



Synthetic Aperture Radar Imager

Team No: 18

NORTHROP GRUMMAN

Luke Baldwin, Josh Dennis, Kaylen Nollie, Desmond Pressey

Aim: Develop a static, multi-antenna Synthetic Aperture Radar (SAR) imager.

Overview

- Create a weapons metal detection system for homeland security
- 2nd Generation Project
- ME Team 18 coordinating with EE Team 11

Project Goals

Structure:

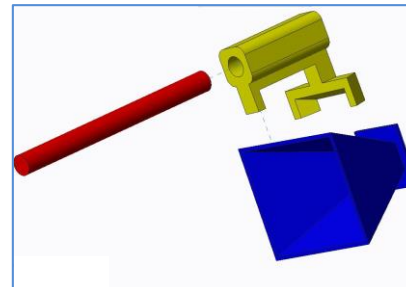
- Lower weight
- Improve stability
- Make mobile

Horn Holders:

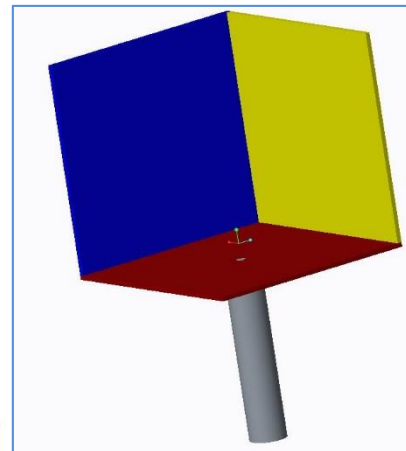
- Prevent RF interference
- Azimuth and elevation adjustment

Calibration/Testing:

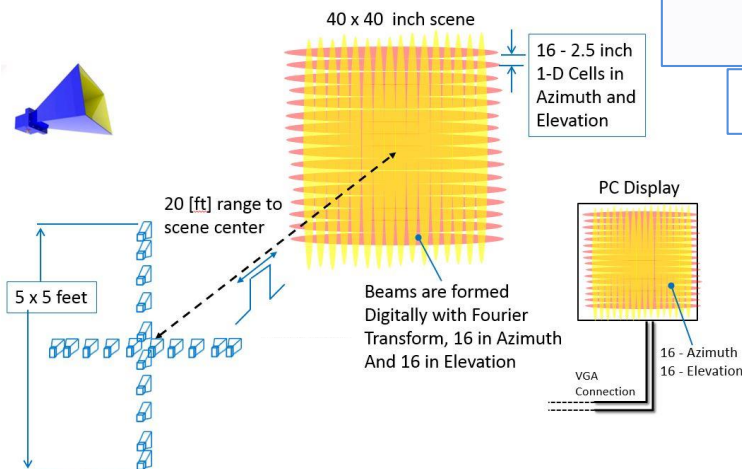
- Devise method to align all 20 horns
- Create radar reflecting equipment



Laser Pointer Alignment



Radar Reflector

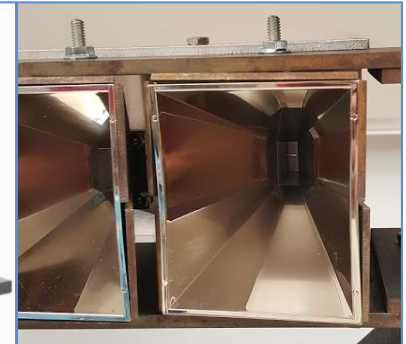
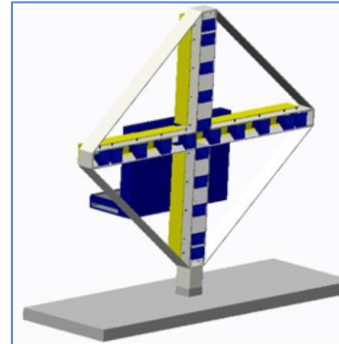


- Array of 20 antennas will project radar downrange
- Any metals objects in field of view will show up on the PC display

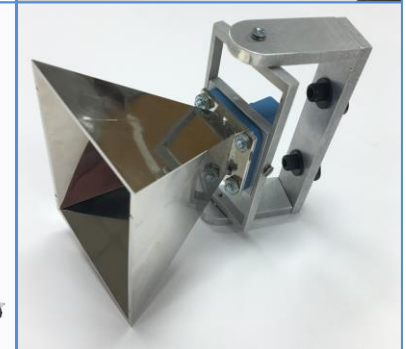
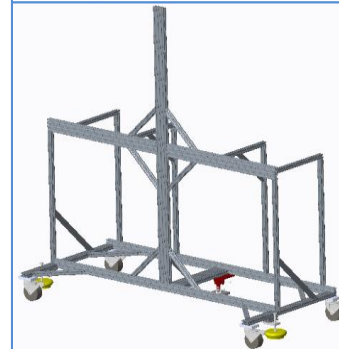
Structure

Horn Holders

Generation 1



Generation 2



Improvements

- Reduced weight by 50%
- Modular
- Mobile
- Increased stability
- Removable
- 2 axes of rotation
- 1 plane of translation
- No horn deflection

Future Recommendations

- Custom Fabrication
- Wall-mounted System
- Easily collapsible
- Improve horn adjustment fidelity