**cell phone APPS**

3 types of cell phone apps:

1) **Native** runs on an operating system. Native applications are applications developed for a particular platform or device. Cell phone is just a piece of hardware that needs an operating system to work. It is a kind of general programme that is responsible for all operations and processes that are going on the phone.Examples: android, ios (iphone operating system). **And this operating system has an API** on it (vibrating, microphone, camera, location, calls,keyboard, speaker, touchscreen these are **low level APIs**) and because of this APIs apps can work with OS. In general you can`t remove these APIs. Theris high level API such as **calendar, browser, email, contacts**… The high level API can call a low level API or stand by itself. You can't go directly to the OS, you have to use APIs.

So theris OS is on the phone with APIs, and native APPs has **direct** access to the APIs of OS, therefore your native APP has to be specific to the OS, in other words an app for Android OS wouldn't work on IOS, because native APPs run on OS APIs.

2) **Web apps does not run directly on the OS !!! It runs in a browser**, you have the browser and in the browser is the app, the browser itself is an API (native), just like the APP is an API (web app). so it is limited by browser to whot API browser can call. Examples: YouTube, Google, Wikipedia ← all of them are web APPs, and can run in the browser they are made using HTML (maybe also CSS, JavaScript),HTML is what used to render the web page(отображает страницу). You only have to design the web APP once because HTML works in any browser the same, and browser is a native app for any OS, so we get the APP that works on any device does not matter what OS is on the phone it will run the same!!!

3) **Hybrid** - it has aspects of both, wich makes it hybrid. Theris 2 ways how it works. #1 You have cell phone browser, and a web APP in the browser and browser call the API in OS. #2 You have the web APP which call browser, browser call something that is called middleware and it call API of OS. So you have access to the API through middleware.

**COMPARISON**

which one has the best:

-quality: native (it has best performance)

-speed: native (because it has direct access to OS, there is no browser to go through to get to OS APIs)

-cost (the least cost): **web app**, because you have to create it once.

-ability to download app: native or hybrid.

Obviously the native app are more preferred, but the problem is that it cost a lott not only in terms of money but in terms of time - 140.000 a team of developers over four month to create a basic native app. The web APP is the easiest way of creating an APP. You can work on it alone.

In the other hand people don't want to download web APPs, for a different reasons:busy, to mach APPs already… .