



Wes Petree
Embedded Systems United, Inc.
123 South St. 316
Norman, OK 73019
owpetree@ou.edu
405-308-7412

November 18, 2011

Mobile Systems, LLC
I. Needshelp
345 Oak Road
Pleasanton, CA 94588-2708

Dear Mr. Needshelp,

Embedded Systems United is providing Mobile Systems this report of the progress of the HC12 system that ESU was contracted to complete. Attached you will find a report of the progress of the work that has been completed, as well as the work that still remains.

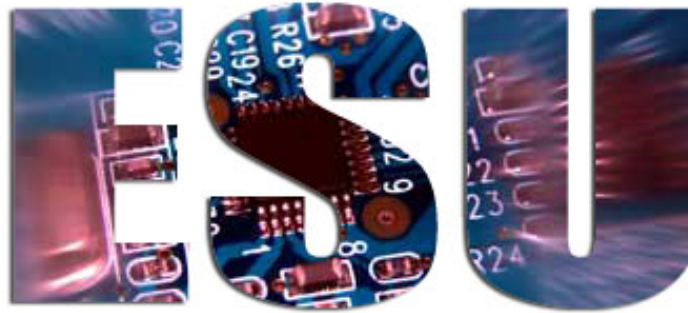
We, at Embedded Systems United would like to thank Mobile Systems for this opportunity to serve in the capacity of the design and development of the HC12 system.

Please feel free to contact me to answer any and all the questions you may have in regards to this project.

Sincerely,

Wes Petree
Engineering Project Manager

Embedded Systems United, Inc.
123 South St. 316
Norman, OK 73019
405-598-2135



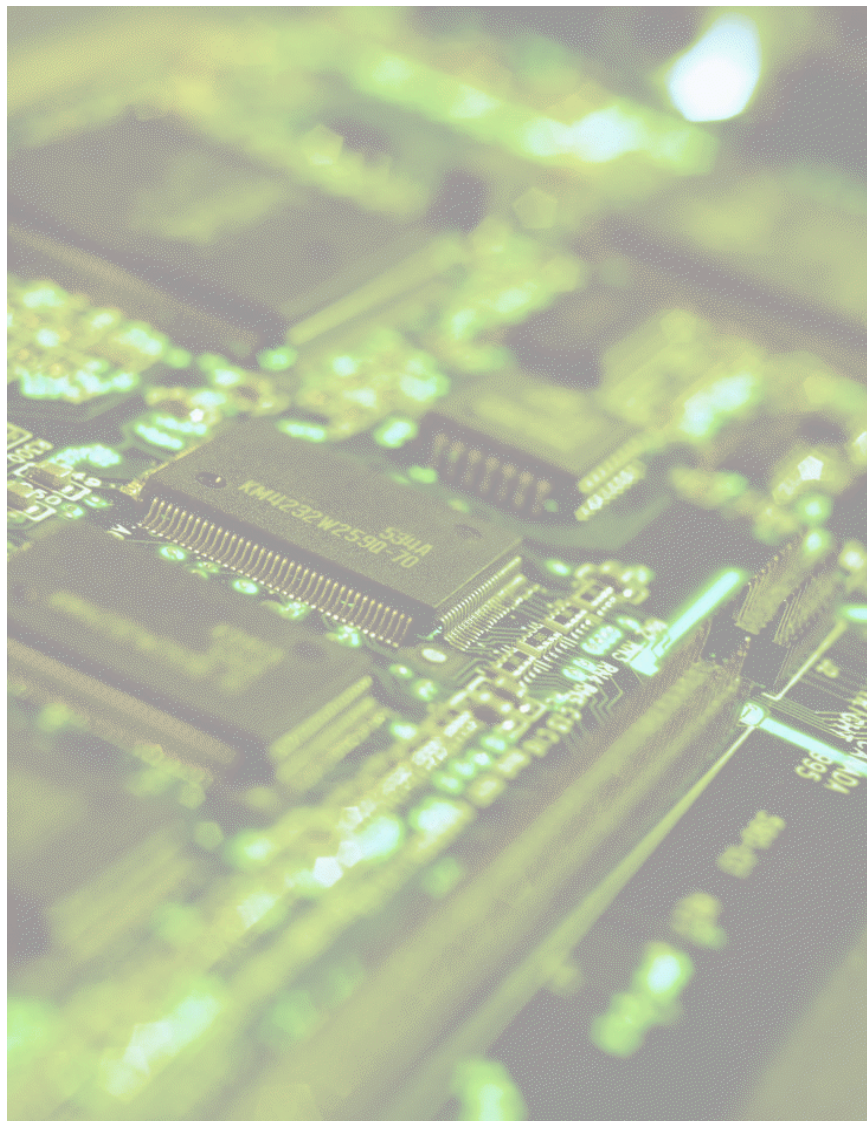
Embedded Systems United

Progress Report for the Design of HC12 Musical Rhythm Game

November 18, 2011

**Embedded Systems
United, Inc.**

123 South St. 316
Norman, OK 73019
405-598-2135



EXECUTIVE SUMMARY

Embedded Systems United is reporting the progress of the design and development of the HC12 system requested by Mobile Systems.

Although the project is well ahead of schedule with the hardware phase nearly complete, ESU has experienced a slight set back. ESU has made corrections to the remaining schedule. The project is back on pace to complete within the original timeframe.

The hardware phase is only lacking the actual construction of the circuit board – the last part of the Hardware phase. The software phase has begun earlier than scheduled, but is delayed because of the complication. However, much progress has been made in its development.

TABLE OF CONTENTS

INTRODUCTION.....	2
BACKGROUND.....	2
PROBLEM STATEMENT	2
MAIN SECTIONS OF DATA	3
COMPLETED WORK	3
ITEMS STARTED	3
WORK REMAINING	3
COMPLICATIONS	4
CONCLUSION	6
FIGURE 1: Updated Gantt Chart.....	4
FIGURE 2: Budget Summary	5



INTRODUCTION

Embedded Systems United was hired by Mobile Systems to design and develop a musical rhythm game. Within this report is the progress that has been made, the work that still remains, and the complications that have occurred. Included is an updated Gantt chart to show the timeline of what has been completed along with what is still remaining.

BACKGROUND

Embedded Systems United has been contracted for the design and development of a musical memory game based on Freescale's HC12 microcontroller by Mobile Systems. Mobile Systems has chosen Embedded Systems United for their experience and proven track record.

This project has been divided into two phases – hardware and software. The software phase depends on the hardware that will be utilized. Due to this, the software phase cannot begin until suitable parts have been chosen.

Problem statement

Mobile Systems has stated their desire for the development of a musical memory game for their new product to be released early 2012. Embedded Systems United has been contracted for the development of this system.



MAIN SECTIONS OF DATA

Embedded System United is well above schedule and is nearing the completion of the hardware phase. As such, the software phase has begun early as well. The project is four days ahead of schedule. However, a complication has arisen that threatens to delay the project by a week. That being said, the overall progress of the project is behind by three days. ESU has every intention to make up this time and honor the original agreed upon deadline and has full confidence of doing so.

Completed Work

- **Hardware**
 - Hardware Design:
The desired circuit has been designed. Parts have been chosen including digital potentiometers, flip flops, and buffers. The switches and LEDs and corresponding resistors have been chosen as well.
 - Circuit Board Design
The circuit has been laid out and meets the desired space requirements.
 - Circuit Testing
The circuit has been tested and maximum efficiency has been achieved.
- **Software**
 - Software Design:
The software has been designed from the sub-routines that will be used to the interrupts that will create the waveforms.

Items Started

- **Software**
 - Software Development:
The software team has begun the process of writing the code that will control the hardware to achieve the desired random sequences and waveforms.

Work Remaining

- **Hardware**
 - Circuit Construction:
The construction of the designed circuit has yet to begin, but will as soon as work is resumed.
- **Software**
 - Software Development:
The development will be completed when work is resumed.
 - Software Testing:
Once the software is completed, it will be tested to ensure that the device works as planned.



Complications

An unforeseen complication has set Embedded Systems United back a week. Unknown to the ESU, one of the accounting personnel was running a fraudulent scheme. The FBI informed ESU of this and is now investigating the issue. The FBI has given assurance that their forensic team will complete their investigation within a week, allowing work to resume upon their completion.

Given the fact that ESU is four days ahead of schedule, this puts the project behind by three days. ESU is confident that the time can be made up without loss of quality.

Included is an updated Gantt chart that shows how much work has been completed, the timeline of what work remains and also the delay caused by the investigation. ESU has made every effort to re-establish the original deadline of December 1.

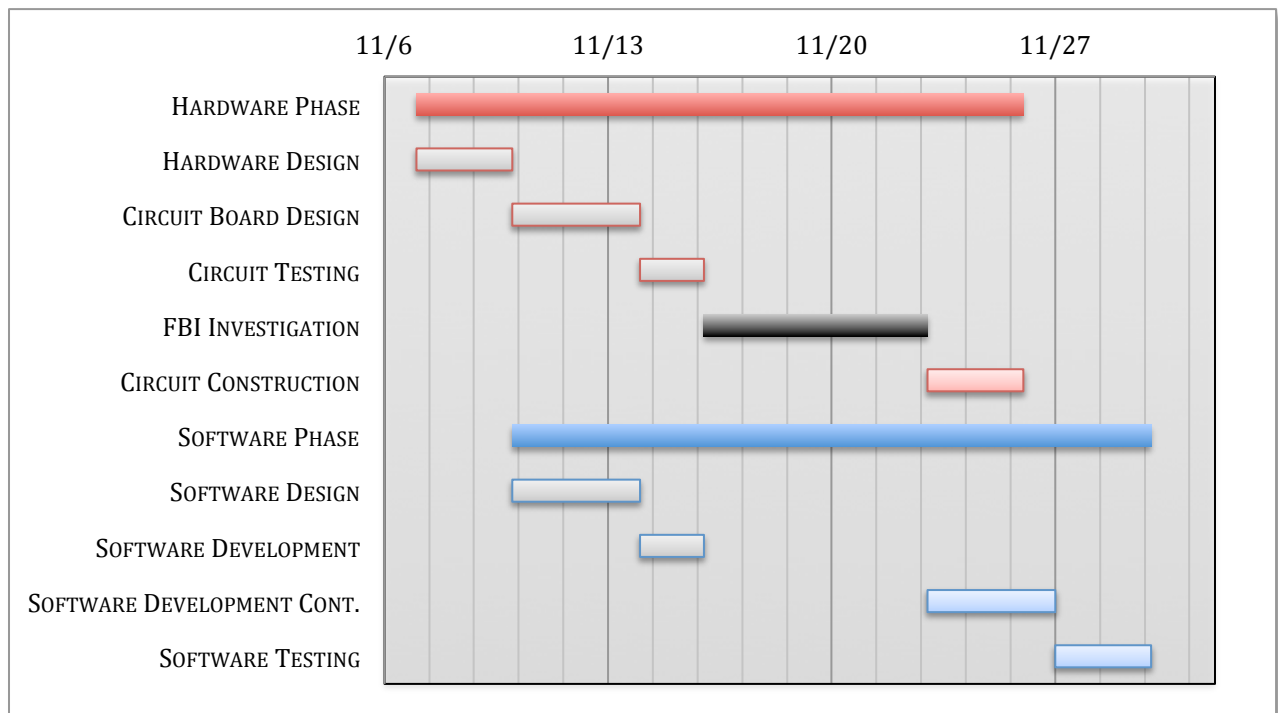


Figure 1: Updated Gantt chart. Greyed items are completed. Black item shows shut down time line.



Also included is the original budget summary. No changes have been made in regards to the budget.

<u>Budget Summary</u>	
Personnel	
Engineering	\$90,232.00
Other Direct Expenses	
Travel	\$1,200.00
Supplies	\$2,500.00
Communication	\$800.00
Computer Services	<u>\$1,500.00</u>
Total:	\$6,000.00
Overhead	\$74,562.00
Contingency and Profit	\$34,400.00
Total:	\$199,194.00
<u>Engineering Personnel Detail</u>	
Senior Engineer	\$22,978.00
Hardware Engineers	\$34,186.00
Software Engineers	<u>\$33,068.00</u>
Total:	\$90,232.00

Figure 2: Budget Summary. Note: has not changed



CONCLUSION

Embedded Systems United is pleased to inform Mobile Systems that we are ahead of schedule. The hardware phase is nearly completed and is four days ahead of schedule. The software phase is ahead of schedule due to this as well.

Unfortunately, ESU has been presented with an unforeseen setback. ESU feels that it is our responsibility to make up the lost time and complete the project within the original time frame. Rest assured that this project holds the highest importance. This project will be completed in the quickest and most professional manner possible.

We, at Embedded Systems United, would like to thank you for this opportunity to serve you. Thank you for your patience and understanding.

