Enhanced Experience at the Museum with iBeacons
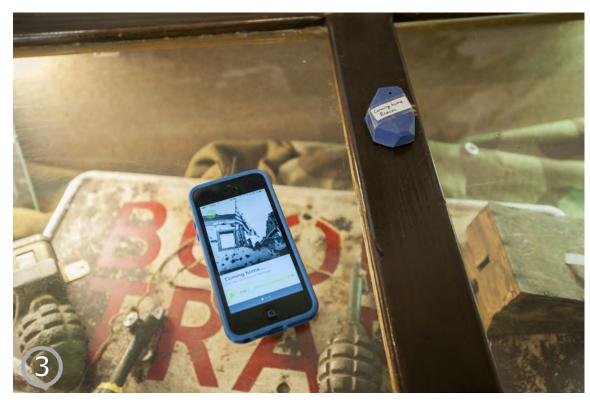

An *Estimote*-iBeacon and the app prototype on screen, displaying quotes against war if no info-point is within proximity.

Abstract

The main goal of the work is to see, whether it is possible to enhance the visitor's experience at the museum by using a smart-phone as multi-medial guide with location-based display of content. The iBeacons create the link between physical exhibition and virtual app and are the automated trigger of events in the app.

To find answers to the resulting questions considering the usability, user interaction and technical feasibility of the concept, an app prototype for iOS was developed, which was put to use in different usability and user experience tests on location at the Museum of the Battle of the Bulge in Clervaux, Luxembourg. The results and observations were analysed in order to improve the app and evaluate the overall verdicts and validity of the work.

The tests showed, that the iBeacons, even in difficult situations like in the small museum in Clervaux, worked very well and precise. However, it is necessary to adapt the app to the needs of the user, as the visitor has to focus on both the app and the exhibits. The overall usability first had to be improved in order to determine a really enhanced experience at the museum.
The creative possibilities iBeacons offer in the context of the museum are endless. But the technology and resulting user interaction are still very unknown, therefore the user needs some time to get familiar with the location-based approach.

Special Focus

The user will probably come into contact with iBeacon functionality the first time visiting the museum. As a consequence, the visitor will not know how the app works. As we are accustomed to use our visual user interface on the smart-phone to complete tasks, it was hard for the test persons to understand that no immediate interaction was required in order to display the info-point content. A short welcome message in the first UX tests simply was not enough to explain the basic functionality of the app. Although, after the first two info-points, almost every test user understood the location based automation the app was based on, the first moments while starting the app need to be as comprehensible and user-freindly as possible in order to create an overall positive user experience and make the user feel more secure.

Another focus was the optimasation of the usability of app and concept. As the user has to concentrate on both exhibtion and the device in his/her hands, it was important to constantly improve the usability, to prevent that the app creates too much distraction. Observations proved, that many UI elements were not seen by the users. Therefore, a reduction to simple, well-known components like scroll views as well as a complete automated playback of audio and video files improved overall satisfaction and effectiveness.

The different types of content screens in the app:
1) Video animations explaning troop movements during the Battle of the Bulge.
2) The base screen, at display when no info-point is within range
3) Audio-guide screen with additional content like pictures and text.
4) 3D objects that can be rotated, with descriptive text.

Result and Future Work

The main goal, of enhancing the experience at the museum was accomplished with some minor deviations. The iBeacons proved to be working very reliable and precise throughout all the tests, especially taking into account the limited space in the museum. The app proved to be a great companion and extension of the museum's exhibition, although at some info-points a profound correlation of app content and exhibits was missing. Nonetheless, the link between physical exhibtion and virtual app content that the iBeacons made possible is a significant opportunity for museums.

For the future use at the *Museum of the Battle of the Bulge*, a few improvements have to be made. First of all, a free wifi network is needed in all the rooms. Secondly, the storage of content, like videos, audio and images should be transfered to the cloud. This reduces the size of the app binary drastically and makes updates of content much easier.
A next step will be, to create a new concept for the entire museum. Creating new, exciting info-points, with the focus on building up a perfect symbiosis of app and exhibition can further enhance the user's experience.
Also, other platforms have to be taken into account, like Android. Even smart-watches could be targeted devices for the playback of audio-guide content. An additional big improvement will be the translation into different languages, making it possible to adress tourists and natives with the app.

1) The castle of Clervaux, in which the museum is located.
2) A starterpack of three *Estimote* iBeacons.
3) The first app version tested on location at the museum.
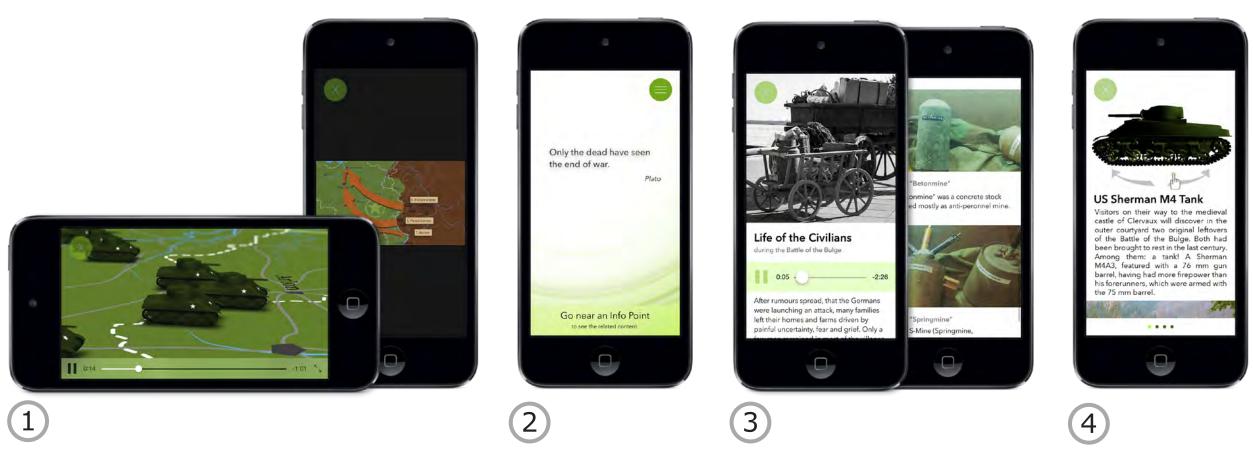4) A notification near an info-point in the museum.

Hochschule Augsburg University of Applied Sciences

www.mobile-experience.de