**Henry**: Hello, we are team 4, and we are doing the mmWave RADAR to assess the quality of green coffee beans. Our demo today probably won’t be too exciting since most of our project consists of filling an aluminum tube with beans, recording and exporting amplitude values to a CSV file, and training a machine learning model. But, for today, we’ll give you a little show of what that process looks like. We’ll begin by showing you the tool that we used more towards the beginning of our project, the Acconeer Exploration Tool, which gives a visual depiction of the amplitude values in real time. We’ve since moved to a Python script that allows us to export these values, run iterative tests, and export these values to CSV. We’re currently working on compiling a much larger dataset than our original dataset, since our first one wasn’t large enough to have enough variation within the data points for our model to learn well enough to differentiate between the beans.

**Chris**: Issues we’ve run into throughout our design:

* Prototypes 1 & 2 introduced noise from the non-uniformity of 3D printed layers
  + Aluminum designs with beans directly on the lens fixed all noise issues
* The wavelength of our radar is 5mm, which also happens to be about equal to the average width of our beans, obviously giving us issues with resolution
  + To keep during mm spectrum, anything between 30- 300 GHz works, but not as cost effective, and may not be as good for water absorption
* The geometry and layout of the beans in our device are inconsistent, leading to different beam path lengths, potentially skewing our data
  + Created “skinny” prototypes to try and average across bean geometries
    - Led somewhat to a noise issue with the need for more power

**Kamal**: Fill the Beanis, Shake the Beanis, and Shake the Beanis again.

**Wallace**: Stand there wearing sunglasses, lookin' cool as hell

