Presentation:

<https://www.canva.com/design/DAFzhlbaW8M/i2zIrRjzIbN_wQRyYglRnQ/edit>

* Title
  + Project, members, date
* The Problem
  + Nurses can spend 20-60 minutes looking for lost equipment
  + Nurses only spend about 30% of their time with patients, and about 12% of their shift is spent looking for equipment (that is almost half of the time they spend on patient care, so think of how much more people they can help if that time spent searching was eliminated)
  + Wheelchair or gurney
  + Nurse paid 40 dollars an hour
  + 5.2 million nurses
* Current Solutions
  + Manual checks
  + Record keeping
  + Expensive RTLS systems (RFID tags, GPS)
  + CMMS
* Components Solution Mechanism
  + Sensor Replacement
    - The previous sensor was an IMU
    - The gyroscope drift is mainly due to the integration of two components: a slow changing, near-dc variable called bias instability and a higher frequency noise variable called angular random walk (ARW)
    - Drift: When the output signal slowly changes independent of the measured property over time
    - The new sensor will be a rotary optical encoder - (why is it better)
  + SLAM algorithm use for localization of asset
* Solution in Use
  + What will the solution accomplish
* Level of Proof
  + Ideally have a video of the wheelchair
* Budget and Milestones
  + Budget calculator
  + Include a budget buffer
* Appendix Key References
* Pitch deck template
* Add VCU college of engineering logo to each slide

Speaker Notes

1. Title
2. Contents
   1. Throughout the presentation will walk you through the problem our project intends to address, how we intend to solve it, and our overall goals
3. The Problem
   1. In healthcare settings, a study found that nurses can spend around 20-60 minutes looking for lost equipment a day
   2. Another study found that nurses spend 30% of their shift with patients, and 12% of their shift looking for equipment
   3. In the United States alone, there are around 5.3 million people working as resident nurses, that are paid 40 dollars an hour on average, that spend an hour each day looking for equipment, for 200 days a year,
   4. that comes out to be around **42.4 Billion dollars of wasted productivity annually**
4. Existing Solutions
   1. To combat this hospitals have devised methods of keeping track of assets. Manually, nurses can do regular checks for inventory and keep a record of what they have and where they have it
   2. But this is inefficient and prone to error - it could even end up costing time
   3. There are some automated methods like Real Time Localizing System
   4. Computerized Maintenance Management System but these are generally very expensive
5. Initial State
   1. Last year’s group attempted to address this problem with a novel wheel based asset tracking system using cheap inertial measurement unit sensors as pictured here. These IMUs contain an accelerometer, gyroscope, and magnetometer that combine to provide data about rotation of the wheels that allow us to calculate the distance an asset has traveled
6. Initial State Cont
   1. The problem with these sensors is that they experience gyroscopic drift
   2. this is a test that we have conducted of the allan variance, which is a common metric of measuring gyroscopic drift
   3. For