

# Cockpit-to-Motion-Table

**Final Presentation: P12242**

Andy Birkel, ME  
Christina Cignarale, IE  
Matt Glynn, ME  
Daniyar Tokkohza, ME

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# Schedule

- Project Description
- Customer Needs & Specifications
- Evolution of the design
- Final Design
- Design Challenges
- System Testing
- Project Status
- Project Evaluation

# Project Description

- Design an adapter plate to interface a Beechwood Duchess modified cockpit with MOOG's electromechanical six-degrees-of-freedom motion table



# Customer Needs & Specifications

Interface the cockpit with the motion table

- Must be able to withstand 2.5G's

Support 2 passengers, the visual equipment, and the cockpit

- Adapter plate should support 700lbs

Cockpit must have mounts for casters & appropriate casters

- Each caster should support 400lbs

Design should remain under budget

- Allotted budget was \$5000

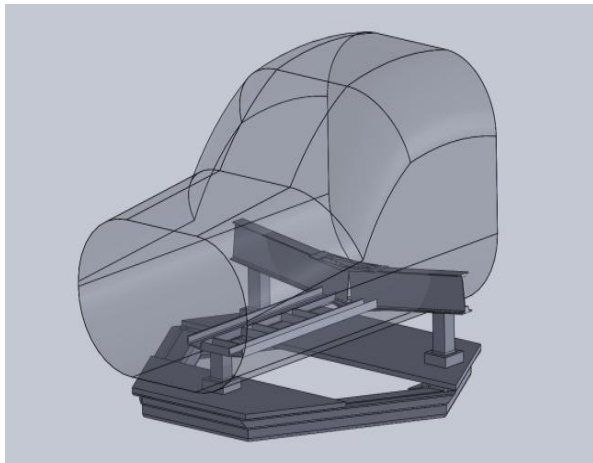
Must be able to be disassembled

- Yes/No

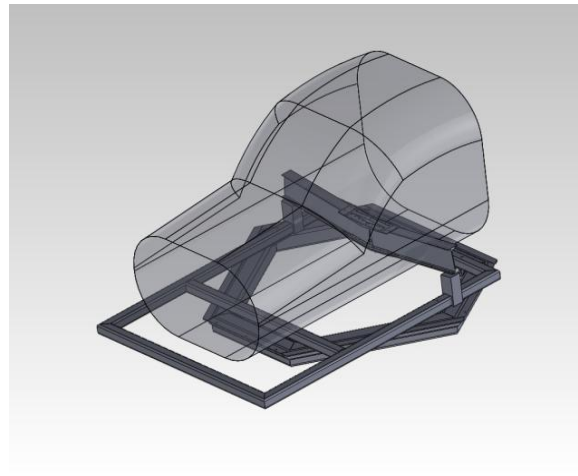
The decided concept must be aesthetically pleasing

# Evolution of the Design

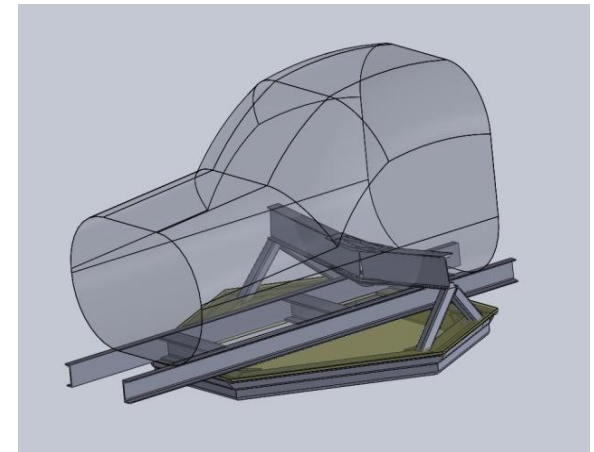
## Original Design Concepts



**Concept 1: Plate Design**



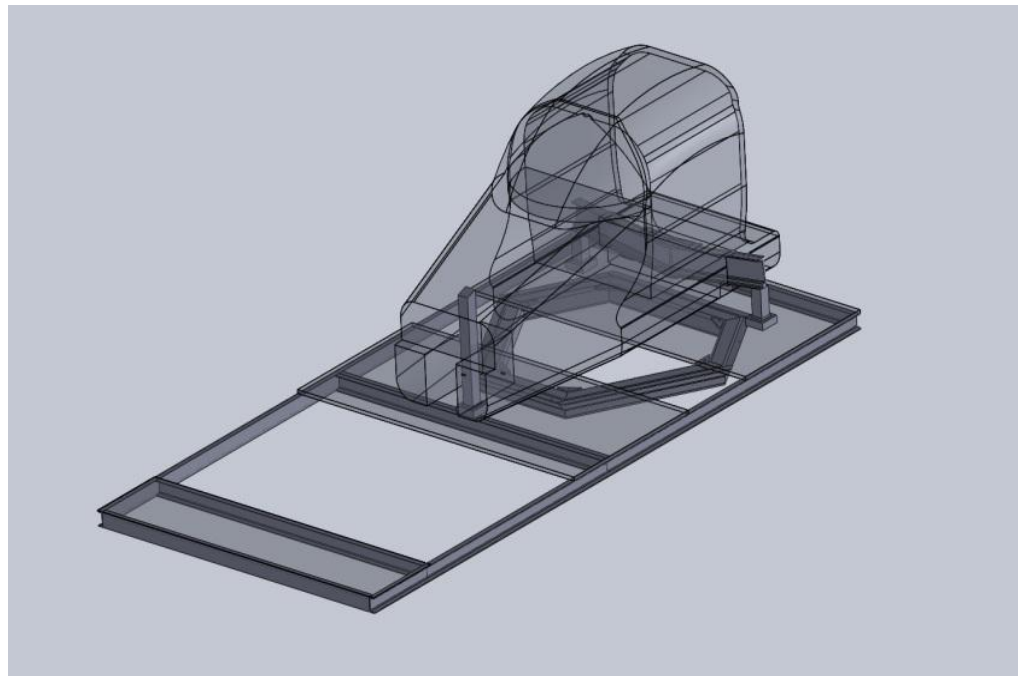
**Concept 2: Tube Framework**



**Concept 3: Framework & Plate**

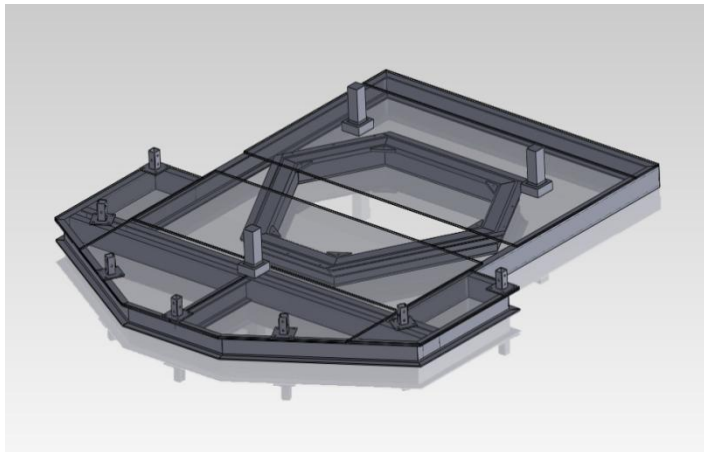
# Evolution of the Design, Cont.

## Concept 4: Intermediate Design

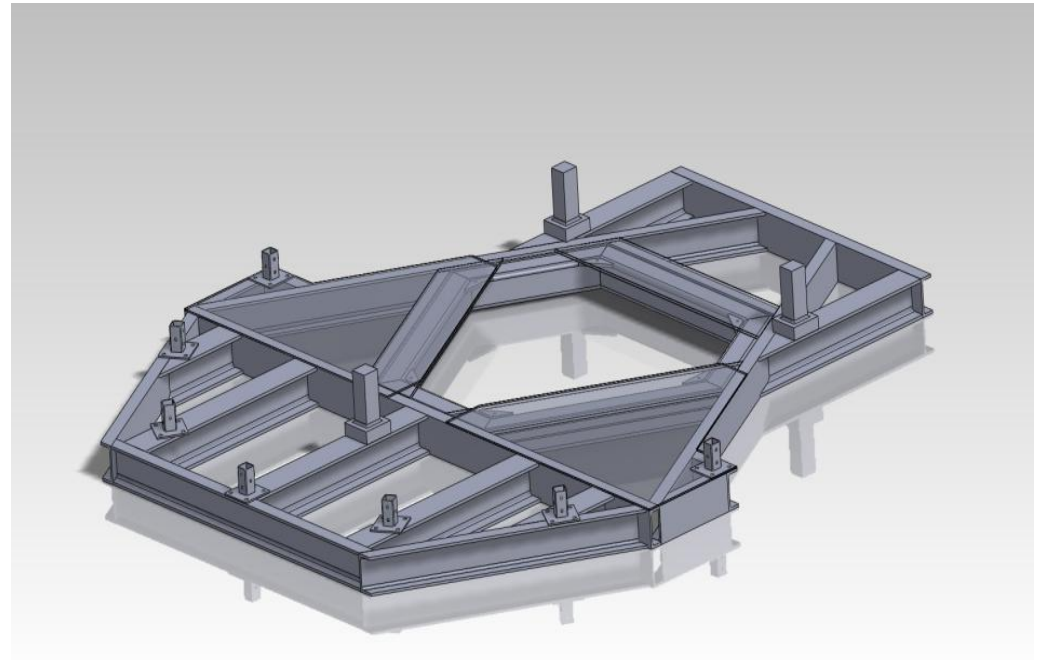


# Evolution of the Design, Cont.

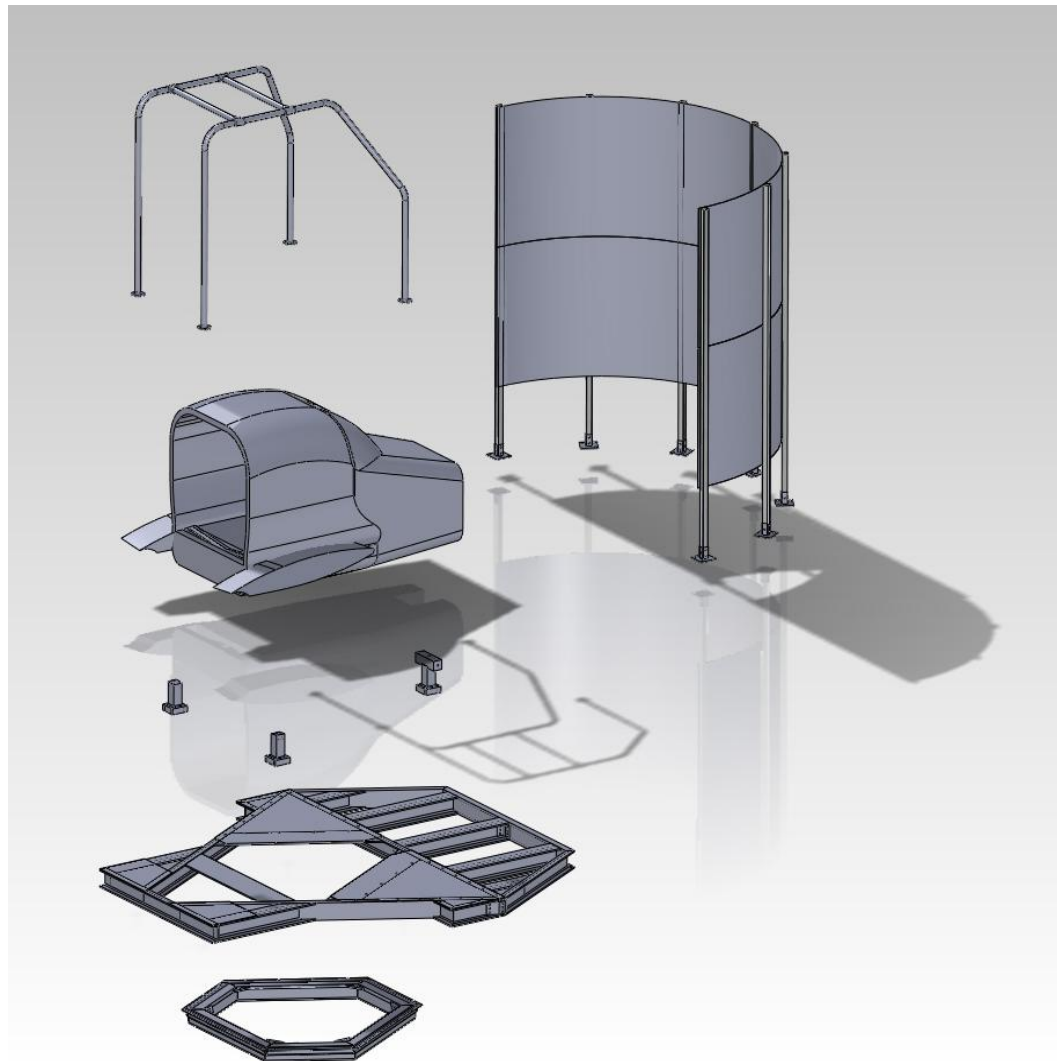
**Concept 5: Plates & Channel**



**Concept 6: Channel Framework**

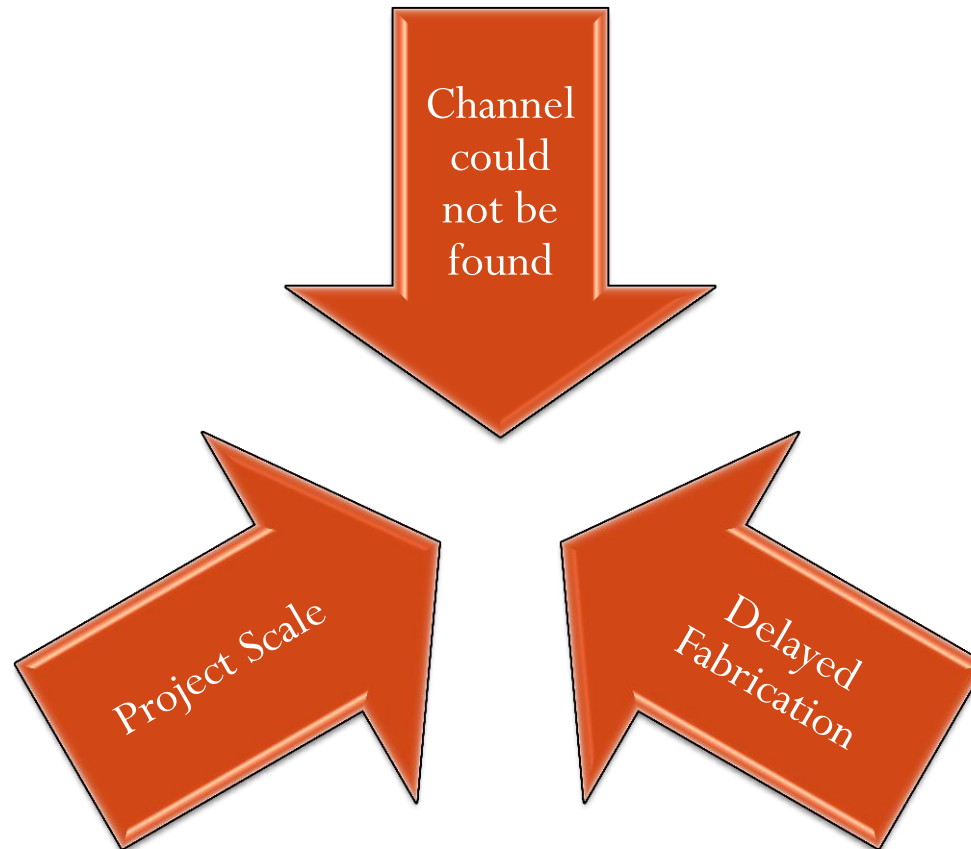


# Final Design

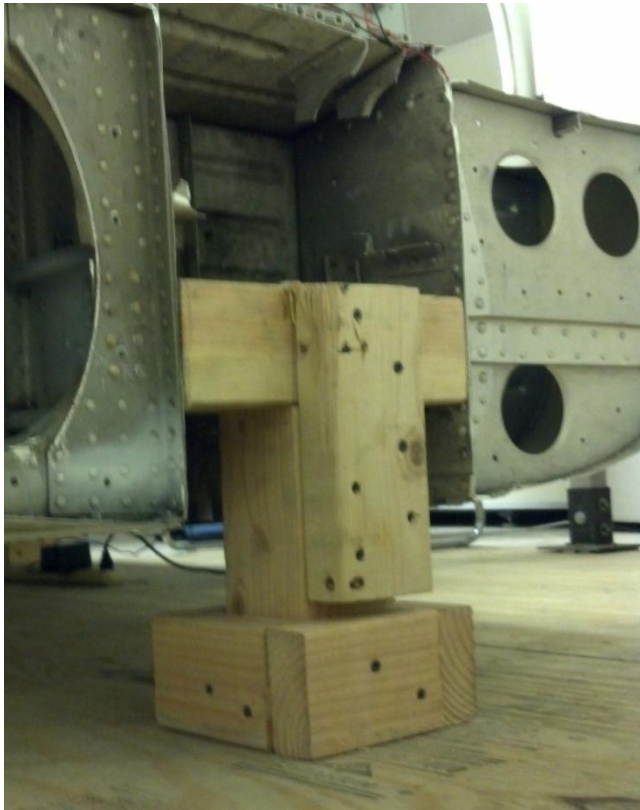




# Design Challenges



# Systems Testing



Since aluminum pylons were not available for us at Imagine RIT, fabricated wooden pylons.

# System Testing, Cont.



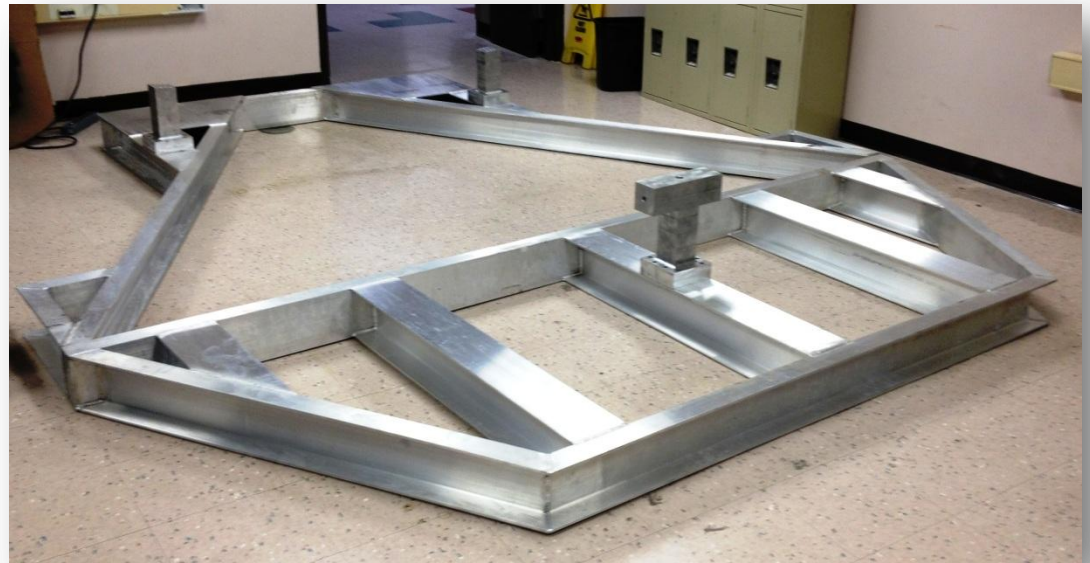
Drilled holes for rear support attachment points.

# Prototype



# Project Status

- Have all parts for plate assembly
  - Front channel
  - Back support
  - Pylons
  - Fasteners
  - Casters
- Assembly Manual
- Final CAD models



# Project Evaluation

- Design meets all customer needs and specifications
- Imagine RIT prototyping proved that pylon concept will sufficiently support the cockpit and passengers

## Lessons Learned

- Research what materials are available while in the design process
- Schedule projects with time for production delays