

Cost Plan

Development

In the Cost Plan we try to estimate the arising Costs that can grow in a Project. Especially in a Hardware related Project where Equipment can break during the development phase or Hardware that is simply not available like in the ongoing chip shortage we currently have, it is very important to have a solid estimation of the Costs that can occur. Also, while developing the Software, there is the uncertainty of time consuming bugs and hard to solve problems that take up more time then estimated.

To counteract this, we try to include a buffer and to subdivide independent topics as good as possible. The topics are :

Preparation and Information	Gather Informations about the Project and individual Topics
Hardware Planning	Develop the Hardware Layout. PCB and the Case. Ordering of the individual Parts
Team Meetings	Weekly Meeting in Person or Online to be always up to date
Software Development	This is the heart of the Project. All the time that is generated whilst developing the Software goes here.
Testing	In this stage all the implemented features get tested!
Documentation	A good Documentation is Essential for others to work on the Project!

Now that we have defined the Topics we need to estimate the time that will be spent on every Individual Phase. The Project will cover 23 working weeks.

Phase	Time	Buffer
Preparation and Information	85h	± 5h
Hardware	100h	± 5h
Team Meetings	115h	± 7h
Software Development	450h	± 30h
Testing	100h	± 5h
Documentation	50h	± 3h
SUM	900h	± 55h

Hardware

The Hardware is always a fluctuating Element whilst Planning the Costs of a Project. In our case the Price is between 74€ - 80€. Here is the parts list already with a Store included :

Partname	Function	Quantity	Price/Pc
Teensy 4.0 Development Board	Microcontroller	1	18.64
Audio Adaptor Board Rev. D	Audio Shield	1	13.23
14-Pin Header Double Insulator		2	0.084
	Exp-Tech		32.038
EA OLEDM204	Display	1	24.22
6N138	Optocoupler 100kBaud	1	0.56
	Reichelt		24.22
AOM-6738P-R	Electret Condenser Mic	1	1.07
W25Q128JVSIM	128M-Bit Flash Memory	1	1.71
	Midi		
Adafruit 1134	Midi In/Out	2	1.59
Resistors	1x220, 1x470, 2x47	1	0.56
	Extra Parts		
NMJ4HCD2	TS 1/4" Jack	4	1.5
P160KN-0FD18C10K	10k Poti linear	4	0.81
PEC11H-4220F-S0024	Rotary Encoder, 24 ppr, Button	1	2.33
74HC4051	8:1 Analog Multiplexer	1	0.63
	Mouser:		18.72
	Essentials:		74.978

Summing Up

To sum up the estimation of the parts list and the workload following calculation follows :

Working Hours	900h ± 55h	50€ / h	45000 € - 47750€
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The Hardware for the Development is negligible. To make profit with the Product we need to estimate the Product price and the devices that need to be sold to make profit.

Parts Price	Consumer Price	Profit	Devices until profit
75€	200 €	125 €	382

The Project will generate Profit when we surpass the 382th Device.