

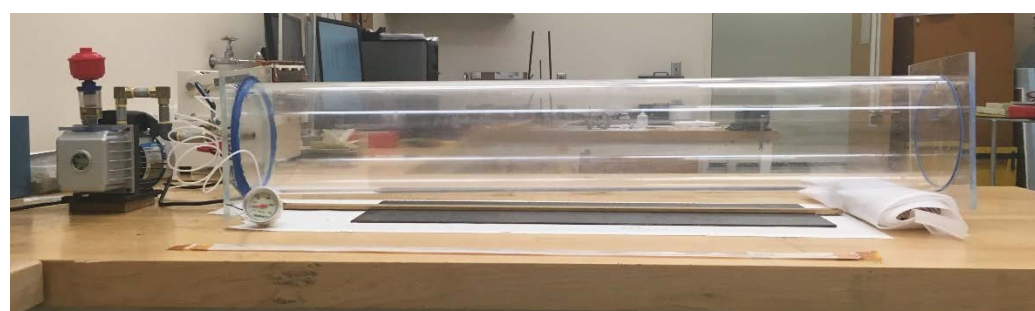
## High Altitude Balloon Launch

This past summer the Utah State University Get Away Special Microgravity Research Team tested several of their prototypes on high altitude balloons. They had a total of four balloon launches where they collected a variety of data. Their primary purpose was to test their passive stabilization mechanism called the Aeroboom.



## Vacuum Chamber

In order to test prototype before sending them on high altitude balloon launches the Get Away Special Team designed and built a vacuum chamber. This allows them to put the Aeroboom through a series of test and improve the overall quality and design. The new vacuum chamber is large enough to place the whole payload inside off allowing for test of the entire system.



## Aeroboom

During the past year the Get Away Special Microgravity Research Team put the original design of the Aeroboom through a series of test. This process revealed several errors in the design. They spent the last school year trying to fix the problems they uncovered and have improved the design.



The first error in the design they discovered was the seal. The previous seal was easy to stretch, rip, and break. To solve this problem they wrap the teflon in kapton tape before creating the seal. This stops the teflon from stretching, ripping, and breaking.



After fixing the seal, air was still getting into the outer boom. During the assembly process the outer boom is vacuumed out so this was concerning. One possibility that was considered, was that the epoxy was outgassing. Several tests were run on the epoxy to better understand it; however, the mechanical team plans on continuing to test the epoxy this summer.

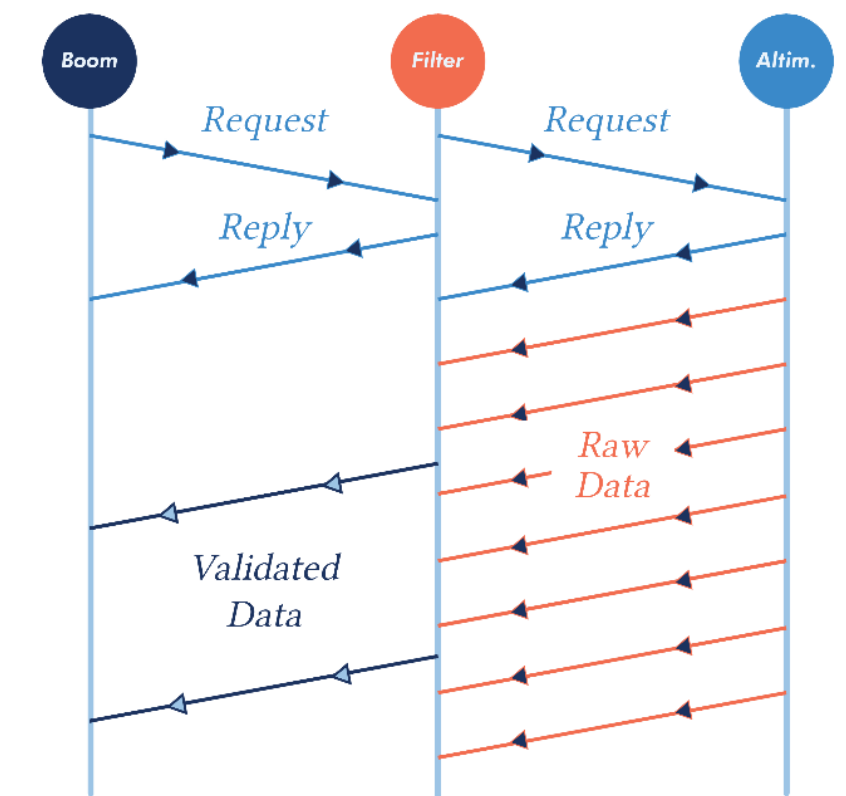


It was also considered that the teflon used for the inner boom was too permeable. To help solve this problem the entire inner boom was wrapped in teflon. This created two layers of material between the inner and outer boom and significantly decreased the amount of air found in the outer boom.



## Open SPA

Open Space Plug and Play Architecture. The Get Away Special team has taken it upon themselves to implement space software that would be open and available to anyone who desired a quick and easy way to implement their mission. Without having to re-invent the wheel every time. It was inspired after having written many versions of HAPCAD. At least 3 versions of HAPCAD were written for the same mission, later nicknamed Errno. OpenSPA is to be the solution, so that more time could be focused on the electrical and mechanical side of things rather than spending time re-writing the software every time.



*Messaging between three SPA components to provide real-time validation of barometric data*

## Acknowledgements

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