



GIF

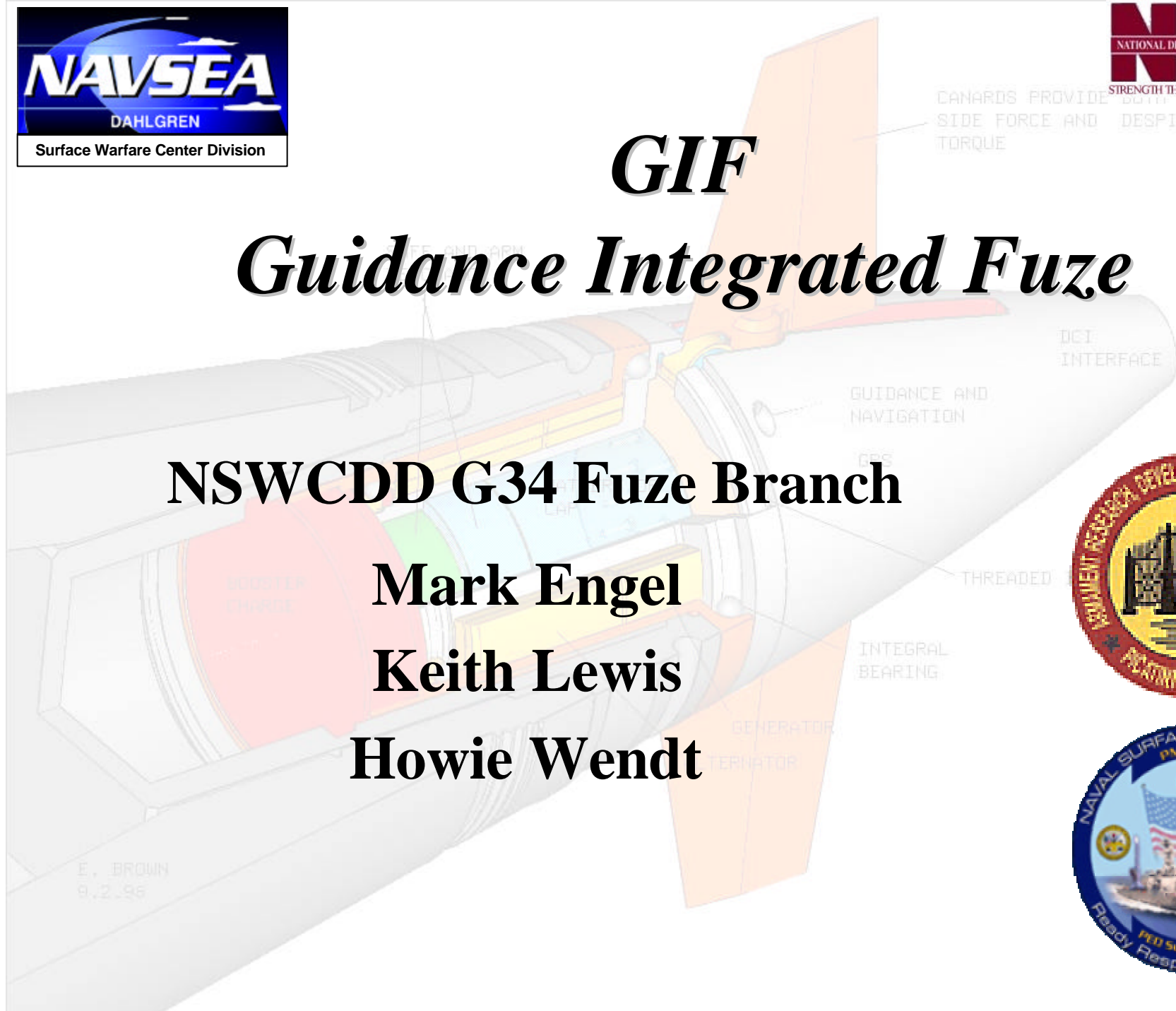
Guidance Integrated Fuze

NSWCDD G34 Fuze Branch

Mark Engel

Keith Lewis

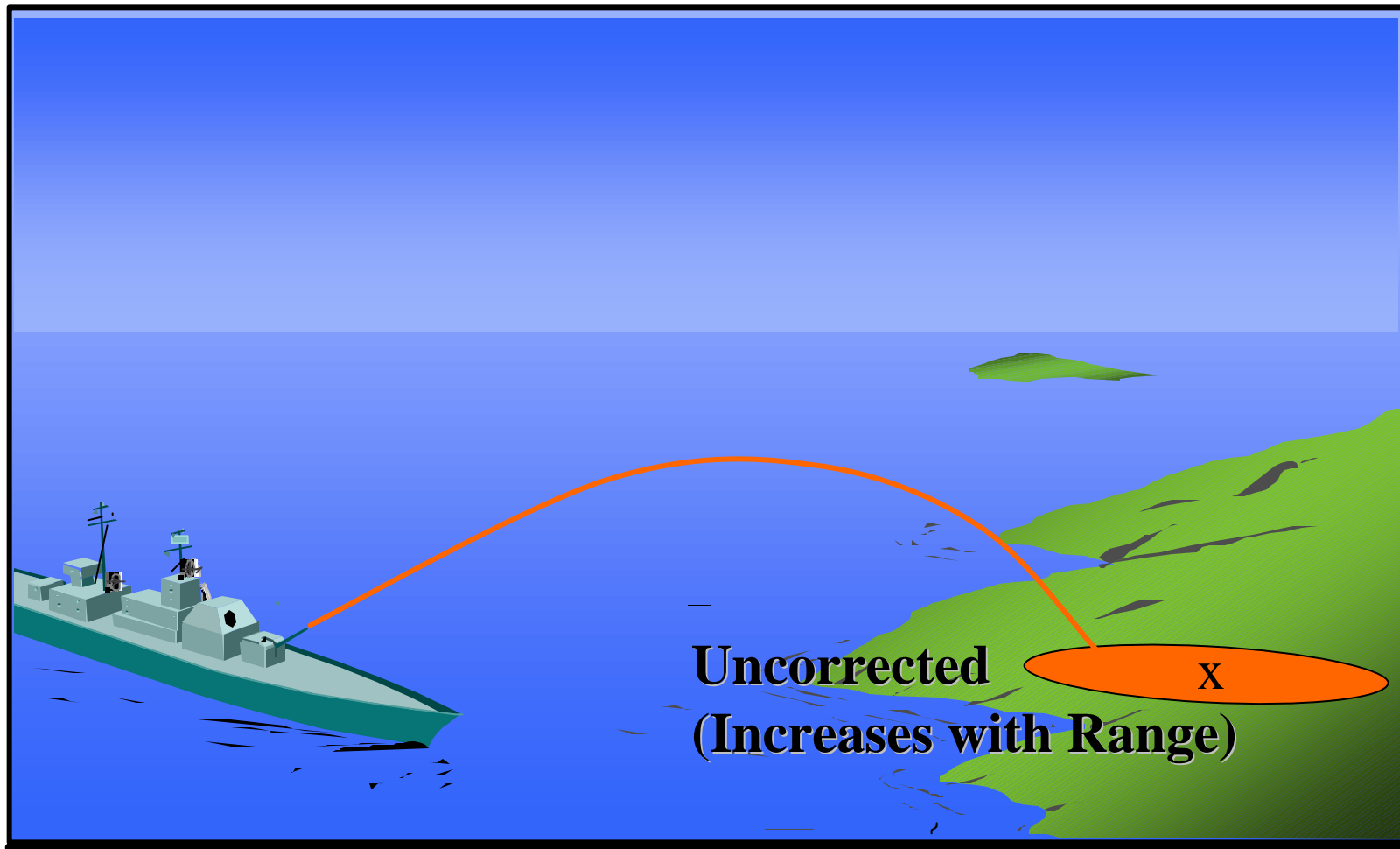
Howie Wendt



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Inaccuracy





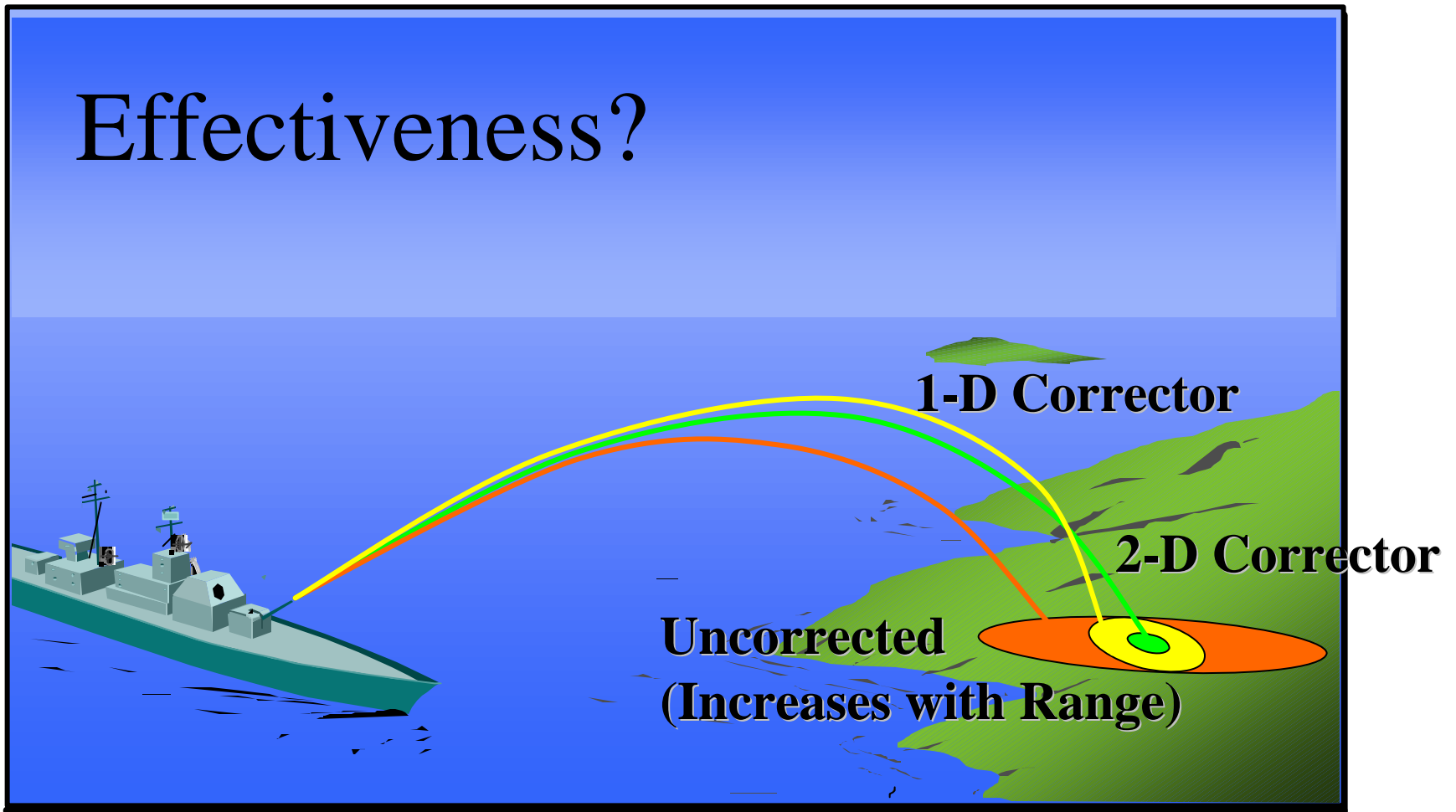
Background

- Why? Improved Accuracy
- Who?
 - US Army, US Navy, Foreign Services
 - Industry
- Other Guided Projectiles:
 - CMATD
 - TCM
 - STAR
 - ERGM & LCGEU
 - XM-982
 - ANSR
 - Barrage



1-D vs. 2-D

Effectiveness?





Approach

- 1-D vs. 2-D? Team Star examining 1-D
- Can Canards Give Acceptable Control Authority?
- Will it Fit?



Control Authority?

ARDEC (Picatinny) Analyzing Trajectories with Canards

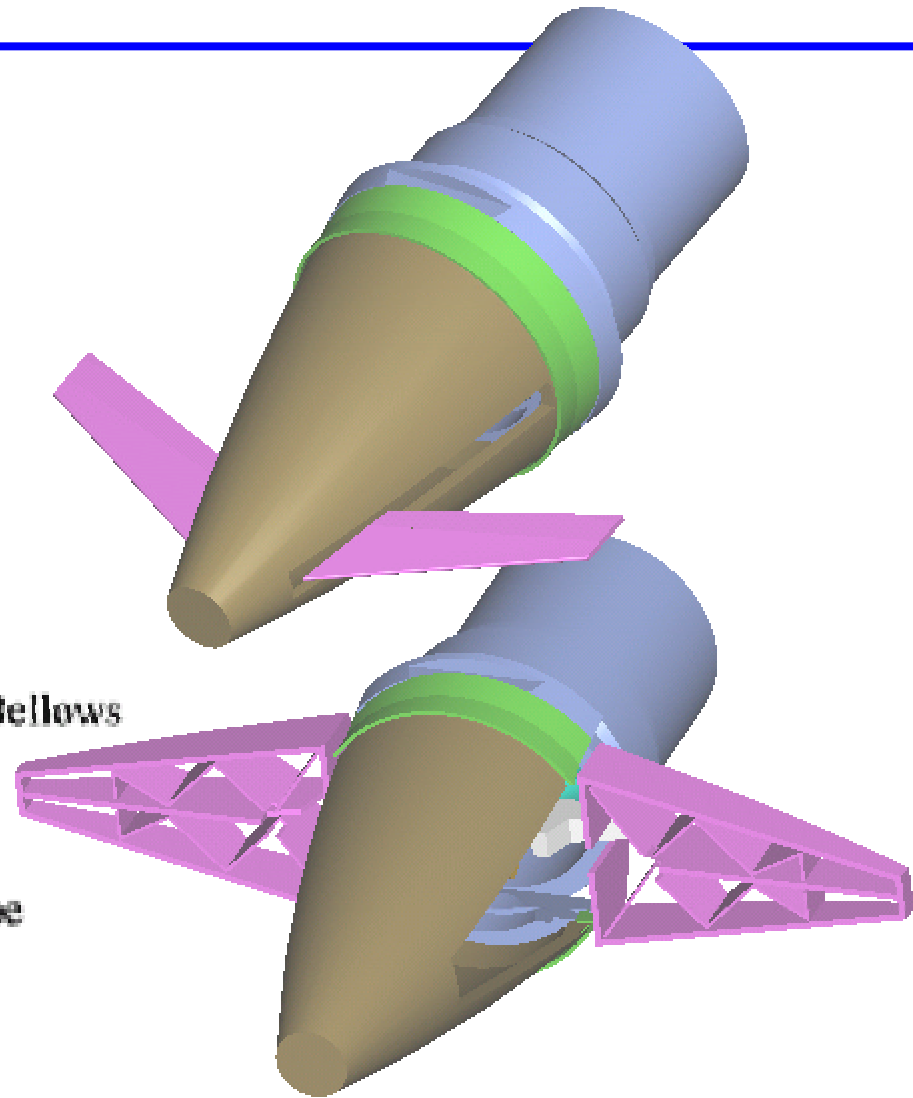
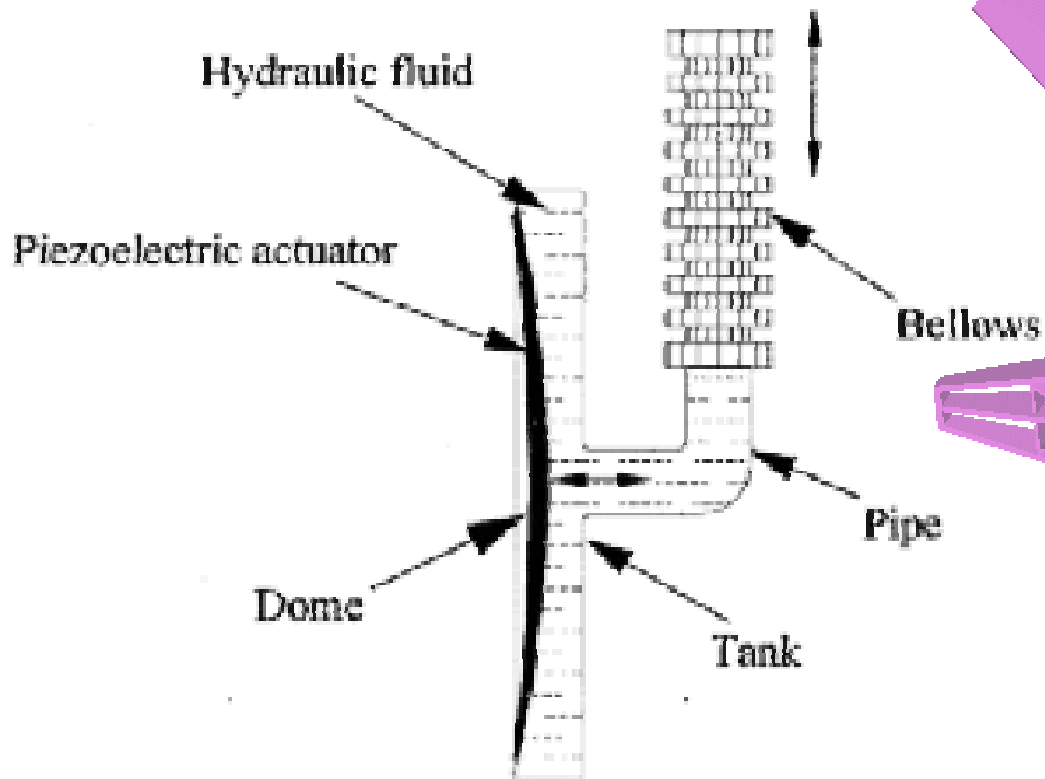


- ✓ Incorporated CMATD Aero into 7-DOF
- ✓ Compared Sample Runs with Draper 7-DOF

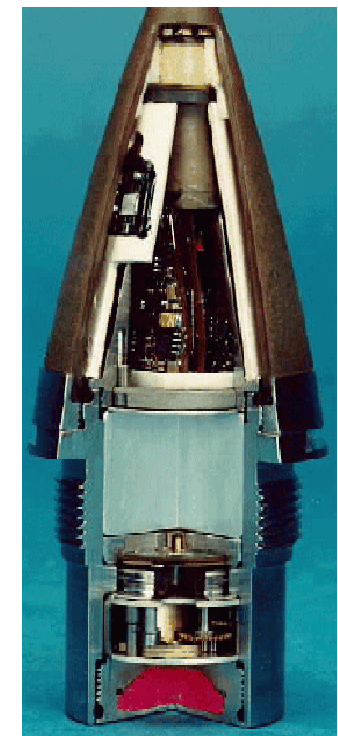
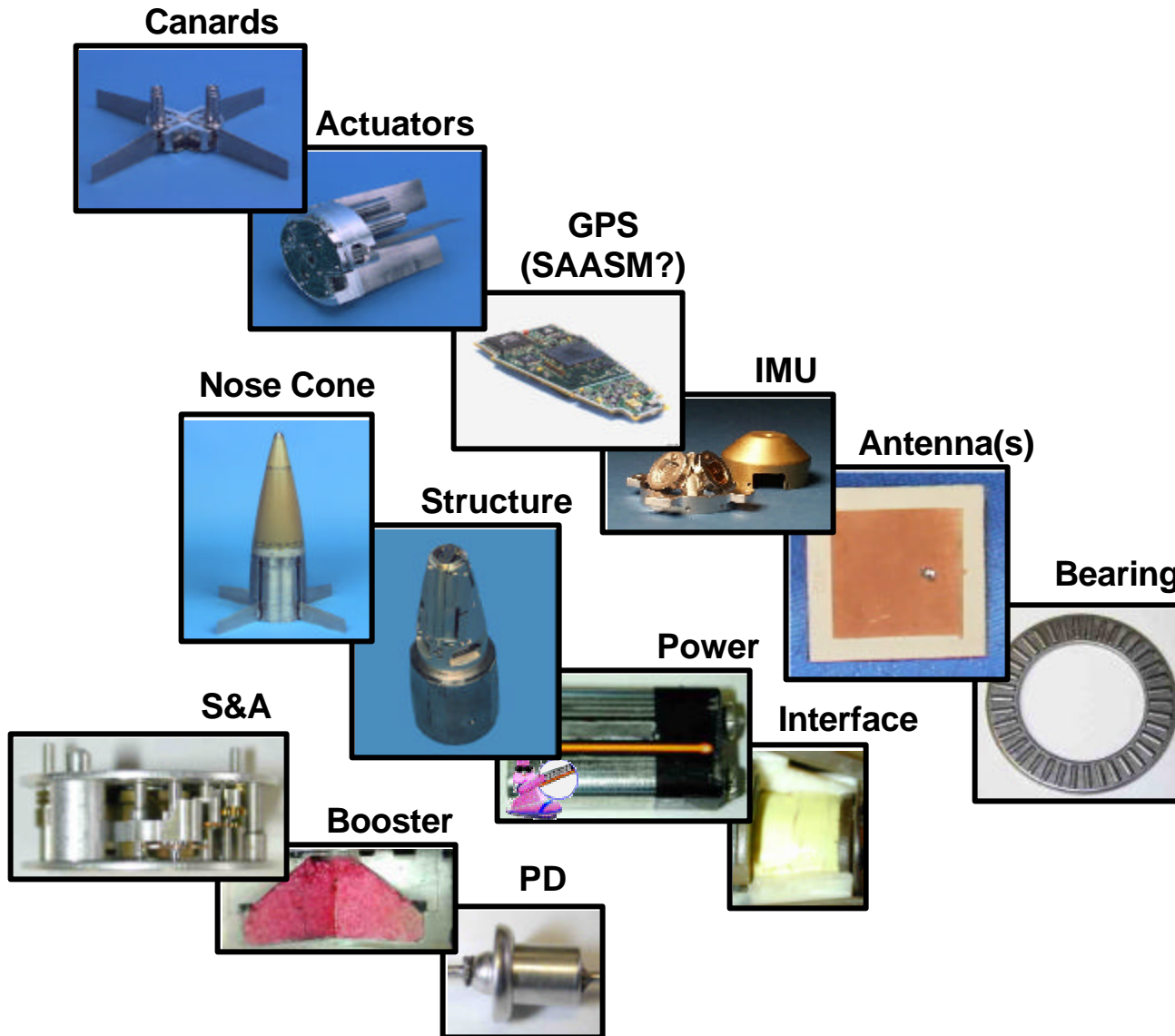
- ! Implementing Closed-Loop CMATD Guidance Algorithms
 - Simulate CMATD Flights for Check
 - Incorporate GIF Canards
 - Simulate GIF Flight for Maximum Control Authority

First Step - Canards

- Canards
- Actuators



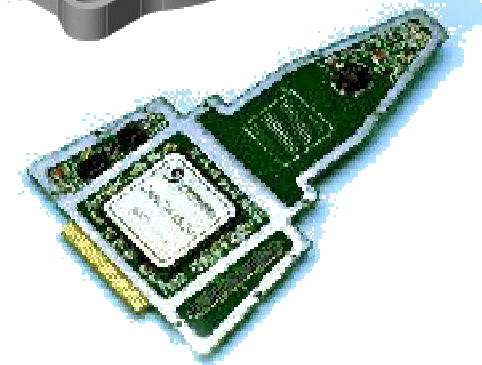
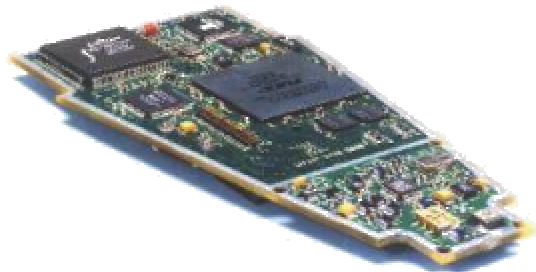
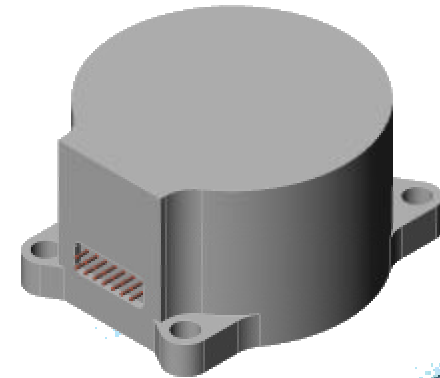
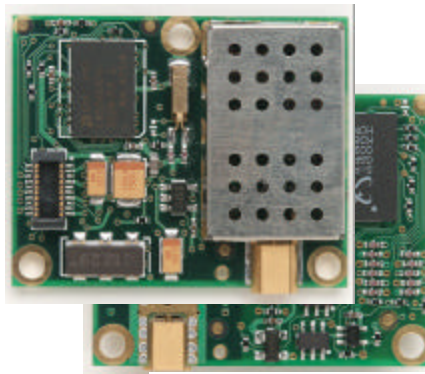
Fit It In 9 Cubic Inches



**NATO Standard
Fuze**

GPS/INS

- Looking for Existing Technology
- Looking for Future Technology





Other Issues

- Battery vs. Generator
- MEMS S&A (but micro detonators?)
- Rolling Canards
- Single vs. Multiple Antennas
- Power Before Flight



Near Term Plan

- Trajectories to Determine Control Authority
- Realistic Volume Allocation
- Options for Power and Rolling Canards
- Collect Data on GPS, INS, Actuators