WHU – Otto Beisheim School of Management

**Assignment #3**

**Offline mode and push notifications in a webapp**

Software development for startup entrepreneurs

BSc 2014

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Your boss believes that the Polls app should be extended or migrated to work as a web app (possibly smartphone app) in offline mode (i.e., allow for useful functionality when occasionally offline) and to make good use of a push notification service (for the good of the polls functionality). Regardless of what you think of your boss' expectation, you are tasked to explain at a conceptual and superficial technical level how exactly the Polls app could be transformed accordingly. Here are some possible questions you may want to address:

a) What is offline mode overall?

The offline mode is useful to enable customers to use certain services even without internet connection. Generally speaking we talk about the offline mode if an application or service normally is used online, but can be used also without Internet connection by saving data to your mobile device.

To make applications run offline, tree technologies can be really helpful. The HTML5 Application Cache, Web Storage and WebSQL Databases. Those technologies are nowadays supported by all major players of mobile operating systems like Android, iOS and Opera.

The rapid development of web applications was partially slowed down, by the problematic of the constant need of an Internet connection. But this isn´t a problem any longer as the above mentioned technologies give us the possibility to run a web app completely offline.

This is really helpful as there are many situations in which we could loose Internet connection. There could be a power outage, router failure or just a bad connection due to a remote location.

<http://www.wisegeek.com/what-is-offline-mode.htm>

https://developer.mozilla.org/en-US/Apps/Build/Offline

<http://www.sitepoint.com/creating-offline-html5-apps-with-appcache/>

<http://dev.w3.org/html5/offline-webapps/>

<http://blog.codinghorror.com/does-offline-mode-still-matter/>

http://dev.opera.com/articles/offline-web-apps/

Implications Poll App:

*Advantages:*

    - always have results with you

    - sharing of data, with people without access to the polls App

    - data collection is possible even without connection (offline mode with possibility to vote offline)

*Disadvantages:*

    - data isn´t always up to date

    - danger of abusing the offline mode to change the poll

b) What are push notifications overall?

In general, push technologies are a way of communicating, where the server or publisher contacts the user instead of the other way around. Push technologies are not only used in the form of push notifications for smartphone apps, but e.g. also for instant messaging and email.

Push notifications in special are used by apps to inform the user about updates, messages, and other events. For example, one can get a notification from an app every time his or her favourite sports team wins a game. The users themselves can decide whether they want to receive push notifications by a certain app and in most cases also what kind of notifications they want to get. There are different types of notifications: sound, onscreen alert, and badge.

Push notifications enable app designers to increase the number of active users, as studies have shown that user activity increases significantly after the introduction of push notifications for an app. Therefore, it gets increasingly important for app designers to develop the right push notification strategy in terms of timing, content, etc.

Pictures:

<http://blog.nimbuzz.com/files/2009/08/nimbuzz-push-notification.jpg>

<http://www.kammerath.net/img/iPhone-Push-Notification-Tagesschau.jpg>

<http://www.mobileapp-development.com/media/51575/iphone_push_apps.jpg>

c) How could these concepts be usefully (?) used within the Polls app?

Offline Mode

The use and need for an offline Mode for a Poll App is rather questionable. Even though you could take polls offline while you are on the run for proper and convincing outcomes you would have to sync the App with an online server. Thus an offline mode can be useful for the collection of data offline but finally the data has to be collected centrally somewhere to collect a significant amount of data points.

Another option that would at least make an offline mode half reasonable would be for local polls in an enclosed area. This would mean though that the poll app could only be installed to one device, which would have to be used throughout the whole data collection process. As mentioned this would be useful for polls in closed areas where all participants can be “forced” to vote on only one device. For any larger data collection a pure offline mode would be rather restricting.

Push-Notification

Push Notifications would be extremely useful for keeping the polltakers up-to-date on the progress of the poll. Anyone who takes part in a poll is interested in the outcome both to see the newest trends and also to check if his opinion is aligned with those of the others. Of course an update for every new answer would be way to much data produced and the actual use for that would not be beneficial for the people using the app. Still it would be reasonable to at least give an update once or twice a day. Additionally you could add the updating option via push as optional feature as some people might not want to be bothered by frequent updates from our poll app.

Another intelligent feature that would be realizable through push notifications would be an updating function for users as soon as the main server initiates new polls. In order to have frequent and enough participants for a poll this would be a really nice future which would be on the one hand convenient for the user as he does not have to bother checking every time but is notified as soon as new polls are available and on the other hand this feature would generate sufficient data points for the people initiating the polls.

d) What technologies/languages could be used for the Polls app?

Depending on the platform of the mobile application there are a number of tools, developers can write, test and deploy applications into the target platform environment (a complete list of applications can be found at the following website <http://en.wikipedia.org/wiki/Mobile_application_development>). When deciding which platform to use it is recommended to take a look at the target mobile platforms, the application should run at, the existing infrastructure and the development skills of the developer. Moreover, recent surveys reveal a strong correlation between application performance and user satisfaction so this should be included in the decision as well.

Though there are numerous opportunities, one should prefer a technology/programming language that uses almost the same code that will run on all versions. Therefore, the most common used languages are definitely HTML 5, CSS and JavaScript. They are supported by all modern smartphones or similar devices. In contrast to this, there are also a number of so-called native apps which are stuck to only certain devices.

Since the aim of our poll app is to reach as many participants and thus, generate as many answers as possible, our aim should be to enable as many people to participate. This can be achieved by using a language supported by as many as possible devices.

Thus, our recommendation is to stick with the previously mentioned HTML 5, CSS and JavaScript.

<http://en.wikipedia.org/wiki/Mobile_application_development>

<http://www.webdeveloper.com/forum/showthread.php?285401-which-is-the-latest-tools-and-technologies-used-in-mobile-application-development>

<http://en.wikipedia.org/wiki/Push_technology>

<http://stackoverflow.com/questions/21764067/what-technologies-were-used-to-create-outlook-web-app-2013>

e) Does it make sense to change the architecture (the underlying technology pool) of the Polls app rather radically to get a true offline-enabled webapp with interesting push notifications?

To our mind, it does not make sense to change the architecture of a Polls app to get a true offline-enabled webapp since the effort put in into this does not pay off. Today, nearly everybody has continuous internet access and thus, can receive push notifications everytime. Moreover, the application is targeted at giving an overview of the current situation and therefore, an offline modus is not important.