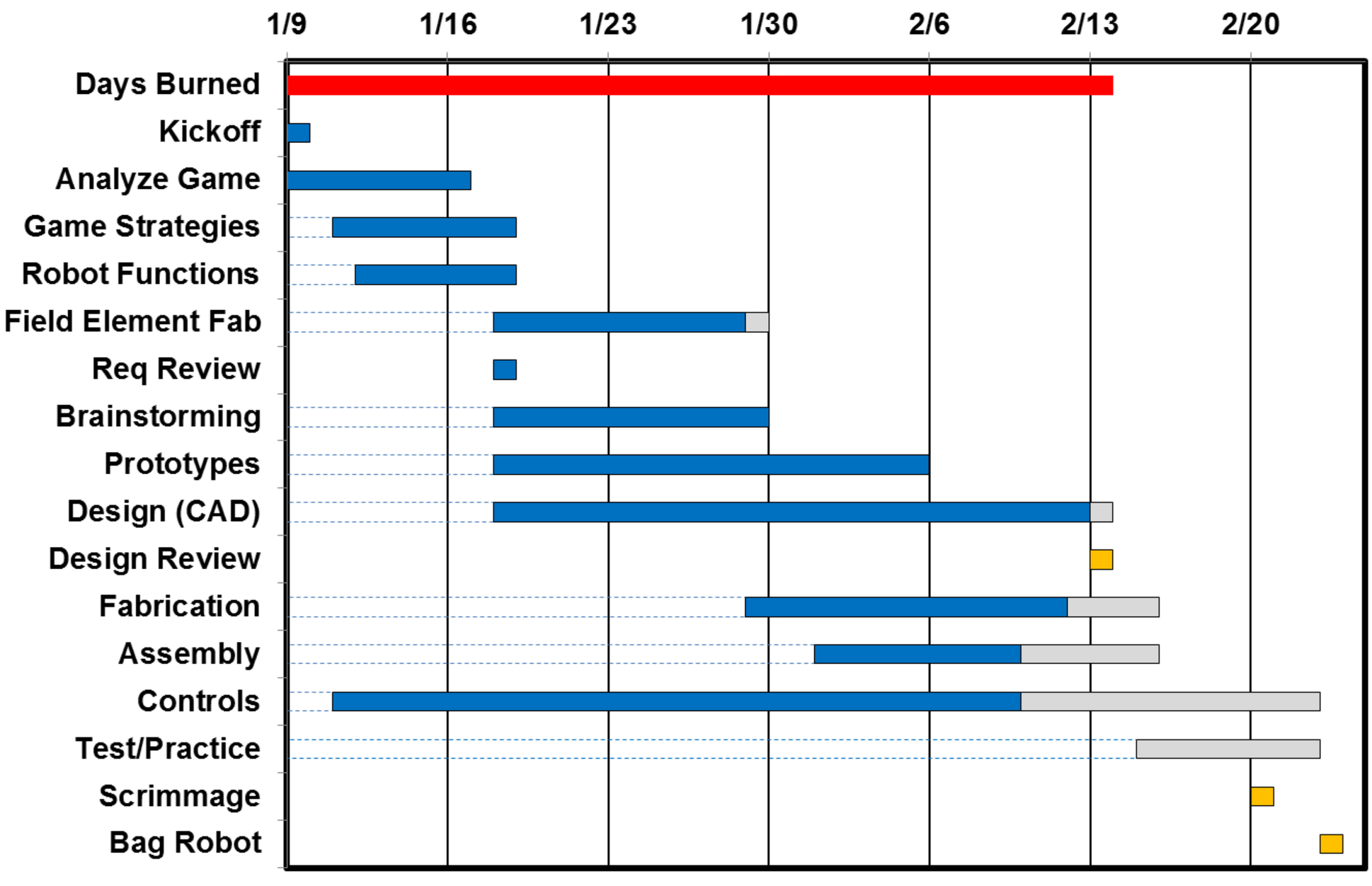
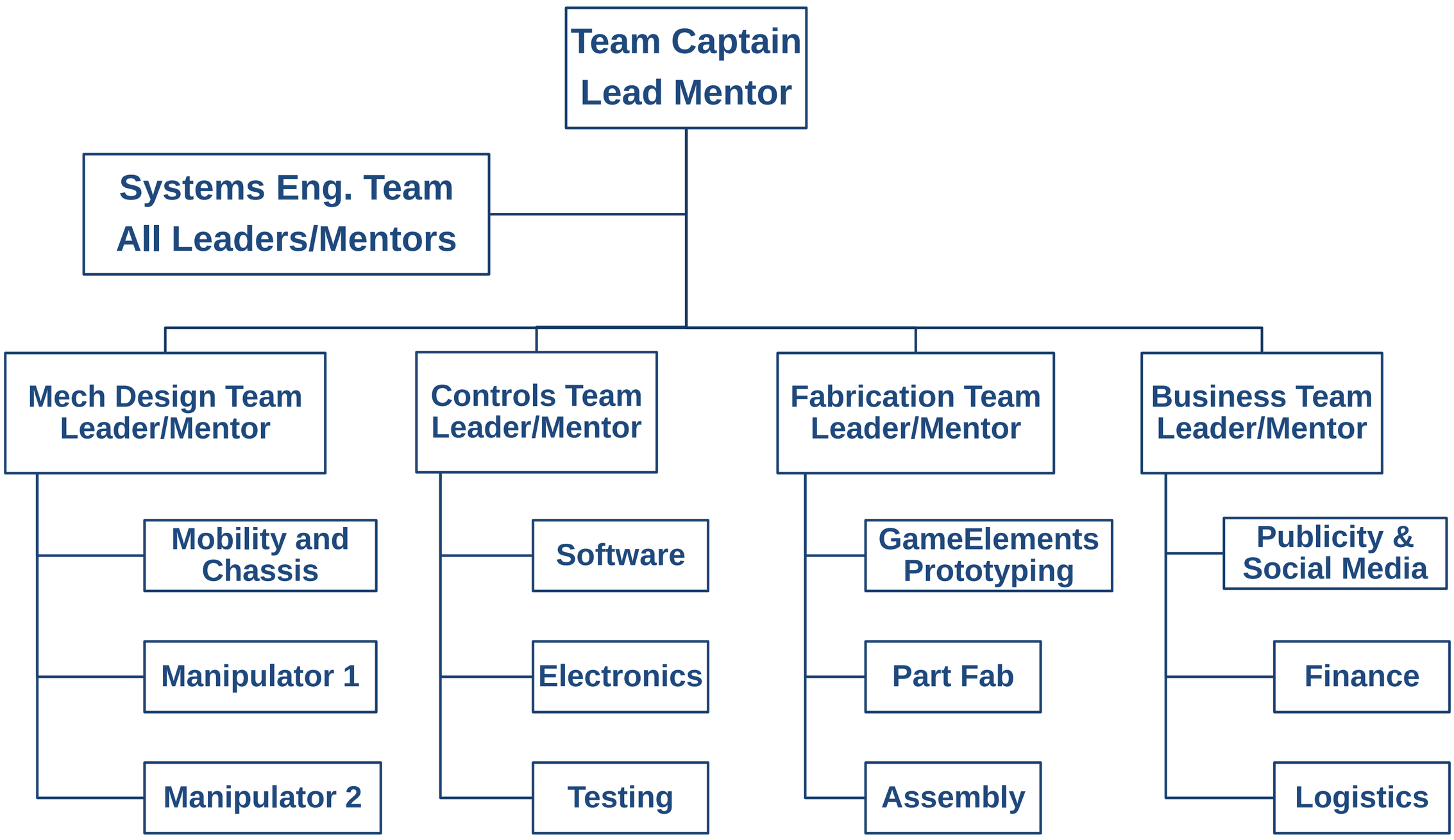
ENGINEERING PROCESS

Engineering Development Environment

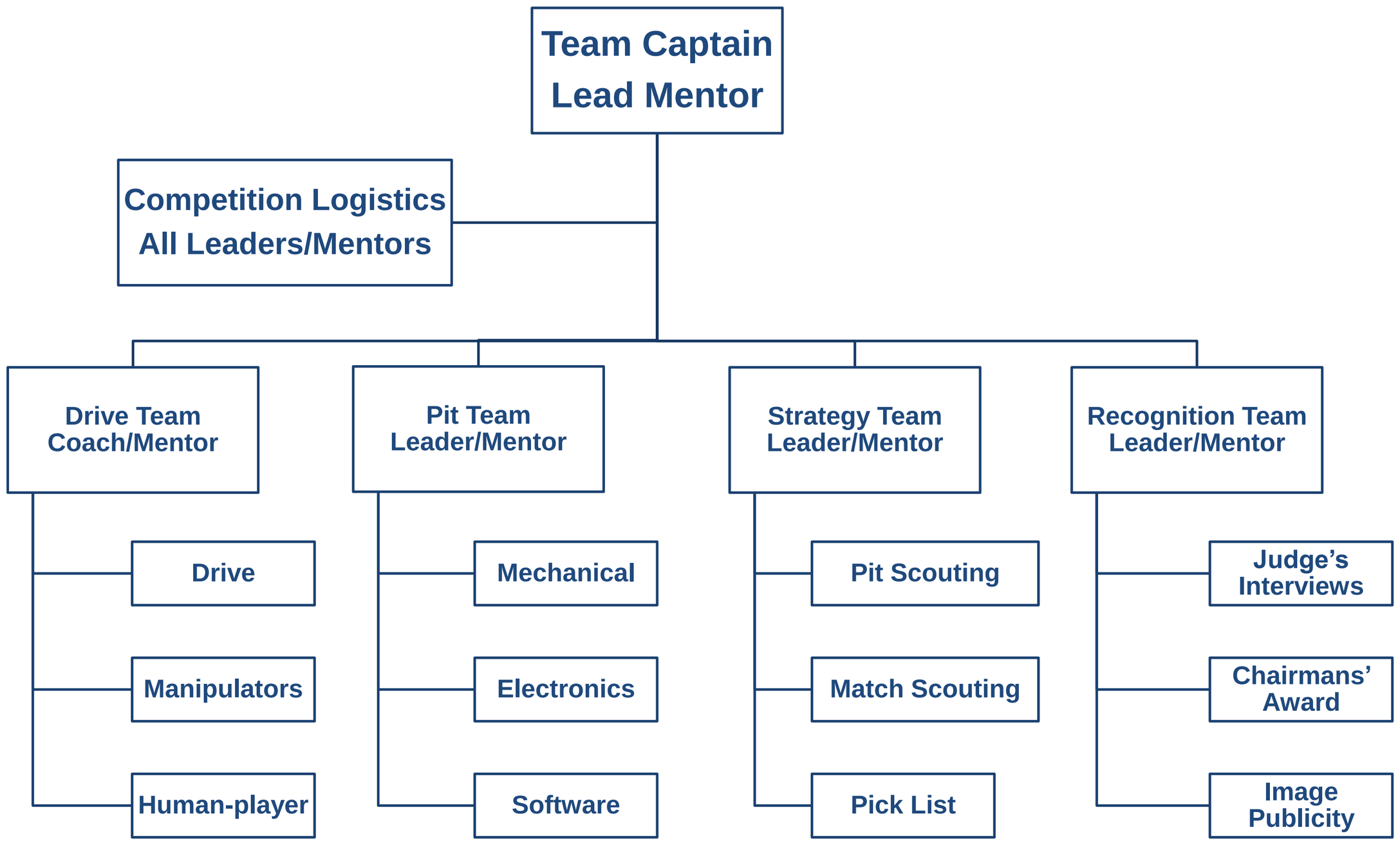
2016 BUILD SCHEDULE



Build Season Organization Board



Competition Season Organization Board



Team Development Opportunities

“Technology and Entrepreneurship”

Codi Simms, Director, Disney Accelerator

“Leadership and Teamwork”

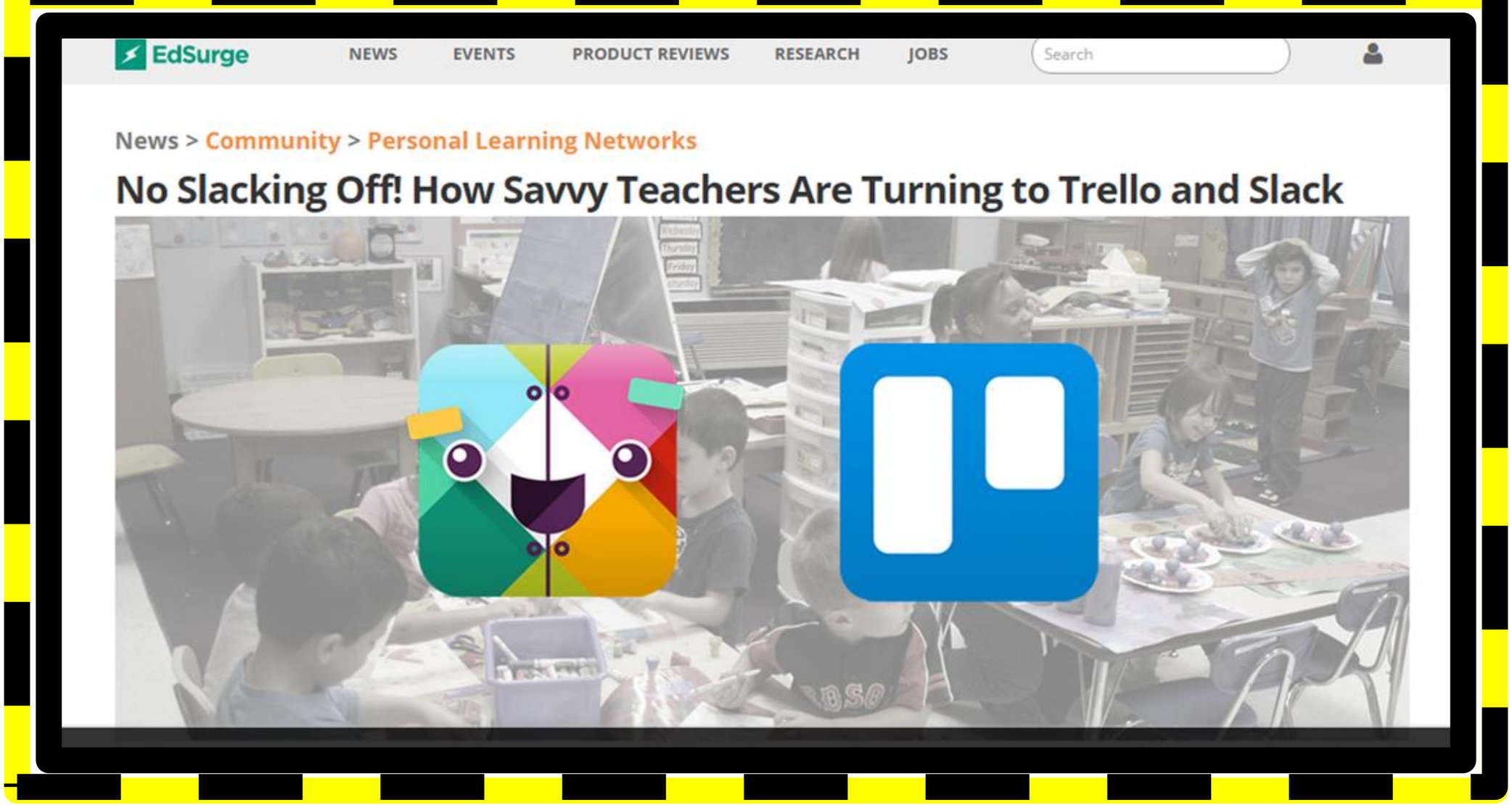
Chris Hagen, Exec. Coach

C++ - 6 week class

Mark Littlefield, Team 980 Mentor

- SolidWorks – 6 week class
  David Toyne, Team 980 Mentor
- Tour at JPL Open House
  David Brinza, Team 980 Lead Mentor
- Tour at Walt Disney Imagineering
  Ali Tarazkar, Team 980 Mentor
- “Opportunities After School”
  Galina Malakhova, Team 980 alumni

Updating our Communication Techniques



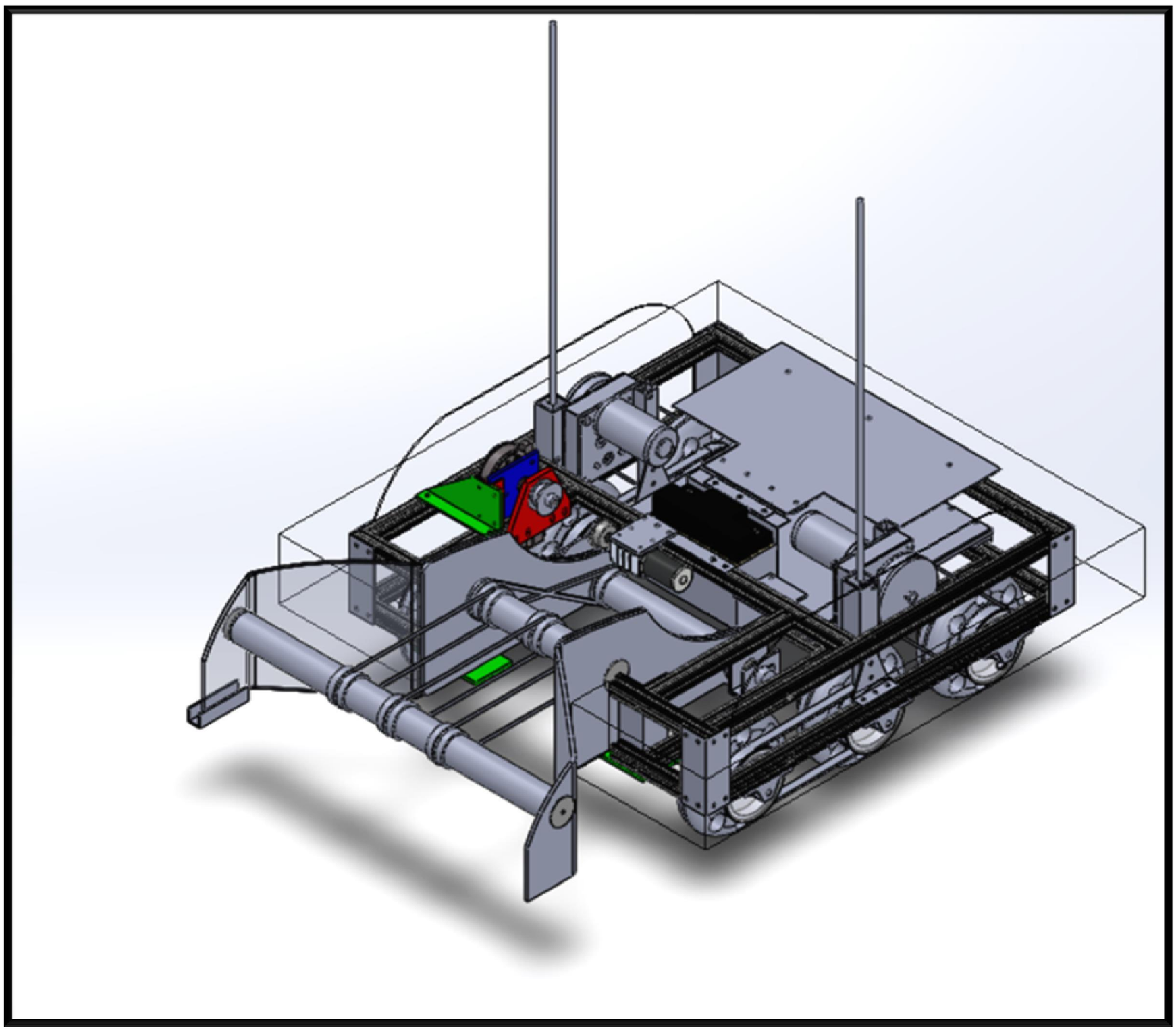
-We migrated our communication to Slack, an innovative communication tool used by large companies like NASA/JPL.

-We adopted Trello as our on-line work space to collaborate on projects, tasks and checklists.

SolidWorks Models

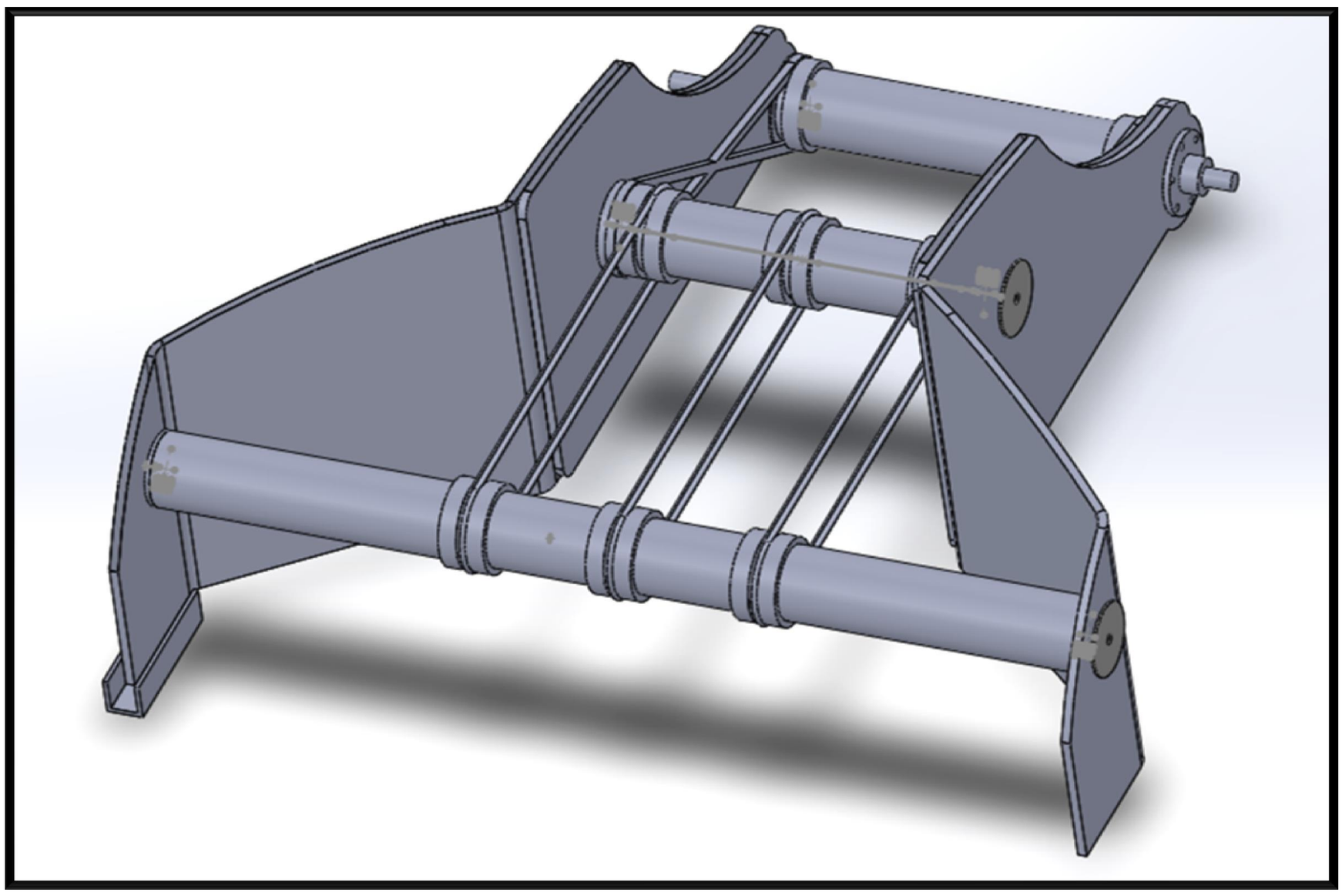
Lightning XIV

Complete Robot w/ arm



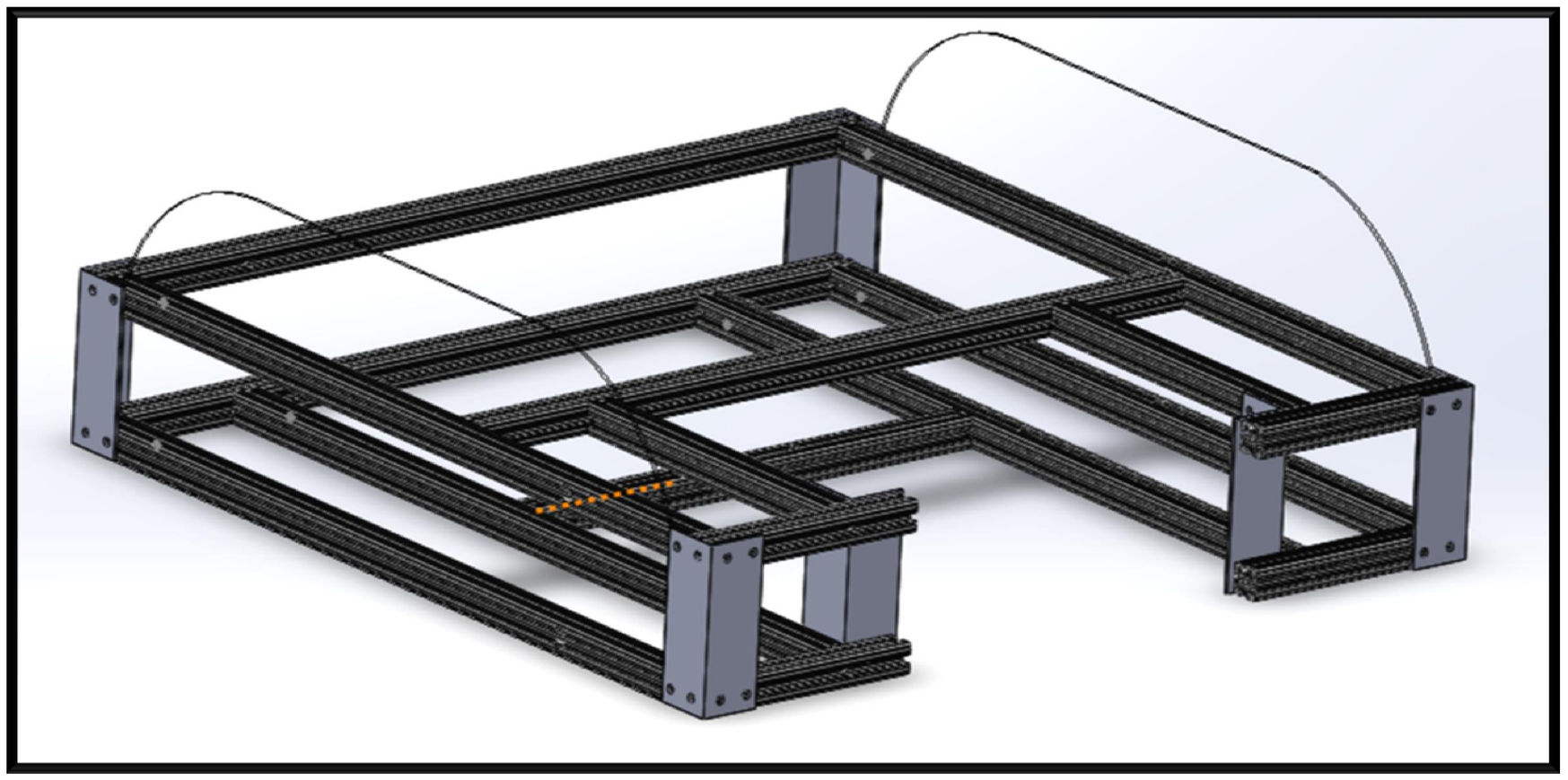
- Robust Drive Train [max speed 10’/sec]
- Low profile [low-bar/high stability]
- Over 50 ft. lbs. of Torque.

Lightning XIV
Arm: boulder pick-up/delivery



- Simple, effective boulder pick-up
- Score low goals or pass to alliance partner
- Ball is securely carried across defenses.

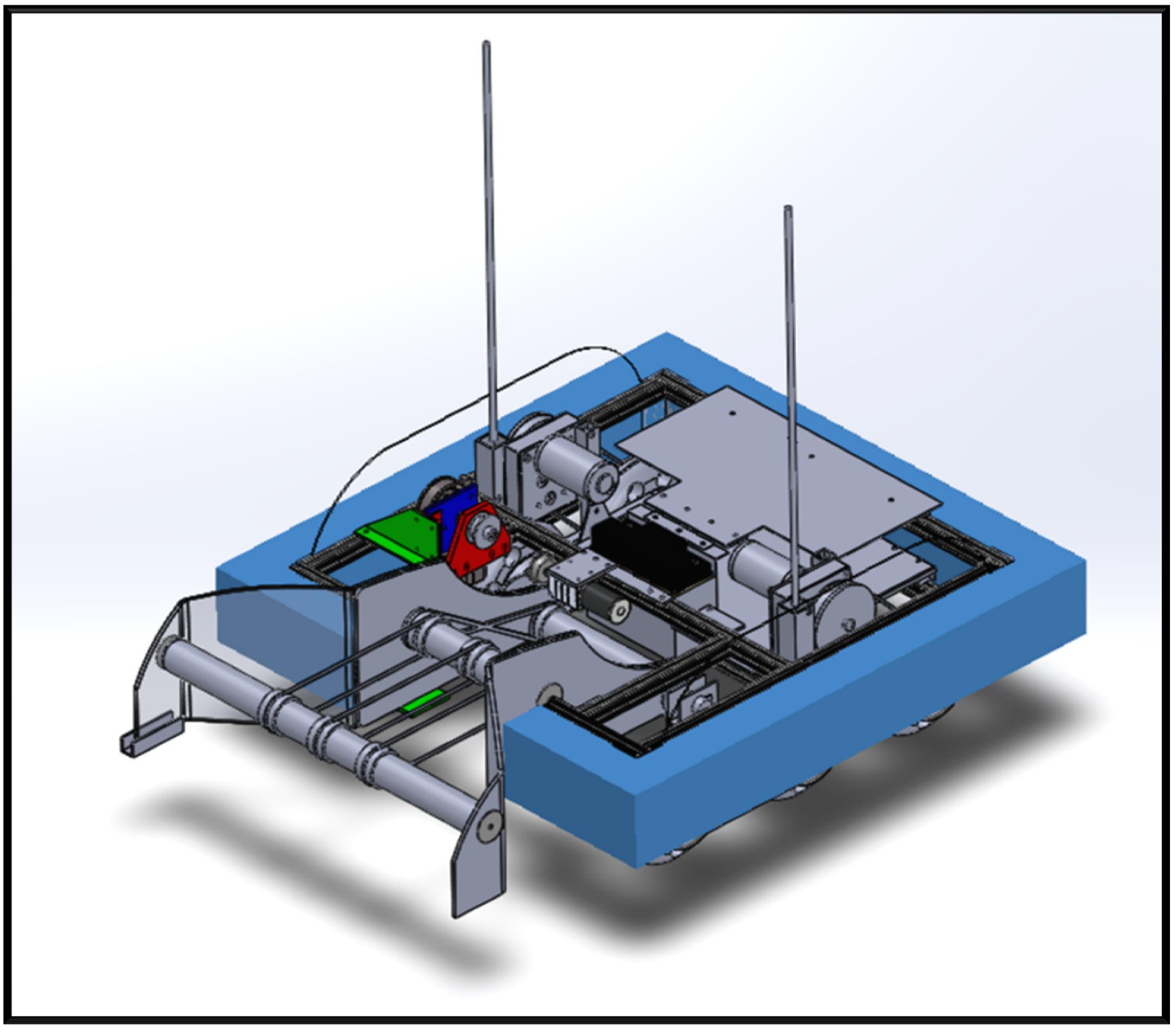
Lightning XIV Frame



- Robust Frame designed to absorb energy
- Made of 80/20 to simplify construction and positioning of components

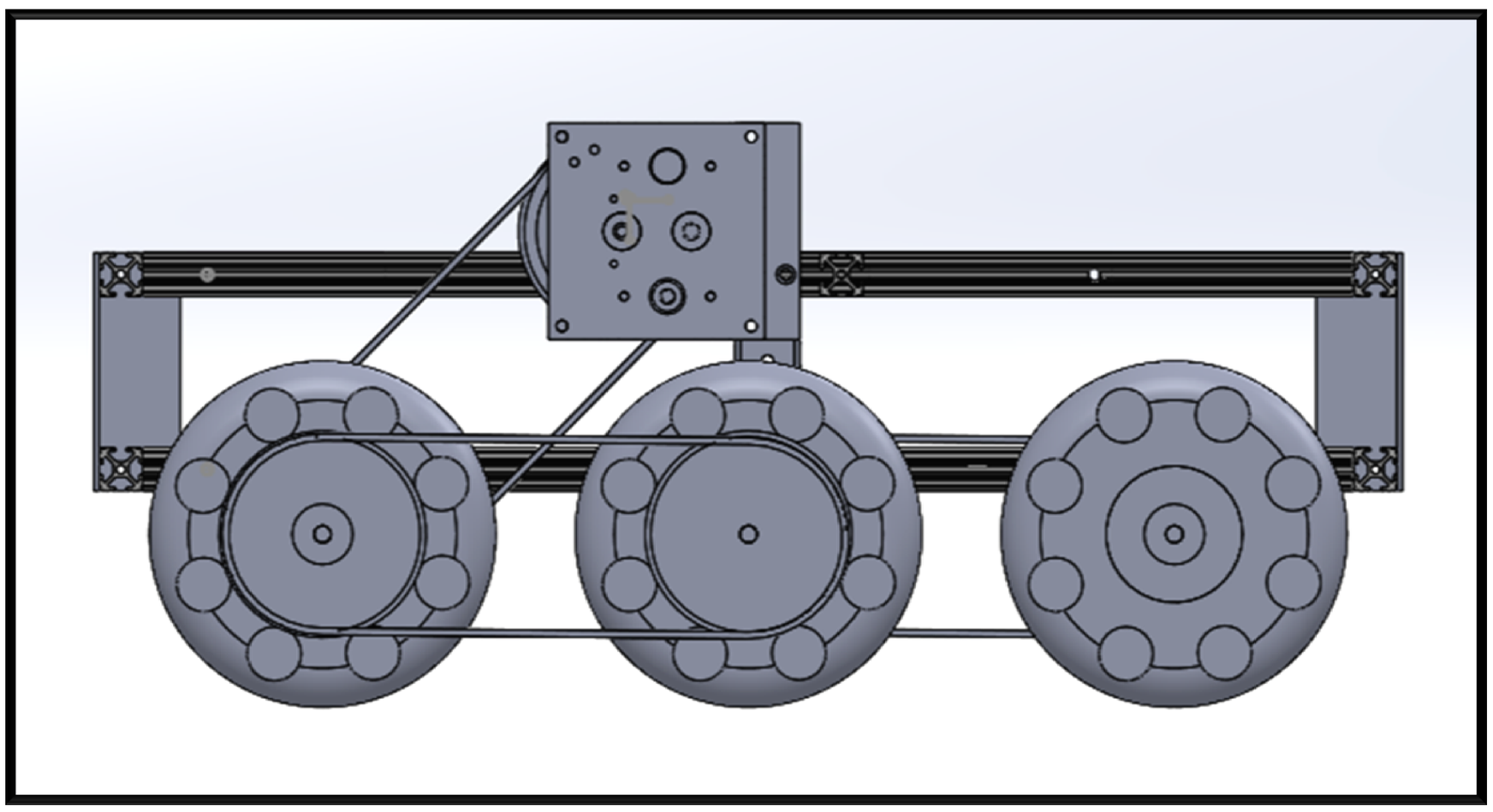
Lightning XIV

Frame on robot with integrated bumpers



- Integrated bumpers work as a mass damper
- Provides structural compression
- Rapid bumper change

Lightning XIV
Drive Train Section
Side View



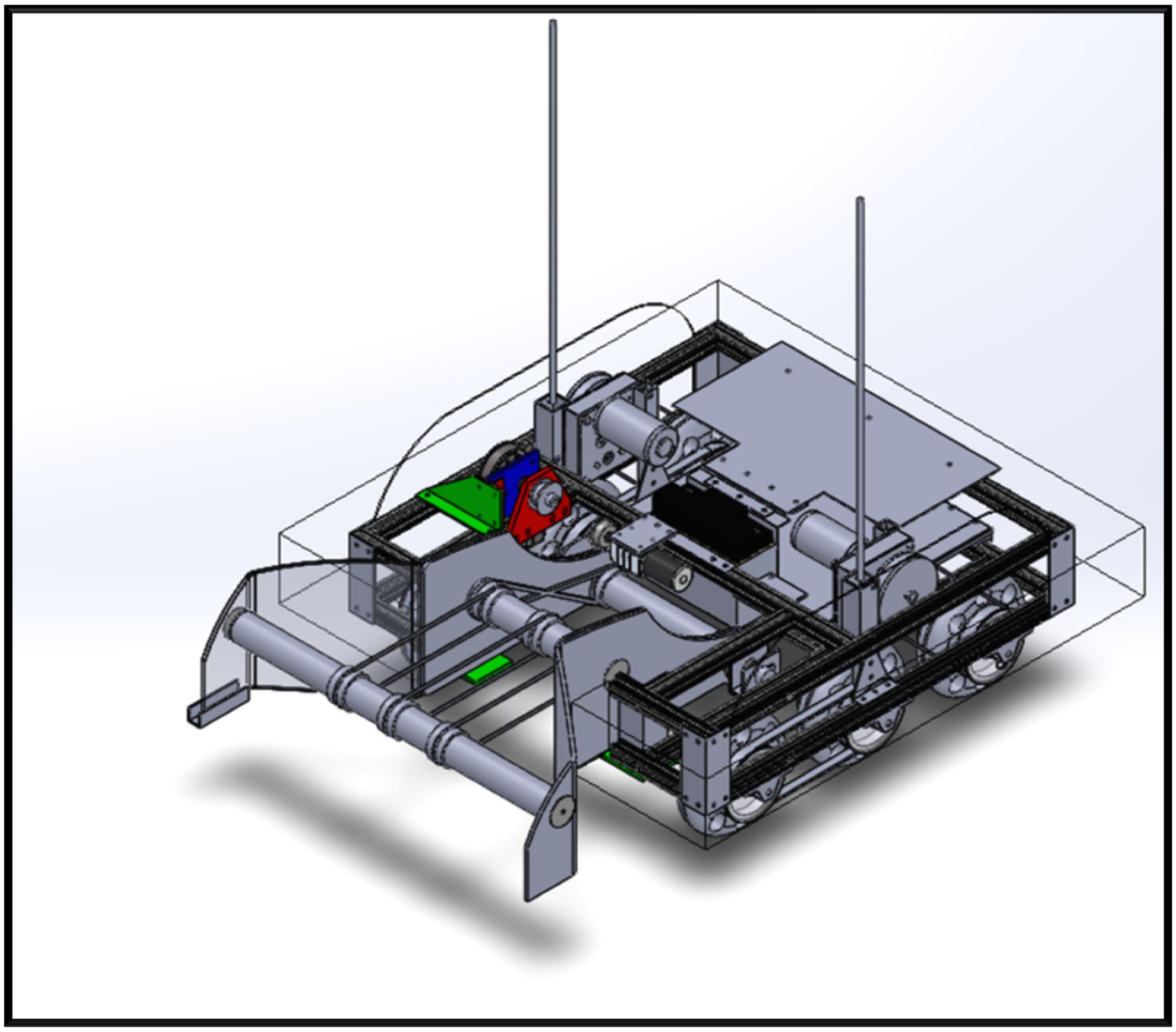
- Pneumatic wheels with perforations to absorb energy (decrease bouncing)
- 5” ground clearance (but still able to go under low bar).

Team 980 Driver's Station

- GoPro camera with HDMI feed to monitor to view opponent's end of field

- Steering wheel and throttle joystick for mobility
- Joystick control for boulder pickup

Lightning XIV
Robot Controls



- Magnetic incremental encoders on drive train (speed, distance control)
- Magnetic absolute encoder for boulder pick-up position control
- C++ development environment