



POWER2DM

“Predictive model-based decision support for diabetes patient empowerment”

Research and Innovation Project

PHC 28 – 2015: Self-management of health and disease and decision support systems based on predictive computer modelling used by the patient him or herself

Deliverable 3.9

D3.4.3 Mobile GUI Components for DSS

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Contributors (Benef.) Armelle Merle (iHealth)

Responsible Author Armelle Merle (iHealth) **Email** a.merle@ihealthlabs.com

EXECUTIVE SUMMARY

This document describes the graphical user interface (GUI) implemented in the mobile App for the Decision Support System (DSS).

The main purpose of the mobile App is to provide an easy way for users to view quickly their performance in terms of goal adherence, to receive reminders / notifications for their goals and interventions which includes daily motivational support and to log any of the measurements or events.

The GUI includes the following components which are described in this deliverable:

- Login screen
- Daily dashboard and goal / action plan monitoring
- JITAI delivery / push notification messages
- Loggin events / measurements (add event view)
- History view
- App settings and log out view
- Technical support tool

Further improvement of the GUI are planed.

POWER2DM Consortium Partners

Abbv	Participant Organization Name	Country
TNO	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek	Netherlands
IDK	Institute of Diabetes “Gerhardt Katsch” Karlsburg	Germany
SRDC	SRDC Yazilim Arastirma ve Gelistirme ve Danismanlik Ticaret Limited Sirketi	Turkey
LUMC	Leiden University Medical Center	Netherlands
SAS	SAS Servicio Andaluz de Salud	Spain
SRFG	Salzburg Research Forschungs Gesellschaft	Austria
PD	PrimeData	Netherlands
iHealth	iHealthLabs Europe	France

OPEN ISSUES

No:	Date	Issue	Resolved
1			

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1 INTRODUCTION

1.1 Purpose and Scope

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1.2 References to POWER2DM Documents

- POWER2DM Description of Work (Proposal)
- D1.1 User Requirements and Use Case Scenarios
- D3.7 Mock-ups for Web and Mobile User Interfaces for SMSS Interventions

1.3 Definitions, Abbreviations and Acronyms

Table 1 List of Abbreviations and Acronyms

Abbreviation/ Acronym	DEFINITION
API	Application Programming Interface
ARC	Audit Repository Client component
DSS	Decision Support System
GUI	Graphical User Interface
SMSS	Self-Management Support System
UI	User Interface

2 USER INTERFACE COMPONENTS OF THE MOBILE APPLICATION

2.1 Login Screens

The account is created by the doctor, then the patient receives an email to complete his/her registration. The email has a link to configure a new password. Then the patient can login to the App by clicking on the button “Log in” (left screen in Figure 1) and entering his/her login information (right screen in Figure 1).

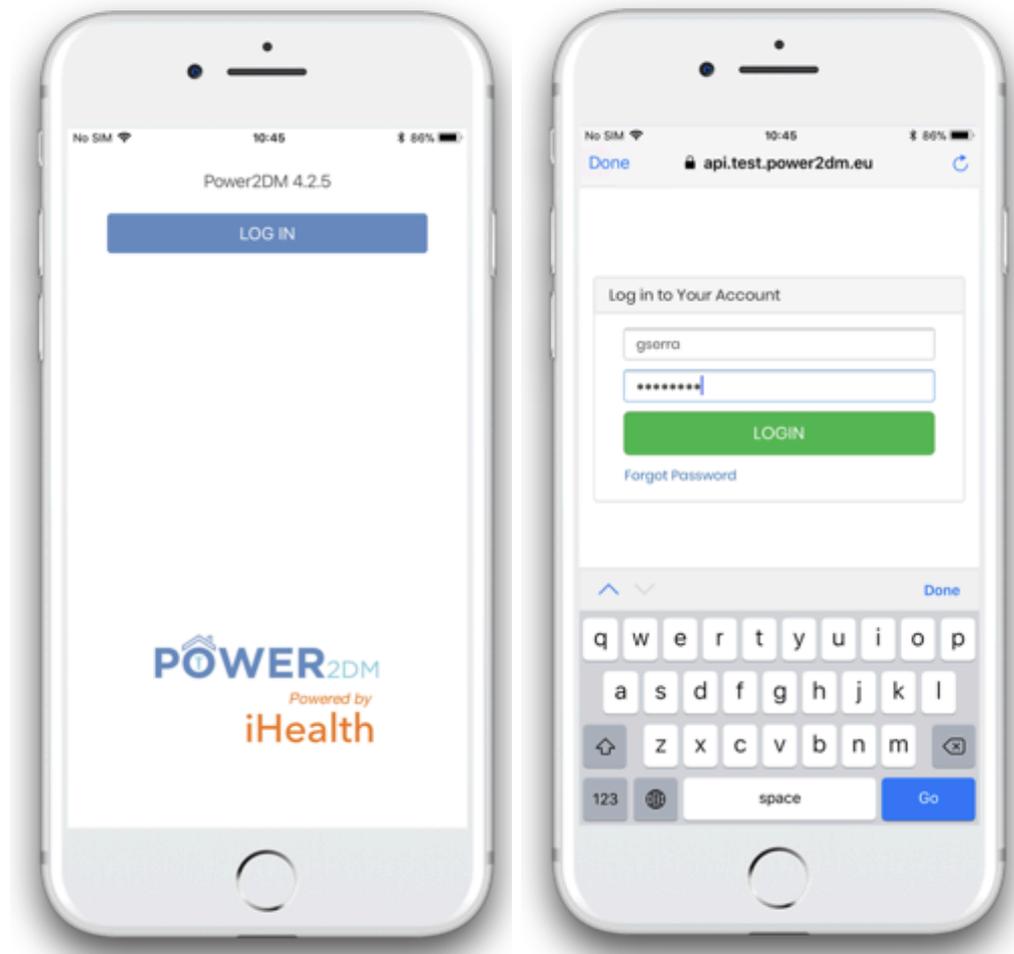


Figure 1. Login screens

2.2 Daily Dashboard – Goal / Action Plan Monitoring

After login in, the App is opened on the Dashboard screen (Figure 2).

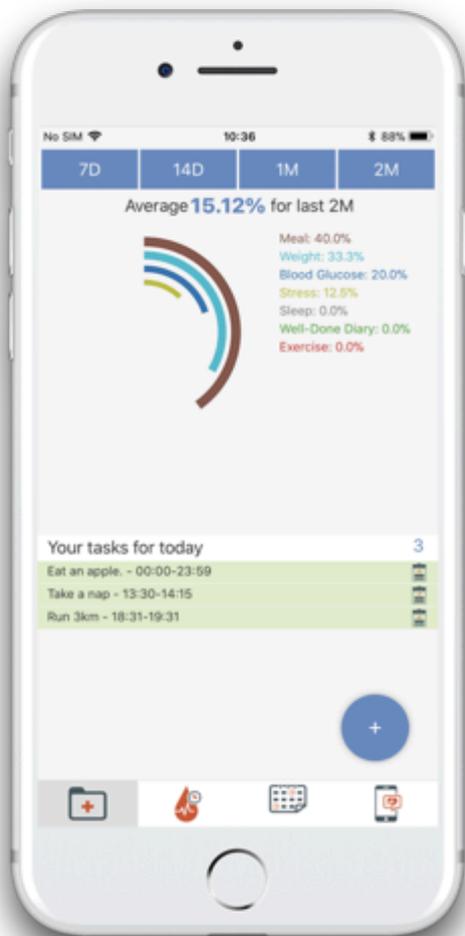


Figure 2. Dashboard screen.

Other screens of the App can be accessed by clicking on the menu bar (Figure 3).



Figure 3. Menu bar.

The first icon displays the Dashboard screen. The second icon displays the “Add event view” dedicated to logging events and measurements (see section 2.4). The third icon displays the “History view” (see section 2.5) and the last icon display the “admin screen” dedicated to App settings and log out (see section 2.6).

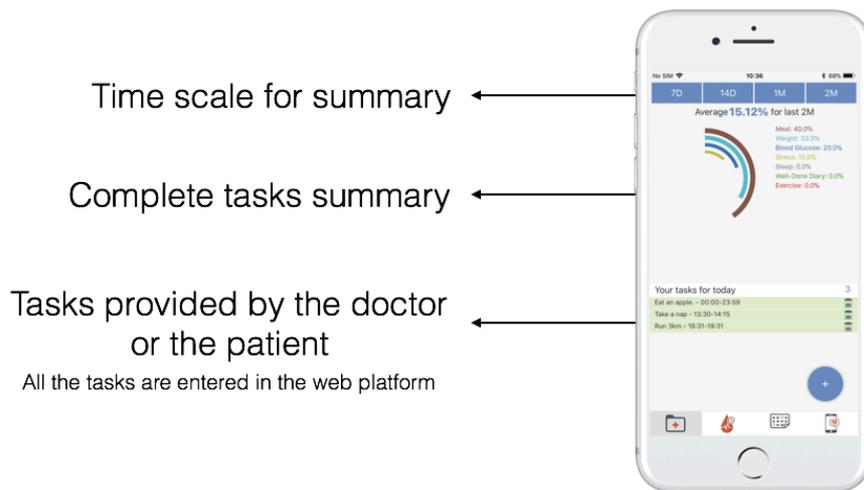


Figure 4. Detailed presentation of the Dashboard screen.

On the dashboard screen, users can select the time scale for displaying the dashboard. Possible time scales are: 7 days (7D), 14 days (14D), one month (1M) or 2 months (2M).

The graph displays the summary of completion of the tasks over the selected time scale.

Then the next section displays the tasks to be performed during the current day (as per tasks which were entered in the web platform).

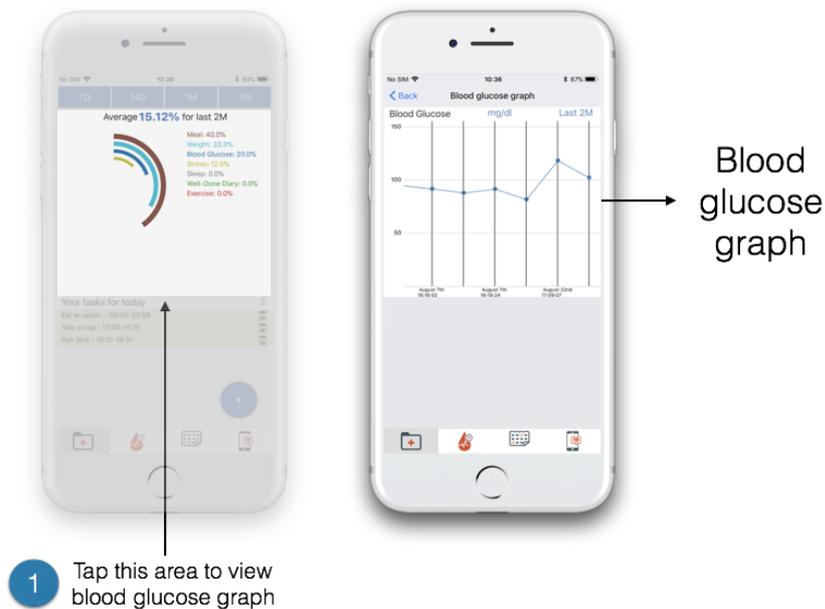


Figure 5. Display of the blood glucose graph

By clicking on the graph of the dashboard screen, users can display the blood glucose graph (Figure 5).

2.3 JITAI Delivery – Push Notification Messages

There are 3 major category of Jus In-Time Adaptive Interventions (JITAI) to be delivered within the day via push notifications over Mobile Application. See D3.1 and D3.3 for more details of JITAIs.

- Motivational Messages are messages sent after some performance of planned actions (either missed or performed); by using some behavioural change technique (e.g. positive comparison with self, positive comparison with others, general reinforcement, social support)
- Reminders are motivational messages before a scheduled action by using some behavioural change technique (e.g. positive comparison with self, with others, social support, positive reinforcements, simple reminder, etc.)
- Instructions/Warnings are warnings and clinical instructions after some event (e.g. overloaded exercise, too low BG measurement) by using some behavioural change technique like "anticipatory coping" or "planning".

Push notification messages are sent to the mobile App using standard notifications available on smartphones as demonstrated in Figure 6.

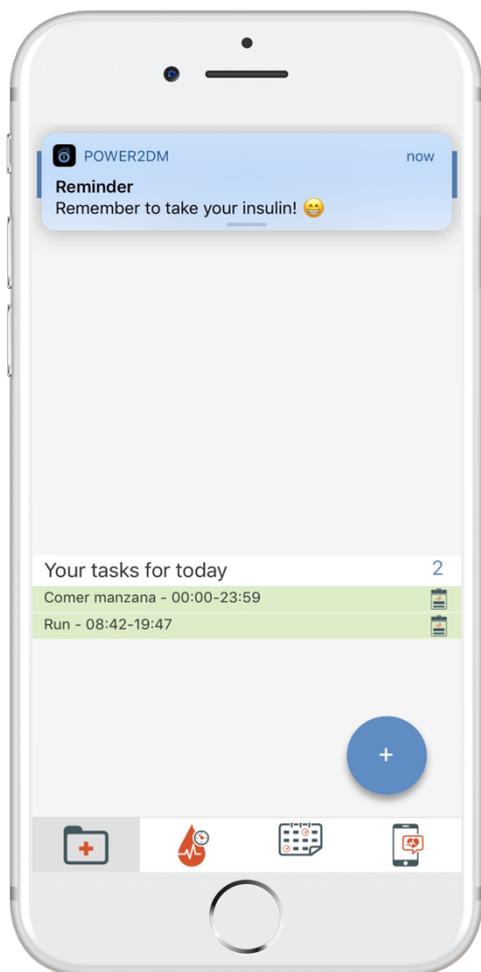


Figure 6. Screen of the mobile App with a push notification message.

The frequency of the notifications can be configured by users as described in section 2.6.

2.4 Logging events / measurements (Add event view)

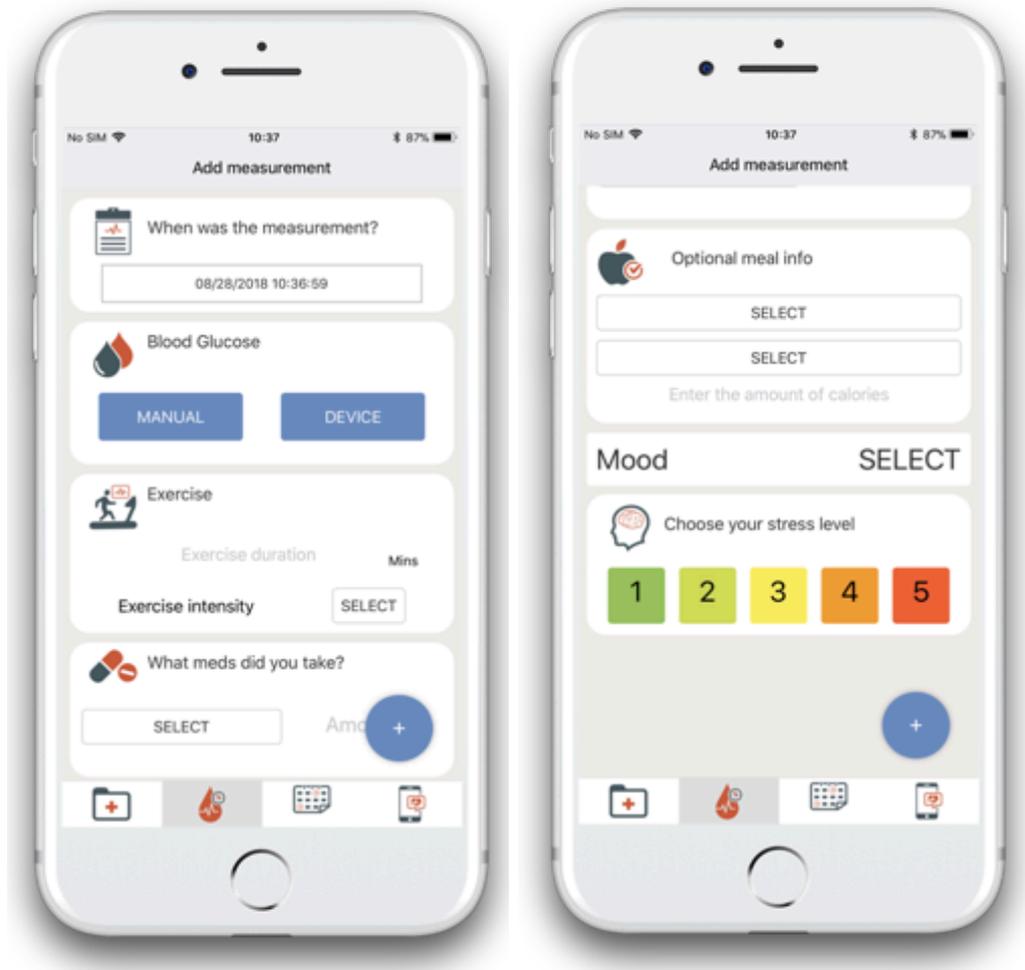


Figure 7. Add event view.

Figure 7 illustrates the view by which patient can log any of the measurements or events.

The first panel “When was the measurement” allows to enter date and time of the measurement or event. The second panel “Blood glucose” allows to enter the blood glucose measurement either manually or automatically using iHealth Gluco connected device. This entry is detailed in section 2.4.1.

The third panel “Exercise” allows to enter duration and intensity of exercise.

The fourth panel “What meds did you take” allows to enter the medication taken by the patient. Only drug prescribed to the patient is listed.

When scrolling on the view, the next panels presented on the second screen of Figure 7 appear.

The fifth panel “Optional meal info” allows to enter the period, grams quantities and amount of calories. The sixth panel “Mood” allows to enter mood. The following options are available: tense, excited, cheerful, irritated, neutral, relaxed, sad, bored, and calm. The options are presented with icons illustrating the mood (see Figure 8).

The seventh and last panel “Choose your stress level” allows to enter the stress level, with a scale from 1 (lowest level of stress) to 5 (higher level of stress).



Figure 8. Options for entering mood.

2.4.1 Blood glucose measurement

Blood glucose measurement can be entered either using the connected glucometer iHealth Gluco (BG5) or by entering manual measurement which were taken using another device.

2.4.1.1 Manual blood glucose entry

Manual blood glucose entry is illustrated by Figure 1. Measurement type can be either normal or interstitial.

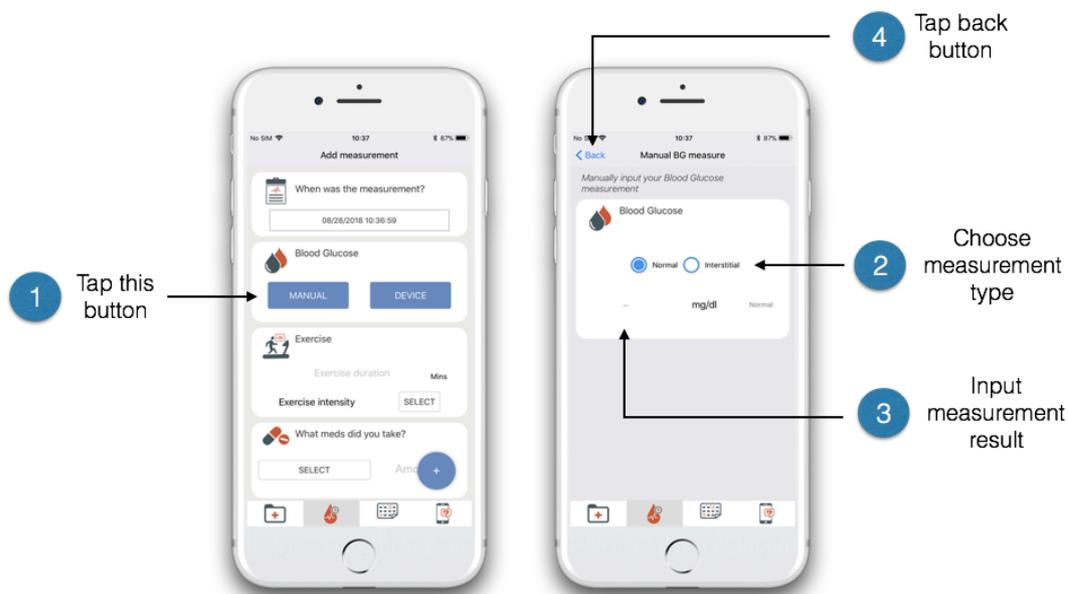


Figure 9. Manual blood glucose entry screens

2.4.1.2 Blood glucose measurement using the connected glucometer iHealth Gluco (BG5)

Measurements of blood glucose can be done using the connected glucometer iHealth Gluco (BG5). The steps to perform and record the measurements are detailed in Figure 10.



Figure 10. Steps to perform blood glucose measurements using the connected glucometer iHealth Gluco (BG5).

2.4.2 Saving events / measurements

After events and/or measurements are entered, user need to save them using a save button as presented in Figure 11. After pressing the save button, all the measurements are displayed and the user can confirm or cancel. Once the measurements are saved they are displayed on the screen. The user has still the ability to modify them if need be.

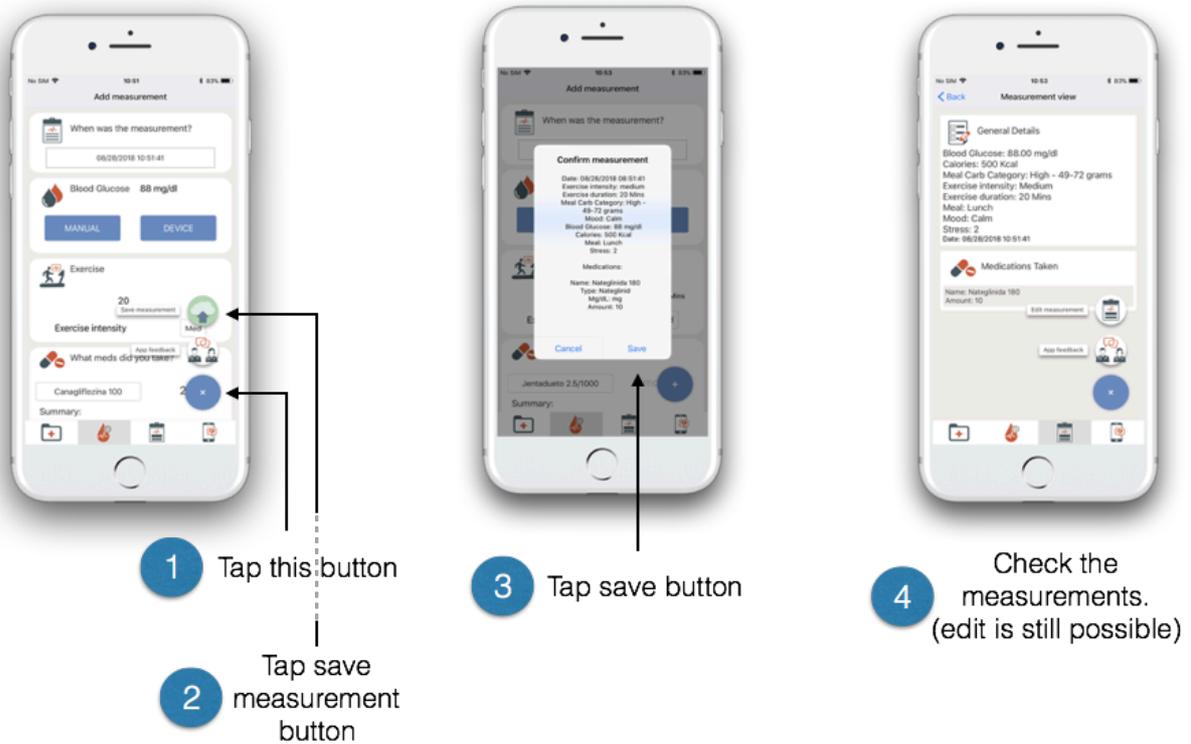


Figure 11. Steps for saving and verifying events / measurements

2.5 History View

The history view shows the list of events / measurements which have been recorded (Figure 12).

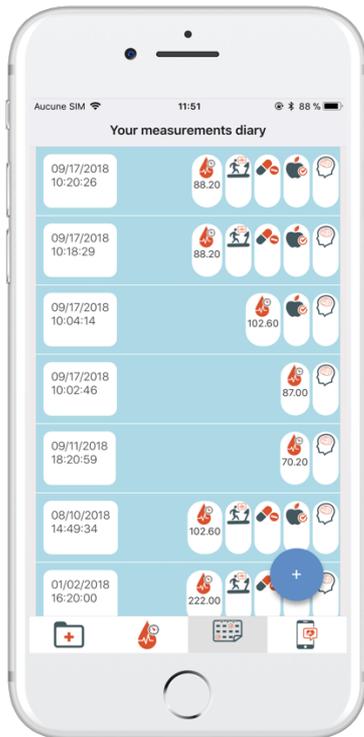


Figure 12. History view

Each event / measurement is listed with the date and time of the event and an icon indicating which type of event / measurement has been entered (blood glucose, exercise, medication, food and/or stress & mood). The icon representing each type of event/measurement is the same as in the “Add event view”.

The history view also allows to review the details of the event / measurement and as needed to modify it by clicking on it.

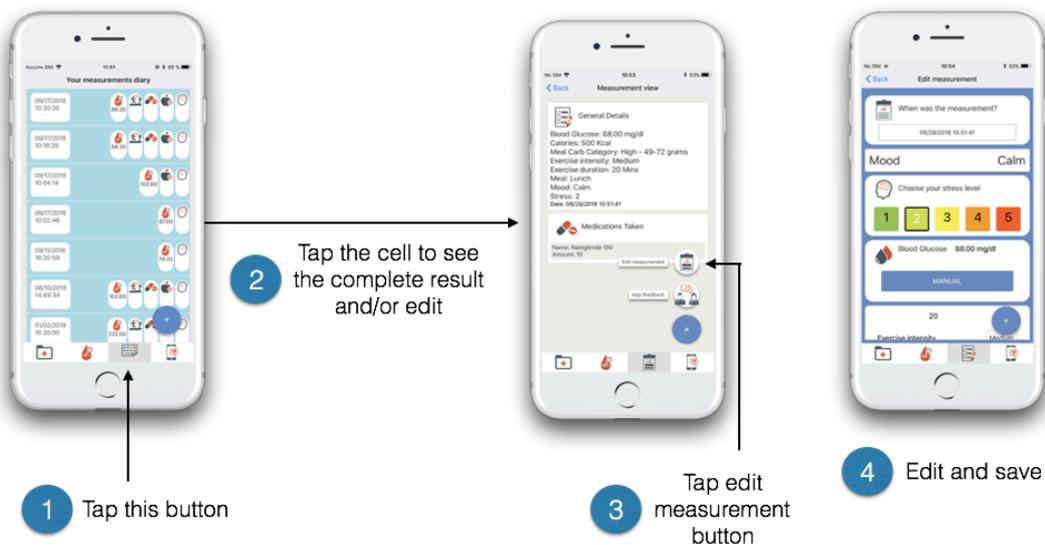


Figure 13. Steps to review an event/measurement and/or to edit it.

2.6 App settings and log out View

The setting panel is presented in Figure 14.



Figure 14. Setting panel

The setting panel allows to:

- Log out.
- Set the frequency of notifications. Frequency of notifications can be set for motivational notifications and reminders notifications, for each type of intervention type (blood glucose monitoring, blood glucose monitoring adherence, physical activity monitoring, carb monitoring, steps monitoring and medication adherence monitoring). Steps to change the frequency of notifications are presented in Figure 15.
- Change glucose unit. Glucose units can be mg/dl or mmol/l.

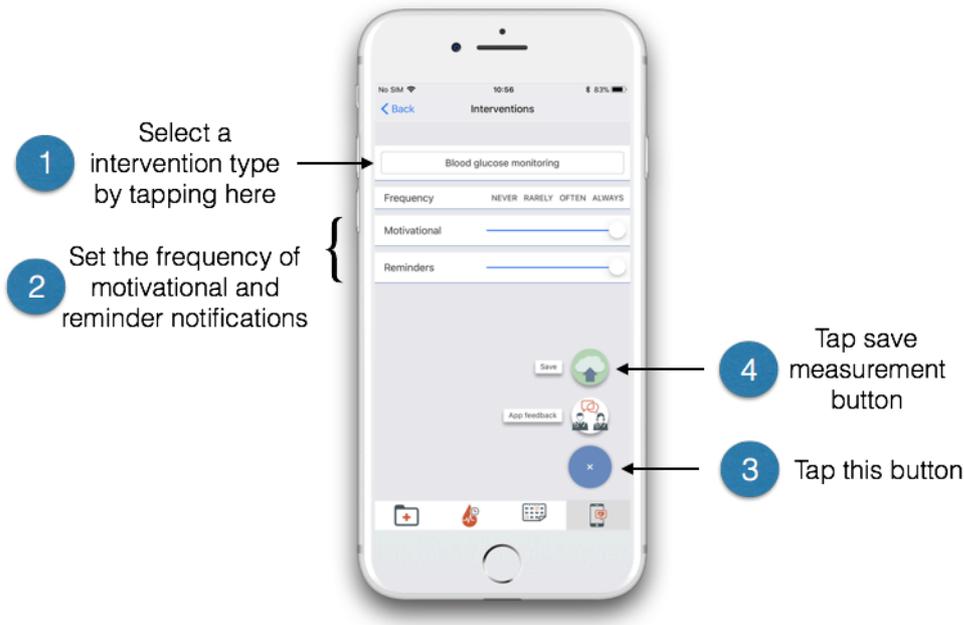


Figure 15. Steps to change the frequency of notifications.

2.7 Technical support

Technical support is provided through a messaging chat system available from any screen of the App. Steps to contact the technical support are presented in Figure 16.

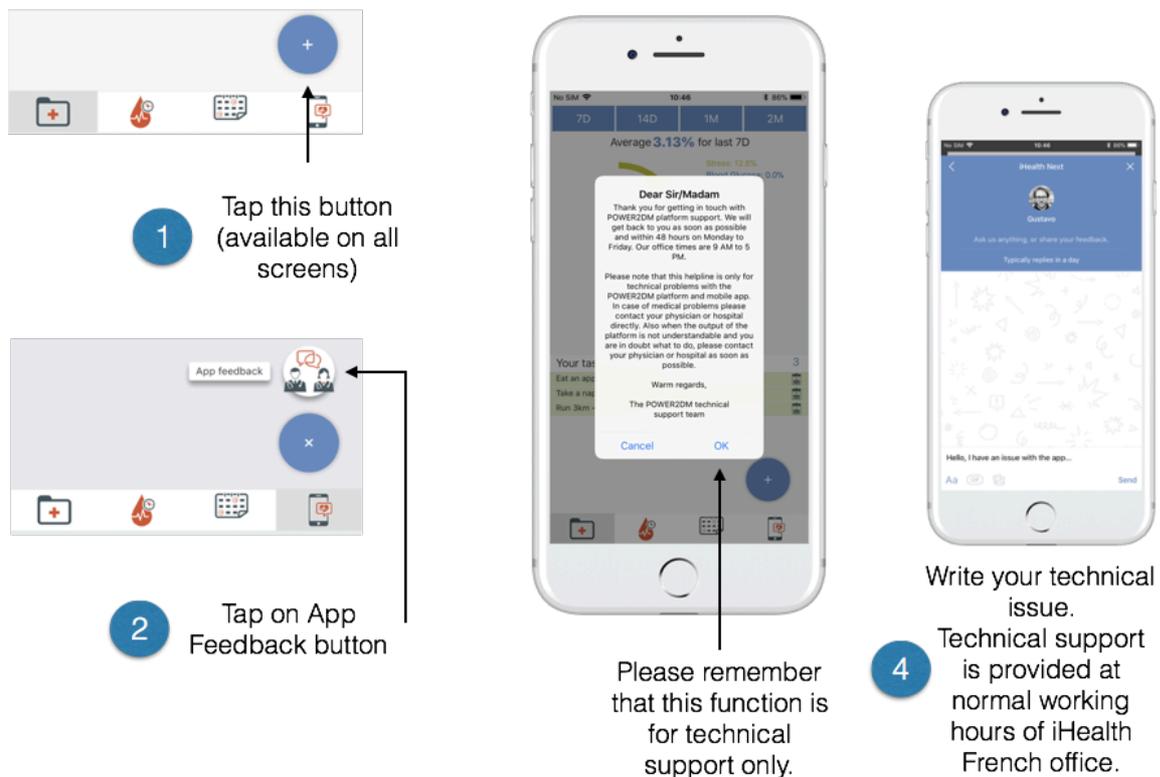


Figure 16. Steps to contact the technical support of the mobile App.

3 CONCLUSION

The GUI components implemented in the mobile App for the Decision Support System (DSS) have been described in this document. Further improvements of the user interface are planned for the next prototype. They will especially include easier entry of events and improvement of the graphs related to blood glucose.