**GOALS**
**Data4Help**

- Allow people to share their data
    - [G1] - Allows people to make available their position
    - [G2] - Allows people to make available their health status
- Allow third parties to request the data
    - [G3] - Allows third parties to request data of some specific individuals
    - [G4] - Allows third parties to request the access to anonymized data of groups of individuals through a search with a specific selection criteria
- [G5] - Allows people to choose whether to accept or not the request for sharing data required by third parties
- Allows third parties to be provided with data they've asked for
    - [G6] - Allows third parties to be able to see saved data as soon as a request is approved by the individual.
    - [G7] - Allows third parties to have the access of new data as soon as they are produced.
    - [G8] - Allows third parties to be notified with the users' response

**AutomatedSOS**

- [G9] - Allows the customers to receive help if their health parameters are below certain thresholds

**Track4Run**

- [G10] - Allows the organizers to create an event for an athletics run
- [G11] - Allows the participants to enroll to a run
- [G12] - Allows the spectators to see the position of the runners on the map during the run

Nostre considerazioni

- [G13] - Allows the creator of the run to modify or delete the race with the relative constraints
- assumiamo che ci sia un modo per assicurarsi che le terze parti e gli organizzatori di una gara siano effettivamente tali. (?)
- assumiamo che l'applicazione, una volta che rileva che i parametri sono sotto una certa soglia, mandi entro 5 secondi una notifica all'ospedale

Requirements - When the health parameters is below the thresholds will be sent to the location of the customer an ambulance

**DOMAIN ASSUMPTIONS**

- [D1] - The individuals' devices are able to measure all the health parameters needed by Data4Help
- The data provided by the devices of the customers are assumed to be correct
    - [D2] - The individuals' devices are able to provide an accurate detection of the health parameters
    - [D3] - The GPS must be active on the individuals' devices
    - [D4] - The individuals' devices are able to provide an accurate enough current location
- [D7] - A run present in the list of all runs is actually held
- [D8] - The third parties know the ID of the individual they've asked data for
- [D9] - An internet connection must be active
- [D11] - The external partner take charge of the help request
- [D12] - An ambulance arrives to the user's location
- [D13] - The individuals are always with the device when they are using Data4Help

Nostre considerazioni (assumptions)

- se i parametri di un utente vanno sotto la soglia, noi assumiamo che l'utente stia effettivamente male
- quando gli utenti si registrano come third parties o come organizzatori di corse, devono fornire tutti i dati necessari per provare che effettivamente sono third parties o organizzatori di corse (QUESTO VA DETTO IN UNA PARTE "DESCRITTIVA")
- le funzionalità offerte dai sw cambiano a seconda del tipo di utente (third party, individual ecc).(QUESTO VA DETTO IN UNA PARTE "DESCRITTIVA")
- quando un utente si iscrive ad una gara, i dati vengono presi automaticamente da quelli di registrazione dell'utente. (QUESTO VA DETTO IN UNA PARTE "DESCRITTIVA")
- gli individuals devono aver con loro stessi uno smartwatch (CN) per poter usare l'app e possono avere qualsiasi altro dispositivo elettronico. Tutti gli altri utenti devono avere un qualsiasi dispositivo elettronico(QUESTO VA DETTO IN UNA PARTE "DESCRITTIVA")
- quando una terza parte fa una richiesta e riceve una risposta positiva, gli viene subito chiesto se vuole iscriversi a quei dati (QUESTO VA DETTO IN UNA PARTE "DESCRITTIVA")
- le gare che l'applicazione mostra sono quelle per cui un utente può ancora iscriversi
- una spettatore è un individuo che ha già scelto di vedere la gara (detto)

**REQUIREMENTS**

- [R1] - Individuals' health status is provided to Data4Help by their smartwatches
- [R2] - Individuals' location is provided to Data4Help by their smartwatches
- [R3] - Third parties can identify a specific individual entering on Data4Help his/her unique ID
- [R4] - Third parties can send a specific individual the request for his/her data through Data4Help

- [R5] - Third parties can send a request for anonymized data of groups of individuals through Data4Help
- [R6] - Third parties' request is sent to the interested user by Data4Help
- [R7] - Individuals can view on Data4Help the request they've received
- [R8] - Individuals can accept or refuse the request using Data4Help
- [R9] - Third parties can view on their devices data provided by Data4Help
- [R10] - Data4Help has access to the requested data
- [R11] - Data4Help must take into account individuals' response
- [R12] - Third parties can view requested data on their devices
- [R13] - The application sends the users' data to the external partner
- [R14] - The users are shown the map
- [R15] - Organizers can create a run by entering the date, the starting and ending time and the path
- [R16] - Individuals are shown a list of athletic runs
- [R17] - Individuals can select a specific run from the list
- [R18] - Track4Run shows the location only of the individuals who actually enrolled the run
- [R19] - Users can create a Data4Help account
- [R20] - Users can log in to the application by providing the combination of a username and a password that match an account

**CONSTRAINTS**

**Data4Help**

- TrackMe accepts any requests for which the number of individuals whose data satisfy the request is higher than 1000

**AutomatesSOS**

- The reaction time from the time the parameters are below the threshold up to the time a notification is sent to the external partner must be less than 5 seconds

**USERS CHARACTERISTICS**

- **Individuals**: users who agree to the share their data
- **Third Parties**: users who use the data of individuals
- **Spectators:** users who see the run
- **Organizers:** users who define the path for the run
- **External partner**: operators of a public service for urgent emergencies

**[G1] - Allow people to share their position**

- [D3] - The GPS must be active
- [D4] - The devices are able to provide an accurate enough current location
- [D8] - User's position is retrieved using GPS system (questo numero è sbagliato)
- [D9] - The device used by the user is equipped with GPS
- [D13] - The users are always with the device when they are using Data4Help
- [R2] - The users location data are provided to Data4Help by the user's device
- [D9] - An internet connection must be active

**[G2] - Allow people to share their health status to be monitored**

- [D1] - The customers' devices are able to provide all the informations on the health of the customers
- [D2] - The devices are able to provide an accurate detection on the user health parameters
- [D13] - The users are always with the device when they are using Data4Help
- [R1] - The user's health status data are provided to the Data4Help by the user's device
- [D9] - An internet connection must be active

**[G3] - Allow third parties to request data of some specific individual**

- [D8] - The third parties know the ID of some specific individuals
- [R3] - The third parties can identify in Data4Help a particular user through his unique ID
- [R4] - The third parties can send the request of sharing data to Data4Help for a specific user
- [D9] - An internet connection must be active
-

**[G4] - Allow third parties to request the access to anonymized data of groups of individuals through a search with a specific selection criteria**

- [R5] - The third parties can send the request of sharing data at Data4Help about a group of individuals with a specific selection criteria
- [D9] - An internet connection must be active
-

**[G5] - Allow people to choose whether to accept or not the request for sharing data after the request from other third parties**

- [R6] - The request from the third parties is sent to the interested user by Data4Help
- [R7] - The user can view through the application the specific request of data with all the details
- [R8] - The user can accept or refuse the request through the application
- [D9] - An internet connection must be active
-

**[G6] - Allow third parties to be able to see saved data as soon as a request is approved by the individual.**

- [D9] - An internet connection must be active

- [R9] - The third parties can view on his device the data provided by Data4Help
- [R10] - The application has access to the requested data
-

**[G7] - Allow third parties to have the access of new data as soon as they are produced.**

- [D9] - An internet connection must be active
- [R9] - The third parties can view on their device the data provided by Data4Help
- [R10] - The application has access to the individuals' data

**[G8] - Allows third parties to be notified with the users' response**

- [D9] - An internet connection must be active
- [R11] - The application must take into account the users' response
- [R12] - The third parties can view on their devices the notifications provided by Data4Help

**[G9] - Allows users to receive help if their health parameters are below certain thresholds**

- [R13] - The application sends the users' registration information, location and health status to the external partner
- [D2] - The devices are able to provide an accurate detection on the user health parameters (**specified the parameters**)
- [D3] - The GPS must be active
- [D4] - The devices are able to provide an accurate enough current location
- [D12] - An ambulance arrives to the user's location
- [D11] - The external partner take charge of the help request
- R1
- R2 vedere primo commento del documento.

**[G10] - Allows the organizers to create an event for an athletics run**

- [R14] - The users are shown the map
- [R15] - The organizers can create a run by stating the date, the starting and ending time and the path
- [D9] - An internet connection must be active
-

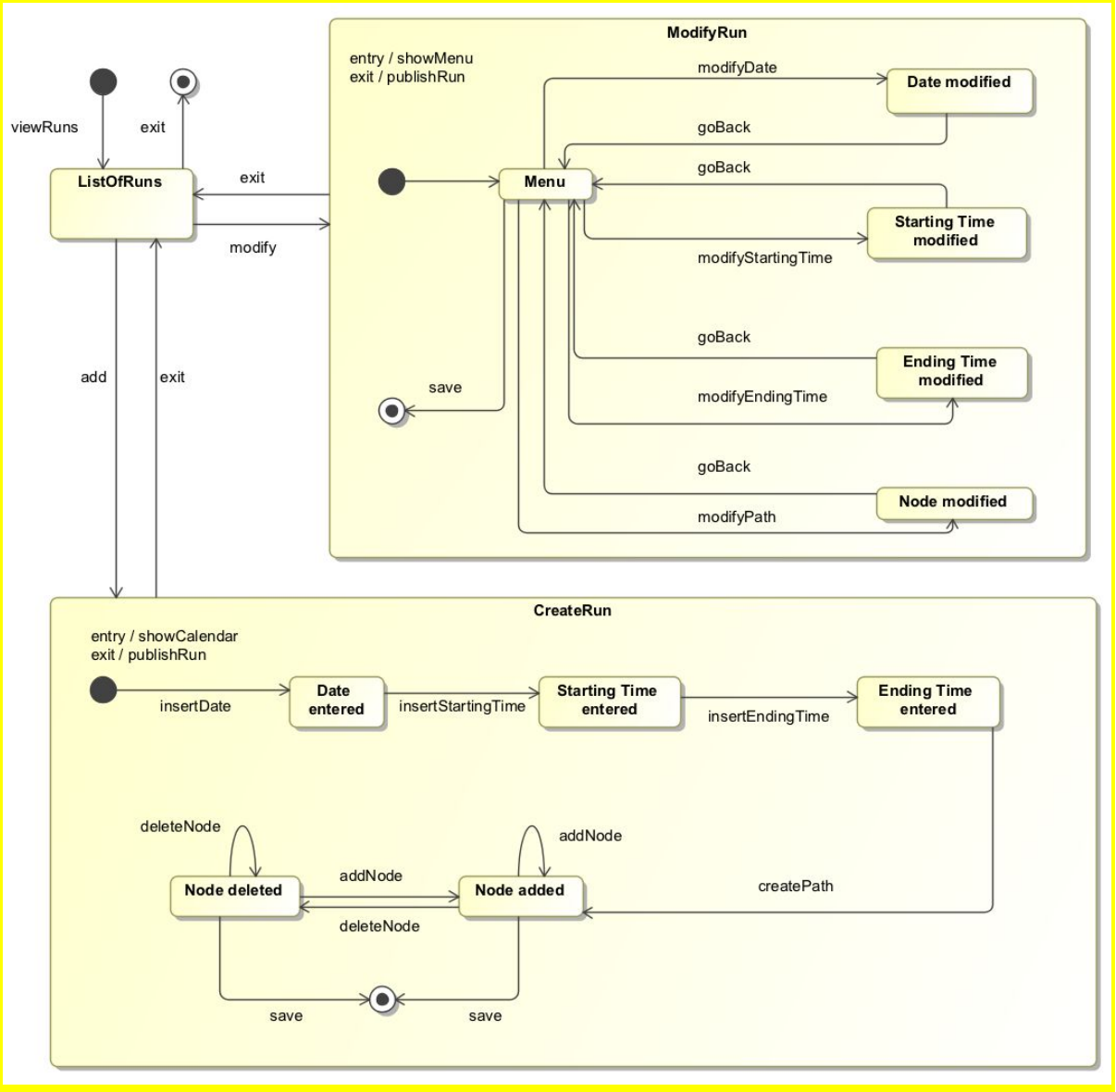
**[G11] - Allows the participants to enroll to a run**

- [D9] - An internet connection must be active
- [R16] - The users are shown a list of athletic runs
- [R17] - The users can select a specific run from the list

**[G12] - Allows the spectators to see the position of the runners on the map during the run**

- [D9] - An internet connection must be active
- [R14] - The users are shown the map
- [R2] - The users' location data are provided to Data4Help by their devices
- [R18] - Track4Run shows the location only of the individuals who actually enrolled the run
- [D4] - The devices are able to provide an accurate enough current location
- [D3] - The GPS must be active
- [D7] - A run present in the list of all runs is actually held
- R2

**Da chiedere**




**Da chiedere**

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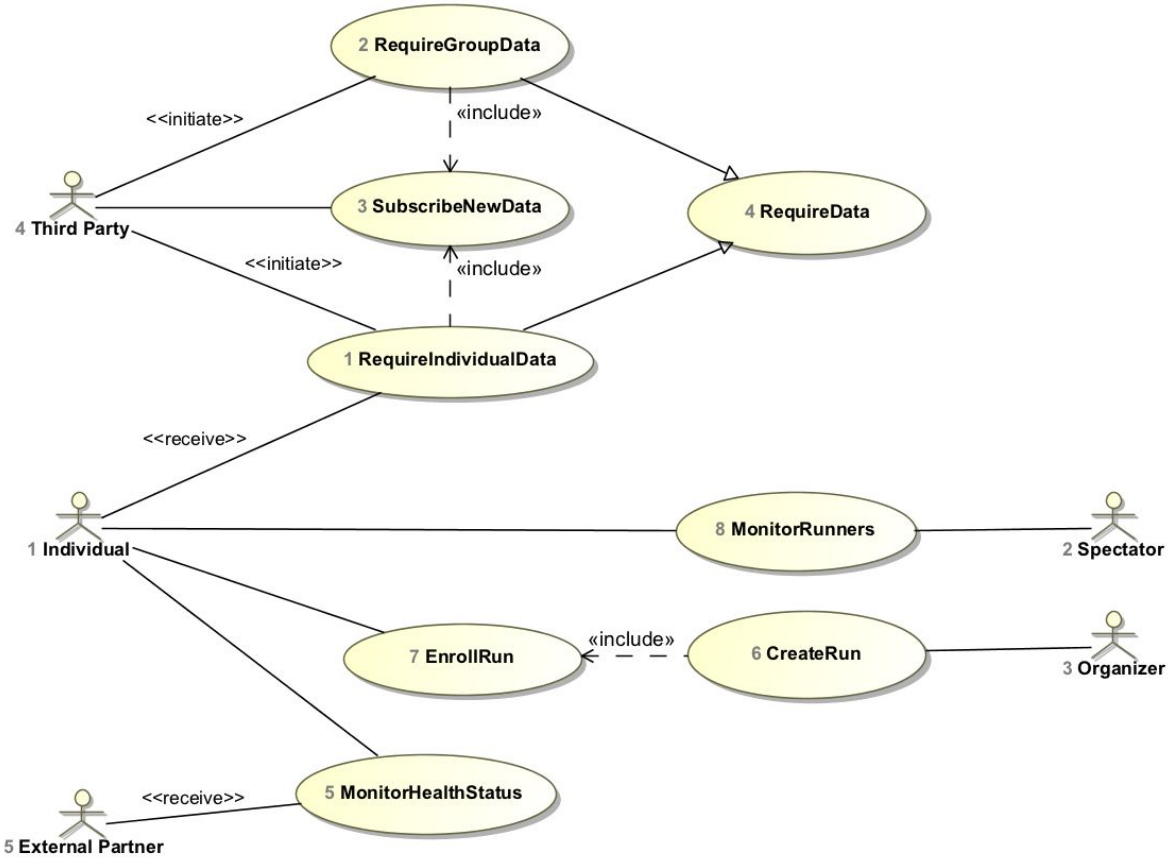
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4 Third Party
3 SubscribeNewData
4 RequireData
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<<receive>>
1 Individual
8 MonitorRunners
2 Spectator
7 EnrollRun
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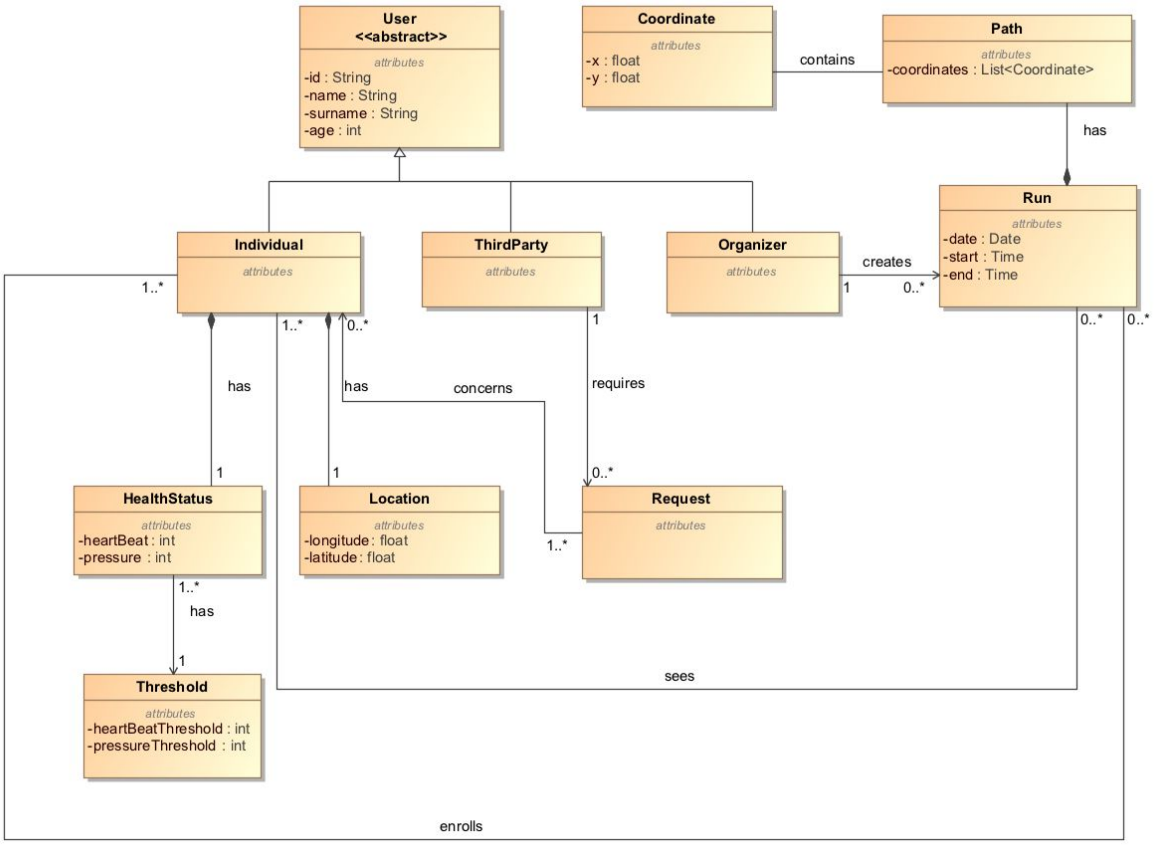
6 CreateRun
3 Organizer
5 MonitorHealthStatus
<<receive>>
5 External Partner

**Da chiedere**




**External Interface Requirements**

Data4Help is a software application for mobile devices with the main goal of allowing third parties to monitor the health status and the position of the users registered to the application. To guarantee this goal it is necessary that the registered users' devices have certain hardware requirements in order to guarantee the correct collection of information, this means that the hardware of the users' devices it must guarantee the ability to measure the required parameters and the ability to transfer these parameters to the central system ensuring, as this sensitive data, security during the whole process of elaboration and data transmission. From the software point of view, the application must guarantee a light and easy-to-interpret interface, as it is also aimed at an elder public.

**User interfaces**

1. The clients must have an easy-to-use UI that is accessible to disabled people and easily used by older people
2. The interface must offer the possibility to choose the language used at all times
3. The first screen must ask the user to login in order to begin operations, where the user can log in as two different types of users: Individuals or Third parties

4. **Individuals** registered to the application must have this interfaces:
    - *Monitoring*
      Being one of the main goals of the application to collect data, the user can monitor his data taken from the device through the application. This section allows the users to see all these data (position and health parameters)
    - *Requests*
      Individuals can receive direct requests from third parties, the application provides users with a special section where they can see the history of the various requests and the ability to accept or reject a new request. When the user receives a request, he is informed via notification, too.
3. **Individuals** also registered for the service **Track4Run** must have others different interfaces:
    - *Define run*
      Allows users to define a race by establishing their route, start time, end timetable and number of participants.
    - *Enroll*
      Allows users to see the available race and enroll in it if possible.
    - *See Run*
      Allows users to see the available race and show on the map the position of the participants.
4. **Third parties** registered to the application must have this interfaces:
    - *Monitoring*
      The monitoring of third parties is divided into two sections, one to view the data of the research on groups of individuals and one to view the data of specific individuals who have accepted the request for sharing data. In both cases the third parties have  a list of available data and it is possible to make a search to filter the different data through the ID of the individual or through the name of the data collection.
    - *Requests*
      The third parties are provided with a special section to send the various requests where they can also see the history of the various requests with the related answers. The third party is informed via notification when a user answers to a request.
    - *Notification of data*
      The third parties is informed via notification when new data related at the requests are available.

**Hardware interfaces**

All individuals must have a smartwatch that allows monitoring of health parameters, smartwatches of registered users must have these sensors (almost all smartwatches are equipped with these basic sensors):

- *Heart rate sensor*: to measure the speed of the heartbeat measured by the number of contractions (beats) of the heart per minute (bpm)
- *Body temperature sensor:* to measure the temperature of body of user

with this two hardware sensors it's possible to guarantee a basic monitoring of users' health status.

Exceptionally, if the device allows it, it will be possible to take further and more specific data through more sophisticated sensors:

- *Oxymetry sensor:* measurement of the percentage oxygen saturation of the arterial blood hemoglobin
- *Electrocardiography sensor:* recording the electrical activity of the heart over a period of time
- *Blood pressure sensor:* measurement of the arterial pressure
- *Glucose detection sensor:* measurement of the percentage of glucose in the blood
- *Sleep monitoring:* measurement of the user's cerebral activity during moments of rest

These sensor guarantee better monitoring of the user, but being sensors that do not have all the smartwatches, then the use of these depends on the device that uses the user.

Further, all the devices must be equipped with GPS so as to ensure the sharing of the user's position and to access the internet, this via Wi-Fi or via mobile data.

The client application must be able to access the GPS and all the health sensors (above indicated) of the user's device and be able to share the data obtained from these.

**Software Interfaces**

The system need:

- A server database where store all the information about health status and position shared by the users.
- A client database where store all the information of a user allowing the application to work even in offline mode.
- A set of rules and protocols to ensure that saved data can only be accessed by authorized users.
- An API to get the information about a map, define a path on this and see the position of athletes during the runs.

**Communication interfaces**

The clients communicate with the server via HTTPS requests (port 443), and TLS protocols guarantees communication security. There will be the need to build an API that lets the application to store and/or retrieve data from the database, which is located server-side.