position of the cellular phone. The server may output the position, shown as 150.

Summary of Invention

[0005] The present application defines a device which enhances privacy in such a system. Specifically,

the present application teaches a device which selectively prevents the electronic device from transmitting its position. This hence allows selection of an enhanced privacy mode.

Brief Description of Drawings

[0006] These and other aspects of the invention will be described in detail with reference to the accompanying drawings, wherein: Figure 1 shows a block diagram of an electronic device with a built-in automatic position location detection system; Figure 2 shows a first embodiment of a privacy enhancing device for an electronic element; Figures 3A and 3B show a passive version of the privacy enhancing device using an RF blocking technique; Figure 4 shows an active jammer device which actively produces a signal to prevent the reporting of position; Figure 5 shows an exemplary jammer which produces fake pseudoranges, to fool the satellite positioning device; Figure 6 shows an alternative position detecting device, in which environmental clues may be used to enhance the position detection; Figure 7 shows an XML form which may be used to report information about the environmental clues; Figure 8 shows an embodiment where current position may be stored and allowed to be used to later return back to that current position; and Figures 9A-9C show a graphical user interface for a portable GPS device.

Detailed Description

[0007] The first embodiment is shown in Figure 2. In this embodiment, the electronic device is a portable telephone such as a cellular phone. However, it should be understood that other electronic devices, such as computers, personal digital assistants, or any other device which is capable of communicating in any way, may use similar techniques to those disclosed herein. A portable phone 200 has a normal user interface 205, and other structure such as display, etc. The device also includes a positioning device 210. In this embodiment, a position detection block control 220 is provided. This is an actuation mechanism, such as a button, which can be pressed to deactivate the function of the positioning device 210. The unit's normal position forms an enable signal 225 which enables the position detector 210, allowing the position detector to determine its position, and report that position to a remote source, such as a base station. When the button is in its override position, an indicator 225 is illuminated, indicating the privacy mode has been entered. In this privacy-enhanced state, the enable signal is removed, thereby preventing position detector 210 from reporting its position.

[0008] A concern, however, is that some users, either hackers or others with more aura of authority, may use this system in a way which determines position surreptitiously, e.g., even when the button is placed on override. For example, law-enforcement officials might use this system to

keep track of someone without their knowledge. One way to do this might be to fake an emergency call or the like. Doing this, however, may have serious privacy implications.

[0009] If a manufacturer includes a "back door" into the system, that "back door" might be used to determine the position of a person, without their authority or knowledge.

[0010] A test module 250 can be used to test the degree of privacy associated with the electronic device. This test module is connectable to the server 260. It also runs a software layer 255 which can be updated via channel 270, e.g., over the Internet. The test module 250, in operation, communicates with a service over the Internet. The service employs experts to research and store the latest and most up-to-date way of improperly obtaining position in such a system. This is available via update 270 from the Internet. This may be carried out as a subscription service, in a similar way to the operations currently done to update virus definitions. The Internet returns ways of hacking the position detection prevention, which can hence be used by the test module to evaluate the privacy provided by the actuation 220.

[0011] The test module sends a request for position location to the phone 200, using the best available techniques. The phone returns information, and this information is evaluated by the server 260. Server 260 returns an evaluation of the operation to the test module 250. This can provide a user with an indication of the level of privacy they have obtained.

[0012] Another embodiment is shown in Figures 3A and 3B. This embodiment may be most usable with a satellite positioning system in a telephone. In this kind of phone, both sets of electronics – the GPS and the codec – may use a common processor. However, a GPS system often requires a separate antenna shown as 300. The separate antenna may be very sensitive to reception. For example, while cellular telephones can often be used indoors, corresponding GPS devices may not be usable in the same situations. Moreover, each separate telephone type will have a GPS antenna 300 placed in a specified location. There are relatively few telephone types in common use, usually less than 50 types. This system finds, for each telephone type, where the GPS antenna will be placed. The device 350 is made of an RF absorbing or reflecting material such as metal. The device is also made in way which allows it to be temporarily attached to the telephone, e.g., by clipping on to the phone. For example, the device may fit on both sides of the telephone 310 and 320 and wrap around the telephone to cover areas adjacent the antenna on both of the surfaces. The cover 350 covers both sides of the antenna 300, and therefore prevents GPS operation while the cover is clamped into place. In this way, privacy can be effectively temporarily enhanced. Figures 3A and 3B show two different places where the shield could be attached; but it should be

understood that the shield could be attached in many different places.

[0013] One of the stated uses of GPS in a portable phone is for use in an emergency. When the user dials 911, the GPS device allows the emergency authorities to determine the user's precise location. In order to allow this, the cover can be maintained in place during all operations other than emergencies. During emergencies, the cover can be removed. But once the cover is removed, the position of the electronic device can be automatically detected, as usual.

[0014] The system of Figures 3A and 3B may not work with certain phones. An alternative system is shown in Figure 4. In this phone, an active jammer module 400 is provided. The jammer module either supplants or fools the system into obtaining false position information. For example, the jammer module may provide false satellite information, e.g., indicating a false satellite position.

[0015] Satellite positioning system information is often provided in broad spectrum noise. The jammer 400 may produce broad spectrum noise, which includes information indicative of three satellites, but which is transmitted at a sufficiently low power to be receivable only at a very short range. In the system of Figure 4, the jammer can also be attached using attachment clips 404. The attachment can place the transmitter of the jammer in close proximity with the satellite positioning system antenna.

[0016] The jammer information can produce outputs that indicate a false location, for example. Similar operations can be carried out with WAP phones. In a WAP phone, for example, the system may override the carrier, or tell the carrier false information about where the phone is located. This may include providing false triangulation information into the system or the like.

[0017] An example of the above-discussed jamming and shielding technique is illustrated in Figure 5. It is recognized that the antenna which receives the automatic positioning information may be relatively sophisticated and may be difficult to adequately shield. The portable telephone 500 includes, as conventional, display 502, and user interface 504 which enables communication with the telephone electronics. The telephone may also include a connector 506 which may often connect to receive power and includes the capability of connection with the power in the telephone and possible communication with the telephone.

[0018] The interface device 510 may be shaped to couple against the phone. For example, the interface device may have inner surfaces 511 which are adapted to be pressed against outer surfaces 501 of the telephone housing. In addition, the device may include a strap 512 which connects across another portion of the telephone housing, to hold the interface device 510

surfaces against the phone surfaces. The interface device 510 may include a shielding function, and may also include a position jamming function that is embodied as electronics within the housing of the interface device 510. The strap itself may also carry out a shielding function; i.e., it may be formed from a metallic material to shield against certain receptions.

[0019] The electronics, shown generically as 514, may be powered either from the connector areas 515, or from a replaceable battery 516.

[0020] In operation, this system may jam certain communications indicative of the device's location. The global positioning system may for example be a satellite positioning system. These systems, as conventional, may receive contact signals from satellites in which the "pseudoranges" are embedded within noise or other random information within the satellite signal. Hence, the electronics 514 produce false pseudoranges. This false pseudorange information is received by the telephone device 500. The real pseudorange information is received by these devices at relatively low-power. Accordingly, producing even ¼ watt or less of pseudorange information from the jamming device 510 may completely overwhelm the real pseudoranges that are incoming from the satellite. For example, the pseudoranges may be programmed to always indicate specified locations such as the North Pole. As an alternative, the pseudoranges may be randomly selected, with the random values being inserted as fake psuedoranges. The jamming device thus forces the unit to indicate a different location.

[0021] In another embodiment, the electronics 514 may include a processor running a specified program. That program may select a pseudorange representing a specified location at random. Then, once the pseudorange is selected, the location being represented by the psuedorange, and thus by the phone, may continually appear to move. This may simulate the user actually moving along a path within the "fake" specified location.

[0022] Figure 6 shows an alternative embodiment in which position detection and monitoring may be augmented by additional operations carried out over a network. In this embodiment, the GPS computer 600 may be a relatively thin client. Examples of thin clients which may operate in the Figure 6 embodiment may include a cell phone, or a personal digital assistant "PDA". In addition, other wireless devices such as laptops and other network capable computers may be used as the computer 600.

[0023] It has been difficult to use such a thin client to carry out navigation assistance in any but the most superficial of ways. In this embodiment, communication over the network may be used to

improve this operation.

[0024] The positioning information may include information obtained from GPS satellites, and information obtained from other positioning elements such as repeaters and transponders. It may also include other kinds of tracking information such as the Syptech Local Positioning System (Syptech.com). For example, the block generically shown as 605 in Figure 6 may include transponders that produce "simulated" GPS information and transmits that simulated information to the computer 600. The transponder may transmit pseudorange information of the type that would be received by GPS receivers, but at a higher power level than could be received from the actual GPS satellites. Alternatively, it may transmit this information in locations which are otherwise shielded against such satellite communications, such as indoors or under tree cover. The transponder 605 may also include bluetooth transponders which may transmit directly to a bluetooth receiver 607 within the phone 600. This system may also use a messaging service or web service to send the information. A "bluetooth blip" may also be used to convey location information.

[0025] The location of the transponder may be known, or alternatively, the transmission itself may include information indicative of its information.

[0026] Environmental information may also be used to provide clues about the specific location of the device 600.

[0027] On a thin client such as 600, the operations that can be done using the GPS information is often limited by the limited resources of the thin client. Many such thin clients simply do not include enough memory and/or resources to store all of the map information which may be necessary for navigation over an extended route, for example. For example, a PDA or cell phone might have some fixed small amount of memory, say 8 megabytes. However, navigation or position determination in any desired area may require much more than that limited amount of resources.

[0028] Accordingly, in this embodiment, the rough positioning information is used to download positioning information, e.g. map information, over the network connection. Local positioning information is downloaded at specified intervals, e.g., every time the unit moves more than 50 feet. The downloaded information may include additional information in the direction of travel, and instructions to delete or ignore certain information that is not within the direction of travel. Alternatively, an entire new subset of information may be downloaded at any time. In this way, the

stored information continually changes as the unit moves. Each new batch of stored information corresponds to a unit of stored information around the current unit position. As the unit moves, the information is continually updated to a new batch of information, centered around the current location.

[0029] The local map information is shown as 610, and is received over the network connection as dynamic information, which is stored into the memory 604. This dynamic map information will be later replaced by new map information, indicative of some new area.

[0030] Use of dynamically changing positioning information may minimize the amount of local resources which are necessary for navigation. Of course, a core of navigation information may be necessary, which may correspond to very rough information about positioning, as well as location information from previous movements, for example.

[0031] In this embodiment, the client may also transmit local "raw" information. The raw information may include information about the environment, from which clues may be derived. These clues may be compared with a database, having a list of clues for the specific areas.

[0032] One example of environment information may include the speed of the device. If the user is going faster than a specified amount, (say, faster than 30 miles per hour), then this clue may indicate that the user is on a road, and information from the map may be used to narrow down the current location to a position of such a road. Of course, the specific road must be determined and may be selected from the other clues. Other clues may include time since a GPS fix. Various parameters may affect the ability to obtain a GPS fix. This may include, for example, trees covering the roadway, as well as tunnels. These clues may help narrow down the user's location also.

[0033] Other environmental information may include the power and/or type of cellular reception.

[0034] The server which receives this information may include a database with information about cellular reception in various areas.

[0035] Another form of environmental information may include a database indicating specified types of interference from various environmental factors. Each specified type of interference may have a specified different kind of signature. For example, the hum from a power line may be one kind of signature; noise and/or interference from a train, power generating station, or radio transmitter may represent another kind of signature. The unit may monitor for different kinds of noise, and

send information about the noise that is received.

[0036] If the client receives cellular or other type information, then information about the different base stations or receivers/transmitters which are communicating with the client may be reported, for example, their ID numbers or other identifying information. The raw amount of received power may also be reported.

[0037] To the extent that the thin client is also aware of its surroundings, information from that awareness may also be reported. For example, if the client has a microphone, then various information about the sounds it is hearing may be transmitted. If a camera is present in the client, then information from the camera may be sent. This information may be detailed, that is it may include enough information to determine actual features, or may be very coarse. Coarse information might only indicate the degree of light or dark, and/or information about outlines of specific objects.

[0038] The client which is used may be a Web service, for example, or may be via communications with the user's cellular telephone company. In any case, the information may preferably be sent in a specified form type format.

[0039] For example, Figure 7 shows the information being sent as an XML form with various tags representing the various raw data which can be sent. This allows the clues to be transmitted in an organized form. Although an XML form is described herein, it should be understood that other forms could alternatively be used. The use of an XML form, however, may produce special advantages. For example, as shown in Figure 7, different tags may be provided to indicate the kind of information that is being sent. As explained above, various different environmental clues may be provided. Each of these clues may be associated with an XML tag. For example, a form might include only tags (e.g., <noise> parameters </noise>) for those parameters which were available. Alternatively, the form may include all possible tags, but no data in between those tags unless information about that data is sensed.

[0040] In each of these embodiments, the details about positioning of the thin client may be enhanced by comparison to a database of information about various characteristics. The database may include characteristics as a function of position. A unique combination of certain characteristics may indicate a position unambiguously, especially if coarse positioning from other operations has indicated a rough location.

[0041] In another embodiment, this same database may be stored locally, and clues about the

environment may be used to enhance determination of position locally.

[0042] An advantage of this system is that it determines position using many of the same clues that are used by a human operator who attempts to determine their position. The human operator often looks for familiar landmarks and other items. In a similar way, this system may attempt to determine the current position based on clues which may be analogous to landmarks.

[0043] In another embodiment, the positioning operation is only allowed to operate in an emergency. For example, the user may signify an emergency, which turns on all of the different clue-reporting positioning systems that are disclosed herein. This may be done to enhance the user's privacy to the extent possible.

[0044] The ability for a thin client to monitor position produces several possible advantages. The embodiment of Figure 6 may also include a special control 620, referred to herein as a "Hansel and Gretel"("HG") control. When the HG control is actuated, the current location of the device is stored as a bookmark/stored location to be used later. The store and retrieval process may follow the flowchart of Figure 8. The control is shown as being actuated at 800. At 802, the system determines if information is already stored in the memory. Note that this determination may be used only for a single bookmark system, and the flowchart may operate differently in other embodiments in which multiple items are stored. If information is not stored in the memory at 802, or if this is a system where multiple bookmarks can be stored, then the current location/coordinates are stored at 805. This storage location may store either the exact location, or a best guess about the location, obtained from any of the embodiments above, including GPS information as improved using the clues about the environment.

[0045] In this embodiment, the information may be used as a bookmark. That is, the actuation of the control causes current coordinate information to be stored in the memory. The next actuation retrieves this data from the memory and uses it to navigate or guide the user back to the location.

[0046] The later retrieval from the memory is shown by the left flowchart side in Figure 8. When information is detected to be stored at 802, then at 810, the computing element retrieves the stored coordinates. Those coordinates may then be processed. 812 represents processing those coordinates using the techniques described above, that is transmitting them to a remote server which may calculate the mapping information, and return at 813, data to be used in plot coordinates. At 815, the operation plots the course to the coordinates, which may include displaying a map and the like. Navigation continues at 820.

the type described above, and may allow selection of a desired location using a graphical user interface. Figure 9A shows a process of displaying a local area map centered in the user's current area.

[0056] The graphical selection embodiment may start with the view shown in Figure 9A, which shows a rough map of the entire area. This may represent the either the entire area that can be navigated, or only a portion of that area. The user can select an area shown as 900 by clicking, which brings up the menu of Figure 9b. Figure 9B shows a zoomed area, centered around the selected location 900, e.g. 10 miles in each direction. The exact extent of the area may depend on the scale of the map of Figure 9A. As an alternative, the map of Figure 9b may be initially shown, with options to allow the user to expand the scale of what they view. For example, the control 910 may command zoom out, with 912 commanding "zoom out a lot". At any point, the user may press the control 914 to bring up a script, e.g. a JavaScript, enabling the user to enter text.

[0057] In order to facilitate navigation, the user may be provided with landmarks. For example, the user may be shown different cities within the selected area. In Figure 9B, the user sees such cities such as Oceanside Center, as 916. Arrows are also provided such as 917 enabling the map view to be rotated. The user may also be shown other common landmarks such as shopping centers and other items which enable the user to better get their bearing.

[0058] In an embodiment, again the GPS device may store a minimal amount of information in order to facilitate operation on a thin client. Therefore, each time the user executes any of the clicks discussed above, the contents of the click, shown as 922, are sent as a form to a Web service. As above, the form may be in XML format, with specified tags indicating the content and format. In Figure 9b, the user has tagged the location 919. Therefore, a new area tag, along with general coordinates of the new tagged area, are sent as XML information to the Web service that handles the navigation operation. The Web service returns information at 924. This includes a recentered map now centered around the selected point 919. The recentered map shows detailed streets that are as close to the point 919 as possible. Each street may be associated with a screen tip. Placing the cursor over the street may bring up a screen tip or other information on the screen showing the additional buttons for movement.

[0059] A pulldown menu having a list of streets and cities are provided as 925. If the user selects the pulldown menu, it provides a list of all the streets within the new map area, shown as 930. The streets may be arranged alphabetically, by distance to the actual selected point, or by some other criteria. This enables the user to select one of those streets.

[0060] In the embodiment of Figure 9C, the user has selected one of the positions. This information is sent as a form (e.g. an XML form) to a Web service. The Web service then returns map information for the desired route in a form that can be used by positioning equipment on the PDA. By using a standardized form of this type, any of a number of different Web services, which may be geographically distributed for example, may be used for the navigation operation. That is, since a standardized form is used, the information can be easily exchanged between multiple different Web services or other services which provides sources of information.

[0061] Although only a few embodiments have been disclosed in detail above, other modifications are possible. For example, any different kind of thin computer can be used, such as a phone, or a PDA. While the above describes the use of the information being for navigation, other uses of this kind of information can be used.

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Claims

- [c1] 1.A system, comprising:
a portable computer having a processor, a location detection part and a communication part, said portable computer acquiring at least a plurality of items of information representing a current location from said location detection part, and said communication part communicating said plurality of items of information to a remote server, and obtaining current position information from said remote server based on said plurality of items of information.
- [c2] 2.A system as in claim 1, wherein said processor controls assembling said plurality of items of information into a form having a specified format, and sending said form to said remote server.
- [c3] 3.A system as in claim 2, wherein said form is in an XML format.
- [c4] 4.A system as in claim 1, wherein said detection part detects an indication of whether current information is being received from a satellite positioning as at least one of said items of information.
- [c5] 5.A system as in claim 4, wherein said detection part detects a time since said current information has been acquired as at least one of said items of information.
- [c6] 6. A system as in claim 1, further comprising a position blocking part, forming false information to be sent to said remote server.
- [c7] 7.A system as in claim 1, further comprising a position blocking part, preventing said information from being sent to said remote server.
- [c8] 8.A system as in claim 1, wherein said portable computer includes a memory, storing navigation information therein associated with said position information, and wherein said remote server sends at least part of said navigation information to said portable computer based on a determination of a current position of said portable computer.
- [c9] 9.A system as in claim 1, wherein at least one of said items of information is information from a local transponder.
- [c10] 10.A system as in claim 1, wherein said detection part detects visual information that is detected in an area of said portable computer as at least one of said items of information.

- [c11] 11.A system as in claim 1, wherein said detection part detects sounds being detected in an area of said portable computer as at least one of said items of information.
- [c12] 12.A system as in claim 1, wherein said portable computer includes a cellular telephone.
- [c13] 13.A system as in claim 12, wherein said detection part detects information about at least one base station which is communicating with said cellular telephone as at least one of said items of information.
- [c14] 14.A system as in claim 1, further comprising an element which prevents said portable computer from sending said information to said remote server.
- [c15] 15. A system as in claim 14, wherein said element includes a jammer.
- [c16] 16.An system as in claim 15, wherein said jammer is an element which produces fake pseudoranges.
- [c17] 17.An system as in claim 15, wherein said jammer is an element that specifies information which indicates a false fixed location.
- [c18] 18.An element as in claim 15, wherein said jammer is an element that specifies information which indicates a false moving location.
- [c19] 19.A system as in claim 18, wherein said false moving location is a path moving along a specified area.
- [c20] 20.A system as in claim 9, wherein said local transponder is a device which produces fake information that simulates information that would be received from a satellite positioning system.
- [c21] 21.A apparatus, comprising:
a sensor, which senses information indicative of a current location;
a transceiver, which transmits said information indicative of the current location, and receives dynamically changing positioning information based on said information indicative of a current location; and
a processor, which processes said information indicative of the current location based on said dynamically changing positioning information.
- [c22] 22.An apparatus as in claim 21, wherein said transceiver is a wireless transceiver that is also

used for carrying out communication.

- [c23] 23. An apparatus as in claim 22, wherein said positioning information includes map information.
- [c24] 24. An apparatus as in claim 22, wherein said information indicative of a current location includes satellite positioning system information.
- [c25] 25. An apparatus as in claim 24, wherein said information indicative of a current location further includes environmental clues.
- [c26] 26. An apparatus as in claim 25, wherein said environmental clues include information on the signature of noise which is being received.
- [c27] 27. An apparatus as in claim 25, wherein said environmental clues include information about which of a plurality of cellular telephone sites are being communicated with.
- [c28] 28. An apparatus as in claim 25, wherein said environmental clues include local sounds.
- [c29] 29. An apparatus as in claim 25, wherein said environmental clues include local visual elements.
- [c30] 30. An apparatus as in claim 22, further comprising a privacy enhancement element, which prevents said transceiver from transmitting said information indicative of current location.
- [c31] 31. An apparatus as in claim 22, wherein said information indicative of a current location is sent as an XML form.
- [c32] 32. An apparatus comprising:
a computer, producing a map of an area, with sections of the map being graphically selectable according to a graphical user interface, to select a desired area on said map; and
a processing device, operating according to the graphically selectable map portion, to produce a signal to be sent to a remote server to indicate the map portion to the remote server.
- [c33] 33. An apparatus as in claim 32, wherein said remote server is a server running a Web service.
- [c34] 34. An apparatus as in claim 33, wherein said Web service is one which returns navigation information based on information that is sent thereto.

[c35] 35. An apparatus as in claim 32, wherein said processing device forms XML information to be sent to said remote server.

[c36] 36. An apparatus, comprising:
a position location device which obtains information indicative of a current location;
a memory, which stores location information; and
a current location storing element, which is selectively actuated to store current location information into said memory.

[c37] 37. An apparatus as in claim 36, further comprising a navigation part, operating to allow said apparatus to navigate position based on said information obtained by said position location device.

[c38] 38. An apparatus as in claim 37, wherein said navigation part allows automatic navigation to said information into said memory, stored by actuating said current location storing element.

[c39] 39. An apparatus as in claim 38, wherein said navigation part is operative to store a current location responsive to a first actuation of said current location storing element, and is operative to navigate to said current location responsive to a second actuation of said current location storing element.

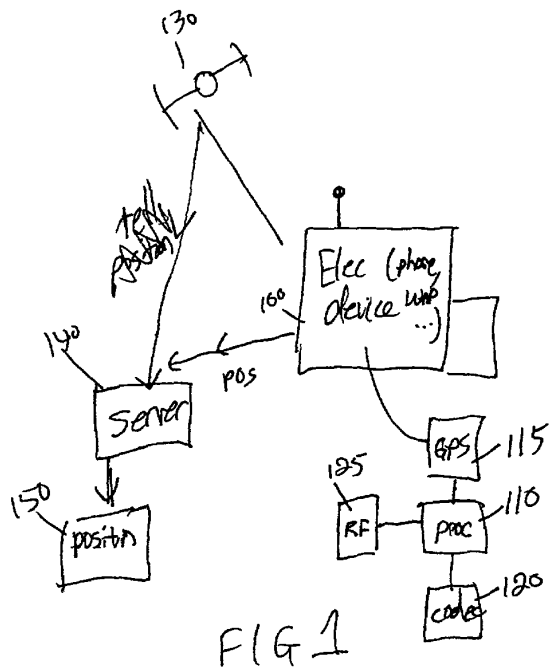
POSITION PRIVACY IN AN ELECTRONIC DEVICE

Abstract of Disclosure

A privacy enhancement device for electronic device such as a cellular telephone. The privacy enhancement device may include a jammer which may produces false information, e.g. false information indicative of pseudo ranges. In addition, the navigation information used on the position detecting device may be locally stored versions of dynamically changing information. The navigation operation may be carried out using a Web service.

Figures

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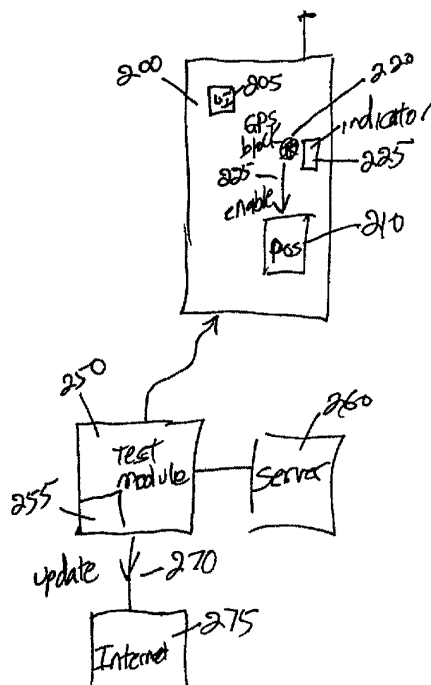
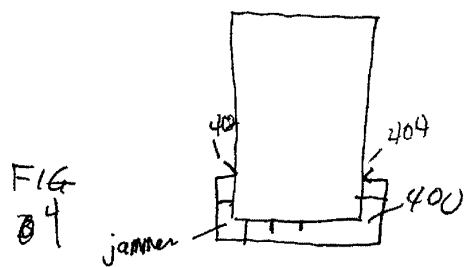
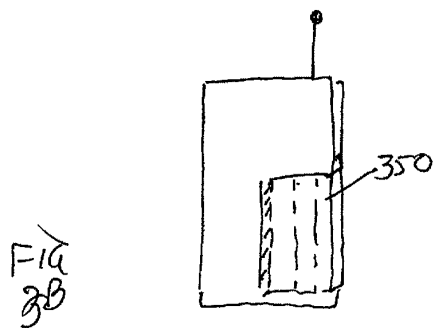
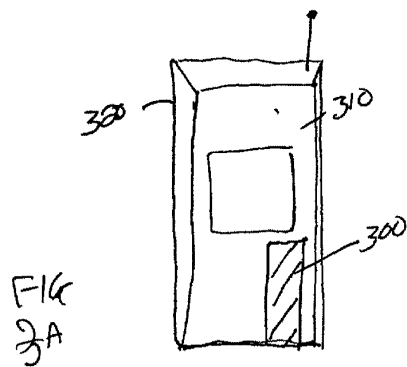


FIG 2



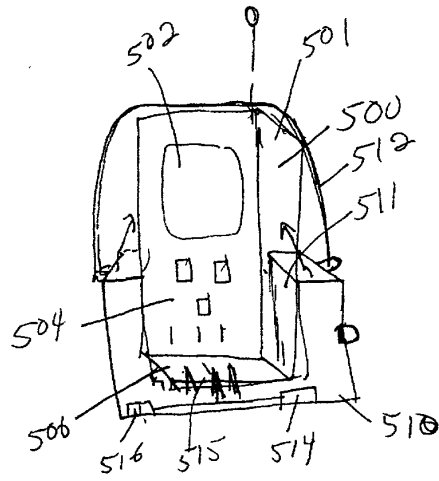


FIG 5

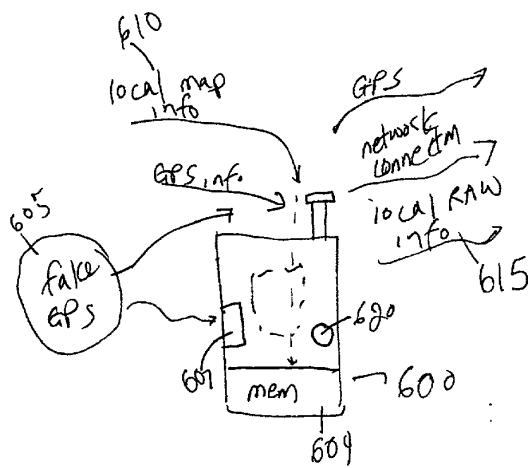


FIG 6

09532600.095301

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FIG 7

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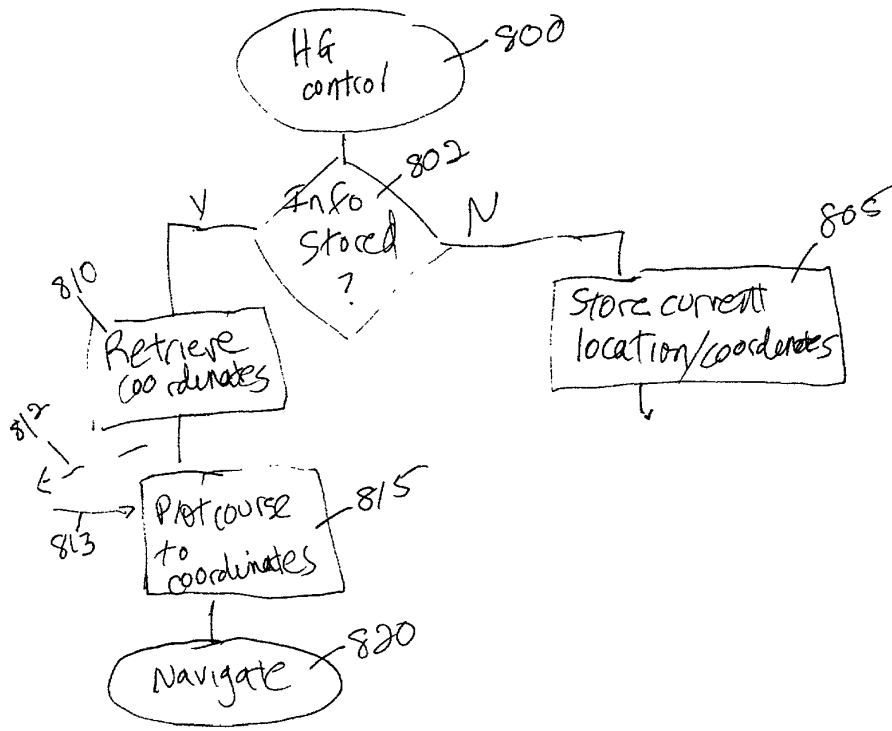


FIG 5

