TEAM 18: PENETROMETER

Sponsor: National Park Service - Dr. Russo
Advisor: Dr. Shih
Instructors: Dr. Gupta, Dr. Frank

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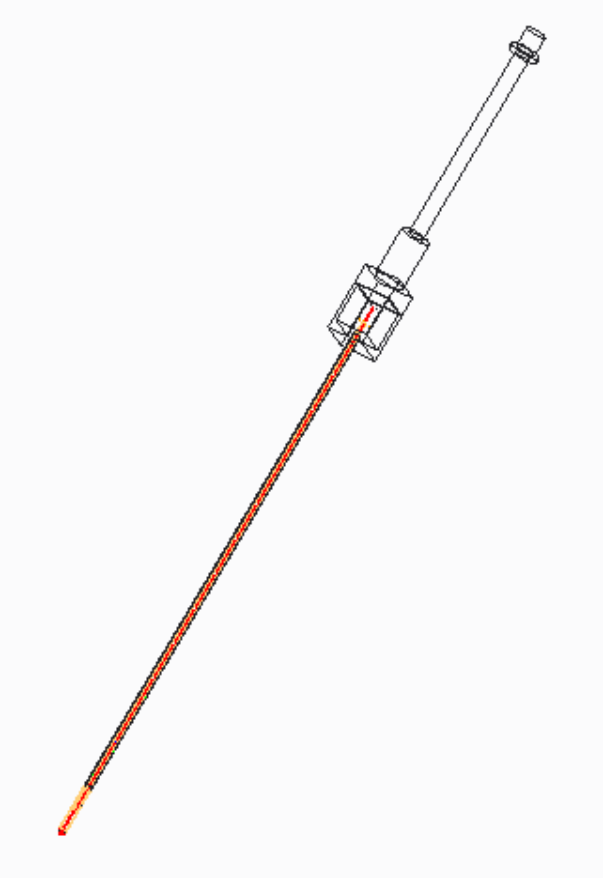
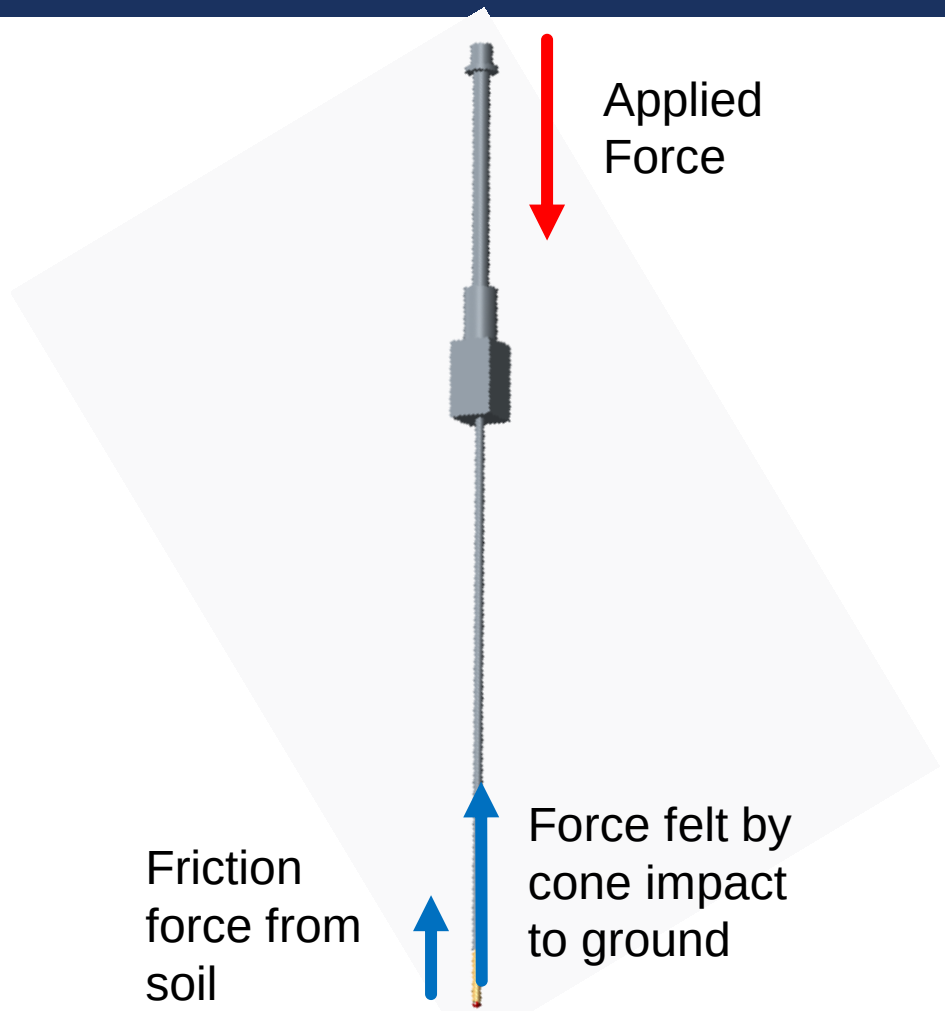
NATALIE MARINI - ME
MITCHELL ROBINSON - EE
MARITZA WHITTAKER - ME

SCOPE OF PROJECT PENETROMETER

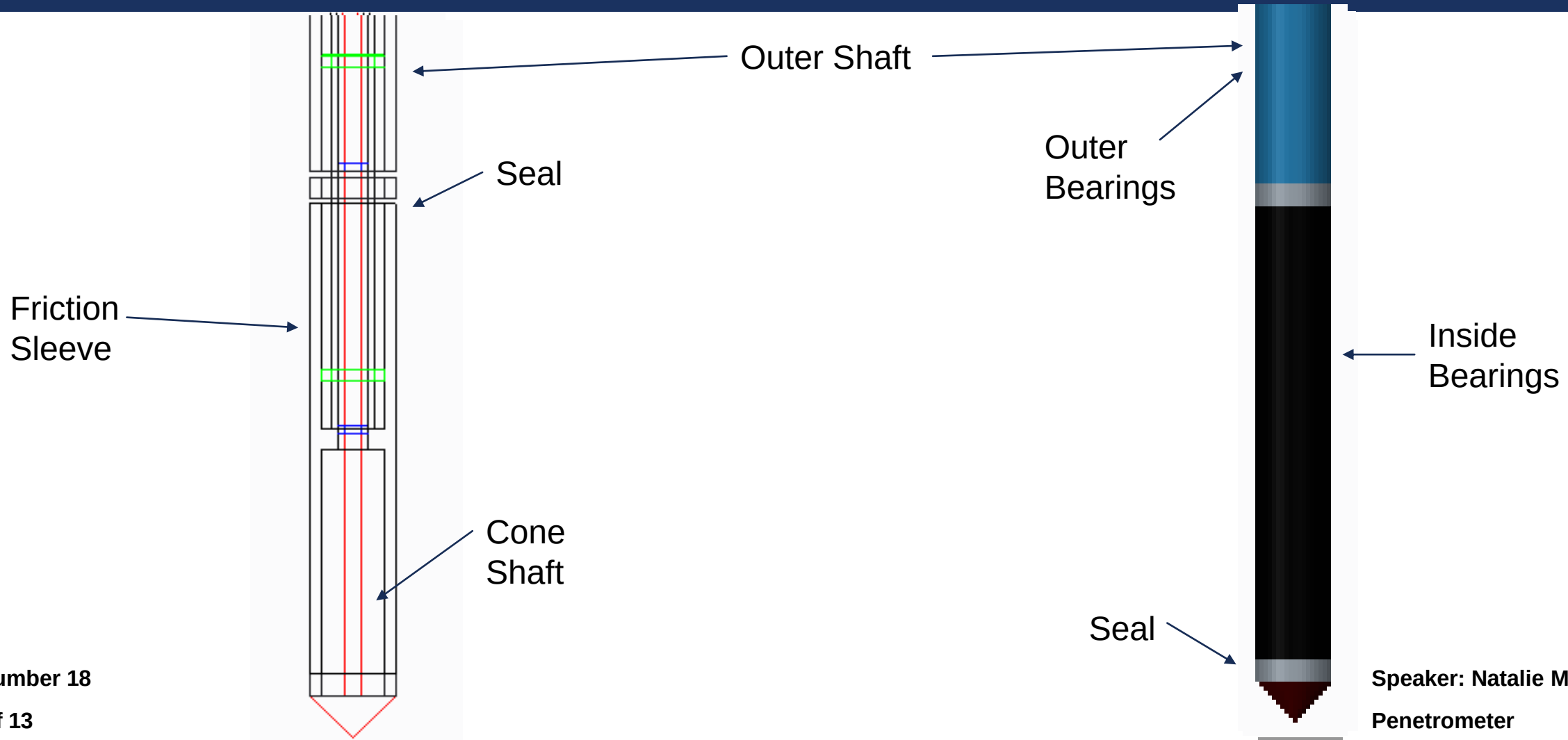
- National Park Service
- Detect midden levels in soil
- Create user-friendly device



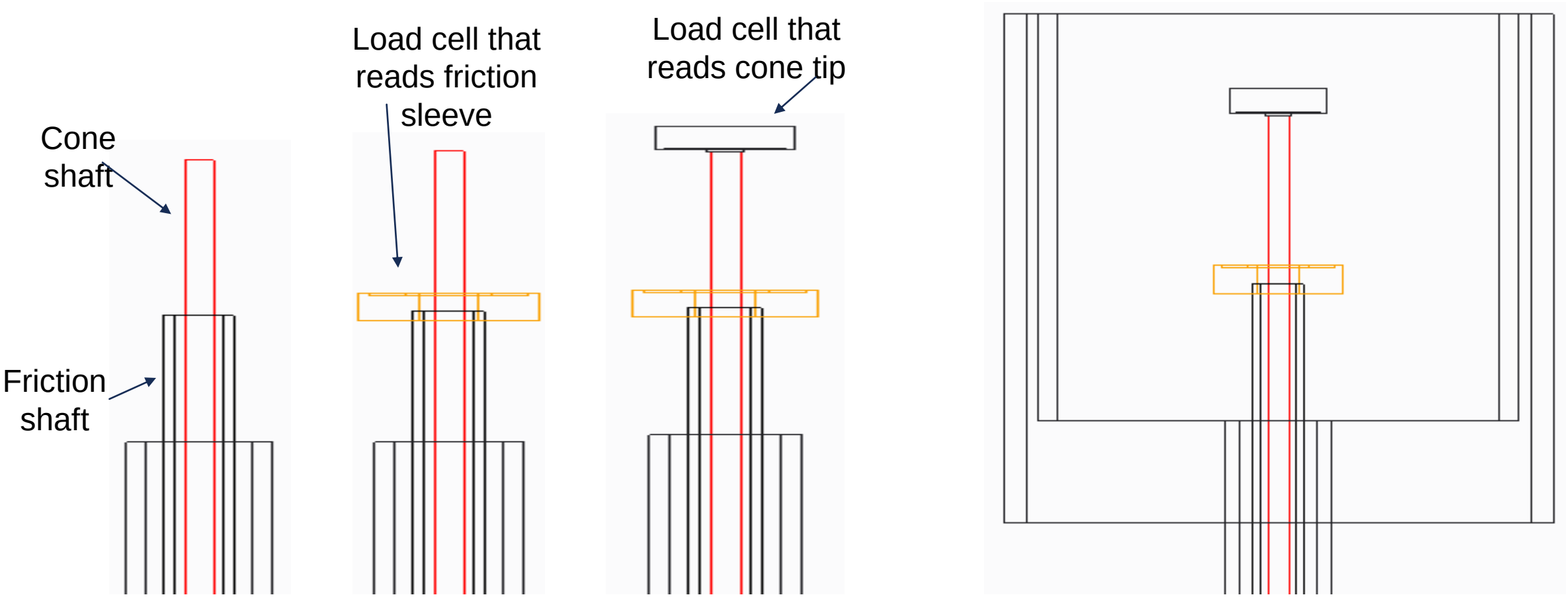
FORCE DIAGRAM



MECHANICAL SHAFT DESIGN



LOAD CELL ARRANGEMENT



CONCERNS AND CHANGES

Concerns

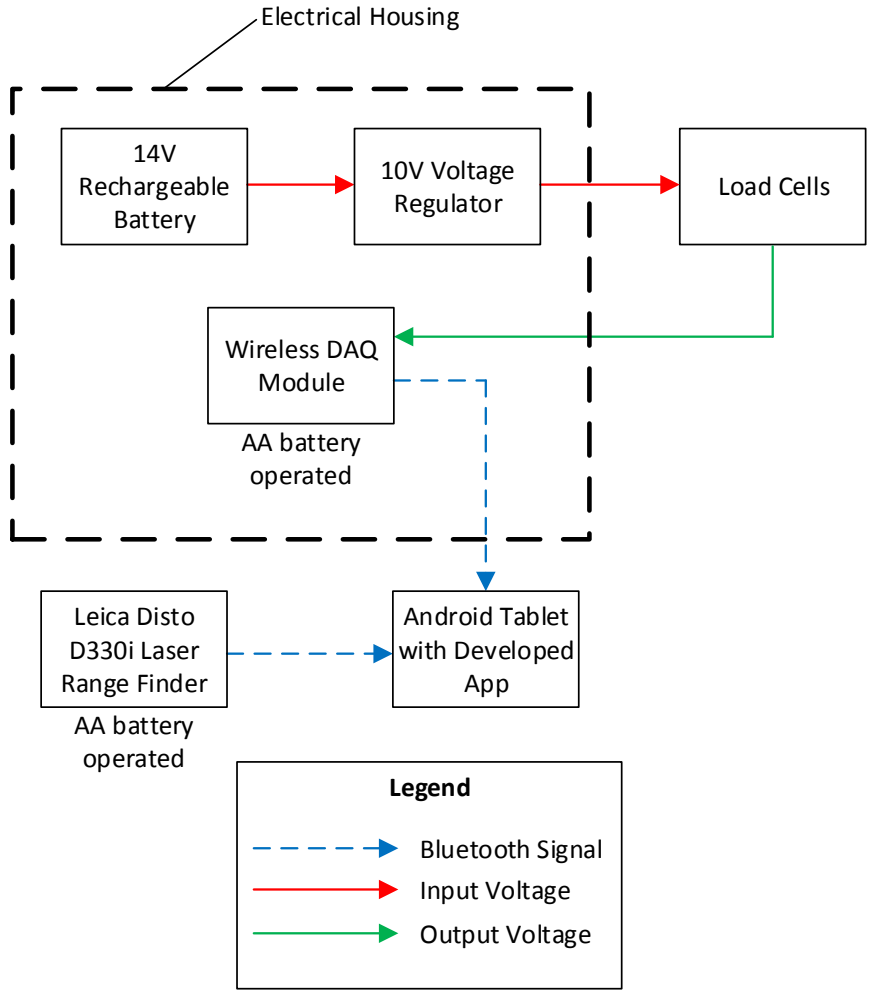
- Shaft size
- Machinability
- T-Bar versus Drop weight for applied force
- Electronics location

Changes

- Shape and placement of load cells
- No extensions

Load Cells

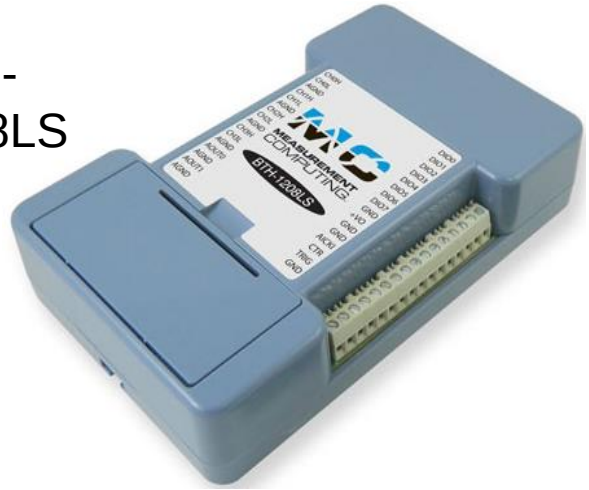
ELECTRICAL SYSTEM



- Voltage regulator has been added between load cells and 14V battery to ensure consistent power supply
- Laser range finder and DAQ can BOTH connect to the android device simultaneously
- Develop App for displaying results

ELECTRICAL COMPONENTS

DTH-1208LS



- Bluetooth Sampling: 1 kS/s continuous, 47 kS/s burst mode
- Four 12-bit DIFF analog inputs
- Two AA cells

Leica DISTO D330i

- Accurate to 1/16th of an inch
- Compatible with Android devices
- Uses Bluetooth V2.0
- 2x AAA 1.5 V batteries

CONCERNS AND CHANGES: ELECTRICAL

Concerns

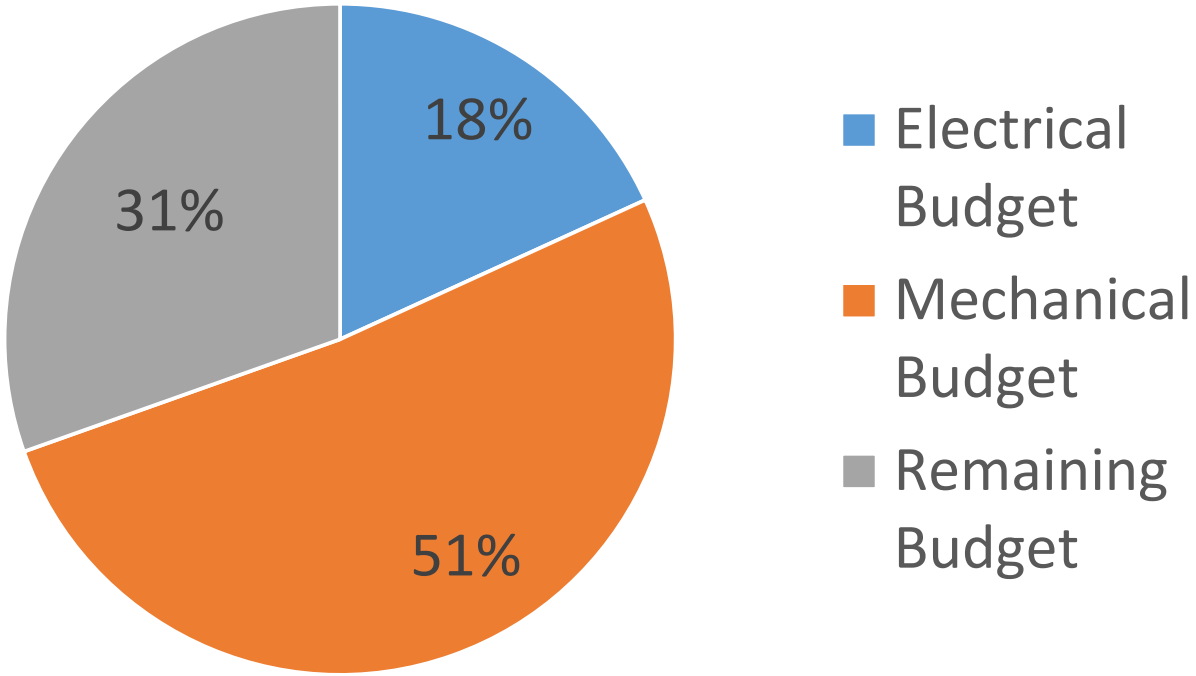
- DAQ Bluetooth capabilities
- Coding the final app
- Housing
- Resolution of data

Changes

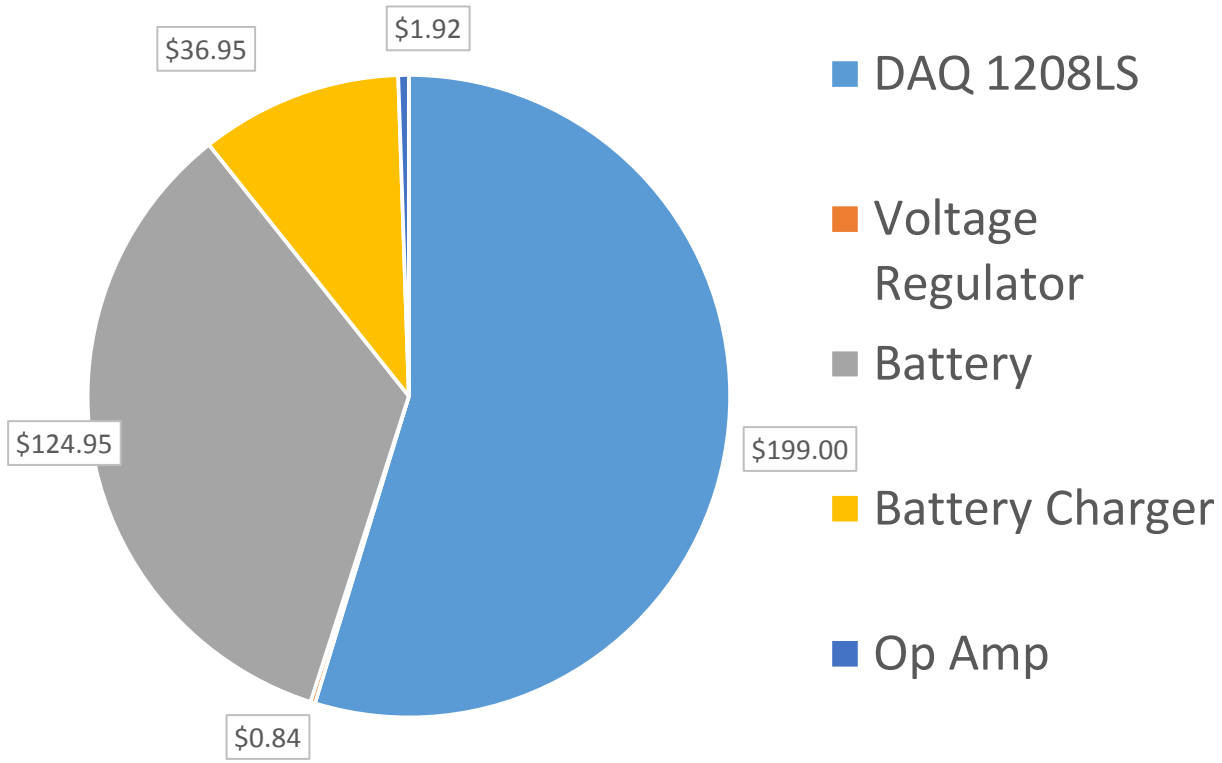
- Added voltage regulator

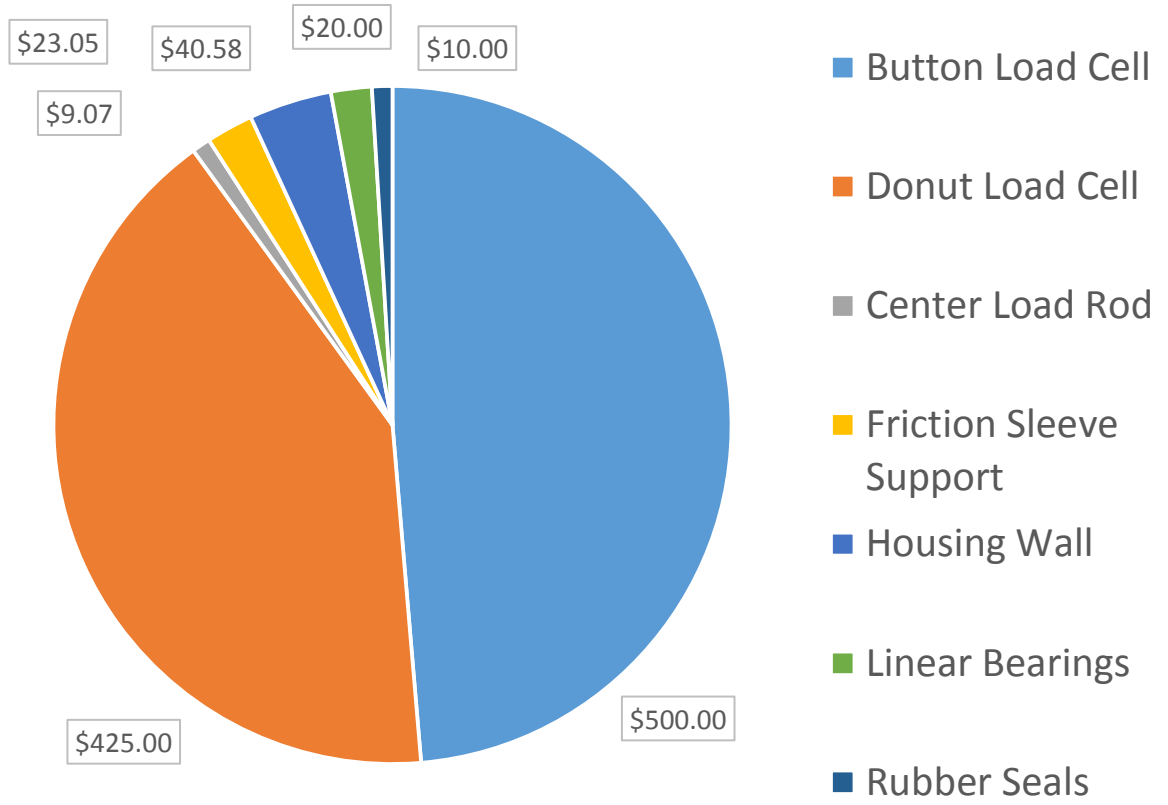
PROCUREMENT

- Allotted Budget: $2000
  - Total Est. Cost of Electrical Parts: $324
  - Est. Cost of Load Cells: ~ $500, each
  - The sponsor may provide further funds

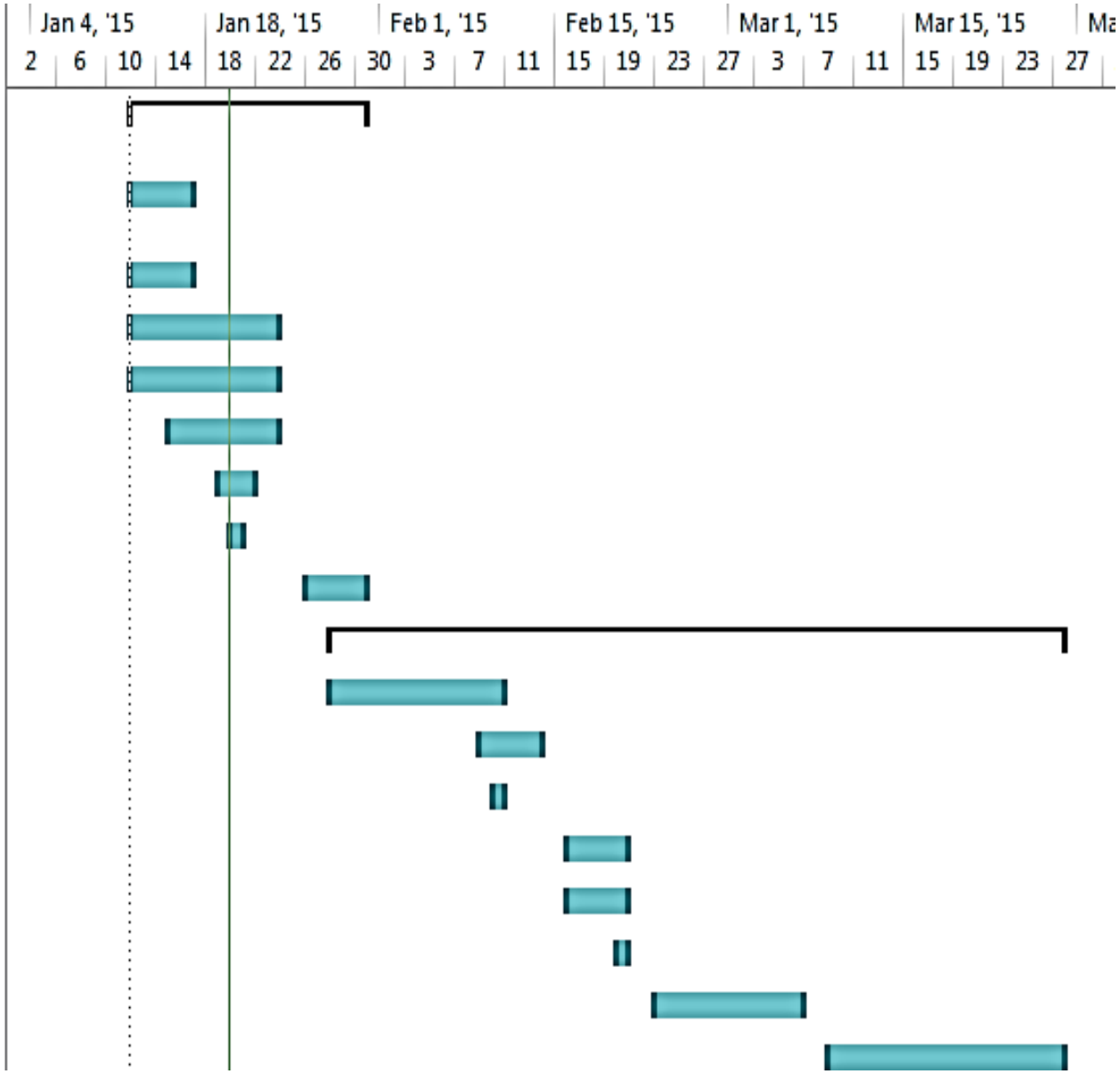


PROCUREMENT





	Task Name	Duration	Start	Finish
1	**Approve Final Designs and Order Parts**	**15 days**	**Mon 1/12/15**	**Fri 1/30/15**
2	Restated Project Definition and Scope/Project Plan	5 days	Mon 1/12/15	Fri 1/16/15
3	EE Final Design	5 days	Mon 1/12/15	Fri 1/16/15
4	Update Web Design	10 days	Mon 1/12/15	Fri 1/23/15
7	ME Finalized Design Approved	10 days	Mon 1/12/15	Fri 1/23/15
8	ProEs for Final Design	7 days	Thu 1/15/15	Fri 1/23/15
5	EE Purchase Forms Sent	3 days	Mon 1/19/15	Wed 1/21/15
6	Update Presentation	1 day	Tue 1/20/15	Tue 1/20/15
9	Orders Sent to the Machine Shop	5 days	Mon 1/26/15	Fri 1/30/15
10	**Build and Test Design**	**43 days**	**Wed 1/28/15**	**Fri 3/27/15**
11	Test Electronics	10 days	Wed 1/28/15	Tue 2/10/15
13	Build mechanical design	5 days	Mon 2/9/15	Fri 2/13/15
12	Order appropriate battery	1 day	Tue 2/10/15	Tue 2/10/15
14	Finish Overall Build	5 days	Mon 2/16/15	Fri 2/20/15
16	Construct electronics housing	5 days	Mon 2/16/15	Fri 2/20/15
17	Team Evaluation Report	1 day	Fri 2/20/15	Fri 2/20/15
15	Test system with soil types	10 days	Mon 2/23/15	Fri 3/6/15
18	Tweak and redesign	15 days	Mon 3/9/15	Fri 3/27/15



ANY QUESTIONS?

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http://eng.fsu.edu/me/senior_design/2015/team18/