D2.3 System Requirements Specification for Help on Demand Service

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Abstract

Through Help-on-Demand Service the MobileSage project will provide a service to everybody in possession of an enabled smart phone. Such a service will support the self-serve society by allowing producing and exploiting a mixture of professional and user-generated content, which supports the help-for-self-help principle. Help can be provided both in home environment and on travel, which makes the service context based and partly location based. Also, the service is provided in a personalized and multimodal manner, and it exploits mechanisms for adaptive and learning user interface.

This deliverable captures the intended behavior of the service and an overview on the functional requirements for the Help-on-Demand module. The requirements from this deliverable are derived from afferent scenarios.

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1 Introduction

This section details the background and scope of this Deliverable.

1.1 Background

This document is Deliverable D2.3 in MobileSage. It 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 Service*, and the second is a Web server application, here referred to as *Content Management Service*.

1.2 Scope of the Deliverable

This Deliverable specifies the system requirements for the MobileSage software deliverable Help on Demand Service and the interface between Help on Demand Service and Content Management Service.

The system requirements are based on *MobileSage Deliverable D2.2: User Requirements* Specification, version 1.1. They serve as input for subsequent project phases, including *Prototyping* and *System Implementation* and *Integration.*

The system requirements of this Deliverable are complemented by the system requirements in *Deliverable D2.4*, which are valid for MobileSage software deliverable Content Management Service. It is stressed that the requirements are not mandatory for the implementation. Rather, it is recommended to deploy a continuous triaging process of the requirements by means of a suitable requirements or issue tracking tool.

2 Choice of technology

The service will be implemented by means of Google's operating system Android.

The choice is based on the fact that Microsoft's Windows Phone is viewed as being not mature enough currently, Apple's iOS is believed to be too restrictive with regard to its Appstore policy, while Android includes the following advantages.

- ↟ Support for all major features of MobileSage
- ↟ High popularity
- ↟ High maturity
- ↟ Provided with IDE
- ↟ Associated with huge developer community
- ↟ Broad support of multimedia standards

3 System architecture

The overall system architecture is shown in Illustration 1, whereas only the left side is relevant for the Help on Demand Service
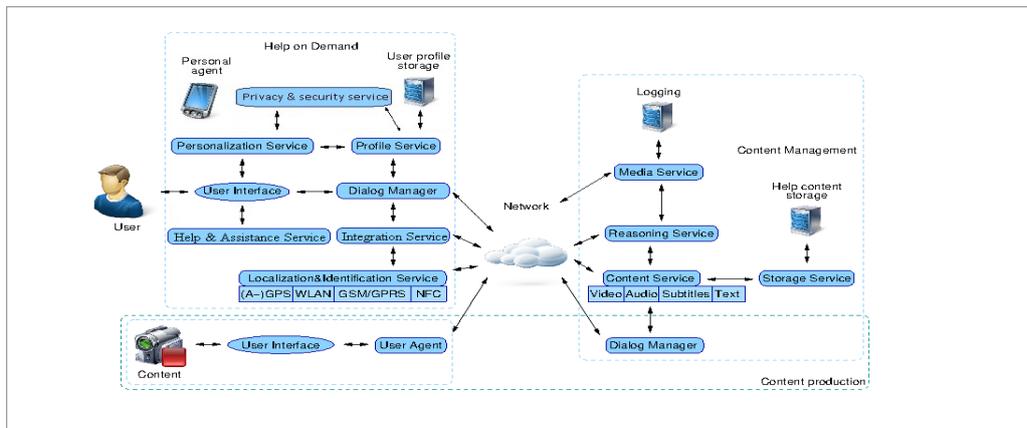

Figure 1 System Architecture for Help on Demand Service

4 System requirements

The system requirements are split into three logical parts regarding UI, functionality, and I/O.

3.1.   UI requirements

In this section, the requirements regarding the service's user interface (UI), i.e., the human-computer interface, are specified.

No.	Description	Relevant user requirements
1.	The service shall display a map which shows a particular route	U7
2.	An emergency button shall be available on any screen, if the user profile has the value for this feature set to "ON".	U9
3.	The user interface shall take into consideration Google's UI Guidelines but firstly it shall consider the users.	U26
4.	The implementation shall take into consideration Google's Designing for Accessibility Guidelines	U27
5.	The service shall hide unwanted or not needed functionality from the user	U28, U29
6.	In selection situations, the service shall give the user a reasonably limited number of options	U30
7.	The service shall provide a adequate switching/selecting options for different input and output modalities	U35

8.	The interface shall include feedback information in a user-friendly way	U36
9.	The main screen shall include a prominently placed help button	U38

3.2. Functional requirements

In this section, the requirements regarding the underlying service functionality are specified.

No.	Description	Relevant user requirements
1.	The service shall have a logic to determine the user's situation/context based on at least location, date, and time	U1
2.	The service shall have 0 stability issues in ideal conditions (enough memory space, no other applications running in background, etc.)	U1, U25
3.	The service shall have a response time of less than 5s after it has received the content from Content Management, in ideal condition(enough memory space, no other applications running in background, etc.)	U1
4.	The service shall provide navigation solely on signal and map availability	U6
5.	The service shall contain a location module	U6
6.	The location module shall be integrated with the profile	U6
7.	The UI shall allow setting a starting point and ending point for a route	U7
8.	The reasoning service shall be able to provide a route based on a starting point and ending point.	U7
9.	There shall be a user profile for customization purposes	U8
10.	The user shall be able to customize the preferred output modalities (default: Text), while several modalities are possible.	U8b, U8g, U12
11.	The user shall be able to customize the following service functionality parts: Emergency button On/Off (default: On)	U8c
12.	The user shall be able to customize the preferred UI language and the preferred content languages. The following UI languages shall be available: English,	U8e, U33

	Romanian, Norwegian, and Spanish. The default UI language is the current system language. In case the system language is not supported, the default UI language shall be English. The primary content language is identical with the UI language. The user shall specify secondary content languages during the initial customization.	
13.	The user shall be able to customize the preferred font size as one of the options Small, Medium, Large, Extra Large (default: Medium)	U8f
14.	The user shall be able to customize the preferred brightness of the display depending on the possibilities and security permissions of the operating system (default: current value)	U8i
15.	The user shall be able to customize what modules are available for context determination (default: all modules enabled) depending on the possibilities and security permissions of the operating system.	U8j
16.	The user profile shall be stored on the phone only, and in a secure manner.	U10, U14, U44
17.	The service shall send user identifying data to Content Management only with the user's approval.	U10, U44
18.	It shall be possible to reset the user profile	U10, U44
19.	It shall be possible to pause the output of audio at any time.	U12
20.	The service shall store all logging and localization data either in the RAM or in the profile	U15
21.	When run for the first time, the service shall show the user information concerning privacy, safety, and security aspects	U16
22.	It shall be possible to access the informative text about privacy, safety, and security in the settings	U16
23.	All map interfaces shall have the option to zoom in and zoom out	U31
24.	The settings shall include service settings and user profile settings and shall be available through the menu at any time	U34, U8
25.	The service shall provide feedback on most user initiated actions and always on critical service functionality	U36
26.	The service shall provide adequate and accessible help content for all of its functionality	U39

27.	Any error, warning, and other messages shall be relevant, concise and easy to understand	U40
28.	The service shall provide help information or offer the possibility to connect with a preset contact, in case of failure	U41
29.	The user shall be able to customize the preferred data transmitting/receiving setting in the profile depending on the possibilities and security permissions of the operating system	U8g
30.	The user shall be able to scan NFC tags	
31.	The user shall be able to scan QR codes.	
32.	The user shall be able to customize the following service functionality parts: Scan On/Off (default: On)	

3.3. I/O requirements

In this section, the requirements regarding the service interface in terms of input/output (I/O) operations are specified.

No.	Description	Relevant user requirements
1.	A (physical) keypad shall be an acceptable input modality, only if the physical keypad is an integral part of the phone (the keypad is built in).	U2b
2.	A virtual keyboard shall be an acceptable input modality	U2b
3.	A (virtual) keypad shall be an acceptable input modality	U2b
4.	It shall be easy to shift among input modalities	U2
5.	Visual text shall be an acceptable output modality	U3a
6.	Video recordings shall be an acceptable output modality	U3
7.	Audio recordings shall be an acceptable output modality	U3b
8.	It shall be easy to shift among available output modalities.	U3

5 Nice to have

These user requirements will be analyzed after completing the implementation of the requirements from chapter: "4. System requirements".

No.	Description	Relevant user requirements
1.	The service shall provide an audio description of a particular route	U7
2.	The date of the last map update shall be shown to the user	U37
3.	The service shall provide at least the travel types walking, driving, and public transport	U7
4.	The user shall be able to customize the preferred services to be used by Content Management. At least the following services shall be available (default: all On): Google Maps	U8h
5.	The user shall be able in the settings to define if any service action is user or service initiated (default: service initiated)	
6.	User initiated actions shall always overrule service initiated actions	
7.	Haptics shall be an acceptable output modality	U3
8.	The service shall be able to recognize speech input as a command/instruction	U4
9.	Voice shall be an acceptable input modality	U2a
10.	The emergency button and the service fallback shall provide 2 numbers and the following calling policy: Call 1. number, let ring 7 seconds, then (if not answered) call 2. number.	U9, U41
11.	Before starting an emergency or fallback call, there should be a 3-second countdown, while the user is given the possibility to cancel this action.	U9, U11, U45
12.	The service shall provide the possibility to search for transportation times and means.	
13.	It shall be possible to search for particular points of interest	U7

6 Non-honored user requirements

These are the user requirements that have been ignored during the derivation of system requirements.

No.	Description	Relevant user requirements
	HoDThe service shall be easy to use in combination with the following assistive devices: a. Hearing aids	U5
	HoD shall provide alarms/reminders for user defined events.	U17
	The service shall motivate the user to help herself and acknowledge any self-managed accomplishments.	U42
	The service shall consider the use of avatars.	U43
	The service shall log the following vital events and store them in the user profile: ⼊ Help was pushed ⼊ Emergency was pushed ⼊ service help was accessed ⼊ Settings were changed ⼊ Modality of help content ⼊ Length of (timed) help content ⼊ Stop/Pause was pushed	U15

7 Data exchange format

In this section, the data format for request and response between HoD and CMS is specified (as JSON format with schema and example)

Request Example

```
{
  "MobileSageExchangeFormat": "1.0",
  "DateTime":{
    "Date": "2012-06-19",
    "Time": "09:31:34"
  },
  "SearchType": "String",
```

```json
  "SearchString": "search term",
  "Location": {
    "Latitude": "59.949440",
    "Longitude": "10.756379",
    "Altitude":"100.32"
  },
  "Languages": [
    "en",
    "ro"
  ],
  "ResponseTypes": [
    "Video",
    "VideoCC",
    "Audio",
    "FText",
    "Image"
  ],
  "MaximumNumberOfRecords": 9,
  "RecordStartIndex": 0,
  "ScreenSize": {
    "X": "800",
    "Y": "450"
  },
  "ConnectionSpeed": "3G"
}
```

Request Schema

```json
{
  "type": "object",
  "properties": {
    "ConnectionSpeed": {
      "required": true,
      "type": [
        "string",
        "null"
      ]
    },
    "DateTime": {
      "required": true,
      "type": [
        "object",
        "null"
```

```
    ],
    "properties": {
     "Date": {
      "required": true,
      "type": [
       "string",
       "null"
      ]
     },
     "Time": {
      "required": true,
      "type": [
       "string",
       "null"
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     }
    }
   },
   "Languages": {
    "required": true,
    "type": [
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     "null"
    ],
    "items": {
     "type": [
      "string",
      "null"
     ]
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   },
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     "object",
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    ],
    "properties": {
     "Altitude": {
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      "type": [
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       "null"
      ]
     },
     "Latitude": {
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      "type": [
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```

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      "null"
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    "Longitude": {
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      "null"
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   }
  },
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   "type": "integer"
  },
  "MobileSageExchangeFormat": {
   "required": true,
   "type": [
    "string",
    "null"
   ]
  },
  "RecordStartIndex": {
   "required": true,
   "type": "integer"
  },
  "ResponseTypes": {
   "required": true,
   "type": [
    "array",
    "null"
   ],
   "items": {
    "type": [
     "string",
     "null"
    ]
   }
  },
  "ScreenSize": {
   "required": true,
   "type": [
    "object",
    "null"
   ],
   "properties": {
    "X": {
     "required": true,
```

```
      "type": [
       "string",
       "null"
      ]
     },
     "Y": {
      "required": true,
      "type": [
       "string",
       "null"
      ]
     }
    }
   },
   "SearchString": {
    "required": true,
    "type": [
     "string",
     "null"
    ]
   },
   "SearchType": {
    "required": true,
    "type": [
     "string",
     "null"
    ]
   }
  }
}
```

8 Prototype

The mockups show the user interface for setting a profile for Help on Demand. They also present the main functionalities that can be accessed by the user from the main screen of the application.