## 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 !

GOETHE UNIVERSITÄT FRANKFURT AM MAIN

# 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

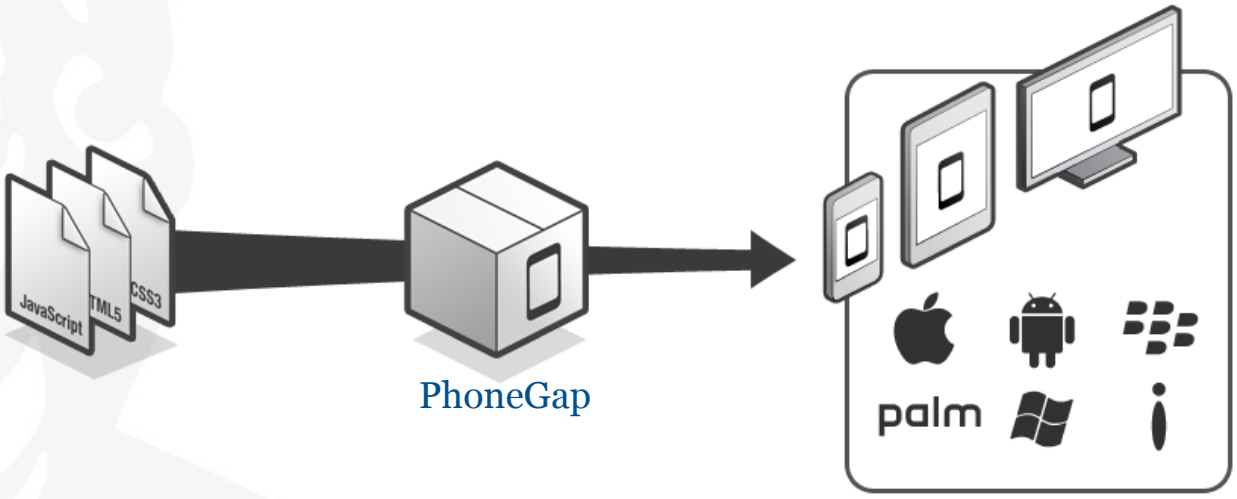
1. Native application
   - Android, iOS, Window...
2. Hybrid application
   - PhoneGap, Corona, Titanium...
3. Web application

| | Device Access | Speed | Development Cost | App Store | Approval Process |
|---|---|---|---|---|---|
| **Native** | Full | Very Fast | Expensive | Available | Mandatory |
| **Hybrid** | Full | Fast as Native | Reasonable | Available | Low Overhead |
| **Web** | Partial | Fast | Reasonable | Not Available | None |

http://www.slideshare.net/AllanHuang/mobile-web-phone-gap

# Adobe PhoneGap

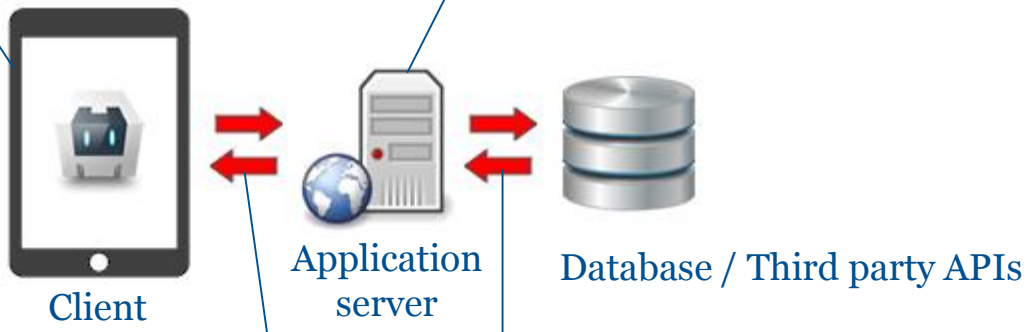
- PhoneGap is a open source framework that builds mobile apps
- PhoneGap is running on the top of Apache Cordova
- Four main features
  1. **Web technology** (HTML, CSS and JavaScript) is used
  2. **Cross platform** allows you build cross-platform apps
  3. **Native functionality** gives you access 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



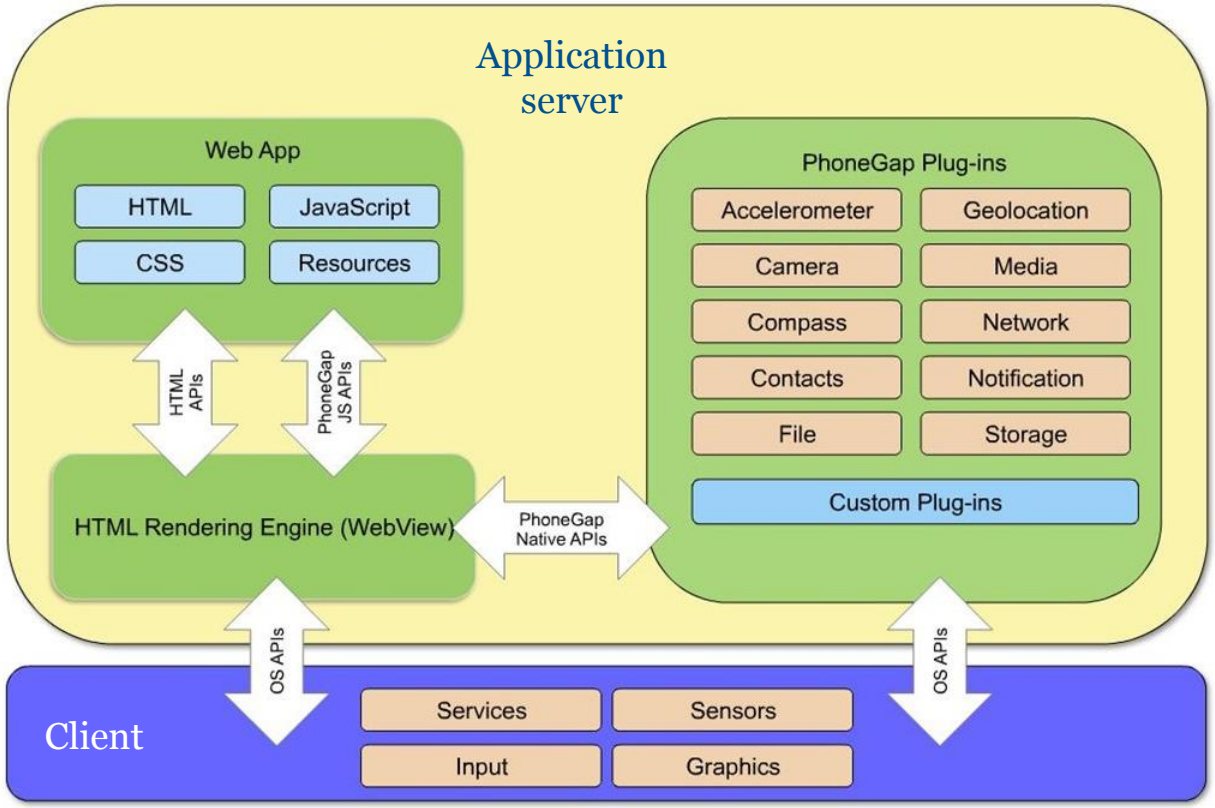

- Data are assigned in HTML DOM
- Variables are kept in memory

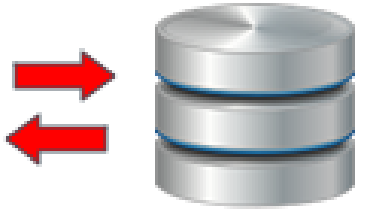
- The format of data is JSON or XML
- Data are retrieved from database or 3rd party APIs

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



Database / Third party APIs

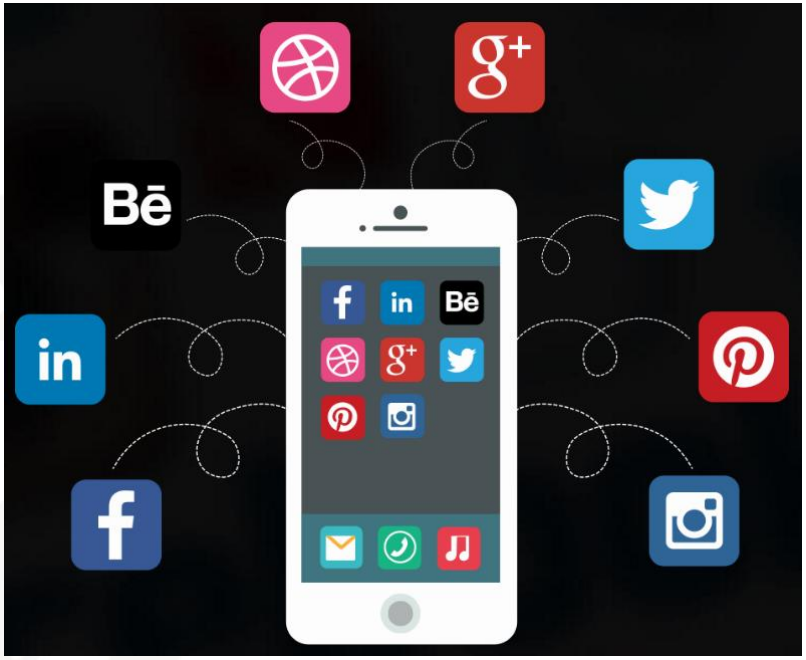
https://github.com/notiontaxi/phonegap-trial

## 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



https://www.spaceotechnologies.com/api-first-design-dawn-of-new-era-in-app-development/

## 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/
- https://cordova.apache.org/docs/en/3.1.0/guide/overview/index.html
- 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?