UCI Rocket Project 2015-2016

Advisor: Professor Kenneth D. Mease

UCI Samueli
School of Engineering

Background

Traditional CubeSat launch costs $40,000/Cube to $2,000,000/Cube and traditional upper mesosphere research launch costs $25,000/kg to $40,000/kg. Alternative ways are considered to bring down the costs.
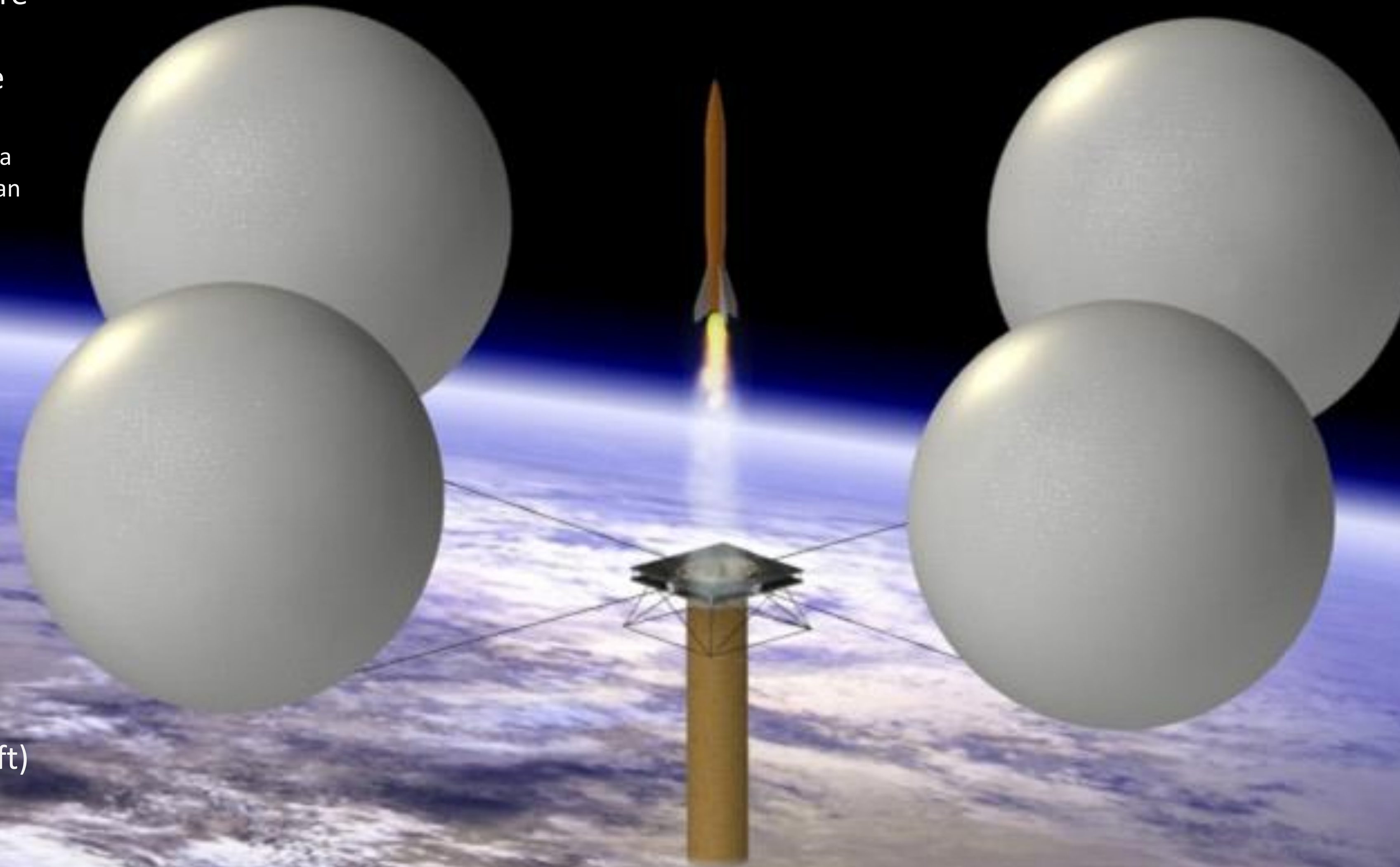
(CubeSat: miniaturized satellite for space research that usually has a volume of exactly one liter (10 cm cube), has a mass of no more than 1.33 kilograms)

Project Goal:

Design cost effective method (Rockoon) for mesosphere research & CubeSat launch by using balloons to hoist and launch an actively stabilized rocket with a highly efficient lightweight hybrid engine.

Objectives:

1. Rockoon prototype 2 high altitude test (65,000ft)
2. Hybrid engine static fire test
3. Develop prototype of precision landing system
4. Develop prototype of gimbaled thrust active stabilization system
5. Design hybrid engine rocket with active stabilization system(it can reach space)

Project Phase	Start	End
Research/UROP Proposal	09.24.2015	11.02.2015
Design	11.02.2015	12.11.2015
Purchase	12.11.2015	01.04.2016
Fabrication	01.04.2016	03.18.2016
Avionics High Altitude Test	03.18.2016	03.23.2016
Report/Optimization	03.23.2016	06.10.2016
Rockoon P2 Test	06.10.2016	06.20.2016
Hybrid Engine Static Fire Test	06.10.2016	06.20.2016

Team Structure

Advisor

Project Manager

Avionics   Structures   Propulsion

Traditional Launch:
$25,000 / kg
(Mesosphere)

Rockoon Launch:
$800 / kg
(Mesosphere)

TOTAL PROPOSED BUDGET $15,000

Avionics $1,200
Structures $1,600
Propulsion $12,200
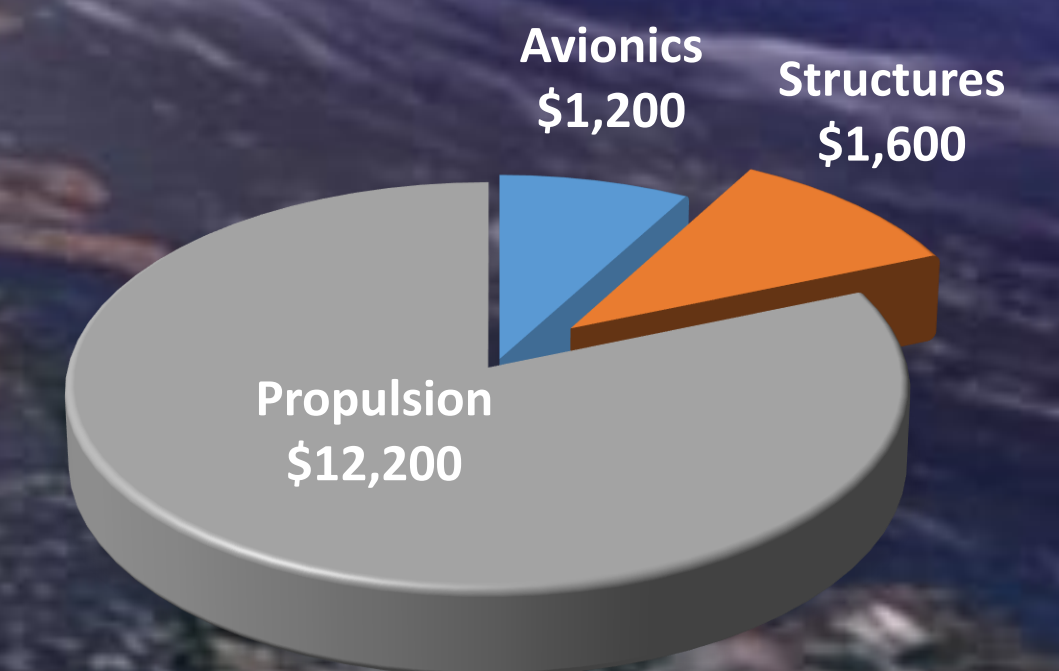
Structures Lead: Isaiah Navarro
Team Members:
Justin Oyas, Michael Morey, Leann Kampley, Alfonso Arreguin

Avionics Lead: Jesse Inouye
Team Members:
Tarik Snyder, Stefanie Figueroa, Vishtasb Namiranian, Sandy Dao, Aaron Zhong , Onalli Gunasekara

Propulsion Lead: Taylor Jones
Team Members:
Justin Block, Grant Dang Wu, Matthew Preszler, Taiwei Chen

General Manager: Yuan Zhang
Volunteers:
Gilbert Pozos, Steve Moes, Anchit Roy, Santiago Barrera, Norberto Abadias, Linh Ly, Brandon Marconet, Samuel Morales

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