



Ad Astra Per Zoom: Texas A&M Uses Our Software To Shoot Experiments Into Space



Dr. Joseph Morgan, Texas A&M University

Challenge

Dr. Morgan and his students wanted to mentor middle and high-schoolers to help them develop projects for NASA. Audio calls and emails weren't allowing for easy collaboration.

Solution

Use Zoom's high quality video platform to collaborate with these students.

Result

Mentors and mentees worked together to develop several experiments that NASA has delivered to the International Space Station.

When most people hear the words "space" and "experiment" used in the same sentence, the first thing that pops into their heads is probably an image of adult astronauts performing research on glass tubes, playing with water in zero gravity, and bringing various life forms along for the ride just to see what happens. But what if you were told that some of these experiments came from college students, high schoolers, and middle schoolers who create their own complex hardware platforms with measurement instruments and control peripherals, and then launch them into space?

The above is exactly the kind of project Dr. Joseph Morgan, professor in the Electronic Systems Engineering Technology Program at Texas A&M University, coordinates with multiple groups of students around the country and around the world. In order to facilitate the communication between loosely connected groups of aspiring engineers, Dr. Morgan is using Zoom. We spoke with the professor about the university's program.

Reaching Beyond The Stratosphere

Texas A&M University has a relationship with a private organization called the Center for the Advancement of Science in Space (CASIS), which works with the National Aeronautics and Space Administration (NASA). The company selected Dr. Morgan and his team of students to be part of a project that sends experiments as payloads to the International Space Station (ISS).

"One of the projects that we've been doing in connection with NASA and CASIS is part of a program by NASA's private partnership to help high school students launch projects to the International Space Station," he said. "My lab, called the Mobile Integrated Solutions Lab (MISL), has designed and developed a small form factor which contains a series of integrated circuits used to monitor the experiments sent to the space station. Students are able to remotely monitor, control, and record different metrics such as CO₂ concentrations."

Upon the development of their integrated platform, Dr. Joseph Morgan and his students have been selected to be technical partners in this new program. Part of this involves mentoring three groups of high school and

middle school students in the Denver area. Dr. Morgan has assigned one of his own students at the university to mentor each group.

"To be able to communicate with our student groups in Denver, we used Zoom," he said. "It allowed us to discuss software changes that need to be made and present the integrated circuit board to the students so that they can better familiarize themselves with what they are working with. For this, it was absolutely necessary that we use something that lets us show everything being put in front of the camera clearly. **Zoom was capable of reaching the level of quality we needed.**"

At this point, Dr. Morgan's team has two operational experiments aboard the ISS. The boards developed at Texas A&M have caught the attention of the private sector. Companies that want to do research on the ISS will purchase the university's boards to integrate them into their containers and control their experiments remotely.

Where Zoom Falls In

"Because we've developed these hardware platforms, our students are able to get high school and middle school students excited about electronics and software development," said Dr. Morgan. "But we're doing all of that essentially through a virtual presence and the decision we've made after using a number of solutions is that **Zoom is the most straightforward, easiest to use, and clean environment for this purpose.**"

To coordinate a project to be launched into space, there's no room for second-guessing what kind of solution a team will use. It either works or it doesn't, and Zoom has provided by far the most consistent solution for Dr. Morgan and his students at Texas A&M.

"We also do projects internationally. On occasion, we will connect with faculty in Germany, for example, that have gone to our universities in the past and coordinate international projects with them," said Dr. Morgan. "In one project, we connected with the Technical University of Munich to develop a mobile application that could control a robot from the vast distances between us. While they were testing their app, they were connected through Zoom. When one German student sent a command to the robot in our campus, they were able to see it move a few seconds later. Zoom was there to make this connectivity happen so that the student that was working in Germany could demonstrate that the software he created was working properly."

Using Zoom has allowed Dr. Morgan and people all over the planet to connect and collaborate in projects that could have possible far-reaching applications in tomorrow's world. The fact that they were able to see the results of

their work instead of hearing it from someone else has made an impact that no other form of communication could have possibly approached.

"Rather than trying to describe the things we do with words or pictures, our use of Zoom lets us actually act upon our desire to express what we're speaking about and present our materials as we would if we were standing in the same room," said Dr. Morgan. "This allows the private sector firms that we work with to gain insight into our work that is represented by more than a few static images."

To Dr. Morgan, the ease with which communication can flow through Zoom is perhaps the principal reason he made the choice to use our software. Of course, the quality of video transmission also pushed him even further towards making his choice, since the material that is presented in project meetings often needs the extra clarity to make individual terminals on circuit boards distinguishable from one another. He has made it quite clear that he does not want us to diverge from the formula that has made our software his video conferencing platform of choice.

"I just hope Zoom never changes. This is what I told the head of marketing in a conversation," said Dr. Morgan. **"With any other solution, I spent a great deal of time trying to start the conference, let alone maintain it. Zoom has made the experience of collaborating with people as simple as clicking on a link and zipping right into the conversation.** Such an automated process would be a shame to change in any way. My message to the company is 'do not mess with it!' It works wonderfully and does everything we want it to do."



About Zoom

Zoom, the cloud meeting company, unifies cloud video conferencing, simple web meetings, and group collaboration into one easy-to-use platform. Our solution offers the first available mobile-screen sharing and an innovative hybrid cloud service, and works across desktop, tablet, mobile and room systems. Zoom services over 40 million participants and more than 100,000 businesses globally.

Website
[zoom.us](https://www.zoom.us)

Innovations

First 3-in-1 Cloud HD Meeting Platform
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