***1.Introduction***

* 1. ***Purpose***

***1.1.1 General Purpose***

*TrackMe is a company that wants to offer some software-based services: Data4Help, AutomatedSOS and Track4Run. The core service is Data4Help and the others are thought as possible integrations of it. This document’s purpose is to deeply describe all the proposed applications to provide a support for the stakeholders.*

*TrackMe wants to offer the possibility to third parties to monitor the health status and position of users through the Data4Help service. The application has to acquire the users’ data in some way (ex: through a wearable device) and offer the possibility to third parties to access them. Data can be queried in a specific way or in an aggregate way: in the first case the request must be accepted by the user. Third parties can make specific requests or ask to access to data as soon as they are recorded by the application. TrackMe wants to ensures also that the access to aggregate data let them anonymous: Data4Help will make data available only if anonymity can be granted.*

*TrackMe also wills to exploit the possibility of recording users’ data to offer another service: AutomatedSOS. Its aim is to support third parties in monitoring health status of the applications’ subscribed customers acquiring their vital signs through some device (as for Data4Help). This service is thought for elderly people and is thought to automatically activate a request for the emergency services (ex: departure of ambulance) of third parties.*

*Finally, TrackMe wants to offer a service to track athletes participating to a run (both professional or not). This service is called Track4Run and, in this case, all the users have to specify their role: the application allow to organizers to set up a run defining its path, to athletes to enroll for a run and offers the possibility to follow the run to every user tracking runners’ position during the manifestation.*

***1.1.2 Goals***

* *G1: Must allow third parties to monitor location and health status of individuals and groups*
* *G2: The data related to the users must be anonymized by the system in case of aggregate queries*
* *G3: Must track in real time the users' parameters*
* *G4: In case of emergency, should guarantee a reaction time (in reporting the emergency) of less than 5 seconds from the time the parameters are below the threshold*
* *G5: Must allow users who want to organize a run to define its path*
* *G6: Must allow participants to enroll to an organized run*
* *G7: Shall allow spectators to see on a map the position of all runners during a run*

***1.2 Scope***

*The Data4Help service is offered to common users and to third parties that want to acquire data (health status and location) about them or, maybe, about their customers, so it is thought for companies that maybe don’t have the appropriate competences internally and have to be supported in the IT management: the service stands in the middle. So, Data4Help, besides helping users to monitor their health and position statistics, supports companies in the analysis of the mentioned types of users’ data and allow them, for example, to fragment their clients according to their habits, their mobility, the places they visit etc. The user can, obviously, accept or refuse the data acquistion’s request by the third party. It must be assumed that users’ devices are capable of acquiring the mentioned data (sensors + GPS). The authorized personnel of the third party can access the data logging in on the platform installed by TrackMe on the computer systems of the company (both users and third parties have first to register to the system). The system relies on the fact that all the users can be identified with a unique key (their fiscal code) and so the third party can access their data through it. Data can be queried in two ways: the third part can make a request to the system to retrieve health status’ or location’s data of a single customer or he can ask for aggregate data on the base of some parameter (ex: data of all customers with a certain age, with certain body measures, of all customers that work in a certain area etc.). The personnel user can also request to the system to receive users’ data in a live way, as soon as they are produced without the necessity to make a query. The request is handled directly by the Data4Help applicative that will provide data only if they can be showed in an anonymous way otherwise it will notify the third party that is impossible to satisfy the request: TrackMe make data available only if the query is satisfied by at least 1000 users’ data. So, the request for data arrives to the system from the environment, but is observed by the system that provide the appropriate answer after some internal computation (ex: control on the number of individuals that satisfy an aggregate query to verify that anonymity is guaranteed).*

*To offer the AutomatedSOS service the user directly agree to his data processing when adding the service (he won’t be queried every time, but will give his consent only once at the beginning). In this case the service monitors the users’ data and automatically signals the emergency to the third party that has access to the applicative when certain health’s parameters go below or over certain thresholds so that an ambulance can be sent to the customer’s location to help him (this responsibility is left to the third party exploiting AutomatedSOS service, AutomatedSOS has just to report the emergency). The service should guarantee a reaction time of less than 5 seconds from the moment in which the parameters go out of certain bounds. In this case it must be assumed that the users’ device send data almost in real time to guarantee a right functioning of the service . The system provide the encoding of the call to the ambulance, the location of the person and, eventually, some informations that the person manage to send as a reaction to the person’s health problem that belongs completely to the environment. This service is thought to be exploited on one side by the users and on the other especially by public authorities’ that, having access to such system, want to monitor the mentioned citizens’ parameters and want to protect their health status (it is not very useful for companies that can’t provide emergency services).*

*For what concerns the Track4Run application in this case TrackMe offers a service that can be exploited by an organizer of a run to arrange a run and its path, by the participants to a run to enroll for the competition and by the simple users just to follow the evolution of the run. The system offer the possibility to organize both professional and non-professional runs. Each user must authenticate himself when using the application and, in case of a professional run, if he is an organizer or a runner, he has to prove it through a certificate, while for amateur runs this is not necessary.*

*Obviously both AutomatedSOS and Track4Run rely on the assumptions made for Data4Help and exploit its features.*

***1.4 Definitions, acronysms, and abbreviation***

***1.4.1 Definitions***

***1.4.2 Acronyms***

*API = Application Programming Interface*

*GPS = Global Positioning System*

***1.4.3 Abbreviation***

***1.5 Revision History***

***1.5 Reference documents***

***1.6 Document Structure***

*Chapter 1 is an introduction: it describes the purpose of the system also through the goals of the applications and it defines the scope of the system defining in more detail the aim of the project and showing the application domain and the most important shared phenomena.*

***2.Overall Description***

***2.1 Product Perspective***

*The idea is to build AutomatedSOS and Track4Run upon Data4Help: they are additional services that can integrate Data4Help and they can be activated also in a second moment providing some additional information. To monitor the position of its user the application exploits his device’s GPS and to manage the organization of a run the system exploit Google Maps’ APIs and the device’s Calendar app to register the event (ex: for an athlete that wants to participates to a competition or for a user that programs to follow a run programmed in the future).*