

# Project Schedule PAM3

## Mobile Hardware Sampler

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## 1 Work packages

There are three main subprojects that will form the whole project as well as three different project stages in order to roughly structure the overall time available. The work packages are each assigned a subproject and a stage. The relations are shown further down in the charts by color and text.

### 1.1 Subprojects

- Midi communication
- Audio playback and storage
- Display and user interface

### 1.2 Stages

- Stage 1: Basic function
- Stage 2: Extended and optional features
- Stage 3: Casing and final product

### 1.3 Detailed description

1. Audio playback and storage

Making the audio playback and storage of samples work. This will involve some parallel programming as well as getting the flash chip to work (soldering and setting up).

## **2. Sample selection with rotary encoder**

Connecting the rotary encoder to the Teensy and programming it to select a certain sample from the flash storage. Selection of a sample will be dependent on the preceding work package, selection in general could be tested by using a dummy program (ui only).

## **3. Displaying selected sample names**

This is partly dependent on the preceding sample selection but mainly aimed at getting the display to work and rendering text on it.

## **4. Menu design (structure and visuals)**

Dependent on the preceding work package. Menu design and user interface design are closely connected to the arrangement of buttons and the type of display in use. The main aspect of this work package will be finding a creative and usable solution to make the interaction with the final product work intuitively and easy.

## **5. Line out playback**

This is dependent on the audio playback. Main challenge will be soldering proper connectors and testing the audio line.

## **6. Recording with line in and mic**

This is also dependent on the playback work package. Here, soldering is also a main task as well as some programming challenges with the goal to add recording abilities over line in and mic.

## **7. Master volume control**

Dependent on line out playback package. This package aims to provide a volume control for the headphone and line out. Task will be to extend menu and program to provide a button/menu function to lower and raise output volume.

## **8. Midi connection over DIN 5 connector**

This work package deals with the Midi part of the project. Here, Midi connectors should be attached to the Teensy and it should be possible to trigger midi notes with an external midi device over the DIN 5 connector.

## **9. Digital effects and filters (at least 2)**

This work package deals with adding digital effects and filters in order to change the sound of the samples being played.

## **10. Menu extension: controlling effects**

This work packages is dependent on the digital effects wp and deals with extending the menu to provide an interface for controlling effect parameters.

## **11. Adding 4 velocity sensitive pads**

This work package aims to add velocity sensitive pads in order to trigger samples with the help of these pads and make the sampler a mobile standalone device.

## 12. Recording midi

Recording midi snippets is the goal of this work package.

## 13. 2-8 voice polyphony

Adding the possibility of playing multiple samples/notes at once.

## 14. Case design and crafting

Creating an eyecatching and usable case and finding parts and materials to craft it.

## 15. Pcb assembly

Designing the Pcb and assembling the parts in a way that fits the case.

## 16. Device assembly (case + pcb)

This work package aims to put pcb and case together and thus is dependent on the last two wps.

## 2 Milestone/Task list

AP number	Work package	Project part	Duration (days)	Predecessor		
1	audio playback and storage	Audio	10	0	Stage 1	7 weeks
2	sample selection with rotary encoder	Display	10	3	Stage 2	8 weeks
3	displaying selected sample names	Display	10	0	Stage 3	4 weeks
4	menu design (structure and visuals)	Display	5	3	testing and troubleshooting	3 weeks
5	line out playback	Audio/Midi	5	1		
6	recording with line in and mic	Audio/Midi	10	1	due dates	
7	master volume control	Audio/Midi	5	5	Stage 1	23.05.22
8	Midi connection over DIN 5 connect	Midi	10	0	Stage 2	18.07.22
9	digital effects and filters (at least 2)	Audio	15	1, 5, 7	Stage 3	15.08.22
10	menu extension: controlling effects	Display	10	2, 3, 4, 9		
11	Adding 4 velocity sensitive pads	Audio/Midi	10	1, (12)		Audio
12	recording midi	Audio/Midi	10	8		Midi
13	2-8 voice polyphony	Audio	5	1, (9)		Display
14	case design and crafting	Display	10	2, 5, 6, 8		All
15	pcb assembly	Audio/Midi	10	2, 5, 6, 8		
16	device assembly (case + pcb)	All	10	15, 14		
17	testing performance stability	All	10	1 – 13		
18	testing mobility	All	5	16, (17)		
19	testing usability	All	5	2, 3, 4, 10 – 13, (18)		

Figure 1: Task list

### 3 Gantt chart

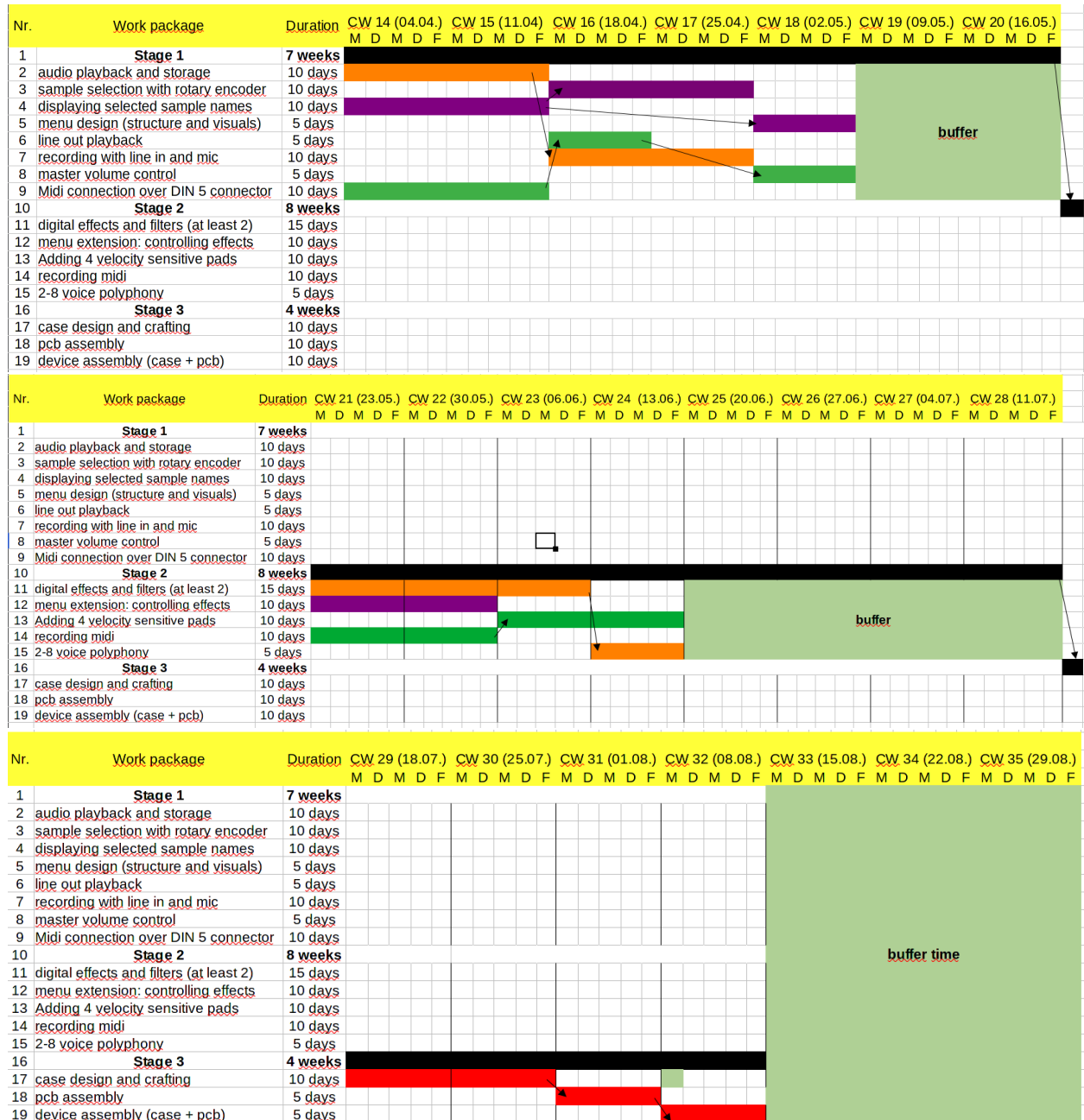


Figure 2: Gantt chart

## 4 Precedence diagram

### 4.1 Stage 1

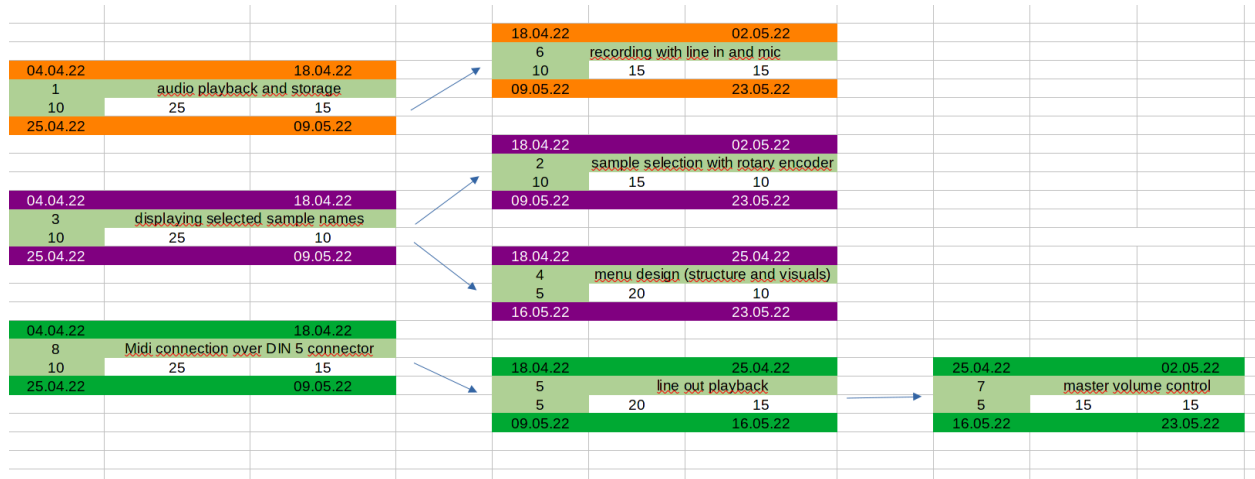


Figure 3: Precedence diagram stage 1

### 4.2 Stage 2

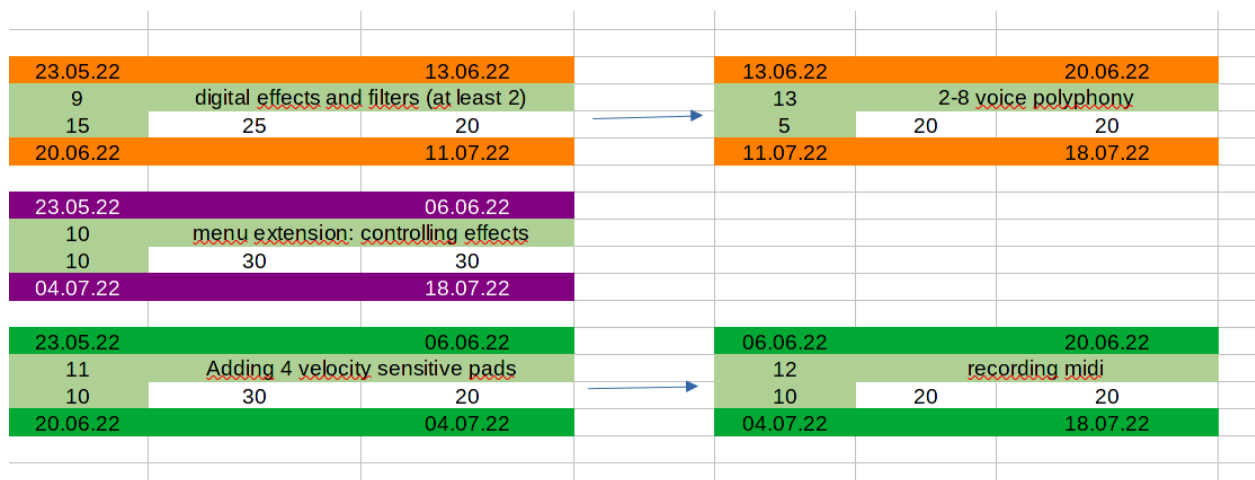


Figure 4: Precedence diagram stage 2

### 4.3 Stage 3

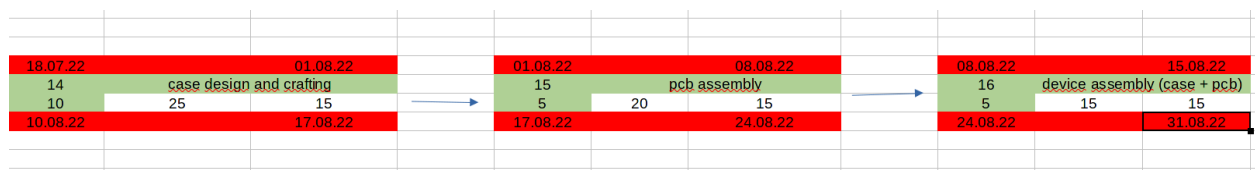


Figure 5: Precedence diagram stage 3