Ani Jordanowa *Master Thesis 2014*

Cross-platform development of an exhibition guide

Schaezlerpalais App as auxiliary exhibition guide

Abstract

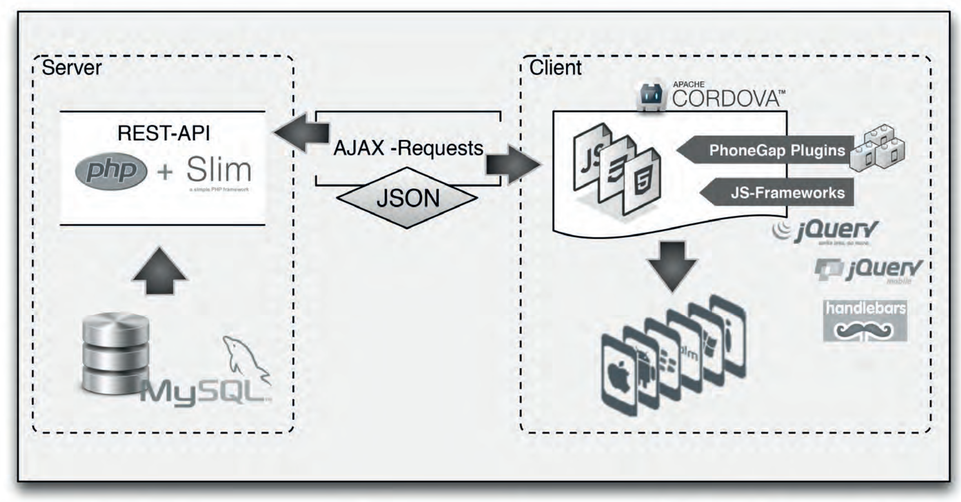
In the field of mobile applications, where there is currently such a growth of variety of function, the options for interactivity with a vast range of aspects of everyday life are growing, too. To take as an example the use of smartphone apps in museums and art galleries as a new opportunity to make the "attraction" even more attractive, the crux is to keep investment costs down while reaching as large a target customer group as possible.

Hence, the cross-platform app development based on web technologies represents an obvious solution for that. The method can vastly reduce development costs while providing almost the same degree of functionality as does a native app, without excluding any user groups reliant on a particular mobile platform. However, this type of development procedure does harbour certain limitations in view of the complexity of the application being created and particular care must be taken with various aspects, among them the graphical user interface, the data management and the performance.

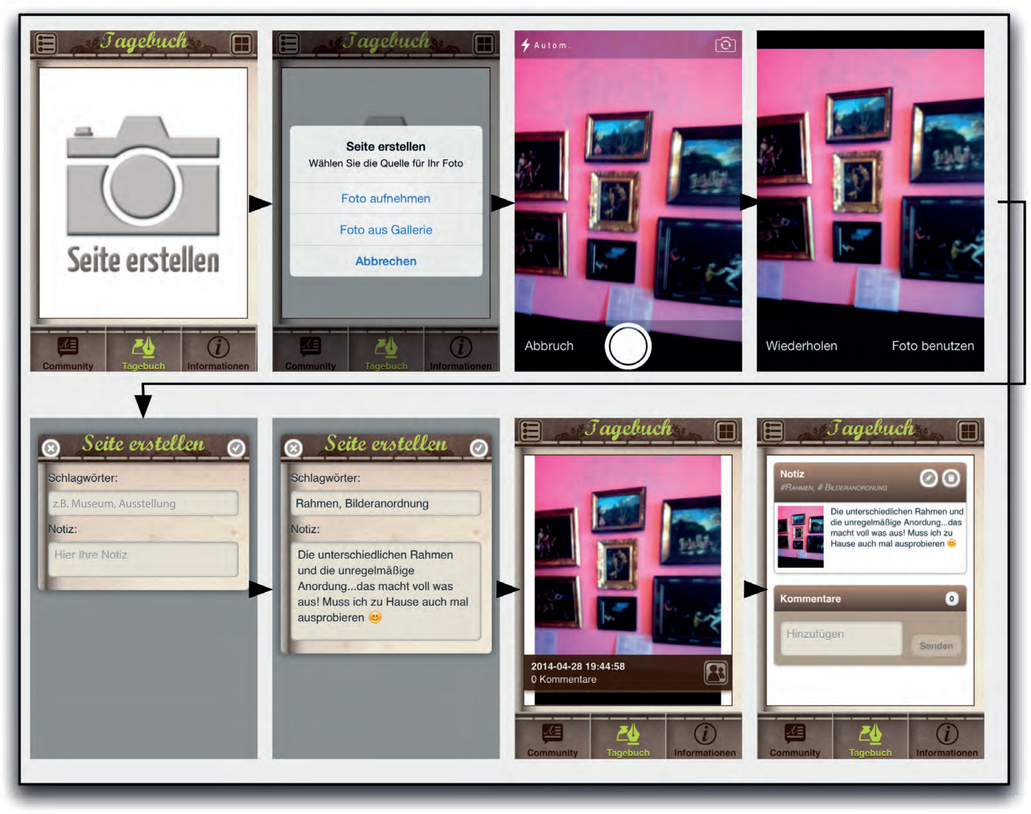
Special Focus

This master thesis is therefore concerned with the production of a guideline for the cross-platform development of a hybrid Web app and evaluation of how it measures up to current situational, but above all technical, demands. The specific exemplary situation considered is the *Schaezlerpalais* in Augsburg, Germany, and the focus is on exploring how well cross-platform development is currently performing and finding out the reasons for existing problems, especially those involved in the interplay of the technology types used in the process.

The first part of the thesis thus deals with the successive stage-by-stage implementation of an initial prototype for the *Schaezlerpalais App* which was planned at the beginning in collaboration with the Augsburg art-gallery and museum association, *Verband für Kunstsammlungen und Museen Augsburg*. With the specifications agreed as content basis and using Phonegap as the cross-platform framework, the core aspects implemented are investigated. They are, inter alia, dynamic page creation which includes photography, the captioning and sharing of user-generated content, the server-side organisation of the data and the general structuring of the app. So, with the aid of the prototype and the list of individual development steps, there is an examination of the limits of cross-platform development and additional work necessary at times if it is to be employed successfully.



System architecture of the prototype and target platforms



Dynamic page creation including photography

Results and Future Work

The results reveal that cross-platform development causes in many cases much more cost- and resource-intensive effort when the app is complex, involving mainly dynamic content. Contrary to the "Write Once, Run Anywhere" slogan, it is demonstrated that the principle for the developer will be "Write Once, Debug Everywhere" and that the struggle with bottlenecks and browser fragmentation continues unabated. Especially in the attempt to mimic the familiar look and feel of a native interface, serious problems emerge which are usually only remediable by means of clumsy workarounds. In addition, it can be seen that the challenge represented by a variety of browser support types is to a certain extent also present in cross-platform development, so that separate treatment of the individual platforms and use of additional technologies will often be required. Here it must also be said that any interactions between the different technical approaches are clearly very much dependent on the architecture that has been selected.

Despite these difficulties, it can be predicted that the future trend in development will, more and more, be towards web and hybrid apps, if only because of the lower development costs. The indications are to be found both in the huge number of frameworks and tools and in the technologies which are being continuously improved or further developed at ever shorter intervals. As mobile end-user devices are modernised and fragmentation of individual platforms is consistently counteracted, the cross-platform concept will march on into many fields of app development.

Hochschule Augsburg University of Applied Sciences

Contact
ani.jordanowa@gmail.com

Supervisor
Prof. KP Ludwig John

www.mobile-experience.de