Interface between RTOS target and an Industrial System: Developing USB Digital I/O Module

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Graduate Research Project

3/22/13

Revision 0.1

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**Revision History**

|  |  |  |
| --- | --- | --- |
| **Date** | **Revision** | **Description** |
| 3/22/13 | 0.1 | Initial Report Layout |
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Definitions, acronyms, and abbreviations

|  |  |
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| GRP | Graduate Research Project |
| PLC | Programmable Logic Controller |
| RTS | Real-Time Systems |
| RTOS | Real-Time Operating System |
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# ****Introduction****

# Objective

# Background

## Literary Exploration

## Existing Solutions

### EasyVeep, PSIM, Bradley Simulators, Sealevel USB Digital I/O device, etc

### Why Existing Solutions Won’t Work

### What was learned from Existing Solutions

## Existing Components Used

# Methodology

## Using EasyVeep

### Reversing EasyVeep Protocol

### Implementing Imitation EasyPort

### Problems with EasyVeep

## Creating MyEasyVeep

### Reuse of SWF Files

### Decompiling and Reversing SWF Files

### Interacting with SWFs programmatically

### Creating a Serial Protocol

## Creating MyEasyPort

### Platform Selection Iterations

### Circuit Design and Considerations

## Real Time Target Platform

### Using the AIM32-104 Digital I/O Card

### Implementing a VxWorks Interface

## Testing and Verification

# Budget and Scheduling

## Budget

### Projected Budget and Actual Budget

#### Bill of Materials

#### Items Purchase

## Schedule

### Projected Schedule and Actual Schedule

# Background

The following sections include detailed descriptions of research that was performed during the proposal and initial development stages of the GRP. This section primarily documents the state of existing work in this field of study. This section also establishes the selected scope of work which is detailed in the Methodology section.

## Literary Exploration

Currently looking into more literary options and select those most pertinent to project.

## Existing Solutions

There are a number of existing simulation solutions for real time industrial control, but few come close to meeting the goal of this research project. Most available hardware and software solutions examined focus on training users to program and operate PLCs.

### Festo-Didatic EasyVeep

EasyVeep is advertised as a “graphical 2D process simulator with numerous attractive examples on PLC training.” EasyVeep is distributed freely and can be acquired easily. However, the software requires an external hardware interface, which is also produced by Festo-Didatic, called an EasyPort.

# Methodology

This section details the methods used and steps taken to complete the GRP. It is broken down into sections that coincide with the main work items that were experimented with during the research process. The items are presented in the chronological order in which they were researched.

## Using EasyVeep

As described in

# References

# Appendices