



*"THIS PROJECT HAS BEEN FUNDED UNDER THE THIRD AAL CALL, AAL-2011-4. THIS PUBLICATION [COMMUNICATION] REFLECTS THE VIEWS ONLY OF THE AUTHOR, AND THE COMMISSION CANNOT BE HELD RESPONSIBLE FOR ANY USE WHICH MAY BE MADE OF THE INFORMATION CONTAINED THEREIN"*



## D18 – MyGuardian Services (Prototype 1)

**Start Date of Project :** 01/05/2012

**Duration :** 36 months

PROJECT FUNDED BY THE AAL JOINT PROGRAMME	
Due date of deliverable	M24
Actual submission date	M25: May 30, 2014
Organisation name of lead contractor for this deliverable	UNIGE
Author(s)	UNIGE
Participant(s)	HIB, UNIGE
Work package	WP4
Classification	Internal, Restricted
Version	1
Total number of pages	12



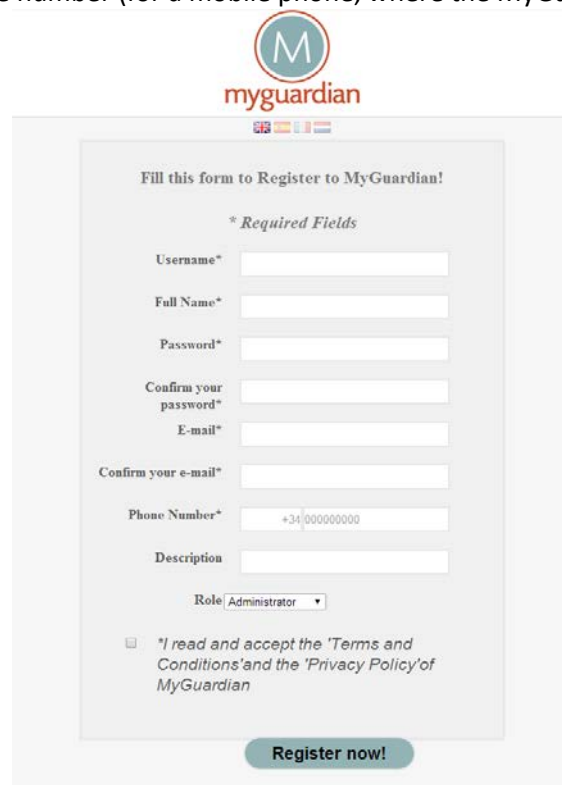
## Table of Contents

1. Authentication module .....	4
2. User profile .....	6
3. User relationship management.....	7
4. Localization module .....	8
5. Messaging interface & contacts list .....	9
6. Background services .....	9
7. Senior remote state assessment module.....	11
8. Area management.....	11
9. Interfaces flow .....	13

## 1. Authentication module

MyGuardian Portal can be accessed both by caregivers and by seniors. So, it includes an easy-to-use registration/login interface to allow the registration of new users (both caregivers and seniors) and to log on into the MyGuardian Home Page of each user. Therefore, to access the system, any new user (i.e., senior and his/her caregivers) needs a personal account. This account is created from the web-based application. It contains at least:

- An unique username,
- A full name,
- An email address,
- A password,
- A mobile phone number (for a mobile phone, where the MyGuardian app is running)



myguardian

Fill this form to Register to MyGuardian!

\* Required Fields

Username\*

Full Name\*

Password\*

Confirm your password\*

E-mail\*

Confirm your e-mail\*

Phone Number\*

Description

Role: Administrator ▾

\*I read and accept the 'Terms and Conditions' and the 'Privacy Policy' of MyGuardian

**Register now!**

*Figure 1 - Web Registration page*

Afterwards, a validation mechanism is used to validate the account upon creation (by sending an email to the indicated email address of the user). Once the account has been validated, the user can access to the application.

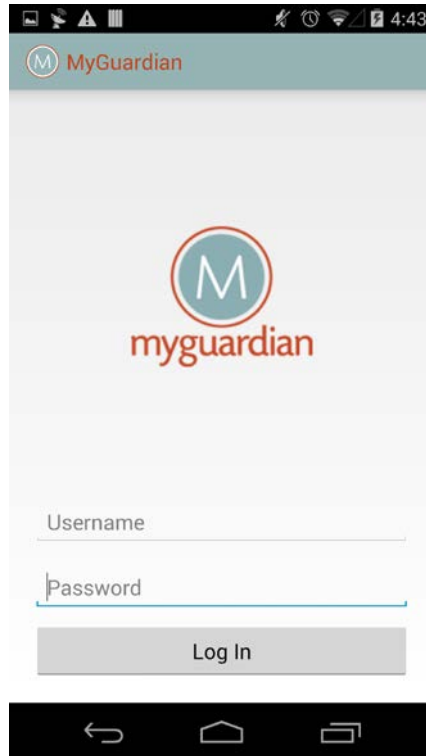


Figure 2 - Mobile app Login page

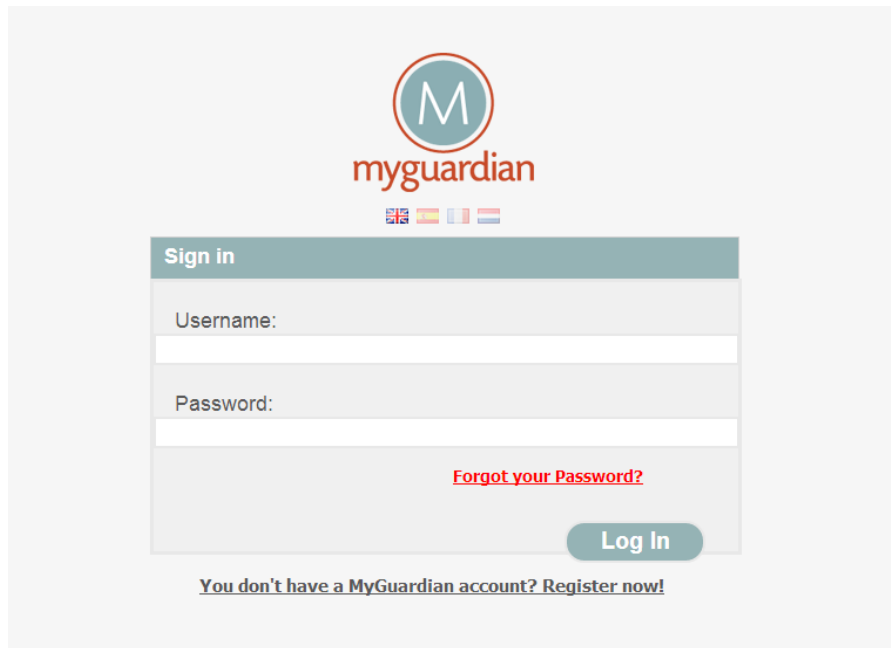


Figure 3 - Web Login page

If the user forgot his password, he can click on a link that sends him his password by email using the email address provided during the registration.

When the user is logged in, he can access to these settings and edit his password and his email address. The username is not editable.

In summary, the entry point of the application is a login page with a link to create an account and another one to retrieve a forgotten password (web application only).

In order to guarantee the security of the system, an authentication mechanism based on OAuth is used to authenticate the user using the same credentials from web-based and mobile applications. On the mobile application, the user will have to do the login step only once. The mobile application stores the OAuth tokens in order to reuse them the next time the user start the app (username/password or not stored, only the user tokens).

This module provides the functionalities defined in Service01: **User interface for authentication and registration**

## 2. User profile

The user profile provides both caregivers and seniors an interface to define his/her personal profile. Such personal profile is defined in the User Profiling Module, and for the first prototype, we can identify two kinds of settings:

- User settings, as for example, contact details and personal settings, that do not need to be updated frequently. These settings will be available and editable only via the web-application.
- Service Settings, as for example, the notification configuration, the caregivers circle and the privacy settings, that need to be setup at the beginning of the app usage and may be modified at all times and that will be accessible from both mobile and web-based apps.

Alex

 Name: Alex Role: Administrator Description: Administrator Email: alex@myguardian.com Phone number: 003433333333 Mobile number: +34888888888 Administrator: fred

Message ✕  
Text ✕  
Videocall 📺

Upload  
Save Changes

Notifications

Personal Settings

Receive a text for alarms  Don't receive an email for updates  
 Receive a call for alarms  Receive an email for daily updates  
 Receive an email for alarms  Receive an email for weekly updates  
 Receive a push for alarms  Receive an email every two weeks updates  
 Receive an email for monthly updates

Save Changes

Figure 4 - User Settings (Web App)

*Figure 5 - Privacy Settings (Web App)*

This module provides the functionalities defined in Service03: **User profile** and such settings are managed at the server-side by the User Profiling Module (for further details about the server part, see the document *D12 - User Profiling Module*).

Furthermore, all settings are synchronized with the MyGuardian Central database thanks to REST API implemented inside the User Profiling Module. By means of REST API, the different server modules and clients applications use HTTP requests to post, read (for example, make queries) and delete data stored in the MyGuardian Database. So, REST API provides another layer of abstraction on top of the MyGuardian database such neither other server modules nor clients applications know the names of fields / tables to manipulate the data.

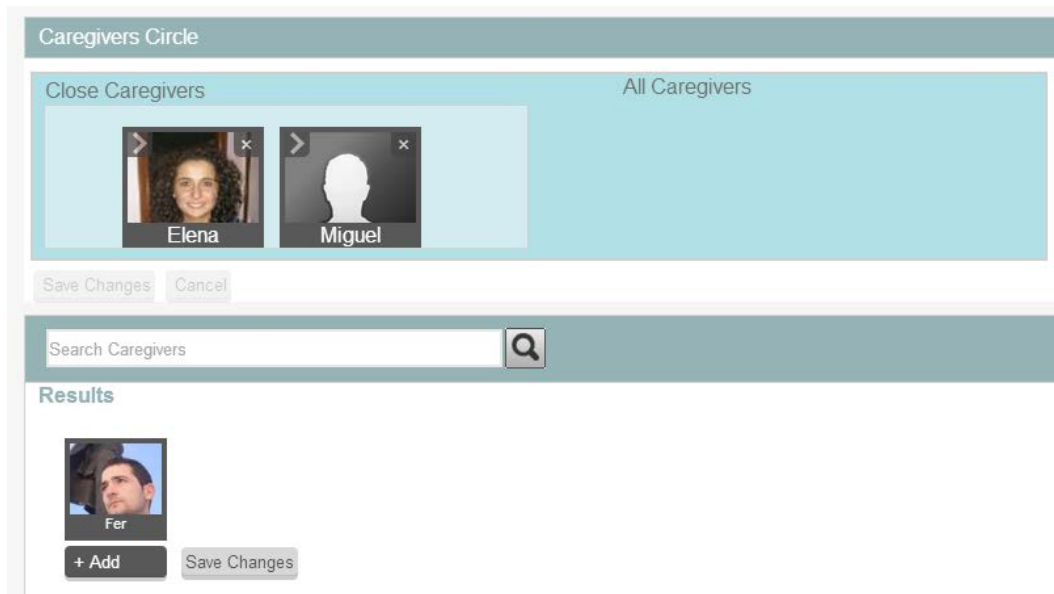
### 3. User relationship management

A Role-Based Access Control (RBAC) model has been chosen in order to manage the user relationship (circle of contacts) and the user roles and permissions to access the resources for certain operations. By means of this model, a role is assigned to a user authorizing the user to have the necessary permissions in order to access particular functionalities or services through particular operations. So, MyGuardian Central Database stores all relationships that build the contact circles; where such circles are built storing all one-to-one relationships that exist between the senior and caregivers within the circle, and the role of each caregiver with respect to that senior.

Thereby, MyGuardian contains a dedicated interface for the user relationship management. In such interface, and depending on his/her role, the user is able to:

- Administrator and close caregivers:
  - View senior's caregivers circle and edit his role: Caregivers are classified as close caregiver or, simply, caregiver.
  - Add a new caregiver to the senior's circle, by entering their known usernames and select the role that he wants to assign to the new caregiver.
- Caregivers:
  - View senior's caregivers circle exclusively.
- Senior:
  - View his/her caregivers circle exclusively.

Such interface also shows the invitations from the caregivers: when a caregiver adds a new caregiver to the senior's circle, the new caregiver receives an "invitation", that he can choose to accept or decline him to be part of his circle.



*Figure 6 - Interface for Caregivers Circle Management (Web App)*

## 4. Localization module

The localization module is composed by 2 distinct modules (one at a mobile phone client side, one at the fixed server side):

- The module at client side is running as a service (i.e., in the background). The user position is provided using network (mobile, WiFi) and GPS providers
- The module at server side is used to inform and update the rule engine. It also communicates with the zone management module and computes the contextual data (user inside, outside or near an area) that is used by the rule engine.

The mobile application has to be able to run at least one full day on the battery of the user's mobile phone. To save the battery, the following design decisions have been made:

- The zone in / out of the area calculation is done at server side to minimize the computational efforts on the phone device.
- The frequency / precision of position steps of the positioning module at the client side could be updated by the positioning module at server side according to data from the rule engine. For example, the frequency and precision of the position could be increased if the user is near or in some specific types of (dangerous) areas, decreased when the user is in a safe area or far away from a dangerous one.

A timestamp (resolution to ms) will be always attached to the location data.



## 5. Messaging interface & contacts list

The **Messaging interface** will provide the following service: MOB-02: **Messaging Interface**. The technology to be used for the client-server communication will be defined by CON. This messaging interface introduces also the functionalities for MOB-05: **Play pre-recorded voice message**, MOB-06: **Image sharing** and MOB-07: **Shortcut for predefined number**. So, all the communication mechanism will be centralized in one place.

This communication service will be available from both mobile and web-based apps. The interface is composed of a contacts list where the user can select another user and send him an asynchronous multimedia message or call him directly (on the phone only).

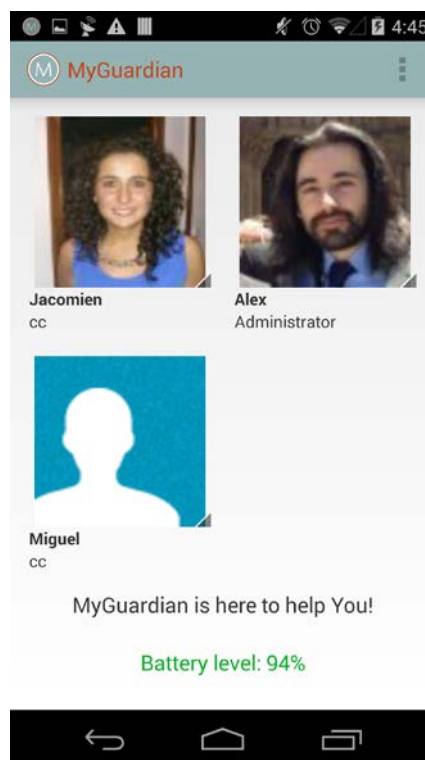


Figure 7 - Senior Mobile App Shortcuts

## 6. Background services

A background service will be developed to provide the following service: MOB-09: **System status**. This service launches a check-up of the system to be sure that all the essential services are running on the device: GPS, data connection, communication flow, access to the server. This system check-up will be also launched at server side to ensure that there is no trouble and report the state to a caregiver if for example the senior device has not sent any information since a while (rules for "timeout" has to be defined).

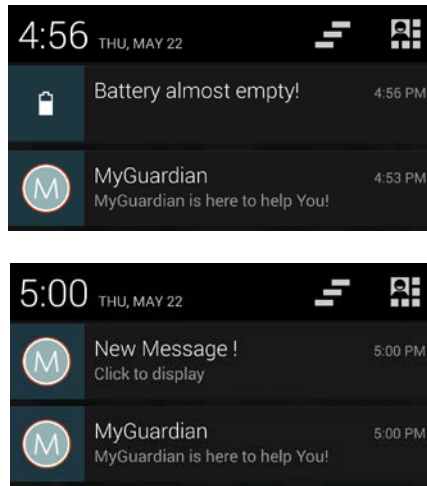
An icon in the notification bar of the Senior mobile application will display the status of the link between the mobile application and MyGuardian server.

This check can also be launched manually in the user interface.

**A battery level notification system** will be developed to provide the following service: MOB-10: **Battery level**. This module notifies the senior and the informal caregiver who chose to be informed.

**A notification module** will be included to provide the following service: MOB-04: **In-App notifications and alerts** and also notification from MOB-10: **Battery level**. The senior user can configure these alerts in the user profile interface. Especially for the first service development, Google Cloud Messaging will be considered as the central notification mechanism for the server-client flow but the notification system himself will be based on the default android notification system.

Numerous kinds of notifications could be set: Simple notification (with text and icon in the notification bar), sound notification, notification with vibration, pop-up. All these levels of alarms will be selected in the web settings for the service.



*Figure 8 - Example of notifications*

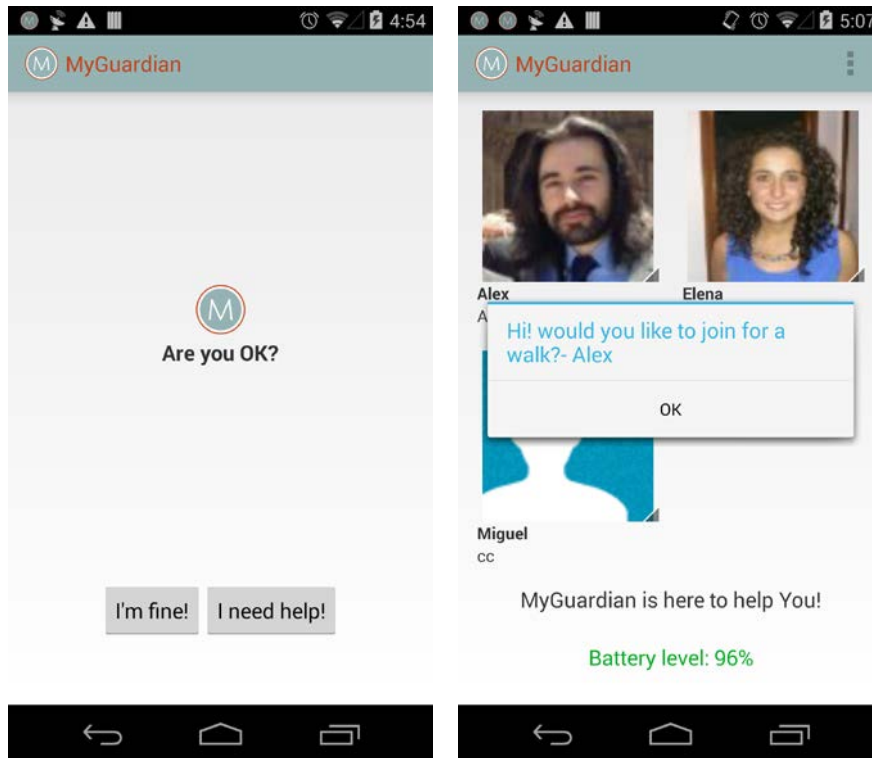


Figure 9 - Example of messages

## 7. Senior remote state assessment module

This model will give statistical probability (0-100%) of senior being in a state of confusion or possibly feeling lost. This module will recognize senior's behavioural traits like repetitive physical activity, e.g., walking at random and/or in cycles.

This behavioural data will be sent to the rule engine and may trigger alarms if rules have been set up for it.

## 8. Area management

The web-application contains an interface where the user (senior or his caregiver) can manage specific areas or points. These areas could be his home coordinates or most visited places (such as relative house, market place, day care center...) with name and description or alternatively dangerous areas with notifications/rules (when enter, when exit, time spent before notify...) associated.

This interface displays a map with tools to create area and a search bar. In the dropdown list of the search bar, the user can select one of his areas by name to display the description of this area. The map will automatically move to this location. He can also search for a new place by entering a name and pushing the Enter key.

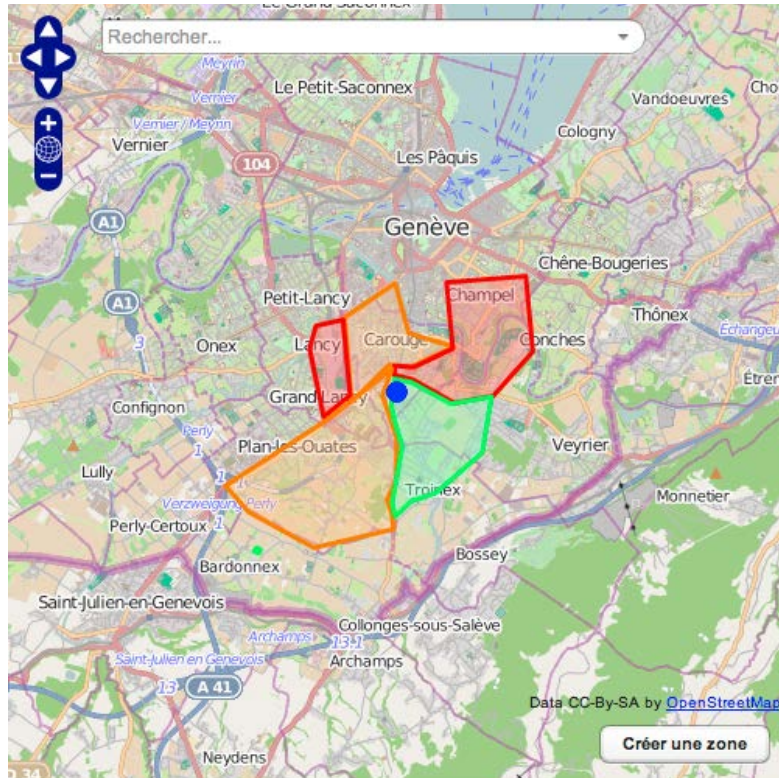


Figure 10 - Area Management

## 9. Interfaces flow

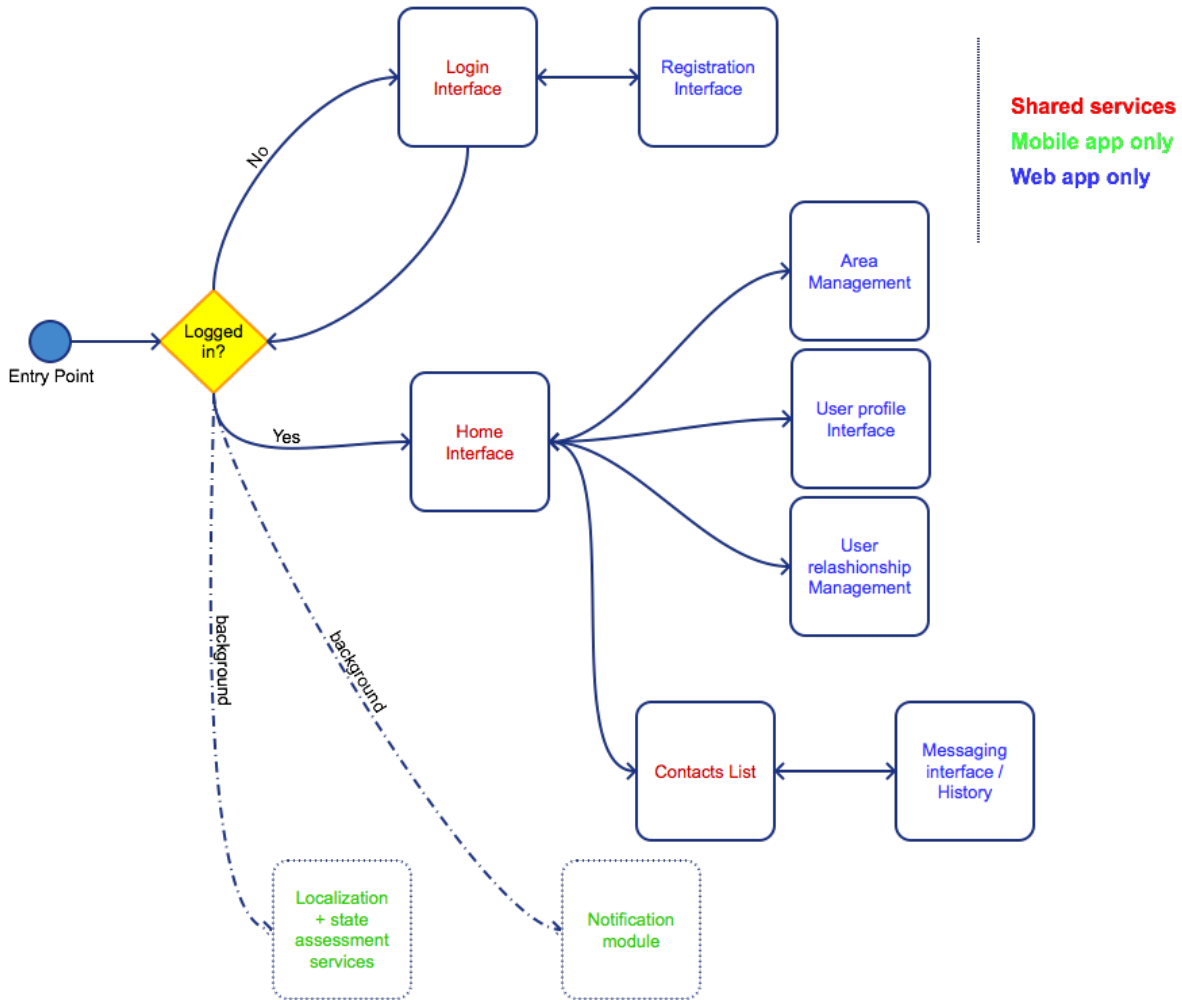


Figure 11 - Global interface flow (prototype 1)