Modeling C2 Agility to Meet the Demands of a Distributed Force

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Agenda

- **Environment**
- **MITRE's Evolution of the Concept**
- **IDA's C2 Agility Work**
- **Collaborative Study**
- **Future Steps**

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Current Environment

- **CCJO Vision 2020***

  – The key feature of such operations is the ability for a Joint Force to "quickly combine capabilities with itself and mission partners across domains, echelons, geographic boundaries, and organization affiliations."

- **Increasing Budget Constraints**

  – Require a distributed force structure to support CCMD operations from strategic reachback

  – Centralize EUCOM's targeteer force structure

*Capstone Concept for Joint Operations: Joint Force 2020, 10 Sept 2012
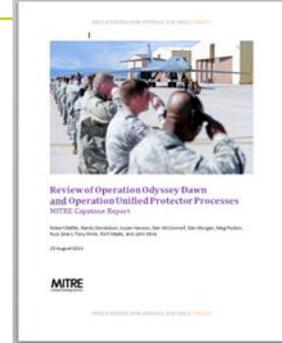
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Evolution of Concept

CENTCOM

AFRICOM

(Libya)

Afghanistan
USD(I)
PED Study

Capstone Report

Review of Operation Odyssey Dawn and Operation Unified Protector Processes
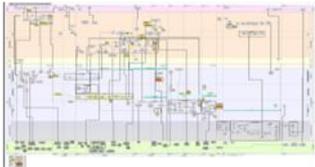MITRE Capstone Report

MITRE

USEUCOM

Austere Challenge '10

Capstone Report

Coalition Air Ops

OOD

OUP

Operations

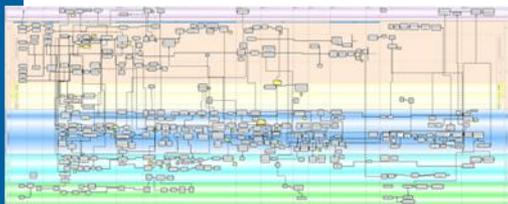**Force Reduction**

USEUCOM

Joint (DoD) Targeting

CENTCOM

IJC Targeting Process

Operational Training Events

MITRE Project
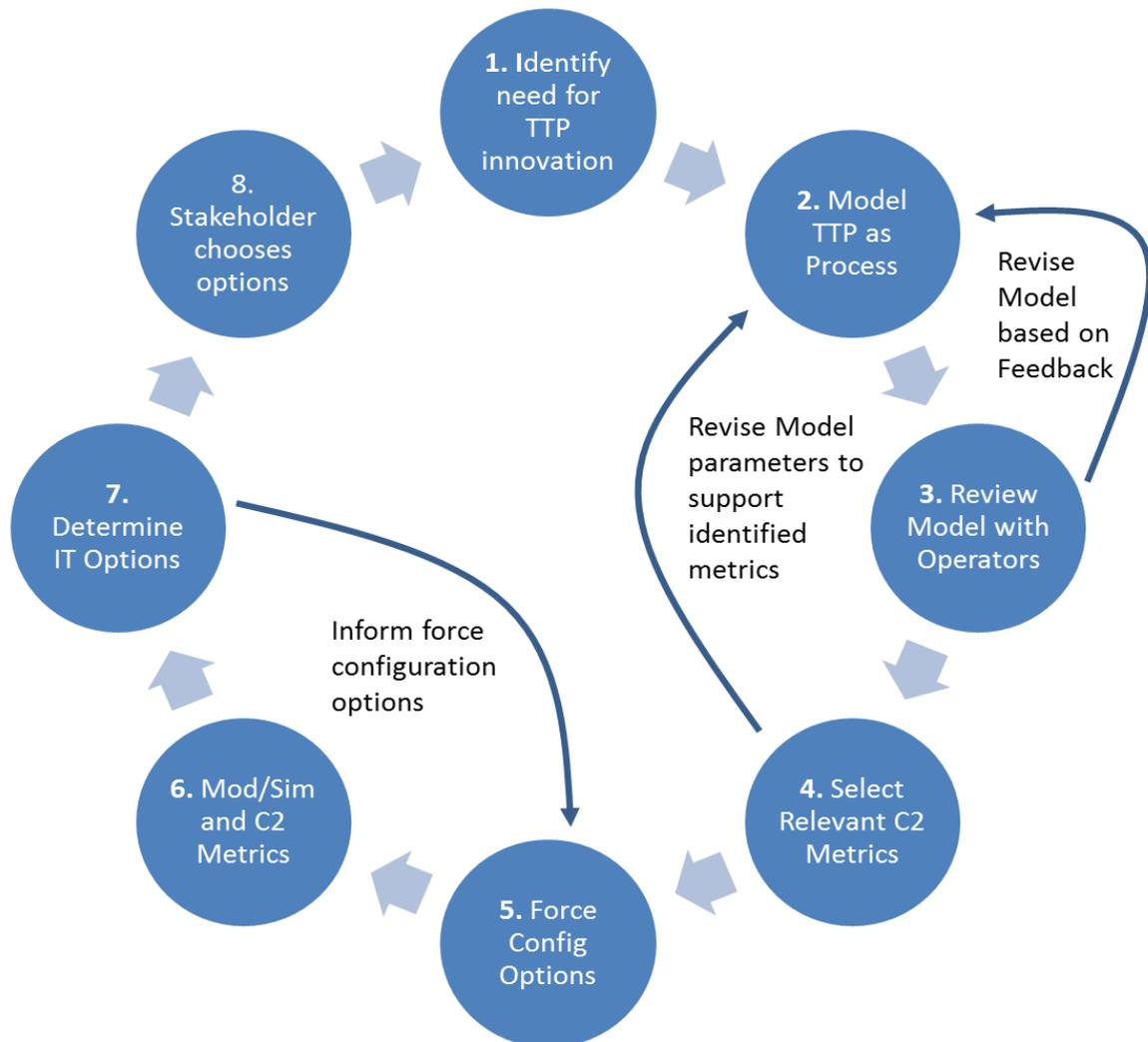
Lessons Learned
– AAE Analysis –

Acquisition Program Improvements

DOTMLPF Improvements

ISR Commander's Handbook (Draft)

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MITRE's Mission Command Modeling Methodology

Diagram of cyclical methodology:
1. Identify need for TTP innovation
2. Model TTP as Process
3. Review Model with Operators
4. Select Relevant C2 Metrics
5. Force Config Options
6. Mod/Sim and C2 Metrics
7. Determine IT Options
8. Stakeholder chooses options

Revise Model based on Feedback

Revise Model parameters to support identified metrics

Inform force configuration options

- **MCM2 is applicable for TTPs under stress (budget, technology, personnel, etc.)**
- **MCM2 generates and measures a variety of configurations and TTPs using modeling and simulation, and measures the resultant performance in context with the operational process**
- **MCM2's operational context gives decision makers options in useful terms**

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C2 Agility

- **IDA working on representation of C2 Agility in terms of 3 factors**
  - Distribution of Information Among Entities
  - Patterns of Interaction Among Entities
  - Allocation of Decision Rights to the Collective
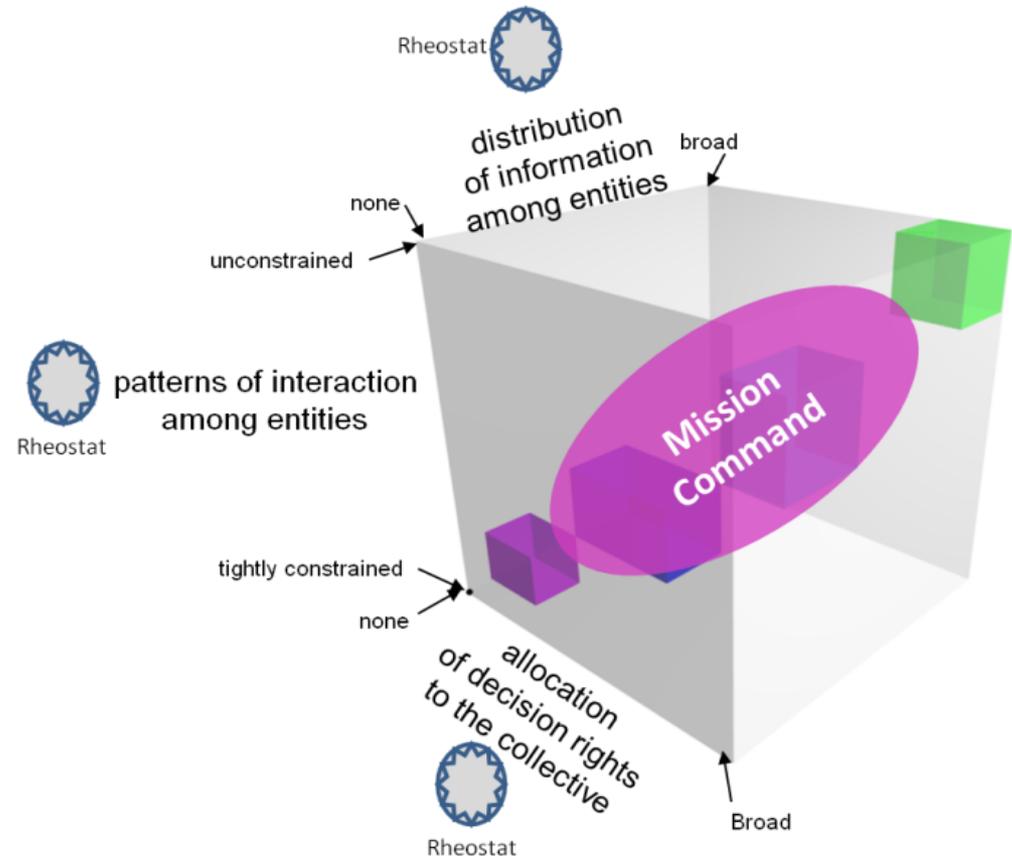
# Targeting Process in Terms of C2 Agility Factors

- **DoD Targeting Process was simulated enabling EUCOM Targeting Chief to understand Staffing Implications of the Target Development Process**

- **The Simulation was modified slightly to highlight the ability to measure the process performance based on C2 Agility Factors outlined by IDA**

  - The quick turn study bounded what could be done for this proof of concept

  - Obtained feedback from EUCOM Targeting Chief
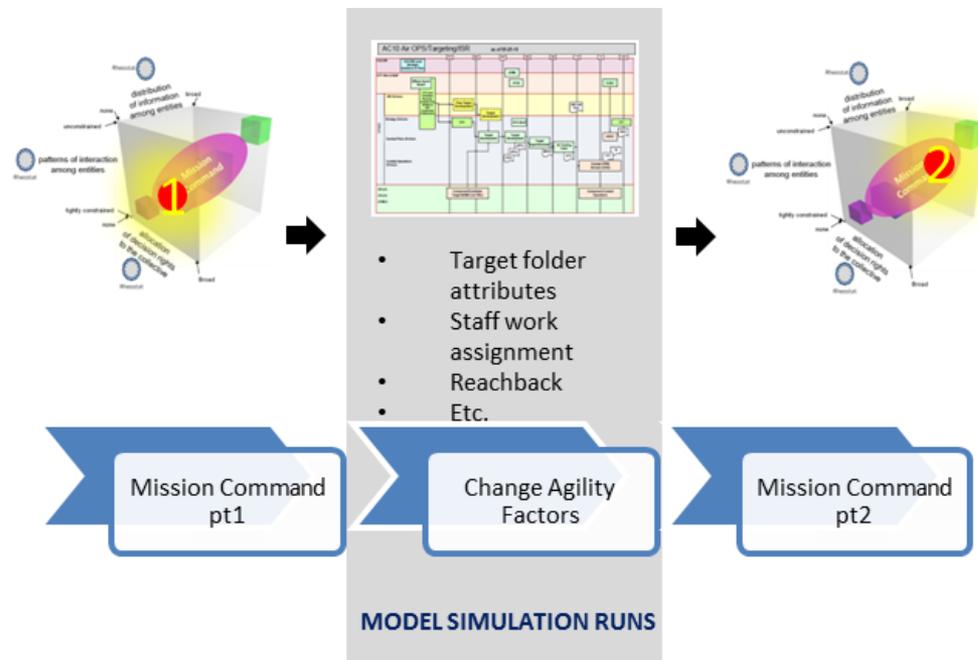
Translating C2 Maturity Model to Process

- **Pattern of Interaction (distribution across resource centers)**
  - Target Development data flow is federated across the globe
    - Target development data flow is currently managed through e-mail for staff assignments (fixed allocation)
    - Simulation: Varied the target development data flow to staff elements for assignment; as a push (current e-mail structure) or as a pull (staff elements can select based on their utilization)
- **Delegation of Decision Rights**
  - Target Folders are subjected to Vetting and Validation boards
    - Target Folders are Vetted and Validated at Decision Boards that occur at specific times
    - Simulation: Allowed Priority Target Folders to be Vetted and Validated as they were developed or still subjected to board schedules

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Simulation Results–Base C2 Approach

Average Joint Targeting List (JTL) Target Development Time
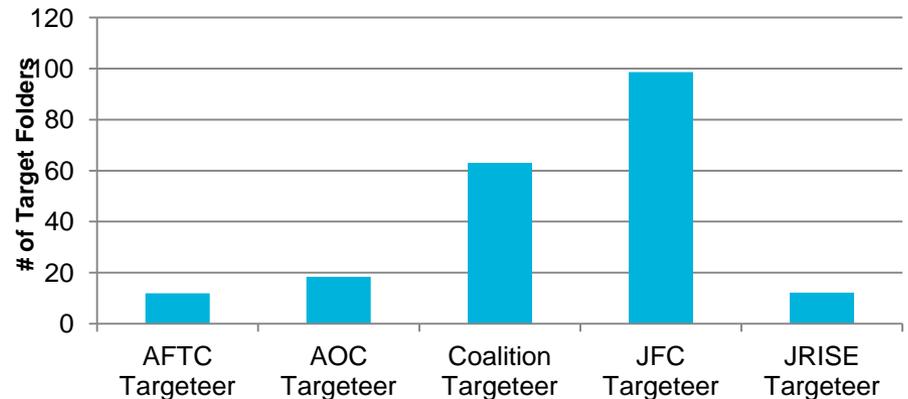

Resource Utilization
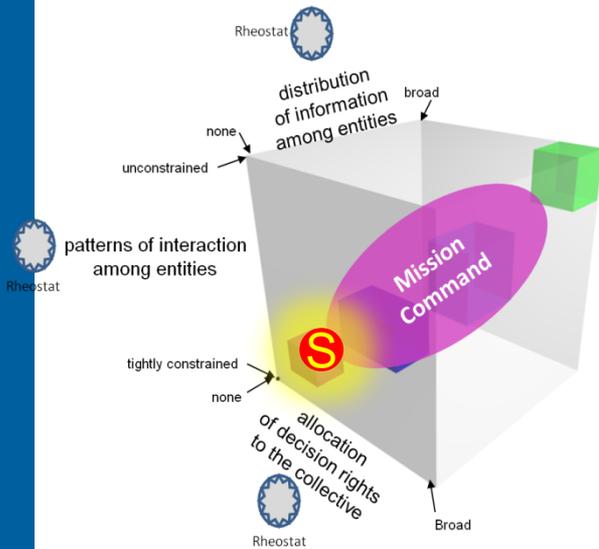
Ⓢ Start-point - currently:
Target development data flow through e-mail (fixed allocation) and the decision boards follow a specific timetable (no targets getting vetted/validated outside this process
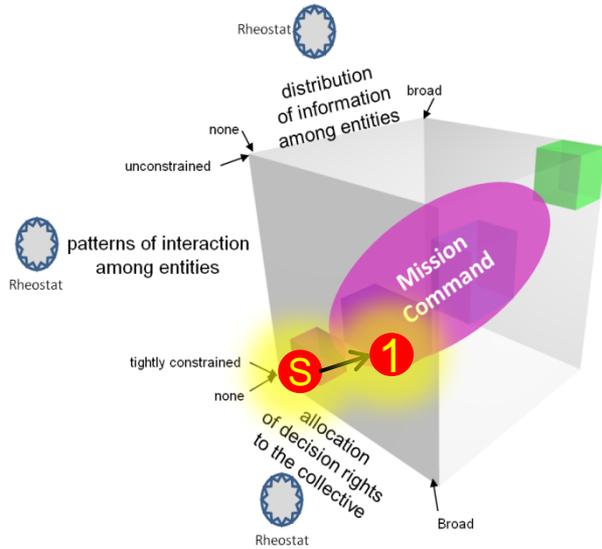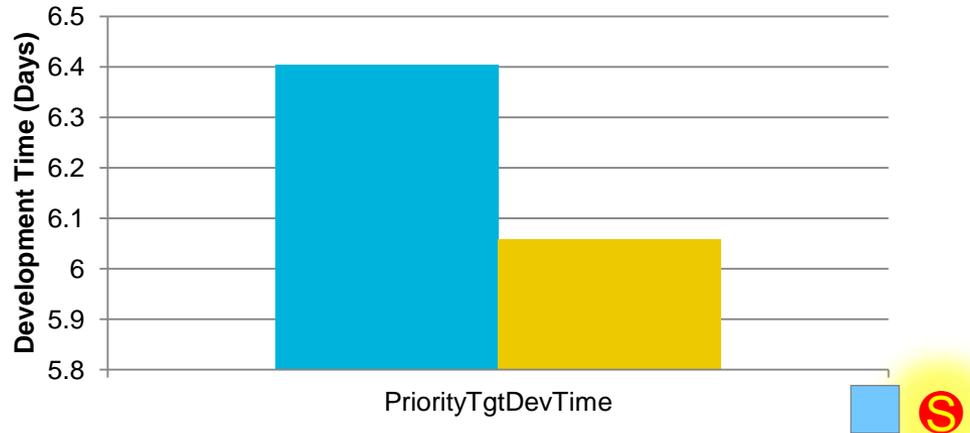
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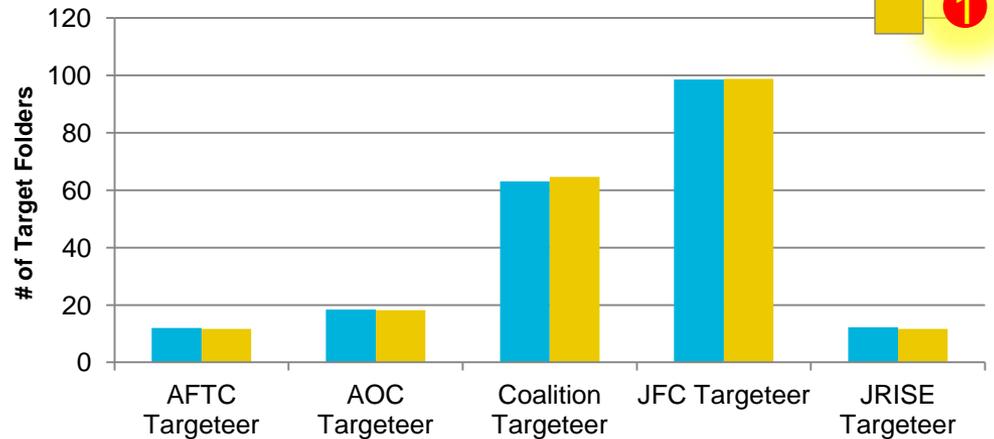# Rheostat #2: Change to Delegation of Decision Rights

1 Allow for Priority Targets to be worked (Vetted/Validated) outside standard operating procedure (as ready v. specific time)
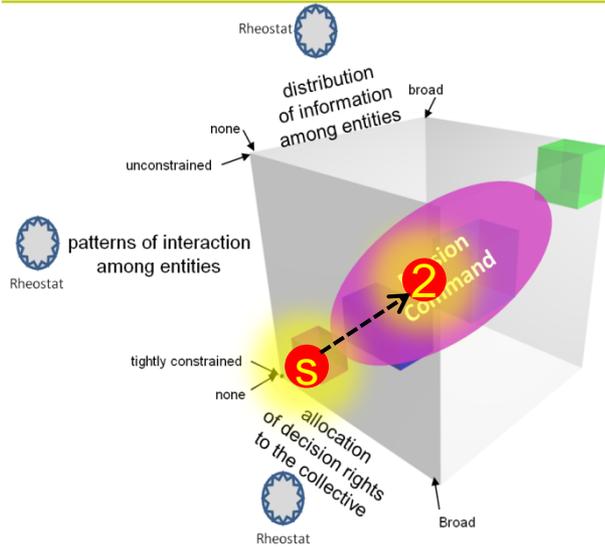
Average Priority Target Development Time

PriorityTgtDevTime

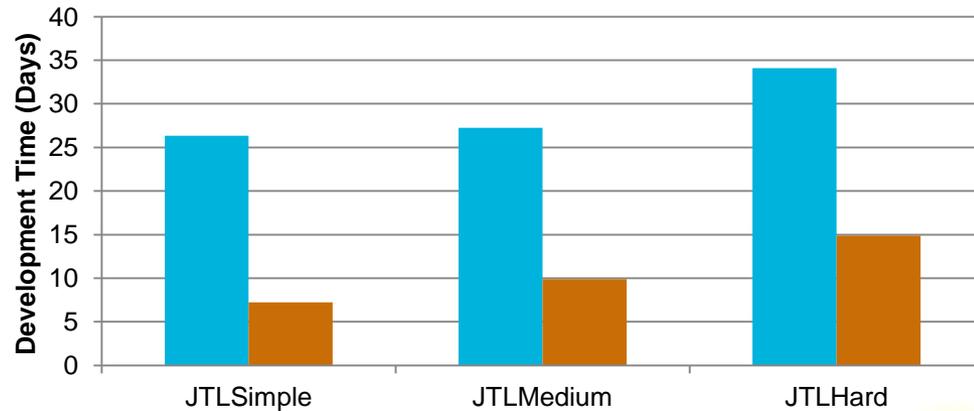**Resource Utilization**

Overall Priority Target Development Time Decreases

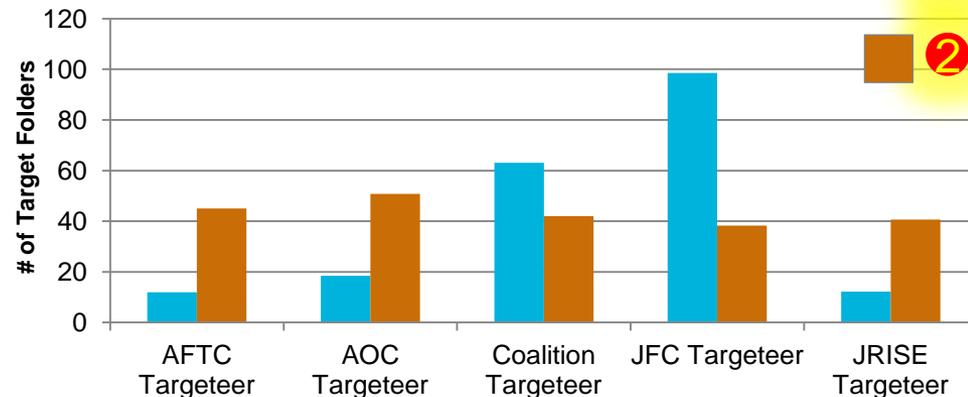# Rheostat #1: Change to Patterns of Interaction Among Entities

② Adjusting the target development data flow, we move up the patterns of interaction among entities axis and along the distribution of information among entities axis (i.e., shared folder v. email)

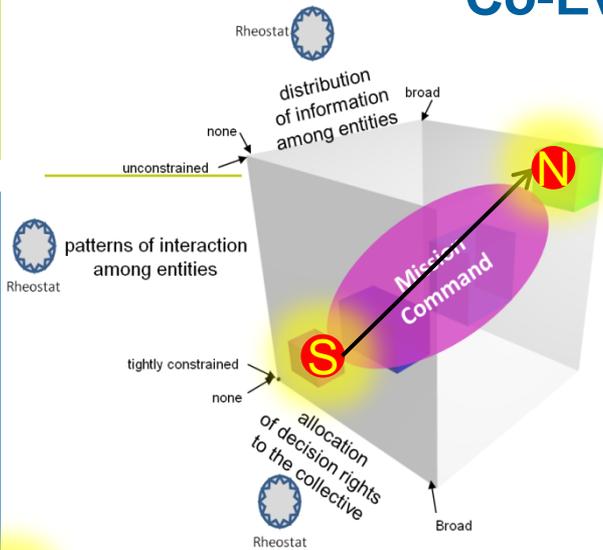**Average JTL Targeting Development Time**
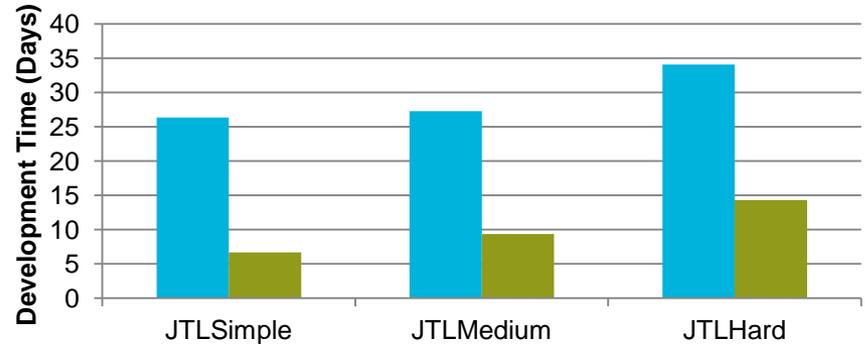

Resource Utilization

JTL Development Time Decreases and Resources more Effectively Utilized

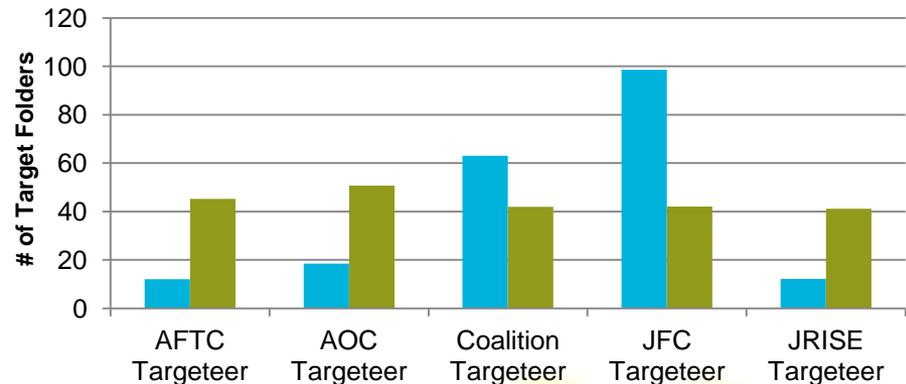**MITRE**

Co-Evolved New C2 Approach (all changes)

N Allow for priority targets to be vetted/validated outside standard operating procedure (as ready v. specific time) and resources assigned based on utilization (shared folder v. email)
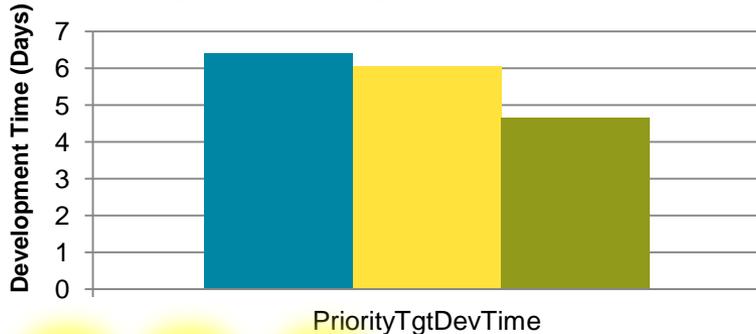
Average JTL Targeting Development Time

Resource Utilization

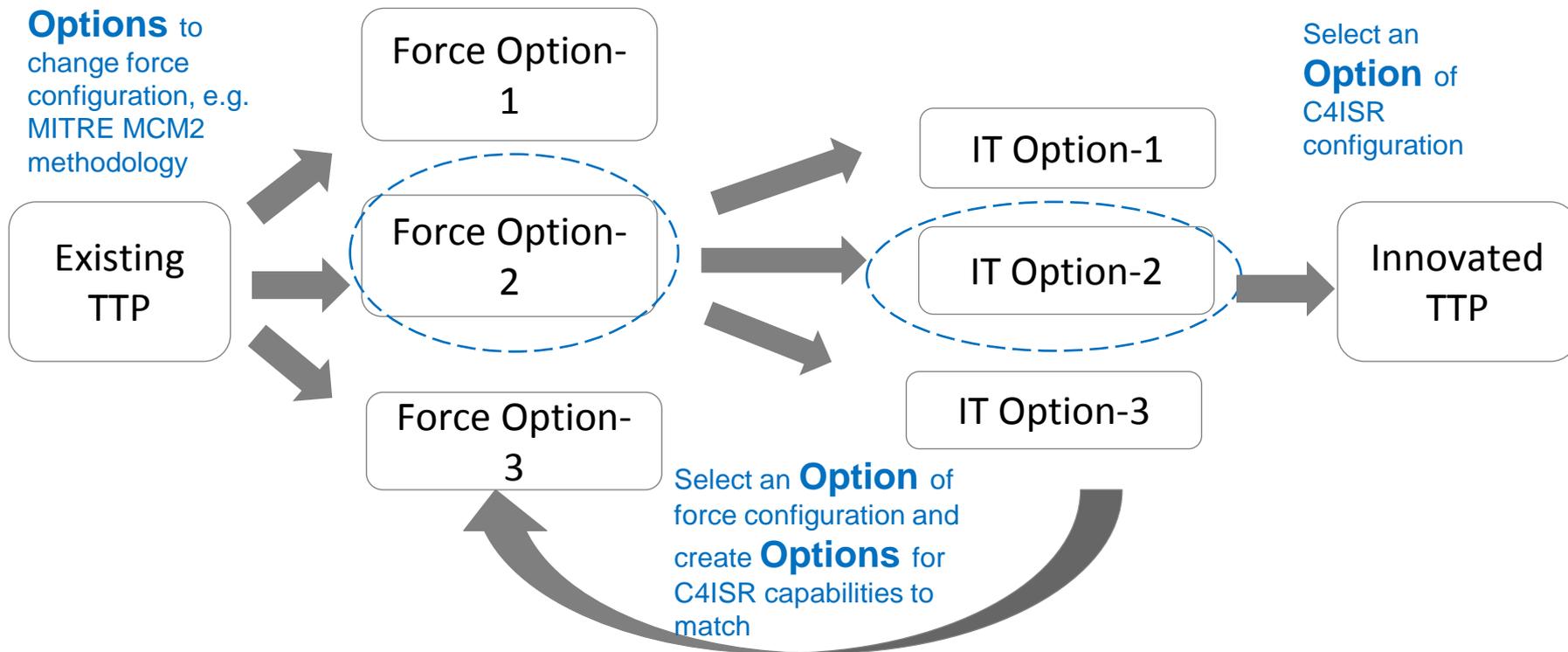**Average Priority Target Development Time**

JTL & Priority Tgt Development Time Decreases and Resource more Effectively Utilized

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Summary of Study

- The C2 Agility paradigm consists of meaningful measures for targeting performance discrimination.

- The DoD targeting process contained the key process detail to adapt to a meaningful model.

- The approach permitted meaningful identification of parameters, sequenced for effective assignment to depict useful causal relationships for analysis.

- The Simulation of the **DoD Targeting Process was able to measure performance impacts on the Targeting Process based on movement along axes in the cube**

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Future

- **Incorporation of IT with the processes/TTPs**
- **Measure adaptability related to changing force configurations, including IT**
- **Relate execution performance of a TTP to overall mission effectiveness**

Options to change force configuration, e.g. MITRE MCM2 methodology

Existing TTP

Force Option-1

Force Option-2

Force Option-3

Select an **Option** of force configuration and create **Options** for C4ISR capabilities to match

IT Option-1

IT Option-2

IT Option-3

Select an **Option** of C4ISR configuration

Innovated TTP

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Conclusion

- **Today's warfighting complexity demands more decision aids**

- **Nature of Intell/ISR/Air Integrated Operations are tightly synchronized to enable agile operations**

- **IT technology Insertions place demands on overall Enterprise System (Human expertise/training demands)**

- **MCM2 provides Decision Makers options to better understand the impacts to their operations as whole**

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