



# **Securing Nuclear Command and Control Systems: The Emerging Cyber Threat**

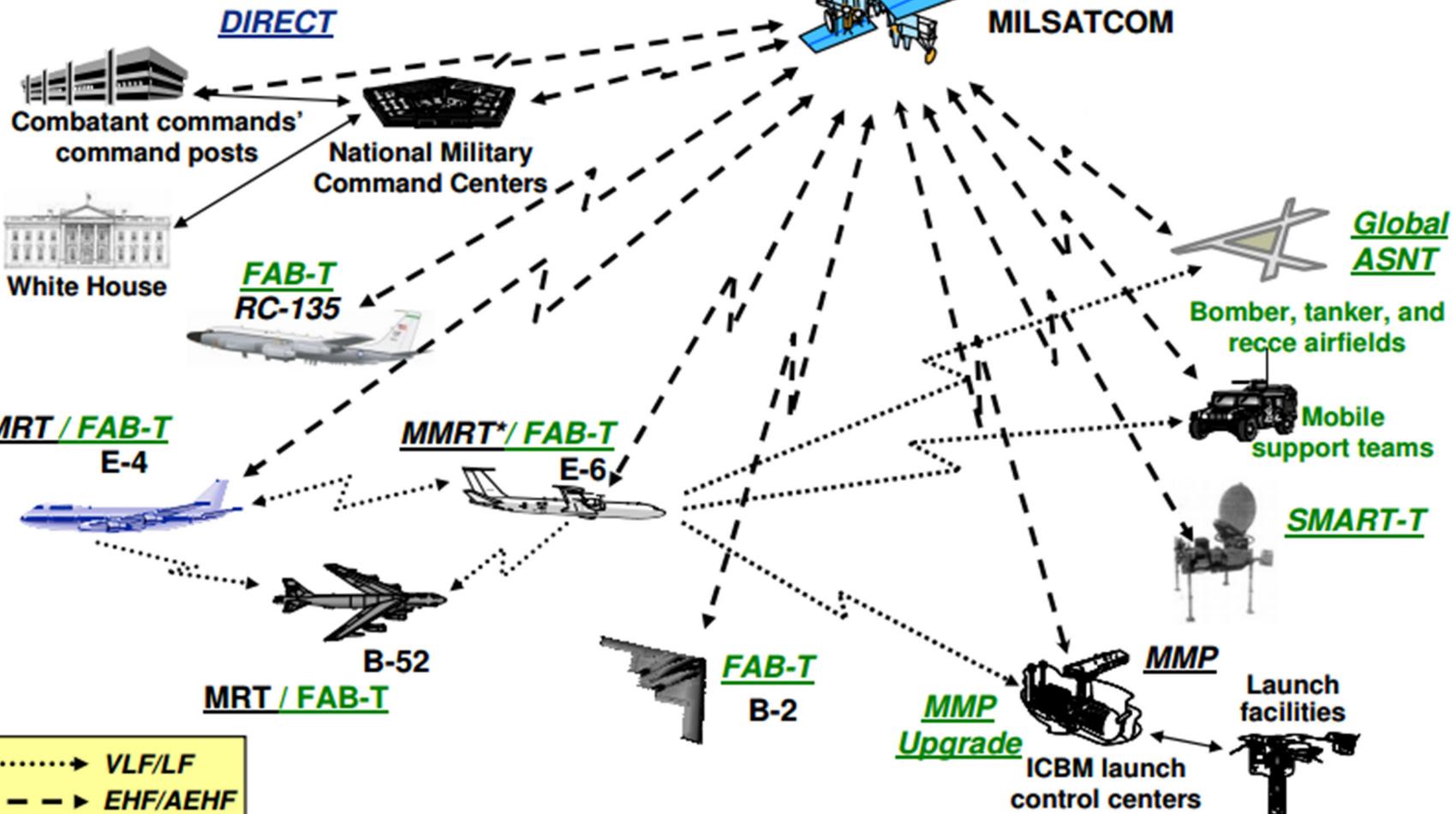
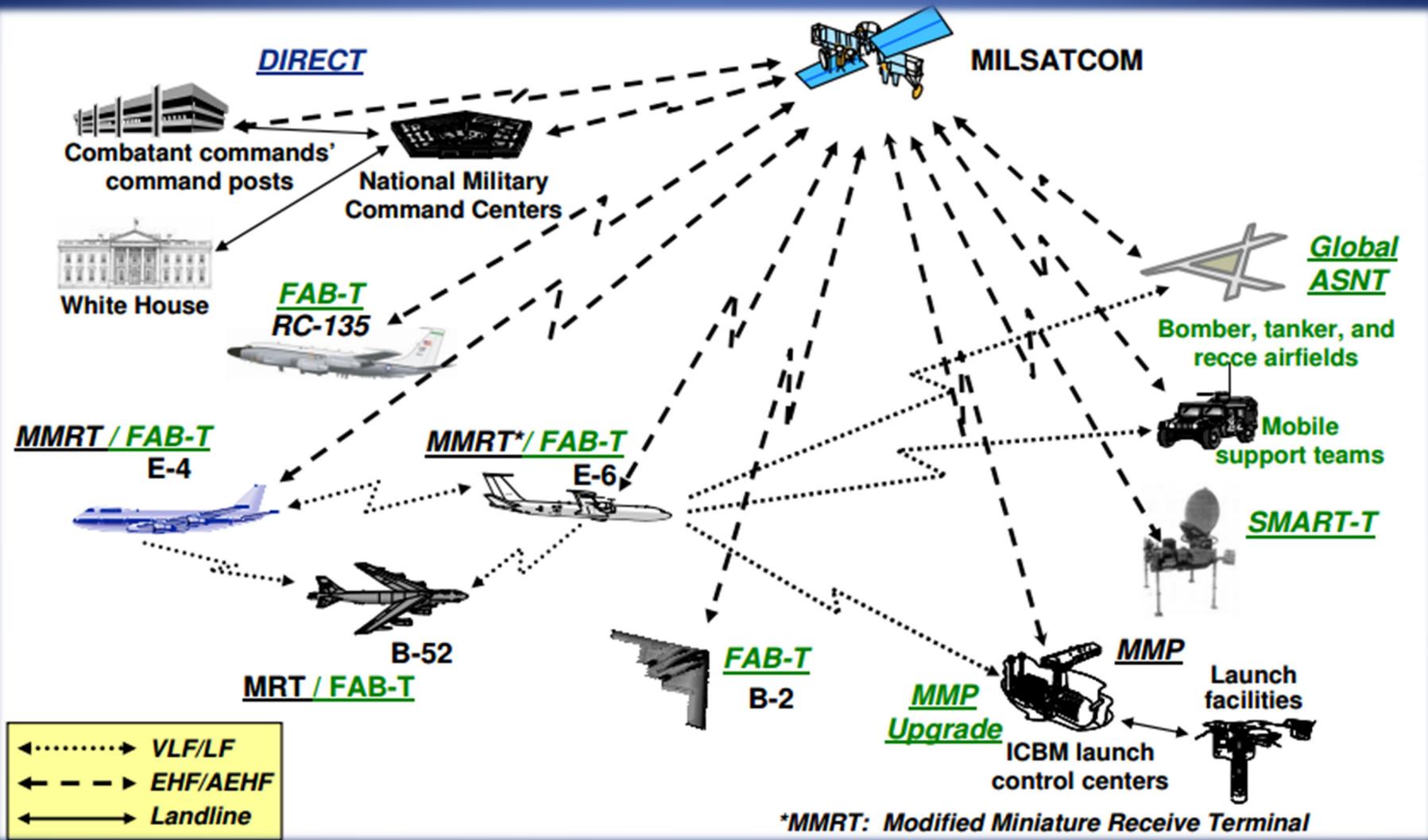
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# Overview

- Nuclear Command and Control
- Satellite System Modernization
- Cyber Incidents
- Increasing Risks
- Potential Solutions



# Nuclear Command and Control



# Advanced Extremely High Frequency (AEHF) System



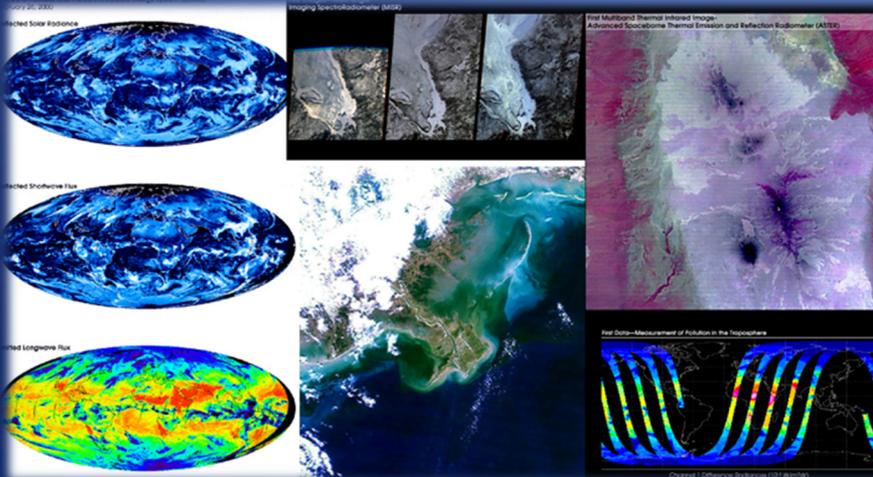
The AEHF System is composed of:

- Space (Satellites)
- Ground (Mission Control)
- Terminals (Users)



# The Threat is Real

- 2011 U.S.-China Economic and Security Review Commission
  - NASA Terra EOS
- NOAA Satellite Network



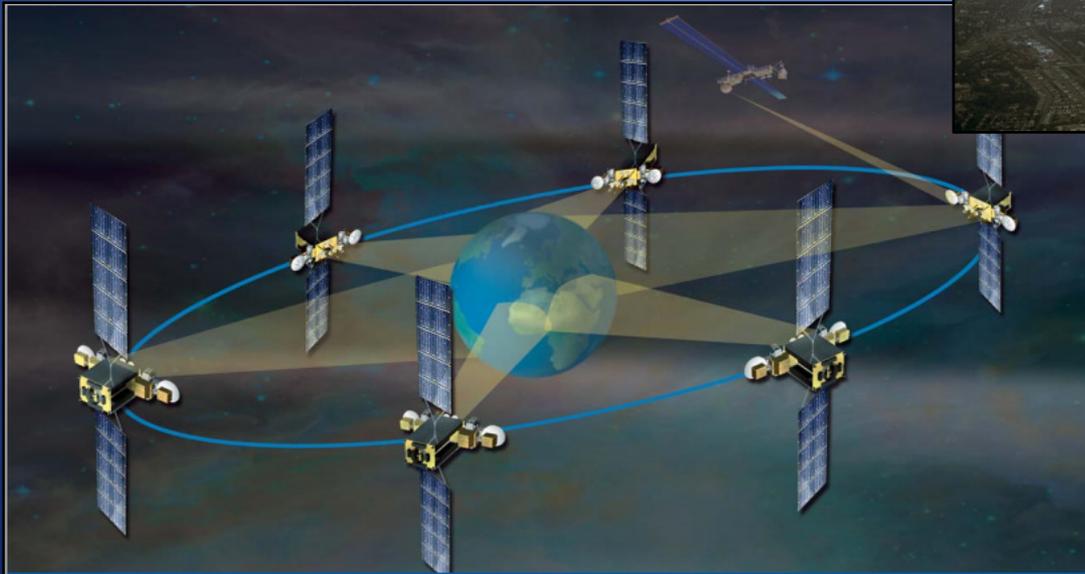
# Risks are Increasing

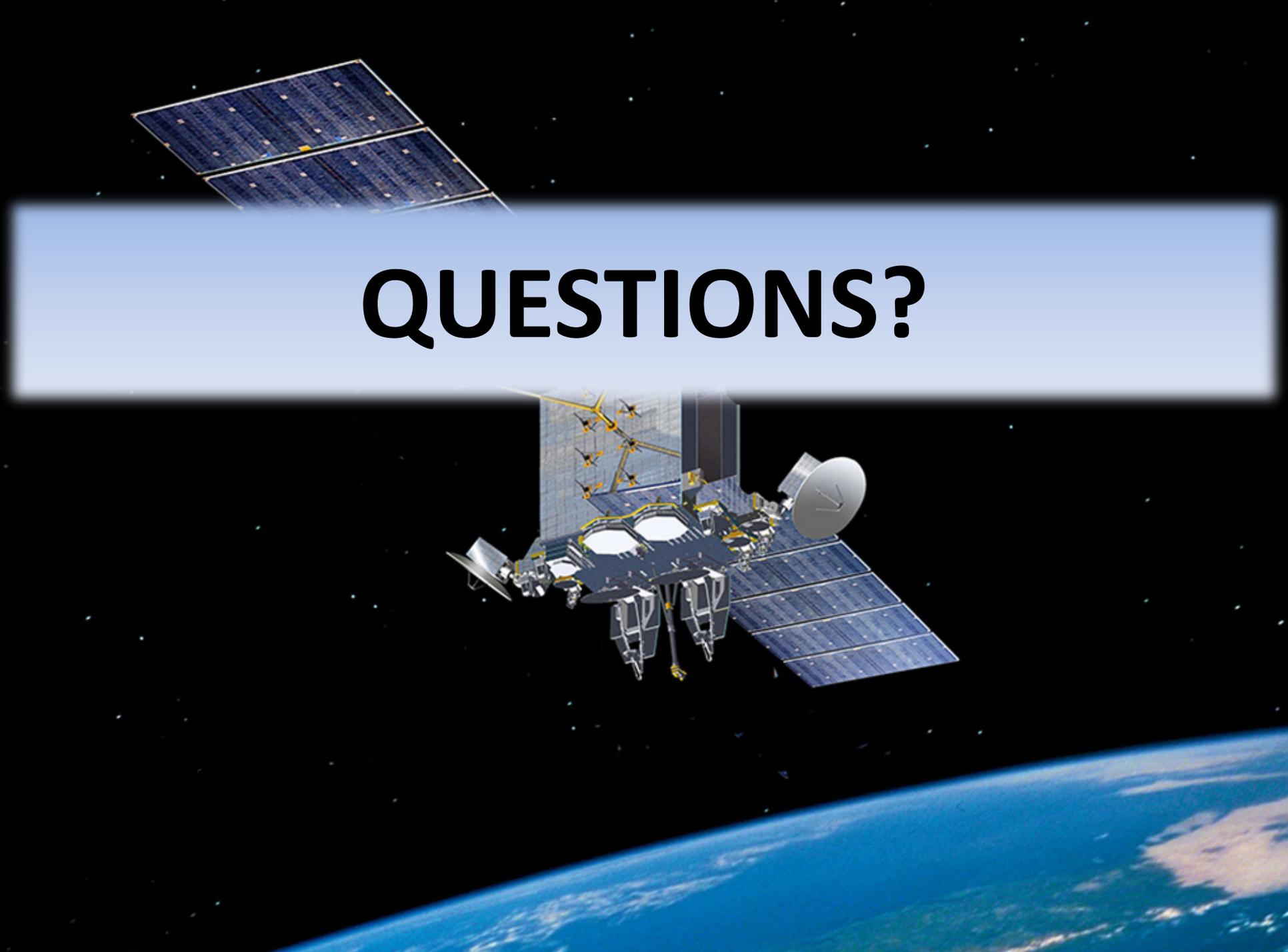
- Technical limitations
- Dated software
- Lack of embedded security
- Supply chain interdiction



# What Can Be Done?

- Utilize airborne domain
- Disaggregate strategic nuclear and tactical satellites





**QUESTIONS?**