3rd Offset

INTEGRATED INFORMATION PREEMINENCE

“Control the Information, Control the Battlespace”

Squadron Officer College

Think Tank 16D

Problem

- Our ability to deter or prevent aggressive acts from our adversaries is deteriorating
- Advances in adversary A2/AD capabilities limit our ability to project power globally
- We lack the ability to economically combat asymmetric irregular warfare

What is the third offset strategy?

Parameters

Design Parameters for an Offset Strategy

- Asymmetric Advantage
  - Not easily imitated or neutralized
  - Provides ability to deter aggressive acts and project global power
- Agile
  - Applicable to wide spectrum of scenarios and adversaries
- Affordable
  - Cost-imposition curve; cheaper than enemy's means to counter

Assumptions

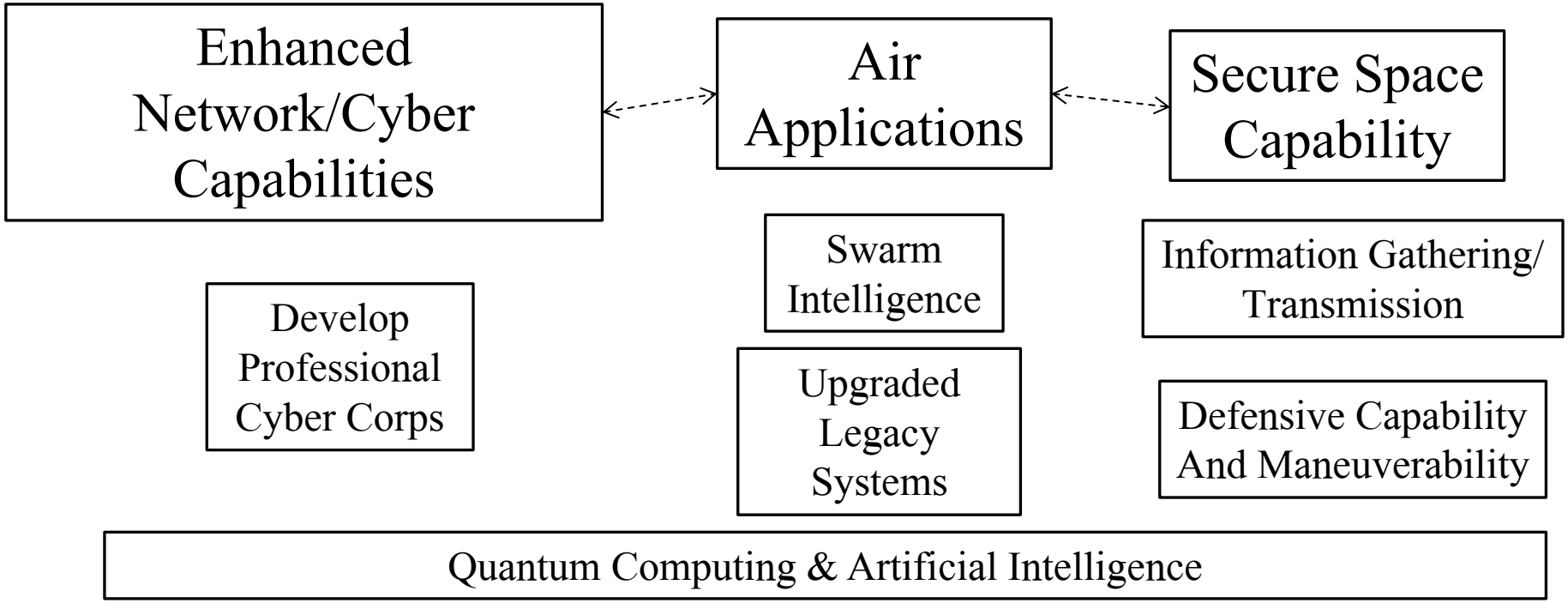
- Near-term technologies

Strategy

Integrated Information Preeminence

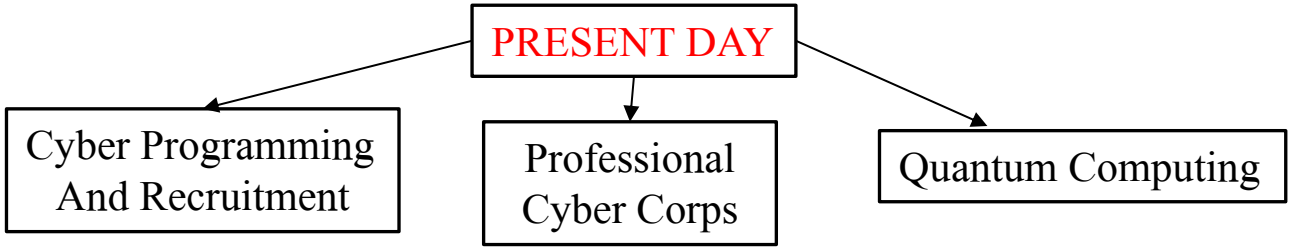
- Provide ability to reach out and take control of any domain
- Apply quantum computing to maximize cyber capabilities
- Utilize AI to rapidly accelerate OODA Loop
- Enhance air operations ability to overcome A2/AD environments
- Defend crucial information collection/transmission via space assets

Strategy Overview



Cyber and Network Preeminence

Process

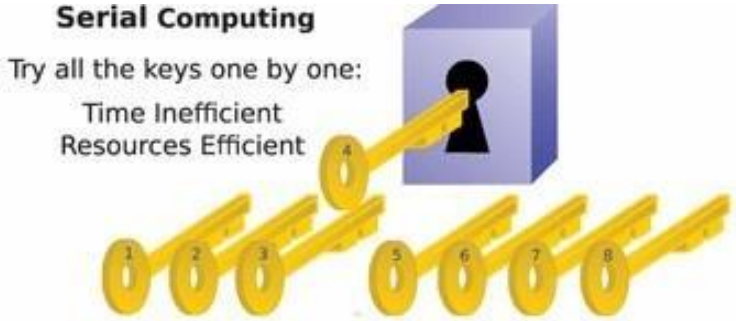


Cyber and Network Preeminence

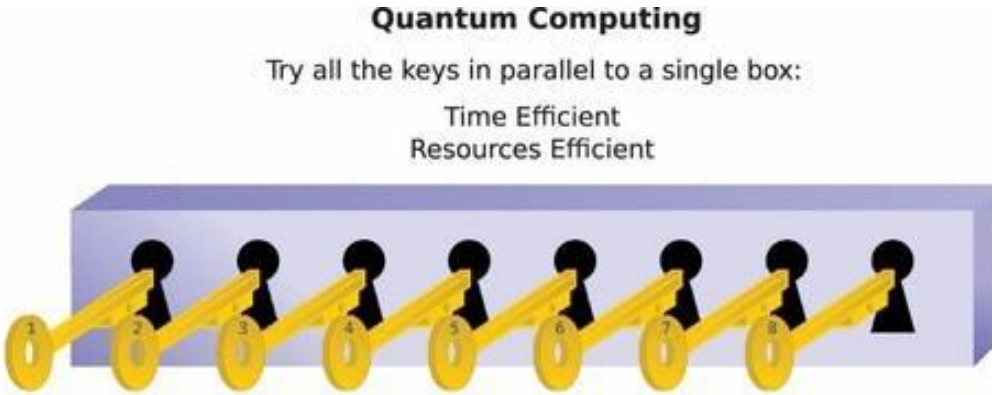
Process

PRESENT DAY

- Cyber Programming And Recruitment
- Professional Cyber Corps
- Quantum Computing

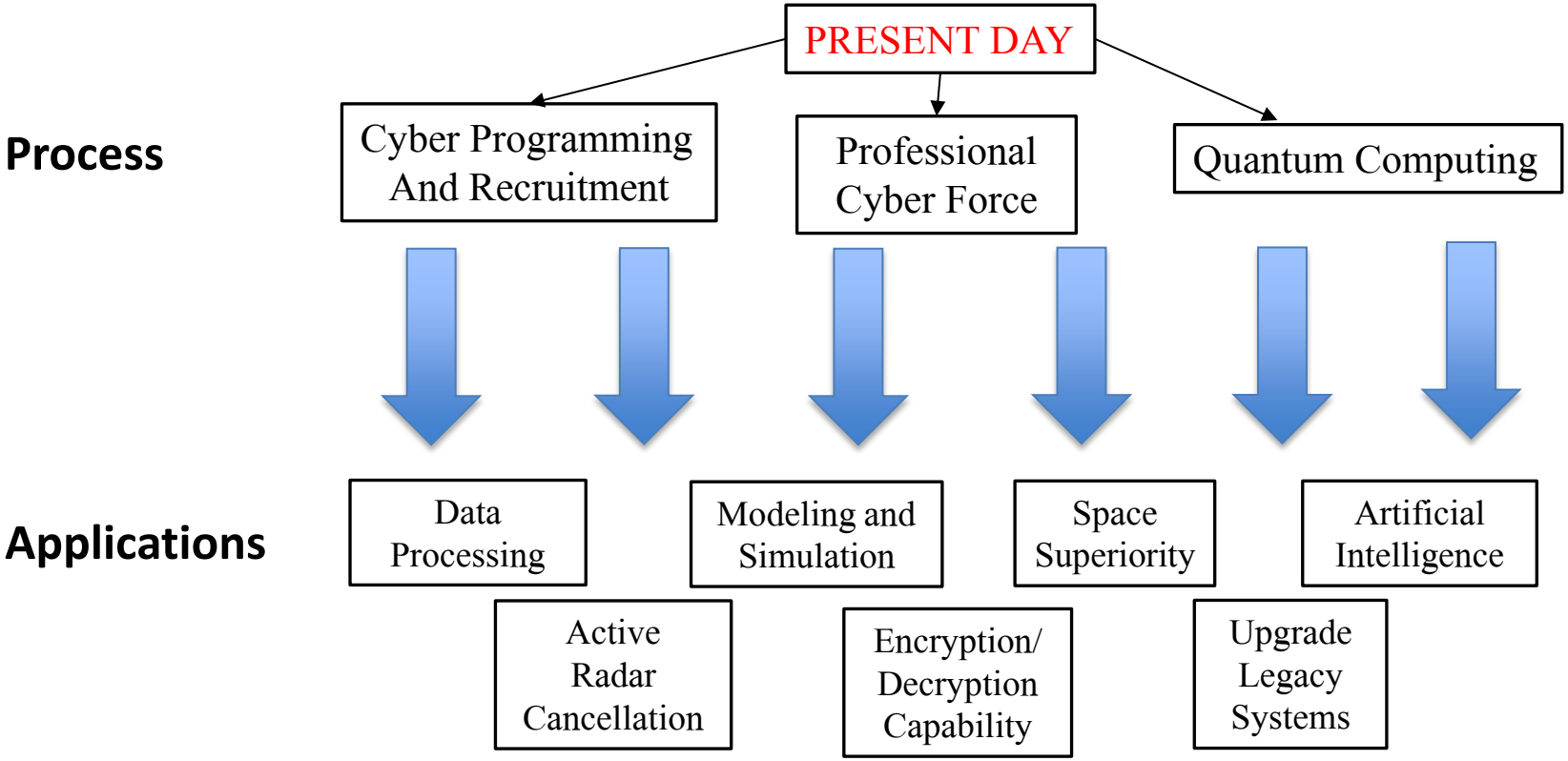


Linear

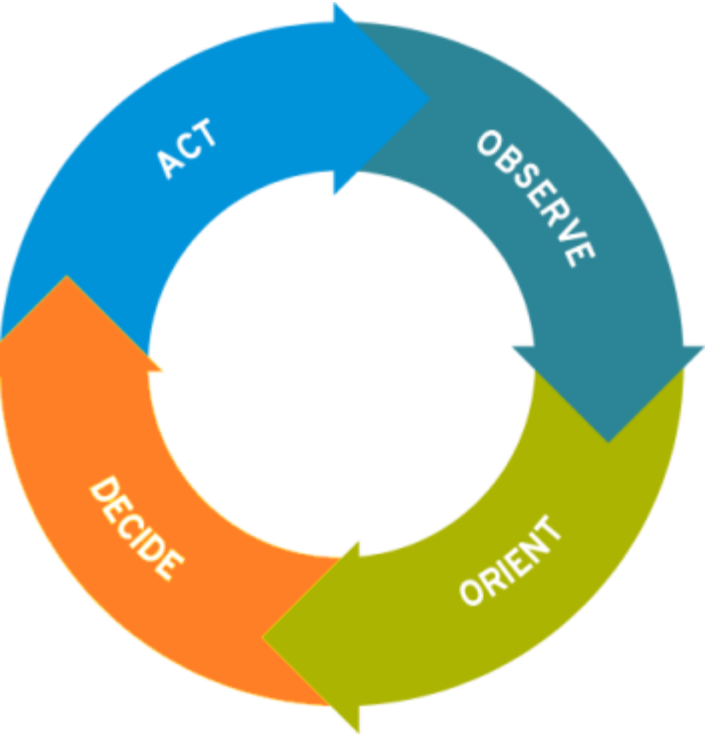


Multi-Dimensional

Cyber and Network Preeminence



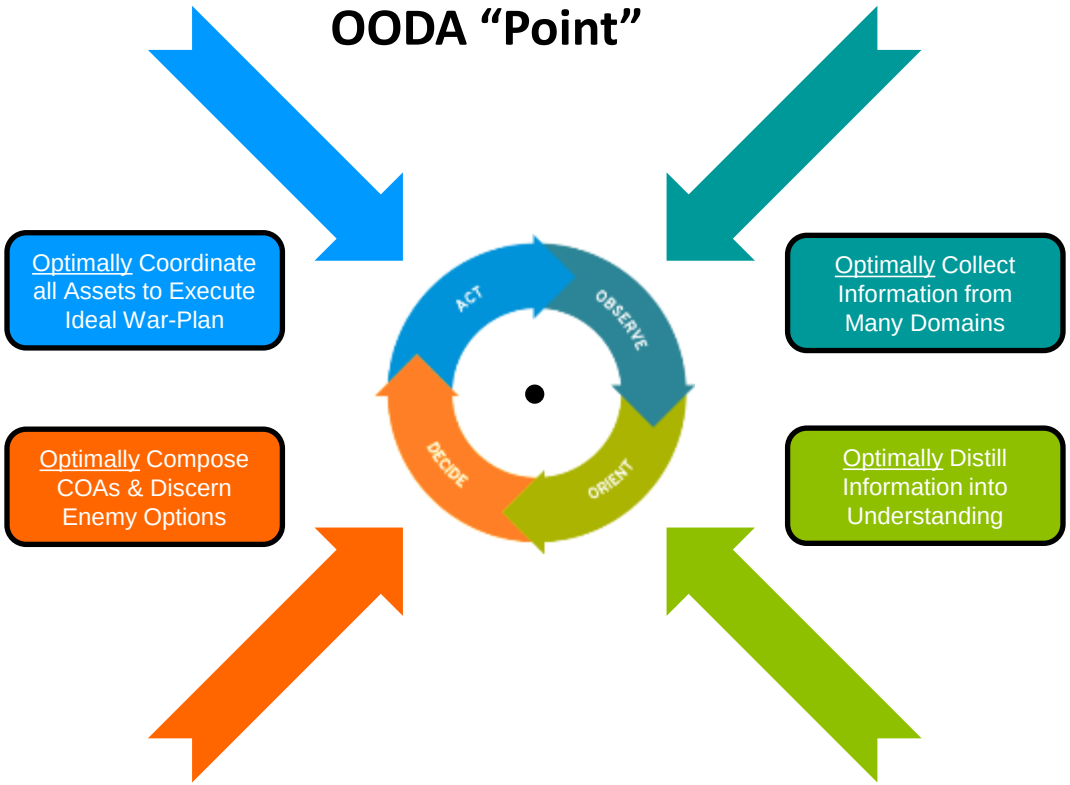
Existing OODA Loop



Human Limitations

- Observe
  - Too many sources
  - Changing information
- Orient
  - Too much data
  - Bias/Distractions
- Decide
  - Staffing process
  - Bottlenecks
- Act
  - Occurs only after decision
  - Inefficient execution

AI's Gift to Warfighting

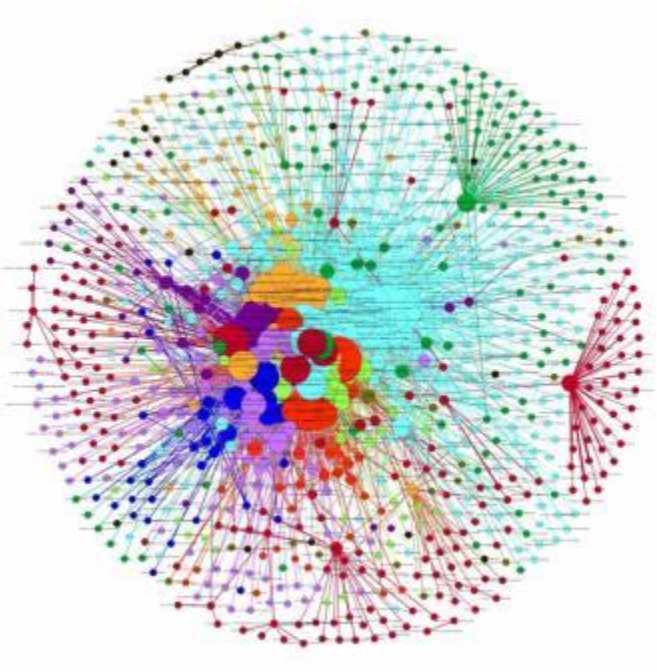


Advantages of AI

- Adaptive
- Parallel Processes
- Exploit Bias
- Quality/Quantity of Info
- Filter Chaff
- Faster Decisions
- Engineers n^{th} Order Effects

Technology Trend to AI

- Amazon
- PALANTIR
- Quantum Computing



Swarm Capability

Scalable, cost-effective, and decentralized to overwhelm adversary A2/AD capabilities

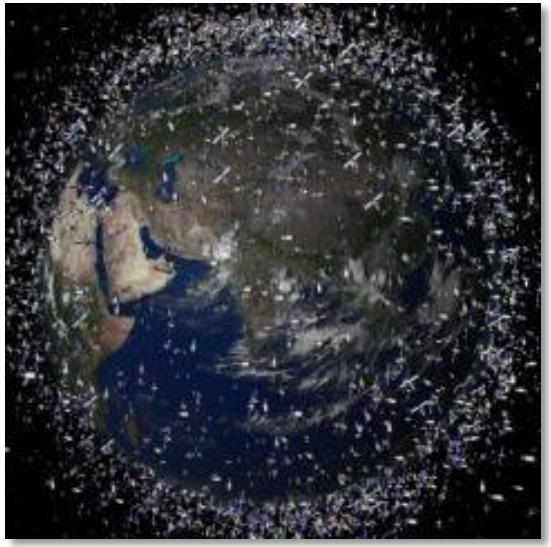
- Modular Payloads: ISR, Kinetic, Cyber and/or Electronic Warfare
- Ready to incorporate future tech

- Autonomous: Individual units do not require individual control
  - Independently optimizes mission requirement
    - Elegantly degrades

Space Significance

- Satellites serve as a global data transmission network
- Organic ISR and GPS capabilities

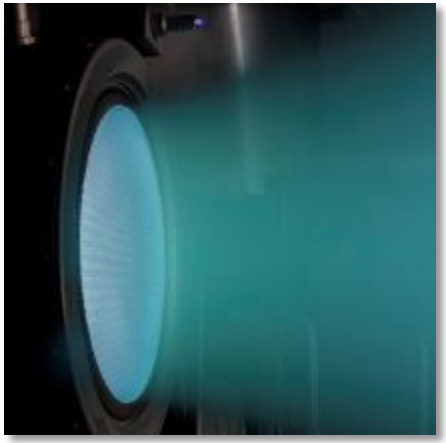
- Adversaries have anti-satellite capability
- Intentional space debris creation as an adversary A2/AD strategy



Space Debris in Low Earth Orbit

Space Superiority

- New propulsion technologies increase maneuverability
- Enhanced launch vehicle design reduces the cost of space launch



Xenon Thruster

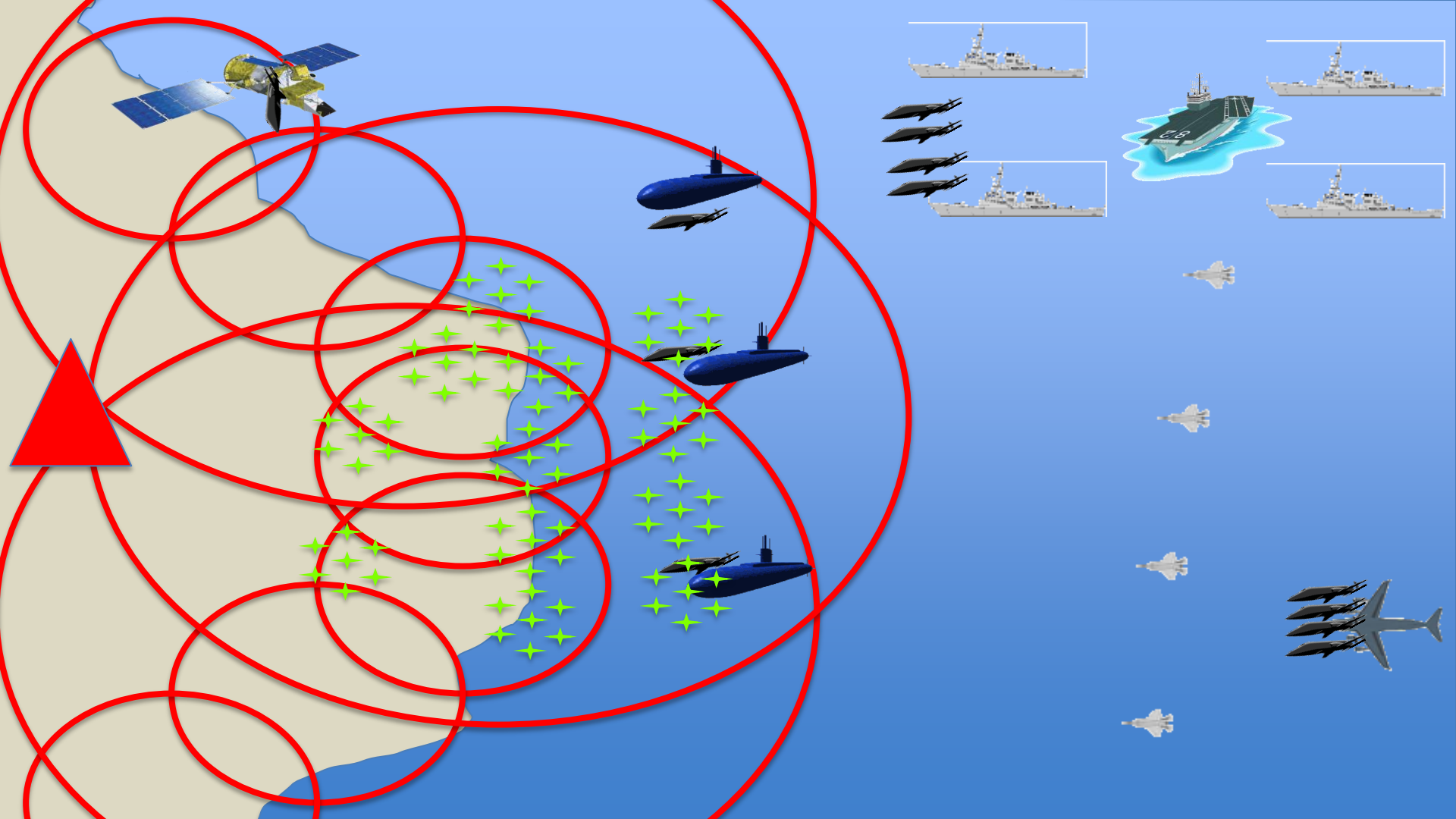
Blue Origin Rocket

Space Superiority

- Establish a constellation of satellites equipped with high powered lasers
  - Protect the information pipeline

- Defensive capability
  - Ability to counter anti-satellite missiles
  - Laser Broom

Space Based Laser



Integrated Information Effects

2nd Order

- Neutralize A2/AD capability; cripple infrastructures
- Intellectual Property Protection
- Cyber fingerprinting of malware
- Decision Herding
- Cyber ISR (useful in irregular warfare)

3rd Order

- Civilian applications of cyber gains
- Adversary has limited influence in global network
- Adversary expends resources attempting to duplicate (perpetually behind)

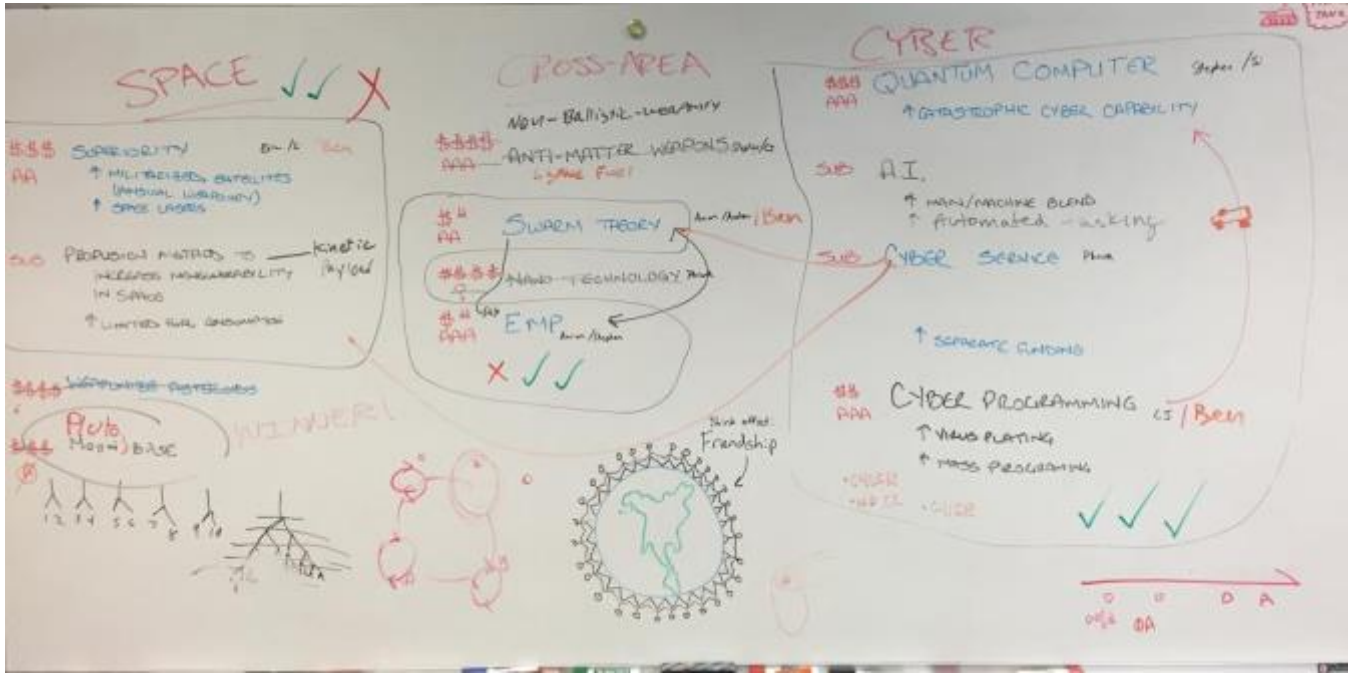
Summary

Integrated Information Preeminence provides…

- Asymmetric Advantage
  - Not easily imitated or neutralized
  - Provides ability to deter aggressive acts and project global power
- Agile
  - Applicable to wide spectrum of scenarios and adversaries
- Affordable
  - Cost-imposition curve; cheaper than enemy's means to counter

…using near-term technologies.

Questions



INFORMATION PREEMINENCE

"Control the Information, Control the Battlespace"

Think Tank Members

Team One

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Capt Si Ferrel
Capt Aaron French
Capt Eric Hickernell
Capt Stephen Kinn
Capt Andrew Radloff
Capt Ben Williams
Capt CJ Yerage

BACKUP

Framing the Problem and Solution

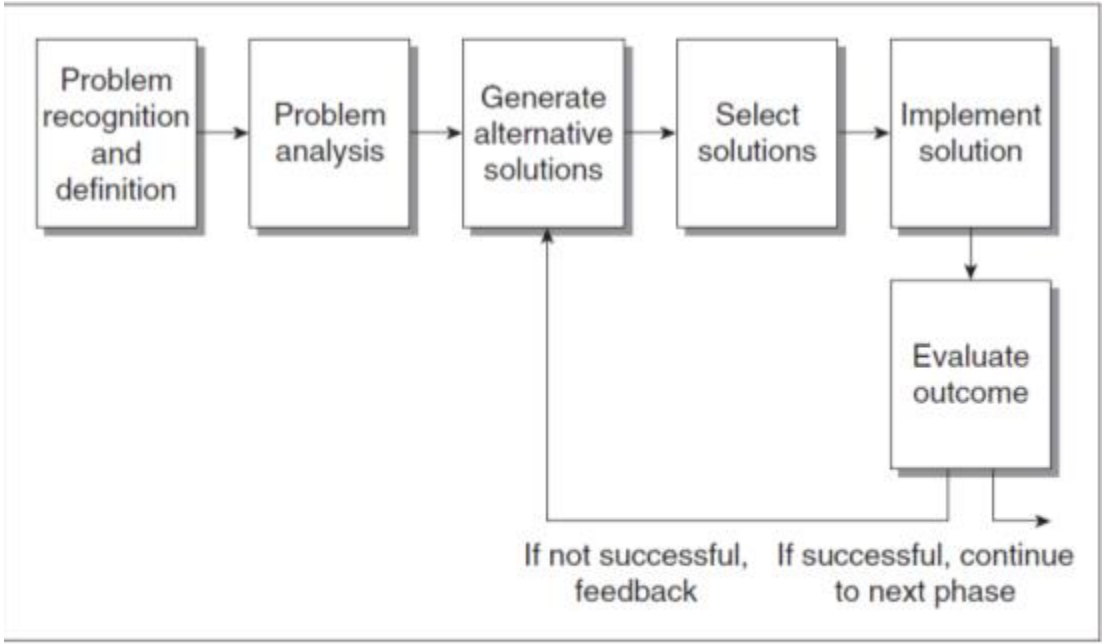

Figure 11.1 Rational Problem-Solving Approach

SOURCE: Adapted from Dewey, J. (1910).

Quantum Computing

Image Sources

- http://www-mobile.ecs.ac.uk/newcomms/?=res/int/quantum (Slide 8)
- https://en.wikipedia.org/wiki/Space_debris#/media/File:Space_Junk.jpg (Slide 9)
- http://www.bibliotecapleyades.net/ciencia/ciencia_laser01.htm (Slide 10)
- https://en.wikipedia.org/wiki/NEXT_(ion_thruster)#/media/File:NASA_NEXT_Ion_thruster.712983main_NEXT_LDT_Thrusterhi-res_full.jpg (Slide 11)
- http://www.techinsider.io/blue-origin-reusable-rocket-video-2015-11 (Slide 11)
- http://videohive.net/item/flying-swarm-of-uav-drones/12710618 (Slide 12)
- http://motherboard.vice.com/blog/you-should-probably-start-caring-about-quantum-computing-now- (Slide 18)