SWEN30007 Group 4: Requirements

Project Overview

Background

There will be a point in time, whether due to old age or misfortune, where one finds themselves physically less able and thus, unable to lead a completely independent life. The ability to call/request for help at a moment's notice becomes an issue for them.

A simple solution would be to place the person under continuous surveillance to ensure that no harm befalls them. Nursing homes are one such solution. However, this would mean giving up the "independent" lifestyle, which many are not willing to do.

Devices such as help "buzzers", generally worn on the neck or wrist, have already been invented in an attempt to solve this problem. However, the extent of their effectiveness has proven to be limited. In particular, these devices are unpopular among their users and their users simply refuse to wear them, defeating their purpose.

Fortunately, due to technological advancements in the past decade, smartphones are now incredibly widespread and have been targeted as a potential platform to the solution to the problem. The smartphone as a platform would allow us to draw from data such as the users location, and recent usage of the device. This allows us to deliver a superior solution which can ensure that a higher percent of users actually use the service they are paying for, and are able to seek help to where they currently are, independent of if they are near a base station, or have forgotten some necklace "buzzer" device.

Users

Primary users of the product include the elderly and also people with disabilities who despite their disabilities, wish to live without continuous day-round monitoring. The product might even be used to replace current patient alert systems in hospitals, allowing patients more freedom in movement.

Design of the product would have to take into account the fact that target audience might have poor eyesight and/or reduced motor skills. Also, the target audience might not be well-versed in modern touch interface conventions (eg. swipe to move, etc.).

These users will also need to have a motivating factor to use the app to check in, so whilst primarily the app is about calling for help or checking in, other features will be needed to motivate these primary users to actually check in, or even worse, uninstall the app due to lack of use.

Secondary users will be:

- The operators, those who will manage the app's users and their information, and intervene in case of an emergency that goes unattended to.

- Carers, who will use the app to check in on if the primary user they are assigned to is okay, and respond to an emergency situation, if one occurs.

Product

The product is an application (ie. "app") mainly targeted on the Android 4.1.x "Jelly Bean" platform to ease integration of the latest features. Stretch goals would include the support of more outdated (but still widely used) versions (eg. Gingerbread 2.3.x, ICS 4.0.x). The app will allow a caree to alert their carers in time of need. It would also call for help in the event that the caree fails to perform a daily "check-in". The app would also be used by carees to receive notifications for when the caree requires help.

The app itself will be aided by a web service, primarily used by operators, and possibly by carees, in order to quickly enter data on a caree and their carers, and so that an operator, who will most likely be situated in some form of call center/office enviornment, will be able to use their computer to pull up information on a caree in the case of an emergency.

Definitions

- **Caree/Patient** - Those who are in need of assistance, and will be assisted by our app. The primary user of our app.

- **Operator** - The call centre operators responsible for dispatching the emergency services if necessary. They will also enter in the information for local carers that would be willing to respond in an emergency situation.

- **Carer**: Family or caretakers, who receive notifications if the caree pushes their emergency button, and can check in on the status of the caree at any time.

- **Main System:** Refers to the backend server that receives, tracks and dispatches alerts and check ins. Will manage the database, and provide an interface for operators to update caree and carer information.

- **Notification:** A message received by either a caree, carer or operator, indicating. Depending on the severity of the notification, it could potentially interrut any currently running app, or override silent mode.

- **Non-intrustive notification:** A notification to the device which does not take focus away

from the current app.

- **Administrator:** One or many people who would be able to create new operators and manage the access rights of operators to the database management section of the platform.

- **Inactive timer:** A timer which automatically counts from the last time a patient has checked-in with the main system. This is used to ensure that the patient hasn't been incapacitated. If the timer isn't reset within a certain period of time, an alert will automatically be raised.

Features

Feature 1: A patient is able to raise an alert

User Stories

As an assisted person, I want to be able to initiate a call for help, so that I can alert my carer(s) when I'm in need, and so that I feel safe.

Acceptance Criteria

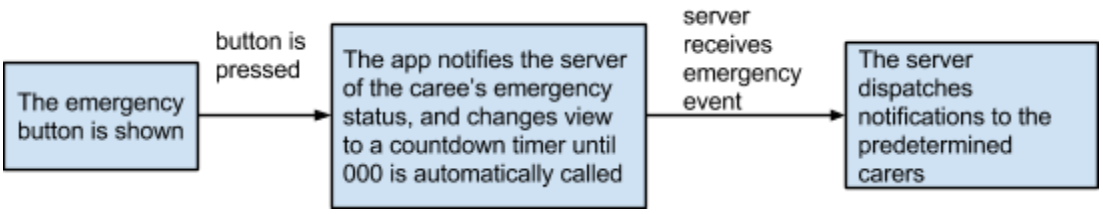
1. Given that the caree is logged into the app, when the caree hits the “emergency” button, then the caree’s assigned carers will be notified that the caree requires urgent assistance.

2. Given that the caree is logged in, when the caree hits the “emergency” button, then the caree will be given feedback that their request was successfully sent to their carers.

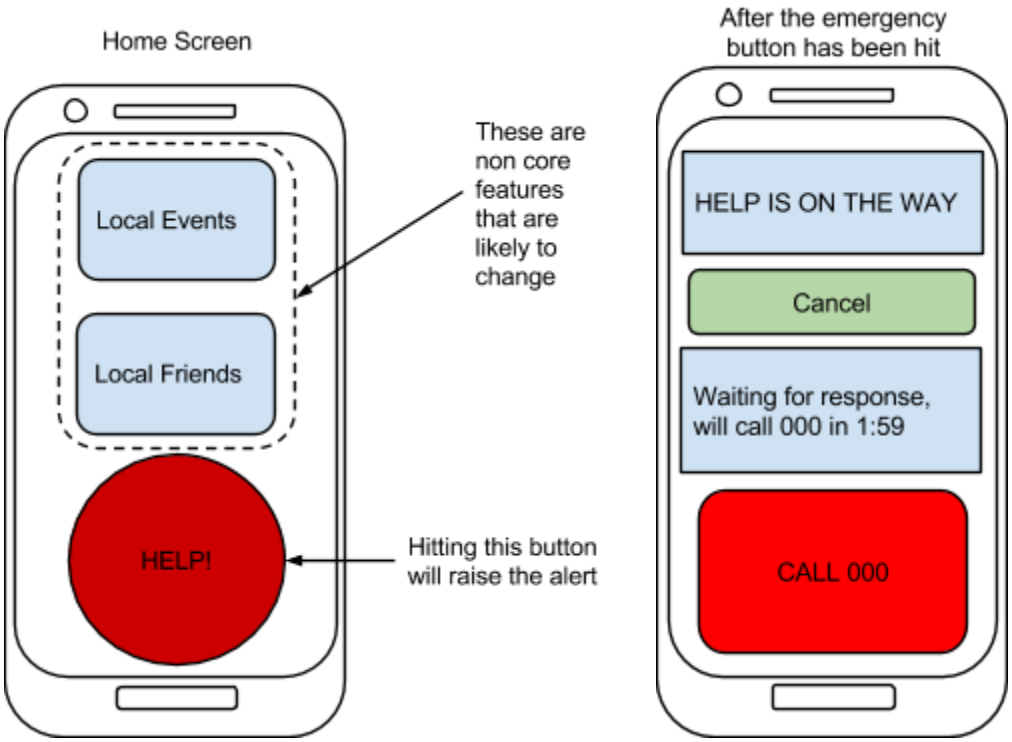
3. Given that a carers have their app set up, when the caree hits the “emergency button”, then they will be notified of the emergency situation.

4. Given that the caree has hit the “emergency” button, when no carers respond to the emergency, then an operator will be notified of the situation

Workflow



Paper Prototypes



Specification

A big prominent “I need urgent help!” button will be placed on the main page. Pressing this button will initiate a request for help.

The patient will be taken to a new view (Active Alert) with a screen providing relevant information about their alert request. On this screen will be a cancel button, along with information about which carers are being contacted, and whether they have confirmed the receipt of the alert.

Priority

Minimal

Reflection

We have been able to sufficiently achieve this task. Carees can log into the app and raise an alert if they are in some sort of emergency situation. This alert gets pushed to their carers’ phones, and is shown in the operator interface. The button has been styled so as to be prominent and clearly readable, which is important for if a caree is vision impaired in some fashion.

Feature 2: Patient can cancel an active alert

User stories

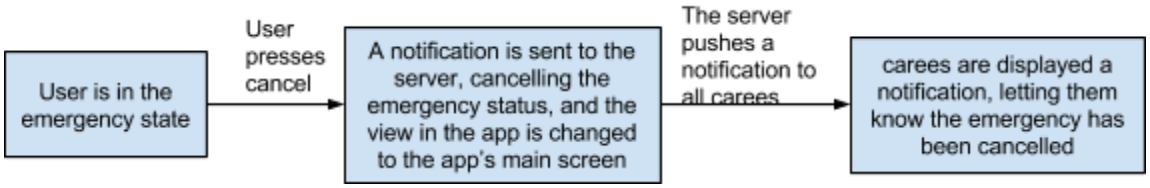
As an assisted person, I want to be able to cancel an alert, so that I can minimise interruption if I accidentally initiate it, and so that I feel in control.

Acceptance Criteria

1. Given that the “Active Alert” screen is being displayed, when the patient presses the “Cancel Alert” button (and confirms that they wish to cancel the alert), then all the notified carers should be notified that the alert was cancelled.

2. Given that the caree has hit the “emergency” button, when the caree cancels the alert, the caree will be given visual confirmation that the alert has been successfully cancelled.

Workflow



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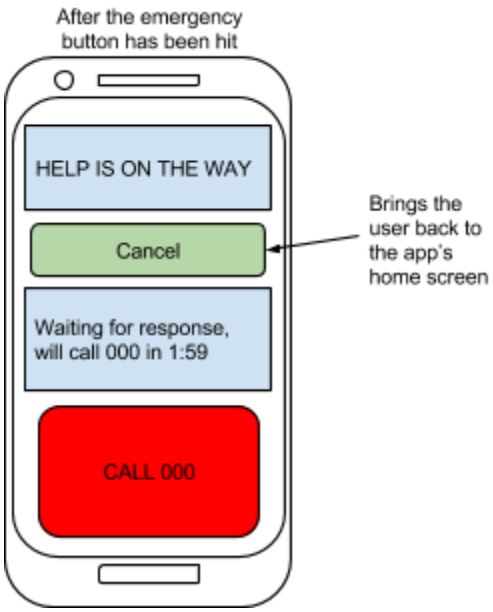


Specification

When the patient has activated an alert (either deliberately or accidentally), they are brought to a new view displaying relevant information as well as a “Cancel Alert” button.

Pressing the “Cancel alert” will ask the user to confirm that they wish to cancel the alert. If confirmed, the patient will return to the main app screen and be informed that the alert has been cancelled.

The patient’s assigned carers alongside the main system will be notified that the alert has been cancelled.

Priority

Core

Reflection

Carees are able to cancel a raised alert. This cancelling is given appropriate feedback in the interface, and carers that were previously given a notification declaring that the caree needed help are given another notification letting them know the caree has cancelled the alert. This will allow carers to still know an alert was raised, but guage for themselves if they still should contact the caree or not.

Feature 3: Carer should receive an alert

User stories

As a carer, I want to be notified when my assisted person initiates an alert, so that I know when they need help.

As a carer, if my assisted person needs help, I want to know where they are, and when they called for help.

Acceptance Criteria

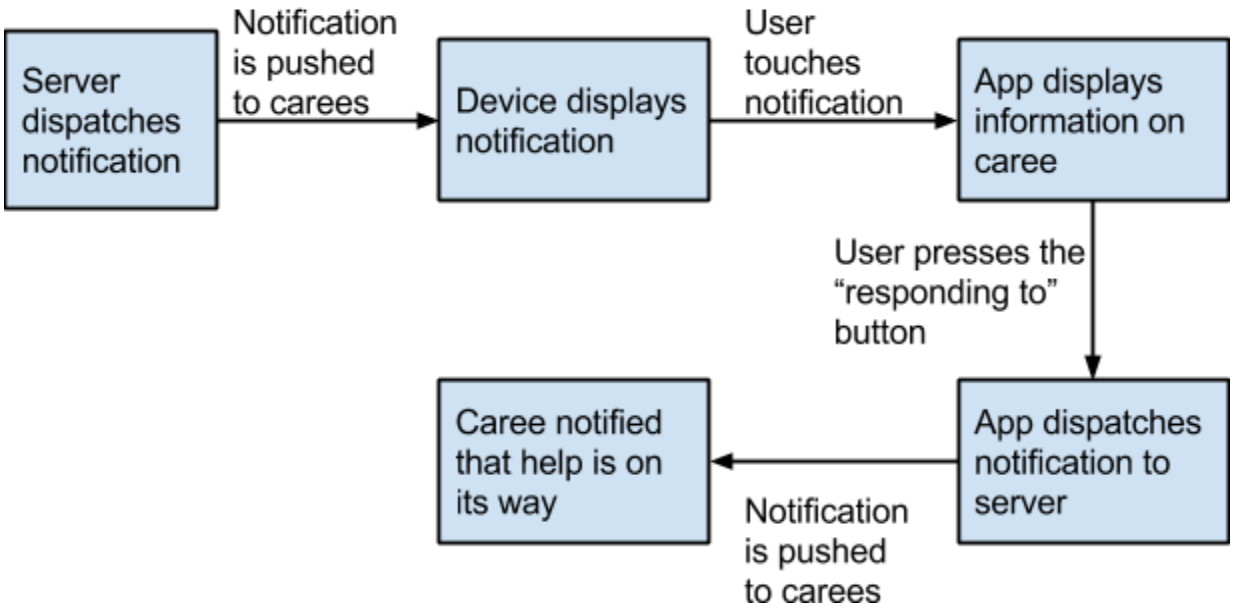
1. Given that the caree is logged in, when the caree hits the “emergency” button, then the app pushes notifications to the assigned carers

2. Given that a carer has received an emergency alert, when the alert is visualised in the app, then information pertinent to the emergency, such as the caree’s address, or their last reported location from the phone’s gps, and the time the alert was raised, will be displayed.

3. Given that the caree has raised an emergency notification, when a carer responds, then the pending alert to an operator, which only gets sent if no carers respond, is not sent.

4. Given that the carer has received the emergency notification, when the carer responds to the emergency, then the caree will be given visual confirmation that carers have received the alert

Workflow



Paper Prototype

Specification

The server will dispatch a notification to the carer that their assigned caree has hit their emergency button.

This notification, when it arrives at the caree's device, will lead the user to a screen which will give the carer information on the caree, including a map with the location last reported from the app (if the caree's device supports this) or their address, and the time the notification was raised.

The caree must also be able to respond to the request for assistance, in order to stop an operator from calling an ambulance once the timer for seeking caree assistance has timed out.

Priority

Minimal

Reflection

Carees are notified through a notification from the app if an assigned caree has raised an alarm. Mapping information was not implemented, as this was considered a stretch goal that we did not get time to implement.

Feature 4: Patient should be able to regularly ‘check-in’ to confirm they are in good health

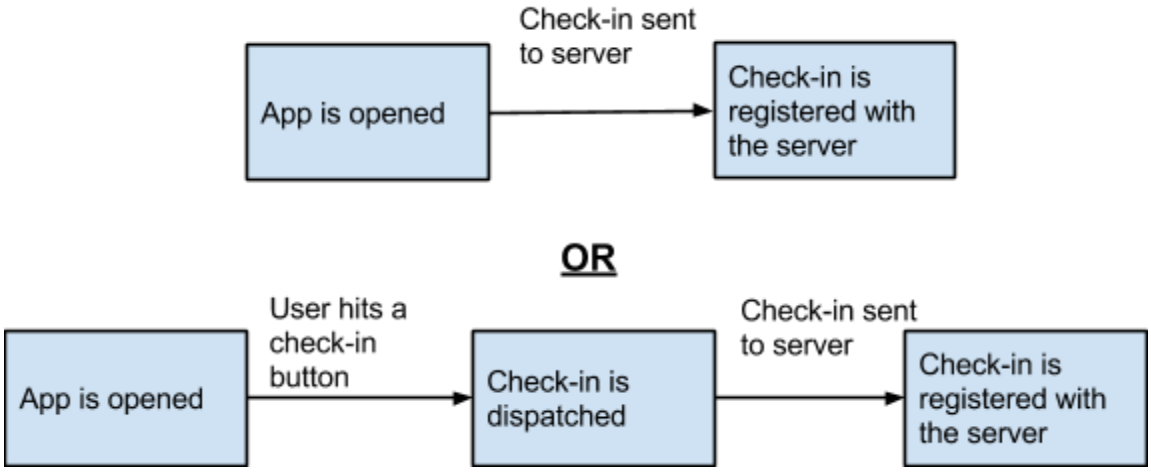
User stories

As an assisted person, I want to be able to let my carer(s) know that I'm okay each day, so that I feel in touch with my carer(s).
As an assisted person, I want to know that my communication was
received, so that I feel in touch with my carer(s).

Acceptance Criteria

1. Given that the patient is logged in, when they open the app, then the check-in timer is automatically reset.
2. Given that the patient is registered with the system, when the patient forgets/neglects to check-in within a certain time period (ie. the inactive timer becomes too high), then they will be nagged to check in.
3. Given that the patient is registered with the system, when the check-in timer expires after the nag grace period, then an automatic alert will be launched, informing carers+operators.
4. Given that the patient has opened the app, when they check in successfully, then they will receive visual confirmation as such.

Workflow



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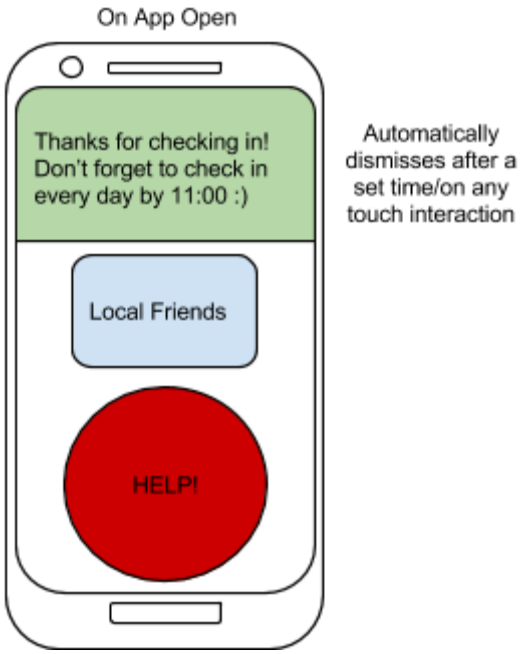


Specification

Every time the patient opens the app, the patient will have been considered to have checked in. Addtitionally, one of the buttons on the main app interface will be a “Check-in” button.

By “checking-in”, the patient will notify the carer and *main system* that they have checked-in. Doing so will reset the *inactive timer.*

If the patient does not check in before the *inactive timer* runs out, the carer will be alerted as defined in feature 3.

Priority

Minimal

Reflection

Carees can check in. This feature forms the basis of our automated alerts, where if the caree does not check in within the allocated period, our operator server dispatches an alert notification, allowing us to ensure carees are checked up on if they have not checked in, helping to increase the usefulness of the app and encourage its correct usage.

The automatic alerter is implemented as a Parse ‘background job’, which is able to run every minute.

Feature 5: The carer should receive a notification that their patient has checked-in

User stories

As a carer, I want to be notified when my assisted person communicates with me each day, so that I feel assured that they are okay.

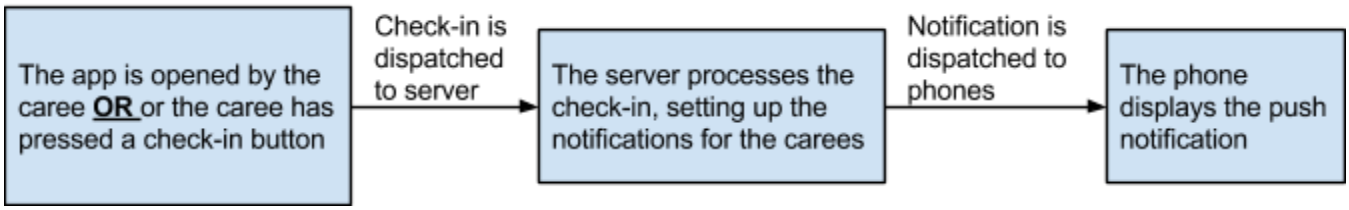
Acceptance Criteria

1. Given that the carer is logged in, when the assisted person pushes the check-in button, then the carer will receive a notification.

2. Given that the assisted person has sent a check-in, when the carer is notified of this check-in, then this should be a n*on-intrusive notification* that their caree has checked in.

3. Given that the carer is actively using the app, when the carer checks their assisted person's status, then the app should show when the assisted person last checked-in.

Workflow



Paper Prototype

Specification

There are two ways that a carer might find out that their caree has checked in.

The first way would consist of a simple non-intrusive notification. This would appear alongside other android notifications (eg. Email notifications)

The second way would consist be checking through the app. A list of the carer's carees is displayed, and an indication (ie. tick/cross) whether they have checked-in is displayed beside the name. In addition, the time since last check-in is also shown.

Priority

Minimal

Reflection

Check-ins are automatically pushed to the appropriate carers, allowing carers to know, without having to even open the app, that the person they are assigned to is still okay.

Feature 6: The carer should be able to acknowledge a patient's check in.

User stories

As a carer, I want to be able to acknowledge my assisted person's communication, so that they feel cared about.

As an assisted person, I want to be notified when my carer(s) acknowledge my communication, so that I feel in touch and cared about.

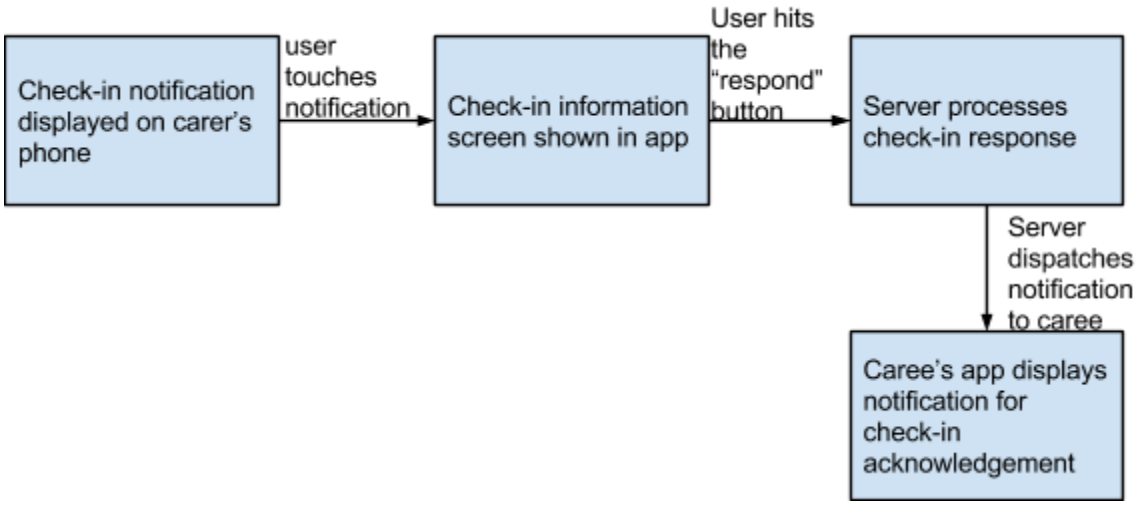
Acceptance Criteria

1. Given that the carer is logged in to the app, when the carer receives a check-in notification (as defined in feature 5), then they should be able to acknowledge the check in.

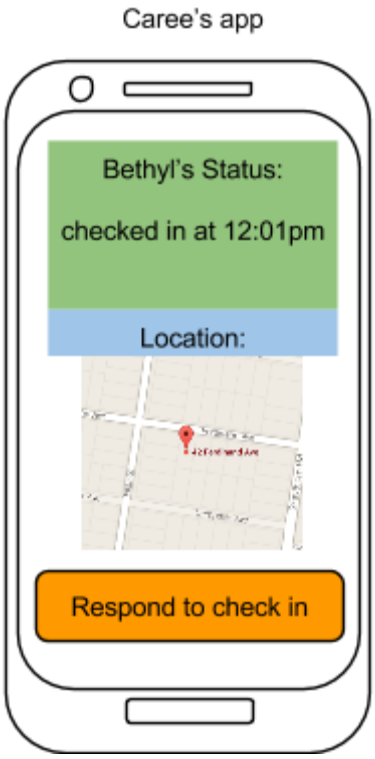
2. Given that the carer is logged in to the app, when the carer sends the acknowledgement, then they should receive visual feedback that it was successfully sent to the patient.

3. Given that the patient is in an area with network connectivity, when the carer acknowledges their check in, they should receive a notification.

Workflow



Paper Prototype



Specification

Assume that the carer has received a check in notification from their caree, as defined in feature 5.

The carer may now open the app. In the main screen, there will be a ‘feed’ of check-ins. The carer may tap on one of the items in the feed in order to acknowledge the notification. This acknowledgement will be sent to the main server and the carer will be visually notified that they have successfully acknoweldged that notification.

The main system will then inform the patient that their carer has acknowledged their check in. This should be done via a push notification.

Priority

Core

Reflection

Whilst there is no map functionality associated with this feature, carers can acknowledge that their carees have checked in, and the caree’s main homescreen on the app lets them know if their latest check-in has been acknowledged.

Feature 7: The patient should be able to change their list of carers at will.

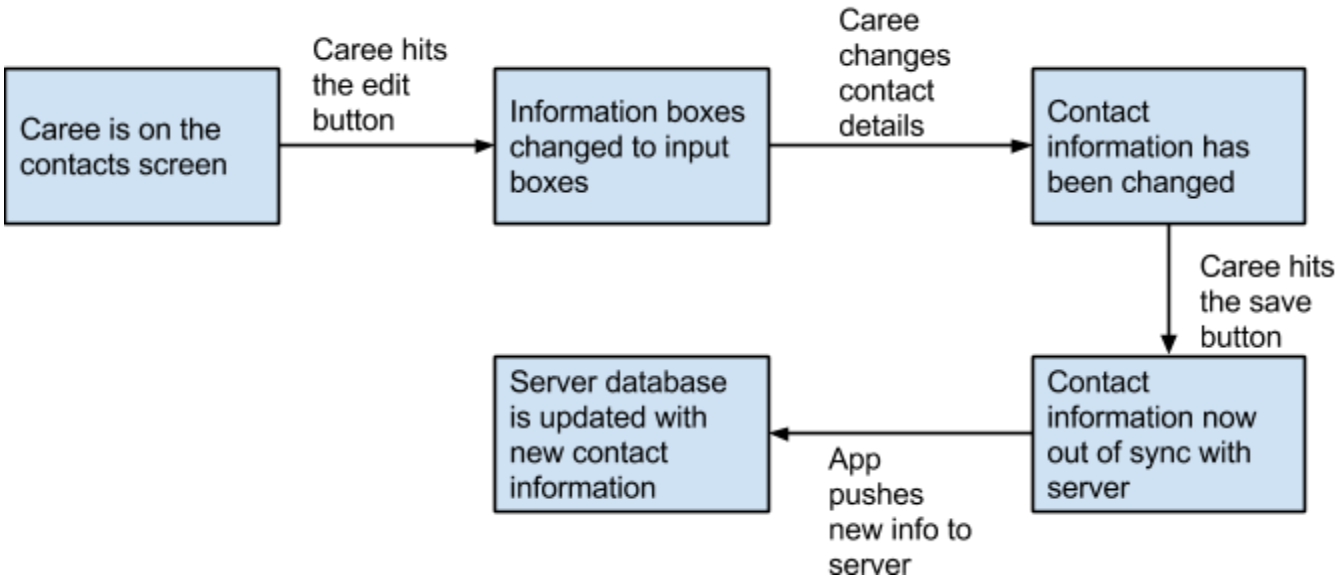
User stories

As an assisted person, I want to be able to change my list of carers, so that I feel in control.

Acceptance Criteria

1. Given that the patient is on the carer information screen, when the patient hits the ‘edit carer’ button, they should be taken to the ‘edit carer’ screen.
2. Given that the carer is pre-registered with the main system, when the patient attempts to add the carer, then it should succeed.
3. Given that the carer is in an area with network connectivity, when the patient adds them as a carer, then they should be notified. Otherwise, they should receive the notification as soon as possible.
4. Given that the new carer was added successfully, when a new notification is sent from the patient, then it should now be sent to the additionally added carer.

Workflow



Paper Prototype

Specification

We will require all carers to be registered with the *main system* beforehand.
Once that is done however, the patient may assign said person as a carer at will.

This will be done through a separate submenu nested within the ‘settings’ area of the app.
In the ‘settings’ view, there will be a button for ‘carers’. Here, the patient may see all carers which have already been assigned to them.

The patient has the option to ‘add new carer’. This will bring them to a screen where they may input the details of their new carer. This new carer will be already registered in the *main system*. Once they’ve entered the correct details, the app will show a confirmation “Add this person as a carer?”.

After pressing yes, the new carer will be assigned. The carer will be notified as well.

Priority

Stretch

Reflection

Carees are able to access a list of carers and select which they would like to be associated with, so that those carers receive notifications. This allows for carees to add or remove people that have told them they do or don't want to receive the push notifications from that individual caree anymore.

Feature 8: The carer should receive a notification that their caree has failed to check-in

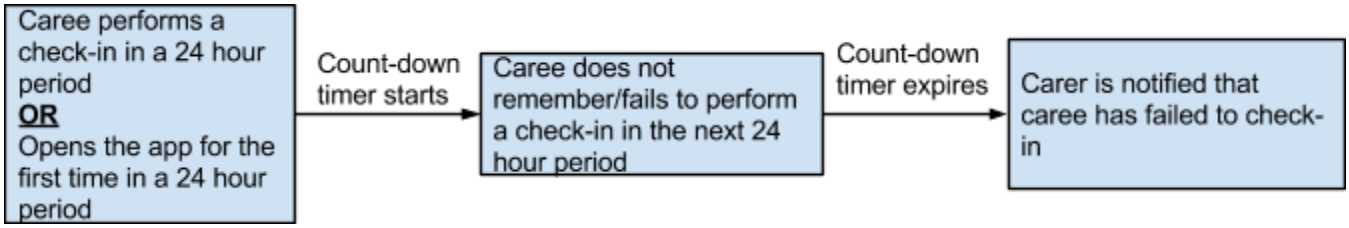
User stories

As a carer, I want to be notified when my assisted person fails to communicate with me on a given day, so that I can check if they need help.

Acceptance Criteria

1. Given that the carer is in an area with network connectivity, when their caree fails to check in before the inactive timer runs out, then the carer will be notified that their patient has failed to check in.
2. Given that the carer is in an area with network connectivity, when the carer receives the 'failed to check in notification', then this notification should be immediately obvious to the user (ie. override silent mode)

Workflow



Paper Prototype

Specification

User interaction is not necessary for this notification to be sent out. The caree would be able to see the countdown to the automated notification when they open the app. Similarly, the carer would be able to see the countdown to automated notification in their list of carees. The only way to reset the countdown is when the caree performs a check-in (as defined in Feature 4)

Priority

Core

Reflection

Our operator interface is set up to continuously check if a caree has not checked in within a predefined timespan. If that is the case, carers are notified in the same manner as if the caree has raised an alarm themselves.

Feature 9: The caree is able to use the app from any location

User Stories

As an assisted person, I want to be able to use the system from any location, so that I feel independent.

Acceptance Criteria

1. Given that the user is an area with internet connectivity, when they attempt to use the app, then it should succeed.

Workflow

N/A

Paper Prototype

N/A

Specification

This is more of a hardware, rather than software issue. However, as long as user is able to get access to an internet connection (ie. app able to communicate with the server), the app will be able to be used from any location.

It is important to remember that since this app relies on some degree of connectivity. We don't expect this app to be deployed in an area with no mobile reception.

Priority

Stretch

Reflection

Our app works with both wireless and mobile data connectivity, meaning that it can be used as long as the caree or carer has a data connection on their phone.

Feature 10: Operators are notified if no carers respond to a help request from a caree

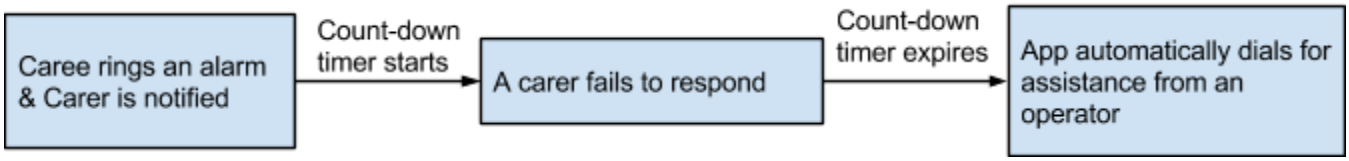
User Stories

As an operator, I want to be immediately notified when a caree fails to have any of their carers respond to a call for help, so that I can either get in contact with the caree, or simply immediately dispatch an ambulance.

Acceptance Criteria

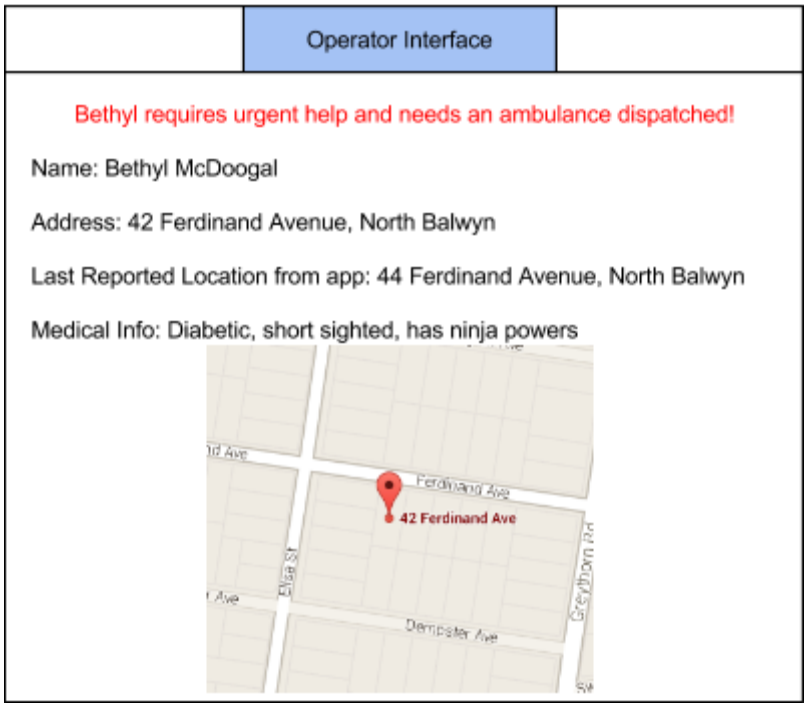
1. Given that the caree has already submitted a help request/alert, when the carer does not respond to the caree before the countdown timer run out, then an operator will automatically be notified.
2. Given that the caree has already submitted a help request/alert, when their help request is deferred to an operator, then they will be notified.

Workflow



Paper Prototype

Caree hits emergency button, no carers respond,
operator required to dispatch ambulance



Specification

Similar to Feature 8, no human interaction needed as the app will automatically dial for help when conditions are met. There will be a very short countdown due to urgency of the situation (mere minutes), before the app will automatically dial for help from the operator.

Priority

Stretch

Reflection

Our operator interface provides a list of alarms, but there is no active “pop-up” or other more in your face notification, and no in-built map functionality, as this was seen as a stretch goal and was something we did not get around to doing.