



# **Laser Pointer**

## **Concept Generation and Selection**

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# Overview

- Project Summary
- Concepts
- Concept Selection
- Project plan
- Conclusion

# Project Summary

**Client:** Mr. Edwin Anderson

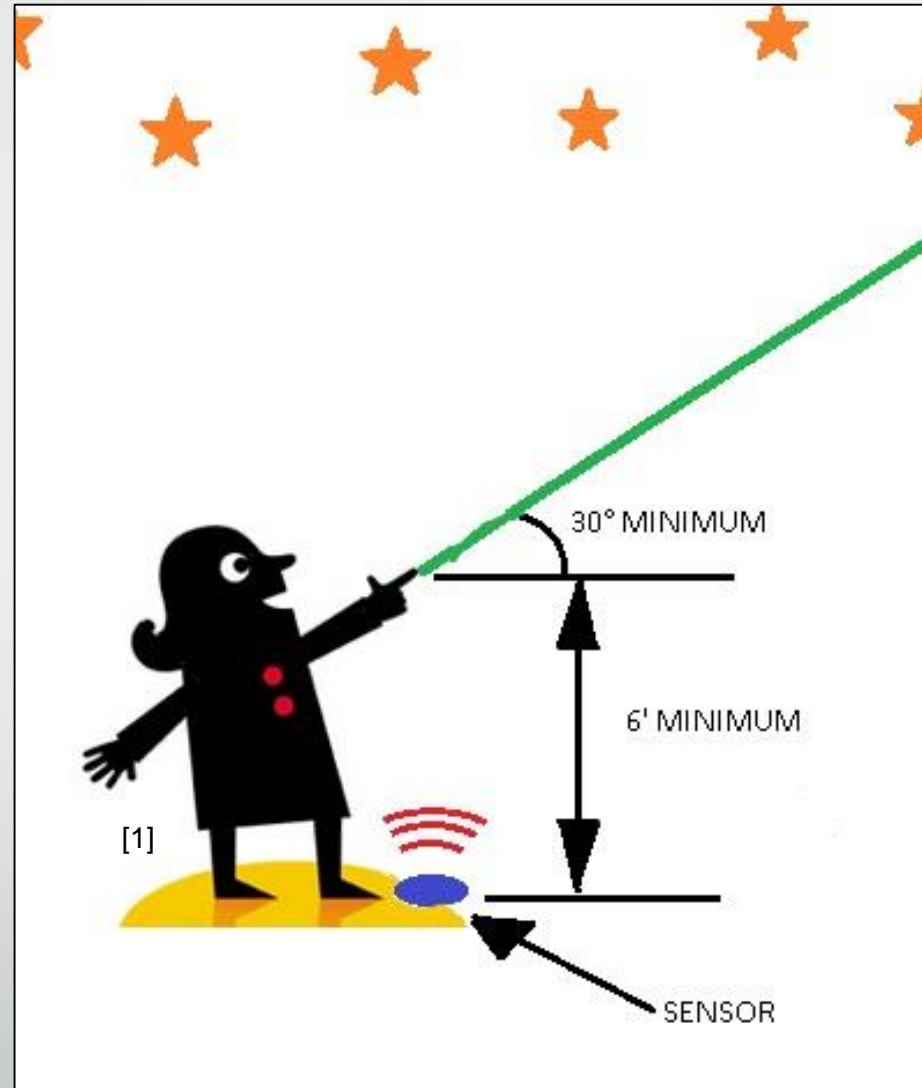
**Problem:** Desired Laser too powerful for handheld use

**Project:** Design indication system to safely indicate the locations of stars

# Concept 1

## Hand Held Unit

Hand Held Concept Diagram



[1] <http://www.vectorstock.com/royalty-free-vector/people-pointing-vector-6316>

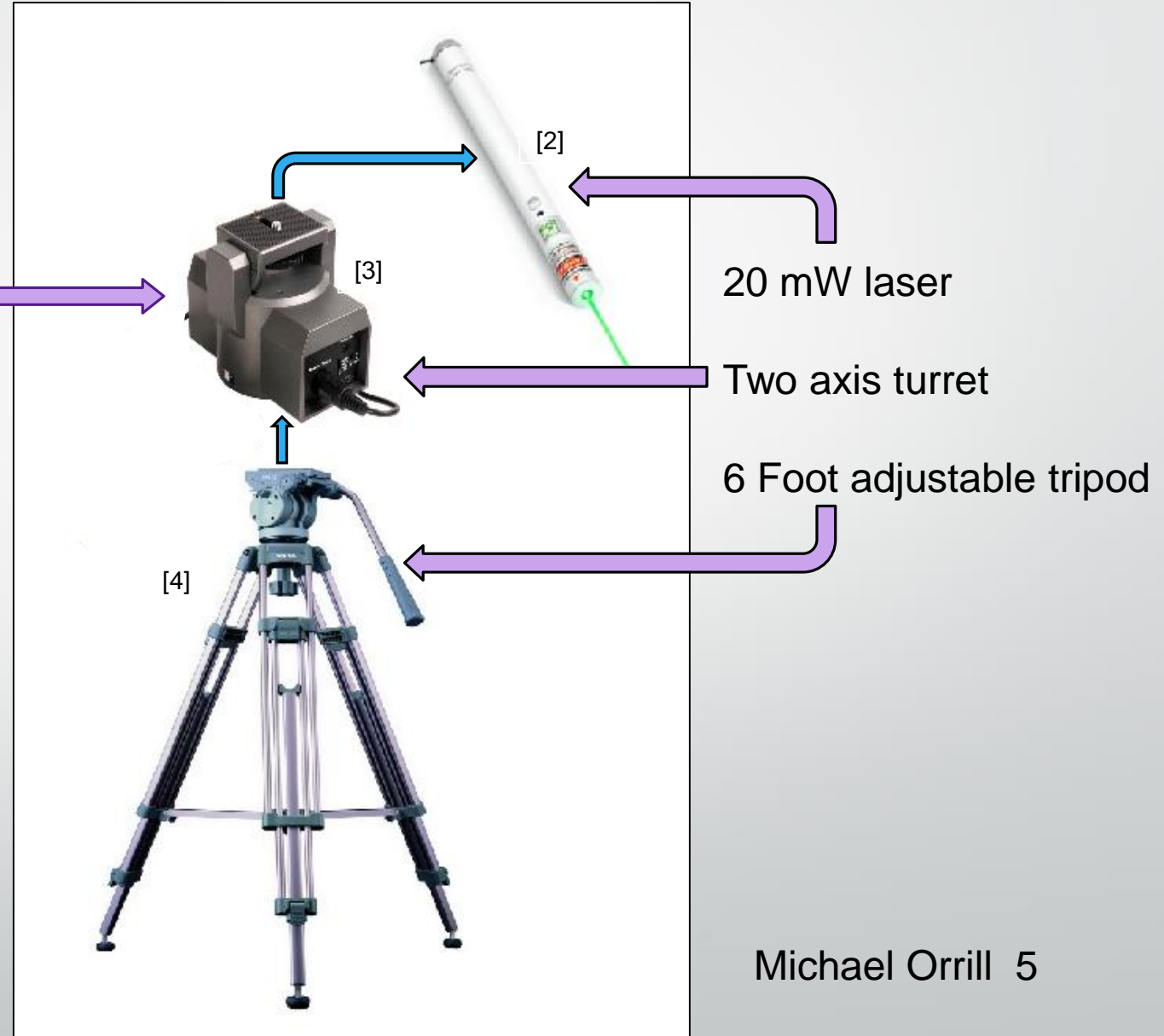
# Concept 2

## Tablet Control



[5]

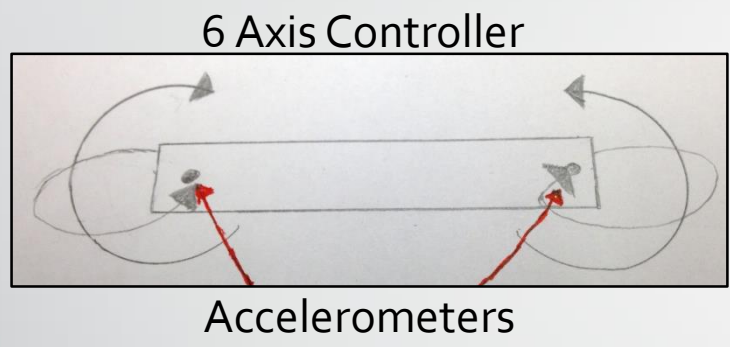
### Overall Design Concept



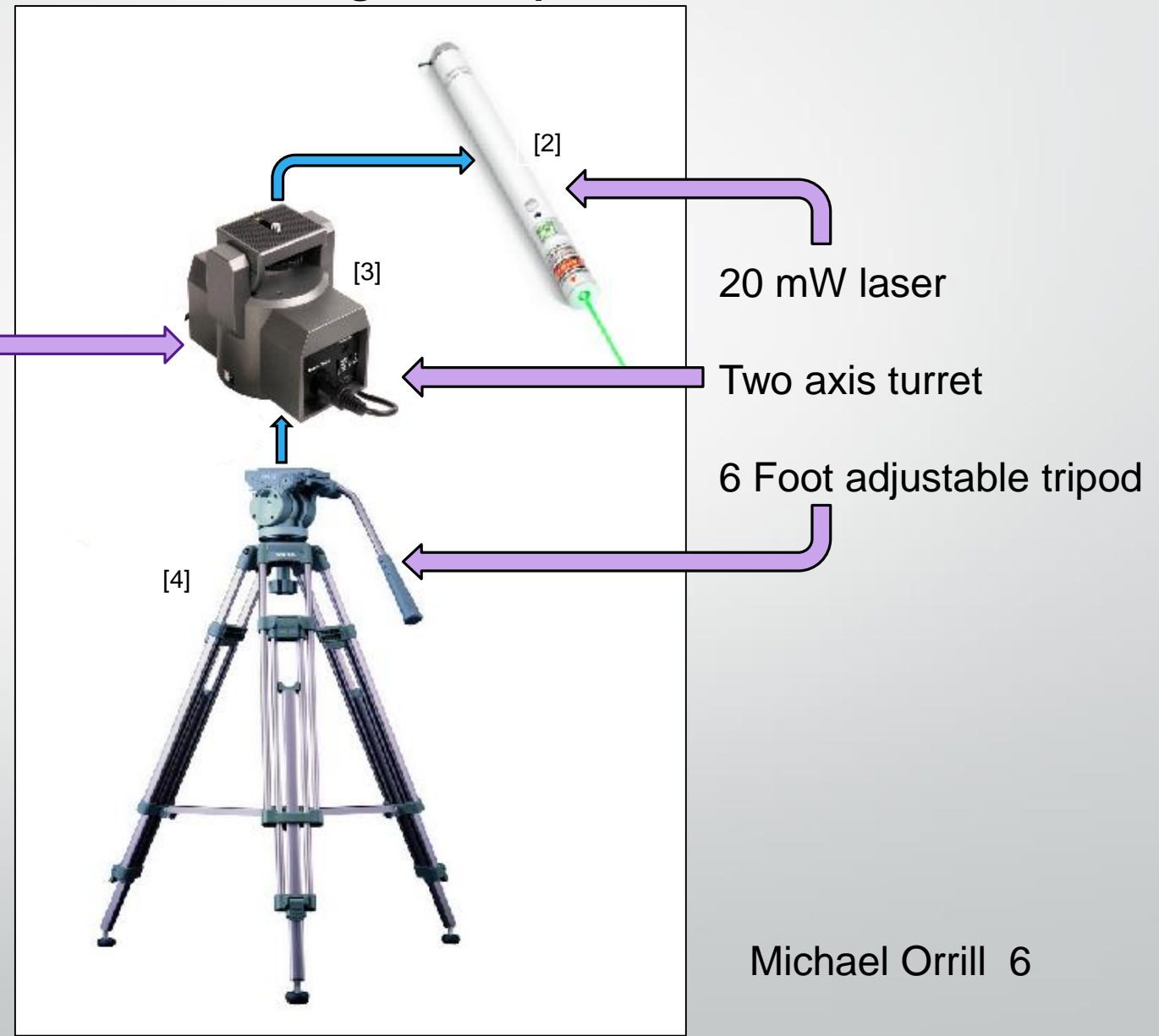
- [2] <http://www.highlasers.com/10mw-green-laser-pointer-w/>
- [3] <http://geb.ebay.in/g/ImportHubViewItem?itemid=121106016969&Bescor-MP-101-Motorized-Camera-Panhead-with-Remote-Control-MPH-1>
- [4] <http://www.made-in-china.com/showroom/wakotripod/product-detailBogxqRnbYtWM/China-Video-Camera-Tripod-KH-25II-.html>
- [5] <http://www.mikesjournal.com/July%202010/iPad%20Eclipse%20Star%20Walk%20App.htm>

# Concept 3

## Smart Phone Control



### Overall Design Concept



# Concept 4

## Motion Sensor



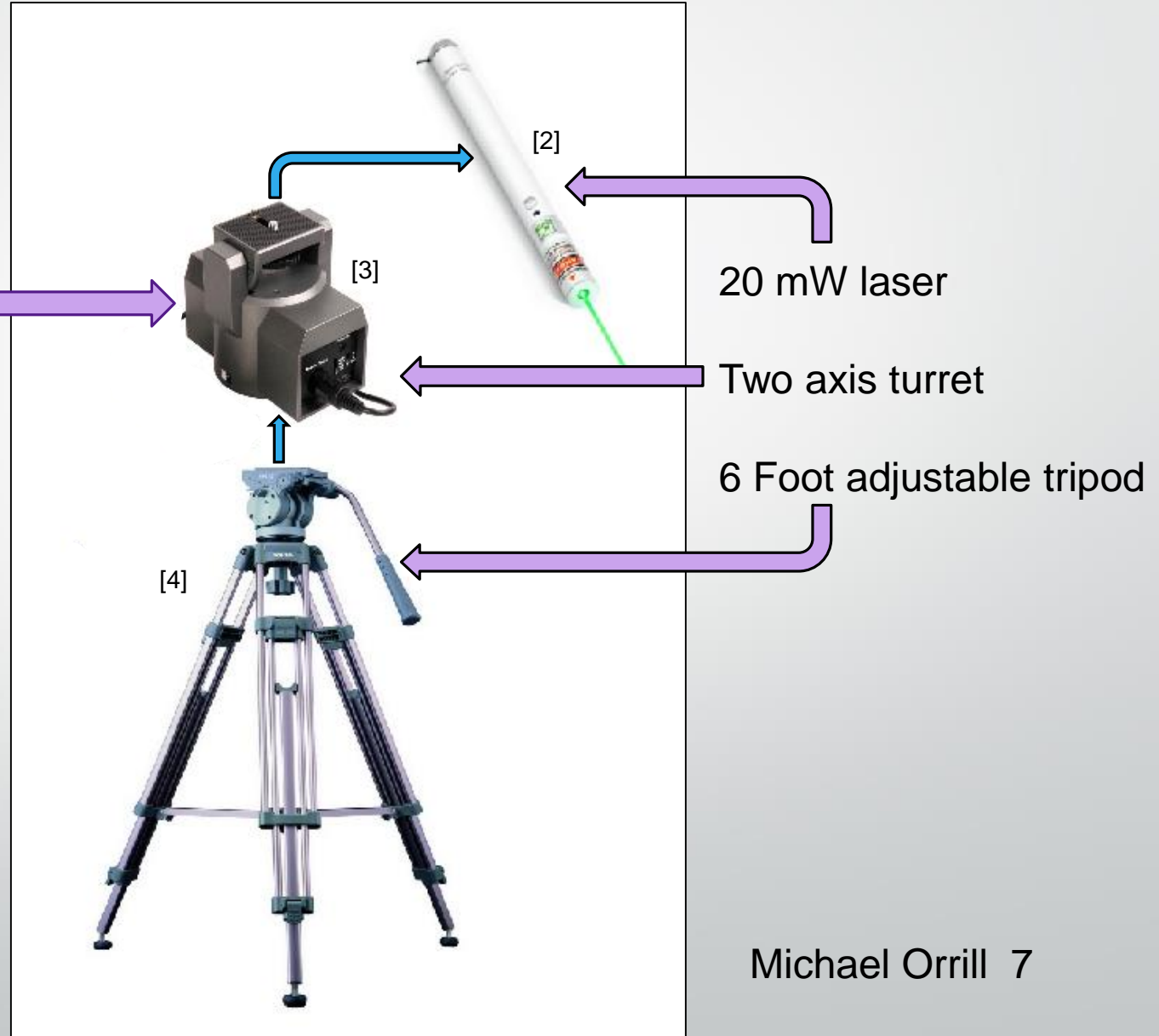
[6]



[7]

[6] <http://www.sample.net/prod/gadgets-apps/nintendo-wii-remote-jackets-free-sample-453.html>  
[7] <http://www.amazon.co.uk/Playstation-Move-Controller-Black-PS3/dp/B003R7KV16>

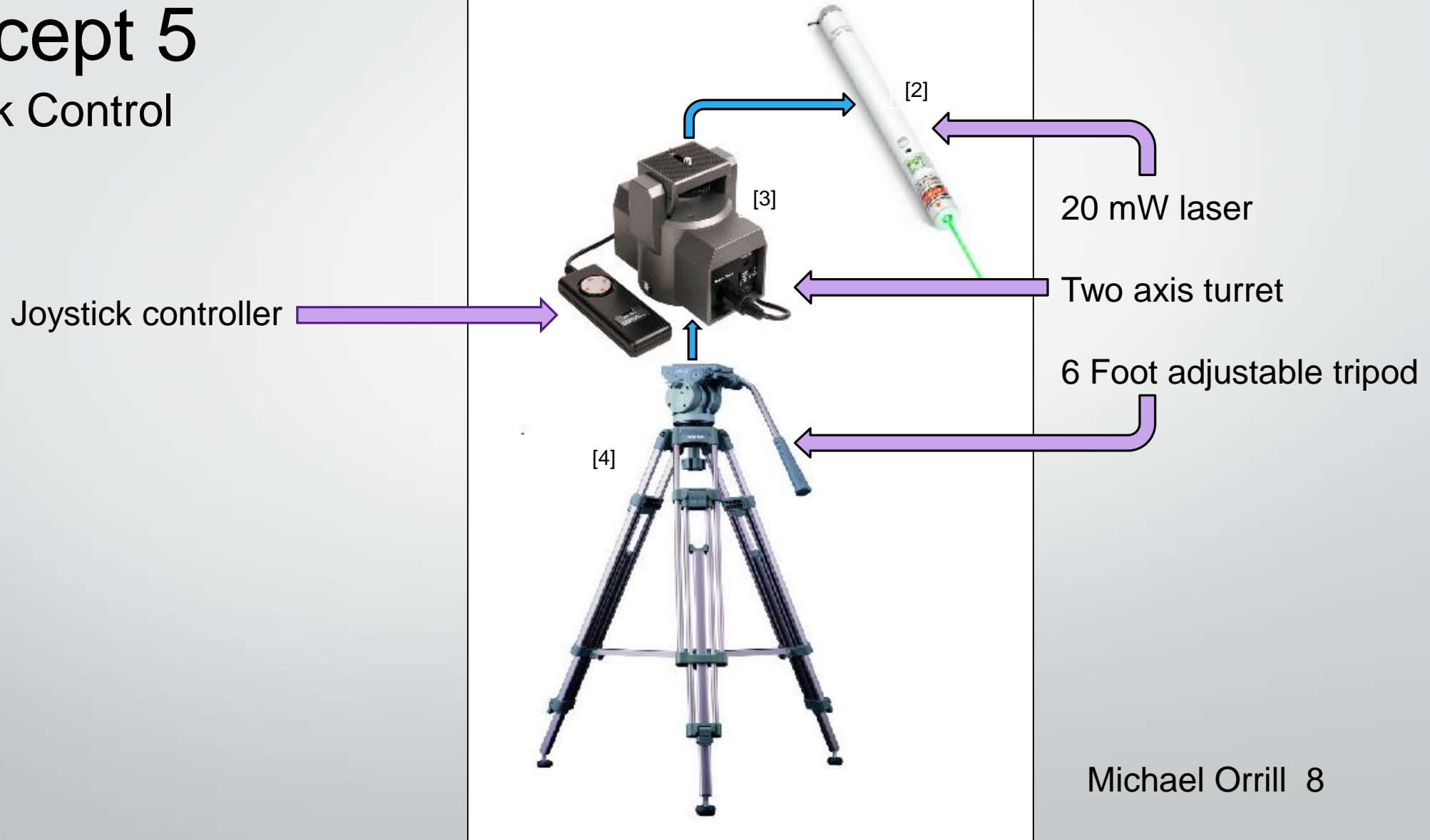
### Overall Design Concept



# Concept 5

## Joystick Control

### Overall Design Concept





# Concept Selection

## Decision Matrix

Weight	5	3	3	2	5	18	
Weight Percent	28%	17%	17%	11%	28%	100%	
System Design	User Control	Mechanical Design	Manuverability	Cost	Electrical Design	Score	Visual score
Hand Held	5	1	5	5	3	3.8	
Tablet Control	3	3	3	1	2	2.5	
Smart Phone Control	5	3	3	3	2	3.3	
Motion Sensor	4	3	3	3	1	2.7	
Joystick Control	2	3	3	5	5	3.5	

Scale: 1-5

1 = Least Desirable

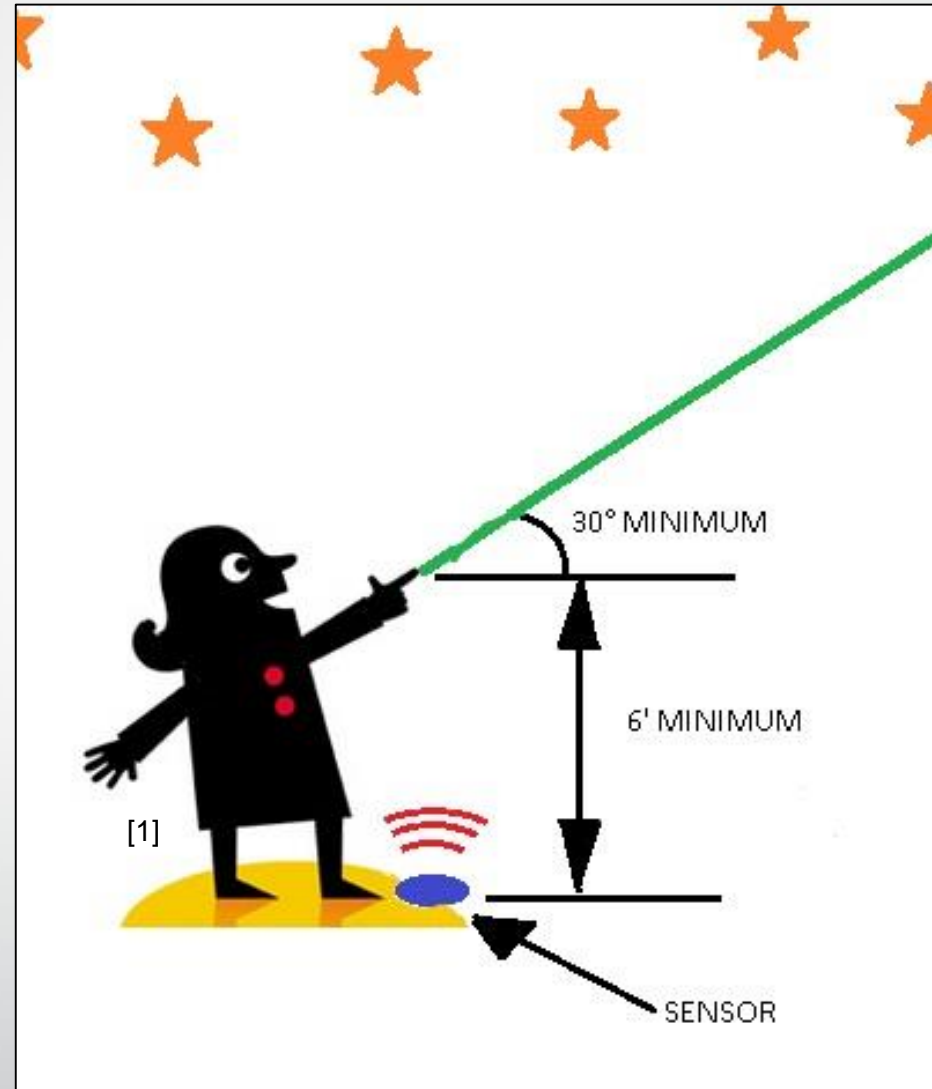
5 = Most Desirable

# Concept Selection

## Hand Held Unit

- Intuitive Control
- Cost Efficient
- Electronics Simplicity

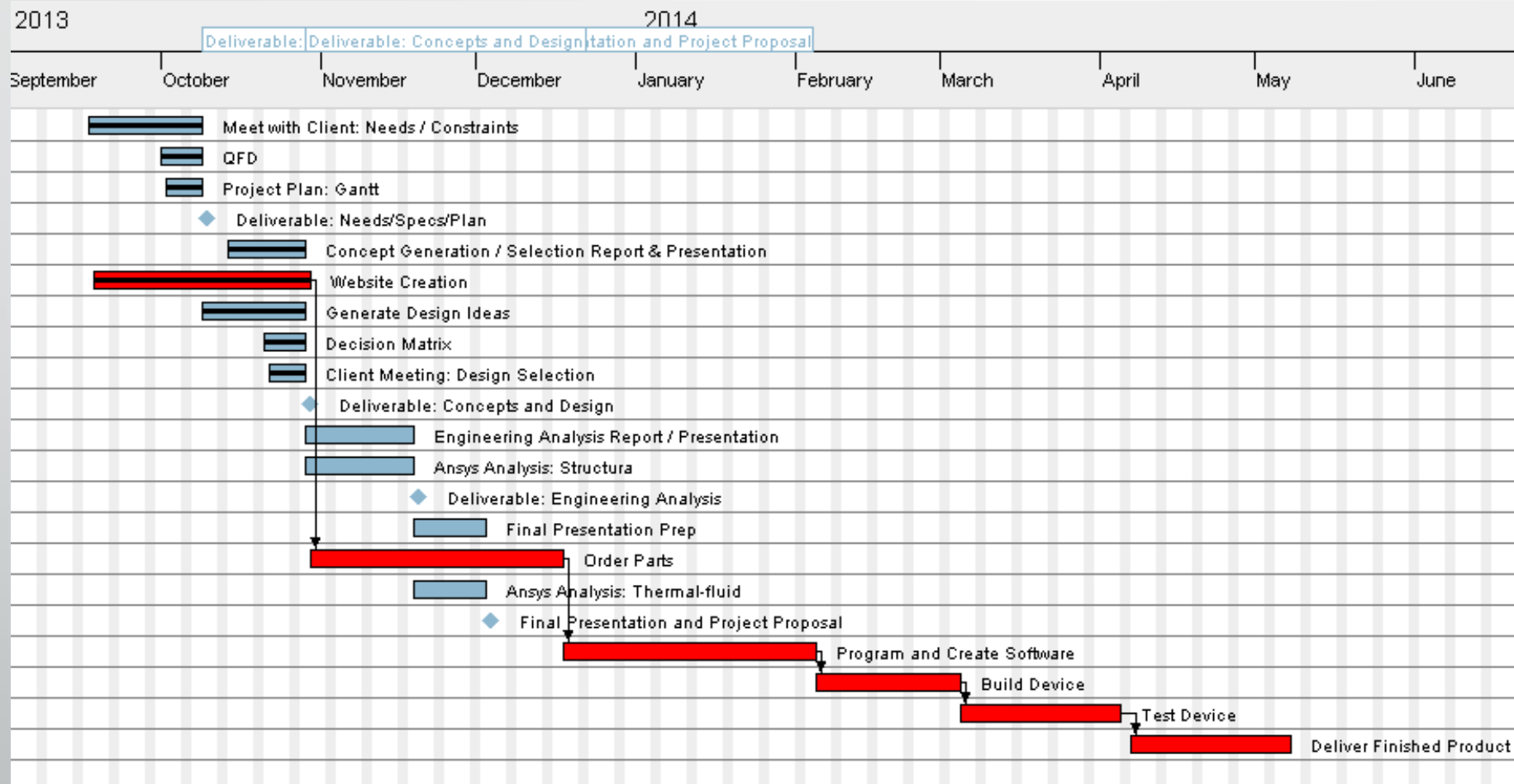
## Hand Held Concept Diagram



# Project Plan

- Revised Gantt Chart
- Capstone website implemented by Oct 29<sup>th</sup>, 2013
- Order Parts by December 2013
- Program and software built by February 2014
- Build and Test by March 2014

# Revised Gantt Chart



# Conclusion

- Need: Device designed to allow the use of a regulated laser
- Designs:
  - 1) Hand-held: Two accelerometers to detect laser height and angle
  - 2) Tablet: Astronomy software, touch-to-position
  - 3) Smartphone: Accelerometer translates motion to turret.
  - 4) Infrared: IR detection to create a vector in space, translated to turret
  - 5) Joystick: Wired joystick to manually control the turret.
- Hand Held concept
- Plan: Parts ordered by Dec, build and test by March 2014

# References

[1] <http://www.vectorstock.com/royalty-free-vector/people-pointing-vector-6316>

[2] <http://www.highlasers.com/10mw-green-laser-pointer-w/>

[3] <http://geb.ebay.in/g/ImportHubViewItem?itemid=121106016969&Bescor-MP-101-Motorized-Camera-Panhead-with-Remote-Control-MPH-1>

[4] <http://www.made-in-china.com/showroom/wakotripod/product-detailBogxqRnbYtWM/China-Video-Camera-Tripod-KH-25II-.html>

[5] <http://www.mikesjournal.com/July%202010/iPad%20Eclipse%20Star%20Walk%20App.htm>

[6] <http://www.sample.net/prod/gadgets-apps/nintendo-wii-remote-jackets-free-sample-453.html>

[7] <http://www.amazon.co.uk/Playstation-Move-Controller-Black-PS3/dp/B003R7KV16>



# Questions?