

**Höhere Technische Bundeslehranstalt Kaindorf an der Sulm**  
**Abteilung Informatik**

**Diplomarbeit**  
im Rahmen der Reife- und Diplomprüfung

# Königskarte



informatik

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5BHIF  
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Datum: MISSING DATE

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## Statutory declaration

I declare under oath that I have written the present diploma thesis independently and without outside help, have not used sources and aids other than those indicated and have identified the passages taken from the sources used literally and in terms of content as such.

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Ort, Datum

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Leon Edlinger

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Ort, Datum

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Paul Gigler

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Ort, Datum

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Andreas Weiszl

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# **Abstract**

Abstract in English

# **Kurzfassung**

Kurzfassung in Deutsch

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## Thanks

It would not have been possible to carry out this thesis to this extent without the active support of a number of people. We would therefore like to thank everyone who supported us in the implementation of this thesis.

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# 1 Introduction

## 1.1 Team

## 1.2 Motivation

# 2 Technologies

Development would not have been possible to implement without making use of many tools, frameworks and environments. In this chapter each tool used in the creation of our software will be described briefly.

## 2.1 LaTeX

Hier kommt eine Beschreibung zu Latex hin

## 2.2 Project Management

Hier kommt Text zum Project Management hin

### 2.2.1 Trello

Hallo, das ist Trello

### 2.2.2 Sharepoint

und das ein Text zu sharepoint, wieso eigentlich

### 2.2.3 Discord

und hier nochmal kurz Discord, kennt eh jeder

## 2.3 Frontend

### 2.3.1 Dart

Dart is a programming language initially designed for web development, with the goal, of replacing JavaScript, in mind. Today it gets used in a variety of software products, mainly



because of the flutter framework. It can be compiled for many platforms and architectures (ARM, x64, RISC-V, JavaScript or WebAssembly) and is loved for its combination of High-Level Features, with practical language features like Garbage collection and optional Type annotation. It was developed by Google and is now an open-source project.

(*Flutter for Beginners*, n.d.)

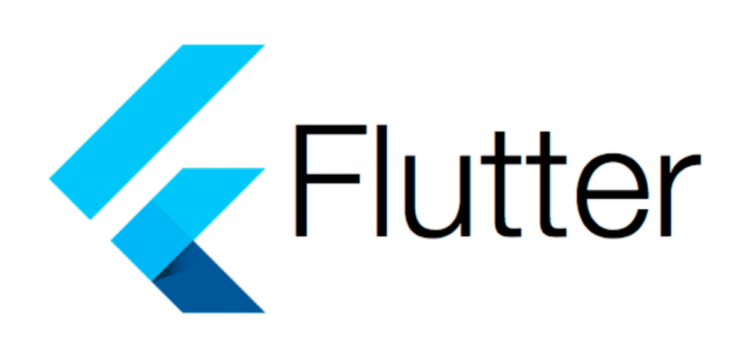


### 2.3.2 Flutter

Flutter is an Open-Source software development framework. It allows programmers to compile their application for different platforms including Web, macOS, IOS as well as Windows and any type of Linux-based systems, all from one code-base, written in Dart. This allows for more efficient and faster cross-platform development. Another benefit of Google's toolkit are the highly customizable predefined UI components. Developers can mix and match these components however needed which makes them an applicable choice.

We chose flutter mainly for these reasons, but also because of our previous experience with Java to which Dart is quite similar. Through it, we were able to get started quickly, learn what we need along the way. Having a design through the components was also very helpful and saved us some time.

(“flutter/README.md at master · flutter/flutter”, 2025) (Dagne, 2019)



## 2.4 Backend

### 2.4.1 Java Spring

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### 2.4.2 PostgreSQL

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## 2.5 Version Control

### 2.5.1 Git

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### 2.5.2 GitHub

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## 2.6 Map Data

### 2.6.1 OpenStreetMap

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### 2.6.2 Graphhopper

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## 2.7 Development Tools

### 2.7.1 VS Code

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### 2.7.2 IntelliJ

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### 2.7.3 Android Studio

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### 2.7.4 Postman

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### 2.7.5 Figma

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## 2.8 Deployment

### 2.8.1 Docker

### 2.8.2 Uberspace

### 2.8.3 Webmin

## 3 Wireframes

### 3.1 Admin Ansicht

### 3.2 User Ansicht

## 4 Research Questions

### 4.1 Leon Edlinger

### 4.2 Paul Gigler

### 4.3 Andreas Weissl

## 5 Final Thoughts

### 5.1 Leon Edlinger

### 5.2 Paul Gigler

### 5.3 Andreas Weissl

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flutter/README.md at master · flutter/flutter [[Online; accessed 23. Jan. 2025]]. (2025, January). <https://github.com/flutter/flutter/blob/master/README.md>

1	Arbeitszeitznachweis . . . . .	15
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## 7 Appendix

### 7.1 Meetings

Protokolle der Meetings, vielleicht auch ein zeitplan wann immer und wie lang

## 7.2 Working Hours

Arbeitspaket-Nr.	Beschreibung	Dauer
1	Einführung und Einarbeitung	8 h
2	Grundkonzept erstellen	8 h
3	Struktur der App festlegen	6 h
5	Wifi-Socket in App implementieren	39 h
6	Write-Funktionalität in App implementieren	14 h
7	Read-Funktionalität in App implementieren	19 h
8	Trim-Funktionalität in App implementieren	10 h
9	Konfigurationsmöglichkeiten für Flug in App implementieren	16 h
10	Höhenregelung-Funktionalität in App implementieren	14 h
12	Graphische Darstellung der Flugdaten	18 h
14	App testen und debuggen	19 h
26	Gesamtkonzept testen und debuggen	16 h
<b>Summe</b>		<b>187 h</b>

Table 1: Arbeitszeitznachweis

### **7.3 Source code directory**

Source Code directory, kein plan was des is

## **7.4 List of illustrations**

Liste alle abbildungen oder so, ka müss ma uns anschauen



## 7.5 Abbreviation

ADC	Analog Digital Converter
API	Application Programming Interface
BLE	Bluetooth Low Energy
CPU	Central Processing Unit
DAC	Digital Analog Converter
DAVE	Digital Application Virtual Engineer
DSP	Digital Signal Processor
FPU	Floating Point Unit
FPV	First Person View, First Pilot View
GPIO	General Purpose Input/Output
GPS	Global Positioning System
GUI	Graphical User Interface
HDMI	High Definition Multimedia Interface
I <sup>2</sup> C	Inter-Integrated Circuit
IDE	Integrated Development Environment
IP	Internet Protocol
RPI	Raspberry Pi
SD	Secure Digital
SPI	Serial Peripheral Interface
USB	Universal Serial Bus
TCP	Transmission Control Protocol
UART	Universal Asynchronous Receiver Transmitter
WLAN	Wireless Local Area Network
WPA	WiFi Protected Access
XML	Extensible Markup Language