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# Drones: A New and Universal Threat

Professor DB Des Roches

[david.desroches@ndu.edu](mailto:david.desroches@ndu.edu)

[www.facebook.com/dbdesroches](https://www.facebook.com/dbdesroches)

 @DBDesRoches

21 November 2021







logo.png



Armenia Tanks.png



TB2 Turkish drone.jpg



Harop in AZ.jpg



Show all ×

# Ermenistan ordusuna ait sahra karargahı ve tanklar imha edildi



[/ulketv](#) [/ulketv](#) [/ulketv](#) [/ulketv](#) [/ulketv](#)

ULKE

0:29 / 0:52

Scroll for details







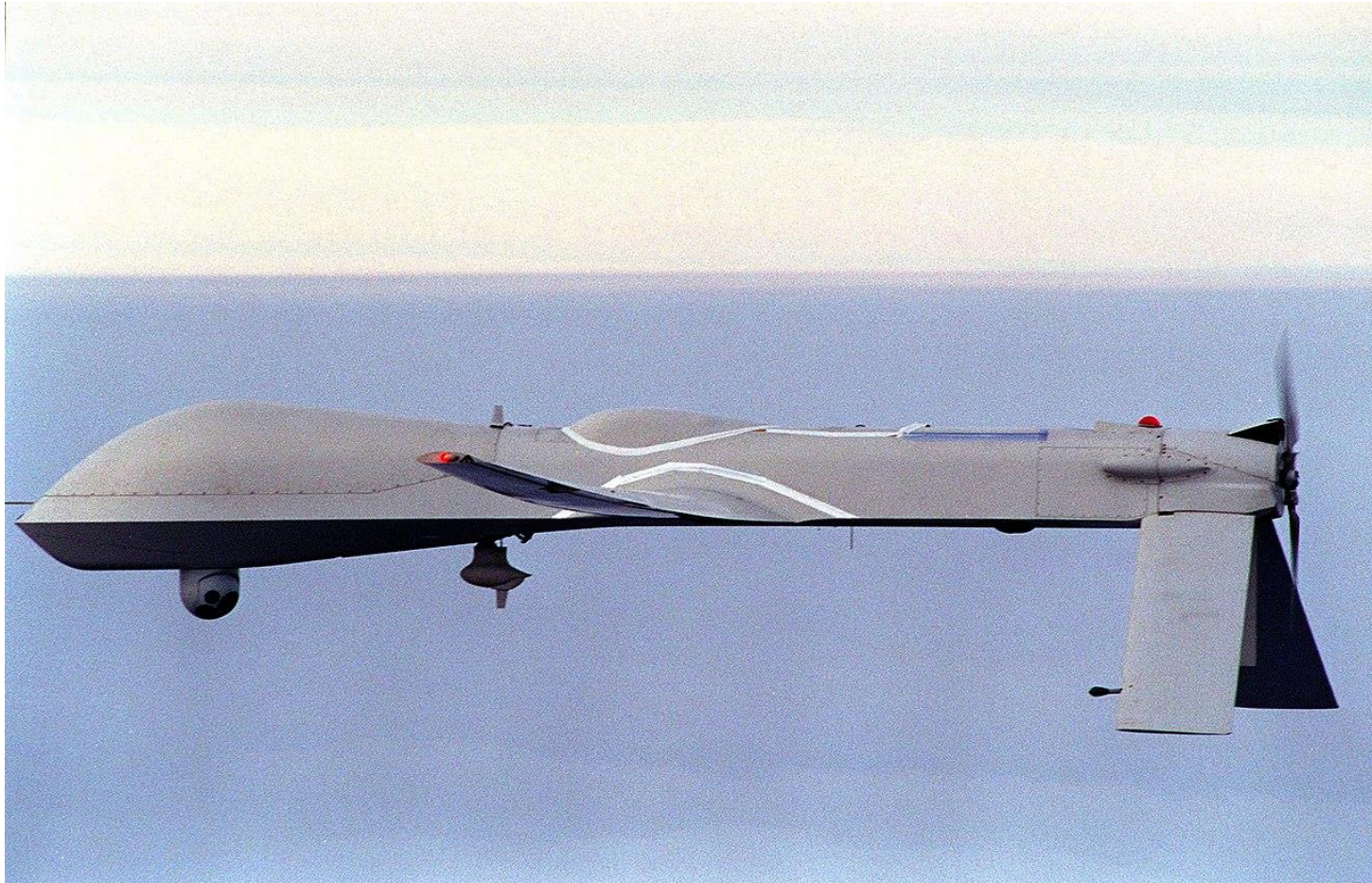








# The First Drone: Predator 1994





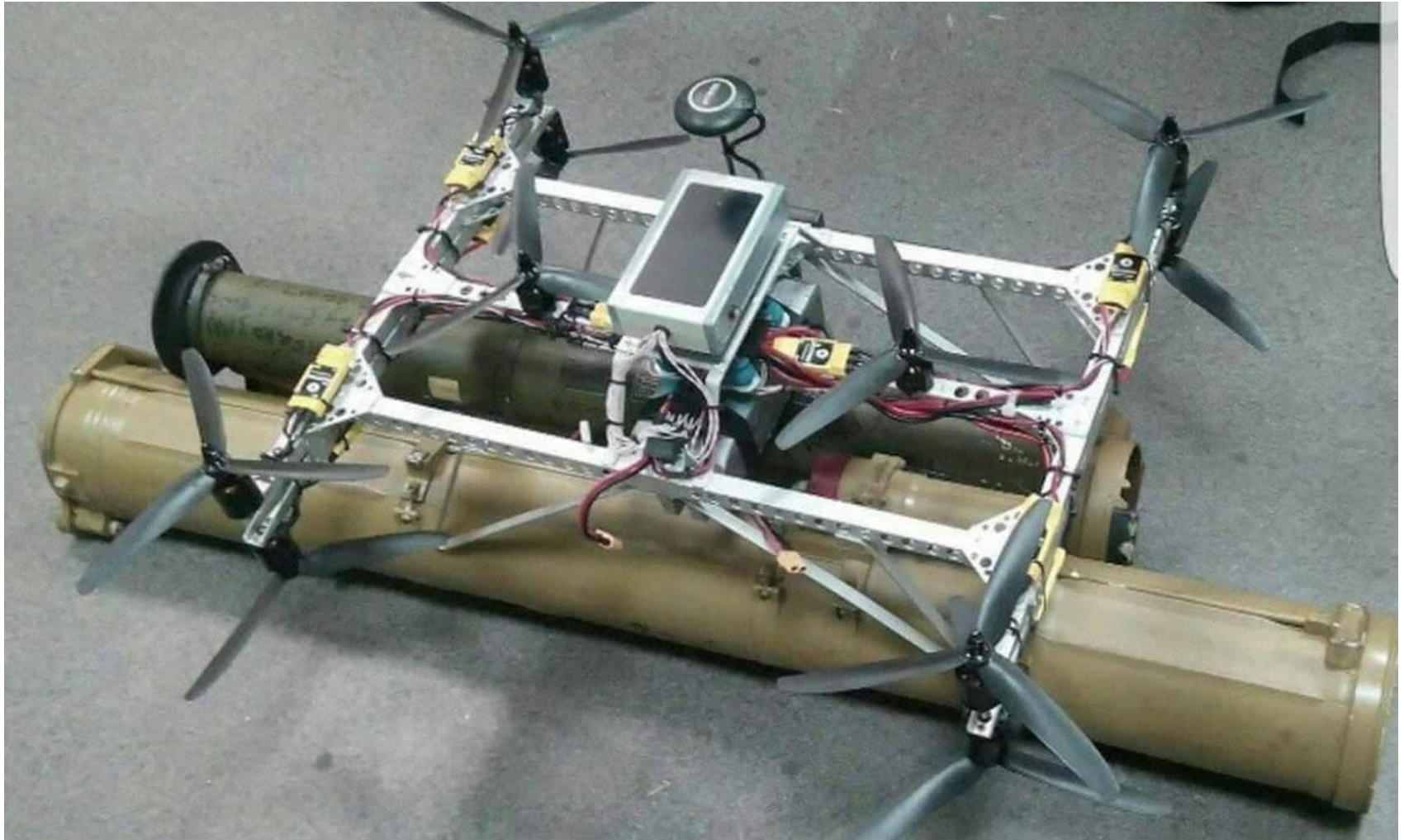
# The First Drone: Predator 1994



Group One	Group Two	Group Three	Group Four	Group Five
				
<ul style="list-style-type: none"> <li>▪ &lt;1,200 ft AGL</li> <li>▪ &lt;115 mph / 185 kph</li> <li>▪ 0-20 lbs / 0-9 kg</li> </ul>	<ul style="list-style-type: none"> <li>▪ &lt;3,500 ft AGL</li> <li>▪ &lt;290 mph / 466 kph</li> <li>▪ 21-55 lbs / 9.5 kg- 25 kg</li> </ul>	<ul style="list-style-type: none"> <li>▪ &lt;18,000 ft MSL</li> <li>▪ &lt;290 mph / 466 kph</li> <li>▪ &lt;1,320 lbs / &lt; 599 kg</li> </ul>	<ul style="list-style-type: none"> <li>▪ &lt;18,000 ft MSL</li> <li>▪ any airspeed</li> <li>▪ &gt;1,320 lbs / &gt;599 kg</li> </ul>	<ul style="list-style-type: none"> <li>▪ &gt;18,000 ft MSL</li> <li>▪ any airspeed</li> <li>▪ &gt;1,320 lbs / &gt;599 kg</li> </ul>



# Helicopter Drones





# Helicopter Drones



# Helicopter Drones



# Drone Types: Helicopter-Like





# Drone Types: Airplane-like



# Drone Types: Airplane-like





# Attack: Rockets / Bombs





# Qasef 2 K



# Qasef 2 K



# Accuracy

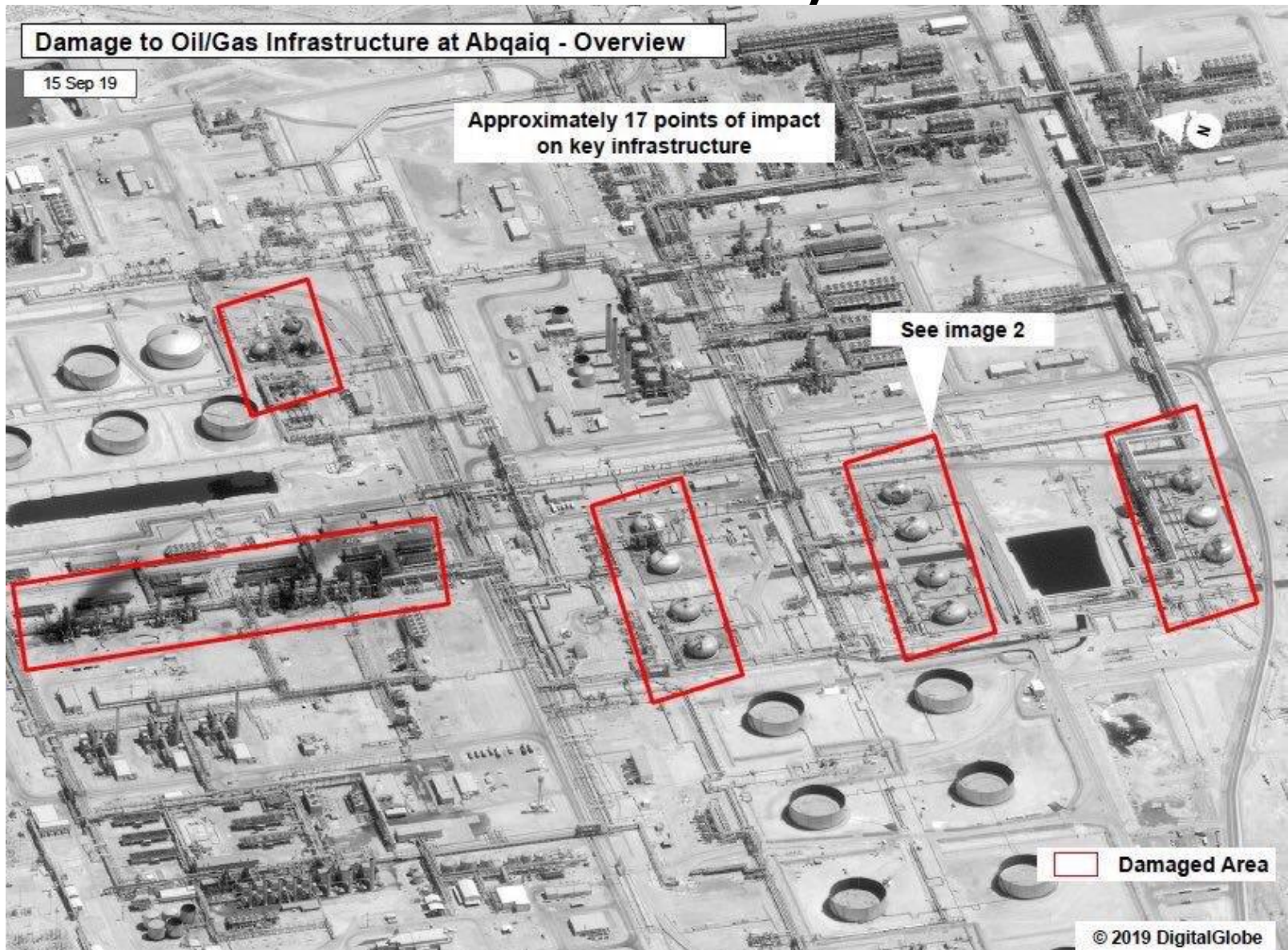




# Accuracy

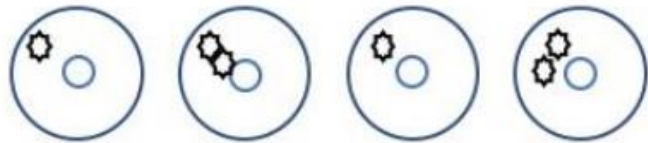


# Accuracy





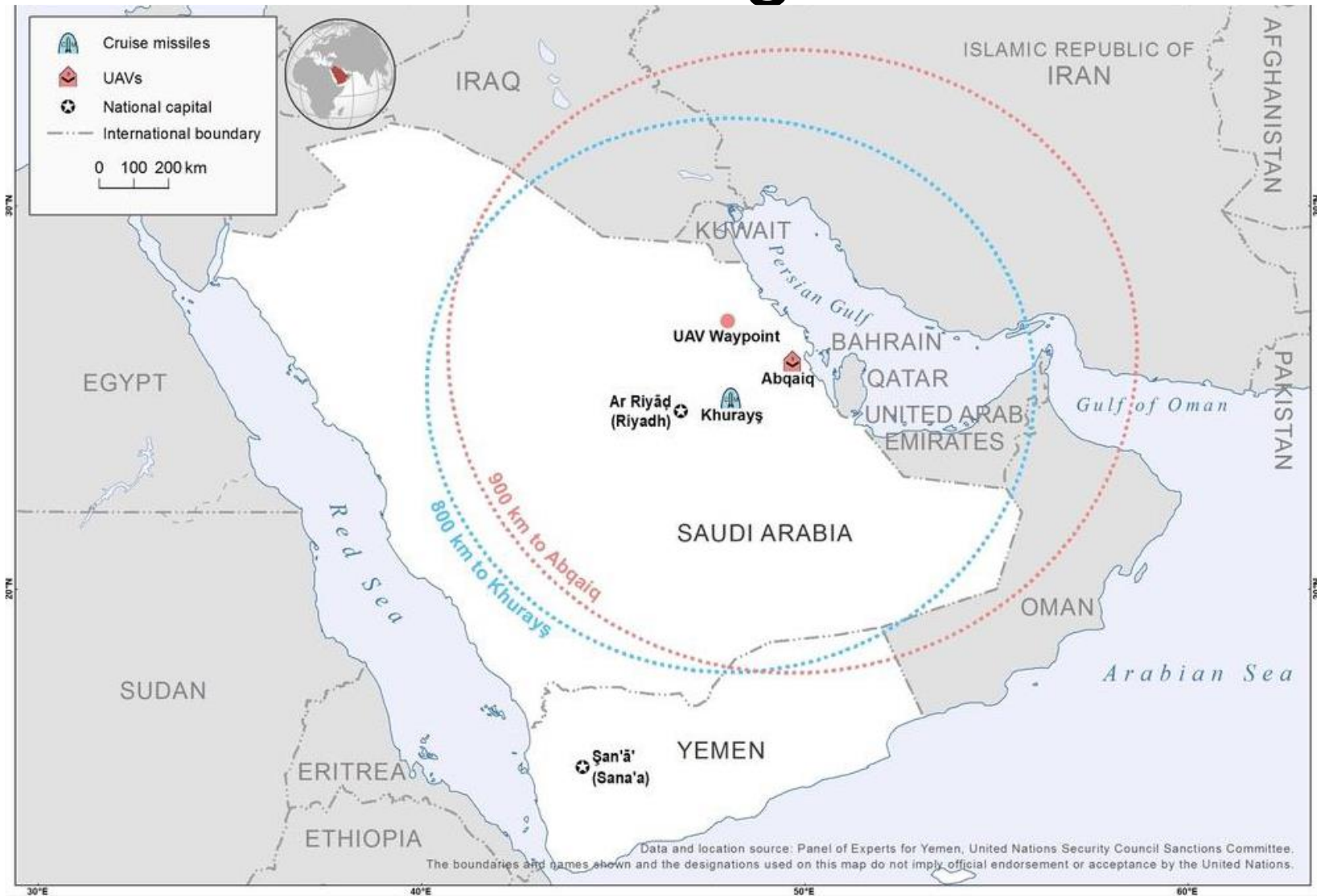
# Accuracy



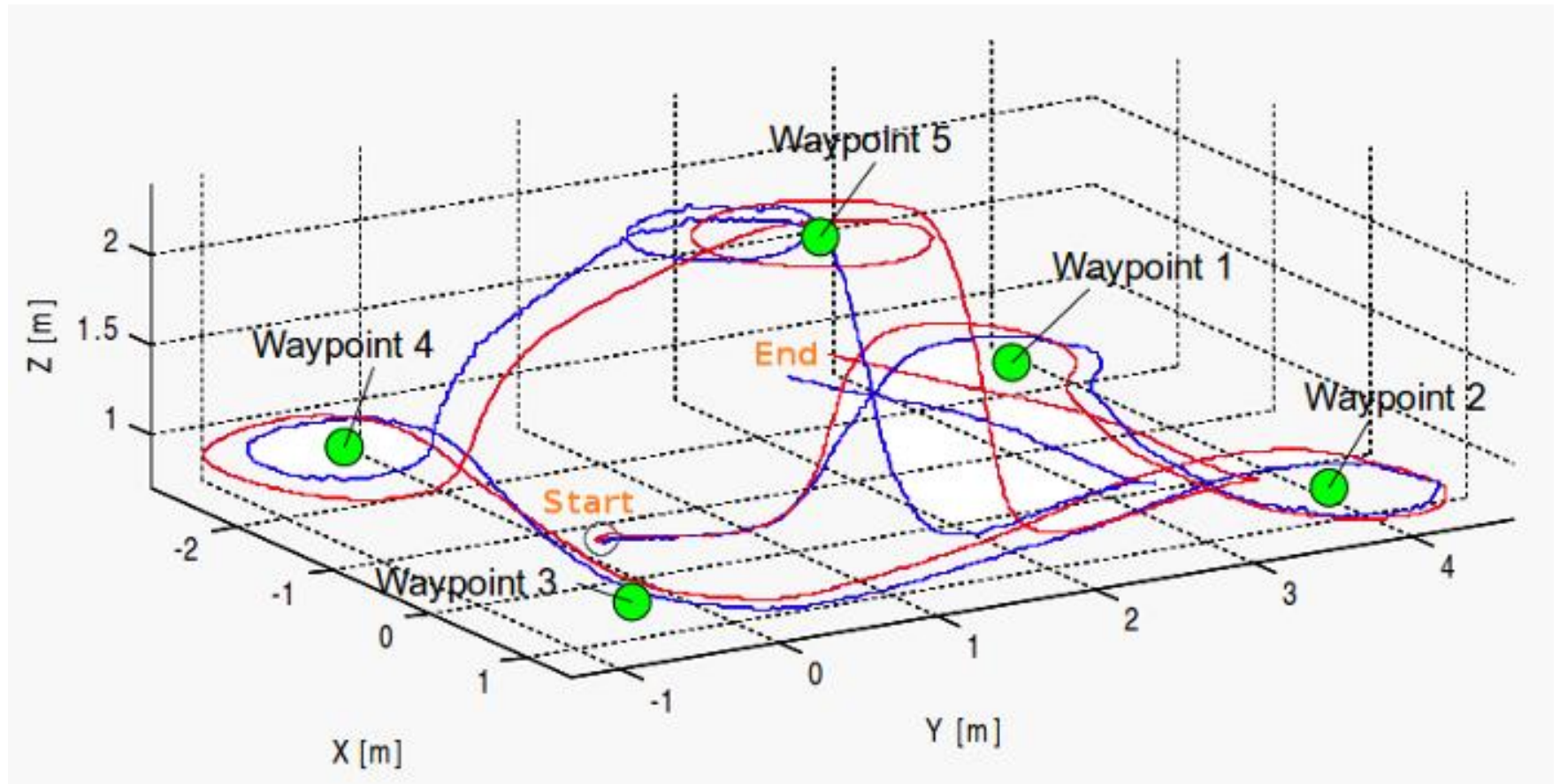
Source: Panel



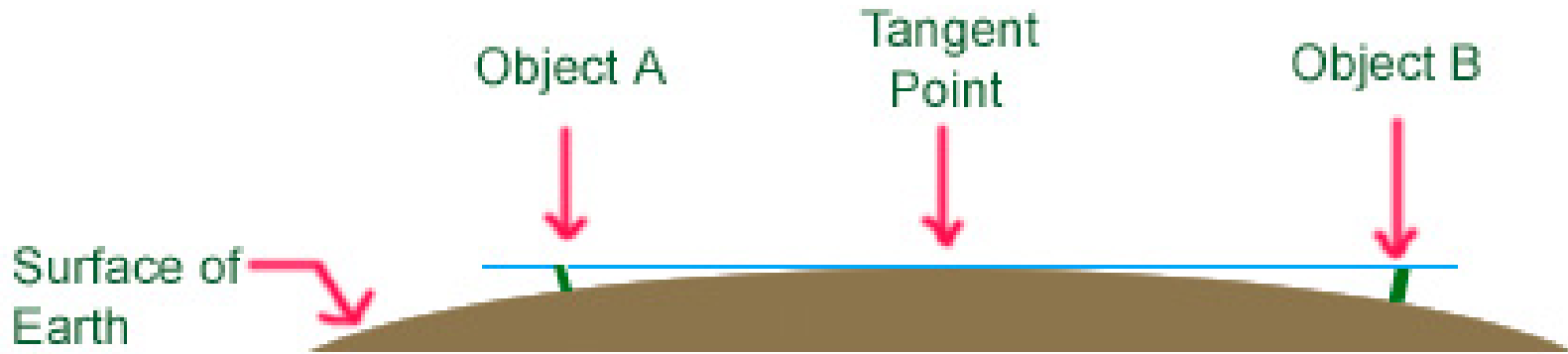
# Range



# Loiter / Variable Trajectory



# Low Altitude Flight



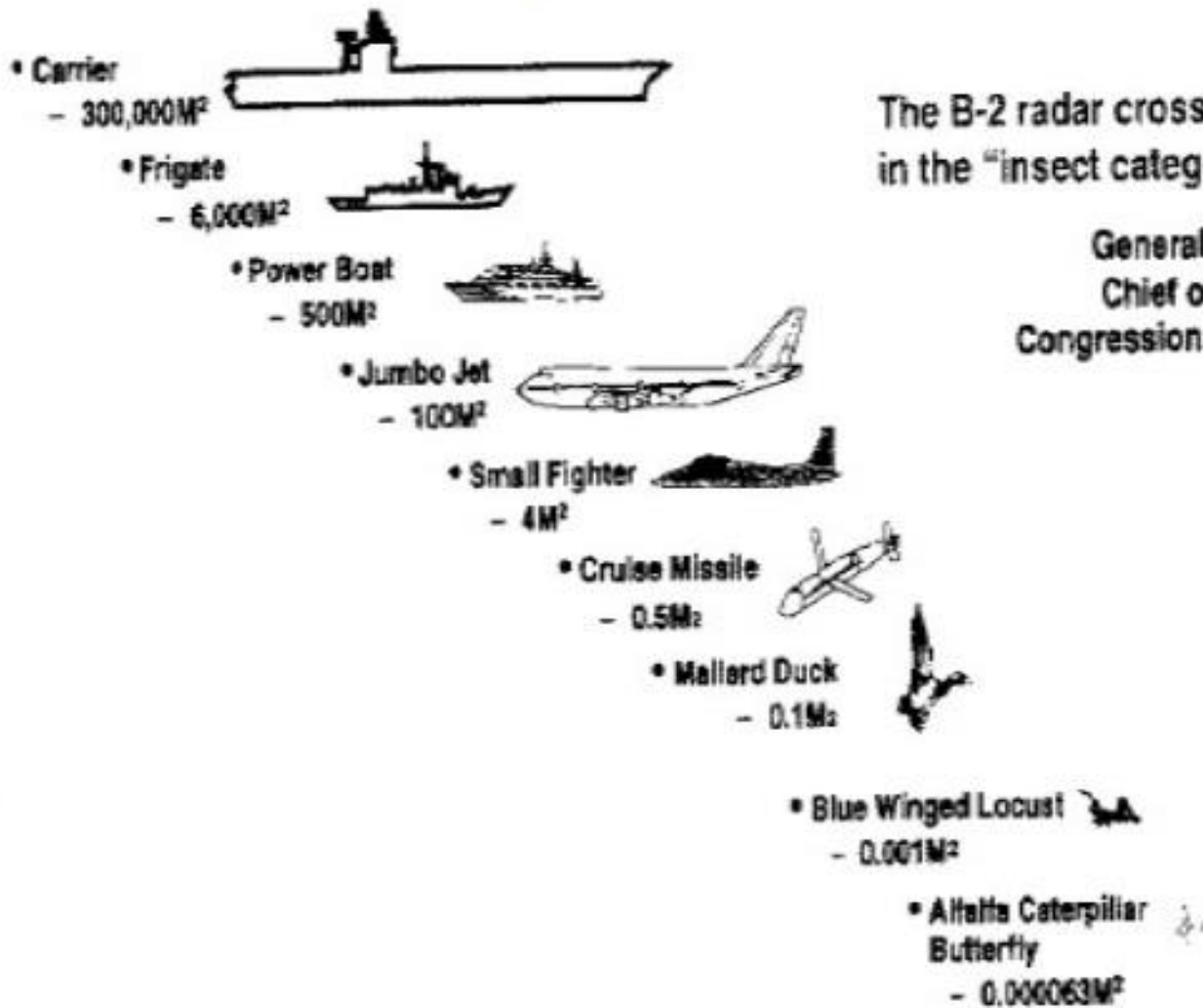
**20 KM – 31 M**



SOLO

## Radar Equation

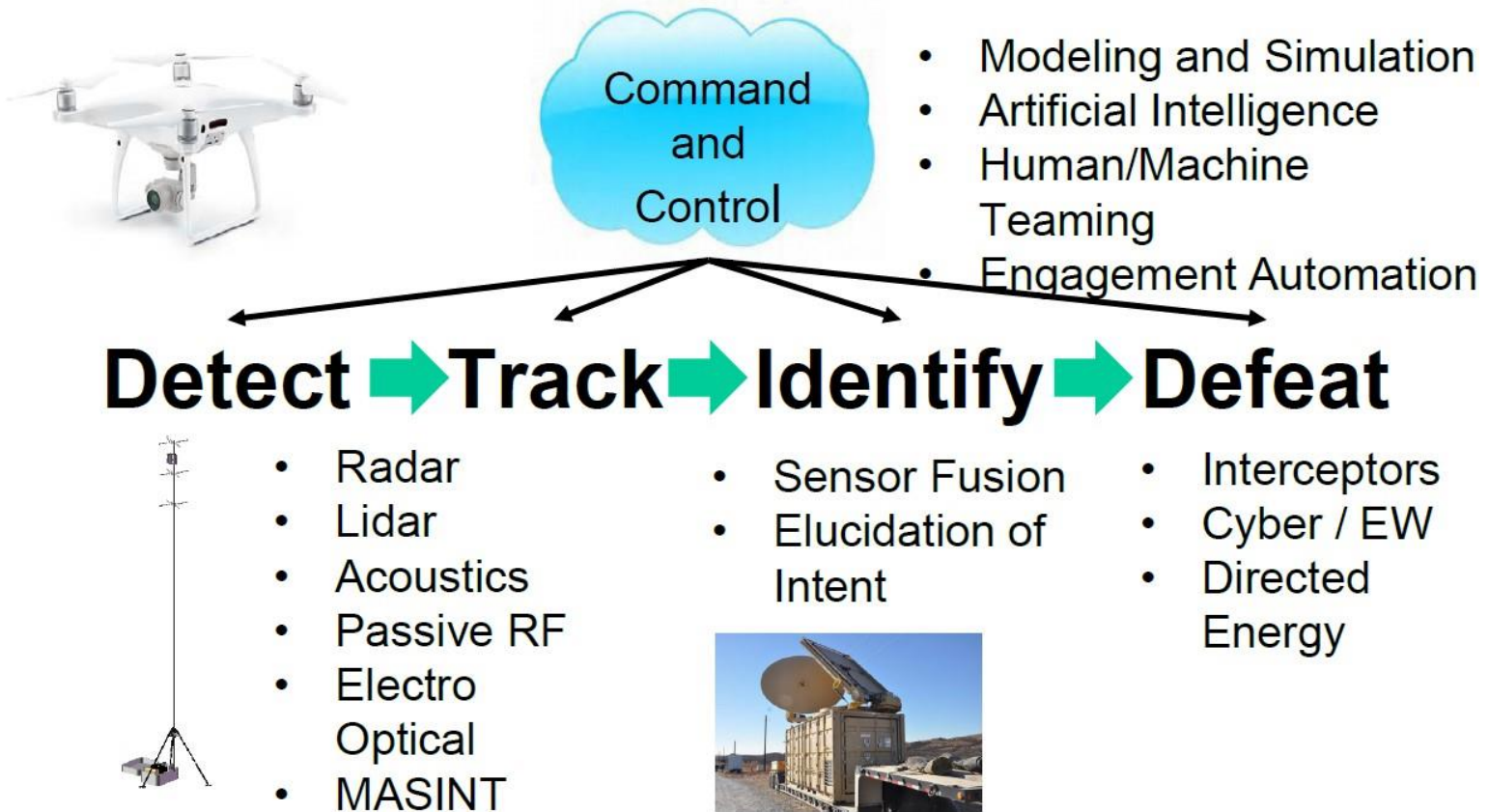
### Radar Cross Section $\sigma$ of Different Bodies



The B-2 radar cross-section is in the "insect category"

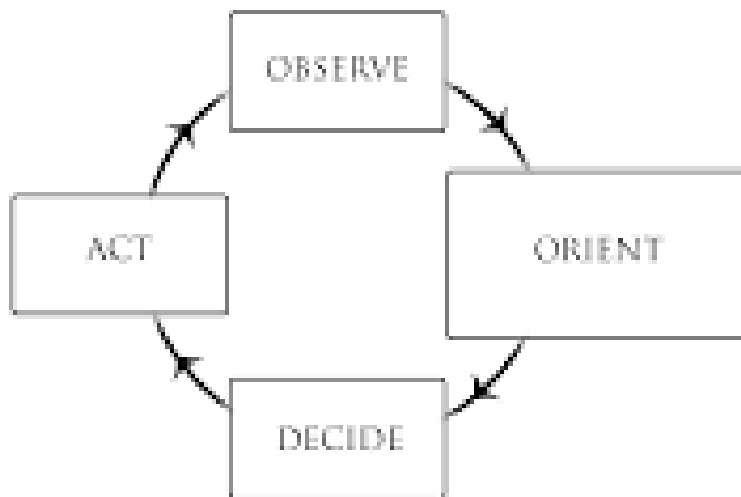
General Larry Welch  
Chief of Staff, USAF  
Congressional Testimony  
June 1990

# AFRL Investment Areas



# THE OODA LOOP

Resiliency





# Observe



# Observe



Inflatech (Courtesy Image)

# Observe







# Orient



HDT-960 Desktop Drone RF Jammer 8 Bands 2.4 GHz+GPS+5.8 GHz

Anti-drone

8 Bands

Coupon

SKU:EO00003US

Availability: **Sold out**

Coupon Code: **PJ0003 (Using this code can save \$40 on payment page)**

**\$881.89**

\$1524.60

-

1

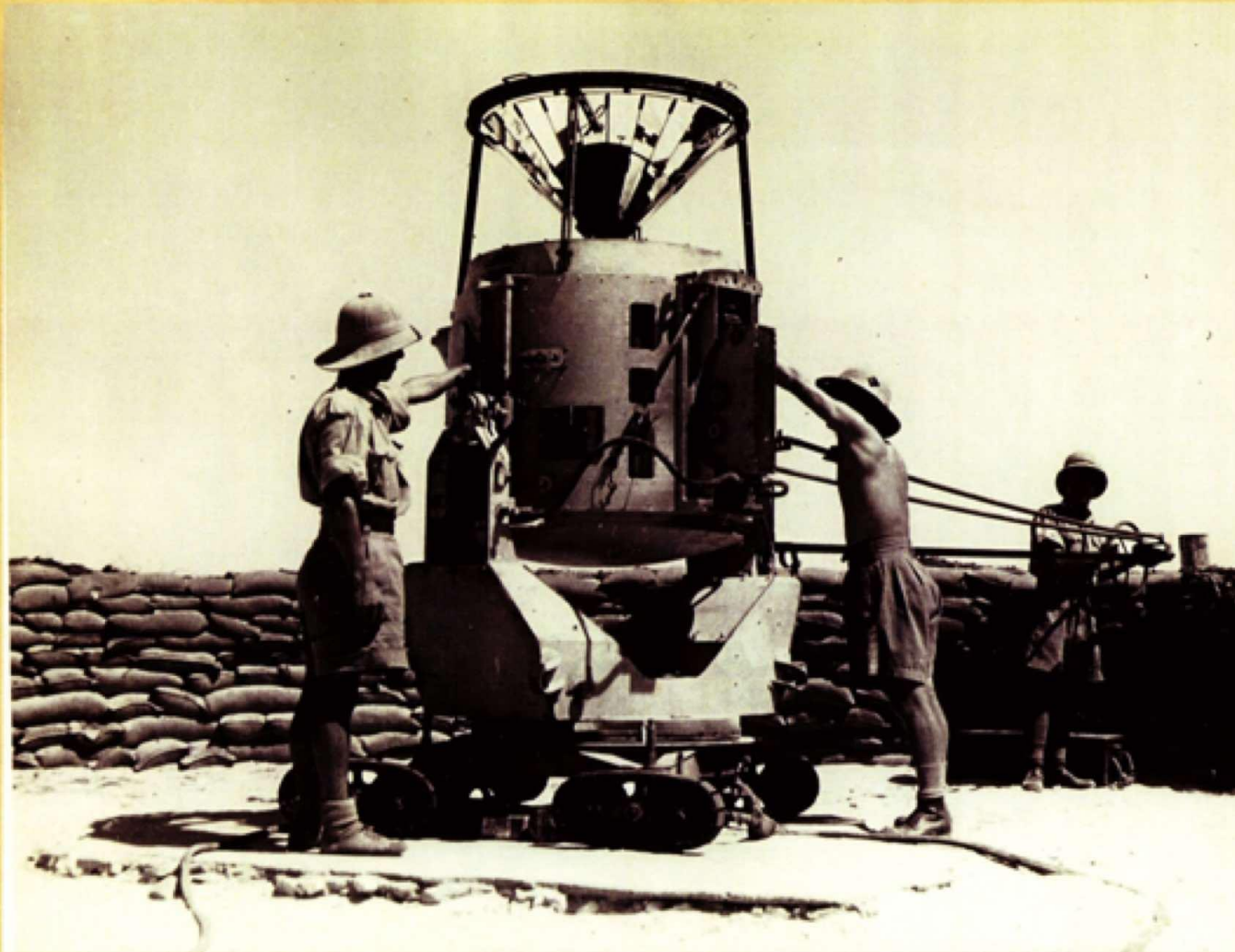
+

# Orient





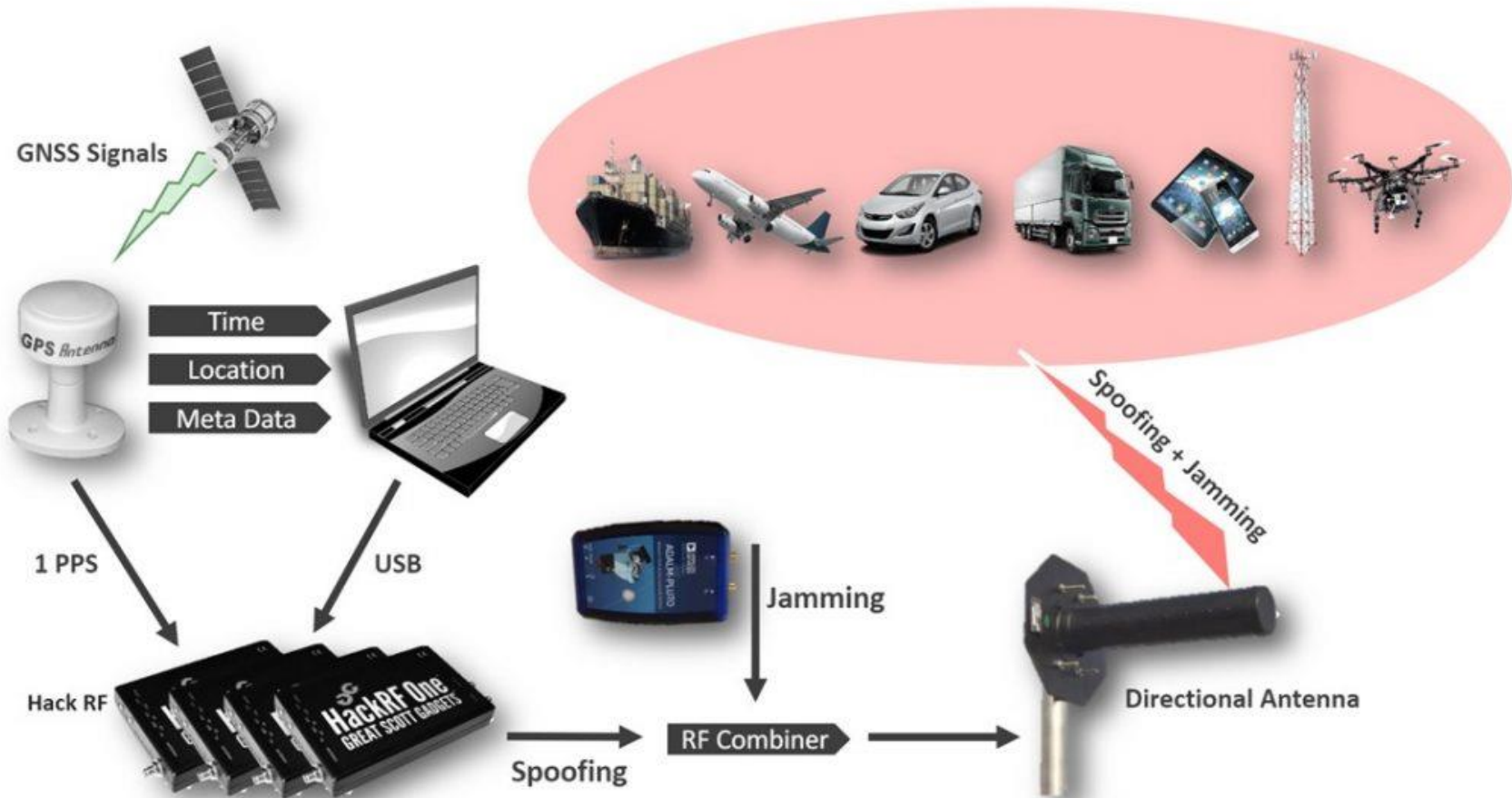
# Orient



# Decide

The Problem We Solve

## Advanced Spoofing Setup



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# Decide





# Decide



# Act



# Act





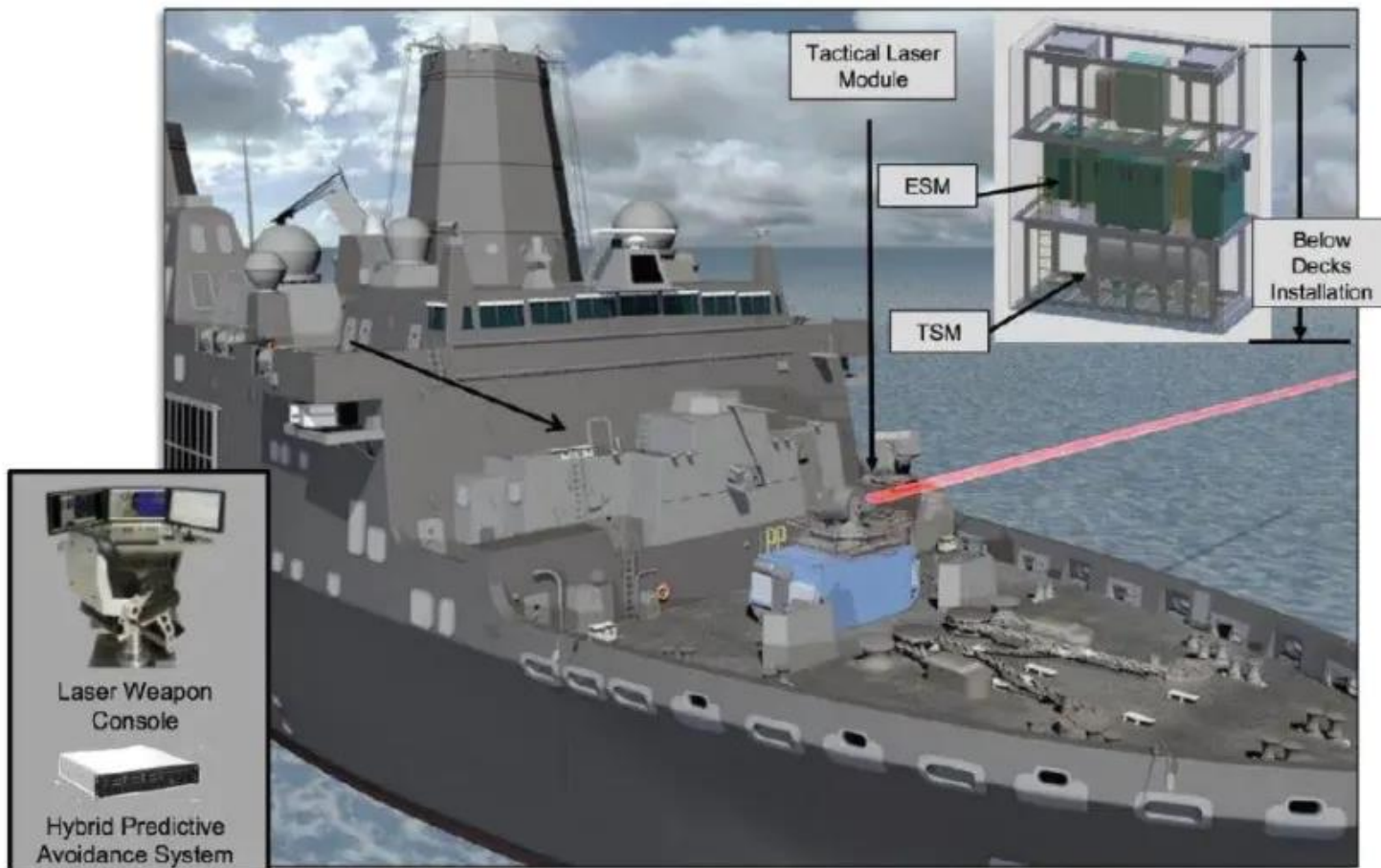
# Act



# Act



## Solid State Laser – Technology Maturation (SSL-TM) Layout









# Resiliency



# Resiliency





# Resiliency



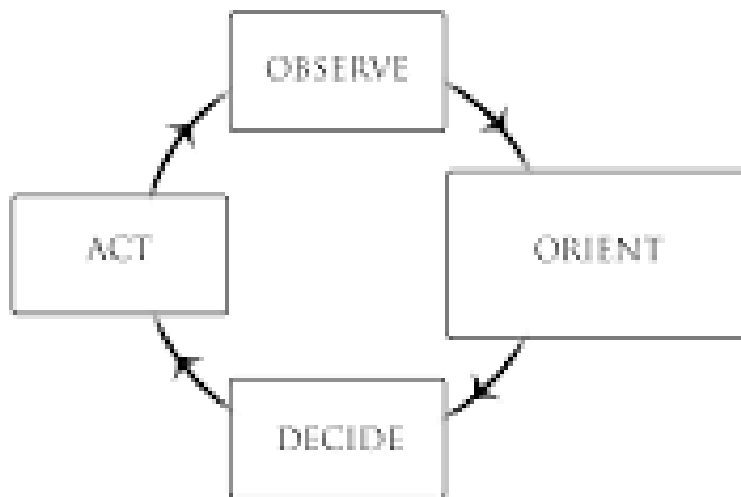


# Other methods: AQAP & ISIS



# THE OODA LOOP

Resiliency



# How Does Iran Fight?

DISRUPTION not  
Dominance

Proxy Attacks

Disrupt Shipping

Take Hostages



The Arab Gulf States  
Institute in Washington  
Building bridges of understanding



Dominance versus Disruption:  
Asymmetry in Gulf Security  
DB Des Roches





# QUESTIONS

Professor DB Des Roches

[david.desroches@ndu.edu](mailto:david.desroches@ndu.edu)

[www.facebook.com/dbdesroches](https://www.facebook.com/dbdesroches)

 @DBDesRoches

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