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(54) **System for locating a person circulating remote work sites and for supervising and controlling remote work**

System zur Lokalisierung einer Person an wechselnden Fernarbeitsplätzen und zur Überwachung und Steuerung der Fernarbeitsplätze

Système de localisation d'une personne circulant sur des chantiers éloignés et de surveillance et de contrôle du travail à distance

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Description

[0001] The present invention relates to a system for locating a person circulating remote work sites and for supervising and controlling remote work, which includes, at each work site, at least one unique RFID tag, for identifying the remote work site,

- a portable mobile station for each person, as well as a tag reader connected to it,
- a server, arranged with a telecommunications link to each mobile station, and also arranged to maintain a personnel and work register and a tag database for the remote work sites,
- an operating system for reading the tags and transmitting data to the server using the mobile station, comprising an application on the mobile station and an application on the server, in which
    - the application on the mobile station further comprises software means
        - for reading the data of an RFID tag and
        - for entering and writing work stages and parameters, and
        - for transmitting data to the server.

[0002] Supervision applications using barcodes and other similar identifiers are disclosed in patent publications EP 0848564, FI 113304, US 6,070,793, DE 3147776, and US 5,166,499. The replacement of barcodes with RFID tags can be regarded as a natural technical development. A small amount of data for later reading can also be written to the memory of an RFID tag.

[0003] Patent US 5,166,499 discloses a route-monitoring system, which includes a portable terminal and a server with software, which can be connected by a cable. The terminal is programmed with the aid of the server, after which it operates independently. The route program comprises consecutive monitoring points, which the terminal displays in sequence, and which are acknowledged, for example, by reading the barcode of the point. After a round has been made, the data are downloaded to the server. The monitoring is not real-time, even though the activity of the user can be monitored afterwards from the log data. As such, the programming of the route can be easily altered, but all the points must be precisely identified and changes cannot be made locally, but only on the server. The software in question is required in each organization using the system.

[0004] The system of patent FI 113304 relates to the location of a person circulating in remote work sites and to supervising remote work. The system is fully real-time and exploits the free programmability of a mobile telephone. The system includes

- at least one barcode identifier at each work site for identifying the site, fixed barcode identifiers, for indicating work tasks and other data, and at least one check code, to be changed at regular intervals,
- a portable mobile station for each person and a barcode reader connected to it,
- a server arranged with a telecommunications link to each mobile station, as well as to maintain a personnel register and an identifier database of the remote work sites,
- an operating system, for reading and transmitting the barcodes to the server by means of a mobile station, comprising an application on the mobile station and an application on the server.

[0005] According to patent FI 113304, the task identifiers of the work sites are collected in a special table. The required number of tables of this kind, each showing different work-task groups, can be created. However, the creation of a table covering a selected group and of the corresponding software is considerably labourious. Thus the system according to patent FI 113304 seeks to preferably use standard tables, which hinders versatile application of the system. The applications are usually made using the smart-phone manufacturer's application-development software, which each developer in the organization must have.

[0006] Patent application US 2006/0044141 A1 discloses a system and method for worker supervision. The system uses various different devices for worker supervision. Patent application US 2002/0078168 A1 discloses a method and apparatus for providing a network based operating system for mobile clients. The applications used in this method are created by the system manager.

[0007] In all of the patents described above, it is difficult and labourious to take into account the requirements of numerous different groups, and generally of different companies. Each organization must have its own systems and software.

[0008] The present invention is intended to create a system that is more flexible than previously and an application developer for supervision and control applications utilizing RFID tags.

[0009] The invention is based on a flexible application editor for creating a situation and state information context for use in RFID tags. The invention is used to flexibly create mobile applications, the technology used being RFID tags, in which is stored the situation/context information according to the desired application structure, created using the application editor. Various wireless data-transfer networks are used for the real-time transfer of the situation and state information.

[0010] The intelligent context-menu structure is stored in the application itself, or can also be downloaded when required over wireless data-transfer networks directly from the server, from its specified location.

[0011] The combination of an application and the data of an RFID tag creates a practical, easy way to create context-sensitive information.

[0012] Groups using mobile application are, for exam-

ple, the following:

- security personnel
- maintenance personnel
- cleaning personnel.

[0013] For example, a mobile application created for cleaners will facilitate the registration of provisioning for each work site, for example, towels, paper goods, detergents, etc. The mobile application reviews all the requisites item by item and transmits the information to the server. The same server, or servers can support numerous organizations, each with its own independent system, which the organization takes care of itself. One server should host the supervision application, which is protected by codes and serves each organization and group. One server, which can be the same as the aforementioned, hosts the application developer, which also serves all the organizations separately. This application-developer server is linked over the internet to the application developer of each organization, so that applications can be created and maintained using nearly any PC whatever.

[0014] In the following, the invention is examined with the aid of examples and the accompanying drawings.

Figure 1 shows the totality of the remote-work control and supervision.

Figure 2 shows the principal parameters of the remote-work control and supervision.

Figure 3 shows a flow diagram of the activation routine of a work site.

Figure 4 shows a flow diagram of making a new application.

Figure 5 shows the selection of an operating code from a drop-down menu.

Figure 6 shows an application created using the application developer, in line form.

[0015] In the example system, the performance of tasks by persons W circulating, around numerous work sites 10, is supervised and controlled, and data available from the work site is registered, Figure 1. Each person W performing work has a mobile station 12, in which there is a built-in RFID reader (e.g., the Nokia® 6131 NFC). Alternatively, this can be an accessory connected to the mobile station. The car 10' is also a kind of work site, by virtue of the recording needs associated with it.

[0016] The person W boots the selected and preloaded mobile application in their mobile station 12 and confirms work stages by reading the RFID tag 11 of the work site 10 and performing the operations under the guidance of the mobile application. At each work site, the employee's times of starting and finishing work, as well as other possible work information, are entered in the mobile station 12, which transmits them over a network 14 to the server 15. With the aid of the second application program on the server, the movements and work of the various employees can be easily monitored. In addition, information can also be sent in the other direction, i.e. from the server 15 to the mobile station 12 of the person W.

[0017] The network connection can be of any kind whatever. Various alternatives are GSM, GPRS, G3, and WLAN. The connection from the base station 21 to the server 15 is naturally operator-specific, and is of no significance in terms of the present invention.

[0018] Figure 1 also shows a work station 16 equipped with a browser, which is linked to the server 15 over the internet. Figure 1 should also be understood more widely, in such a way that the same server can serve work-site groups of numerous different organizations. Each group has its own work station 16. The applications of the various organizations as well as their control are separated from each other by means of user identifiers. As such, any PC whatever, equipped with a browser, (MS IE, FireFox, Opera), in which there is Java@ support, or corresponding browser application development support (e.g. MS ActiveX), can act as an application developer. Of these, Java@ support functions in nearly all operating systems.

[0019] The mobile application of the mobile station 12 usually identifies a person with the aid of a personal username and password. Naturally a SIM card and its PIN code can identify a person, if the application uses these.

[0020] At a work site, the entry of tasks with the aid of the mobile application operates as follows. The person W boots the mobile application and is identified in the selected manner. The application requests an RFID tag to be read (prompt 'Touch a tag'). After reading, the application provides operating instructions as a menu on the display, from which the desired command or data entry is selected. Guided by the operation code of the application, the user enters the data to the application, which sends them either immediately, or collected as a batch to the server. Usually, once a task has been performed at a work site, the application again requests the reading of the RFID tag, which can be associated with the entry of data, e.g., the state of the task. The application provides feedback according to the row, sends the entered data immediately (unless the delay 'Rep' has been selected), and returns after the operation from the sub-menu to the main menu. The context number '999' is reserved for this, when the prompt 'Touch a tag' returns to the display.

[0021] Mobile applications and RFID tags are used to locate a mobile workforce and various consumers, as well as to collect information for various purposes. A mobile application can collect data concrete: Who, What, Where, and When, Figure 2.

[0022] The Who data is generally the username/password of the application, but can also be a phone number (SIM card),

The What data is created using the menus of the application, The Where data is the location of the RFID tag. The individual series number of the RFID tag is linked in the background system, for example, to a customer

number 12345 Perch Road 5. The When data is the time of the event, e.g., the time of a phone call or the time of reading an RFID tag.

[0023] With the aid of an RFID tag, the What and Where data are generally created simultaneously. The menus and data-collection requirements in a mobile application can be extensive and diverse. The structure of the application may be long and complex, but in reality the recording of an event at various specific sites only requires, for example, the entry of numerical data. By means of the invention, the context is entered to a fixed RFID tag while the next menu location/link following this context is made to the desired context using the flexible application developer. In practice, this appears as a particular ease of use, i.e. the program knows to move immediately to the desired location in the menu structure, after the reading of the RFID tag containing the context. The data entry can be made immediately at the desired level, without browsing. The application developer, used by means of a browser, is used to construct the mobile application one row, i.e. operation, at a time, according to the flow diagram shown in Figure 4. The development of the first row is illustrated in Figure 5. In the application developer, there are the normal Open File (140), Save (141), and Save As (142) partitions. In addition, the code can be saved here for different versions of phone. The application and its structure can be named in field 143. The application developer also comprises functions for sending applications to users' phones, or similar mobile stations.

[0024] The location marked with a work or other RFID tag is registered in the system using the routine shown in Figure 3, in which an RFID reader/writer terminal is used - preferably the same type of mobile station as is used in the system too. The unique 14-bit identifier of the RFID attached to the work site (e.g., in a sticker) is read to the terminal. The location number is entered in the terminal. If desired, the context number is written to the RFID with the aid of the terminal. After this, the terminal sends the unique identifier and location number to the server. The context number need not be sent to the server.

[0025] The application is constructed one row at a time. The application developer gives an empty first row, in which the following are always entered:

- message 'Label' intended for the display of the phone (field 121)
- message 'ID' going to the server (field 122)
- operation code 'Type' (field 124).

[0026] The following operation codes can be selected in the system example of Figure 5:

'submenu' forms a submenu in the next lower level; 'string node', integer node', 'decimal node' control the entry of text, an integer, or decimal number. The entry of data is also controlled by the commands: 'url_node' URL address; 'email_node' email address; 'phonenumber_node' phone number. The command 'Command_node' sends the data to the server. The command 'Option_node' creates a menu with preselected values, one of which goes to the server. The command 'contextwriter_node' is used in an application, which can write a context number to an RFID tag. There is no specific loop command in this case, because in any event the application jumps to the start state after each operation.

[0027] In addition, a default value can be used for a variable (field 123), collection flag 126 'Rep', hide flag 127 'Hide', and context number 128 'Cnxt'. Press buttons 129 and 130 are used to add a normal row or submenu. Some operations have additionally their own fields, such as selection in the operation selecting alternatives from the display 132 and their corresponding messages to the server 133.

[0028] According to Figure 4, each application makes a loop after naming, until all the rows have been made. The aforementioned mandatory fields are the identifier 'Label' going to the display, the message 'ID' going to the server, and the actual operation code, which can also be a submenu 'Submenu'.

[0029] An example of the start of one application is shown in Figure 6. The main menu 'Main menu' of the first row has a specific context number '999', which causes the application to display the prompt 'Touch the tag' after identification. In the application according to this example, after reading the tag a menu appears in the display of the mobile station, the start of which is

'Checkpoint'
'Office'
'Vehicle'.

[0030] These can be browsed and the selected operation performed. Each selection creates a transmission of the corresponding identifier '10' to the server. If the context number '1' appears in the read RFID tag, the application jumps directly to the row 'Checkpoint' and sends the acknowledgement message 'Check' to the server, in addition to the identifier data of the mobile station. After this, the application returns to the start, i.e. displays the prompt 'Touch a tag'.

[0031] By selecting 'Office' a new menu appears:

'IN'
'OUT'

[0032] Of these, the 'IN' selection leads to a choice between three alternatives, the selection of one of which returns:

'Admin task'
'Internal meeting'
'Client meeting'
One message, 'Admin', 'Internal meeting', or 'Client meeting' goes to the server.

[0033] The following situation can be given as an example of the use of a context value. When a RFID tag is created for a car, it is possible to jump directly to the km menu, which is natural in this 'work site'.

1. Create own hierarchal program using the application developer.
2. Save the contexts in the desired menu-hierarchal location.
3. Install the RFID tag at the desired location and link it.
4. Save the context number '5' according to the menu hierarchy in the RFID tag (Figure 6)

When using the application

5. Touch the RFID tag of the car
6. The program jumps directly to the km menu in the menus and there is no need to browse the operation steps from the very start. The 'MILAGE' menu 'Start', 'End', appears directly in the display. The OK key is used to select 'Start', when the application expects an integer. After the initial km-reading, 'OK' is selected and the initial prompt 'Touch a tag' reappears in the display.

[0034] Once the journey has been completed, the same tag is touched again, when the context number '5' again goes directly to the display's 'MILAGE' menu, from which 'End' is now selected, when the final kilometre reading is entered and 'OK' is selected, which initiates the transmission of the data to the server.

[0035] The application sends each row immediately and returns to the main menu, unless the 'Rep' selection has been made in the operation-code row. The selection of 'Rep' causes a return to the menu after each operation and the collection of the data according to the menu's operations for sending to the server as a single batch. Thus the 'Rep' selection collects the menu-hierarchal data, which can be collected as a batch until it is decided specifically to select the send command from the menu (not shown). The 'Send' selection sends as a batch the data controlled by the menu.

[0036] The application need not be complex. Some groups, for example, security guards, can use a quite primitive application, in which there can be only the two first rows of Figure 6 (in both the display is hidden 'hide') : 'Main menu/submenu' context 999, and the following row 'check point/ command_node' with the context value 1, i.e. 'context 1'. When booted, the application displays 'Touch a tag' and commands a message to be sent immediately to the RFID tag using the recorded context number '1'. The application then returns to the 'Touch a tag' display. The guard moves to the following location and this simple routine is repeated. In any event, the application developer shown can be used to manage various routines versatilely as required.

[0037] The invention assists the user of the program, as the work sites can be individuated with the aid of the information content of a RFID tag, and thus guide the employee directly to the correct location in the hierarchal directory in the mobile application used and thus to the selected operation. The invention resolves and facilitates the creation of communications between an RFID tag and a flexible program. In particular, the invention makes possible an easy way to implement diverse mobile applications for different groups of employees. In particular, with the aid of the invention, a vast group of different work sites can be managed individually. The creation and alteration of application is flexible, due to the browser-based application developer.

[0038] The data security of the system relative to other groups involved (for instance, operators) is improved by the fact that each work site (10) is registered in the work site's RFID tag by means of a unique value, which is stored on the sever, but not in the actual RFID tag.

Claims

1. System for locating persons (W), belonging to different groups, circulating remote work sites and for supervising and controlling remote work, which includes at each work site (10) at least one unique RFID tag (11), for identifying a remote work site,

- a portable mobile station (12) for each person (w), as well as a tag reader (13) connected to it,
- a work station (16) for each group,
- a server (15), arranged in a telecommunications link with each mobile station, and also arranged to maintain a personnel and work register and a tag database for the remote work sites (10),
- an operating system for reading the tags and transmitting data to the server (15) using the mobile station (12), comprising an application on the mobile station (12) and an application on the server (15), in which

  - the application on the mobile station further comprises software means

    - for reading the data of an RFID tag (11) and
    - for entering and writing work stages and parameters, and
    - for transmitting data to the server

characterized in that the system further comprises an application developer located in each work station (16), operated by means of a browser application development support of an internet browser, for creating mobile applications for different work sites, the application developer being used for creating each mobile-station application one row at a time, each row defining one controlling operation, each finished mobile-station application comprising sequential

controlling operations to be performed by the said software means.

2. System according to Claim 1, **characterized in that** the row controlling the operation of the mobile-station application contains

   - a controlled message or display-darkening function for the display of the mobile station (12),
   - an identifier to be transmitted to the server,
   - an operation code,
   - a possible default parameter.

3. System according to Claim 2, **characterized in that** a context number for recording is arranged for the RFID tag, for guiding the application directly to the selected row and thus to the corresponding operation.

4. System according to Claim 3, **characterized in that** the application developer comprises a context-writing operation code, by means of which the mobile-station application can write a context value for the RFID tag.

5. System according to any of Claims 1 - 4, **characterized in that** the RFID tags are so-called near tags (NFC), the reading distance being 0 - 50 cm, preferably 1 - 15 cm.

6. System according to any of Claims 1 - 5, **characterized in that** one of the work sites (10) is arranged to be a vehicle, in which there is a single RFID tag for entering and sending parameters relating to the vehicle.

7. System according to any of Claims 1 - 6, **characterized in that** the application developer is arranged to use Java@ code.

8. System according to any of Claims 1 - 7, **characterized in that** each work site (10) is fitted to be registered with a unique value connected to an RFID tag of the work site (10), which unique value is stored on a server, but not on the actual RFID tag.

9. System according to any of Claims 1 - 8, **characterized in that** the application developer includes collection flag (rep) for collecting data for several rows and sending at the same time.

Patentansprüche

1. Ein System zur Lokalisierung von zu unterschiedlichen Gruppen zugehörigen Personen (W), mit zirkulierenden externen Arbeitsorten und zur Überwachung und Kontrolle externer Arbeiten, umfassend mindestens einen eindeutigen RFID-Tag (11) an jedem Arbeitsort (10) zur Identifizierung eines externen Arbeitsortes,

   - eine tragbare Mobilstation (12) für jede Person (w) sowie einen damit verbundenen Tag-Reader (13),
   - eine Workstation (16) für jede Gruppe,
   - einen Server (15), der über eine Telekommunikationsleitung mit jeder Mobilstation verbunden und so eingerichtet ist, dass diese Mitarbeiter- und Arbeitsregister führt, sowie eine Tag-Datenbank für die externen Arbeitsorte (10),
   - ein Betriebssystem für das Lesen der Tags und die Übertragung der Daten an den Server (15) mithilfe der Mobilstation (12), umfassend eine Anwendung auf der Mobilstation (12) und eine Anwendung auf dem Server (15), bei der

     - die Anwendung auf der Mobilstation darüber hinaus eine Softwaremöglichkeit umfasst, mit der

       - die Daten eines RFID-Tag (11) gelesen werden können und
       - die Arbeitsphasen und Parameter eingegeben und geschrieben werden können, und
       - die Daten an den Server übertragen werden,

   dadurch gekennzeichnet, dass das System weiterhin einen Anwendungsentwickler auf jeder Workstation (16) umfasst, die über den Entwicklungssupport einer Browseranwendung eines Internetbrowsers bedient wird, um mobile Anwendungen für unterschiedliche Arbeitsorte zu entwickeln, wobei der Anwendungsentwickler dafür verwendet wird, jede Anwendung einer Mobilstation Zeile für Zeile zu erstellen, wobei jede Zeile eine Steuerfunktion definiert und jede abgeschlossene Anwendung für eine Mobilstation sequenzielle Steuerabläufe umfasst, die von der genannten Software durchgeführt werden.

2. System gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die Zeile für die Steuerung des Ablaufs der Anwendung der Mobilstation Folgendes umfasst:

   - eine gesteuerte Nachrichten- oder Display-Abdunkelungsfunktion für die Anzeige an der Mobilstation (12),
   - eine Kennung, die an den Server übermittelt wird,
   - einen Ablaufcode,
   - einen möglichen Standardparameter.

3. System gemäß Anspruch 2, dadurch gekennzeich-

net, dass eine Kontextnummer für die Erfassung des RFID-Tag bereitgestellt wird, um die Anwendung direkt zur ausgewählten Zeile zu führen und damit zum entsprechenden Ablauf.

4. System gemäß Anspruch 3, **dadurch gekennzeichnet, dass** der Anwendungsentwickler einen Ablaufcode für die Kontextentwicklung enthält, mit dessen Hilfe die Anwendung der Mobilstation einen Kontextwert für den RFID-Tag schreiben kann.

5. System gemäß einem der Ansprüche 1-4, dadurch gekennzeichnet, dass es sich bei den RFID-Tags um so genannte Near-Tags (NFC) handelt und der Leseabstand 0-50 cm beträgt, bevorzugt 1-15 cm.

6. System gemäß einem der Ansprüche 1-5, dadurch gekennzeichnet, dass es sich bei einem der Arbeitsorte (10) um ein Fahrzeug handelt, in dem ein einzelner RFID-Tag zum Eingeben und Senden der Fahrzeugparameter vorhanden ist.

7. System gemäß einem der Ansprüche 1-6, **dadurch gekennzeichnet, dass** der Anwendungsentwickler für den Einsatz der Java®-Code eingerichtet ist.

8. System gemäß einem der Ansprüche 1-7, **dadurch gekennzeichnet, dass** jeder Arbeitsort (10) so vorbereitet ist, dass er mit einem eindeutigen, mit einem RFID-Tag des Arbeitsortes (10) verbundenen Wert registriert werden kann, wobei der eindeutige Wert auf einem Server, jedoch nicht auf dem RFID-Tag selbst gespeichert ist.

9. System gemäß einem der Ansprüche 1-8, dadurch gekennzeichnet, dass der Anwendungsentwickler eine Sammelmarkierung (rep) zur Erfassung von Daten aus verschiedenen Zeilen und zum gleichzeitigen Senden umfasst.

Revendications

1. Système permettant de localiser des personnes (W), appartenant à différents groupes, se déplaçant sur des sites de travail à distance, et permettant de superviser et de contrôler le travail à distance, comprenant sur chaque site (10) au moins une étiquette RFID unique (11) servant à identifier un site de travail à distance,

   - une station mobile portable (12) pour chaque personne (w), ainsi qu'un lecteur d'étiquettes (13) raccordé,
   - un poste de travail (16) pour chaque groupe,
   - un serveur (15), agencé en liaison de télécommunication avec chaque station mobile et de façon à tenir un registre du personnel et des travaux, ainsi qu'une base de données d'étiquettes pour les sites de travail à distance (10),
   - un système d'exploitation qui permet de lire les étiquettes et de transmettre les données au serveur (15) à l'aide de la station mobile (12), comprenant une application sur la station mobile (12) et une application sur le serveur (15), dans lequel

     - l'application sur la station mobile comprend en outre un programme logiciel

       - pour la lecture des données d'une étiquette RFID (11) et
       - pour la saisie et l'écriture des étapes et des paramètres de travail et
       - pour la transmission des données au serveur

   caractérisé en ce que le système comporte un développeur d'applications dans chaque station de travail (16) qui fonctionne au moyen d'une assistance au développement d'applications d'un navigateur Internet, et qui sert à créer des applications mobiles pour différents sites de travail. Le développeur d'applications est utilisé pour créer chaque application de la station mobile une ligne à la fois, chaque ligne définissant une opération de contrôle, chaque application de la station mobile terminée comprenant des opérations de contrôle séquentielles devant être exécutées par ledit programme logiciel.

2. Système conformément à la revendication 1, **caractérisé en ce que** la ligne contrôlant le fonctionnement de l'application de la station mobile contient

   - un message contrôlé ou une fonction d'obscurcissement de l'affichage de la station mobile (12),
   - un identifiant à transmettre au serveur,
   - un code d'exploitation,
   - un éventuel paramètre par défaut.

3. Système conforme à la revendication 2, **caractérisé en ce qu'**un numéro de contexte pour l'enregistrement est fixé pour l'étiquette RFID, permettant d'acheminer l'application directement vers la ligne sélectionnée et donc vers l'opération correspondante.

4. Système conforme à la revendication 3, **caractérisé en ce que** le développeur d'applications comporte un code d'exploitation pour l'écriture du contexte qui permet à l'application de la station mobile d'écrire une valeur de contexte pour l'étiquette RFID.

5. Système conforme à l'une des revendications 1 à 4, **caractérisé en ce que** les étiquettes RFID se trou-

vent soi-disant à proximité des étiquettes (NFC), la distance de lecture étant de l'ordre de 0 à 50 cm, de préférence de 1 à 15 cm.

6. Système conforme à l'une des revendications 1 à 5, **caractérisé en ce que** l'un des sites de travail (10) est un véhicule dans lequel est placée une étiquette RFID unique pour la saisie et l'envoi des paramètres liés au véhicule.

7. Système conforme à l'une des revendications 1 à 6, **caractérisé en ce que** le développeur d'applications peut utiliser le code Java@.

8. Système conforme à l'une des revendications 1 à 7, **caractérisé en ce que** chaque site de travail (10) peut être enregistré avec une valeur unique connectée à une étiquette RFID du site de travail (10) et dont la valeur unique est stockée sur un serveur et non sur l'étiquette RFID réelle.

9. Système conforme à l'une des revendications 1 à 8, **caractérisé en ce que** le développeur d'applications comporte un indicateur de collecte (rep) pour la collecte des données de plusieurs lignes et leur envoi simultané.

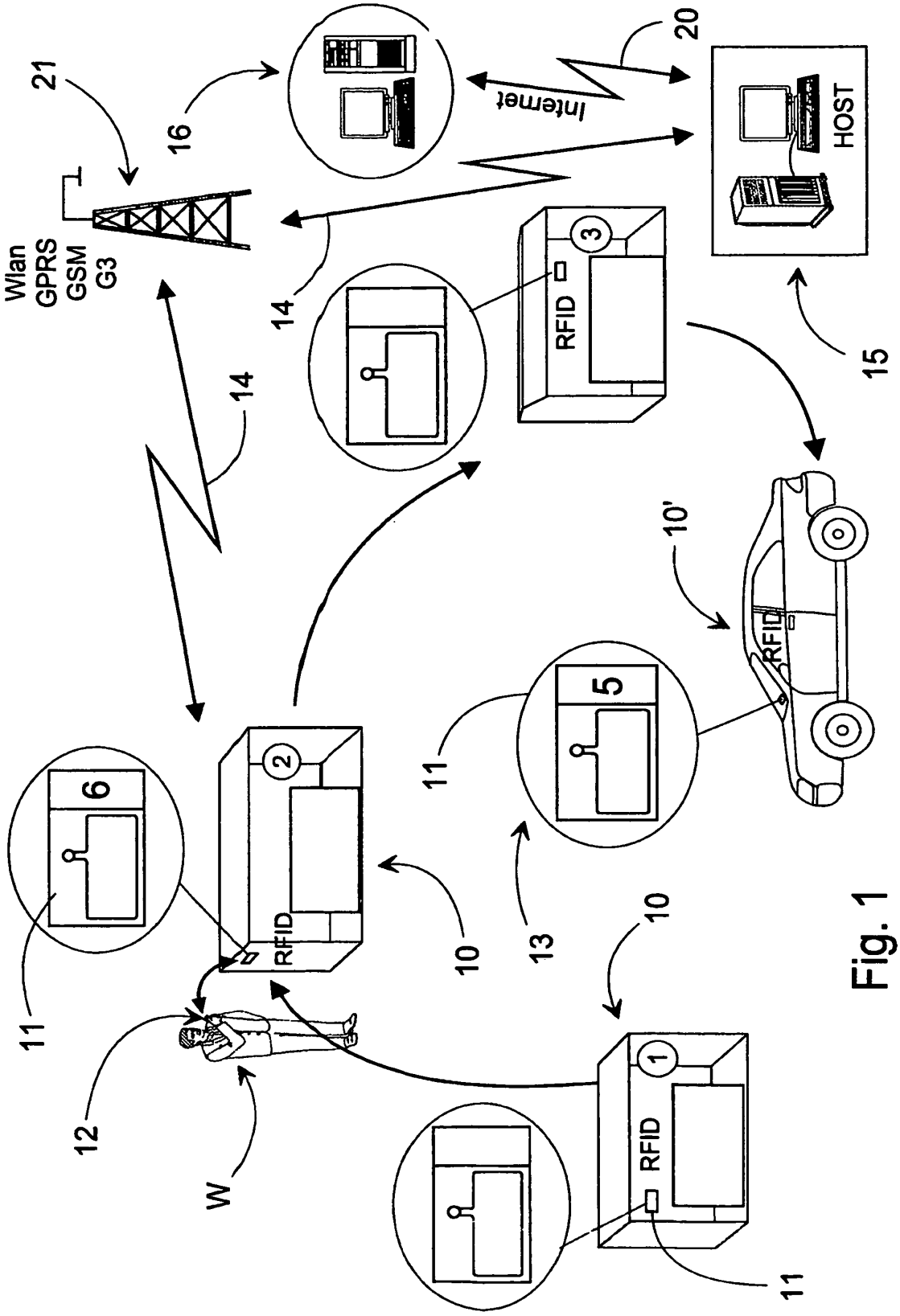

Internet
HOST
20
21
16
Wlan
GPRS
GSM
G3
14
14
15
RFID
3
RFID
2
RFID
1
RFID
5
6
10
10'
11
11
11
12
13
W

Fig. 1

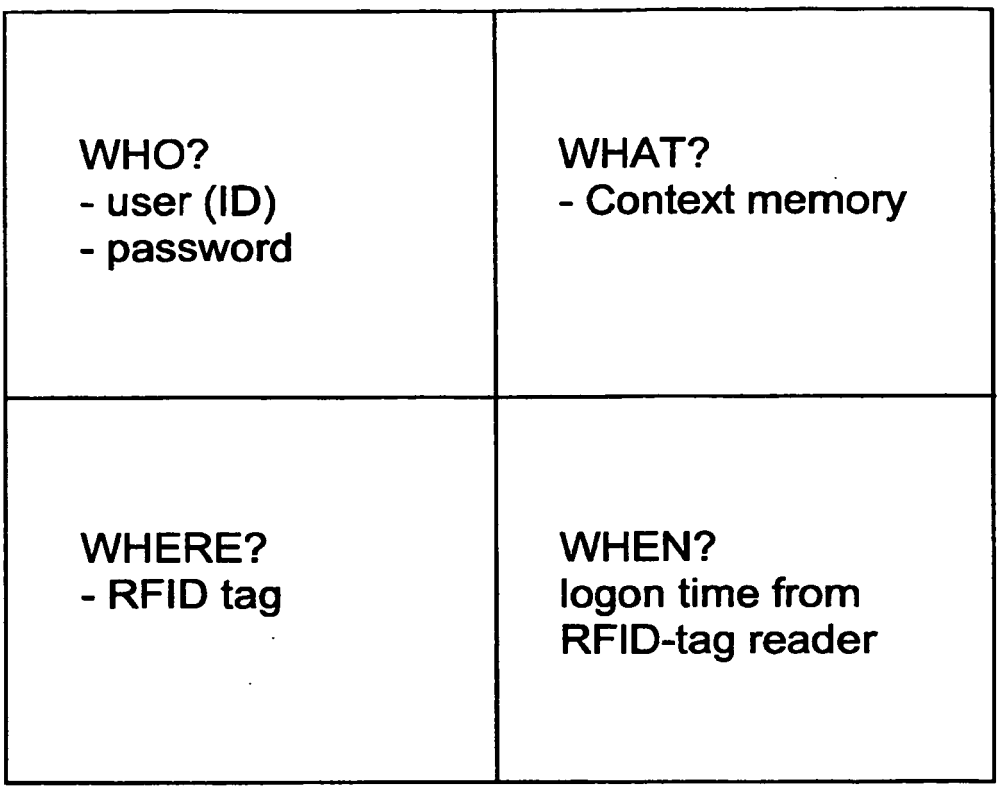

WHO?
- user (ID)
- password
WHAT?
- Context memory
WHERE?
- RFID tag
WHEN?
logon time from
RFID-tag reader

Fig. 2

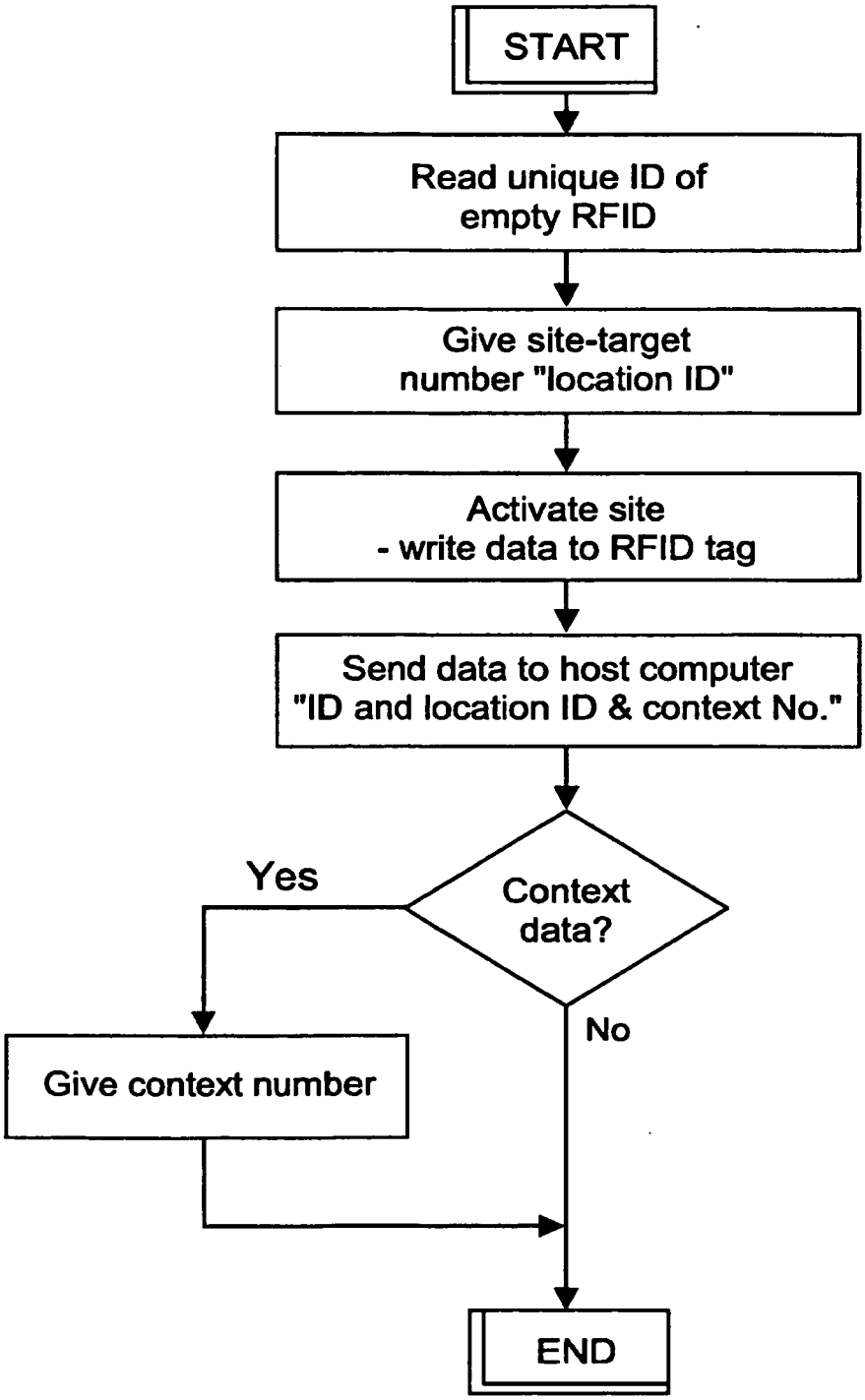

START
Read unique ID of empty RFID
Give site-target number "location ID"
Activate site - write data to RFID tag
Send data to host computer "ID and location ID & context No."
Context data?
Yes
No
Give context number
END

Fig. 3

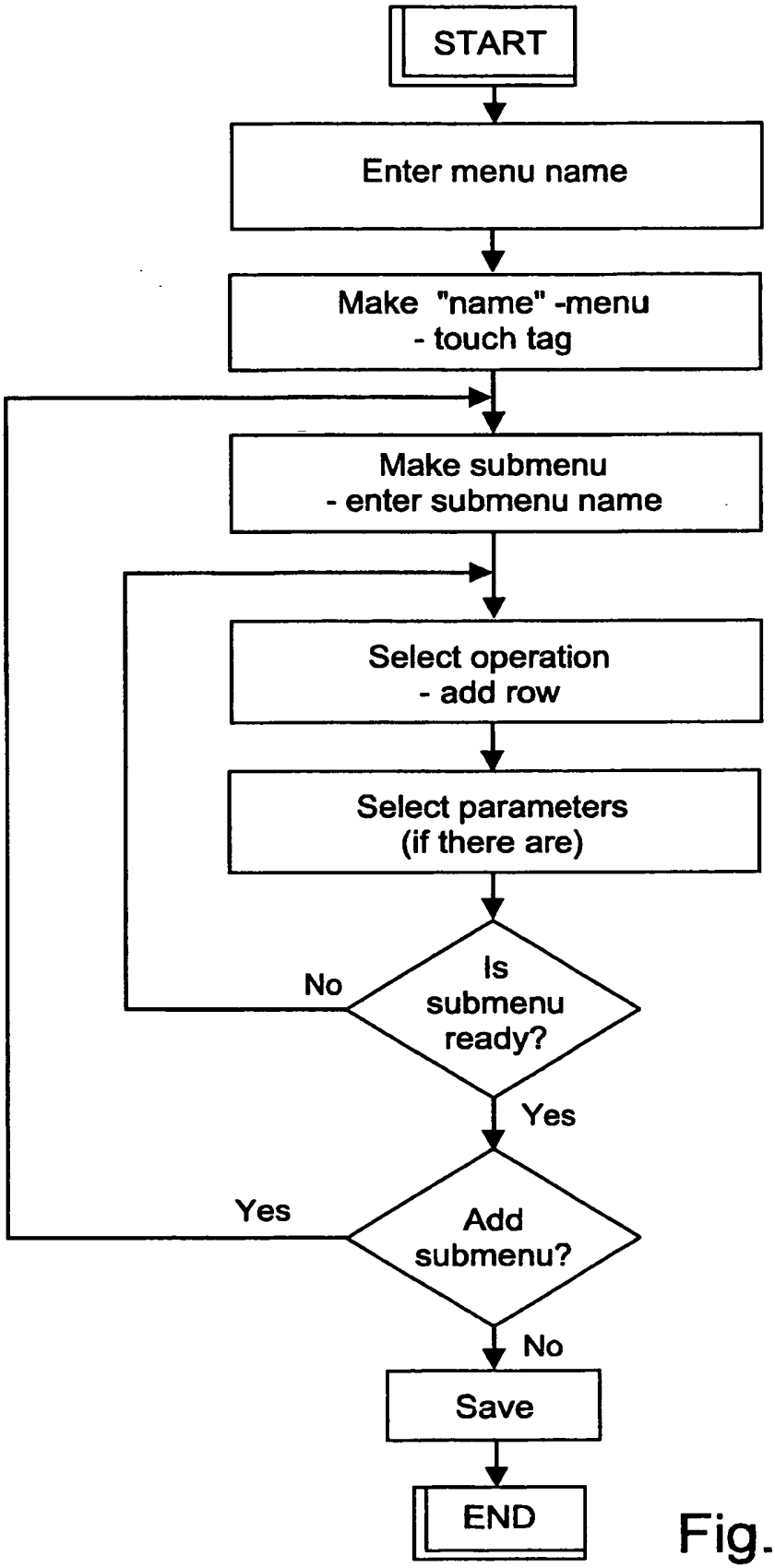

START
Enter menu name
Make "name" -menu
- touch tag
Make submenu
- enter submenu name
Select operation
- add row
Select parameters
(if there are)
Is submenu ready?
No
Yes
Add submenu?
Yes
No
Save
END

Fig. 4

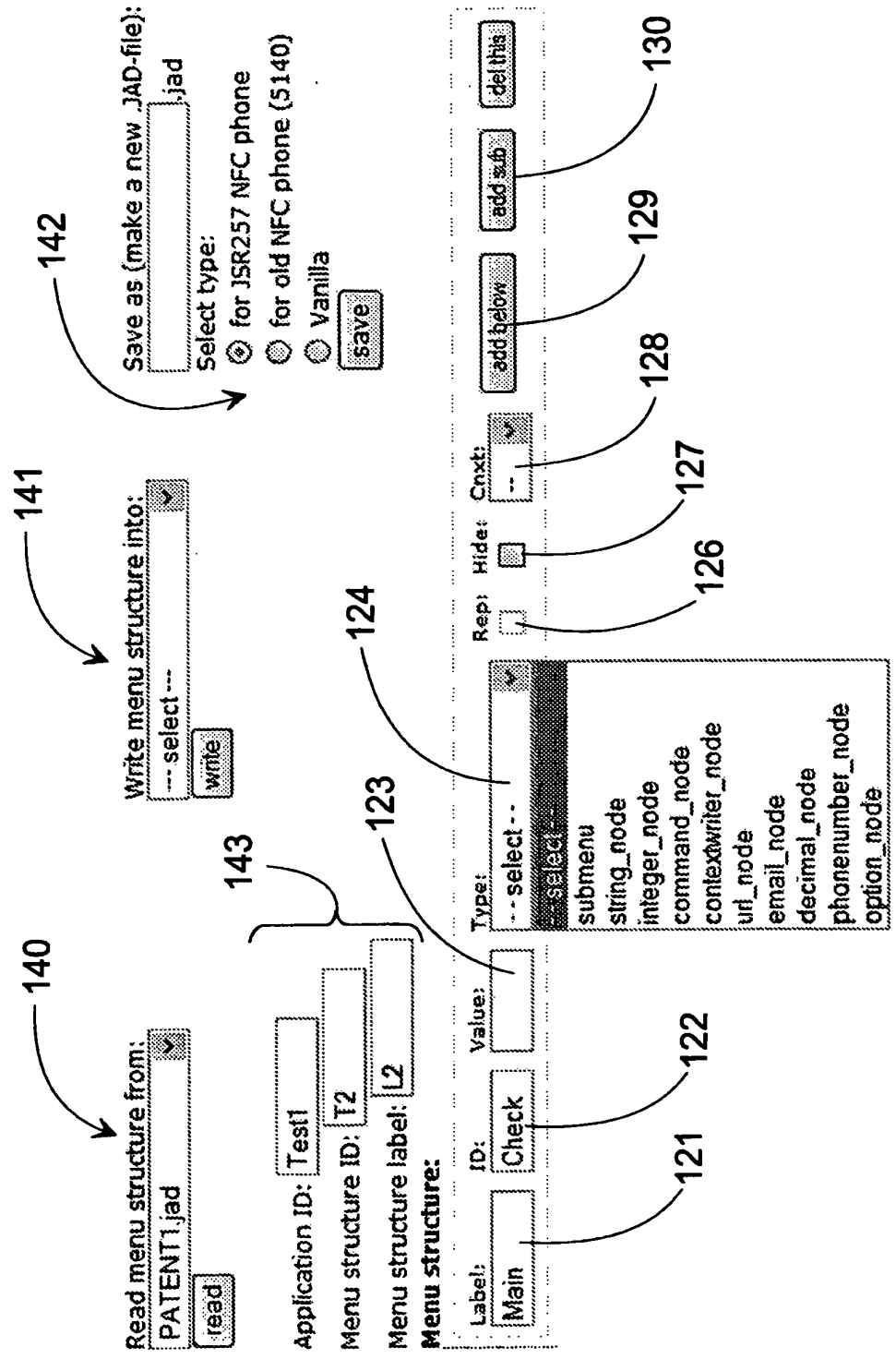

Read menu structure from:
PATENT1.jad
read
Write menu structure into:
--select--
write
Save as (make a new .JAD-file):
.jad
Select type:
for JSR257 NFC phone
for old NFC phone (5140)
Vanilla
save
Application ID: Test1
Menu structure ID: T2
Menu structure label: L2
Menu structure:
Label:
Main
ID:
Check
Value:
Type:
--select--
--select--
submenu
string_node
integer_node
command_node
contextwriter_node
url_node
email_node
decimal_node
phonenumber_node
option_node
Rep:
Hide:
Cnxt:
--
add below
add sub
del this
140
141
142
143
123
124
121
122
126
127
128
129
130

Fig. 5

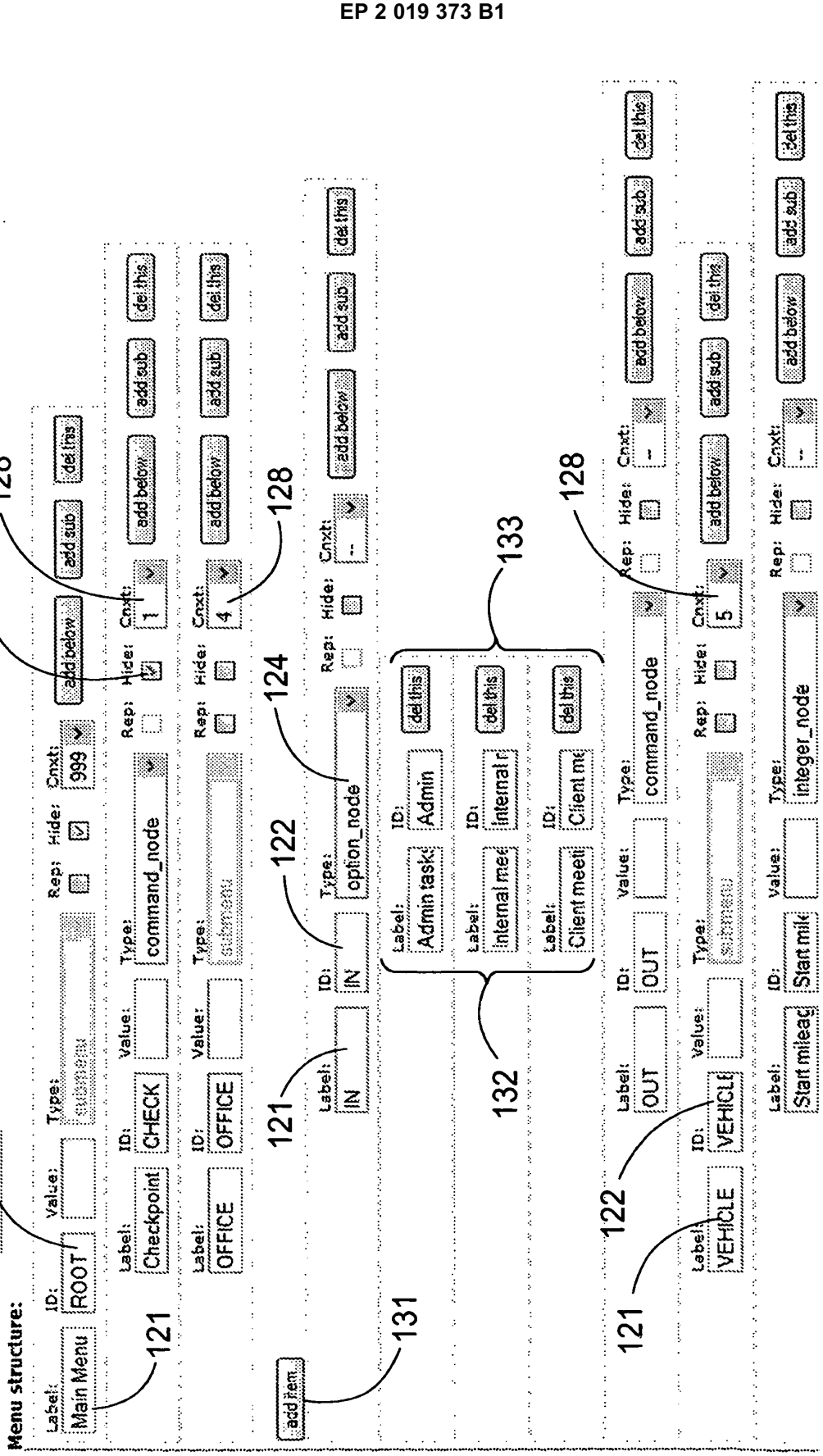

Menu structure:
Label:
Main Menu
ID:
ROOT
Value:
Type:
submenu
Rep:
Hide:
Cnxt:
999
add below
add sub
del this
Label:
Checkpoint
ID:
CHECK
Type:
command_node
Cnxt:
1
Label:
OFFICE
ID:
OFFICE
Type:
submenu
Cnxt:
4
add item
Label:
IN
ID:
IN
Type:
option_node
Cnxt:
--
Label:
Admin task
ID:
Admin
Label:
internal me
ID:
internal r
Label:
Client meeti
ID:
Client me
Label:
OUT
ID:
OUT
Type:
command_node
Cnxt:
--
Label:
VEHICLE
ID:
VEHICLE
Type:
submenu
Cnxt:
5
Label:
Start mileag
ID:
Start mile
Type:
integer_node
Cnxt:
--
121
122
124
127
128
131
132
133

Fig. 6

REFERENCES CITED IN THE DESCRIPTION

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