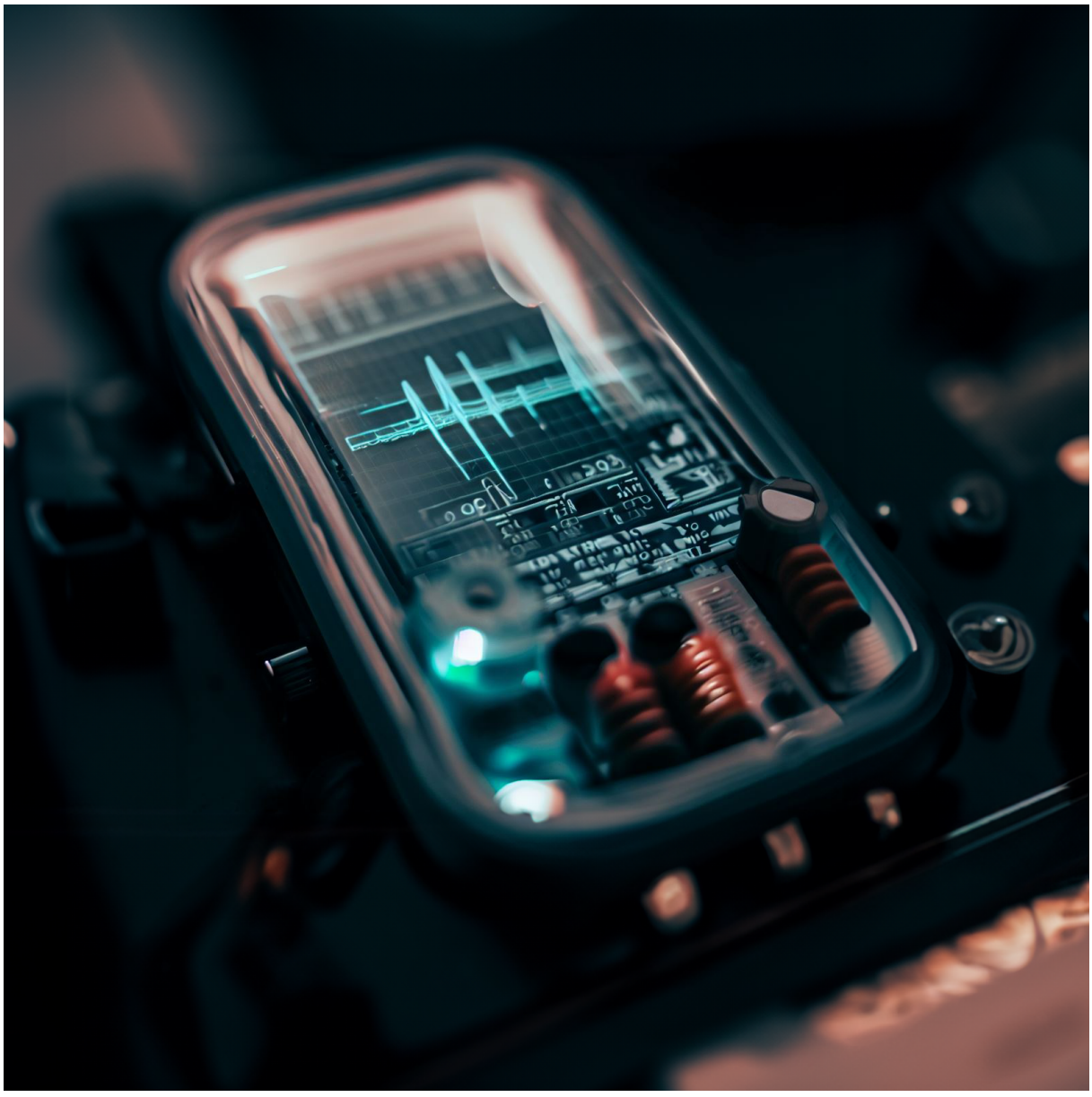
HST Project S5

CircuitVoyager Pre1



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22.09.2023

Abstract

Konzept (gestalterisch)
Methode
Wichtigste Ergebnisse

Contents

1 Introduction

Vorstellung von Thema und eigenem gestalterischen Konzept oder Konstruktionsplan in Bezug auf das Oberthema, Darlegung der Motivation für die Arbeit, Erläuterung der verwendeten Methoden, Überblick über den schriftl. Kommentar

2 Main Body

3 Conclusion

Gesamtschau, Arbeitsergebnis, Gesamturteil, evtl. Ausblick

4 Appendix

4.1 Journal

Date	Location	Duration	Activity
01.09.2023	TBZ	1.5h	Selected and bought DevBoard
08.09.2023	TBZ	2h	Tested DevBoard with demos
08.09.2023	TBZ	0.5h	Noted first ideas for DMM
15.09.2023	TBZ	1.5h	Written and signed Project Agreement [4.2]
21.09.2023	Home	3h	Created documentation template
22.09.2023	TBZ	2h	Started writing Journal [4.1]
24.09.2023	Home	1.5h	Made GANTT chart [4.3]

Table 4.1: Project Journal

4.2 Project Agreement

Information TBZ/EE / **2337.00** HST
jschaller
HST: BüP *Sem:* **5** 1_Project_Agreement.docx
TBZ Technische Berufsschule Zürich Abteilung Elektro/Elektronik

1 Projektvereinbarung

Verfasser/innen: Joel Schaller **Klasse:** BEN21
Titel: CircuitVoyager pre1

1. **Thema** (Hintergrund, Überblick, gegenwärtiger Wissensstand)

Develop a tiny extension Board for the STM32H747i-Disco Board, to allow it to act as a DMM. Additionally, a software, that measures the DMM Values and displays them on the Touch Display. If there's more time I could extend the Project with Measurement Logging via a SD-Card or over USB to a Desktop application.

2. **Eigene Fragestellung / Untersuchungsgegenstand**

2.1 Eigene Fragestellung (Leitfrage)
How to implement the following functions / protocols? (QSPI Flash, SDRAM, TouchGFX, Mipi DSI) and if the time is sufficient: (FAT with SDcards, Bootloaders)
2.2 Hypothese (Vermutung über das Ergebnis)
I want to learn, working with High Speed MCUs and implement such protocols.
2.3 Methoden und Vorgehen (mindestens 2 Methoden müssen angewendet werden)
HW-Dev (Altium), SW-Dev (STM32Cube with HAL), Documentation in LaTeX
2.4 Hilfsmittel
Internet, literature
2.5 Kontaktpersonen, Informationsstellen, Institutionen
Teachers, Instructor at ETH, Dad

3. **Persönlicher Bezug / Motivation**
In the next 2 Years I want to develop my own DMM, because I think there's much to improve with standard DMMs as Fluke. For Example: Touch Display, Rechargeable Battery…

4. **Bewertungsform**
This Project will only be done by me. Time: about 28 lesson and unknown time at home.
Project delivery on: 12.01.2023

5. **Besprechungstermine mit Lehrperson** (vorgeschrieben sind zwei Besprechungen)
Termin 1: 27.10.2023
Termin 2: 01.12.2023

Datum: 15.09.23. Die Lernenden: .....

Datum: 15.9.23 Die Lehrperson: .....

DMM = Digital Multimeter
TouchGFX = Graphical Designer for Embedded Touch Displays

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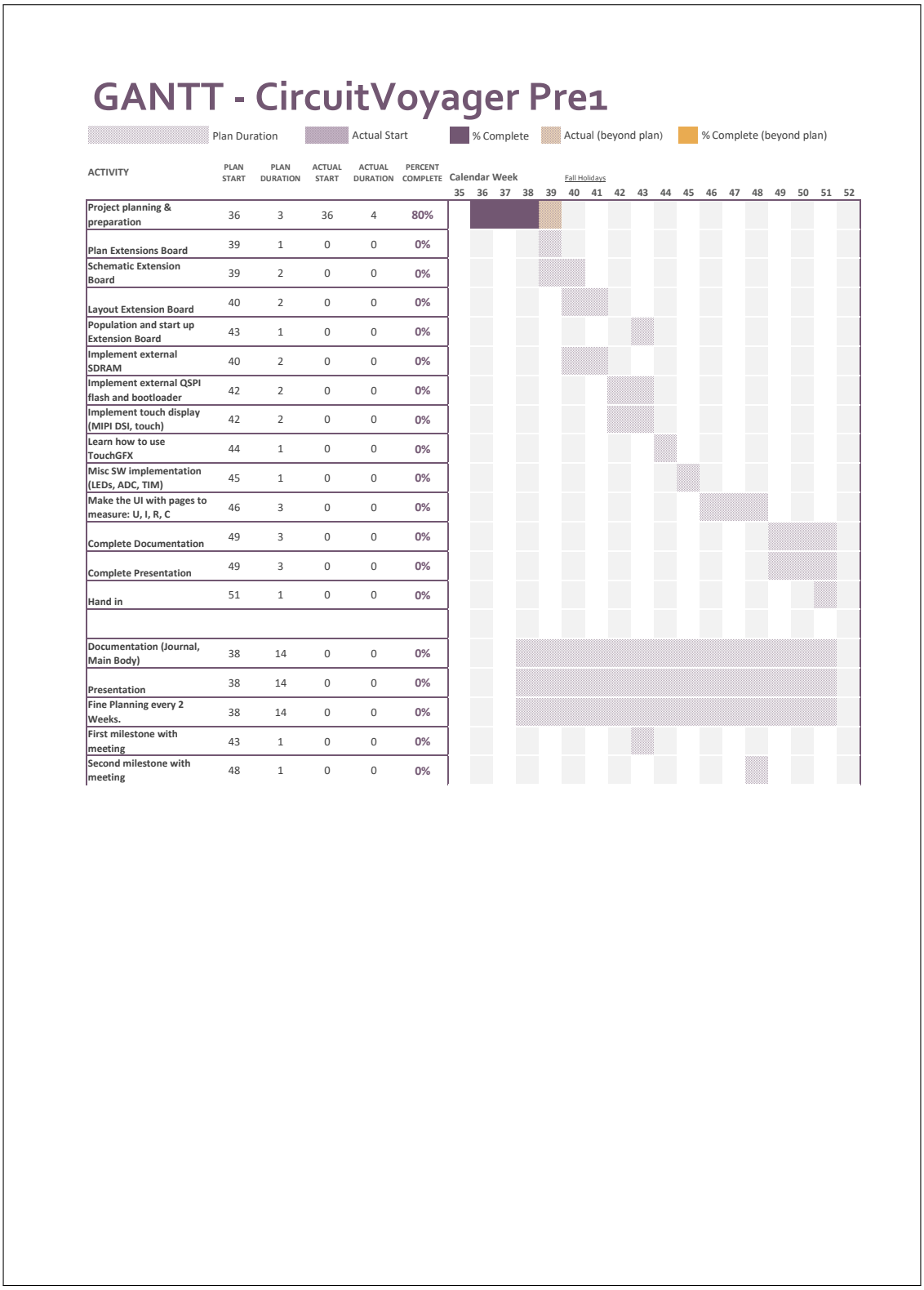
Figure 4.1: Project Agreement

4.3 GANTT Chart



ACTIVITY	PLAN START	PLAN DURATION	ACTUAL START	ACTUAL DURATION	PERCENT COMPLETE
Project planning & preparation	36	3	36	4	80%
Plan Extensions Board	39	1	0	0	0%
Schematic Extension Board	39	2	0	0	0%
Layout Extension Board	40	2	0	0	0%
Population and start up Extension Board	43	1	0	0	0%
Implement external SDRAM	40	2	0	0	0%
Implement external QSPI flash and bootloader	42	2	0	0	0%
Implement touch display (MIPI DSI, touch)	42	2	0	0	0%
Learn how to use TouchGFX	44	1	0	0	0%
Misc SW implementation (LEDs, ADC, TIM)	45	1	0	0	0%
Make the UI with pages to measure: U, I, R, C	46	3	0	0	0%
Complete Documentation	49	3	0	0	0%
Complete Presentation	49	3	0	0	0%
Hand in	51	1	0	0	0%
Documentation (Journal, Main Body)	38	14	0	0	0%
Presentation	38	14	0	0	0%
Fine Planning every 2 Weeks.	38	14	0	0	0%
First milestone with meeting	43	1	0	0	0%
Second milestone with meeting	48	1	0	0	0%

Figure 4.2: GANTT Chart

5 Credits

Bibliography

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Listings

Acronyms

DevBoard main microcontroller developement board. (STM32H747I-Disco)

DMM digital multimeter