Budget Proposal

for Autonomous Panda System

Sponsor

The Department of Electrical, Computer, Software & Systems Engineering at Embry Riddle Aeronautical University

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Funky Town Fancy Pandas Development Team

**Abstract:** The budget proposal and functional design is contained in this document in conjunction with the preliminary budget, justifications, and decisions for each of the major components.

# Revision History

|  |  |  |
| --- | --- | --- |
| **Version** | **Date** | **Description** |
| 0.1.0 | Sept. 28, 2014 | Initial draft of the document |

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# Introduction

## Purpose

## Scope

## Team Information

|  |  |
| --- | --- |
| **Name** | **Role** |
| Kurt Pedrosa | Team Leader/Scrum Master |
| Merissa Roth | Software Leader |
| Mary Luongo | Hardware Leader/Product Owner |
| Luis Bogran | Development Leader |
| Kok Peng Tan | Developer |

# Functional Decomposition System

## High-Level Architecture of System

## Decomposition of Vehicle Hardware Layer

## Decomposition of Communication Hardware Layer

# Requirements Traceability

## Microcontroller

|  |  |  |
| --- | --- | --- |
| **ID** | **Requirement Text** | **Fulfillment** |
|  |  |  |

## Sensors

|  |  |  |
| --- | --- | --- |
| **ID** | **Requirement Text** | **Fulfillment** |
| 4.1.3 | The APS shall monitor the red LED on the floor. |  |
| 4.1.5 | The APS shall follow the line on the floor. |  |
| 4.1.6 | The APS shall remain within the playing board. |  |
| 4.1.7.1 | The APS shall identify the game station. |  |
| 4.1.8 | The APS shall stop moving once the finish line is crossed. |  |
| 4.2.2 | The APS shall play with the Simon Carabiner for 15 seconds. |  |
| 4.2.3 | The APS shall rotate one (1) row of the Rubik’s Cube 180 degrees. |  |
| 4.2.8 | The APS shall pick up one (1) playing card from the stack of cards. |  |

## Motors

|  |  |  |
| --- | --- | --- |
| **ID** | **Requirement Text** | **Fulfillment** |
| 4.1.4 | The APS shall start moving when the red LED powers off. |  |
| 4.1.6 | The APS shall remain within the playing board. |  |
| 4.1.8 | The APS shall stop moving once the finish line is crossed. |  |

## Arm

|  |  |  |
| --- | --- | --- |
| **ID** | **Requirement Text** | **Fulfillment** |
| 4.2.1 | The APS shall press the middle button on the Simon Carabiner to start playing. |  |
| 4.2.2 | The APS shall play with the Simon Carabiner for 15 seconds. |  |
| 4.2.3 | The APS shall rotate one (1) row of the Rubik’s Cube 180 degrees. |  |
| 4.2.6 | The APS shall draw “IEEE” on the Etch-a-Sketch using the knobs located on the Etch-a-Sketch. |  |
| 4.2.8 | The APS shall pick up one (1) playing card from the stack of cards. |  |

## Frame

|  |  |  |
| --- | --- | --- |
| **ID** | **Requirement Text** | **Fulfillment** |
|  |  |  |

## Batteries

|  |  |  |
| --- | --- | --- |
| **ID** | **Requirement Text** | **Fulfillment** |
| 4.1.1 | The APS shall receive power from an independent, on-board, battery. |  |

# Budget Decision Matrices and Justifications

## Microcontroller

### Items Under Consideration

### Decision Matrix

### Justification

## Sensors

### Items Under Consideration

### Decision Matrix

### Justification

## Motors

### Items Under Consideration

### Decision Matrix

### Justification

## Arm

### Items Under Consideration

### Decision Matrix

### Justification

## Wheels

### Items Under Consideration

### Decision Matrix

### Justification

## Frame

### Items Under Consideration

### Decision Matrix

### Justification

## Batteries

### Items Under Consideration

### Decision Matrix

### Justification

# Risk Analysis

## Microcontroller

## Sensors

## Motors

## Arm

## Wheels

## Frame

## Batteries

# Total System Budget

# Glossary

# Acronyms & Abbreviations

|  |  |
| --- | --- |
| Entry | Expanded Phrase |
| FTFP | Funky Town Fancy Pandas |
| DOF | Degrees of Freedom |
| APS | Autonomous Panda System |
| LED | Light-emitted Diode |
|  |  |
|  |  |

# References