Project RelaXR - Post Mortem

## Project idea and realization

The project idea originates from the project owner Nuru Jingili, post doctor in data science at LTU, and can be summarized as a VR application targeted to young women that promotes mental health. Our solution was an application focusing on dealing with anxiety and stress using the AR-headset HoloLens 2, by providing guidance in exercises that lower stress and improve body awareness. The exercises implemented are a breathing exercise and a muscle relaxation exercise. In addition to the exercises there are also relaxing ambience sounds that you can choose between to supplement the exercises. Both exercises also come with the option to deeply customize the exercise for the user's needs.

## Top priorities

The biggest priority of our project was to deliver a relaxing experience without making it too much of a hassle to use. The menu is meant to be simple to use, whilst still giving the user enough options to be able customize the application to their need. The exercises were also made to be simple and self explanatory. Instead of using high frequency data like numbers to show timers, simple animations and shaders were used instead. This helped to keep the exercise decluttered, making it easier for the user to learn how to perform the exercise, as well as making the exercise more efficient by letting the user keep their focus on only one thing.

## What went right?

After getting the “Unity-to-HoloLens” pipeline working, the MRTK (Mixed Reality Tool Kit) by Microsoft for Unity made the implementation of the program quite easy, since all the hand tracking and button interaction was already handled out of the box. All we had to do was to place the buttons in the scene and to script what the buttons were supposed to do.

Using shaders and animation rather than text and timers was a good choice for our use case, since it could bring intuition without disturbing the atmosphere of calm that the exercises aim to provide.

Considering the distribution of work and project planning, the basic initial UML-plan allowed all developers to start working independently in the very beginning of the project and thus get a working prototype working fairly quickly. At the later stages of the project, rigorous planning was less applicable since we were faced with lots of feedback from both the project owner and peers. In that stage distribution of work was more important than planning the actual implementation, which was possible thanks to having a common base project.

## What went wrong?

For being such a short project, there were lots of problems that arose. As we didn’t have a lot of time, we were quite stressed to get the project setup and working. Already here we encountered difficulties. As we didn’t have any previous experience with the Hololens 2 headset, we didn’t really know what our workspace would look like and it was hard to assess the scope of the project.

The first big issue we ran into was how to build and deploy the application onto the HoloLens 2. There were guides online on how to do it, but a lot of them were incomplete or assumed we had tools already installed on our computers. This led to us having to redo and retrace our steps several times to find a solution. This meant we lost a lot of valuable time.

This loss of time also led to less time to acquaint ourselves with the Hololens headset. Leading to our project not utilizing the headsets unique features.

Another issue we had was syncing the files with github. Since we had a lot of addons added to our project for the Mixed Reality Tool Kit, github wouldn’t accept our upload due to file size restrictions. We solved this issue by excluding the MRTK library and instead downloading it manually on each computer.

## Lessons learned

Having a basic software architecture plan (like UML class diagrams) in the beginning to get a common project base up and running as soon as possible is a good idea for productivity and efficiency. When the base is done, centralized architectural planning is less of a vital component in the development process and individual developers can instead come up with their own solutions along the way, as long as they build upon the common base.