# 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

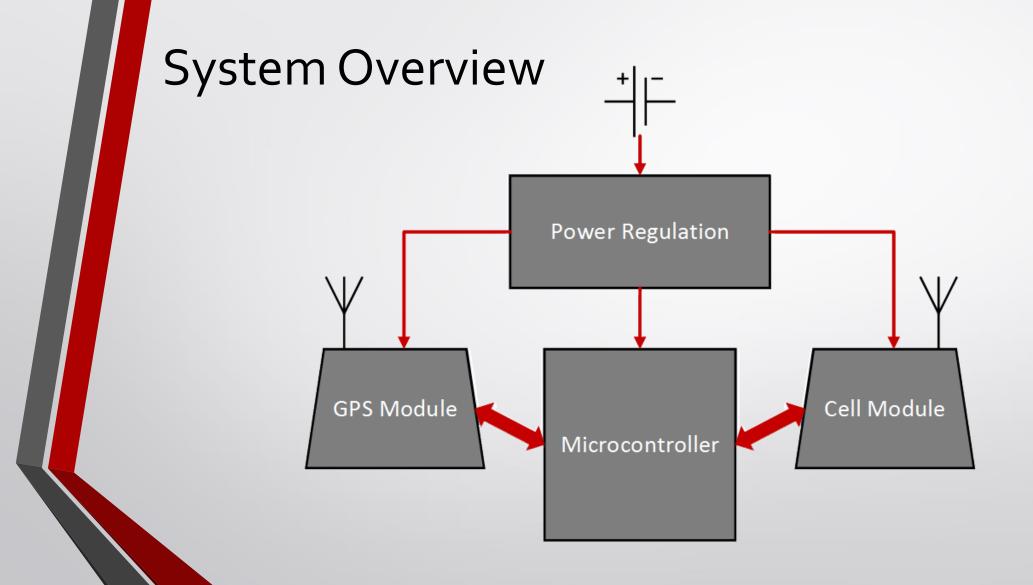
Create a Passive Tracking Device (PTD) that can be used in power, space, and monetarily constrained environments.

#### Project Impact

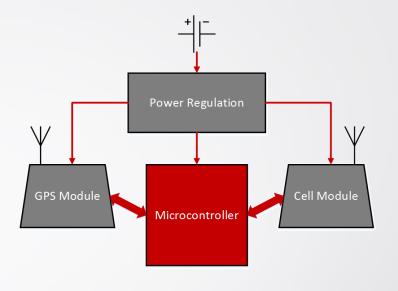
The PTD is an alternative passive tracking solution that emphasizes in the ATV use. This will allow clients to better supervise their vehicles.

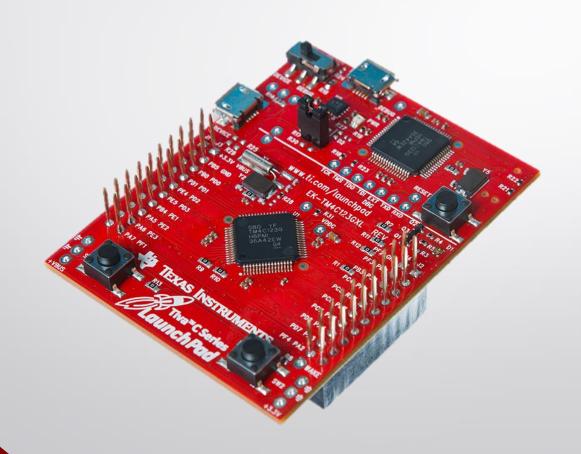
### Design Details

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

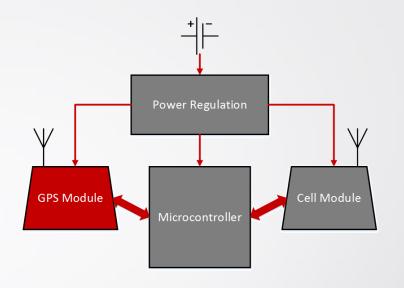


### Sub-System – Microcontroller

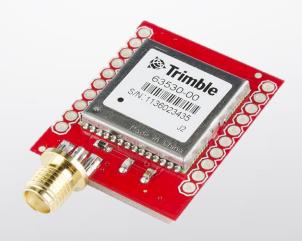




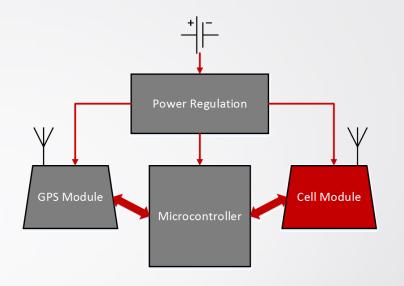
### Sub-System – GPS Module







## Sub-System – Cell Module





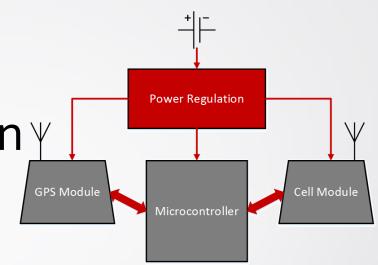




Sub-System – Power Regulation Y

- Voltage/Current Regulation
- Current Sourcing
- Reliability





#### Team Members

- Dallin Marshall
  - Utah State University
  - Computer Engineering



### Schedule

Tack Name	Start	Finish	Duration	Apr 2015	May 2015	Jun 2015	Jul 2015	Aug 2015	Sep 2015	Oct 2015	Nov 2015
ID Task Name	Start	rimsii	Duration	4/19 4/26 5/	3 5/10 5/17 5/24 5/	31 6/7 6/14 6/21	5/28 7/5 7/12 7/19 7/26	8/2 8/9 8/16 8/23 8/3	9/6 9/13 9/20 9/27	10/4 10/11 10/18 10/25 :	11/1 11/8 11/15 11/22
Review Specifications	4/20/2015	4/24/2015	1w								
Srainstorm .	4/20/2015	5/1/2015	2w								
Component Selection	4/20/2015	5/1/2015	2w								
re - Design Review	4/24/2015	4/24/2015	.2w	1							
Vrite Formal Project Proposal	4/20/2015	4/28/2015	1.4w								
Buy Components	4/28/2015	5/4/2015	1w								
Design System	5/4/2015	6/1/2015	4.2w								
Design Power Regulation	5/4/2015	6/15/2015	6.2w								
mplement Power Circuit	5/11/2015	7/1/2015	7.6w								
mplement Cell Module	5/22/2015	7/15/2015	7.8w								
mplement GPS Module	6/1/2015	7/29/2015	8.6w								
Rehash Software	7/20/2015	10/23/2015	14w								
Testing Testing	8/3/2015	10/1/2015	8.8w								
ossible PCB Design	9/1/2015	10/23/2015	7.8w					_			
Product Enclosure	9/1/2015	10/23/2015	7.8w					_			
Server/Web Service Scouting	10/5/2015	11/20/2015	7w								
ost – Design Review	11/20/2015	11/20/2015	.2w								1
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# 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



#### **Future Plans**

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