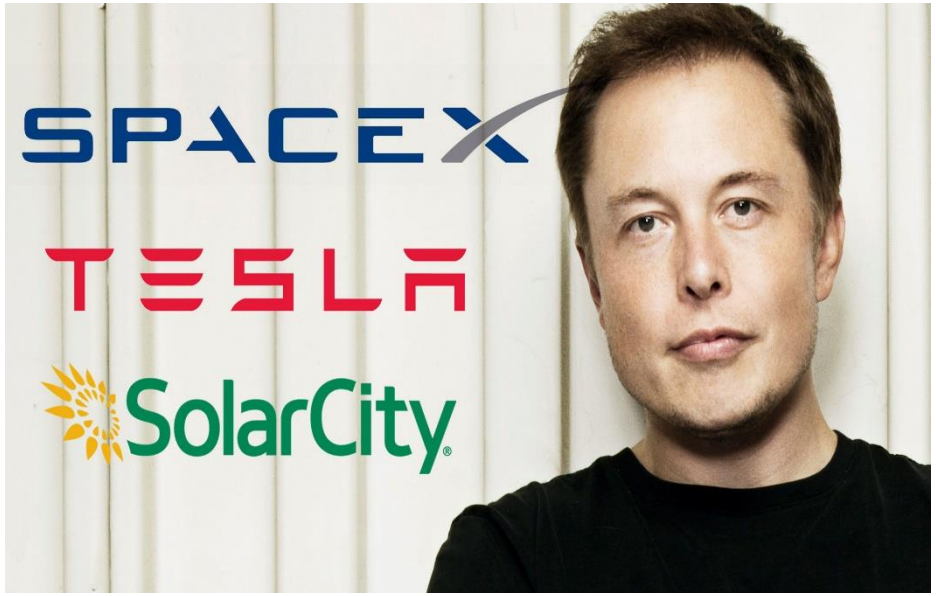
McMaster

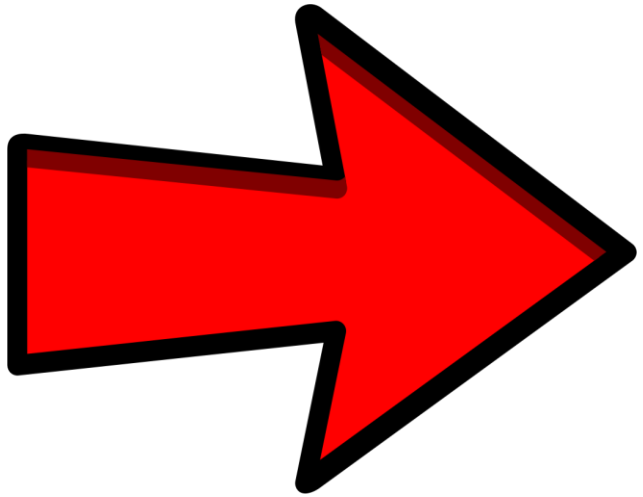
Hyperloop

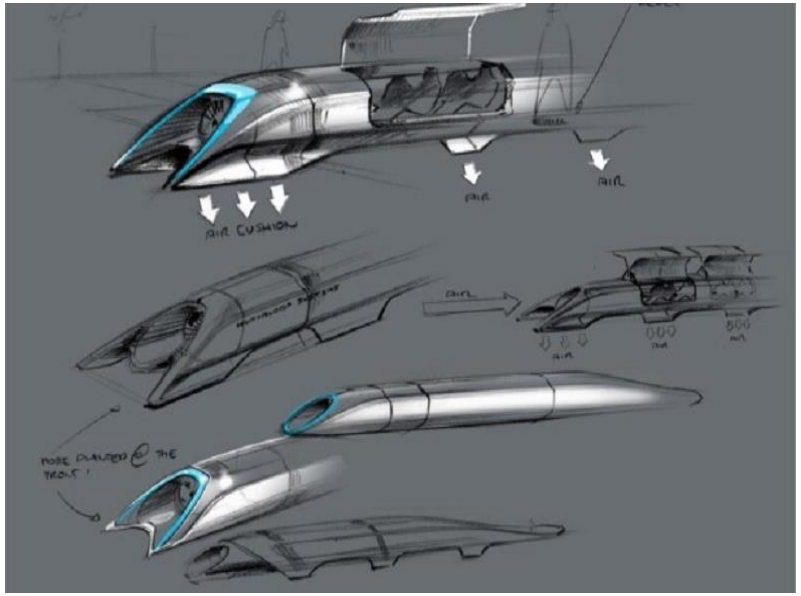
Who are we?


HYPERLOOP
POD COMPETITION
DESIGN
WEEKEND
JAN 29-30, 2016
JUDGE

The Challenge







The Result

Stage 1: Preliminary Design Briefing

- 1200+ Submissions
- 300 SpaceX Approved submissions move onto next round
- Express Preliminary Ideas about how to design The Hyperloop

https://docs.google.com/presentation/d/1jqBDnTVNsM_0BLvis7xbA_tvxBDqzLM2q8u9itZ7WQk/edit?usp=sharing

McMaster Hyperloop Moves onto Stage 2

- November 25th, 2015:

  McMaster Hyperloop was formally invited to present Final Design intentions for The Hyperloop at The SpaceX Hyperloop Pod Design Competition

- Final Design Competition

  Held from January 29-30 2016 at Texas A&M University; College Station, Texas United States of America

Stage 2: Final Design Competition

- 300 SpaceX approved teams come to Texas A&M from January 29-30, 2016 to present Final Design Intentions to series of Judges (Industry Professional, University Professors, SpaceX & Tesla Engineers selected at random)

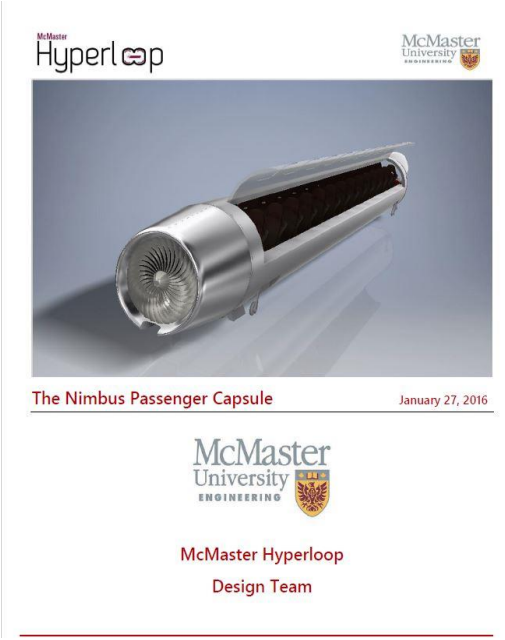
- Design Only

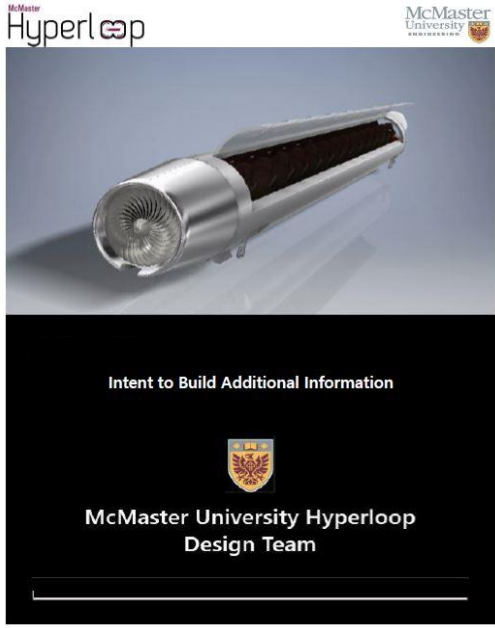
- Design & Build

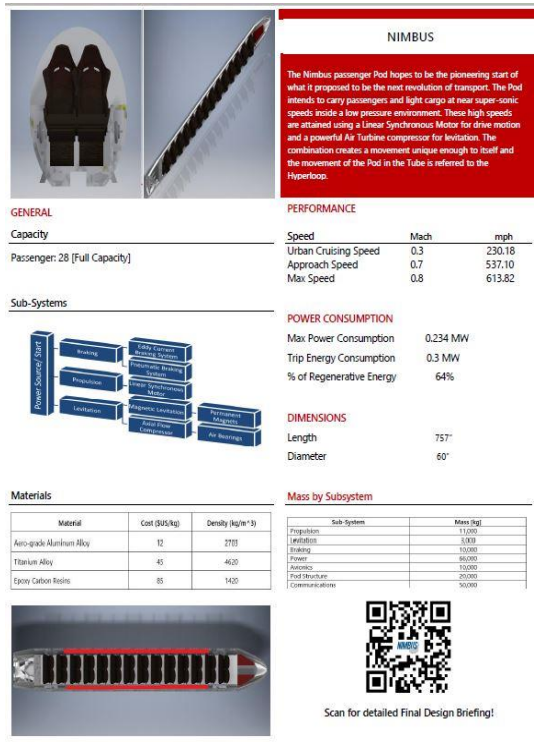
- Nominated Sub-System

Our Response

- Final Design Package
- Additional Information for Intent to Build
- Presentation of Research
- Specification Sheet
- Presentation Board





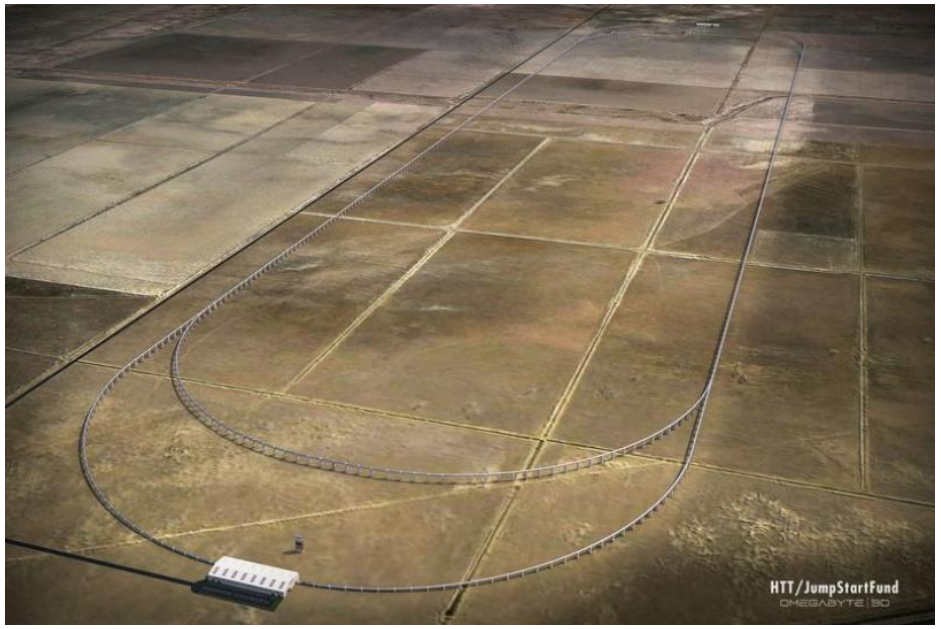


Pictures From Final Design Competition

Stage 3: Competition Weekend

- Top 22 Teams from Design Weekend move forward to final round; Stage 3

- Scheduled for August 2016, selected teams to bring their Final Designs to life by building prototypes test on SpaceX Official Test Track



Current Team Status

McMaster Hyperloop

Future Plans

McMaster Hyperloop

X

RYERSON
UNIVERSITY

Deployable Hyperloop Landing Gear

“Using an innovative hybrid actuator system to perform extension and retraction at low speeds and emergency scenarios, the deployable wheels system will play a key role in the safe and smooth operation of the pod “ –TAMU Engineering

Requested Task of McMaster University

Design and Manufacture a Test Rig to:

1.) **Validate Static Stress Levels**

- At critical (and non-critical sections if warranted) using applied forces and measured with strain gauges

2.) **Validate Static Deformation**

- Certain sections of the wheel system should not deform more than a to be determined amount in order for the gear to function nominally (also this deformation should not be permanent)

3.) **Deployment; Retraction Cycle Tests**

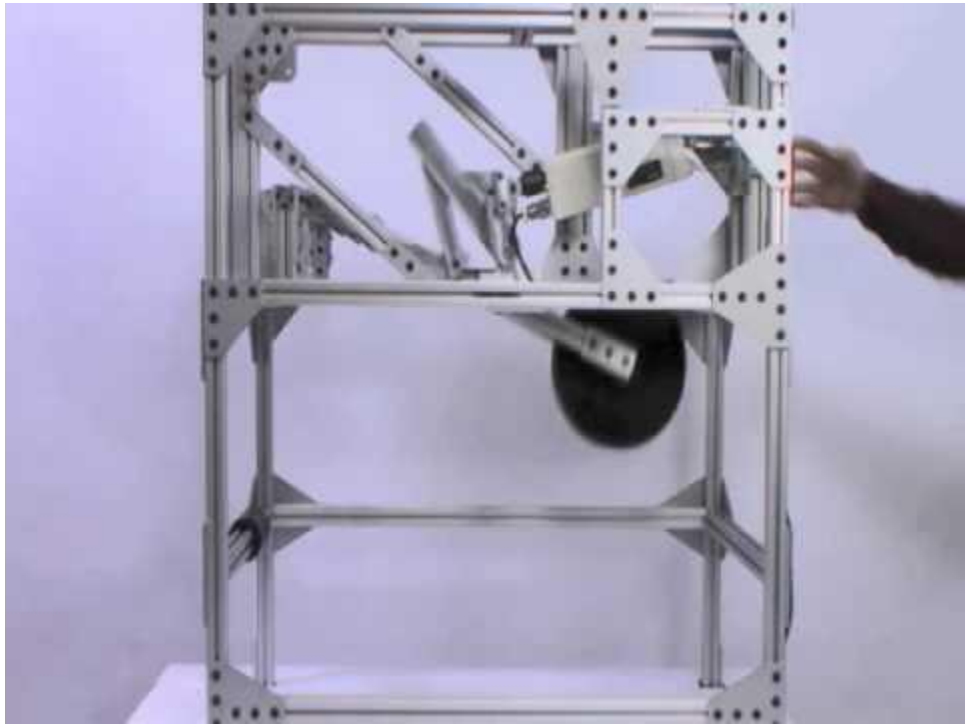
- (measure speeds, loading due to g-forces, stresses on motor and other components)

4.) **Active Control System Testing**

- (when braking, does system react quick enough to a given scenario? does the system insure all gears touchdown at the same rate, same time and if not does it correct for that?)

5.) **Validate Dynamic Loading Cases**

- (ie. braking, un even load distribution over the gears, wheels touching ground at different rotational speeds, etc.)



2017

Meeting Takeaways

2016 Season Performance

- Thoughts/Comments/ Advice
- What could we have done differently?
- Lessons Learned/ Takeaways

Ryerson Collaboration

- Resources
- Funding
- Agreement Conditions

2017 Season

- What can we start doing now?
- Frameworks to Implement
- Advice/Resources for University Engineering Teams
- Funding

Thank You!