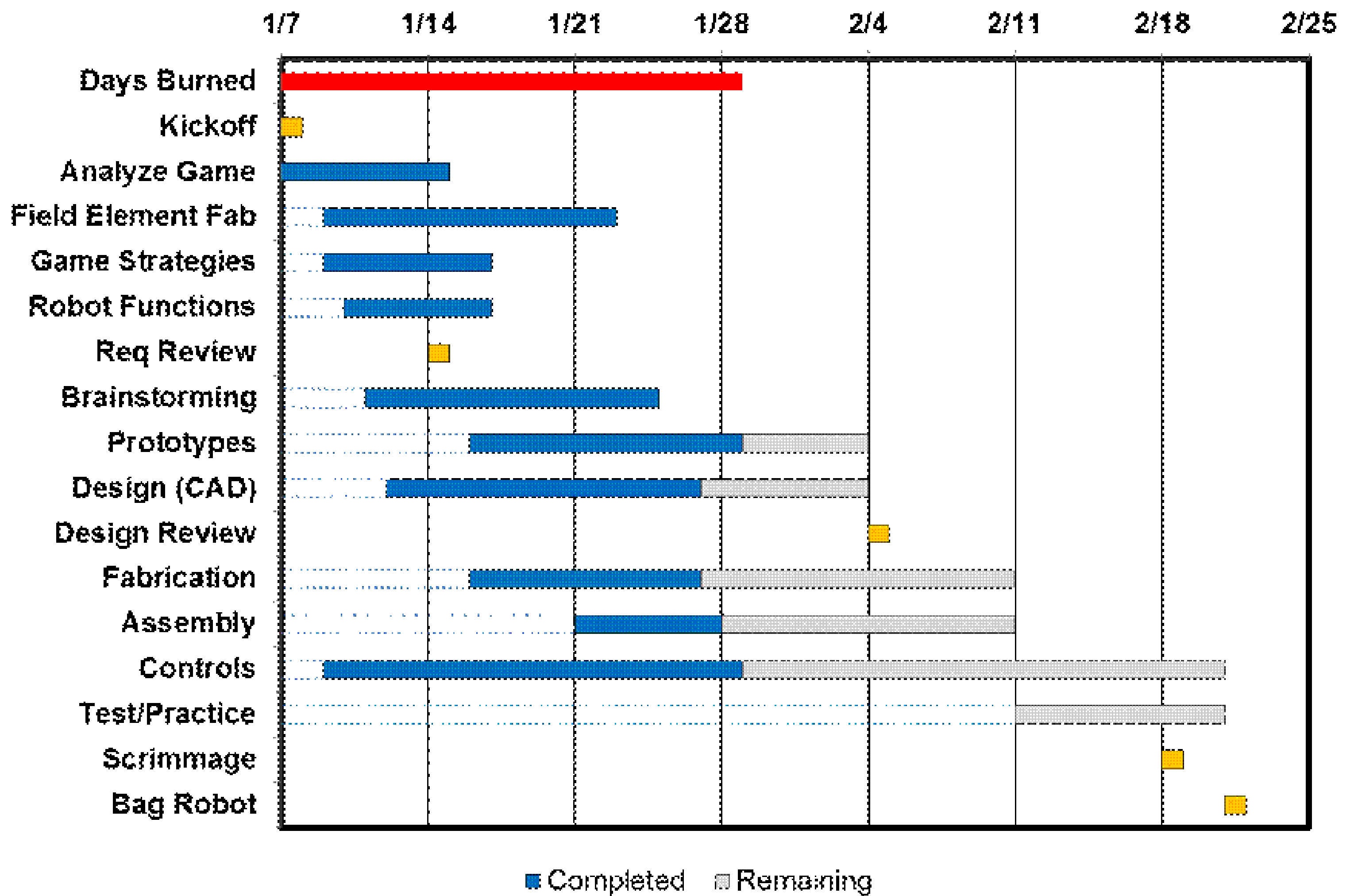


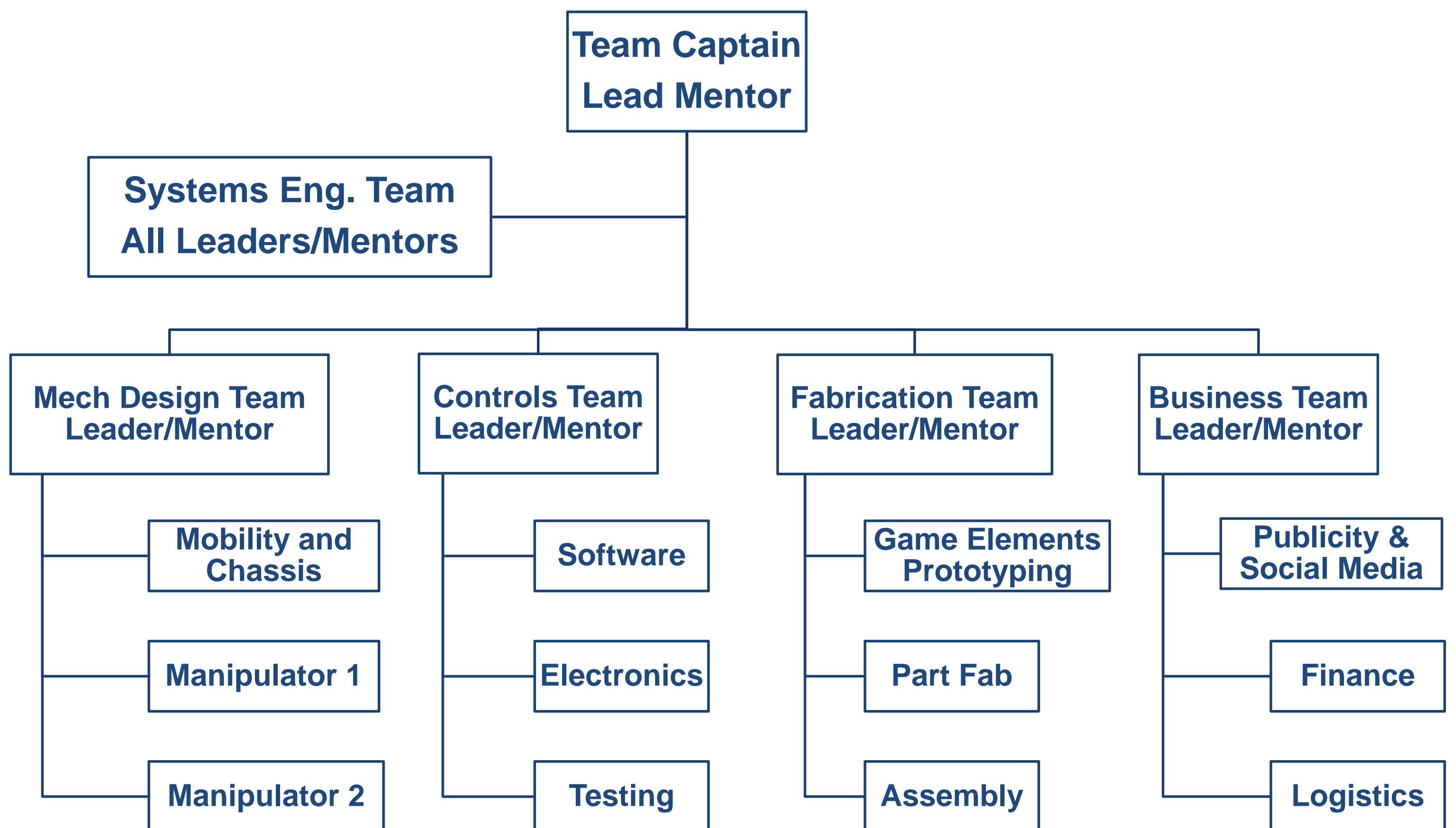
**2017**  
**ENGINEERING**  
**PROCESS**

# Engineering Development Environment

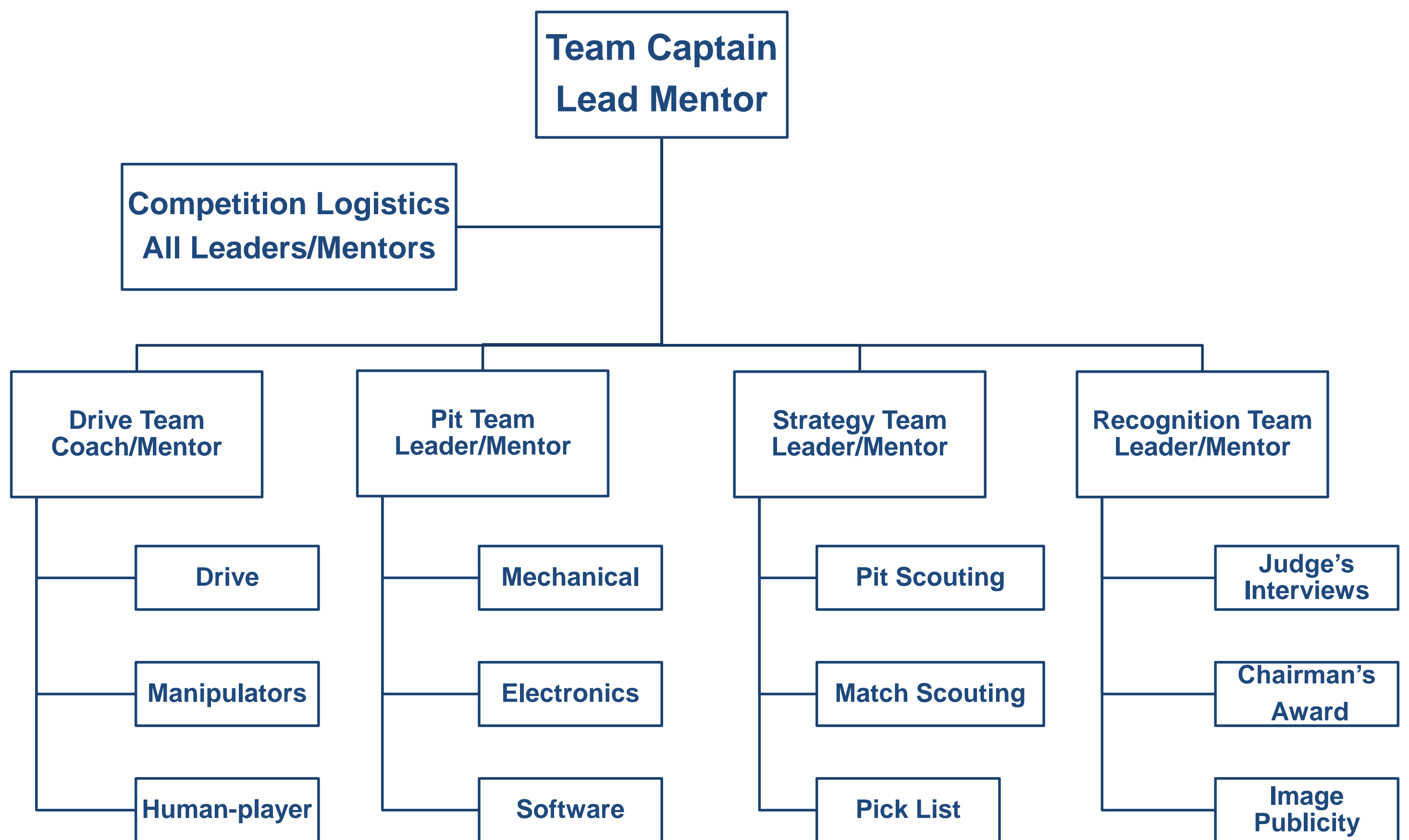
## 2017 BUILD SCHEDULE



# Build Season Organization Chart



# Competition Season Organization Chart



# ThunderScout



Tablet-based, custom scouting software designed by team member Luke Myers.

Available now on Google Play, and soon on Amazon App Store.

# Industry Standard Communications

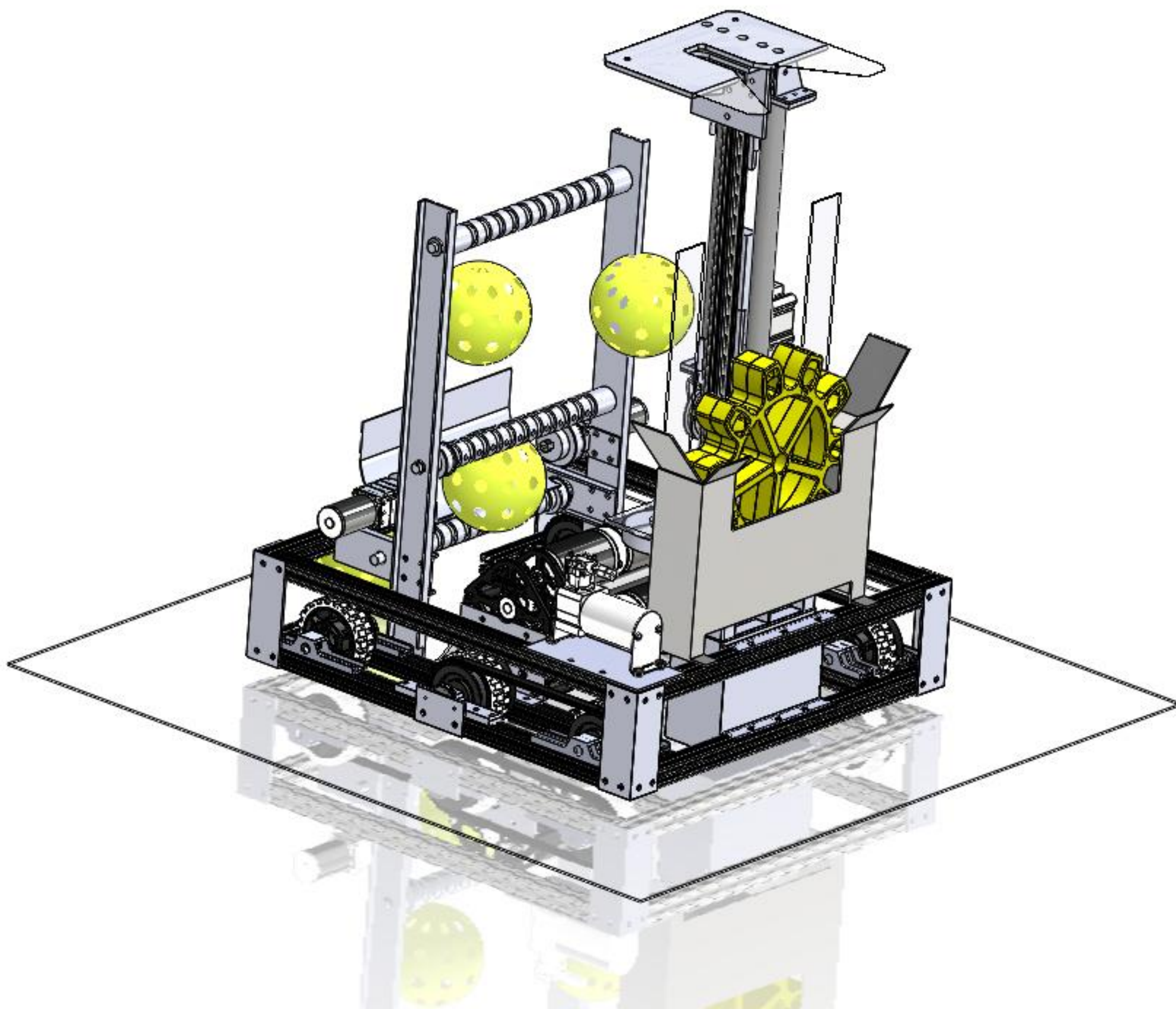


-For intra-team communication, we use Slack, an innovative communication tool used by large companies like NASA/JPL.

-For project management, we use Trello as our on-line work space to collaborate on projects, tasks and checklists.

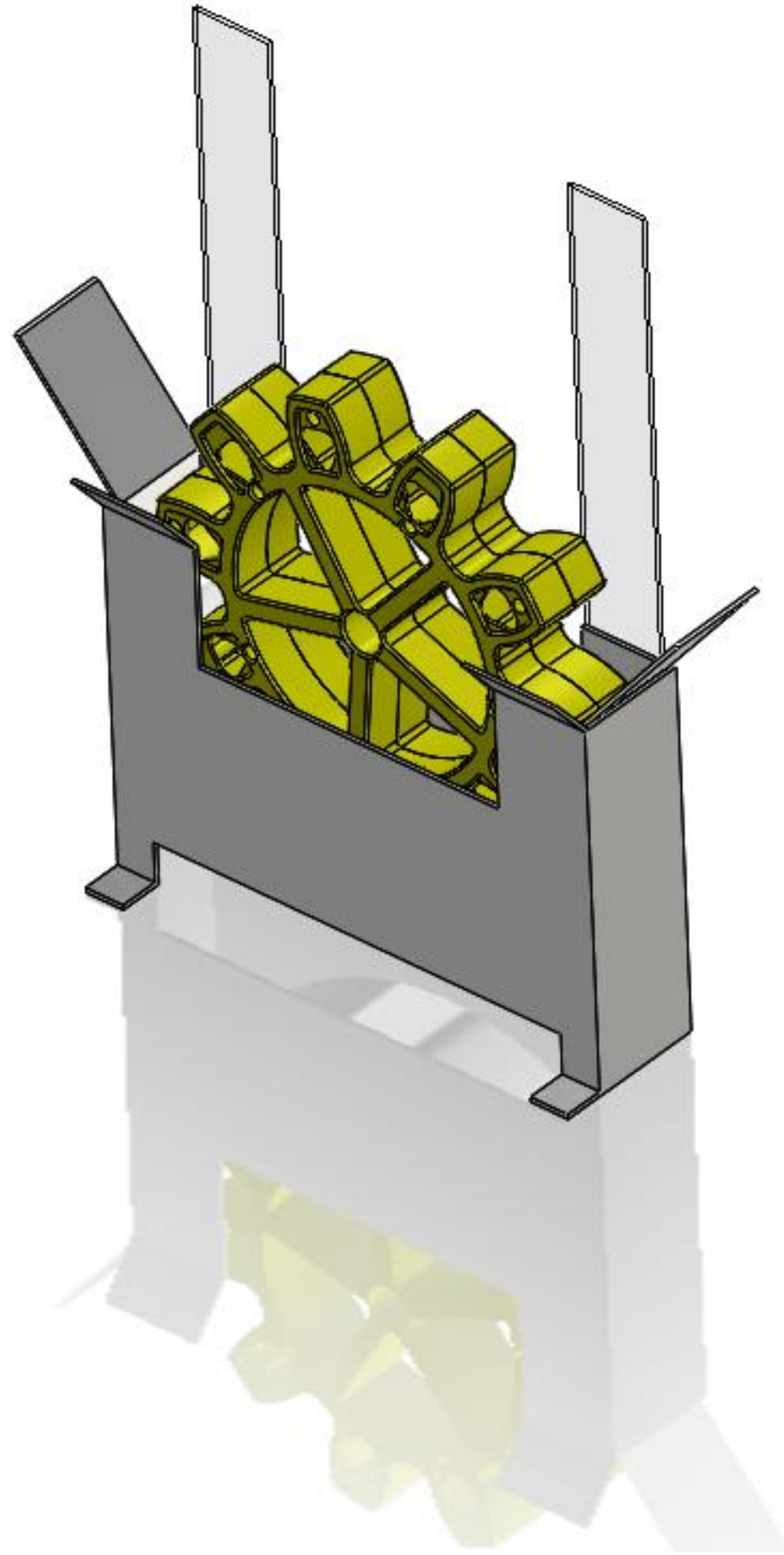
# SolidWorks Models

## Lightning XV Complete Robot



- “Tall” robot configuration
- Climb, place gears, pick-up and dump fuel in low goal

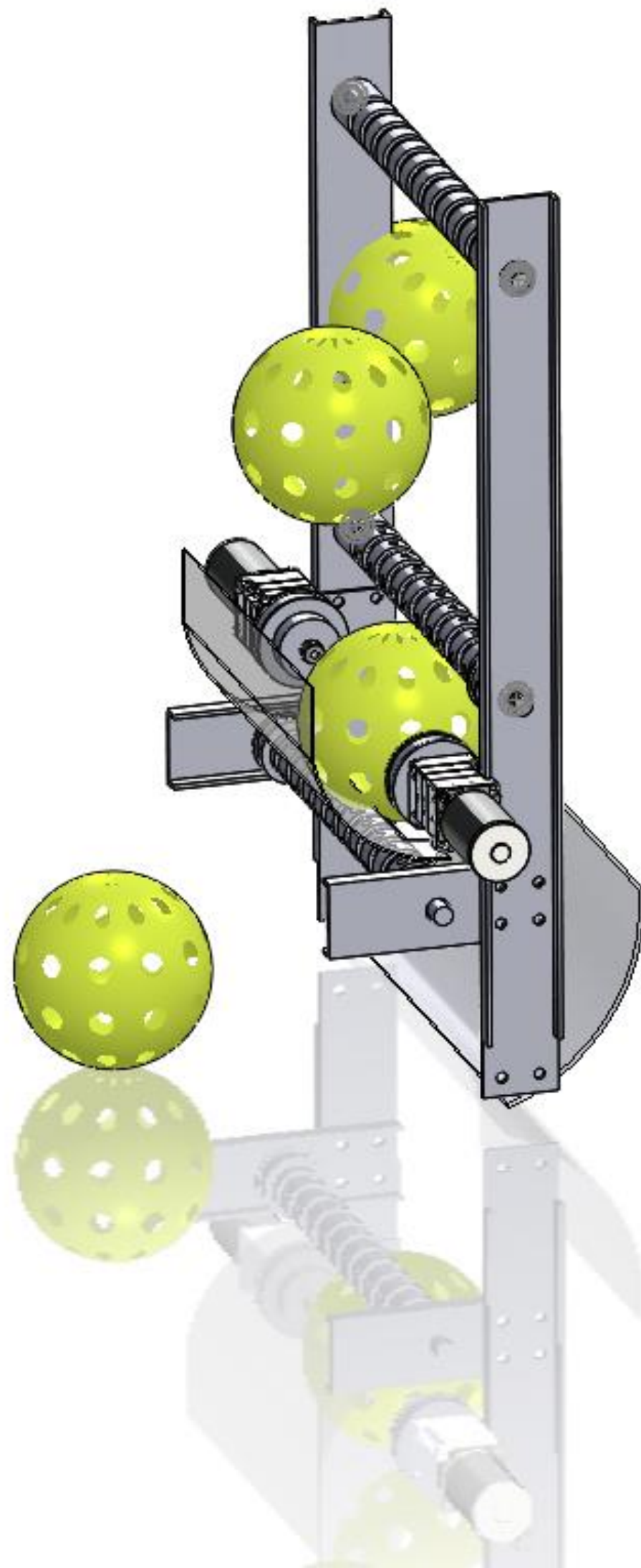
# Lightning XV Gear Catcher



- Passive capture from feeder station

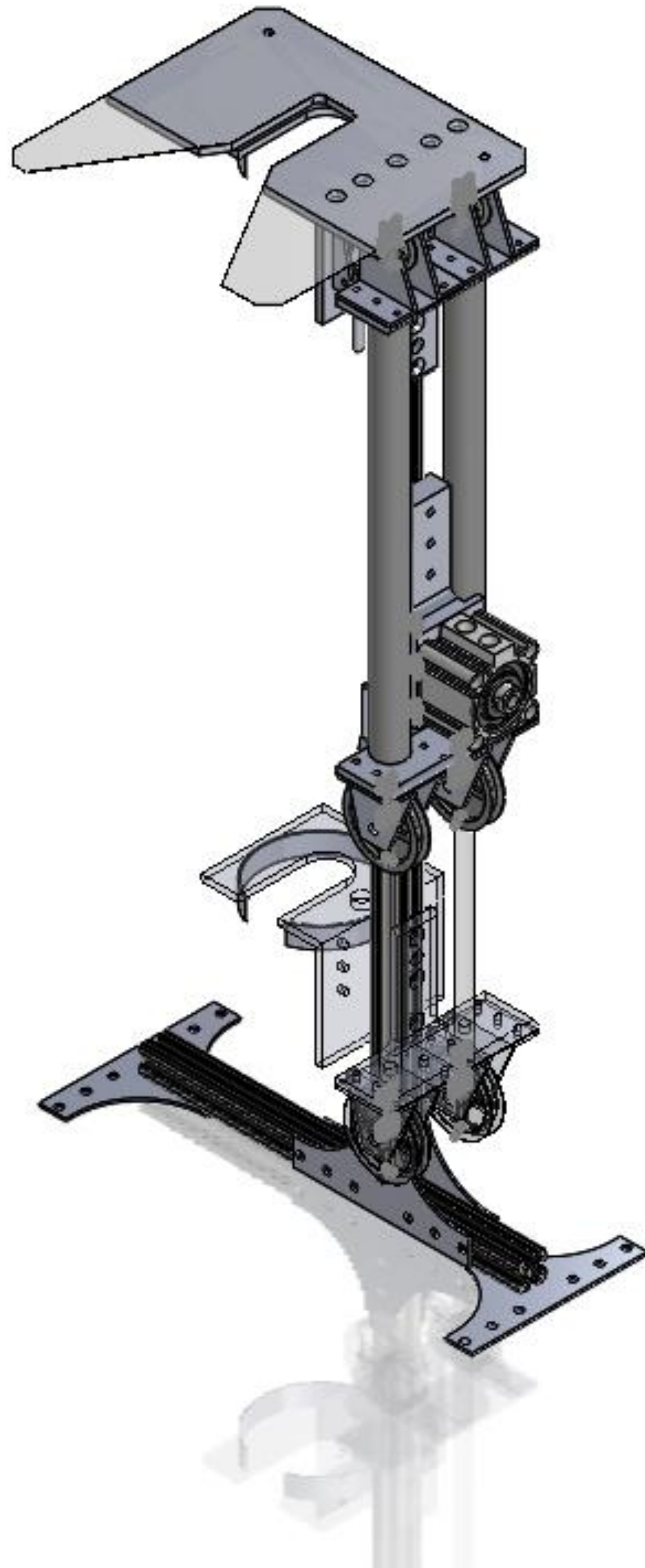


# Lightning XV Fuel Handler



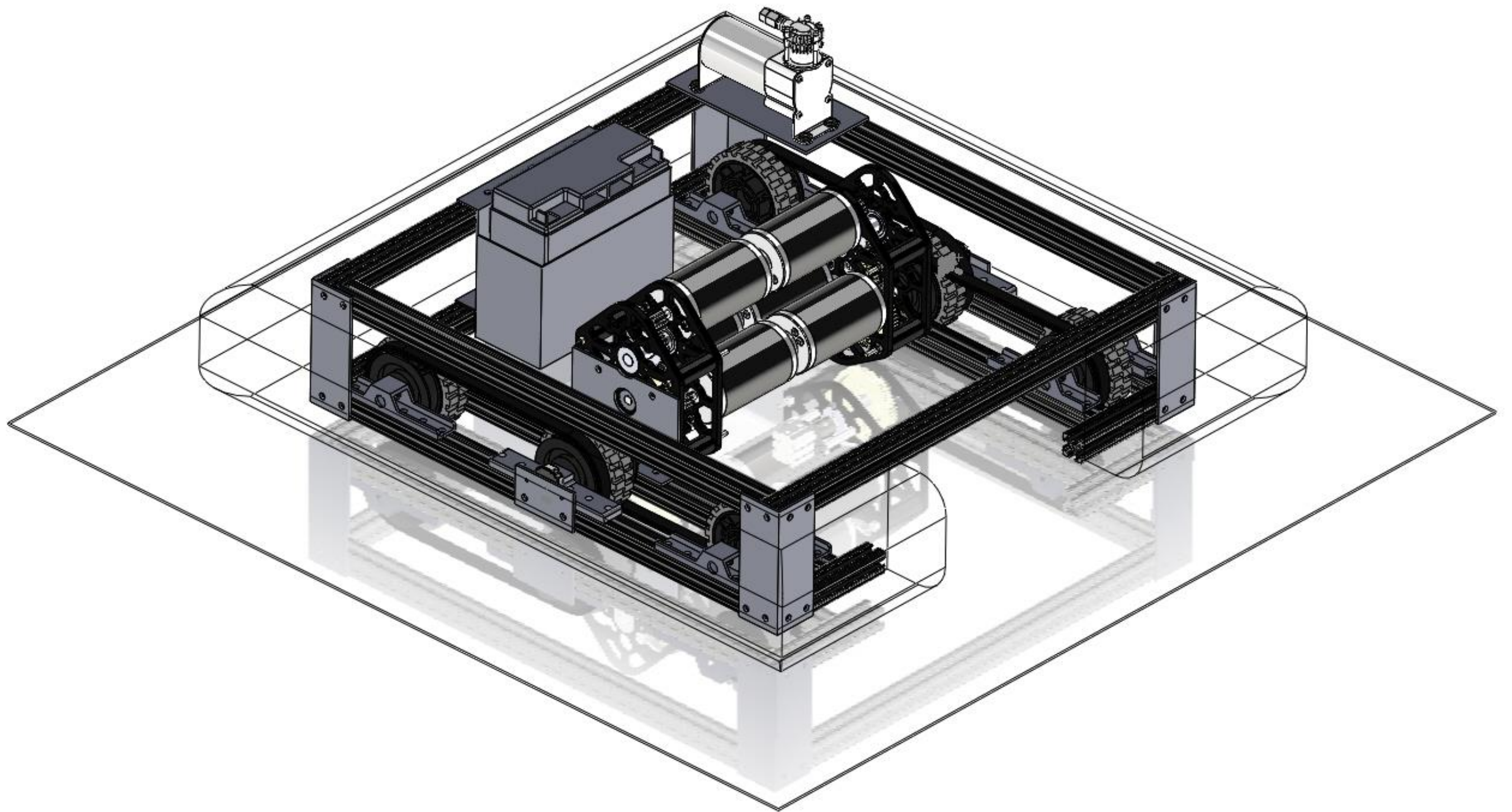
- Pick-up roller with Lexan “scoop”
- Belts on rollers to dump fuel

# Lightning XV Climb Assembly



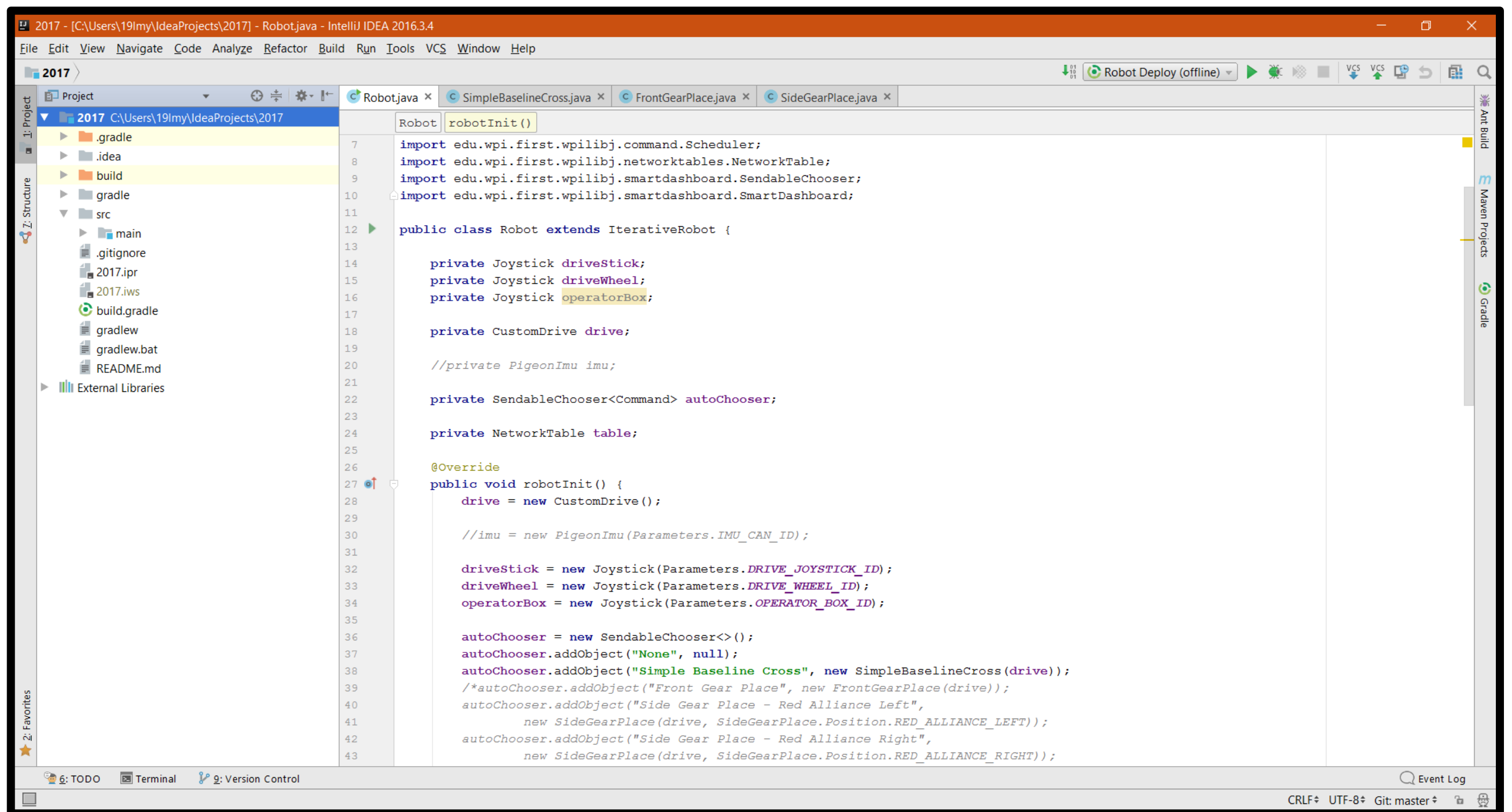
- Gas springs: 600-lb stored energy
- 3:1 stroke multiplier for 24" climb

# Lightning XIV Drive Base



- 6-CIM drive with 2-speed shifter

# Lightning XV Robot Controls



```
1  import edu.wpi.first.wpilibj.command.Scheduler;
2  import edu.wpi.first.wpilibj.networktables.NetworkTable;
3  import edu.wpi.first.wpilibj.smartdashboard.SendableChooser;
4  import edu.wpi.first.wpilibj.smartdashboard.SmartDashboard;
5
6  public class Robot extends IterativeRobot {
7
8      private Joystick driveStick;
9      private Joystick driveWheel;
10     private Joystick operatorBox;
11
12     private CustomDrive drive;
13
14     //private PigeonImu imu;
15
16     private SendableChooser<Command> autoChooser;
17
18     private NetworkTable table;
19
20     @Override
21     public void robotInit() {
22         drive = new CustomDrive();
23
24         //imu = new PigeonImu(Parameters.IMU_CAN_ID);
25
26         driveStick = new Joystick(Parameters.DRIVE_JOYSTICK_ID);
27         driveWheel = new Joystick(Parameters.DRIVE_WHEEL_ID);
28         operatorBox = new Joystick(Parameters.OPERATOR_BOX_ID);
29
30         autoChooser = new SendableChooser<>();
31         autoChooser.addObject("None", null);
32         autoChooser.addObject("Simple Baseline Cross", new SimpleBaselineCross(drive));
33         /*autoChooser.addObject("Front Gear Place", new FrontGearPlace(drive));
34         autoChooser.addObject("Side Gear Place - Red Alliance Left",
35             new SideGearPlace(drive, SideGearPlace.Position.RED_ALLIANCE_LEFT));
36         autoChooser.addObject("Side Gear Place - Red Alliance Right",
37             new SideGearPlace(drive, SideGearPlace.Position.RED_ALLIANCE_RIGHT));
```

- Three autonomous modes
- Automatic transmission with PID drive
- Vision-assisted targeting for gear delivery to airship.

# Team 980 Driver's Station



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