FleetWeb

Structure of Level I

FleetWeb is a system of fleet management based on the Internet.
It is composed of three principal parts:

- Rover
- Server
- Client

Rover

The Rover duty is to gather all information on its position. It receives these information through GPS and it stores them for a certain period of time in case the communication with the server is not available.
Through the Client, the user can establish a connection with any rover and ask about information stored in its files or visualise its actual location in real time.
The Rover is equipped with different alarms which can be chosen and set up; they can monitor a certain situation and when a certain event happens, they make a phone call to a pre-determined mobile or land line number and inform about it.
If the data connection is not active, it is possible to establish a real audio communication with the rover like if it was a real mobile phone; in facts, every rover has a SIM card which is necessary for its functioning.
The Rover has buttons which can be set to respond to every needed function.

Server

The server is the place all information coming from the rovers linked to it are stored. All the files containing the list of past locations of those rovers are stored here, and by the server it is possible to establish communications with the rovers in order to transfer and memorise all data sent by them. These operations are all bound by the presence of a connection.
The management of the information transfer from the rover to the server is automatic, and times and modalities can be set according to what is required.
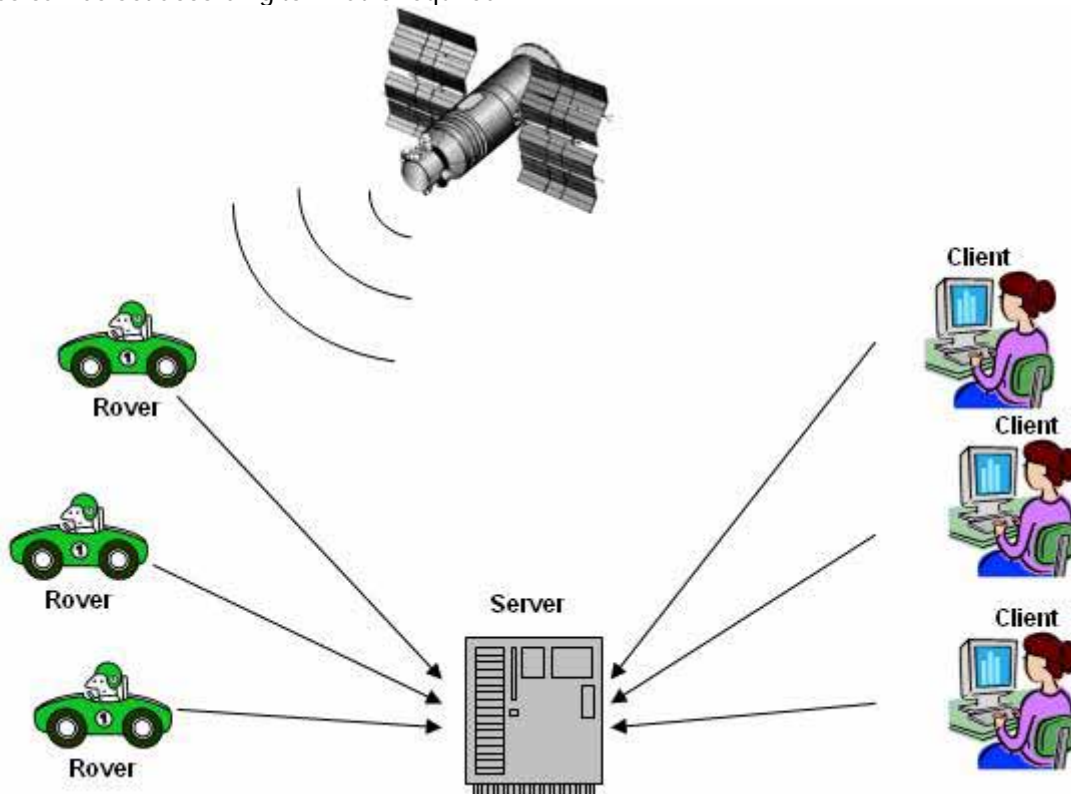
The maintenance of the files, all filtering operations and the organizations of records are all characteristics of the server which can be set and personalised according to the user's needs.
The communication rover-server is made through TCP-IP protocol on GPRS.

Client

The client is the part of the system which interfaces the final user. Through the client, the user can start a communication with the server and question it about the files of the rover (one rover or more). The client consist of an applicative made on the base of GoogleEarth, and therefore, once the information of the files are downloaded, it can show on the screen what was the position of the rover/rovers in a certain date and time, or it can show the sequence of its/their movements during a certain period of time.
The client can even establish a direct communication with the rover (either through the server or directly) in order to monitor the real position and the movements of the rover/rovers.
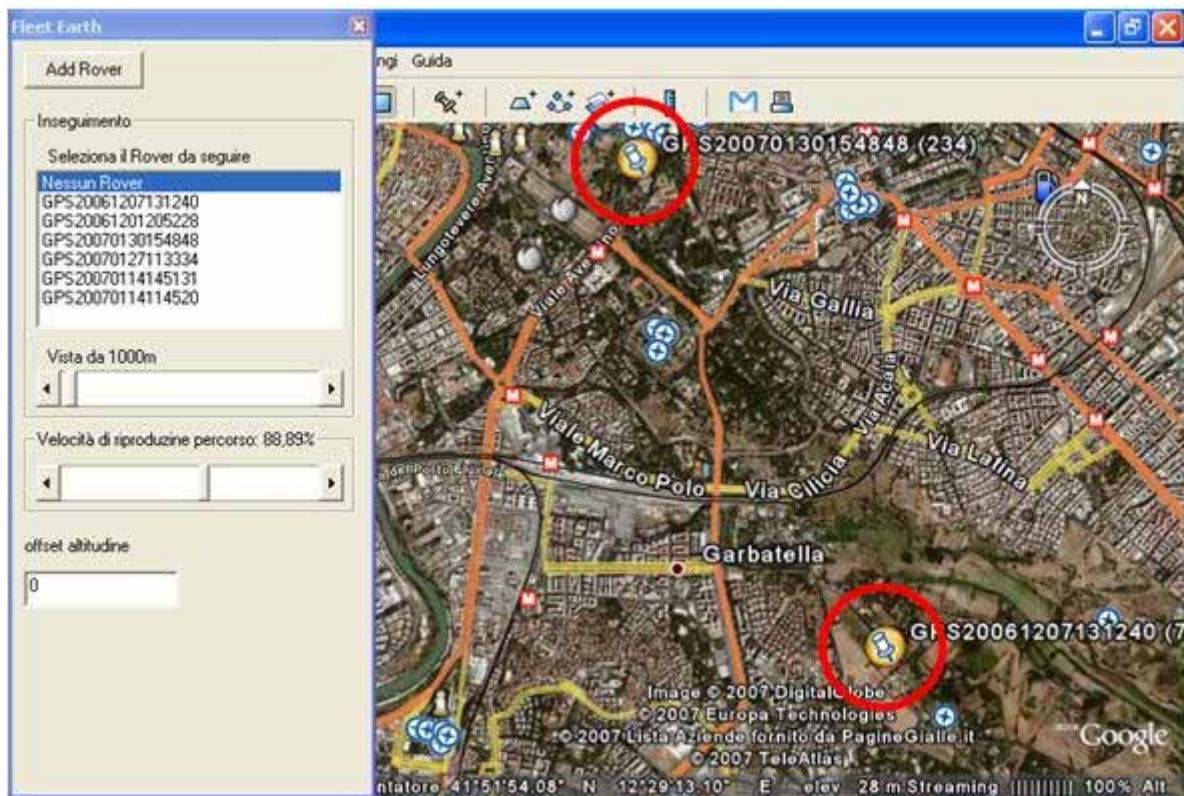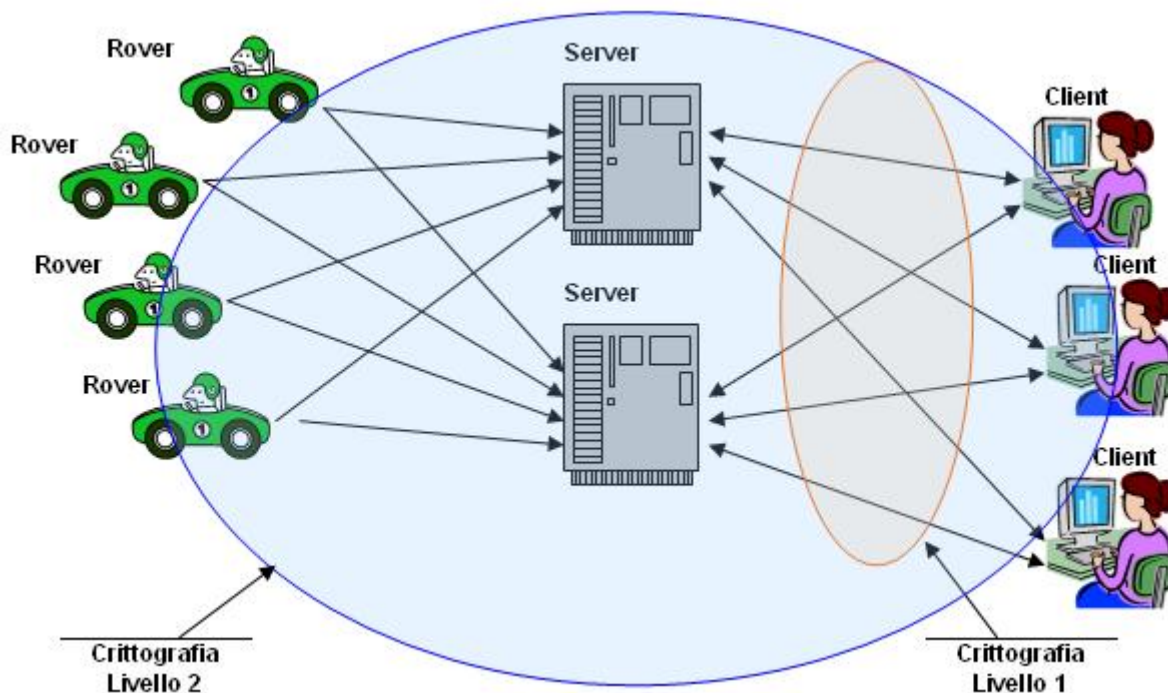
Cryptography

In order to insure privacy to its users, the fleet-management system above described is equipped with two Levels of cryptography.

Cryptography Level 1

The cryptography of the first level is used to avoid that un-authorised users might consult data of other users, and it is even used to protect all communications which happen normally between the Server and the Client. The cryptographic key is formed by a pin of 16 characters (256 bit) known by the server and by the administrator of the sever.
This key (extended Pin) is memorised on a file encoded with a key known only to the client program, which itself is encoded with the specific print of the disc used.
This means that the copy of the initial file cannot absolutely be used if copied on another PC because it doesn't allow to go back to the initial value if the same disc is not used.

Cryptography Level 2

It is used only on request of the user and it allows to make impossible to decode all data starting from the rover to the client. As a consequence, even the log files present on the server are impossible to decode. Therefore, the data exchanged between the server and the client will have both the cryptography of 1st and 2nd level - a double cryptography.
The key of the second level needs to be inserted through serial connection between the client and the server and it is made of 16 characters (258 bit).

Please notice that only the user will know this key, therefore its lost will make unreadable all past and present data of the rover with no possibility of getting them back.

Falcon (the Rover)
Personal tracker & mobile phone

High sensitive 20 channel GPS receiver based on SiRFstarlll
Tri Band GSM/GPRS phone
Bluetooth data and voice communication integrated Build-in 3 axis motion sensor
GPS antenna included
Real time object tracking
Configurable geofences
GPS history function 3 configurable buttons
Lithium Ion battery

Based on the GSM/GPRS and state-of-art GPS technology for satellite navigation, FALCOM introduces a new portable tracking device for personal safety and asset monitoring. The integrated GPS receiver architecture based on the SiRF starlll chipset provides more then enough precise location information using satellite signals to enable to track people where they are anywhere in the world.

With its integral housing, compact design and ultra-low power consumption, it is an outstanding quality, high-performance, operating as a stand alone unit ideally suited for personal security, asset management and automotive applications as well. The configurable internal firmware is a fundamental component which in combination with the excellent hardware performance makes the FALCOM MAMBO unit to be on the top of applications where the fleet management and personal security today are required. The FALCOM MAMBO consists of the GSM/GPRS engine, 20 channel

GPS receiver, Bluetooth™ class 2 for voice and data connection and a motion detector as an all-in-one solution.

The FALCOM MAMBO provides geofence features that can be used for territory management route verification, prohibited locations, and more. Once a geofence is established, the unit automatically notifies via SMS, Voice or Data calls, if the person earring it enters and/or leaves the predefined area(s). In the event of an emergency, the person who carries the FALCOM MAMBO can activate it by pressing a touch button on the unit's surface. Upon activation the equipment uses the GPS signals to define its positions, and sends a SMS message with its location information or performs a voice call to the predefined number via the GSM network. The FALCOM MAMBO based on the TCP/IP protocol is also able to be monitored as real time over the internet or to send an e-mail to the predefined e-mail address.

Tracking solution

Based-on the MAMBO and STEPP II features, FALCOM GmbH has developed a Demo Tracking Software which provides a comprehensive online reporting system producing text and graphical information. To track your MAMBO unit you only need a computer connected to the internet with the pre-installed standard web browser. No additional software or computer hardware are required. Just log-in to the tracking web site to manage your MAMBO personal security unit. With the help of the Demo Tracking Software which provides a real-time tracking map and other configuration features, the unit's position can be polled and graphically represented on the map. So it allows you to put in the know where are the persons who earring it, vehicles and others. However, via this software you can watch them as they travel.

Battery variants (1700 mAh or 850 mAh]

Geofencing

provides geo-fence features that can be used for territory management, route verification, prohibited locations, and more, Once a geofence is established, the unit automatically notifies via SMS, Voice or Data calls, if the person car-ring it enters and/or leaves the predefined area(s).

History

contains a History function enables the GPS receiver to store upto 180000 records and at a later time the history data can be downloaded either locally or over-air GSM network or TCP-connection for further evaluation.

Field of Application

Personal safety and security Fleet tracking and management Navigation and positioning Finding streets and routes Travel planning and many others..

Technical specification

GPS	GSM
GPS frequency: LI, 1575,42MHz C/A code: 1.023 MHz chip rate Channels: 20 Datum: WGS-84	MAMB055:900/1800/1900 MHz MAMB056:850/1800/1900 MHz Compliant to GSM Phase 2/2+ Voice, Data SMS, TCP/IP, PPP GPRS class 10, class **B**

Accuracy	Bluetooth serial port
Position: <10m CEP without SA Velocity: 0.1 m/s without SA Time: 1 ms sync, to GPS time	Connection: Class 2 serial port profile Protocol: NMEA, GGA, GGL GSAGSV, RMC Bluetooth range: 10 m
DGPS Accuracy Position: 1 to 5 m, typical Velocity: 0,05 m/s, typical	**Electrical characteristics** Rechargeable LiIon batteries 850/1700 mAh Power: +5 V DC input charging circuit 500mA
TTFF (Time to First Fix) Hot start: <8 s average Cold start: <42s average	**Physical characteristics** Dimensions |LxWxH): 86 x 60 x 28 mm Weight: 90 g Operating temperature: 0 to + 55 °C
Sensitivity Tracking: 13dbHz Hot start: 15dbHz Warm start: 26 dbHz Cold start: 30 dbHz	**Interfaces** Bluetooth serial port Class 1.1 and 2.0 3.5 mm power jack 3 LEDs for status signals SIM card reader Internal microphone & loudspeaker 3 axis motion sensor 4pol 2,5mm jack for external headsets
Dynamic conditions Altitude: 18,000 m [60.000 feet) max, Velocity: <515m/s max. Acceleration: 4 g, max.	