# C401T
# Introduction to Operational Art and Design
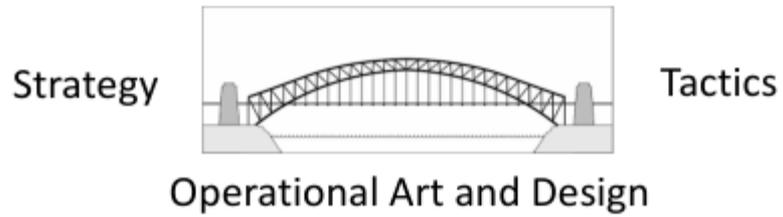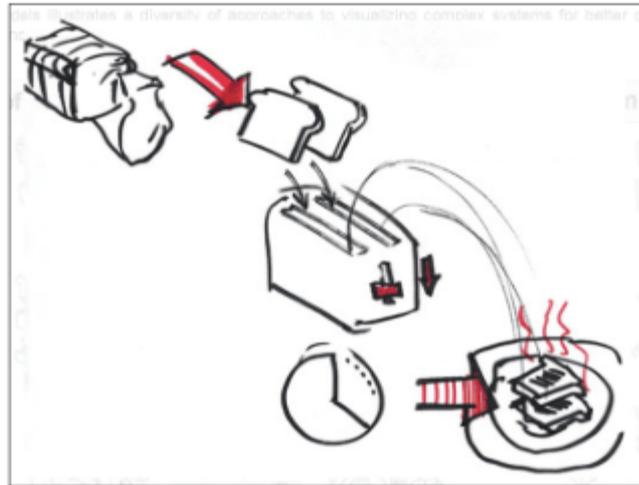
Strategy

Operational Art and Design

Tactics

1

# Can design/systems thinking help solve the FBI's current "wicked" problems?



www.drawtoast.com

2

# Operational Art and Design

Strategy  Tactics

## Operational Art and Design

Leader/Commander

| Using | Produces |
|---|---|
| • Systems Perspective <br> • Operational Design <br> • Linear Planning Processes | • Strategy <br> • Operational Plans <br> • Orders |

*The interaction of operational art and operational design provides a bridge between strategy and tactics, linking national strategic aims to tactical combat and noncombat operations that must be executed to accomplish these aims.*   3

# Systems Perspective

Afghanistan Stability / COIN Dynamics

Graphic from JP 2-01.3
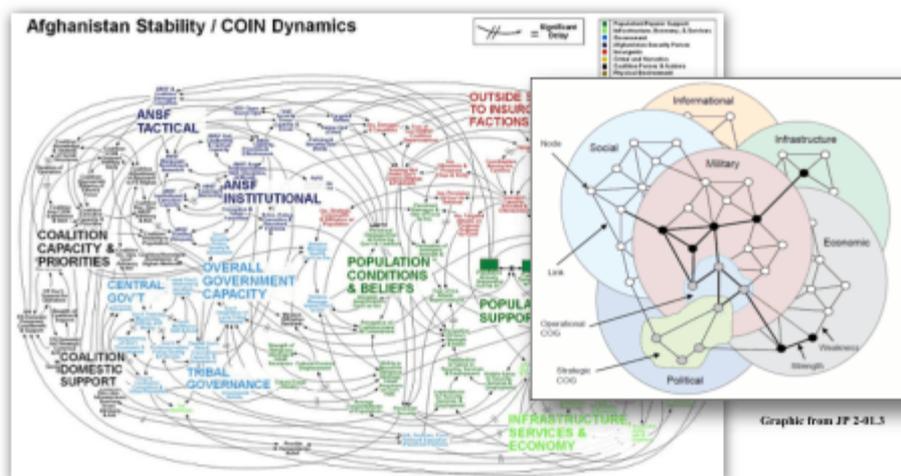
*The leader must understand the series of complex, interconnected relationships at work within the operational environment. One way of developing solutions is to view these interrelated challenges from a systems perspective…to consider the relationship between all of the aspects of the system.*

Here are some examples of systems analysis products used to understand the operational environment.

Notice that the systems analysis labeled "Afghanistan Stability/COIN Dynamics" was meant to be a design drawing for the internal use of the design team/staff. Design drawings, which could be on sketch paper, what boards, or on slides will only make sense to those that created it to help in understanding. It is not meant to serve as a presentation drawing (labeled Key Actors Relationships) that provides a level of simplicity and ease of understanding to someone who did not participate in the creation of the product.

# History of Operational Design (1 of 2)

- 1970's – "Intellectual Renaissance" in military theory and planning requiring officers to "visualize" problems before the initiation of planning
- 1990's – End of the "Cold War" and a dawn of new/more complex problems facing the military
- Mid-2000's:
  - Systemic Concept for Operational Design
  - Army adopts concepts of design in FM 3-0 *Operations*
  - 2006: DoD TRADOC Pamphlet 525-5-500 codifies *Commander's Appreciation and Campaign Design*
  - Command & General Staff College / School of Advanced Military Studies
  - OIF Campaign: Gen. Mattis stressed planners needed to "design a broad approach to achieving objectives and accomplishing the mission; and to determine if, when, and how to change that approach when circumstances change."

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# History of Operational Design (2 of 2)

- Israeli Defense Forces
  - 1990's: Operational Theory Research Institute (ORTI)
  - 2006: Shimon Navey (Director of ORTI) – Highly critical of the Israeli approach in the Yom Kippur War of 1973
- US Special Operational Command – Center for Special Operations
  - Campaign Plan 7500
  - Interagency Approach
  - Horizon of the CT Challenge to the United States Government
  - "Range Rider"
  - "Global Forecasting"

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# Operational Art and Design

**Operational Art** –Operational art is the *application of intuition and creative imagination* by commanders (leaders) and staffs. Supported by their skill, knowledge, experience, creativity, and judgment, commanders (leaders) seek to understand the OE, visualize and describe the desired end state, and employ assigned resources to achieve objectives. *JP 5-0, I-5*
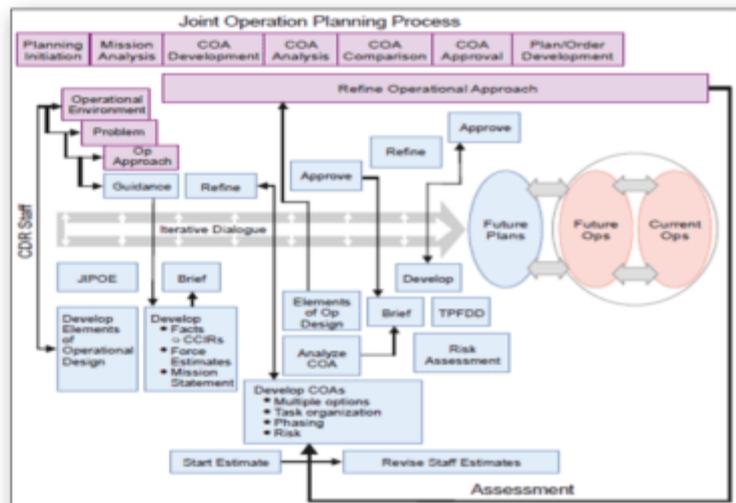
**Operational Design** – Operational design is the *conception and construction of the framework* that underpins a campaign or operation and its subsequent execution. *JP 5-0, IV-1*
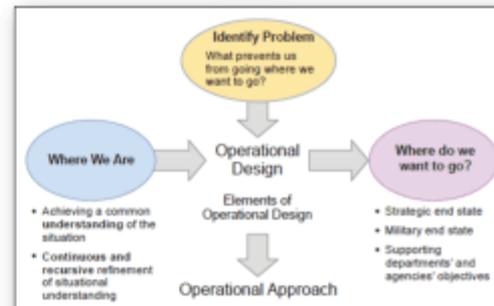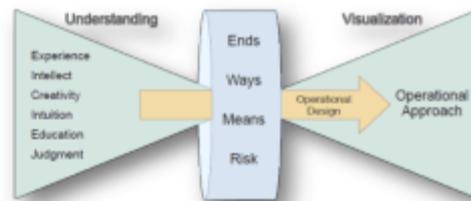




*Operational Design supports operational art with a framework and general methodology using elements of operational design for understanding the situation and the problem.*

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# Operational Design and JPP

• **Operational Design** provides the *conceptual basis* for structuring campaigns and operations.

• **JPP** provides *a proven process to organize* the work of the commander, staff, subordinate commanders, and other partners to develop plans...

• **Operational Design** and **JPP** are *complementary elements* of the overall planning process.
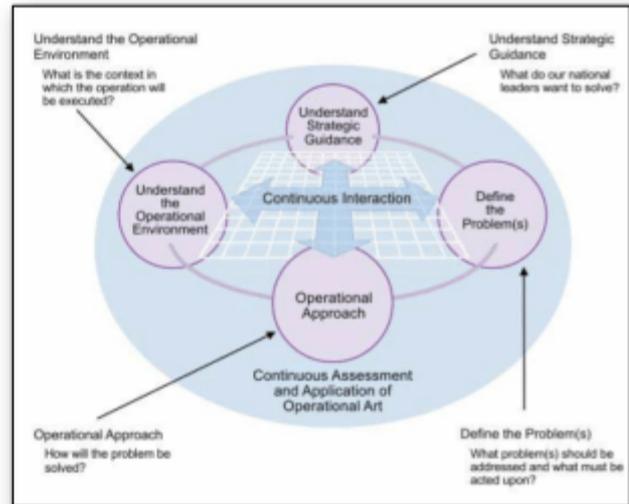


Joint Operation Planning Process

*The iterative process between the CDR's maturing operational approach and the development of the mission through JPP facilitates the continuing development of COAs and their refinement into eventual CONOPS...*

# Operational Design Framework

**Four Major Components:**

1. Understand Strategic Guidance
2. Understand the Operational Environment
3. Define the Problem(s)
4. Operational Approach

*JP 5-0, Fig. IV-3*



The diagram labels read:

Understand the Operational Environment — What is the context in which the operation will be executed?

Understand Strategic Guidance — What do our national leaders want to solve?

Understand Strategic Guidance

Understand the Operational Environment

Continuous Interaction

Define the Problem(s)

Operational Approach

Continuous Assessment and Application of Operational Art

Operational Approach — How will the problem be solved?

Define the Problem(s) — What problem(s) should be addressed and what must be acted upon?

*The components have characteristics that exist outside of each other and are not necessarily sequential. However, an understanding of the OE and the problem(s) must be established prior to developing operational approaches.*

# Design Methodology

**Methodology includes:**

1. Understand strategic direction and guidance
2. Understand the strategic environment (policies, diplomacy, politics)
3. Understand the operational environment
4. Define the problem
5. Identify assumptions needed to continue planning (both strategic and operational)
6. Develop options (the operational approach)
7. Identify decisions, decision points (external to the organization)
8. Refine the operational approach(es)
9. Develop planning guidance
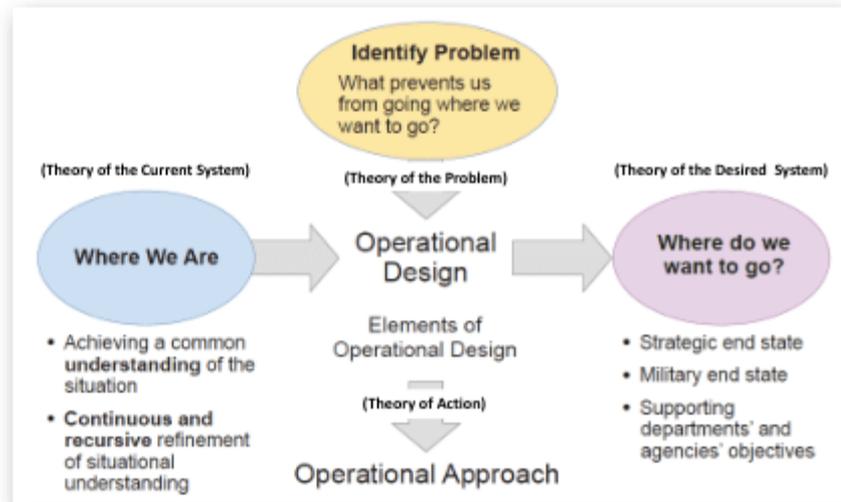


*Operational Design results in the commander's operational approach, which broadly describes the actions the joint force needs to take to reach the end state.*

# Elements of Operational Design

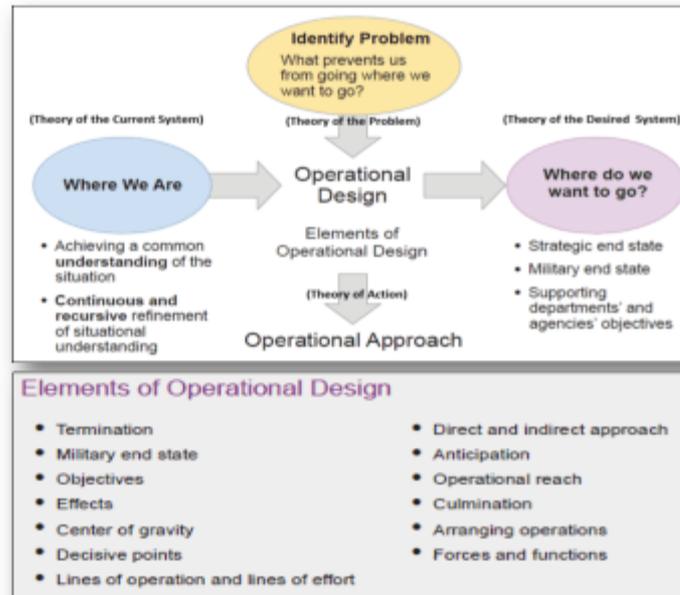**Where We Are**
- Center of Gravity*

**Where do we want to go?**
- Termination
- Military End State

**Identify Problem**
- Center of Gravity*

**Operational Approach**
- Objectives
- Effects
- Center of Gravity*
- Decisive Points
- LOO/LOE
- Direct/Indirect Approach
- Anticipation
- Operational Reach
- Culmination
- Arranging Operations
- Forces and Functions



**Identify Problem**
What prevents us from going where we want to go?

(Theory of the Current System)

(Theory of the Problem)

(Theory of the Desired System)

**Where We Are**

**Operational Design**
Elements of Operational Design

(Theory of Action)

**Operational Approach**

**Where do we want to go?**

- Achieving a common **understanding** of the situation
- **Continuous and recursive** refinement of situational understanding

- Strategic end state
- Military end state
- Supporting departments' and agencies' objectives

## Elements of Operational Design

- Termination
- Military end state
- Objectives
- Effects
- Center of gravity
- Decisive points
- Lines of operation and lines of effort
- Direct and indirect approach
- Anticipation
- Operational reach
- Culmination
- Arranging operations
- Forces and functions

*CoG is developed as part of understanding the situation, but assists with identifying the problem & provides focus for developing the Operational Approach*

# Strategic Guidance Principles
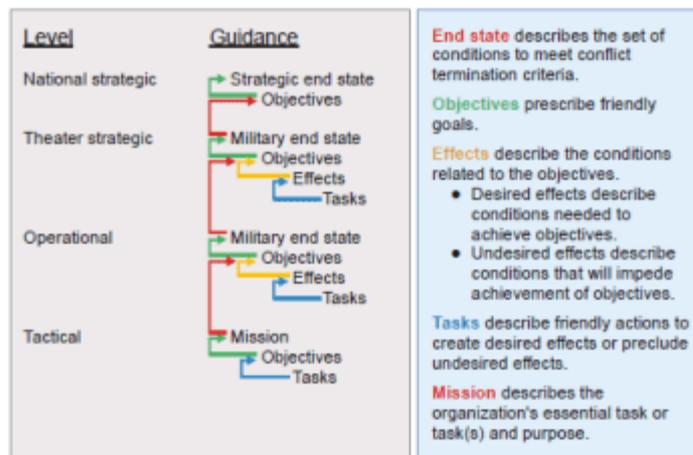


After Termination there is end state, objectives, effects and tasks. These are difficult topics so do not rush through it.
***Note: Tasks are not a separate element (Why? I don't know.)***
Notice the nesting of the levels from national strategic to tactical in the box on the left. ***Note: our discussion is focused on the theater strategic and operational levels where joint forces operate, not the national strategic. Joint doctrine's "elements of operational design reside" at these two levels***. Effects and tasks are not used at the national strategic level and effects are not used at the tactical level. However, the Army at the tactical level could use the term 'conditions' in lieu of effects.
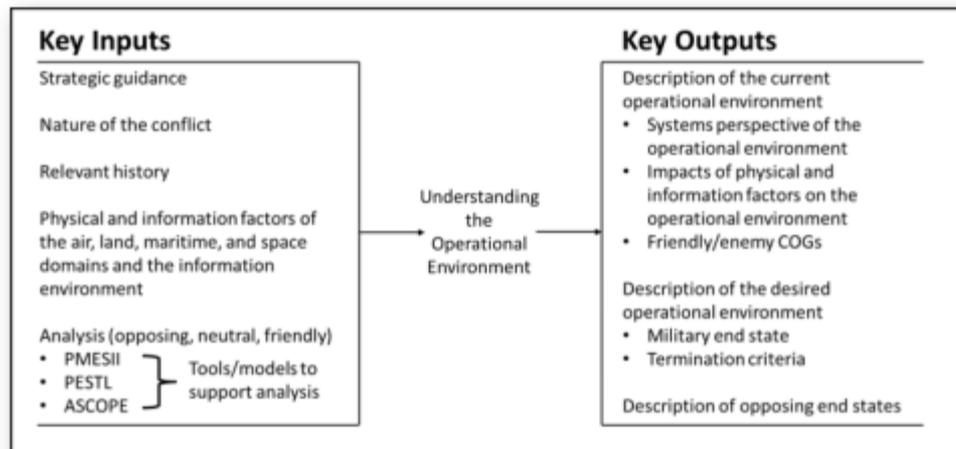
The box on the right defines the elements and their hierarchy. Notice that the end state is a set of conditions and should be described as conditions, that meet the termination criteria. Remember the termination criteria is approved and comes down from the national strategic level. ***Note: Some think that the end state should come first and that the termination criteria should be based on the end state conditions. This thinking is reasonable and true at the national strategic level, but represents misunderstanding of the operational level of war.*** Strategic guidance given to the joint force commander includes the strategic end state, objectives and termination criteria, from that the staff determines what conditions (the military end state) meets the termination criteria and the objectives/goals that would create those conditions. Know that an effect is a physical and/or behavioral state of a system that results from an action, a set of actions, or another effect. Therefore the effect is a description of how a system should behave when the objective is achieved. The behavior is observable and measurable and is used as a metric to determine if the objective had been met.

There are four primary considerations for writing a desired effect statement.
(a) Each desired effect should link directly to one or more objectives
(b) The effect should be measurable
(c) The statement should not specify ways and means for accomplishment
(d) The effect should be distinguishable from the objective it supports as a condition for success, not as another objective or a task.
The following slides will discuss each element individually and include examples.

# Understand the Operational Environment (1 of 3)

| Key Inputs | | Key Outputs |
|---|---|---|
| Strategic guidance<br><br>Nature of the conflict<br><br>Relevant history<br><br>Physical and information factors of the air, land, maritime, and space domains and the information environment<br><br>Analysis (opposing, neutral, friendly)<br>• PMESII<br>• PESTL    } Tools/models to support analysis<br>• ASCOPE | Understanding the Operational Environment → | Description of the current operational environment<br>• Systems perspective of the operational environment<br>• Impacts of physical and information factors on the operational environment<br>• Friendly/enemy COGs<br><br>Description of the desired operational environment<br>• Military end state<br>• Termination criteria<br><br>Description of opposing end states |

**_Where are we?...Where do we want to go?_**

# Operational Environment Analytic Methods

- DIME:
  - Diplomacy
  - Information
  - Military
  - Economy

- PMESII-PT:
  - Political
  - Military
  - Economic
  - Social
  - Information
  - Infrastructure
  - Physical Environment
  - Time

- ASCOPE:
  - Areas
  - Structures
  - Capabilities
  - Organizations
  - People
  - Events

- PESTL:
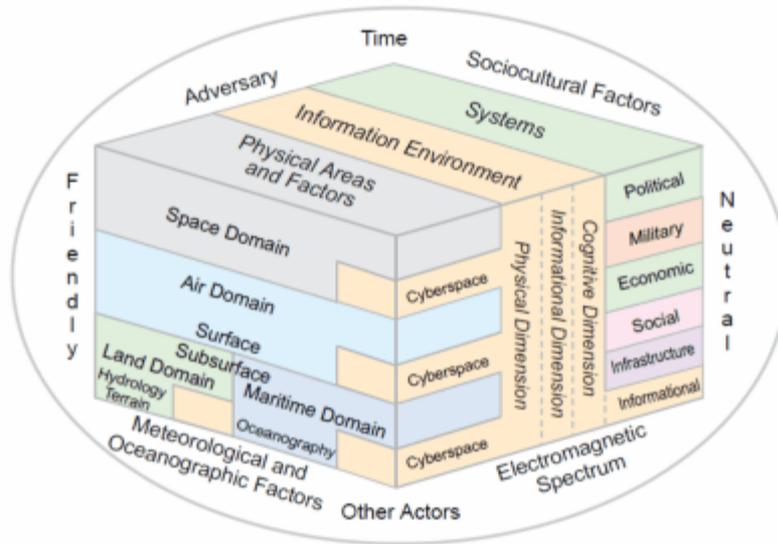  - Political
  - Economic
  - Social
  - Technologic
  - Legal

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**Figure IV-5. Holistic View of the Operational Environment**

# Understand the Operational Environment (2 of 3)



NARCOTICS NETWORK ANALYSIS - 5

Nodes and links derived from intelligence and other sources and development of node-to-node relationships.
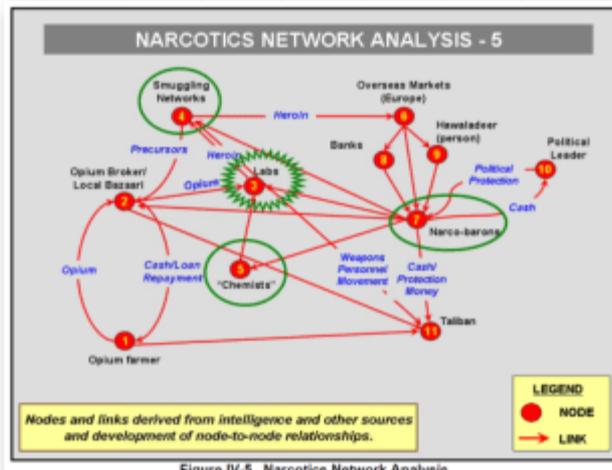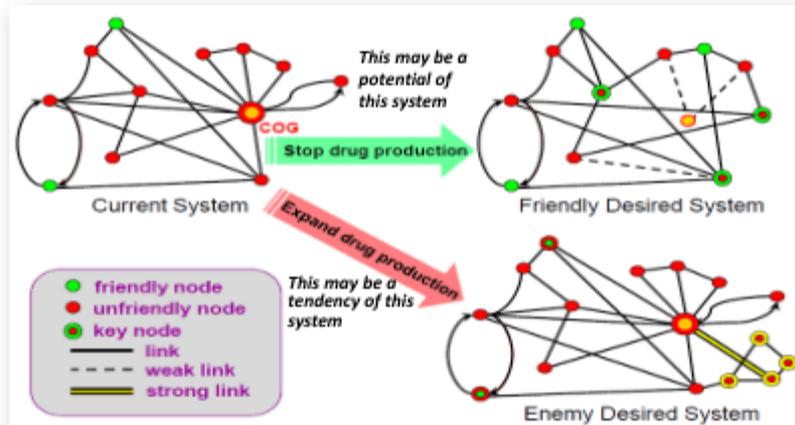
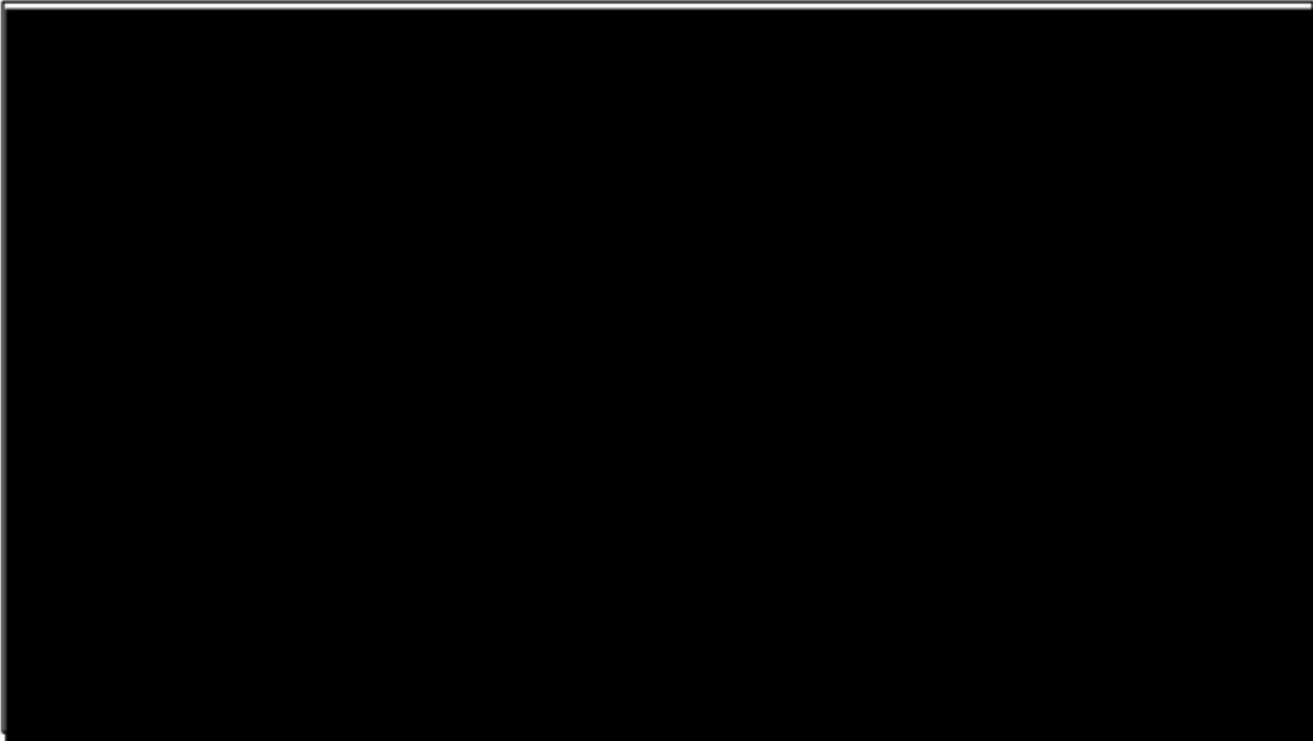LEGEND
● NODE
→ LINK

Figure IV-5. Narcotics Network Analysis

*Operational Environment is the composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander.*

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# Understand the Operational Environment (3 of 3)



*This may be a potential of this system*

**Stop drug production**

*Expand drug production*

*This may be a tendency of this system*

Current System

COG

Friendly Desired System

Enemy Desired System

- friendly node
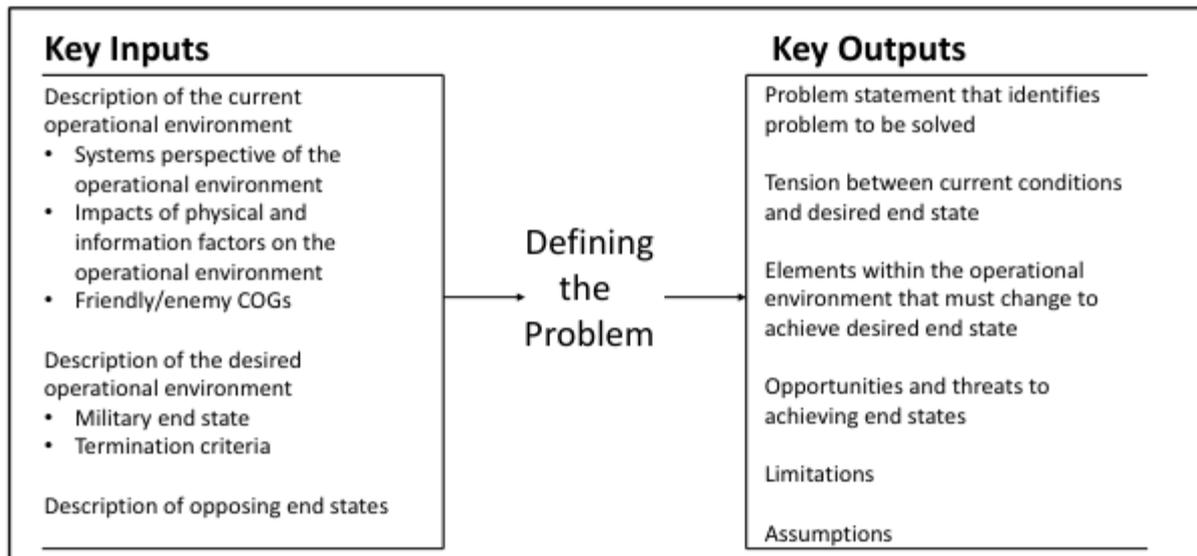- unfriendly node
- key node
- link
- weak link
- strong link

The commander must be able to describe both the current state… and the desired end state to visualize an approach to solving the problem. In developing an understanding of the interactions and relationships of relevant actors…, commanders and staffs consider natural tendencies and potentials in their analysis.

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# Define the Problem (1 of 2)

## Key Inputs

Description of the current operational environment
- Systems perspective of the operational environment
- Impacts of physical and information factors on the operational environment
- Friendly/enemy COGs

Description of the desired operational environment
- Military end state
- Termination criteria

Description of opposing end states

## Defining the Problem

## Key Outputs

Problem statement that identifies problem to be solved

Tension between current conditions and desired end state

Elements within the operational environment that must change to achieve desired end state

Opportunities and threats to achieving end states

Limitations

Assumptions

**Where—conceptually—should we act to achieve our desired state?**

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# Defining the Problem (2 of 2)



*Current System*

*What needs to change to get to the desired end state?*

COG

Stop drug production

Expand drug production

*Friendly Desired System*

*Enemy Desired System*

- friendly node
- unfriendly node
- key node
- link
- weak link
- strong link
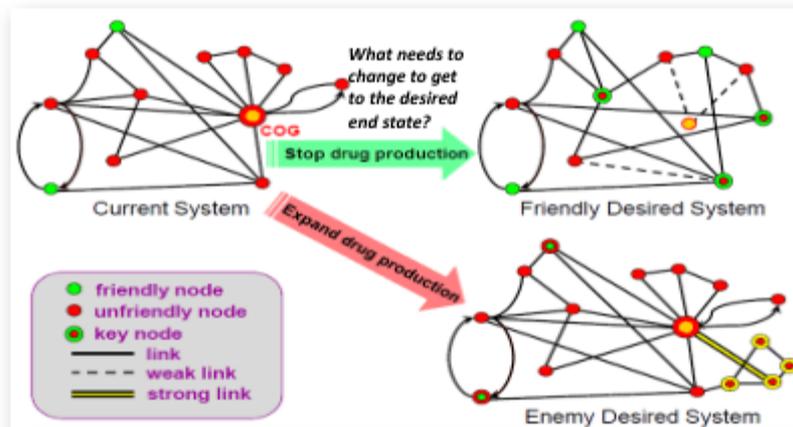
*Critical to defining the problem is determining what needs to be acted on to reconcile the differences between existing and desired conditions.*

# Problem Statements

- Two forms:
  - Interrogative
  - Declarative

- Generally requires a "deeper" level of analysis

- Must encompass the true root of the organization's challenge to drive the current state to the desired state

- Can use "METT-TC" {Mission, Enemy (*Threat*), Terrain, Troops (*Personnel*), Time, Civilian Considerations (*Community*)} analysis to assist with focusing the problem statement

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## Defining the Problem

No good solutions cover these two issues—is that a problem?
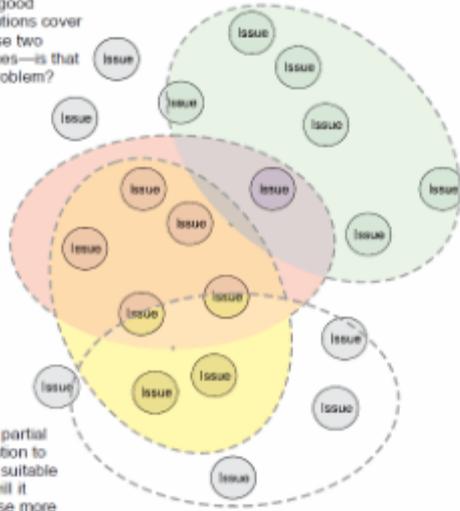
Is a partial solution to this suitable or will it cause more problems?

### Problem Identification

- Cannot easily determine which issue is "critical"
  - ○ critical to United States
  - ○ critical to ally
  - ○ critical to the home country
- Insufficient resources to address them all
- Unclear relationship between the issues
  - ○ which issues, if left to fester, have more impact on others (even if not critical)
  - ○ which issues will go away if another is addressed
- Which are "pet rocks" and not really an issue

**Figure IV-6. Defining the Problem**

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*Sample Design Drawing Problem Statement*

Tensions in Present System

Tendency

Potential
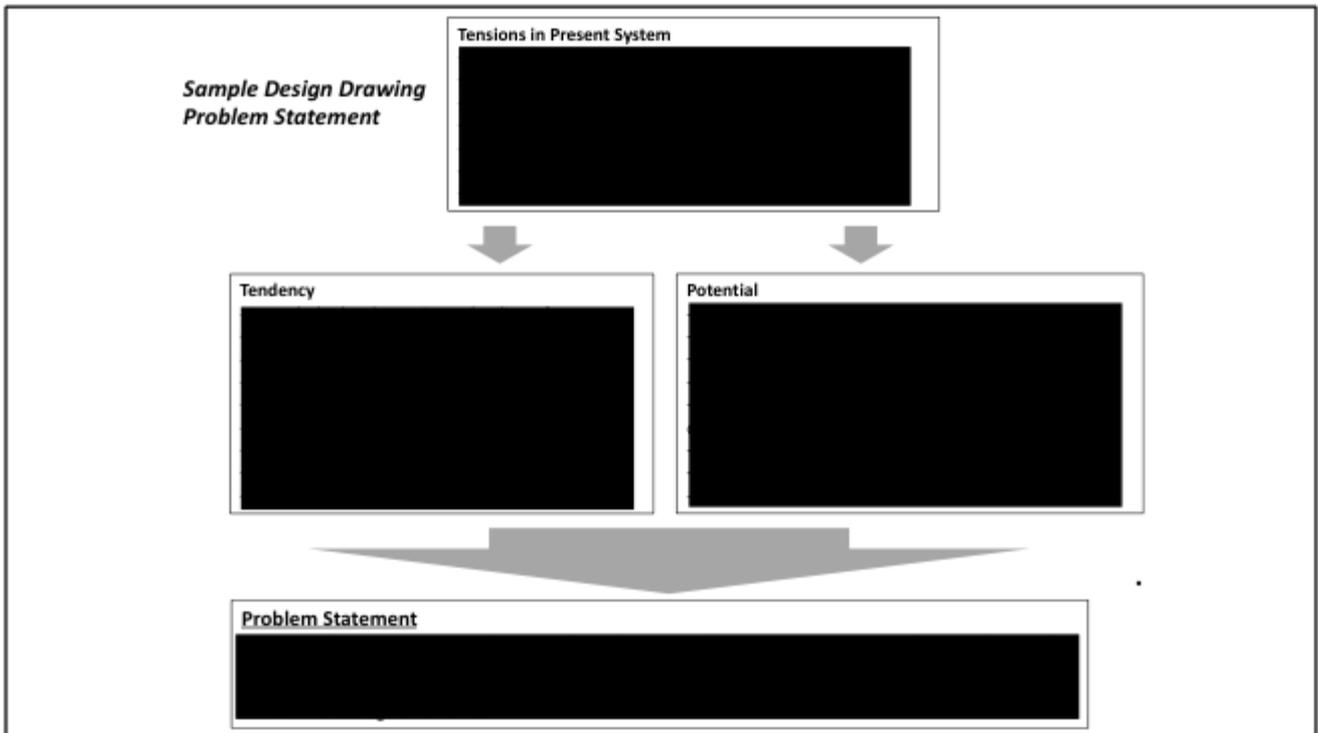
Problem Statement

President Obama: "The United States' prime interest is to defeat ISIL and to respect Iraqi sovereignty... that will continue to be our policy." Economic Interests in Iraq

**Sample Design Drawing –
Problem Statement**

*Tensions in Present System*
-UK at war with Germany and Turkey
-British EEF and Turkish Fourth Army engaged in conventional battle
-Turkish occupation of Arab land
-Tribal Feuds among Arab tribes
-Differing views of warfare
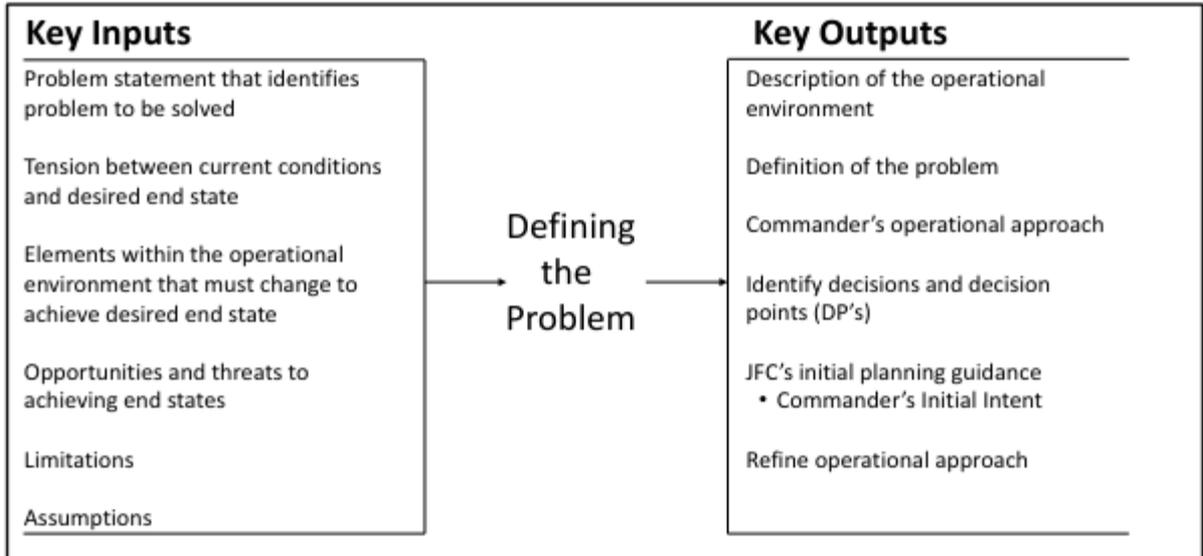
Tendency

Potential

*Enemy Desired System*
-Arabs remain unable to unite for common purpose; remain ineffective fighting force
-Arabs unable to help the British war effort
-Turks continue occupation of Arab lands

*Friendly Desired System*
-Arabs become an effective fighting force
-Arabs able to help the British war effort
-Turks unable to sustain presence in Arab lands

**Problem Statement**
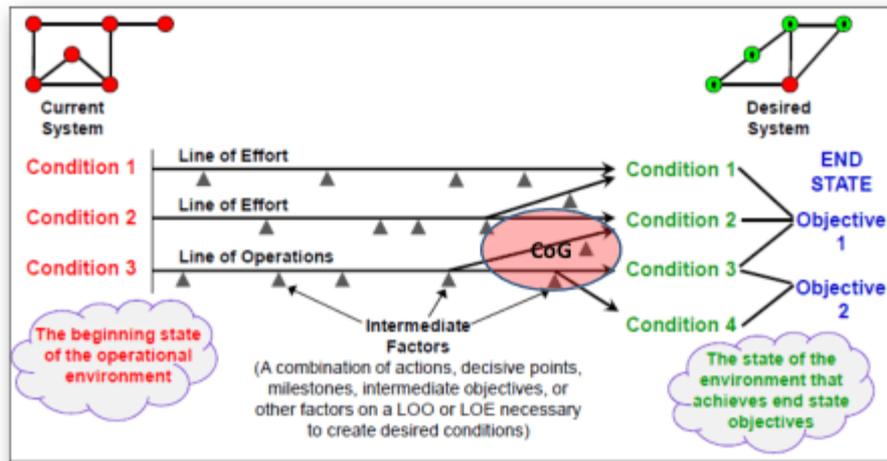How does Lawrence bring together a disparate group of Arab tribes to form an effective fighting force which can support the EEF's conventional campaign against the Turks occupying the Arab lands?
or
Lawrence needed to bring together a disparate group of Arab tribes to form an effective fighting force which can support the EEF's conventional campaign against the Turks occupying the Arab lands.

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# Operational Approach (1 of 2)

**Key Inputs**

Problem statement that identifies problem to be solved

Tension between current conditions and desired end state

Elements within the operational environment that must change to achieve desired end state

Opportunities and threats to achieving end states

Limitations

Assumptions

**Defining the Problem** →

**Key Outputs**

Description of the operational environment

Definition of the problem

Commander's operational approach

Identify decisions and decision points (DP's)

JFC's initial planning guidance
• Commander's Initial Intent

Refine operational approach

**How do we act to achieve our desired state?**

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# Operational Approach (2 of 2)



The operational approach reflects understanding of the operational environment and the problem while describing the commander's visualization of a broad approach for achieving the desired end state.

# Understanding the Linkage of an Operational Approach

https://www.youtube.com/watch?v=W5qQblHZ5gQ

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## Sample Design Drawing – Operational Approach

**Problem Statement**

How does US, partners and "Moderate" Muslim nations form and maintain a MNF for an enduring effort to support Iraq (& Sunni's) to defeat ISIS, enable broader WoT and restore regional security and stability, while respecting state sovereignty, preventing long term involvement of US ground combat troops, and without increasing Iranian threat.

**MN Cooperation**
- Promote regional coop & conciliation
- Strengthen border/migration
- Recruitment disrupted

**Strengthen Iraq**
- Strengthen Iraq national institutions
- Iraqi able to regain sovereign territory
- Iraq security and stability improved

**Target ISIL**
- Use of 'hard' and 'soft' power
- ISIL reject by Sunni/defeat ISIL C2
- Limited US ground troops

Defeat Mechanism

*Winning the Narrative*

*US Strategic Guidance*

- Improve stability and security in central region (M/E)
- Respect state sovereignty (D/M)
- Protect interests (D/E)
- Limited ground combat operations (I/M)

**Operational Approach Narrative**

The approach will include three broad lines of effort; strengthening Iraq, targeting ISIL and MN cooperation. We will build and maintain a strong multinational force that is able to effectively plan and coordinate effects, and manage risk. Iraqi land forces will be supported by SOF, air and stand-off effects and training/advisory forces. Operations will include a range of conventional and unconventional methods to directly and indirectly target, degrade and defeat ISIL's "Apocalyptic" narrative. We will work to gain the collective support of 'moderate' Muslims. All regional operations will be aligned to ensure they are complementary and synergistic with broader WoT effects and outcomes.

**Sample Design Drawing –**
**Operational Approach**

Categories of Analysis —produces→ Conceptual Plan —which achieves→ Desired System

**Algebraical**
-need to calculate factors related to space and time

**Biological**
-need to wear down enemy

**Psychological**
-need for moral support

Guerrilla Warfare

Support of populace thru Info Ops

Precision Intelligence

Operational Mobility

Irregular warfare tactics

Defeat Mechanism- *Exhaustion*

*Desired System*
-Arabs become an effective fighting force
-Arabs able to help the British war effort
-Turks unable to sustain presence in Arab lands

**Operational Approach Narrative**
Using the algebraically, biological, and psychological categories of analysis, Lawrence envisioned a conceptual plan centered on guerrilla warfare against the Turks. His conceptual plan was built on the four pillars of populace support, precision intelligence, operational mobility, and irregular warfare tactics which optimized the strengths of the Arabs in this harsh environment. The defeat mechanism for this plan was exhaustion of the Turkish forces in Arabia through attacks on the "enemy's material." The Arabs would thus be transformed into an effective fighting force able to support the British war effort and ultimately make it unsustainable for the Turks to continue its occupation.

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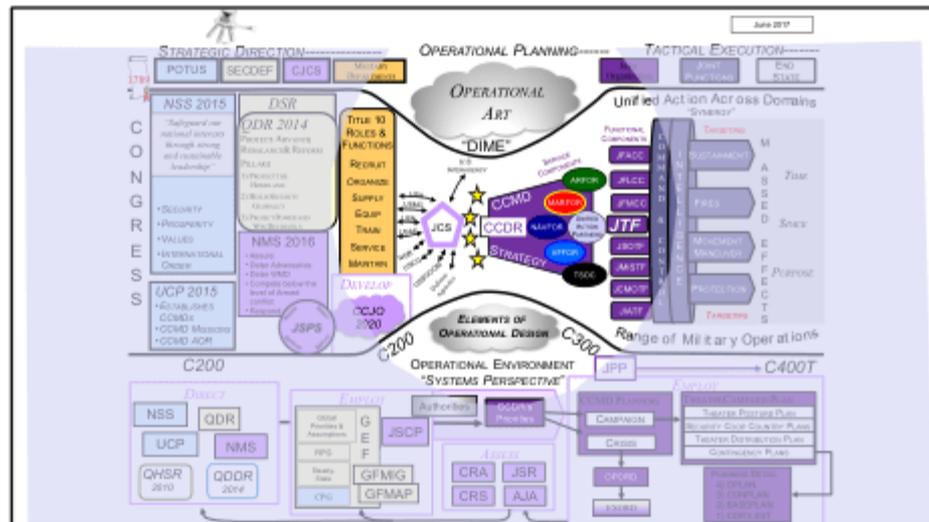
DIRECT
   NSS– National Security Strategy
   UCP—Unified Command Plan
   QDR– Quadrennial Defense Review
   NMS– National Military Strategy
   QHSR-- Quadrennial Homeland Security Review (Dept of Homeland Security)
   QDDR-- Quadrennial Diplomacy and Development Review (Dept of State)
EMPLOY
   GEF– Guidance for Employment of the Force
   RPG– Resource Planning Guidance
   CPG--  Contingency Planning Guidance
   JSCP--  Joint Strategic Capabilities Plan (Next release: Joint Strategic *Campaign* Plan
   TCP– Theater Campaign Plan
   TPP– theater Posture Plan
   OPLAN-  Operations Plan (complete plan with all annexes and TPFDL (Time Phased Force Deployment List))
   CONPLAN– Contingency Plan (Base plan with select annexes and TPFDL
   BASEPLAN– Complete Base plan without annexes
   CDR's Estimate– Commander's Estimate
Assess
   CRA-- Chairman's Risk Assessment
   CRS--   Chairman's Readiness System
   JSR– Joint Strategic Review
   AJA– Annual Joint Assessment (Renamed from CRA)
Develop
   CCJO– Chairman's Concept for Joint Operations
Military Departments / Defense Organizations
   USA– U.S. Army
   USMC--  U.S. Marine Corps
   USN– U.S. Navy
   USAF– U.S. Air Force
   USCG– U.S. Coast Guard
   USSOCOM– U.S. Special Operations Command
Service Components
   ARFOR– Army Forces
   MARFOR– Marine Forces
   NAVFOR--  Navy Forces
   AFFOR– Air Force Forces
   TSOC– Theater Special Operations Command
Functional Components
   JFACC– Joint Force Air Component Commander
   JFLCC– Joint Force Land Component Commander
   JFMCC– Joint Force Maritime Component Commander
   JTF– Joint Task Force
   JSOTF– Joint Special Operations Task Force

JMISTF– Joint Military Information Support Task Force
JCMOTF– Joint Civil Military Operations Task Force
JIATF—Joint Interagency Task Force