**Labor, Cost & Schedule Document**

**CLICK SENSOR HUB**

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**Ingram School of Engineering**

**SPONSOR NXP**

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# **Introduction & Summary**

The Click Sensor Hub Project will design a PCB that allows connection between the FRDM-KL46Z and four MikroBUS standard sockets. Having access to MikroBUS sockets allows users of the FRDM-KL46Z to gain access to over 250 Click sensors that can be used in a myriad of development projects.

This Click Sensor Hub project will be completed by May 07,2019 with a total estimated labor cost of $116,756, total non-capital expenses cost of $446, and total capital expenses of $5,770. This results in a total estimated project cost of $122,972.

|  |  |
| --- | --- |
| **Cost Category** | **Estimated Cost** |
| Labor | $116,756 |
| Capital Expenses | $5770 |
| Non-Capital Expenses | $446 |
| **TOTAL ESTIMATED PROJECT COST** | **$122,972** |

# **Labor**

## Labor Categories

|  |  |
| --- | --- |
| **Project Labor Categories** | |
| **Labor Category** | **Justification** |
| Senior Electrical Engineer | Electrical design validation from senior engineer (Dr Stapleton) |
| Test Engineer | Guidance for creating thorough testing procedures from senior engineer (Dr Stapleton) |
| Technical Writer | Feedback on correct writing of technical writings from experienced industry professional (Prof. Hinkle) |
| Technician | Not needed for project scope |
| Fabricator / Assembler | Not needed for project scope |
| Drafting / CAD | Instructions on materializing PCB design from senior engineer (Dr Stapleton) |
| Marketing Analyst | Not in scope to market product |
| Administrative | Administrative duties to frame the timeline of the project and framework major document deliverables (Prof. Hinkle) |
| Management / Supervision | Guidance for Project Manager on how to effectively lead a team of engineers (Prof. Hinkle) |
| Consulting | Additional design validation from senior engineer (Sponsor: Dr Kemp) |
| Contractor | All design work done in house |

## Labor Rates

|  |  |  |
| --- | --- | --- |
| **Labor Categories and Burdened Hourly Costs** | | |
| **Labor Category** | **Burdened Hourly Cost** | **Justification** |
| Design Engineer | $77.37 | Average pay in Austin with 50% burden rate |
| Test Engineer | $61.50 | Average pay in Austin with 50% burden rate |
| Technical Writer | $42.85 | Average pay in Austin with 50% burden rate |
| Technician | N/A | Not needed for project scope |
| Fabricator / Assembler | N/A | Not needed for project scope |
| Drafting / CAD | $40.30 | Average pay in Austin with 50% burden rate |
| Marketing Analyst | N/A | Not in scope to market product |
| Administrative | $30.17 | Average pay in Austin with 50% burden rate |
| Management / Supervision | $101.65 | Average pay in Austin with 50% burden rate |
| Consulting | $72.76 | Average pay in Austin with 50% burden rate |
| Contractor | N/A | All design work done in house |

## 

## Total Cost of Labor





# **Materials**

## Capital Expenses

|  |  |  |
| --- | --- | --- |
| **CAPITAL EXPENDITURE ESTIMATE** | | |
| **Task** | **Materials** | **Cost** |
| Testing PCB | Tektronix TDS-2024B Digital Oscilloscope | $1,499.00 2 |
|  | Tektronix AFG3022C Arbitrary/Function Generator | $2,980.00 2 |
|  | Fluke 8808A Digital Multimeter | $850.00 2 |
|  | Instek GPS-3303 Triple-Output Linear DC Power Supply | $441.00 2 |
| **TOTAL** |  | **$5770.00** |

1 Available from Sponsor

2 Available at Texas State University

## Non-Capital Expenses

|  |  |  |
| --- | --- | --- |
| **NON-CAPITAL EXPENDITURE ESTIMATE** | | |
| **Task** | **Materials** | **Cost** |
| PCB & Components | PCB prints | $200 |
|  | 2:4 Decoders | $6.19 |
|  | USB Females | $7.50 |
|  | Interface Controllers | $24.84 |
|  | 8:3 Encoders | $18.57 |
| Clicks for Testing | Temp&Hum 2 Click ​ | $16.00 |
|  | USB UART 3 Click​ | $15.00 |
|  | Color 5 Click ​ | $16.00 |
|  | BarGraph 2 Click ​ | $19.00 |
|  | Accel 5 Click ​ | $19.00 |
|  | Gaussmeter Click ​ | $19.00 |
|  | LightRanger 3 Click ​ | $24.00 |
|  | Alcohol Click ​ | $15.00 |
|  | Air Quality Click ​ | $16.50 |
|  | MicroSD Click | $16.00 |
| Miscellaneous | Tupperware for Storage | $12.98 |
| **TOTAL** |  | **$445.58** |

# **Total Project Cost**

|  |  |
| --- | --- |
| **PROJECT LABOR & MATERIALS COST SUMMARY** | |
| **Cost Category** | **Estimated Cost** |
| Labor | $116,756 |
| Capital Expenses | $5770 |
| Non-Capital Expenses | $446 |
| **TOTAL ESTIMATED PROJECT COST** | **$122,972** |

# **Project Schedule**

See attached Gantt Chart.

# **Approvals**

|  |  |  |  |
| --- | --- | --- | --- |
| **Approver Name** | **Title** | **Signature** | **Date** |
|  | Project Manager |  |  |
|  | D2 Project Manager |  |  |