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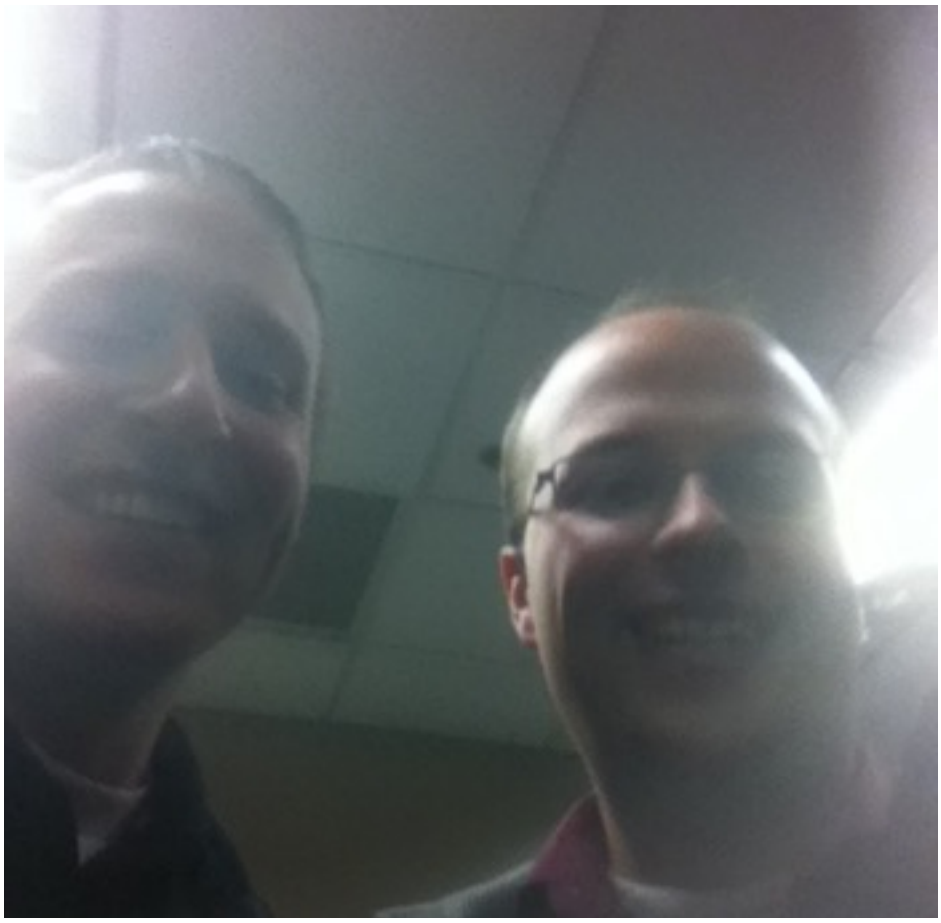
CMST 1020 - PUBLIC SPEAKING

Outside Speaker Evaluation

Engineering processes for developing spaceflight components



Bryan Hansen and I after the speech

I attended a talk given by Tim Neilsen and Bryan Hansen who work at USU's Space Dynamics Lab (SDL) about what kind of engineering processes are required when developing hardware and software that will be deployed in space. The purpose of the speech was to convince engineering students of the necessity of sound engineering processes and to inform them about the processes in use at the SDL. The main points of the speech were that following industry standard practices are incredibly important when dealing with spacecraft, since your design

needs to be as well-documented and designed as possible. If good design practices are not followed, you will run into unforseen problems when the device is launched, and chances are the millions of dollars it took to build the thing will be wasted.

To support these claims, the presenters showed off a little bit of what the engineering processes were at the SDL, and put up some slides and videos of actual space components being tested and verified. They showed one video in particular of a component being shot 300 m into the air before landing on a trampoline to illustrate the need for proper staking on the circut board. The component actually missed the trampoline and hit the mud at impact velocity, but since they had followed proper safety and precautionary measures, the insturment kept working even during impact.

The speech was organized into two parts, hardware and software. Both of these parts tackled the subject from two different perspectives, but came together on some key process design steps. This was helpful because it allowed students to follow the train of thought that they were most familiar with and end up at the same conclusion, while allowing them to see a little bit into the world of the other students. As a software developer, some of the things I remember most were actually interesting bits about the hardware processes, such as learning how important it was for schematics and diagrams to be drawn up before any of the parts are purchased. On the software side, it was mostly a reminder to me that just because nobody was looking over my shoulder didn't mean that design documents weren't still important.

Overall, I'd say the speakers did a great job of topic selection and presenting information, though their presentation skills were occasionally lacking. Particularly at the beginning of the speech, one speaker kept mentioning how unsure of himself he was, which didn't instill in me a lot of confidence in his views as a speaker and created a lot of noise in his signal-to-noise ratio. Nevertheless, they both presented good information and you got the impression that they really practiced what they preached, which was probably the most effective thing that they did. As I mentioned above, they were well adapted to their audience by splitting the speech into two halves, and I feel like the repeated themes among the two halves were effective as well. All in all I'd say the speech was of slightly higher

quality than I would expect from a technical presentation, but it was obvious that the speakers were engineers by trade and not speaking professionals.

I think the most applicable bit of information I gleaned from this talk was actually how to split up my speeches to address a divided audience. Instead of trying to group us all together into one unit, they asked at the beginning of the speech which ones of us were more interested in hardware or software. Then, when they were making a point, they knew which students to focus in on, and during the few times they asked for audience participation they never called on a hardware guy to answer a software question or vice versa. I'm guessing that when they asked us to identify with a side, they mentally picked out a few audience members on each side so they knew who to call on in times of need. Interestingly enough, I didn't feel like this division of audience members segregated us, but instead their acknowledgement of the split helped bring us together.

Other than that topic, I did get some pretty useful reminders. Especially about managing how often I expressed self-doubt, and about being authentic with my audience.