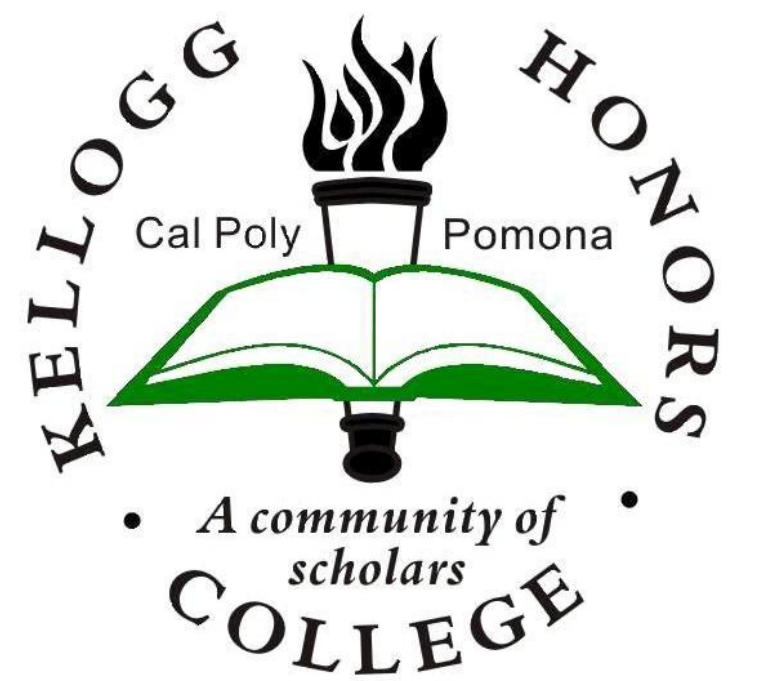


Hybrid Airship Design & Aeronautics Software



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 Kellogg Honors College Capstone 2011

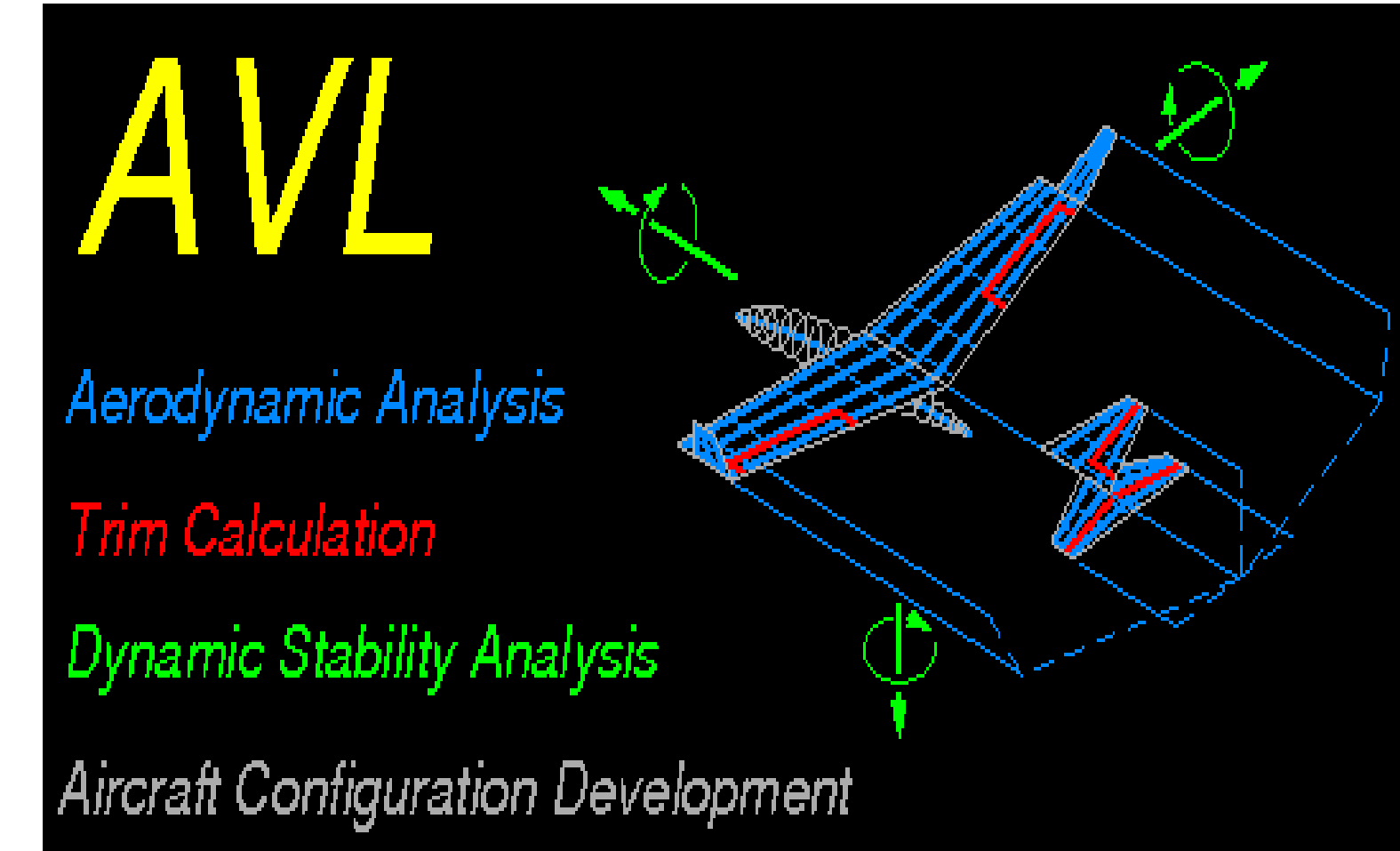
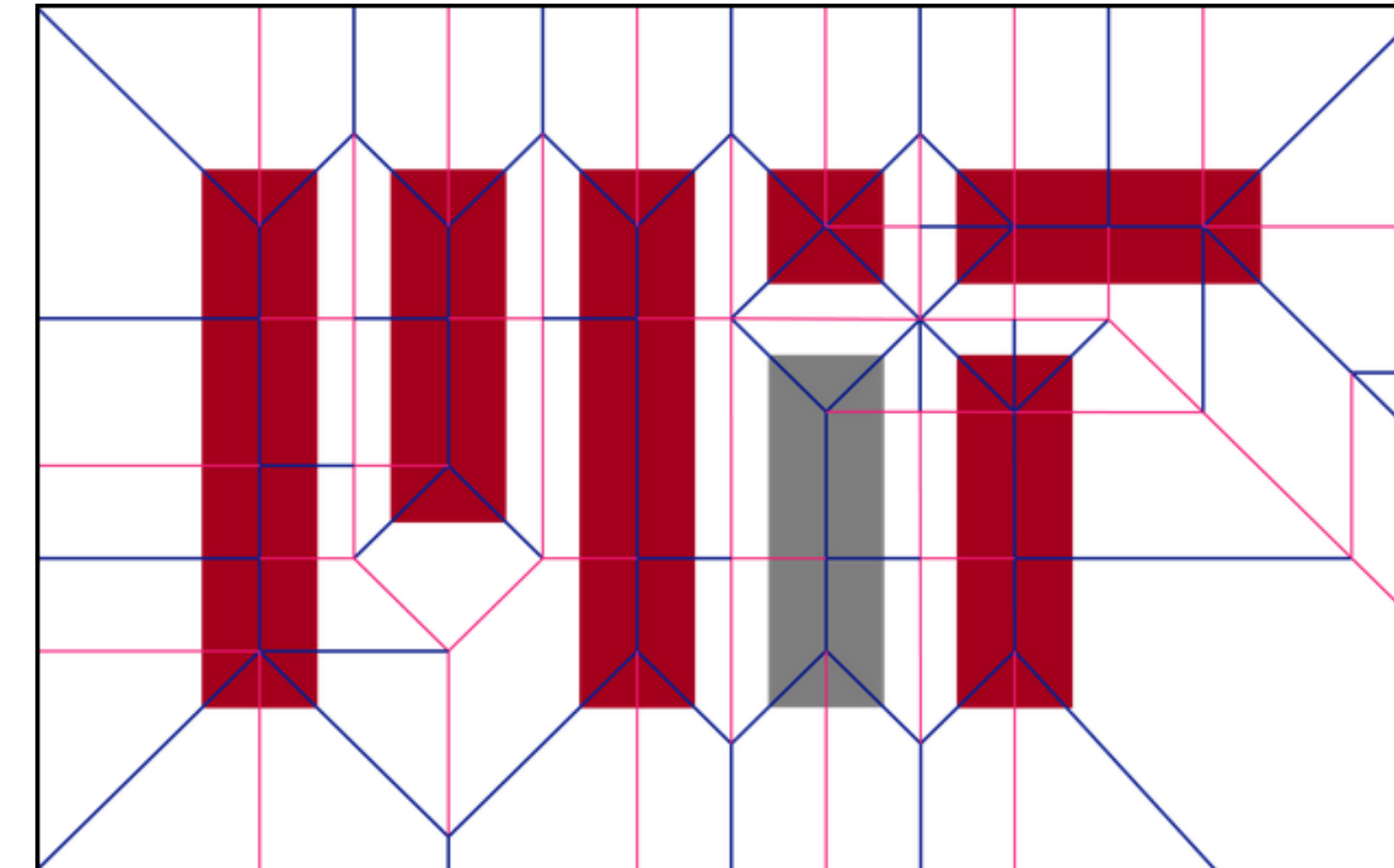


Introduction of Design Need:

- Military:
 - Need effective means to combat terrorism and secure safety of the nation
- Commercial aircraft industry
 - Desire ideal means of travel
 - Aircraft too expensive
 - Ships too slow

Introduction of Aerospace Software:

- Desired to use aeronautics software available from Massachusetts Institute of Technology
- Apply software to hybrid air vehicle to assist aerodynamic analysis

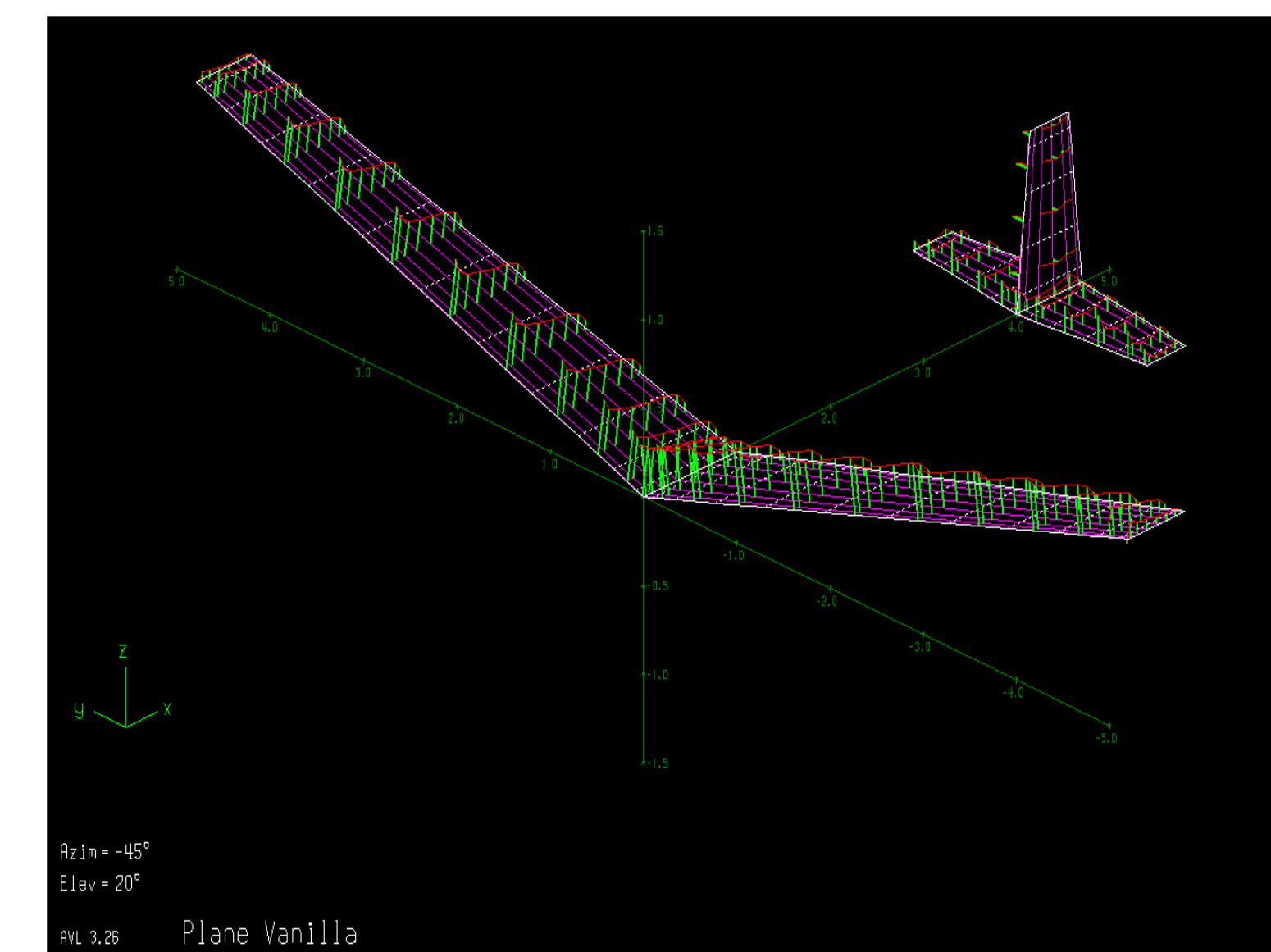
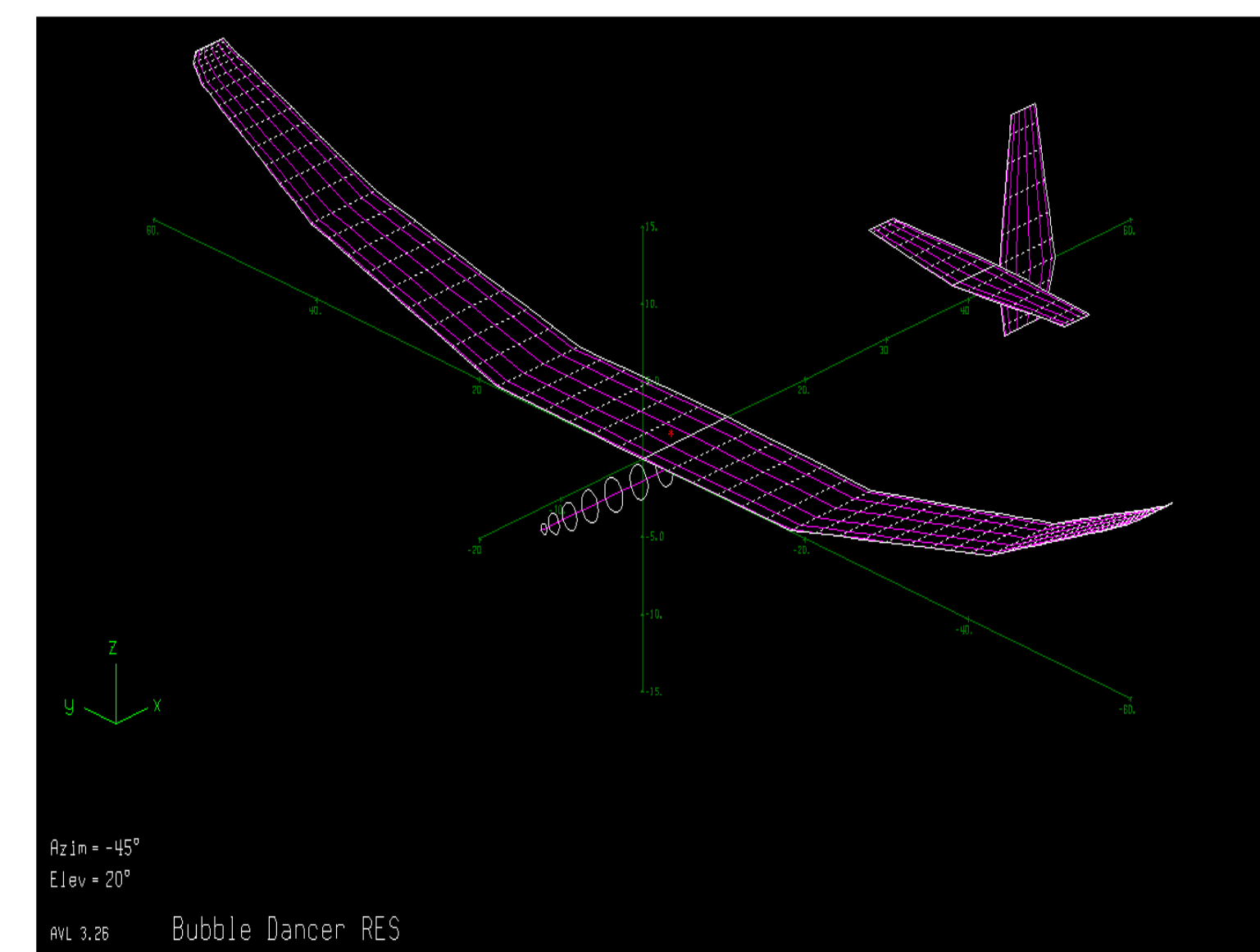
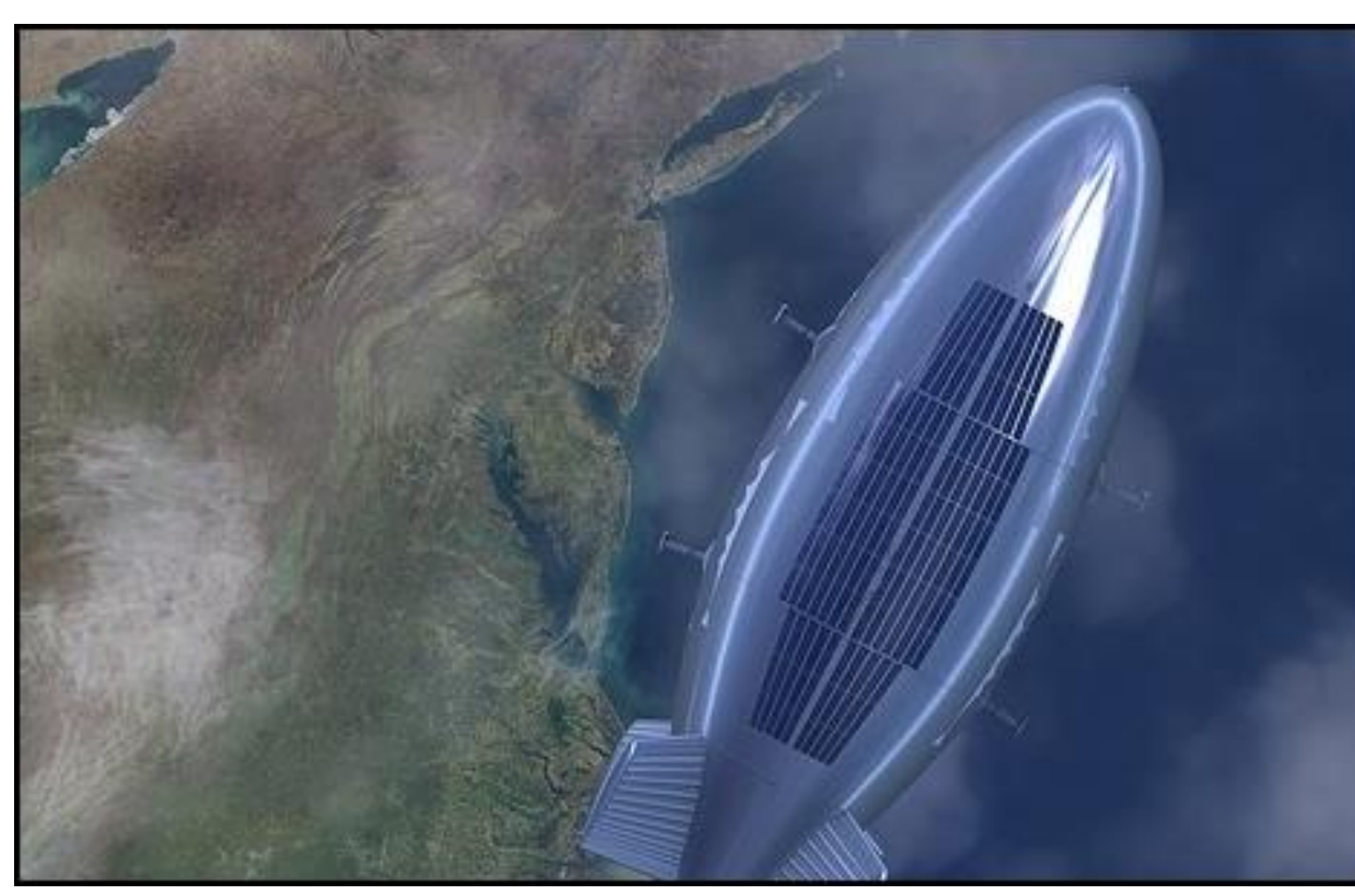


Design Requirement:

- Hybrid Airship capable of:
 - Carrying 1.2 million lbs
 - Any terrain capabilities
 - Travel faster than average airship
 - Travel across the globe

Previous goal nonviable, new goal:

- Software only applicable to thin aircraft, hybrid airship too blunt for software use
- Software still useful for learning purposes
- Present to junior class of aerospace engineers
- Design a reference manual for upcoming generations of Cal Poly Pomona students to learn and use software



Results and Methods:

- Led a team of senior aerospace engineers to design:
- Designed lighter than air vehicle
- Through engineering software satisfied load capabilities
- Through Computational Fluid Dynamics analyzed aerodynamic loads

Results and Discussion:

- Reference manual created with examples and step-by-step approach for students to understand and use
- Introductory presentation given to junior aerospace engineers
- Expecting future generations to benefit from understanding a new software that is recognized throughout graduate schools

