

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
5 March 2009 (05.03.2009)

PCT

(10) International Publication Number  
**WO 2009/029238 A1**

(51) International Patent Classification:  
**G06Q 50/00** (2006.01)

(21) International Application Number:  
PCT/US2008/010049

(22) International Filing Date: 25 August 2008 (25.08.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
11/895,762 27 August 2007 (27.08.2007) US

(71) Applicant: **VERDASEE SOLUTIONS, INC.** [US/US];  
3 Woods Lane, Ambler, PA 19002 (US).

(72) Inventors: **VASQUEZ, Reuben, C.**; 17825 West Pond  
Ridge Circle, Gurnee, IL 60031 (US). **VASQUEZ,  
Michael, A.**; 4524 Hogan Lane, Wadsworth, IL 60083  
(US). **VASQUEZ, Michael, A.**; 4524 Hogan Lane,  
Wadsworth, IL 60083 (US).

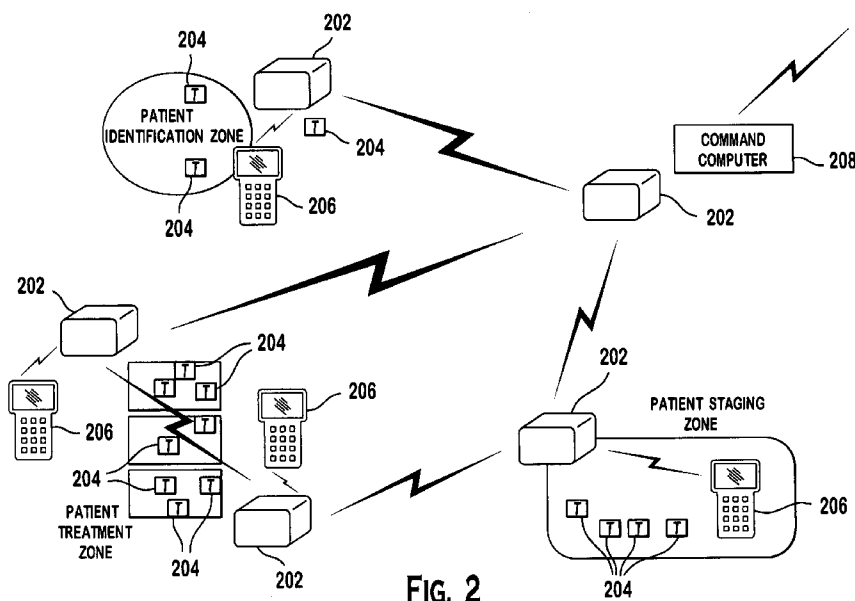
(74) Agent: **NEY, Andrew, L.**; 4 Andorra Hill Road, Lafayette  
Hill, PA 19444 (US).

(81) Designated States (*unless otherwise indicated, for every  
kind of national protection available*): AE, AG, AL, AM,  
AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA,  
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE,  
EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID,  
IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK,  
LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW,  
MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT,  
RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ,  
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM,  
ZW.

(84) Designated States (*unless otherwise indicated, for every  
kind of regional protection available*): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL,  
NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG,  
CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**  
— with international search report

(54) Title: MANAGING A PATIENT INJURED IN AN EMERGENCY INCIDENT



(57) Abstract: A method and system employed by emergency responders to an emergency incident in the management of individuals injured in emergency incidents. An injured patient is tagged with a triage tag that has a bar code and an RFID inlay that identify the patient. At least one of the bar code and RFD inlay are scanned by a portable optical/electronic unit. As the patient is moved through various zones in which the condition of the patient is evaluated and, if necessary, the condition of the patient is treated, patient evaluation data is recorded in the in the portable optical/electronic unit and a command computer in association with patient identification data.

VER-020US

1

PATENT

## MANAGING A PATIENT INURED IN AN EMERGENCY INCIDENT

### FIELD OF THE INVENTION

The present invention relates, in general, to services performed by responders to emergency incidents and, in particular, to a method and system employed by responders to an emergency incident in the management of individuals injured in emergency incidents.

### BACKGROUND OF THE INVENTION

Emergency incidents, such as a fire, a building collapse, or a bombed building, whether caused by an act of nature, human error, or an act of a terrorist, are of tremendous concern at the present time. One major aspect of this concern is the management of individuals injured in the emergency incident.

Currently, there are many different procedures practiced and equipment employed by responders to an emergency incident in the management of individuals injured in the incident. The management of an individual injured in an emergency incident requires a quick and accurate assessment of the condition of the individual and, if necessary, quick and proper treatment of the condition. In addition, of major importance is keeping track of the injured individual, his or her condition, and his or her location.

It is apparent that the tasks of the responders to an emergency incident, in managing individuals injured in the incident, become more difficult the

VER-020US

- 2 -

greater the number of injured individuals. Consequently, there is an ongoing effort to improve the procedures and systems that are practiced and used by the responders.

#### SUMMARY OF THE INVENTION

5                   According to the present invention, a patient, injured in an emergency incident, is managed by emergency responders that use a system that includes a plurality of wireless electronic transmitter/receiver communications units placed at selected locations in the site of an emergency incident to establish a wireless electronic communications network. A triage tag, having a bar code and an RFID  
10   inlay, with each containing patient identity data that identifies a selected patient in the selected area, is placed on the selected patient while the patient is in a patient identification zone. A first patient evaluation of the condition of the selected patient is conducted by an emergency responder and, if necessary, the condition of the selected patient is treated. First patient evaluation data is recorded on the triage tag  
15   by the emergency responder. The emergency responder, using a wireless optical/electronic transmitter/receiver reader, scans at least one of the bar code and the RFID inlay of the triage tag of the selected patient and records the patient identity data and the first patient evaluation data in the reader. The patient identity data and the first patient evaluation data are transmitted from the reader to a  
20   transmitter/receiver in a command computer via the communications units of the communications network and are recorded in the command computer. When a second patient evaluation of the condition of the selected patient is conducted by a second emergency responder in a patient treatment zone, a second wireless optical/electronic transmitter/receiver reader receives from transmitter/receiver of

VER-020US

- 3 -

the command computer via the communications units of the communications network, the patient identity data and the first patient evaluation data. After a second patient evaluation is conducted and the condition of the selected patient is treated, second patient evaluation data is recorded on the triage tag and in the second reader and the patient identity data and the second patient evaluation data are transmitted from the reader to the transmitter/receiver of the command computer via the communications units of the communications network and are recorded in the command computer.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a flow chart of a preferred embodiment of a method for managing a patient injured in an emergency incident according to the present invention.

Figure 2 is a diagram of a preferred embodiment of a system for managing a patient injured in an emergency incident according to the present invention.

Figures 3A and 3B are front and back views, respectively, of a triage tag particularly useful in the system illustrated in Figure 2.

Figures 4A through 4F illustrate examples of drop-down menus that can be incorporated in wireless optical/electronic transmitter/receiver readers used in the Figure 2 system.

VER-020US

- 4 -

Figure 5 is a sectional view of an RFID inlay that can be incorporated in a triage tag used in the method and system for managing a patient injured in an emergency incident according to the present invention.

#### DETAILED DESCRIPTION OF THE INVENTION

5 Referring to Figures 1 and 2, a patient, injured in an emergency incident, is managed by emergency responders according to the present invention by first placing a plurality of wireless electronic transmitter/receiver communications units at selected locations in the site of an emergency incident to establish a wireless electronic communications network. This is represented by step 102 in the flow chart  
10 of Figure 1 and the transmitter/receiver communications units 202 in Figure 2. These transmitter/receiver units can be of conventional construction and operation, such as the commercially available units known as BreadCrumbs® sold by Rajant Corporation.

A triage tag 204, shown in Figure 2, is placed on the selected patient  
15 while the patient is in a patient identification zone, commonly referred to as the "hot zone." This is represented by step 104 in the flow chart of Figure 1.

Triage tags in use at the present time, such as EMS Disaster Tags sold by Disaster Management Systems, Inc., have a unique bar code that contains patient identity data that identifies a selected patient in the selected area. In other words,  
20 each such bar code represents unique data that is individually associated with a selected patient injured in an emergency incident and this unique data serves to identify the selected patient. The bar code is scanned by a wireless optical transmitter/receiver reader to record the patient identity data.

VER-020US

- 5 -

As shown in Figures 3A and 3B, a triage tag 204 that is used in the present invention has front and back sheets 204a and 204b, respectively. A bar code 204c is printed on a plurality of separable parts. Triage tag 204 has, in addition to bar code 204c, an RFID inlay 204d, shown by dotted lines, that is disposed between the front and back sheets 204a and 204b and contains the same unique data as in the bar code, thereby serving as another source of patient identity data that identifies the selected patient when either the bar code or the RFID inlay is scanned by a wireless optical/electronic transmitter/receiver reader. This is represented by step 106 in the flow chart of Figure 1 and readers 206 in Figure 2. Reader 206 can be of conventional construction and operation, such as Symbol RFID Barcode Mobile Scanners made by Motorola, Inc., that are programmed with software appropriate for the particular application. It will be understood that it is not necessary to scan both the RFID inlay and the bar code to record the patient identity data. The preferred mode of operation is to scan the RFID inlay in the first instance and scan the bar code if the RFID inlay scanning operation fails.

Figure 5 is a sectional view of an RFID inlay 204d that can be incorporated in triage tag 204. RFID inlay 204d in Figure 5 can be of standard design that includes a chip 204d1 and an antenna 204d2 connected to the chip.

While the selected patient is in the patient identification area, a patient evaluation of the condition of the selected patient is conducted by an emergency responder and, if necessary, the condition of the selected patient is treated. This is represented by step 108 in the flow chart of Figure 1.

VER-020US

- 6 -

Patient evaluation data is recorded on triage tag 204 in Figure 2 by the emergency responder and in reader 206 by the emergency responder. If desired, the Figure 2 system can be arranged to record patient treatment data that represents the treatment provided the patient if treatment has been provided. This is represented  
5 by step 110 in the flow chart of Figure 1.

The recorded patient identity data and the recorded first patient evaluation data (along with recorded first patient treatment, if any) are transmitted from reader 206 to a transmitter/receiver in a command computer 208 via the communications units 202 of the communications network. The data transmitted to  
10 command computer 208 is recorded in the command computer. This is represented by steps 112 and 114 in the flow chart of Figure 1.

When a second patient evaluation of the condition of the selected patient is conducted, the reader has, or receives from the transmitter/receiver of command computer 208 via communications units 202 of the communications  
15 network, the patient identity data and the first patient evaluation data, along with patient treatment data if available and desired. This is represented by step 116 in the flow chart of Figure 1. Preferably, the patient identity data, the first patient evaluation data, and the first patient treatment data, if available and desired, are accessed from reader 206 or received from command computer 208 prior to  
20 conducting a second patient evaluation of the patient and administering further treatment, if necessary, to the patient.

As represented by step 118 in the flow chart of Figure 1, a second evaluation of the condition of the selected patient can be conducted and, if

VER-020US

- 7 -

necessary, the condition of the selected patient is treated further. The second patient evaluation data is recorded on triage tag 204 and in reader 206. This is represented by step 120 in the flow chart of Figure 2.

The patient identity data and the second patient evaluation data are transmitted from reader 206 to the transmitter/receiver of command computer 208 via the communications units 202 of the communications network and are recorded in the command computer. If the Figure 2 system is arranged to record patient treatment data, second patient treatment data also can be transmitted to command computer 208 and recorded in the command computer. This is represented by steps 122 and 114 in the flow chart of Figure 1.

After the selected patient has been identified and the condition of the selected patient has been evaluated and, if necessary, treated, the selected patient is moved from the patient identification zone to a patient treatment zone, commonly referred to as the "triage zone, where the condition of the selected is treated, if further treatment is necessary. This is represented by step 124 in the flow chart of Figure 1.

A second emergency provider, having a second wireless optical/electronic transmitter/receiver reader 206, manages the selected patient in the patient treatment zone. The second emergency provider scans at least one of the RFID inlay and the bar code of triage tag 204 of the selected patient with the second reader to record in the second reader the patient identity data. This is represented by step 126 in the flow chart of Figure 1.



VER-020US

- 8 -

By accessing command computer 208 prior to treating the selected patient in the patient treatment zone, the patient evaluation data and the patient treatment data, if any, recorded in the command computer is received in second reader 206. This is represented by step 128 in the flow chart of Figure 1.

5                   The second emergency provider conducts a patient evaluation of the condition of the selected patient in the patient treatment zone and, if necessary, treats the condition of the selected patient in the patient treatment zone. This is represented by step 130 in the flow chart of Figure 1.

10                   The patient evaluation data developed from the patient evaluation conducted in the patient treatment zone is recorded on the triage tag and in the second reader 206 and the patient identity data and this patient evaluation data are transmitted from second reader 206 to the transmitter/receiver of command computer 208 via communications units 202 of the communications network for recording in the command computer. If the Figure 2 system is arranged to record  
15                   patient treatment data representative of the treatment received by the selected patient in the patient treatment zone, patient treatment data is recorded in second reader 206 and transmitted to the transmitter/receiver of command computer 208 and via communications units 202 of the communications network for recording in the command computer. This is represented by steps 132, 134, and 114 of the flow  
20                   chart of Figure 1.

After the selected patient has been evaluated and treated in the patient treatment zone, the selected patient is moved to a patient staging zone from where the selected patient is transported to a remote destination for further

VER-020US

- 9 -

treatment. This is represented by step 136 in the flow chart of Figure 1. It should be understood that, if the evaluation of the selected patient in the patient identification zone leads to the conclusion that the selected patient does not require treatment, the selected patient can be moved directly from the patient identification zone to the patient staging zone if the users of the system contemplate such flexibility in their management of patients.

A third emergency provider, having a third wireless optical/electronic transmitter/receiver reader 206, manages the selected patient in the patient staging zone. The third emergency provider scans at least one of the bar code and the RFID inlay of triage tag 204 of the selected patient with the third reader to record in the third reader the patient identity data. This is represented by step 138 in the flow chart of Figure 1.

By accessing command computer 208 prior to transporting the selected patient to a remote location, patient evaluation data and patient treatment data, if any has been recorded, is received in third reader 206. This is represented by step 140 in the flow chart of Figure 1.

The selected patient then is transported to a remote destination which is represented by step 142 of the flow chart of Figure 1. Patient destination data of the remote destination to which the selected patient is transported and patient transport data of the transport means (e.g., ambulance identification) by which the patient is being transported to the remote destination is recorded in third reader 206. This is represented by step 144 in the flow chart of Figure 1.

VER-020US

- 10 -

The patient identity data, patient destination data, and patient transport data are transmitted from third reader 206 to the transmitter/receiver of the command computer 208 via the communications units 202 of the communications network. This is represented by step 146 of the flow chart in Figure

- 5 1. The patient identity data, patient destination data and patient transport data are recorded in command computer 208 as represented by step 114 of the flow chart of Figure 1.

- 10 Data recorded in command computer 208 can be transmitted to a central location or headquarters, such as a city hall, for recording. This is represented by steps 148 and 150 of the flow chart of Figure 1.

- 15 It should be understood that labeling the patient evaluations and patient treatments in numerical sequence is done more to present the manner in which the present invention can be implemented rather than presenting how the present invention is practiced in all instances. As indicated above, if the evaluation of the selected patient in the patient identification zone is such that the selected patient does not require treatment, the selected patient can be moved directly from the patient identification zone to the patient staging zone. Likewise, if no further treatment of the selected patient in the patient identification zone is conducted, the second patient treatment, if necessary, will be performed in the patient treatment zone. The present invention is best implemented by providing the users, namely emergency responders, with equipment and methodology that has the most features and greatest flexibility to enable them to perform their tasks.
- 20

VER-020US

- 11 -

Preferably, each wireless optical/electronic transmitter/receiver reader 206 includes means for displaying drop-down menus having a plurality of data entry selections that display options for entering data associated with the selected patient, means for selecting a data entry option, and means for entering data associated with the selected patient selecting options. It will be understood that, in the following description of the entry of data into a wireless optical/electronic transmitter/receiver reader, the reader under consideration at any particular time is that reader being operated by the emergency responder at the particular location within the site of the emergency event (i.e., "Patient Identification Zone" or "Patient Treatment Zone" or "Patient Staging Zone") where the data is being entered.

Figure 4A illustrates a user interface screen of a wireless optical/electronic transmitter/receiver reader of the data entry options available to an emergency responder for entering data about the selected patient. Upon activation of the "Pull Trigger To Read Tag" block by the emergency responder by engaging an appropriate control on the reader, the scanning by the reader of the RFID inlay in the triage tag (i.e., "patient identity data") is automatically entered in this block.

When the emergency responder engages the appropriate character(s) on the key pad of the wireless optical/electronic transmitter/receiver reader that correspond to the "(1) Triage Type" option, the "Triage Category Options" screen illustrated in Figure 4B appears on the reader. The "Triage Category Options" "(1) Immediate" or "(2) Delayed" or "(3) Minor" or "(4) Morgue") that are displayed on the reader screen correspond to the "EVIDENCE" options on triage tag 204 illustrated in Figures 3A and 3B. The emergency responder enters data of the triage category option (i.e., "patient evaluation data") by engaging the appropriate character(s) on

VER-020US

- 12 -

the key pad of the reader that correspond to the triage category option that is selected.

When the emergency responder engages the appropriate character(s) on the key pad of the wireless optical/electronic transmitter/receiver reader that correspond to the "(2) Gender" option, the "Gender Options" screen illustrated in Figure 4C appears on the reader. The emergency responder enters the gender of the selected patient (i.e., "patient identity data") by engaging the appropriate character(s) on the key pad of the reader that correspond to the gender of the selected patient.

When the emergency responder engages the appropriate character(s) on the key pad of the wireless optical/electronic transmitter/receiver reader that correspond to the "(3) Age" option, the "Age Data" screen illustrated in Figure 4D appears on the reader. The emergency responder enters the age of the selected patient (i.e., "patient identity data") by manually entering the age of the selected patient by engaging the character(s) on the key pad of the reader that correspond to the age of the selected patient.

When the emergency responder engages the appropriate character(s) on the key pad of the wireless optical/electronic transmitter/receiver reader that corresponds to the "(4) Injury" option, the "Injury Options" screen illustrated in Figure 4E appears on the reader. The emergency responder enters the nature of the injury sustained by the selected patient (i.e., "patient evaluation data") by engaging the character(s) on the key pad of the reader that correspond to the nature of the injury sustained by the selected patient.

VER-020US

- 13 -

When the emergency responder engages the appropriate character(s) on the key pad of the wireless optical/electronic transmitter/receiver reader that corresponds to the "(5) Amb. #" option, the "Ambulance Options" screen illustrated in Figure 4F appears on the reader. With a listing of the ambulance services that operate in the geographical area in which the emergency incident occurred, the emergency responder enters the particular ambulance service by which the selected patient is being transported to the remote location (i.e., "patient transport data") by engaging the appropriate character(s) on the key pad of the reader that correspond to particular ambulance service and the emergency responder manually enters the number of the ambulance in which the selected patient is being transported to the remote destination by engaging the appropriate character(s) on the key pad of the reader that correspond to the ambulance number.

When the emergency responder engages the appropriate character(s) on the key pad of the reader that corresponds to the "(6) Hospital Destination" option, the "Hospital Destination Options" screen illustrated in Figure 4G appears on the reader. With a listing of the hospitals that operate in the geographical area in which the emergency incident occurred, the emergency responder enters the particular hospital to which the selected patient is being transported (i.e., "patient destination data") by engaging the appropriate character(s) on the key pad of the reader that correspond to the particular hospital.

After data has been entered into a wireless optical/electronic transmitter/receiver reader at a particular location (i.e., "Patient Identification Zone" or "Patient Treatment Zone" or "Patient Staging Zone"), that data is transmitted to the command computer by engaging the appropriate character(s) on the key pad of

VER-020US

- 14 -

the reader corresponding to the "(8) Send Data" option that appears on all of the screens described above and illustrated in the drawings.

Although the invention is illustrated and described herein with reference to specific embodiments, the invention is not intended to be limited to the details shown. Rather, various modifications may be made in the details within the scope and range of equivalents of the claims and without departing from the invention.

VER-020US

- 15 -

## What is Claimed:

- 1                   1.       A method for managing a patient injured in an emergency  
2   incident comprising the steps of:  
  
3                    placing a plurality of wireless electronic transmitter/receiver  
4   communications units at selected locations in the site of an emergency incident to  
5   establish a wireless electronic communications network;  
  
6                    providing a triage tag having a bar code and an RFID inlay each  
7   containing patient identity data that identifies a selected patient in the selected area;  
  
8                    placing the triage tag on the selected patient;  
  
9                    conducting a first patient evaluation of the condition of the selected  
10   patient;  
  
11                   recording first patient evaluation data on the triage tag;  
  
12                   providing a wireless optical/electronic transmitter/receiver reader;  
  
13                   scanning at least one of the bar code and the RFID inlay of the triage  
14   tag of the selected patient with the reader to record in the reader the patient identity  
15   data;  
  
16                   recording the first patient evaluation data in the reader;  
  
17                   providing a command computer having a wireless transmitter/receiver;



VER-020US

- 16 -

18 transmitting the patient identity data and the first patient evaluation  
19 data from the reader to the transmitter/receiver of the command computer via the  
20 communications units of the communications network;

21 recording the patient identity data and the first patient evaluation data  
22 in the command computer;

23 conducting a second patient evaluation of the condition of the selected  
24 patient;

25 recording second patient evaluation data in the reader;

26 transmitting the patient identity data and the second patient  
27 evaluation data from the reader to the transmitter/receiver of the command  
28 computer via the communications units of the communications network; and

29 recording the patient identity data and the second patient evaluation  
30 data in the command computer.

1 2. A method for managing a patient injured in an emergency  
2 incident according to claim 1 further including the steps of:

3 (a) accessing the patient identity data and the first patient  
4 evaluation data recorded in the command computer prior to conducting  
5 the second patient evaluation;

VER-020US

- 17 -

6 (b) receiving in the reader the patient identity data and the first  
7 patient evaluation data prior to conducting the second patient  
8 evaluation.

1 3. A method for managing a patient injured in an emergency  
2 incident according to claim 1:

3 (a) wherein the reader is operated by a first emergency responder  
4 managing the selected patient in a patient identification zone where  
5 the selected patient is identified and the first patient evaluation is  
6 conducted; and

7 (b) the method further includes the steps of:

8 (1) moving the selected patient to a patient treatment zone  
9 where the condition of the selected patient is treated,

10 (2) providing a second wireless optical/electronic  
11 transmitter/receiver reader operated by a second emergency  
12 responder managing the selected patient in the patient  
13 treatment zone,

14 (3) scanning at least one of the bar code and the RFID inlay  
15 of the triage tag of the selected patient with the second reader  
16 to record in the second reader the patient identity data,

VER-020US

- 18 -

- 17 (4) receiving in the second reader the first patient  
18 evaluation data prior to treating the selected patient in the  
19 patient treatment zone,
- 20 (5) conducting a second patient evaluation of the condition  
21 of the selected patient in the patient treatment zone,
- 22 (6) conducting treatment of the condition of the selected  
23 patient in the patient treatment zone,
- 24 (7) recording the second patient evaluation data in the  
25 second reader,
- 26 (8) transmitting the patient identity data and the second  
27 patient evaluation data from the second reader to the  
28 transmitter/receiver of the command computer via the  
29 communications units of the communications network, and
- 30 (9) recording the patient identity data and the second  
31 patient evaluation data in the command computer.

1 4. A method for managing a patient injured in an emergency  
2 incident according to claim 3 further including the steps of:

- 3 (a) moving the selected patient to a patient staging zone from  
4 where the selected patient is transported to a remote destination for  
5 further treatment;

VER-020US

- 19 -

- 6 (b) providing a third wireless optical/electronic transmitter/receiver  
7 reader operated by a third emergency responder managing the  
8 selected patient in the patient staging zone;
- 9 (c) scanning at least one of the bar code and the RFID inlay of the  
10 triage tag of the selected patient to record in the third reader the  
11 patient identity data;
- 12 (d) receiving in the third reader the second patient evaluation data  
13 prior to transporting the selected patient to the remote destination;
- 14 (e) transporting the selected patient to the remote destination;
- 15 (f) recording patient destination data of the remote destination to  
16 which the selected patient is transported and patient transport data of  
17 the transport means by which the patient is being transported to the  
18 remote destination in the third reader and;
- 19 (g) transmitting the patient identity data, the patient destination  
20 data, and the patient transport data from the third reader to the  
21 transmitter/receiver of the command computer via the  
22 communications units of the communications network;
- 23 (h) recording the patient identity data, the patient destination data,  
24 and the patient transport data in the command computer;

VER-020US

- 20 -

25 (i) transmitting the patient identity data, the patient evaluation  
26 data, the patient destination data, and the patient transport data from  
27 the command computer to a headquarters facility; and

28 (j) recording the patient identity data, the patient evaluation data,  
29 the patient destination data, and the patient transport data at the  
30 headquarters facility.

1 5. A method for managing a patient injured in an emergency  
2 incident according to claim 3 further including the steps of:

3 (a) recording patient treatment data in the second reader;

4 (b) transmitting the patient treatment data from the second reader  
5 to the transmitter/receiver of the command computer via the  
6 communications units of the communications network; and

7 (c) recording the patient treatment data in the command  
8 computer.

1 6. A method for managing a patient injured in an emergency  
2 incident according to claim 5 further including the steps of:

3 (a) conducting patient treatment of the condition of the selected  
4 patient while the selected patient is in the patient identification zone;

5 (b) recording patient treatment data of the treatment of the  
6 selected patient conducted while the selected patient is in the patient

VER-020US

- 21 -

7 identification zone in the reader operated by the first emergency  
8 responder;

9 (c) transmitting the patient treatment data from the reader  
10 operated by the first emergency responder to the transmitter/receiver  
11 of the command computer via the communications units of the  
12 communications network; and

13 (d) recording the patient treatment data transmitted from the  
14 reader operated by the first emergency responder in the command  
15 computer.

1 7. A system for managing a patient injured in an emergency  
2 incident comprising:

3 a wireless electronic communications network including a plurality of  
4 wireless electronic transmitter/receiver communications units disposed at selected  
5 locations in the site of an emergency incident;

6 a triage tag having a bar code and an RFID inlay each containing  
7 patient identity data that identifies a selected patient in the selected area;

8 a wireless optical/electronic transmitter/receiver reader having:

9 (a) means for scanning at least one of the bar code and the RFID  
10 inlay of the triage tag of the selected patient to record the patient  
11 identity data of the selected patient,

VER-020US

- 22 -

12 (b) means for recording patient evaluation data of the condition of  
13 the selected patient, and

14 (d) transmitting the patient identity data and the patient evaluation  
15 data from the reader to a command computer via the communications  
16 units of the communications network; and

17 a command computer having a wireless transmitter/receiver and data  
18 recording means for:

19 (a) receiving via the communications units of the communications  
20 network and the transmitter/receiver of the command computer the  
21 patient identity data and the patient evaluation data transmitted from  
22 the reader,

23 (b) recording in the data recording means the patient identity data  
24 and the patient evaluation data, and

25 (c) transmitting via the transmitter/receiver of the command  
26 computer and the communications units of the communications  
27 network the patient identity data and the patient evaluation data to  
28 the reader.

1 8. A system for managing a patient injured in an emergency  
2 incident according to claim 7:

VER-020US

- 23 -

- 3 (a) wherein the reader is operated by a first emergency responder  
4 managing the selected patient in a patient identification zone where  
5 the selected patient is identified; and
- 6 (b) the system further includes a second wireless optical/electronic  
7 transmitter/receiver reader operated by a second emergency  
8 responder managing the selected patient in a patient treatment zone  
9 where the selected patient is treated, said second reader having means  
10 for:
- 11 (1) scanning at least one of the bar code and the RFID inlay  
12 of the triage tag of the selected patient to record in the second  
13 reader the patient identity data,
- 14 (2) receiving from the data recording means in the  
15 command computer the patient evaluation data recorded in the  
16 command computer,
- 17 (3) recording in the second reader patient evaluation data  
18 received from the data recording means in the command  
19 computer and patient evaluation data developed while the  
20 patient is in the patient treatment zone, and
- 21 (4) transmitting the patient identity data and the patient  
22 evaluation data from the second reader to the  
23 transmitter/receiver of the command computer via the  
24 communications units of the communications network.



VER-020US

- 24 -

1                   9.     A system for managing a patient injured in an emergency  
2 incident according to claim 8 further including:

3                   (a)     a third wireless optical/electronic transmitter/receiver reader  
4 operated by a third emergency responder managing the selected  
5 patient in a patient staging zone from where the selected patient is  
6 transported to a remote destination for further treatment, said third  
7 reader for:

8                   (1)     scanning at least one of the bar code and the RFID inlay  
9 of the triage tag of the selected patient to record in the third  
10 reader the patient identity data,

11                  (2)     receiving from the data recording means in the  
12 command computer the patient evaluation data recorded in the  
13 command computer,

14                  (3)     recording patient destination data of the remote  
15 destination to which the selected patient is transported, and

16                  (4)     transmitting the patient identity data and the patient  
17 destination data from the third reader to the  
18 transmitter/receiver of the command computer via the  
19 communications units of the communications network; and

20                  (b)     means for recording the patient identity data and the patient  
21 destination data in the command computer.

VER-020US

- 25 -

1                   10.     A system for managing a patient injured in an emergency  
2     incident according to claim 9 wherein each of the readers include:

3                   (a)     means for displaying drop-down menus having a plurality of  
4                   data entry selections that display options for entering data associated  
5                   with the selected patient;

6                   (b)     means for selecting a data entry option; and

7                   (c)     means for entering data associated with the selected patient  
8                   selecting options.

1                   11     A system for managing a patient injured in an emergency  
2     incident according to claim according to claim 10 wherein:

3                   (a)     the second reader has means for:

4                   (1)     recording patient treatment data, and

5                   (2)     transmitting the patient treatment data to the  
6                   transmitter/receiver of the command computer via the  
7                   communications units of the communications network; and

8                   (b)     the command computer has means for recording the patient  
9                   treatment data.

1                   12.     A method for managing a patient injured in an emergency  
2     incident according to claim 11 wherein:

VER-020US

- 26 -

3           (a)    the reader operated by the first emergency responder has  
4           means for:

5                   (1)    recording patient treatment data, and

6                   (2)    transmitting the patient treatment data to the  
7                   transmitter/receiver of the command computer via the  
8                   communications units of the communications network; and

9           (b)    the command computer has means for recording the patient  
10           treatment data transmitted from the reader operated by the first  
11           emergency responder.

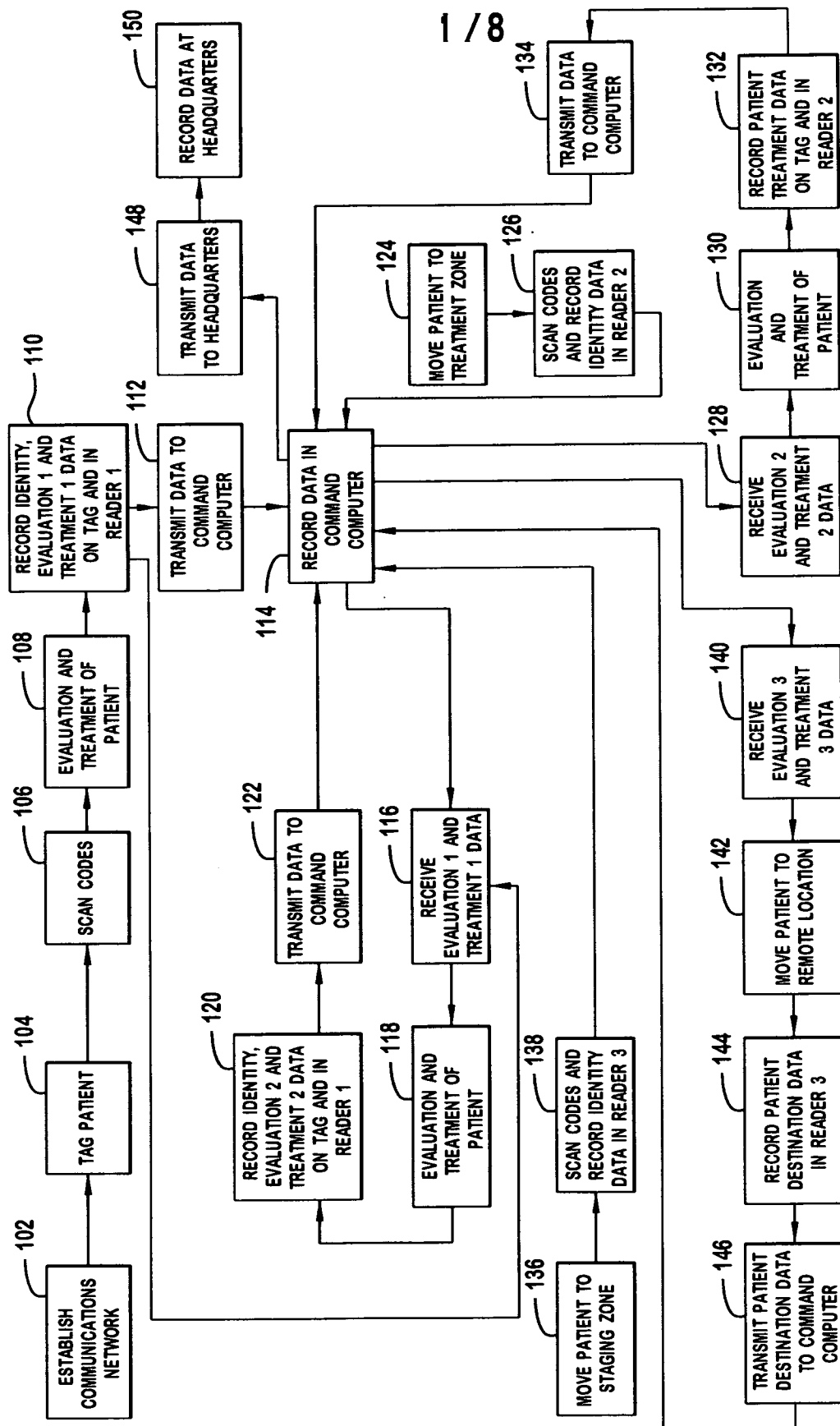


FIG. 1

2/8

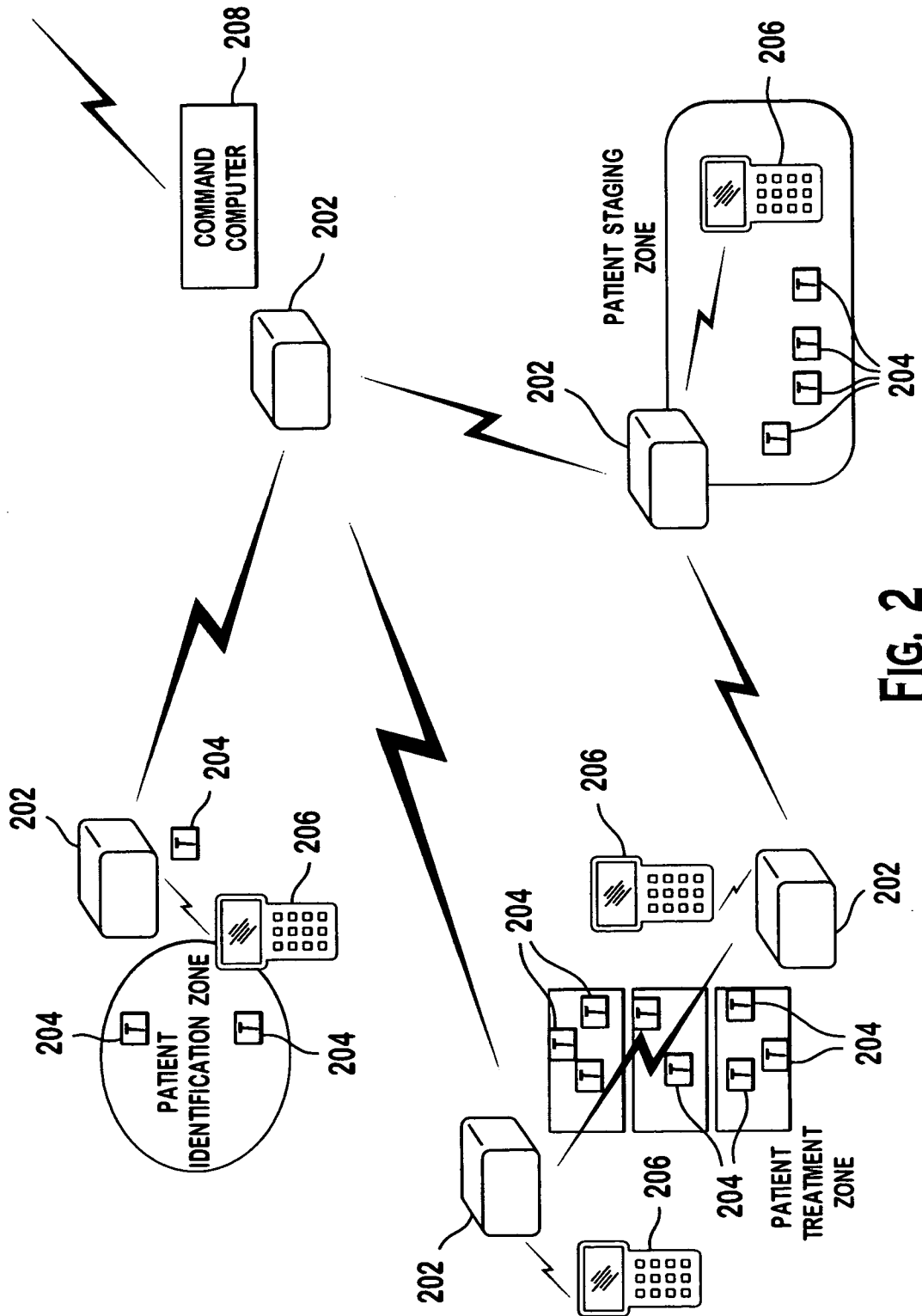


FIG. 2

3 / 8

204c

FIG. 3A

**3 / 8**

**204c**

CONTAMINATED

**Personal Property Receipt/  
Evidence Tag** R001349

---

**Destination** R001349

**Via** R001349

---

**RFID** enhanced R001349

**All Risk TRIAGE TAG**

☐ S Salivation
☐ L Laceration
☐ U Urination
☐ D Defecation
☐ G G.I. Distress
☐ E Emesis
☐ M Miosis

**AUTO INJECTOR TYPE** 
☐ 1 ☐ 2 ☐ 3

**AUTO INJECTOR TYPE** 
☐ 1 ☐ 2 ☐ 3

Yes	No	Primary Decon
Yes	No	Secondary Decon

Solution
Blunt Trauma
Burn
C-Spine
Cardiac
Crushing
Fracture
Laceration
Penetrating Injury

Age

☐ Male ☐ Female

**204d**

Other:

VITAL SIGNS

Time	B/P	Pulse	Respiration

Time	Drug Solution	Dose

EVIDENCE

R001349

MORGUE

R001349

IMMEDIATE

R001349

DELAYED

R001349

MINOR

R001349

MORGUE

R001349

IMMEDIATE

R001349

DELAYED

R001349

MINOR

R001349

4 / 8

FIG. 3B

○

**Comments/Information**

**Patient's Name**

---

**RESPIRATIONS**  
**R** ☐ Yes  
☐ No

**PERFUSION**  
**P** ☐ + 2 Sec.  
☐ - 2 Sec.


**MENTAL STATUS**  
**M** ☐ Can Do  
☐ Can't Do

---


Move the Walking Wounded ► **MINOR**

No Respirations After Head Tilt ► **MORGUE**

☐ Respirations - Over 30 ► **IMMEDIATE**

 3  
☐ Perfusion - Capillary Refill Over 2 Seconds ► **IMMEDIATE**

☐ Mental Status - Unable to Follow Simple Commands ► **IMMEDIATE**

 Otherwise ► **DELAYED**

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 All Risk Triage Tag and RFID Enhanced All Risk Triage Tag are Trademarks of Disaster Management Systems, Inc. • All Rights Reserved

PERSONAL INFORMATION	
NAME	
ADDRESS	
CITY	ST ZIP
PHONE	
COMMENTS	RELIGIOUS PREF.

<b>MORGUE</b> Pulseless/ Non-Breathing	<b>MORGUE</b> Pulseless/ Non-Breathing
<b>IMMEDIATE</b> Life Threatening Injury	<b>IMMEDIATE</b> Life Threatening Injury
<b>DELAYED</b> Serious Non Life Threatening	<b>DELAYED</b> Serious Non Life Threatening
<b>MINOR</b> Walking Wounded	<b>MINOR</b> Walking Wounded

**CONTAMINATED**

**EVIDENCE**

204b

5 / 8






USER INTERFACE : AGE DATA :	
	TRIAGE DATA    12:05
PULL TRIGGER TO READ TAG ...	
(1). TRIAGE TYPE	<input type="text"/>
(2). GENDER	<input type="text"/>
(3). AGE	<input type="text"/>
(4). INJURY	<input type="text"/>
(5). AMB. #	<input type="text"/>
(6). HOSPITAL DESTINATION	<input type="text"/>
(7). CAPTURE IMAGE	
(8). SEND DATA	(0). EXIT
EXIT OPTIONS 	

FIG. 4A






TRIAGE CATEGORY OPTIONS :	
	TRIAGE DATA    11:12
PULL TRIGGER TO READ TAG ...	
(1)	<input type="text"/>
(2)	(1). IMMEDIATE
(3)	(2). DELAYED
(4)	(3). MINOR
(5)	(4). MORGUE
(6). HOSPITAL DESTINATION	<input type="text"/>
(8). SEND DATA	(0). EXIT
EXIT OPTIONS 	

FIG. 4B



6 / 8





GENDER OPTIONS:	
	TRIAGE DATA <input type="checkbox"/> G   11:19
PULL TRIGGER TO READ TAG ...	
(1). T	1. FEMALE 2. MALE
(2). GENDER	
(3). AGE	
(4). INJURY	
(5). AMB. #	
(6). HOSPITAL DESTINATION	
(8). SEND DATA	(0). EXIT
EXIT OPTIONS 	

FIG. 4C





	TRIAGE DATA <input type="checkbox"/> G   11:21
PULL TRIGGER TO READ TAG ...	
(1). TRIAGE TYPE	
(2). GENDER	
(3). AGE	25
(4). INJURY	
(5). AMB. #	
(6). HOSPITAL DESTINATION	
(7). CAPTURE IMAGE	
(8). SEND DATA	(0). EXIT
EXIT OPTIONS 	

FIG. 4D

7/8





INJURY OPTIONS:	
	TRIAGE DATA <input type="text" value="G"/>   11:23
PULL TRIGGER TO READ TAG ...	
(1). T	1. BLUNT TRAUMA
(2). G	2. BURN
(3). A	3. C-SPINE
(4). IN	4. CARDIAC
(5). A	5. CRUSHING
(6). H	6. FRACTURE
	7. LACERATION
	8. PENETRATING INJURY
	9. CONTAMINATED
<input type="text"/>	
(8). SEND DATA (0). EXIT	
EXIT OPTIONS 	

FIG. 4E





AMBULANCE OPTIONS:	
	TRIAGE DATA <input type="text" value="G"/>   12:00
PULL TRIGGER TO READ TAG ...	
(1)	1. AMR
(2)	2. ANA
(3)	3. CARE
(4)	4. EMRG
	5. LYNCH
	6. MDX
(5). AMB. #	<input type="text"/>
(6). HOSPITAL DESTINATION	<input type="text"/>
(8). SEND DATA (0). EXIT	
EXIT OPTIONS 	

FIG. 4F

8 / 8

**HOSPITAL DESTINATION OPTIONS:**

TRIAGE DATA **G** 12:03

PULL TRIGGER TO READ TAG...

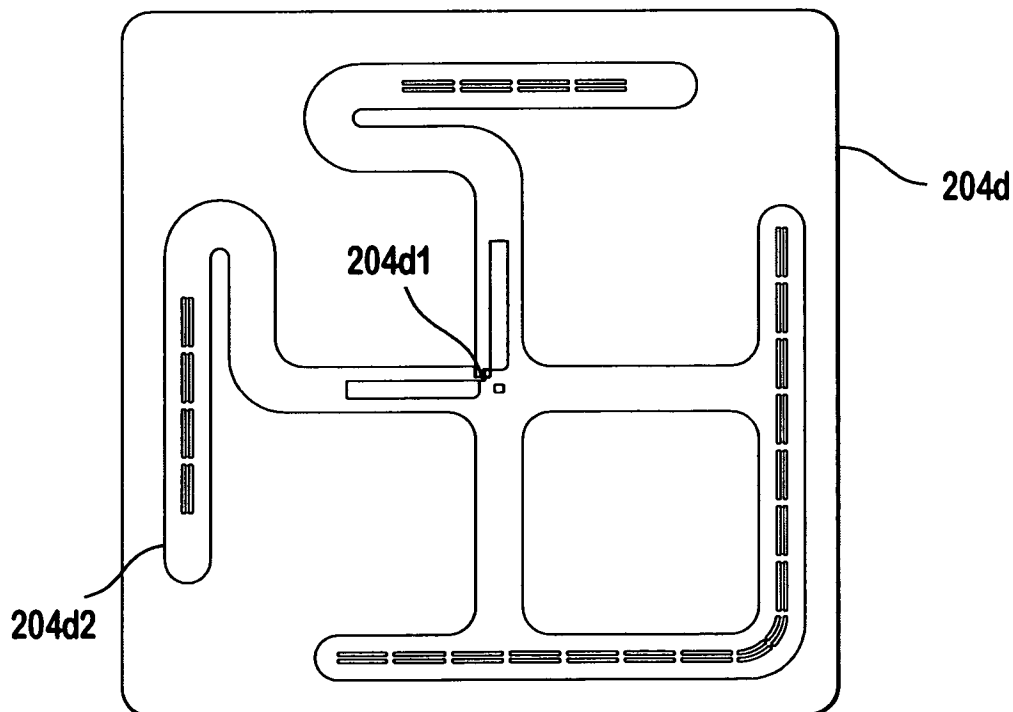
(1)	1. ANAHEIM MEM. MED CENTER : AMMC	<input type="checkbox"/>
(2)	2. ANAHEIM GENERAL HOSPITAL	<input type="checkbox"/>
(3)	3. KAISER LAKEVIEW : KAISER	<input type="checkbox"/>
(4)	4. W. ANAHEIM MED CENTER : WAMC	<input type="checkbox"/>
(5)	5. W. MED ANAHEIM : WMA	<input type="checkbox"/>
(6)	6. PLACENTIA LINDA : PLH	<input type="checkbox"/>
(7)	7. ST. JOSEPH'S MED CENTER : ST. JOE'S	<input type="checkbox"/>
(8)	8. UCI MEDICAL CENTER : UCI	<input type="checkbox"/>
(9)	9. W. MED SANTA ANA : WMSA	<input type="checkbox"/>
(0)	0. CLEAR FIELD	<input type="checkbox"/>

> . NEXT PAGE

(8) . SEND DATA      (0) . EXIT

EXIT OPTIONS

**FIG. 4G**



**FIG. 5**

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/10049

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G06Q 50/00 (2008.04)

USPC - 705/3

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)

USPC: 705/3

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

USPC: 705/1, 2, 3; 700/90

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

PubWEST(PGPB,USPT,EPAB,JPAB)Google, Google Scholar

Search Terms Used: patient, victim, data, information, record, identification, identity, assessment, evaluation, triage, visit, tag, command, central, remote, computer, server, database, network, wireless, communicate, rfid, bar code, reader, transmitter, receiver

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2007/0194099 A1 (Miller et al.) 23 August 2007 (23.08.2007) see para [0002]-[0003], [0008], [0020], [0024], and [0030]-[0036].	1-12
Y	Lenert et al., "An Intelligent 802.11 Triage Tag For Medical Response to Disasters," AMIA Annual. Symposium Proceedings (online), 2005; pg 440-444, Retrieved from the internet <URL: <a href="http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&amp;pubmedid=16779078">http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&amp;pubmedid=16779078</a> >, [retrieved on 29 October 2008] see pg 1-3, and 5 (numbering from Internet html copy).	1-12
Y	US 2004/0172284 A1 to Sullivan et al. 02 September 2004 (02.09.2004), see para [0021], [0026], [0050] and [0060]	4, 10-12

☐ Further documents are listed in the continuation of Box C.


\* Special categories of cited documents:

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"O" document referring 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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

30 October 2008 (30.10.2008)

Date of mailing of the international search report

19 NOV 2008

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents

P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300

PCT OSP: 571-272-7774