# Chapter 1

# Introduction

The first section, Motivation 1.1, of this chapter gives a motivation for the research. Explaining why the research and in which context this is relevant. Thereafter the problem formulation 1.2 section is stated which describes the problem that is researched«. In the Problem formulation section the scope of the study and the development goals are also stated. Development goals describes development goals that are important to make the research result applicable». The following section Contribution statement 1.3 contains the contribution to the research made by the researchers. The section also describes the knowledge gained by this research. Lastly the section Report organization 1.4 explains what the following chapters contain and how they fit together.

## 1.1   Motivation

A web application has a lot of advantages compared to mobile applications. They run on all plattforms, have instant updates and are simple to maintain [5]. However, a web application can't access some native mobile features, such as the mobile's accelorometer. A company who want to access such native features need to develop a mobile application. Developing a mobile application can be very expensive. Small to medium sized project for an Android mobile is estimated to cost from 20 000 - 40 000 dollars [3].

If a company has a web application they can choose to develop a mobile application from the ground up. The users activity in the mobile and web application can be synchronized with the use of the same back-end, see figure ??. Development time will be spent on:
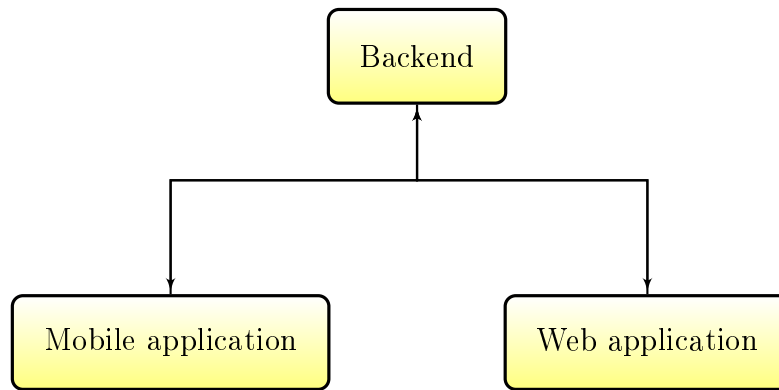
**Figure 1.1:** Seperate mobile and web application connected with a common backend.
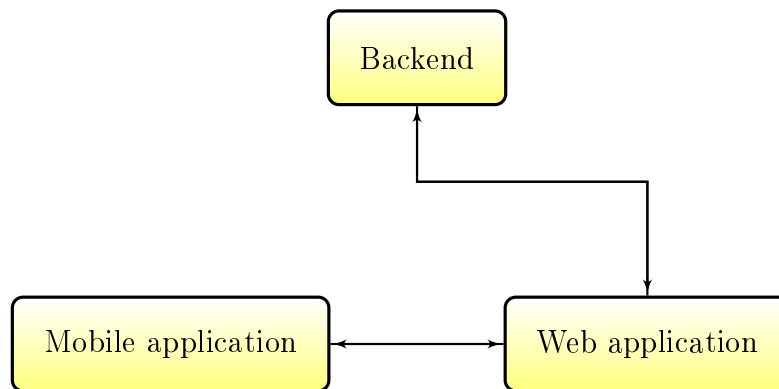
**Figure 1.2:** Seperate mobile and web application connected with a common backend.

- Developing a new mobile application.

- Maintaining the mobile and web application.

- Restructuring the web application back-end to a common back-end for the mobile and web application.

Another alternative, is to create a mobile application using the existing web application. The web application is run within a shell of the mobile application, see figure ??. The web application can then access the mobile's native functions. This means that the web application back-end does not need to be modified and instead of maintaining several platforms for every feature the mobile application only need to be maintained in regards of the use of the native functions.

There are a number of researches of developing a mobile application using different methods. The researches focuses on aspects such as cost, effort and advantages and disadvantages for developing an entirely new mobile application. However, it is very hard to find research on extending an existing web application with mobile native features.

# 1.2 Problem formulation

It can be very expensive for companies or organizations to develop a mobile application [3]. To investigate an alternative to develop an mobile application from the ground up is therefore interesting. What is the advantages and disadvantages for two different development methods for encapsulating an existing web application in a mobile application to utilize native functions? An example of such a native function would be accessing the mobile's accelerometer. The advantages and disadvantages will be evaluated by looking at development effort and how the code can be structured in the mobile and web application.

## 1.2.1 Scope

To limit the scope of the research the development methods is only evaluted for the mobile operating system Android. Android was choosen since it has a market share of 80.7% of all smartphone sales **??**.

The development methods that is researched is the PhoneGap framework and developing with the Android SDK. The methods will be evaluated and compared from a developers perspective. It is assumed that there is an existing web application and that there is a need/or desire to extend the functionality of it's web-application with native functions.

## 1.2.2 Development goals

Antoher goal is that the mobile application only provides data from native functions. In order to achieve that the web application and mobile application should have a master slave relationship. Where the web application acts as the master and the mobile application as the slave. To get data from the mobiles native functions the web application asks for the data and the mobile application passes the data back.

To enable this master and slave relationship the mobile and web application layer must be able to communicate. Passing commands and data between the layers. It is important the mobile and web application layers has a way of communicating that is developer friendly.

It is important that the logic of the web application can be written in a general way (non-platform dependant) adapting to the device accessing the web application. So that the same web application code is used for the web application and mobile application.

# 1.3 Contribution statement

Throughout this work we have been working together very closely. We have reviewed and improved each others work continuously. During development we often been pair programming. With that said we can attribute parts of our work to one of us more then the other. Even though most of the work has been created together.

Philip designed the code of the web application and the mobile application built natively in Android. David designed the code for the PhoneGap application. David researched different techniques for the communication between the PhoneGap layer and the web application layer. David wrote the Approach section and Philip wrote the Introduction section in this paper.

# 1.4 Report organization

# Bibliography

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