

Master's Thesis



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Technical  
University  
in Prague

**F8**

Faculty of Information Technology  
Katedra teoretické informatiky

# Tablet infotainment system

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## / Declaration

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## Abstrakt / Abstract

Tento dokument je pouze pro potřeby testování.

This document is for testing purpose only.

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# Chapter 1

## Introduction

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### 1.1 Project

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#### 1.1.1 Motivation

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### 1.2 Assignment analysis

#### 1.2.1 Review existing Android applications for in-car use

One of the key approaches in research project is reviewing the existing progress in the given field. Reviewing existing applications helps understanding the topic, seeing the bigger picture, learning from mistakes of others and last but not least, getting general idea about competition.

#### 1.2.2 Review and analyse User Interface development methods for in-car infotainment applications

Cosidering the car environment, the user interface must deal with a lot of different problems than usual. This task should review existing User Interface development rules and apply them to the car environment, then analyse them and choose proper method for car-UI design process.

#### 1.2.3 Analyze the in-car OBD API and exported data

On-Board Diagnostics API is a standard API provided by modern cars for gathering various information from speed to engine temperature. This task focuses on understanding and gathering data from the OBD API.

#### 1.2.4 Design an application system architecture for accessing the OBD data and resources

Having the data from OBD and preparing an application for displaying them, designing proper architecture is required for everything to work well. The application has to gather data, while displaying them properly without unnecessary (FIX!) delay.

#### 1.2.5 Design a tablet User Interface for in-car use

After reviewing existing applications and UI development methods, the next goal is to create new User Interface for in-car use, while considering the constraints this environment puts on it.

### ■ 1.2.6 Design and implement in-car application offering the OBD data for Android tablet platform

With everything prepared and thought through, the application will be developed based on result from all the tasks accomplished so far. In this case, the Android platform will be used as explained later in the text.

### ■ 1.2.7 Perform UI and application testing and evaluate results

For best results the application must and will be tested. Both code and UI must be tested properly, using various testing approaches, such as unit tests or UI testing with real users in a car simulator.



# Chapter 2

## Analysis

### 2.1 Existing applications

#### 2.1.1 Applications

#### 2.1.2 Google AutoUI

### 2.2 Platforms

### 2.3 Android platform

#### 2.3.1 Architecture

#### 2.3.2 Specifics

### 2.4 GUI

#### 2.4.1 Basic principles

#### 2.4.2 Car UI differences

### 2.5 Server

#### 2.5.1 Functionality

#### 2.5.2 Data storage

#### 2.5.3 Communication

### 2.6 Development and support tools

#### 2.6.1 Development environment

#### 2.6.2 Quality Assurance tools

#### 2.6.3 Version system

#### 2.6.4 Test driven development

#### 2.6.5 Continuous integration



## Chapter 3

### Design



#### 3.1 Application architecture



##### 3.1.1 Extensibility



##### 3.1.2 Modularity



##### 3.1.3 Adaptability



##### 3.1.4 AutoUI preparation



##### 3.1.5 Platform limitations



#### 3.2 GUI



##### 3.2.1 Basic elements



##### 3.2.2 UI drafts

## Chapter 4

### Realization

#### 4.1 Preparation

##### 4.1.1 Environment

##### 4.1.2 Versioning

##### 4.1.3 Testing

##### 4.1.4 Scripting

#### 4.2 Core

##### 4.2.1 Core

##### 4.2.2 Data storage

##### 4.2.3 Communication

##### 4.2.4 Optimization

#### 4.3 Modularity

##### 4.3.1 Requirements

##### 4.3.2 Integration

#### 4.4 GUI

##### 4.4.1 Common elements

##### 4.4.2 Multiple designs

# Chapter 5

## Testing

### 5.1 Implementation

#### 5.1.1 Unit testing

#### 5.1.2 Integration testing

#### 5.1.3 System testing

#### 5.1.4 Qualification testing

### 5.2 GUI

#### 5.2.1 Heuristic testing

#### 5.2.2 Evaluation

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#### 5.2.3 Testing with users

#### 5.2.4 Simulator

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#### 5.2.5 Preparations

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#### 5.2.6 Course

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#### 5.2.7 Evaluation

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### 5.3 Summary



## Chapter 6

### Conclusion



#### 6.1 Assignment completion



#### 6.2 Project life cycle



##### 6.2.1 Present



##### 6.2.2 Future



#### 6.3 Summary