Passive Tracking Device

Dallin Marshall – Computer Engineering

Presentation Overview

- Project Problem
- Project Purpose
- Project Impact
- Design Details
- System Overview
  - Subsystem – Microcontroller
  - Subsystem – GPS Module
  - Subsystem – Cell Module
  - Subsystem – Power Regulation
- Team Members
- Budget
- Schedule
- Conclusion

Project Problem

Existing Enterprise Solutions – Active Solution

- Large
- Power Intensive
- Automobile Emphasis
- Expensive

Difficulty Managing Fleet and Theft

Project Purpose

Create a Passive Tracking Device (PTD) that can be used in power, space, and monetarily constrained environments.

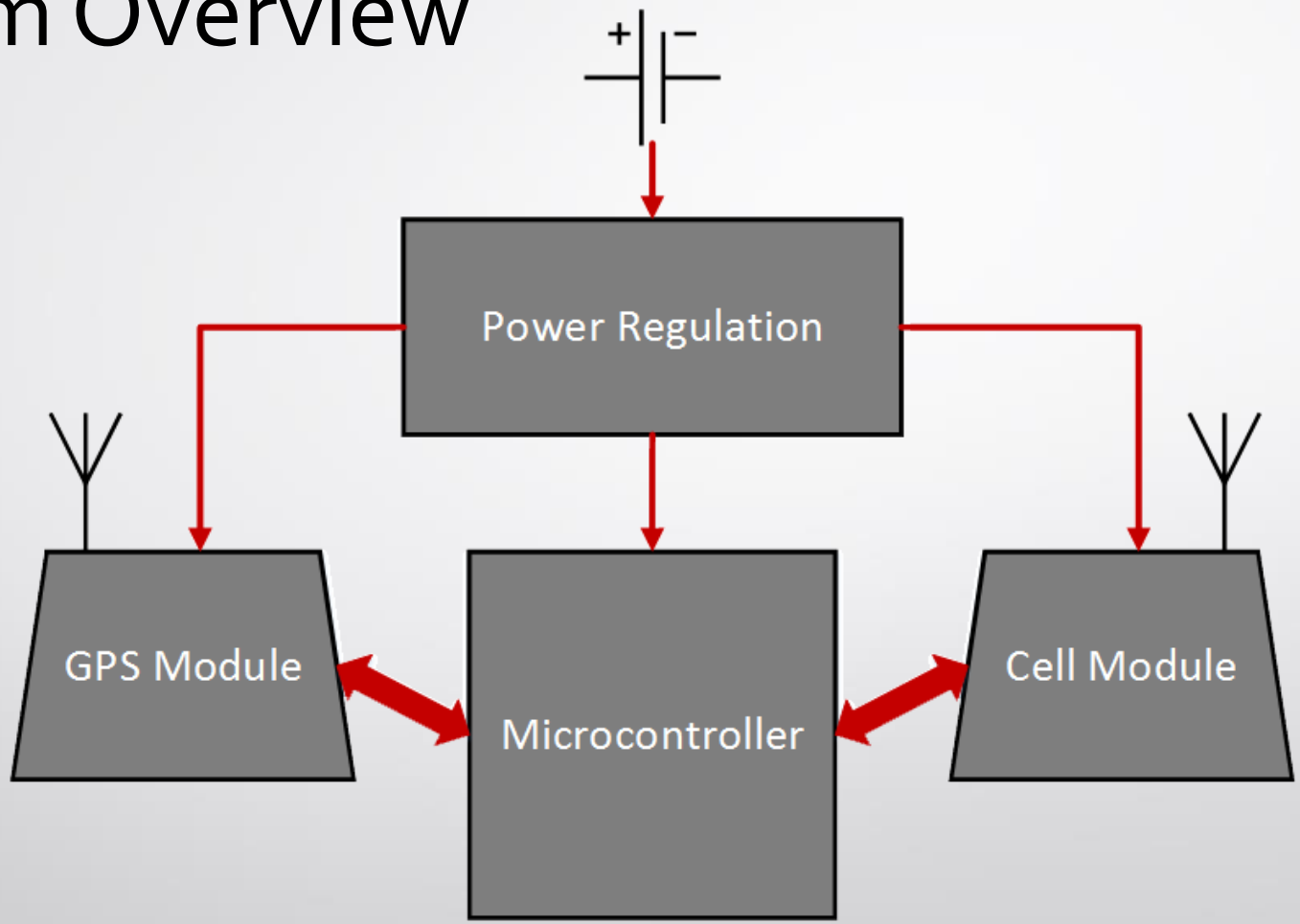
Project Impact

The PTD is an alternative passive tracking solution that emphasizes in the ATV use. This will allow clients to better supervise their vehicles.

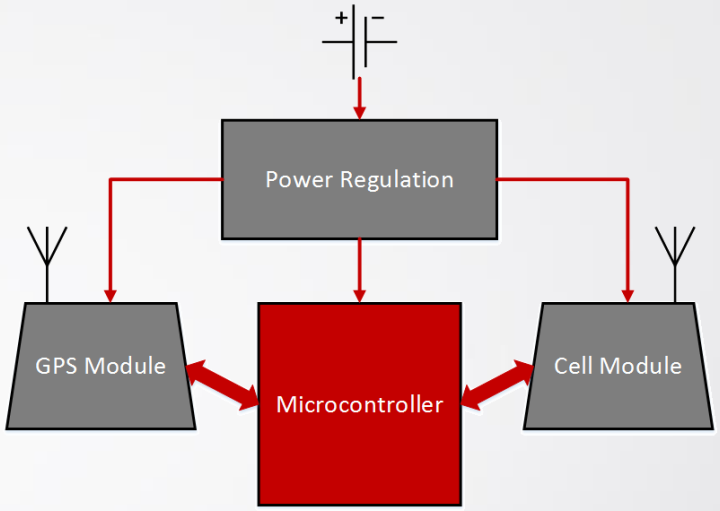
Design Details

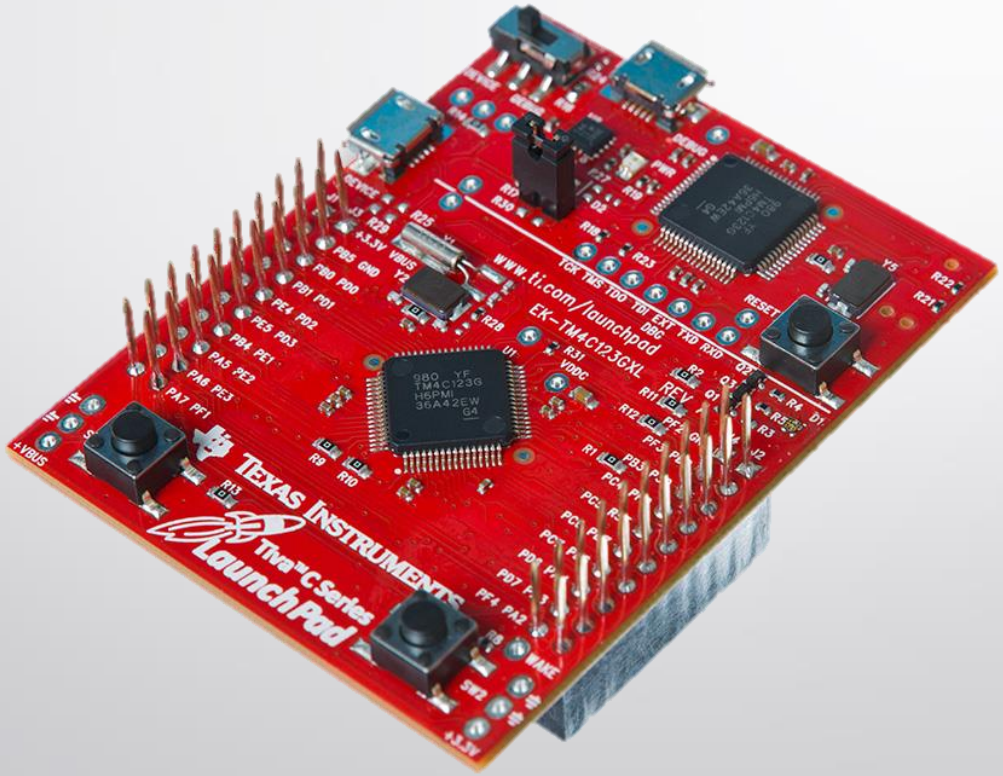
- Microcontroller
- GPS Module
- Cell Module
- Power Regulation Circuitry

System Overview

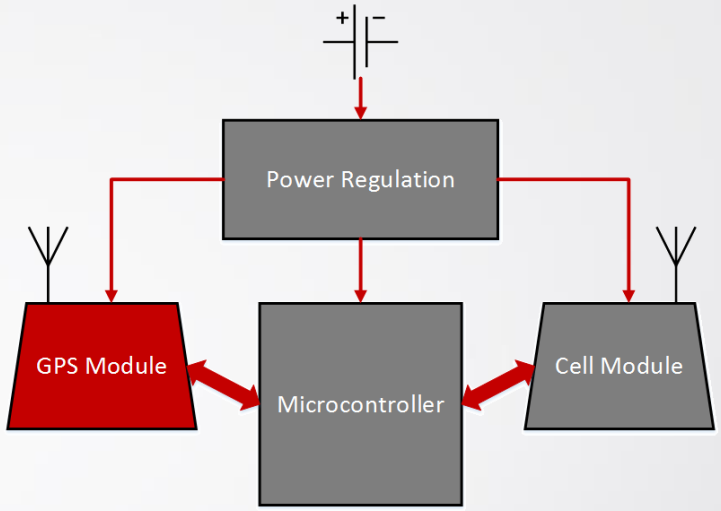


Sub-System – Microcontroller

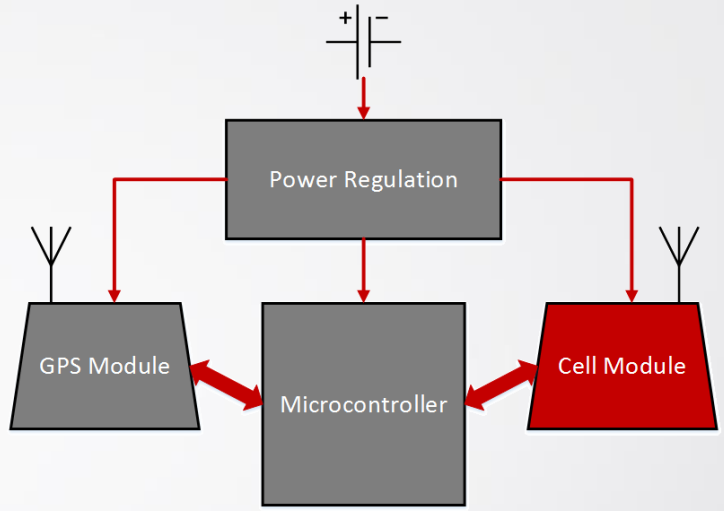


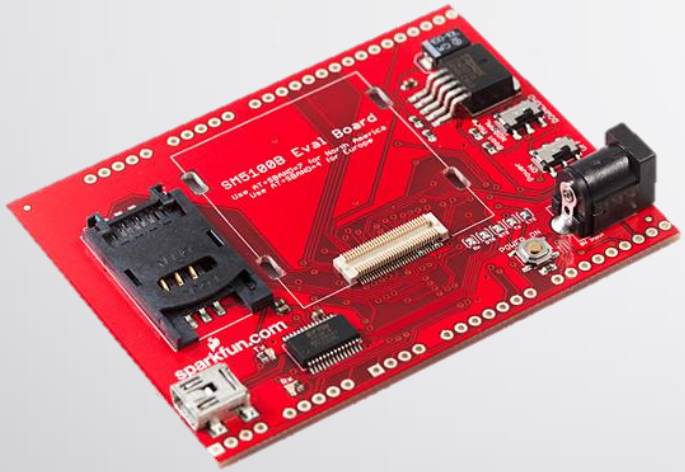


Sub-System – GPS Module

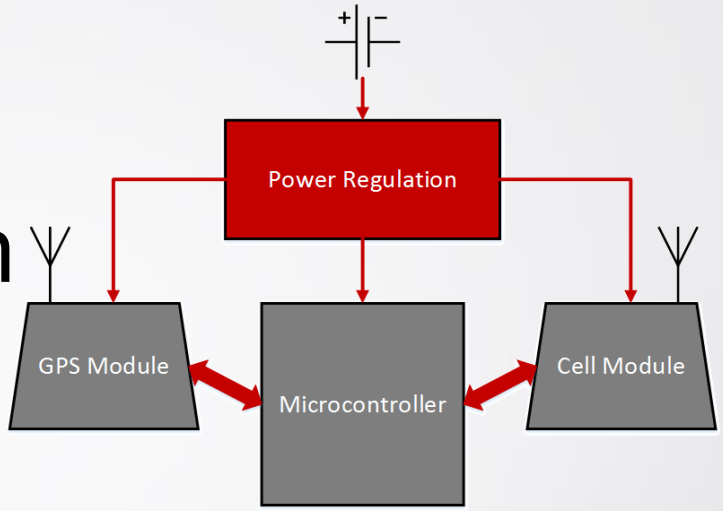


Sub-System – Cell Module





Sub-System – Power Regulation



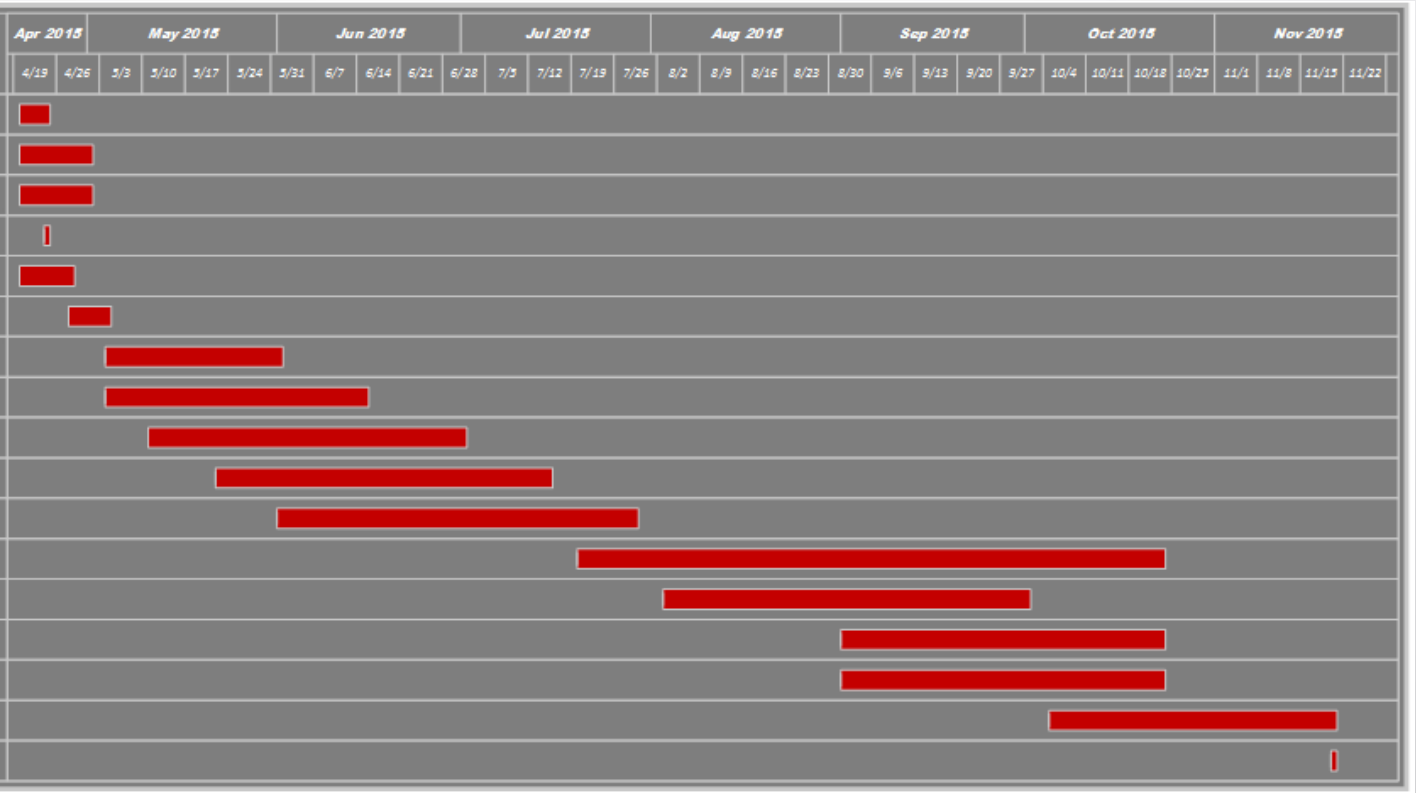
- Voltage/Current Regulation
- Current Sourcing
- Reliability

Team Members

- Dallin Marshall
  - Utah State University
  - Computer Engineering

Schedule

ID	Task Name	Start	Finish	Duration
1	Review Specifications	4/20/2015	4/24/2015	1w
2	Brainstorm	4/20/2015	5/1/2015	2w
3	Component Selection	4/20/2015	5/1/2015	2w
4	Pre - Design Review	4/24/2015	4/24/2015	.2w
5	Write Formal Project Proposal	4/20/2015	4/28/2015	1.4w
6	Buy Components	4/28/2015	5/4/2015	1w
7	Design System	5/4/2015	6/1/2015	4.2w
8	Design Power Regulation	5/4/2015	6/15/2015	6.2w
9	Implement Power Circuit	5/11/2015	7/1/2015	7.6w
10	Implement Cell Module	5/22/2015	7/15/2015	7.8w
11	Implement GPS Module	6/1/2015	7/29/2015	8.6w
12	Rehash Software	7/20/2015	10/23/2015	14w
13	Testing	8/3/2015	10/1/2015	8.8w
14	Possible PCB Design	9/1/2015	10/23/2015	7.8w
15	Product Enclosure	9/1/2015	10/23/2015	7.8w
16	Server/Web Service Scouting	10/5/2015	11/20/2015	7w
17	Post – Design Review	11/20/2015	11/20/2015	.2w



Budget

Component	Model	Price (Evaluation Board)	Price (Discrete Component)
Microcontroller	TI Tiva-C TM4C123G	$13.00	~ $5.00
GPS Module	Trimble Copernicas 2	$74.95	$44.95
GPS Antenna	SPS 3V SMA	$12.95	$12.95
Cell Module	SM5100B	$119.90	$59.95
Cell Antenna	Quad-band Antenna	$7.95	$7.95
Cell Card/Service	T-Mobile Unlimitted	$79.95/6 Months	~ $13.00/Month
Power Regulation		~ $40.00	~ $40.00
Total		**~ $348.70**	**~ $183.80**

Conclusion

PTD will give businesses another tracking solution with unique benefits

- PTD will be cost effective
- PTD will allow for better monitoring of ATV fleet
- PTD will function in low power environments

Questions

Future Plans

- Central Database
  - Server
  - Database
  - 24/7 Online Accessibility
  - Web Interface