



MobileSage Deliverable 2.2: User Requirements Specification

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Abstract

This document specifies the user requirements for the MobileSage deliverables *Help on Demand* and *Content Management*. The requirements are based on an analysis of the outcome from the focus group work and serve as input for subsequent project phases, such as Prototyping and the writing of the System Requirements Specification.

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1. Introduction

This section details the background and scope of the deliverable.

1.1 Background

This document is Deliverable D2.2 in MobileSage and specifies the user requirements for the MobileSage software. D2.2 is part of the Work Package 2, User Requirements & System Design.

MobileSage is an Ambient Assisted Living project (AAL) [1]. The main objective in MobileSage is the writing of two service applications. The first is a mobile client application, called Help on Demand, and the second is a Web server application, here referred to as Content Management.

1.2 Scope of the Deliverable

The user requirements are based on an analysis of the outcome from the focus group work; please see public Deliverable D2.1, User Needs Analysis (Report) [2]. This document serves in turn as input for writing derived specifications, including – if applicable – the User Interface Specification, the Functional Requirements Specification, and the API Specification.

2. Definition of users

In accordance with the AAL call, there are three target user groups in MobileSage [1].

The most important one is the *primary* end-user group, consisting of elderly individuals with or without impairments (motor, perception, cognition) and/or little or no familiarity with technology. They are the ones the Help-on-Demand service mainly is intended for. Ideally, these elderly have the explicit wish to remain active members in the digital society.

Next, there are family members and care persons, both of which stand close to the primary end users, and which add up to the *secondary* user group. These are the users the Content Management service mainly is tailored for. As amateurs, they may have an interest in generating or finding help content relevant for the primary users.

Finally, there are the *tertiary* end-users, such as interest organizations and NGOs teaching digital literacy to the elderly. As with the secondary user group, tertiary users may want to produce, expand, or make available help content for use by primary users.

3. Areas of interest

The AAL call defines a number of areas of interest to be addressed by the project deliverables [1]. They are listed in the following.

- Advanced independence of elderly people
- Help for self-help
- Mobility, transportation, and travel
- Home environment
- Relevant/useful, context- and location-sensitive assistance
- Accessibility, usability/user-friendliness, design for all
- Help on demand
- Personalization, customization
- Adaptivity
- Multimodality
- Social aspects
- Privacy, security, and trust

During the formulation of user requirements, special attention has been given to answering the question in how far the results from the user focus groups meet the aforementioned areas of interest. The areas of interest should further be included in any derived work.

4. User requirements

This section lists the detailed user requirements.

The user requirements are based on the findings from the focus groups work, which in turn is summarized in the User Needs Analysis [2].

The User Needs Analysis, and hence this Specification, addresses the needs of the primary users, as the former document solely reflects the opinion of the users in the focus groups. The

requirements listed subsequently are thus by no means mandatory for the formulation of the system requirements.

The requirements are divided into those specific to only one of the two services to be build, and those both services have in common.

4.1 User requirements for Help on Demand

These are the user requirements that are specific for the Help on Demand service, here abbreviated HoD.

- U1 HoD shall provide relevant, trustworthy help content just in time and depending on the context.
- U2 HoD shall accept input in the following modalities:
 - a. Voice
 - b. Keyboard (keypad and full keyboard, physical and virtual)
- U3 HoD shall provide for output in the following modalities. Haptics shall additionally be considered.
 - a. Visual text
 - b. Voice
- U4 HoD shall have high-quality voice recognition.
- U5 HoD shall be easy to use in combination with the following assistive devices:
 - a. Hearing aids
- U6 HoD shall be capable of in- as well as outdoor navigation.
- U7 HoD shall provide assistance with way finding.
- U8 It shall be possible to customize HoD with regard to personal needs and preferences. At least the following matters must be customizable:
 - a. Input modality
 - b. Output modality
 - c. Functionality
 - d. Complexity
 - e. Language
 - f. Font size
 - g. Content delivery
 - h. Subservice(s) used
 - i. Screen brightness
 - j. Location aware behavior
- U9 HoD shall provide an emergency button.

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- U10 HoD shall store the user profile in a safe and privacy-appropriate manner.
- U11 HoD shall handle cost sensitive functionality in a sensible manner.
- U12 HoD shall have measures for privacy protected audio output.
- U13 HoD shall consider the use of PIN codes to protect privacy.
- U14 HoD shall make provisions for lost/stolen devices.
- U15 HoD shall consider privacy implications of logging events and user localization tracking.
- U16 HoD shall inform the user about privacy, safety, and security aspects.
- U17 HoD shall provide alarms/reminders for user defined events.

4.2 User requirements for Content Management

These are the user requirements that are specific for the Content Management service, here abbreviated CM.

- U18 Demonstrations in CM shall be short, concise, and illustrate a particular problem solving task with comprehensive step-by-step instructions.
- U19 CM shall provide demonstrations in the following modalities, which shall be equivalent and hence mandatory fallbacks for each other in any context:
 - a. Video
 - b. Audio
 - c. Captions
- U20 CM shall provide content in several languages, if possible.
- U21 At a minimum, CM shall provide content on the following topics.
 - a. Self-service machines (ATMs, ticket machines, etc.)
 - b. Domestic appliances
 - c. Cooking recipes
 - d. Rules for sports and games
 - e. Sights and touristic information
 - f. Emergency situations
- U22 CM shall provide maps and navigation instructions.
- U23 CM shall provide the following travel information:
 - a. Departures times
 - b. Arrival times
 - c. Transportation means

d. Travel prices and discounts

U24 It shall be possible to customize CM with regard to personal needs and preferences. At least the following matters must be customizable.

- a. Functionality
- b. Complexity
- c. Language
- d. Subservice(s) used

4.3 General user requirements

These are the user requirements that both Help on Demand and Content Management have in common.

U25 The service shall be stable and work in any conditions.

U26 The service shall have an intuitive, simple, and easy-to-learn user interface.

U27 The service shall be as easy as possible and highly accessible.

U28 The service shall hide unwanted or not needed functionality from the user.

U29 The service shall have several complexity levels, such as Simple, Normal, and Expert.

U30 In selection situations, the service shall give the user a reasonably limited number of options.

U31 It shall be easy and intuitive to scale maps by zooming in and out.

U32 The service shall be localizable.

U33 It should be possible to switch the language on the fly.

U34 It shall be possible to customize the service arbitrarily often.

U35 It shall be easy to switch among any modalities.

U36 The service shall provide appropriate feedback to the user.

U37 The service shall make provisions for situations where maps are not up to date.

U38 The service shall have a prominently placed help button.

U39 The service shall provide adequate and easily accessible help and training in case the user needs assistance with the service.

U40 The service shall show error messages that are non-cryptic, informative, and helpful.

U41 The service shall provide guidance in case the service fails, in particular in form of a human fallback.

U42 The service shall motivate the user to help herself and acknowledge any self-managed accomplishments.

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U43 The service shall consider the use of avatars.

U44 The service shall make provisions to protect the user's privacy.

U45 Any privacy critical actions in the service, such as sending SMS, etc., shall be user initiated.

4.4 Non-honored user wishes

There were a number of issues that could not be included in the aforementioned user requirements as they were outside the scope of the project and/or not feasible.

- A user's strong dependence on the device/service
- Automatic detection of hindrances and objects
- The location of arbitrary HoD users
- Who should assist the users with making changes to the setup?
- A smartphone's value makes it attractive to potential thieves.
- Touch screens are difficult to operate for people with vision impairment.
- Difficulties seeing the display
- Malfunction
- Empty of cash
- Problems depositing money
- Swiping-card problems
- The phone should be able to communicate with the self-service machine directly.
- Translator tool
- Smart home control device
- Reminder tool for medications, appointments, etc.
- Rehabilitation device
- Cost of device/service
- Preference of human assistance over machine assistance
- A smartphone with big buttons and large screen

5. Conclusion

In this work, the user requirements for the MobileSage deliverables have been specified. The requirements are based on the analysis of the outcome from the focus group work.

As the focus groups solely consisted of primary users, subsequent work building on this document should take into account the needs of MobileSage's secondary and tertiary users, as specified above.

The requirements are split into those only relevant for a respective service, and those that both services have in common. They mirror nicely the topics from MobileSage's areas of interest. An example here is that the Help on Demand Service “shall provide relevant, trustworthy help content just in time and depending on the context”.

A number of topics brought up by the focus group participants could not be honored, either due to the fact that they were outside the scope of the project, and/or that they were not feasible. For instance, “Reminder tool for medications” is outside the project's scope, and “A user's strong dependence on the device/service” is, though relevant, not feasible to cope with in this project.

References

- [1] AAL Association. AAL Program Call 3: ICT-Based Solutions for Advancement of Older Persons' Independence and Participation in the “Self-Serve Society”. March 2010
- [2] Øystein Dale. MobileSage Deliverable 2.1: User Needs Analysis. January 2012