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***WRS Document***

***Interim Phase I***

**Team T-MIP**

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Table of Contents

[2 Revision History 3](#_Toc319018750)

[3 Project responsibilities 4](#_Toc319018751)

[4 Introduction 5](#_Toc319018752)

[5 ISSUES WITH PRELIMINARY DEFINITION GIVEN 6](#_Toc319018753)

[5.1 Domain Issues 6](#_Toc319018754)

[5.2 Functional Requirements Issues 8](#_Toc319018755)

[5.3 Non Functional Requirements Issues 18](#_Toc319018756)

[6 WRS 22](#_Toc319018757)

[6.1 W 22](#_Toc319018758)

[6.1.1 Problem 22](#_Toc319018759)

[6.1.2 Goal 22](#_Toc319018760)

[6.1.3 Improved understanding of Domain, Stakeholders, Functional and Non-Functional objectives 22](#_Toc319018761)

[6.2 RS 25](#_Toc319018762)

[6.2.1 Functional RS – Improved understanding of Software System Requirements: FRs 25](#_Toc319018763)

[6.2.2 Non-functional RS -Improved understanding of Software System Requirements: NFRs 26](#_Toc319018764)

[7 Traceability MAtrix 28](#_Toc319018765)

# Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Date** | **Comments** | **Author** |
| 0.0 | February 23, 2012 | Initial draft including document layout and some domain and functional requirements | Taraneh |
| 0.1 | February 24, 2012 | Add Introduction | Ian |
| 0.2 | March 02, 2012 | Add Problem, Goal, Stakeholders and Domain Requirements sections | Ian |
| 0.3 | March 06, 2012 | Add Summary, Domain Issues | Ian |
| 0.4 | March 07, 2012 | Add Functional requirements Issues | Taraneh |
| 0.5 | March 07, 2012 | Revised Domain Issues | Ian |
| 0.6 | March 08, 2012 | Revised Functional requirements and Traceability Matrix | Taraneh |
| 0.7 | March 09, 2012 | Issues with Non-Functional Requirements and revised requirements | Pooria |
| 0.8 | March 09, 2012 | Reviewed | Taraneh  Mairon  Ian  Pooria |
| 1.0 | March 09, 2012 | First formal version to turn in | T-MIP |

# Project responsibilities

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Phase 1** | **Deliverables** | **Ian** | **Taraneh** | **Mairon** | **Pooria** |
| **Introduction** | X |  |  |  |
| **Preliminary Definition** | X | X |  | X |
| **Functional Requirements** |  | X |  |  |
| **Non-Functional Requirements** |  |  |  | X |
| **Mockups** |  |  | X |  |
| **User Manual** |  |  | X |  |
| **Scenario** |  |  | X |  |
| **Presentation** | X |  |  |  |

# Introduction

HELPeople is a project whose mission is to improve the quality of life for those with communicative disabilities by employing assistive technologies that can be implemented on personal mobile devices.

Baby Boomers are entering their golden years just as the smartphone era takes off. The emergence of mobile devices always connected to the internet can bring many benefits to, as well as challenges for, this significant growth market.

Fortunately, most people in this demography are already familiar with the personal computer. Many use it daily to do things like E-mail, search for information on the World Wide Web, network with family and friends, etc. However, performing these tasks on smaller handheld devices can be intimidating and difficult for them, especially as the effects of age such as impaired vision and memory begin to take their toll.

Leveraging existing mobile applications as well as those yet to be invented, HELPeople aims to provide a simplified yet unified interface through which any user, old or young, with or without disabilities, can easily accomplish many of their important daily tasks using their mobile devices.

# ISSUES WITH PRELIMINARY DEFINITION GIVEN

## Domain Issues

In this section we will cover the issues related to requirements collected in section 5 that we observed. The issues related to domain, stakeholders, functional and non-functional objectives have been addressed.

**Issue IDR1:**

|  |  |
| --- | --- |
| **Description** | System shall provide multiple input methods.  Issue Type: Incomplete  What are those inputs? How should they be configured? |
| **Options** | 1: Touch by default; Voice on demand  2: Touch and Text by default; Voice on demand  3: Touch and Text by default; Voice on demand; Camera per app |
| **Decision** | Option 3: Touch and Text always available by default; Voice input can be invoked on demand; and Camera input available as needed by a specific app |

**Issue IDR2:**

|  |  |
| --- | --- |
| **Description** | System shall provide multiple output methods  Issue Type: Incomplete  What are those outputs? How are they configured? |
| **Options** | 1: Visual display (icons, images, etc.)  2: Visual plus Audio (spoken words in a selectable language)  3: Audio only (i.e. “Non-Visual” profile)  4: Vibration (“Silent” mode) |
| **Decision** | Option 1 by default; Option 2 or 3 can be configured via user profile; and Option 4 can be configured as an app-specific setting. |

**Issue IDR3:**

|  |  |
| --- | --- |
| **Description** | System shall provide API to integrate with other apps  Issue: Vague, Incomplete  Does not specify how this can be accessed by User |
| **Options** | 1: Let user switch from one App to another manually  2: Create one common interface that hides integration details from User |
| **Decision** | Option 2. But also provide a mechanism for user to move easily between Apps manually. |

**Issue IDR6:**

|  |  |
| --- | --- |
| **Description** | System shall provide Text To Speech (TTS) functions:  Issue: Vague, Incomplete  How many languages to support? |
| **Options** | 1. As many languages as supported natively by device’s OS 2. Only one language (pre-configured) 3. Only one language (user-configurable) |
| **Decision** | Only support English in first version. If demand exists, add other languages. |

**Issue IDR7:**

|  |  |
| --- | --- |
| **Description** | System shall provide Screen Reader functions.  Issue: Incomplete  What type of functionalities will be needed?  Which browsers will be supported? |
| **Options** | 1: Web browser only.  2: Screen Menus only.  3: Both.  4: Multiple web browser support |
| **Decision** | Option 3: Provide a Screen Menu reader AND a Web Browser reader for the default Browser that comes with the device (i.e. Safari for iOS, Chrome for Android)  Other browsers may be supported in future if demand exists |

**Issue IDR8:**

|  |  |
| --- | --- |
| **Description** | System shall support multiple mobile OS’s.  Issue: Vague  Which ones? Why? |
| **Options** | 1. Apple iOS 2. Google Android 3. Microsoft Windows Mobile 4. Symbian |
| **Decision** | Option 1 & 2. iOS and Android only. This is to maximize market potential but keep development scope manageable. |

## Functional Requirements Issues

**Iss****ue IFR1:**

|  |  |
| --- | --- |
| **Description** | “Provide a tool to user so s/he can interact with the product and give commands to do certain tasks via speech or by touch”  Issue type: ambiguous, incomplete  Which certain tasks user can do via command? What’s the tool? What are the other input methods? |
| **Options** | Option 1:   * User can use the product by touching the icons   Option 2:   * If the user is visually impaired so he should be able to give certain commands like “open Calendar” to use this app. * List of defined commands would be available for the user to interact via speech to HELPeople! |
| **Decision** | HELPeople! Will provide 3 types of input for users to interact with product.   1. Touch 2. Voice 3. Text   We chose option 2 to have all of them so user can choose between different types of interaction based on his need. Commander would be available to accept voice requests and respond them back in voice. The other option would be keyboard input which user can type his request and HELPeople will interpret it to a command and do the request. |

**Issue IF****R2:**

|  |  |
| --- | --- |
| **Description** | “Generating speech output for those who are visually impaired so that the user can hear rather than seeing the pictures or menus”  Issue type: ambiguous  When product needs to generate speech output? Is it only applicable for visually impaired users? Is it possible to show the pictures along with voice output? |
| **Options** | Option 1:   * Set the configuration for visually impaired users so they can hear the outputs rather than showing them the picture or icon * Speech generation is available when the input method is also with voice   Option 2:   * Have flexible configuration so user can choose between different input and outputs * Configuration should be available for all types of people not restricted to those who are visually impaired so use can choose to have voice output or use touch or keyboard |
| **Decision** | We chose Option 2. Regardless of user type, various output methods should available for user to choose among them. So we decided to put setting regarding output of the product in configuration therefore there would be 3 options for users to choose either voice or touch. Screen reader would be available for blind people that read the screen while user goes to different pages of the product in order to help them choose a menu. |

**Issue** **IFR3:**

|  |  |
| --- | --- |
| **Description** | “Provide a way for user to select categories via touch or speech”  Issue type: redundant  The way which user is going to select one menu would be the same as available input methods, which is redundant of IFR1. |
| **Options** | Option 1:   * User can choose input method as voice or keyboard or touch * For all sections of the product this would be available as input method |
| **Decision** | User would be ale to choose the icons and menus of the system with touch or by typing the command in keyboard or by voice command. All of these are input methods to the system and is applicable for choosing a menu, opening an application, set a reminder in calendar, exit an application and etc. |

**Issue IF****R4:**

|  |  |
| --- | --- |
| **Description** | “Providing an easy access to most common in use apps or favorite ones”  Issue type: ambiguous, incomplete  What would be the easy access? Is it a different tool or it would be in same product? |
| **Options** | Option 1:   * Put the applications od our product under certain categories   Option 2:   * Categorize the applications in 4 groups and also give an option to user to put most commonly used applications or his favorite ones in separate section to have easy and fast access rather than going to each category and find them. * It maybe difficult for elder people to find applications that they use the most, like medication, under defined categories. Or for those who are suffering form memory loss they can forgot which application was under which category. So this option will give them easy access. |
| **Decision** | We decided to choose option 2 and put “H” button available in first page of HELPeople so the user can have easy access to favorite applications that he uses the most. |

**Issue IF****R5:**

|  |  |
| --- | --- |
| **Description** | “Change the settings and configuration according to their need”  Issue type: vague, incomplete  By Setting does it mean general setting or options available for each application? |
| **Options** | Option 1:   * Set default setting in the product in time of installation for once according to user’s need   Option 2:   * Define “configuration” section in the product with various settings so the user would be able to set the setting according to their desire |
| **Decision** | We defined configuration section available in all pages with an icon. For first page the setting would be general setting for the product like output/input method but for other pages the setting will refer to configuration of that specific application. |

**Issue IF****R6:**

|  |  |
| --- | --- |
| **Description** | “Allow changing and managing applications in HELPeople!”  Issue type: vague  “Allow changing” is vague so we need to describe it in a better way |
| **Options** | Option 1:   * Define fixed list of applications according to our understanding of the product   Option 2:   * Define flexible list of apps and let the user to manage apps by listing, removing, adding apps to the product. These applications would be those that are in non-native apps so there is a possibility to integrate them within the product. |
| **Decision** | We chose option 2 to give flexible environment for user to manage apps according to it’s desire. So he would be able to add apps, which he’s using them the most or removing those that are interested for him. |

**Issue** **IFR7:**

|  |  |
| --- | --- |
| **Description** | “Providing a way to remember their family members and friends”  Issue type: ambiguous, incomplete  What would be the way to remember people’s face? Does it mean remembering them via picture or by name? |
| **Options** | Option 1:   * People who are suffering from memory loss can have a list consist of the names of family members or friends in their phone   Option 2:   * People who are suffering from memory loss can have a list of the names together with pictures of any relative person stored in their phone. |
| **Decision** | We chose the second option to have an application to store family tree together with the picture of members so that the people who are suffering from memory loss would be able to remember them as they can see family/friend’s picture associated to that name. |

**Issue IFR****8:**

|  |  |
| --- | --- |
| **Description** | “People who are suffering from memory loss should be able to remember places they visited before or remind their parking place”  Issue type: incomplete  Is this feature only available for those who are suffering from memory loss? |
| **Options** | Option 1:   * Limit Backtrack application only to specific user (memory loss)   Option 2:   * Make this application available for general use |
| **Decision** | We chose the second option. So Backtrack application would help people to remind previous places they’ve visited before so that they can take a picture and store it in the phone together with the name of that place. The same would be applicable for remembering the parking lot which would be useful to find where you parked your car. |

**Issue IF****R9:**

|  |  |
| --- | --- |
| **Description** | “Assist them to remind their medication/food/drink and etc”  Issue type: incomplete, ambiguous  How to assist? “Them” refers to which group? Don’t use “ect”, be concise |
| **Options** | Option 1:   * Users can use the built-in reminder/calendar of their phone to remind them about their medication or appointments   Option 2:   * Develop new application to remind peoples medication or other activities |
| **Decision** | We decided to have native application for reminding different activities for user and give on-line access for authorized family members so they can add items on behalf of the person who is using the product in case he’s not able to set the reminder himself. |

**Issue IF****R10:**

|  |  |
| --- | --- |
| **Description** | “Assist them to remind their scheduled meetings/appointments”  Issue type: Redundant |
| **Options** | Option 1:   * Develop separate reminder application to schedule ad set appointments or meetings   Option 2:   * Use the same application as medication reminder also for appointment and share the calendar |
| **Decision** | We decided to use the same calendar to remind about different activities. Whether it’s a reminder about a medication or is about eating food, drinking water (for those who are suffering from memory loss) or an appointment. They can schedule an event to remind them the activities by alarm. |

**Issue IFR****11:**

|  |  |
| --- | --- |
| **Description** | “Providing a way for family members to add reminders in users calendar”    Issue type: ambiguous, incomplete  “Providing a way” is vague. Family members are the only group who can add reminders? Are they able to add only reminders to the calendar? |
| **Options** | Option 1:   * User would be able to add reminder/events to his calendar   Option 2:   * Family members should be able to enter reminder for the users as well |
| **Decision** | As elder people or people who are suffering from memory loss may not be able to add reminder or any event on their calendar so we thought it would be very helpful that authorized user like a family member should be able to add any event or reminder in user’s calendar by accessing this application via remote connection over internet. |

**Issue IF****R12:**

|  |  |
| --- | --- |
| **Description** | “Placing emergency calls”  Issue type: incomplete  How can product place emergency call? |
| **Options** | Option 1:   * Put emergency icon in main menu so it would be accessible for the user   Option 2:   * Place emergency icon in all pages as an icon so the user can use it whenever needed * User should be able to call 911 * User should be able to call/text a predefined family number * User should be able to call/text a doctor |
| **Decision** | We chose option 2 so that we give 3 different options to the user in case of emergency. By Pressing emergency button he can either call 911 which he needs to confirm it again (by pressing YES/NO button), or he can choose between calling a family member or a doctor without confirmation. |

**Issue IFR1****3:**

|  |  |
| --- | --- |
| **Description** | “User should be able to listen to music”  Issue type: incomplete  How user should be able to listen to music? Is it available for all users. |
| **Options** | Option 1:   * All users apart from those who are not able to listen to music (suffering from hearing loss) should be able to listen to their music   Option 2:   * Integrate to external music app.   Option 3:   * Remove the option of music for this product |
| **Decision** | We chose to have first option so that user should be able to listen to his stored music on the phone. Integration to external/online music application would bring difficulties. In case user call a music app then he will loose the application control because the external application will call in top of our product so he won’t have further access to HELPeople rather than closing the external app and reopen HELPeople. |

**Issue IFR****14:**

|  |  |
| --- | --- |
| **Description** | “Users who are visually impaired should be able to surf the web”  Issue type: incomplete  We should define how they can surf the web? Which tool? |
| **Options** | Option 1:   * User an existing tool for helping to surf the internet   Option 2:   * Use already developed tool of “Screen reader” which is powerful for screen reading |
| **Decision** | We will give the option for users who are visually impaired to be able to surf the web. So we will use “Web reader” tool that can convert the web pages to standard structured html pages and read the content of each page for the user, basically it will show what appears in the screen for blind user. |

**Issue IFR****15:**

|  |  |
| --- | --- |
| **Description** | “Mute user should be able to communicate to others via HELPeople”  Issue type: ambiguous  How mute user should be able to communicate via our application? |
| **Options** | Option 1:   * User can use motions to communicate with others   Option 2:   * User can communicate to others by typing in HELPeople and text to speech application will convert it to voice |
| **Decision** | We will give the option for users who are mute to type in iTalk application and app will convert text to speech. Moreover speech to text would be also available for those who have hearing difficulties, so then can use iTalk speech to text converter to convert voice to text for them in order to understand what others say. |

**Issue IFR****16:**

|  |  |
| --- | --- |
| **Description** | “User should be able to use camera to recognize objects or family and friends”  Issue type: incomplete  Didn’t mentioned how to use camera to recognize the people he knows |
| **Options** | Option 1:   * User can have the family or friends pictures stored in his device   Option 2:   * Application should help user to identify the friends and family members by capturing their photo and match them to already stored pictures in contact list |
| **Decision** | We chose second option. For those who are suffering from memory loss and they can’t remember their family members or friend’s face, they can capture a picture from those people and match them with the ones which they had it already it their phone and “Recognition” application will show the name of the person together with any defined note related to him/her. |

**Issue IF****R17:**

|  |  |
| --- | --- |
| **Description** | “User should be able to keep track of his meal and nutritional info”  Issue type: ambiguous, incomplete  How to keep track of his meal? What else can user keep track of |
| **Options** | Option 1:   * Search in internet to find out what would be the nutrition info about the meal he take and write them down in his notes   Option 2:   * Dedicate an application to keep track of every meal, exercise and weight and provide information regarding the nutrition’s of his/her food. |
| **Decision** | Option 2 would be better idea so that he can easily have all of the information in one dedicated application. He can also set reminders to remind him when to take his medicine or when to drink or eat. |

**Issue IFR****18:**

|  |  |
| --- | --- |
| **Description** | “User should be able to use HELPeople for entertainment purpose”  Issue type: ambiguous  What is entertainment? All users will have this section? |
| **Options** | Option 1:   * User can have access to Games or other entertainment apps installed in his phone   Option 2:   * User can access to Games or chatting with friends in skype or check latest movies in Movie Theatre via HELPeople. |
| **Decision** | We chose to provide this option in our product so for some of the profiles who are willing to have this feature it would be possible to access entertainment section instead of going to each app itself. |

## Non Functional Requirements Issues

**Issue INFR1:**

|  |  |
| --- | --- |
| **Description** | “Installation time should be quick enough” Type of issue : ambiguous how QUICKLY it should be ? |
| **Options** | 1. Product should install its entire component less than a minute.  2. We should not consider the installation time |
| **Decision** | We selected option 1 so entire component get install completely |

**Issue INFR2:**

|  |  |
| --- | --- |
| **Description** | Product should consume less battery power  Type of issue : ambiguous how LESS it should be ? |
| **Options** | 1. Product should use 5% of total battery per hour while it is open.  2. We should not consider the power consumption |
| **Decision** | We selected option 2 for the first release, till further versions |

**Issue INFR3:**

|  |  |
| --- | --- |
| **Description** | Product should occupy less memory space  Type of issue : ambiguous how Less it should be ? |
| **Options** | 1. Product should use 5 MB after installation.  2. We should not consider the size of it |
| **Decision** | We selected option 1 for less capacity usage |

**Issue INFR4:**

|  |  |
| --- | --- |
| **Description** | Product should be easy to use  Type of issue : ambiguous how EASY it should be ? |
| **Options** | 1. It should be in list/icon format depends on user preferable. Also applications are categorized in folder and subfolder format 2. All applications could line in alphabetical format. |
| **Decision** | We selected option 1 in order to be more user friendly |

**Issue INFR5:**

|  |  |
| --- | --- |
| **Description** | Application should be properly categorized  Type of issue: ambiguous how properly it should be ? |
| **Options** | 1. Applications could be categorized in most frequent use to least.  2. Application could be categorized according to their functionality |
| **Decision** | We selected option 2 for less simplicity |

**Issue INFR6:**

|  |  |
| --- | --- |
| **Description** | Graphically it should be attractive  Type of issue: ambiguous how colorful it should be ? |
| **Options** | 1. Each application Icon should resemble its functionality  2. Each application can be a short demo |
| **Decision** | We selected option 1 for example SOS button is like life buoy |

**Issue INFR7:**

|  |  |
| --- | --- |
| **Description** | Product should be extensible  Type of issue: ambiguous Up to what extend it will grow? |
| **Options** | 1. It should be able to get debug and add more nonresident/resident applications in future versions  2. Debug same configuration |
| **Decision** | We selected option 1 to make the most comprehensive product |

**Issue INFR8:**

|  |  |
| --- | --- |
| **Description** | While using, product should respond quickly to command |
| **Options** | 1.For any interaction, product shouldn’t take more than 1000 ms  2. It shouldn’t be a concern to consider respond time |
| **Decision** | We have selected option 1 to have maximum time respond |

**Issue INFR9 :**

|  |  |
| --- | --- |
| **Description** | Essential icons should be reachable all the time.  Type of issue: ambiguous How it should be reachable? |
| **Options** | 1.Emergency ,Main Menu, Commander are available on bottom bar all time  2. Any Essential application is in a folder in the main menu. |
| **Decision** | We selected option 1 to make our product more efficient |

# WRS

## W

### Problem

The mobile app market already has a multitude of applications targeting the elderly to help them do many important daily tasks. These apps are generally categorized under Health Care; many have been very well developed and are extremely useful.

But because modern mobile devices such as smartphones and tablets rely on a touch screen as their main mode of input, they represent a significant obstacle for older people, especially those with visual and/or motor degradations.

Furthermore, the visual nature of web browsers, mobile or otherwise, makes it increasingly difficult for poor-sighted people to access information on the web. And, of course, for those who are nearly or totally blind it is nearly impossible to do on today’s smart phone.

### Goal

Our goal is to make “smart” mobile devices even “smarter”. Our objective is NOT to reinvent apps that have already been created. Instead, we aim to make those existing apps work even better and allow them to help many more needy users.

We intend to accomplish our goal by making those apps accessible to people with various communicative impairments such as poor vision, hearing, or memory degradations.

### Improved understanding of Domain, Stakeholders, Functional and Non-Functional objectives

#### Stakeholders

The elderly population, being our main target user group, represents the most important stakeholder. However, because age affects different people in different ways, it is not easy to generalize what their needs are. Therefore, from a system requirements perspective, we shall limit our scope to some of the most common needs, and perhaps extend the product in future versions to accommodate more requirements.

A related group of stakeholders are those who help care for the elderly. These could be family members, caretakers, doctors, etc. Our product will make it easy also for them to assist the person under their care with everything from installing the product to using it on a day-to-day basis.

A third group of stakeholders are those in the public space whom the elderly might need to call upon in case of emergencies, such as Fire, Police, Ambulance, etc. Again, our product will make it easy for the needy to contact help and for emergency personnel to obtain the necessary biodata about that person quickly and accurately.

On the Product Development side, other stakeholder groups whose needs also need to be taken account are: Investors; Sales/Marketing; Management; Engineering; Support.

Last, but not least, are other mobile app makers on the market with whom we have a symbiotic relationship. They have a critical role to play in the success of our product and, conversely, we can help them reach a larger market segment than what they currently have.

#### Definitions

The following terms regarding different **App Types** shall be used within the context of this product to mean specific things:

1. **Resident** – any app that physically resides on the device, which can be:
   1. **Native** – is built into this product
   2. **Non-Native** – is not a part of this product and can be:
      1. **Integrated** – can communicate with this product via an API
      2. **Standalone** – is not integrated with this product at all
2. **Non-Resident** 
   1. **Web-based** (e.g. Pandora)
   2. **Network-based** (e.g. Teleconferencing)

#### Domain Requirements

The types of services (DRs) that the system shall provide are listed below:

1. Input (DR1)
2. System shall provide touch-based input mode by default (DR1.1)
3. System shall provide voice-based input as a supplement (DR1.2)
4. System shall provide image-based input as a supplement (DR1.3)
5. Output (DR2)
6. System shall provide image- and language-based output by default (DR2.1)
7. System shall provide audio-based output as a supplement (DR2.2)
8. System shall provide vibration-based output as a supplement (DR2.3)
9. System shall provide text-based input, e.g. keyboard (DR2.4)
10. Interface (DR3)
11. System shall provide an API through which other apps may communicate with it. (DR3.1)
    * System is not required to support apps that cannot be integrated via this API
12. System shall provide a common interface through which user can invoke, command, and receive responses from native and integrated apps (DR3.2)
13. GPS (DR4)
    1. System shall have a native app that uses the device’s built-in GPS (DR4.1)
    2. System shall support non-native apps that rely on GPS (DR4.2)
14. Bluetooth (DR5)
    1. System shall support native and integrated apps that use the built-in Bluetooth (DR5.1)
    2. System shall support remote devices that can pair with the built-in Bluetooth (DR5.2)
15. Text To Speech (DR6)
16. System shall provide an audio-based menu description for native and integrated apps (DR6.1)
17. System shall have ability to convert lines of text to audio output in at least one language (DR6.2)
18. Bluetooth (DR7)
    1. System shall provide a screen-reader service that can be integrated with a mobile web browser to describe the web page content in audio format, and be able to accept nagivation commands from the user via voice. (DR7.1)
19. OS Support (DR8)
    1. System shall support Apple iOS (DR8.1)
    2. System shall support Google Android (DR8.2)

## RS

### Functional RS – Improved understanding of Software System Requirements: FRs

|  |  |
| --- | --- |
| **RID** | **Requirements Specification** |
| RFR1 | User should be able to interact with the product by voice or text or by touch according to user’s profile. |
| RFR2 | Product should be able to respond to user visually or by voice according to user’s profile. |
| RFR3 | Product should provide quick access to most used apps or favorite ones via dedicated button presented in all pages of product |
| RFR4 | Product should have set of configurations for each app and also for the product in general so the user can change the setting according their desire |
| RFR5 | User should be able to manage applications |
| RFR6 | Product should be able to store pictures associated with names listed in phone’s contact list so that user can create a family tree to store family and friends pictures |
| RFR7 | Product should be able to guide the user to find locations or their parking place with pictorial view using GPS |
| RFR8 | Product should be able to store medical information and records of medications for user |
| RFR9 | Product should provide a reminder for user for daily activities and also family members should have access to add reminders remotely via internet to user’s calendar |
| RFR10 | In case of emergency user should be able to call 911 and call or text a doctor or family member |
| RFR11 | Product should provide entertainment section so that user would be able to listen to music, record a video, skype with his friends and play games. |
| RFR12 | Product should provide a web reader for people who are visually impaired so that they can hear the content of internet pages. |
| RFR13 | Product should provide text to speech and speech to text features |
| RFR14 | Product should be able to match objects and faces with the ones that already stored in the phone once user took a picture from it. |
| RFR15 | Product should be able to provide nutritional information about foods and keep track of user’s food plan |

### Non-functional RS -Improved understanding of Software System Requirements: NFRs

INFR1: Installation time should be quick enough

Explanation: this has to be taken care while coding.

INFR2: Product should consume less battery power

Explanation: this has to be taken care while coding.

INFR3: Product should occupy less memory space

Explanation: this has to be taken care while coding.

INFR4: Product should be easy to use

See User Manual p12

Explanation: The product should be icon driven in folders and sub-folders, icons per screen should be maximum six, whether it’s in list or grid.

INFR5: Application should be properly categorized

See User Manual p4

Explanation: The application should be in such category, so that user can get to them by reading the main folders name.

INFR6: Application icon picture should be meaningful

See User Manual p2 & p3

Explanation :Each icon should resemble unique functionality, e.g. life buoy for SOS

INFR7: Product should be extensible

Explanation: Product should not limit itself to its first release application, it should be programmed so that, more application can co-operate with it . And indeed more smooth and less bug

INFR8: While running, product should respond quickly to command.

Explanation: this has to be taken care while coding.

INFR9: Essential icons should be reachable all time.

See User Manual p.4

Explanation: User must should be away from “main menu”, ”commander”, and Emergency only by one touch

# Traceability MAtrix

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| --- | --- | --- | --- |
| **Preliminary Definition** | **Issues with requirement** | **Improved Requirement** | **User Manual** |
| DR1 | IDR1 | DR1.1, DR1.2, DR1.3 | N/A |
| DR2 | IDR2 | DR2.1, DR2.2, DR2.3 | N/A |
| DR3 | IDR3 | DR3.1, DR3.2 | N/A |
| DR4 | - | DR4.1, DR4.2 | N/A |
| DR5 | - | DR5.1, DR5.2 | N/A |
| DR6 | IDR6 | DR6.1, DR6.2 | N/A |
| DR7 | - | DR7.1 | N/A |
| DR8 | IDR8 | DR8.1, DR8.2 | N/A |
| FR1 | [IFR1](#IFR1) | RFR1 | Section 3 |
| FR2 | [IFR2](#IFR2) | RFR2 | Section 3 |
| FR3 | [IFR3](#IFR3) | RFR1 | Section 3 |
| FR4 | [IFR4](#IFR4) | RFR3 | Section 5.1 |
| FR5 | [IFR5](#IFR5) | RFR4 | Section 6 |
| FR6 | [IFR6](#IFR6) | RFR5 | Section 6 |
| FR7 | [IFR7](#IFR7) | RFR6 | Section 8 |
| FR8 | [IFR8](#IFR8) | RFR7 | Section 10 |
| FR9 | [IFR9](#IFR9) | RFR8 | Section 8 |
| FR10 | [IFR10](#IFR10) | RFR9 | Section 8 |
| FR11 | [IFR11](#IFR11) | RFR9 | Section 8 |
| FR12 | [IFR12](#IFR12) | RFR10 | Section 5.4 |
| FR13 | [IFR13](#IFR13) | RFR11 | Section 9 |
| FR14 | [IFR14](#IFR14) | RFR12 | Section 10 |
| FR15 | [IFR15](#IFR15) | RFR13 | Section 10 |
| FR16 | [IFR16](#IFR16) | RFR14 | Section 10 |
| FR17 | [IFR17](#IFR17) | RFR15 | Section 8 |
| FR18 | [IFR18](#IFR18) | RFR11 | Section 9 |