

## Team #17 30 lb. Combat Robot "Mike WaPlowSki"

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### Background

- Sumo style robot competition in which the goal is to remove or immobilize opponent robot from or in the combat volume
- Robots have a 30 lb. weight limit
- \$2500 budget

### Objectives

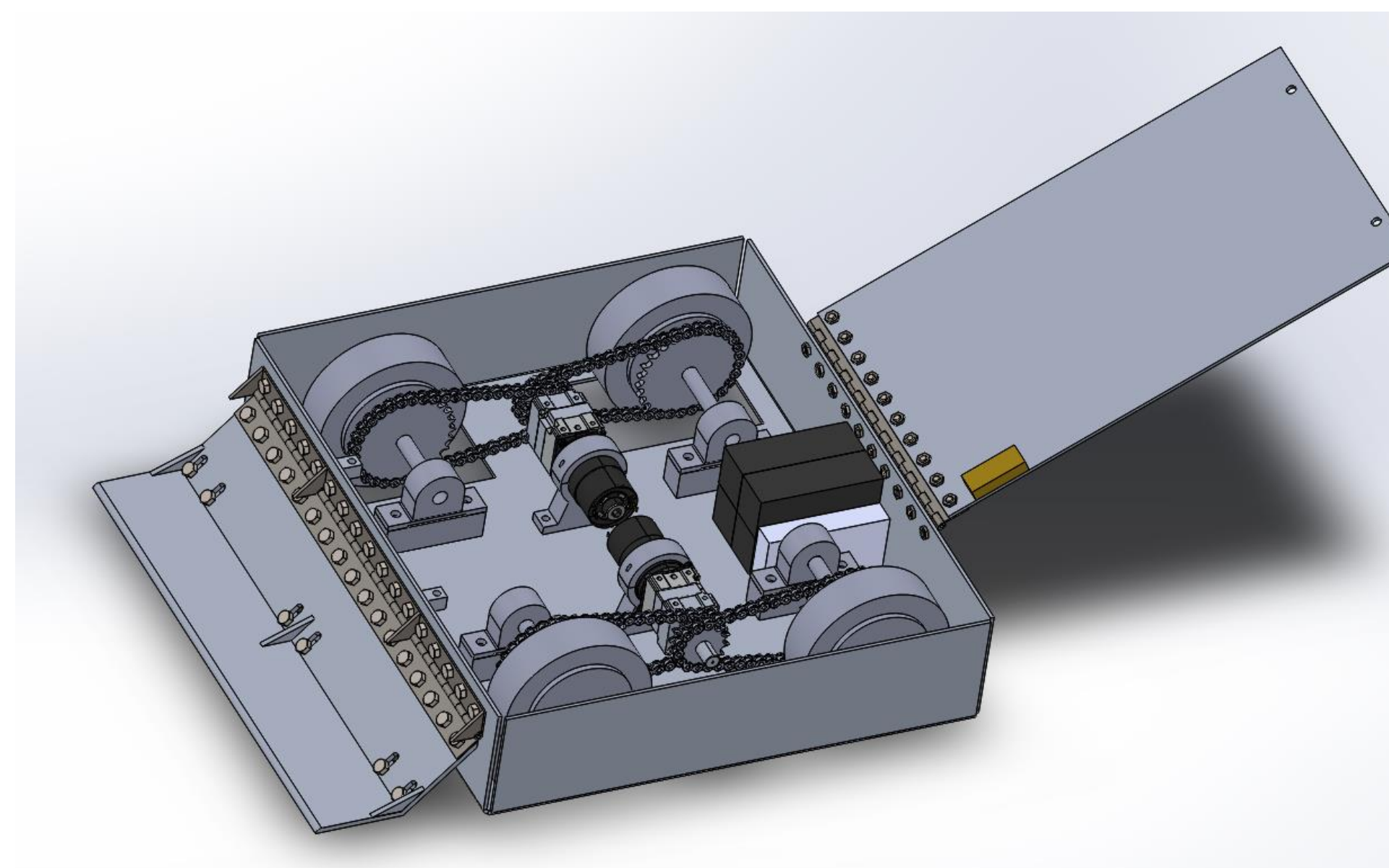
- Design and manufacture a robot that adheres to the rules and regulations of the competition
- Win the 2019 Bengal Bot Brawl and advance to the national competition

### Engineering Specifications

	Projected	Actual
Battery Voltage	12 V	12.6 V
Battery Capacity	22000 mAh	20800 mAh
Speed	10 ft/s	11 ft/s
Pushing Force	80 lb	95 lb
Turning Radius	0 ft (360°)	0 ft
Weight	30 lb. ± 2.5%	30.05 lb

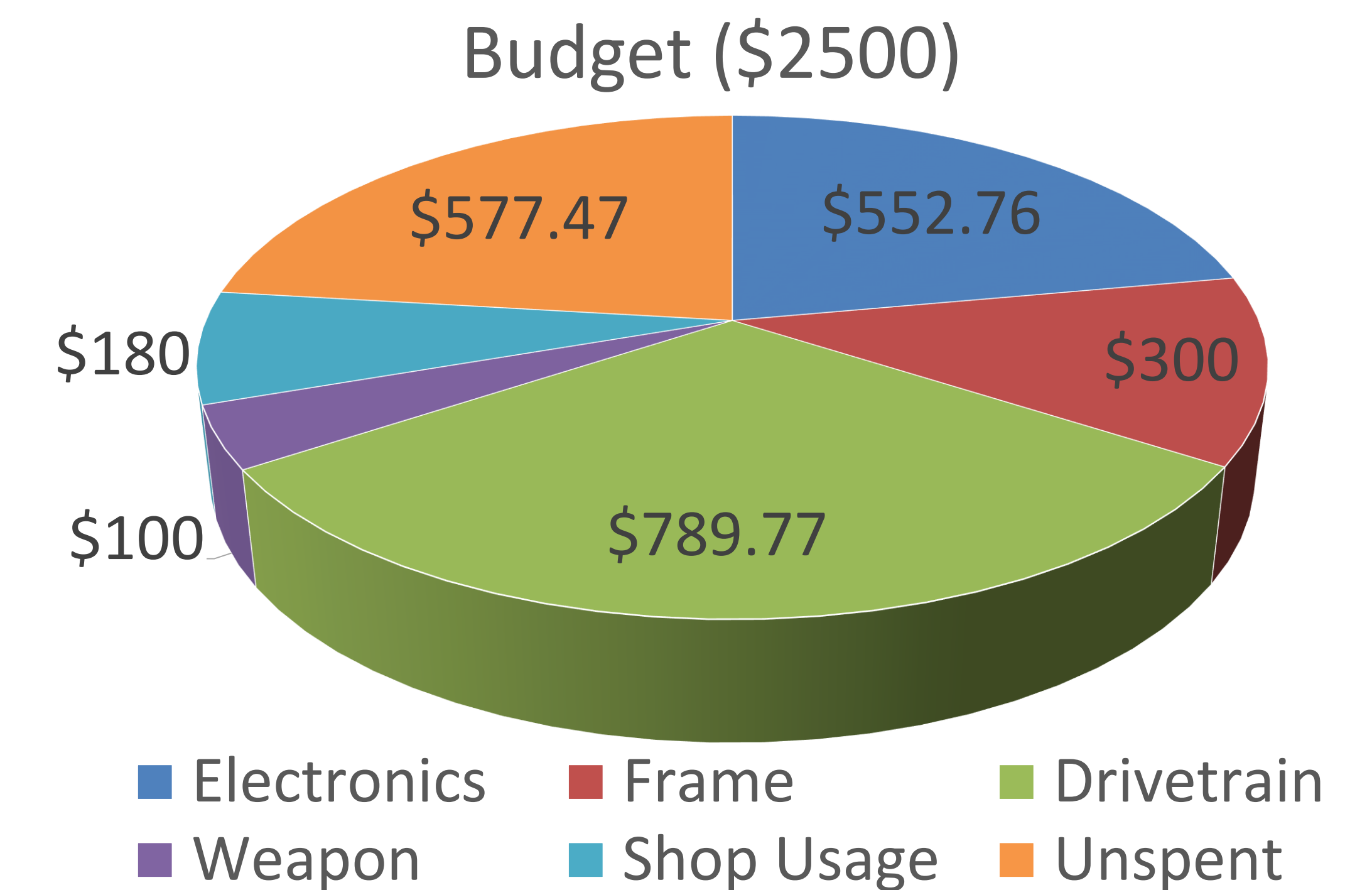
### Safety Considerations

- Kill switch to shut off power to motors
- Must be safe for everyone at the competitions
- Adequate heat dissipation for electronics
- Protection for LiPo batteries in combat/ safe storage



### Competition Results

Placed **1st** in the Bengal Bot Brawl with a record of 3 wins and 1 loss. **Dominated** the rumbles (free for all format) with 6/9 possible eliminations.



### Major Analysis

- Stress analysis (frame and weapon)
- Drive ratio analysis (Chain, Sprockets, Gearbox)
- Power analysis (Batteries, Motor, ESC)

### Testing

- Push load test
- Driving test
- Friction test
- Speed test
- Controller range test
- Drop test
- Impact test
- Battery run time test
- Motor/Gearbox test
- Internal component heat test

