13th ICCRTS: C2 for Complex Endeavors

Prioritization Taxonomy for Net-centric Operations

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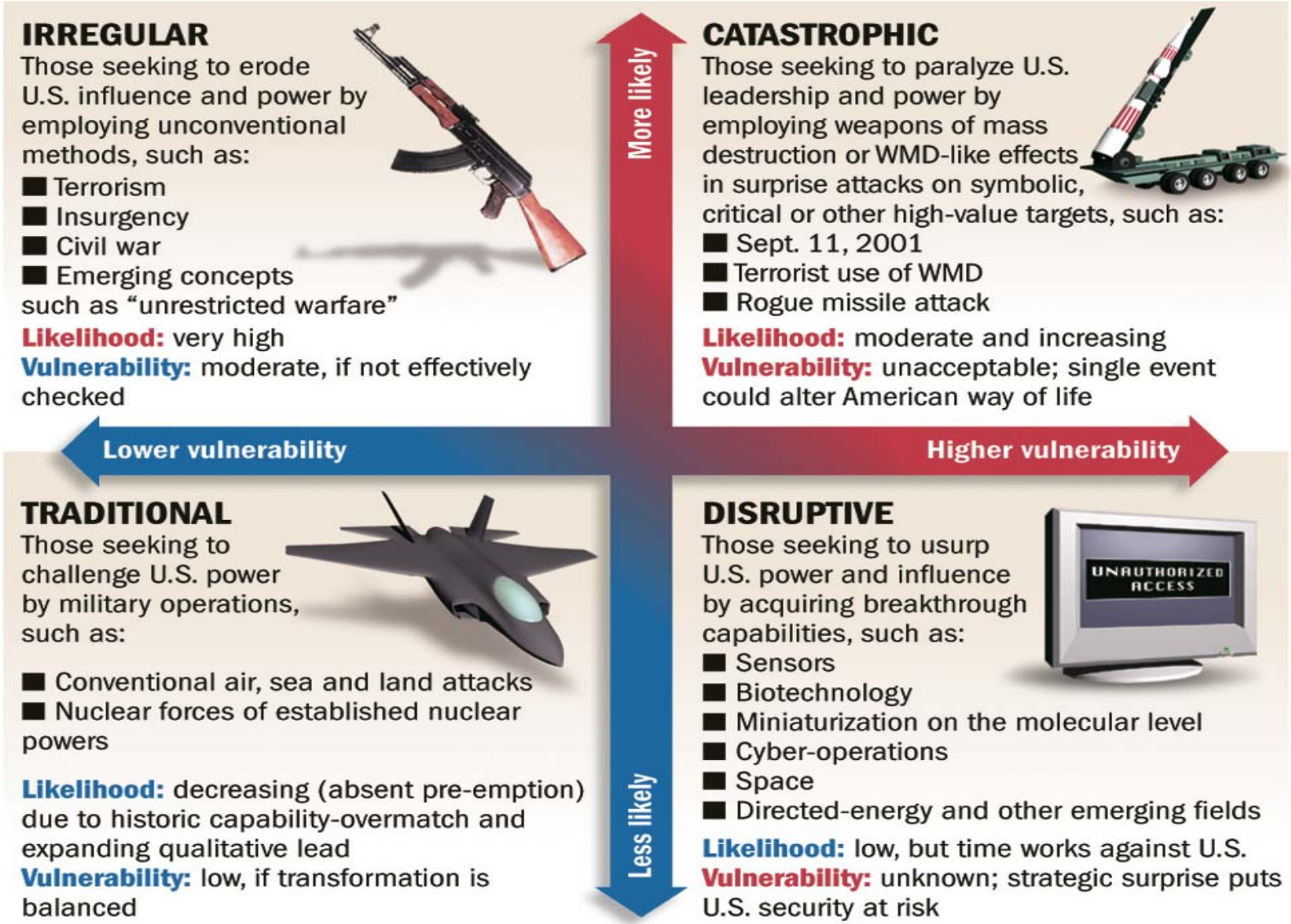
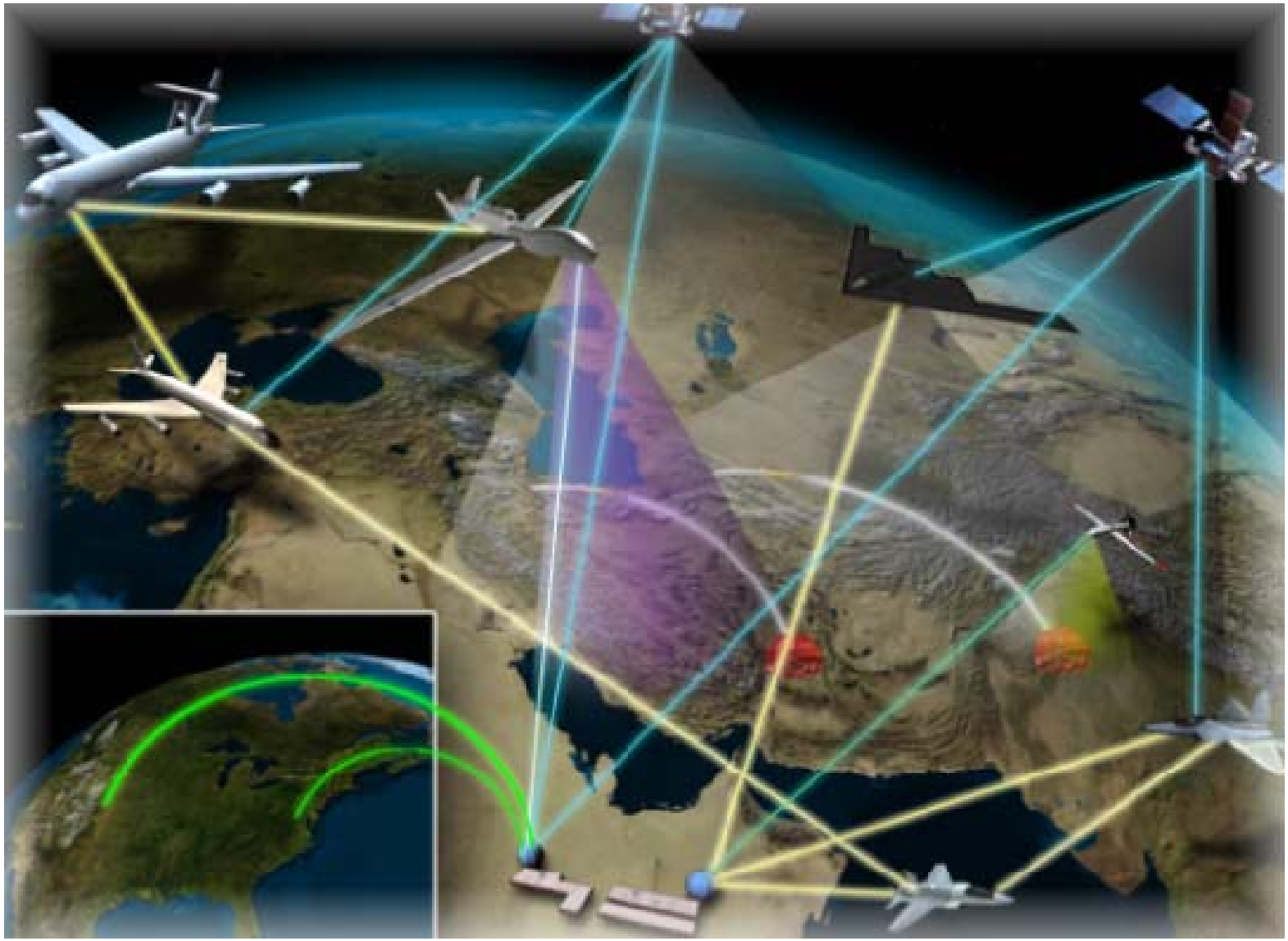
Outline

- Setting the stage
  - Future Challenges & the Warfighter's Vision
  - Information requirements in the Operational Environment
  - BMC2 101
- Prioritization
  - Notional taxonomy
  - Benefits
  - Collaboration support effects
- Summary

Future DoD Challenges
(Sources: NDS ’05 & QDR ‘06)



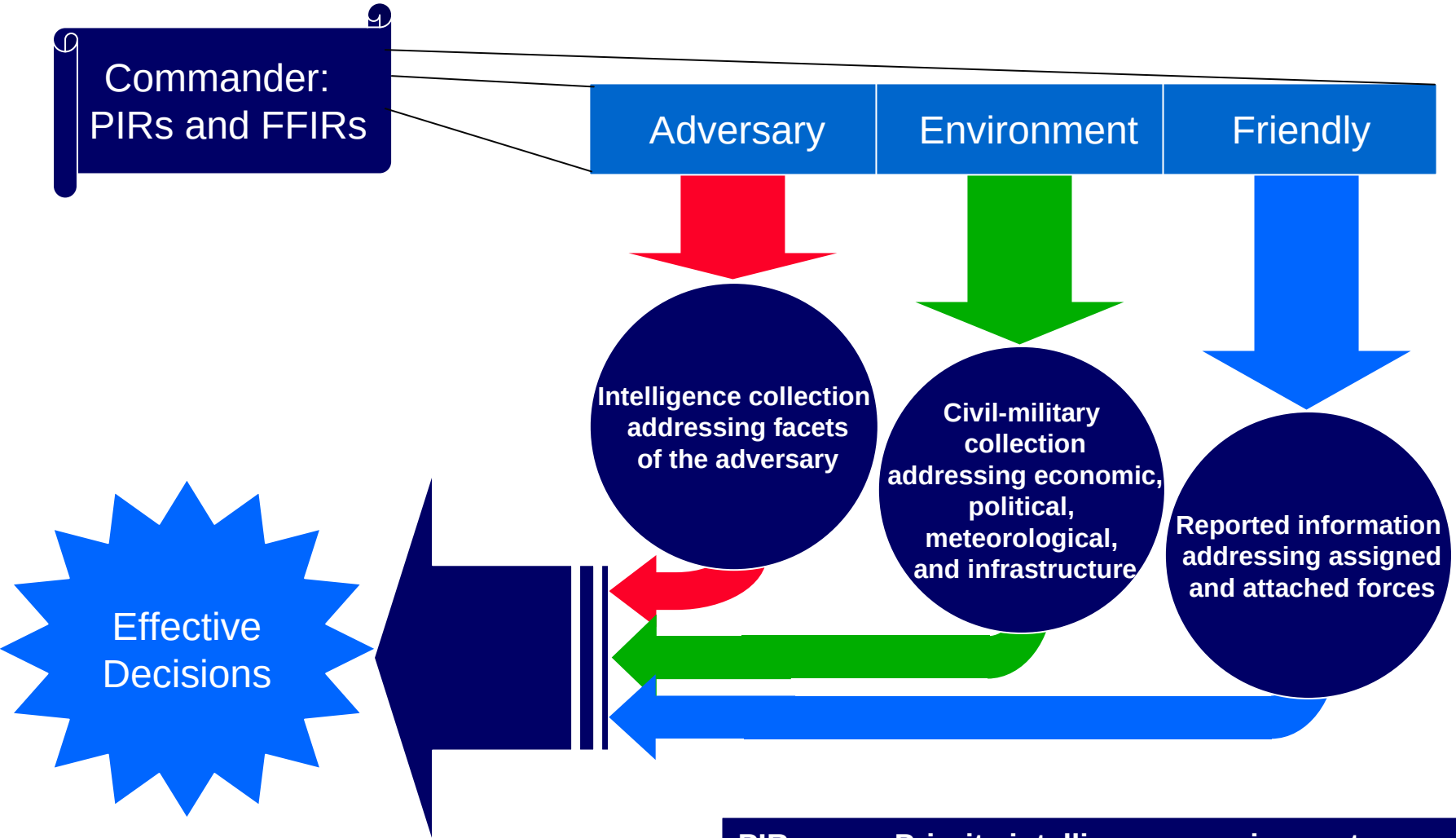
Warfighter's Vision
Air Component Execution



BMC2 101

- **JFC "Owns" the campaign**
  - **All ISR & C2 supports Commander's Intent**
- **Resource mgt (sensors, weapons, bandwidth, etc) is a function of JFC's priorities**
  - **Resources & budgets are finite**
  - **Resources are apportioned/expended wrt objectives**
  - **Execute the plan; respond to contingencies as needed**
- **In AOR, want 'Picture' as close to 'Truth' as possible**
  - **Sense, ID, and track all actors (to some level of fidelity)**
  - **Everything tracked has a *dynamic priority***
- **Need a common prioritization taxonomy for all BMC2**
  - **To ensure a smart, dynamic reallocation of resources**

Information Requirements Categories – JP 3.0 (17 Sep 2006)



PIR	Priority intelligence requirement
FFIR	Friendly force information requirement

What Constitutes Priority?

- Priority = ∫ {Identification, location, health / inherent capability, engagement status}
  - ID/CID – Friend, Neutral, Unknown, Suspect, Hostile
  - Location – Proximity to allied or enemy forces
  - Health/capability – Somewhat subjective measure of actor's potential for mission success
  - Engagement status – Potential for battle damage or neutralization
- Primary contributing factor is ID (or CID)
- Priority is dynamic – these factors can change over time

Notional Prioritization Taxonomy

900- 999: Hostile targets & Engaged US/Allied Forces

800- 899: Manually designated high priority (e.g. CSAR, SOF, etc)

Manual ID (ROE)

700- 799: Suspects (potential Hostiles; automation limit)

600- 699: Unknowns, Tracks of interest (ID sensor tasking)

500- 599: Unengaged US/Allied combat forces in AOR (high update)

400- 499: Non-combatants and Neutral Forces in AOR

300- 399: US/Allied military forces in AOR (slow update rate required)

200- 299: US/Allied military forces outside AOR, not on ATO

100- 199: Noncombatants, outside AOR (moderate update rate required)

000- 099: Noncombatants, outside AOR (slow update rate required)

Automated ID (ROI)

Considerations within taxonomy

Priority: 9 9 9

Is the Friend/Neutral reporting own position?

Is the Actor cleared to be engaged?

ES = 5-9
es = 0-4
IO = 0-4
ie = 5-9

Authorized operators can manually change priority/ID

Tens digit = System Capability (Hostile/Suspect/Unknown)

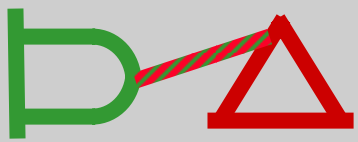
= Mission Category (Friend/Neutral)

Ones digit = Tracking accuracy required (F, N, S, H)

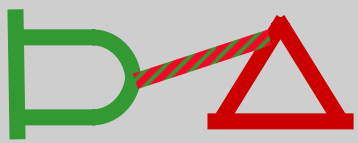
= Sensor tasking designator (U)

Dynamic Prioritization
Conventional Example

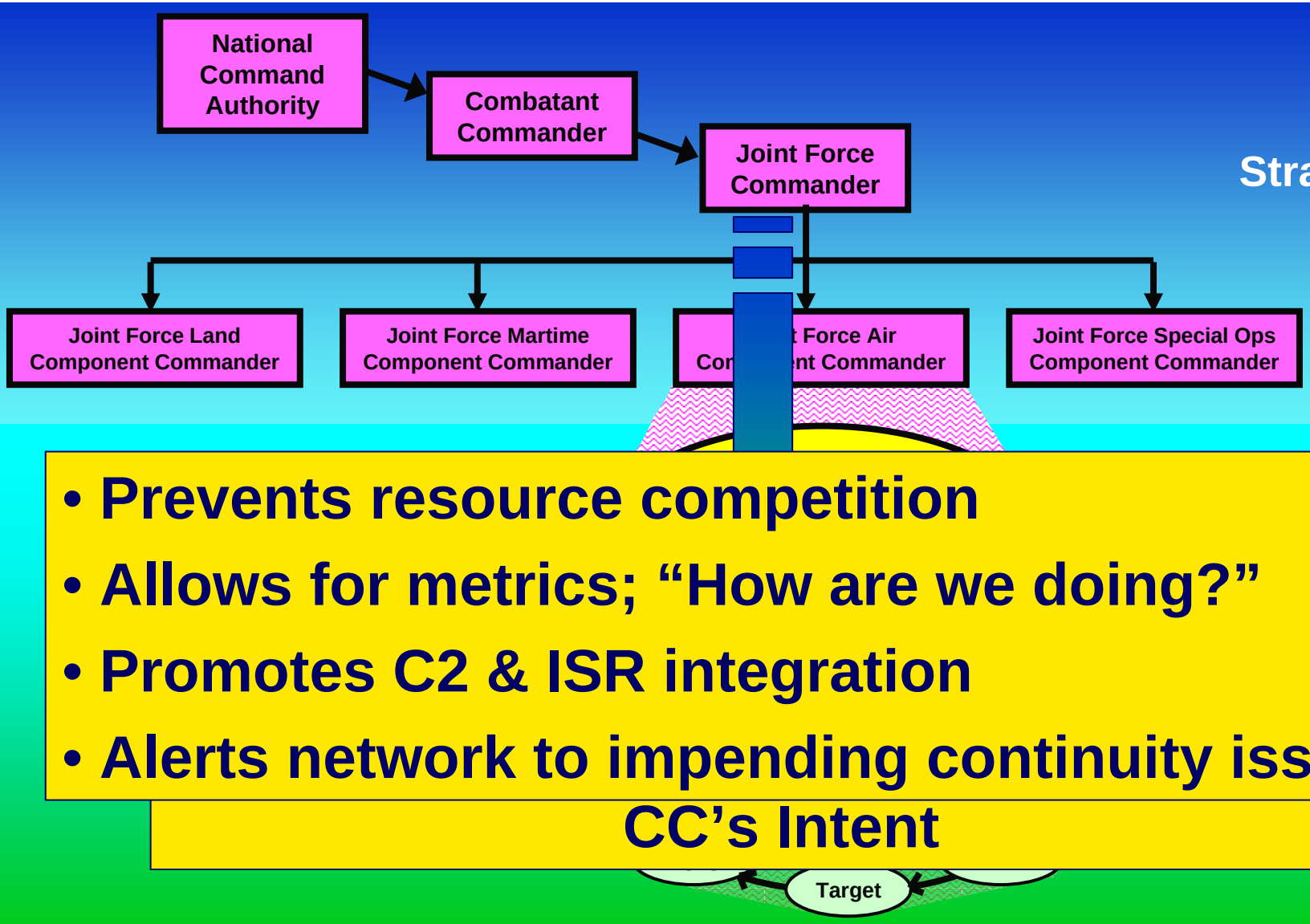
- Time 0: US F-15C flight on CAP in AOR, no PPLI
- Time 1: Unknown detected
- Time 2: CID info accumulated (ROI)
- Time 3: Hostile act committed (ROE)
- Time 4: F-15Cs cleared to engage
- Time 5: Tgt destroyed; F-15C damaged

Symbols	Priority
	595
	667
	775
	975
	975 (Both)
	899

Dynamic Prioritization
Catastrophic Example

	Symbols	Priority	Auto?
• Time 0: Intelligence received; ISR system searching		699	✓
• Time 1: Money transfers detected		699	✓
• Time 2: Suspect seen at airport		799	✓
• Time 3: Other suspects ID'd at port		799	✓
• Time 4: Intelligence update received		999	
• Time 5: Suspects apprehended; WMD materials recovered		999	✓

Benefits of Common Prioritization
Levels of War



- Prevents resource competition
- Allows for metrics; “How are we doing?”
- Promotes C2 & ISR integration
- Alerts network to impending continuity issues

CC’s Intent

Collaboration Support Effects
Information Leveling

- No one sensor can do it all; collaboration is mandatory
- Constant refinement of data (tracking, ID) to keep picture accurate
  - One actor = one symbol on ‘picture’
  - Differing vantages/capabilities across ISR network
    - Continuity
    - Discrepancies

    } require resource collaboration
- Need 3 IDs to counter corrupt data propagation:
  - ID Authority’s – official
  - Platform - sensed locally
  - Manual – awaiting ID authority’s review

Collaboration Support Effects

Achieving team synergy

- Missions are executed according to plans
- Plans become dynamic early in execution
  - Thinking enemies require flexibility
  - Changing environmental factors
  - Equipment malfunctions, mistakes are made, etc
    - Discrepancies between ISR platforms
    - Some info may not be “in” network
- Examples of team synergy
  - SOF team comes under attack
  - ISR platform unable to finish mission
  - Recognition of a cyber attack

Summary

Questions?

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