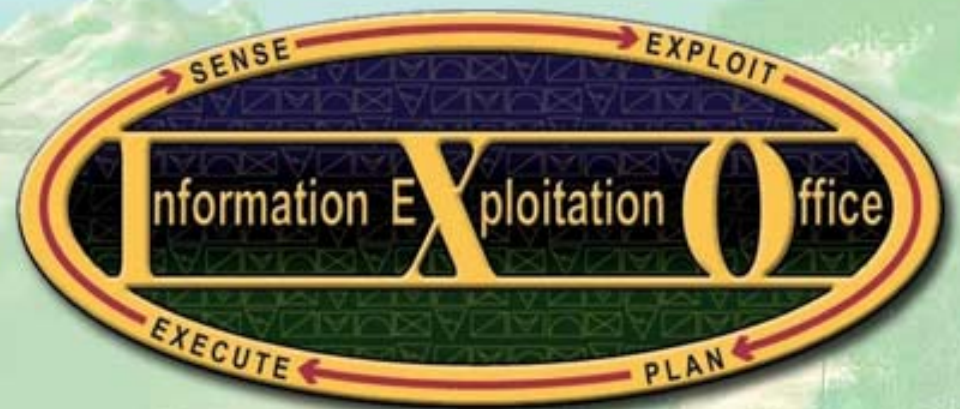




# Technology For C4KISR

## Meeting C4KISR Requirements: Implementing and Exploiting Technology Solutions



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# Report Documentation Page

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# Some of the New Challenges



## Wide Spectrum of Targets



Opponents will take advantage of delays or shortcomings in quick reaction targeting capabilities to shelter their weapon systems

## Diverse Battlefields



TERRAIN

COMPLEX

URBANIZED

## New Rules of Engagement

- Precise, high-confidence target identification
- Minimal inadvertent collateral damage / undesired effects

# C4KISR Changes Needed

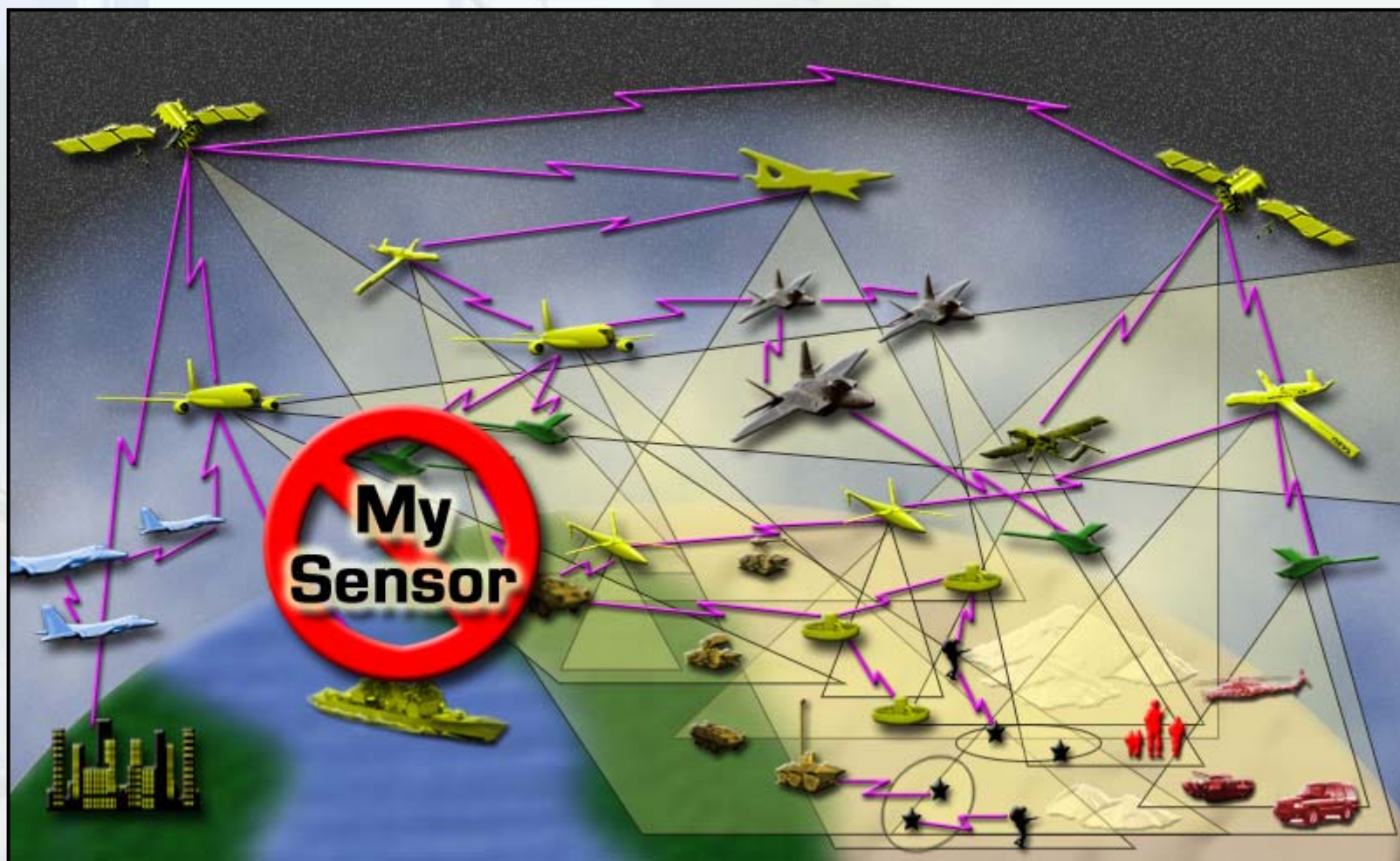


- You can't put at risk or attack specific, ROE-restricted targets if you can't find them
  - Novel sensors for new targets, environments, and functions
  - Sensor exploitation with precision target identification and birth-to-death tracking
- You can't kill mobile targets by "rapid decisive actions" if your command systems are too slow
  - Dynamic command and control
  - Advanced weapon seekers, guidance and communications
- You can't get synergy if you can't share information
  - Integration among information systems
  - Collaboration among people and machines

We need to develop new transformational capabilities to find, precisely identify, track, attack, and *kill* targets

$$\left. \begin{array}{l} \text{C4ISR} \\ + \\ \text{Kill} \end{array} \right\} \frac{\quad}{\text{C4KISR}}$$


# Vision: A Ubiquitous C4KISR Web



# Vision: A C4KISR Paradigm Shift



Predictive battlespace awareness

Ubiquitous multi-discipline sensor networks

Sensors for any target, any environment, any location

Sensors for precise target identification

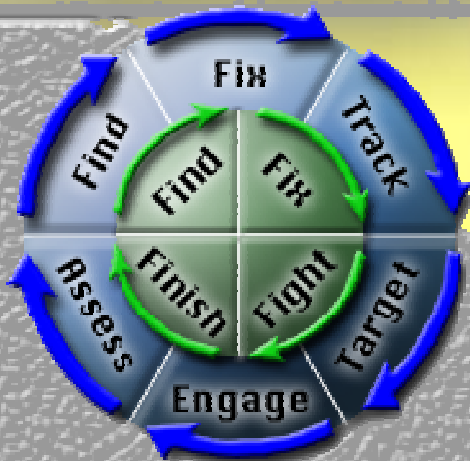
Multi-sensor data exploitation

Continuous target localization and tracking

Dynamic planning and assessment aids

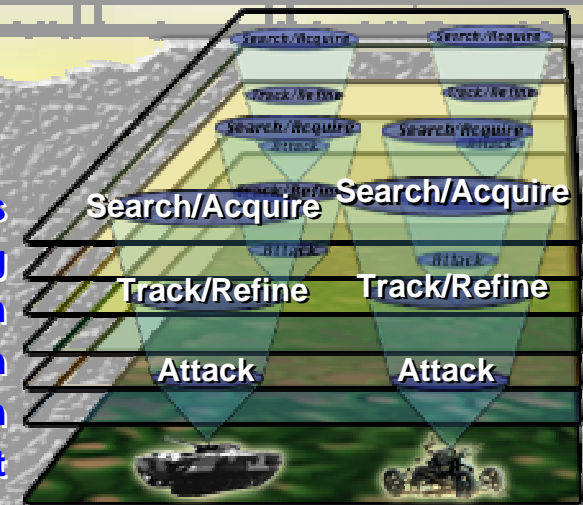
Highly automated execution monitoring and BDA

## *Building a Bridge across the Technical Divide*



**Current Paradigms**

- Multiple targets
- Distributed sensing
- Seamless integration
- Precise identification
- Actionable information
- Continuous assessment
- Multiple confirmed kills

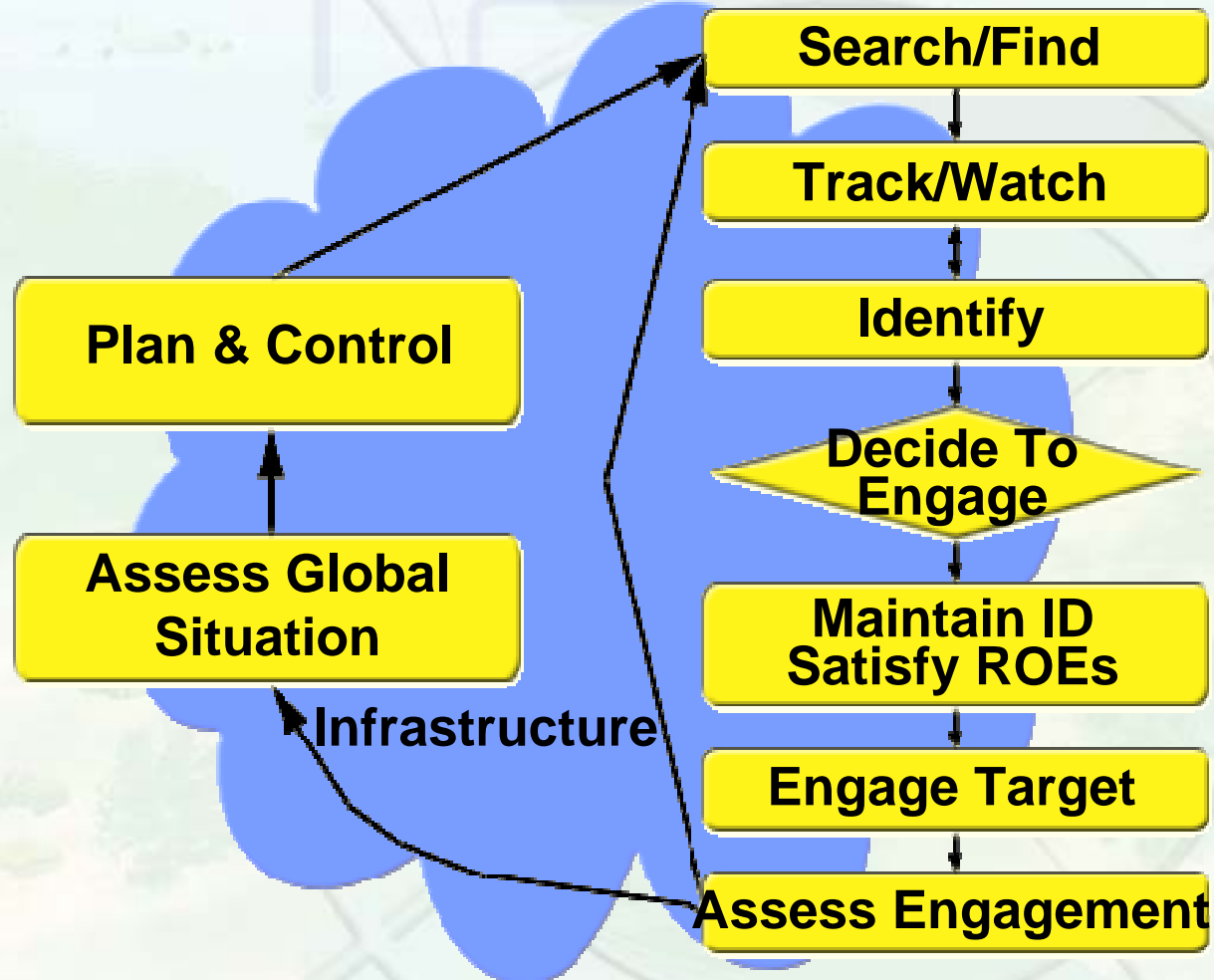


**New Paradigm**

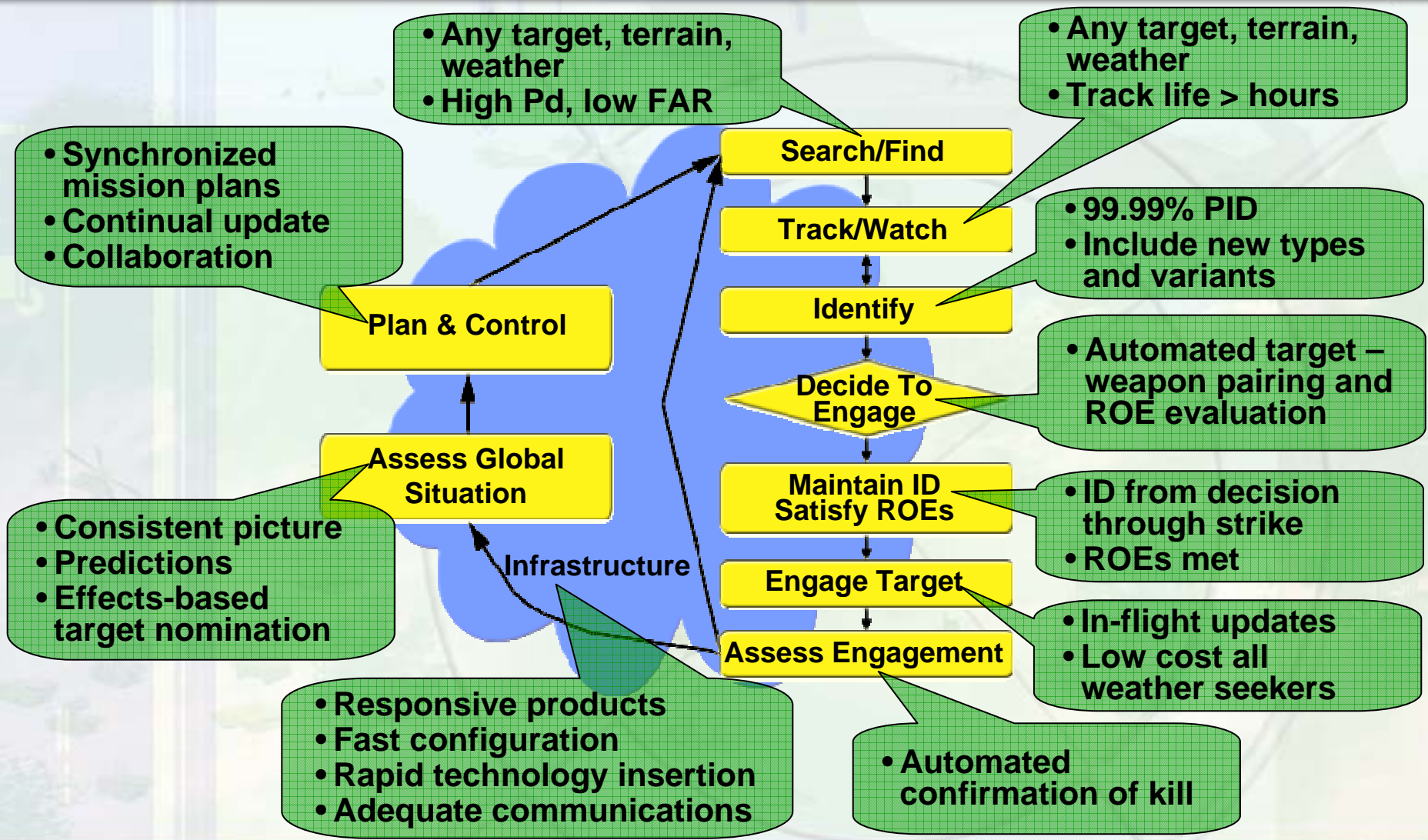
Continuous, dynamic, synchronized, networked, seamless interaction between sensors, exploiters, planners and killers to create virtual sensor to shooter links



# C4KISR Model



# Some Science and Technology Goals





# Summary



**Mission: Create and transition technology to precisely put at risk, attack, and kill any ground target, anywhere, any time**

- **We must adapt and transform C4ISR to counter new threats**
- **We must put the “Kill” into C4ISR systems**
- **May require painful paradigm shifts**
  - Networked ISR (sensors and processing)
  - Merging of C2 and ISR
- **DARPA IXO thrusts include:**
  - Find and attack any ground target, anytime on any battlefield
    - With precise identification complying with ROEs
  - Agile and dynamic joint operations
  - Hold dismounts at risk

