DARPA

DARPATech

2002 Symposium

Transforming Fantasy

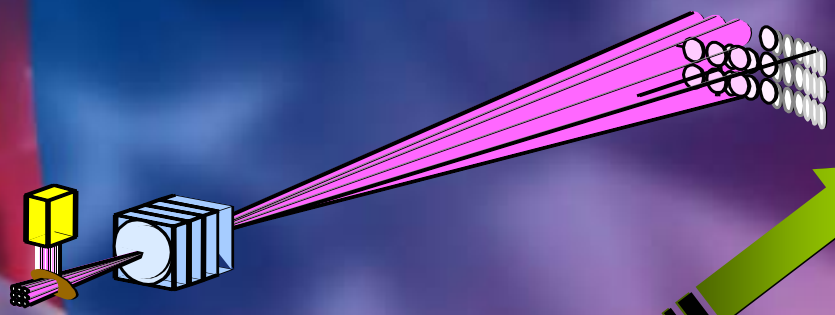
DARPA

LTC John C. Carrano, USA

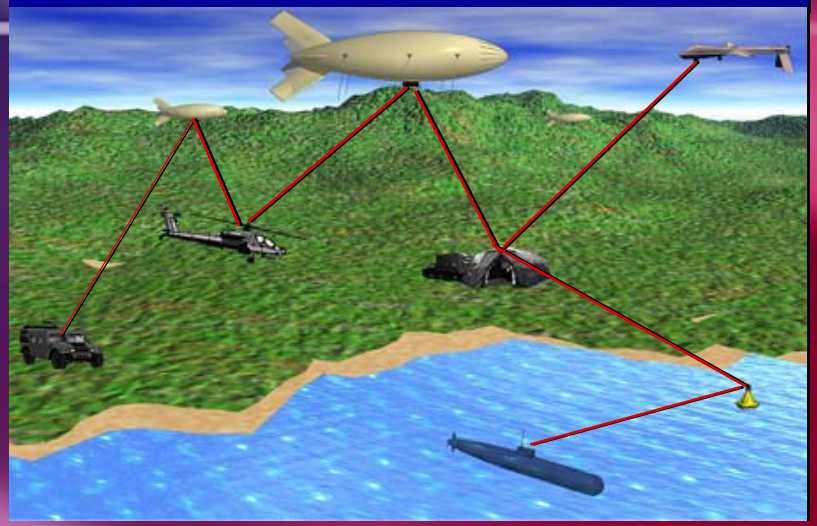
Program Manager

Transforming Fantasy

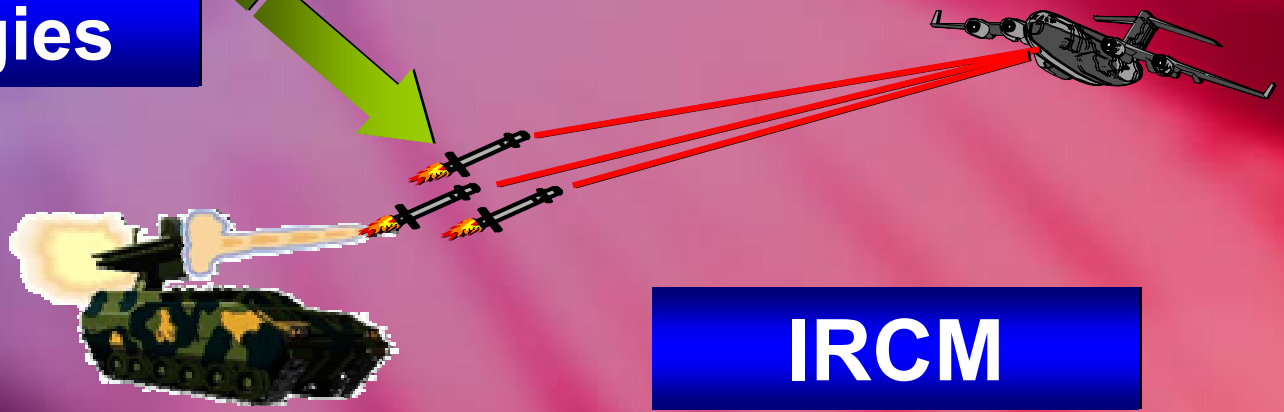
Small, lightweight, soldier transportable laser beam scanning modules



Laser Communications



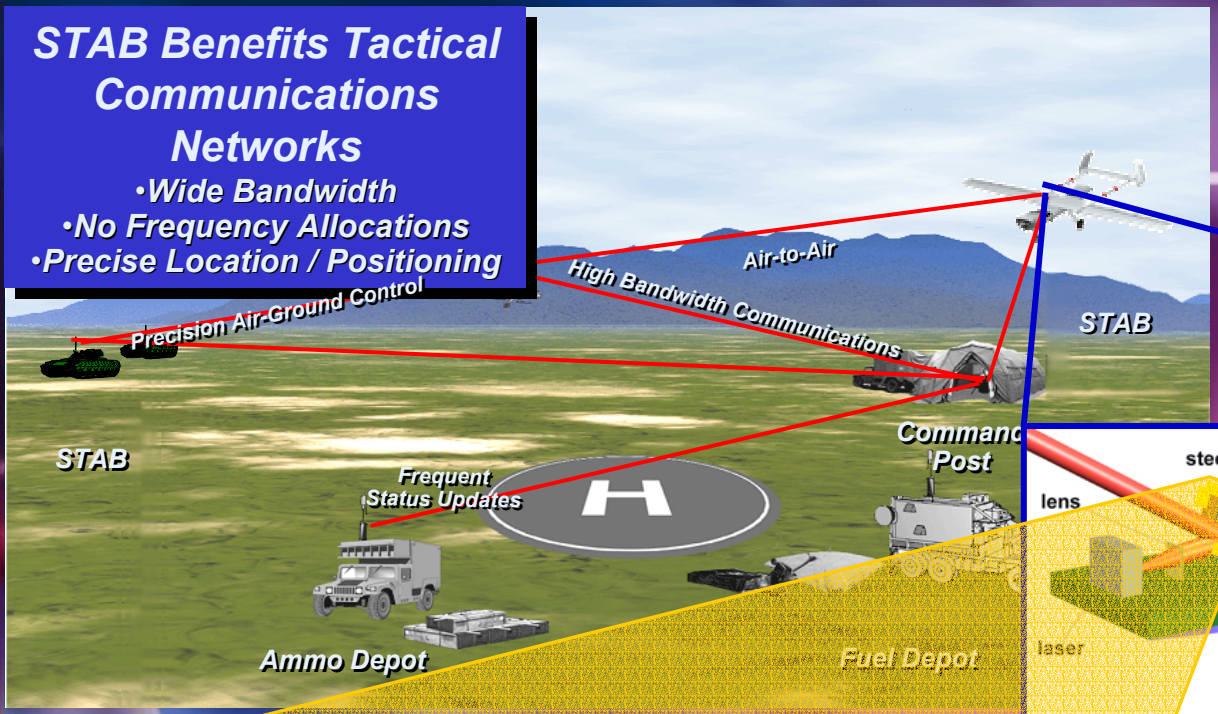
STAB Technologies

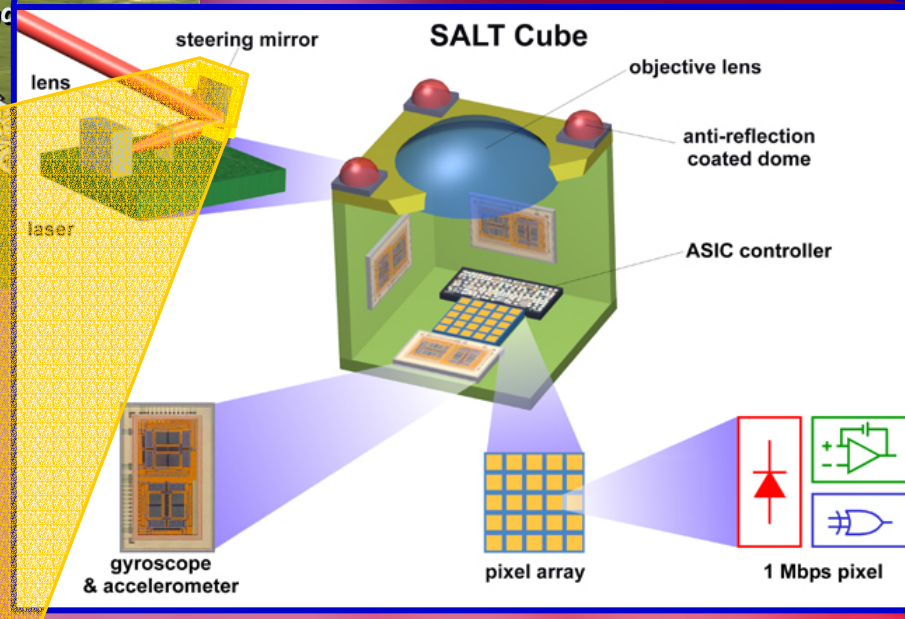


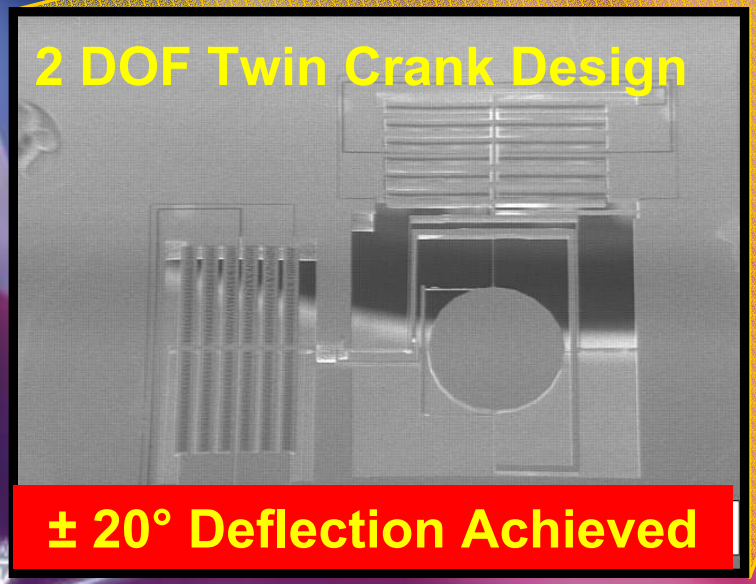
IRCM

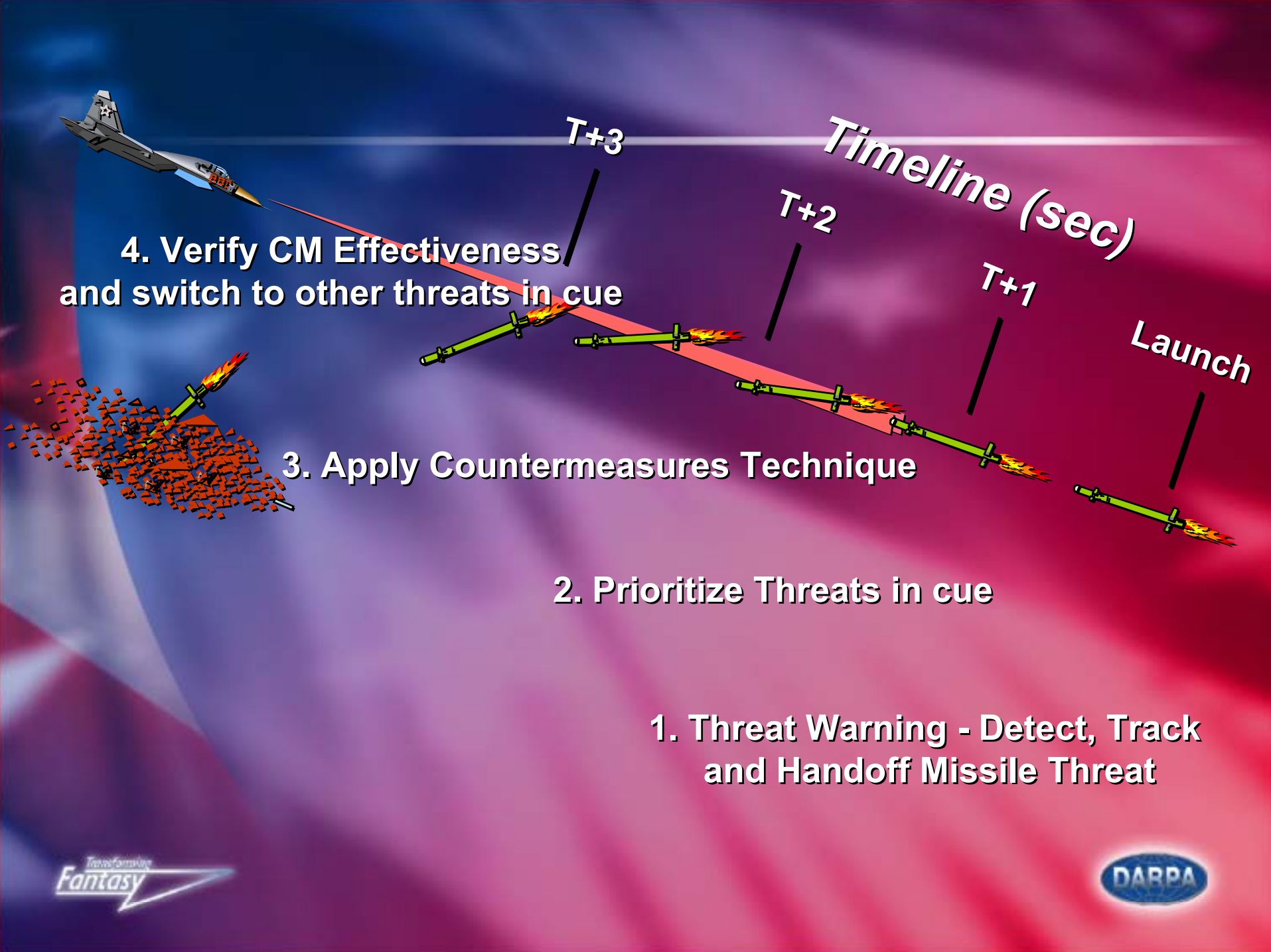
STAB Benefits Tactical Communications Networks

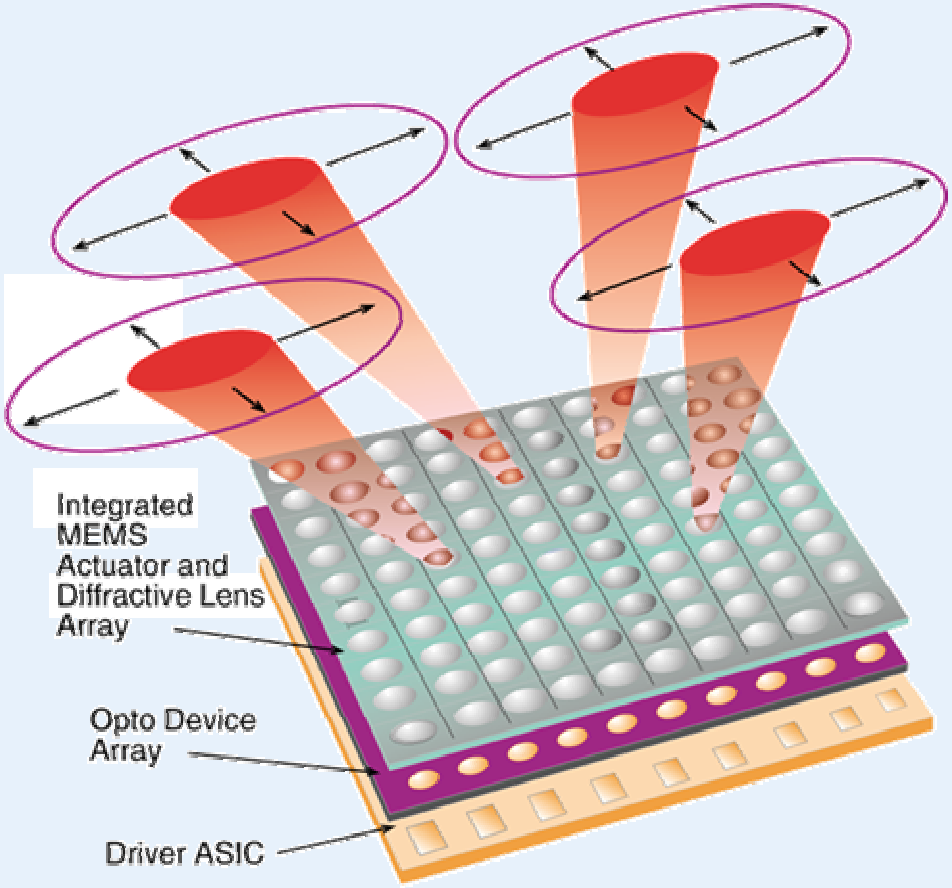
- Wide Bandwidth
- No Frequency Allocations
- Precise Location / Positioning

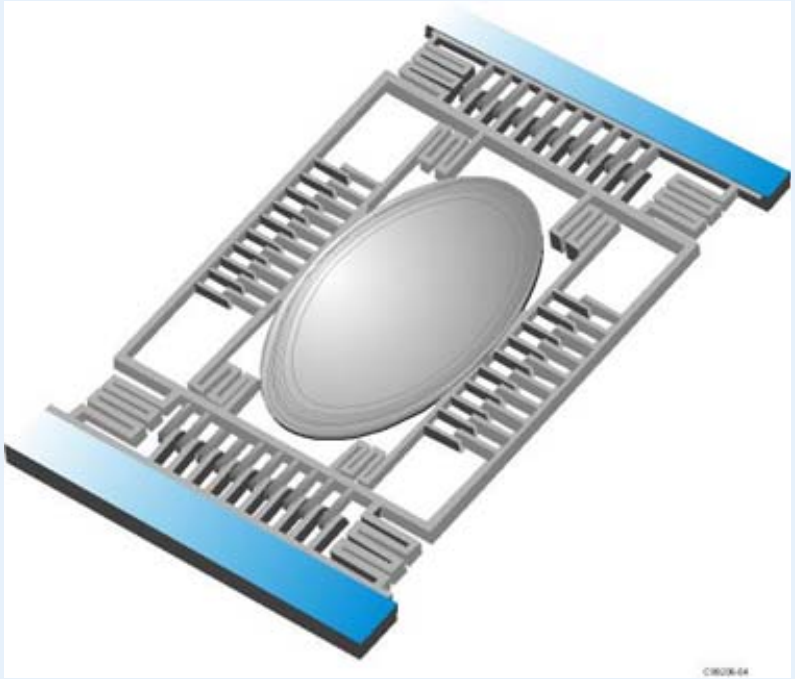


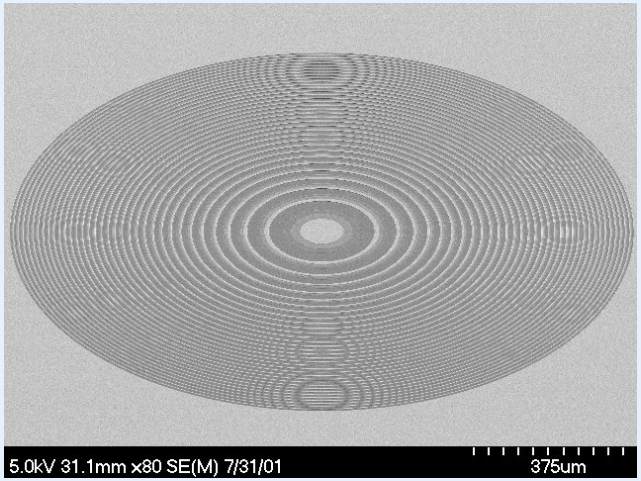




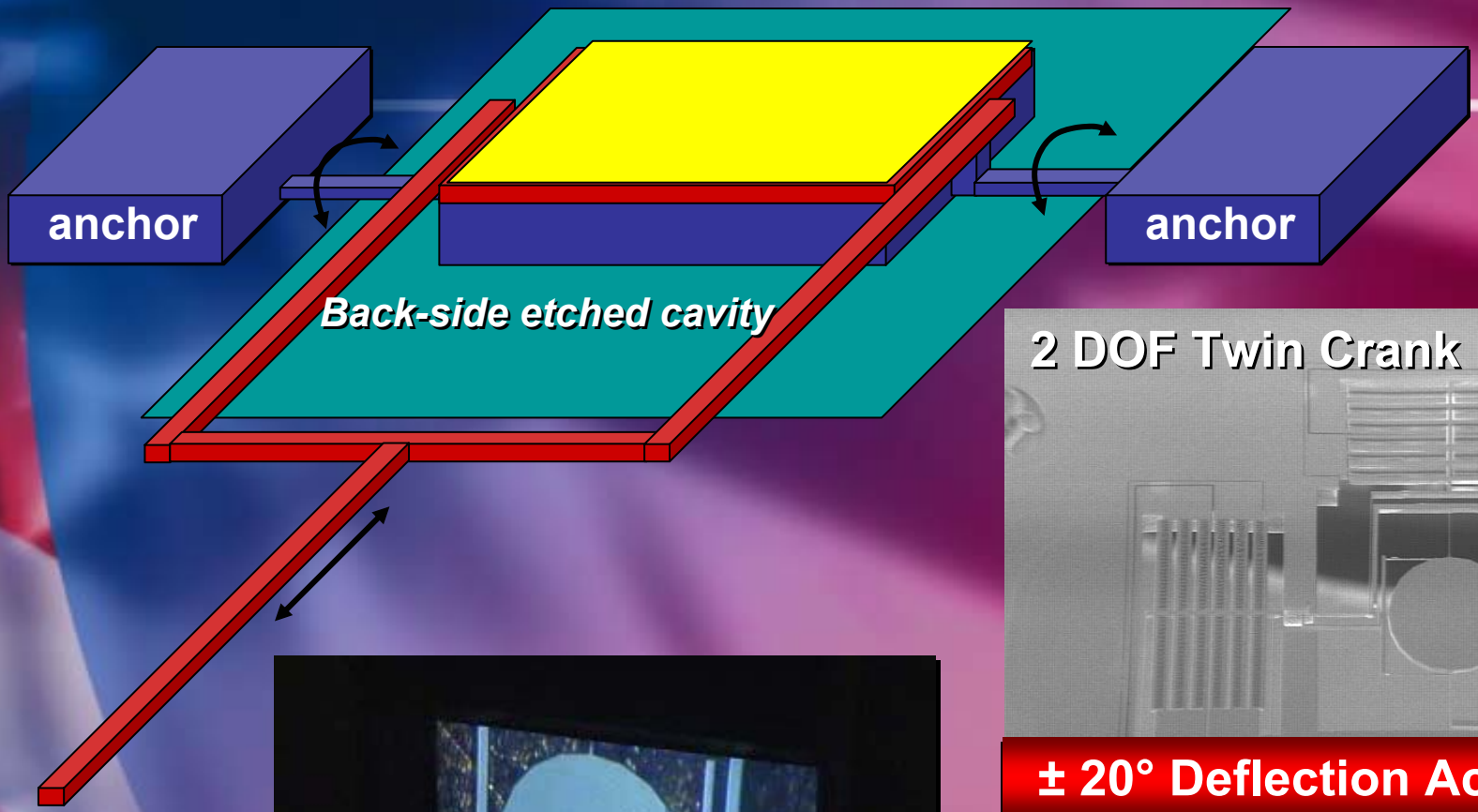

Timeline (sec)
T+3
T+2
T+1
Launch
4. Verify CM Effectiveness
and switch to other threats in cue
3. Apply Countermeasures Technique
2. Prioritize Threats in cue
1. Threat Warning - Detect, Track
and Handoff Missile Threat
Transforming Fantasy
DARPA

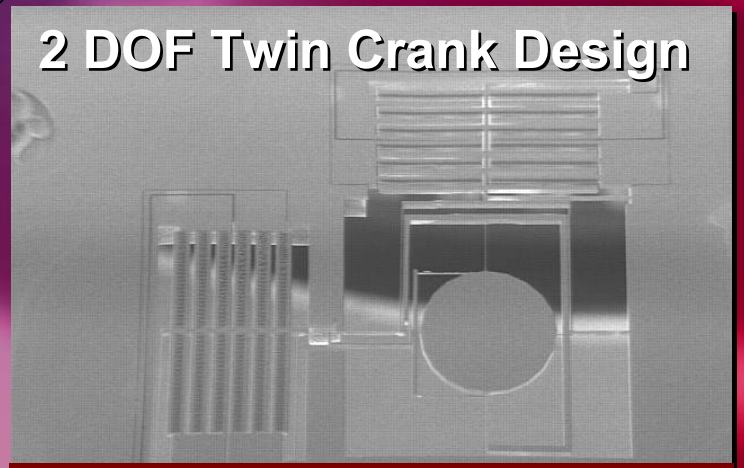

Integrated MEMS Actuator and Diffractive Lens Array
Opto Device Array
Driver ASIC



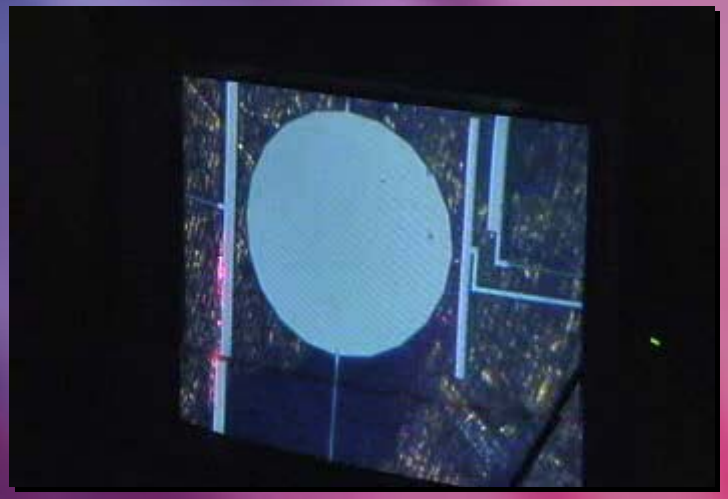

5.0kV 31.1mm x80 SE(M) 7/31/01
375um

Honeywell





± 20° Deflection Achieved

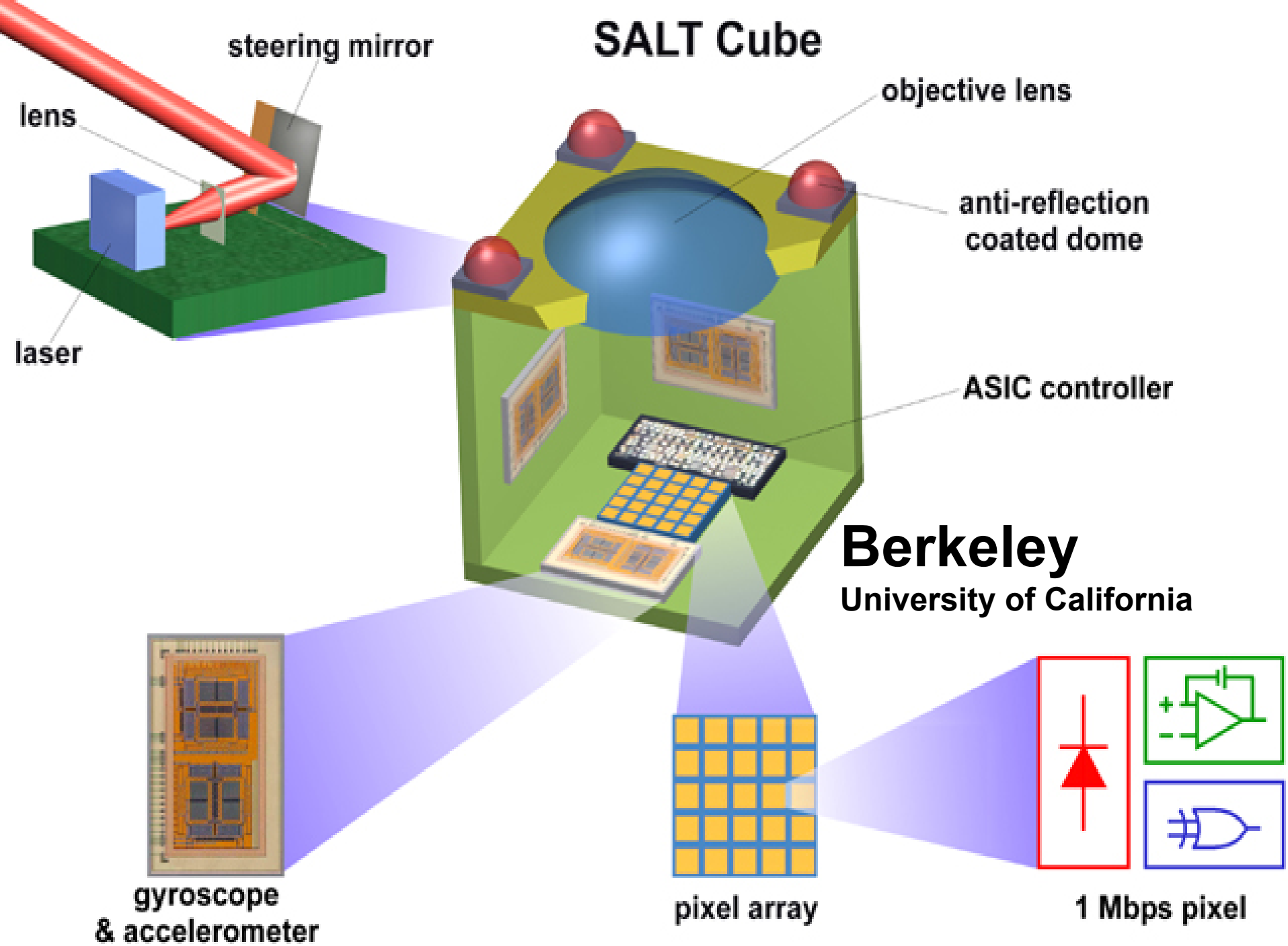


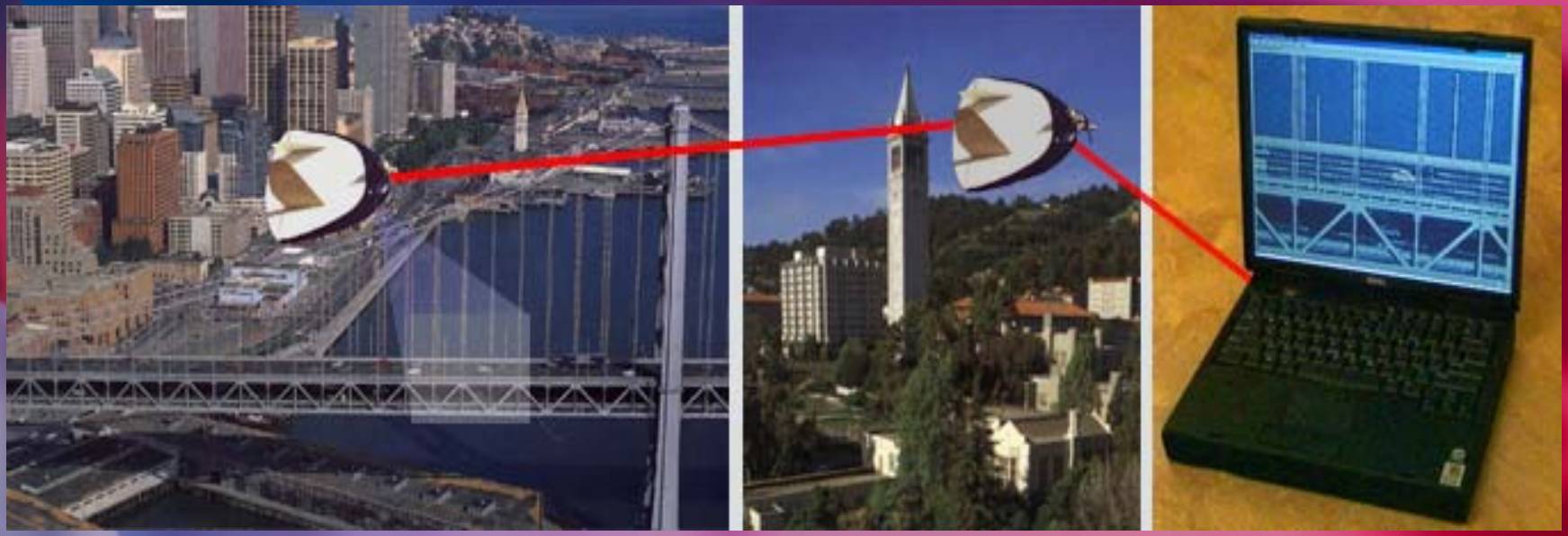
Berkeley

University of California

Transforming Fantasy

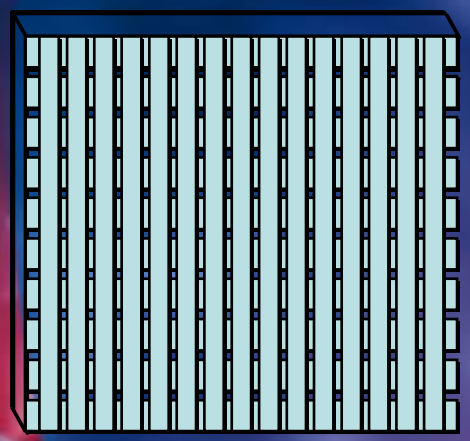
DARPA

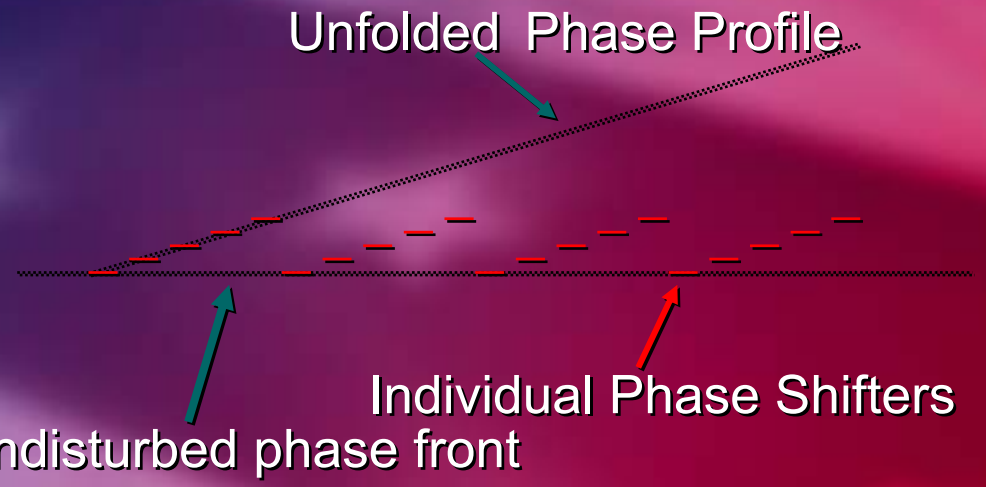

SALT Cube
steering mirror
lens
laser
objective lens
anti-reflection
coated dome
ASIC controller
Berkeley
University of California
gyroscope
& accelerometer
pixel array
1 Mbps pixel

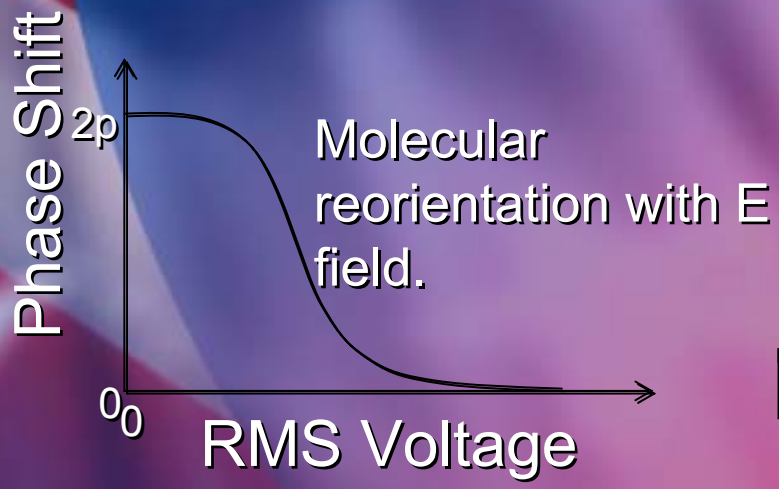


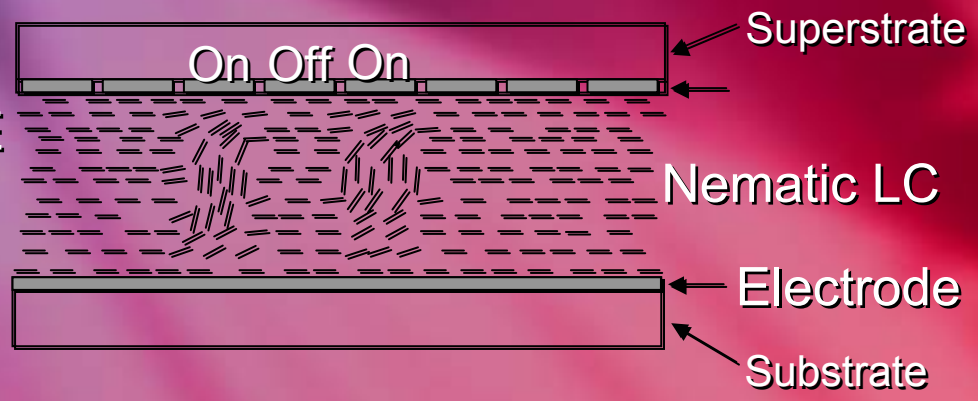
Transforming Fantasy

DARPA

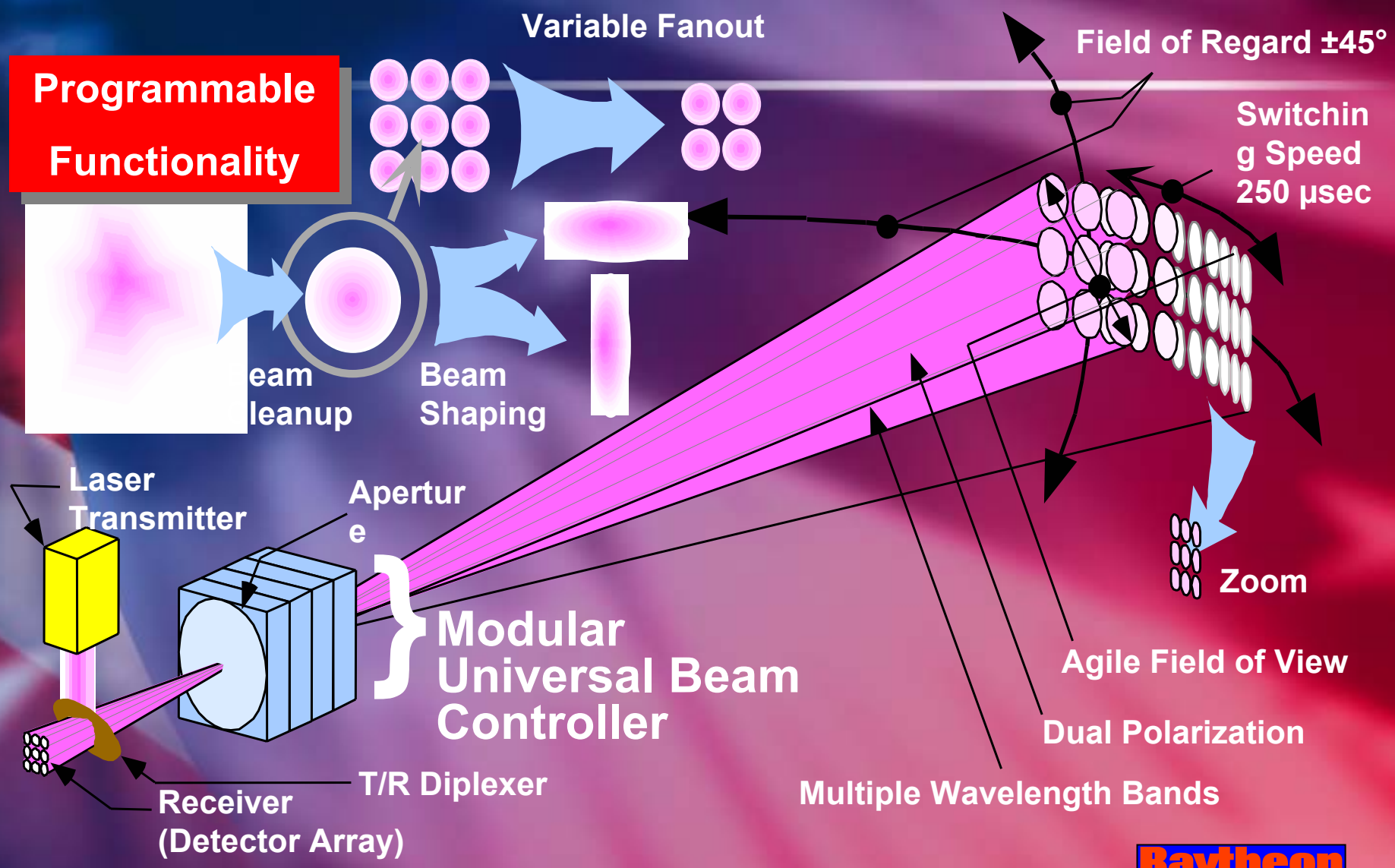



Unfolded Phase Profile
Individual Phase Shifters
Undisturbed phase front


Phase Shift
2p
0
0
Molecular reorientation with E field.
RMS Voltage


Superstrate
On Off On
Nematic LC
Electrode
Substrate

Programmable Functionality



Raytheon

DARPA

Transforming Fantasy

STAB Participants

Rockwell Science Center

Raytheon

Berkeley
University of California

Honeywell

PENNSTATE

UNIVERSITY OF DELAWARE

BAE SYSTEMS

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

UNO
Ultrafast and Nanoscale Optics Group
UNIVERSITY OF CALIFORNIA, SAN DIEGO

KENT STATE UNIVERSITY

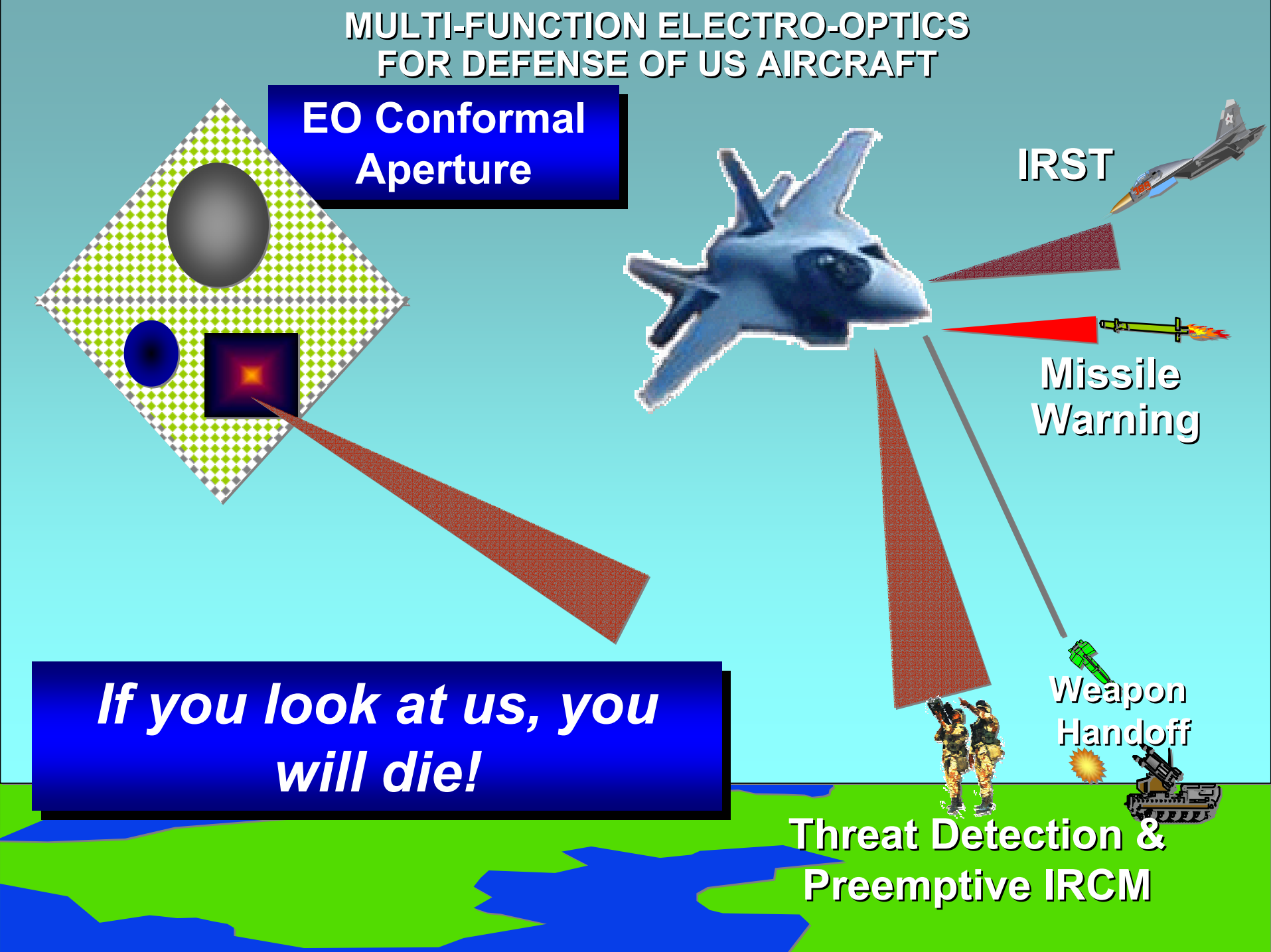
BOEING

HRL LABORATORIES

UCLA

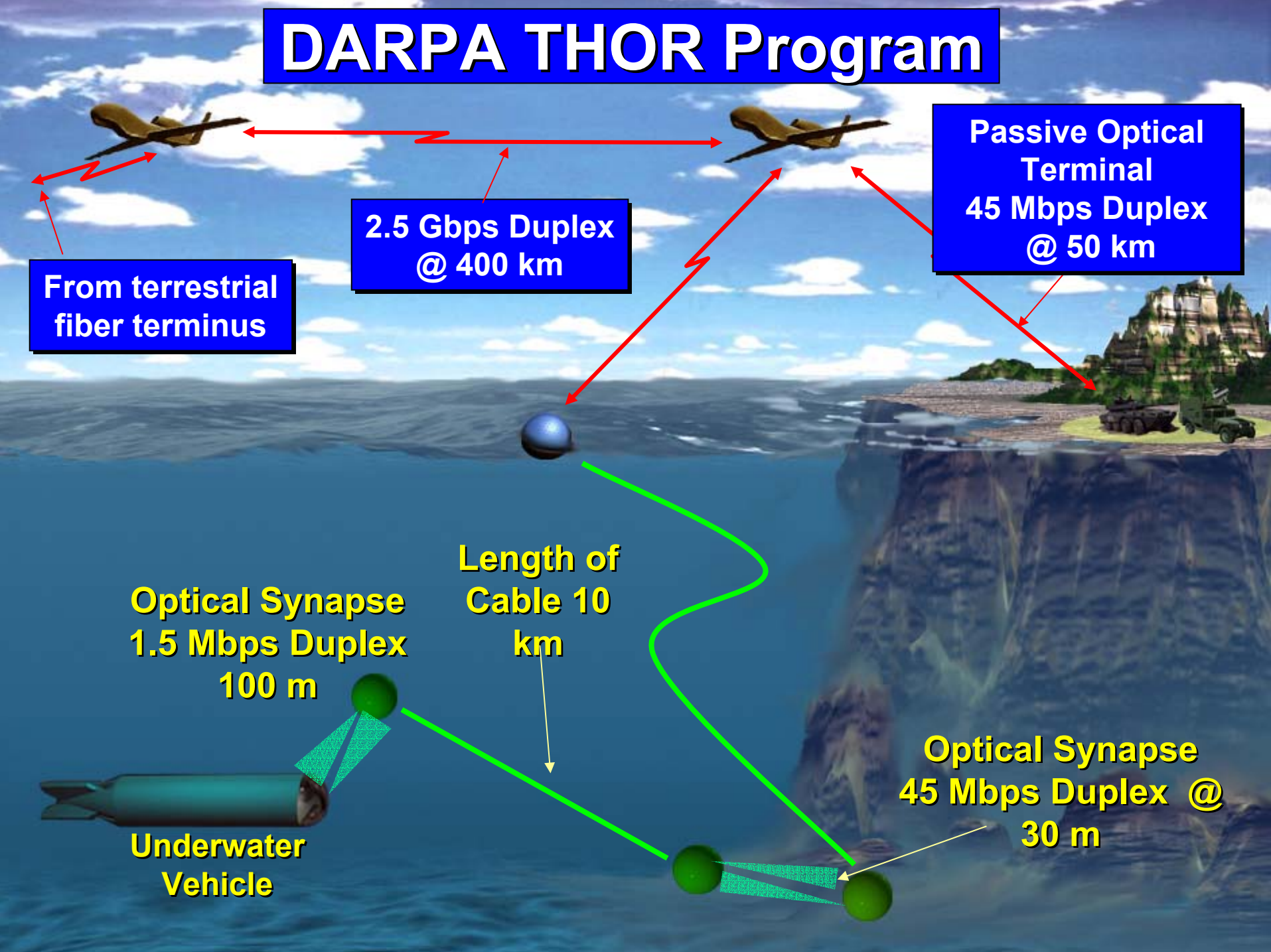
University of Central Florida

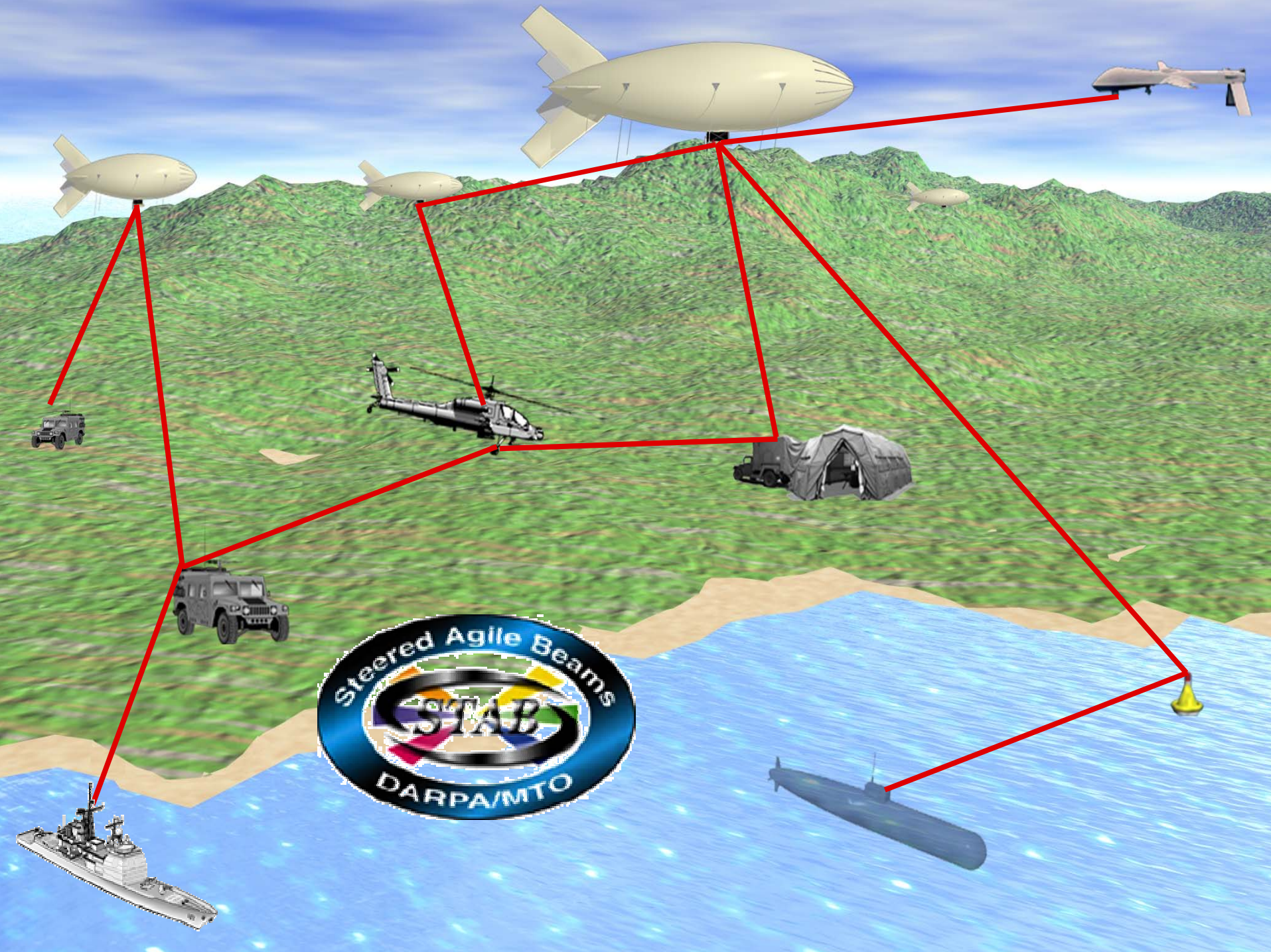
MULTI-FUNCTION ELECTRO-OPTICS FOR DEFENSE OF US AIRCRAFT



If you look at us, you will die!

DARPA THOR Program




Steered Agile Beams
STAB
DARPA/MTO

DARPA

DARPATech

2002 Symposium

Transforming Fantasy