A GLOBAL DATA COMMUNICATIONS SERVICE SYSTEM FOR REMOTE CONTROL AND STATUS REPORTING

FIELD OF THE INVENTION

This invention relates to a global data communications service system for the remote control and status reporting of a platform via an autonomous communications unit.

BACKGROUND OF THE INVENTION

There are many circumstances in which it is desirable to be able to keep a check on the status of a platform, and if necessary to be able to control one or more of its properties. A well known example is that of the need to keep track of the location of cargo containers as they are moved around harbors, docks and ports. It is known that this need can be achieved by mounting on each cargo container a satellite positioning system receiver and a radio transmitter. A well known example of a satellite positioning system is the NAVSTAR Global Positioning System. The satellite positioning system receiver receives signals from satellite positioning system positioning satellites from which it determines the location of the cargo container on which it is mounted. The cargo container's location is transmitted by the radio transmitter to a service center.

However, under some circumstances there can be a loss in communications between the satellite positioning system receiver and the

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satellite positioning system satellites, and in some cases losses in communications can be for fairly extensive periods of time. For example, when containers are stacked one on the other, only the uppermost container has line of sight with the satellite positioning system satellites. In such a case all the containers apart from the uppermost one will suffer from a loss in communications with the satellite positioning system satellites and therefore their location will not be known.

Furthermore, it may be important to keep some physical property, for example the temperature of some of the cargo containers, under surveillance. In such a case it is not only important to track the container's location but also to be able to continuously or intermittently monitor the container's temperature. This is achieved by providing the container with temperature measuring equipment which feeds the measured temperature to a transmitter mounted on the container. The measured temperature values, with or without the location value, are then transmitted to the service center. Hence, it is equally important to be able to maintain substantially uninterrupted radio communication with the container. For if, say, a container were to overheat its contents may well spoil.

Equally important, is the ability to maintain substantially uninterrupted radio communication between a service center and a container so that the former can transmit commands to the container with instructions for, say, lowering the temperature inside the container.

A further problem encountered with the remote surveillance of cargo containers is when they are stored undercover, for example in a warehouse. Not only is there no line of sight with the satellite positioning system satellites, but radio communication between a service center and the containers will be impaired if not completely cut off.

Yet a further problem is encountered when the containers are stacked on ships for transport to another port, generally in another country. Remote surveillance by a service center at the port of departure

requires that communications be via satellite. For the example under consideration, communications between the cargo container's radio transmitter/receiver and the service center has to be via satellite. For the essentially continuous reporting of a container's status and for the container to be able to receive commands transmitted to the container by the service center it is imperative that the transmitter/receiver, including the satellite positioning system receiver, mounted on the container be available for operation when required.

It should also be kept in mind that cargo containers are very often moved from one place to another before reaching their final destination. For example, a container starting off at a loading and packing warehouse, may then be transported by truck to a train station and therefrom by train to another train station and therefrom by truck to a port. At the port of departure the container is generally stored before loading onto a ship for transport to another port. On arrival at the other port the container is generally stored before transportation to its final destination, which may well require a further journey by truck and train.

It is therefore important that the radio transmitter/receiver and the satellite positioning system receiver mounted on a cargo container be able to function for long periods of time over large geographical regions, including different countries and under conditions in which normal radio communications may be impaired if not impossible.

It may be suggested that a radio transmitter/receiver and satellite positioning system receiver unit mounted on a cargo container be provided with rechargeable batteries, which could then be recharged at every port of call. However, this would entail either removing the unit from the container or connecting it via cables to a source of power for recharging it. Both of these solutions are not only inconvenient but also demand having electrical connectors appropriate to the different

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standards in different countries, not to mention differences in mains voltage values in different countries.

Although the above-discussed features of status reporting of a platform have been elucidated for a cargo container, it will be apparent that status reporting is not confined to cargo containers and that the problems, drawbacks and requirements referred to with respect to the status reporting of cargo containers may well exist completely or partially also for status reporting of other platforms both mobile and immobile.

Furthermore, status reporting of a platform over long periods of time and possibly over large distances is not confined to location values or to the values of physical properties of containers but can also include, for example, reporting the status of an anti-theft device which gives an indication as to whether the platform has been stolen or broken into.

In view of the foregoing, it should be apparent that there exists a need to provide a data communications system including a communications device mounted on a platform for reporting the platform's status. The communication device should be able to operate autonomously for long periods of time under varying communication conditions and possibly over large distances . There also exists a need to be able to communicate data to the communications device for controlling the status of the platform.

GLOSSARY

In the following specification and claims the following terms will be used:

ACCUMULATOR - An appliance for storing electrical energy. For example, a battery.

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PLATFORM - Any structure of interest, stationary or mobile. Mobile platforms include, for example, cars, trains, ships, aircraft and transportable objects such as cargo containers. Stationary platforms include, for example, houses, warehouses, airports and holding yards.

SERVICE CENTER - A place equipped with processors for processing data and with transmitters and receivers and/or communication channels for transmitting and receiving data and for communicating with various platforms and customers.

SUMMARY OF THE INVENTION

In accordance with a first aspect of the present invention there is provided a global data communications service system for status reporting of anti-theft devices, comprising:

(i) at least one communications satellite;

(ii) at least one service center; and

(iii) at least one autonomous dual-purpose communications device electrically connected to at least one multi-functional antenna unit, both mountable on at least one platform, the at least one autonomous dual-purpose communications device capable of receiving status data from at least one anti-theft device mounted on the at least one platform, and capable of communicating with the at least one service center via the at least one communications satellite.

In accordance with the first aspect of the present invention, the at least one autonomous dual-purpose communications device comprises:

a transmitter connected to at least one multi-functional antenna unit for transmitting status data to the at least one service center;

a processor, for receiving status data from the at least one anti-theft device and for relaying the status data to the transmitter, the processor capable of operating in a power down mode whereby power consumption

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of the at least one communications device is reduced during allowed time periods; and

a power source connected to the transmitter and the processor for providing electrical power to the transmitter and the processor.

If desired, the power source comprises at least one battery.

Further if desired, the at least one battery is rechargeable.

Typically, the status data received from the at least one anti-theft device is selected from at least one of the group of data indicative of a triggered at least one anti-theft device and data indicative of a non-triggered at least one anti-theft device.

In accordance with one embodiment, the global data communications service system further comprises a plurality of satellite positioning system satellites and the at least one autonomous dual-purpose communications device is provided with a satellite positioning system satellite signal receiver capable of receiving positioning signals from the plurality of satellite positioning system satellites via the at least one multi-functional antenna unit, and the satellite positioning system satellite signal receiver provides location measurement data indicative of the location thereof.

In accordance with this embodiment, the status data further comprises location measurement data indicative of the location of the at least one autonomous dual-purpose communications device.

Preferably, the at least one service center is capable of transmitting a signal to the at least one communications device containing a command for terminating the power down mode.

Further preferably, the at least one autonomous dual-purpose communications device is further provided with a receiver for receiving signals from the at least one service center, via the at least one communications satellite, the received signals containing at least one command for activating the at least one anti-theft device mounted on the at least one platform.

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If desired, the anti-theft device is an alarm system.

Further if desired, the anti-theft device is a an immobilizer.

In accordance with one aspect of the invention, the at least one platform is mobile.

In accordance with another aspect of the invention, the at least one platform is immobile.

If desired, the at least one multi-functional antenna unit comprises an antenna capable of transmitting data to the at least one communications satellite.

Further if desired, the at least one multi-functional antenna unit comprises an antenna capable of receiving data from the at least one communications satellite.

Still further if desired, the at least one multi-functional antenna unit comprises an antenna capable of transmitting and receiving data from another at least one multi-functional antenna unit.

If desired, the at least one multi-functional antenna unit is mounted substantially undetectably on the at least one platform.

Further if desired, the at least one autonomous dual-purpose communications device is mounted substantially undetectably on the at least one platform.

Also if desired, the at least one anti-theft device is capable of being remotely activated by the at least one service center.

Further also if desired, the status data is transmitted to the at least one service center only when the at least one service center transmits an appropriate signal to the at least one autonomous dual-purpose communications device.

Yet further also if desired, the at least one anti-theft device further comprises a health monitoring device.

In accordance with a second aspect of the present invention there is provided a global data communications service system for

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tracking, status reporting and management of mobile platforms' status, comprising:

(i) at least one communications satellite;

(ii) at least one service center; and

(iii) at least one autonomous dual-purpose communications device electrically connected to at least one multi-functional antenna unit, both mountable on at least one mobile platform, the at least one autonomous dual-purpose communications device capable of reporting the status of at least a portion of the at least one platform and capable of communicating with the at least one service center via the at least one communications satellite.

In accordance with the second aspect of the present invention, the at least one autonomous dual-purpose communications device comprises:

a transmitter connected to at least one multi-functional antenna unit for transmitting status data to the at least one service center;

a processor, for receiving status data from at least one status data measuring device and for relaying the status data to the transmitter, the processor capable of operating in a power down mode whereby power consumption of the at least one autonomous dual-purpose communications device is reduced during allowed time periods;

at least one accumulator connected to the transmitter and the processor for providing electrical power to the transmitter and the processor; and

charging means for charging the accumulator.

If desired, the charging means is at least one solar panel.

Alternatively if desired, the charging means is an external power source.

Typically, the status data comprises measurement data selected from at least one of the group of: temperature measurement data,

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humidity measurement data, fire detector measurement data and smoke detector measurement data.

If desired, the at least one autonomous dual-purpose communications device is further provided with a receiver connected to the at least one multi-functional antenna for receiving signals from the at least one service center, via the at least one communications satellite.

Further if desired, the received signals contain at least one command for causing a modification of the value of a property of at least a portion of the at least one platform.

In accordance with one embodiment, the property is temperature.

In accordance with another embodiment, the property is humidity.

If desired, the received signals contain at least one command for activating an anti-theft device mounted on the at least one platform.

Typically, the anti-theft device is an alarm system.

Further typically, the anti-theft device is an immobilizer.

If desired, the global data communications service system further comprises a plurality of satellite positioning system satellites and the at least one communications device is provided with a satellite positioning system satellite signal receiver.

Typically, the status data comprises location measurement data of the at least one communications device.

Preferably, the at least one service center is capable of transmitting a signal to the at least one communications device terminating the power down mode.

In accordance with one embodiment of the invention, the at least one communications satellite is an INMARSAT satellite.

In accordance with another embodiment of the invention, the at least one communications satellite is further capable of transmitting global positioning system data.

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BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Fig. 1 shows a schematic illustrative block diagram of the system of the invention;

Fig. 2 shows an illustrative block diagram showing two antenna units mounted on the same platform;

Fig. 3 shows an illustrative block diagram of a communications device in accordance with a broad aspect of the invention;

Fig. 4 shows a perspective view of a cargo container on which is mounted at least two antenna units;

Fig. 5 shows a perspective view of stacked cargo containers; and

Fig. 6 shows a perspective view of a cargo container in a warehouse.

DETAILED DESCRIPTION OF THE INVENTION

Attention is first drawn to Fig. 1 showing a schematic illustrative block diagram of one embodiment the system of the invention comprising a plurality of communication satellites 10, a plurality of positioning satellites 12, a service center 14 and a multi-function antenna unit 16 electrically connected to an autonomous dual-purpose communications device 18 mounted on a platform 20. As will be described in more detail below multi-function antenna unit 16 comprises a number of antennas each utilized for a specific function, and hence the term "*multi-function antenna unit*". Also as will be described in more detail below autonomous dual-purpose communications device 18 serves both for satellite communications and for communication between two or more autonomous dual-purpose communications devices, and hence the term "*dual-purpose communications device*". Furthermore, as will be described in greater detail below, autonomous dual-purpose communications device 18 functions without being electrically connected to an external power

source, and hence the term "*autonomous*". However, since the term "*autonomous dual-purpose communications device*" is rather long, **18** will also be referred to herein simply as "*communications device*". Similarly, **16** will also be referred to herein simply as "*antenna unit*".

In many applications multi-function antenna unit **16** will be mounted on an external surface of platform **20**, whereas communications device **18** will be mounted on an interior surface of the platform, preferably not far from the multi-function antenna. In some circumstances it may be preferable to hide the communications device from view. For example, if the platform is a house, it may be possible build the communications device into an external wall of the house, making it safe from theft. In such circumstances and in others, it may also be preferable to hide the multi-function antenna unit from view by covering it with material substantially transparent to electromagnetic radiation in the operational frequency band of the multi-function antenna.

The communicating of data between service center **14** and communications device **18** is via communication satellites **10** either using a direct route "service center - satellite - communications device", if the service center is equipped with satellite communication capability. If on the other hand, service center **14** is not equipped with satellite communication capability then satellite ground station **22** is used in the communication process. That is, there is a terrestrial communications link between service center **14** and satellite ground station **22** and service center communicates with communications device **18** via the indirect route "service center - satellite ground station - satellite - communications device". Under some circumstances, as will be described in greater detail below, data can also be transmitted from one communications device to another before being transmitted to the service center.

Although only one platform **20**, one service center **14** and one satellite ground station **22** are shown in Fig. 1, any number of each one

of these members of the system of the invention is possible depending on the specific application.

A well known example of communication satellites 10, are the INMARSAT satellites. The invention, however, is by no means bound to INMARSAT satellites and can be applied to any communication satellites providing local and global communication services. A well known example of positioning satellites 12, are the satellites of the NAVSTAR Global Positioning System, however, the invention is by no means bound to the NAVSTAR Global Positioning System and can be applied to any system of positioning satellites (see, e.g., Understanding satellite positioning system Principles and Applications, Editor E. D. Kaplan, Artech House, 1996).

Although the communication satellites 10 are shown as being separate from the positioning satellites 12, the case in which one set of satellites serves both as communications and positioning satellites is not ruled out.

The number of antenna units mounted on a platform is not restricted to one. Fig. 2 shows an example of two antenna units 16′ and 16″ mounted on the same platform 20, both electrically connected (the electrical connections are not shown) to the same communications device 18. In general, a platform can have any number of antenna units mounted on it. The various antenna units may, but not necessarily, be connected to the same communications device.

Attention is now drawn to Fig. 3 showing an illustrative block diagram of communications device 18 and associated multi-function antenna unit 16 in accordance with a broad aspect of the invention. Communications device 18 comprises a processor 24 connected to a status measurement device, not shown. The status measurement device is not part of the communications device but is mounted on, or in, the platform under surveillance and provides status data pertaining to a state of the platform, or a portion of the platform. Nonlimiting examples of status

data are temperature or humidity measurements taken inside the platform. Other examples are data pertaining to the state of smoke, fire or anti-theft detectors, wherein the data would typically comprise of one of two possible signals, one representing non-activation of the detector and the other representing activation of the detector. Nonlimiting examples of status measurement devices are thermometers, for measuring temperature, hygrometers for measuring humidity, counters for measuring flow and accelerometers for measuring shock.

Processor 24 is connected to transmitter/receiver 26 which, as will be described in more detail below, may comprise just a transmitter for transmitting status data, via multi-function antenna 28, to a service center and may also comprise several transmitters and receivers, depending on the application. Accordingly, although shown as one antenna, multi-function antenna 28 may comprise a number of antennas that are preferably packaged as a single unit. Processor 24 and transmitter/receiver 26 are powered by accumulator 30, which is capable of being charged by solar panel 31. Solar panel 31 is preferably housed in antenna unit 16. However, solar panel 31 is optional and in some circumstances, when non-detection of the antenna unit is important, it is preferable to not to use a solar panel. If a solar panel is not used it is preferable to replace accumulator 30 by rechargeable batteries.

The data transmission by communications device 18 can be performed continuously or intermittently. However, in order to conserve the accumulator's power, processor 24 is preferably programmed in a power conservation mode. As an example of a power conservation mode consider the case in which the processor allows continuous transmission of data when the solar panel receives solar radiation and therefore recharges the accumulator, whereas it intermittently shuts done the transmitter when the accumulator is not being recharged. The processor itself does not, of course, shut down, but powers down to a minimum required power allowing it to power up when required.

In accordance with one aspect of the invention there is no requirement to remotely change the status of a property of the platform on which the communications device is mounted. Hence, in accordance with this aspect of the invention status data is transmitted by communications device 18 but change of status commands are not be received by it.

In accordance with another aspect of the invention transmitter/receiver 26 not only transmits data but is also capable of receiving data. In accordance with this aspect of the invention, multi-function antenna 28 comprises an antenna for receiving satellite signals as well as an antenna for transmitting signals to satellites. Optionally, one communications device is capable of communicating with another communicating device. In this case, transmitter/receiver 26 also comprises components for terrestrial the transmission and reception of terrestrial communications and multi-function antenna 28 further comprises appropriate terrestrial communications antennas. The addition of data receiving capability not only enhances the power conservation capability of the communications device, through the reception of power down commands, but also allows for the remote control of properties of platform 20 via commands transmitted by service center 14 to communications device 18.

In accordance with yet another aspect of the invention transmitter/receiver 26 is also capable of receiving satellite positioning system signals from satellite positioning system satellites. In accordance with this aspect of the invention, multi-function antenna 28 further comprises an antenna for receiving satellite positioning system satellite signals.

Consider the example in which communications device 18 is mounted on a cargo container and wherein the status data is the measured temperature within a refrigerated region inside the container. The temperature within the refrigerated region is measured by a suitable temperature measuring device and the measured temperature values over

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a given period of time are communicated to processor 24 and then on to transmitter/receiver 26 from where they are transmitted to service center 14 via communications satellites 10. At service center 14 the received temperature values are compared with an allowed range of temperature values. Should the temperature values fall outside the allowed temperature range then a signal is transmitted to communications device 18 with a suitable set of instructions for causing a change in temperature in the refrigerated region in order to correct the temperature. The signal is received by transmitter/receiver 26 and then relayed by processor 24 to the refrigerator's control unit.

In a similar manner the power conservation capability of communications device 18 is enhanced by remote shut down, or power down, commands transmitted by service center 14, in addition to a possible internal timer for powering down. For example, when the service center is tracking a cargo container which is on a long journey, say by ship, it may be decided that it is sufficient to receive a position status report once a day. In such a case a command can be transmitted from the service center to the communications device mounted on the cargo container powering down the communications device, and then once a day a power up command can be transmitted to the communications device followed by a request for a position status report.

Having received the position status report a power down command can then be sent to the communications device. For maximum power conservation, the communications device power down command can be accompanied by a satellite positioning system receiver power shut down command, whereby power to the satellite positioning system receiver is completely cut off until a location report is requested. If desired, status measurement device power shut down commands can also be transmitted from the service center to the communications device for shutting down the power of other status measurement devices until a status report is required.

Attention is now drawn to Fig. 4 showing a perspective view of a cargo container on which is mounted at least two multi-function antenna units. Cargo container 32 has the form of a rectangular box with an end face 34 containing doors which are opened for loading the container. Opposite and parallel to end face 34 is end face 36, hidden from view. There are two upright side faces 38 and 40 (hidden from view) and an upper face 42 and a lower face 44 (hidden from view). In accordance with the present invention there are at least two multi-function antenna units mounted on the cargo container. One multi-function antenna unit 46 is mounted on side face 38 and the other 48 is mounted on upper face 42. The multi-function antenna units are preferably, but not necessarily, mounted close to an upper corner of the cargo container, as shown. If circumstances were to dictate so, further multi-function antenna units could be mounted on the other faces of the container. The two multi-function antenna units are preferably, but not necessarily, electrically connected to the same communications device.

Multi-function antenna units 46 and 48 are flat and mounted flush with side face 38 and upper face 42, respectively. Due to the fact that the multi-function antenna units are flat, they can be mounted on existing cargo containers with a minimum of protrusion. However, future cargo containers can be built with the multi-function antenna units and their associated communication devices built in, as an integral part of the faces of the container. As will be described below, the mounting of two multi-function antenna units as shown offers a solution to the problem of loss in communications between a cargo container and communication and satellite positioning system satellites when the containers are stacked one on the other.

Attention is now drawn to Fig. 5 showing a perspective view of stacked cargo containers. Shown are three cargo containers 50, 52 and 54, each of the type shown in Fig. 4 with two multi-function antenna units mounted as shown in Fig. 4. Visible, is multi-function antenna unit

56 mounted on the top face of container 50, and multi-function antenna units 58, 60 and 62 mounted on the visible side face of containers 50, 52 and 54, respectively. In the stacked configuration only the uppermost container 50 has an unobstructed multi-function antenna unit on its upper face and therefore only the uppermost container 50 has a multi-function antenna unit, 56, that has line of sight with the satellite positioning system and communication satellites. Hence in the stacked configuration all the containers apart from the uppermost one will suffer from lack satellite communication.

In accordance with the present invention the lack satellite communication, in a stacked container configuration, for all but the uppermost container is solved by utilizing the multi-function antenna units 58, 60 and 62 to communicate between communication devices mounted on the three cargo containers. Consider the case in which multi-function antenna unit 62 is required to transmit status data to the service center via the communication satellites. The status data is transmitted by multi-function antenna unit 62 which is then received by multi-function antenna unit 58. Multi-function antenna unit 58 then relays the status data to multi-function antenna unit 56, which in turn transmits the status data to the service center via the communication satellites. The transmission of data from the service center to multi-function antenna unit 62 is performed in a similar manner, but in the reverse order. That is, the service center transmits data which is received by multi-function antenna unit 56, which relays the data to multi-function antenna unit 58, which in turn transmits the data to multi-function antenna unit 62. In a similar manner, multi-function antenna unit 60 is able to communicate with the service center.

Attention is now drawn to Fig. 6 showing a perspective view of a cargo container in a warehouse. Container 64 has a multi-function antenna unit 66 mounted on a side face, and a multi-function antenna unit 68 mounted on its top face. Warehouse 70 has two electrically

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connected multi-function antenna units. One 72 mounted on the warehouses ceiling (shown by a broken line because it is hidden from view), and the other 74 mounted on the roof of the warehouse. It is assumed that due to its location within the warehouse that the cargo container has no, or very poor, communications with anything outside of the warehouse.

Communications between the container and the service center is carried out via the two multi-function antenna units 72 and 74, in the following manner. Consider the case in which multi-function antenna unit 68 is required to transmit status data to the service center via the communication satellites. The status data is transmitted by multi-function antenna unit 68 which is then received by multi-function antenna unit 72. Multi-function antenna unit 72 then relays the status data to multi-function antenna unit 74 through their common communication device, and antenna unit 74 in turn transmits the status data to the service center via the communication satellites. The transmission of data from the service center to multi-function antenna unit 68 is performed in a similar manner, but in the reverse order.

Clearly, if the stacked configuration shown in Fig. 5 were to replace container 64 in Fig. 6 inside the warehouse, then again communication between any of the containers 50, 52, 54 and the service center would be via multi-function antenna unit 56, as described above with respect to Fig. 5, with the communications between multi-function antenna unit 56 and the service center being carried out via multi-function antenna units 72 and 74 as described above with respect to Fig. 5.

Another example of the use of the communication system of the invention and the communication device of the invention is obtained when platform 18 in Fig. 1 is a house. Multi-function antenna unit 16 can be placed on the roof of the house, or on a side wall of the house, and can

be covered by some convenient material making blend with the background on which it is mounted.

Status data can be transmitted from wirelessly, or by wire, from various devices, such as smoke, fire or anti-theft detectors, in the house to the communications device. From the communications device the status data is transmitted to a service center. The status data can be directly observed and stored for latter use. Likewise, commands can be transmitted to the communication device from the service center with instructions for, say, switching on the heating system, or alternatively the air conditioning in the house.

Although the present invention has been described to a certain degree of particularity, it should be understood that various alterations and modifications can be made without departing from the spirit or scope of the invention as hereinafter claimed.

CLAIMS:

1. A global data communications service system for status reporting of anti-theft devices, comprising:

(i) at least one communications satellite;

(ii) at least one service center; and

(iii) at least one autonomous dual-purpose communications device electrically connected to at least one multi-functional antenna unit, both mountable on at least one platform, the at least one autonomous dual-purpose communications device capable of receiving status data from at least one anti-theft device mounted on the at least one platform, and capable of communicating with the at least one service center via the at least one communications satellite.

2. The global data communications service system according to Claim 1, wherein the at least one autonomous dual-purpose communications device comprises:

a transmitter connected to at least one multi-functional antenna unit for transmitting status data to the at least one service center;

a processor, for receiving status data from the at least one anti-theft device and for relaying the status data to the transmitter, the processor capable of operating in a power down mode whereby power consumption of the at least one communications device is reduced during allowed time periods; and

a power source connected to the transmitter and the processor for providing electrical power to the transmitter and the processor.

3. The global data communications service system according to Claim 2, wherein the power source is selected from the group consisting of at least one battery, and at least one rechargeable battery.

4. The global data communications service system according to any of the preceding Claims, wherein the status data received from the at least one anti-theft device is selected from at least one of the group

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consisting of data indicative of a triggered at least one anti-theft device, and data indicative of a non-triggered at least one anti-theft device.

5. The global data communications service system according to any of the preceding Claims, further comprising a plurality of satellite positioning system satellites and wherein the at least one autonomous dual-purpose communications device is provided with a satellite positioning system satellite signal receiver capable of receiving positioning signals from the plurality of satellite positioning system satellites via the at least one multi-functional antenna unit, and wherein the satellite positioning system satellite signal receiver provides location measurement data indicative of the location thereof.

6. The global data communications service system according to Claim 5, wherein the status data further comprises location measurement data indicative of the location of the at least one autonomous dual-purpose communications device.

7. The global data communications service system according to any one of Claims 2 to 4, wherein the at least one service center is capable of transmitting a signal to the at least one communications device containing a command for terminating the power down mode.

8. The global data communications service system according to any one of the preceding Claims, wherein the at least one autonomous dual-purpose communications device is further provided with a receiver for receiving signals from the at least one service center, via the at least one communications satellite, the received signals containing at least one command for activating the at least one anti-theft device mounted on the at least one platform.

9. The global data communications service system according to Claim 8, wherein the anti-theft device is selected from the group consisting of an alarm system, and an immobilizer.

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10. The global data communications service system according to any of Claims 1 to 9, wherein the at least one platform is selected from the group consisting of mobile platforms, and immobile platforms.

11. The global data communications service system according to any one of the preceding Claims, wherein the at least one multi-functional antenna unit comprises an antenna capable of transmitting data to the at least one communications satellite.

12. The global data communications service system according to any one of the preceding Claims, wherein the at least one multi-functional antenna unit comprises an antenna capable of receiving data from the at least one communications satellite.

13. The global data communications service system according to any one of the preceding Claims, wherein the at least one multi-functional antenna unit comprises an antenna capable of transmitting and receiving data from another at least one multi-functional antenna unit.

14. The global data communications service system according to any one of the preceding Claims, wherein the at least one multi-functional antenna unit is mounted substantially undetectably on the at least one platform.

15. The global data communications service system according to any one of the preceding Claims, wherein the at least one autonomous dual-purpose communications device is mounted substantially undetectably on the at least one platform.

16. The global data communications service system according to any one of the preceding Claims, wherein the at least one anti-theft device is capable of being remotely activated by the at least one service center.

17. The global data communications service system according to any one of the preceding Claims, wherein the status data is transmitted to the at least one service center only when the at least one service center

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transmits an appropriate signal to the at least one autonomous dual-purpose communications device.

18. The global data communications service system according to any one of the preceding Claims, wherein the at least one anti-theft device further comprises a health monitoring device.

19. A global data communications service system for tracking, status reporting and management of mobile platforms' status, comprising:

(i) at least one communications satellite;

(ii) at least one service center; and

(iii) at least one autonomous dual-purpose communications device electrically connected to at least one multi-functional antenna unit, both mountable on at least one mobile platform, the at least one autonomous dual-purpose communications device capable of reporting the status of at least a portion of the at least one platform and capable of communicating with the at least one service center via the at least one communications satellite.

20. The global data communications service system according to Claim 19, wherein the at least one autonomous dual-purpose communications device comprises:

a transmitter connected to at least one multi-functional antenna unit for transmitting status data to the at least one service center;

a processor, for receiving status data from at least one status data measuring device and for relaying the status data to the transmitter, the processor capable of operating in a power down mode whereby power consumption of the at least one autonomous dual-purpose communications device is reduced during allowed time periods;

at least one accumulator connected to the transmitter and the processor for providing electrical power to the transmitter and the processor; and

charging means for charging the accumulator.



21. The global data communications service system according to Claim 20, wherein the charging means is selected from the group consisting of an external power source, and at least one solar panel.

22. The global data communications service system according to Claim 20, wherein the status data comprises measurement data selected from at least one of the group consisting of temperature measurement data, humidity measurement data, fire detector measurement data, smoke detector measurement data, flow measurement data, and shock measurement data.

23. The global data communications service system according to any one of Claims 19 to 22, wherein the at least one autonomous dual-purpose communications device is further provided with a receiver connected to the at least one multi-functional antenna for receiving signals from the at least one service center, via the at least one communications satellite.

24. The global data communications service system according to Claim 23, wherein the received signals contain at least one command for causing a modification of the value of a property of at least a portion of the at least one platform.

25. The global data communications service system according to Claim 24, wherein the property is selected from one of the group consisting of temperature, humidity, flow rate, and pressure.

26. The global data communications service system according to any one of Claims 23 to 25, wherein the received signals contain at least one command for activating an anti-theft device mounted on the at least one platform.

27. The global data communications service system according to Claims 26, wherein the anti-theft device is selected from one of the group of an alarm system, and an immobilizer.

28. The global data communications service system according to any of Claims 19 to 27, further comprising a plurality of satellite position-

ing system satellites and wherein the at least one communications device is provided with a satellite positioning system satellite signal receiver.

29. The global data communications service system according to Claim 28, wherein the status data comprises location measurement data of the at least one communications device.

30. The global data communications service system according to any one of Claims 19 to 29, wherein the at least one service center is capable of transmitting a signal to the at least one communications device terminating the power down mode.

31. The global data communications service system according to any of the preceding Claims, wherein the at least one communications satellite is an INMARSAT satellite.

32. The global data communications service system according to any of the preceding Claims, wherein the at least one communications satellite is further capable of transmitting satellite positioning system data.