Seamless Engineering Milestone 1 - Requirements Template

Team number: Seamless Engineering Group xx

# Requirements

If there is one aspect a project must have in order not to be doomed to failure, it is a reasonable and comprehensive repository of both functional and non-functional requirements. A project's requirements must be well considered, balanced and easily understood by all team-members, but perhaps most importantly, they must not be dropped or compromised during half of the project.

Fill out the following templates according to your requirements.

Functional Requirements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ID | Title | Description | Priority | Remarks |
| **F1** | **Localize sound sources via beamforming** | **Use beamforming to detect the direction of sounds** | MUST |  |
| **F2** | **Sound tracking** | **Track movement of sound sources** | SHOULD |  |
| **F3** | **Usage of multiple smartphones** | **Pairing of multiple smartphones with the hearing aid to provide a higher number of microphones for better sound quality** | COULD |  |
| **F4** | **Scene recognition** | **Recognize the scene and objects within based on their frequency** | SHOULD |  |
| **F5** | **Display sound sources** | **Display the direction of the sound sources on the screen in real time (360°)** | MUST | **Only 180° could be possible** |
| **F6** | **Application of noise filter** | **Filter noise recorded with the two available microphones in order to extract voice** | MUST | **Type of filter as a result of the upcoming Matlab tests** |
| **F7** | **Bluetooth pairing** | **Pairing of smartphone and hearing aid or headphones via Bluetooth (automatically after first initialization)** | MUST | **May already be standard** |
| **F8** | **Broadcasting** | **Broadcast clear and understandable voice of selected conversation partner** | MUST |  |

Non-Functional Requirements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ID | Title | Description | Priority | Remarks |
| **NF1** | **Provide application area** | **The App provides an application area where the directions of sounds are displayed** | SHOULD | **App is split into two areas, one containing the application is used and one where the settings can be adjusted** |
| **NF2** | **Simple design of user interface** | **Clear structure of user interface, using as few text as possible** | MUST |  |
| **NF3** | **Selection menu for sound sources to track** | **Offer selection menu for choosing the sound sources that should be tracked** | MUST |  |
| **NF4** | **Provide settings area** | **The App provides a settings area** | SHOULD | **App is split into two areas, one containing the application is used and one where the settings can be adjusted** |
| **NF5** | **Provide selection of amplification** | **Choose the amplification of the selected sound sources** | MUST |  |
| **NF6** | **Provide selection of Bluetooth pairing devices** | **Choose the Bluetooth device to pair with for the broadcast of the selected sound sources** | MUST |  |
| **NF7** | **Voice command** | **Use voice commands to automate certain functionalities** | COULD |  |
| **NF8** | **Battery efficiency** | **Application should be battery efficient** | SHOULD |  |
| **NF9** | **Compatibility with android smartphones** | **Compatible to android version XY and higher** | MUST | **Compatibility to iOS and others will be considered in the future** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NF10** | **Insensitivity to rotation of the smartphone** | **Rotating the smartphone, the displayed directions of the sources of sound must remain true to the directions of the real sources of sound** | MUST | **Possibilities using two microphones?** |
| **NF11** | **Sound quality** | **Clear and understandable sounds are broadcasted** | MUST |  |
| **NF12** | **Latency limit** | **Overall latency of max. XY** | MUST |  |
| **NF13** | **Bluetooth / 2.4 GHz Interface** | **Provide Bluetooth / 2.4 GHz Interface to broadcast sound to the chosen device** | MUST |  |
| **NF14** | **Compatibility with hearing aids** | **Provide pairing via Bluetooth with hearing aids** | MUST |  |
| **NF15** | **Compatibility with headphones** | **Provide pairing via Bluetooth with headphones** | COULD |  |