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PUBLIC EMERGENCY NOTIFICATION AND COMMUNICATIONS SYSTEM

WE Disaster Warning Systems Limited, a New Zealand company of 177b Old Kaimai Road, Tauranga 3171, New Zealand; Gary Trevor Benner, a New Zealand citizen of 177b Old Kaimai Road, Tauranga 3171, New Zealand

do hereby declare this invention for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described in and by the following statement:

PUBLIC EMERGENCY NOTIFICATION AND COMMUNICATIONS SYSTEM

STATEMENT OF CORRESPONDING APPLICATIONS

This application is based on the Provisional specification filed in relation to New Zealand Patent Application Number 592485, the entire contents of which are incorporated herein by reference.

TECHNICAL FIELD

This invention relates to a public emergency notification and communications system. In particular the present invention may provide geographically sensitive alerts or warnings to its users in addition to triggering or providing an alarm which may wake unconscious persons.

BACKGROUND ART

Emergency warning systems can provide valuable warning of impending disaster or emergency situations. Communication with the public in the minutes and days after the event is just as critical to inform them of what to do, and progress of any measures to protect them, and manage their circumstances.

For example, disasters such as tsunamis, tornado, severe weather events or warfare situations all place life and property in danger. An early warning of such impending conditions can allow a population to evacuate, or secure themselves and their property, potentially mitigating loss of life and damage.

In addition to the above, for disasters such as earthquakes, where early warning is not generally feasible as yet, then there is a need to maintain communication with the population, to ensure that measures in place are understood.

Such warning systems need to operate on a geographically localised basis to ensure that only the population presently in danger receives a warning. False alarms distributed to communities which are not threatened can degrade the reputation and perceived importance of such

warnings when issued in future.

One existing method of warning a population is through the activation of audio sirens. These sirens could be activated once an emergency condition is detected to gain the attention of a local population in a specific geographical region.

However, such siren based systems can alarm and confuse a population if there is no wide spread understanding of the meaning of the siren. There is also the potential for unconscious or sleeping persons to miss the warning provided by such sirens.

Other forms of emergency warning systems rely on broadcast networks such as radio or television transmissions. These forms of media can rapidly and effectively update a population as to an impending emergency situation.

However, broadcast systems are only capable of alerting their current audience of an impending emergency. Members of the population who are sleeping, unconscious or not in the presence of a television or radio will not be provided with an early warning of an emergency.

One highly effective form of emergency warning system is the dedicated smoke or fire alarm installed in individual structures or buildings. These alarm systems can rapidly wake unconscious or sleeping persons once the sensors they incorporate detect smoke or fire conditions. However, individual smoke alarms can not necessarily wake or alert an entire population within a large geographical region.

It would therefore be of advantage to have an improved emergency warning system which addressed any or all of the above problems. In particular a warning system which could be activated on a geographically sensitive basis to warn a large number of people of an impending emergency, and which could also wake unconscious or sleeping persons would be an advantage.

It is an object of the present invention to address the foregoing problems or at least to provide the public with a useful choice.

It is acknowledged that the term 'comprise' may, under varying jurisdictions, be attributed with either an exclusive or an inclusive meaning. For the purpose of this specification, and unless otherwise noted, the term 'comprise' shall have an inclusive meaning - i.e. that it will be taken to mean an inclusion of not only the listed components it directly references, but also other non-specified components or elements. This rationale will also be used when the term 'comprised' or 'comprising' is used in relation to one or more steps in a method or process.

Further aspects and advantages of the present invention will become apparent from the ensuing description which is given by way of example only.

DISCLOSURE OF THE INVENTION

The present invention is configured to provide an emergency notification system. The system is designed to alert both awake and sleeping or unconscious persons and to provide information to these persons of an impending emergency situation. The system includes an emergency notification terminal which may be installed or located in a wide range of places, for example in static locations such as buildings, in outdoor public spaces or alternatively the terminal may be located within a mobile device, for example within cellular telephones, GPS units or other wireless devices.

According to one aspect of the invention, there is provided an emergency notification system which comprises,

an emergency notification terminal comprising ;

a) a trigger signal receiver, and

b) at least one alert indicator, and

c) a central control element configured to receive a coded trigger signal from the trigger

signal receiver,

and a trigger signal generator comprising;

d) at least one input element configured to receive emergency data, and

e) a trigger signal encoder configured to provide coded trigger signals based on emergency data received from at least one input element, and

f) at least one output element configured to provide generated trigger signals to a trigger signal receiver.

According to a further aspect of the invention there is provided a method of providing emergency information over a communications network, the method comprising;

a) inputting information regarding an emergency situation into a base unit;

b) delivering said information from the base unit to a server or cluster of servers;

c) delivering said information from a server or cluster of servers directly or indirectly to one or more emergency notification terminals, wherein an alert indicator associated with the terminal is actuated on receipt of the information.

In preferred embodiments, the information is coded to activate only emergency notification terminals located within a specific geographic area.

In further preferred embodiments, the emergency information is delivered to the emergency notification terminals using a telecommunications network.

In alternative embodiments the emergency information is delivered to the emergency notification terminal using a radio broadcast system.

Even more preferably, the emergency information is delivered to the emergency notification terminals using existing radio station systems.

In preferred embodiments, the base unit includes a trigger signal generator.

According to a further aspect of the present invention there is provided an emergency notification terminal which comprises,

a) a trigger signal receiver, and

b) at least one alert indicator, and

c) a central control element configured to receive a coded trigger signal from the trigger signal receiver,

wherein the control element actuates said at least one alert indicator on receipt of at least one specific coded trigger signal.

In one preferred embodiment of the invention the terminal is in the form of a static receiver unit, the static receiver unit being pre-programmed with a specific geographical location. For example, a static receiver unit in location A would be programmed to only receive trigger signals coded for terminals based in location A.

More preferably, the static receiver unit is a standalone unit.

In alternative embodiments, the terminal is in the form of a mobile receiver unit. For example the terminal may be a portable unit that can be carried on a keyring, or the terminal may be incorporated into any appropriate wireless device such as computers, smart-phones, tablets, notebooks and laptops.

In further preferred embodiments, the location of the mobile receiver unit can be updated continuously using wireless positioning systems, such as a GPS system or a cellular communication network.

In further preferred embodiments the emergency notification terminal is adapted to receive signals from a telecommunications network.

In alternative embodiments the emergency notification terminal is adapted to receive signals from a radio broadcast network.

According to a further aspect of the present invention there is provided a terminal substantially as described above, wherein the alert indicator is an alarm indicator actuated to warn of an impending emergency condition.

The alarm indicator may be displayed in a number of different ways as would be understood to a person skilled in the art. For example, an alarm may be visually displayed through use of an array light emitting diodes (LEDs) or similar lamps to indicate a predefined set of warning scenarios, through the use of display screens which may either be a display on an individual terminals on both static or mobile receiver units or in public places such as supermarkets and transport stations where the alarm can be visually superimposed or displayed on computer screen or other publically visible monitors.

The alarm may also be an audible alarm, with different tones, frequencies, patterns or intensities indicating the nature of an emergency situation, or a test process or other predefined situation.

In a further aspect of the invention the alert indicator is a broadcast indicator configured to provide information concerning an impending or preceding emergency condition.

The broadcast indicator may be configured in a number of different ways as would be understood by a person skilled in the art. For example, information may be provided using a speaker system that is adapted to relay a warning message/messages spoken by a radio announcer. The speakers may be mounted on individual static terminals, or pre-existing speaker systems found in public places such as supermarkets and transport stations may be used. When terminals are in the form of mobile receiver units in wireless devices, existing speaker systems associated with the wireless device may be employed to relay the broadcast.

The broadcast indicator may also take the form of an alphanumeric display showing emergency information on a single screen, or using a scrolling arrangement, whereby the message can relay instructions to the users. These examples are not intended to be limiting and may be used in combination or with further known methods of relaying information.

In preferred embodiments the alarm indicator is actuated followed by the broadcast indicator being actuated after a predetermined period of time from the alarm indicator.

This configuration of alert indicators provides an initial warning alarm intended to rouse sleeping or distracted persons and gain their attention, then provides information once the attention of the user has been gained.

Preferably the broadcast indicator will be actuated approximately 10 – 60 seconds after the alarm indicator.

As would be understood by a person skilled in the art, if the alarm indicator is an aural alarm, this will stop before a following aural broadcast can begin. However, in such situations the alarm indicator may switch to a visual indicator and continue to run while a broadcast is being given. Alternatively, an aural alarm may continue to operate while a visual broadcast indicator is in operation.

The flexibility in aural/visual alert indicators also allows for the system to be adapted for persons with disabilities such as hearing or visually impaired persons.

According to yet another aspect of the present invention there is provided an emergency notification terminal substantially as described above, wherein the terminal has a dormant configuration and an alert configuration, wherein the central control element switches the from the dormant configuration to the alert configuration on receipt of at least one coded trigger signal.

Preferably the terminal resides in a dormant configuration when it is not required to provide emergency notifications. In such a dormant configuration, the trigger signal receiver may await receipt of a specific coded trigger signal. For example, in a preferred embodiment where a trigger signal is transmitted via radio, the trigger signal receiver may periodically scan a set of one or many radio frequencies for any broadcast trigger signals.

Preferably the operation or configuration of the emergency notification terminal is controlled by the type of coded trigger signal received by the trigger signal receiver.

Specific coded trigger signals can be employed to selectively activate or change the configuration of the terminal. For example, specific coded trigger signals may incorporate information with respect to the type or urgency of a particular emergency condition in addition to or alternatively a geographical indicator which provides information as to the location at which such an emergency condition is expected to occur. Such information embedded within coded trigger signals can control whether terminals in a number of geographical regions are activated.

Preferably a coded trigger signal provides information specific to the type of emergency users are to be warned of.

Preferably a coded trigger signal provides information with respect to a geographical region which is to experience an emergency condition.

In a preferred embodiment the trigger signal receiver includes a radio frequency receiver. Radio frequency receivers are well known in the art and can be formed from relatively low cost electrical components. This trigger signal receiver may be employed to receive a coded trigger signal which controls the configuration of the emergency notification terminal.

Preferably a terminal provided in accordance with the present invention may include a control

element formed by a microprocessor. A microprocessor can be used to manage the operation or change in configuration required of the terminal when emergency notifications are to be provided. Such a microprocessor may receive coded trigger signals from the trigger signal receiver and also act to activate any alert indicators as required.

The control element may switch the terminal from this dormant configuration to an alert configuration once it receives a specific coded trigger signal which indicates that the current geographical region in which the terminal is located is about to experience an emergency situation. In such an alert configuration the control element can be used to activate at least one alarm indicator to immediately gain the attention of any persons within the vicinity of the terminal.

Preferably an emergency notification terminal may include power supply components, with these components varying depending on the specific arrangement or installation type of the terminal. For example, in one embodiment such power supply components may be provided by a battery. In an alternative embodiment power supply components may be provided by connections to the mains power supply of a building. Preferably when a mains power supply is employed the housing of the terminal may also provide a power supply socket for additional electrical appliances, allowing power to be supplied to a further electrical appliance.

Preferably, the power supply is a rechargeable energy cell. For example, a solar cell to provide continuous power to the unit, so a replacement power source is not required.

In another embodiment the terminal battery may be supplanted by an external module designed to provide power only when the broadcast radio is employed, so as to ensure availability at that time to deliver any information via the terminal audio facility.

Preferably an initialisation process may be executed with respect to a terminal prior to the terminal being used to provide emergency notifications. This initialisation process may set the

geographical region for which the terminal is to provide alarm notifications, preferably by determining a radio frequency on which transmissions are received for that particular geographical region. However, in other instances such an initialisation process may indicate to the microprocessor or other ancillary memory elements a geographical location code or hierarchal indicator that can be matched to information encoded into received trigger signals.

The geographical resolution of the trigger may be set to any level, be that country, region, city/town, suburb, or street.

According to a further aspect of the present invention there is provided a trigger signal generator configured to provide coded trigger signals for delivery to a plurality of emergency notification terminals, said trigger signal generator comprising;

a) at least one input element configured to receive emergency data, and a trigger signal encoder configured to provide coded trigger signals based on emergency data received from at least one input element, and

b) at least one output element configured to provide generated trigger signals directly or indirectly to a emergency notification terminal.

Preferably said emergency data comprises a geographical indicator.

Preferably said emergency data comprises authorisation information.

Preferably said emergency data comprises hierarchal information.

In a further preferred embodiment such a trigger signal generator may be located at a radio station. The trigger signals generated may also be transmitted at the same time as or instead of normal radio programming transmitted by the station. As the terminals involved can be tuned to specific radio frequencies, such signal generators may be associated with the radio

stations which transmit at the selected tuned frequency.

Preferably, the trigger signal generator may use the Radio Data Signal (RDS) or Radio Broadcast Data Signal (RDBS) protocol to generate trigger signals for displaying signal information in FM radio broadcasts.

Preferably a trigger signal generator may provide an encoding system which can receive emergency data via an input element or interface, and encode such data to provide a specific coded trigger signal. In a further preferred embodiment the coded trigger signal is formatted in terms of specific audio frequency tones. Tone modulated frequencies may provide such coded trigger signals which in turn are to be broadcast by the radio station involved, for example RDS or Dual Tone Multi Frequency Signalling (DTMF) tones may be used singly, or in combination to activate emergency notification terminals.

Preferably such trigger signal generators may embed or encode into trigger signals geographical indicators employed by terminals to determine whether these terminals should enter into their alert configuration. Such trigger signals may also include emergency type information in addition to or alternatively information pertaining to the speed at which alarm notification recipients should take action.

Preferably, the geographical indicators sent to the alerting devices are entered as a set of points defining a longitude or latitude value, and may also include a distance from each of those locations.

In alternative embodiments the geographical indicator may include a set of longitude and latitude values defining a polygon shape to determine the geographical area to be alerted.

In a preferred embodiment the emergency data provided to a trigger signal generator may also include authorisation information. Such authorisation information can be employed to ensure

that trigger signals may only be generated by authorised personnel. Such authorisation information allows emergency co-ordination organisations to install trigger signal generators at third party radio stations without fear of their equipment being misused by unauthorised personnel.

In one embodiment the authorisation information may include a separate authorization message to provide a secure method of authorising the activation of the alert. In use, a trigger signal will provide the geographical alerting information, however the alarm will not activate until the authorising message has been sent and approved.

Preferably, the authorising message includes high security encryption. The encryption may use encryption seeds that include (for example) information such as the radio station details, time/date information, and a secure embedded code that is stored in each device, and is not retrievable external to the unit.

Sequential message codes may also be used to increase security of the messaging mechanism, and prevent improper use of the system.

In a further preferred embodiment, the emergency information provided to the trigger signal generator includes hierarchal information that determines the order in which terminals are activated based on a predetermined hierarchy.

Using the hierarchal system terminals may be identified as, for example:

- "Public"; in this mode all public devices will be activated.

- "Civil Defence"; in this mode only those members with a device with this setting will be activated. This will allow Civil Defence and other emergency members to be placed on standby in case of emergency. This could occur for instance when an earthquake occurs overseas, but

it is not yet known if a tsunami has been created.

- "Other"; these modes may be set up for any other group, such as police, armed defenders, military, marine, schools etc. Messages intended for these groups would be also filtered geographically, but limited to their hierarchal group.

The term "telecommunications network should be taken to mean networks and systems such as computer networks, the Internet, telephone networks, TCP/IP networks, 3G wireless networks and other such networks as would be clear to a person skilled in the art.

The term "radio broadcast" should be taken to mean any system of delivering information using the radio frequency spectrum.

"Emergency information" should be taken to mean any information associated with an emergency event, for example, times, dates, locations, instructions of how to proceed and civil defence alerts. The term also covers alarms, both aural and visual, and any type of display or notification that can be interpreted to have a specific meaning by a user or recipient of that information.

The present invention may provide many potential advantages over the prior art.

The present invention allows emergency notification terminals to be located within buildings, homes or other structures where people are likely to be sleeping or unaware of emergencies when they need to be notified. The present invention may also installed within vehicles or be provided with a portable configuration to provide emergency notifications outside of static locations in buildings or structures.

Emergency notification terminals may also be embedded or downloaded as software applications onto computers, smart phones tablets and other mobile communications devices.

This provides a further opportunity for emergency information to be provided to a larger group of people, regardless of whether or not they are close to a static notification terminal.

The trigger signals employed can be used to activate only terminals within a geographical region expecting an emergency. Furthermore, when placed in a broadcast configuration such terminals may provide detailed and specific instructions to notification recipients as to what they should do next.

Through the provision of trigger signal generators at appropriate broadcast facilities (preferably being radio stations) the present invention may employ existing broadcast networks to implement the methodology of the present invention. Additionally, the use of the Internet for deploying the activation protocol will assist in notifiying an even wider audience of an emergency situation.

The activation of the alarm indicator, the duration and nature of the alarm, and the activation of an associated radio speaker may be fully in the control of the central control element using the broadcast or telecommunications network. This will ensure that only relevant messages are broadcast, and that available power is conserved for essential use.

The emergency notification terminal is configured to be activated by a regulatory authority, so empowered to issue such warnings. The central control element is configured to ensure that only authorised messages can be delivered.

The delivery of a notification may be delivered by an existing broadcast radio network. Alternatively, a dedicated radio network for this purpose can also be employed. The emergency notification terminal comprises components to enable automatic or manual notification by the relevant regulatory authority.

In another embodiment, the emergency notification terminal can also be physically and

electrically attached to an existing smoke alarm to utilise the alarm sounding capability of the smoke alarm, and optionally to power the smoke alarm. In another embodiment, the terminal can incorporate its own circuitry to act as a smoke alarm, thereby reducing the need for a separate smoke alarm.

BRIEF DESCRIPTION OF DRAWINGS

Further aspects of the present Invention will become apparent from the following description which is given by way of example only and with reference to the accompanying drawings in which:

Figure 1 shows a block schematic diagram with components employed to provide an emergency notification terminal in accordance with a preferred embodiment, and

Figure 2 shows a block schematic diagram of components employed to provide a trigger signal generator in accordance with a further embodiment, and

Figures 3a, 3b, 3c show views of the external housing provided for an emergency notification terminal in two further embodiments, and

Figure 4 shows a block schematic diagram of a preferred method of the present invention when deployed over a radio broadcast system; and

Figure 5 shows a block schematic diagram of an alternative method of the present invention when deployed over a telecommunications system.

BEST MODES FOR CARRYING OUT THE INVENTION

Figure 1 shows a block schematic diagram with components employed to provide a static emergency notification terminal in accordance with a preferred embodiment. The static terminal is pre-programmed with data relevant to its geographic location.

As can be seen from figure 1 the terminal (1) comprises a trigger signal receiver formed by an AM/FM radio core (2). An alert indicator is provided by the amplifier and speaker (3) in addition to a further light based alert indicator (4).

A central control element is provided by the microprocessor core (5) shown.

The radio components (2) are employed to listen for a coded trigger signal which is extracted from radio frequency transmissions via the tone decoder (6). The tone decoder (6) provides the extracted coded trigger signal to the microprocessor (5) to assess whether the geographical information embedded in a trigger signal matches the current geographical location of the terminal.

If a geographical match is found the microprocessor (5) will switch the terminal from its current dormant configuration into an alarm configuration and generate an audio alarm signal via the speaker (3) in addition to providing an activation signal to the light alarm (4).

After a set time period has elapsed the microprocessor (5) will then change the terminal into its broadcast configuration to transmit radio broadcasts of information pertinent to the current emergency condition via the speaker (3).

Figure 2 shows a block schematic diagram of components employed to provide a trigger signal generator in accordance with a further embodiment.

As can be seen from figure 2 an input element of the trigger signal generator is provided by an Ethernet connection (10). This Ethernet connection provides emergency data to a trigger signal encoder formed by a microprocessor core (11). The microprocessor acts to encode this received emergency data into a tone modulated frequency signal via the DTMF tone generator (12). The DTMF tones generated are subsequently supplied to a broadcast radio station via an output element (13) formed by the transmission feed shown.

The microprocessor can be programmed to provide specific coded trigger signals based on the information present within the emergency data it is supplied. This emergency data can result in coded trigger signals conveying information with respect to the geographical region in which an emergency condition is expected, the type of such emergency in addition to the speed at which people should take action. In addition, a proportion of the trigger signals may be generated using the Radio Data Signal (RDS) protocol for displaying signal information in FM radio broadcasts. Furthermore, such emergency data preferably comprises authorisation information or codes which check to ensure that the trigger signal generator is not being misused by unauthorised personnel.

Figures 3a, 3b and 3c show views of the external housing provided for an emergency notification terminal in two further embodiments.

As can be seen from figures 3a and 3b a terminal may be packaged within (as shown in figure 3a) or attached to (as shown in Figure 3c) a housing similar to that normally provided for domestic smoke alarm. This type of packaging system is well known to large numbers of people, and in some instances may also incorporate components to provide a smoke or fire alarm system in addition to the geographically sensitive emergency notification terminal provided.

Figure 3c shows an alternative housing configuration for an emergency notification terminal which receives it power supply via a mains power connection from a power supply socket of a building. In such configurations a further electrical appliance may be plugged into a socket provided at the front of the terminal to ensure the power supply socket used by the terminal can still be employed to power additional electrical appliances.

Figure 4 shows a preferred method of the invention when operated using a radio broadcast system. When in operation, the method includes the input of emergency information and the generation of a coded signal within the base unit 20. The coded emergency information is

delivered to servers 21 located at radio stations or broadcast facilities and subsequently broadcast to be received by emergency notification terminals 22 - 24 adapted to receive information from a radio broadcast system. The receipt of the coded signal actuates the alert indicators and the emergency alarm and/or information is relayed to the user.

Figure 5 shows an alternative method of the invention wherein the method is operated using a telecommunications network. Emergency information is input and a trigger signal generated at base unit 20. The coded emergency information is delivered to a server cluster 26 and delivered via the Internet 27 to mobile emergency notification terminals 28-31. The emergency alert indicators are activated and the emergency alarm and/or information is relayed to the user.

Aspects of the present invention have been described by way of example only and it should be appreciated that modifications and additions may be made thereto without departing from the scope thereof.

WHAT WE CLAIM IS:

1. An emergency notification terminal which comprises a static receiver unit, the static receiver unit comprising:

a) a trigger signal receiver,

b) at least one alert indicator, and

c) a central control element configured to receive a coded trigger signal from the trigger signal receiver, the coded trigger signal including information on the geographical area targeted by the coded trigger signal, the central control element storing information on the geographical location of the terminal,

wherein the control element compares the information on the geographical area targeted by the coded trigger signal with the geographical location of the terminal and actuates the at least one alert indicator on receipt of at least one coded trigger signal targeted at the geographical location of the terminal.

2. The emergency notification terminal of claim 1, wherein the terminal is pre-programmed with the geographical location of the terminal.

3. The emergency notification terminal of claim 2, wherein the static receiver unit is a standalone unit.

4. The emergency notification terminal of any one of claims 1 to 3, further compromising at least one wireless positioning system and wherein the central control element is configured to store the geographic location of the receiver unit based on information received from the at least one wireless positioning.

5. The emergency notification terminal of claim 4, wherein one of the at least one wireless positioning system is a global positioning system (GPS) or cellular communication network.

6. The emergency notification terminal of any one of claims 1 to 5 wherein the terminal is adapted to receive signals from a telecommunications network.

7. The emergency notification terminal of any one of claims 1 to 5 wherein the terminal is adapted to receive signals from radio broadcast network.

8. The emergency notification terminal of any one of claims 1 to 7, wherein the alert indicator is an alarm indicator actuated to warn of an impending emergency condition.

9. The emergency notification terminal of any one of claims 1 to 7, wherein the alert indicator is a broadcast indicator configured to provide information concerning an impending or preceding emergency condition.

10. The emergency notification terminal of claim 8 wherein in use, an alarm indicator is actuated followed by a broadcast indicator being actuated after a predetermined period of time from the alarm indicator.

11. The emergency notification terminal of claim 10 wherein the broadcast indicator will be actuated approximately 10 - 60 seconds after the alarm indicator.

12. The emergency notification terminal of any one of claims 1 to 11, wherein the terminal has a dormant configuration and an alert configuration, wherein the central control element switches the emergency notification terminal from the dormant configuration to the alert configuration on receipt of at least one coded trigger signal.

13. The emergency notification terminal of claim 12 wherein the terminal resides in a dormant configuration when it is not required to provide emergency notifications.

14. The emergency notification terminal of any one of claims 1 to 13 wherein the operation or configuration of the emergency notification terminal is controlled by the coded trigger signal received by the trigger signal receiver.

15. The emergency notification terminal of claim 14, wherein the coded trigger signal provides information specific to the type of emergency users are to be warned of.

16. The emergency notification terminal of claim 14, wherein the coded trigger signal provides information with respect to a geographical region which is to experience an emergency condition.

17. The emergency notification terminal of any one of claims 1 to 5 and 7 to 16 wherein the trigger signal receiver includes a radio frequency receiver.

18. The emergency notification terminal of any one of claims 1 to 5 and 7 to 17 wherein the terminal includes a control element formed by a microprocessor.

19. The emergency notification terminal of any one of the preceding claims wherein the terminal includes a power supply component.

20. The emergency notification terminal of claim 19 wherein the power supply component is a rechargeable energy cell.

21. The emergency notification terminal of any one of the preceding claims wherein an initialisation process is executed with respect to a terminal prior to the terminal being used to provide emergency notifications.

22. An emergency notification terminal substantially as herein described and with reference to Figures 1, 3a, 3b and 3c.

Disaster Warning Systems Limited and Gary Trevor Benner



By Their Attorneys
ELLIS TERRY

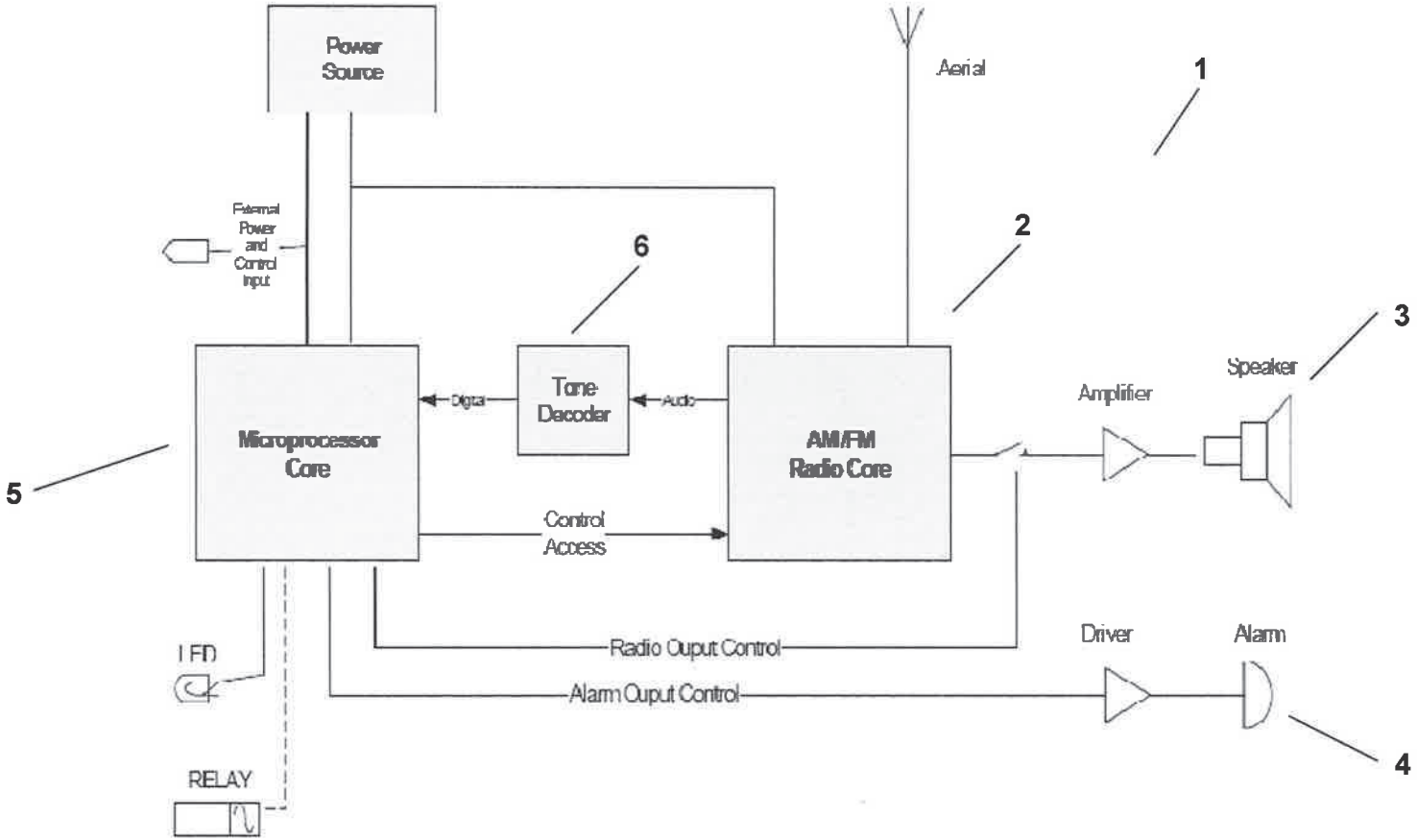

Power Source
Aerial
1
External Power and Control Input
6
2
3
Speaker
Amplifier
Tone Decoder
Digital
Audio
Microprocessor Core
AM/FM Radio Core
5
Control Access
LED
Radio Ouput Control
Driver
Alarm
Alarm Ouput Control
4
RELAY

Figure 1

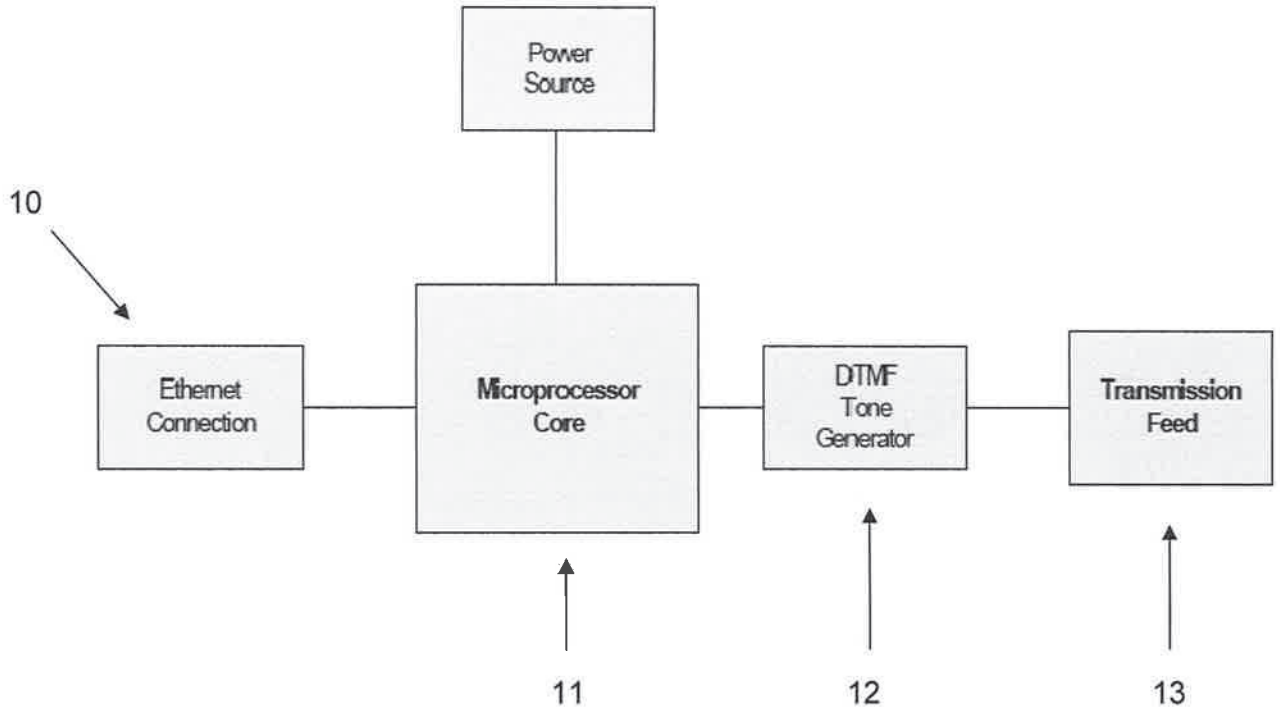

Power Source
10
Ethernet Connection
Microprocessor Core
DTMF Tone Generator
Transmission Feed
11
12
13

Figure 2



Figure 3a

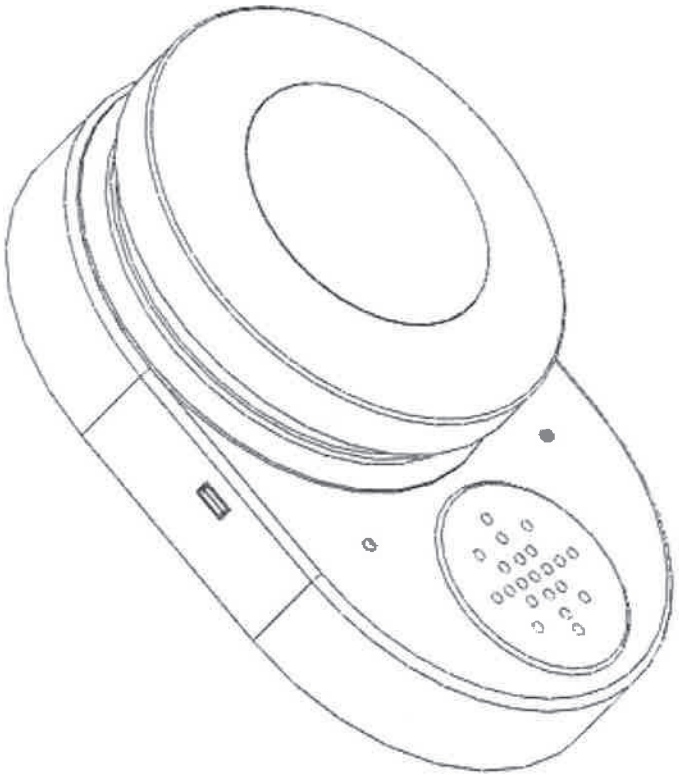


Figure 3b

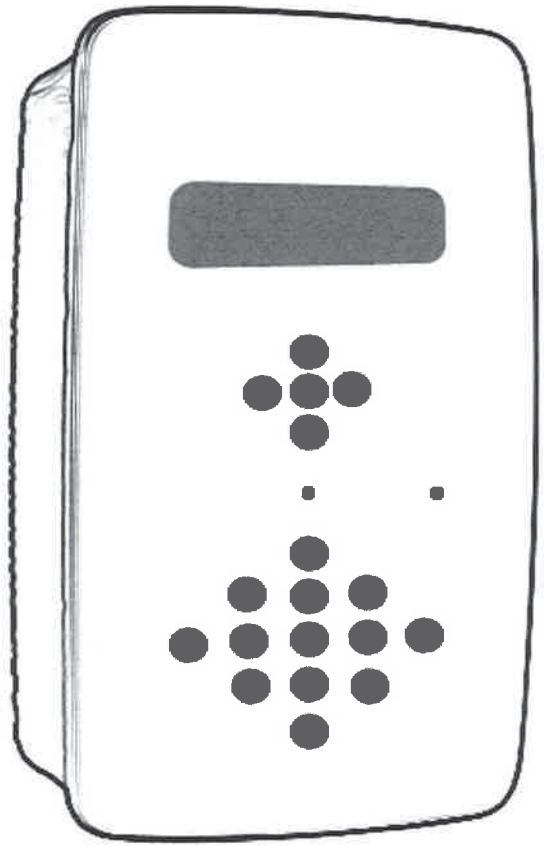


Figure 3c

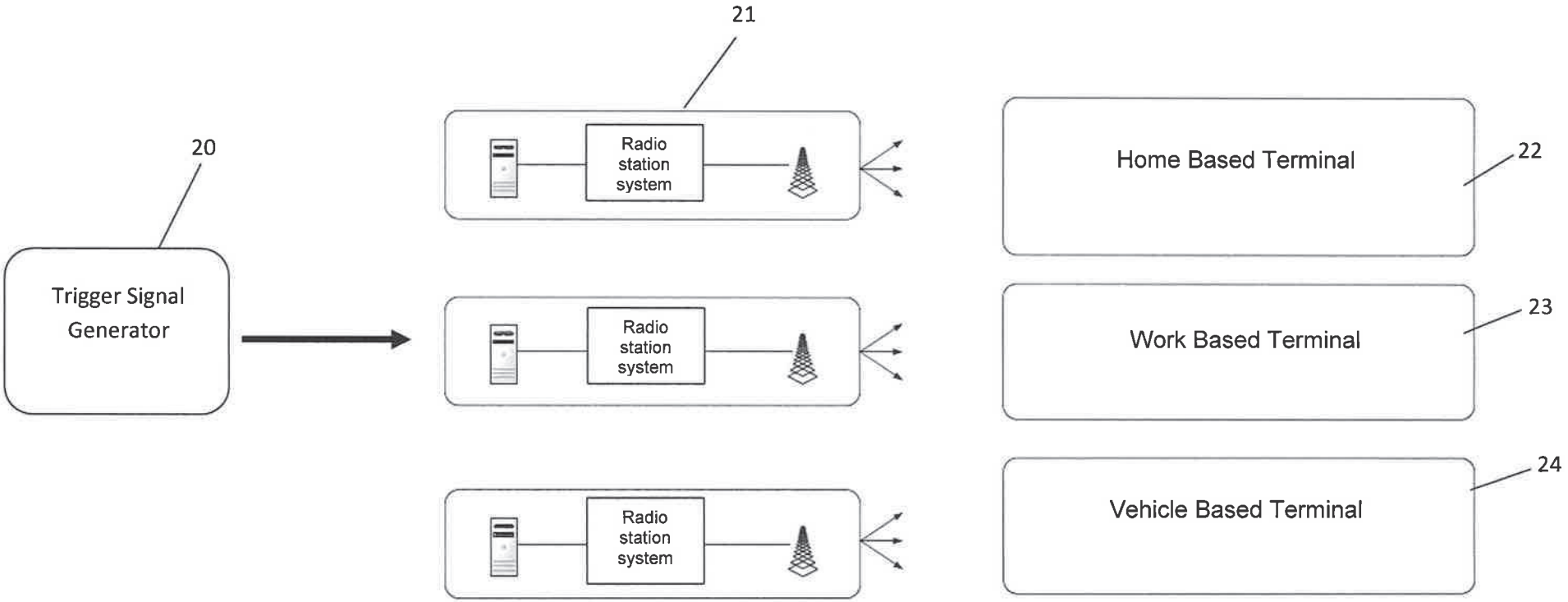

21
20
Trigger Signal Generator
Radio station system
Radio station system
Radio station system
Home Based Terminal
22
Work Based Terminal
23
Vehicle Based Terminal
24

Figure 4

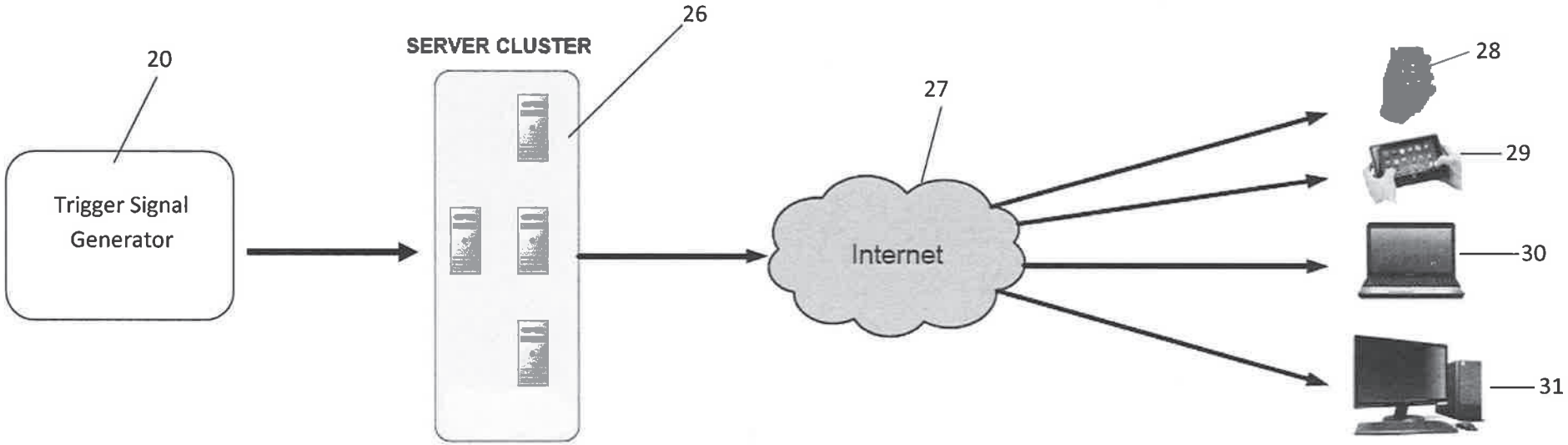

20
Trigger Signal Generator
SERVER CLUSTER
26
27
Internet
28
29
30
31

Figure 5