HUMAN POWERED VEHICLES

Spring Technical Review

February 14, 2013

Content

- Slow Speed Stability System (SSSS)
- Rider Variation Compensation System (RVCS)
- Door (Door)

Slow Speed Stability System

- Requirement
  - Support rider while stopped
- Design Goals
  - Minimize weight
  - Maximize user intuition
  - Minimize fairing cutout size

SSSS

	FALL PROTOTYPE	CURRENT PROTOTYPE
Geometry	A-frame	A-frame
Power Source	Hand crank	Rear wheel
Actuation	Double lever	Single lever

Flaws

- Low actuation distance
- Low power input
- Lots of friction

Seeking Advice On:

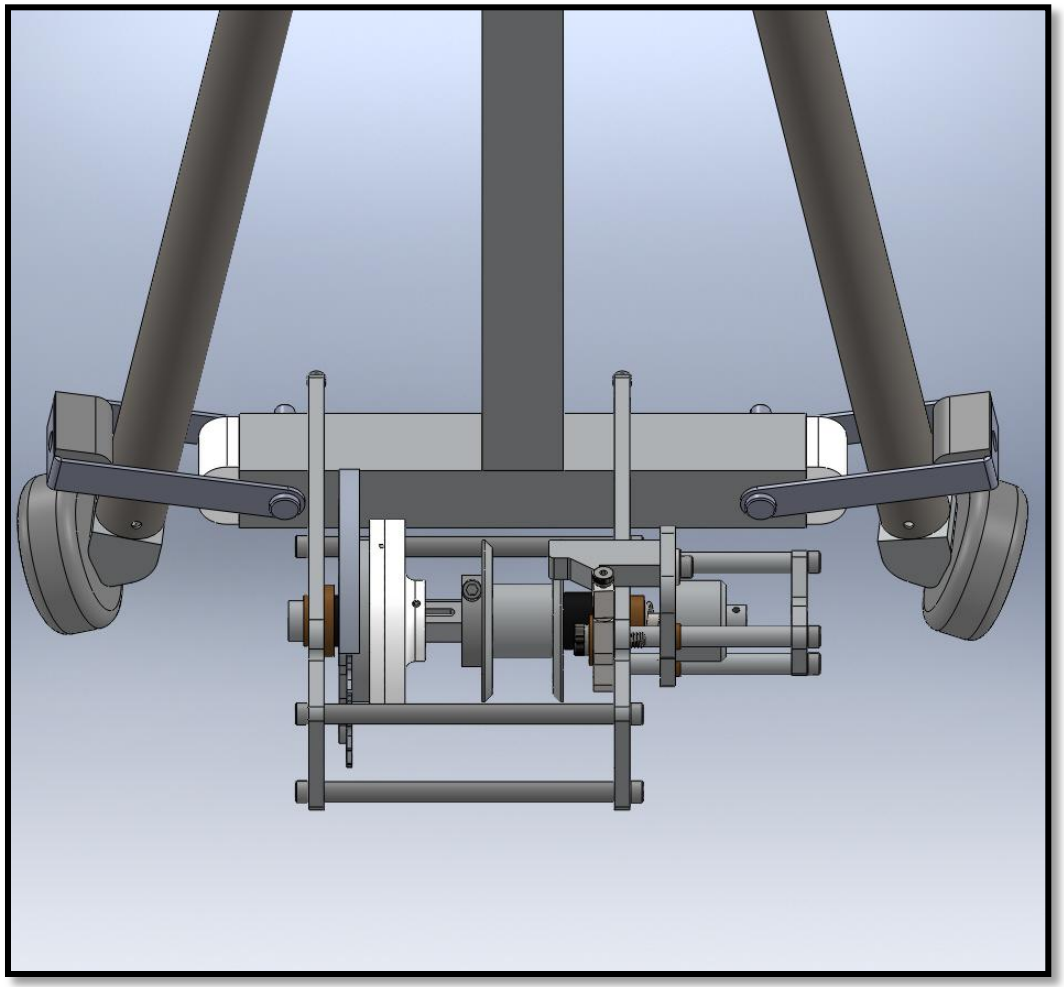
- Latch mechanism
- Clutch materials
- Part reduction techniques

SSSS

- Linear slide geometry

SSSS

- Self-contained subsystem

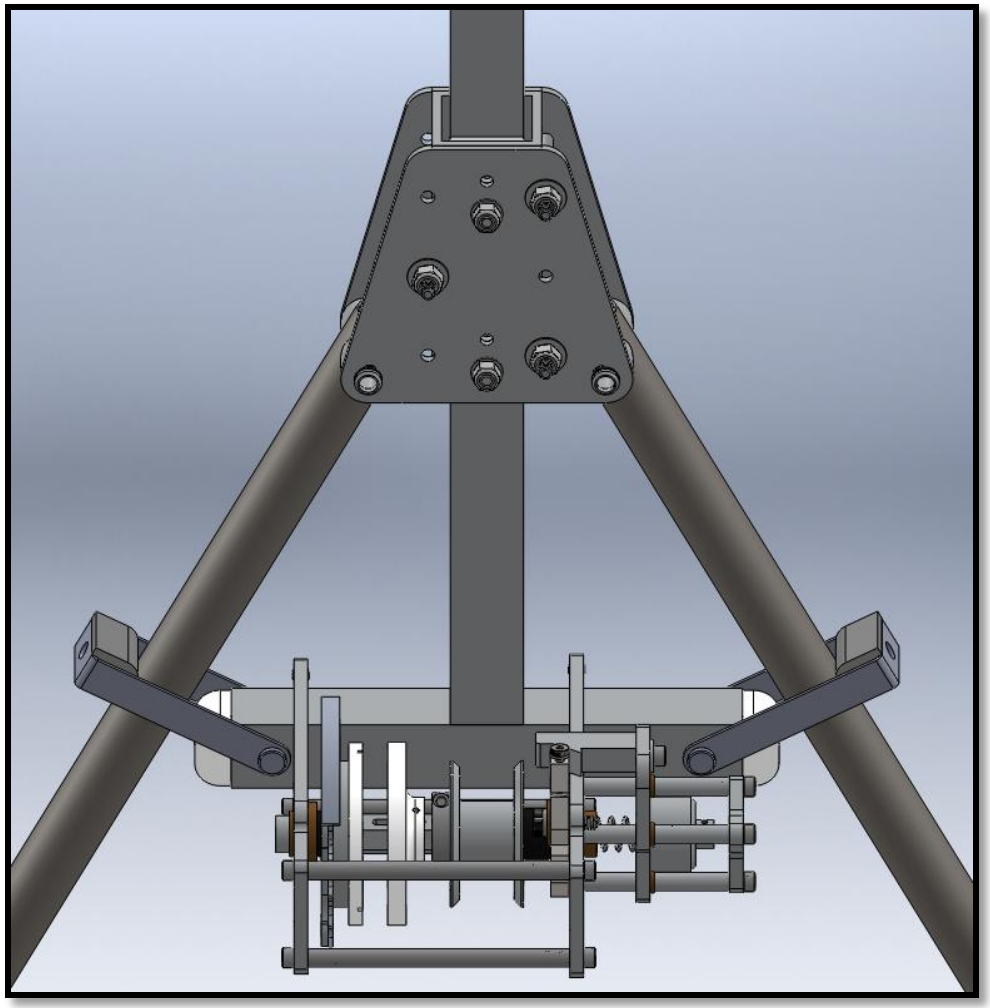


SSSS

- Power drawn from rear wheel

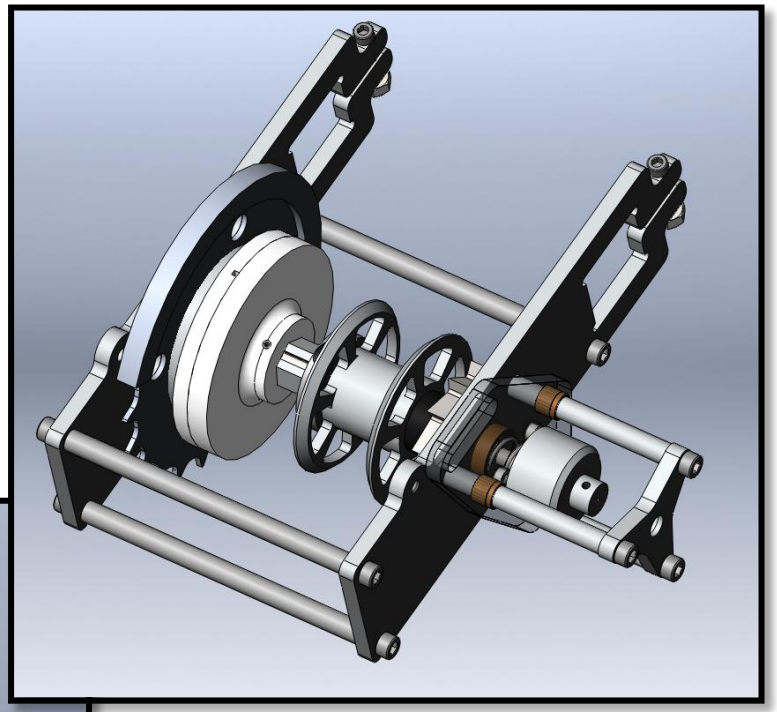
SSSS

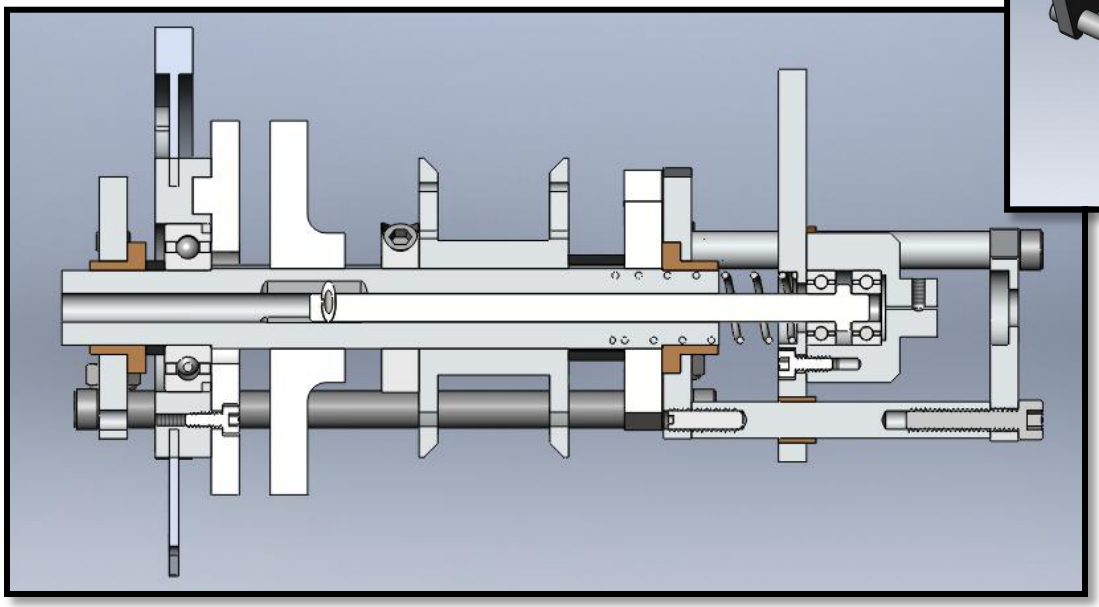
- Spooled nylon webbing



SSSS

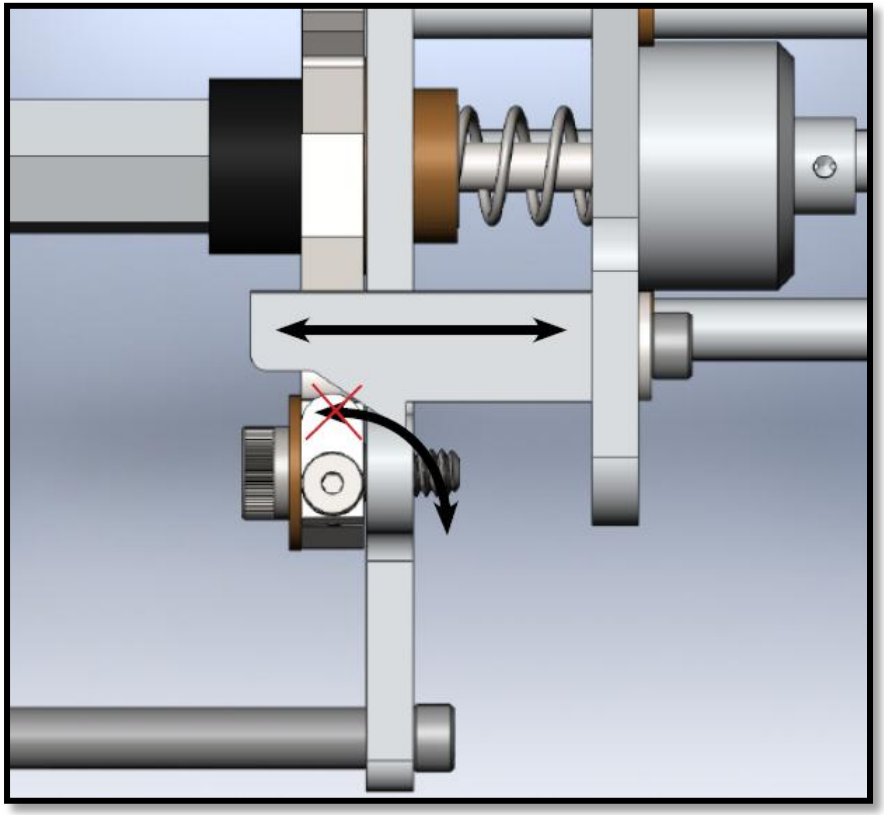
- Concentric transmission

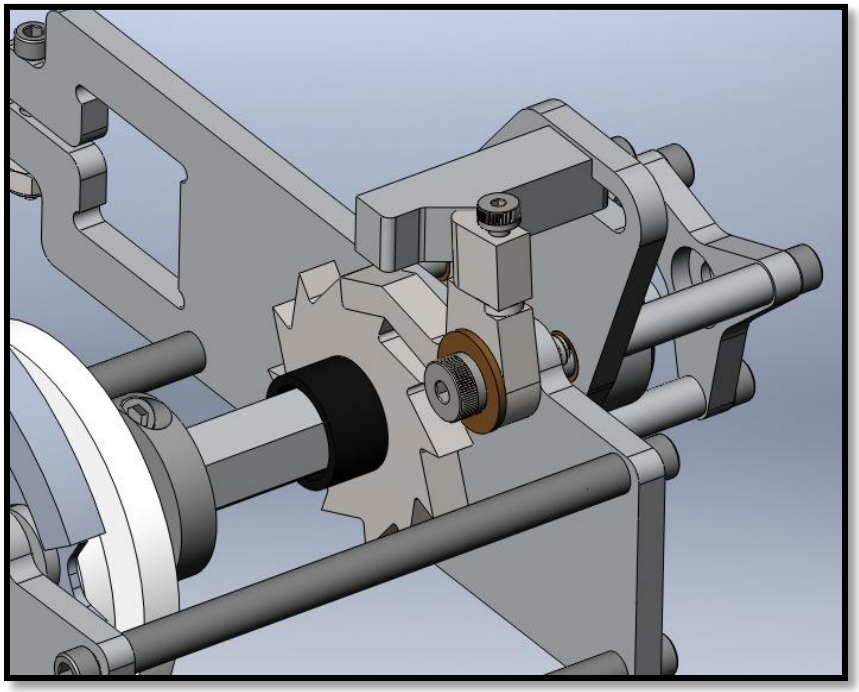




SSSS

- One-way latch





Rider Variation Compensation System

- Requirement
  - Adjust pedal position by 8”
- Design Goals
  - Minimize weight
  - Minimize slop
  - Preserve rigidity

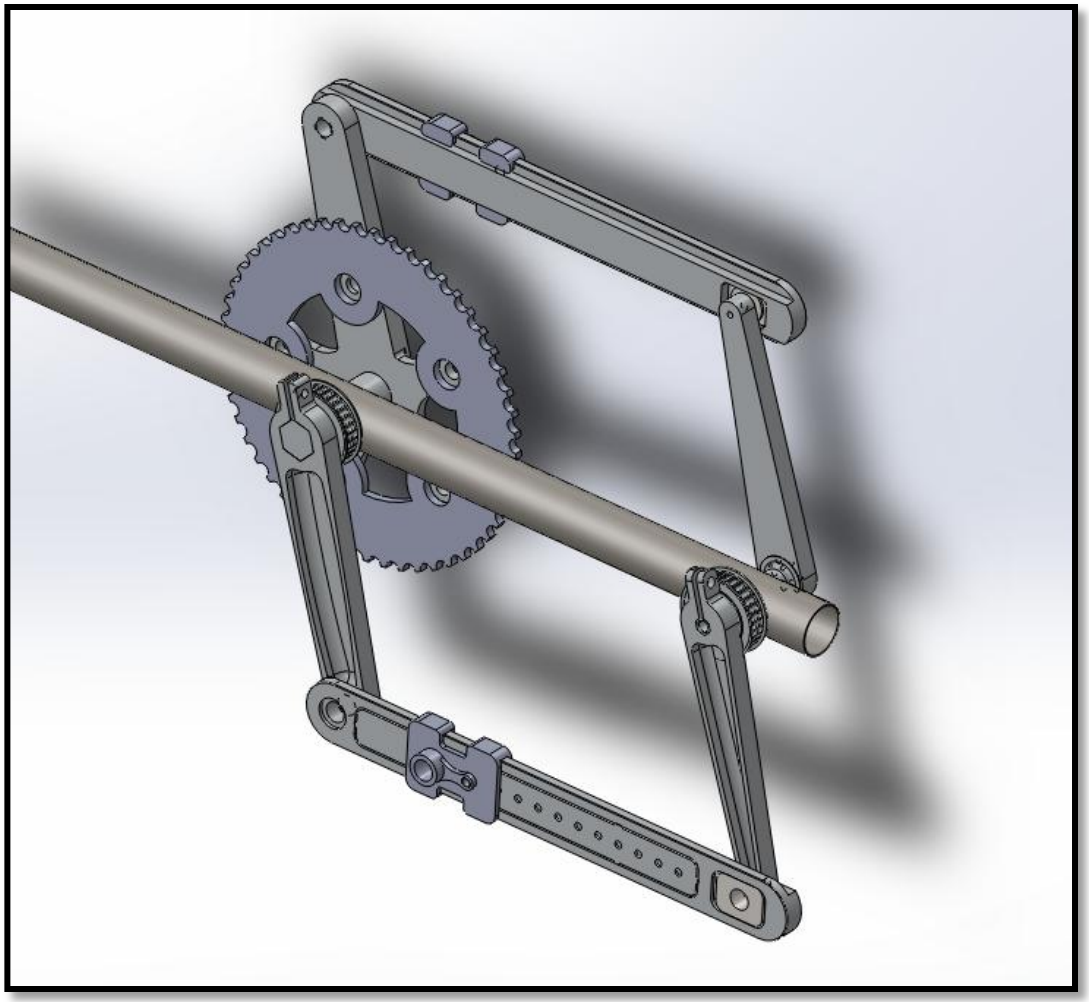
Proven System

Seeking Advice On:

- Mounting bearings in tube
- Strength concerns
- Further weight reduction opportunities
- Design flaws

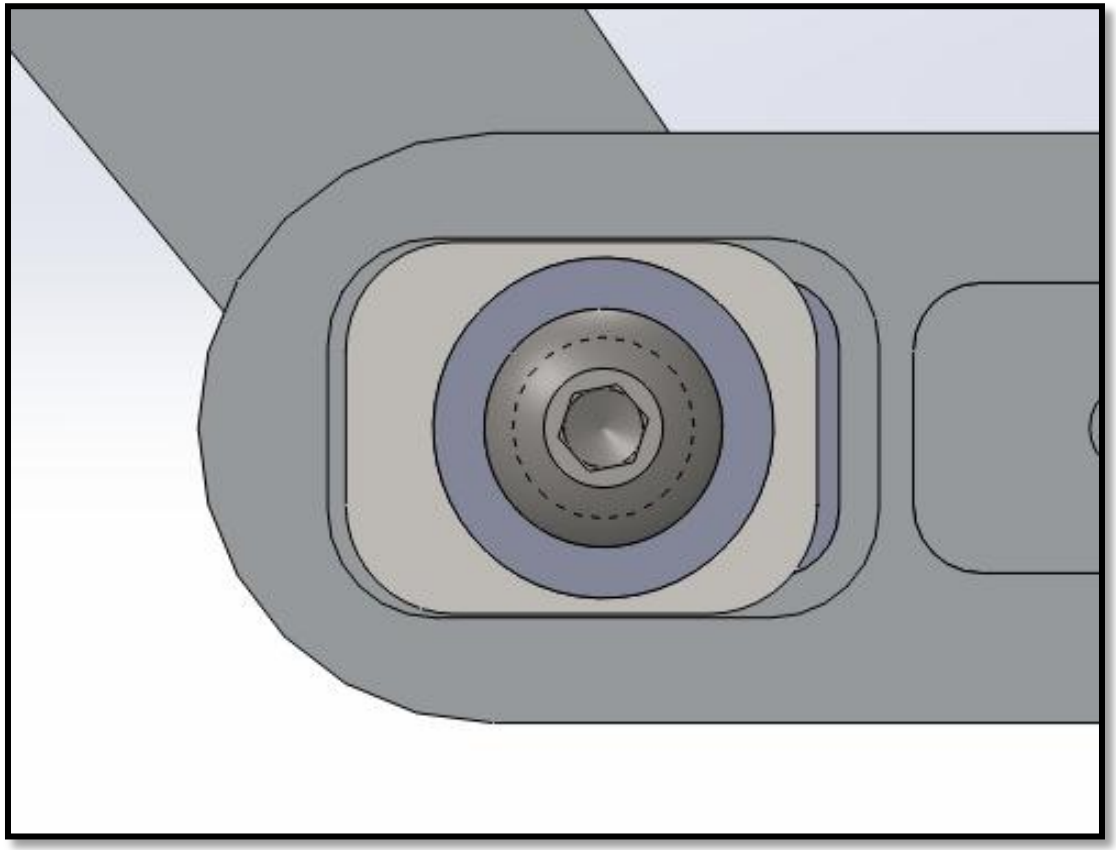
RVCS

- Parallel linkages



RVCS

- Degree of freedom

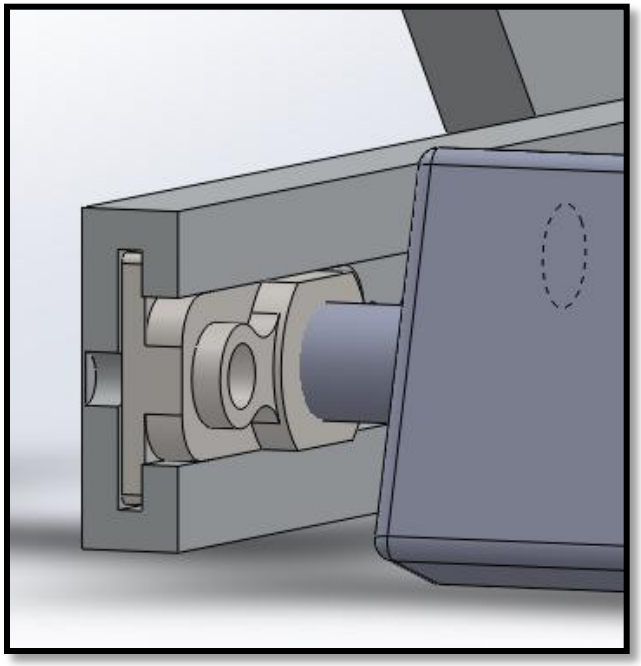


RVCS

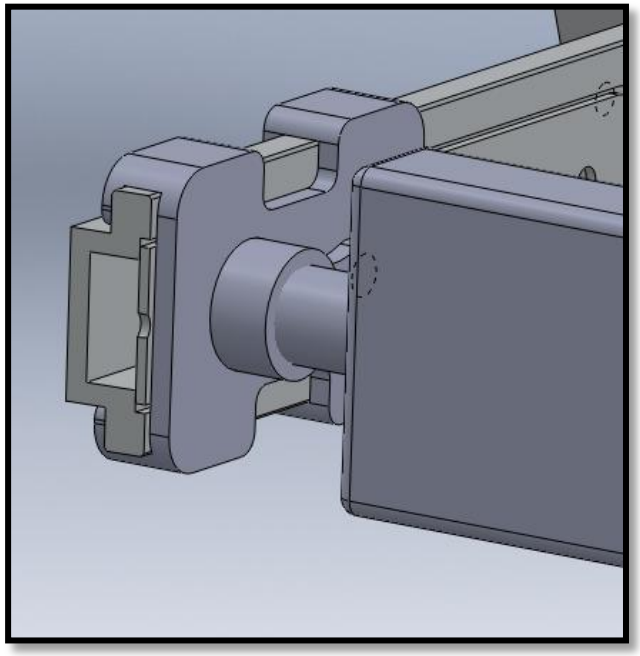
- Catawampus prevention

RVCS

PREVIOUS PEDAL MOUNT

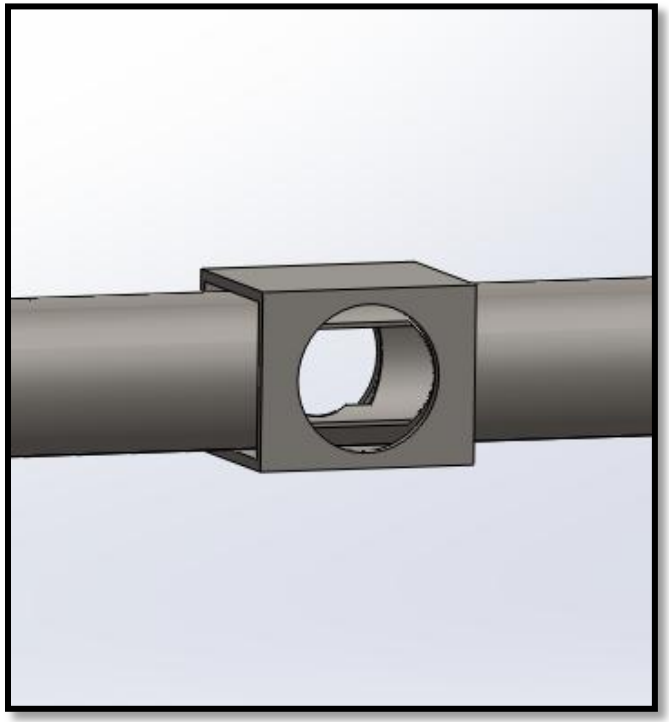


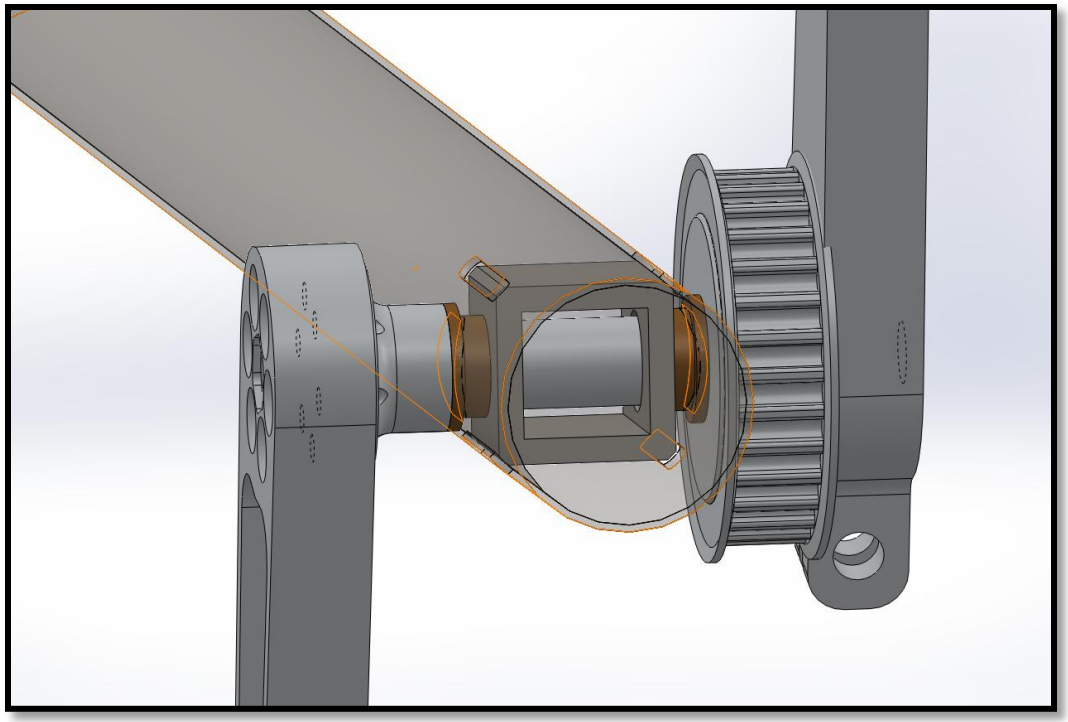
CURRENT MOUNT DESIGN



RVCS

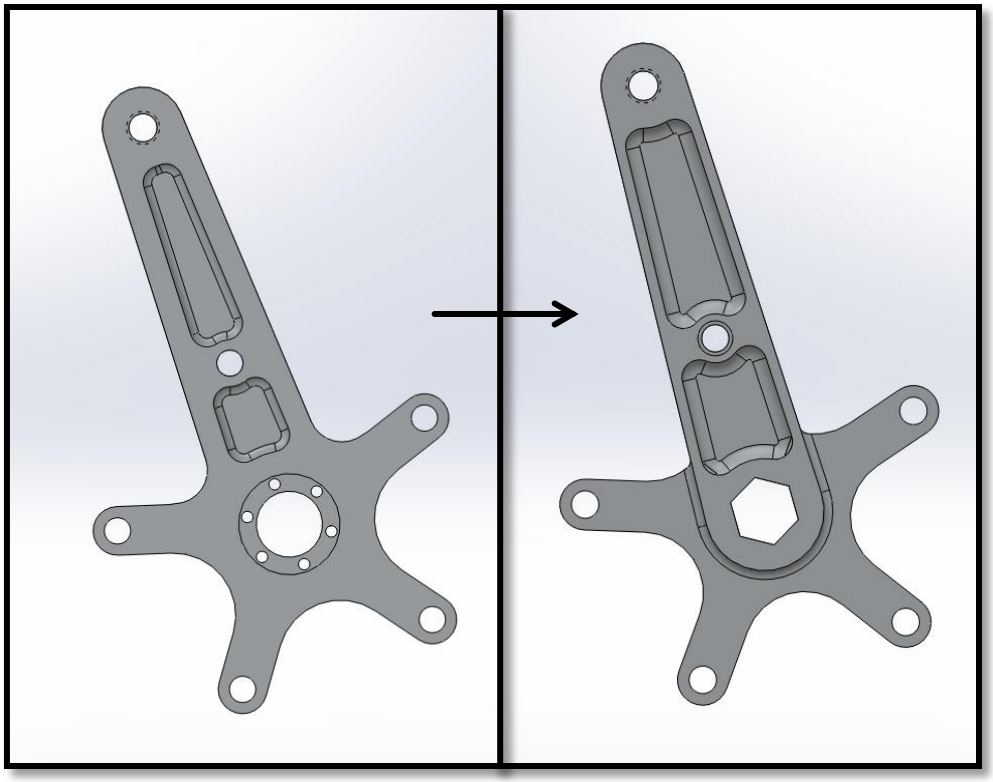
- Axle mounting

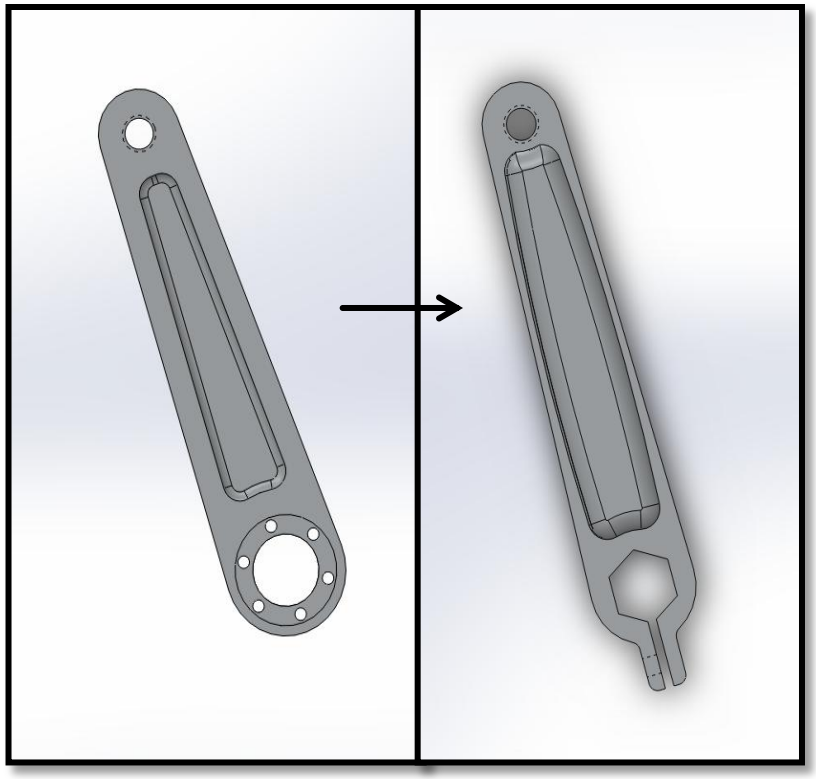




RVCS

- Weight reduction





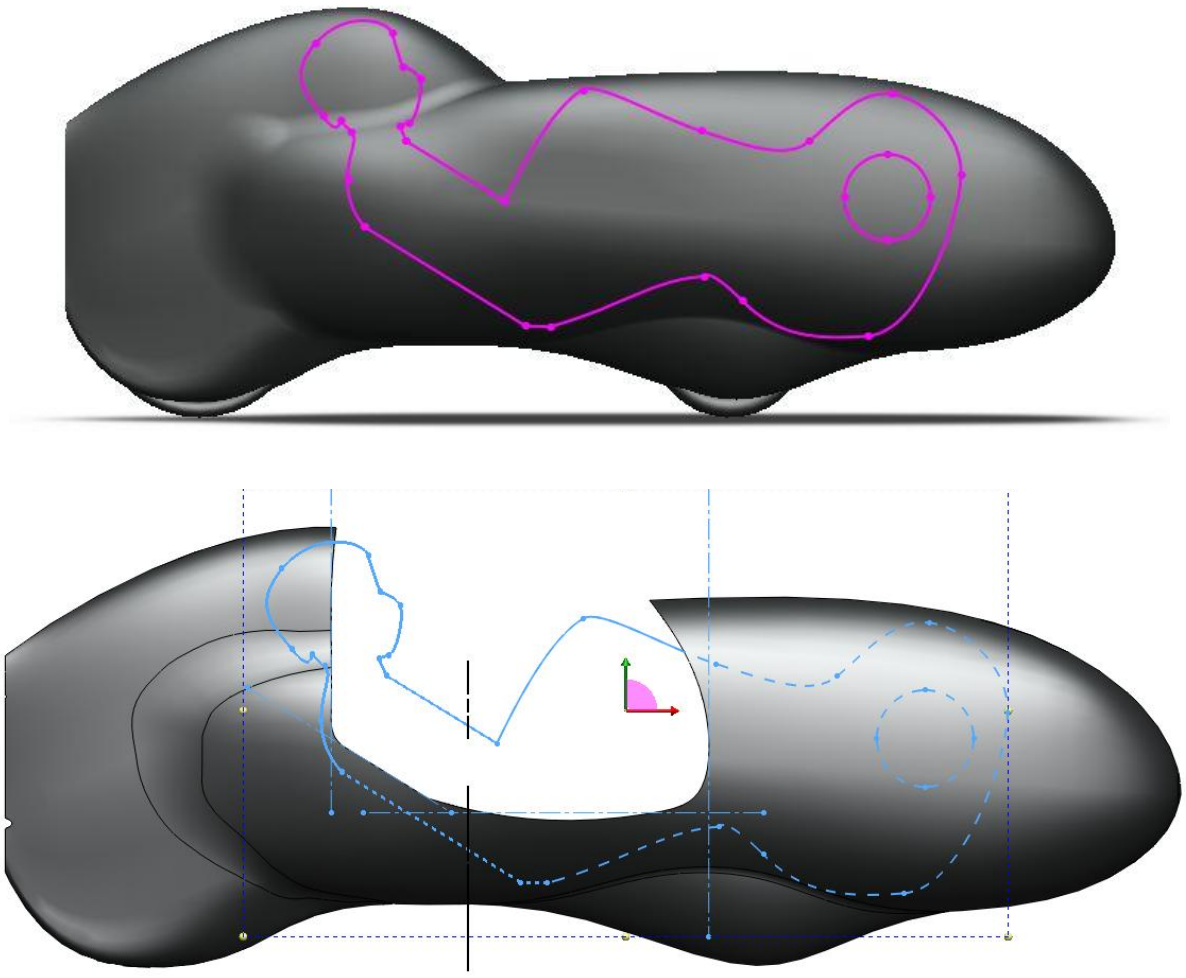
Door

- Requirement
  - Allow egress
  - Unlatchable from inside and out
- Design Goals
  - Easy entry
  - Rigidity and durability

Seeking Advice On

- Latches
- Hinges
- Composite lip technique

Door



Thank you.

If you have any questions, please come talk to us.