



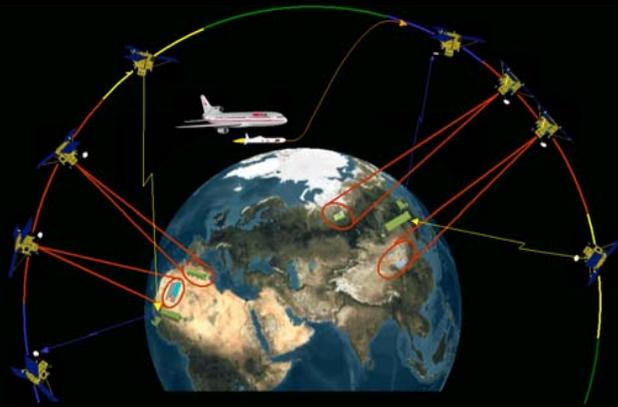
# ***DARPA*Tech**

## ***2002 Symposium***

*Transforming*  
***Fantasy***

# SPO Focus: Counter Emerging Threats

Space



Undergrounds



Chem/Bio Attack



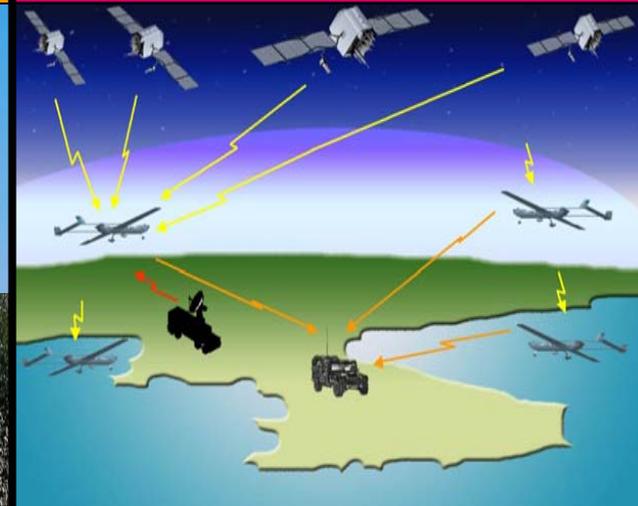
Non-RF Air Defenses



Low-Tech Missiles



GPS Jamming



# Counter Underground Facilities

Find

Characterize...

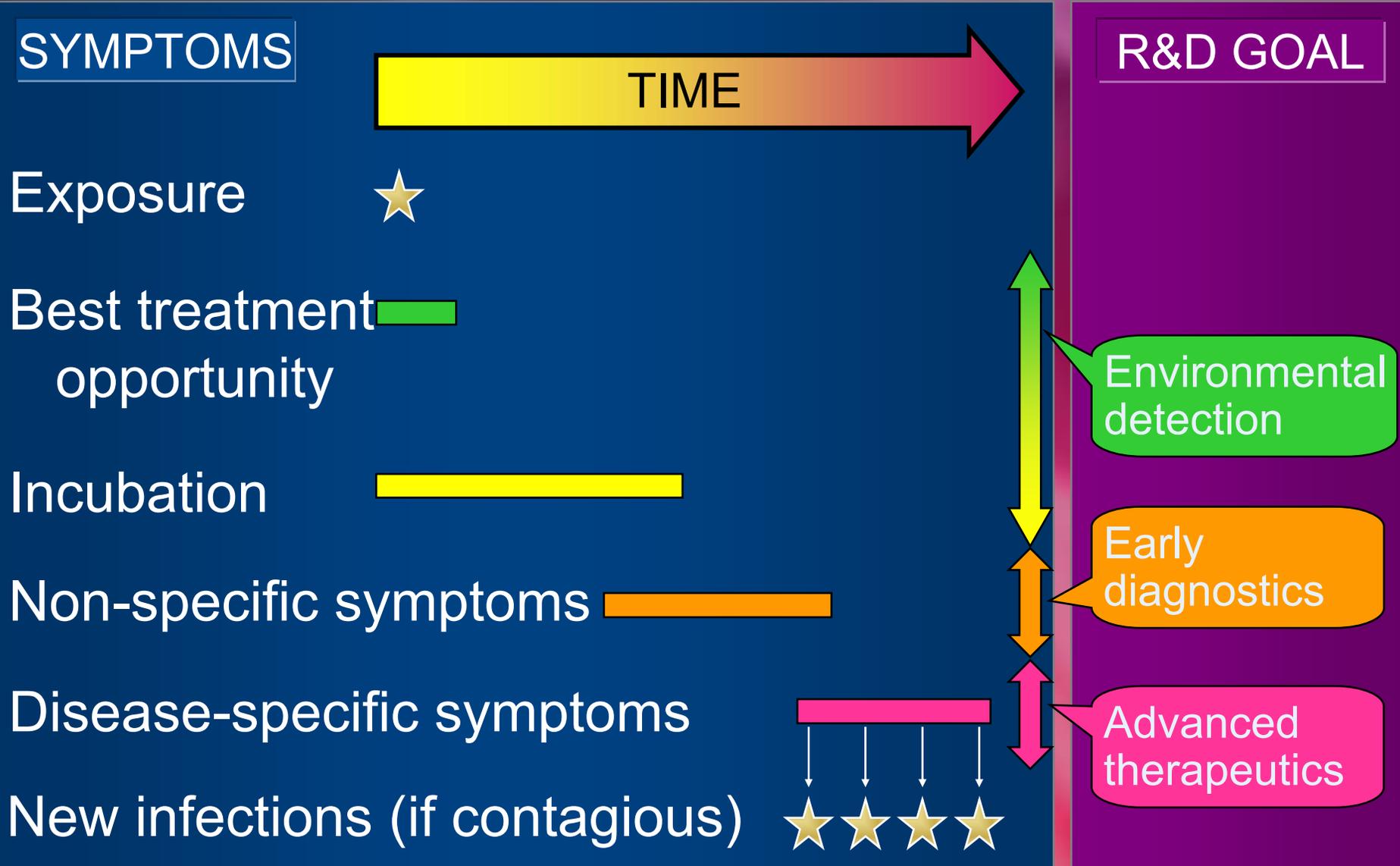
- function
- pace of activity
- vulnerability

Defeat

Assess damage



# Defense Against Bio Warfare Agents



# Benefits of Environmental Detection

## “Detect to Treat”

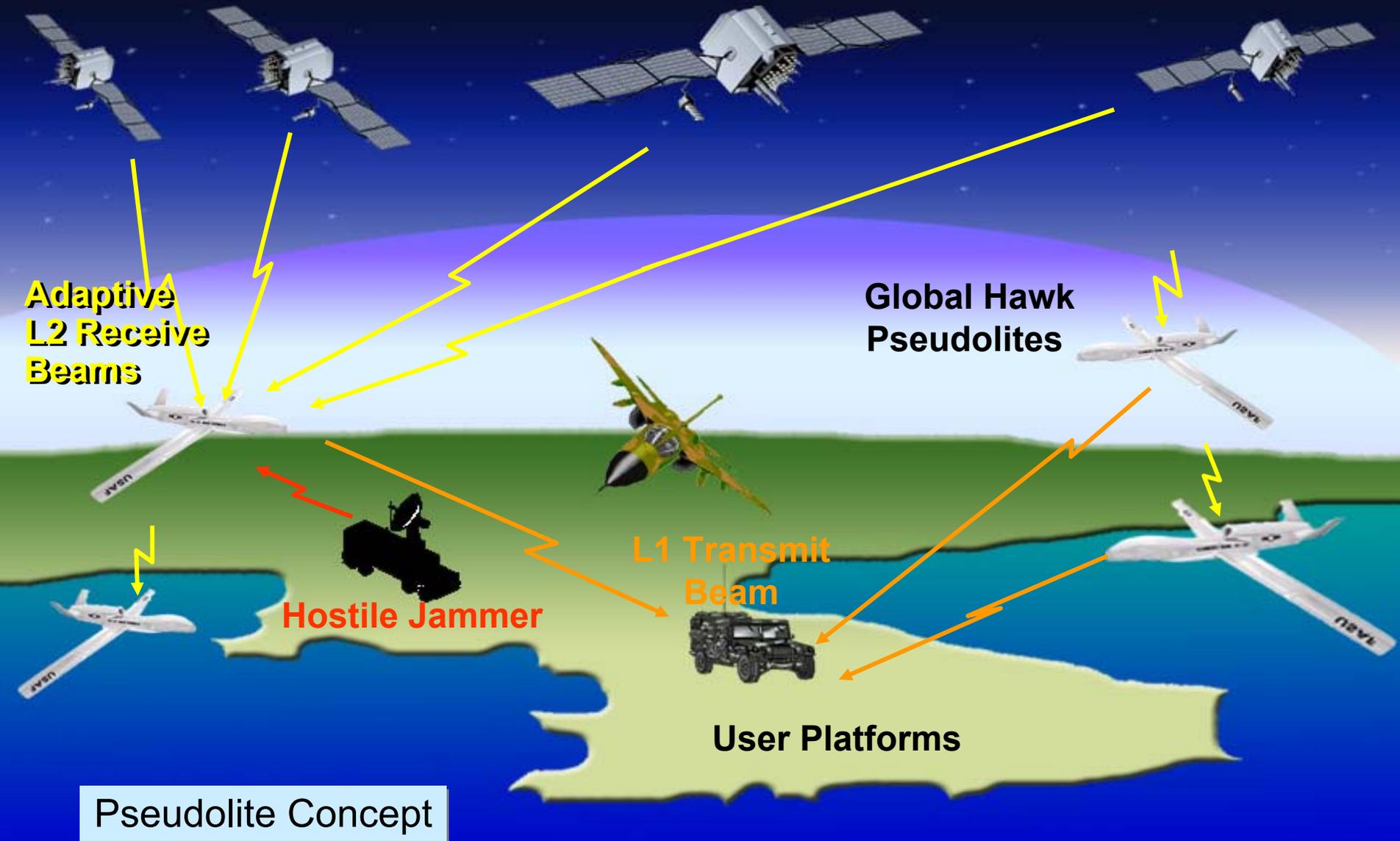
- Goal: effective treatment.
- Sensor identifies:
  - which agent released;
  - where release occurred
- which enables:
  - identification of victims;
  - pre-symptomatic treatment;
  - (contagious agents) quarantine before contagious phase.

## “Detect to Protect”

- Goal: prevent (or reduce) exposure.
- Sensor enables immediate action.



# Anti GPS Jamming

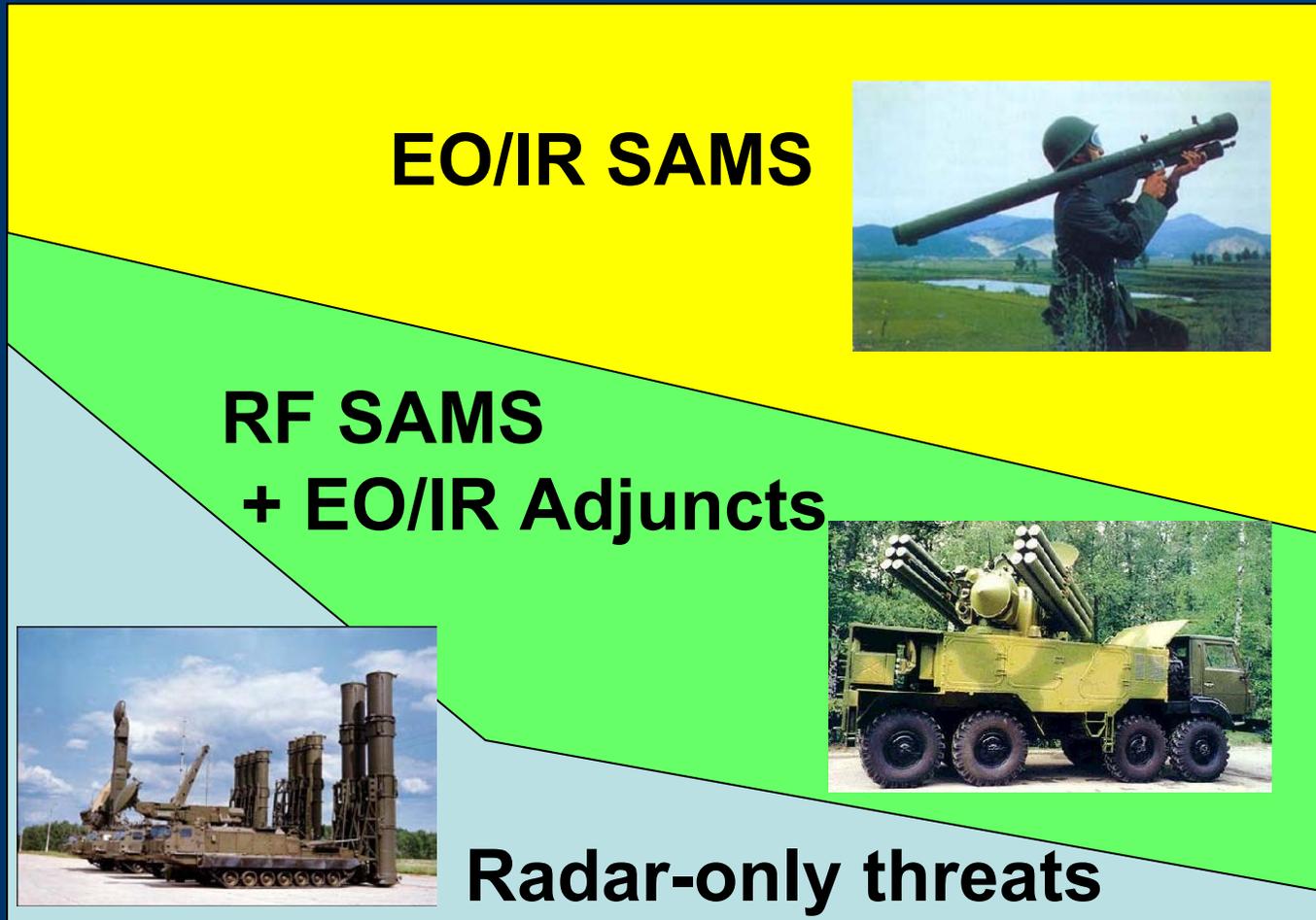


# Low-Cost Cruise Missile Defense



# Counter to EO/IR Air Defense

Threat make-up (%)



**EO/IR SAMS**



**RF SAMS  
+ EO/IR Adjuncts**



**Radar-only threats**

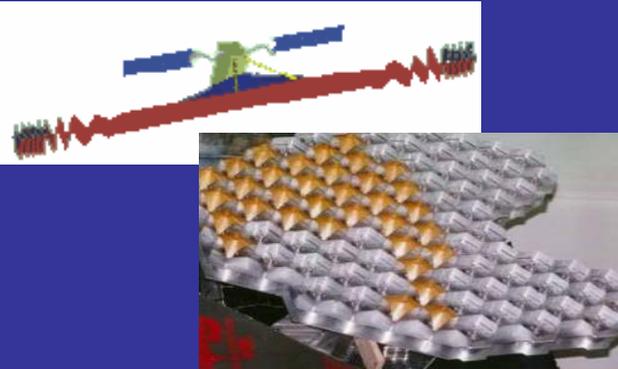
1980

2000

2020

# Enabling Technologies

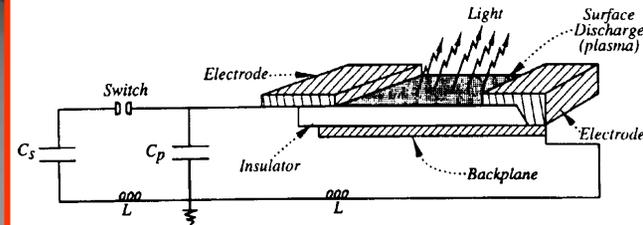
## Novel Lightweight Antennas



## Highly Sensitive Electric Field Sensors



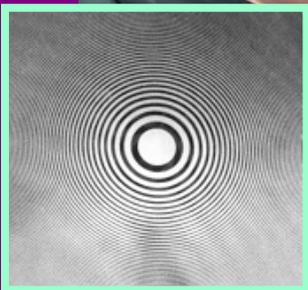
## Efficient, High-Power UV



## Lightweight Optics

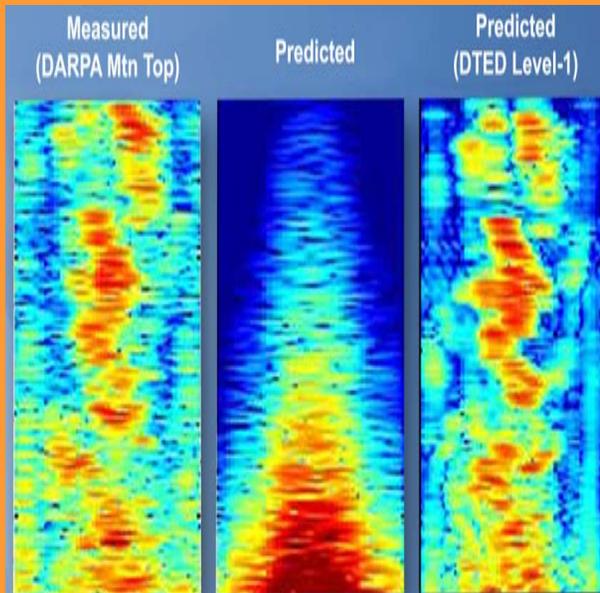


Nanolaminate Mirrors?



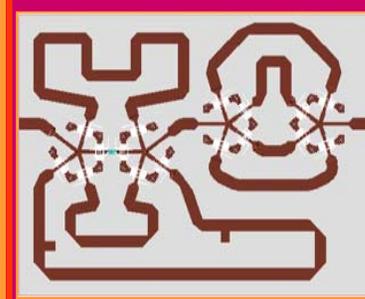
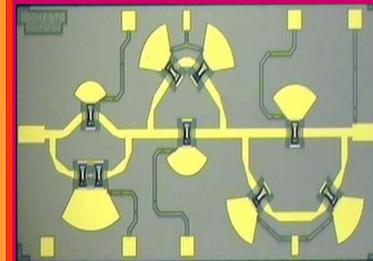
Fresnel Diffractive Lens

## Next-Gen Signal Processing

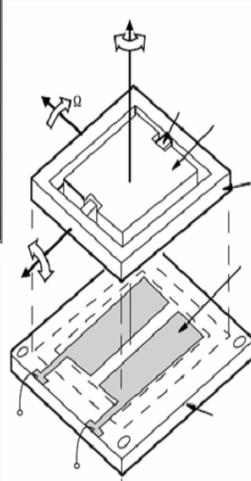


## MEMS

### Phase Shifters



### INS



# Agenda

Support to Tactical Warfighter  
from Space

(Space Briefing)

Counter Underground Facilities

Dr. Steve Buchsbaum

Chem / Bio Defense...

- Systems
- Sensors

Mr. Roger Gibbs

Mr. Tom McCreery

Guidance & Navigation

Lt Col Greg Vansuch

Advanced RF Sensors

Dr. Larry Corey

Advanced Optical Sensors

Mr. Robert Hauge



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