GuPS

1024 Digital Way
Baltimore, MD 21229

1

**MEMO Number:** 006
**DATE:** 11-14-2014
**TO:** ACME Chief Engineer E.F. Charles Laberge, PhD
**FROM:** GuPS1 Team (Written by Jonathan Peevy)
**SUBJECT:** Team Status Report 3

## 1 INTRODUCTION

This memo details the progress and effort of the GuPS1 team in development of the GuPS – Guitar Pitch Shifter, during the period of October 31, 2014 through November 14, 2014. Also included is an updated Gantt Chart (Figure 1), as well as a breakdown of work to be completed in the upcoming development period.

## 2 COMPLETED WORK

Development tasks completed as a team effort are listed below:

- **Task 1.4 –** The team has recorded an audio sample, and acquired other pre-recorded samples for algorithm simulation.
- **Task 1.5 –** The team has researched pitch shifting algorithms suitable Electronic Capo mode, and has selected an algorithm utilizing time-stretching techniques.
- **MISC –** The team has collectively decided to schedule additional group meetings on a weekly basis on Friday afternoons, in addition to existing Monday evening meetings.
- **MISC –** The team has agreed on a development environment for FPGA design of the system. The team has come to agreement on Xilinx ISE.

The following individual tasks were completed during the work period:

- **MISC –** The MatLab GUI for simulation has been designed for appearance, and functionality has been defined. The decided-upon GUI will feature a virtual pedal with knobs/buttons that can be manipulated to emulate setting changes. Input and output waveforms will also be displayed for functionality verification.

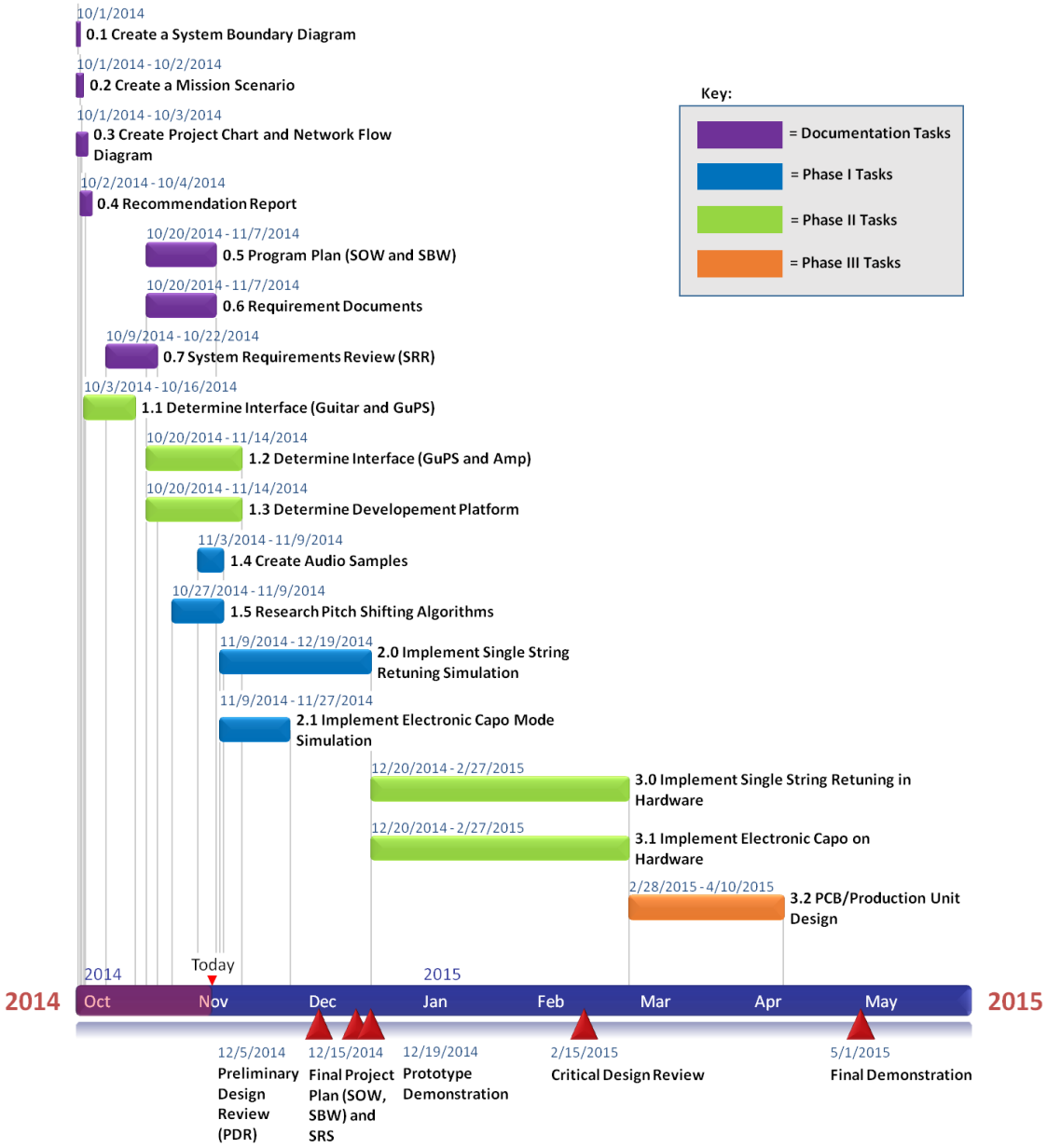


*Figure 1 - GuPS1 Development Gantt Chart*

## 3 WORK EXPECTED DURING NEXT REPORTING PERIOD

During the next work period, unfinished tasks from the current period will be transferred. It is anticipated that the following tasks will be completed in the following reporting period:

- **Task 2.1 –** Implement Electronic Capo Simulation
- **Task 2.0 –** Begin Single-String Detection and Isolation
- **MISC –** Research Difficulties/Implications of Inputting Raw Analog to FPGA Platform through ¼" Guitar Jack.

## 4 ISSUES

Currently, the GuPS1 team has minimal concerns. Our main concern currently is our main concern throughout project development; we are concerned with the quality of processed output, and ways we can improve the signal quality in order to provide a high quality audio product. We are currently exploring delay metrics, in order to ensure the user will be able to use the product without noticeable audio delay, which may hinder the user's ability to play correctly. We do however believe our platform decision (FPGA) will assist in improving performance, and minimizing delay to a negligible quantity.