



Proceedings

SY12.02 | eLearning

DEVELOPMENT OF AN ANDROID BASED INTERACTIVE GUIDE FOR THE BERLINER MEDIZINHISTORISCHES MUSEUM DER CHARITÉ

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Introduction/ Background

Pathology is the science of diseases that ranges from macroscopic to histologic, and of course molecular changes. To offer a holistic education we wanted to involve portable electronic devices to combine information on diseases with microscopic changes and formalin fixed organs (macroscopic preparation).

Aims

At the time of compilation of this application there was no alternative, useful solution that offers the possibility of extensions towards virtual microscopy. Moreover, other solutions always use fixed databases or do not provide tools for content updates. Hence, it was required to create an appropriate system. Additional aimed feature are high performance, data-caching and the option to use the app in offline mode without a network connection. By the reason of the large amount of smartphone and tablet computer that runs the Android operating system and cheaper devices this platform was used.

Methods

We combined our virtual microscope „AndroScope“ [1] with a new developed user-interface of the „Berliner Medizinhistorisches Museum“ (BMM) for android based mobile devices such as smartphone and tablet computer. As content we used images of the exhibition samples, information on the corresponding organ and disease, as well as the epidemiology data and whole slide images for visualization of histological changes. Linkage of digital content and samples is realized using QR-codes to assure valid and user-friendly recognition. We have also evaluated other technologies such as NFC, Bluetooth, WiFi or GPS to ensure that the QR-Code solution is the best option [2]. The application offers an online mode with full functionality and an offline mode with limited access to images as well as to the virtual microscope. The application main database is stored local on the android device and online update capabilities were added.

Results

The “BMM Guide” is available for all visitors of the museum on lendable devices or for students (professional audience) using their personal devices and installing the application manually via the web-access eduroam. The guide is connected to the internet. It is designed to easily expand, update or transfer the content catalogue data. At the moment there is a connection between the exhibit and text-, image-, video- or virtual microscope content via QR-Code. The offline mode is limited to the connection between text content and the exhibit. We also implemented a multi-language support for English and German. The application has information like room plans, opening times and latest news of the museum. The museum guide is an easy handable, selfexplaining blended learning tool that can be embedded in the general education. This guide for the exhibitions of the Berliner Medizinhistorisches Museum opens a new branch for self-study of students. Nevertheless he still has a potential to be integrated in curricular lectures in the future.

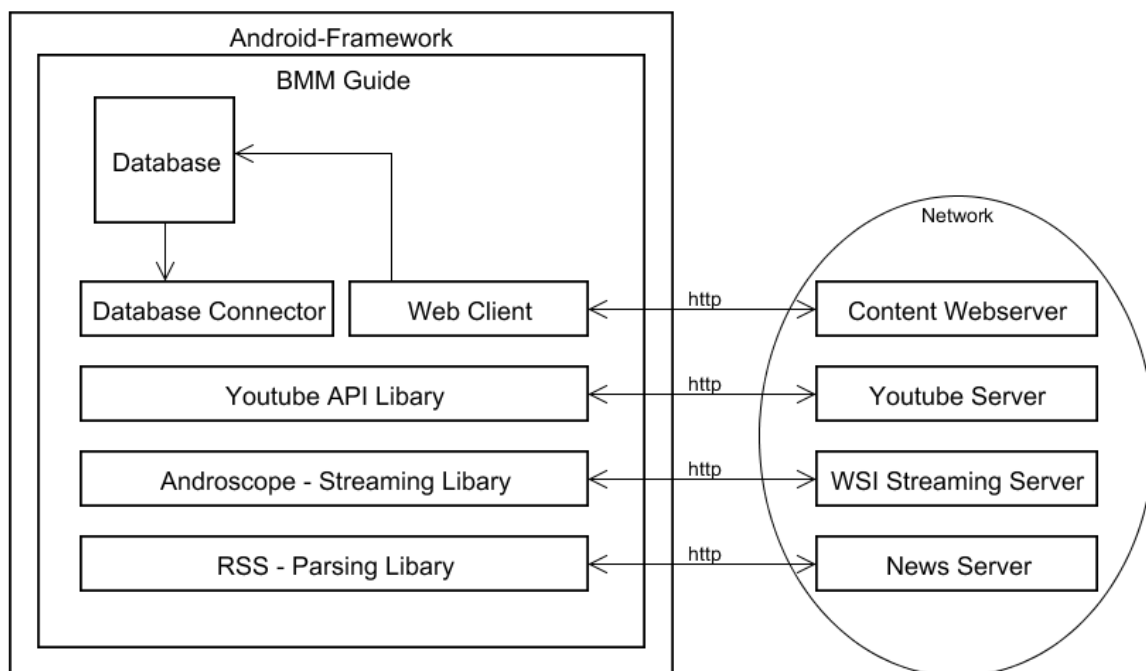


Figure 1.

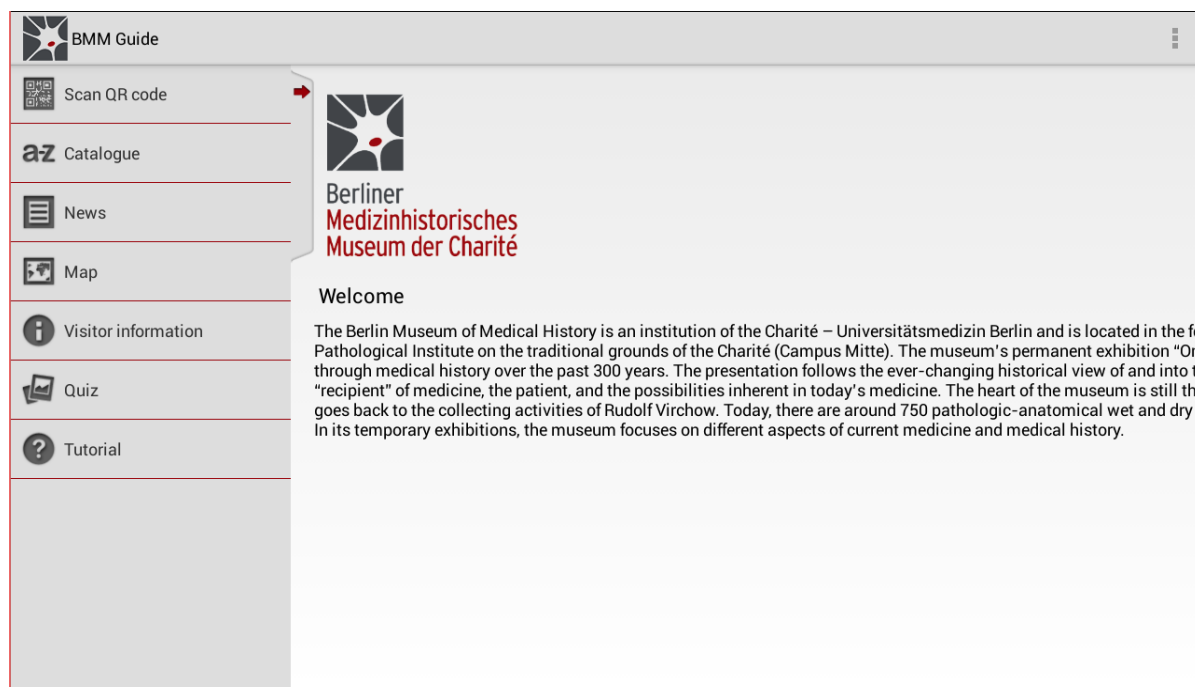


Figure 2.

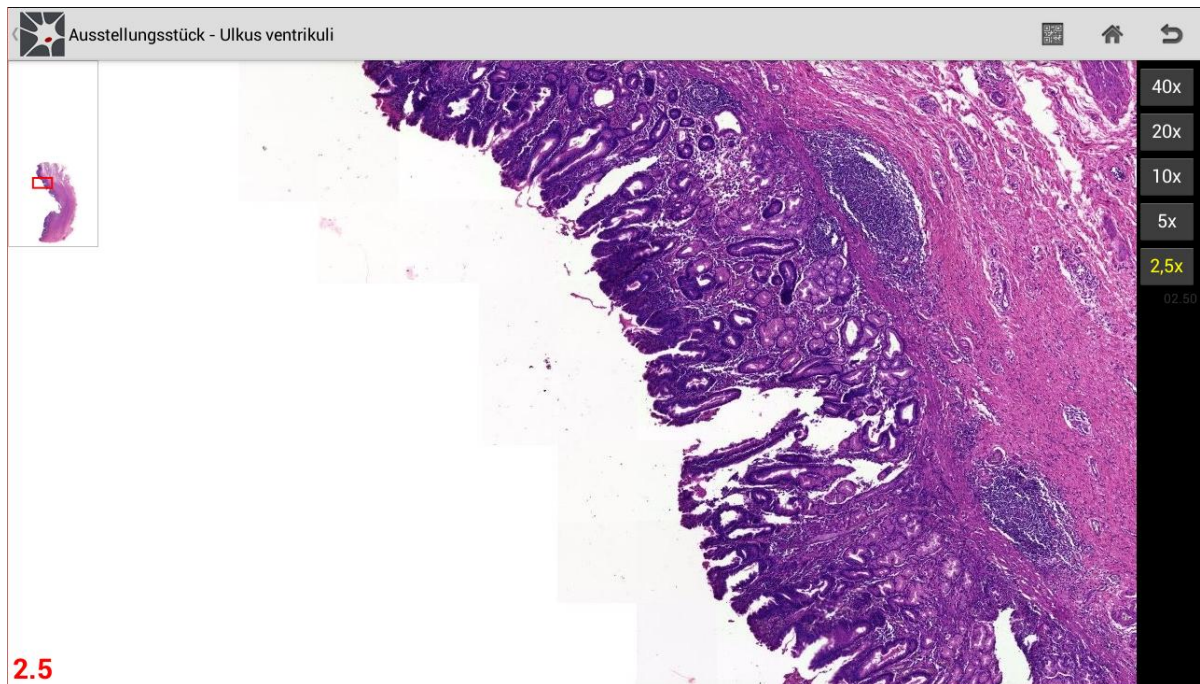


Figure 3.

References:

- [1] Stewart, P., *Konzeption und Entwicklung eines multitouchbasierten virtuellen Mikroskops mit Navigationsunterstützung*, University for Applied Sciences, HTW Berlin, Bachelor Thesis, 2012.
- [2] Arndt, T., *Entwicklung eines Android-basierten interaktiven Museumsguide für das Berliner Medizinhistorische Museum der Charité*, University for Applied Sciences, HTW Berlin, Bachelor Thesis, 2014.