Intel Leap Ahead Logo

E3VB

**Engineering Engagement Electrical Validation Board**

**Project Proposal**

Revision 1.5

January 2015

Team 12

Owners: Kris Gibbs, Brandon Towell, Luis Santiago, Travis Berger

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# About this Document

## Introduction, Purpose and Scope

This document covers the project proposal.

## Document Revisions

|  |  |  |  |
| --- | --- | --- | --- |
| **Rev.** | **Date** | **Owner** | **Details** |
| **1.0** | 1/13/15 | Kris Gibbs | Initial doc with initial outline of project |
| **1.1** | 1/17/15 | Kris Gibbs | Added more detail to the documentation and added a new section for board improvements |
| **1.2** | 1/17/15 | Brandon Towell, Travis Berger, Luis Santiago | Group revisions and expansion to proposal points. Added team number to Title Page. |
| **1.3** | 1/24/15 | Travis Berger, Luis Santiago, Kris Gibbs | Added task breakdown and task timeline. |
| **1.4** | 1/26/15 | Dr. Morris | Edited experiments in timeline. |
| **1.5** | 3/7/15 | Travis Berger | Changed Project Proposal to reflect change in scope. |
|  |  |  |  |

Table 1 – Document Revisions

## Abbreviations, Acronyms and Terminology

|  |  |  |
| --- | --- | --- |
| **Term** | **Acronym** | **Description** |
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Table 2 - Abbreviations, Acronyms and Terminology

## Reference Documents

|  |  |  |  |
| --- | --- | --- | --- |
| **Ref #** | **Document Name** | **Doc Ver.** | **Relevance** |
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Table 2 – Reference Documents

# Project Proposal

## Background

The E3VB board is a learning tool developed by Intel as part of a program called Intel Learning Company 2.0. The E3VB board is made up of various circuits that coincide with experiments that teach students and industry members validation techniques. These experiments highlight common problems that occur when creating PCB layouts.

## Problem Statement

## As part of Portland State University’s ECE Capstone Project the E3VB board will be improved upon and peripheral experiments will be added. Some of the documentation for the E3VB is incorrect and vague. Correcting these errors will lead to better understanding and better reception of the E3VB. Due to the tools available, project scope, and finances modifying the existing board is not possible, but adding experiments through peripheral board(s) is possible and will possibly be added to a new board revision in the future.

## Project Tasks

### Improve Project Documentation

* Give all Documents the same look and feel.
* Provide background theory before each experiment.
* Make experiments as clear as possible by improving setup procedure.

### Create Peripheral Boards

* Create peripheral PCB’s that demonstrate additional experiments.
* Additional experiments:
  + ISI Add-On
  + Mixed Signal Ground Techniques
  + Connector Experiment

## Task Breakdown

### Kris

##### Experiments

* Package Differences
* Simalutaneous Switching Outputs
* Crosstalk I & II

##### Peripheral Boards

* Main Experiment: ISI Add-On

### Luis

##### Experiments

* Intersymbol Interference
* Driver Circuit
* Crosstalk I & II

##### Peripheral Boards

* Main Experiment: ISI Add-On

### Travis

##### Experiments

* LCR Transmission Line
* Corners and Vias
* Crosstalk I & II

##### Peripheral Boards

* Main Experiment: Mixed Signal Ground Techniques

### Brandon

##### Experiments

* Mystery Traces
* Decoupling
* Crosstalk I & II

##### Peripheral Boards

* Main Experiment: Connector Experiment

## Project Timeline

##### Experiments

1. Crosstalk I & II
   * Two Weeks
2. Intersymbol Interference
   * Three Weeks
3. Simalutaneous Switching Outputs
   * Three Weeks
4. Intersymbol Interference
   * Three Weeks
5. Driver Circuit
   * Three Weeks
6. LCR Transmission Line
   * Three Weeks
7. Corners and Vias
   * Three Weeks
8. Mystery Traces
   * Three Weeks
9. Decoupling
   * Three Weeks

### Experiments Expected Completion:

1. **Preliminary Version: April 13th 2015**

##### Peripheral Boards

1. Order Parts
   * **Expected Completion: March 10th**
2. Preliminary Layout
   * **Expected Completion: March 23rd**
3. Testing Phase I
   * **Expected Completion: April 6th**
4. Draft Experiment
   * **Expected Completion: April 13th**
5. Board Revisions
   * **Expected Completion: April 20th**
6. Testing Phase II
   * **Expected Completion: April 27th**
7. Experiment Design Finalization
   * **Expected Completion: April 6th**

### Peripheral Board Expected Completion: Mid-April