Important

- ING DiBa – Meeting to answer questions: Tuesday 22nd November room will be announced latest on Monday (by eMail)

- Submission Phase I via eMail to: dc-ws1617@dbis.cs.uni-frankfurt.de
  Deadline: Friday 25th November (12pm - Berlin time)
  Report and Slides!
Mobile Application Development

Web Business B-WB, M-WB, PoE, M-SIW-I1A, M-SIW-I1B

Frankfurt Big Data Lab
understanding and applying technologies for Big Data
Type of Mobile Application

1. Native application
   • Android, iOS, Window...
2. Hybrid application
   • PhoneGap, Corona, Titanium...
3. Web application

<table>
<thead>
<tr>
<th></th>
<th>Device Access</th>
<th>Speed</th>
<th>Development Cost</th>
<th>App Store</th>
<th>Approval Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native</td>
<td>Full</td>
<td>Very Fast</td>
<td>Expensive</td>
<td>Available</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Hybrid</td>
<td>Full</td>
<td>Fast as Native</td>
<td>Reasonable</td>
<td>Available</td>
<td>Low Overhead</td>
</tr>
<tr>
<td>Web</td>
<td>Partial</td>
<td>Fast</td>
<td>Reasonable</td>
<td>Not Available</td>
<td>None</td>
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</tbody>
</table>

http://www.slideshare.net/AllanHuang/mobile-web-phone-gap
PhoneGap is an open source framework that builds mobile apps.

PhoneGap is running on the top of Apache Cordova.

Four main features:

1. **Web technology** (HTML, CSS and JavaScript) is used.
2. **Cross platform** allows you to build cross-platform apps.
3. **Native functionality** gives you access to all of the native device APIs (camera, GPS, accelerometer and more), so that the app behaves just like a native app.
4. **Open source** means it is free and it allows you to have great community support.
Architecture in High-Level

- **Client**
  - Application acts as a client for the user
  - Client does not talk directly to a database
  - Client communicates with an application server to receive data

- **Application server**
  - It is a web server (Apache, IIS, etc…)
  - Languages are ColdFusion, Java, PHP, etc…
  - It handles business logic
  - It communicates with a database

- **Data**
  - Data are assigned in HTML DOM
  - Variables are kept in memory

- **Database / Third party APIs**
  - The format of data is JSON or XML
  - Data are retrieved from database or 3rd party APIs

http://phonegap.com/blog/2012/05/02/phonegap-explained-visually/
Architecture in detail

- Communication between the different layers
  - Hardware can be accessed via JavaScript OS APIs
  - Plug-ins can interact with OS and WebView
  - WebView can communicate directly to the OS
- Developer is able to write and use own plugins

https://github.com/notiontaxi/phonegap-trial
Plugins

- Battery Status
- Camera
- Contacts
- Dialogs (notification)
- Geolocation
- InAppBrowser
- Vibration
- SQLite
- And more... (473 Plugins are available)
Third Party APIs

- With API, a machine can communicate with another machine
- Popular APIs: Google Translate, Google Map, Twitter, Facebook, LinkedIn and more
Demo

1. Install PhoneGap desktop application
   - PhoneGap CLI for those who prefer a command line interface
2. Create an app
3. Preview the app
   - Preview in a desktop browser
   - Preview on a device (need to install mobile app)
4. Build(Package) it
Tutorials and Documents

- [http://docs.phonegap.com/tutorials/](http://docs.phonegap.com/tutorials/)
- [https://www.tutorialspoint.com/phonegap/index.htm](https://www.tutorialspoint.com/phonegap/index.htm)
Appendix – Native Mobile App

- **Tutorials and Documents**
  - [CSE 5236: Mobile Application Development](#)
  - [Getting started with Android Apps](#)
  - [MOBILE APPLICATION DEVELOPMENT COURSE](#)
  - [Building Mobile Applications](#)
  - [Developing Android Apps by Google](#) (udacity)
  - [Programming Mobile Applications for Android Handheld Systems](#) (coursera)

- **Development Tools**
  - [Android Developer Tools (ADT)](#) & [Android Studio](#)
  - [Xcode IDE (iOS)](#)
  - [Visual Studio (Windows)](#)
  - [Xamarin Platform](#) (cross platform)
  - [More IDEs](#)
Question?
DESCRIPTION (PDF, max. 2000 words) content structure:

- Team description mandatory
- Market Research & Needs to be met max. 10 / threshold 4
- Idea / Solution / Innovation max. 10 / threshold 6
- Data Sets max. 10 / threshold 6
- Technologies max. 10 / threshold 6
- Ethical, Legal and Risk issues max. 10 / threshold 4
- Validation / Test plan for Phase II max. 10 / threshold 6

Sum max. 60 / threshold 40
Phase 1- Evaluation Criteria (1)

**How Innovative is your idea?**
- How does it differ from existing solutions?
- How did you perform the market research?

**How useful is your idea? Does it solve a real need?**
- How did you capture the customer requirements/needs?
- How did you identify who are the main stakeholders in this challenge and how do you plan to involve them?
- What is the value added and benefits that your idea bring?
- Who should profit from your ideas?
- What are the possible limitations and risks that your idea is not useful in practice?

**How do you intend to interact with the customers?**
- How do you envisage the user will be using your suggested solution?
- What kind of “dialog” do you expect with the user? (human and/or machine-based interactions and services?)
- What possible issues do you expect with users when using your solution?
Phase 1- Evaluation Criteria (2)

**How do you plan to find and use the Data Sets?**
- How and why did you choose some specific external data sets?
- Did you study the terms of use of the proposed data sets?
- What do you plan to do with the data sets in Phase II?
- What are the implications for the customers if you use these data sets?

**What is the motivation to use technologies, and how you intend to use them?**
- What is the rational for you to choose specific technologies? Which ones?
- How do you intend to use them in phase II?
- What specific problems do you plan to solve with the chosen technologies?
- What is your expertise with such technologies?

**What are the Legal and Ethical implications of your ideas?**
- How did you verify that your proposed solution is sound from a legal view point?
- How did you consider the Ethical consequences of your proposed solution?
- How did you verify that your idea is conformant with current Policy?

**How do you plan to test if your idea works in practice?**
- What do you expect to show/demonstrate at the end of the project?
- What is the implementation plan do you intend to use?
- What are the possible risks and remedy to such risk you intend to do?