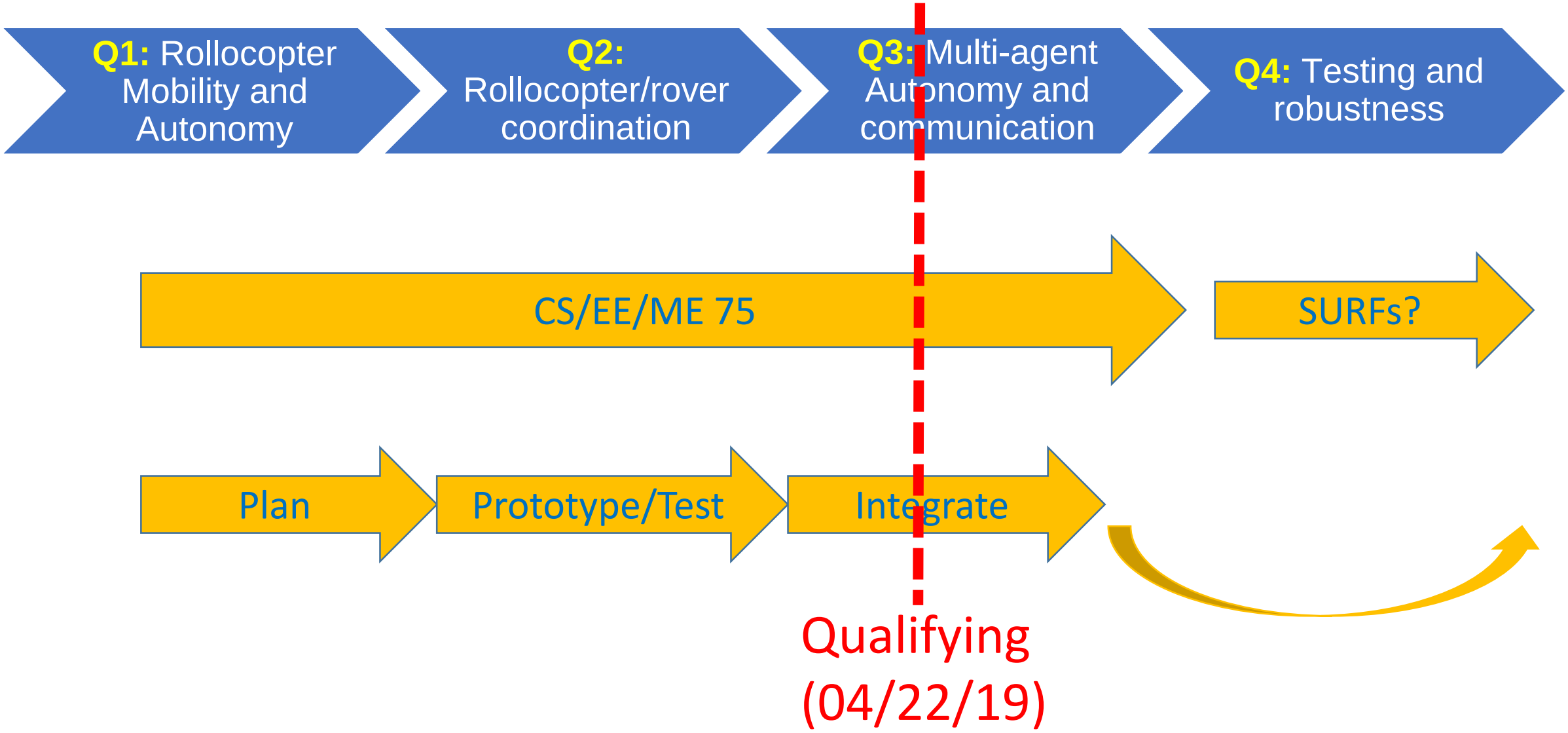
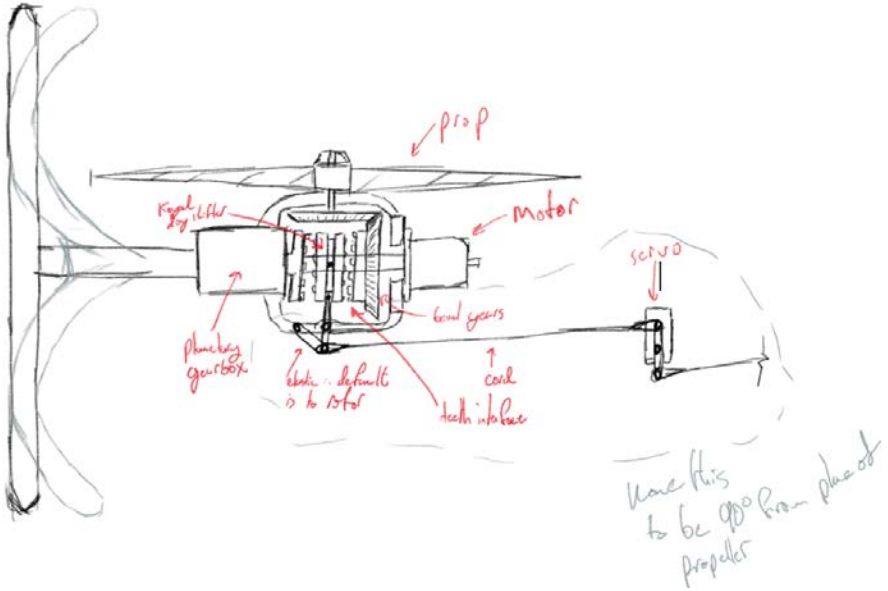
CS/EE/ME 75(b)


Q1: Rollocopter Mobility and Autonomy
Q2: Rollocopter/rover coordination
Q3: Multi-agent Autonomy and communication
Q4: Testing and robustness
CS/EE/ME 75
SURFs?
Plan
Prototype/Test
Integrate
Qualifying
(04/22/19)

CS/EE/ME 75(a) projects

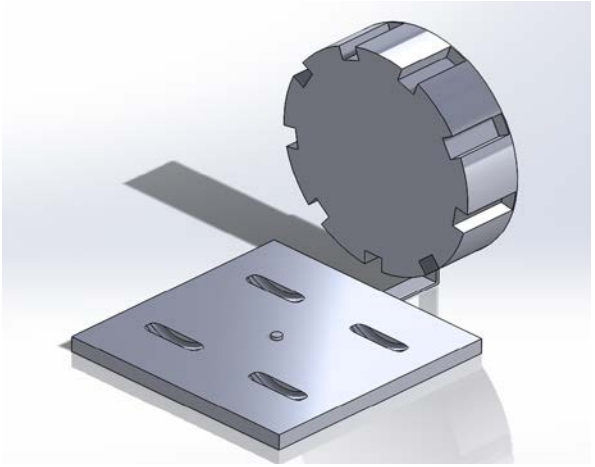
- “Drive-o-copter”
  - Alternative to JPL rollocopter
  - Potentially better ground operation
  - Easier, modular build

- “Shift-o-copter”
  - Lightweight shifting mechanism to reroute power from prop.s to wheels
  - Alternative to JPL rollocopter
  - Potentially better ground operation



CS/EE/ME 75(a) projects

- “Battery Swap”
  - Multi-hour mission is envisioned.
  - Current multi-rotor run time ~10 minutes
  - Must support multiple swaps/recharges



- Ground Robot Team
  - How to model rough terrain?
  - How to motion plan in rough terrain?
  - Modular autonomy package

  - New Vehicles?

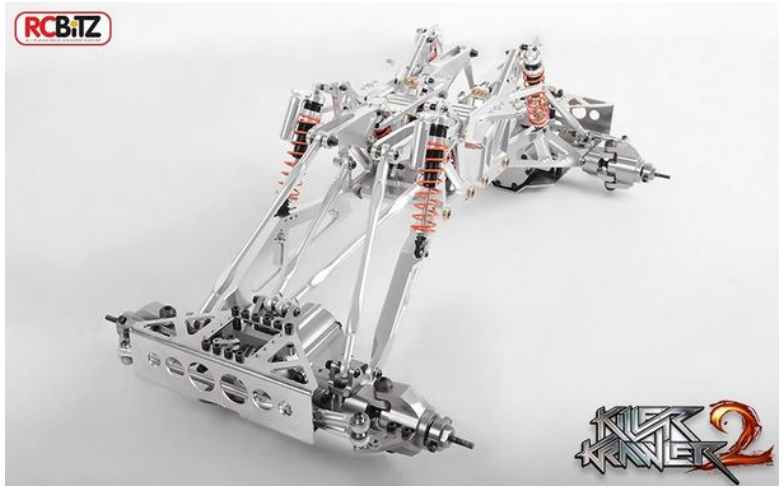
Rover Robotics “Open Source Rover”

Spin-off of RoboteX
“Emergency Response” Rovers

1/5-1/4 Scale RC Cars

Rock Crawlers

- Best on Rocky Terrain
- Very “springy” chassis
- Less efficiency, especially on flat ground



Killer Krawler 2
~$2,000-$2,300

Monster Trucks

- Balanced performance
- Stiffer chassis/body
- Less ground clearance

Rampage MT Pro V3
~$1,800-$2,000

Buggies

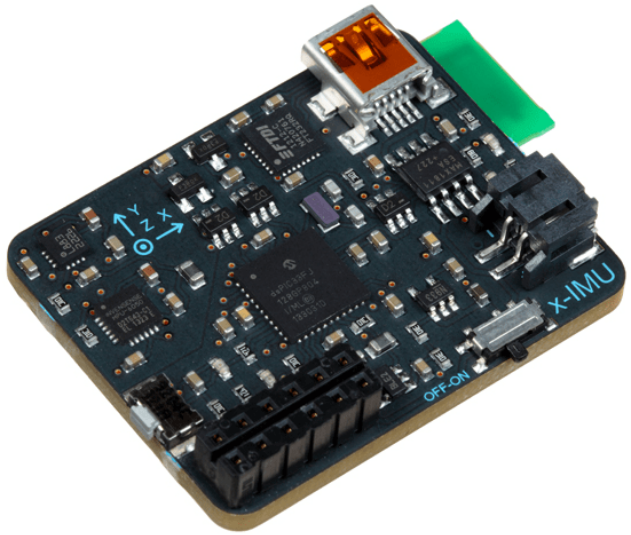
- Best for speed on undulating terrain
- Top speeds far in excess of needs
- Stiff suspensions

Losi 1/5 Desert Buggy XL-E:1
~$1,300-$1,800

CS/EE/ME 75(a) projects

- “Sensor Fusion”
  - Fuse IMU and Velodyne
  - Fuse IMU, Velodyne, RealSense

  - New Issue: IMU/Velodyne calibration



CS/EE/ME 75(b): Next Steps

- Next Goal: Critical Design Review (3-4 weeks)
- Next Steps:
  - Design Details
  - Prototypes

Assignment:

- Choose one component of your project
- Develop a detailed design
- Present design next week
- Present prototype in 2 weeks