Assessment A2 - The Human Assignment

The Last Survivor App

Pablo Córcoles Molina & Pablo de Haro Corredor
December 2019.

Human-Computer Interaction

Index of Contents

Index of Figures

Introduction

In this report we are going to describe the different solutions to the challenges that we have formulate along with different screenshots showing what the system can do to solve them.

Impossibility of using hands

We can find many situations in which we are unable to use the hands or maybe we don't want to navigate through a whole menu system to reach a certain function or screen. Just like Apple does with Siri voice assistant. We have implemented a button that allows you to say some functions names in order to open them without touching the buttons. We have not implemented all the screens that the application might have in order to simplify the operation. The actuals commands are "Maps", "Guide", "Accessibility" and "Astronomy". When we press the button, a window will appear waiting for us to say one of these commands. It is implemented by means of an Intent that calls to an activity called "RecognizerIntent.ACTION_RECOGNIZE_SPEECH" that will prompt the user for speech and send it through a speech recognizer.
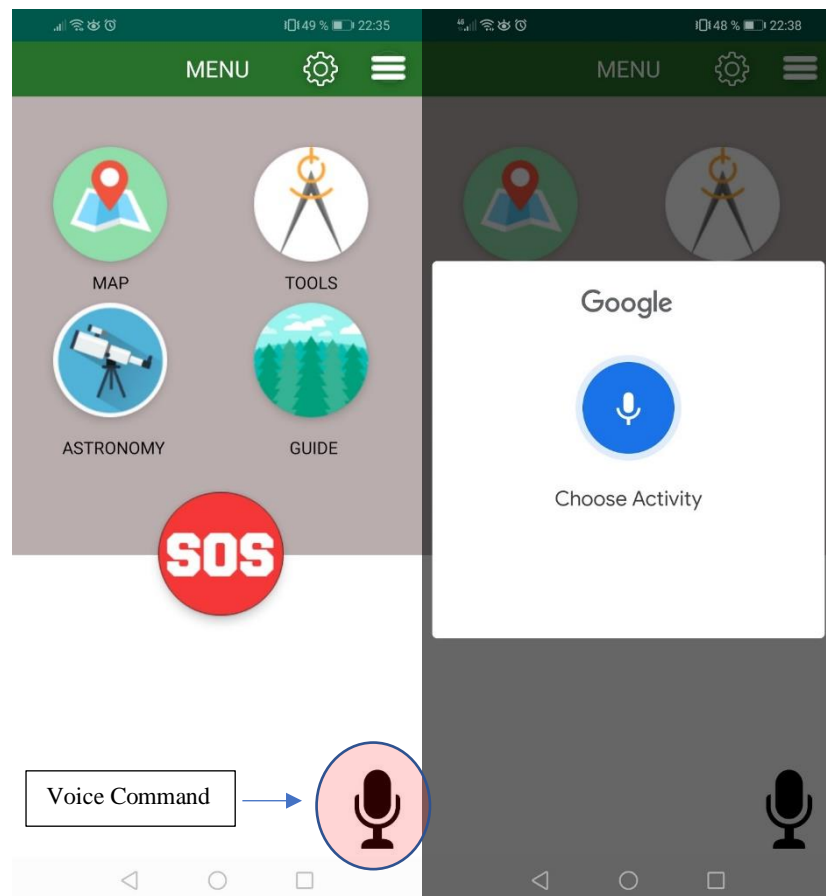

Figure 1 - Voice Command Function

Another function that we have implemented for this challenge is the Voice or Speech to Text. With this function we are allow to tell where we want to search in a text View. We have only implemented this in a navigation bar, which doesn't search anything only the text is written, in order to simplify things. The implementation is very similar to the previous one, in this case the text that we say is store in an Array List of Strings and later is shown in the text View.
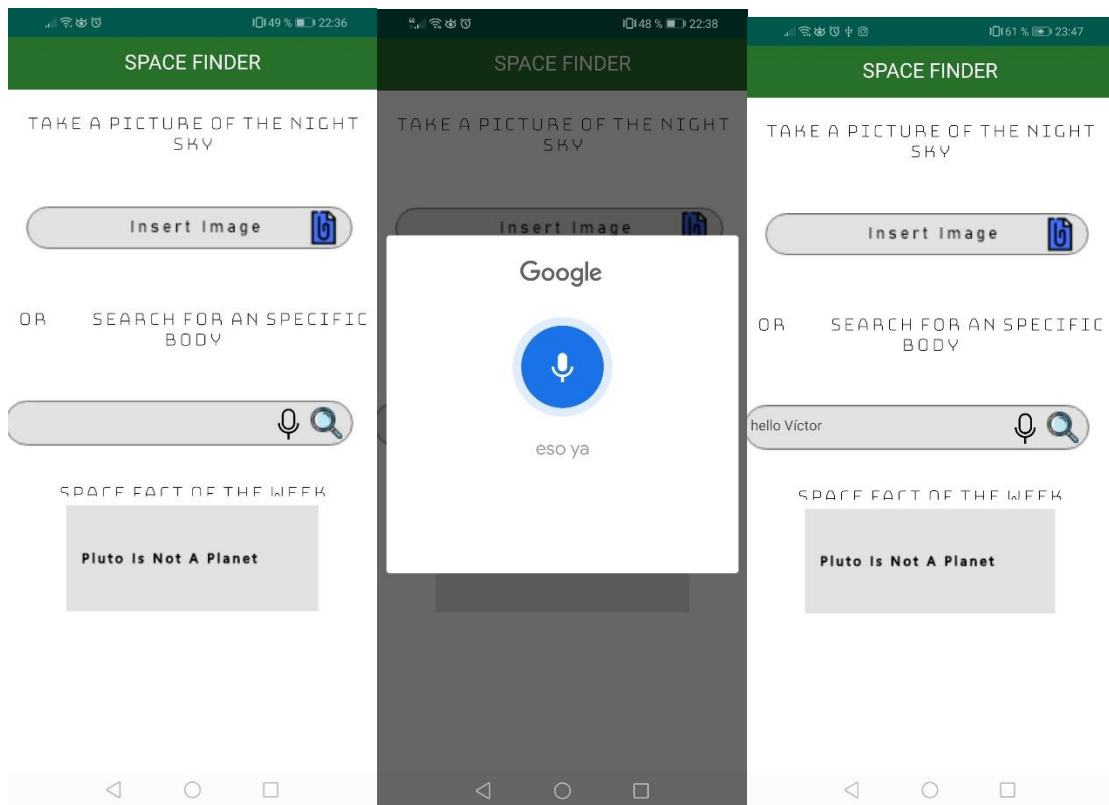

Figure 2 - Speech to Text Function

Vision Problems

There are people with several vision problems from the ones that consists in color alterations to people that use glasses (and they don't have them available at that moment), etc.

We have implemented three different functions to deal with this challenge. One of them is the Text to Voice or Text to Speech (TTS) which allows us to hear the text that we have in our screen. In order to simply the implementation we have only included this function in a screen with a text (Guide -> Water). If we press the button a window will appear asking for the language we want to hear and then the Speech will start. We can stop it by a long press in the same button. This implementation is done by means of an object of the class "TextToSpeech".
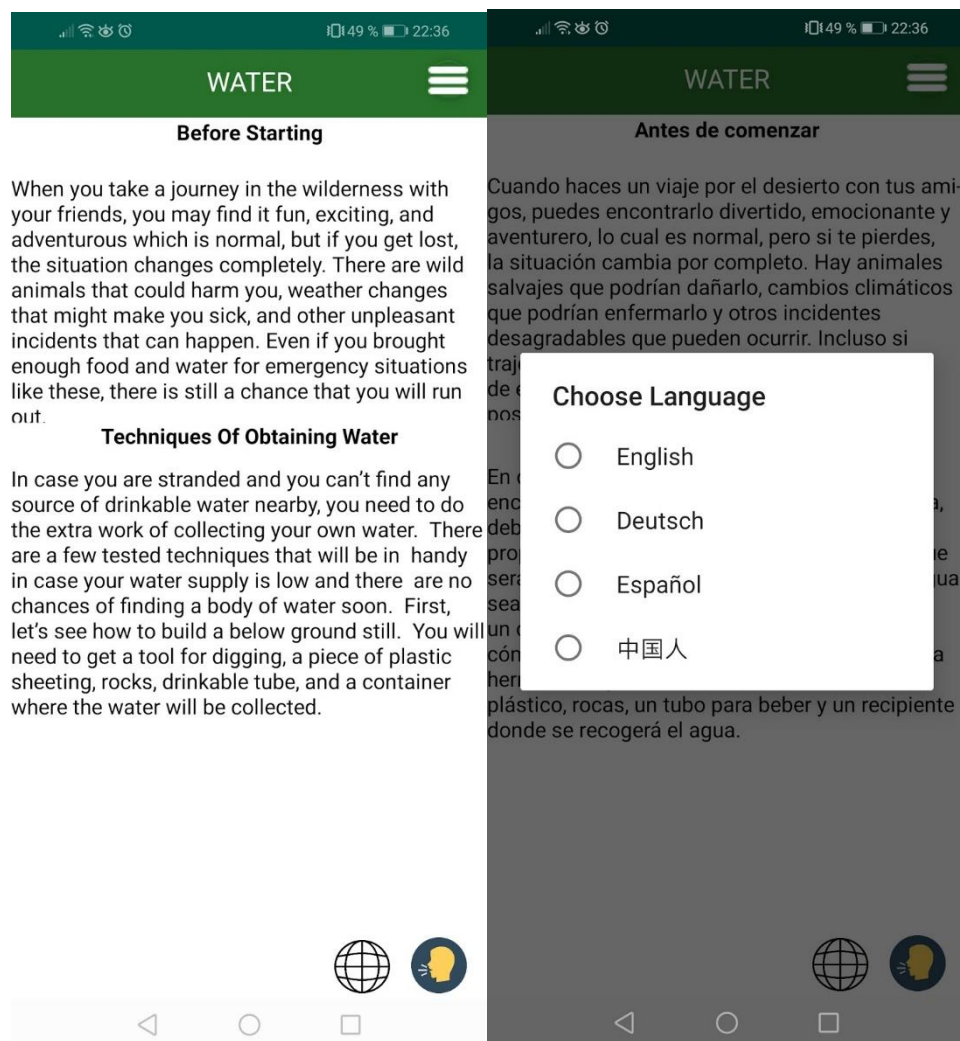

Figure 3 - Text To Speech (TTS) Function

Another function that we have implemented is the possibility to correct the color of the images that we have in our application. We have implemented three different corrections belonging to three alterations of the colors: Deuteranomaly, protanomaly and tritanomaly. People with these diseases see colors with another spectre. So, when the user selects an option of Color Correction in the screen "Accessibility" it will show the colors corresponding to these spectres of colors.

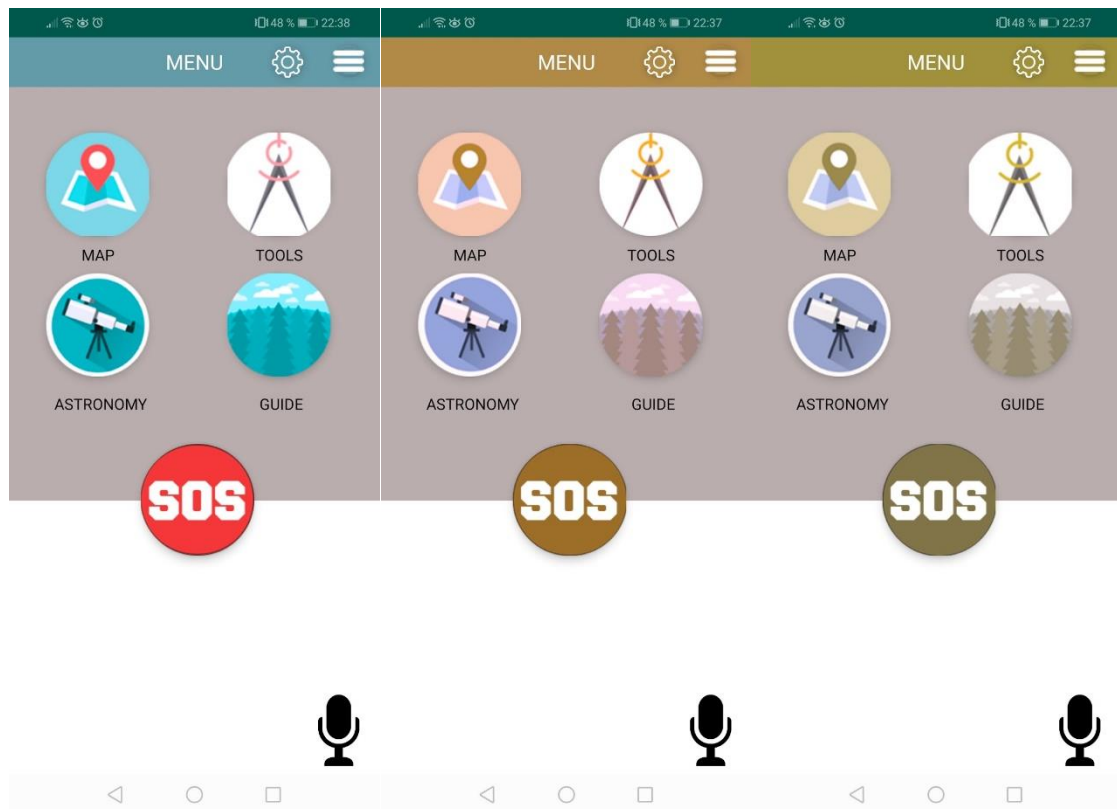*Figure 4 - Color Correction in the Accessibility Menu*

Figure 5 - Color Correction in Main Menu

The light of the screen, in the long term, can damage our eyes especially when It is very bright. We have included a dark/night mode in our system to deal with these problems. If we select dark mode the colors will become darker and the letters will change the color in order to make easier the reading. We have also included the option of inverting the colors of the images.
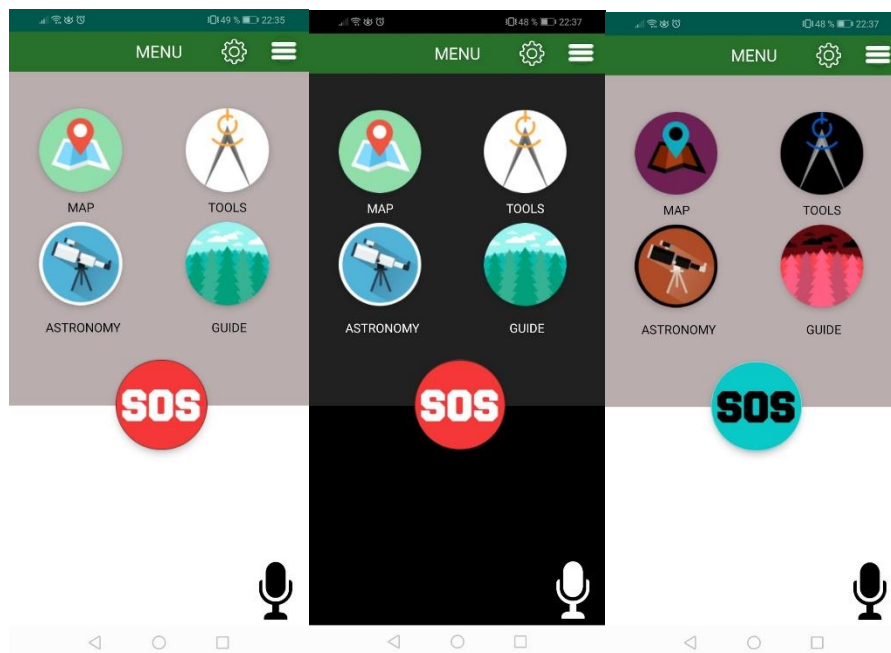

Figure 6 - Normal, Dark and Inverted Colors modes

Multilanguage App

For this challenge we were thinking in how a foreign person will react using our application, so a good way to ease the interaction with it is to support their language. Our app supports four different languages (English, German, Spanish and Chinese) which are really used among the world. The app will let you choose the language in which you want to read the words and texts among the already mentioned languages. For this function we have created a world globe icon to refer to the translations.

In order to support those languages, we have search for the translations and put them into a kind of database for the app to know what it has to translate. Then when tapping on the pertinent icon a menu will be displayed with the four languages ready to choose.

This will lead us to a decent situation where people from different countries can in some way move through our app with the less problems possible.

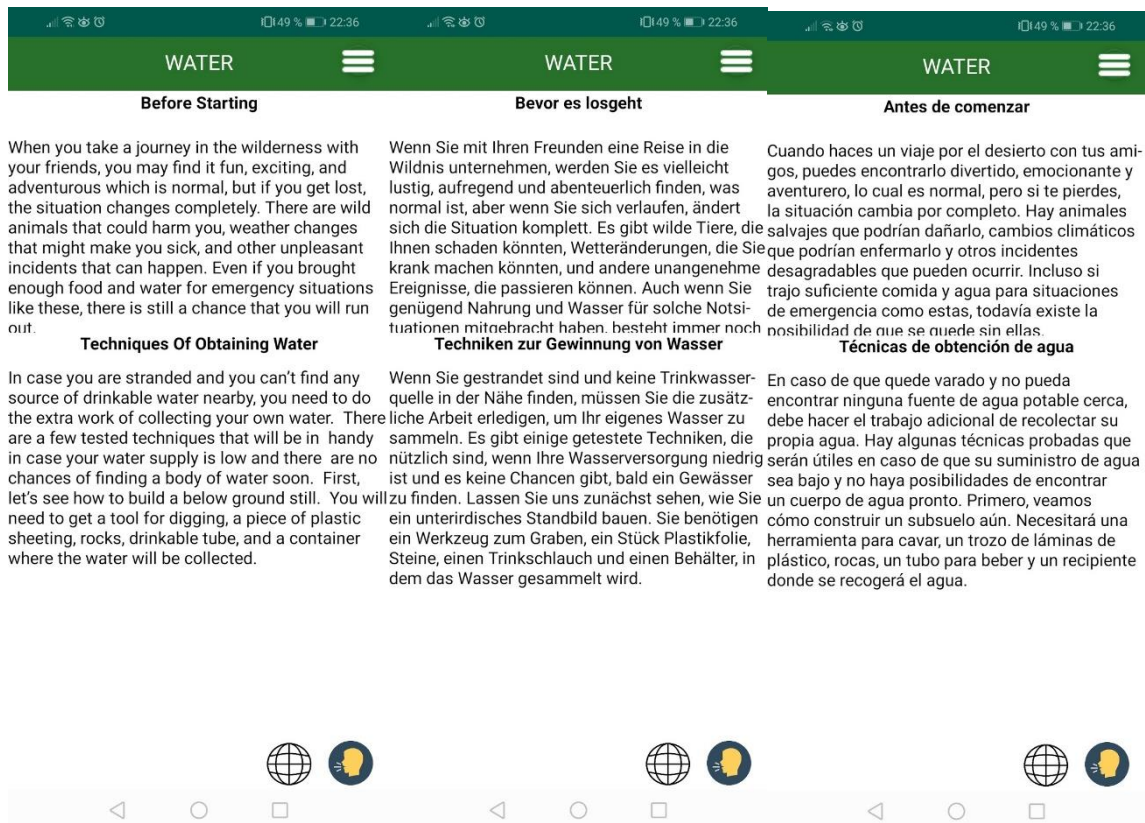Here we put some Screenshots of the translated texts.
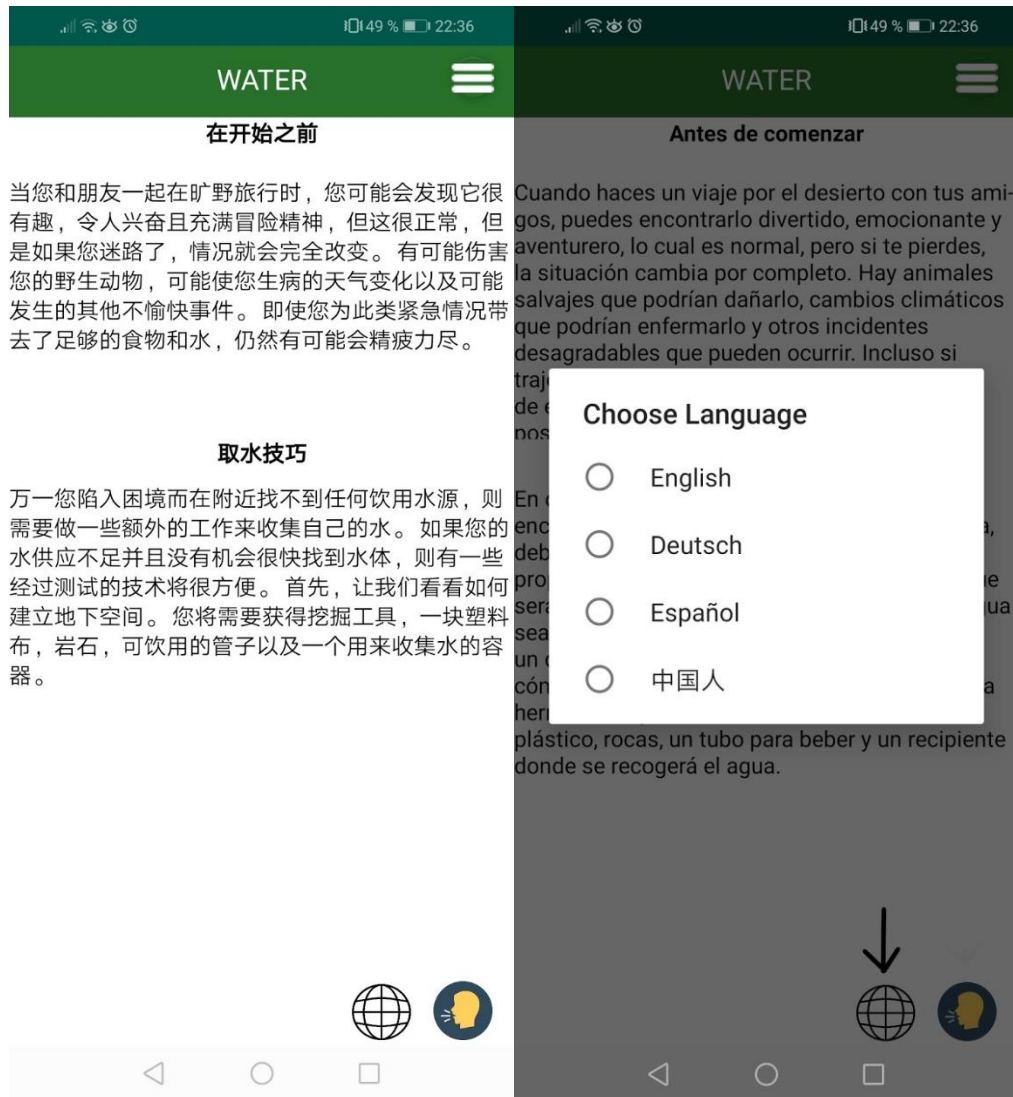

Figure 7 - Translated Texts

Figure 8 - Translated Text into Chinese

Other Considerations

Along with these challenges, we have also included several small functions to make the application more usable and accessible to the users. For example, we have implemented vibration in the buttons that you can press, along with a sound and an animation.

We have implemented longer vibration in toggle buttons than in normal ones and some kind of sound for knowing you are tap on it. Also, in our SOS button we have just set a "Help scream" in order to simulate an emergency call.