Disruptive Technologies

Innovation or Disruption?

The Impact of Changing Technology upon ISR Capabilities

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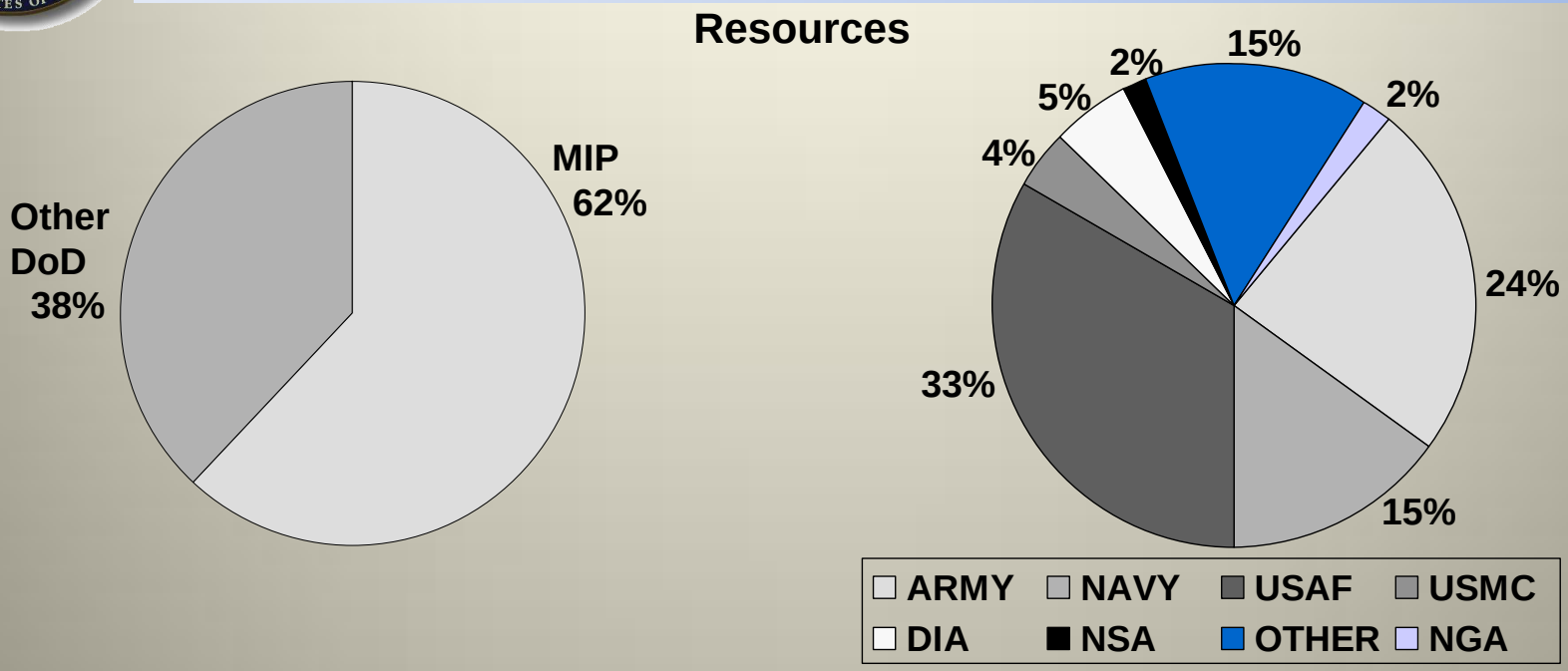
Director ISR Programs
Under Secretary of Defense
for Intelligence

Agenda

- Battlespace Awareness Portfolio
- Innovative or Disruptive?
- Disruptive Technologies
  - Persistence
  - Sensors
- Today's Disruptions Resulting from Yesterday's Innovation
- The Future
  - Technologies
  - Processes
  - Our Challenge
- Discussion

Battlespace Awareness Portfolio



USD(I) Oversight

- Battlespace Awareness Capability Portfolio Responsible for all ISR Capabilities
- Military Intelligence Program enables ISR dedicated funding

Innovative or Disruptive?

It's a Matter of Perspectives

	Department of Defense	Industry
Innovative Technology	➢ Maintains warfighter effectiveness ➢ Enables combat on our terms *SMALLER--FASTER--BETTER*	➢ Customer focused ➢ Value network SURVIVAL IN COMPETITIVE GLOBAL MARKET
Disruptive Attributes	❑ Managing the downstream effects ❑ Integration and interoperability ❑ Data overload DATA-TO-KNOWLEDGE	❑ Profit motive ❑ Shareholder perspective ❑ The rise and fall of companies NEW PARADIGMS BORNE OF INNOVATIVE TECHNOLOGY

Innovation Key to Warfighter Success

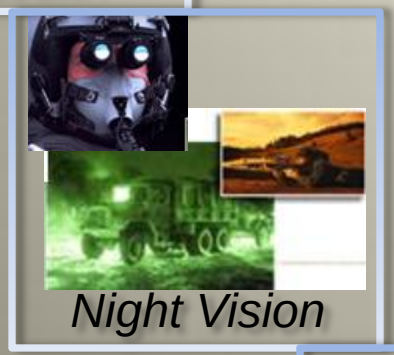
All Innovation Has Disruptive Attributes That Must be Actively Managed

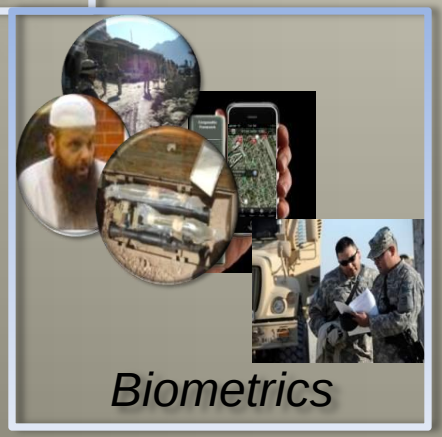
Disruptive Technology

Persistence and Sensors

Historical

Future

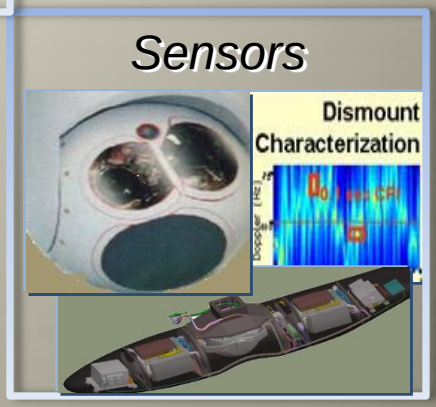




Conventional Warfare

Application Predominance

Irregular Warfare



Disparate Innovative Technologies

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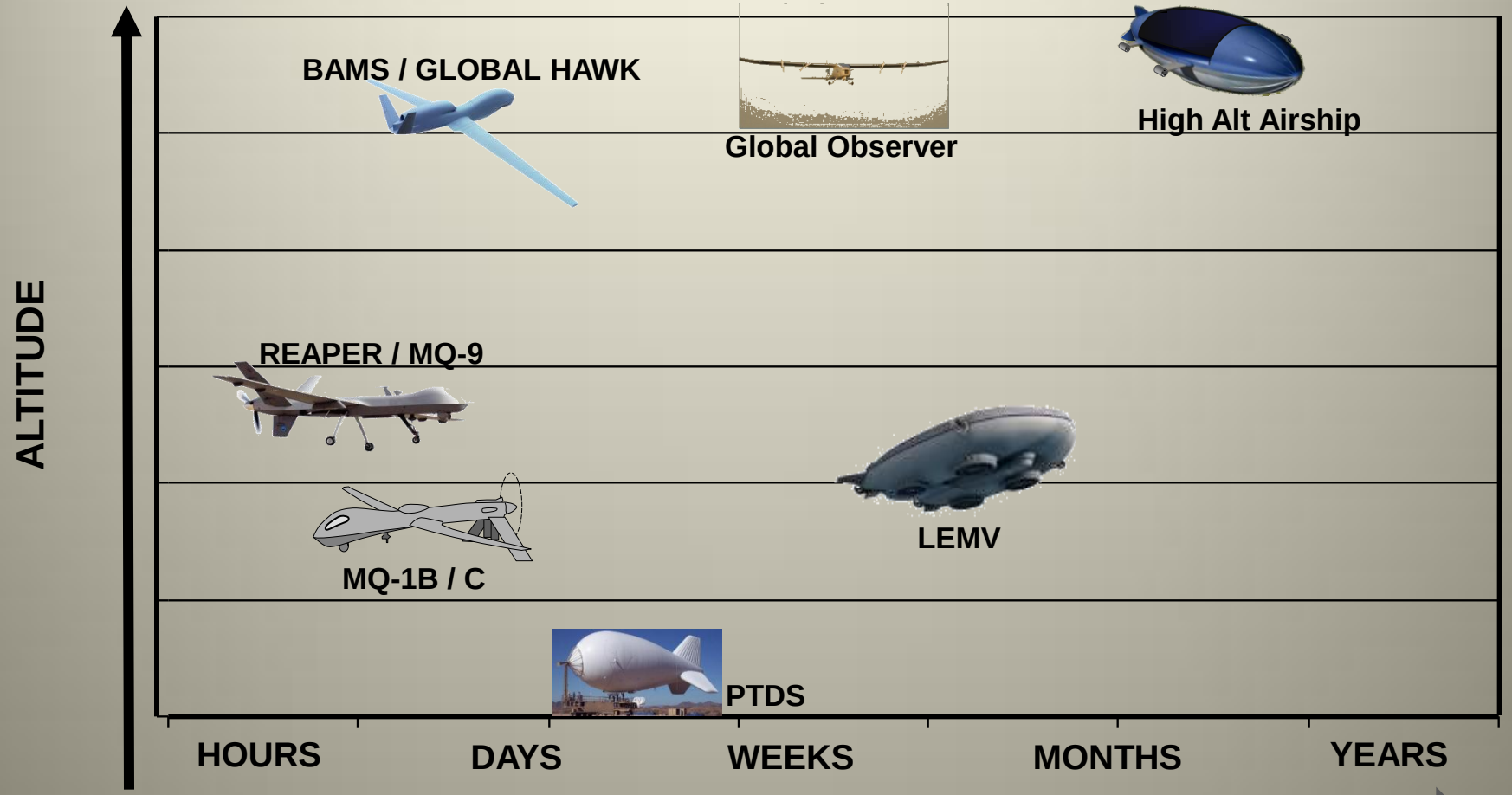
Similar Disruptive Consequences

Disruptive Technology

Persistence

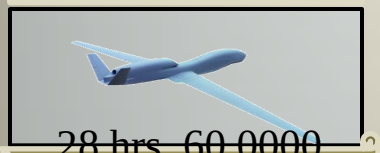


Extreme Persistence in our Grasp

Disruptive Technology

Persistence

Global Hawk



28 hrs, 60,0000 feet, 2000 lb Operational

Reaper

24 hrs, 40,0000 feet, 1000 lb Operational

Predator

24 hrs, 20,0000 feet, 400 lb Operational

Persistent Local Coverage

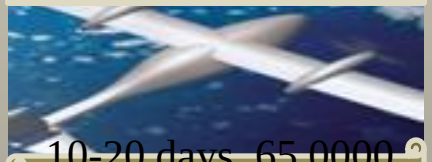
Global Observer

7 days, 55,0000 feet, 400 lb Demonstration Pha

PTDS/PGSS

24 hrs, 2,0000 feet, 500 lb Operational

Phantom Eye

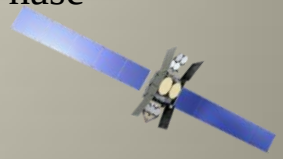


10-20 days, 65,0000 feet, 1,000 lb Development Phase

Persistent Regional Coverage

ISIS

10 years, 65,0000 feet, 3,000 lb Early Development Phase



Endurance Airship

20+ days, 20,0000 feet, 3,000 lb Near Demonstration Phase

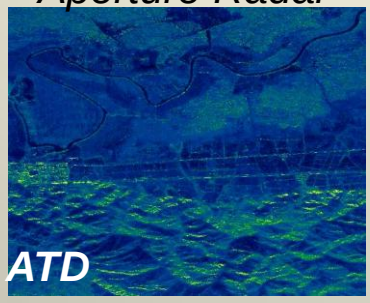
Disruptive Implications—Volume, CONOPs, Bandwidth, *PED* and Storage

Disruptive Technology

Sensors

Radar and LIDAR

Synthetic Aperture Radar

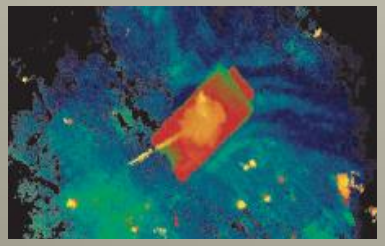


SOUTHCOM FOPEN

TRACER

ALIRT Point Cloud

Jigsaw LIDAR



Foliage Penetration

Wide Area Surveillance

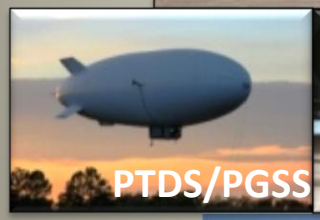
Disruptive Implications—Volume, Bandwidth, PED and Storage

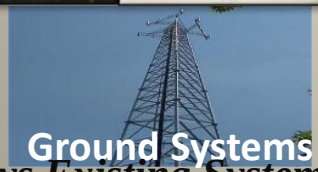
Wide Area Surveillance

Current Activities to Support Wartime Ops

End-to-End Development, Integration and Fielding

$400+M





Deploys Existing Systems And Procures Added Capability
$300M

WAS Dissemination Enhancement

ISR Network Modifications to 10 Network Radios

Communications And Bandwidth
$50M

WAS PED Automation

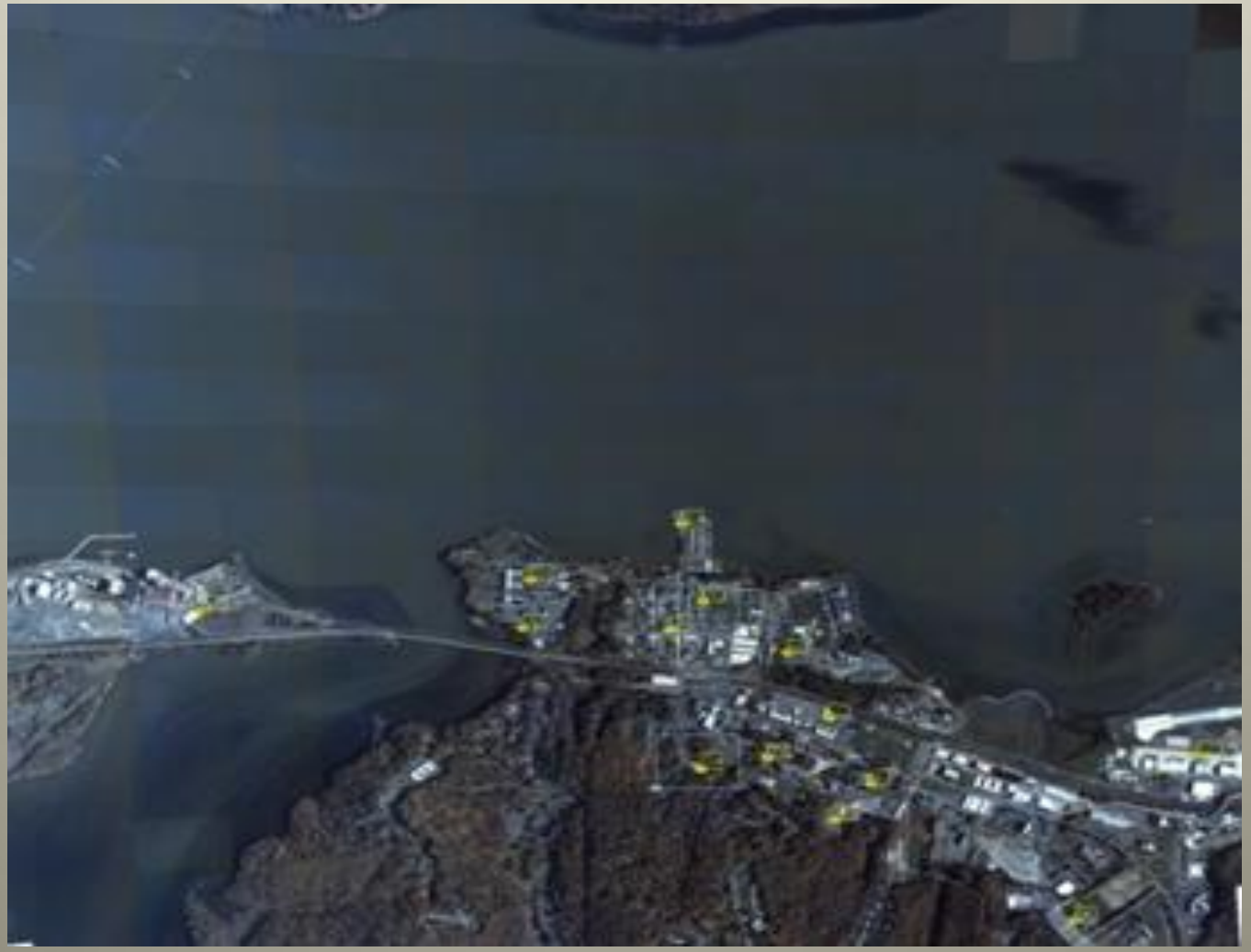
Ground Processing Analysis

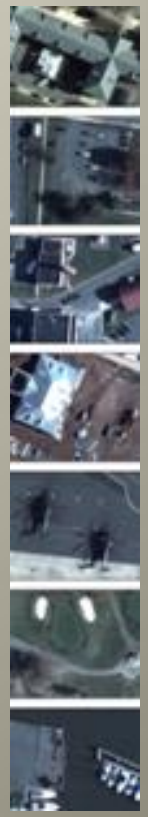
Processing, Exploitation And Dissemination
$60M

Balancing Collection & Production With Dissemination & Distribution

Wide Area Surveillance

Demonstration Imagery





Single Sensor Provides <u>Tailored</u> Real-Time Images to Multiple Users

Persistence and Sensors

Disruptive Attributes of Innovative Technology

Greater Persistence and Improved Sensors Exponentially Increased the Amount of Information Available

More Collection = More Data

However

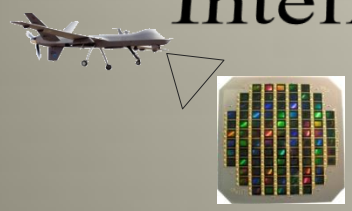
More data ≠ More Knowledge ≠ Actionable Intelligence

- Collection outpacing ability to transport, store and process
- Volumetrics, variety, and velocity are growing
- Challenge--discriminate IW the threat from the clutter
- "Behavior discernment"

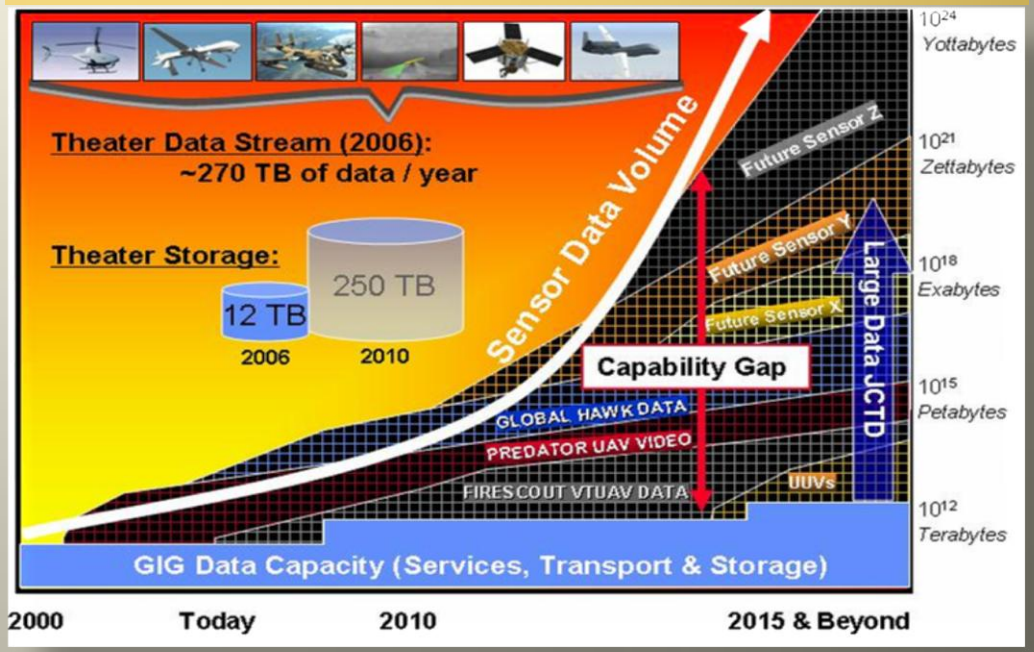
Persistence and Sensors

Disruptive Attributes—Data Movement & Storage

More Collection =
More Data
But
More data ≠ More
Knowledge ≠
Actionable
Intelligence



Illustrative of Data Movement/Storage Problem



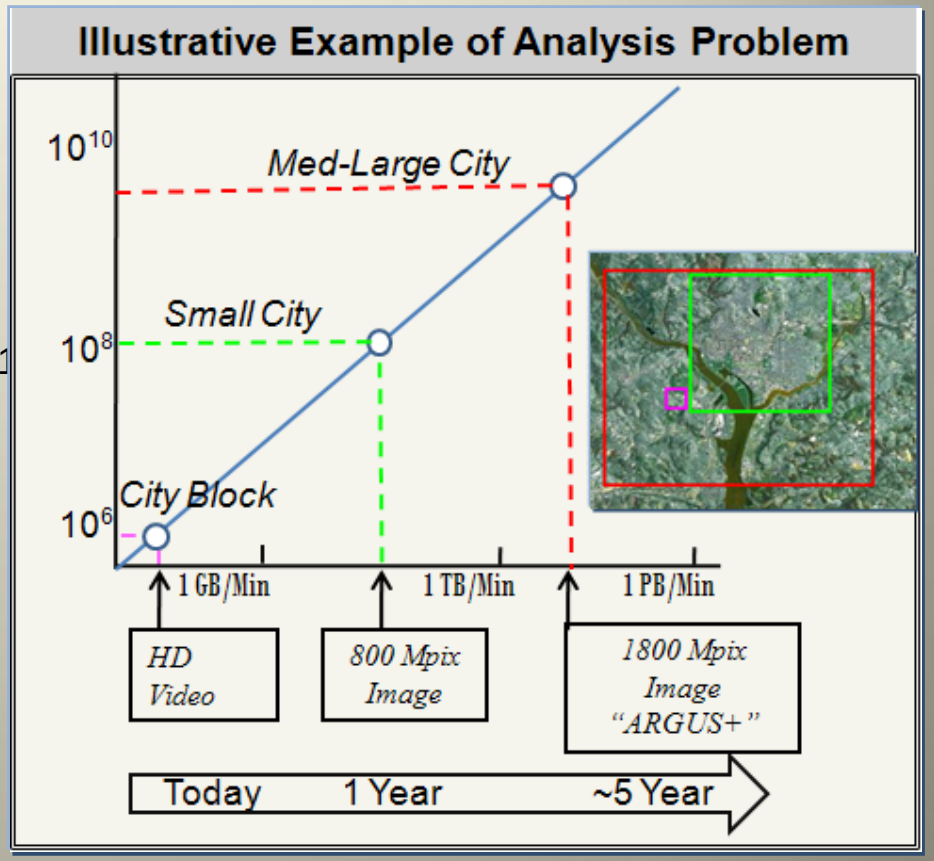
- Data pipes are saturated
- Storage is approaching saturation
- Disruptive tendencies are accelerating and solutions are lagging

One ARGUS Can Consume Bandwidth of Ten WGS' , Even With

Persistence and Sensors

Disruptive Attributes—PED

More Collection =
More Data
But
More data ≠ More
Knowledge ≠
Actionable
Intelligence



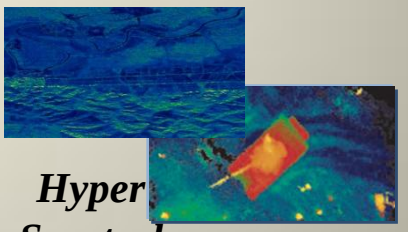
- Automated exploitation is sparse
- Human analysis capacity is optimized
- Threat signature development lags
- Problem will get worse

Adding Analysts--Linear Solution to Exponential Problem & Not

Future Disruptive Technologies?

Advanced Signals Intelligence

Automated/Aided Target Recognition



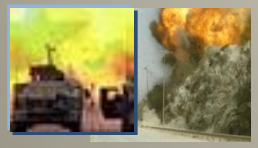
Hyper Spectral Imaging

Intelligence Fusion

Translating Information to Actionable Intelligence

Human Terrain Analysis

Forensic Maturation



Automated PED

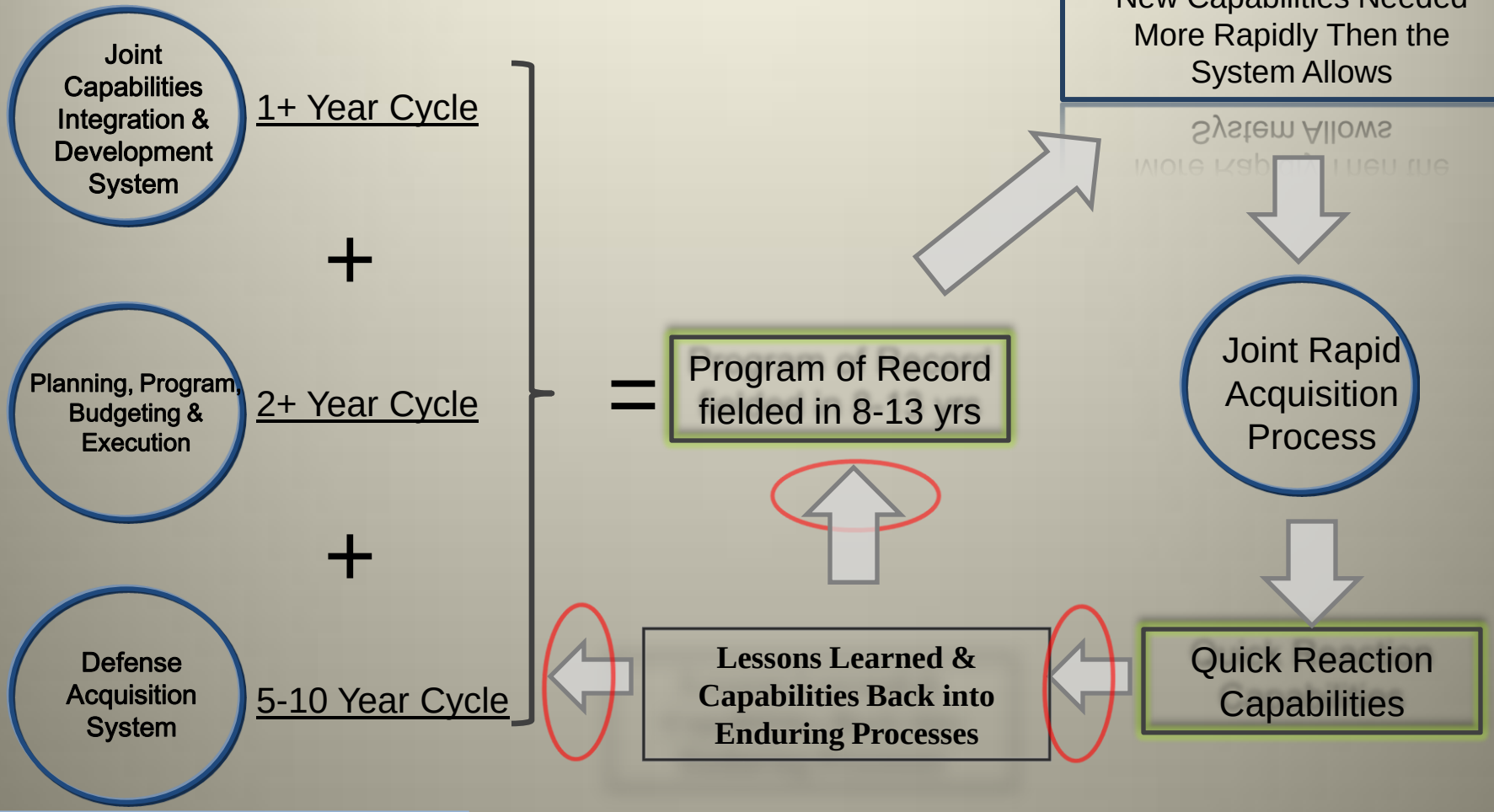
Advanced Analytics

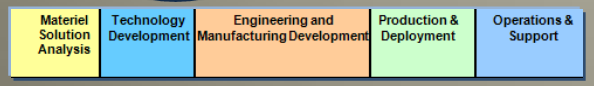
High Definition Imagery

Micro Air Vehicles

Flexible Acquisition &Modular/Integrated Technologies Key to

The Classic Conundrum

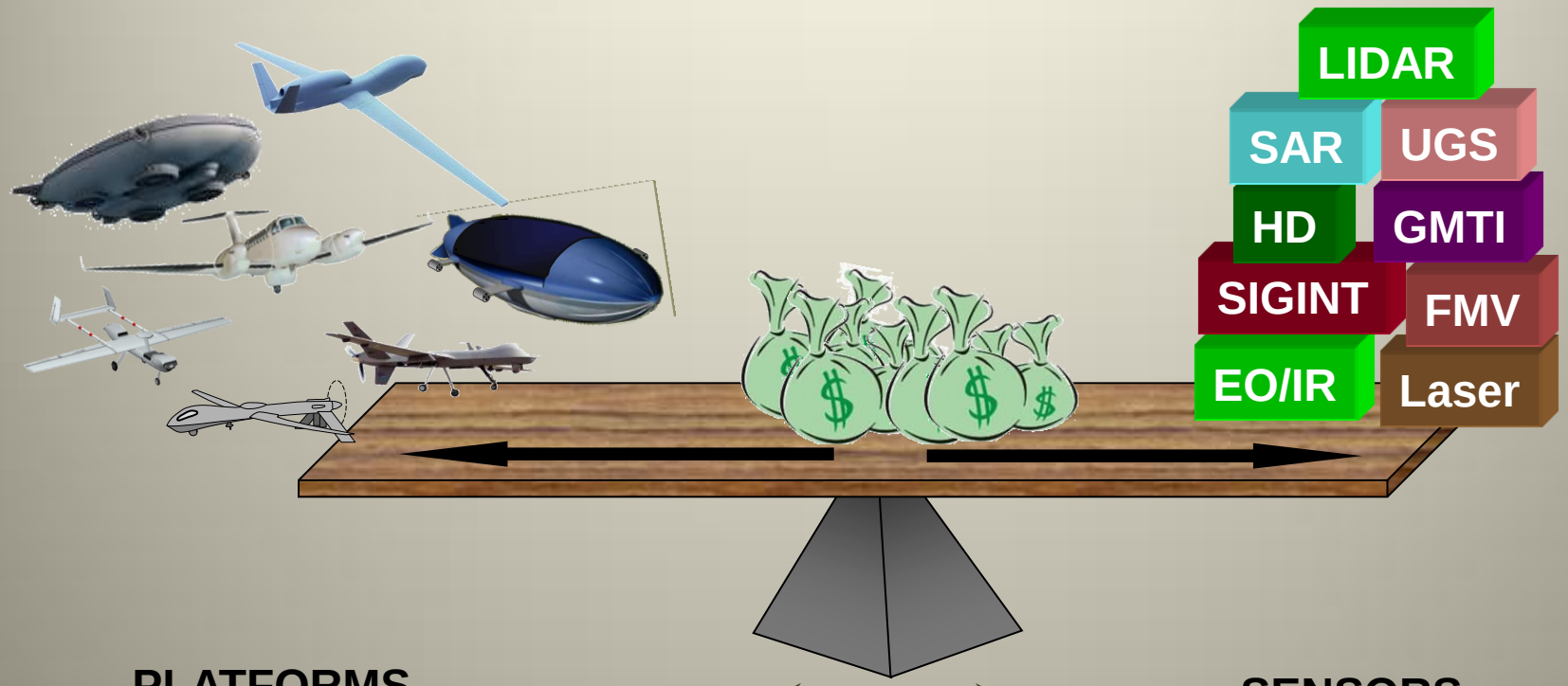




The Defense Acquisition System

Disruptive Attributes of Innovative Technologies

This is Our Challenge!



PLATFORMS ⟷ **SENSORS**

COLLECTION ⟷ **EXPLOITATION**

CONVENTIONAL WARFARE ⟷ **IRREGULAR WARFARE**

Balancing the ISR Enterprise Through Multiple Paradigms

Platforms & Sensors--Collection & Exploitation--Conventional & Irregular Warfare

Discussion

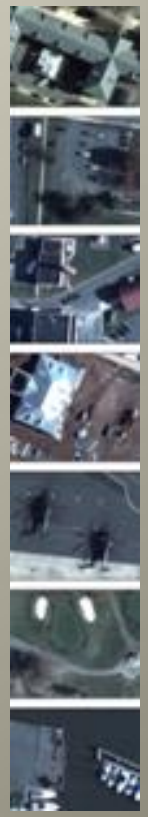
“The challenge to provide the information, insight, and warning that allow our national military and civilian leaders to make better decisions …has never been greater or more urgent.”

BACK UP

Wide Area Surveillance

Demonstration Imagery

Return to Brief



Single Sensor Provides <u>Tailored</u> Real-Time Images to Multiple Users

Conference Goal

To identify technologies that enable us to fill gaps in capabilities required for conduct of irregular warfare and asymmetric threats