Pflichtenheft

Virtual Reality für Sensordatenanalyse

Projekt:	Virtual Reality für Sensordatenanalyse 0.1
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1 Purpose

The software project module in 2017 at the university of Constance focuses on the development of app for mobile devices.
Especially, this Pflichtenheft intends to describe the structure of an implementation of a virtual reality representation of BLE sensor feedback.

1.1 Must-have criteria

M1 The app shall use the Bluetooth adapter of the smartphone to connect to a TI SimpleLink SensorTag device.

M2 The app shall track the position of a TI SimpleLink SensorTag device with up to 30m tolerance.

M3 The app shall visualize the sensors' data and its position using 3D/stereoscopy, more concrete the WebVR framework.

M4 The visualization mentioned in M3 shall be explorable by tilting the joystick of a bluetooth controller

1.2 Nice-to-have criteria

A1 The app shall visualize the sensors' data and its position using augmented reality

2 Product Environment

2.1 Software

- Android 5.0 Lollipop or higher

2.2 Hardware

- Bluetooth-enabled Smartphone
- TI SimpleLink SensorTag device
- Victorstar VRBox 2.0
- VR-Park Bluetooth Controller

3 Product Functions

3.1 Settings

The User can set the following Options:

/F0100/ *Sensor:* The User can set, which data shall be displayed in the VR-World (Temperature, etc.)

3.2 VR-World

The VR-Mode is 3D view of the world on entering VR-Mode the user will see a fullscreen 3D world and by pressing the button in the lower right corner he can enter the stereoscopic view of the World. The VR-World is a 3D representation of a real series of rooms.

/F0300/ *Look around:* The User can look around in the Vr-World by touching and draging on the Screen or by moving his head around to pan the camera.

/F0310/ *Move inside VR-World:* The User can move inside the VR-World by tilting the joystick of his controller forward. Turning will be done by looking around with the VR-headset or by clicking and dragging on the screen.

/F0320/ *Switch Data representation:* The User can switch between two different respresentations of the bluetooth data from the sensor by pressing the A-Button on his controller.

/F0330/ *Exit VR-Mode:* The User can exit the VR-Mode by pressing the x in the top right corner of the screen or by looking for 5 seconds directly on the x under his feet.

/F0340/ *Enter stereoscopic VR-Mode:* The User can switch from fullscreen VR-Mode to stereoscopic by pressing the button in the lower right corner or by pressing the A-Button on his controller.

/F0350/ *Exit stereoscopic VR-Mode:* The User can leave stereoscopic Vr-Mode by pressing the back button on his device or by touching the back button in the top left corner.

/F0360/ *Enter Settings:* The User shall be able to enter the Settings menu while in normal 3D-Mode.

/F0370/ *Switch rooms:* The User can easily switch rooms by pressing the B-Button on his controller or by looking up at the door sign for at least 5 seconds.

4 Product Data

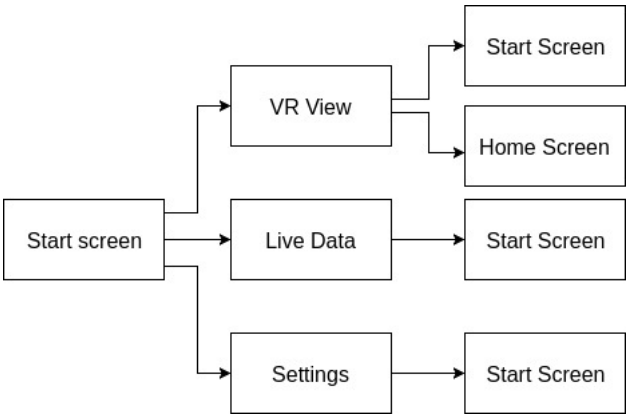
TODO: MockUp/Interface einer Projekt 4 Gruppe
TODO: Was muss für 3D Modell gespeichert werden? Wie sehen die Datenstrukturen aus?

5 User Interface

5.1 Structure

A small overview of the menu Structure.

5.1.1 Start Screen



5.1.2 VR-View

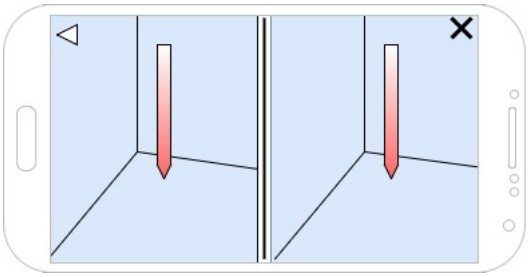
5.1.3 Live Data

5.1.4 Settings

5.2 Layout

A mockup of the Start up screen.

And a mockup of the Vr-view.



6 Quality Requirements

	very important	important	less important	lesser important
Robustness				**X**
Reliability	**X**			
Correctness	**X**			
Usability	**X**			
Efficiency		**X**		
Portability		**X**		
Compatibility			**X**	

7 Test Cases

8 Development Environment

8.1 Software

OS: Windows 10

IDEs:
- ◇ Android Studio
- ◇ Sensor Controller Studio 1.4.1

VCS: Git & GitHub

UML-Editor: Enterprise Architekt/MS Visio/draw.io

Zeichensatz: LaTeX

8.2 Hardware

Smartphone: Motorola XT1572

Sensor: TI CC2650STK

VR-Headset: Victorstar VRBox 2.0

Bluetooth-Controller: VR-Park (?)

9 Project Time Line

02.05.2017 release Pflichtenheft incl. project plan and subject of the milestones

25.05.2017 Milestone 1

12.06.2017 Milestone 2 & intermediate assesment

17.07.2017 Milestone 3

25.007.2017 Final presentation

Possible starting points:
Simple, bad layout
TI official, complex

10 Sources

Pflichtenheft Template Simon K. Baur Link